Lucia Mar Unified School District

Mesa Middle School Field Restroom

ADDENDUM No. 1

Project Tracking Number: 68759-132
DSA Filing Number: 40-39
DSA Application Number: 03-125727

TO: All Plan Holders and Bidders

FROM: RRM Design Group
3765 South Higuera, Suite 102
San Luis Obispo, CA 93401
Phone: 805.543.1794

DATE: June 5, 2026

This addendum is hereby made a part of the contract documents to the same extent as though it were originally included therein.

Bidders are required to acknowledge receipt of this addendum in the space provided in the proposal.

Bidders are hereby notified of the following:

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A. CONTRACT DOCUMENT REVISIONS

1. The approved DSA set is attached.

B. SPECIFICATIONS CLARIFICATIONS AND REVISIONS

1. Section 08 1113 – Hollow Metal Doors and Frames

A. Replaced in its entirety.

C. PLAN CLARIFICATIONS AND REVISIONS

1. Sheet G-001

A. General Conformance
(i) Signatures added and expiration date updated.
(ii) Check boxes filled in

2. Sheet AS-903

A. Guardrail level extension dimension revised: ~~11"~~ **12"**, see Detail 22.
B. Revision to rebar in concrete ramp on detail 24 for bidding clarity.
C. Revision to rebar in concrete stairway on detail 44 for bidding clarity.

3. Sheet A-111

A. Omission of 'Tubular Skylight' symbol from RCP legend.

4. Sheet A-121

A. Omission of 'Tubular Skylight' symbol from roof legend.

5. Sheet A-511

A. Revise keynote 06 1000.O to read
(i) PROVIDE BLOCKING FOR **CONTRACTOR** ~~CLIENT~~ PROVIDED WALL-MOUNTED WHITE BOARD AND OTHER FUTURE USE.

6. Sheet A-931

A. Revision to door jamb on detail 12.
B. Door threshold note revised on detail 13: "Threshold, refer to door hardware schedule. Secure to Floor with ¼" ~~min. expansion sleeve anchors, (3) min. Set in sealant per manufacturer. ½" max height from base level to top of threshold ICC-ES report #ELC-4386.~~ **Titen HD with countersunk head, (3) min. per threshold. Install per UES-493. Set threshold in sealant."**

7. Sheet S-501

A. Omission of ceiling connection drawing on detail 33.

8. Sheet S-511

A. Framing member designation called out on details: 12, 13, 14, 53

9. Sheet M-200

A. "SIM" added to boxed note on Platform Framing detail in detail B.

D. RESPONSES TO CONTRACTOR QUESTIONS

1. Several of the Structural Drawings reference a Geotechnical/Soils Report Update dated 04/03/2025. This report is also referenced on the Civil Drawing Title Sheet; however, the referenced document does not appear to be included within the current bid documents.
Can the project team please confirm whether the updated Geotechnical/Soils Report is currently available for review? If not, will the report be issued as part of a forthcoming addendum?

A. The Geotechnical / Soils Report has been attached.

2. During the course of the initial grading operations required to achieve the over-excavation and re-compaction of the proposed Building Pad and Switchback Ramp areas, a significant quantity of surplus soil will be generated requiring onsite handling, relocation, and temporary stockpiling. Portions of this material will also need to remain accessible for future use as retaining wall backfill operations progress.
Please confirm whether the area located south of the proposed Switchback Ramp may be utilized as a temporary soil stockpiling and staging area for the duration of the grading and retaining wall construction activities.

A. See attached Lay Down Exhibit.

3. Structural Sheet S-312, Detail #14, pertaining to the Switchback Ramp Retaining Walls, indicates that a wall drain system may be installed in lieu of the specified 12" wide gravel column extending to 12" below proposed subgrade. Can the design team confirm whether MiraDRAIN 6200XL would be considered an acceptable wall drain product for the application? If not, please provide the preferred or approved equivalent product specification.

Additionally, Structural Sheet S-311, Detail #11, pertaining to the Deepened Footing and associated Building Retaining Wall, references the same 12" wide gravel column detail; however, this detail does not include the note permitting substitution with a wall drain system. Please confirm whether a wall drain system will also be permitted at this location in lieu of the gravel column, or if the 12" wide gravel column will be strictly required for this condition.

A. The Miradrain product can be used at both the retaining wall and the deepened footing. The drainpipe is still required at the base, and shall be tied into the drainage panel appropriately to ensure that the wall remains free of saturated soil surcharges.

4. The specification section 26 7700 directs to provide an assisted listening system, with a campus minimum number of kits (1).

Is that correct; and does the campus already have its minimum amount of one?

A. Yes, the minimum is one and the campus already has the minimum.

E. DISTRICT SPECIAL INSTRUCTIONS

1. If there appears to be a conflict between specifications, use the more stringent specification.

2. All planting to be by District.

3. Fire Lane & front student drop-off area to be kept clean. Swept daily during heavy grading activities.

4. All construction fences to have green fabric screening.

5. Unused soils to be exported from site.

6. Contractor shall coordinate with the district for student access to the blacktop court area throughout the duration of construction.

7. All buried utilities to have 6" color coded mylar traceable marker tape. Place minimum 6” wide mylar/aluminum traceable marker tape at 12” below finish grade along and above buried piping. Tape shall be blue in color when over domestic water, yellow in color when over gas, and green in color when over sewer. This does not replace the requirement for tracer wire.

F. ATTACHMENTS

- Specification Sections
  - 08 1113
- Sheets
  - G-001
  - AS-903
  - A-111
  - A-121
  - A-511
  - A-931
  - S-501
- Lay Down Area Exhibit – filename: *Lay Down Area.pdf*
- DSA Approved set – file name: *03 -125727_DWG_A.pdf*
- DSA Approved Specifications – file name: *03 -125727_SPC_A.pdf*
- DSA 103-19 – file name: *03 -125727_103_A.pdf*
- Updated Geotechnical Report –file name: *CGS_Geotechnical and Geologic Hazards Report_V1.pdf*

Section 08 1113
Hollow Metal Doors And Frames

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Standard hollow metal doors and frames.

1.02 RELATED SECTIONS

A. Section 08 7100 - Door Hardware for door hardware for hollow metal doors.

B. Section 09 9113 - Exterior Painting for field painting hollow metal doors and frames.

C. Section 09 9123 - Interior Painting for field painting hollow metal doors and frames.

1.03 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings.

B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.04 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022.

B. ANSI/BHMA A156.38 - Low Energy Power Operated Sliding and Folding Doors; 2019.

C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.

D. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2020.

E. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

F. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

G. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames; 2022.

H. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025.

J. ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2022.

K. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2024.

L. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

M. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2019.

N. 2025 Building Standards Administrative Code, Part 1, CBSC.

O. 2022 California Building Code (CBC), Part 2, CBSC (2021 IBC & California Amendments).

P. 2022 California Energy Code, Part 6, CBSC.

Q. 2022 California Fire Code, Part 9, CBSC (2021 International Fire Code & California Amendments).

R. 2022 California referenced Standards, Part 12 CBSC.

S. Title 19 C.C.R., Public Safety, SFM Regulations.

T. Americans with Disabilities Act (ADA), Title II or Title III.

1.05 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.

B. Other Action Submittals:
   1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference designation for details and openings as those on Drawings. Coordinate with door hardware schedule.
      a. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
      b. Indicated specific model number of door and frame.
      c. Indicate steel sheet type (galvanized, non-galvanized, etc.)
      d. Indicate door and frame type (A, A1, B, C, etc.)
      e. Indicated hardware group.
      f. Indicate dimensions and locations of mortises and holes for hardware.
      g. Indicate dimensions and locations of cutouts.

h. Indicate fire ratings for fire doors.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.06 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
1. Provide additional protection to prevent damage to finish of factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking.
1. Do not store in a manner that traps excess humidity.
2. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.09 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of steel doors and frames that fails in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Steel Doors and Frames: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Stiles; (Basis of Design)
   2. Or equal (Reference Section 01 25 00 – Substitutions).

2.02 MATERIALS

A. Galvannealed (Metallic-Coated) Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum A60 metallic coating for exterior doors and frames.

B. Frame Anchors: ASTM A879/A879M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
   1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M, hot-dip galvanized according to ASTM A153/A153M, Class B.

C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M .

D. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.

2.03 STANDARD HOLLOW METAL DOORS

A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated.
   1. Comply with ANSI/SDI A250.8.
   2. Design: Flush panel 16ga door.
   3. Core Construction: Steel stiffeners and batt insulation.
   4. Vertical Edges for Single-Acting Doors: Beveled edge.
   5. Beveled Edge: 1/8 inch in 2 inches.
   6. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick, end closures or channels of same material as face sheets.
   7. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

B. Exterior Doors: Face sheets fabricated from galvannealed (metallic-coated) steel sheet. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 4 for physical performance level:
   1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 1 (Full Flush):
      a. Face thickness: 16 gage (0.053 inch).

C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

2.04 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior and Interior Door Frames: Fabricated from metallic-coated steel sheet. No knockdown frames accepted for exterior applications, welded frames only.
   1. Fabricate door frames with mitered or coped corners.
   2. Fabricate door frames as full profile welded unless otherwise indicated.
   3. Frame: 14 gage (0.067-inch) thick steel sheet.
      a. Product: F14 Series by Steelcraft.
   4. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

2.05 ACCESSORIES:

A. Glazing Bead: Formed steel sheet; screw-attached.
   1. Glazing Bead: Formed steel sheet; snap-in installation.

2.06 FINISH

A. Factory prime finish in accordance with ANSI/SDI A250.10 .

2.07 FRAME ANCHORS

A. Jamb Anchors:
   1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
   1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fastener.

2.08 STOPS AND MOLDINGS

A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.

B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated.

C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed.

2.09 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where

practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Tolerances:
   1. Standard doors and frames: Fabricate hollow metal work to tolerances indicated in SDI 117.

C. Hollow Metal Doors:
   1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
   2. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
   2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
   4. Floor Anchors: Weld anchors to bottom of jambs with at least four spot welds per anchor.
   5. Jamb Anchors: Provide number and spacing of anchors as follows:
      a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      b. Three anchors per jamb up to 60 inches high.
      c. Four anchors per jamb from 60 to 90 inches high.
      d. Five anchors per jamb from 90 to 96 inches high.
      e. Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
      f. Two anchors per head for frames above 42 inches wide and mounted in metal-stud partitions.
      g. Compression Type: Not less than two anchors in each jamb.
      h. Post installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
   6. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
      a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
      b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Section 08 7100 - Door Hardware.

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8 .
2. Reinforce doors and frames to receive non-templated, mortised and surface-mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/BHMA A156.38 A115 Series specifications for preparation of hollow metal work for hardware.

G. Air Infiltration: Maximum rate not more than indicated when tested according to AAMA/WDMA/CSA 101/I.S.2/A440 , Air Infiltration Test.
1. Maximum Rate: 0.1 cfm/sq. ft. of area at an inward test pressure of 6.24 lbf/sq. ft.

2.10 STEEL FINISHES

A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

B. Field-Applied Paint Finish: Comply with Division 9 Sections “Painting”.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.
1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
2. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
3. Remove temporary braces necessary for installation only after frames have been properly set and secured.
4. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
5. Floor Anchors: Provide floor anchors for each jamb that extends to floor, and secure with post installed expansion anchors.
6. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.
7. In-Place Gypsum Board Partitions: Secure frames in place with post-installed expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
8. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
9. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
10. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
11. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
12. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Steel Doors:
   a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
   b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.

d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.04 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

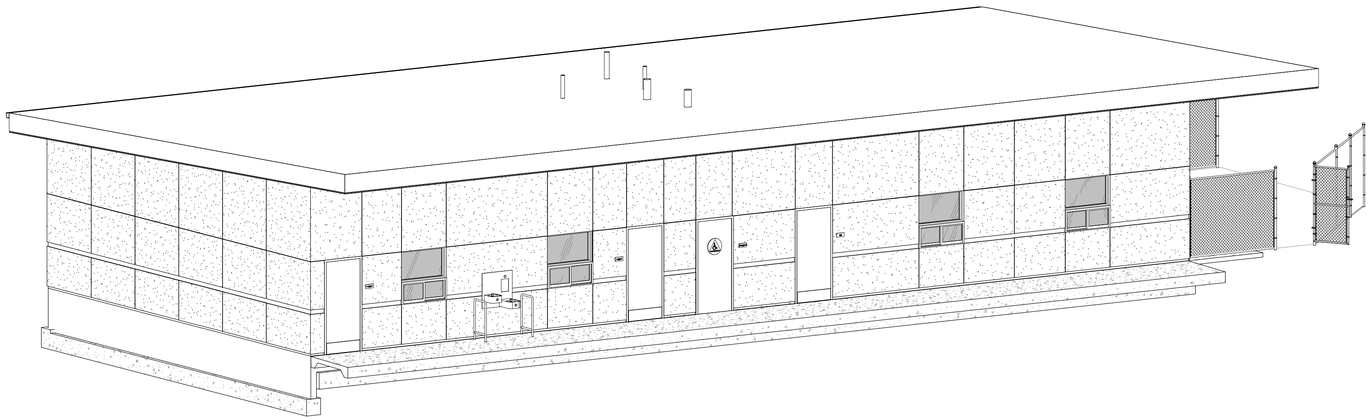
B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

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2555 S HALCYON RD, ARROYO GRANDE, CA

DSA APP. NO.: 03-125727

PTN: 68759-132

VICINITY MAP



PROJECT DIRECTORY

SCHOOL DISTRICT
LUCIA MAR SCHOOL DISTRICT
970 School Road,
Arroyo Grande, CA 93420
Andy Stenson
andy.stenson@lmusd.org
(805) 474-3000

ARCHITECT
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Kathryn Anne Hicks
kahicks@rrmdesign.com
(805) 543-1794

CIVIL ENGINEER
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Robert Camacho
rcamacho@rrmdesign.com
(805) 543-1794

LANDSCAPE ARCHITECT
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Chris Dufour
cbdufour@rrmdesign.com
(805) 543-1794

STRUCTURAL ENGINEER
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Jessica Meadows
jmmeadows@rrmdesign.com
(805) 543-1794

MECH & PLUMBING ENGINEER
3C ENGINEERING
1500 Palm Street
San Luis Obispo, CA 93401
Bryan Starrett
bstarrett@3ceng.com
(805) 540-3363

ELECTRICAL ENGINEER
THOMA ELECTRIC
3562 Empleo Street
San Luis Obispo, CA 93401
Jeffrey Thoma
jthoma@thomaelec.com
(805) 543-3850

GEOTECHNICAL ENGINEER
EARTH SYSTEMS
4378 Old Santa Fe Road
San Luis Obispo, CA 93401
Nick Zoetewey
nzoetewey@earthsystems.c...
(805) 234-9474

APPLICABLE STANDARDS

PARTIAL LIST OF APPLICABLE STANDARDS
2022 CALIFORNIA BUILDING CODE (FOR SFM) REFERENCED STANDARDS CHAPTER 35

- **NFPA 13** AUTOMATIC SPRINKLER SYSTEMS (CALIFORNIA AMENDED) 2022 EDITION
- **NFPA 14** STANDPIPE SYSTEMS (CALIFORNIA AMENDED) 2019 EDITION
- **NFPA 17** DRY CHEMICAL EXTINGUISHING SYSTEMS 2021 EDITION
- **NFPA 17A** WET CHEMICAL EXTINGUISHING SYSTEMS 2021 EDITION
- **NFPA 20** STATIONARY PUMPS 2019 EDITION
- **NFPA 24** PRIVATE FIRE SERVICE MAINS (CALIFORNIA AMENDED) 2019 EDITION
- **NFPA 72** NATIONAL FIRE ALARM AND SIGNALING CODE (CALIFORNIA AMENDED) (NOTE: SEE UL STANDARD 1971 FOR "VISUAL DEVICES") 2022 EDITION
- **NFPA 80** FIRE DOOR AND OTHER OPENING PROTECTIVES 2019 EDITION
- **NFPA 253** CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS 2015 EDITION
- **NFPA 2001** CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CALIFORNIA AMENDED) 2018 EDITION
- **UL300** - STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT 2005 (R2010)
- **UL464** - AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS 2003 EDITION
- **UL521** - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS 1999 EDITION
- **UL1971** - STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED 2002 (R2010)

APPLICABLE CODES

THESE NOTES APPLY TO ALL PORTIONS, PHASES AND SUBCONTRACTORS OF THIS PROJECT.
APPLICABLE CODES ARE STANDARDS:

- **2025** CALIFORNIA ADMINISTRATIVE CODE
- **2022** CALIFORNIA BUILDING CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA PLUMBING CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA MECHANICAL CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA FIRE CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA ELECTRICAL CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS.
- **2022** CALIFORNIA GREEN BUILDING STANDARDS CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA FIRE CODE
- COMPLIANCE WITH CFC CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION
- **2022** CALIFORNIA EXISTING BUILDING CODE
- **2022** CALIFORNIA REFERENCED STANDARDS CODE TITLE 24 CCR
- TITLE 19 CCR. PUBLIC SAFETY STATE FIRE MARSHALL REGULATIONS
- CURRENT CITY OF ARROYO GRANGE MUNICIPAL CODE.
- **2010** ADA STANDARDS FOR ACCESSIBLE DESIGN

DEFERRED SUBMITTALS

NONE.

PROJECT INFORMATION

PROJECT SCOPE
1. CONSTRUCTION OF A NEW CLASSROOM BUILDING 230
2. ASSOCIATED GRADING, PAVING, LANDSCAPE, UTILITY, AND SITEWORK

CLIMATE ZONE: 5

DESCRIPTION

OCCUPANCY:	E
CONSTRUCTION TYPE:	V-B
FIRE SPRINKLERED:	NO
BUILDING HEIGHT:	14' - 11"
NUMBER OF STORIES:	1
BUILDING AREA:	2,808 SF
OVERALL AREA (WITH OVERHANGS):	3,930 SF

GENERAL CONFORMANCE

APPLICATION NO. 03-125727 FILE NO. 40-39

DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX SHEET HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1. DESIGN INTENT, AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS, AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND,
2. COORDINATION WITH MY PLANS AND SPECIFICATIONS, AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS DUTIES AND RESPONSIBILITIES UNDER SECTION 17302 AND 81138 OF THE EDUCATION CODE, AND SECTIONS 4-336, 4-341, AND 4-344" OF TITLE 24, PART 1 (*TITLE 24, PART 1, SECTION 4-317(b)).*

I CERTIFY THAT:
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SIGNATURE — DATE

ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE
KATHRYN ANNE HICKS
PRINT NAME
C-38079 — LICENSE NUMBER
02/28/27 — EXPIRATION

☐ IS/ARE IN GENERAL CONFORMANCE AND
☐ HAVE BEEN COORDINATED

02/23/2025
SIGNATURE — DATE

ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE
KRISTINE LYNNE FERREIRA
PRINT NAME
C-38017 — LICENSE NUMBER
11/30/27 — EXPIRATION

ACCEPTANCE TESTING

SEE G-002 FOR ACCEPTANCE TESTING REQUIREMENTS.

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G-403	BUILDING CODE ANALYSIS	
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Grand total: 97

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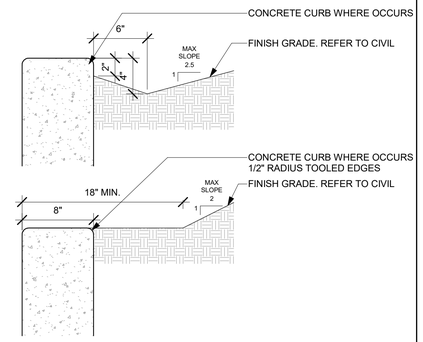
TITLE SHEET

NO.	REVISION	DATE
1	ADDENDUM #1	05/29/26

PROJECT MANAGER
KH
DRAWN BY DK
CHECKED BY KF
DATE
JUNE 05, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
G-001

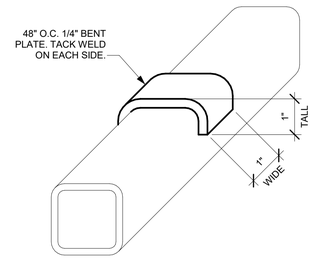
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31 LANDSCAPE AT CURB

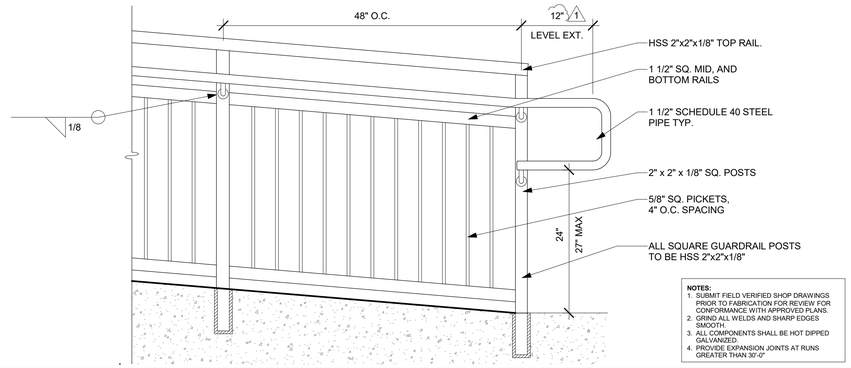
AS-903 SCALE: 1 1/2" = 1'-0"



ANTI-SKATE AT STAIR RAILING

32 ANTI-SKATE PLATE

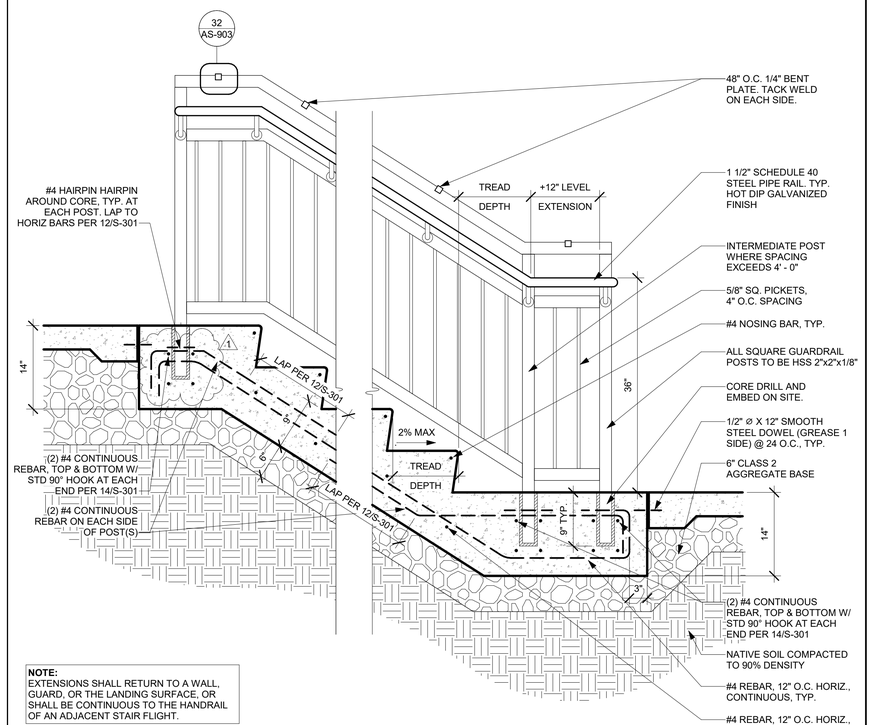
AS-903 AS-903 SCALE: 6" = 1'-0"



NOTES:
1. SUBMIT FIELD VERIFIED SHOP DRAWINGS PRIOR TO FABRICATION FOR REVIEW FOR CONFORMANCE WITH APPROVED PLANS.
2. GRIND ALL WELDS AND SHARP EDGES SMOOTH.
3. ALL COMPONENTS SHALL BE HOT DIPPED GALVANIZED.
4. PROVIDE EXPANSION JOINTS AT RUNS GREATER THAN 30'-0"

22 GUARDRAIL ELEVATION

AS-903 AS-903 SCALE: 1" = 1'-0"

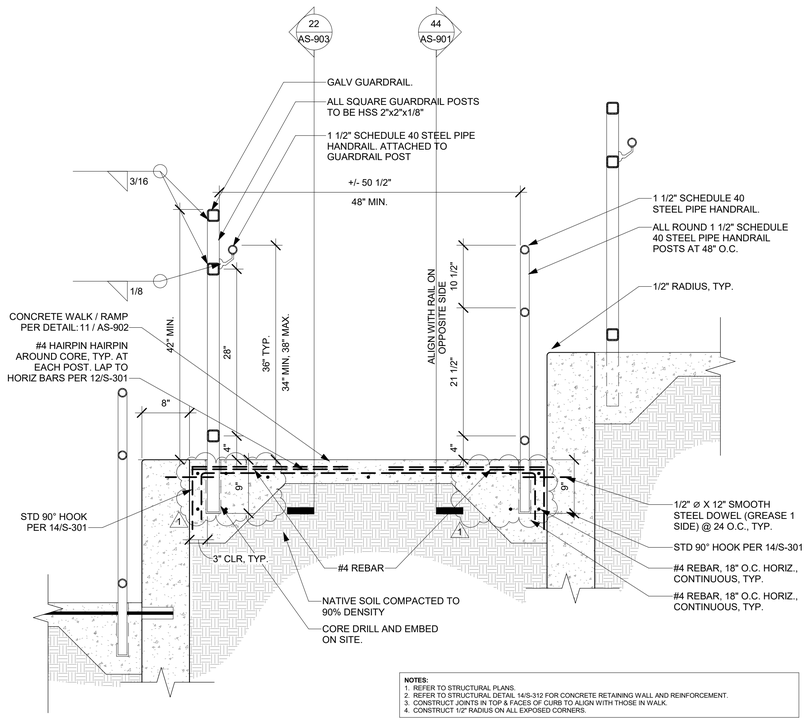


NOTE:
EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT.

REF: CBC 11B-505.10

44 STAIR SECTION

AS-101 AS-903 SCALE: 1" = 1'-0"



NOTES:
1. REFER TO STRUCTURAL PLANS.
2. REFER TO STRUCTURAL DETAIL 14/S-312 FOR CONCRETE RETAINING WALL AND REINFORCEMENT.
3. CONSTRUCT JOINTS IN TOP & FACES OF CURB TO ALIGN WITH THOSE IN WALK.
4. CONSTRUCT 1/2" RADIUS ON ALL EXPOSED CORNERS.

24 RAMP SECTION

AS-101 AS-903 SCALE: 1" = 1'-0"

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ARCHITECTURAL SITE DETAILS - RAMP & STAIRS

NO.	REVISION	DATE
1	ADDENDUM #1	05/29/26

PROJECT MANAGER
KH

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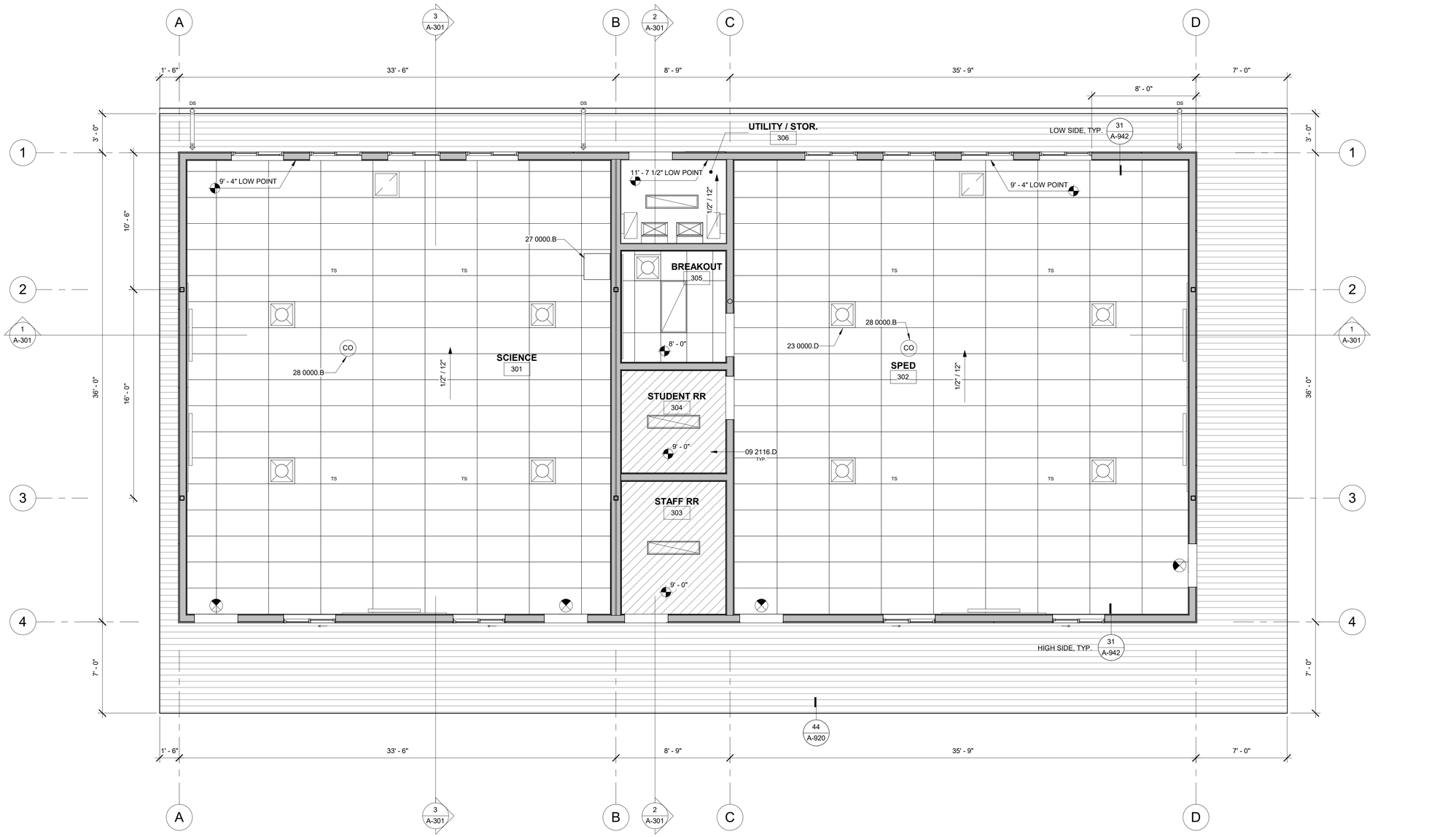
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PROJECT NUMBER
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SHEET
AS-903

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1 REFLECTED CEILING PLAN

A-201 | A-111 SCALE: 1/4" = 1'-0"

KEYNOTES

09 2116.D	GYPSUM BOARD DROP CEILING.
23 0000.D	MECHANICAL REGISTER
27 0000.B	WALL MOUNTED IDF CABINET, REFER TO ELECTRICAL
28 0000.B	CARBON MONOXIDE DETECTOR

LEGEND

XX'-X" — CEILING HEIGHT (SEE PLAN FOR ACTUAL HEIGHTS)

INTERIOR - MOISTURE RESISTANT GYPSUM BOARD CEILING
REFER TO 33/S-501 FOR CEILING FRAMING DETAILS

INTERIOR - ACOUSTICAL TILE CEILING
REFER TO SHEETS A-954 - A-957

FIBER CEMENT SOFFIT PANEL
REFER TO SUPPORTING DOCUMENT ICC REPORT ESR-2273 TABLE 5, LINE 2
REF. TO: 44 / A-920

GYPSUM WALLBOARD DIRECT APPLIED TO STRUCTURE ABOVE

CO — CARBON MONOXIDE ALARM

ILLUMINATED EXIT SIGN,
ARROW INDICATES DIRECTIONAL CHEVRON
REFER TO INTERIOR ELEVATIONS AND RCP FOR MOUNTING LOCATION

MECHANICAL REGISTERS, REFER TO MECHANICAL PLANS

LIGHT FIXTURE, REFER TO ELECTRICAL PLANS

RCP GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ELECTRICAL PLANS FOR FURTHER INFORMATION.
3. REFER TO MECHANICAL PLANS FOR FURTHER INFORMATION.
4. REFER TO DETAILS FOR FLOOR/CEILING ASSEMBLIES.
5. HEIGHT OF CEILINGS SHALL BE MEASURED FROM TOP OF SLAB TO FINISH FACE OF GWB OR FACE OF CEILING GRID AS INDICATED ON THE REFLECTED CEILING PLAN, UNO.
6. BORDERS AT LAY-IN ACOUSTICAL CEILING PANELS SHALL BE CUT TO MATCH FACTORY EDGE PROFILE. NO EXPOSED FASTENERS SHALL BE PERMITTED INCLUDING POP RIVETS AND TAPPETS.
7. CONTRACTOR TO VERIFY DEPTH OF SOFFITS AND HOLD TIGHT TO PLUMBING, SPRINKLERS, ELECTRICAL AND MECHANICAL DUCTS
8. SEE MECHANICAL DRAWINGS FOR MECH. ACCESS PANELS. PAINT TO MATCH CEILING
9. AT DROPPED GWB SOFFITS/GWB BEAMS, PROVIDE C-STUDS AS VERTICAL SUPPORTS AT EACH SIDE OF THE SOFFIT/BEAM AND DIAGONAL BRACING FOR WRACKING. IF CEILING JOIST SPACING DIFFERS FROM FLOOR THEN BLOCKING BETWEEN THE FLOOR FRAMING MAY BE UTILIZED TO ATTACH THE VERTICAL STRUTS
10. ALL LIGHT FIXTURES ARE TO BE INSTALLED ACCORDING TO THE ARCHITECTURAL REFLECTED CEILING PLAN. ARCHITECT TO REVIEW CEILING LAYOUT INCLUDING BULKHEADS AND GRID PRIOR TO INSTALLATION.
11. LIGHT FIXTURES SHALL BE CENTERED WITHIN SPACES AND/OR WINDOW EVENLY ARRAYED. IF CONFLICTS OCCUR AT MECHANICAL REGISTERS OR SPRINKLER HEADS, LIGHTING LOCATIONS SHALL TAKE PRECEDENCE. CONSULT ARCHITECT AS NEEDED TO RESOLVE.
12. SEE ELECTRICAL PLANS FOR LIGHTING SPECIFICATIONS, AND EXIT LIGHT LOCATIONS.

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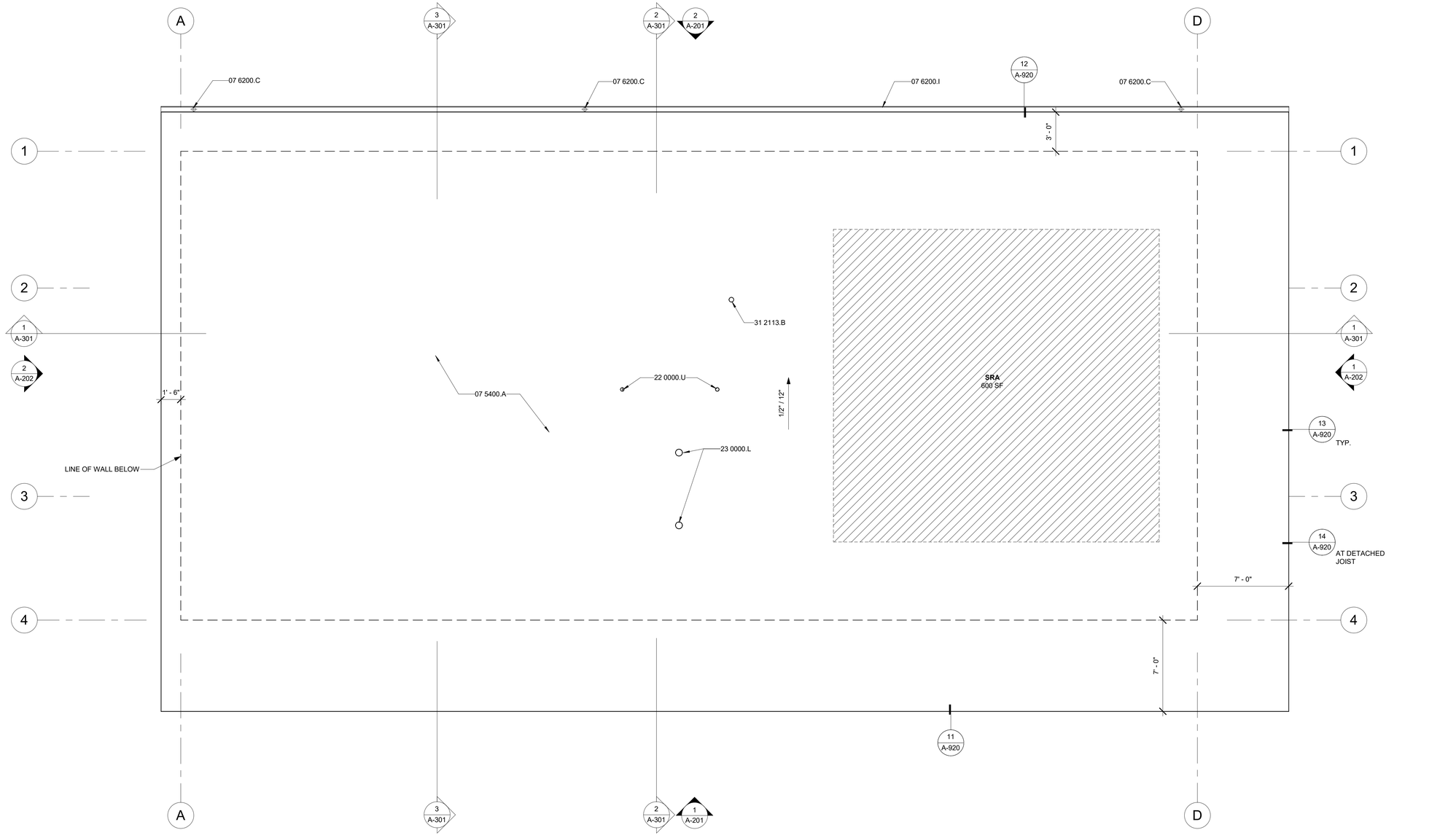
REFLECTED CEILING PLAN

NO.	REVISION	DATE
1	ADDENDUM #1	05/29/26

PROJECT MANAGER KH
DRAWN BY DK | **CHECKED BY** KF
DATE JUNE 05, 2026
PROJECT NUMBER 0822-03-ED25
SHEET A-111

ADDENDUM #1

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1 01-ROOF PLAN

A-201 | A-121 SCALE: 1/4" = 1'-0"

SOLAR READY AREA

TOTAL ROOF AREA = 3,961 SF
TOTAL SKYLIGHT AREA = 5.22 SF X 8 = 42 SF

MINIMUM SOLAR READY AREA = 15% X (3,961 SF - 42 SF) = **588 SF**

SOLAR READY AREA = 600 SF

600 SF > 588 SF - OK

NOTE: NO SOLAR IS PROPOSED AS PART OF THIS PROJECT. ANY FUTURE P.V. INSTALLATION SHALL BE SUBMITTED TO AND APPROVED BY DSA UNDER A SEPARATE APPLICATION NUMBER.

FUTURE SOLAR PANEL LOAD ALLOWANCE: 4.0 PSF

KEYNOTES

07 5400.A	LOW SLOPE MEMBRANE ROOFING SYSTEM
07 6200.C	DOWNSPOUT. REFER TO DETAIL 24/A-920 FOR ATTACHMENT AT STUCCO.
07 6200.I	GUTTER
22 0000.U	PLUMBING VENT, REFER TO PLUMBING
23 0000.L	6" EXHAUST FAN VENT
31 2113.B	RADON VENT PIPE, REFER RADON PLAN.

LEGEND

2" / 12" — ROOF SLOPE (REFER TO PLANS FOR ACTUAL SLOPE)

WALL BELOW

GUTTER, CONNECT TO DOWNSPOUT

FUTURE SOLAR READY AREA

NOTE: NO SOLAR IS PROPOSED AS PART OF THIS PROJECT. ANY FUTURE P.V. INSTALLATION SHALL BE SUBMITTED TO AND APPROVED BY DSA UNDER A SEPARATE APPLICATION NUMBER.

WUI REQUIREMENTS

1. ROOF COVERING SHALL COMPLY WITH ***2022 CBC 705A.2*** UNDERLAYMENT SHALL BE ONE LAYER OF MINIMUM 72 POUND MINERAL-SURFACED NONPERFORATED CAP SHEET COMPLYING WITH ASTM D3909 INSTALLED OVER THE COMBUSTIBLE DECKING.
2. ROOF GUTTERS SHALL COMPLY WITH ***2022 CBC 705A.4***. ROOF GUTTERS SHALL BE PROVIDE WITH THE MEANS TO PREVENT THE ACCUMULATION OF LEAVES AND DEBRIS IN THE GUTTER
3. VENTILATION OPENINGS SHALL COMPLY WITH ***2022 CBC 706A*** - VENTILATION OPENINGS FOR ENCLOSED ATTICS, ENCLOSED EAVE SOFFIT SPACES, ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS, AND UNDERFLOOR VENTILATION OPENINGS SHALL BE FULLY COVERED WITH METAL WIRE MESH, VENTS, OTHER MATERIALS, OR OTHER DEVICES. REFER TO ***SECTIONS 706A.1*** THROUGH ***706A.3*** FOR ADDITIONAL INFORMATION.
4. EXTERIOR COVERINGS SHALL COMPLY WITH ***2022 CBC 707A*** EXTERIOR WALL COVERINGS OR WALL ASSEMBLIES SHALL COMPLY WITH ONE OF THE FOLLOWING REQUIREMENTS: BE OF NONCOMBUSTIBLE MATERIAL, IGNITION-RESISTANT MATERIAL, HEAVY TIMBER EXTERIOR WALL ASSEMBLY, LOG WALL CONSTRUCTION ASSEMBLY, OR WALL ASSEMBLIES THAT MEET THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES FOR A 10-MINUTE DIRECT FLAME CONTACT EXPOSURE TEST SET FORTH IN SFM STANDARD 12-7A-1. REFER TO ***SECTIONS 707A.1*** THROUGH ***707A.9*** FOR ADDITIONAL INFORMATION.
   A. EXTERIOR STUCCO CEMENT PLASTER SYSTEM SHALL BE NON-COMBUSTIBLE PER CBC 707A.3
5. PROVIDE TEMPERED SAFETY GLAZING ON BOTH PANES OF MULTI-PANE GLAZING PER CBC 708A.2.1

ROOF PLAN GENERAL NOTES

1. REFER TO STRUCTURAL PLANS FOR ROOF FRAMING INFORMATION INCLUDING MEMBER SIZES AND CONNECTION HARDWARE.
2. REFER TO PLUMBING PLANS ROOF VENT PENETRATIONS.
3. REFER TO SITE/GRADING PLAN FOR DOWNSPOUT DISCHARGE OR CONTINUATION.
4. WHERE THE ROOF PROFILE ALLOWS A SPACE BETWEEN THE ROOF COVERING AND DECKING, THE SPACES SHALL BE CONSTRUCTED TO PREVENT THE INTRUSION OF FLAMES AND EMBERS, BE FIRESTOPPED WITH APPROVED MATERIALS OR HAVE ONE LAYER OF MINIMUM 72 POUND MINERAL-SURFACED NONPERFORATED CAP SHEET OVER THE COMBUSTIBLE DECKING.
5. ALL ROOFING MATERIALS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
6. OVERHANG DIMENSIONS ARE FROM FACE OF EXTERIOR WALL SHEATHING TO ROOF EDGE
7. ROOF COVERINGS AND UNDERLAYMENT SHALL BE APPLIED IN ACCORDANCE WITH ***(2022 CBC 1507.1)***, AND MANUFACTURER'S INSTALLATION INSTRUCTIONS
8. WHERE PROVIDED, VENTILATION OPENINGS SHALL BE IN ACCORDANCE WITH ***(2022 CBC SECTION 1202)***. EXTERIOR OPENINGS INTO THE ATTIC SPACE SHALL BE COVERED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARE CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL. THE OPENINGS SHALL BE A MINIMUM OF 1/16" AND SHALL NOT EXCEED 1/4" PER ***(2022 CBC 1202.2.2.)***
9. ROOF VENTS SHALL BE APPLIED PER MANUFACTURER'S SPECIFICATIONS
10. FURNISHED DIMENSIONS FOR VENTS ARE GUIDES ONLY. INSTALL PER MANUFACTURERS SPECIFICATIONS AND ADJUST TO ACCOMMODATE TRUSS LOCATIONS, PLUMBING VENTS, AND SOLAR COLLECTORS.

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CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

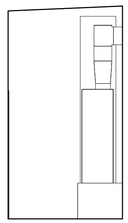
ROOF PLAN

NO.	REVISION	DATE
1	ADDENDUM #1	05/29/26

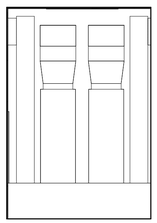
PROJECT MANAGER KH
DRAWN BY DK | **CHECKED BY** KF
DATE JUNE 05, 2026
PROJECT NUMBER 0822-03-ED25
SHEET A-121

ADDENDUM #1

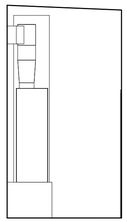
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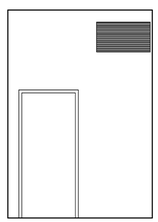
2N



2E



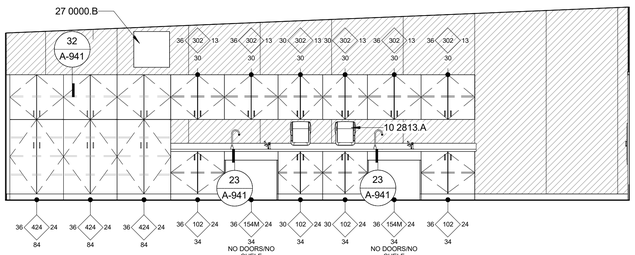
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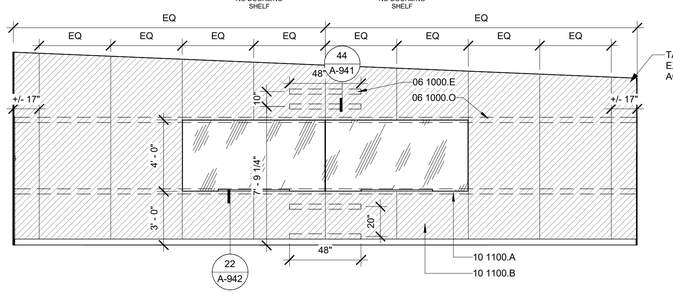
2W

1/4" = 1'-0"

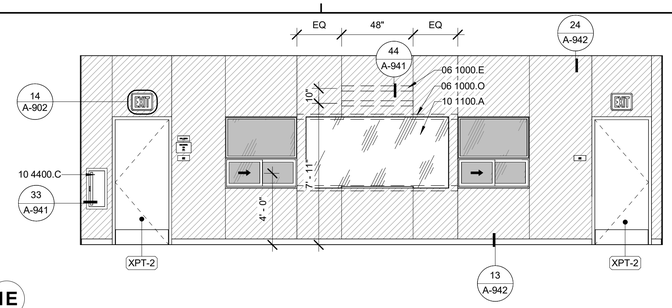
UTILITY/STOR.



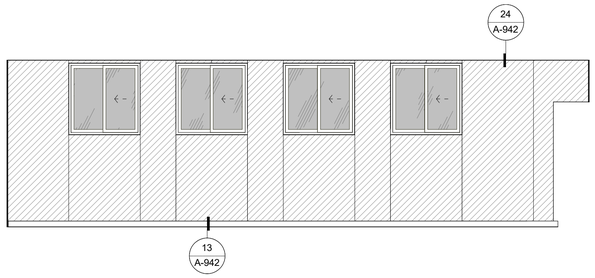
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1S



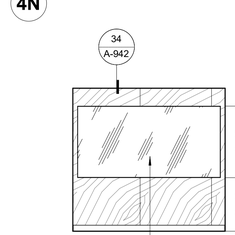
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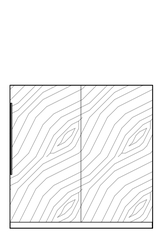
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1/4" = 1'-0"

SCIENCE CLASSROOM



4N



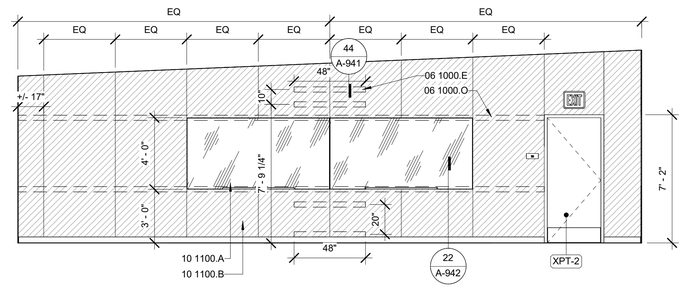
4E

4S

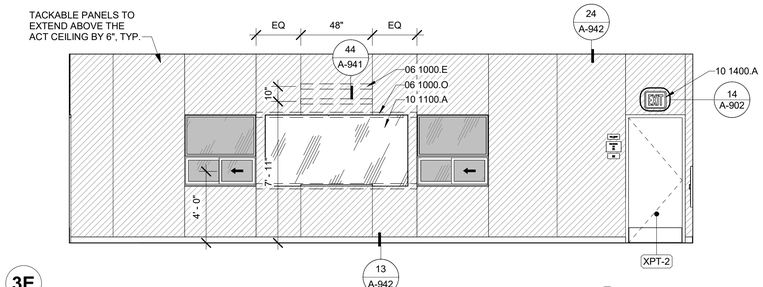
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1/4" = 1'-0"

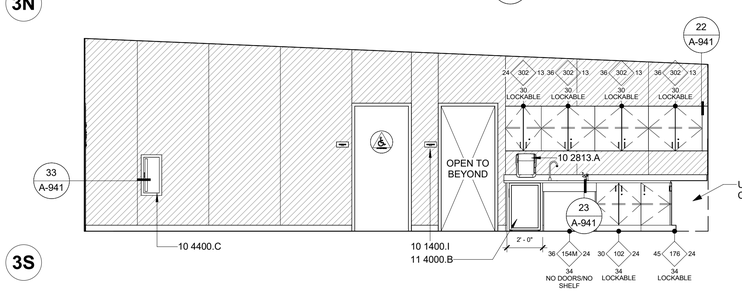
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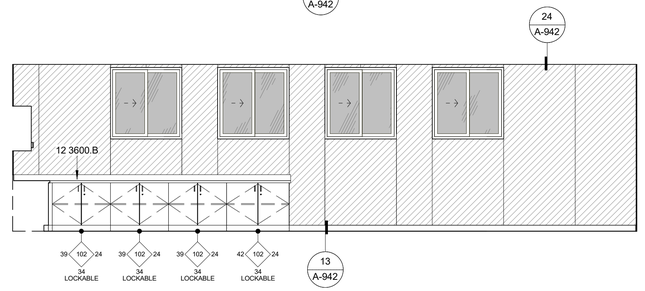
3N



3E



3S

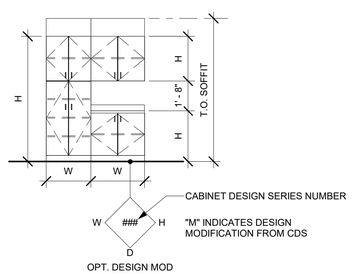


3W

1/4" = 1'-0"

SPED CLASSROOM

CASEWORK LEGEND



MATERIAL LEGEND

CPT 1 — MATERIAL TAG
REFER TO MATERIAL SCHEDULE FOR MORE INFORMATION

FLOORS

- CPT 1
- LVT 1
- CFT 1
- PC

WALLS

- CT 1
- CT 2
- CT 3
- CT 4
- PLY 1
- VTP 1
- IPT 1

KEYNOTES

06 1000.E	PROVIDE BLOCKING FOR CLIENT PROVIDED WALL-MOUNTED TV BRACKET.
06 1000.O	PROVIDE BLOCKING FOR CONTRACTOR PROVIDED WALL-MOUNTED WHITE BOARD AND OTHER FUTURE USE.
10 1100.A	4' x 8' MARKERBOARD; CONTRACTOR PROVIDED. REFER TO DETAIL 22/A-942
10 1100.B	TACKABLE WALL PANELS, CONTRACTOR TO PROVIDE BLOCKING. REFER TO DETAIL 24/A-942
10 1400.A	ILLUMINATED EXIT SIGN. REFER TO DETAIL 14/A-902
10 1400.I	SIGNAGE. REFER TO A-101 AND A-601
10 2813.A	SURFACE MOUNTED PAPER TOWEL DISPENSER, OFCI
10 4400.C	SEMI-RECESSED FIRE EXTINGUISHER CABINET WITH EXTINGUISHER, 2A:10B:C RATING ; REFER TO 33/A-941
11 4000.B	REFRIGERATOR. OWNER FURNISHED.
12 3600.B	CHEMICAL RESISTANT COMPACT LAMINATE COUNTERTOP
27 0000.B	WALL MOUNTED IDF CABINET, REFER TO ELECTRICAL

INT. ELEVS. GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ELECTRICAL PLANS FOR FURTHER INFORMATION ON ELECTRICAL EQUIPMENT.
3. REFER TO RCP'S FOR SOFFIT DIMENSIONS AND FURTHER INFORMATION.
4. PROVIDE BLOCKING FOR ALL WALLS WHERE WALL HUNG EQUIPMENT AND FIXTURES OCCUR.
5. ALL DIMENSIONS SHOWN IN A ROOM TO BE CONSIDERED TYPICAL FOR EACH ELEVATION OF THE ROOM, UNLESS NOTED OTHERWISE.
6. VERIFY MOUNTING HEIGHTS OF ACCESSORIES AND PLUMBING FIXTURES MEET ACCESSIBILITY REQUIREMENTS WHERE APPLICABLE.
7. ALL WALL AND CEILING FINISHES SHALL COMPLY WITH ***2022 CBC TABLE 803.13*** FOR MAXIMUM FLAME SPREAD AND SMOKE DENSITY.
8. REFER TO FINISH SCHEDULE ON A-103 FOR WALL FINISH MATERIALS AND COLOR SELECTIONS.
9. REFER TO PLUMBING PLANS FOR LOCATIONS OF WALL MOUNTED ACCESS PANELS AT CONCEALED PLUMBING EQUIPMENT.

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LICENSED ARCHITECT
KATHRYN ANNE HEIL
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

INTERIOR ELEVATIONS

NO.	REVISION	DATE
1	ADDENDUM #1	05/29/26

PROJECT MANAGER
KH

DRAWN BY DK
CHECKED BY KF

DATE
JUNE 05, 2026

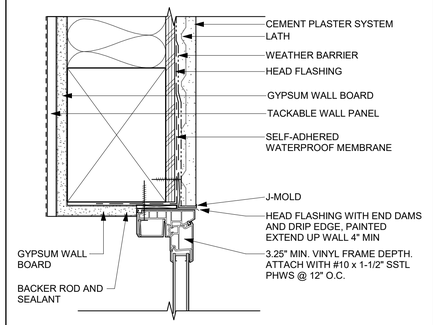
PROJECT NUMBER
0822-03-ED25

SHEET
A-511

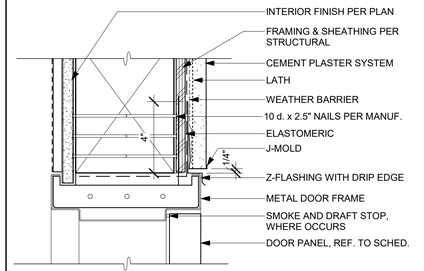
ADDENDUM #1

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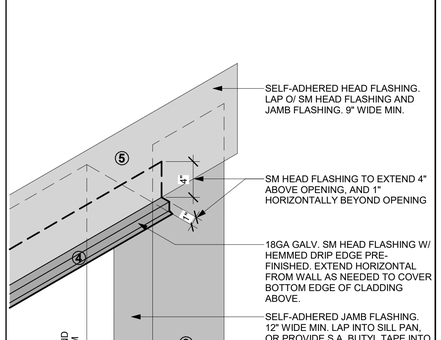
NOTE:
MANUFACTURED VINYL WINDOWS PER SPEC. 08 5313.



21 WINDOW HEAD
A312 A931 SCALE: 3" = 1'-0"



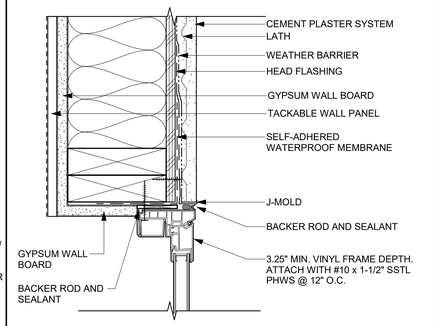
11 DOOR HEAD
A931 SCALE: 3" = 1'-0"



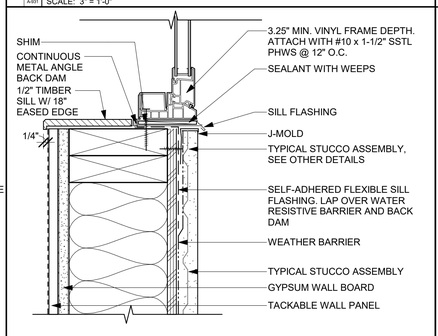
STOREFRONT SYSTEM NOT SHOWN FOR CLARITY.
WALL CLADDING NOT SHOWN FOR CLARITY.

33 STOREFRONT FLASHING
A931 SCALE: 1 1/2" = 1'-0"

NOTE:
MANUFACTURED VINYL WINDOWS PER SPEC. 08 5313.

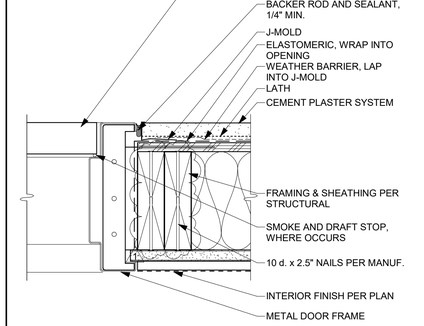


22 WINDOW JAMB
A931 SCALE: 3" = 1'-0"

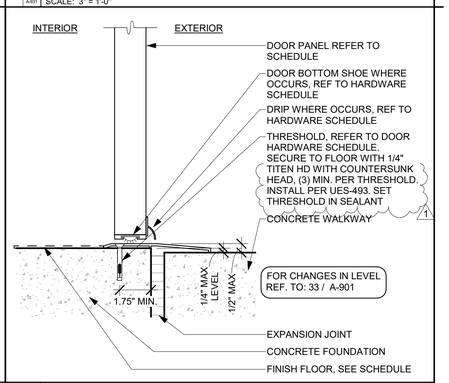


NOTE:
MANUFACTURED VINYL WINDOWS PER SPEC. 08 5313.

23 WINDOW SILL
A931 SCALE: 3" = 1'-0"

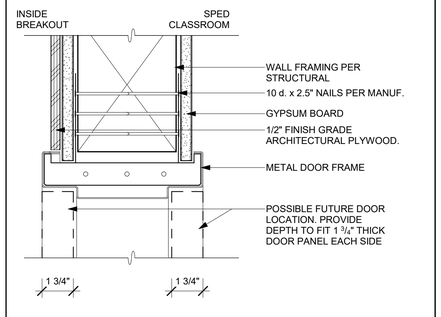


12 DOOR JAMB
A931 SCALE: 3" = 1'-0"



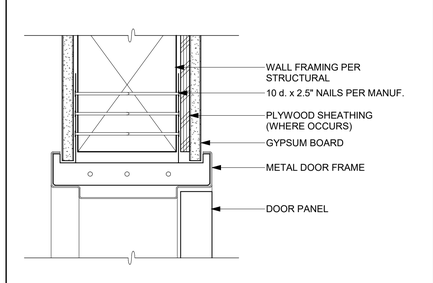
13 DOOR THRESHOLD
A931 SCALE: 3" = 1'-0"

HEAD/JAMB SIMILAR

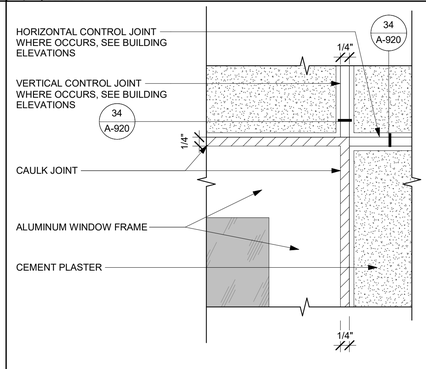


34 INTERIOR DOOR - DOUBLE RABBET
A311 A931 SCALE: 3" = 1'-0"

HEAD/JAMB SIMILAR



24 INTERIOR DOOR HEAD/JAMB
A931 SCALE: 3" = 1'-0"



14 ELEVATION @ TYP. WINDOW CORNER
A931 SCALE: 6" = 1'-0"

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2-28-27
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STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

DOOR & WINDOW DETAILS

NO.	REVISION	DATE
1	ADDENDUM #1	05/29/26

PROJECT MANAGER
KH

DRAWN BY DK
CHECKED BY KF

DATE
JUNE 05, 2026

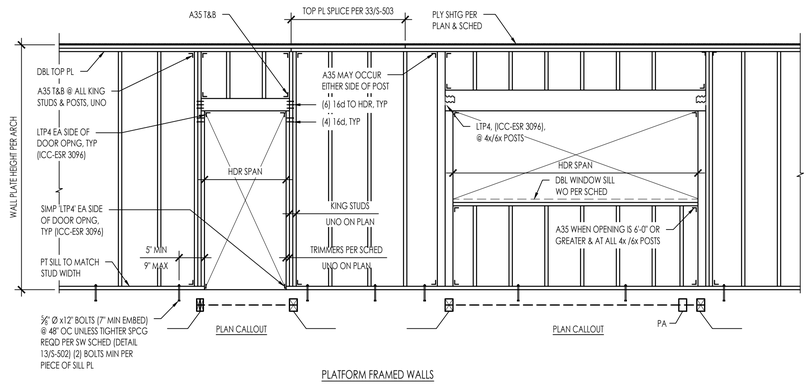
PROJECT NUMBER
0822-03-ED25

SHEET
A-931

ADDENDUM #1

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Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt

BEARING/SHEAR WALL HEADER SCHEDULE					
1-STORY	6 INCH WALLS				
1-STORY	HDR SPAN	6x HEADER	SILL AT WINDOW	POST / TRIMMER	KING STUDS
	UP TO 3'-0"	6x4	2x	2x6	2x6
	UP TO 5'-0"	6x6	2x	2x6	2x6
	UP TO 7'-0"	6x8	(2) 2x	2x6	(2) 2x6



PLATFORM FRAMED WALLS

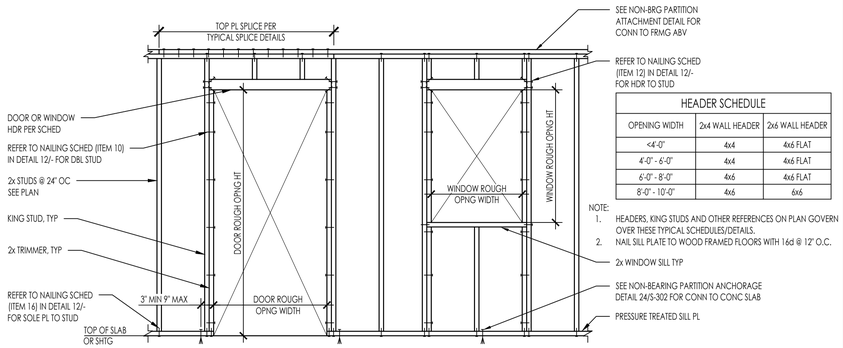
NOTES:
1. THIS DETAIL APPLIES AT ALL EXT WALLS AND INT LOAD BEARING WALLS AND ALSO APPLIES TO SHEAR WALL FRAMING
   A. FOR SHEAR WALLS SEE 34/S-402 FOR ADDTL REQUIREMENTS.
   B. FOR INTERIOR NON-BEARING PARTITIONS SEE DETAIL 43/-
2. HEADERS, KING STUDS AND OTHER REFERENCES ON PLAN GOVERN OVER THIS TYPICAL SCHED/DETAILS
3. PROVIDE A34 @ 4" WALLS & A35 @ 6" OR GREATER WALLS ([APMO ER-112)

FASTENING SCHEDULE PER 2022 CBC 2304.10.1		
CONNECTION	FASTENING	LOCATION
1. BLOCKING BETWEEN CEILING JOISTS, RAFTERS OR TRUSSES TO TOP PLATE OR OTHER FRAMING BELOW	3-8d COMMON	EACH END, TOENAIL
2. BLOCKING BETWEEN RAFTERS OR TRUSS NOT AT THE WALL TO TOP PLATE, TO RAFTER OR TRUSS	2-8d COMMON	EACH END, TOENAIL
	2-16d COMMON	END NAIL
3. FLAT BLOCKING TO TRUSS AND WEB FILLER	16d COMMON @ 6" OC	FACE NAIL
4. CEILING JOIST TO TOP PLATE	3-8d COMMON	EACH JOIST, TOENAIL
5. CEILING JOIST NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS	3-16d COMMON	FACE NAIL
6. CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT)	3-16d COMMON	FACE NAIL
7. COLLAR TIE TO RAFTER	3-10d COMMON	FACE NAIL
8. RAFTER OR ROOF TRUSS TO PLATE	3-10d COMMON	TOENAIL[b]
9. ROOF RAFTER TO RIDGE VALLEY OR HIP RAFTER; OR ROOF RAFTER TO 2-INCH RIDGE BEAM	2-16d COMMON	END NAIL
	3-10d COMMON	TOENAIL
10. STUD TO STUD AND ABUTTING STUDS AT INTERSECTING WALL CORNERS	16d COMMON	16" OC FACE NAIL
11. BUILT-UP HEADER (2" TO 2" HEADER)	16d COMMON	16" OC EACH EDGE, FACE NAIL
12. CONTINUOUS HEADER TO STUD	4-10d COMMON	TOENAIL
13. TOP PLATE TO TOP PLATE	16d COMMON	16" OC FACE NAIL
14. TOP PLATE TO TOP PLATE, AT END JOINTS	8-16d COMMON	EACH SIDE OF END JOINT, FACE NAIL (MINIMUM 24" LAP SPLICE LENGTH EACH SIDE OF END JOINT)
15. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING	2-16d COMMON	16" OC FACE NAIL
16. STUD TO TOP OR BOTTOM PLATE	4-8d COMMON	TOENAIL
	2-16d COMMON	END NAIL
17. TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS	2-16d COMMON	FACE NAIL
18. JOIST TO SILL, TOP PLATE, OR GIRDER	3-8d COMMON	TOENAIL
20. RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL OR OTHER FRAMING BELOW	8d COMMON	6" OC, TOENAIL
21. 1"x6" SUBFLOOR OR LESS TO EACH JOIST	2-8d COMMON	FACE NAIL
22. 2" SUBFLOOR TO JOIST OR GIRDER	2-16d COMMON	FACE NAIL
23. BUILT-UP GIRDER AND BEAMS, 2" LUMBER LAYERS	20d COMMON (4" x 0.192")	32" OC FACE NAIL AT TOP AND BOTTOM STAGGERED ON APPOSITE SIDE
24. LEDGER STRIP SUPPORTING JOIST OR RAFTERS	3-16d COMMON	EACH JOIST OR RAFTER, FACE NAIL
26. JOIST TO BAND JOIST OR RIM JOIST	3-16d COMMON	END NAIL
27. BRIDGING OR BLOCKING TO JOIST, RAFTER OR TRUSS	2-8d COMMON	EACH END, TOENAIL

NOTES:
a. THIS NAILING SCHEDULE SHALL ONLY BE USED IF CONDITION IS NOT OTHERWISE DETAILED OR SPECIFIED ON THE CONSTRUCTION DOCUMENTS. COMMON NAILS SHALL BE USED EXCEPT WHERE OTHERWISE STATED
b. WHERE A RAFTER IS FASTENED TO AN ADJACENT PARALLEL CEILING JOIST IN ACCORDANCE WITH THIS SCHEDULE AND THE CEILING JOIST IS FASTENED TO THE TOP PLATE IN ACCORDANCE WITH THIS SCHEDULE, THE NUMBER OF TOENAILS IN THE RAFTER SHALL BE PERMITTED TO BE REDUCED BY ONE NAIL

EXTERIOR WALL / INTERIOR WALL BEARING WALL FRAMING

0822-03-ED25 - S501 - 32 — NTS — 32

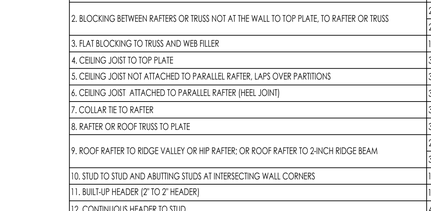


HEADER SCHEDULE		
OPENING WIDTH	2x4 WALL HEADER	2x6 WALL HEADER
<4'-0"	4x4	4x6 FLAT
4'-0" - 6'-0"	4x4	4x6 FLAT
6'-0" - 8'-0"	4x6	4x6 FLAT
8'-0" - 10'-0"	4x6	6x6

NOTE:
1. HEADERS, KING STUDS AND OTHER REFERENCES ON PLAN GOVERN OVER THESE TYPICAL SCHEDULES/DETAILS.
2. NAIL SILL PLATE TO WOOD FRAMED FLOORS WITH 16d @ 12" O.C.

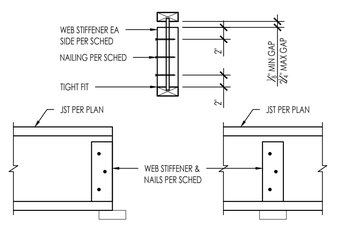
NAILING SCHEDULE

0822-03-ED25 - S501 - 12 — NTS — 12



INTERIOR NON-BEARING PARTITION WALL FRAMING

0822-03-ED25 - S501 - 43 — NTS — 43



WEB STIFFENER REQUIREMENTS					
JOIST SERIES	DEPTH (IN)	MIN WEB STIFFENER SIZE	NAIL TYPE	# OF NAILS	
				END	INT
RED I-65	11 ⅞"	1" X 2 ⅜"[1]	8d (0.113" X 2½")	3	3

NOTES:
1. PSI SHEATHING, FACE GRAIN VERTICAL

CEILING JOIST SCHED & DETAILS

0822-03-ED25 - S501 - 33 — NTS — 33

CEILING JOIST SCHED	
JOIST SIZE	MAX SPAN
2x4 @ 16" OC	9'-0"
2x6 @ 16" OC	14'-0"
2x8 @ 16" OC	18'-0"

LOADING CRITERIA	
DEAD LOAD	10 PSF
LIVE LOAD	10 PSF

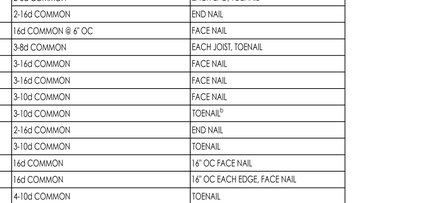
NOTE:
THIS DETAIL IS INTENDED FOR CEILING JST THAT SPAN FROM WALL TO WALL @ CONTRACTORS OPTION.

I-JOIST TO BEARING PLATE

0822-03-ED25 - S501 - 23 — NTS — 23

I-JOIST BLOCKING

0822-03-ED25 - S501 - 13 — NTS — 13

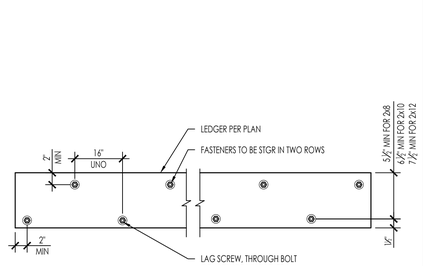


WEB STIFFENER ATTACHMENT

0822-03-ED25 - S501 - 54 — NTS — 54

LEDGER DETAIL

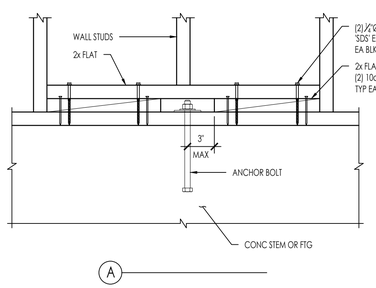
0822-03-ED25 - S501 - 44 — NTS — 44



NOTE:
THE TIP OF THE LAG SCREW SHALL FULLY EXTEND BEYOND THE INSIDE FACE OF THE BAND OR RIM JOIST

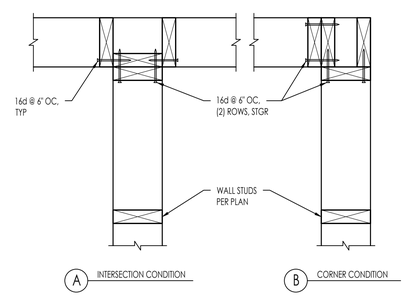
ANCHOR BOLT AT WOOD STUD

0822-03-ED25 - S501 - 34 — NTS — 34



TYPICAL WOOD STUD INTERSECTIONS

0822-03-ED25 - S501 - 24 — NTS — 24



14

DSA BACKCHECK

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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

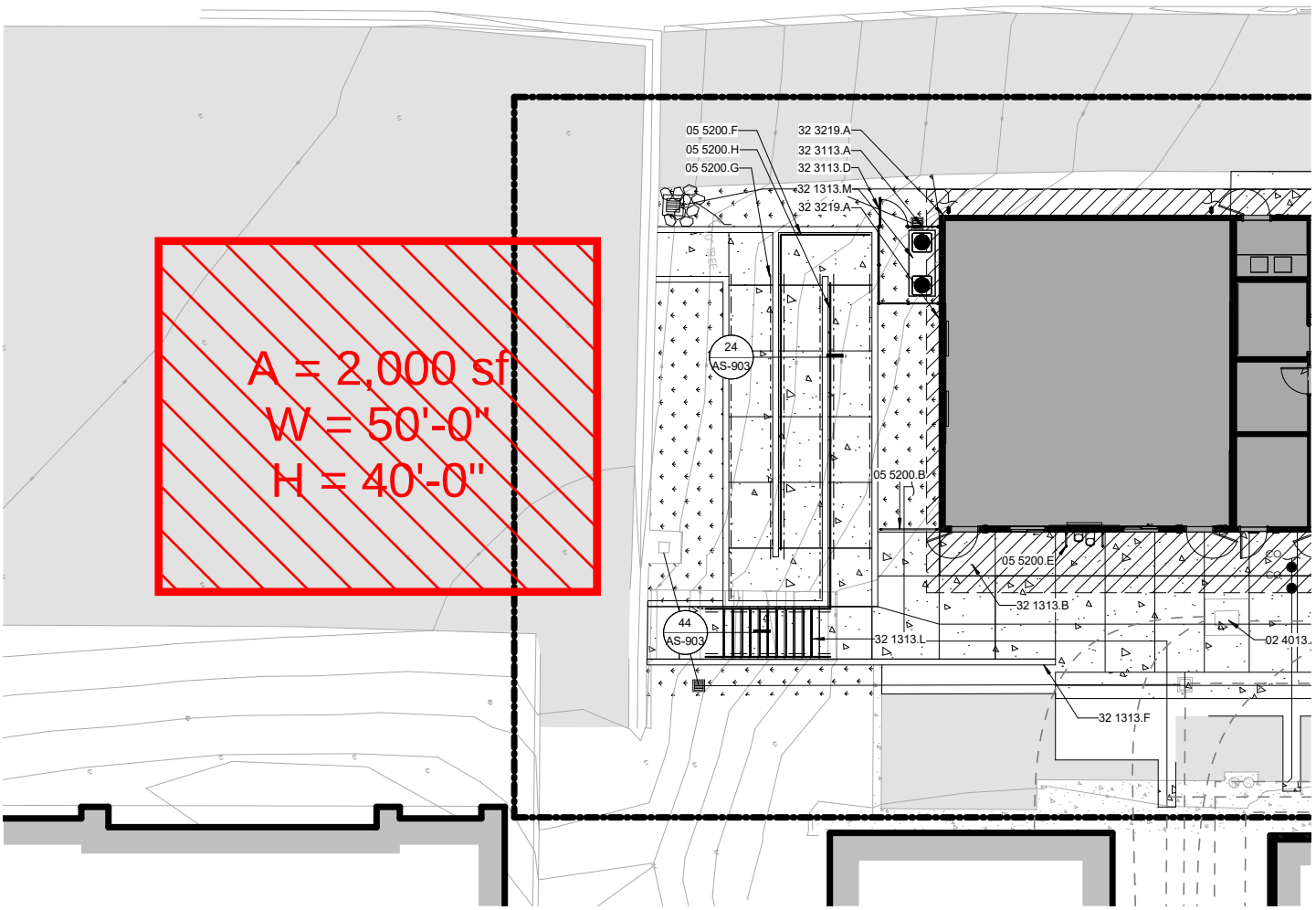
MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

TYPICAL WOOD DETAILS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER: J. MEADOWS
DRAWN BY: C. PRESSLER
CHECKED BY: J. MEADOWS
DATE: FEBRUARY 22, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: S-501

N:\08011.0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Structural\ConDocs\Sheet-Files\0822-03-ED25 - S501.dwg, S501, Jun 05, 2026 10:24am, jdiong



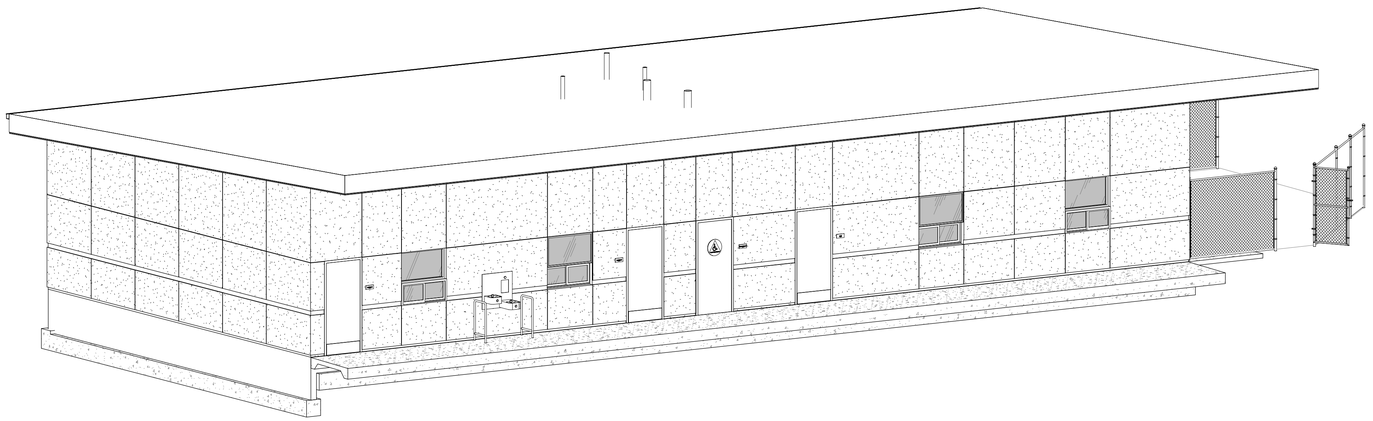
APPROXIMATE CONTRACTOR
LAYDOWN AND STOCKPILE AREA

rrm design group
3765 S. Higuera St., Ste. 102 • San Luis Obispo, CA 93401
p: (805) 543-1794 • f: (805) 543-4609
www.rrmdesign.com
a California corporation • Lenny Grant, Architect C26973 • Robert Camacho, PE 76597
• Steve Webster, LS 7561 • Jeff Ferber, LA 2844

Mesa M.S. Science & SPED

Lay Down Exhibit

REF. SHEET **N/A**
DRAWN BY **KH**
CHECKED BY
DATE **05.29.26**
JOB NO. **0822-03**
SCALE **NTS**



2555 S HALCYON RD, ARROYO GRANDE, CA

DSA APP. NO.: 03-125727

PTN: 68759-132

VICINITY MAP



PROJECT DIRECTORY

SCHOOL DISTRICT
LUCIA MAR SCHOOL DISTRICT
970 School Road,
Arroyo Grande, CA 93420
Andy Stenson
andy.stenson@lmusd.org
(805) 474-3000

ARCHITECT
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Kathryn Anne Hicks
kahicks@rrmdesign.com
(805) 543-1794

CIVIL ENGINEER
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Robert Camacho
rcamacho@rrmdesign.com
(805) 543-1794

LANDSCAPE ARCHITECT
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Chris Dufour
cbdufour@rrmdesign.com
(805) 543-1794

STRUCTURAL ENGINEER
RRM DESIGN GROUP
3765 S. Higuera St. Suite 102
San Luis Obispo, CA 93401
Jessica Meadows
jmmeadows@rrmdesign.com
(805) 543-1794

MECH & PLUMBING ENGINEER
3C ENGINEERING
1500 Palm Street
San Luis Obispo, CA 93401
Bryan Starrett
bstarrett@3ceng.com
(805) 540-3363

ELECTRICAL ENGINEER
THOMA ELECTRIC
3562 Empleo Street
San Luis Obispo, CA 93401
Jeffrey Thoma
jthoma@thomaelec.com
(805) 543-3850

GEOTECHNICAL ENGINEER
EARTH SYSTEMS
4378 Old Santa Fe Road
San Luis Obispo, CA 93401
Nick Zoetewey
nzoetewey@earthsystems.c...
(805) 234-9474

APPLICABLE STANDARDS

PARTIAL LIST OF APPLICABLE STANDARDS
2022 CALIFORNIA BUILDING CODE (FOR SFM) REFERENCED STANDARDS CHAPTER 35

- **NFPA 13** AUTOMATIC SPRINKLER SYSTEMS (CALIFORNIA AMENDED) 2022 EDITION
- **NFPA 14** STANDPIPE SYSTEMS (CALIFORNIA AMENDED) 2019 EDITION
- **NFPA 17** DRY CHEMICAL EXTINGUISHING SYSTEMS 2021 EDITION
- **NFPA 17A** WET CHEMICAL EXTINGUISHING SYSTEMS 2021 EDITION
- **NFPA 20** STATIONARY PUMPS 2019 EDITION
- **NFPA 24** PRIVATE FIRE SERVICE MAINS (CALIFORNIA AMENDED) 2019 EDITION
- **NFPA 72** NATIONAL FIRE ALARM AND SIGNALING CODE (CALIFORNIA AMENDED) (NOTE: SEE UL STANDARD 1971 FOR "VISUAL DEVICES") 2022 EDITION
- **NFPA 80** FIRE DOOR AND OTHER OPENING PROTECTIVES 2019 EDITION
- **NFPA 253** CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS 2015 EDITION
- **NFPA 2001** CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CALIFORNIA AMENDED) 2018 EDITION
- **UL300** - STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT 2005 (R2010)
- **UL464** - AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS 2003 EDITION
- **UL521** - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS 1999 EDITION
- **UL1971** - STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED 2002 (R2010)

APPLICABLE CODES

THESE NOTES APPLY TO ALL PORTIONS, PHASES AND SUBCONTRACTORS OF THIS PROJECT.
APPLICABLE CODES ARE STANDARDS:

- **2025** CALIFORNIA ADMINISTRATIVE CODE
- **2022** CALIFORNIA BUILDING CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA PLUMBING CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA MECHANICAL CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA FIRE CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA ELECTRICAL CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS.
- **2022** CALIFORNIA GREEN BUILDING STANDARDS CODE AND ITS APPENDICES AND STANDARDS.
- **2022** CALIFORNIA FIRE CODE
- COMPLIANCE WITH CFC CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION
- **2022** CALIFORNIA EXISTING BUILDING CODE
- **2022** CALIFORNIA REFERENCED STANDARDS CODE TITLE 24 CCR
- TITLE 19 CCR. PUBLIC SAFETY STATE FIRE MARSHALL REGULATIONS
- CURRENT CITY OF ARROYO GRANGE MUNICIPAL CODE.
- **2010** ADA STANDARDS FOR ACCESSIBLE DESIGN

DEFERRED SUBMITTALS

NONE.

PROJECT INFORMATION

PROJECT SCOPE

1. CONSTRUCTION OF A NEW CLASSROOM BUILDING 230
2. ASSOCIATED GRADING, PAVING, LANDSCAPE, UTILITY, AND SITEWORK

CLIMATE ZONE: 5

DESCRIPTION

OCCUPANCY:	E
CONSTRUCTION TYPE:	V-B
FIRE SPRINKLERED:	NO
BUILDING HEIGHT:	14' - 11"
NUMBER OF STORIES:	1
BUILDING AREA:	2,808 SF
OVERALL AREA (WITH OVERHANGS):	3,930 SF

GENERAL CONFORMANCE

APPLICATION NO. 03-125727 FILE NO. 40-39

DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX SHEET HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1. DESIGN INTENT, AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS, AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND,
2. COORDINATION WITH MY PLANS AND SPECIFICATIONS, AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS DUTIES AND RESPONSIBILITIES UNDER SECTION 17302 AND 81138 OF THE EDUCATION CODE, AND SECTIONS 4-336, 4-341, AND 4-344" OF TITLE 24, PART 1 (*TITLE 24, PART 1, SECTION 4-317(b)).*

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☐ THIS DRAWING OR PAGE

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Kathryn Anne H. — 04.23.2026 SIGNATURE — DATE	Kristine Ferreira — 04.23.2026 SIGNATURE — DATE
ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE	ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE
KATHRYN ANNE HICKS PRINT NAME	KRISTINE LYNNE FERREIRA PRINT NAME
C-38079 — 02/28/27 LICENSE NUMBER — EXPIRATION	C-38017 — 11/30/25 LICENSE NUMBER — EXPIRATION

ACCEPTANCE TESTING

SEE G-002 FOR ACCEPTANCE TESTING REQUIREMENTS.

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G-403	BUILDING CODE ANALYSIS	
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C-2.1	EXISTING CONDITIONS AND SITE PREPARATION	
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C-4.1	GRADING AND DRAINAGE PLAN	
C-4.2	GRADING AND DRAINAGE PLAN	
C-4.3	RETAINING WALL PROFILES	
C-5.1	DETAILS	
C-6.1	HORIZONTAL CONTROL PLAN	
C-7.1	BMP NOTES	
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E301	FIRE ALARM DETAILS	
E302	FIRE ALARM CALCULATIONS	
E401	COMMUNICATIONS RISER DIAGRAM	

Grand total: 97

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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LICENSED ARCHITECT
KATHRYN ANNE HICKS
938079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

TITLE SHEET

NO.	REVISION	DATE

PROJECT MANAGER
KH
DRAWN BY DK
CHECKED BY KF
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
G-001

DSA BACK CHECK 2

4/20/2026 6:42:53 PM
Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt

ABBREVIATIONS

A/C	AIR CONDITIONING
ABV	ABOVE
ACOUS	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICANS WITH DISABILITIES ACT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISH FLOOR
AL	ALUMINUM
ALT	ALTERNATE
ARCH	ARCHITECT(URAL)
BD	BOARD
BDRM	BEDROOM
BET	BETWEEN
BIT	BITUMINOUS
BLDG	BUILDNG
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BUR	BUILT UP ROOF
CB	CATCH BASIN
CBC	CALIFORNIA BUILDING CODE
CEM	CEMENT
CFM	CUBIC FEET PER MINUTE
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
DBL	DOUBLE
DF	DRINKING FOUNTAIN
DIA	DIAMETER, DIAPHRAGM
DIM	DIMENSION
DN	DOWN
DR	DOOR
DS	DOWN SPOUT
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
(E)	EXISTING
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
ELEC	ELECTRIC
ENCL	ENCLOSURE
EQ	EQUAL
EQUIP	EQUIPMENT
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERIOR
FACP	FIRE ALARM CONTROL PANEL
FAU	FORCED AIR UNIT
FAWP	FLUID APPLIED WATERPROOFING
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN	FINISH
FIXT	FIXTURE
FLR	FLOOR
FLUOR	FLOURESCENT
FND	FOUNDATION
FO	FACE OF
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOIC	FURNISHED BY OWNER INSTALLED BY CONTRACTOR
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FRP	FIBERGLASS REINFORCED PANELS
FT	FOOT OR FEET
FTG	FOOTING
GA	GAUGE, GAGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GT	GROUT
GWB	GYPSUM BOARD
GYP	GYPSUM
HB	HOSE BIBB
HC	HOLLOW CORE
HDWD	HARDWOOD
HDWR	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HVAC	HEATING, VENTILATION, A/C
ID	INSIDE DIAMETER
IIC	IMPACT INSULATION CLASS
IN	INCH
INCAND	INCANDESCENT
INSUL	INSULATION, INSULATED
INT	INTERIOR
JC	JANITORS CLOSET
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY
LBS	POUNDS
LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
LF	LINEAR FEET
LIN	LINEN CLOSET
LINO	LINOLEUM
LT(G)	LIGHT(ING)
LVL	LAMINATED VENEER LUMBER
LVT	LUXURY VINYL TILE
LW	LIGHTWEIGHT
MAX	MAXIMUM
MDF	MEDIUM DENSITY FIBERBOARD
MECH	MECHANICAL
MEMB	MEMBRANE
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
N	NORTH
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O.P.	OVERFLOW PIPE
OC	ON CENTER
OD	OVERFLOW DRAIN
OFF	OFFICE
OH	OPPOSITE HAND
OPG	OPENING
OPP	OPPOSITE
(P)	PROPOSED
PERIM	PERIMETER
PERP	PERPENDICULAR
PG	PAINT GRADE
PL	PLATE, PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLBG	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
PP	POWER POLE
PR	PAIR
PRTN	PARTITION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PT	PRESSURE TREATED
PTD	PAINTED
PV	PHOTO VOLTAIC
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QTY	QUANTITY
R	RADIUS, RISER
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFRIGERATOR
REINF	REINFORCED
REQD	REQUIRED
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
RTU	ROOF TOP UNIT (MECH)
S	SOUTH
SAFB	SOUND ATTENUATION FIBER BATT
SAWP	SELF ADHEREING WATERPROOFING
SC	SCUPPER/SOLID CORE
SCHED	SCHEDULE
SEAL	SEALANT
SECT	SECTION
SF	SQUARE FOOT
SHT	SHEET
SHTHG	SHEATHING
SIM	SIMILAR
SM	SHEET METAL
SPEC	SPECIFICATION
SQ	SQURE
SS	SOLID SURFACE
SSTL	STAINLESS STEEL
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUPSPENDED
SV	SHEET VINYL
SYM	SYMMMETRICAL
T	TREAD
T&G	TONGUE & GROOVE
TB	TACKBOARD
TEL	TELEPHONE
TEMP	TEMPERED
TER	TERRAZZO
THK	THICK
THR	THRESHOLD
TJI	TRUSS JOIST I-JOIST
TO	TOP OF
TOS	TOP OF SLAB
TOW	TOP OF WALL
TRANS	TRANSFORMER
TV	TELEVISION
TYP	TYPICAL
UFAS	UNIFORM FEDERAL ACCESSIBILITY STANDARDS
UG	UNDERGROUND
UNFIN	UNFINISHED
UNO	ULNESS NOTED OTHERWISE
UV	UTRAVIOLET
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VTR	VENT TERMINATION PIPE
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
W/D	WASHER DRYER
W/O	WITHOUT
WC	WATERCLOSET
WD	WOOD
WDW	WINDOW
WH	WATER HEATER
WI	WROUGHT IRON
WIN	WINDOW
WP	WATERPROOF(ING)
WR	WEATHER RESISTIVE
WRB	WATER RESISTIVE BARRIER
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
YD	YARD

LUCIA MAR UNIFIED SCHOOL DISTRICT

Lucia Mar Unified School District
Facilities, Maintenance, and Operations
222 Stanley Avenue, Arroyo Grande, CA 93420
Ph: 805.474.3000 Ext. 1032 | Fax: 805.473.5594

February 18, 2026

Mr. Mark Carreon
Fire and Life Safety Officer II
Division of the State Architect
Los Angeles Regional Office
355 South Grand Avenue, Suite 2100
Los Angeles, CA 90071

Project: Mesa MS SPED Science Building
DSA Application No. 03-125727 / PTN: 68759-132

Dear Mark,

I am writing to clarify the occupancy and intended use of each of the classrooms for the new classroom building at Mesa Middle School as reviewed with our design team.

Within the Science Room, Room 301, the district middle school curriculum is limited to “life science” and the experiments do not involve the storage or use of any hazardous materials as defined in Chapter 3. Chapter 2 SFM definition specifically defines a lab as “A room, building or area where the use and storage of hazardous materials are utilized for testing, analysis, instruction, research or developmental activities.” Given these two conditions this space is most appropriately classified as an E occupancy with an OLF of 20 net instead of 50 net.

Additionally, the Special Education Room, Room 302 at Mesa serves middle school students, grades 7 and 8, with special education needs, but does not serve their highest need non-ambulatory students. Those students are provided with educational opportunities at another district site at Oceano Education Center. The room may include learning aides (but not custodial care) depending on the student’s individual education plan, and the students in this space are able to exit unassisted. In reviewing IR 10-2 section 1.14.1 with our architect, this space would not need to be classified as an I-4 occupancy and is most appropriately classified as an E occupancy.

Sincerely,

Andy Stenson
Executive Director of Facilities, Maintenance & Operations

TITLE 24 CCR NOTES

1. ALL WORK SHALL CONFORM TO THE 2022 EDITION TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
2. CHANGE TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY DSA, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR. CCD MUST BE SIGNED BY A/E OF RECORD, STRUCTURAL ENGINEER (WHEN APPLICABLE), DELEGATED PROFESSIONAL ENGINEER (WHEN APPLICABLE)
3. SUBMIT RFIS TO DESIGN TEAM IN CASE OF INCONSISTENCIES BETWEEN APPROVED DRAWINGS AND APPROVED SPECIFICATIONS IN THE DESCRIPTIONS OF WORK TO BE DONE, EQUIPMENT TO BE PROVIDED OR MATERIAL TO BE USED. IT SHALL BE THAT THE MORE STRINGENT, THE MORE RESTRICTIVE, THE HIGHER QUALITY, AND THE GREATER QUANTITY OF WORK SHALL APPLY. SUBMIT REVISED DRAWINGS OR SPECIFICATIONS AS RESULT OF SUCH RFIS TO DSA VIA CCD'S IF REQUIRED BY IR A-6.
4. WHENEVER DSA FINDS ANY CONSTRUCTION WORK IS BEING PERFORMED IN A MANNER CONTRARY TO THE PROVISIONS OF CALIFORNIA BUILDING CODE AND THAT WOULD COMPROMISE THE STRUCTURAL INTEGRITY OF THE BUILDING, THE DEPARTMENT OF GENERAL SERVICES, STATE OF CALIFORNIA, IS AUTHORIZED TO ISSUE A STOP WORK ORDER PER SECTION 4-334.1 CALIFORNIA ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR).
5. A DSA CERTIFIED, CLASS 2 MIN. PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24. INSPECTOR SHALL BE CLASS 1 CERTIFIED.
6. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
7. VERIFY REPORTS ARE REQUIRED BY THE GEOTECHNICAL ENGINEER.
8. THE PROJECT INSPECTION (PI) SHALL WITNESS AND VERIFY GROUNDING.
9. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION, OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR).
10. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS, AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
11. COPIES OF TITLE 24, PARTS 1 THROUGH 5 AND 9 SHALL BE KEPT ON SITE DURING CONSTRUCTION.
12. CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND OR SEISMIC FORCE RESISTING SYSTEM, INSTALLATION OF EQUIPMENT /COMPONENTS REQUIRING SPECIAL SEISMIC CERTIFICATION, OR A WIND OR SEISMIC FORCE RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL (DIVISION OF THE STATE ARCHITECT) AND THE OWNER OR THE OWNER'S AUTHORIZED AGENT PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS. STATEMENTS SHALL BE IN ACCORDANCE WITH CBC 1704A.4.
13. PER CFC 510.1 EMERGENCY RESPONDER RADIO COVERAGE IN NEW BUILDINGS: NEW BUILDINGS SHALL HAVE APPROVED RADIO COVERAGE FOR EMERGENCY RESPONDERS WITHIN THE BUILDING BASED ON THE EXISTING COVERAGE LEVELS OF THE PUBLIC SAFETY COMMUNICATION SYSTEMS UTILIZED BY THE JURISDICTION, MEASURED AT THE EXTERIOR OF THE BUILDING.
14. ALL STRUCTURAL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING MATERIALS INSTALLATION TO COMPLY WITH APPLICABLE CODES, STANDARDS, AND MANUFACTURER'S RECOMMENDATIONS.
15. EPOXY SHEAR DOWELS IN SITE FLATWORK AND AND OTHER NON-STRUCTURAL CONCRETE SHALL NOT REQUIRE TESTING IN ACCORDANCE WITH DSA IR A-22.
16. SEE IR A-6 FOR ADDITIONAL INFORMATION. SUBSTITUTIONS AFFECTING ITEMS REGULATED BY THE DIVISION OF THE STATE ARCHITECT (DSA) REQUIRE DSA APPROVAL AS AN ADDENDUM OR A CONSTRUCTION CHANGE DOCUMENT (CCD). DSA APPROVAL SHALL BE OBTAINED PRIOR TO FABRICATION AND/OR INSTALLATION PER SECTION 4-338, PART 1, TITLE 24, CCR.

ACCEPTANCE TESTING

ACCEPTANCE TESTING TO BE PROVIDED BY CERTIFIED TECHNICIANS FOR THE FOLLOWING SYSTEMS:

1. INDOOR AND OUTDOOR LIGHTING SYSTEMS CONTROLS (SPEC SEC. 26 5670)

2. BUILDING ENVELOPE (SHT. EC-002 NRCC-PRF-E FORM).

3. MECHANICAL SYSTEMS (SHT. EC-002 NRCC-PRF-E FORM).

ADD THE FOLLOWING NOTE TO THE DRAWINGS:

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.

LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).

MECHANICAL SYSTEM ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.

ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TESTS SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINEER/ARCHITECT OF RECORD OR THE OWNER'S AGENT.

A LISTING OF CERTIFIED ATT CAN BE FOUND AT: HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER-PROGRAM/ACCEPTANCE.

THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.

PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.

GENERAL NOTES

USE OF PLANS: THESE PLANS ARE THE PROPERTY OF RRM AND MAY NOT BE USED WITHOUT THE EXPRESS, WRITTEN CONSENT.

THESE NOTES APPLY TO ALL PORTIONS, PHASES AND SUBCONTRACTORS OF THIS PROJECT.
APPLICABLE CODES ARE STANDARDS:

- *2022 CALIFORNIA BUILDING CODE AND ITS APPENDICES AND STANDARDS.*
- *2022 CALIFORNIA PLUMBING CODE AND ITS APPENDICES AND STANDARDS.*
- *2022 CALIFORNIA MECHANICAL CODE AND ITS APPENDICES AND STANDARDS.*
- *2022 CALIFORNIA FIRE CODE AND ITS APPENDICES AND STANDARDS.*
- *2022 CALIFORNIA ELECTORAL CODE AND ITS APPENDICES AND STANDARDS.*
- *2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS.*
- *2022 CALIFORNIA GREEN BUILDING STANDARDS CODE AND ITS APPENDICES AND STANDARDS.*
- *CURRENT CITY OF ARROYO GRANDE MUNICIPAL CODE.*

1. ALL WORK DESCRIBED IN THE DRAWINGS SHALL BE VERIFIED FOR DIMENSION, GRADE, EXTENT AND COMPATIBILITY WITH EXISTING SITE CONDITIONS. ANY DISCREPANCIES AND UNEXPECTED CONDITIONS THAT AFFECT OR CHANGE THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY. DO NOT PROCEED WITH THE WORK IN THE AREA OF DISCREPANCIES UNTIL ALL SUCH DISCREPANCIES ARE RESOLVED. IF THE CONTRACTOR CHOOSES TO DO, HE/SHE SHALL BE PROCEEDING AT HIS/HER OWN RISK.
2. DIMENSIONS SHOWN SHALL TAKE PRECEDENCE OVER DRAWING SCALE OR PROPORTION. LARGER SCALE DRAWINGS SHALL TAKE PRECEDENCE OVER SMALLER SCALE DRAWINGS. ALL DIMENSIONS ARE ROUGH AND TO THE FACE OF FRAMING.
3. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
4. IN THE EVENT OF THE UNFORESEEN ENCOUNTER OF MATERIALS SUSPECTED TO BE ARCHAEOLOGICAL OR PALEONTOLOGICAL NATURE, ALL GRADING AND EXCAVATION SHALL CEASE IN IMMEDIATE AREA AND THE CONTRACTOR SHALL NOTIFY THE OWNER. THE FIND SHALL BE LEFT UNTOUCHED UNTIL AN EVALUATION BY A QUALIFIED ARCHAEOLOGIST OR PALEONTOLOGIST IS MADE.
5. CONTRACTOR IS TO BE RESPONSIBLE FOR BEING FAMILIAR WITH THESE DOCUMENTS INCLUDING ALL CONTRACT REQUIREMENTS.
6. CONTRACTOR TO REVIEW CALIFORNIA GREEN CODE REQUIREMENTS FOR CONTRACTOR REQUIREMENTS.
7. TEMPORARY FACILITIES: CONTRACTOR SHALL PAY FOR, PROVIDE AND MAINTAIN TEMPORARY FACILITIES FOR PROJECT PROTECTION AND CONSTRUCTION, AND AS REQUIRED BY LOCAL REGULATION AND THESE DOCUMENTS. SUCH FACILITIES INCLUDE, BUT ARE NOT LIMITED TO: TOILETS, LIGHTS, HEATERS, POWER, GAS FANS, WATER, PHONES, FENCES, SIGNS, SHEDS, ETC. REMOVE FROM SITE UPON COMPLETION OF WORK. OBTAIN BUILDING OFFICIAL OR FIRE MARTIAL APPROVAL PRIOR TO USE OF ANY TEMPORARY HEATING DEVICE.
8. CONTRACTOR SHALL PROVIDE FOR PROTECTION AND SAFETY; RESPONSIBLE FOR ALL ITEMS (SIGNS, LIGHTS, FENCES, BRACING, ANCHOR-AGE, FIRE-EXTINGUISHERS, ETC.) NECESSARY FOR THE PROTECTION OF THE PUBLIC, WORKERS, MATERIALS, CONSTRUCTION AND PROPERTY PER LOCAL, STATE, AND FEDERAL REQUIREMENTS (INCLUDING EARTHQUAKES, FIRES, SPILLS, ACCIDENTS, EROSION, MUD, DUST ETC.).
9. CONTRACTOR TO PROVIDE COMPLETE DETAILS OF ENGINEERED TEMPORARY SHORING OR SLOT CUTTING PROCEDURES ON PLANS. CALL FOR INSPECTION BEFORE EXCAVATION BEGINS.
10. THE SOILS ENGINEER IS TO APPROVE THE KEY OR BOTTOM AND LEAVE A CERTIFICATE ON THE SITE FOR THE GRADING INSPECTOR. THE GRADING INSPECTOR IS TO BE NOTIFIED BEFORE ANY GRADING BEGINS., AND FOR BOTTOM INSPECTION, BEFORE FILL IS PLACED. FILL MAY NOT BE PLACED WITHOUT APPROVAL OF THE GRADING INSPECTOR.
11. A SEPARATE OFFICER, ACCESS EASEMENT/AGREEMENT, AND/OR RECIPROCAL ACCESS EASEMENT/AGREEMENT MAY BE REQUIRED TO ENSURE THAT THE PROPOSED PRIVATE ACCESS ROADWAY WILL REMAIN OPEN TO THROUGH TRAFFIC AND EMERGENCY VEHICLES PRIOR TO FINAL OF BUILDING PERMIT.
12. SHOP WELDS MUST BE PERFORMED BY A LICENSED FABRICATOR'S SHOP.
13. OSHA PERMITS REQUIRED FOR VERTICAL CUTS 5' OR GREATER.

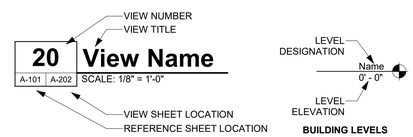
RADON MITIGATION

THE GEOTECHNICAL ENGINEER HAS FOUND THIS PROJECT SITE TO BE LOCATED IN AN AREA OF LOW RADON POTENTIAL, AS DEPICTED IN FIGURE 7 AS PRESENTED IN APPENDIX D IN THE GEOTECHNICAL REPORT (UPDATED GEOTECHNICAL ENGINEERING AND GEOLOGIC HAZARDS REPORT p. 100 & 104)

RADON MITIGATION IS ADDRESSED IN THIS PROJECT THROUGH THE INCLUSION OF A VAPOR BARRIER IN ACCORDANCE WITH SPECIFICATION SECTION 03 0516.

REFER TO SPECIFICATION SECTION 03 0516 FOR SPECIFIC REQUIREMENTS AND INSTALLATION INFORMATION.

SYMBOLS



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

rrmdesign.com | (805) 543-1794

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LICENSED ARCHITECT
KATHRYN ANNE NICOL
938079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

GENERAL INFORMATION

NO.	REVISION	DATE

PROJECT MANAGER
KH

DRAWN BY	CHECKED BY
DK	KF

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
G-002

DSA BACK CHECK 2

4/20/2026 6:42:55 PM
Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt

Attachment 1

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

Division of the State Architect – Structural Safety (DSA-SS)

(CCR, Title 24, Part 11)

CHAPTER 3 – GREEN BUILDING

SECTION 301 – GENERAL

301.4 Mandatory measures for public schools and community colleges. [DSA-SS] New building construction and site work on a new or existing site shall comply with Section 301.4.

301.4.1 Building and site construction on a new site shall comply with Chapter 5 as adopted by DSA-SS.

301.4.2 Work on an existing site shall comply with Section 301.4.2.

301.4.2.1 Newly constructed site work shall comply with Chapter 5 as adopted by DSA-SS.

301.4.2.2 Newly constructed buildings shall comply with Chapter 5 as adopted by DSA-SS and Section 301.4.3.

301.4.2.3 Additions to existing buildings shall comply with Section 301.4.3.

301.4.2.4 Rehabilitated landscape areas shall comply with Sections 5.304.6 and 5.106.12.

301.4.3 Minimum rehabilitated landscape area requirement. A minimum rehabilitated landscape area equal to 75 percent of the footprint area of the building shall comply with Section 5.304.6 and Section 106.12. New buildings or additions to existing buildings less than 1,600 square feet shall not be required to comply with Section 301.4.3.

CHAPTER 5 – NONRESIDENTIAL MANDATORY MEASURES

DIVISION 5.1 – PLANNING AND DESIGN

SECTION 5.106 – SITE DEVELOPMENT

5.106.4.2 Bicycle parking. [DSA-SS] For public schools and community colleges, comply with Sections 5.106.4.2.1 and 5.106.4.2.2.

☐ **5.106.4.2.1 Student bicycle parking.** Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building.

☐ **5.106.4.2.2 Staff bicycle parking.** Provide permanent secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable parking facilities shall be convenient from the street or staff parking area and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

☐ **5.106.5.3 Electric vehicle (EV) charging. [N]** Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the *California Building Code*, the *California Electrical Code* and as follows:

Notes:

1. **[N]** See also *California Building Code,* Chapter 12, Section 1205.7 for college campus lighting requirements for parking facilities and walkways.
2. Refer to Chapter 8 (Compliance Forms, Worksheets and Reference Material) for Illuminating Engineering Society Technical Memorandum TM-15-11 Table A-1, *California Energy Code* Tables 130.2-A and 130.2-B.
3. Refer to the California Energy Code for requirements for additions and alterations.

TABLE 5.106.8 [N]

MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT, AND GLARE (BUG) RATINGS

(See CALGreen for TABLE)

☐ **5.106.10 Grading and paving.** Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales.
2. Water collection and disposal systems.
3. French drains.
4. Water retention gardens.
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

Exception: Additions and alterations not altering the drainage path.

☐ **5.106.12 Shade trees. [DSA-SS]** Shade trees shall be planted to comply with Sections 5.106.12.1, 5.106.12.2, and 5.106.12.3. Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6.

☐ **5.106.12.1 Surface parking areas.** Shade tree plantings, minimum #10 container size or equal, shall be installed to provide shade over 50% of the parking area within 15 years.

Exception: The surface parking area covered by solar photovoltaic shade structures, or shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.

☐ **5.106.12.2 Landscape areas.** Shade trees plantings, minimum #10 container size or equal, shall be installed to provide shade over 20% of the landscape area within 15 years

Exception: Playfields for organized sport activity are not included in the total area calculation.

☐ **5.106.12.3 Hardscape areas.** Shade trees plantings, minimum #10 container size or equal, shall be installed to provide shade over 20% of the hardscape area within 15 years.

Exception: Walks, hardscape areas covered by solar photovoltaic shade structures, and hardscape areas covered by shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.

DIVISION 5.2 – ENERGY EFFICIENCY

SECTION 5.201 – GENERAL

☐ **5.201.1 California Energy Code.** For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.

☐ **5.106.5.3.1 Single charging space requirements. [N]** When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the *California Electrical Code.* Construction plans and specifications shall include, but are not limited to, the following:

1. The type and location of the EVSE.
2. A listed raceway capable of accommodating a 208/240-volt dedicated branch circuit.
3. The raceway shall not be less than trade size 1 inch.
4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into a listed suitable cabinet, box, enclosure or equivalent.
5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-amprere dedicated branch circuit for the future installation of the EVSE.

☐ **5.106.5.3.2 Multiple charging space requirements. [N]** When multiple charging spaces are required per Table 5.106.5.3.3 raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the *California Electrical Code.* Construction plans and specifications shall include, but are not limited to, the following:

1. The type and location of the EVSE.
2. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent.
3. Plan design shall be based upon 40-amprere minimum branch circuits.
4. Electrical calculations shall substantiate the design of the electrical system, to include the rating of equipment and any on-site distribution transformers and have sufficient capacity to simultaneously charge all required EVs at its full rated amperage.
5. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE.

EV charging space calculation. [N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.

Exceptions: On a case-by-case basis where the local enforcing agency has determined EV charging and infrastructure is not feasible based upon one or more of the following conditions:

1. Where there is insufficient electrical supply.
2. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.

DIVISION 5.3 – WATER EFFICIENCY AND CONSERVATION

SECTION 5.303 – INDOOR WATER USE

5.303.3 Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:

☐ **5.303.3.1 Water closets.** The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specifications for Tank-Type Toilets.

Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

5.303.3.2 Urinals.

☐ **5.303.3.2.1 Wall mounted urinals**. The effective flush volume of wall mounted urinals shall not exceed 0.125 gallons per flush.

☐ **5.303.3.2.2 Floor mounted urinals**. The effective flush volume of floor mounted or other urinals shall not exceed 0.5 gallons per flush.

5.303.3.3 Showerheads

☐ **5.303.3.3.1 Single showerhead.** Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specifications for showerheads.

☐ **5.303.3.3.2 Multiple showerheads serving one shower**. When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the showerhead shall be designed to allow only one shower outlet to be in operation at one time.

Note: A hand-held shower shall be considered a showerhead.

5.303.3.4 Faucets and fountains.

☐ **5.303.3.4.1 Non-residential lavatory faucets.** Non-residential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi.

☐ **5.303.3.4.2 Kitchen faucets.** Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

5.303.3.4.3 Wash fountains. Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute/20 [rim space (inches) at 60 psi].

☐ **5.303.3.4.4 Metering faucets.** Metering faucets shall not deliver more than 0.20 gallons per cycle.

☐ **5.303.3.4.5 Metering faucets for wash fountains.** Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per cycle/20 [rim space (inches) at 60 psi].

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

☐ **5.303.6 Standards for plumbing fixtures and fittings.** Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code* and in Chapter 6 of this code**.**

TABLE 5.106.5.3.3	
TOTAL NUMBER OF ACTUAL PARKING SPACES	**NUMBER OF REQUIRED EV CHARGING SPACES**
0 – 9	0
10 – 25	1
26 – 50	2
51 – 75	4
76 – 100	5
101 – 150	7
151 – 200	10
201 and over	6 percent of total [1]

1. Calculation for spaces shall be rounded up to the nearest whole number.

☐ **5.106.5.3.4 [N] Identification.** The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."

☐ **5.106.5.3.5 [N] Future charging spaces.** Future charging spaces qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.

☐ **5.106.8 Light pollution reduction. [N]** Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the *California Energy Code* for Lighting Zones 0 to 4 as defined in Chapter 10, Section 10-114 of the *California Administrative Code,* and
2. Backlight, (B) ratings as defined in Illuminating Engineering Society of North America (IESNA) TM-15-11*(shown in TABLE A-1 in Chapter 8),* and
3. Uplight and Glare ratings as defined in *California Energy Code* (shown in TABLES 130.2-A and 130.2-B in Chapter 8) and
4. Allowable Backlight, Uplight, and Glare (BUG) ratings not exceeding those shown in Table 5.106.8 [N], or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Exceptions: [N]

1. Luminaires that qualify as exceptions in Section 140.7 of the *California Energy Code.*
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the *California Energy Code*, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.

SECTION 5.304 – OUTDOOR WATER USE

5.304.6 Outdoor potable water use in landscape areas. For public schools and community colleges, landscape projects as described in Sections 5.304.6.1 and 5.304.6.2 shall comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) commencing with Section 490 of Chapter 2.7, Division 2, Title 23, *California Code of Regulations*, except that the Evapotranspiration Adjustment Factor (ETAF) shall be 0.65 with an additional water allowance for special landscape areas (SLA) of 0.35.

Exception: Any project with an aggregate landscape area of 2,500 square feet or less may comply with the prescriptive measures contained in Appendix D of the MWELO.

☐ **5.304.6.1 Newly constructed landscapes.** New construction projects with an aggregate landscape area equal to or greater than 500 square feet.

☐ **5.304.6.2 Rehabilitated landscapes.** Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 1,200 square feet.

DIVISION 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION 5.407 – WATER RESISTANCE AND MOISTURE MANAGEMENT

☐ **5.407.1 Weather protection.** Provide a weather-resistant exterior wall and foundation envelope as required by *California Building Code,* Section 1402.2 (Weather Protection), manufacturer's installation instructions, or local ordinance, whichever is more stringent.

5.407.2 Moisture control. Employ moisture control measures by the following methods:

☐ **5.407.2.1 Sprinklers.** Design and maintain landscape irrigation systems to prevent spray on structures.

5.407.2.2 Entries and openings. Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows:

☐ **5.407.2.2.1 Exterior door protection.** Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:

1. An installed awning at least 4 feet in depth.
2. The door is protected by a roof overhang at least 4 feet in depth.
3. The door is recessed at least 4 feet.
4. Other methods which provide equivalent protection.

☐ **5.407.2.2.2 Flashing.** Installed flashings integrated with a drainage plane.

SECTION 5.408 – CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

5.408.1 Construction waste management. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.

☐ **5.408.1.1 Construction waste management plan.** Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that:

1. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.

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938079
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RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

CAL GREEN REQUIREMENTS

NO.	REVISION	DATE

PROJECT MANAGER
KH

DRAWN BY DK | **CHECKED BY** KF

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
G-201

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2. Determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
3. Identifies diversion facilities where construction and demolition waste material collected will be taken.
4. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

☐ **5.408.1.2 Waste management company.** Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.

Note: The owner or contractor shall make the determination if the construction and demolition waste material will be diverted by a waste management company.

Exceptions to Sections 5.408.1.1 and 5.408.1.2:

1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.
3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets.

☐ **5.408.1.3 Waste stream reduction alternative.** The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.

☐ **5.408.1.4 Documentation.** Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 5.408.1.1 through 5.408.1.3. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

Notes:
1. Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located at www.bsc.ca.gov/Home/CALGreen.aspx may be used to assist in documenting compliance with the waste management plan.
2. Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

SECTION 5.410 – BUILDING MAINTENANCE AND OPERATION

☐ **5.410.1 Recycling by occupants.** Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive.

Exception: Rural jurisdictions that meet and apply for the exemption of Public Resources Code 42649.82 (a)(2)(A) et seq. will also be exempt from the organics waste portion of this section.

☐ **5.410.1.2 Sample ordinance.** Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the *Public Resources Code.* Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act).

Note: A sample ordinance for use by local agencies may be found in Appendix A of the document at the CalRecycle's website.

DIVISION 5.5 ENVIRONMENTAL QUALITY

SECTION 5.505 – INDOOR MOISTURE CONTROL

☐ **5.505.1 Indoor moisture control.** Buildings shall meet or exceed the provisions of *California Building Code*, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures see Section 5.407.2 of this code.

SECTION 5.506 – INDOOR AIR QUALITY

☐ **5.506.1 Outside air delivery.** For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements for Ventilation) of the *California Energy Code*, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

SECTION 5.507 – ENVIRONMENTAL COMFORT

☐ **5.507.4 Acoustical control.** Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413 or Outdoor–Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirement of this section and all subsections apply only to new construction.

☐ **5.507.4.1 Exteriors noise transmission, prescriptive method.** Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

   Exceptions:

   1. L_{dn} or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
   2. L_{dn} or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_{dn} noise contour of a freeway or expressway railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

☐ **5.507.4.1.1 Noise exposure where noise contours are not readily available.** Buildings exposed to a noise level of 65 dBL_{eq}-1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

☐ **5.507.4.2 Performance method.** For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (L_{eq}-1Hr) of 50 dBA in occupied areas during any hour of operation.

☐ **5.507.4.2.1 Site features.** Exterior features such as sound wall or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

SECTION 5.504.1 – POLLUTANT CONTROL

☐ **5.504.3 Covering of duct openings and protection of mechanical equipment during construction.** At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.

5.504.4 Finish material pollutant control. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.

☐ **5.504.4.1 Adhesives, sealants, and caulks.** Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene, and trichloroethylene), except for aerosol products as specified in subsection 2, below.
2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with Section 94507.

TABLE 5.504.4.1 – ADHESIVE VOC LIMIT
(See CALGreen for TABLE)

TABLE 5.504.4.2 – SEALANT VOC LIMIT
(See CALGreen for TABLE)

☐ **5.504.4.3 Paints and coatings.** Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3, shall be determined by classifying the coating as a Flat, Nonflat, or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

TABLE 5.504.4.3 – VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS
(See CALGreen for TABLE)

☐ **5.504.4.3.1 Aerosol paints and coatings.** Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of *California Code of Regulations*, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.

5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification.

☐ **5.507.4.2.2. Documentation of compliance.** An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

☐ **5.507.4.3 Interior sound transmission.** Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC rating may be found at the California Office of Noise Control: www. https://www.tsib.org/files/STC_IIC_Ratings.pdf

SECTION 5.508 – OUTDOOR AIR QUALITY

5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

☐ **5.508.1.1 Chlorofluorocarbons (CFCs).** Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

A DSA Project Submittal Guideline is a compilation of recommendations based on code, referenced standards, DSA bulletin/policy/procedure/interpretation documents, and DSA practices. These guidelines are intended to give the design profession helpful information and insight into DSA's project application, submittal, and review processes. Guidelines are provided by DSA in support of DSA's goals of providing stakeholders information they need to facilitate working smoothly with DSA, and to help standardize practices among the four DSA Regional Offices.

Compliance with a Guideline does not assure that a project is complete or that it adheres to the requirements of the California Building Standards Code (Title 24 of the California Code of Regulations) or all DSA requirements. Additional information may be required, depending on project complexity or site conditions. For complete submittal requirements see forms *DSA 1: Application for Approval of Plans and Specifications* and *DSA 3: Project Submittal Checklist.*

2. Field verification of on-site product containers.

☐ **5.504.4.4 Carpet systems.** All carpet installed in the building interior shall meet at least one of the following testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version1.1, February 2010 (also known as CDPH Standard Method V1.1 or *Specification 01350*);
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (CA-CHPS) Criteria 2014 and listed in the CHPS High Performance Product Database.

☐ **5.504.4.4.1 Carpet cushion.** All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program**.**

☐ **5.504.4.4.2 Carpet adhesive.** All carpet adhesive shall meet the requirements of Table 5.504.4.1.

☐ **5.504.4.5 Composite wood products.** Hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted by the ATCM must meet the specified emission limits as shown in Table 5.504.4.5.

TABLE 5.504.4.5 – FORMALDEHYDE LIMITS
(See CALGreen for TABLE)

☐ **5.504.4.6 Resilient flooring systems.** For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (CA-CHPS) Criteria 2014 and listed in the CHPS High Performance Product Database; or
4. Products certified under the UL GREENGUARD Gold (formerly the Greenguard Children & Schools program).

☐ **5.504.5.3 Filters.** In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exception: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.

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KH

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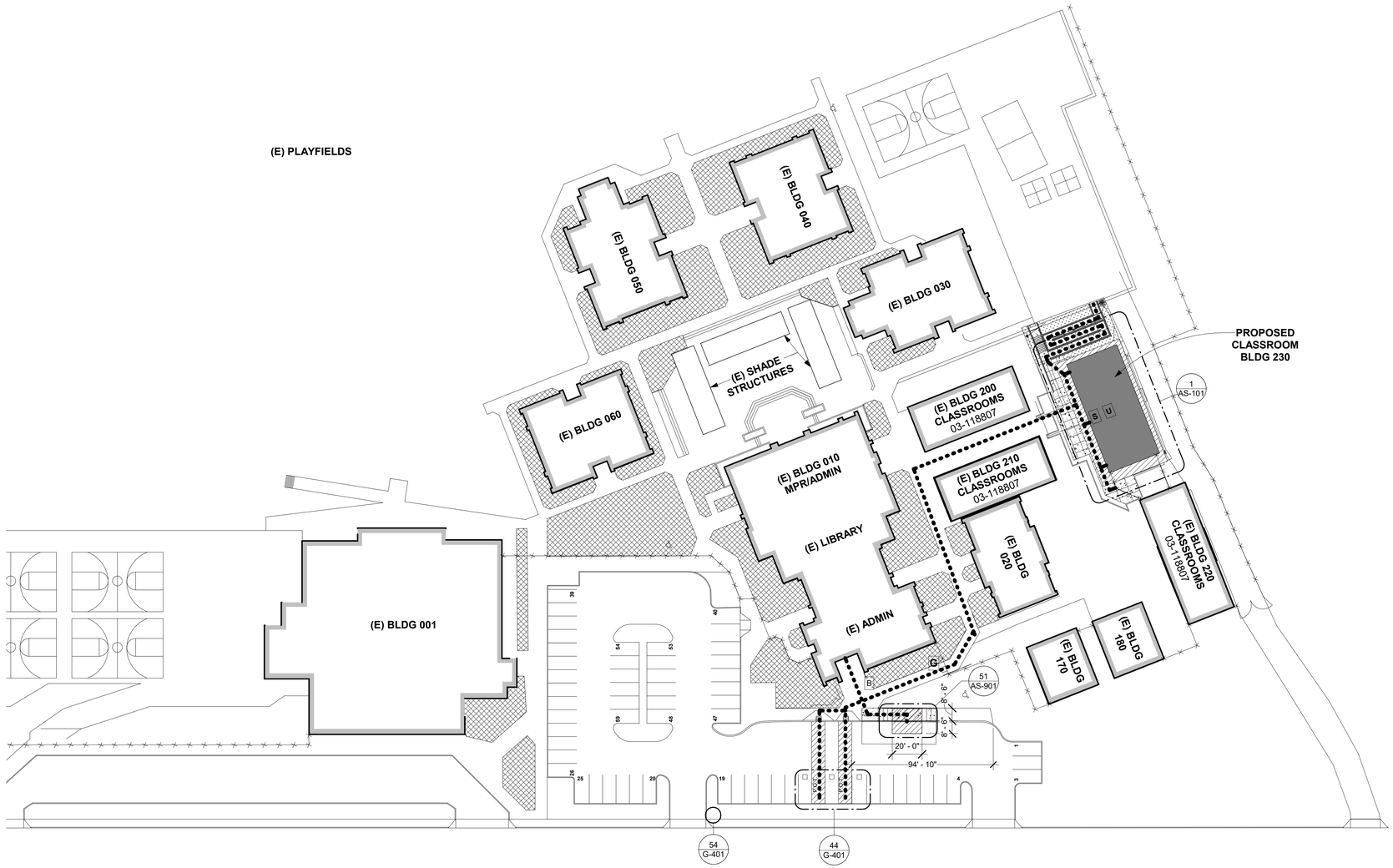
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1 ACCESS SITE PLAN

A-201 | G-401 SCALE: 1" = 40'-0"



NOTE:
CONTRACTOR TO PERMANENTLY AFFIX THE FOLLOWING LETTERING IN THE BLANK SPACE(S):

"CITY OF ARROYO GRANDE P.D."
"AT (805) 473-5100"

NOTE:
(E) TOW AWAY SIGN PLAQUE TO REMAIN

APPROVED UNDER DSA #03-118030

54 ACC. TOWING SIGN - EXISTING

G-401 | G-401 NTS



NOTE:
(E) ACCESSIBLE PARKING SIGN PLAQUE TO REMAIN

APPROVED UNDER DSA #03-118030

44 ACC. PARKING SIGN - EXISTING

G-401 | G-401 NTS

PARKING

LOT 1

TOTAL NUMBER OF PARKING SPACES 59

	REQUIRED	PROVIDED
NUMBER OF ACCESSIBLE SPACES *TABLE 11B-208.2*	3	3
NUMBER OF VAN SPACES *11B-208.2.4*	1	1

LEGEND

- PROPOSED BUILDING
- EXISTING BUILDING
- PROPOSED AREA UNDER HORIZONTAL PROJECTION OF ROOF
- EXISTING LANDSCAPING
- PATH OF TRAVEL
- U ACCESSIBLE STUDENT RESTROOM
- S ACCESSIBLE STAFF RESTROOM
- PERIMETER ENCLOSURE FENCES AND GATES
- G EXISTING ACCESSBILE PEDESTRIAN GATE
- B EXISTING BICYCLE PARKING

CERTIFICATION HISTORY

CAMPUS BUILDINGS

BUILDING NUMBER	TYPE	A#	YEAR
BUILDING 010	ADMIN/MPR/LI...	#51515	1988 CONSTRUCTED
BUILDING 020	CLASSROOMS	#51515	1988 CONSTRUCTED
BUILDING 030	CLASSROOMS	#51515	1988 CONSTRUCTED
BUILDING 040	CLASSROOMS	#51515	1988 CONSTRUCTED
BUILDING 050	CLASSROOMS	#51515	1988 CONSTRUCTED
BUILDING 060	CLASSROOMS	#51515	1988 CONSTRUCTED
BUILDING 001	GYM	03-101122	1998 CONSTRUCTED
BUILDING 170	CLASSROOMS	63628	1996 PLACED
BUILDING 180	CLASSROOMS	63628	1996 PLACED
BUILDING 200	CLASSROOMS	03-118807	2019 CONSTRUCTED
BUILDING 210	CLASSROOMS	03-118807	2019 CONSTRUCTED
BUILDING 220	CLASSROOMS	03-118807	2019 CONSTRUCTED
BUILDING 230	CLASSROOMS	03-125727	2025 PROPOSED
SHADE STRUCTURES	N/A	03-118030	2017 CONSTRUCTED

CERTIFICATION HISTORY

A#	YEAR	SCOPE	STATUS
51515	1988	ADMIN & CLASSROOM BUILDINGS	#2 CLOSED (2017)
63628	1996	RELOCATABLE CLASSROOM BUILDINGS	#1 CERTIFIED
03-101122	1998	GYM	#1 CERTIFIED
03-118030	2017	SHADE STRUCTURES	#1 CERTIFIED
03-118807	2019	MODULAR CLASSROOM BUILDINGS	#1 CERTIFIED
03-125727	2025	CLASSROOM BUILDING	PROPOSED

PATH OF TRAVEL

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON THE PLAN IS A BARRIER-FREE ACCESS ROUTE

FLOOR OR GROUND SURFACE *(CBC 11B-302.1)*
SURFACE IS STABLE, FIRM, AND SLIP RESISTANT.

SLOPE *(CBC 11B-403.3)*
THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20 (5%). THE CROSS SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:48 (2%). THE RUNNING SLOPE OF SIDEWLAKS SHALL NOT EXCEED THE GENERAL GRADE ESTABLISHED FOR THE ADJACENT STREET OR HIGHWAY.

CHANGES IN LEVEL *(CBC 11B-403.3)*
- CHANGES IN LEVEL OF 1/4" HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL AND WITHOUT EDGE TREATMENT. *(CBC 11B-303.2)*
- CHANGES IN LEVEL BETWEEN 1/4" HIGH MINIMUM AND 1/2" HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2. *(CBC 11B-303.3)*

CLEARANCES *(CBC 11B-403.5.1)*
THE CLEAR WIDTH SHALL BE 36" MINIMUM
1. THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32" MINIMUM FOR A LENGTH OF 24" MAXIMUM PROVIDED THAT REDUCED WIDTH SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48" LONG MINIMUM AND 36" WIDE MINIMUM. *(EXCEPTION 1)*
2. THE CLEAR WIDTH FOR WALKING SURFACES IN CORRIDORS SERVING AN OCCUPANT LOAD OF 10 OR MORE SHALL BE 44" MINIMUM. *(EXCEPTION 2)*
3. THE CLEAR WIDTH FOR SIDEWALKS AND WALKS SHALL BE 48" MINIMUM *(EXCEPTION 3)*
4. THE CLEAR WIDTH FOR ACCESSIBLE ROUTES TO TOILET COMPARTMENTS SHALL BE 44" *(EXCEPTION 4)*

PROTRUDING OBJECTS *(CBC 11B-307)*
- ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM *(CBC 11B-307.4)*
- OBJECTS WITH LEADING EDGES MORE THAN 27" AND NOT MORE THAN 80" ABOVE THE FINISH FLOOR OR GROUND SHALL PROTRUDE 4" MAXIMUM HORIZONTALLY INTO THE CIRCULATION PATH *(CBC 11B-307.2)*

RESPONSIBLE CHARGE

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:
THE PATH OF TRAVEL IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS, AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS, OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS, AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS, OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED ON THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

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CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

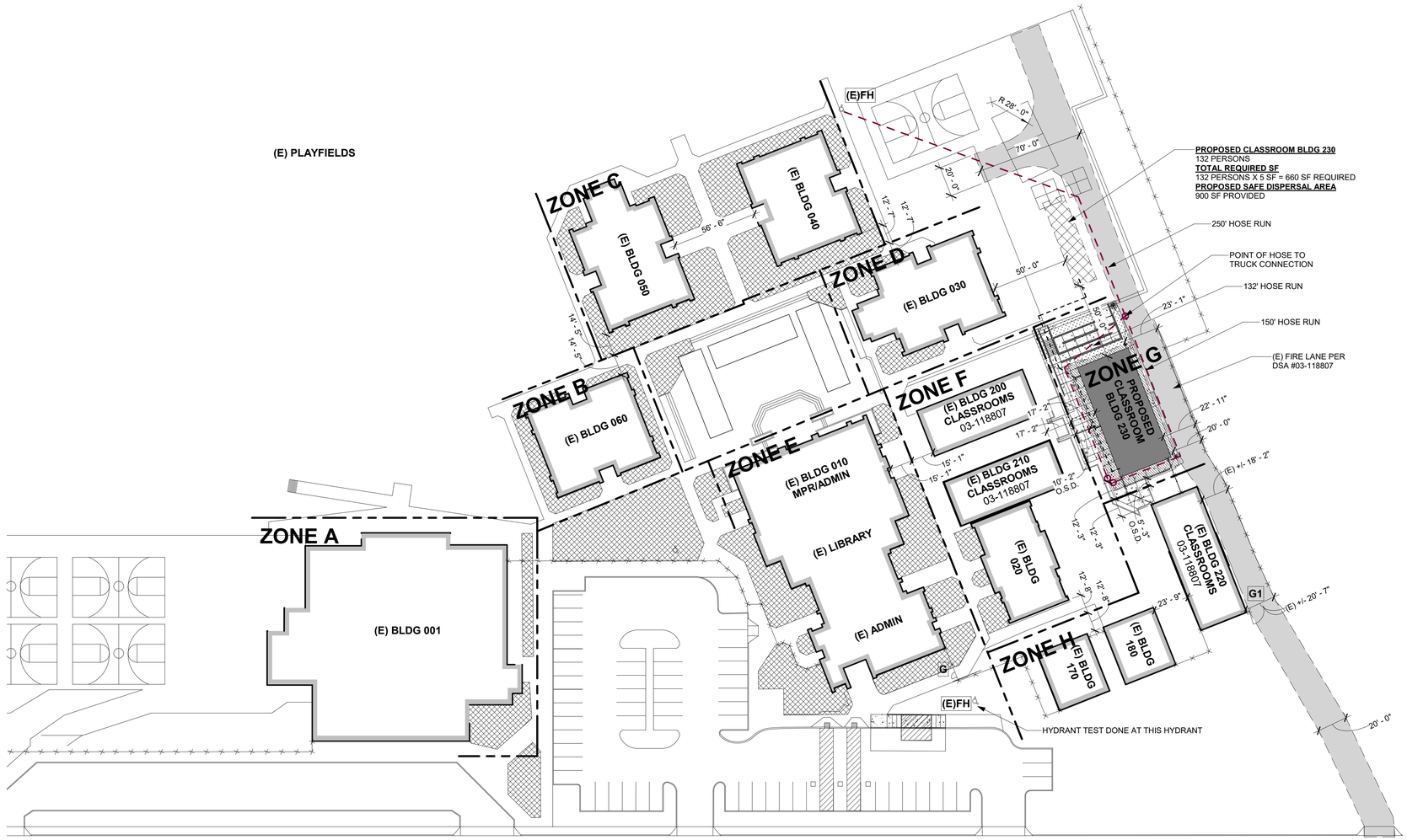
ACCESS COMPLIANCE AND OVERALL CAMPUS PLAN

NO.	REVISION	DATE

PROJECT MANAGER KH
DRAWN BY DK | **CHECKED BY** KF
DATE APRIL 23, 2026
PROJECT NUMBER 0822-03-ED25
SHEET G-401

DSA BACK CHECK 2

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S HALCYON ROAD

1 FIRE & LIFE SAFETY PLAN

A-201 | G-402 | SCALE: 1" = 40'-0"

LEGEND

- PROPOSED BUILDING
- EXISTING BUILDINGS
- P.O.T. SAFE DISPERSAL P.O.T.
- SAFE DISPERSAL AREA
- AREAS UNDER HORIZ. PROJECTION OF ROOFS AND COVERED WALKWAYS
- 20' WIDE FIRE APPARATUS ACCESS ROAD U.N.O. - PAINT CURB RED, PAINT WORDS "NO PARKING, FIRE LANE" AT 50' INTERVALS (NOT REQUIRED IN PLAY AREA)
- FIRE HYDRANT
- G1 (E) 20' WIDE ROLLING VEHICLE GATE W/ KNOX BOX DSA # 03-118807
- PERIMETER ENCLOSURE FENCES AND GATES
- FIRE HOSE RUN

BUILDING HEIGHT & AREA

ZONE A UNAFFECTED	**ZONE G** STRUCTURES INCLUDED WITHIN AREA: • PROPOSED BUILDING 230 BASIC ALLOWABLE BUILDING HEIGHT & AREA BASED ON THE FOLLOWING: TYPE OF CONSTRUCTION: VB OCCUPANCY: E FIRE SPRINKLERS: NO NUMBER OF STORIES: 1 **ALLOWABLE HEIGHT & AREA** OCCUPANCY GROUP E (508.3): ALLOWABLE HEIGHT (CBC TABLE 504.3): 40' - 0" ALLOWABLE NO. OF STORIES (CBC TABLE 504.4): 1 BASIC ALLOWABLE BUILDING AREA: 9,500 SF **PROPOSED HEIGHT & AREA** BUILDING HEIGHT: 14' - 11" COMPLIES NUMBER OF STORIES: 1 COMPLIES BUILDING AREA: 2,808 SF COMPLIES
ZONE B UNAFFECTED	
ZONE C UNAFFECTED	
ZONE D UNAFFECTED	
ZONE E UNAFFECTED	
ZONE F UNAFFECTED	
ZONE H UNAFFECTED	

LFA REVIEW

DSA 810

FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

To facilitate the Division of the State Architect's (DSA) fire and life safety plan review of project site conditions, DSA requires the design professional to provide the following information at time of project submittal for projects consisting of construction of a new campus, construction of new building(s), additions to existing buildings, and for site alternate design means for fire department emergency vehicle access, and fire suppression water supply.

Information associated with compliance items 1 through 3 below is to be provided for all project types indicated above. Information associated with items 4 through 7 is to be completed when an alternate means is utilized. Acknowledgement by the school district and signature from the Local Fire Authority (LFA) is only required when an alternate design means is being requested.

The Project Information and Fire & Life Safety Information sections are to be completed for all projects and imaged onto the fire access site plan. When an alternate design/means is proposed, all sections on pages 1 and 2 are to be completed and imaged on the fire access site plan.

For additional information refer to the instructions at the end of this form and DSA Policy *PL 09-01: Fire Flow for Buildings*.

PROJECT INFORMATION	
School District/Owner:	Lucia Mar Unified School District
Project Name/School:	Mesa Middle School Classroom Building
Project Address:	2555 S. Halcyon Rd., Arroyo Grande, CA 93420

FIRE & LIFE SAFETY INFORMATION				
1.	Has a fire hydrant flow test been performed within the past 12 months? *(If yes, provide a copy of the test data.)*	Yes ☑		No ☐
2.	Was the fire hydrant water flow test performed as part of this LFA review?	Yes ☑		No ☐
3.	Is the project located within a designated fire hazard severity zone (FHSZ) as established by Cal-Fire? *(If yes, indicate FHSZ classification below.)* Due to proximity to Moderate area, bldg designed to 7A standards.	Yes ☐		No ☑
	Refer to the following website for FHSZ locations: Fire Hazard Severity Zones in State Responsibility Area	Moderate ☑	High ☐	Very High ☐
	Wildland Interface Area (WIFA) *(If any designations are checked, project design must meet the requirements of CBC Chapter 7A.)*			WIFA ☑

CONDITION MEANS AND METHODS RESOLUTION		ALTERNATE ACCEPTED			
		Yes	No	N/A	N/R
4.	Emergency vehicle access roadways do not meet CFC requirements.				
4a.	**Acceptable Alternate:** Emergency vehicle and personnel access as proposed by the project architect is acceptable for providing fire suppression and protection of life and property.	✓			
5.	**Fire Hydrants:** Number and spacing does not meet CFC requirements.			✓	
5a.	**Acceptable Alternate:** Number of fire hydrants and spacing as proposed by the project architect is acceptable for fire suppression and protection of life and property.				
6.	**Fire Hydrants:** Water flow and pressure are less than CFC minimum.				
6a.	**Acceptable Alternate:** The available flow and pressure is acceptable for providing fire suppression and protection of life and property.	✓			
7.	Location of fire department connection(s) serving fire sprinkler systems or standpipe systems does not meet CFC requirements.				✓
7a.	**Acceptable Alternate:** The location of fire department connection serving the fire sprinkler system and/or standpipe system is acceptable for providing fire suppression and protection of life and property.				

School District Acceptance of Acceptable Design Alternates

By signing this form, the school district acknowledges and accepts the proposed design as an alternative to California Building Code (CBC) and California Fire Code (CFC) minimum requirements, as indicated by one or more of the conditions indicated at items 4a, 5a, 6a or 7a, for providing fire and life safety protection of life and property.

Accepted by: Andy Stenton Title: EVCS, Director

Signature: Date: 9-16-25

LOCAL FIRE AUTHORITY (LFA) INFORMATION	
LFA Agency Name:	San Luis Obispo County Fire Department
LFA Review Official:	Nick Terrones
Title: Fire Captain/Deputy Fire Marshal	Work Phone: (805) 543-4244
Work Email:	thomas.terrones@fire.ca.gov

LFA Reviewer's Signature: Date: 8/26/25

HYDRANT TEST

Mid-Coast Fire Protection, Inc.
1342 Ramona Ave. • Grover Beach, CA • 93433
Ph: 805/466-0211 • Fax: 805/466-0266
Phone: 805/489-2889
Contractor's License C-16 #579499 • CA State Fire Marshal License E-1651

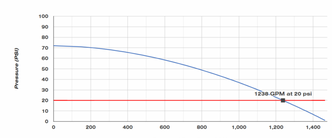
HYDRANT # & LOCATION Mesa Middle School, 2555 S. Halcyon Rd. AG, CA 93420 DATE: 3/24/2025
TEST BY: Kyle Greenwell DAY: Monday TIME OF DAY: 7:30 AM MIN. OF FLOW 10
WATER SUPPLIED BY: City Water
PURPOSE OF TEST: Annual Test

FLOW DATA

	#1	#2	#3
FLOW HYDRANT(S):			
SIZE OPENING:	2.5		
COEFFICIENT:	0.906		
PITOT READING:	21.2		
GPM:	778	0	0

TOTAL FLOW DURING TEST: 778 GPM
STATIC READING: 72 PSI RESIDUAL: 50 PSI
RESULTS: 1238 GPM AT 0 PSI 1475 GPM
ESTIMATED CONSUMPTION: 7777 GAL.
REMARKS:

GPM at 20 psi: 1238
Class: A
Marking color: Green
% Pressure Drop: 31%



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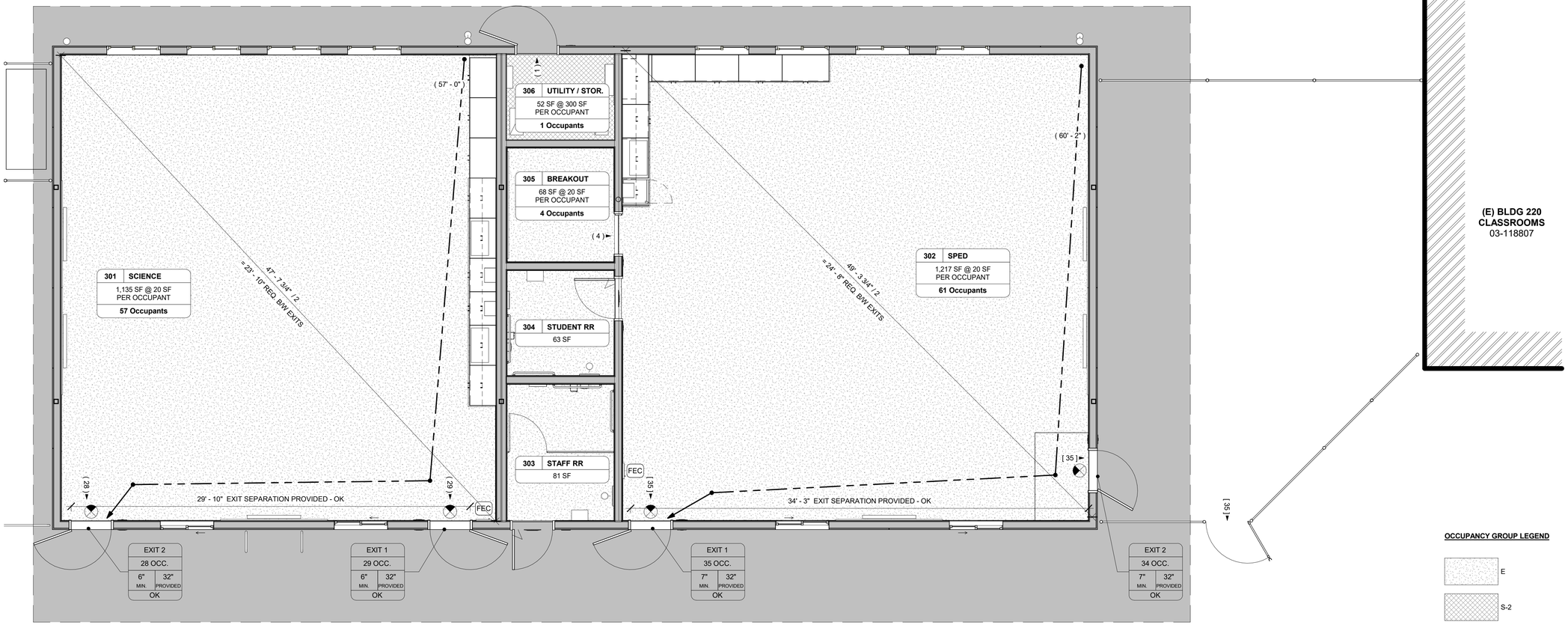
FIRE LIFE SAFETY SITE PLAN

NO.	REVISION	DATE

PROJECT MANAGER	KH
DRAWN BY	DK
CHECKED BY	KF
DATE	APRIL 23, 2026
PROJECT NUMBER	0822-03-ED25
SHEET	G-402

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1 CODE ANALYSIS

A-201 | G-403 SCALE: 1/4" = 1'-0"

OCCUPANCY GROUP LEGEND

- E
- S-2
- UNDER ROOF

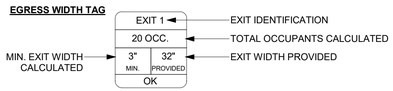
LEGEND

NOTE: REFER TO ***SHEET A-103*** FOR TACTILE SIGNS.

EGRESS PATH OF TRAVEL

- [10] ► COMBINED OCCUPANT COUNT ALONG PATH OF TRAVEL
- (##' - ##") MAXIMUM TRAVEL DISTANCE FROM REMOTE POINT ON STORY TO AN EXIT
- **(12)** ◄ NUMBER OF OCCUPANTS EXITING SPACE

EGRESS WIDTH TAG



FEC FIRE EXTINGUISHER & RECESSED CABINET 2A:10B:C RATING

ILLUMINATED EXIT SIGN, ARROW INDICATES DIRECTIONAL CHEVRON REFER TO INTERIOR ELEVATIONS AND RCP FOR MOUNTING LOCATION

BUILDING DATA

PROPOSED CLASSROOMS

JURISDICTION	CA
CODE YEAR	2022

TYPE OF CONSTRUCTION	VB
SPRINKLER TYPE	N/A
FIRE SEPARATION	N/A

Occupancy Type	Area
E	2,571 SF
S-2	51 SF
UNDER ROOF	1,308 SF
GROSS NEW AREA*	3,930 SF

HEIGHT AND AREA

BUILDING AREA
PER SECTION 508.3.1, USE AREA REQUIREMENTS FOR MOST RESTRICTIVE OCCUPANCY GROUP PER STORY TABLE 506.2

OCCUPANCY GROUP	DESIGNED AREA	ALLOWABLE AREA	
E	3,930 SF	9,500 SF	COMPLIES

BUILDING HEIGHT IN FEET
CBC 504.3

OCCUPANCY GROUP	DESIGNED MAXIMUM HEIGHT	ALLOWABLE HEIGHT ABOVE GRADE PLANE	
E	14' - 11"	40' - 0"	COMPLIES

BUILDING HEIGHT IN STORIES
CBC 504.4

OCCUPANCY GROUP	DESIGNED NUMBER OF STORIES	ALLOWABLE NUMBER OF STORIES	
E	1	1	COMPLIES

EXITING

MINIMUM EXITS PER STORY
TABLE 1006.2.1

OCCUPANCY GROUP	TOTAL OCCUPANT LOAD BY STORY	MINIMUM NUMBER OF EXITS	MAXIMUM COMMON PATH OF EGRESS ALLOWED FOR 1 EXIT	MAXIMUM TRAVEL DISTANCE ALLOWED FOR 1 EXIT
E	128	2	N/A	N/A
S-2	1	1	49	100'

MAXIMUM EXIT ACCESS TRAVEL DISTANCE & DEAD-END CORRIDOR LENGTH

OCCUPANCY GROUP	MAXIMUM EXIT ACCESS TRAVEL DISTANCE *TABLE 1017.2*	MAXIMUM DEAD-END CORRIDOR LENGTH *SECTION 1020.4*
E	200'	20'
S-2	300'	20'

MAXIMUM EXIT ACCESS TRAVEL DISTANCE SERVING EACH SPACE SHOULD BE AT A MAXIMUM THE VALUE ABOVE FOR EACH OCCUPANCY GROUP

DEAD-END CORRIDOR LENGTH LIMITS ONLY APPLY WHERE MORE THAN ONE EXIT OR EXIT ACCESSDOORWAY IS REQUIRED

DEAD-END CORRIDOR LENGTH IS NOT LIMITED WHERE THE LENGTH OF THE DEAD-END CORRIDOR IS LESS THAN 2.5 TIMES OF ITS LEAST WIDTH

EGRESS

CBC TABLE 1004.5, 1006.2.1, & 1006.3.2

MORE THAN ONE EXIT MUST BE PROVIDED IF THE SPACE OCCUPANT LOAD OR MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE ARE EXCEEDED. MORE EXITS MAY BE REQUIRED UNDER HIGH OCCUPANT LOAD OR OTHER SPECIAL CONDITIONS.

OCCUPANCY GROUP	NO.	SPACE NAME	FUNCTION OF SPACE	DESIGNED AREA USABLE*	OLF	CUM. OCC. LOAD OF SPACE	EXITING: MAX. SINGLE EXIT CUMULITIVE LOAD OF SPACE	EXITING: MIN. NUMBER OF EXITS PER SPACE	EXITING: MAX. COMMON PATH OF EGRESS ALLOWED FOR SINGLE EXIT
E	301	SCIENCE	EDUCATIONAL: CLASSROOM AREA	1,135 SF	20	57	49	2	N/A
E	302	SPED	EDUCATIONAL: CLASSROOM AREA	1,217 SF	20	61	49	2	N/A
E	303	STAFF RR	ACCESSORY USE	81 SF	20	5	49	1	75'
E	304	STUDENT RR	ACCESSORY USE	63 SF	20	4	49	1	75'
E	305	BREAKOUT	EDUCATIONAL: CLASSROOM AREA	68 SF	20	4	49	1	75'
				2,563 SF		131			
S	306	UTILITY / STOR.	ACCESSORY STORAGE AREAS; MECHANICAL EQUIPMENT ROOM	52 SF	300	1	29	1	
				52 SF		1			
				2,615 SF		132			

*USABLE AREA IS TO FINISH SURFACE OF A SPACE

EGRESS LIGHTING

1. SEE ELECTRICAL PLANS FOR EMERGENCY LIGHTING

PATH OF TRAVEL

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON THE PLAN IS A BARRIER-FREE ACCESS ROUTE

FLOOR OR GROUND SURFACE *(CBC 11B-302.1)*
SURFACE IS STABLE, FIRM, AND SLIP RESISTANT.

SLOPE *(CBC 11B-403.3)*
THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20 (5%). THE CROSS SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:48 (2%). THE RUNNING SLOPE OF SIDEWLAKS SHALL NOT EXCEED THE GENERAL GRADE ESTABLISHED FOR THE ADJACENT STREET OR HIGHWAY.

CHANGES IN LEVEL *(CBC 11B-403.3)*

- CHANGES IN LEVEL OF 1/4" HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL AND WITHOUT EDGE TREATMENT. *(CBC 11B-303.2)*
- CHANGES IN LEVEL BETWEEN 1/4" HIGH MINIMUM AND 1/2" HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2. *(CBC 11B-303.3)*

CLEARANCES *(CBC 11B-403.5.1)*
THE CLEAR WIDTH SHALL BE 36" MINIMUM

1. THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32" MINIMUM FOR A LENGTH OF 24" MAXIMUM PROVIDED THAT REDUCED WIDTH SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48" LONG MINIMUM AND 36" WIDE MINIMUM. *(EXCEPTION 1)*
2. THE CLEAR WIDTH FOR WALKING SURFACES IN CORRIDORS SERVING AN OCCUPANT LOAD OF 10 OR MORE SHALL BE 44" MINIMUM. *(EXCEPTION 2)*
3. THE CLEAR WIDTH FOR SIDEWALKS AND WALKS SHALL BE 48" MINIMUM *(EXCEPTION 3)*
4. THE CLEAR WIDTH FOR ACCESSIBLE ROUTES TO TOILET COMPARTMENTS SHALL BE 44" *(EXCEPTION 4)*

PROTRUDING OBJECTS *(CBC 11B-307)*

- ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM *(CBC 11B-307.4)*
- OBJECTS WITH LEADING EDGES MORE THAN 27" AND NOT MORE THAN 80" ABOVE THE FINISH FLOOR OR GROUND SHALL PROTRUDE 4" MAXIMUM HORIZONTALLY INTO THE CIRCULATION PATH *(CBC 11B-307.2)*

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BUILDING CODE ANALYSIS

NO.	REVISION	DATE

PROJECT MANAGER
KH

DRAWN BY DK | **CHECKED BY** KF

DATE
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PROJECT NUMBER
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SHEET
G-403

DSA BACK CHECK 2

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MESA MIDDLE SCHOOL
SCIENCE AND SPED CLASSROOMS

ARROYO GRANDE, CALIFORNIA

PREPARER'S STATEMENT

THIS PLAN SET WAS PREPARED BY:
RRM DESIGN GROUP
3765 S. HIGUERA STREET, SUITE 102
SAN LUIS OBISPO, CA 93401

UNDER THE DIRECTION OF:
ROBERT CAMACHO, P.E. No. 76597

DISTRICT/ REPRESENTATIVE

LUCIA MAR UNIFIED SCHOOL DISTRICT

CONTACT: ANDY STENSON
ADDRESS: 222 STANLEY AVENUE
ARROYO GRANDE, CA 93420
PHONE: (805) 474-3000
EMAIL: ANDY.STENSON@LMUSD.ORG

PROJECT DESCRIPTION

CONSTRUCTION OF NEW 2-CLASSROOM BUILDING WITH ABOVE GROUND AND UNDERGROUND IMPROVEMENTS LOCATED IN EXISTING SCHOOL SITE. ASSOCIATED IMPROVEMENTS INCLUDE SITE WORK, GRADING, PAVING AND UTILITIES.

STORMWATER COMPLIANCE

PCRS:

THE PROJECT LIES INSIDE OF THE COUNTY MS4 COVERAGE AREA AND IS SUBSEQUENTLY NOT EXEMPT FROM CENTRAL COAST POST-CONSTRUCTION STORMWATER REQUIREMENTS PER RESOLUTION R3-2013-0032

NPDES:

THE PROJECT AREA OF DISTURBANCE IS UNDER 1 ACRE AND IS SUBSEQUENTLY EXEMPT FROM COVERAGE UNDER THE CONSTRUCTION STORMWATER GENERAL PERMIT ORDER 2022-0057-DWQ.

ABBREVIATIONS

AB	AGGREGATE BASE	MAX	MAXIMUM
AC	ASPHALT	MIN	MINIMUM
AP	ANGLE POINT	NTS	NOT TO SCALE
ARV	AIR RELEASE VALVE	PL	PROPERTY LINE
BCR	BEGIN CURVE	PCL	PARCEL
BW	BACK OF WALK	PCC	PORTLAND CEMENT CONCRETE
CB	CATCH BASIN	POC	POINT ON CURVE OR POINT OF CONNECTION
CL	CENTERLINE		
CMP	CORRUGATED METAL PIPE	POT	POINT OF TANGENT
CONC	CONCRETE	PRC	POINT OF REVERSE CURVE
DI	DRAIN INLET	ROW	RIGHT OF WAY
DIP	DUCTILE IRON PIPE	RP	REDUCED PRESSURE
EG	EXISTING GRADE	STA	STATION
EX	EXISTING	STD	STANDARD
EL	ELEVATION	TBD	TO BE DETERMINED
FDC	FIRE DEPARTMENT CONNECTION	TBM	TEMPORARY BENCHMARK
FG	FINISHED GRADE	TC	TOP OF CURB
FL	FLOWLINE	TF	TOP OF FOOTING
FS	FINISHED SURFACE	TP	TOP OF PAVEMENT
FP	FINISHED PAD	TG	TOP OF GRATE
GB	GRADE BREAK	TYP	TYPICAL
HP	HIGH POINT	TW	TOP OF WALL
IPS	IRON PIPE SIZE	UNO	UNLESS NOTED OTHERWISE
INV	INVERT	WSE	WATER SURFACE ELEVATION
LP	LOW POINT		

LEGEND

OH	EX OVERHEAD POWERLINE		FIRE HYDRANT ASSEMBLY
SS	EX SANITARY SEWER LINE	2:1	SLOPE DIRECTION AND GRADE
SD	EX STORM DRAIN LINE		GATE VALVE
W	EX WATER LINE		SIGN
E	EX ELECTRICAL LINE		AREA DRAIN
SS	SANITARY SEWER LINE		DOMESTIC LATERAL AND METER
SD	STORM DRAIN LINE		CONCRETE CATCH BASIN
W	DOMESTIC WATER LINE		SDMH PER CITY STD
FW	FIRE WATER LINE		SSMH PER CITY STD
	SAWCUT LINE		DRY UTILITIES
	EASEMENT LINE		
	RETAINING WALL		
	FENCE		
	EDGE OF PAVEMENT		
	TRUNCATED DOMES/ WARNING SURFACE		
	LANDSCAPE AREA		
	ASPHALT PAVEMENT		
	CONCRETE		

PROJECT SOILS REPORT

REPORT/ADDENDUM TITLE	PREPARED BY	DATE	FILE NO.	CGS APPROVAL DATE (IF APPLICABLE)	APPROVAL REF# (IFAPPLICABLE)
UPDATED GEOTECHNICAL ENGINEERING AND GEOLOGIC HAZARDS REPORT MESA MIDDLE SCHOOL SPED/SCIENCE BUILDING 2555 SOUTH HALCYON ROAD ARROYO GRANDE, CALIFORNIA	EARTH SYSTEMS PACIFIC 4378 OLD SANTA FE ROAD SAN LUIS OBISPO, CA 93401 P: (805) 544-3276	04/03/2025	301024-006	-	-

SOIL CORROSIVITY

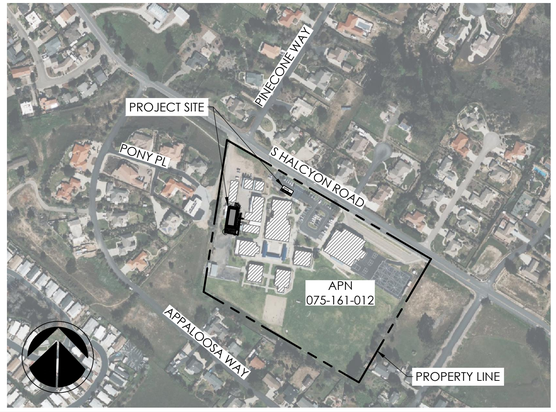
SOILS ARE DEFINED AS CORROSIVE. CONTRACTOR TO FOLLOW RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AS REFERENCED AS PART OF THIS DRAWING SET.

TOPOGRAPHIC SURVEY

DATUM: THE HORIZONTAL AND VERTICAL DATUM FOR THIS SURVEY IS BASED UPON THE CALIFORNIA COORDINATE SYSTEM OF 1983, CCS83, ZONE 3, AND THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED LOCALLY UPON GPS SATELLITE OBSERVATIONS.

PROJECT SITE

SCALE: NTS



CIVIL SHEET INDEX

11 SHEETS

SHEET NUMBER	SHEET TITLE
C-1.0	TITLE SHEET
C-1.1	GENERAL NOTES
C-2.1	EXISTING CONDITIONS AND SITE PREPARATION
C-3.1	CONSTRUCTION AND UTILITY PLAN
C-4.1	GRADING AND DRAINAGE PLAN
C-4.2	GRADING AND DRAINAGE PLAN
C-4.3	RETAINING WALL PROFILES
C-5.1	DETAILS
C-6.1	HORIZONTAL CONTROL PLAN
C-7.1	BMP NOTES
C-7.2	BMP PLAN

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REGISTERED PROFESSIONAL ENGINEER
ROBERT A. CAMACHO
No. 76597
CIVIL
STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT
KATHRYN ANNE NICOL
C38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

TITLE SHEET

NO.	REVISION	DATE
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PROJECT MANAGER: RAG
DRAWN BY: KC
CHECKED BY: RAC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: C-1.0

DSA BACK CHECK 2

N:\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Engineering\ConDocs\Sheet-Files\C-1.x_Title and General Notes.dwg, C-1.0, Apr 21, 2026, 8:52am, RAGomez

GENERAL NOTES

1. NO CONSTRUCTION SHALL BE STARTED WITHOUT PLANS APPROVED BY THE DIVISION OF THE STATE ARCHITECT. THE SCHOOL DISTRICT SHALL BE NOTIFIED AT LEAST FORTY-EIGHT HOURS PRIOR TO STARTING OF CONSTRUCTION. ANY CONSTRUCTION DONE WITHOUT APPROVED PLANS OR PRIOR NOTIFICATION TO THE SCHOOL DISTRICT WILL BE REJECTED AND WILL BE AT THE CONTRACTOR'S AND/OR OWNER'S RISK.
2. ALL CONSTRUCTION WORK AND INSTALLATIONS SHALL CONFORM TO THE DIVISION OF THE STATE ARCHITECT APPROVED DRAWINGS AND SPECIFICATIONS, AND ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE INSPECTOR OF RECORD.
3. ALL GRADING SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER AND THE PROJECT SOILS REPORT (SEE SHEET C-1.0 FOR GEOTECHNICAL ENGINEER CONTACT AND REPORT DETAILS).
4. RECORD PLANS ARE TO BE PREPARED AFTER CONSTRUCTION IS COMPLETED. THE CIVIL ENGINEER CERTIFYING THE IMPROVEMENTS AND PREPARING THE RECORD PLANS SHALL BE PRESENT WHEN THE FINAL INSPECTION IS MADE.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO POTHOLE AND VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND IMPROVEMENTS PRIOR TO START OF CONSTRUCTION. EXISTING UTILITIES AND IMPROVEMENTS SHOWN ON THE CONSTRUCTION PLANS ARE FROM RECORD SOURCES AND ARE SHOWN FOR DESIGN PURPOSES ONLY.
6. ALL UTILITY COMPANIES MUST BE NOTIFIED PRIOR TO THE START OF CONSTRUCTION BY THE CONTRACTOR.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO TELEPHONE UNDERGROUND SERVICE ALERT (USA) TOLL FREE AT 1-800-642-2444 A MINIMUM OF FORTY-EIGHT WORKING HOURS PRIOR TO THE START OF CONSTRUCTION. FOR BEST RESPONSE, PROVIDE AS MUCH NOTICE AS POSSIBLE, UP TO TEN WORKING DAYS.
8. CONTRACTOR TO VERIFY ALL UTILITY POINT OF CONNECTIONS FOR ALL UTILITIES I.E. POTHOLE EACH SIDE, FIELD VERIFY DEPTHS THROUGHOUT FOR ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION.
9. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE ON BEHALF OF THE CONTRACTOR ON ACCOUNT OF AN ERROR ON HIS OR HER PART OF THEIR NEGLIGENCE OF FAILURE TO ACQUAINT THEMSELVES WITH THE CONDITIONS OF THE SITE, EXISTING UTILITY LOCATIONS AND EASEMENTS OR OF THE STREET OR ROADS APPROACHING THE SITE.
10. CONSTRUCTION CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR LOCATING OR HAVING LOCATED ALL UNDERGROUND UTILITIES AND RELATED FACILITIES AND FOR PROTECTING SAME DURING THE COURSE OF CONSTRUCTION. ALL UTILITIES THAT ARE NOT A MEMBER OF USA MUST ALSO BE NOTED.
11. THE CONTRACTOR SHALL PROVIDE A LEGIBLE HARD AND DIGITAL COPY AND COMPLETE SET OF PLANS IDENTIFYING ALL MODIFICATIONS MADE DURING CONSTRUCTION TO THE DESIGN ENGINEER FOR THE RECORD DRAWINGS.
12. ANY PROPOSED DEVIATIONS FROM THE PLANS MUST BE SUBMITTED TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL, INCLUDING FIELD REVISIONS REQUESTED BY THE INSPECTOR OF RECORD.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OR PROPER RESETTING OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS. ANY SURVEY MONUMENTS DESTROYED BY THE CONTRACTOR SHALL BE REPLACED IN ACCORDANCE WITH THE STATE LAND SURVEYORS ACT AT THE CONTRACTOR'S EXPENSE.
14. THE DESIGN OF THE SURFACE AND UNDERGROUND IMPROVEMENTS IS BASED ON RECORD INFORMATION (SURVEYS AND DRAWINGS). IMMEDIATELY AFTER THE CONSTRUCTION CONTRACT IS AWARDED, THE CONTRACTOR SHALL VERIFY THE RELATIVE ELEVATIONS AS SPECIFIED ON THESE PLANS AND NOTIFY THE DESIGN ENGINEER IF THERE ARE ANY DISCREPANCIES. THE CONSTRUCTION DRAWINGS ELEVATIONS WILL THEN BE MODIFIED ACCORDINGLY, AND A REVISED SET FURNISHED TO THE CONTRACTOR. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY REQUIRED REWORK IF CONSTRUCTION BEGINS WITHOUT VERIFYING THE SPECIFIED ELEVATIONS AND NOTIFYING THE DESIGN ENGINEER.
15. ALL PROPERTY CORNER MONUMENTS SHALL BE IN PLACE AND IDENTIFIED AT THE TIME OF THE FOUNDATION INSPECTION REQUEST.
16. ANY SECTIONS OF DAMAGED OR DISPLACED CURB, GUTTER & SIDEWALK OR DRIVEWAY APPROACH SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE SCHOOL DISTRICT.
17. ALL STORM WATER EROSION CONTROL AND SEDIMENT CONTROL DEVICES / MEASURES (I.E. BMPS) SHALL BE IN PLACE THROUGHOUT GROUND DISTURBING ACTIVITIES.
18. DIGITAL DRAWINGS OF HORIZONTAL CONTROL PROVIDED TO SURVEY FOR PURPOSE OF CONSTRUCTION.
19. THE CONTRACTOR SHALL ADHERE TO ALL NOTES AND DETAILS PRESENTED ON THE EROSION CONTROL PLAN AND DETAILS SHEET.
20. THE EXISTING SITE CONDITIONS SHOWN HEREIN HAVE BEEN COMPILED BASED ON TOPOGRAPHIC FIELD SURVEYS, AS-BUILT DRAWINGS OF THE EXISTING IMPROVEMENTS, AND KNOWLEDGE OF THE SITE BY THE DISTRICT. IT IS THE RESPONSIBILITY OF THE PROJECT CONTRACTOR TO VERIFY FIELD CONDITIONS, ESPECIALLY AT CRITICAL JOIN LOCATIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER OF RECORD AND THE DISTRICT FOR THEIR REVIEW PRIOR TO CONSTRUCTION OF IMPROVEMENTS.
21. IT IS THE RESPONSIBILITY OF THE PROJECT CONTRACTOR TO CALL 1-800-642-2444 BEFORE ANY TRENCHES OF EXCAVATION WORK.
22. GENERAL CONTRACTOR TO POTHOLE ANY AREAS WHERE EXCAVATIONS ARE PLANNED. ANY UTILITIES DAMAGED, WHETHER REFLECTED ON RECORD DRAWINGS OR NOT, BY CONTRACTOR SHALL BE RESPONSIBILITY OF CONTRACTOR.
23. THE GEOTECHNICAL ENGINEERING REPORT, IN ITS ENTIRETY, SHALL BE CONSIDERED A PART OF THESE PLANS.
24. A COMPACTION REPORT SHALL BE PROVIDED BY A SOILS ENGINEER STATING THAT THE BASE AND SUBGRADE WERE PREPARED IN ACCORDANCE WITH THE PROJECT SOILS REPORT.
25. IF DE-WATERING IS REQUIRED, A LOW THREAT DISCHARGE PERMIT MAY BE REQUIRED.
26. HYRDROSEEDING SHALL BE PLACED ON ALL DISTURBED SURFACES OTHER THAN PAVED OR GRAVEL SURFACES PRIOR TO FINAL INSPECTION. SEED MIX SHALL BE SPECIFIED BY THE LANDSCAPE ARCHITECT.

REFERENCE DOCUMENTS:

CITY STANDARD SPECIFICATIONS AND ENGINEERING STANDARDS: APRIL 2016 EDITION
COUNTY ENGINEERING STANDARDS: AUGUST 2022 EDITION

GRADING NOTES

1. ALL GRADING SHALL BE IN CONFORMANCE WITH THE COUNTY OF SAN LUIS OBISPO GRADING ORDINANCES, THE STANDARDS AND REQUIREMENTS PERTAINING THERETO, THIS PLAN, AND THE RECOMMENDATIONS AND REQUIREMENTS OF THE SUPERVISING SOILS ENGINEER.
2. ALL EXPORT MATERIAL SHALL BE DISPOSED OF TO THE SATISFACTION OF THE COUNTY GRADING INSPECTOR.
3. DUST CONTROL MEASURES SHALL BE IMPLEMENTED IN ACCORDANCE WITH COUNTY GRADING ORDINANCE AND COUNTY APCD REQUIREMENTS.
4. CONSTRUCTION CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR PROTECTION OF PUBLIC AND PRIVATE PROPERTY ADJACENT TO THE JOB SITE AND THAT HE/SHE SHALL AT HIS/HER EXPENSE, REPAIR OR REPLACE TO ORIGINAL CONDITION ALL EXISTING IMPROVEMENTS WITHIN OR ADJACENT TO THE JOB SITE WHICH ARE DESIGNATED FOR REMOVAL AND WHICH ARE DAMAGED OR REMOVED AS A RESULT OF HIS/HER OPERATIONS.
5. NO CUT OR FILL SLOPES WILL BE CONSTRUCTED STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1). UNLESS OTHERWISE APPROVED BY THE SOILS ENGINEER.
6. MINIMUM DRAINAGE GRADIENT OF 5% IS REQUIRED FOR A MINIMUM OF 10' AWAY FROM THE BUILDING PAD/FOUNDATION IN ACCORDANCE WITH THE BUILDING CODES FOR LANDSCAPED AREAS ADJACENT TO BUILDINGS. MINIMUM DRAINAGE GRADIENT OF 2% IS REQUIRED AWAY FROM BUILDING FOR IMPERVIOUS HARDSCAPE WITHIN 10' OF THE BUILDING (SEE CBC SECTION 1804A.4).
7. ALL SURFACE AND SUBSURFACE DRAINAGE SYSTEMS DESIGNED AT LESS THAN 2% SHALL HAVE FINAL GRADIENTS CERTIFIED BY A LICENSED SURVEYOR OR ENGINEER PRIOR TO FINAL INSPECTION.
8. SOILS TESTS SHALL BE DONE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS AND PROJECT SOILS REPORT AND PROVISIONS.
9. COMPACTION TESTS SHALL BE MADE ON SUBGRADE MATERIAL AND MATERIAL AS SPECIFIED BY THE ENGINEER. SAID TESTS SHALL BE MADE PRIOR TO THE PLACING OF THE NEXT MATERIAL.GRADING AND COMPACTIONS REQUIREMENTS SHOULD BE AS PER THE RECOMMENDATIONS OF THE SOILS ENGINEER REPORT AND/OR COUNTY OF SAN LUIS OBISPO STANDARDS.
10. FINAL REPORTS SHALL BE REQUIRED IN ACCORDANCE WITH CHAPTER 18A OF THE CALIFORNIA BUILDING CODE (CBC).
11. DURING CONSTRUCTION/GROUND DISTURBING ACTIVITIES, THE APPLICANT SHALL IMPLEMENT THE FOLLOWING PARTICULATE (DUST) CONTROL MEASURES. THESE MEASURES SHALL BE SHOWN ON THE GRADING AND BUILDING PLANS. IN ADDITION, THE CONTRACTOR OR BUILDER SHALL DESIGNATE A PERSON OR PERSONS TO MONITOR THE DUST CONTROL PROGRAM AND TO ORDER INCREASED WATERING AS NECESSARY, TO PREVENT TRANSPORT OF DUST OFF SITE. THEIR DUTIES SHALL INCLUDE HOLIDAY AND WEEKEND PERIODS WHEN WORK MAY NOT BE IN PROGRESS. THE NAME AND TELEPHONE NUMBER OF SUCH PERSONS SHALL BE PROVIDED TO THE APCD PRIOR TO COMMENCEMENT OF CONSTRUCTION. USE OF WATER TRUCKS OR SPRINKLER SYSTEMS IN SUFFICIENT QUANTITIES TO PREVENT AIRBORNE DUST FROM LEAVING THE SITE. INCREASED WATERING FREQUENCY WOULD BE REQUIRED WHENEVER WIND SPEEDS EXCEED 15 MPH. RECLAIMED (NON POTABLE) WATER SHALL BE USED WHENEVER POSSIBLE.
11. ALL DISTURBED SURFACES SLOPED FOUR HORIZONTAL TO ONE VERTICAL (4:1) AND GREATER AND AREAS USED TO CONVEY CONCENTRATED DRAINAGE SHALL BE PREPARED AND MAINTAINED TO CONTROL EROSION BY EFFECTIVE PLANTING TO BE COMPLETED NO LATER THAN 30 DAYS PRIOR TO A REQUEST FOR FINAL INSPECTION APPROVALS.
12. ALL ACTIVITIES ASSOCIATED WITH CONSTRUCTION AND OPERATION FOR THE SCHOOL IMPROVEMENTS SHALL COMPLY AT ALL TIMES WITH ALL CURRENT APCD RULES AND REGULATIONS AS APPLICABLE, INCLUDING BUT NOT LIMITED TO PM-10, NOx EMISSIONS, BEST AVAILABLE CONTROL TECHNOLOGIES, CONSTRUCTION ACTIVITY MANAGEMENT PLANS, AND PHASING TECHNIQUES.
13. A FIRE DEPARTMENT PERMIT IS REQUIRED IF FUEL IS STORED ON-SITE.
14. TRACKING ONTO THE PUBLIC RIGHT-OF-WAY SHALL BE MINIMIZED. THE ADJOINING STREET AND SIDEWALK SHALL BE CLEANED BY SWEEPING TO REMOVE DIRT, DUST, MUD, AND CONSTRUCTION DEBRIS AT THE END OF EACH WORKING DAY.

UTILITY NOTES

1. UTILITIES SHOWN ARE ACCURATE TO THE EXTENT OF AVAILABLE RECORDS AND KNOWLEDGE. THE CONTRACTOR HAS THE RESPONSIBILITY TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND TO NOTIFY UTILITY COMPANIES WHEN WORKING IN THEIR PROXIMITY. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL POTHOLE TO VERIFY ALL EXISTING UTILITY POINTS OF CONNECTION AND ELEVATIONS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IF ANY DISCREPANCIES EXIST BETWEEN THE PLANS AND FIELD CONDITIONS PERTAINING TO MATERIALS, ELEVATIONS, LOCATIONS, ETC., PRIOR TO CONTINUING WORK.
2. ALL WATER VALVES THAT ARE DEEPER THAN 4' SHALL BE A EQUIPPED WITH A STEEL VALVE STEM EXTENSION THAT WILL ALLOW VALVE OPERATION WITH STANDARD LENGTH VALVE KEY. VALVE OPERATING NUTS SHALL BE BETWEEN 2' TO 4' BELOW GRADE. THE STEEL VALVE STEM EXTENSION SHALL BE STEEL ONLY BY PIPE LINE PRODUCTS OR APPROVED EQUAL.
3. THE DRY UTILITY SERVICE LINES AND BOXES SHOWN IN THESE PLANS ARE SCHEMATIC AND BASED ON RECORD SOURCES AND PROVIDED PLANS FROM THE UTILITY PROVIDER. THE CONTRACTOR IS REQUIRED TO OBTAIN THE FINAL PLANS FROM THE UTILITY PROVIDER AND VERIFY THE FINAL ALIGNMENT PER THEIR APPROVED PLANS PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ROUTING THE SERVICE WIRE THROUGH THE CONDUIT RUNS TO PROVIDE SERVICE TO THE SHOWN EQUIPMENT.
4. ALL MATERIAL SUBJECT TO CORROSION INCLUDING COPPER TRACING WIRE, DUCTILE IRON PIPES, COPPER TUBING, FITTINGS, ETC. SHALL BE PROTECTED IN CONFORMANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS AND SOIL REPORT'S RECOMMENDATIONS AS SPECIFIED IN APPENDIX C- "SOIL CORROSIVITY STUDY BY HDR ENGINEERING, INC." OF THE SOILS REPORT.
5. VERIFY ALL P.O.C. FOR ALL UTILITIES I.E. POTHOLE EACH SIDE, FIELD VERIFY DEPTHS THROUGHOUT THROUGHPUT FOR ALL EXISTING UTILITIES. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE ON BEHALF OF THE CONTRACTOR ON ACCOUNT OF AN ERROR ON HIS OR HER PART OF HIS OR HER NEGLIGENCE OF FAILURE TO ACQUAINT HIMSELF OR HERSELF WITH THE CONDITIONS OF THE SITE, EXISTING UTILITY LOCATIONS AND EASEMENTS, OR OF THE STREET OR ROADS APPROACHING THE SITE.
6. CONTRACTOR TO PROVIDE A MINIMUM OF 12" OF CLEARANCE AT CROSSINGS BETWEEN WET UTILITIES AND ELECTRICAL CONDUITS.

DEMOLITION NOTES

1. THIS EXISTING CONDITIONS AND SITE PREPARATION PLAN (DEMOLITION PLAN) WAS PREPARED FOR THE CONVENIENCE OF THE CONTRACTOR. THE ARCHITECT AND THE ENGINEER DO NOT REPRESENT THAT ALL ITEMS WHICH MAY REQUIRE DEMOLITION HAVE BEEN SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CAREFULLY EXAMINE THE SITE AND DETERMINE WHAT MAY BE REQUIRED FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK.
2. DEMOLITION WORK AND ABANDONMENT SHALL CONFORM TO THE LATEST VERSION OF THE UNIFORM BUILDING CODE, TITLE 24, AND ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER OF RECORD.
3. NO DEMOLITION SHALL BE STARTED WITHOUT APPROVED PLANS. THE DISTRICT SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO STARTING DEMOLITION.
4. THE PLANS DO NOT AUTHORIZE SITE DISTURBANCE BEYOND THE LIMITS AS REPRESENTED ON THESE PLANS UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ALL ITEMS DAMAGED DURING DEMOLITION AND CONSTRUCTION TO ITS ORIGINAL CONDITION OR TO THE SATISFACTION OF THE DISTRICT.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER STORAGE OF ANY ITEMS TO BE RELOCATED.
7. ALL ITEMS ARE THE PROPERTY OF THE DISTRICT. THE CONTRACTOR SHALL SALVAGE ANY ITEMS AT THE REQUEST OF THE DISTRICT.
8. ALL DEBRIS FROM THE DEMOLITION PROCESS SHALL BE REMOVED FROM THE SITE TO AN APPROVED DUMP AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE NOTED.
9. ALL HAZARDOUS MATERIALS SHALL BE REMOVED PRIOR TO ANY DEMOLITION OR ACTIVITY WHICH WOULD DISTURB THAT MATERIAL BY A LICENSED ABATEMENT CONTRACTOR.
10. ALL STREETS, ALLEYS, VEHICULAR WAYS, SIDEWALKS, AND HAUL ROUTES SHALL BE KEPT CLEAN AND CLEAR OF DEBRIS, DIRT AND DUST IN A MANNER ACCEPTABLE TO THE COUNTY. AT A MINIMUM, THESE AREAS SHALL BE CLEANED AT THE END OF EACH WORK DAY. FAILURE TO DO SO WILL RESULT IN A "STOP WORK" NOTICE. SAID NOTICE WILL NOT BE RELEASED UNTIL THE AREA HAS BEEN ADEQUATELY CLEANED. THE FLUSHING OF DIRT OR DEBRIS INTO STORM DRAIN OR SANITARY SEWER FACILITIES SHALL NOT BE PERMITTED.
11. ALL ABANDONED UTILITIES SHALL BE MARKED IN THE FIELD AND LOCATED ON THE DRAWINGS OF RECORD BY THE CONTRACTOR WHICH WILL BE SUPPLIED TO BOTH THE ENGINEER OF RECORD AND THE DISTRICT AT THE CONCLUSION OF THE DEMOLITION WORK.
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION. EXISTING UTILITIES AND IMPROVEMENTS SHOWN ON THESE PLANS ARE FROM RECORD SOURCES AND SPOT CHECKS. UTILITIES ARE SHOWN FOR DESIGN PURPOSES ONLY.
13. CONTRACTOR TO VERIFY ALL UTILITY POINT OF CONNECTIONS FOR ALL UTILITIES I.E. POTHOLE EACH SIDE, FIELD VERIFY DEPTHS THROUGHOUT FOR ALL EXISTING UTILITIES.
14. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE ON BEHALF OF THE CONTRACTOR ON ACCOUNT OF AN ERROR ON HIS OR HER PART OF THEIR NEGLIGENCE OF FAILURE TO ACQUAINT THEMSELVES WITH THE CONDITIONS OF THE SITE, EXISTING UTILITY LOCATIONS AND EASEMENTS OR OF THE STREET OR ROADS APPROACHING THE SITE.
15. THE CONTRACTOR SHALL ONLY REMOVE THOSE UNDERGROUND FACILITIES SPECIFICALLY NOTED FOR REMOVAL. DAMAGE TO EXISTING FACILITIES TO REMAIN SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
16. THE CONTRACTOR MUST NOTIFY ALL UTILITY COMPANIES PRIOR TO THE START OF CONSTRUCTION.
17. CONTRACTOR TO TELEPHONE UNDERGROUND SERVICE ALERT (USA) TOLL FREE AT 1-800-642-2444 A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. FOR BEST RESPONSE, PROVIDE AS MUCH NOTICE AS POSSIBLE, UP TO 10 WORKING DAYS.
18. CONTRACTOR SHALL NOT INTERRUPT ANY DISTRICT SERVICES AND SCHOOL ACTIVITIES DURING OPERATING HOURS OR DISRUPT THE OPERATION OF ADJACENT BUSINESSES, RESIDENTIAL AREAS OR ONSITE FACILITIES OUTSIDE THE LIMITS OF DEMOLITION.
19. CONTRACTOR TO REMOVE AND DISPOSE OF ALL WOOD, CONCRETE, A.C. PAVING, AGGREGATE BASE, AND VEGETATION AS SHOWN UNLESS OTHERWISE NOTED ON THE PLANS.
20. DUST CONTROL SHALL BE MAINTAINED TO THE SATISFACTION OF THE INSPECTOR OF RECORD AND COUNTY APCD.
21. PROTECT EXISTING FACILITIES OUTSIDE THE LIMITS OF DEMOLITION UNLESS OTHERWISE NOTED.
22. IF INDICATED ON PLANS, REMOVE TREES, TOGETHER WITH THE BULK OF THE ROOTS, TO A MINIMUM DEPTH OF 4 FEET BELOW EXISTING GRADE AND WITHIN A RADIUS OF 7 FEET BEYOND THE PERIMETER OF THE TRUNK AT GROUND LINE.
23. FILL AND COMPACT HOLES RESULTING FROM TREES AND TREE STUMP REMOVAL TO REQUIRED DENSITY. FILLING SHALL NOT BE DONE UNTIL HOLES HAVE BEEN APPROVED BY THE DISTRICT'S REPRESENTATIVE.
24. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AND MAINTAINED TO THE SATISFACTION OF THE INSPECTOR OF RECORD AND/OR PUBLIC WORK'S DIRECTOR DURING ALL DEMOLITIONS, CONSTRUCTION AND GROUND DISTURBING ACTIVITIES.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

DSA FILE #: x
DSA APP #: x
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RENEWAL DATE
STATE OF CALIFORNIA

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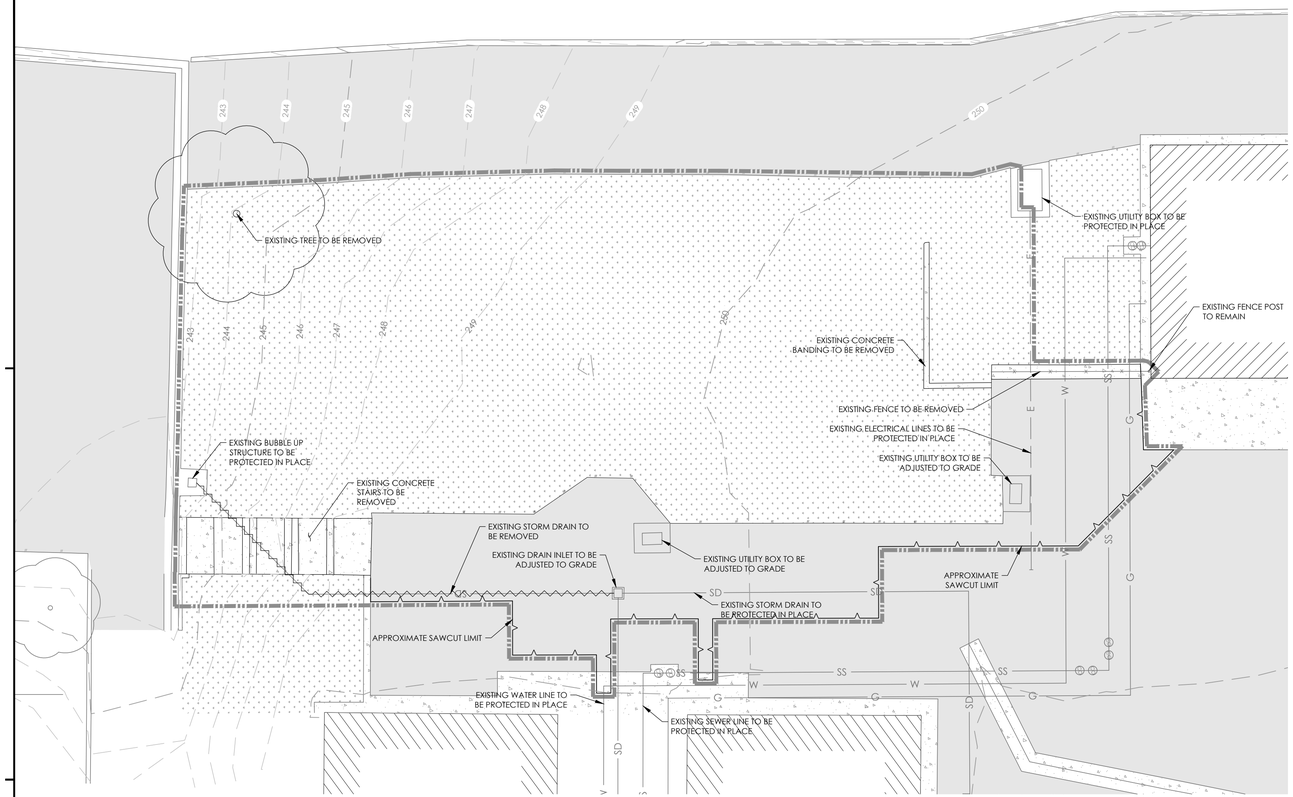
GENERAL NOTES

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PROJECT MANAGER: RAG
DRAWN BY: KC | CHECKED BY: RAC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: C-1.1

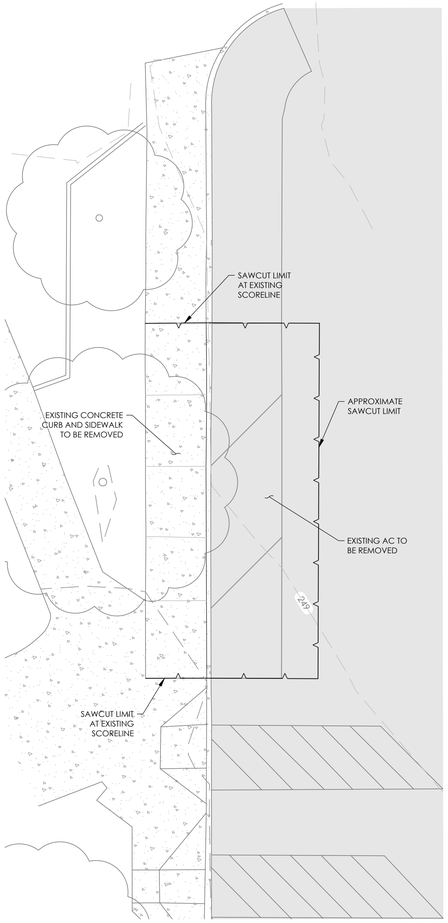
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PLAN VIEW 1

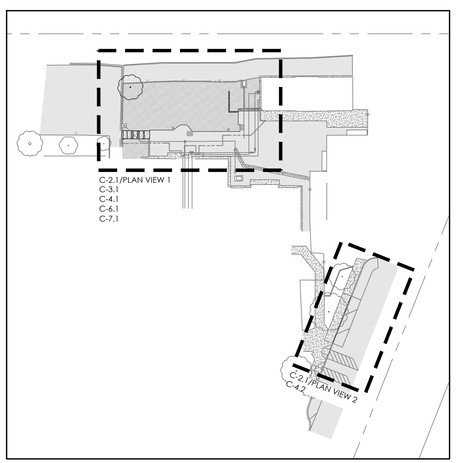
SCALE: 1"=5'



PLAN VIEW 2

SCALE: 1"=5'

0 5 10 15 feet
1"=5'



KEYMAP
-NTS-

LEGEND

- SAWCUT LIMIT
- APPROXIMATE LIMIT OF WORK
- EXISTING AC PAVING
- EXISTING CONCRETE
- EXISTING LANDSCAPE
- EXISTING BUILDING

Know what's **below.**
Call 811 before you dig.

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2555 S HALCYON RD, ARROYO GRANDE, CA

EXISTING CONDITION AND SITE PREPARATION

NO.	REVISION	DATE

PROJECT MANAGER
RAG

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KC

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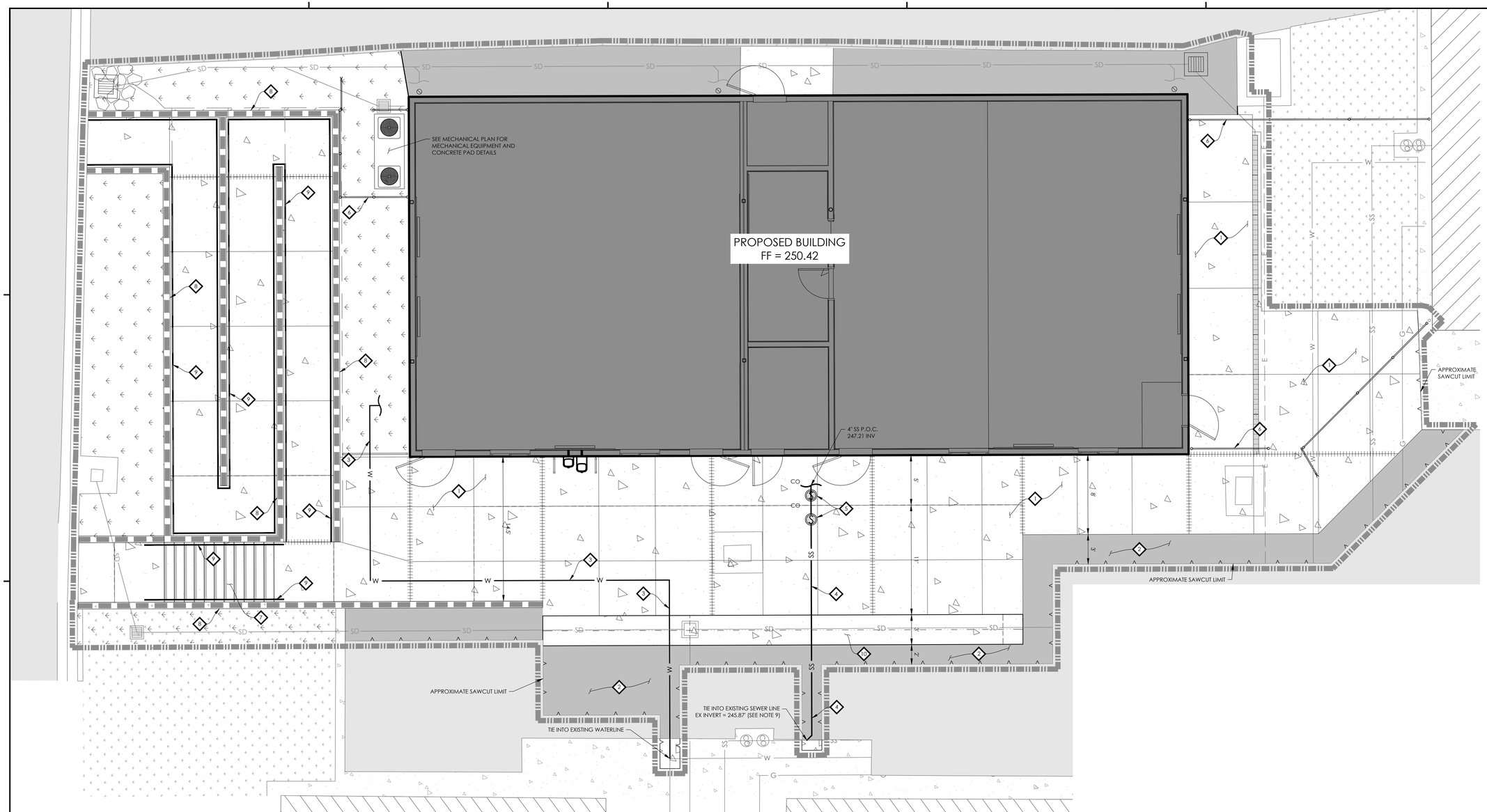
DATE
APRIL 23, 2026

PROJECT NUMBER
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LEGEND

- SAWCUT LIMIT
- APPROXIMATE LIMIT OF WORK
- CONCRETE RETAINING WALL
- PROPOSED AC PAVING
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE
- EXISTING BUILDING
- EXISTING AC PAVING

GENERAL NOTES

1. ALL UTILITY SERVICE LATERALS TO BE STUBBED 5' FROM BUILDING. SEE PLUMBING PLANS FOR CONTINUATION AND SEWER CLEANOUT LOCATIONS.
2. CABLE, ELECTRIC, PHONE, GAS, AND DRY UTILITIES ARE SHOWN SCHEMATICALLY ON THESE PLANS, SUBJECT TO CHANGE BASED UPON FINAL PLAN ISSUANCE FROM THE INDIVIDUAL UTILITY COMPANY.
3. SEE GRADING AND DRAINAGE SHEETS FOR GRADING CONTOURS AND STORM DRAIN ADDITIONAL INSTALLATION NOTES AND DETAILS.
4. CONTRACTOR SHALL PROVIDE ALL FITTINGS AND APPURTENANCES REQUIRED TO INSTALL AND CONSTRUCT ANY/ALL UTILITIES AS SHOWN ON THESE IMPROVEMENT PLANS.
5. SEE LANDSCAPE PLANS FOR LOCATION OF EXPANSION JOINTS AND SCORE LINES. ALSO SEE SOILS REPORTS RECOMMENDATIONS.
6. THE PROJECT SOILS REPORT, IN ITS ENTIRETY, SHALL BE CONSIDERED A PART OF THESE PLANS.
7. CONTRACTOR TO REFER TO ELECTRICAL PLANS FOR ALL POWER ROUTING, FEEDERS, UNDERGROUND CONDUITS, LIGHT FIXTURE DETAILS, ETC.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING P.G.&E., CHARTER COMMUNICATIONS, A.T.&T., AND THE GAS COMPANY FOR OBTAINING THE RESPECTIVE UTILITY INSTALLATION PLANS PRIOR TO CONSTRUCTION. THE ENGINEER OF RECORD MUST BE NOTIFIED OF ANY DEVIATION FROM THESE APPROVED IMPROVEMENT PLANS, PRIOR TO INSTALLATION AND/OR CONSTRUCTION OF SUCH CHANGES. THESE PROPOSED CHANGES SHALL BE REFLECTED IN THE FINAL "RECORD" DRAWINGS.
9. CONTRACTOR TO FIELD VERIFY LOCATION, SIZE, MATERIAL, AND INVERT OF EXISTING DOMESTIC WATER P.O.C. AND EXISTING SANITARY SEWER P.O.C. PRIOR TO CONSTRUCTION.
10. THE SITE CONTAINS CORROSIVE PROPERTIES PER THE SOILS REPORT. ON ALL PIPES, APPURTENANCES, AND FITTINGS NOT PROTECTED BY CATHODIC PROTECTION, COAT BARE METAL SUCH AS VALVES, BOLTS, FLANGE JOINTS, JOINT HARNESSES, AND FLEXIBLE COUPLINGS WITH WAX TAPE PER AWWA C217 AFTER ASSEMBLY. FOLLOW GEOTECH REPORT FOR CORROSION CONTROL RECOMMENDATIONS FOR SPECIFIC PIPE TYPES.

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE PEDESTRIAN PAVING PER ARCHITECTURE PLAN AND DETAIL.
2. CONSTRUCT MIN. 3" AC PAVING WITH MIN. 6" OF COMPACTED (95% OR BETTER) CLASS II AGGREGATE BASE (NO RECYCLED BASE) OR MATCH AC SECTION IN KIND, WHICHEVER IS GREATER.
3. INSTALL 2" SCH. 80 PVC DOMESTIC WATER LINE. SEE UTILITY TRENCH DETAIL A ON SHEET C-5.1.
4. INSTALL 4" SDR 35 PVC SEWER LINE, SLOPE = 0.02 FT/FT MIN. SEE UTILITY TRENCH DETAIL A ON SHEET C-5.1.
5. INSTALL TWO-WAY SEWER CLEANOUT PER DETAIL B ON SHEET C-5.1.
6. INSTALL FENCE PER ARCHITECTURE PLAN.
7. CONSTRUCT STAIRS PER ARCHITECTURE PLAN.
8. CONSTRUCT WALL PER STRUCTURAL DETAIL.
9. INSTALL HANDRAIL PER ARCHITECTURE DETAIL.
10. CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL C ON SHEET C-5.1.

0 5 10 15 feet
1"=5'

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ROBERT A. CAMACHO
No. 76597
CIVIL
STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT
KATHRYN ANNE NICKS
C38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS

2555 S HALCYON RD, ARROYO GRANDE, CA

CONSTRUCTION AND UTILITY PLAN

NO.	REVISION	DATE

PROJECT MANAGER
RAG

DRAWN BY
KC

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RAC

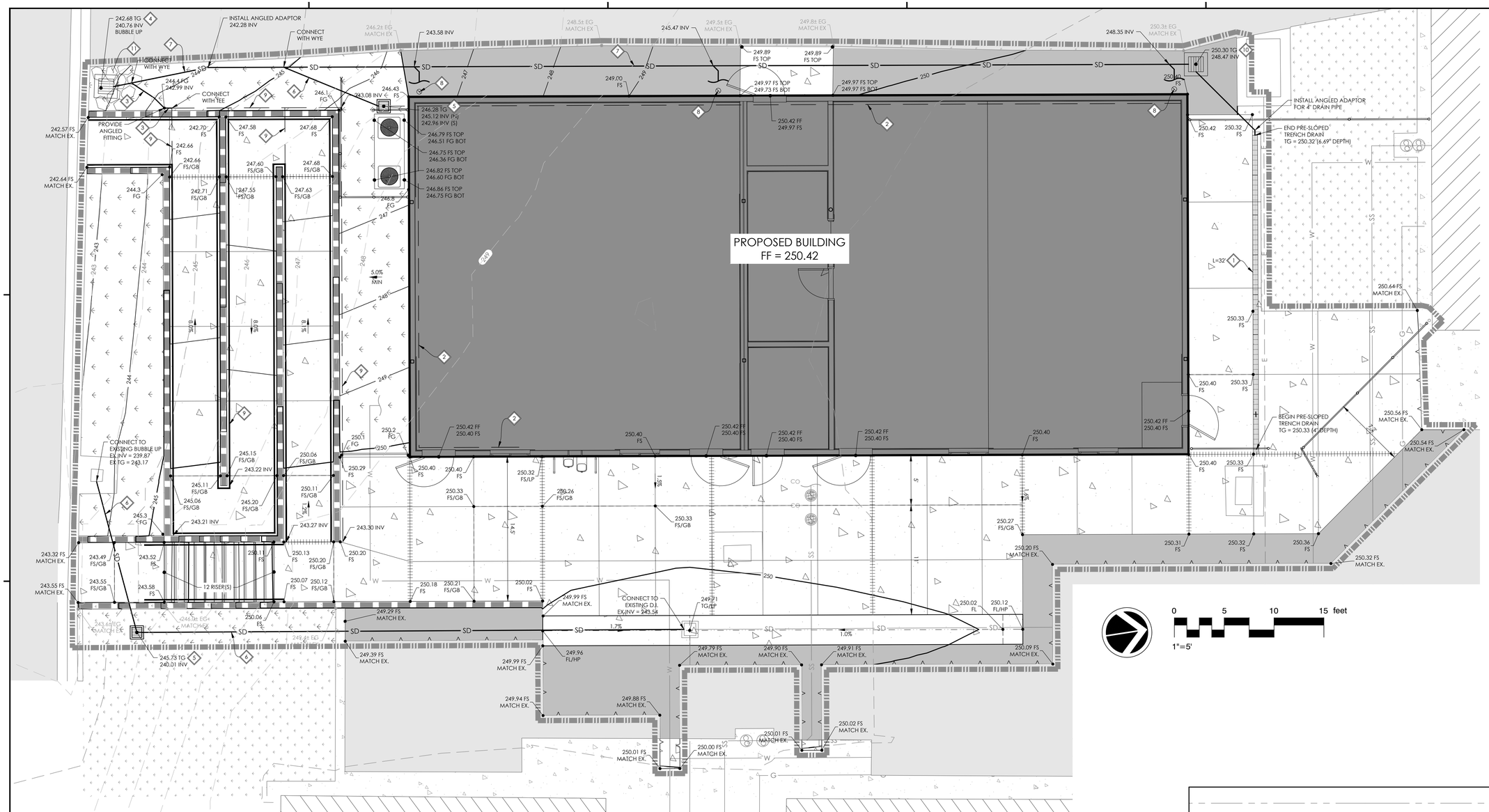
DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
C-3.1

DSA BACK CHECK 2

N:\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Engineering\ConDocs\Sheet-Files\C-3.x_Construction Plan.dwg, C-3.1, Apr 21, 2026, 8:54am, RAGomez

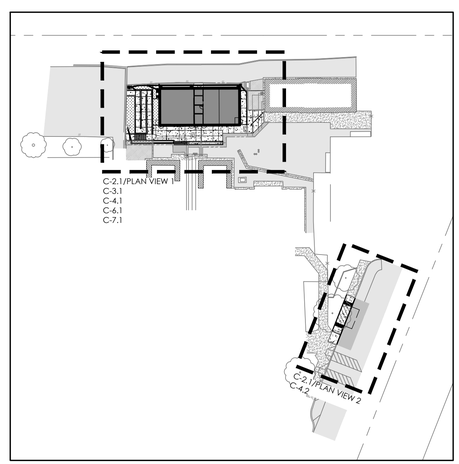


LEGEND

- SAWCUT LIMIT
- APPROXIMATE LIMIT OF WORK
- CONCRETE RETAINING WALL
- PROPOSED AC PAVING
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE
- EXISTING BUILDING
- EXISTING AC PAVING

IMPROVEMENT NOTES

1. INSTALL NDS DURA SLOPE TRENCH DRAIN (OR APPROVED EQUAL) WITH ADA COMPLIANT/HEEL PROOF CAST IRON GRATE, 4' SECTIONS WITH 0.7% BUILT IN SLOPE (MIN. DEPTH = 4", MAX DEPTH = 12").
2. INSTALL 6" DUAL WALL CORRUGATED HDPE WALL DRAIN PIPE WITH 3 SLOT PATTERN PERFORATIONS AT 120° EVERY OTHER VALLEY. INSTALL WITH SLOT PERFORATIONS CONSISTENTLY FACING DOWNWARD IN CONFORMANCE WITH THE SOILS REPORT. FABRIC-MIRAFI N-SERIES NON-WOVEN PRODUCT OR APPROVED EQUAL TO BE INSTALLED AROUND PERFORATED PIPE.
3. INSTALL 4" HDPE STORM DRAIN PIPE (MIN. SLOPE = 0.01 FT/FT).
4. INSTALL 18" X 18" CONCRETE MIDSTATE SQUARE CATCH BASIN (OR APPROVED EQUAL) PER MANUFACTURER'S DETAIL; PROVIDE ADA COMPLIANT AND TRAFFIC RATED GRATE WITH FRAME. PROVIDE 3" WEEP HOLES 9" O.C. EACH WAY AT BOTTOM OF CATCH BASIN AND INSTALL 18" MIN. HEIGHT OF 1" DIAMETER GRAVEL UNDER CATCH BASIN INLET. SEE OUTLET BUBBLE-UP DETAIL D ON SHEET C-5.1.
5. INSTALL 12" X 12" CONCRETE MIDSTATE SQUARE CATCH BASIN (OR APPROVED EQUAL) PER MANUFACTURER'S DETAIL; PROVIDE TRAFFIC RATED AND ADA COMPLIANT GRATE WITH FRAME.
6. INSTALL 6" HDPE STORM DRAIN PIPE (MIN. SLOPE = 0.01 FT/FT).
7. INSTALL 8" HDPE STORM DRAIN PIPE (MIN. SLOPE = 0.005 FT/FT).
8. INSTALL ROOF DRAIN CONNECTION PER ARCHITECTURAL PLAN AND DETAILS.
9. INSTALL 4" ADS DUAL WALL CORRUGATED AND PERFORATED HDPE PIPE (OR APPROVED EQUAL) WITH SLOT PERFORATIONS CONSISTENTLY FACING DOWNWARD AND IN CONFORMANCE WITH THE RETAINING WALLS SUBSECTION IN SECTION 11.0 GEOTECHINCAL RECOMMENDATIONS OF THE SOILS REPORT. FABRIC-MIRAFI N-SERIES NON-WOVEN PRODUCT OR APPROVED EQUAL TO BE INSTALLED AROUND PERORATED PIPE.
10. INSTALL 18" X 18" CONCRETE MIDSTATE SQUARE CATCH BASIN (OR APPROVED EQUAL) PER MANUFACTURER'S DETAIL; PROVIDE ADA COMPLIANT AND TRAFFIC RATED GRATE WITH FRAME.
11. INSTALL 3'-6" BALLAST RIP-RAP SURROUNDING OUTLET BUBBLE-UP.



KEYMAP
-NTS-

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KATHRYN ANNE HICKS
C38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS

2555 S HALCYON RD, ARROYO GRANDE, CA

GRADING AND DRAINAGE PLAN

NO.	REVISION	DATE

PROJECT MANAGER
RAG

DRAWN BY
KC

CHECKED BY
RAC

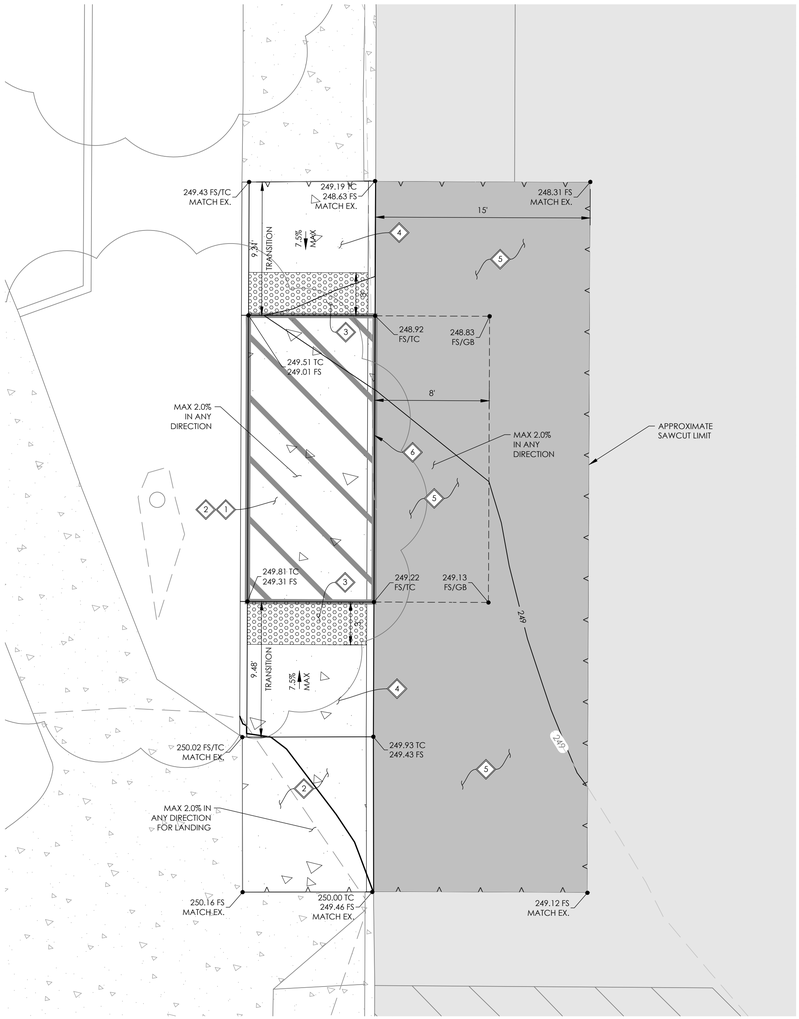
DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
C-4.1

DSA BACK CHECK 2

N:\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Engineering\ConDocs\Sheet-Files\C-4.x_Grading and Drainage.dwg, C-4.1, Apr 21, 2026 9:38am, RAGomez



DROP-OFF GRADING AND CONSTRUCTION DETAIL

0 5 10 15 feet

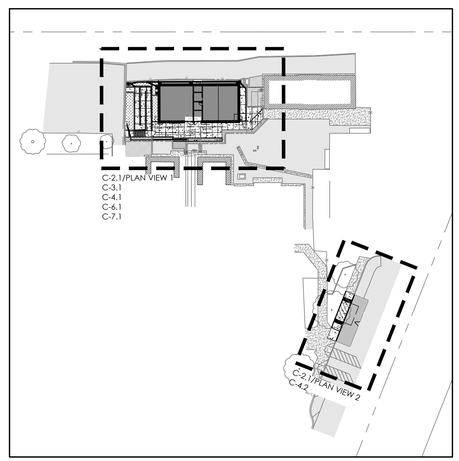
1"=5'

LEGEND

- SAWCUT LIMIT
- APPROXIMATE LIMIT OF WORK
- CONCRETE RETAINING WALL
- PROPOSED AC PAVING
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE
- EXISTING BUILDING
- EXISTING AC PAVING

IMPROVEMENT NOTES

1. INSTALL 4" WIDE BLUE DIAGONAL STRIPING AT 36" MAX O.C. WITH 4" WIDE BLUE BORDERLINE FOR DROP-OFF ZONE.
2. CONSTRUCT CONCRETE PEDESTRIAN PAVING PER ARCHITECTURE PLAN AND DETAIL.
3. INSTALL DETECTABLE WARNING SURFACE.
4. CONSTRUCT CURB RAMP 'CASE F' PER CALTRANS STANDARD PLAN A88A; FINISHED ELEVATIONS PER GRADING AND DRAINAGE PLAN.
5. CONSTRUCT AC PAVING PER ARCHITECTURE PLAN AND DETAIL.
6. CONSTRUCT MODIFIED 0" CURB PER CITY CITY OF ARROYO GRANDE STANDARD 4020.



KEYMAP
-NTS-

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MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

GRADING AND DRAINAGE PLAN

NO.	REVISION	DATE
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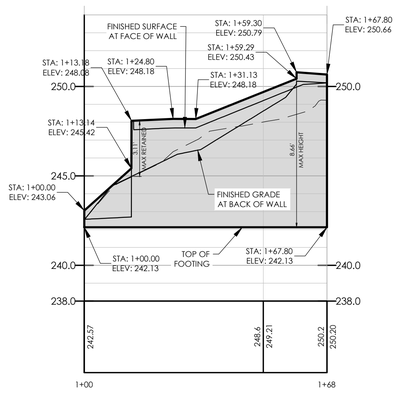
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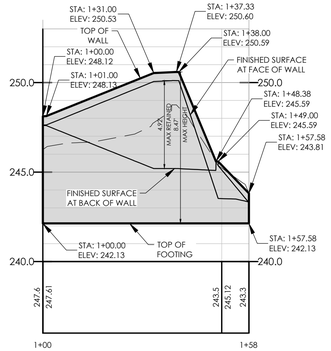
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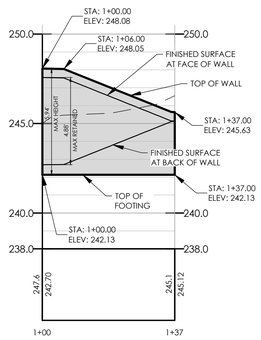
CONCRETE WALL 'A'

1" = 20' HORIZONTAL SCALE
1' = 4' VERTICAL SCALE



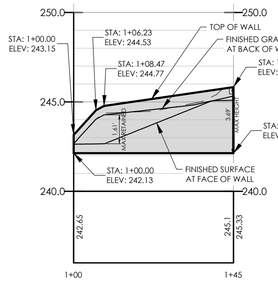
CONCRETE WALL 'B'

1" = 20' HORIZONTAL SCALE
1' = 4' VERTICAL SCALE



CONCRETE WALL 'C'

1" = 20' HORIZONTAL SCALE
1' = 4' VERTICAL SCALE

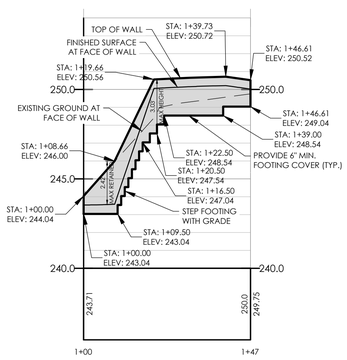


CONCRETE WALL 'D'

1" = 20' HORIZONTAL SCALE
1' = 4' VERTICAL SCALE



KEYMAP



CONCRETE WALL 'E'

1" = 20' HORIZONTAL SCALE
1' = 4' VERTICAL SCALE

0 10 20 30 feet
1"=10'

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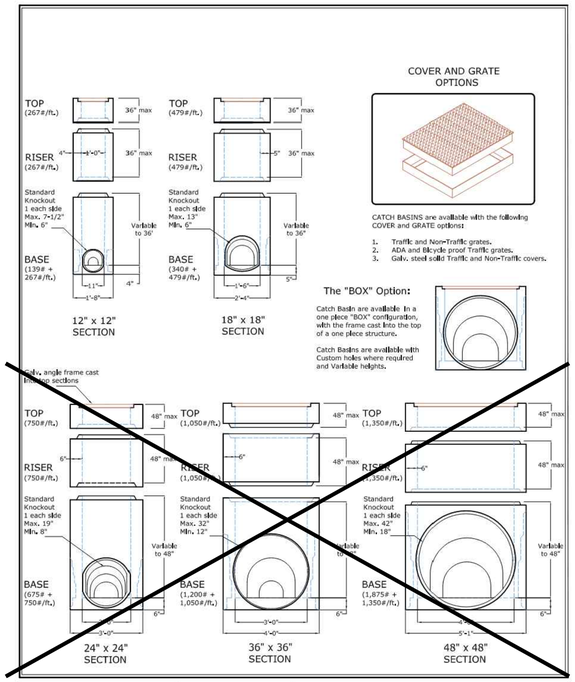
RETAINING WALL PROFILES

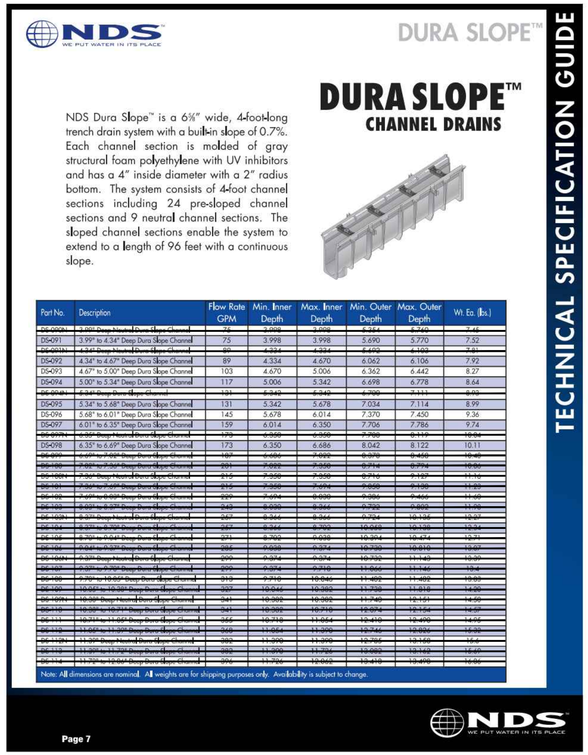
NO.	REVISION	DATE

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C-4.3

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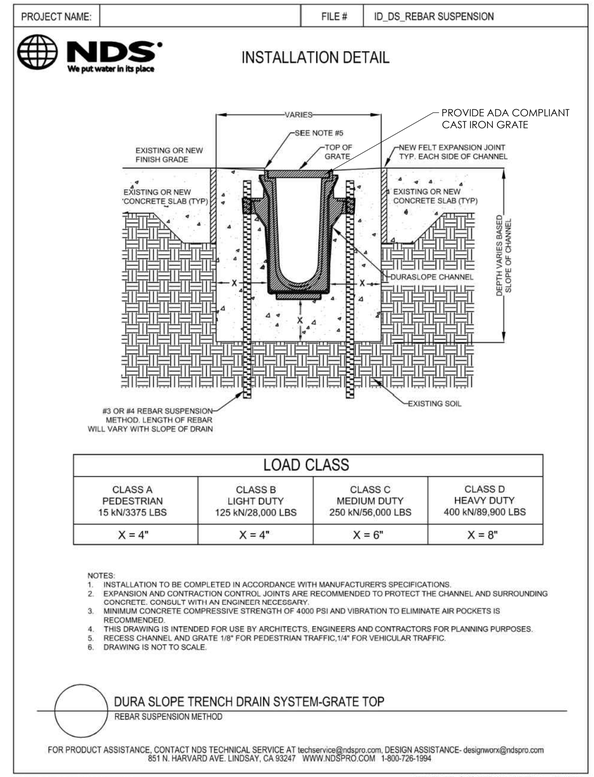
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Part No.	Description	Flow Rate GPM	Min. Inner Depth	Max. Inner Depth	Min. Outer Depth	Max. Outer Depth	Wt. Ea. (lbs.)
DS-090N	3.09" Deep Neutral Dura-Slope Channel	78	3.098	3.098	6.284	6.350	7.48
DS-091	3.99" to 4.34" Deep Dura Slope Channel	75	3.998	3.998	5.690	5.770	7.52
DS-091N	4.34" Deep Neutral Dura-Slope Channel	89	4.334	4.334	6.692	6.762	7.81
DS-092	4.34" to 4.67" Deep Dura Slope Channel	89	4.334	4.670	6.062	6.106	7.92
DS-093	4.67" to 5.00" Deep Dura Slope Channel	103	4.670	5.006	6.362	6.442	8.27
DS-094	5.00" to 5.34" Deep Dura Slope Channel	117	5.006	5.342	6.698	6.778	8.64
DS-094N	5.34" Deep Neutral Dura-Slope Channel	131	5.342	5.342	6.706	7.111	8.92
DS-095	5.34" to 5.68" Deep Dura Slope Channel	131	5.342	5.678	7.034	7.114	8.99
DS-096	5.68" to 6.01" Deep Dura Slope Channel	145	5.678	6.014	7.370	7.450	9.36
DS-097	6.01" to 6.35" Deep Dura Slope Channel	159	6.014	6.350	7.706	7.786	9.74
DS-097N	6.35" Deep Neutral Dura-Slope Channel	175	6.350	6.350	7.706	8.112	10.01
DS-098	6.35" to 6.69" Deep Dura Slope Channel	173	6.350	6.686	8.042	8.122	10.11
DS-099	6.69" to 7.02" Deep Dura Slope Channel	187	6.686	7.022	8.378	8.458	10.49
DS-100	7.02" to 7.36" Deep Dura Slope Channel	201	7.022	7.358	8.714	8.794	10.87
DS-100N	7.36" Deep Neutral Dura-Slope Channel	215	7.358	7.358	8.716	9.119	11.15
DS-101	7.36" to 7.69" Deep Dura Slope Channel	215	7.358	7.694	9.050	9.130	11.25
DS-102	7.69" to 8.03" Deep Dura Slope Channel	229	7.694	8.030	9.386	9.466	11.63
DS-102N	8.03" Deep Neutral Dura-Slope Channel	243	8.030	8.366	9.720	9.800	11.98
DS-103	8.03" to 8.37" Deep Dura Slope Channel	257	8.030	8.366	9.724	10.135	12.07
DS-104	8.37" to 8.70" Deep Dura Slope Channel	271	8.366	8.702	10.060	10.140	12.51
DS-105	8.70" to 9.04" Deep Dura Slope Channel	271	8.702	9.038	10.396	10.474	12.71
DS-106	9.04" to 9.37" Deep Dura Slope Channel	285	9.038	9.374	10.730	10.810	13.09
DS-106N	9.37" Deep Neutral Dura-Slope Channel	299	9.374	9.374	10.736	11.139	13.39
DS-107	9.37" to 9.71" Deep Dura Slope Channel	299	9.374	9.710	11.072	11.152	13.47
DS-108	9.71" to 10.04" Deep Dura Slope Channel	313	9.710	10.046	11.406	11.486	13.85
DS-109	10.04" to 10.38" Deep Dura Slope Channel	313	10.046	10.382	11.738	11.818	14.20
DS-109N	10.38" Deep Neutral Dura-Slope Channel	327	10.382	10.382	11.740	12.157	14.51
DS-110	10.38" to 10.71" Deep Dura Slope Channel	341	10.382	10.718	11.740	12.157	14.59
DS-111	10.71" to 11.05" Deep Dura Slope Channel	355	10.718	11.054	12.076	12.156	14.97
DS-112	11.05" to 11.39" Deep Dura Slope Channel	369	11.054	11.390	12.410	12.490	15.32
DS-112N	11.39" Deep Neutral Dura-Slope Channel	383	11.390	11.390	12.744	12.843	15.63
DS-113	11.39" to 11.72" Deep Dura Slope Channel	383	11.390	11.726	13.080	13.160	16.01
DS-114	11.72" to 12.06" Deep Dura Slope Channel	397	11.726	12.062	13.416	13.496	16.40

Note: All dimensions are nominal. All weights are for shipping purposes only. Availability is subject to change.



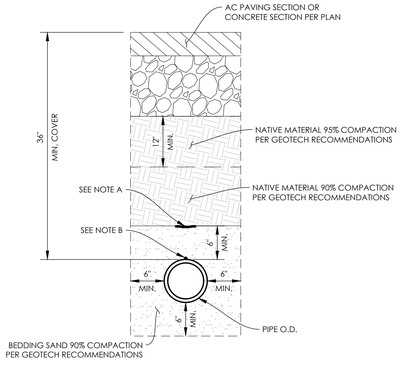
LOAD CLASS			
CLASS A PEDESTRIAN 15 kN/3375 LBS	CLASS B LIGHT DUTY 125 kN/28,000 LBS	CLASS C MEDIUM DUTY 250 kN/56,000 LBS	CLASS D HEAVY DUTY 400 kN/89,900 LBS
X = 4"	X = 4"	X = 6"	X = 8"

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. EXPANSION AND CONTRACTION CONTROL JOINTS ARE RECOMMENDED TO PROTECT THE CHANNEL AND SURROUNDING CONCRETE. CONSULT WITH AN ENGINEER NECESSARY.
3. MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4000 PSI AND VIBRATION TO ELIMINATE AIR POCKETS IS RECOMMENDED.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS AND CONTRACTORS FOR PLANNING PURPOSES.
5. RECESS CHANNEL AND GRATE 1/8" FOR PEDESTRIAN TRAFFIC,1/4" FOR VEHICULAR TRAFFIC.
6. DRAWING IS NOT TO SCALE.

DURA SLOPE TRENCH DRAIN SYSTEM-GRATE TOP
REBAR SUSPENSION METHOD

FOR PRODUCT ASSISTANCE, CONTACT NDS TECHNICAL SERVICE AT techservice@ndspro.com, DESIGN ASSISTANCE- designworx@ndspro.com
851 N. HARVARD AVE. LINDSAY, CA 93247 WWW.NDSPRO.COM 1-800-726-1994

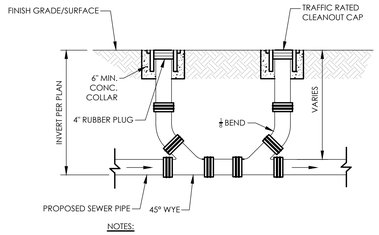
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TEMPLATE: QMS-TMP-8.3-05 REV 1.0 - 3/24/2020



NOTES:
A. 3-INCHES WIDE POLYETHYLENE NON-DETECTABLE TRACER TAPE

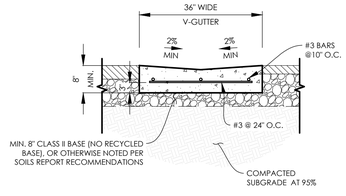
B. NUMBER 12 INSULATED THW COPPER WIRE SHALL BE PLACED CONTINUOUSLY OVER PIPE AND SHALL BE BROUGHT TO THE SURFACE IN VALVE WELLS, METER BOXES, AND SIMILAR STRUCTURES

A UTILITY TRENCH DETAIL
SCALE: NTS

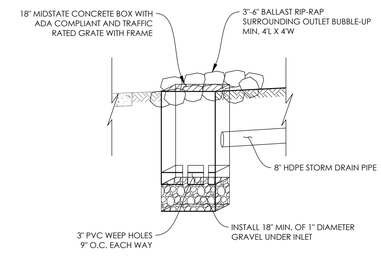


NOTES:
1. CHIMNEY SIZE AND CONNECTIONS SHALL BE 4".
2. PIPE AND FITTINGS SHALL BE PVC
3. BEDDING AND BACKFILL SHALL BE THE SAME AS FOR MAIN SEWER.

B TWO-WAY SEWER CLEANOUT
SCALE: NTS



C V-GUTTER DETAIL
SCALE: NTS



D OUTLET BUBBLE UP
SCALE: NTS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

DSA FILE #: x
DSA APP #: x
DSA TRACKING #: x

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REGISTERED PROFESSIONAL ENGINEER ROBERT A. CAMACHO No. 76597 CIVIL STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT KATHRYN ANNE NICOL C 38079 2-28-27 RENEWAL DATE STATE OF CALIFORNIA

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

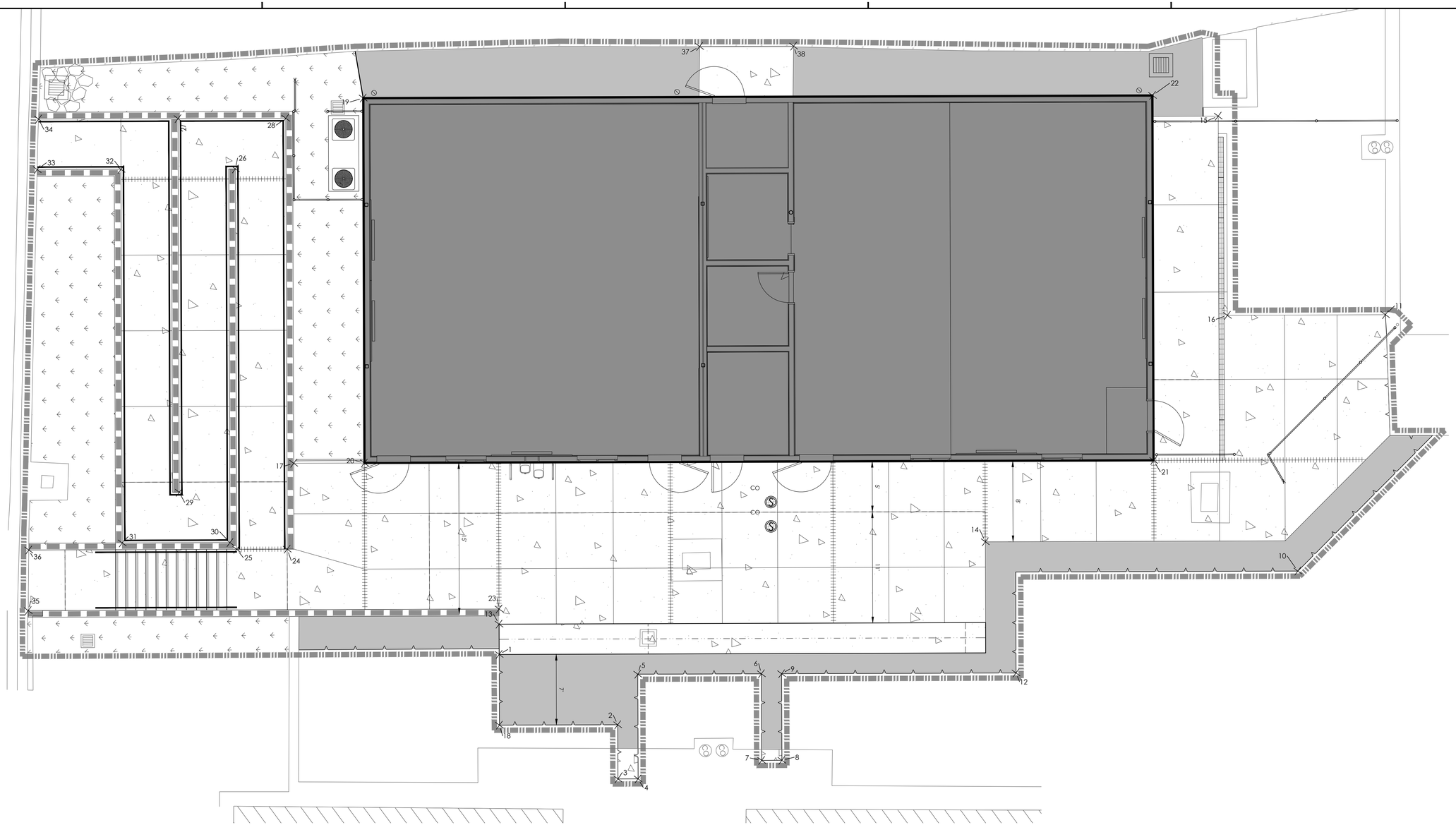
DETAILS

NO.	REVISION	DATE

PROJECT MANAGER RAG
DRAWN BY KC | CHECKED BY RAC
DATE APRIL 23, 2026
PROJECT NUMBER 0822-03-ED25
SHEET C-5.1

DSA BACK CHECK 2

N:\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Engineering\ConDocs\Sheet-Files\C-5.x_Details.dwg, C-5.1, Apr 21, 2026 9:10am, RAGomez



ABBREVIATIONS

CNTL	CONTROL POINT
CONC	CONCRETE
EDGE CONC	EDGE OF CONCRETE
BLDG CRN	BUILDING CORNER
FC	FACE OF CURB
FL	FLOWLINE
FW	FACE OF WALL
EP	EDGE OF PAVEMENT

Point Table			
Point #	Raw Description	Northing	Easting
1	EDGE CONC	2223840.9140	5789195.4596
2	EP	2223851.4568	5789204.1253
3	CONC	2223850.6587	5789209.4277
4	CONC	2223852.6364	5789209.7254
5	EP	2223854.1787	5789199.4787
6	EP	2223866.2833	5789201.3007
7	CONC	2223865.0070	5789209.7801
8	CONC	2223866.9856	5789210.0722
9	EP	2223868.2610	5789201.5983
10	EP	2223920.3213	5789199.3217
11	EDGE CONC	2223932.7506	5789175.5462
12	EP	2223891.2107	5789205.0527
13	EDGE CONC	2223841.3606	5789192.4930
14	EP	2223890.1790	5789191.7509
15	EDGE CONC	2223919.3810	5789153.5986

Point Table			
Point #	Raw Description	Northing	Easting
16	EDGE CONC	2223917.2735	5789173.2377
17	EDGE CONC	2223823.6844	5789173.6522
18	EP	2223839.8722	5789202.3817
19	BLDG CRN	2223835.9864	5789138.9509
20	BLDG CRN	2223830.6065	5789174.6941
21	BLDG CRN	2223907.8818	5789186.3254
22	BLDG CRN	2223913.2618	5789150.5822
23	FW	2223841.5838	5789191.0098
24	FW	2223821.7600	5789181.9583
25	FW	2223816.8157	5789181.2141
26	FW	2223822.4221	5789143.9670
27	FW	2223817.5627	5789138.1793
28	FW	2223828.1106	5789139.7669
29	FW	2223812.0556	5789174.7672
30	FW	2223816.2557	5789180.4557

Point Table			
Point #	Raw Description	Northing	Easting
31	FW	2223805.7079	5789178.8680
32	FW	2223811.2150	5789142.2802
33	FW	2223803.0113	5789141.0454
34	FW	2223803.9031	5789136.1233
35	EDGE CONC	2223795.4936	5789184.0724
36	EDGE CONC	2223796.4589	5789178.1501
37	EDGE CONC	2223869.6844	5789138.9673
38	EDGE CONC	2223878.8880	5789140.3526

0 5 10 15 feet

1"=5'

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
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DATE: 05/26/2026

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REGISTERED PROFESSIONAL ENGINEER
ROBERT A. CAMACHO
No. 76597
CIVIL
STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT
KATHRYN ANNE NICKS
C38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

DSA BACK CHECK 2

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS

2555 S HALCYON RD, ARROYO GRANDE, CA

HORIZONTAL CONTROL PLAN

NO.	REVISION	DATE
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PROJECT MANAGER
RAG

DRAWN BY
KC

CHECKED BY
RAC

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
C-6.1

N:\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Engineering\ConDocs\Sheet-Files\C-6.x_Horizontal Control Plan.dwg, C-6.1, Apr 21, 2026 9:13am, RAGomez

SITE SPECIFIC BMP NOTES

1. PERIMETER CONTROL BMP'S AND STABILIZED CONSTRUCTION ENTRANCES SHALL BE IN PLACE PRIOR TO ANY GROUND DISTURBANCE.
2. THESE PLANS ARE INTENDED TO REPRESENT DIFFERENT PHASES DURING CONSTRUCTION. THE CONTRACTOR SHALL IMPLEMENT THE BMP'S SHOWN AND/OR ANY OTHER MEASURES NECESSARY DURING CONSTRUCTION TO BE IN COMPLIANCE WITH THE GENERAL PERMIT. IMPLEMENTATION OF THE THE BMP'S SHOWN ON THESE PLANS DO NOT RELIEVE THE OWNER OR HIS/HER REPRESENTATIVE FROM RESPONSIBILITY OF IMPLEMENTING ALL MEASURES NEEDED TO BE IN COMPLIANCE.
3. THE CONTRACTOR SHALL USE CLASS II BASE FOR THE STABILIZED CONSTRUCTION ROADWAY OR ALTERNATE METHODS THAT ACHIEVE THE DESIRED RESULTS. THIS BMP SHALL BE IMPLEMENTED TO ALL BUILDING PADS PRIOR TO VERTICAL CONSTRUCTION, OR AS SOON AS PRACTICAL.
4. THE CONTRACTOR MAY UTILIZE RUMBLE PLATES IN LIEU OF RIP RAP AT THE CONSTRUCTION ENTRANCES AS LONG AS THEY ACCOMPLISH THE DESIRED RESULTS.
5. ANY SEDIMENTS TRACKED OFFSITE SHALL BE CLEANED DAILY BY MEANS OF MOBILE STREET SWEEPERS.
6. ANY GRADED AREAS THAT ARE GOING TO SIT IDLE FOR MORE THAN TWO WEEKS, SHALL HAVE AN APPROPRIATE GROUND COVER BMP APPLIED.
7. THE LOCATIONS SHOWN FOR THE EQUIPMENT AND MATERIAL DELIVERY STORAGE AREAS AND CONCRETE WASTE CLEANOUT MAY BE RELOCATED DURING CONSTRUCTION.
8. CLEANING STREETS AND SWEEPING MUST BE DONE AT THE END OF EACH WORK DAY TO THE SATISFACTION OF THE PUBLIC WORKS INSPECTOR.

CONTRACTOR'S NOTES

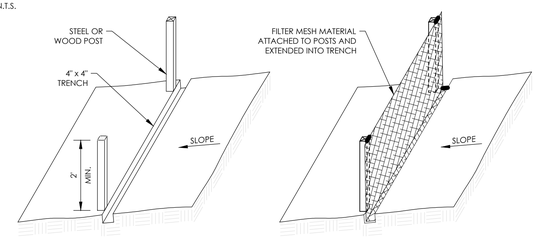
1. CONTRACTOR SHALL PREVENT WATER CONTAMINATION DURING CONSTRUCTION BY IMPLEMENTING THE FOLLOWING CONSTRUCTION SITE MEASURES:
   - A. ALL ENTRANCES/EXITS TO THE CONSTRUCTION SITE SHALL BE STABILIZED USING METHODS DESIGNED TO REDUCE TRANSPORT OF SEDIMENT OFF SITE.
   - B. STABILIZING MEASURES MAY INCLUDE BUT ARE NOT LIMITED TO USE OF GRAVEL PADS, STEEL RUMBLE PLATES, TEMPORARY PAVING, ETC.
   - C. ANY SEDIMENT OR OTHER MATERIALS TRACKED OFF SITE SHALL BE REMOVED THE SAME DAY AS THEY ARE TRACKED USING DRY CLEANING METHODS.
   - D. ENTRANCES/EXITS SHALL BE MAINTAINED UNTIL GRADED AREAS HAVE BEEN STABILIZED BY STRUCTURES, LONG-TERM EROSION CONTROL MEASURES OR LANDSCAPING.
   - E. APPLY CONCRETE, ASPHALT, AND SEAL COAT ONLY DURING DRY WEATHER.
   - F. COVER STORM DRAINS AND MANHOLES WITHIN THE CONSTRUCTION AREA WHEN PAVING OR APPLYING SEAL COAT, SLURRY, FOG SEAL, ETC.
   - G. STORE, HANDLE AND DISPOSE OF CONSTRUCTION MATERIALS AND WASTE SUCH AS PAINT, MORTAR, CONCRETE SLURRY, FUELS, ETC., IN A MANNER WHICH MINIMIZES THE POTENTIAL FOR STORM WATER CONTAMINATION.
2. WITHIN 30 DAYS OF COMPLETION OF GRADING ACTIVITIES, CONTRACTOR SHALL USE HYDRO-SEED, STRAW BLANKETS, GEOTEXTILE BINDING FABRICS OR OTHER P&D APPROVED METHODS AS NECESSARY TO HOLD SLOPE SOILS UNTIL LANDSCAPE VEGETATION IS ESTABLISHED. P&D MAY REQUIRE THE RESEEDING OF SURFACES GRADED FOR THE PLACEMENT OF STRUCTURES IF CONSTRUCTION DOES NOT COMMENCE WITHIN 30 DAYS OF GRADING.
3. CONTRACTOR SHALL DESIGNATE A CONSTRUCTION EQUIPMENT FILLING AND STORAGE AREA(S) TO CONTAIN SPILLS, FACILITATE CLEAN-UP AND PROPER DISPOSAL AND PREVENT CONTAMINATION FROM DISCHARGING TO THE STORM DRAINS, STREET, DRAINAGE DITCHES, CREEKS, OR WETLANDS. THE AREAS SHALL BE NO LARGER THAN 50 X 50 FOOT UNLESS OTHERWISE APPROVED BY P&D AND SHALL BE LOCATED AT LEAST 100 FEET FROM ANY STORM DRAIN, WATER BODY OR SENSITIVE BIOLOGICAL RESOURCES.
4. GRADING AND EROSION AND SEDIMENT CONTROL PLANS SHALL BE DESIGNED TO MINIMIZE EROSION DURING CONSTRUCTION AND SHALL BE IMPLEMENTED FOR THE DURATION OF THE GRADING PERIOD AND UNTIL RE-GRADED AREAS HAVE BEEN STABILIZED BY STRUCTURES, LONG-TERM EROSION CONTROL MEASURES OR PERMANENT LANDSCAPING.
5. THESE MEASURES ARE REQUIRED FOR ALL PROJECTS INVOLVING EARTHMOVING ACTIVITIES REGARDLESS OF THE PROJECT SIZE OR DURATION. PROPER IMPLEMENTATION OF THESE MEASURES IS ASSUMED TO FULLY MITIGATE FUGITIVE DUST EMISSIONS. DURING CONSTRUCTION, USE WATER TRUCKS OR SPRINKLER SYSTEMS TO KEEP ALL AREAS OF VEHICLE MOVEMENT DAMP ENOUGH TO PREVENT DUST FROM LEAVING THE SITE. AT A MINIMUM, THIS SHOULD INCLUDE WETTING DOWN SUCH AREAS IN THE LATE MORNING AND AFTER WORK IS COMPLETED FOR THE DAY. INCREASED WATERING FREQUENCY SHOULD BE REQUIRED WHENEVER THE WIND SPEED EXCEEDS 15 MPH. RECLAIMED WATER SHOULD BE USED WHENEVER POSSIBLE. HOWEVER, RECLAIMED WATER SHOULD NOT BE USED IN OR AROUND CROPS FOR HUMAN CONSUMPTION. MINIMIZE AMOUNT OF DISTURBED AREA AND REDUCE ON SITE VEHICLE SPEEDS TO 15 MPH OR LESS. IF IMPORTATION, EXPORTATION AND STOCKPILING OF FILL MATERIAL IS INVOLVED, SOIL STOCKPILED FOR MORE THAN TWO DAYS SHALL BE COVERED, KEPT MOIST, OR TREATED WITH SOIL BINDERS TO PREVENT DUST GENERATION. TRUCKS TRANSPORTING FILL MATERIAL TO AND FROM THE SITE SHALL BE TARPED FROM THE POINT OF ORIGIN. GRAVEL PADS SHALL BE INSTALLED AT ALL ACCESS POINTS TO PREVENT TRACKING OF MUD ONTO PUBLIC ROADS. AFTER CLEARING, GRADING, EARTH MOVING OR EXCAVATION IS COMPLETED, TREAT THE DISTURBED AREA BY WATERING, OR REVEGETATING, OR BY SPREADING SOIL BINDERS UNTIL THE AREA IS PAVED OR OTHERWISE DEVELOPED SO THAT DUST GENERATION WILL NOT OCCUR.
6. THE CONTRACTOR OR BUILDER SHALL DESIGNATE A PERSON OR PERSONS TO MONITOR THE DUST CONTROL PROGRAM AND TO ORDER INCREASED WATERING, AS NECESSARY, TO PREVENT TRANSPORT OF DUST OFFSITE. THEIR DUTIES SHALL INCLUDED HOLIDAY AND WEEKEND PERIODS WHEN WORK MAY NOT BE IN PROGRESS. THE NAME AND TELEPHONE NUMBER OF SUCH PERSONS SHALL BE PROVIDED TO THE AIR POLLUTION CONTROL DISTRICT PRIOR TO LAND USE CLEARANCE FOR MAP RECORDATION AND LAND USE CLEARANCE FOR FINISH GRADING OF THE STRUCTURE.

NOTE:
THE PROJECT AREA OF DISTURBANCE IS UNDER 1 ACRE AND IS SUBSEQUENTLY EXEMPT FROM COVERAGE UNDER THE GENERAL PERMIT FOR DISCHARGES OF THE STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY CONSTRUCTION GENERAL PERMIT ORDER 2009-0009-DWQ.

WDID No. EXEMPT (UNDER 1 ACRE)

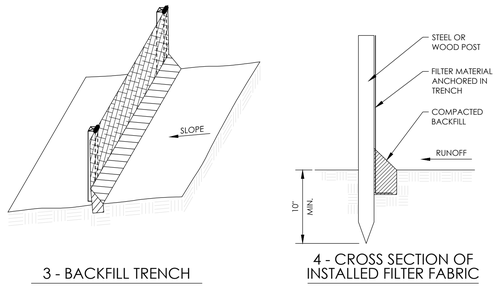
EROSION CONTROL DETAILS

N.T.S.



1 - SET POSTS & EXCAVATE TRENCH

2 - INSTALL FILTER FABRIC



3 - BACKFILL TRENCH

4 - CROSS SECTION OF INSTALLED FILTER FABRIC

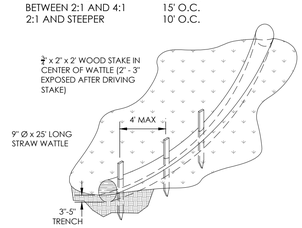
SILT FENCE CONSTRUCTION DETAIL
-NTS-

CONSTRUCTION SPECIFICATIONS:
- THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES (0.9 M). STORAGE HEIGHT AND PONDING HEIGHT SHALL NEVER EXCEED 18 INCHES (0.5 M).
- THE FENCE LINE SHALL FOLLOW THE CONTOUR AS CLOSELY AS POSSIBLE. IF POSSIBLE, THE FILTER FABRIC SHALL BE CUT FROM A CONTINUOUS ROLL TO AVOID THE USE OF JOINTS.
- JOINTS, WHEN NECESSARY, SHALL BE SPLICED ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH (0.2 M) OVERLAP AND BOTH ENDS SECURELY FASTENED TO THE POST.
- POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET (3.1 M) APART AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 12 INCHES (0.3M)). WHEN EXTRA-STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET (1.8 M).
- TURN THE ENDS OF THE FENCE UPHILL.
- A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES (101 MM) WIDE AND 6 INCHES (0.2 M) DEEP ALONG THE LINE OF POSTS AND UP-SLOPE FROM THE BARRIER.
- WHEN STANDARD-STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UP-SLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH (25.4 MM) LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES (51MM) ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
- WHEN EXTRA-STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS.
- THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE TOE OF THE FILTER FABRIC.
- SILT FENCES PLACED AT THE TOE OF A SLOPE SHALL BE SET AT LEAST 6 FEET (1.8 M) FROM THE TOE IN ORDER TO INCREASE PONDING VOLUME.
- SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED AND ANY SEDIMENT STORED BEHIND THE SILT FENCE HAS BEEN REMOVED.

INSPECTION AND MAINTENANCE:
- SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED WEEKLY AFTER EACH SIGNIFICANT STORM (1 INCH (25.4 MM) IN 24 HOURS). ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
- SEDIMENT SHOULD BE REMOVED WHEN IT REACHES 1/3 HEIGHT OF THE FENCE OR 9 INCHES (0.3 M) MAXIMUM.
- THE REMOVED SEDIMENT SHALL CONFORM WITH THE EXISTING GRADE AND BE VEGETATED OR OTHERWISE STABILIZED.

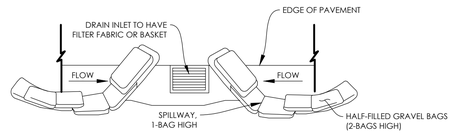
INSTALLATION TABLE

SLOPE	ROLL INTERVAL
4:1 OR FLATTER	20' O.C.
BETWEEN 2:1 AND 4:1	15' O.C.
2:1 AND STEEPER	10' O.C.

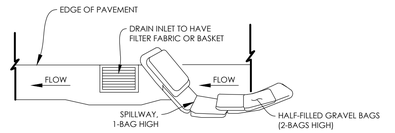


NOTES:
PLACE STRAW WATTLE IN TRENCH. WATTLE TO BE TIGHTLY BUTTED END TO END BUT NOT OVERLAPPING. MINIMUM 6 STAKES PER 25' OF WATTLE.

STRAW WATTLE DETAIL
-NTS-

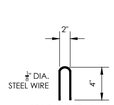


TYPICAL PROTECTION FOR INLET ON SUMP
-NTS-

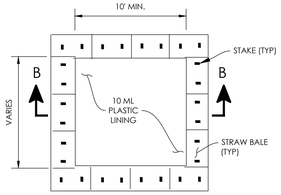


TYPICAL PROTECTION FOR INLET ON GRADE
-NTS-

NOTES:
1. INTENDED FOR SHORT TERM USE
2. USE TO INHIBIT NON-STORM WATER FLOWS
3. ALLOW FOR PROPER MAINTENANCE AND CLEANUP
4. BAGS MUST BE REMOVED AFTER ADJACENT OPERATION IS COMPLETE
5. NOT APPLICABLE IN AREAS WITH HIGH SILTS & WITHOUT FILTER FABRIC

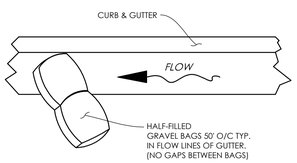


STAPLE DETAIL

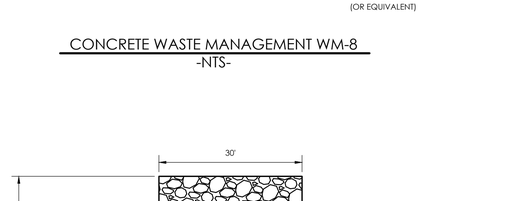


SE-10 STORM DRAIN INLET PROTECTION TYPE-3
-NTS-

SE-10 STORM DRAIN INLET PROTECTION [ALTERNATE]
-NTS-



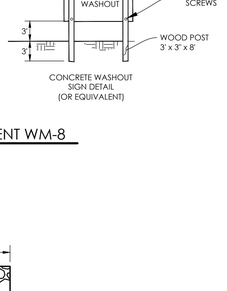
SE-6 GRAVEL BAGS IN FLOW LINE DETAIL
-NTS-



SECTION B-B
-NTS-

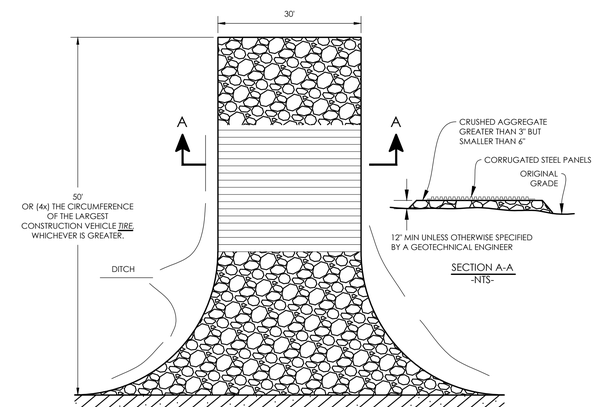
"ABOVE GRADE" WITH STRAW BALES
-NTS-

NOTES:
1. ACTUAL LAYOUT DETERMINED IN FIELD
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY



CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)

CONCRETE WASTE MANAGEMENT WM-8
-NTS-



SECTION A-A
-NTS-

NOTES:
MANUFACTURED STEEL RUMBLE PLATES MAY BE USED IN ADDITION TO OR IN LIEU OF STONE AT PROJECT ENTRANCES AT THE CONTRACTOR'S DISCRETION, SUBJECT TO APPROVAL BY THE DISTRICT AND ENGINEER OF RECORD.

PLAN
TC-1 STABILIZED CONSTRUCTION ENTRANCE/EXIT
-NTS-

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REVIEWED FOR
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REGISTERED PROFESSIONAL ENGINEER
ROBERT A. CAMACHO
No. 76597
CIVIL
STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT
KATHRYN ANNE NICOL
C38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

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2555 S HALCYON RD, ARROYO GRANDE, CA

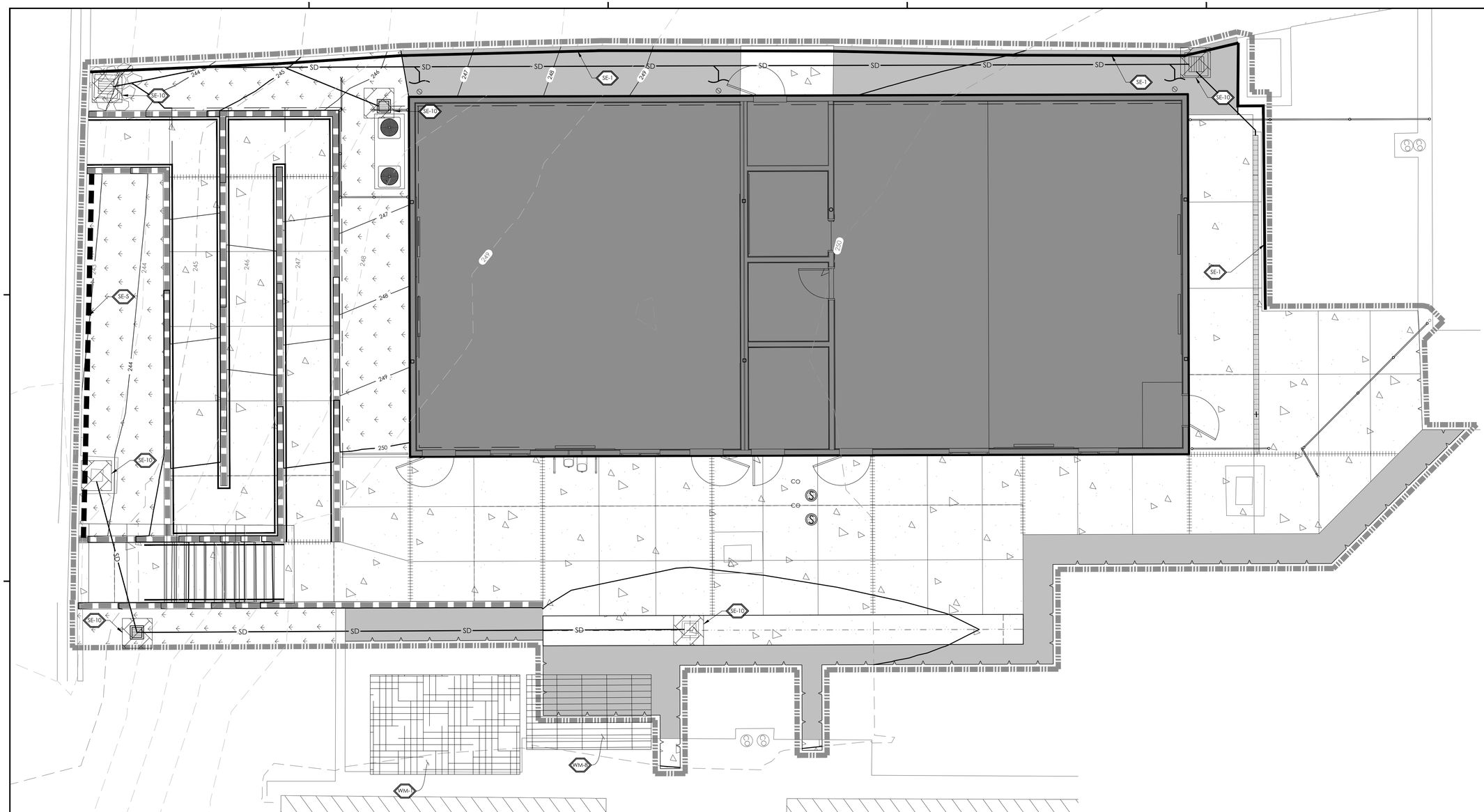
BMP NOTES

NO.	REVISION	DATE
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PROJECT MANAGER: RAG
DRAWN BY: KC
CHECKED BY: RAC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: C-7.1

DSA BACK CHECK 2

N:\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Engineering\ConDocs\Sheet-Files\C-7.x_Erosion Control Plan.dwg, C-7.1, Apr 21, 2026 9:13am, RAGomez



BMP LEGEND

- SE-1 SILT FENCE
- SE-5 STRAW WATTLE
- SE-7 STREET SWEEPING/VACUUMING
- SE-10 STORM DRAIN INLET PROTECTION
- TC-1 STABILIZED CONSTRUCTION ENTRANCE WITH WHEEL WASH AREA
- WM-1 MATERIAL DELIVERY/STORAGE AREA
- WM-8 CONCRETE WASTE MANAGEMENT AREA
- SE-6 GRAVEL BAGS

NOTE:
MANUFACTURED STEEL RUMBLE STRIPS MAY BE USED IN LIEU OF STONE AT PROJECT ENTRANCES AT THE CONTRACTOR'S DISCRETION, SUBJECT TO APPROVAL BY THE DISTRICT AND ENGINEER OF RECORD.

0 5 10 15 feet
1"=5'

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KATHRYN ANNE HICKS
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RENEWAL DATE
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DSA BACK CHECK 2

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2555 S HALCYON RD, ARROYO GRANDE, CA

BMP PLAN

NO.	REVISION	DATE

PROJECT MANAGER
RAG

DRAWN BY
KC

CHECKED BY
RAC

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
C-7.2

COMPLIANCE WITH MWELO

1. PROJECT INFORMATION - SEE COVER PAGE OF THIS DRAWING SET FOR ALL INFORMATION INCLUDING, DATE, PROJECT APPLICANT AND OWNER, AND ADDRESS.

   TOTAL LANDSCAPE AREA: ONSITE: XX SF
   SHRUBS GROUNDCOVER AND TREES - ONSITE: XX SF
   TURF - XX SF
2. PROJECT TYPE - NEW CONSTRUCTION
3. WATER SUPPLY - POTABLE
4. CHECKLIST OF ALL DOCUMENTS IN LANDSCAPE DOCUMENT PACKAGE:
   X LANDSCAPE DESIGN PLAN - INCLUDED IN THESE LANDSCAPE DRAWINGS
   X IRRIGATION DESIGN PLAN - INCLUDED IN THESE LANDSCAPE DRAWINGS
   X GRADING DESIGN PLAN - PER CIVIL SHEETS
5. WATER BUDGET CALCULATIONS (MAWA) AND (ETWU). SEE BELOW.
6. I AGREE TO COMPLY WITH THE REQUIREMENTS OF MWELO.

LANDSCAPE ARCHITECT | CA LICENSE NUMBER #4993

CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING ITEMS:
http://www.water.ca.gov/wateruseefficiency/docs/MWELO09-10-09.pdf

1. COMPOSTING
   INCORPORATE COMPOST AT A RATE OF AT LEAST FOUR CUBIC YARDS PER 1,000 SQUARE FEET TO A DEPTH OF SIX INCHES INTO LANDSCAPE AREA - UNLESS CONTRA-INDICATED BY A SOILS REPORT.
2. PLANT MATERIAL
   FOR RESIDENTIAL AREAS, INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER (AVERAGE WUCOLS PLANT FACTOR 0.3) FOR 75% OF THE PLANT AREA, EXCLUDING EDIBLES AND AREAS USING RECYCLED WATER.
3. IRRIGATION SYSTEM
   SHALL COMPLY WITH THE FOLLOWING:
   AUTOMATIC IRRIGATION CONTROLLERS ARE REQUIRED AND MUST USE EVAPOTRANSPIRATION OR SOIL MOISTURE SENSOR DATA AND UTILIZE A RAIN SENSOR.
   IRRIGATION CONTROLLERS SHALL BE A TYPE WHICH DOES NOT LOSE PROGRAMMING DATA IN THE EVENT THE PRIMARY POWER SOURCE IS INTERRUPTED.
   PRESSURE REGULATORS SHALL BE INSTALLED ON THE IRRIGATION SYSTEM TO ENSURE THE DYNAMIC PRESSURE OF THE SYSTEM IS WITHIN THE MANUFACTURER'S RECOMMENDED PRESSURE RANGE.
   ALL IRRIGATION EMISSION DEVICES MUST MEET THE REQUIREMENTS SET IN THE ANSI STANDARD, ASABE/ICC 802-2014 "LANDSCAPE IRRIGATION SPRINKLER AND EMITTER STANDARD," ALL SPRINKLER HEADS INSTALLED IN THE LANDSCAPE MUST DOCUMENT A DISTRIBUTION UNIFORMITY LOW QUARTER OF 0.65 OR HIGHER USING THE PROTOCOL DEFINED IN ASABE/ICC 802-2014.
   AREAS LESS THAN TEN (10) FEET IN WIDTH IN ANY DIRECTION SHALL BE IRRIGATED WITH SUBSURFACE IRRIGATION OR OTHER MEANS THAT PRODUCES NO RUNOFF OR OVERSPRAY.
4. FINAL INSPECTION
   AT THE TIME OF FINAL INSPECTION, THE CONTRACTOR MUST PROVIDE THE OWNER OF THE PROPERTY WITH A CERTIFICATE OF COMPLETION, CERTIFICATE OF INSTALLATION, IRRIGATION SCHEDULE AND A SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE.

IRRIGATION NOTES

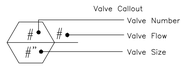
1. CONTRACTOR SHALL SLEEVE ALL LATERALS AND MAINLINES RUNNING UNDER PAVING.
2. IRRIGATION PLAN IS DIAGRAMMATIC. FINAL LOCATION OF PIPING WILL BE DETERMINED AT THE TIME OF INSTALLATION. MAINLINE AND LATERALS SHALL BE PLACED IN THE SAME TRENCH WHEN POSSIBLE. ALL Q.C. VALVES ARE TO BE LOCATED 12" FROM SIDEWALKS, CURBS, ASPHALT & CONCRETE SURFACES.
3. ALL EQUIPMENT REQUIRED BUT NOT SPECIFIED ON THE DRAWING, TO COMPLETE THE WORK, SHALL BE PROVIDED BY THE IRRIGATION CONTRACTOR
4. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND/OR SPECIFICATIONS.
5. CONTRACTOR SHALL COORDINATE POWER TO CONTROLLERS AND DEDICATE ONE (1) 20 AMP BREAKER FOR EACH CONTROLLER. THE AUTHORIZED REPRESENTATIVE SHALL REVIEW CONTROLLER LOCATIONS PRIOR TO INSTALLATION. 120 VOLT SERVICE AND HOOK-UP TO THE CONTROLLER SHALL BE COMPLETED BY A LICENSED ELECTRICAL CONTRACTOR. THIS COST IS TO BE A PART OF THE LANDSCAPE CONTRACTOR'S BID.
6. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE PLANS AND SITE CONDITIONS PRIOR TO BEGINNING WORK. SHOULD CONFLICTING INFORMATION BE FOUND ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE PROJECT LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH THE WORK IN QUESTION.
7. DO NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR DIFFERENCES IN THE AREA DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHOULD BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY AT NO EXPENSE TO THE OWNER.
8. CONTRACTOR SHALL ADJUST HEADS AS NEEDED TO MINIMIZE OVERSPRAY ONTO HARDSCAPE AREAS.
9. SPLICING OF 24 VOLT WIRES WILL NOT BE PERMITTED EXCEPT IN VALVE BOXES. LEAVE A 24" COIL OF EXCESS WIRE AT EACH SPLICE. LABEL ALL WIRES W/ WATERPROOF MARKERS AT ALL SPLICES AND VALVE MANIFOLDS.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL MATERIAL APPEARING ON PLAN.
11. PROVIDE PVC SHUTOFF VALVE FOR EACH VALVE.
12. ALL EXISTING UTILITIES, WATER LINES AND FIRE HYDRANTS SHALL REMAIN CONNECTED AND IN FULL CONTINUOUS OPERATION DURING AND FOLLOWING ALL CONTRACT WORK.
13. CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENTS TO THE IRRIGATION SYSTEM FOLLOWING A PRECIPITATION TEST PER THE OWNER. ADJUSTMENTS SHALL INCLUDE BUT WILL NOT BE LIMITED TO: HEAD RELOCATION, CHANGING NOZZLES, AND ADJUSTING ARC PATTERNS TO ATTAIN 65% EFFICIENT UNIFORMITY AS REQUIRED BY THE OWNER.
14. CONTRACTOR SHALL SLEEVE ALL PIPE CROSSINGS UNDER HARDSCAPE. ALL SLEEVES UNDER PAVING SHALL RECEIVE IDENTIFYING MARK ON TOP OF HARDSCAPE AT EDGE OF PLANTER TO INDICATE LOCATION OF SLEEVE. EXTEND ALL SLEEVES 18" BEYOND EDGE OF HARDSCAPE, TYP.
15. ALL NEW IRRIGATION BOXES, AND ADDITIONAL BOXES SHALL BE LOCATED IN PLANTING AREAS 18" MIN. AWAY FROM ADJACENT PAVING AND 5' MIN. AWAY FROM IMMEDIATE BUILDING ENTRIES.
16. EXTRA VALVE WIRES SHALL BE PROVIDED FOR EACH VALVE STATION NOT USED ON PROPOSED CONTROLLER. UNLESS OTHERWISE NOTED ON PLANS, VALVE WIRES SHALL BE EXTENDED AND LOCATED IN TWO (2) VALVE BOXES EACH LOCATED AT POLAR OPPOSITE ENDS OF THE PROJECT SITE.
17. FOR ALL DRIP AREAS: CONTRACTOR TO INSTALL AIR RELIEF VALVES, OPERATION INDICATORS AND FLUSH VALVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
18. CONTRACTOR SHALL NOT INSTALL ANY PLANTING UNTIL THE FOLLOWING ARE COMPLETED: 1. THE IRRIGATION SYSTEM SHALL BE FULLY OPERATIONAL. 2. HYDROSTATIC PRESSURE TESTS SHALL BE PERFORMED ON MAIN AND LATERAL LINES. 3. ALL ZONES SHALL PASS A COVERAGE TEST. 4. CONTROLLERS SHALL BE FULLY OPERATIONAL.

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	RAIN BIRD RWS-B-C 1401 ROOT WATERING SYSTEM WITH 4.0IN. DIAMETER X 36.0IN. LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE, AND CHECK VALVE. RAIN BIRD BUBBLER OPTION AS INDICATED: 1401 0.25 GPM, 1402 0.5 GPM, 1404 1.0 GPM, 1408 2.0 GPM.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	RAIN BIRD XCZ-100-PRF MEDIUM FLOW DRIP CONTROL KIT, 1" DV VALVE, 1" PRESSURE REGULATING FILTER, 40PSI PRESSURE REGULATOR. 3GPM - 15GPM.
	PIPE TRANSITION POINT ABOVE GRADE PIPE TRANSITION POINT FROM PVC LATERAL TO DRIP TUBING WITH RISER TO ABOVE GRADE INSTALLATION.
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD PCT PRESSURE COMPENSATING THREADED LOW-FLOW BUBBLERS. OFFERED IN 5 GPH, 7 GPH, AND 10 GPH MODELS, WITH 1/2IN. FPT THREADED INLET. LIGHT BROWN = 5 GPH, VIOLET = 7 GPH, AND GREEN = 10 GPH. Emitter Notes: PCT-05 emitters (1 assigned to each 1 gal plant) PCT-05 emitters (1 assigned to each 5 gal plant) PCT-05 emitters (1 assigned to each 15 gal plant)

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	HUNTER ICV-G 1IN., 1-1/2IN., 2IN., AND 3IN. PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
	LANDSCAPE PRODUCTS INC. BBV 1/2IN., 3/4IN., 1IN., 1-1/4IN., 1-1/2IN., 2IN., 2-1/2IN., 3IN. FULL PORT BRASS BALL VALVE. SUITABLE FOR A FULL RANGE OF LIQUIDS AND GASES IN RESIDENTIAL AND COMMERCIAL APPLICATIONS.
C	BASELINE BL-1000XS-R12 12-STATION CONVENTIONAL WIRE CONTROLLER IN LARGE 16-GAUGE STAINLESS-STEEL WALL MOUNT ENCLOSURE, BASE MODEL 50 STATIONS, EXPANDABLE TO 75 OR 100 STATIONS.
POC	POINT OF CONNECTION 2" AVAILABLE PSI TO BE CONFIRMED IN FIELD
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40
	IRRIGATION MAINLINE: PVC SCHEDULE 40
	PIPE SLEEVE: PVC SCHEDULE 40



EXISTING IRRIGATION

- EXISTING SPRAY HEAD
- EXISTING VALVE
- EXISTING MAINLINE

WATER USE CALCULATIONS

WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and it is a required element of the Landscape Document Package

Reference Evapotranspiration (Eto) 32.9

Hydrozone # /Planting Description*	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	ETAF (PF/IE)	Landscape Area (Sq, ft)	ETAF x Area	Estimated Total Water Use (ETWU)
Regular Landscape Areas							
1 - Low Use Shrubs	0.3	Drip	0.81	0.37	186	68.89	1,405
3- Low Use Trees	0.3	Bubbler	0.81	0.37	600	222.22	4,533
				Totals	786	291.11	5,938
Special Landscape Areas							
Play Field				1	0		0
Edibles				1	0		0
Other				1	0		0
				Totals	0		0
						ETWU Total	5,938
						Maximum Allowed Water Allowance (MAWA)	**7,215**

Hydrozone #/Planting Description	*Irrigation Method*	*Irrigation Efficiency*	*ETWU (Annual Gallons Required)*
E.G. *1.) front lawn* *2.) low water use plantings* *3.) medium water use planting*	*overhead spray or drip*	*0.75 for spray head* *0.81 for drip*	*Eto x 0.62 x (ETAF x Area)* *where 0.62 is a conversion factor that converts acre inches per acre per year to galls per square foot per year.*

*MAWA (Annual Gallons Allowed) = (Eto) (0.62) [(ETAF x LA)]+((1-ETAF) x SLA)]

where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year. LA is the total landscape area in square feet. SLA is the total special landscape area in square feet, and ETAF is .55 for residential areas and 0.45 for non-residential areas.

ETAF Calculations

Regular Landscape Areas	
Total ETAF x Area	(B)
Total Area	(A)
Average ETAF	B / A

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas	
Total ETAF x Area	(B+D)
Total Area	(A+C)
Sitewide ETAF	(B+D) / (A+C)

CRITICAL ANALYSIS

Generated: 2025-10-06 14:34

P.O.C. NUMBER: 01
Water Source Information: AVAILABLE PSI TO BE CONFIRMED IN FIELD

FLOW AVAILABLE
Point of Connection Size: 2"
Flow Available 77.18 GPM

PRESSURE AVAILABLE
Static Pressure at POC: 0 PSI
Pressure Available: 0 PSI

DESIGN ANALYSIS
Maximum Station Flow: 0.5 GPM
Flow Available at POC: 77.18 GPM
Residual Flow Available: 76.68 GPM

Design Pressure:	30 PSI
Friction Loss:	0.01 PSI
Fittings Loss:	0 PSI
Elevation Loss:	0 PSI
Loss through Valve:	2 PSI
Pressure Req. at Critical Station:	32.0 PSI
Loss for Fittings:	0 PSI
Loss for Main Line:	0.0 PSI
Loss for POC to Valve Elevation:	0 PSI
Loss for Backflow:	0 PSI
Critical Station Pressure at POC:	32.0 PSI
Pressure Available:	0 PSI
Residual Pressure Available:	-32.01 PSI

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CONSULTANT

LICENSED ARCHITECT — KATHRYN ANNE HICKS — C38079 — 2-28-27 RENEWAL DATE — STATE OF CALIFORNIA

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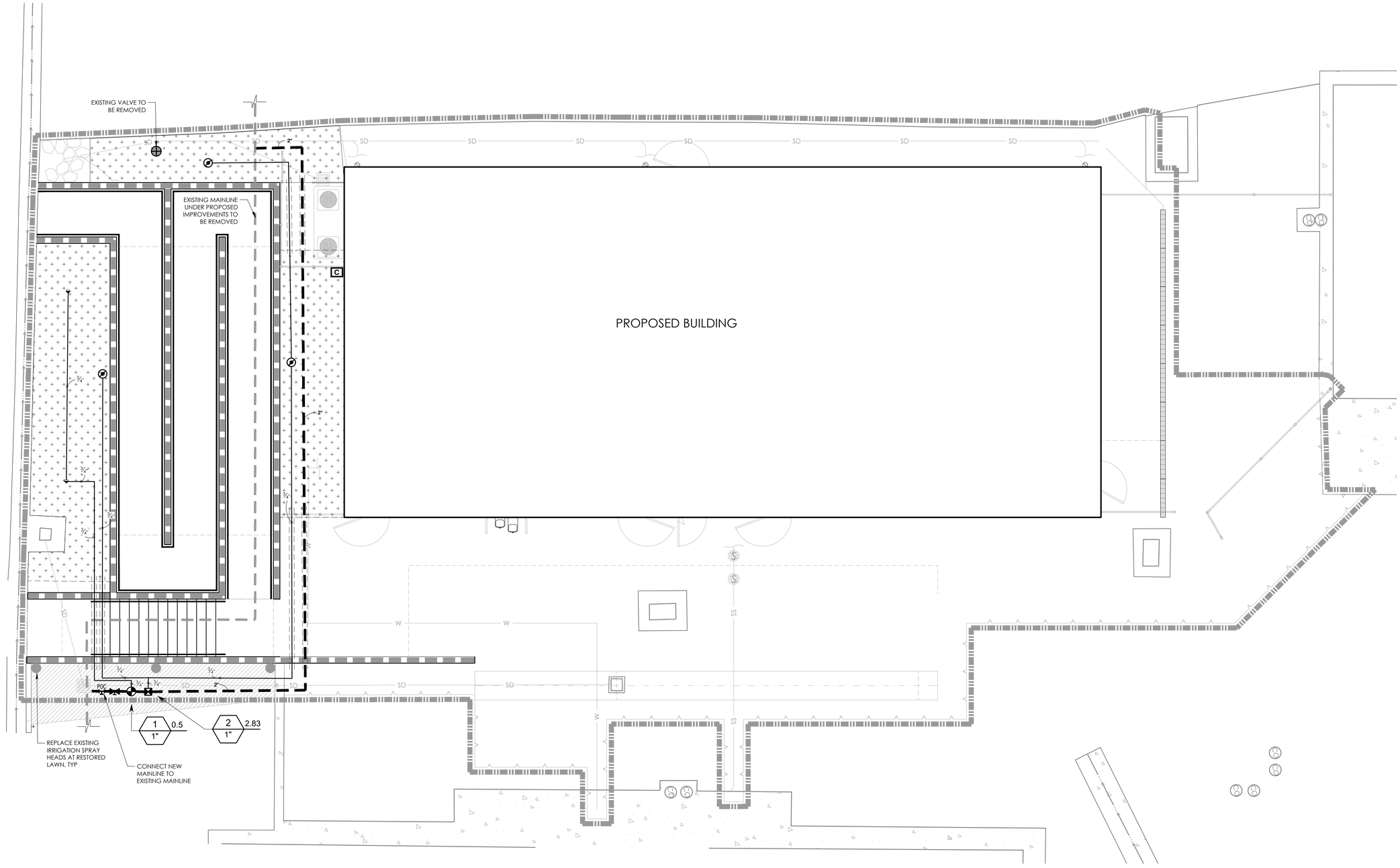
IRRIGATION SCHEDULE AND NOTES

NO.	REVISION	DATE

PROJECT MANAGER CD
DRAWN BY EH | **CHECKED BY** CD
DATE APRIL 23, 2026
PROJECT NUMBER 0822-03-ED25
SHEET LI001

DSA BACK CHECK 2

\\EgnyteDrive\On-Site\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Landscape-Architecture\2-Con Docs_Sheet Files\LI-0822-03.dwg, LI001, Feb 19, 2026 2:54pm, EHousley



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CHRISTOPHER B. DUFOUR No. 5941
Expires
08/30/26
Month/Date
Date
STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT
KATHRYN ANNE NICOL
C38079
2-28-27
RENEWAL DATE
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IRRIGATION PLAN

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PROJECT MANAGER
CD

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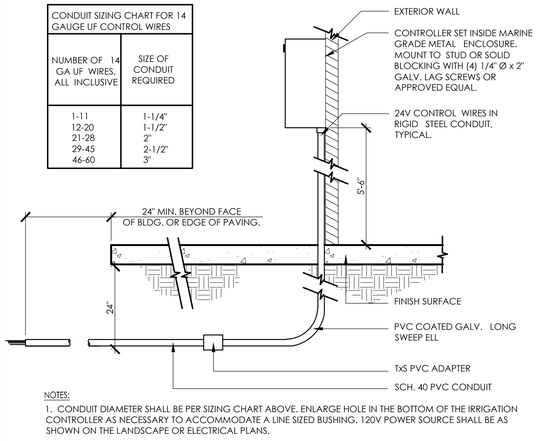
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DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

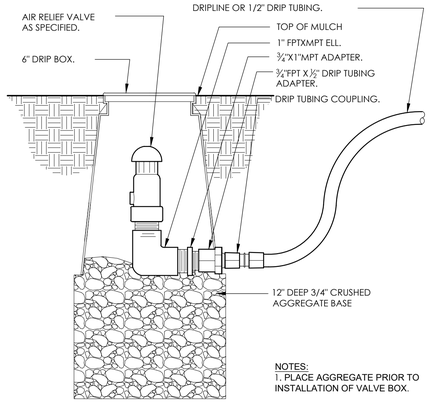
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LI101

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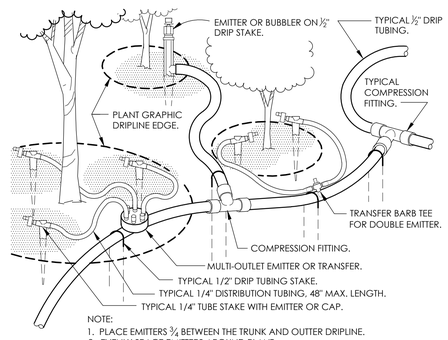
I EXTERIOR WALL MOUNTED CONTROLLER

3" = 1'-0" RRM-0801-0822.03-10



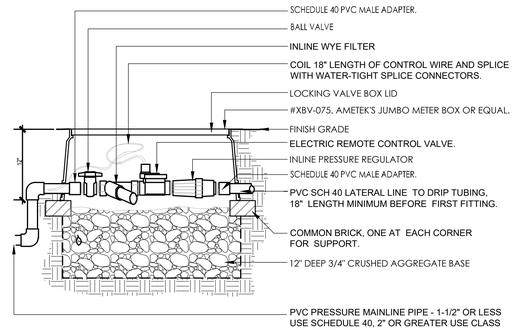
H DRIP AIR RELIEF VALVE IN BOX

3" = 1'-0" RRM-0801-0822.03-38



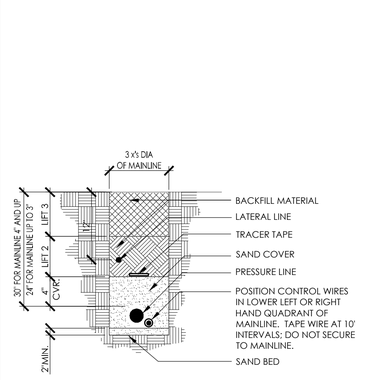
F TYPICAL DRIP TUBING

1 1/2" = 1'-0" RRM-0801-0822.03-43

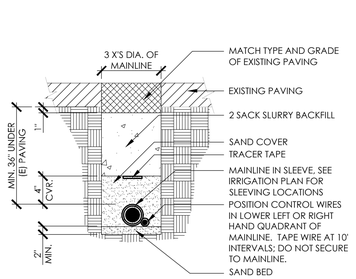


C DRIP VALVE ASSEMBLY

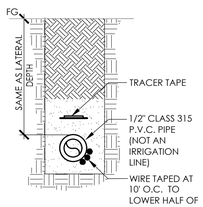
1/2" = 1'-0" RRM-0801-0822.03-55



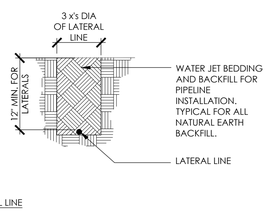
MAINLINE COMBINED WITH LATERAL LINE



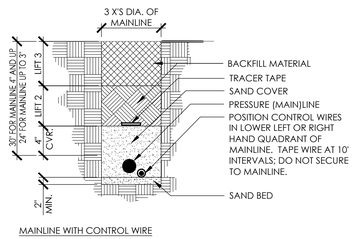
MAINLINE WITH CONTROL WIRE BELOW EXISTING PAVING



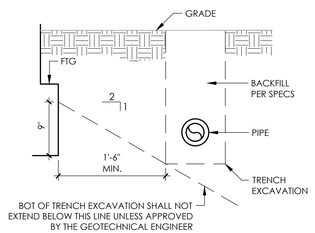
CONTROL WIRE SEPARATE FROM PIPE



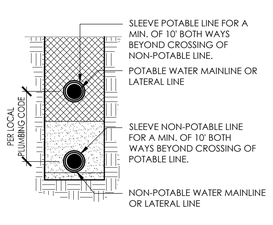
LATERAL LINE



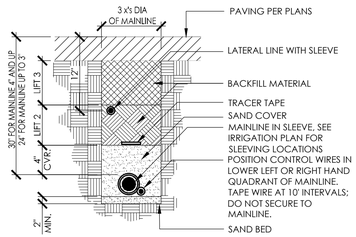
MAINLINE WITH CONTROL WIRE



PIPES PARALLEL TO FOOTINGS



RECLAIMED WATER & POTABLE WATER PIPE

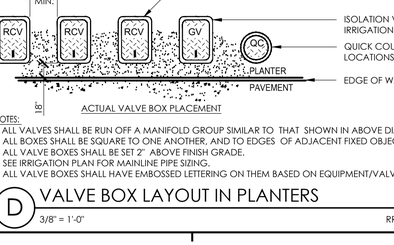


MAINLINE COMBINED WITH LATERAL LINE UNDER PAVEMENT

NOTES:
1. PIPE BEDDING AND BACKFILL SHALL BE WATER JETTED TO ACHIEVE PROPER DENSIFICATION.
2. PIPE AND CONTROL WIRE CROSSING VECHICULAR ROADWAY SHALL BE SLEEVED PER PLANS AND THIS DETAIL
3. ELECTRICAL SLEEVE: 3" MIN; LARGER IF REQUIRED BY INSPECTOR.
4. IRRIGATION SLEEVE: TWO PIPE SIZES LARGER THAN WATER PIPE SIZE.
5. SHOW ALIGNMENT OF ALL CONTROL WIRE NOT INSTALLED WITH MAINLINE ON AS-BUILT DRAWINGS.

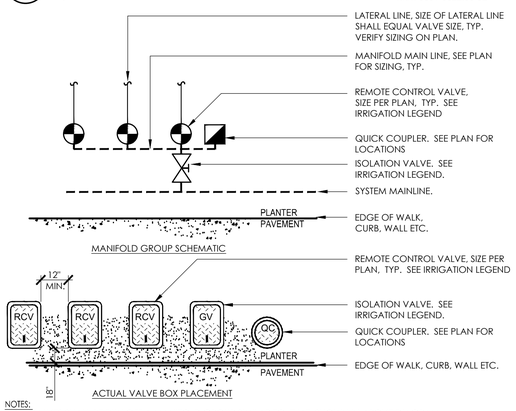
G TRENCHING

1" = 1'-0" RRM-0801-0822.03-99



E WIRING CONNECTIONS

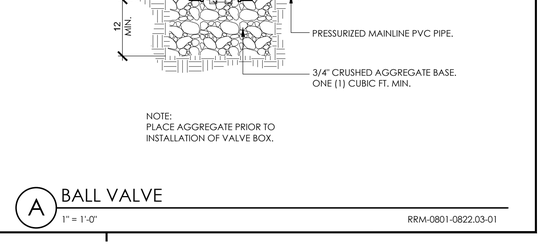
1 1/2" = 1'-0" RRM-0801-0822.03-52



NOTES:
1. ALL VALVES SHALL BE RUN OFF A MANIFOLD GROUP SIMILAR TO THAT SHOWN IN ABOVE DIAGRAM.
2. ALL BOXES SHALL BE SQUARE TO ONE ANOTHER, AND TO EDGES OF ADJACENT FIXED OBJECTS.
3. ALL VALVE BOXES SHALL BE SET 2" ABOVE FINISH GRADE.
4. SEE IRRIGATION PLAN FOR MAINLINE PIPE SIZING.
5. ALL VALVE BOXES SHALL HAVE EMBOSSED LETTERING ON THEM BASED ON EQUIPMENT/VALVE TYPE.

D VALVE BOX LAYOUT IN PLANTERS

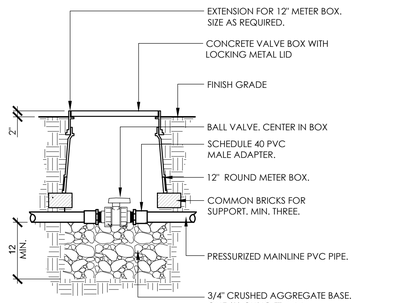
3/8" = 1'-0" RRM-0801-0822.03-53



NOTE:
PLACE AGGREGATE PRIOR TO INSTALLATION OF VALVE BOX.

B REMOTE CONTROL VALVE

1" = 1'-0" RRM-0801-0822.03-54



NOTE:
PLACE AGGREGATE PRIOR TO INSTALLATION OF VALVE BOX.

A BALL VALVE

1" = 1'-0" RRM-0801-0822.03-01

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CONSULTANT

LICENSED ARCHITECT — CYNTHIA ANNE HICKS — C38079 — 2-28-27 RENEWAL DATE — STATE OF CALIFORNIA

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

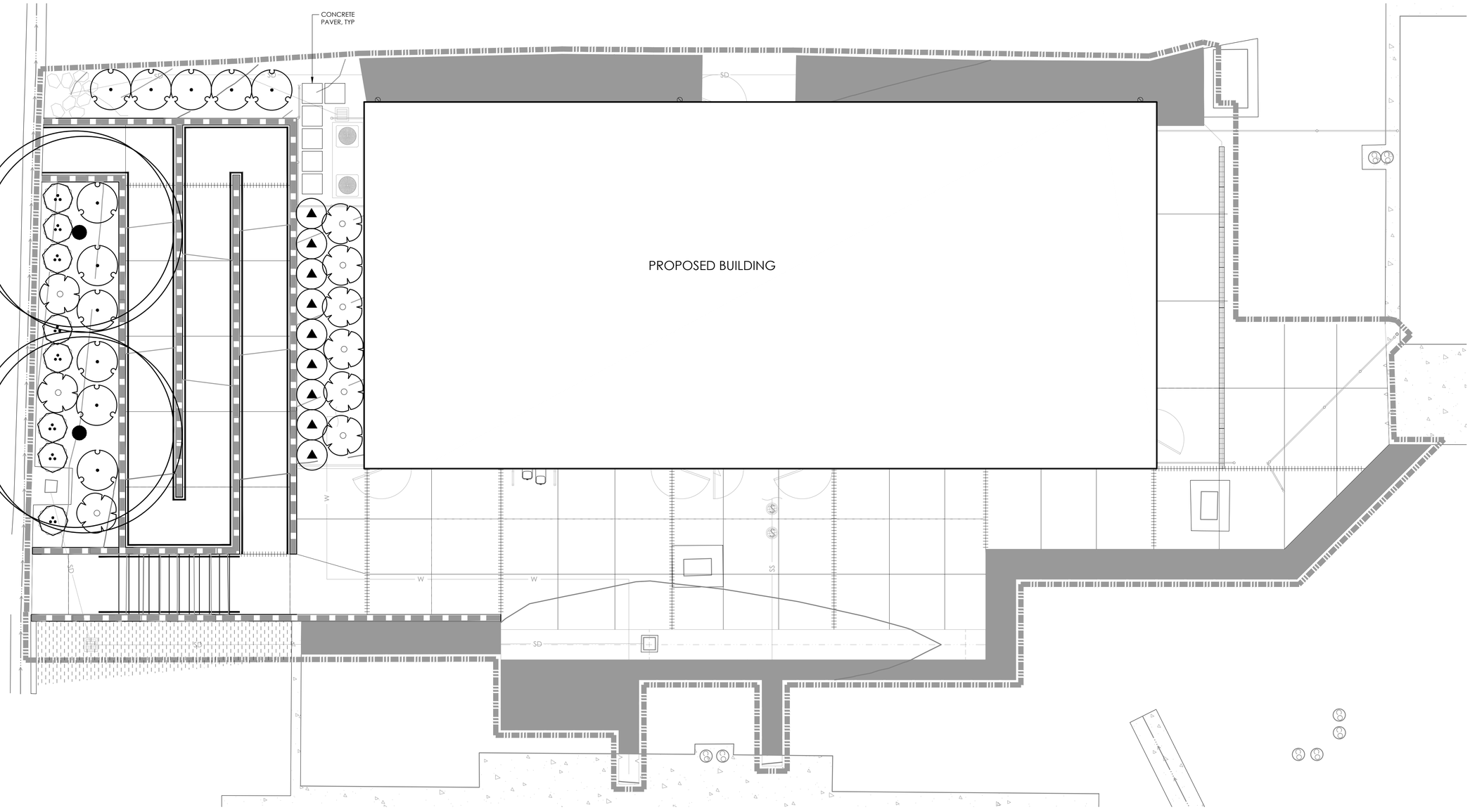
IRRIGATION DETAILS

NO.	REVISION	DATE
△		
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PROJECT MANAGER: CD
DRAWN BY: EH | CHECKED BY: CD
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: LI501

DSA BACK CHECK 2

\\EgnyteDrive\On-Site\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Landscape-Architecture\2-Con Docs_Sheet Files\LI-0822-03.dwg, LI501, Feb 19, 2026 2:54pm, EHouley



PLANT SCHEDULE

SYMBOL	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS
TREES				
	OLEA EUROPAEA 'SWAN HILL'	FRUITLESS OLIVE	24" BOX	LOW
SHRUBS				
	CISTUS X SKANBERGII	CORAL ROCKROSE	5 GAL	LOW
	LAVANDULA ANGUSTIFOLIA	ENGLISH LAVENDER	5 GAL	LOW
	LOMANDRA LONGIFOLIA 'BREEZE'	BREEZE™ MAT RUSH	5 GAL	LOW
	WESTRINGIA FRUTICOSA `GREY BOX`	DWARF COAST ROSEMARY	5 GAL	LOW
SYMBOL	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS
GROUND COVERS				
	TURF MARATHON II		SOD	MODERATE

0 5 10 15 feet
1"=5'

DSA BACK CHECK 2

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CHRISTOPHER B. DUFOUR NO. 5941
Registered
08/30/26
Renewal Date
STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT
KATHRYN ANNE HICKS
C38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

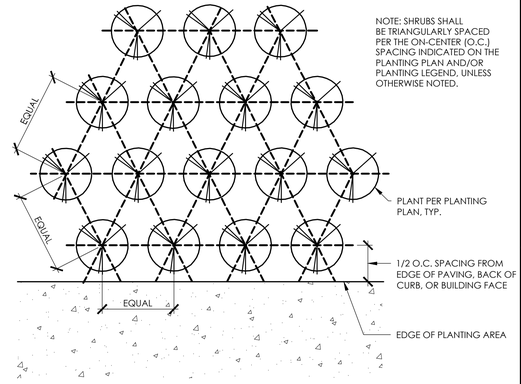
MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

PLANTING PLAN

NO.	REVISION	DATE

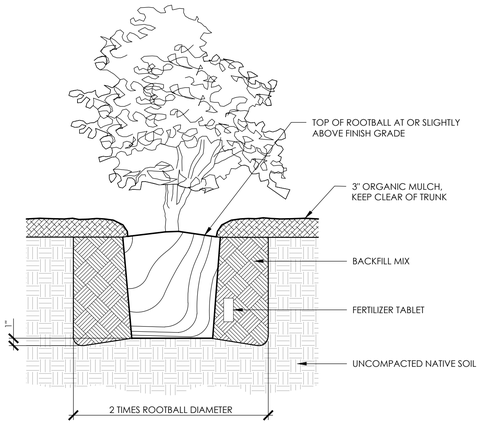
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CHECKED BY CD
DATE
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PROJECT NUMBER
0822-03-ED25
SHEET
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\\EgnyteDrive\On-Site\0801\0822-03-ED25-Mesa-MS-New-Science-SPED-Class-Bldg\Landscape-Architecture\2-Con Docs_Sheet Files\LP-0822-03.dwg, LP101, Feb 19, 2026 - 2:54pm, EHousley



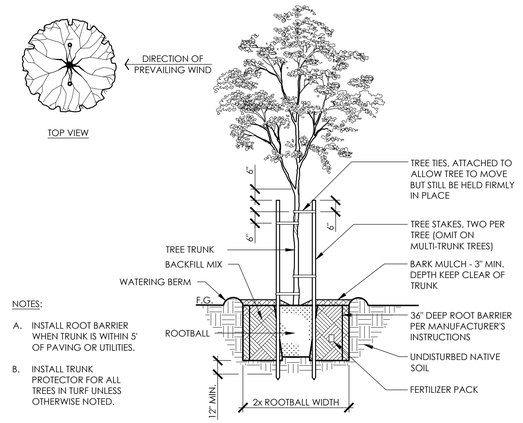
C SHRUB SPACING

1 1/2" = 1'-0" RRM-0801-0822.03-07



B SHRUB PLANTING

1 1/2" = 1'-0" RRM-0801-0822.03-42



NOTES:

A. INSTALL ROOT BARRIER WHEN TRUNK IS WITHIN 5' OF PAVING OR UTILITIES.

B. INSTALL TRUNK PROTECTOR FOR ALL TREES IN TURF UNLESS OTHERWISE NOTED.

A TREE PLANTING WITH WOOD STAKING

1/2" = 1'-0" RRM-0801-0822.03-11

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CHRISTOPHER B. DUFOUR No. 5941
Renewal 08/30/26
Date
STATE OF CALIFORNIA

CONSULTANT

LICENSED ARCHITECT
KATHRYN ANNE HICKS
C38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

DSA BACK CHECK 2

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

PLANTING DETAILS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

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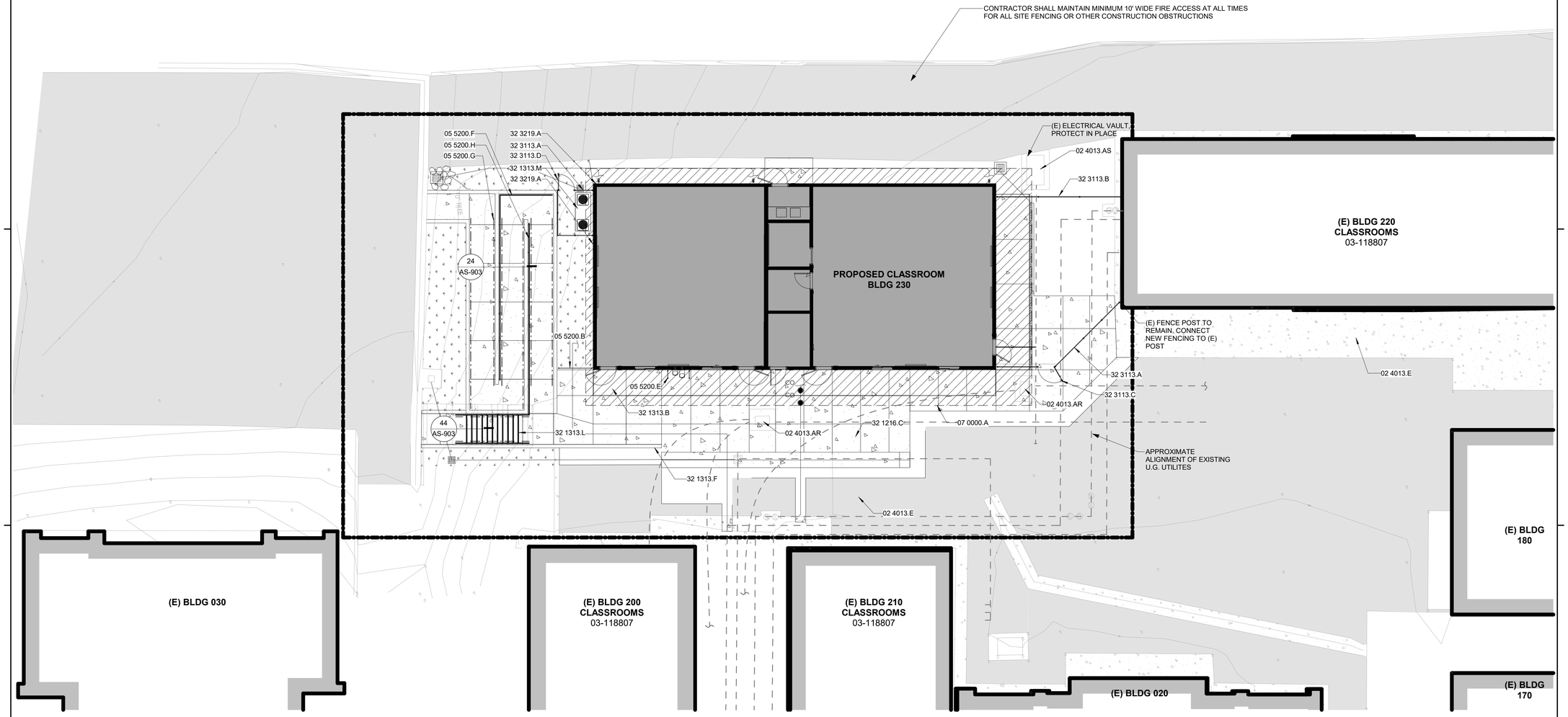
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EH	CD

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PROJECT NUMBER
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1 ARCHITECTURAL SITE PLAN

A-201 | AS-101 SCALE: 1" = 10'-0"

SITE PLAN NOTES

1. REFER TO CIVIL, LANDSCAPE, AND ELECTRICAL SITE PLAN FOR ADDITIONAL INFORMATION.
2. CONTRACTOR TO PERFORM TRADE COORDINATION AND LAY OUT FENCE FOOTINGS HORIZONTALLY IN CONJUNCTION WITH EXISTING AND PROPOSED UNDERGROUND UTILITIES. NOTIFY ARCHITECT OF POTENTIAL CONFLICT PRIOR TO INSTALLATION.

KEYNOTES

02 4013.AR	EXISTING UTILITY VAULT, PROTECT IN PLACE.
02 4013.AS	EXISTING ELECTRICAL VAULT, PROTECT IN PLACE.
02 4013.E	EXISTING PAVING TO REMAIN.
05 5200.B	GALVANIZED STEEL BARRIER RAIL.
05 5200.E	STAINLESS STEEL BARRIER RAIL. REFER TO 22/A-904
05 5200.F	GALVANIZED STEEL GUARDRAIL.
05 5200.G	GALVANIZED STEEL HANDRAIL.
05 5200.H	GALVANIZED STEEL GUARDRAIL WITH ATTACHED HANDRAIL.
07 0000.A	EDGE OF ROOF OVERHEAD.
32 1216.C	PROPOSED AC PAVING, REFER TO CIVIL.
32 1313.B	CONCRETE PAVING FOR PEDESTRIAN TRAFFIC, REFER TO DETAIL 11/AS-902
32 1313.F	CONCRETE CURB AT WALKWAY. REFER TO DETAIL 21/AS-903
32 1313.L	EXTERIOR CONCRETE STAIRS.
32 1313.M	CONCRETE PAD FOR MECHANICAL EQUIPMENT. REFER TO STRUCTURAL DETAIL 34/S-302.
32 3113.A	6' TALL CHAIN LINK FENCE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.
32 3113.B	8' TALL CHAIN LINK FENCE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.
32 3113.C	6' TALL CHAIN LINK ACCESSIBLE GATE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.
32 3113.D	6' TALL CHAIN LINK MAINTENANCE GATE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.
32 3219.A	RETAINING WALL. REFER TO STRUCTURAL CALCULATION PAGE 223 FOR SURCHARGE ON RETAINING WALL AND PAGE 248 FOR SURCHARGE ON COMBINED FOOTING.

LEGEND

- PROPERTY LINE
- APPROXIMATE LIMIT OF WORK
- CHAIN LINK FENCE / GATE
- RAMP / STAIR GUARDRAIL
- RAMP / STAIR HANDRAIL
- RAMP / STAIR GUARDRAIL WITH ATTACHED HANDRAIL
- APPROXIMATE ALIGNMENT OF EXISTING UNDERGROUND UTILITES
- EXISTING BUILDING TO REMAIN
- PROPOSED BUILDING
- PROPOSED COVERED WALKWAY ABOVE
- EXISITNG COVERED WALKWAY ABOVE
- CONCRETE PAVING FOR PEDESTRIAN USE, REFER TO CIVIL DRAWINGS
- PLANTING OR LANDSCAPE AREA, REFER TO CIVIL & LANDSCAPE DRAWINGS

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938079
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MESA MS SPED SCIENCE BUILDING

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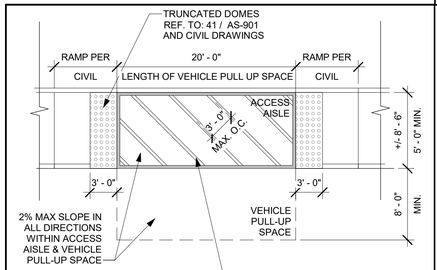
ARCHITECTURAL SITE PLAN

NO.	REVISION	DATE

PROJECT MANAGER	KH
DRAWN BY	DK
CHECKED BY	KF
DATE	APRIL 23, 2026
PROJECT NUMBER	0822-03-ED25
SHEET	AS-101

DSA BACK CHECK 2

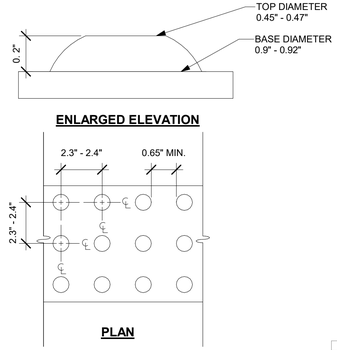
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Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt



NOTE:
REFER TO CIVIL PLANS FOR ADDITIONAL GRADING AND STRIPING INFORMATION.
FLOOR AND GROUND SURFACES SHALL BE STABLE, FIRM AND SLIP RESISTANT.

AREA TO BE MARKED. MARK WITH A PAINTED BORDERLINE AROUND THEIR PERIMETER. AREA WITHIN THE BORDERLINES SHALL BE MARKED WITH HATCHED LINES IN A COLOR CONTRASTING WITH THAT OF THE AISLE SURFACE. PROVIDE BLUE ON CONCRETE AND WHITE ON ASPHALT.

51 ACC. DROP OFF
D-401 AS-901 SCALE: 1/8" = 1'-0"



REF: CBC 11B-705.1

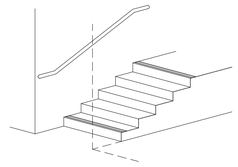
41 ACC. TRUNCATED DOMES
AS-901 SCALE: 3" = 1'-0"

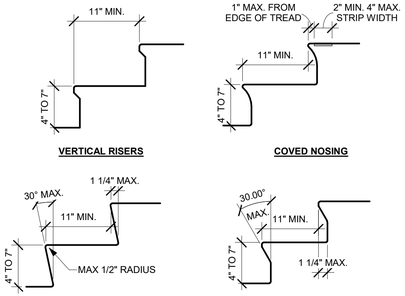
NOTES:
1. TREAD & LANDING SURFACES SHALL BE STABLE, FIRM & SLIP RESISTANT.
2. STAIR TREADS & RISERS SHALL BE OF UNIFORM SIZE AND SHAPE.
3. ALL NOSING SHALL BE UNIFORM SIZE, INCLUDING EDGE OF FLOOR AT TOP OF FLIGHT.
4. TREADS SHALL BE PERMITTED TO HAVE A SLOPE NOT STEEPER THAN 1:48 IN ANY DIRECTION.

WARNING STRIPS:
- MIN. 2" TO MAX. 4" WIDE; FULL WIDTH OF STAIR.
- MUST BE CLEARLY CONTRASTING COLOR FROM ADJOINING SURFACES.
- THE STRIP MUST BE MADE OF A MATERIAL THAT IS AT LEAST AS SLIP RESISTANT AS THE OTHER TREADS OF THE STAIR.

EXTERIOR STAIRS:
- ALL TREADS MUST BE PROVIDED WITH A WARNING STRIP.
- PAINTED OR GROOVED STRIPES NOT ACCEPTABLE; MATERIAL SHALL BE AT LEAST AS SLIP RESISTANT AS TREADS.
- EXTERIOR STAIRS SHALL DESIGNED TO PREVENT THE ACCUMULATION OF WATER.

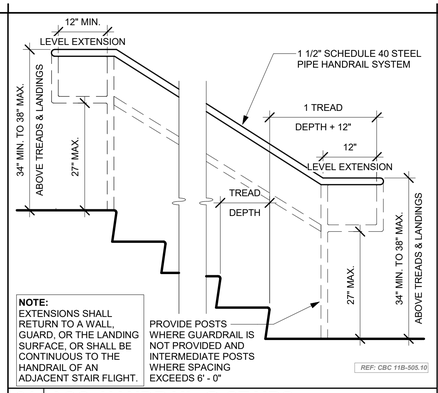
INTERIOR STAIRS:
- UPPER APPROACH AND LOWEST TREAD MUST BE MARKED.





REF: CBC 11B-504

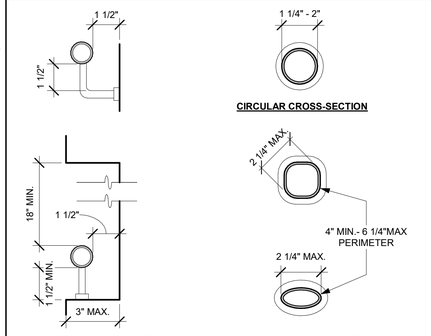
32 ACC. STAIR COMPLIANCE
AS-901 SCALE: 1" = 1'-0"



NOTE:
EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT.

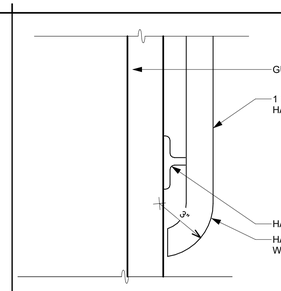
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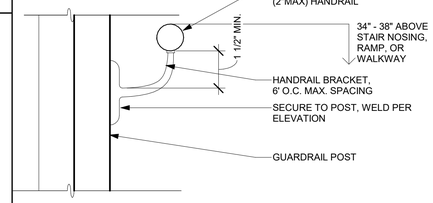
21 ACC. HANDRAIL @ STAIRS
AS-901 SCALE: 3/4" = 1'-0"



REF: CBC 11B-505

22 ACC. HANDRAIL SECTION PROFILES
AS-901 SCALE: 3" = 1'-0"

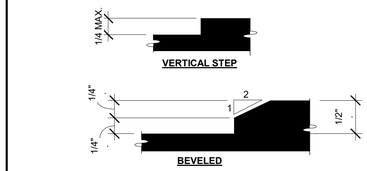




NOTE:
1) HANDRAIL TO HAVE SMOOTH SURFACE WITH NO SHARP CORNERS
2) HANDRAILS TO ACCOMMODATE 50LBS/FT LATERAL LOAD
3) WALL MOUNTED HANDRAILS SHALL RETURN TO WALL AT ENDS

REF: CBC 11B-505

12 HANDRAIL ATTACHMENT AT WALL
AS-901 SCALE: 3" = 1'-0"

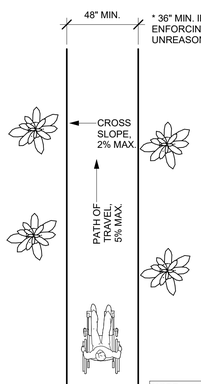


NOTES:
1. VISUAL CHARACTERS TO COMPLY WITH CBC 11B-703.5
2. SIGN TO BE A NON-GLARE FINISH AND CHARACTERS TO CONTRAST WITH THEIR BACKGROUND.
3. CHARACTERS TO BE UPPERCASE AND CONVENTIONAL IN FORM.
4. CHARACTERS SHALL BE SELECTED FROM FONTS WHERE THE UPPERCASE LETTER "O" IS 60% MINIMUM AND 110% MAXIMUM THE HEIGHT OF UPPERCASE LETTER "I".
5. CHARACTER HEIGHT TO COMPLY WITH TABLE 11B-703.5.5 AND BE BASED ON UPPER CASE LETTER "I"
6. STROKE THICKNESS OF UPPER CASE LETTER "I" SHALL BE 10% MIN. AND 20% MAX. OF HEIGHT
7. CHARACTER SPACING SHALL BE MEASURED BETWEEN THE TWO CLOSEST POINTS OF ADJACENT CHARACTERS. SPACING SHALL BE 10% MIN, AND 35% MAX. OF CHARACTER HEIGHT
8. SPACING BETWEEN THE BASELINES OF SEPARATE LINES OF CHARACTERS WITHIN A MESSAGE SHALL BE 135% MIN. AND 170% MAX. OF CHARACTER HEIGHT.
9. TEXT SHALL BE IN A HORIZONTAL FORMAT.
10. CONTRACTOR TO CONFIRM ORIENTATION OF SIGNAGE WITH ARCHITECT PRIOR TO INSTALLATION.

52 ACC. ROUTE SIGNAGE
AS-901 SCALE: 3/4" = 1'-0"

CHANGES IN LEVEL

REF: CBC 11B-303.2.3

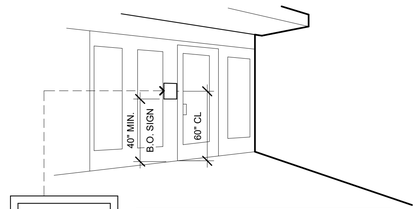


NOTE:
THE RUNNING SLOPE OF SIDEWALKS SHALL NOT EXCEED THE GENERAL GRADE ESTABLISHED FOR THE ADJACENT STREET

ALLOWABLE SLOPE AND CROSS SLOPE

REF: CBC 11B-402

54 ACC. WALKS
AS-901 SCALE: 1/4" = 1'-0"



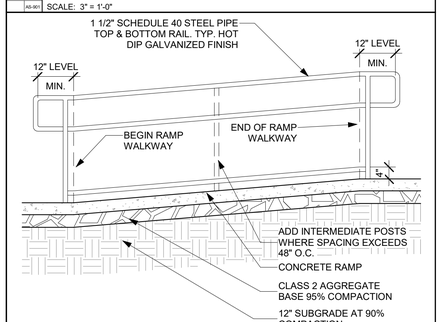


INTERNATIONAL SYMBOL OF ACCESSIBILITY

NOTE:
AT EVERY PRIMARY PUBLIC ENTRANCE AND AT EVERY MAJOR JUNCTION WHERE THE ACCESSIBLE ROUTE OF TRAVEL DIVERGES FROM THE REGULAR CIRCULATION PATH ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL, ENTRANCE, OR FACILITY, THERE SHALL BE A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY.

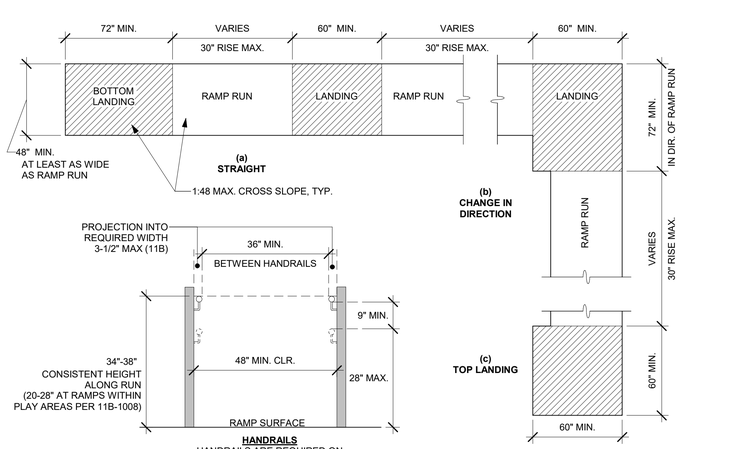
REF: CBC 11B-216.6

43 ACC. BLDG. ENTRY SIGNAGE
AS-901 SCALE: 3" = 1'-0"

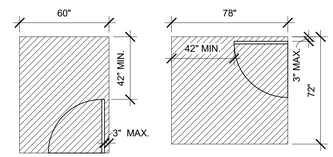


NOTE:
1. WELD ALL CONNECTIONS SMOOTH WITH CONTINOUS WELDS
2. SEE CONSTRUCTION PLAN ON AS-101 FOR HANDRAIL LAYOUT
3. PROVIDE EXPANSION JOINTS AT RUNS GREATER THAN 30'-0"

44 RAMP HAND RAIL
AS-901 AS-901 SCALE: 1/2" = 1'-0"



HANDRAILS
HANDRAILS ARE REQUIRED ON BOTH SIDES OF RAMPS WITH A RISE GREATER THAN 6"



RAMP LANDING AT DOORWAY
DOOR MANEUVERING CLEARANCES REQUIRED BY 11B-404.2.4 AND 11B-404.3.2 SHALL BE PERMITTED TO OVERLAP THE REQUIRED LANDING AREA.
DOORS, WHEN FULLY OPEN, SHALL NOT REDUCE LANDING WIDTH BY MORE THAN 3"
DOORS, IN ANY POSITION, SHALL NOT REDUCE THE MINIMUM DIMENSION OF THE RAMP LANDING TO LESS THAN 42"

REF: CBC 11B-405

24 ACCESSIBLE RAMP DETAILS
AS-901 SCALE: 1/4" = 1'-0"

ACC-SITE-16_V1_V0

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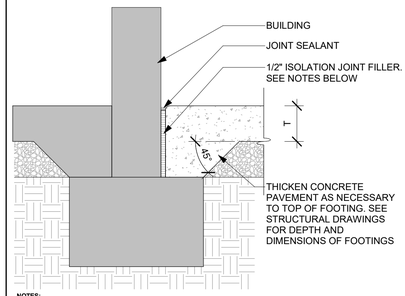
ARCHITECTURAL SITE DETAILS - ACCESSIBILITY

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PROJECT MANAGER: KH
DRAWN BY: DK
CHECKED BY: KF
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: AS-901

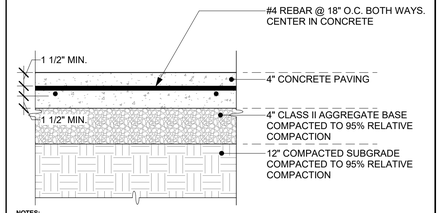
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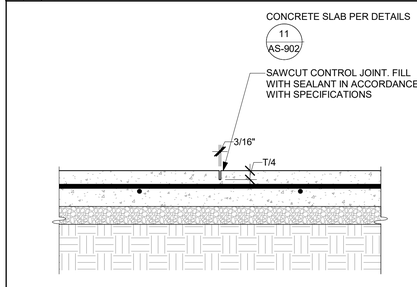
NOTES:
1. ISOLATION JOINT FILLER SHALL MEET THE REQUIREMENTS OF ASTM D1751, ASPHALT-SATURATED CELLULOSIC FIBER IN PRE-FORMED STRIPS.
2. EXTEND JOINT FILLERS FULL WIDTH AND DEPTH OF JOINT.
3. TERMINATE JOINT FILLER WITH SEALANT
4. INSTALL ISOLATION JOINTS AT ALL LOCATIONS WHERE EXTERIOR CONCRETE PAVEMENT ABUTS BUILDING CONCRETE.

21 ISOLATION JOINT AT BUILDING
AS-902 SCALE: 1 1/2" = 1'-0"



NOTES:
1. CONCRETE PAVEMENT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. 4" MAX SLUMP. REFER TO PROJECT SPECIFICATIONS
2. MAXIMUM WATER/CEMENT RATIO SHALL BE 0.50
3. JOINT SPACING AND CONSTRUCTION AS NOTED ON PLANS

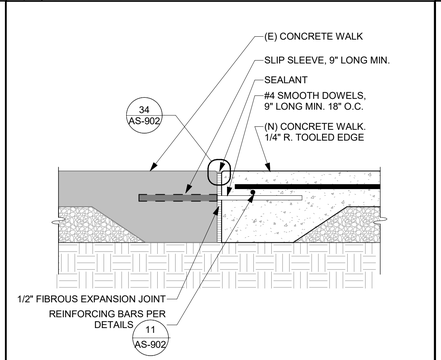
11 CONCRETE PAVING - PEDESTRIAN
AS-902 AS-902 SCALE: 1 1/2" = 1'-0"



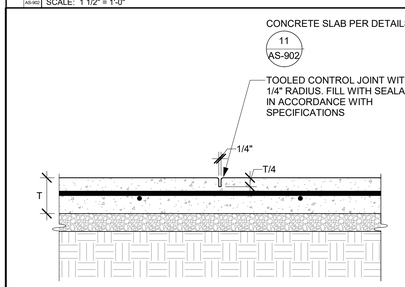
NOTES:
1. CONTROL JOINTS TO BE PROVIDED IN ALL SITE FLATWORK AND WALKWAYS AT APPROX. 5' O.C. EACH WAY AND AT ALL EQUIPMENT PAD CORNERS
2. MATCH EXISTING CONTROL JOINT LOCATIONS WEHRE THEY OCCUR.
3. SEE SITE PLAN FOR LAYOUT IF NOT INDICATED, AT ARCHITECT'S DISCRETION.

NOTE:
SOIL UNDER NON-STRUCTURAL FLATWORK & REBAR EXEMPT FROM SPECIAL INSPECTION OR TESTING

22 CONTROL JOINT - SAWCUT
AS-902 SCALE: 1 1/2" = 1'-0"



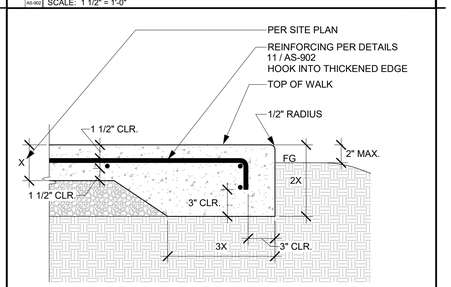
12 CONC. TO (E) CONC.
AS-902 SCALE: 1 1/2" = 1'-0"



NOTES:
1. CONTROL JOINTS TO BE PROVIDED IN ALL SITE FLATWORK AND WALKWAYS AT APPROX. 5' O.C. EACH WAY AND AT ALL EQUIPMENT PAD CORNERS
2. MATCH EXISTING CONTROL JOINT LOCATIONS WEHRE THEY OCCUR.
3. SEE SITE PLAN FOR LAYOUT IF NOT INDICATED, AT ARCHITECT'S DISCRETION.

NOTE:
SOIL UNDER NON-STRUCTURAL FLATWORK & REBAR EXEMPT FROM SPECIAL INSPECTION OR TESTING

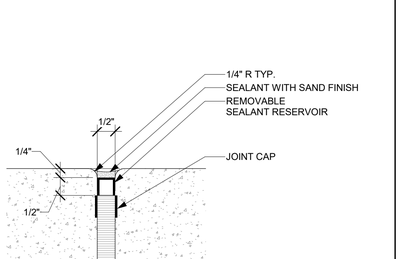
23 CONTROL JOINT - TOOLED
AS-902 SCALE: 1 1/2" = 1'-0"



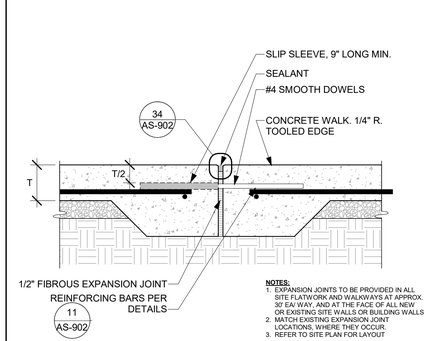
NOTES:
1. THICKENED EDGE ON ALL SIDES OF PAVEMENT UNLESS NOTED OTHERWISE
2. FORM ALL SIDES OF CONCRETE
3. APPLY BROOM FINISH TRANSVERSE TO THE PATH OF TRAVEL.
   A. MEDIUM BROOM WHERE WALK SLOPE IS 5% OR LESS
   B. HEAVY BROOM WHERE SLOPE IS GREATER THAN 5%
4. GEOTECHNICAL ENGINEER SHALL REVIEW AND APPROVE SUBGRADE BEFORE PLACING FORMS AND REBAR

NOTE:
SOIL UNDER NON-STRUCTURAL FLATWORK & REBAR EXEMPT FROM SPECIAL INSPECTION OR TESTING

13 WALKWAY EDGE
AS-902 SCALE: 1 1/2" = 1'-0"



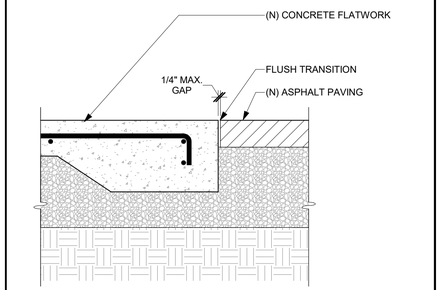
34 EXPANSION JOINT SEAL
AS-902 AS-902 SCALE: 6" = 1'-0"



NOTES:
1. EXPANSION JOINTS TO BE PROVIDED IN ALL SITE FLATWORK AND WALKWAYS AT APPROX. 30' EA/ WAY, AND AT THE FACE OF ALL NEW OR EXISTING SITE WALLS OR BUILDING WALLS
2. MATCH EXISTING EXPANSION JOINT LOCATIONS, WHERE THEY OCCUR.
3. REFER TO SITE PLAN FOR LAYOUT

NOTE:
SOIL UNDER NON-STRUCTURAL FLATWORK & REBAR EXEMPT FROM SPECIAL INSPECTION OR TESTING

24 EXPANSION JOINT
AS-902 SCALE: 1 1/2" = 1'-0"



ALL CHANGES IN LEVEL ON ACCESSIBLE PATH OF TRAVEL ROUTES SHALL COMPLY WITH CBC 11B-303. REFER TO DETAIL: 33 / A-901

NOTE:
SOIL UNDER NON-STRUCTURAL FLATWORK & REBAR EXEMPT FROM SPECIAL INSPECTION OR TESTING

14 AC PAVING AT WALK
AS-902 SCALE: 1 1/2" = 1'-0"

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1		
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3		
4		
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KH

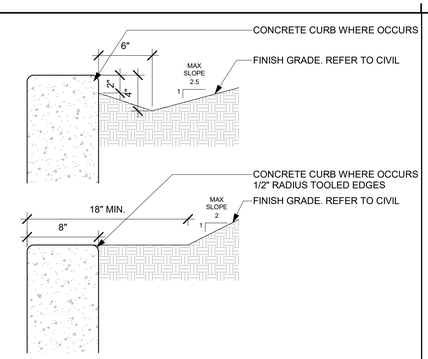
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DATE
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PROJECT NUMBER
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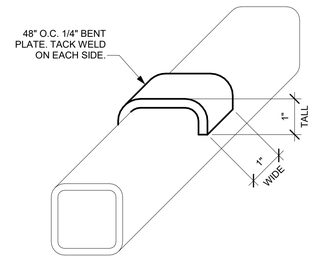
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31 LANDSCAPE AT CURB

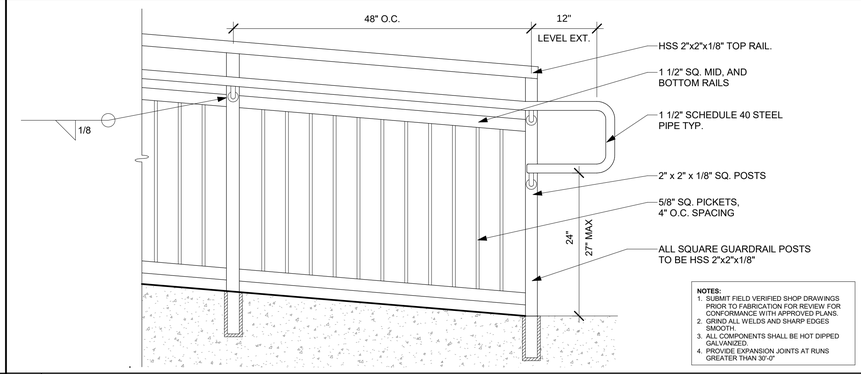
AS-903 SCALE: 1 1/2" = 1'-0"



ANTI-SKATE AT STAIR RAILING

32 ANTI-SKATE PLATE

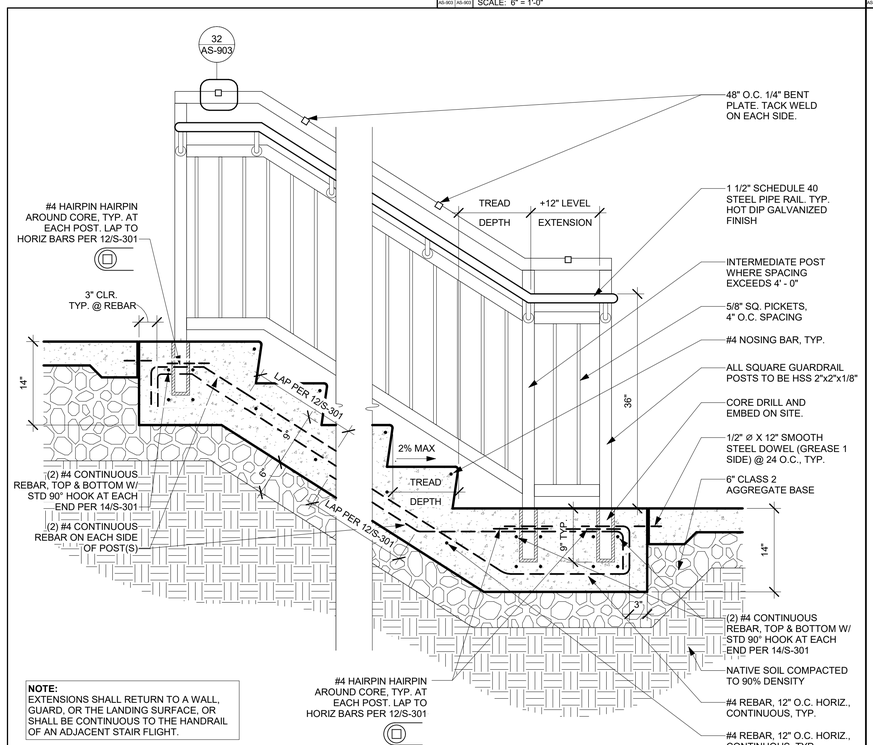
AS-903 AS-903 SCALE: 6" = 1'-0"



NOTES:
1. SUBMIT FIELD VERIFIED SHOP DRAWINGS PRIOR TO FABRICATION FOR REVIEW FOR CONFORMANCE WITH APPROVED PLANS.
2. GRIND ALL WELDS AND SHARP EDGES SMOOTH.
3. ALL COMPONENTS SHALL BE HOT DIPPED GALVANIZED.
4. PROVIDE EXPANSION JOINTS AT RUNS GREATER THAN 30'-0"

22 GUARDRAIL ELEVATION

AS-903 AS-903 SCALE: 1" = 1'-0"

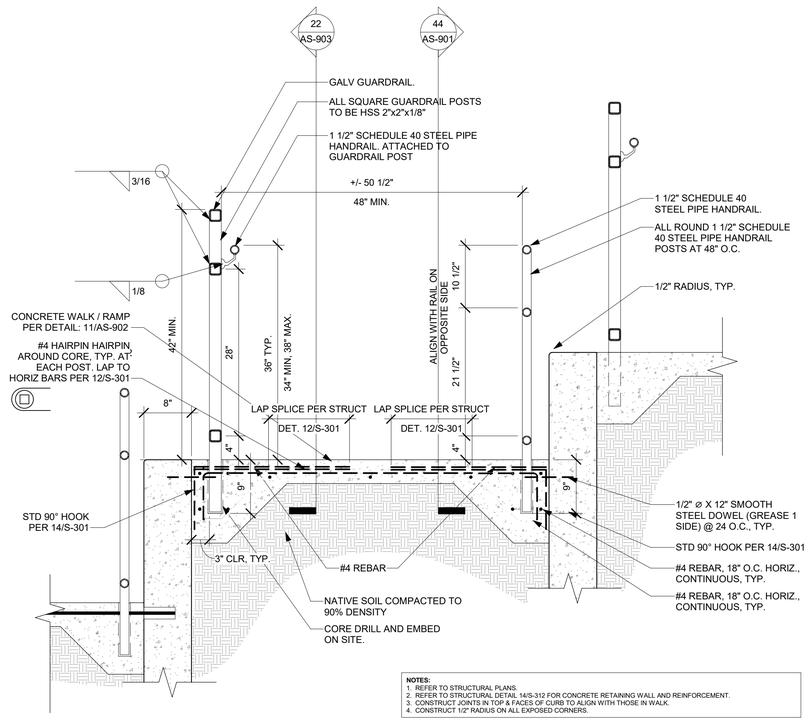


NOTE:
EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT.

REF: CBC 11B-505.10

44 STAIR SECTION

AS-101 AS-903 SCALE: 1" = 1'-0"



NOTES:
1. REFER TO STRUCTURAL PLANS.
2. REFER TO STRUCTURAL DETAIL 14/S-312 FOR CONCRETE RETAINING WALL AND REINFORCEMENT.
3. CONSTRUCT JOINTS IN TOP & FACES OF CURB TO ALIGN WITH THOSE IN WALK.
4. CONSTRUCT 1/2" RADIUS ON ALL EXPOSED CORNERS.

24 RAMP SECTION

AS-101 AS-903 SCALE: 1" = 1'-0"

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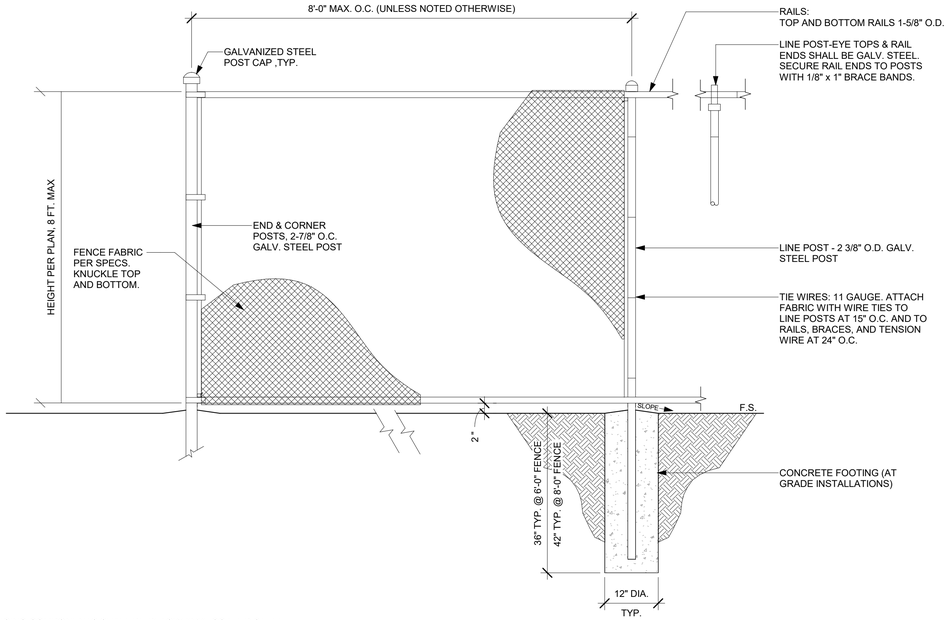
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PROJECT NUMBER
0822-03-ED25

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AS-903

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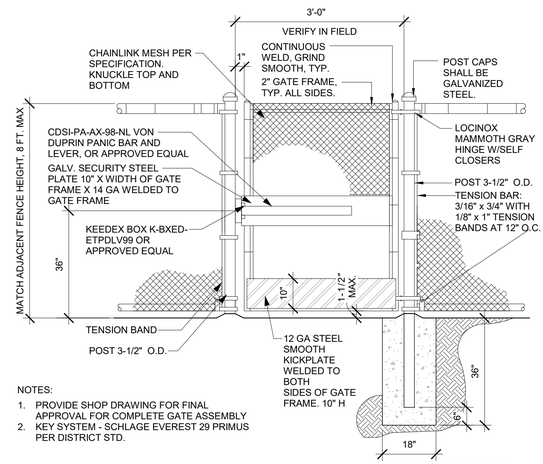
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NOTES:
1. ALL FENCING COMPONENTS SHALL BE BLACK VINYL COATED STEEL.
2. CHAINLINK TO BE 1" NO CLIMB TYP. AT ALL DETAILS
3. NO SLATS, SIGNS, OR OTHER COVERINGS SHALL BE ADDED TO FENCING.

NOTE: NOT FOR DSA REVIEW PER IR A-22

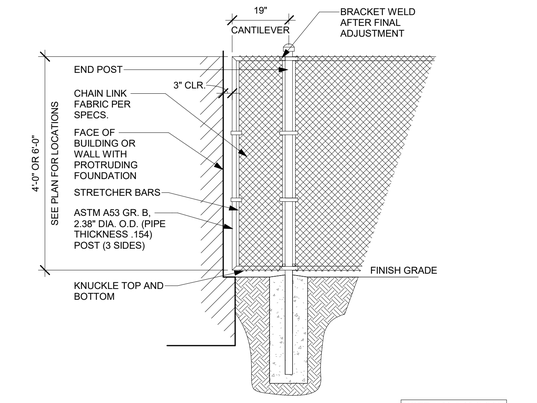
3 CHAIN LINK FENCE
AS-904 SCALE: 1/2" = 1'-0"



NOTES:
1. PROVIDE SHOP DRAWING FOR FINAL APPROVAL FOR COMPLETE GATE ASSEMBLY
2. KEY SYSTEM - SCHLAGE EVEREST 29 PRIMUS PER DISTRICT STD.

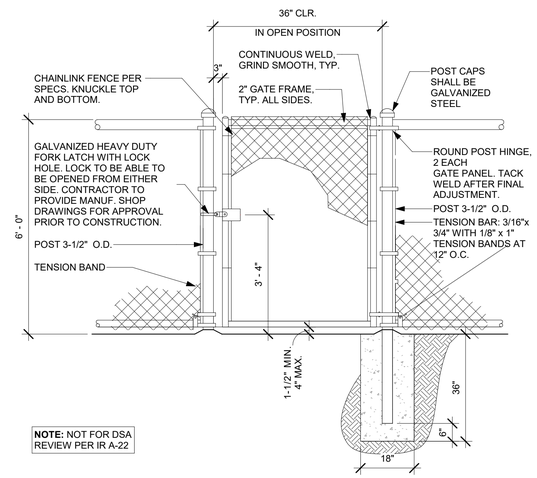
NOTE: NOT FOR DSA REVIEW PER IR A-22

1 ACC. SINGLE GATE W/ PANIC BAR
AS-904 SCALE: 1/2" = 1'-0"



NOTE: NOT FOR DSA REVIEW PER IR A-22

2 CHAIN LINK FENCE AT BLDG.
AS-904 SCALE: 1/2" = 1'-0"



NOTE: NOT FOR DSA REVIEW PER IR A-22

4 CHAINLINK GATE- MAINTENANCE AREA ONLY
AS-904 SCALE: 1/2" = 1'-0"

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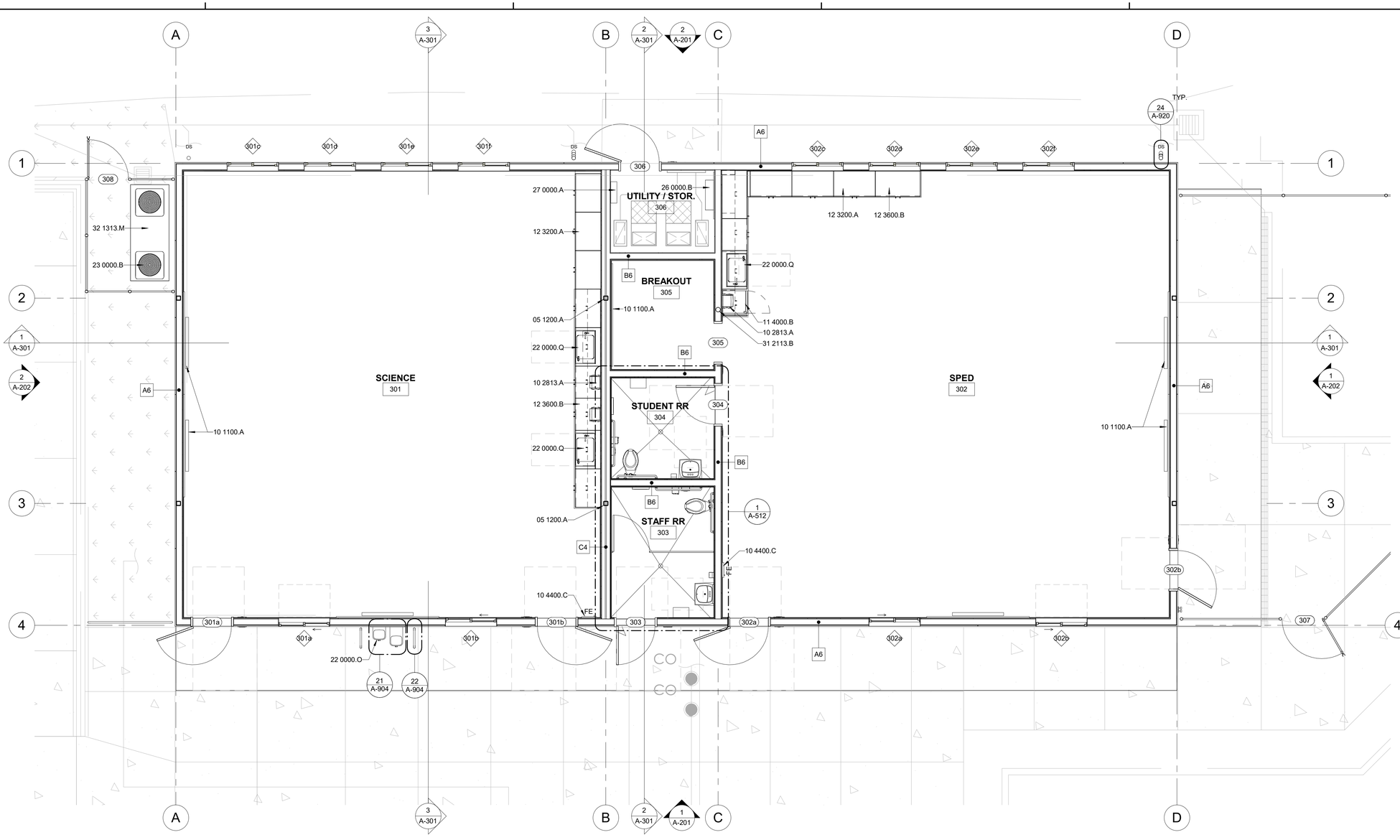
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2555 S HALCYON RD, ARROYO GRANDE, CA

ARCHITECTURAL SITE DETAILS - CHAIN LINK FENCES/GATES

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER KH
DRAWN BY DK | **CHECKED BY** KF
DATE APRIL 23, 2026
PROJECT NUMBER 0822-03-ED25
SHEET AS-904



1 FLOOR PLAN

A-201 | A-101 SCALE: 1/4" = 1'-0"

MISC. NOTES

FUNCTION OF SPACE	AREA	SF/OCCUPANT	OCCUPANT LOAD
EDUCATION:			
SCIENCE CLASSROOM	1,135 SF	@ 20 SF/OCC	57 OCCUPANTS
SPED CLASSROOM	1,217 SF	@ 20 SF/OCC	61 OCCUPANTS

ASSISTIVE LISTENING DEVICES

CBC SECTION 11B-219

1. PROVIDE PERSONAL RECEIVERS FOR **6** PEOPLE (4% OF TOTAL NUMBER OF SEATS) WITH HEARING IMPAIRMENTS, 3 PER ROOM.
2. **2** SYSTEMS ARE TO BE HEARING AID COMPATIBLE (25% OF SYSTEMS)
3. SYSTEM TO BE PORTABLE
4. SIGNAGE PER PLAN

KEYNOTES

05 1200.A	STEEL COLUMN. REFER TO STRUCTURAL DRAWINGS
10 1100.A	4' x 8' MARKERBOARD; CONTRACTOR PROVIDED. REFER TO DETAIL 22/A-942
10 2813.A	SURFACE MOUNTED PAPER TOWEL DISPENSER, OFCI
10 4400.C	SEMI-RECESSED FIRE EXTINGUISHER CABINET WITH EXTINGUISHER, 2A:10B:C RATING ; REFER TO 33/A-941
11 4000.B	REFRIGERATOR. OWNER FURNISHED.
12 3200.A	CASEWORK PER INTERIOR ELEVATIONS
12 3600.B	CHEMICAL RESISTANT COMPACT LAMINATE COUNTERTOP
22 0000.O	HI LOW DRINKING FOUNTAIN, REFER TO 21/A-904 DETAIL. SEE PLUMBING FIXTURE SCHEDULE ON SHEET P-001
22 0000.Q	SINK OR LAVATORY.REFER TO PLUMBING.
23 0000.B	MECHANICAL CONDENSER. REFER TO MECHANICAL
26 0000.B	ELECTRICAL PANELBOARD. REFER TO ELECTRICAL
27 0000.A	WALL-MOUNTED TV CABLE/DATA/POWER CONNECTION. REFER TO ELECTRICAL
31 2113.B	RADON VENT PIPE, REFER RADON PLAN.
32 1313.M	CONCRETE PAD FOR MECHANICAL EQUIPMENT. REFER TO STRUCTURAL DETAIL 34/S-302.

SYMBOL LEGEND

- A4 — **WALL TAG**
- RID — **SIGN TAG** REFER TO A-601 FOR SCHEDULE
- OL — **OCC. LOAD SIGN** AND A-601
- FE — **FIRE EXTINGUISHER** 2A:10B:C RATING - 5 POUND CAPACITY
- D — **DOOR TAG**
- W — **WINDOW TAG**
- REF. TO STRUCTURAL FOR SHEAR WALL EXTENTS
- ACCESSIBLE CLEARANCE

WALL TYPES LEGEND

NOTE: STRUCTURAL FRAMING PLANS TAKE PRECEDENCE.

NOTE: WHERE PLYWOOD SHEATHING IS PROVIDED ON INTERIOR WALLS, PER STRUCTURAL, CONTRACTOR TO PROVIDE SHEATHING FULL LENGTH OF WALL TO NEXT INSIDE CORNER FOR FLUSH & SMOOTH CONDITION OF INTERIOR FINISHES.

REFER TO SHEET A-911 FOR WALL TYPE ASSEMBLIES

TYPE A
A6 2X6 FRAMING EXTERIOR STUCCO WALL ASSEMBLY

TYPE B
B6 2X6 FRAMING

TYPE C
C4 2X4 FRAMING DOUBLE STUD w/ 1 INCH AIR GAP

FLOOR PLAN GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO SHEET A-911 FOR WALL TYPES
3. REFER TO STRUCTURAL PLANS FOR FURTHER INFORMATION.
4. REFER TO ELECTRICAL PLANS FOR FURTHER INFORMATION IF PROVIDED.
5. REFER TO MECHANICAL PLANS, DRAWINGS OR REPORTS FOR FURTHER INFORMATION.
6. REFER TO PLUMBING PLANS OR DRAWINGS FOR FURTHER INFORMATION IF PROVIDED.
7. ALL DOOR LANDINGS SHALL BE SLOPED AWAY FROM THE THRESHOLD WITH CROSS SLOPE OF NOT MORE THAN 2% IN ALL DIRECTIONS.
8. EXTERIOR DIMENSIONS ARE TO FACE OF SHEATHING, CENTERLINE OF HSS COLUMNS; INTERIOR DIMENSIONS ARE TO FACE OF FRAMING, AND CLEAR DIMENSIONS ARE TO FACE OF FINISH, UNLESS OTHERWISE NOTED.
9. PROVIDE ADEQUATE BLOCKING IN WALLS FOR CABINETS AND OTHER WALL MOUNTED DEVICES INCLUDING BUT NOT LIMITED TO GRAB BARS, FIXTURES, AND ACCESSORIES.
10. PROVIDE FIREBLOCKING FOR WALL CAVITIES THAT EXCEED 2022 CBC HEIGHT LIMITATIONS
11. DOOR AND WINDOW DIMENSIONS ARE CENTERED AT OPENINGS
12. WHERE DOOR IS LOCATED WITHOUT DIMENSION AT THE CORNER OF A ROOM THE HINGE SIDE SHALL BE 6" FROM FACE OF FRAMING OF ADJACENT PERPENDICULAR WALL TO ROUGH DOOR OPENING, UNLESS OTHERWISE NOTED.
13. DRYWALL INSTALLED WITHIN 2'-0" OF DOOR OPENINGS SHALL BE MOISTURE RESISTANT.
14. WHERE RECESSED FIXTURES OCCUR IN WALLS OR HORIZONTAL ASSEMBLIES, THE FIRE RATING OF THOSE ASSEMBLIES SHALL BE MAINTAINED
15. AT ALL PENETRATIONS AND/OR CUT OUTS THROUGH DEMISING AND RESTROOM WALLS, ACOUSTICAL INSULATION SHALL BE PLACED TIGHTLY AROUND OPENINGS WITH SEALANT ALL AROUND.

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FLOOR PLAN

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PROJECT MANAGER KH

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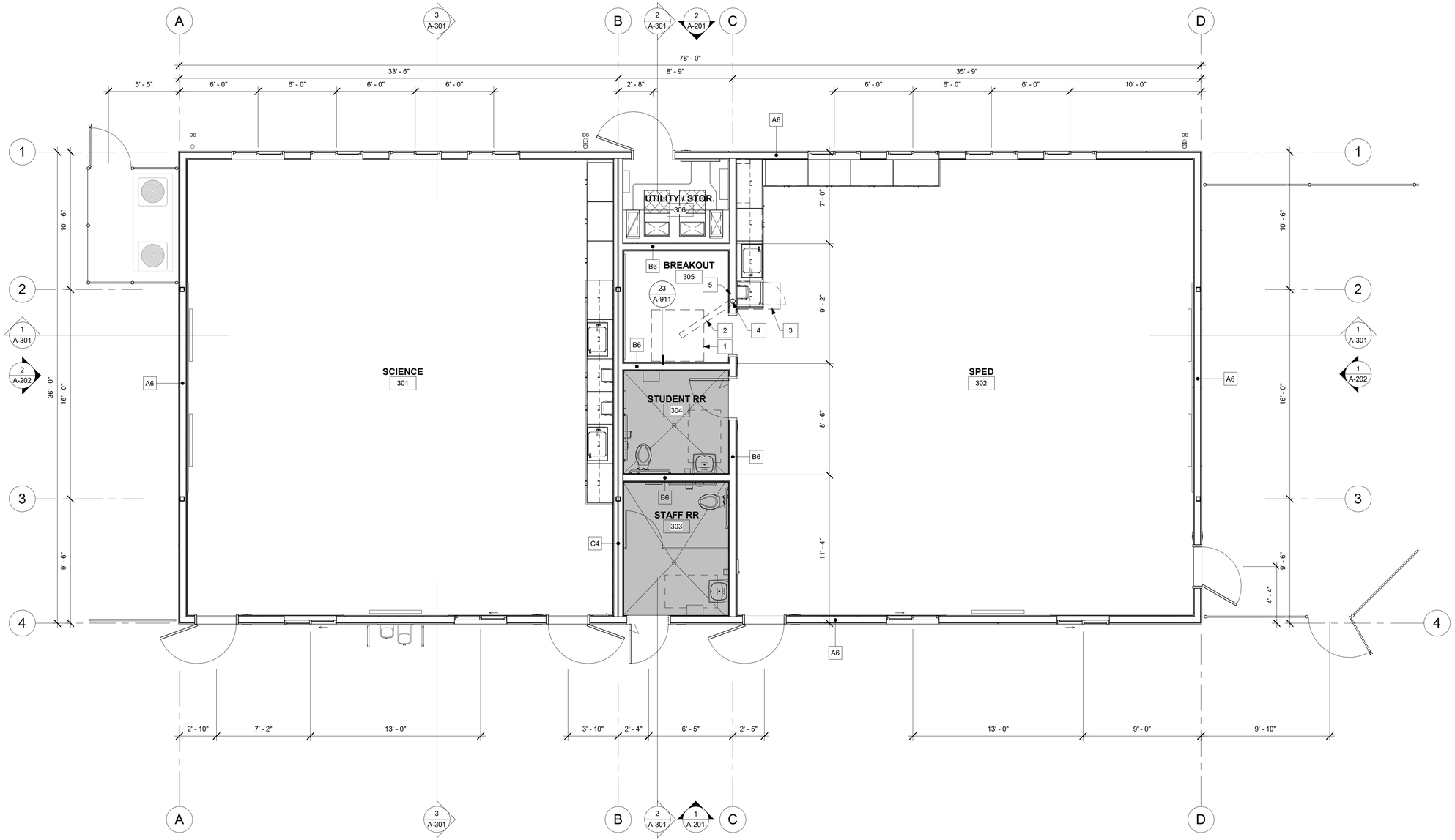
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SHEET A-101

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1 DIMENSION PLAN

A-201 | A-102 SCALE: 1/4" = 1'-0"

RADON LEGEND

1. 48" x 48" x 8" DEEP RADON PIT IN AGGREGATE BASE
2. 6" SCHEDULE 40 SUB-SLAB RADON PIPE
3. 24" X 30" ACCESS PANEL IN CEILING FOR FUTURE FAN IF REQUIRED. PROVIDE OUTLET IN CEILING READILY ACCESSIBLE FROM ACCESS PANE.
4. PROVIDE PIPE SEAL AT ALL SLAB PENETRATIONS
5. 6" SCHEDULE 40 RADON VENT STACK PIPE. EXTEND 24" ABOVE ROOF AND PROVIDE "T" FITTING AT TOP TO PREVENT WATER INTRUSION. LABEL PIPE "RADON VENT PIPE" AT 10' INTERVALS. PROVIDE SPLIT RING RISER CLAMPS AT 4' - 0" O.C. UP HEIGHT OF WALL. AT ROOF CONTRACTOR TO PERMANENTLY AFFIX SIGN THAT READS "SOIL GAS VENT STACK MAY CONTAIN HIGH LEVELS OF RADON. DO NOT PLACE AIR INTAKE WITHIN 25'-0"." PAINT TO MATCH ROOFING. PROVIDE SCREEN ON ENDS OF PIPE "T" FOR PEST CONTROL.

RADON MITIGATION NOTES

1. PROVIDE VAPOR BARRIER BELOW CONC. SLAB & OVER AG BASE PER SPECIFICATIONS. REFER TO DETAIL 23 / A-911 FOR ADDITIONAL INFORMATION.
2. PROVIDE GEOTEXTILE FABRIC BETWEEN AG BASE & SUBGRADE PER SPECIFICATIONS. REFER TO DETAIL 23 / A-911 FOR ADDITIONAL INFORMATION.

LEGEND

DEPRESSED SLAB
REFER TO STRUCTURAL

FLOOR DRAIN
SLOPE TO DRAIN. MAX SLOPE 1/4" PER 12"

WALL TYPES LEGEND

NOTE: STRUCTURAL FRAMING PLANS TAKE PRECEDENCE.

NOTE: WHERE PLYWOOD SHEATHING IS PROVIDED ON INTERIOR WALLS, PER STRUCTURAL, CONTRACTOR TO PROVIDE SHEATHING FULL LENGTH OF WALL TO NEXT INSIDE CORNER FOR FLUSH & SMOOTH CONDITION OF INTERIOR FINISHES.

REFER TO SHEET A-911 FOR WALL TYPE ASSEMBLIES

TYPE A
A6 2X6 FRAMING EXTERIOR STUCCO WALL ASSEMBLY

TYPE B
B6 2X6 FRAMING

TYPE C
C4 2X4 FRAMING DOUBLE STUD w/ 1 INCH AIR GAP

FLOOR PLAN GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO SHEET A-911 FOR WALL TYPES
3. REFER TO STRUCTURAL PLANS FOR FURTHER INFORMATION.
4. REFER TO ELECTRICAL PLANS FOR FURTHER INFORMATION IF PROVIDED.
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6. REFER TO PLUMBING PLANS OR DRAWINGS FOR FURTHER INFORMATION IF PROVIDED.
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DIMENSION & RADON PLAN

NO.	REVISION	DATE

PROJECT MANAGER
KH

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DATE
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PROJECT NUMBER
0822-03-ED25

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A-102

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ROOM FINISH SCHEDULE

NO.	NAME	FLOOR	WALL			CEILINGS		NOTES
			BASE	SUBSTRATE	FINISH	MATERIAL	FINISH	
301	SCIENCE	PC	RB	GWB	PT / VTP	ACT	PRE	SEE INTERIOR ELEVATIONS
302	SPED	CPT / LVT	RB	GWB	PT / VTP	ACT	PRE	SEE INTERIOR ELEVATIONS
303	STAFF RR	CT	CT	GWB / CB	CT	GWB	PT	SEE INTERIOR ELEVATIONS
304	STUDENT RR	CT	CT	GWB / CB	CT	GWB	PT	SEE INTERIOR ELEVATIONS
305	BREAKOUT	CPT	RB	GWB / PLY	PT / PLY	ACT	PRE	SEE INTERIOR ELEVATIONS
306	UTILITY / STOR.	CONC	RB	GWB	PT	GWB	PT	

FINISH LEGEND

CPT 1 — MATERIAL TAG
REFER TO MATERIAL SCHEDULE FOR MORE INFORMATION

FLOORS

CPT 1 | LVT 1 | CFT 1 | PC

WALLS

CT 1 | CT 2 | CT 3 | CT 4 | PLY 1 | VTP 1 | IPT 1

ABBREVIATIONS

BASE		
BASE	CT	CERAMIC TILE, 6" COVED UNGLAZED FINISH.
BASE	RB	RUBBER BASE
CEILING		
CEILING	ACT	ACOUSTIC CEILING TILE
CEILING	GWB	GYPSUM BOARD, PAINT FINISH.
CEILING	OPEN	OPEN TO ABOVE
FINISH		
FINISH	FRP	FIBER REINFORCED PANEL
FINISH	PLY	FINISH GRADE ARCHITECTURAL PLYWOOD
FINISH	PRE	MANUFACTURER FINISHED
FINISH	PT	PAINT
FINISH	VTP	VINYL TACKABLE PANEL
FLOORS		
FLOORS	CONC	EXPOSED CONCRETE, CLEAR SEAL FINISH.
FLOORS	CPT	CARPET TILES, TRANSITION STRIPS AT EXPOSED EDGES.
FLOORS	CT	CERAMIC TILE
FLOORS	LVT	LUXURY VINYL TILE
FLOORS	PC	POLISHED CONCRETE
FLOORS	PCT	PORCELAIN TILE
SUBSTRATE		
SUBSTRATE	CB	CEMENT BOARD
SUBSTRATE	GWB	GYPSUM BOARD

FINISH REQUIREMENTS

PER ***2022 CBC 803.13*** INTERIOR WALL AND CEILING FINISH SHALL HAVE A FLAME SPREAD INDEX NOT GREATER THAN THAT SPECIFIED IN TABLE 803.13 FOR THE GROUP AND LOCATION DESIGNATED. REFER TO ***2022 CBC SEC. 803*** FOR ADDITIONAL INFORMATION.

INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY
(CBC 2022 TABLE 803.13)

DEGREE OF FIRE PROTECTION: NON SPRINKLERED

GROUP	INTERIOR EXIT STAIRWAYS AND RAMPS AND EXIT PASSAGEWAYS	CORRIDORS AND ENCLOSURE FOR EXIT ACCESS STAIRWAYS AND RAMPS	ROOMS AND ENCLOSED SPACES
A-1 & A-2	B	B	C
A-3,A-4,A-5	B	B	C
B,E,M,R-1	B	C	C
R-2	C	C	C
R-2.1	B	C	C
R-2.2	C	C	C
R-3, R-3.1	C	C	C
S	C	C	C

CLASSIFICATIONS

CLASS A:
- FLAME SPREAD INDEX = 0-25
- SMOKE DEVELOPED INDEX = 0-450

CLASS B:
- FLAME SPREAD INDEX = 26-75
- SMOKE DEVELOPED INDEX = 0-450

CLASS C:
- FLAME SPREAD INDEX = 76-200
- SMOKE DEVELOPED INDEX = 0-450

ROOM SIGNAGE LEGEND

NOTE: REFER TO SHEET A-601 FOR SIGNAGE DETAILS.

AS	ASSISTIVE LISTENING
OL	MAXIMUM OCCUPANT LOAD
RID	ROOM IDENTIFICATION
RRD	RESTROOM DOOR SYMBOL
RRW	RESTROOM WALL SIGN
X	EXIT SIGN

MATERIALS SCHEDULE

Tag	Description	Application	Manufacturer	Pattern/Texture	Color	Other
PAINT						
XPT1	Exterior Paint	Field Color	Sherwin Williams	Satin	Sawyer's Fence SM 30719	
XPT2	Exterior Paint	Accent Color/Trim	Sherwin Williams	Satin	Roman Blue	
	Exterior Paint	Doors/Frames	Sherwin Williams	Semi-Gloss	Roman Blue	
PT1	Interior Paint	Wall and Ceilings	Sherwin Williams	Eggshell	White Shadow	
		CR and RR	Sherwin Williams	Semi-Gloss	White Shadow	
		Interior Door Frames	Sherwin Williams	Semi-Gloss	White Shadow	
PT2	Interior Paint	Door Frames	Sherwin Williams	Semi-Gloss	Roman Blue	
FLOORS						
CPT1	Carpet Tile	Classrooms	Mannington Commercial	Collection: Exchange 2 - Dispatch	Haptics 13143	Adhesive: Nexterra
CFT 1	Ceramic Tile	Floor	Dal Tile	2x2 Keystones	Desert Gray Speckle D200	
LVT1	Luxury Vinyl Tile	Classrooms	Shaw Contract	In Unison 2.5	Smoky Oak 91516	
RB1	Rubber Base	All rooms with CPT and...	Flexco	Base 2000: Topset	Midnight Blue 099	
PC1	Polished Concrete	Floor				
WALL GUARDS						
VTP1	Vinyl Tackable Panel	Classrooms	Chatfield-Clark	Type 1 Group 1	Beige	
CT 1	Ceramic Tile	Wall - Field Color	Daltile	4" Colorwheel Classic	White 0100	
CT 2	Ceramic Tile	Wall - Field Color	Daltile	6" Cove Base	White 0100	
CT 3	Ceramic Tile	Wall - Accent	Daltile	4" Colorwheel Classic	Waterfall 0169	
CT 4	Ceramic Tile	Wall - Accent	Daltile	4" Colorwheel Classic	Galaxy 1469	
GT 1	Grout	Walls/Floors	Custom		Natural Gray 09	
PLY	Architectural Grade Plywood	Walls	N/A	Paint	White Shadow	
CASEWORK						
PL1	Plastic Laminate	Cabinet Face	Wilsonart	38 Fine Velvet Texture	Huntington Maple 7929-38	
PL2	Plastic Laminate	Countertop	Wilsonart	60 Matte	Natural Tigris 4669-60	
DOORS						
DR 1	Interior Door	Veneer	Masonite Aspiro	Aspiro	Huntington Maple 7929-38	

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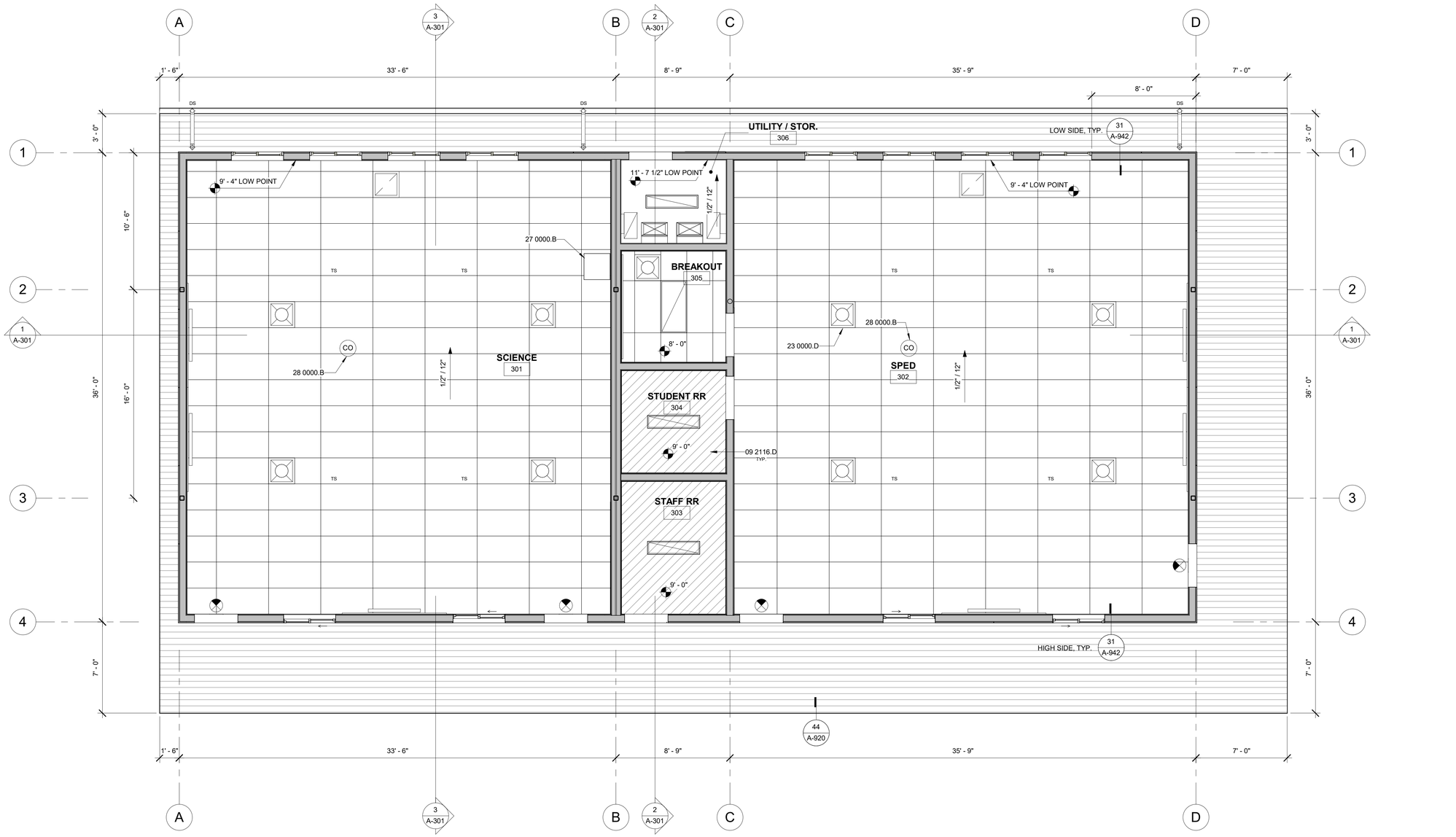
FINISH & SIGNAGE PLAN

NO.	REVISION	DATE

PROJECT MANAGER: KH
DRAWN BY: DK
CHECKED BY: KF
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: A-103

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1 REFLECTED CEILING PLAN

A-201 | A-111 SCALE: 1/4" = 1'-0"

KEYNOTES

09 2116.D	GYPSUM BOARD DROP CEILING.
23 0000.D	MECHANICAL REGISTER
27 0000.B	WALL MOUNTED IDF CABINET, REFER TO ELECTRICAL
28 0000.B	CARBON MONOXIDE DETECTOR

LEGEND

- XX'-X" — CEILING HEIGHT (SEE PLAN FOR ACTUAL HEIGHTS)
- INTERIOR - MOISTURE RESISTANT GYPSUM BOARD CEILING REFER TO 33/S-501 FOR CEILING FRAMING DETAILS
- INTERIOR - ACOUSTICAL TILE CEILING REFER TO SHEETS A-954 - A-957
- FIBER CEMENT SOFFIT PANEL REFER TO SUPPORTING DOCUMENT ICC REPORT ESR-2273 TABLE 5, LINE 2 REF. TO: 44 / A-920
- GYPSUM WALLBOARD DIRECT APPLIED TO STRUCTURE ABOVE
- CO — CARBON MONOXIDE ALARM
- ILLUMINATED EXIT SIGN, ARROW INDICATES DIRECTIONAL CHEVRON REFER TO INTERIOR ELEVATIONS AND RCP FOR MOUNTING LOCATION
- MECHANICAL REGISTERS, REFER TO MECHANICAL PLANS
- LIGHT FIXTURE, REFER TO ELECTRICAL PLANS
- TS — TUBULAR SKYLIGHT

RCP GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ELECTRICAL PLANS FOR FURTHER INFORMATION.
3. REFER TO MECHANICAL PLANS FOR FURTHER INFORMATION.
4. REFER TO DETAILS FOR FLOOR/CEILING ASSEMBLIES.
5. HEIGHT OF CEILINGS SHALL BE MEASURED FROM TOP OF SLAB TO FINISH FACE OF GWB OR FACE OF CEILING GRID AS INDICATED ON THE REFLECTED CEILING PLAN, UNO.
6. BORDERS AT LAY-IN ACOUSTICAL CEILING PANELS SHALL BE CUT TO MATCH FACTORY EDGE PROFILE. NO EXPOSED FASTENERS SHALL BE PERMITTED INCLUDING POP RIVETS AND TAPPETS.
7. CONTRACTOR TO VERIFY DEPTH OF SOFFITS AND HOLD TIGHT TO PLUMBING, SPRINKLERS, ELECTRICAL AND MECHANICAL DUCTS
8. SEE MECHANICAL DRAWINGS FOR MECH. ACCESS PANELS. PAINT TO MATCH CEILING
9. AT DROPPED GWB SOFFITS/GWB BEAMS, PROVIDE C-STUDS AS VERTICAL SUPPORTS AT EACH SIDE OF THE SOFFIT/BEAM AND DIAGONAL BRACING FOR WRACKING. IF CEILING JOIST SPACING DIFFERS FROM FLOOR THEN BLOCKING BETWEEN THE FLOOR FRAMING MAY BE UTILIZED TO ATTACH THE VERTICAL STRUTS
10. ALL LIGHT FIXTURES ARE TO BE INSTALLED ACCORDING TO THE ARCHITECTURAL REFLECTED CEILING PLAN. ARCHITECT TO REVIEW CEILING LAYOUT INCLUDING BULKHEADS AND GRID PRIOR TO INSTALLATION.
11. LIGHT FIXTURES SHALL BE CENTERED WITHIN SPACES AND/OR WINDOW EVENLY ARRAYED. IF CONFLICTS OCCUR AT MECHANICAL REGISTERS OR SPRINKLER HEADS, LIGHTING LOCATIONS SHALL TAKE PRECEDENCE. CONSULT ARCHITECT AS NEEDED TO RESOLVE.
12. SEE ELECTRICAL PLANS FOR LIGHTING SPECIFICATIONS, AND EXIT LIGHT LOCATIONS.

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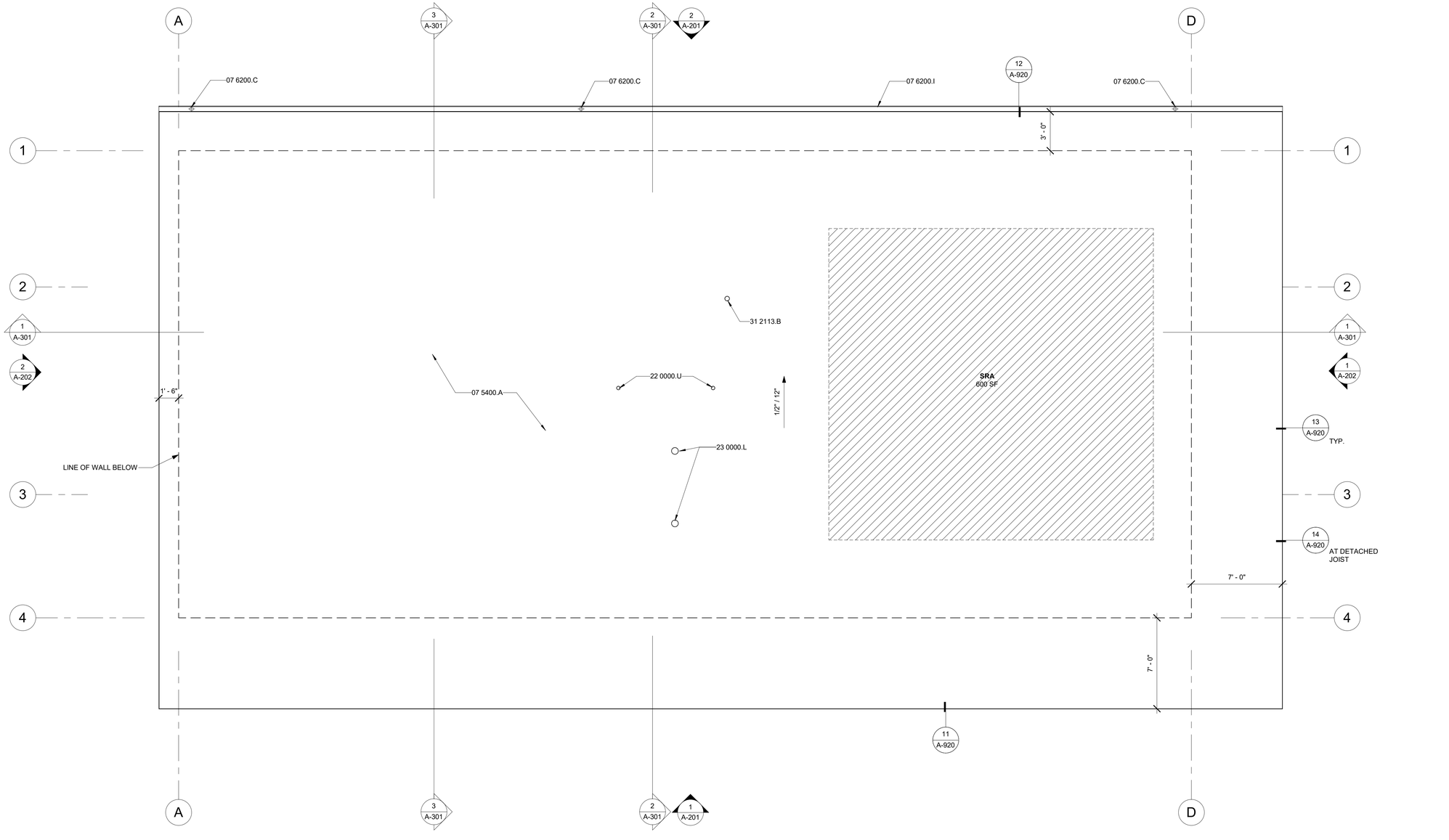
REFLECTED CEILING PLAN

NO.	REVISION	DATE

PROJECT MANAGER: KH
DRAWN BY: DK
CHECKED BY: KF
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: A-111

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1 01-ROOF PLAN

A-201 | A-121 SCALE: 1/4" = 1'-0"

SOLAR READY AREA

TOTAL ROOF AREA = 3,961 SF
TOTAL SKYLIGHT AREA = 5.22 SF X 8 = 42 SF

MINIMUM SOLAR READY AREA = 15% X (3,961 SF - 42 SF) = **588 SF**

SOLAR READY AREA = 600 SF

600 SF > 588 SF - OK

NOTE: NO SOLAR IS PROPOSED AS PART OF THIS PROJECT. ANY FUTURE P.V. INSTALLATION SHALL BE SUBMITTED TO AND APPROVED BY DSA UNDER A SEPARATE APPLICATION NUMBER.

FUTURE SOLAR PANEL LOAD ALLOWANCE: 4.0 PSF

KEYNOTES

07 5400.A	LOW SLOPE MEMBRANE ROOFING SYSTEM
07 6200.C	DOWNSPOUT. REFER TO DETAIL 24/A-920 FOR ATTACHMENT AT STUCCO.
07 6200.I	GUTTER
22 0000.U	PLUMBING VENT, REFER TO PLUMBING
23 0000.L	6" EXHAUST FAN VENT
31 2113.B	RADON VENT PIPE, REFER RADON PLAN.

LEGEND

- 2" / 12" — ROOF SLOPE (REFER TO PLANS FOR ACTUAL SLOPE)
- WALL BELOW
- GUTTER, CONNECT TO DOWNSPOUT
- TUBULAR SKYLIGHT
- FUTURE SOLAR READY AREA

NOTE: NO SOLAR IS PROPOSED AS PART OF THIS PROJECT. ANY FUTURE P.V. INSTALLATION SHALL BE SUBMITTED TO AND APPROVED BY DSA UNDER A SEPARATE APPLICATION NUMBER.

WUI REQUIREMENTS

1. ROOF COVERING SHALL COMPLY WITH ***2022 CBC 705A.2*** UNDERLAYMENT SHALL BE ONE LAYER OF MINIMUM 72 POUND MINERAL-SURFACED NONPERFORATED CAP SHEET COMPLYING WITH ASTM D3909 INSTALLED OVER THE COMBUSTIBLE DECKING.
2. ROOF GUTTERS SHALL COMPLY WITH ***2022 CBC 705A.4***. ROOF GUTTERS SHALL BE PROVIDE WITH THE MEANS TO PREVENT THE ACCUMULATION OF LEAVES AND DEBRIS IN THE GUTTER
3. VENTILATION OPENINGS SHALL COMPLY WITH ***2022 CBC 706A*** - VENTILATION OPENINGS FOR ENCLOSED ATTICS, ENCLOSED EAVE SOFFIT SPACES, ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS, AND UNDERFLOOR VENTILATION OPENINGS SHALL BE FULLY COVERED WITH METAL WIRE MESH, VENTS, OTHER MATERIALS, OR OTHER DEVICES. REFER TO ***SECTIONS 706A.1*** THROUGH ***706A.3*** FOR ADDITIONAL INFORMATION.
4. EXTERIOR COVERINGS SHALL COMPLY WITH ***2022 CBC 707A*** EXTERIOR WALL COVERINGS OR WALL ASSEMBLIES SHALL COMPLY WITH ONE OF THE FOLLOWING REQUIREMENTS: BE OF NONCOMBUSTIBLE MATERIAL, IGNITION-RESISTANT MATERIAL, HEAVY TIMBER EXTERIOR WALL ASSEMBLY, LOG WALL CONSTRUCTION ASSEMBLY, OR WALL ASSEMBLIES THAT MEET THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES FOR A 10-MINUTE DIRECT FLAME CONTACT EXPOSURE TEST SET FORTH IN SFM STANDARD 12-7A-1. REFER TO ***SECTIONS 707A.1*** THROUGH ***707A.9*** FOR ADDITIONAL INFORMATION.
   A. EXTERIOR STUCCO CEMENT PLASTER SYSTEM SHALL BE NON-COMBUSTIBLE PER CBC 707A.3
5. PROVIDE TEMPERED SAFETY GLAZING ON BOTH PANES OF MULTI-PANE GLAZING PER CBC 708A.2.1

ROOF PLAN GENERAL NOTES

1. REFER TO STRUCTURAL PLANS FOR ROOF FRAMING INFORMATION INCLUDING MEMBER SIZES AND CONNECTION HARDWARE.
2. REFER TO PLUMBING PLANS ROOF VENT PENETRATIONS.
3. REFER TO SITE/GRADING PLAN FOR DOWNSPOUT DISCHARGE OR CONTINUATION.
4. WHERE THE ROOF PROFILE ALLOWS A SPACE BETWEEN THE ROOF COVERING AND DECKING, THE SPACES SHALL BE CONSTRUCTED TO PREVENT THE INTRUSION OF FLAMES AND EMBERS, BE FIRESTOPPED WITH APPROVED MATERIALS OR HAVE ONE LAYER OF MINIMUM 72 POUND MINERAL-SURFACED NONPERFORATED CAP SHEET OVER THE COMBUSTIBLE DECKING.
5. ALL ROOFING MATERIALS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
6. OVERHANG DIMENSIONS ARE FROM FACE OF EXTERIOR WALL SHEATHING TO ROOF EDGE
7. ROOF COVERINGS AND UNDERLAYMENT SHALL BE APPLIED IN ACCORDANCE WITH ***(2022 CBC 1507.1)***, AND MANUFACTURER'S INSTALLATION INSTRUCTIONS
8. WHERE PROVIDED, VENTILATION OPENINGS SHALL BE IN ACCORDANCE WITH ***(2022 CBC SECTION 1202)***. EXTERIOR OPENINGS INTO THE ATTIC SPACE SHALL BE COVERED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARE CLOTH, PERFORATED VINYL OR SIMILAR MATERIAL. THE OPENINGS SHALL BE A MINIMUM OF 1/16" AND SHALL NOT EXCEED 1/4" PER ***(2022 CBC 1202.2.2.)***
9. ROOF VENTS SHALL BE APPLIED PER MANUFACTURER'S SPECIFICATIONS
10. FURNISHED DIMENSIONS FOR VENTS ARE GUIDES ONLY. INSTALL PER MANUFACTURERS SPECIFICATIONS AND ADJUST TO ACCOMMODATE TRUSS LOCATIONS, PLUMBING VENTS, AND SOLAR COLLECTORS.

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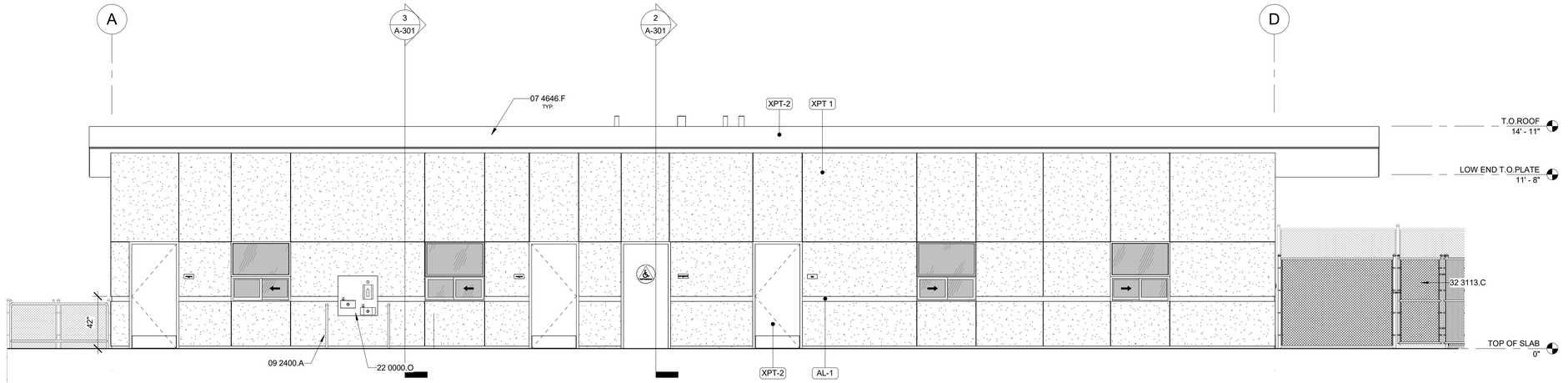
ROOF PLAN

NO.	REVISION	DATE
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PROJECT MANAGER: KH
DRAWN BY: DK | CHECKED BY: KF
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: A-121

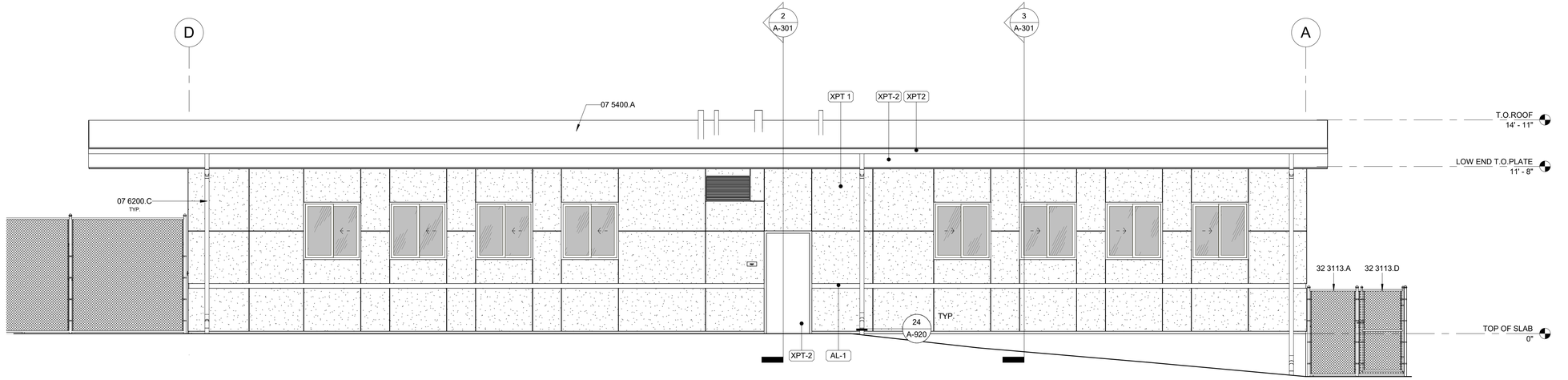
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1 EAST ELEVATION

A-101 | A-201 SCALE: 1/4" = 1'-0"



2 WEST ELEVATION

A-101 | A-201 SCALE: 1/4" = 1'-0"

MATERIAL SCHEDULE

Tag	Description	Application	Manufacturer	Pattern/Texture	Color	Other
PAINT						
AL-1	Aluminum Trim	Trim				
XPT-1	Exterior Paint	Field Color	Sherwin Williams	Satin	Sawyer's Fence SM 30719	
XPT-2	Exterior Paint	Accent Color/Trim	Sherwin Williams	Satin	Roman Blue	
	Exterior Paint	Doors/Frames	Sherwin Williams	Semi-Gloss	Roman Blue	

KEYNOTES

07 4646.F	FIBER CEMENT FASCIA. REFER TO A-920 FOR DETAILS.
07 5400.A	LOW SLOPE MEMBRANE ROOFING SYSTEM
07 6200.C	DOWNSPOUT. REFER TO DETAIL 24/A-920 FOR ATTACHMENT AT STUCCO.
09 2400.A	CEMENT PLASTER SYSTEM
22 0000.O	HI LOW DRINKING FOUNTAIN, REFER TO 21/A-904 DETAIL. SEE PLUMBING FIXTURE SCHEDULE ON SHEET P-001
32 3113.A	6' TALL CHAIN LINK FENCE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.
32 3113.C	6' TALL CHAIN LINK ACCESSIBLE GATE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.
32 3113.D	6' TALL CHAIN LINK MAINTENANCE GATE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.

LEGEND

CPT 1 — MATERIAL TAG
REFER TO MATERIAL SCHEDULE FOR MORE INFORMATION

XPT 1 — EXTERIOR PAINT - FIELD COLOR

ELEVATION GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. FRAMING ELEVATIONS, INCLUDING FLOOR PLATES AND FLOOR LEVEL ELEVATIONS ARE MEASURED FROM BUILDING FINISH FLOOR, U.N.O.
3. SEE DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
4. REFER TO ROOF PLAN FOR ROOF PITCH AND OVERHANGS. FASCIA PER DETAILS.
5. SEE ROOF PLAN FOR APPROXIMATE DOWNSPOUT LOCATIONS, U.N.O.
6. REFER TO DOOR AND WINDOW SCHEDULES AND TYPES FOR DOOR AND WINDOW INFORMATION.
7. SEE ELECTRICAL DRAWINGS FOR EXTERIOR LIGHTING
8. SEE MECHANICAL DRAWINGS FOR GRILLES AND LOUVERS. PAINT TO MATCH ADJACENT FINISH.
9. CONTRACTOR TO VERIFY COLOR SCHEME WITH OWNER BEFORE PERFORMING THE WORK.

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CONSULTANT

MESA MS SPED SCIENCE BUILDING

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EXTERIOR ELEVATIONS

NO.	REVISION	DATE
1		
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PROJECT MANAGER
KH

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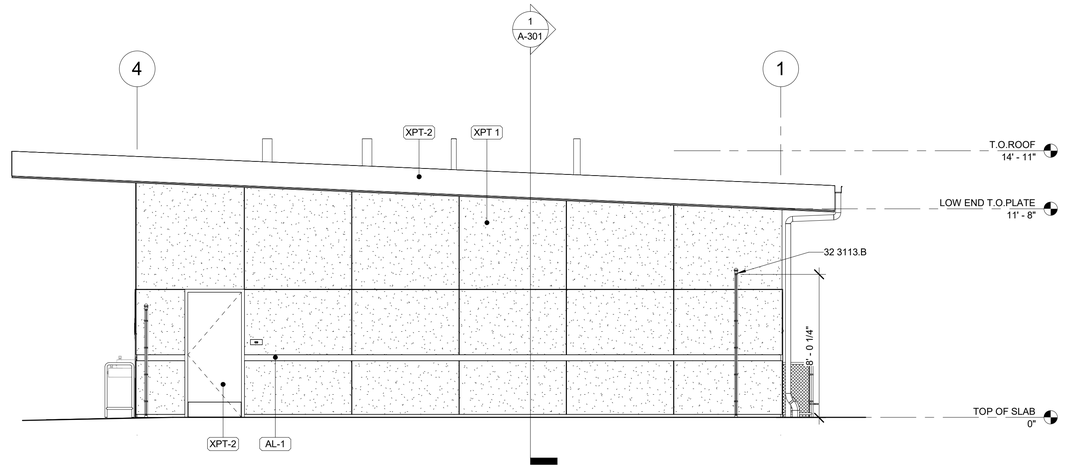
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PROJECT NUMBER
0822-03-ED25

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A-201

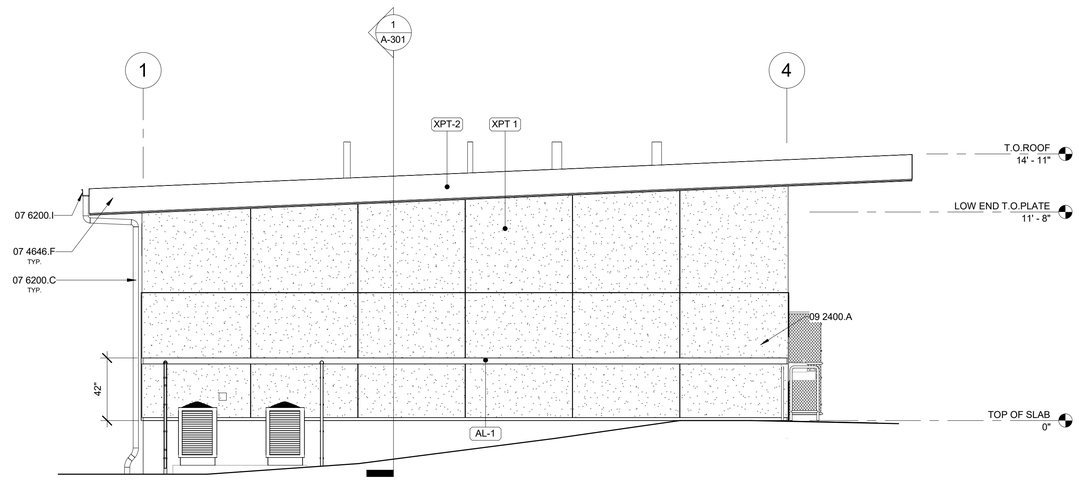
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1 NORTH ELEVATION

A-101 | A-202 SCALE: 1/4" = 1'-0"



2 SOUTH ELEVATION

A-101 | A-202 SCALE: 1/4" = 1'-0"

MATERIAL SCHEDULE

Tag	Description	Application	Manufacturer	Pattern/Texture	Color	Other
PAINT						
AL-1	Aluminum Trim	Trim				
XPT-1	Exterior Paint	Field Color	Sherwin Williams	Satin	Sawyer's Fence SM 30719	
XPT-2	Exterior Paint	Accent Color/Trim	Sherwin Williams	Satin	Roman Blue	
	Exterior Paint	Doors/Frames	Sherwin Williams	Semi-Gloss	Roman Blue	

KEYNOTES

07 4646.F	FIBER CEMENT FASCIA. REFER TO A-920 FOR DETAILS.
07 6200.C	DOWNSPOUT. REFER TO DETAIL 24/A-920 FOR ATTACHMENT AT STUCCO.
07 6200.I	GUTTER
09 2400.A	CEMENT PLASTER SYSTEM
32 3113.B	8' TALL CHAIN LINK FENCE, REFER TO DETAILS ON AS-904. COORDINATE FENCE POST AND FOOTING LOCATIONS WITH EXISTING UTILITY LINES.

LEGEND

CPT 1 — MATERIAL TAG
REFER TO MATERIAL SCHEDULE FOR MORE INFORMATION

XPT 1 — EXTERIOR PAINT - FIELD COLOR

ELEVATION GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. FRAMING ELEVATIONS, INCLUDING FLOOR PLATES AND FLOOR LEVEL ELEVATIONS ARE MEASURED FROM BUILDING FINISH FLOOR, U.N.O.
3. SEE DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
4. REFER TO ROOF PLAN FOR ROOF PITCH AND OVERHANGS. FASCIA PER DETAILS.
5. SEE ROOF PLAN FOR APPROXIMATE DOWNSPOUT LOCATIONS, U.N.O.
6. REFER TO DOOR AND WINDOW SCHEDULES AND TYPES FOR DOOR AND WINDOW INFORMATION.
7. SEE ELECTRICAL DRAWINGS FOR EXTERIOR LIGHTING
8. SEE MECHANICAL DRAWINGS FOR GRILLES AND LOUVERS. PAINT TO MATCH ADJACENT FINISH.
9. CONTRACTOR TO VERIFY COLOR SCHEME WITH OWNER BEFORE PERFORMING THE WORK.

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CONSULTANT

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2555 S HALCYON RD, ARROYO GRANDE, CA

EXTERIOR ELEVATIONS

NO.	REVISION	DATE

PROJECT MANAGER
KH

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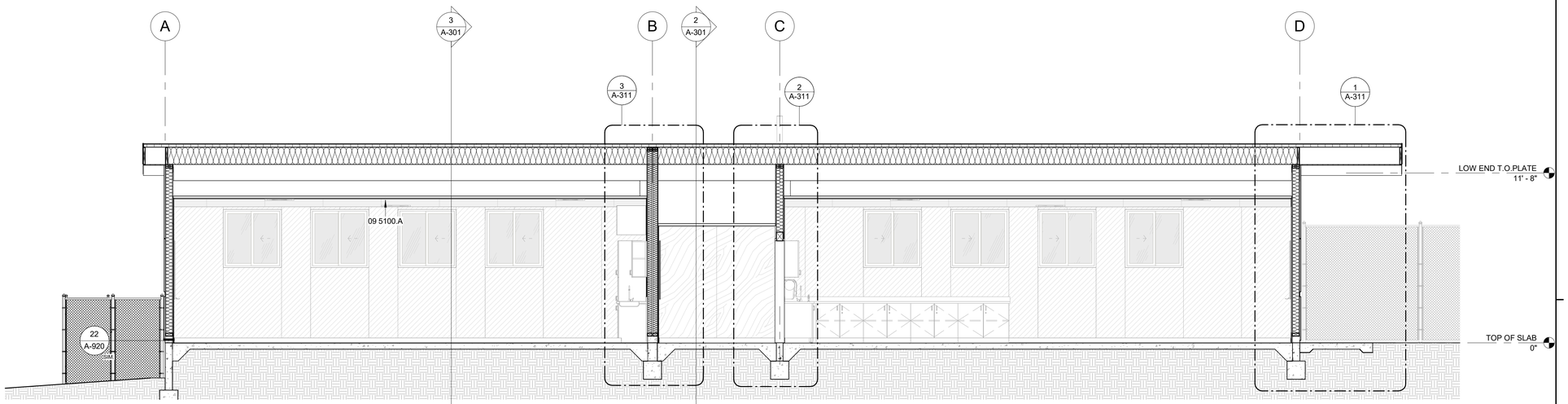
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PROJECT NUMBER
0822-03-ED25

SHEET
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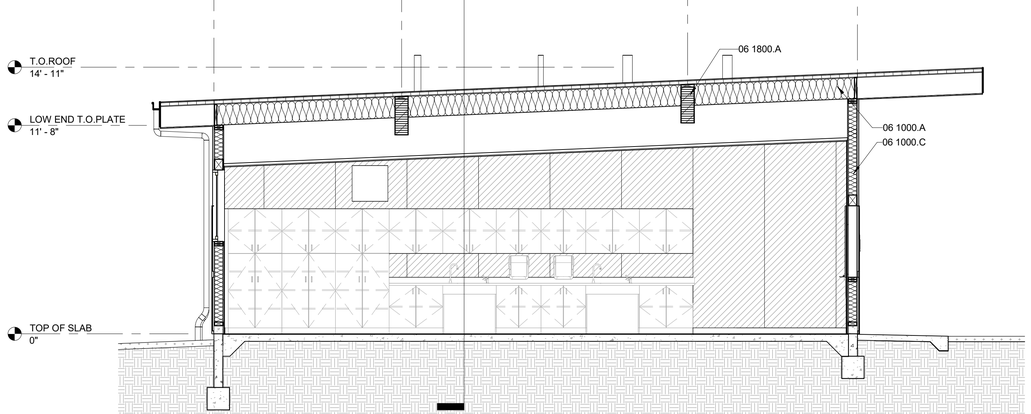
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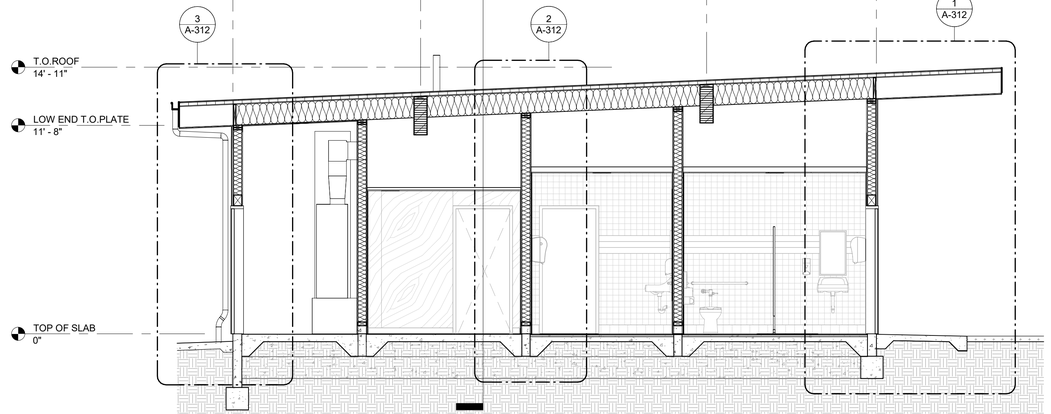
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A-101 | A-301 SCALE: 1/4" = 1'-0"



3 SECTION 3

A-101 | A-301 SCALE: 1/4" = 1'-0"



2 SECTION 2

A-101 | A-301 SCALE: 1/4" = 1'-0"

KEYNOTES

06 1000.A	ROOF FRAMING. REFER TO STRUCTURAL
06 1000.C	WALL FRAMING PER STRUCTURAL AND WALL LEGEND
06 1800.A	GLULAM BEAMS, PER STRUCTURAL.
09 5100.A	ACOUSTICAL LAY-IN TILE CEILING

LEGEND

SECTIONS GENERAL NOTES

1. THE PURPOSE OF THESE DRAWINGS IS TO SHOW CONSTRUCTION MATERIALSS/ASSEMBLIES. FOR SPECIFIC SIZES AND DETAILS REFER TO ARCHITECTURAL PLANS, ELEVATIONS, DETAILS, AND STRUCTURAL PLANS.
2. INSULATION: REFER TO ENERGY COMPLIANCE DOCUMENTATION SHEET EC-002 FOR ADDITIONAL RATINGS, REQUIREMENTS, AND INFORMATION.
3. REFER TO FIREBLOCKING / DRAFTSTOPING DETAIL 24/A-911.
4. WOOD SHALL BE PROTECTED FROM DECAY AND TERMITES AS REQUIRED PER ***2022 CBC SECTION 2304.12***
5. FOUNDATION SILLS TO BE NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD. ***2022 CBC SECTION 2304.112.2***
6. WALL ASSEMBLIES TO BE PER FLOOR PLAN.
7. DOORS, WINDOWS SYSTEMS TO BE PER APPLICABLE SCHEDULE. REFER TO FLOOR PLANS FOR IDENTIFICATION.

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BUILDING SECTIONS

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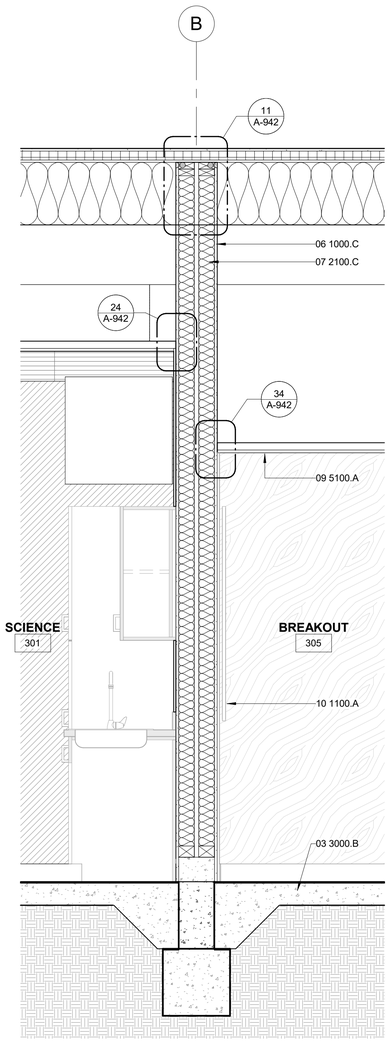
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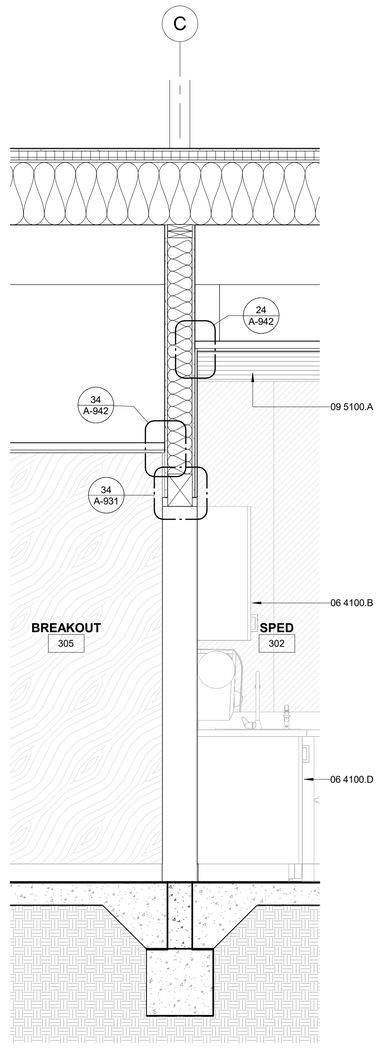
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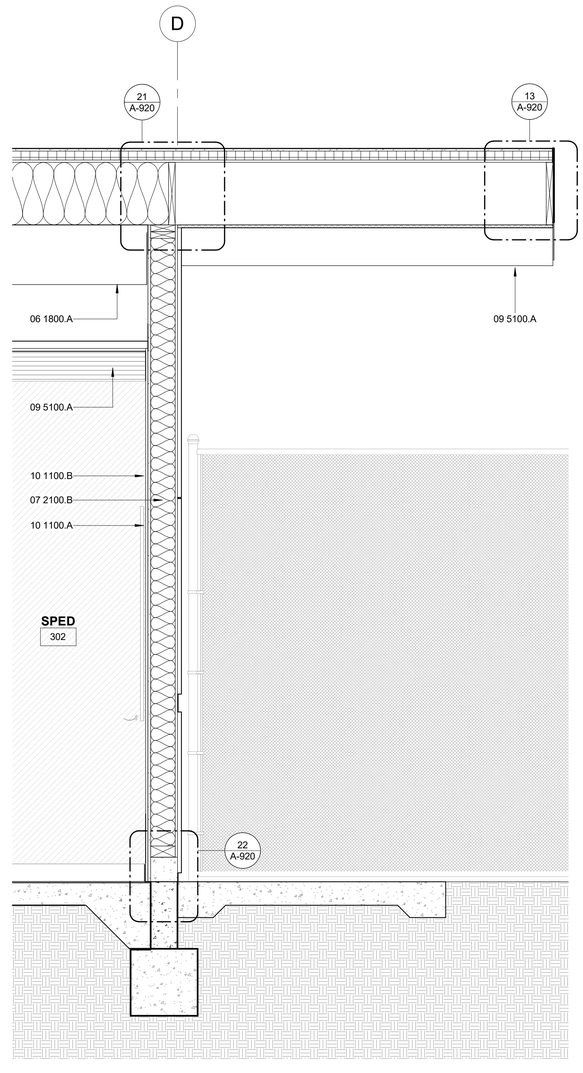
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2 | A-301 | A-311 **SECTION 1 - CALLOUT 2**

SCALE: 3/4" = 1'-0"



1 | A-301 | A-311 **SECTION 1 - CALLOUT 1**

SCALE: 3/4" = 1'-0"

KEYNOTES

03 3000.B	CONCRETE SLAB, REFER TO STRUCTURAL."
06 1000.C	WALL FRAMING PER STRUCTURAL AND WALL LEGEND
06 1800.A	GLULAM BEAMS, PER STRUCTURAL.
06 4100.B	UPPER CABINET. REFER TO INTERIOR ELEVATIONS FOR SIZE, CONFIGURATION, AND WIC NUMBER.
06 4100.D	ACCESSIBLE BASE CABINET. REFER TO INTERIOR ELEVATIONS FOR SIZE, CONFIGURATION, AND WIC NUMBER.
07 2100.B	EXTERIOR WALL BATT INSULATION PER SPECIFICATIONS.
07 2100.C	SOUND CONTROL BATT INSULATION.
09 5100.A	ACOUSTICAL LAY-IN TILE CEILING
10 1100.A	4' x 8' MARKERBOARD; CONTRACTOR PROVIDED. REFER TO DETAIL 22/A-942
10 1100.B	TACKABLE WALL PANELS, CONTRACTOR TO PROVIDE BLOCKING. REFER TO DETAIL 24/A-942

LEGEND

BATT INSULATION

SECTIONS GENERAL NOTES

1. THE PURPOSE OF THESE DRAWINGS IS TO SHOW CONSTRUCTION MATERIALSS/ASSEMBLIES. FOR SPECIFIC SIZES AND DETAILS REFER TO ARCHITECTURAL PLANS, ELEVATIONS, DETAILS, AND STRUCTURAL PLANS.
2. INSULATION: REFER TO ENERGY COMPLIANCE DOCUMENTATION SHEET EC-002 FOR ADDITIONAL RATINGS, REQUIREMENTS, AND INFORMATION.
3. REFER TO FIREBLOCKING / DRAFTSTOPING DETAIL 24/A-911.
4. WOOD SHALL BE PROTECTED FROM DECAY AND TERMITES AS REQUIRED PER ***2022 CBC SECTION 2304.12***
5. FOUNDATION SILLS TO BE NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD. ***2022 CBC SECTION 2304.112.2***
6. WALL ASSEMBLIES TO BE PER FLOOR PLAN.
7. DOORS, WINDOWS SYSTEMS TO BE PER APPLICABLE SCHEDULE. REFER TO FLOOR PLANS FOR IDENTIFICATION.

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REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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938079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

WALL SECTIONS

NO.	REVISION	DATE
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PROJECT MANAGER
KH

DRAWN BY	CHECKED BY
DK	KF

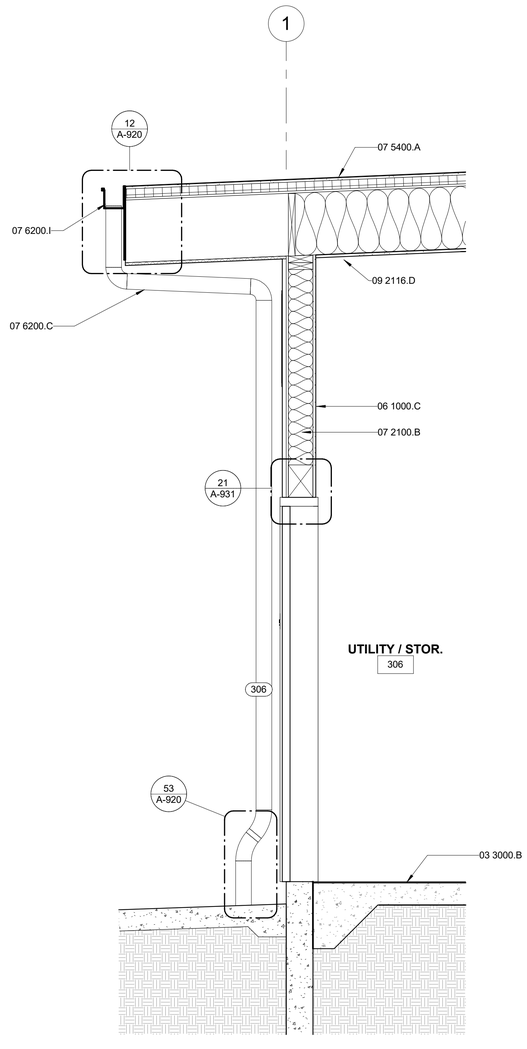
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APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
A-311

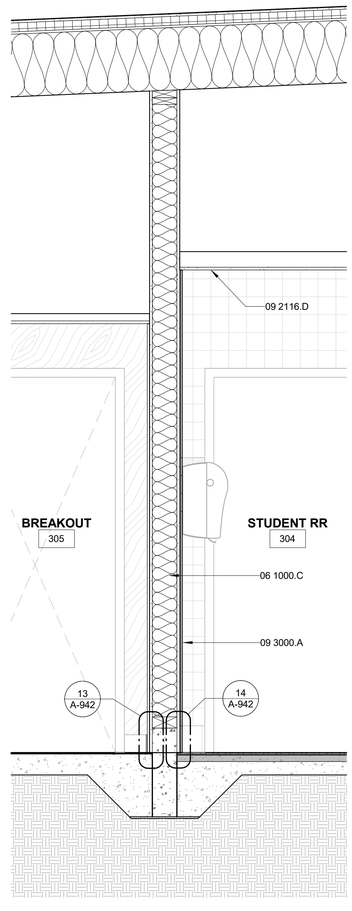
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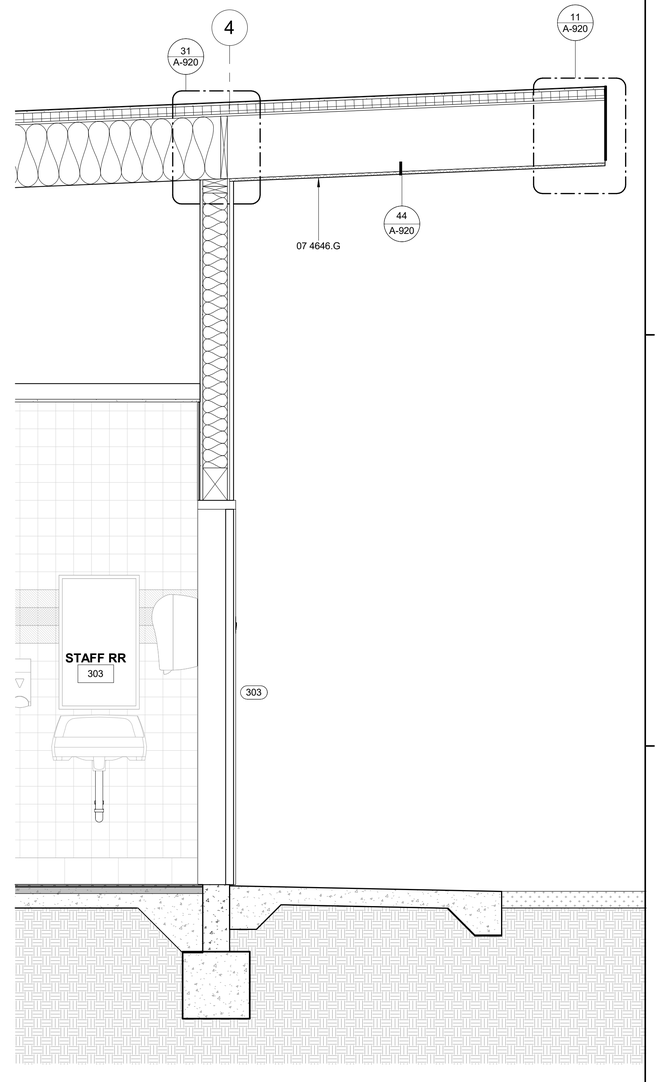
3 SECTION 2 - CALLOUT 3

A-301 | A-312 SCALE: 3/4" = 1'-0"



2 SECTION 2 - CALLOUT 2

A-301 | A-312 SCALE: 3/4" = 1'-0"



1 SECTION 2 - CALLOUT 1

A-301 | A-312 SCALE: 3/4" = 1'-0"

KEYNOTES

03 3000.B	CONCRETE SLAB, REFER TO STRUCTURAL."
06 1000.C	WALL FRAMING PER STRUCTURAL AND WALL LEGEND
07 2100.B	EXTERIOR WALL BATT INSULATION PER SPECIFICATIONS.
07 4646.G	FIBER CEMENT SOFFIT. REFER TO 44/A-920 FOR DETAILS.
07 5400.A	LOW SLOPE MEMBRANE ROOFING SYSTEM
07 6200.C	DOWNSPOUT. REFER TO DETAIL 24/A-920 FOR ATTACHMENT AT STUCCO.
07 6200.I	GUTTER
09 2116.D	GYPSUM BOARD DROP CEILING.
09 3000.A	CERAMIC TILE, WALL APPLICATION.

LEGEND

BATT INSULATION

SECTIONS GENERAL NOTES

1. THE PURPOSE OF THESE DRAWINGS IS TO SHOW CONSTRUCTION MATERIALSS/ASSEMBLIES. FOR SPECIFIC SIZES AND DETAILS REFER TO ARCHITECTURAL PLANS, ELEVATIONS, DETAILS, AND STRUCTURAL PLANS.
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2555 S HALCYON RD, ARROYO GRANDE, CA

WALL SECTIONS

NO.	REVISION	DATE
1		
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3		
4		
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6		

PROJECT MANAGER
KH

DRAWN BY DK | **CHECKED BY** KF

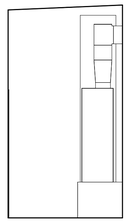
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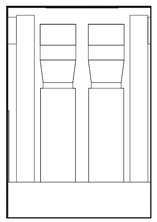
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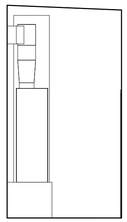
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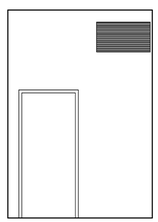
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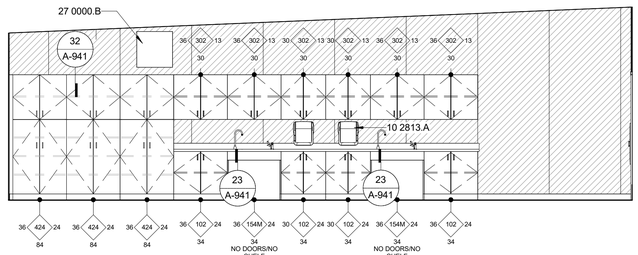
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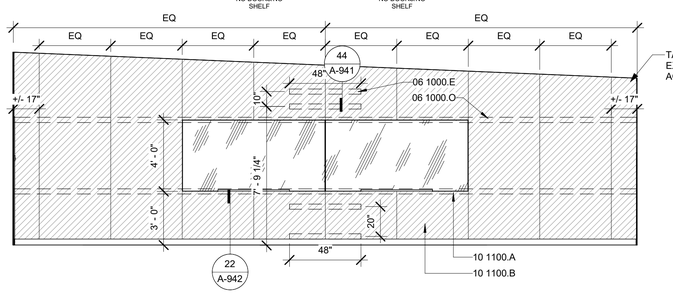
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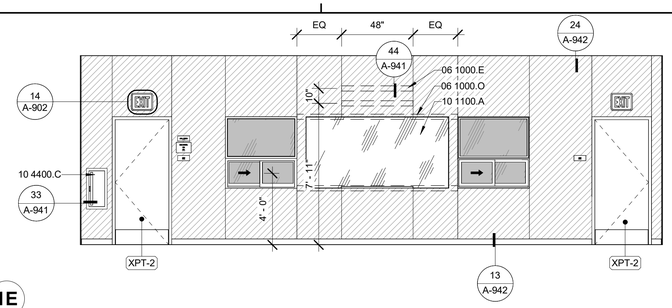
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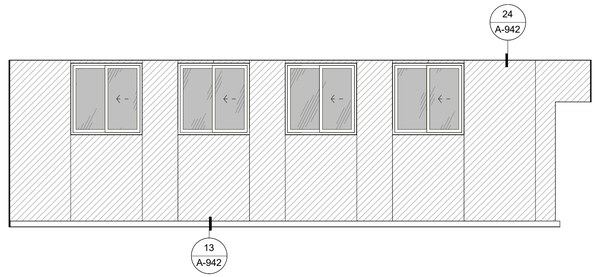
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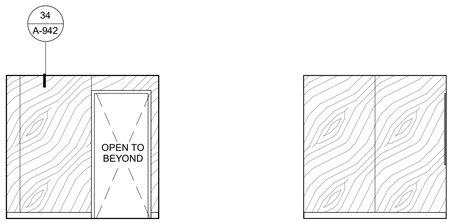
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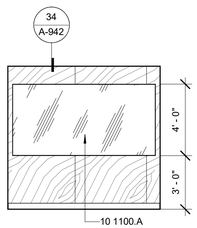
1/4" = 1'-0"

SCIENCE CLASSROOM

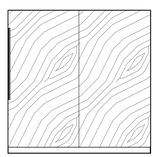


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4E



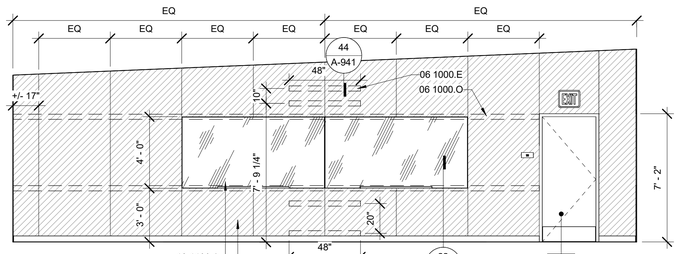
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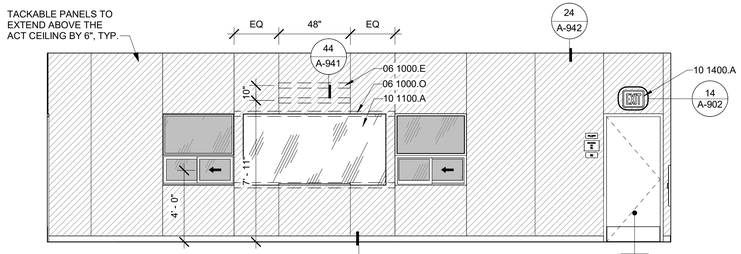
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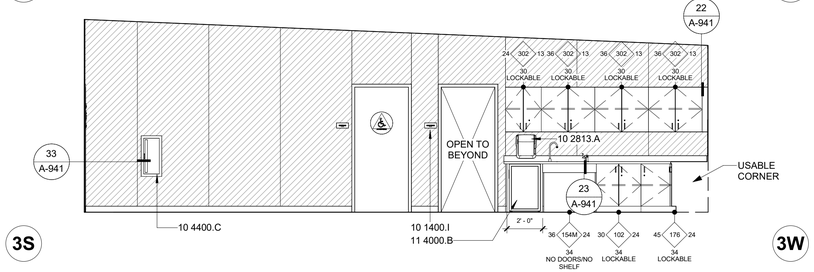
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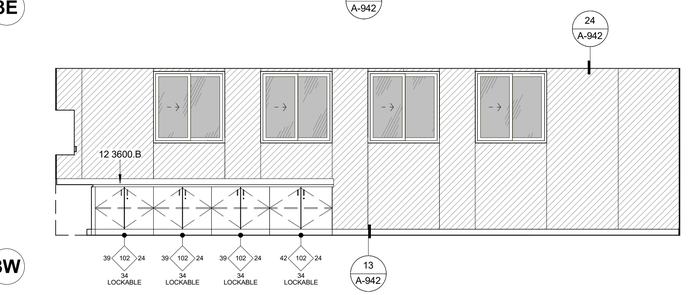
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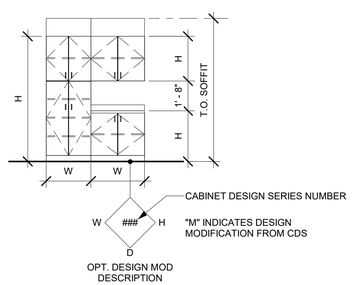


3W

1/4" = 1'-0"

SPED CLASSROOM

CASEWORK LEGEND



MATERIAL LEGEND

CPT 1 — MATERIAL TAG
REFER TO MATERIAL SCHEDULE FOR MORE INFORMATION

FLOORS

CPT 1
LVT 1
CFT 1
PC

WALLS

CT 1
PLY 1
CT 2
VTP 1
CT 3
IPT 1
CT 4

KEYNOTES

06 1000.E	PROVIDE BLOCKING FOR CLIENT PROVIDED WALL-MOUNTED TV BRACKET.
06 1000.O	PROVIDE BLOCKING FOR CLIENT PROVIDED WALL-MOUNTED WHITE BOARD AND OTHER FUTURE USE.
10 1100.A	4' x 8' MARKERBOARD; CONTRACTOR PROVIDED. REFER TO DETAIL 22/A-942
10 1100.B	TACKABLE WALL PANELS, CONTRACTOR TO PROVIDE BLOCKING. REFER TO DETAIL 24/A-942
10 1400.A	ILLUMINATED EXIT SIGN. REFER TO DETAIL 14/A-902
10 1400.I	SIGNAGE. REFER TO A-101 AND A-601
10 2813.A	SURFACE MOUNTED PAPER TOWEL DISPENSER, OFCI
10 4400.C	SEMI-RECESSED FIRE EXTINGUISHER CABINET WITH EXTINGUISHER, 2A:10B:C RATING ; REFER TO 33/A-941
11 4000.B	REFRIGERATOR. OWNER FURNISHED.
12 3600.B	CHEMICAL RESISTANT COMPACT LAMINATE COUNTERTOP
27 0000.B	WALL MOUNTED IDF CABINET, REFER TO ELECTRICAL

INT. ELEVS. GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ELECTRICAL PLANS FOR FURTHER INFORMATION ON ELECTRICAL EQUIPMENT.
3. REFER TO RCP'S FOR SOFFIT DIMENSIONS AND FURTHER INFORMATION.
4. PROVIDE BLOCKING FOR ALL WALLS WHERE WALL HUNG EQUIPMENT AND FIXTURES OCCUR.
5. ALL DIMENSIONS SHOWN IN A ROOM TO BE CONSIDERED TYPICAL FOR EACH ELEVATION OF THE ROOM, UNLESS NOTED OTHERWISE.
6. VERIFY MOUNTING HEIGHTS OF ACCESSORIES AND PLUMBING FIXTURES MEET ACCESSIBILITY REQUIREMENTS WHERE APPLICABLE.
7. ALL WALL AND CEILING FINISHES SHALL COMPLY WITH ***2022 CBC TABLE 803.13*** FOR MAXIMUM FLAME SPREAD AND SMOKE DENSITY.
8. REFER TO FINISH SCHEDULE ON A-103 FOR WALL FINISH MATERIALS AND COLOR SELECTIONS.
9. REFER TO PLUMBING PLANS FOR LOCATIONS OF WALL MOUNTED ACCESS PANELS AT CONCEALED PLUMBING EQUIPMENT.

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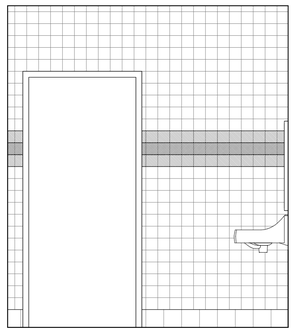
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NO.	REVISION	DATE
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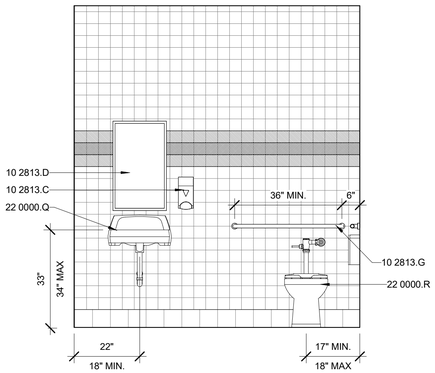
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PROJECT NUMBER: 0822-03-ED25
SHEET: A-511

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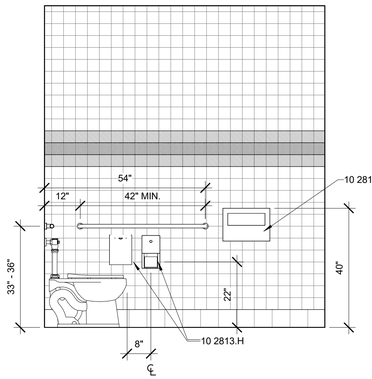
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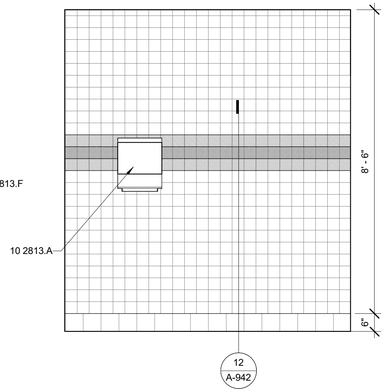
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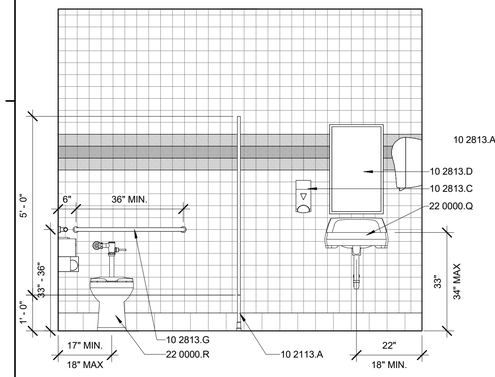


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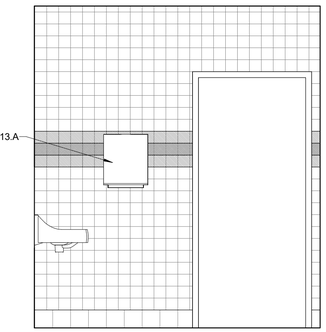


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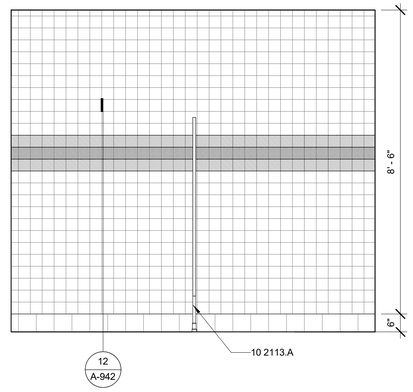
1/2" = 1'-0" **STUDENT RESTROOM**



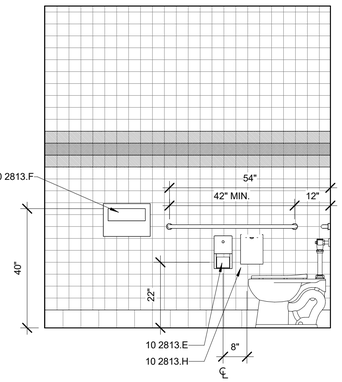
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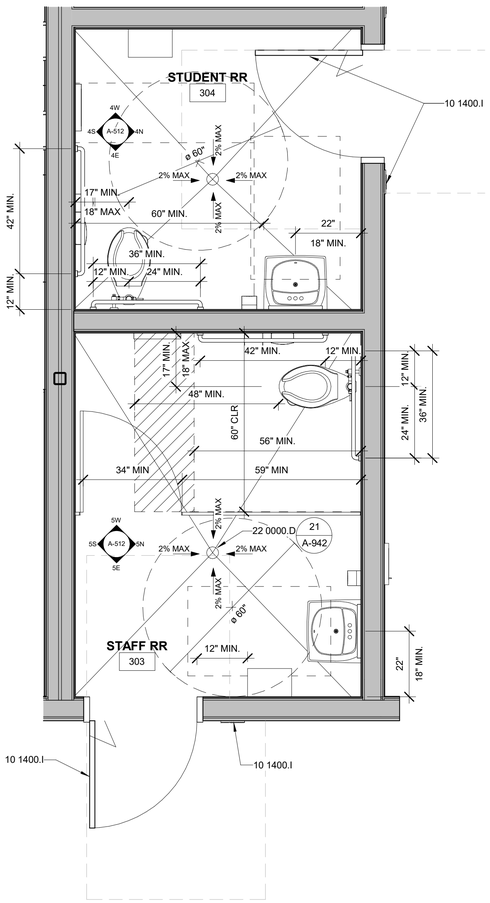


5S



5W

1/2" = 1'-0" **STAFF RESTROOM**

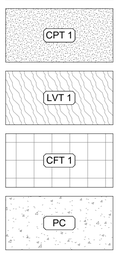


1 **ENLARGED RESTROOM PLAN**
A-101 | A-512 SCALE: 1/2" = 1'-0"

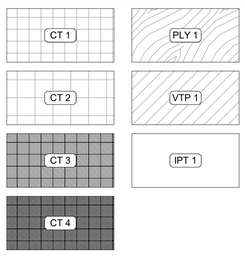
MATERIAL LEGEND

CPT 1 — MATERIAL TAG
REFER TO MATERIAL SCHEDULE FOR MORE INFORMATION

FLOORS



WALLS



KEYNOTES

10 1400.I	SIGNAGE. REFER TO A-101 AND A-601
10 2113.A	TOILET COMPARTMENT
10 2813.A	SURFACE MOUNTED PAPER TOWEL DISPENSER, OFCI
10 2813.C	SOAP DISPENSER MOUNTED
10 2813.D	MIRROR.
10 2813.E	TOILET PAPER HOLDER, OFCI
10 2813.F	SEAT COVER DISPENSER
10 2813.G	GRAB BAR REFER TO DETAIL12/A-904
10 2813.H	SANITARY NAPKIN DISPOSAL.
22 0000.D	FLOOR DRAIN. REFER TO PLUMBING.
22 0000.Q	SINK OR LAVATORY.REFER TO PLUMBING.
22 0000.R	TOILET. REFER TO PLUMBING.

INT. ELEVS. GENERAL NOTES

1. REFER TO GENERAL NOTES SHEET G-002 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ELECTRICAL PLANS FOR FURTHER INFORMATION ON ELECTRICAL EQUIPMENT.
3. REFER TO RCP'S FOR SOFFIT DIMENSIONS AND FURTHER INFORMATION.
4. PROVIDE BLOCKING FOR ALL WALLS WHERE WALL HUNG EQUIPMENT AND FIXTURES OCCUR.
5. ALL DIMENSIONS SHOWN IN A ROOM TO BE CONSIDERED TYPICAL FOR EACH ELEVATION OF THE ROOM, UNLESS NOTED OTHERWISE.
6. VERIFY MOUNTING HEIGHTS OF ACCESSORIES AND PLUMBING FIXTURES MEET ACCESSIBILITY REQUIREMENTS WHERE APPLICABLE.
7. ALL WALL AND CEILING FINISHES SHALL COMPLY WITH ***2022 CBC TABLE 803.13*** FOR MAXIMUM FLAME SPREAD AND SMOKE DENSITY.
8. REFER TO FINISH SCHEDULE ON A-103 FOR WALL FINISH MATERIALS AND COLOR SELECTIONS.
9. REFER TO PLUMBING PLANS FOR LOCATIONS OF WALL MOUNTED ACCESS PANELS AT CONCEALED PLUMBING EQUIPMENT.

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938079
2-28-27
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STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

INTERIOR ELEVATIONS & ENLARGED RESTROOM PLAN

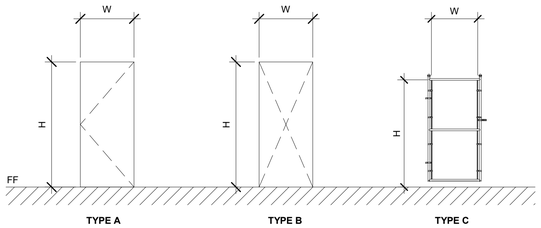
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PROJECT MANAGER: KH
DRAWN BY: DK | CHECKED BY: KF
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: A-512

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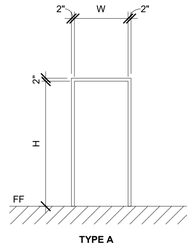
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DOOR & FRAME TYPES



TYPE A | TYPE B | TYPE C

DOOR TYPES



TYPE A

FRAME TYPES

DETAILS

EXTERIOR		INTERIOR	
11 / A-931	TYPICAL HEAD	24 / A-931	TYPICAL HEAD/JAMB
13 / A-931	TYPICAL THRESHOLD	13 / A-931	TYPICAL THRESHOLD
22 / A-931	TYPICAL JAMB	34 / A-931	INTERIOR @ BREAKOUT

DOOR SCHEDULE

NO.	INSIDE ROOM	SIZE			DOOR			FRAME			FIRE RATING	HARDWARE GROUP	SIGNAGE			REMARKS
		WIDTH	HEIGHT	THICKNESS	TYPE	MAT'L	FINISH	TYPE	MAT'L	FINISH			PUSH	PULL	DOOR	
301a	SCIENCE	3' - 0"	7' - 0"	1 3/4"	A	HM	1	A	HM	1	--	01	X	RID	(none)	1, 2, 3, 5, 7, 10
301b	SCIENCE	3' - 0"	7' - 0"	1 3/4"	A	HM	1	A	HM	1	--	02	X	RID	(none)	1, 2, 3, 5, 7, 10
302a	SPED	3' - 0"	7' - 0"	1 3/4"	A	HM	1	A	HM	1	--	02	X	RID	(none)	1, 2, 3, 5, 7, 10
302b	SPED	3' - 0"	7' - 0"	1 3/4"	A	HM	1	A	HM	1	--	02	X	RID	(none)	1, 2, 3, 5, 7, 10
303	STAFF RR	3' - 0"	7' - 0"	1 3/4"	A	HM	1	A	HM	1	--	03	(none)	RRW	RRD	5, 8
304	STUDENT RR	3' - 0"	7' - 0"	1 3/4"	A	WD	4	A	HM	2	--	04	RRW	RID	RRD	5, 8
305	BREAKOUT	3' - 0"	7' - 0"	0"	B	NONE		A	HM	2	--	N/A	(none)	RID	(none)	9
306	UTILITY / STOR.	3' - 0"	7' - 0"	1 3/4"	A	HM	1	A	HM	1	--	05	(none)	RID	(none)	5, 7
307	SPED YARD	3' - 0"	6' - 0"	2"	C	CL	3	N/A	N/A	N/A	--	06	(none)	(none)	(none)	5, 6
308	MECH YARD	3' - 0"	6' - 0"	2"	C	CL	3	N/A	N/A	N/A	--		(none)	(none)	(none)	6

ROOM SIGN TYPES

***NOTE:**
REFER TO 12/G-903 AND 22/G-904 FOR MOUNTING HEIGHTS FOR SIGNAGE.

AS	ASSISTIVE LISTENING
OL	MAXIMUM OCCUPANT LOAD
RID	ROOM IDENTIFICATION
RRD	RESTROOM DOOR SYMBOL
RRW	RESTROOM WALL SIGN
X	EXIT SIGN



TYPE: **RID** — REF. TO: 12 / A-902

TYPE: **X** — REF. TO: 12 / A-902

TYPE: **RRW** — REF. TO: 23 / A-902

TYPE: **OL** — REF. TO: 32 / A-902

TYPE: **RRD** — REF. TO: 23 / A-902

DOOR GENERAL NOTES

1. REFER TO FLOOR PLANS FOR DOOR LOCATIONS.
2. CONTRACTOR TO VERIFY EXACT ROUGH OPENING SIZES WITH DOOR MANUFACTURER SPECIFICATIONS PRIOR TO FABRICATION OF ROUGH OPENINGS.
3. CONTRACTOR TO VERIFY ACTUAL DOOR SIZES TO FIT FINISH OPENING PRIOR TO FABRICATION OF DOOR AND FINISH OPENING.
4. REFER TO DOOR TYPES LEGEND FOR GLAZING.
5. REFER TO T24 REPORT FOR GLAZING ENERGY REQUIREMENTS
6. INSTALL PER MANUFACTURERS WRITTEN INSTRUCTIONS
7. HOLLOW METAL DOORS TO BE POLYSTYRENE FILLED.

DOOR REMARKS

1. EGRESS DOOR.
2. EQUIPPED W/PANIC HARDWARE..
3. INCLUDES SAFETY GLAZING.
4. ~~LOUVERED DOOR.~~
5. KICK-PLATE PROVIDED.
6. REFER TO CIVIL PLANS FOR GATE ELEVATIONS AND ADDITIONAL INFORMATION.
7. PROVIDE SEAL AT BOTTOM OF DOOR PANEL.
8. 1" UNDERCUT.
9. DOUBLE RABBET PER DETAIL 34/A-931 AT SPED FRAME OPENING 305.
10. LOCKABLE FROM THE INSIDE PER CBC. 1010.1.11.

MATERIAL & FINISH LEGEND

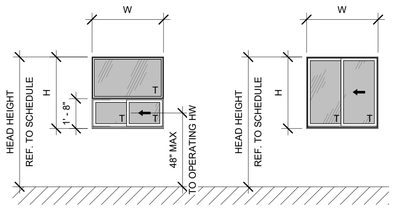
MATERIAL

CL	CHAIN LINK
HM	HOLLOW METAL
MP	METAL PICKET
STL	STEEL
WD	WOOD
SG	SAFETY GLAZING

FINISH

1. PAINTED, XPT2
2. STAIN
3. VINYL COATED
4. HDPL

WINDOW TYPES



TYPE A
SLIDER WITH FIXED TRANSOM
ACCESSIBLE WINDOW*

TYPE B
SLIDER

DETAILS

21 / A-931	TYPICAL HEAD
22 / A-931	TYPICAL JAMB
23 / A-931	TYPICAL SILL

GLASS AND GLAZING NOTES

GLAZING HAZARDOUS LOCATIONS DESCRIBED IN CBC SECTION 2406.3. SHALL BE TEMPERED SAFETY GLASS, IF WITHIN 24" OF ANY DOOR. GLAZING IN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST EXPOSED EDGE OF THE GLAZING IS WITHIN 24-INCH ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE.

EACH LIGHT SHALL BEAR THE MANUFACTURERS LABEL DESIGNATION THE TYPE AND THICKNESS OF GLASS. EACH LIGHT OF TEMPERED SAFETY GLASS SHALL HAVE A PERMANENT IDENTIFICATION LABEL WHICH SHALL BE VISIBLE WHEN THE LIGHT IS INSTALLED.

FRAMING PERIMETER DIMENSIONS ARE OPENING SIZES, CONTRACTOR TO VERIFY EXACT FRAME DIMENSIONS.

*ACCESSIBLE WINDOW NOTES:

AT LEAST ONE WINDOW OPENING IN AN ACCESSIBLE ROOM SHALL COMPLY WITH THE FOLLOWING:
CLEAR FLOOR SPACE THAT COMPLIES WITH CBC 11B-305 SHALL BE PROVIDED WHERE OPERABLE HARDWARE EXISTS, MAX OPERATING HEIGHT SHALL COMPLY WITH CBC 11B-308 AND BE NO HIGHER THAN 48" A.F.F.

OPERABLE PARTS: WINDOW SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST, AND FORCE REQUIRED TO ACTIVATE SHALL BE 5 LBS. MAX. BASIS OF DESIGN WINDOW HAS "PUSH" OPERATED SLIDER HARDWARE.

REFER TO SHEET A-101 FOR LOCATION OF ACCESSIBLE WINDOW.

WINDOW SCHEDULE

NO.	TYPE	SIZE		SILL HEIGHT	HEAD HEIGHT	FRAME MATERIAL	REMARKS
		WIDTH	HEIGHT				
301a	A	4' - 0"	4' - 0"	3' - 2"	7' - 2"	VINYL	1
301b	A	4' - 0"	4' - 0"	3' - 2"	7' - 2"	VINYL	1
301c	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1
301d	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1
301e	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1
301f	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1
302a	A	4' - 0"	4' - 0"	3' - 2"	7' - 2"	VINYL	1
302b	A	4' - 0"	4' - 0"	3' - 2"	7' - 2"	VINYL	1
302c	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1
302d	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1
302e	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1
302f	B	4' - 0"	4' - 0"	5' - 2"	9' - 2"	VINYL	1

WINDOW GENERAL NOTES

1. REFER TO GENERAL NOTES ON SHEET G-101 FOR ADDITIONAL REQUIREMENTS
2. REFER TO FLOOR PLANS FOR WINDOW LOCATIONS.
3. CONTRACTOR TO VERIFY EXACT ROUGH OPENING SIZES WITH WINDOW MANUFACTURER SPECIFICATIONS PRIOR TO FABRICATION OF ROUGH OPENINGS.
4. CONTRACTOR TO VERIFY ACTUAL WINDOW SIZES TO FIT FINISH OPENING PRIOR TO FABRICATION OF WINDOW AND FINISH OPENING.
5. HEAD HEIGHT MEASURED FROM FF UNLESS NOTED OTHERWISE.
6. REFER TO ENERGY COMPLIANCE REPORTS FOR U-FACTOR, SHGC AND ADDITIONAL WINDOW REQUIREMENTS.
7. ALL GLAZING IS DOUBLE PANE UNLESS OTHERWISE NOTED.
8. PROVIDE SHOP DRAWINGS FOR ALL WINDOW UNITS
9. REFER TO WINDOW TYPES LEGEND FOR GLAZING.
10. REFER TO WINDOW SCHEDULE AND WINDOW TYPES LEGEND FOR FURTHER INFORMATION.
11. STOREFRONT SECTIONS ARE 2" AND CURTAINWALL SECTIONS ARE 2-1/2", UNO. REFER TO STOREFRONT TYPES LEGEND FOR FURTHER INFORMATION.
12. WINDOWS BETWEEN CONDITIONED AND UNCONDITIONED SPACES SHALL BE CAULKED, GASKETED, WEATHER-STRIPPED OR OTHERWISE SEALED.
13. SAFETY GLAZING NOTATED WITH "T"

WINDOW REMARKS

1. INCLUDES SAFETY GLAZING ON BOTH PANES. REFER TO SPECIFICATIONS FOR INSULATED GLASS IG-1.

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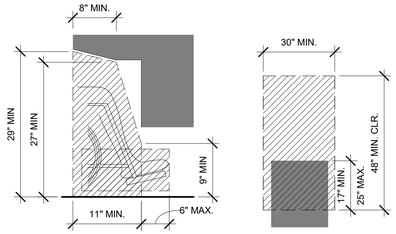
DOOR AND WINDOW SCHEDULES

NO.	REVISION	DATE
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DRAWN BY: DK | CHECKED BY: KF
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PROJECT NUMBER: 0822-03-ED25
SHEET: A-601

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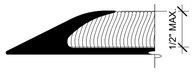
ELEVATION PLAN

NOTE:
1. THE REQUIRED CLEAR FLOOR SPACE MAY NOT OVERLAP THE REQUIRED KNEE SPACE BY MORE THAN 19".
2. KNEE CLEARANCES AT TABLES, COUNTERS & WORKSURFACES IS AT LEAST 27" HIGH, 30" WIDE AND 19" DEEP.

REF: 2022 CBC 11B-306

41 TOE & KNEE CLEARANCES

A-901 SCALE: 3" = 1'-0"



CARPET OR CARPET TILE MUST CONSIST OF:
- LEVEL LOOP
- TEXTURED LOOP
- LEVEL CUT PILE, OR
- LEVEL CUT/UNCUT PILE

IF PILE HEIGHT EXCEEDS 1/4", THEN EDGES MUST HAVE BEVELED TRIM

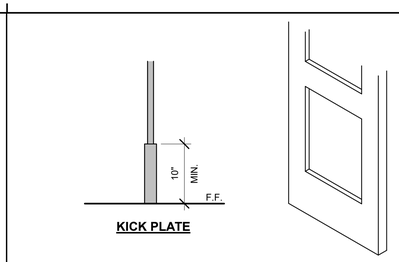
EXPOSED EDGES OF CARPET SHALL BE FASTENED TO FLOOR SURFACES AND SHALL HAVE TRIM ON THE ENTIRE LENGTH OF THE EXPOSED EDGE

FOR CHANGES IN LEVEL, REF. TO: 33 / A-901

REF. CBC 11B-302.2

42 CARPET FLOOR SURFACES

A-901 SCALE: 12" = 1'-0"



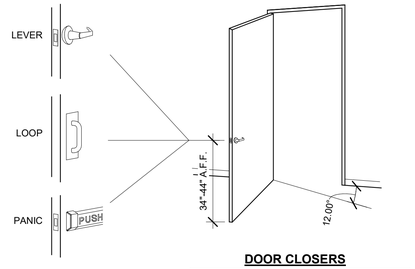
KICK PLATE

NOTE:
SWINGING DOOR & GATE SURFACES WITHIN 10" OF FINISH FLOOR SHALL HAVE A SMOOTH SURFACE OF THE PUSH SIDE EXTENDING THE FULL WIDTH OF DOOR OR GATE. PARTS CREATING HORIZONTAL OR VERTICAL JOINTS SHALL BE WITHIN 1/16" OF SURFACE & SHALL BE FREE OF SHARP OR ABRASIVE EDGES. CAVITIES CREATED BY KICK PLATES SHALL BE CAPPED.

REF: CBC 11B-404.2.10

31 ACC. DOOR KICK PLATE

A-901 SCALE: 1" = 1'-0"



ACCEPTABLE DOOR HARDWARE AND MOUNTING HEIGHTS

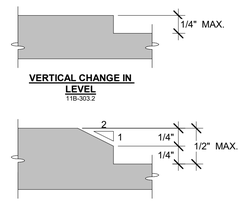
DOOR CLOSERS

NOTE:
DOOR CLOSERS IF PRESENT, MUST BE SET SO THAT IT TAKES DOOR AT LEAST 5 SECONDS TO CLOSE FROM AN OPEN POSITION OF 90 DEGREES TO WITHIN 12° OF LATCH. THE FORCE TO OPEN DOOR SHALL NOT EXCEED 5 LBS. TYPICAL.

REF: CBC 11B-404.2

32 ACC. DOOR REQUIREMENTS

A-901 SCALE: 1" = 1'-0"



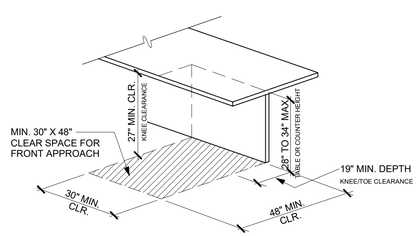
VERTICAL CHANGE IN LEVEL
11B-303.2

BEVELED CHANGE IN LEVEL
11B-303.3

REF: CBC 11B 303

33 CHANGES IN LEVEL

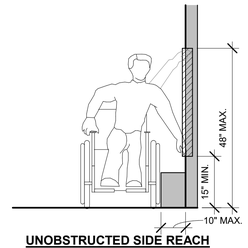
A-901 SCALE: 12" = 1'-0"



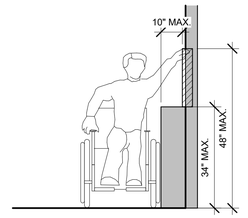
NOTE:
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2. KNEE CLEARANCES AT TABLES, COUNTERS & WORKSURFACES IS AT LEAST 27" HIGH, 30" WIDE AND 19" DEEP.

34 COUNTERTOP CLEARANCES

A-901 SCALE: 3" = 1'-0"



UNOBSTRUCTED SIDE REACH

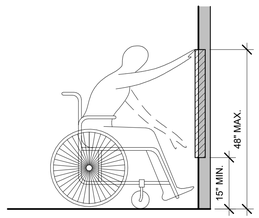


OBSTRUCTED HIGH SIDE REACH

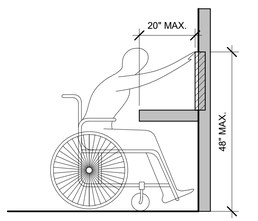
REF: CBC 11B-308.3

22 ACC. SIDE REACH

A-901 SCALE: 1/2" = 1'-0"



UNOBSTRUCTED FORWARD REACH

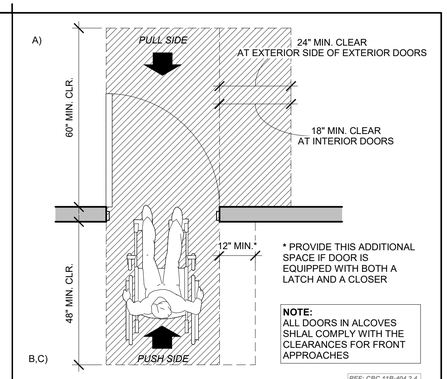


OBSTRUCTED HIGH FORWARD REACH

REF: CBC 11B-308.2

24 ACC. FORWARD REACH

A-901 SCALE: 1/2" = 1'-0"



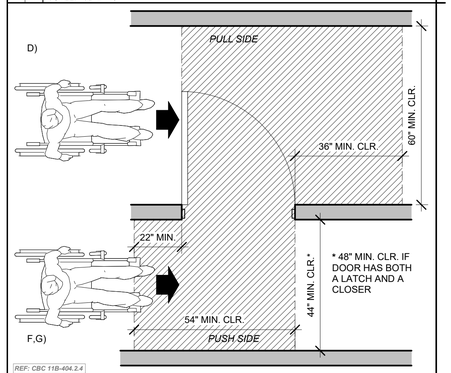
* PROVIDE THIS ADDITIONAL SPACE IF DOOR IS EQUIPPED WITH BOTH A LATCH AND A CLOSER

NOTE:
ALL DOORS IN ALCOVES SHLAL COMPLY WITH THE CLEARANCES FOR FRONT APPROACHES

REF: CBC 11B-404.2.4

11 FRONT APPROACH CLEARANCES

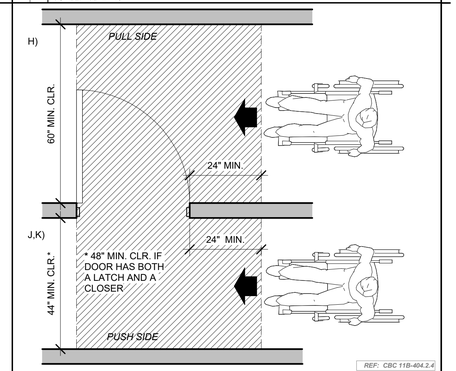
A-901 SCALE: 1/2" = 1'-0"



REF: CBC 11B-404.2.4

12 HINGE APPROACH CLEARANCES

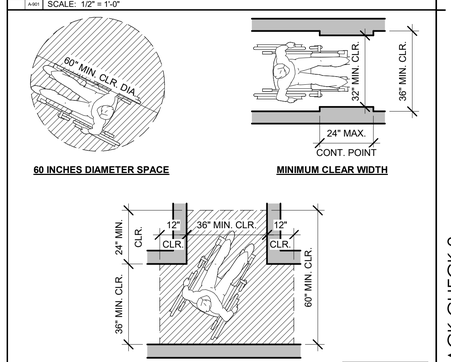
A-901 SCALE: 1/2" = 1'-0"



REF: CBC 11B-404.2.4

13 LATCH APPROACH CLEARANCES

A-901 SCALE: 1/2" = 1'-0"



60 INCHES DIAMETER SPACE

MINIMUM CLEAR WIDTH

T-SHAPED SPACE FOR 180 DEGREE TURNS

REF: CBC 11B-304 & 11B-403.5.1

14 TURNING SPACE

A-901 SCALE: 3/8" = 1'-0"

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CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

ACCESSIBILITY DETAILS - GENERAL

NO.	REVISION	DATE
1		
2		
3		
4		
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6		

PROJECT MANAGER: KH
DRAWN BY: DK
CHECKED BY: KF
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: A-901

DSA BACK CHECK 2

4/21/2026 10:24:52 AM
Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt



PERMANENT SIGNAGE TO BE WALL MOUNTED 7'-0" AFF UNO ON SIGNAGE PLAN.

VISUAL CHARACTERS TO COMPLY WITH 11B-703.5.

PICTOGRAM TO COMPLY WITH 11B-703.6 AND 11B-703.7.

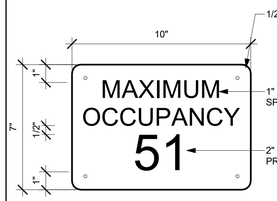
NOTE: REFER TO SPECIFICATION FOR REQUIRED NUMBER OF RECEIVERS TO BE PROVIDED.

REF CBC 11B-703

31 ASSISTIVE LISTENING SIGN

A902 SCALE: 3" = 1'-0"

ALL TEXT/GRAPHICS TO BE A PERMANENT PART OF THE SIGN



EVERY ROOM OR SPACE WITH AN OCCUPANT LOAD OF 50 OR MORE SHALL HAVE THE OCCUPANT LOAD OF THE ROOM OR SPACE POSTED IN A CONSPICUOUS PLACE, NEAR THE MAIN EXIT OR EXIT ACCESS DOORWAY FROM THE ROOM OR SPACE.

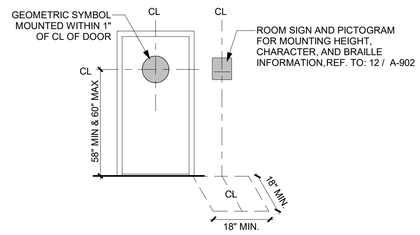
FOR ADDITIONAL ROOM SIGN INFORMATION REF. TO: 12 / A-902

REF: CBC 703
REF: CBC 1004.9

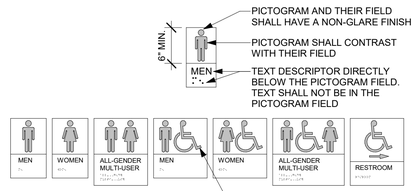
32 MAX OCCUPANT LOAD SIGN

A902 SCALE: 3" = 1'-0"

APPLICABLE SIGNAGE TO BE INSTALLED AT BOTH ACCESSIBLE AND NON-ACCESSIBLE RESTROOMS

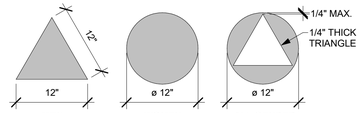


PICTOGRAM & ROOM SIGNS



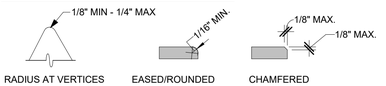
DOOR-MOUNTED GEOMETRIC SYMBOLS

PICTOGRAMS AND/OR LETTERING ARE NOT REQUIRED ON DOOR-MOUNTED SIGNAGE



GEOMETRIC SYMBOLS SHALL BE 1/4" THICK.
SYMBOLS SHALL CONTRAST WITH THE COLOR OF THE DOOR OR SURFACE ON WHICH THE SYMBOL IS MOUNTED.

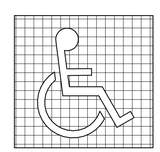
EDGES AND VERTICES ON GEOMETRIC SYMBOLS



REF. 11B-703.7
REF 11B-703.4

23 RESTROOM SIGNS & SYMBOLS

A901 SCALE: 1" = 1'-0" ACC-INT-45_V1



SYMBOL PROPORTIONS

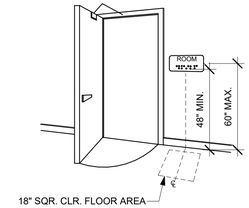


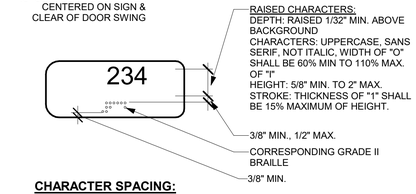
FIGURE 11B-703.7.2.1 INTERNATIONAL SYMBOL

REF: CBC 11B-703.7.2.1

24 INTL SYMBOL OF ACC.

A902 SCALE: 1 1/2" = 1'-0"





CHARACTER SPACING:

RECTANGULAR

18

1/8" MIN. TO 4 TIMES STROKE WIDTH MAX

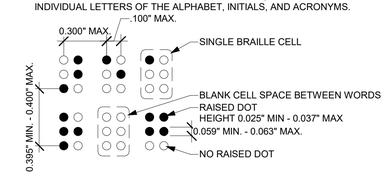
NON RECTANGULAR

74

1/16" MIN. TO 4 TIMES STROKE WIDTH MAX

BRAILLE

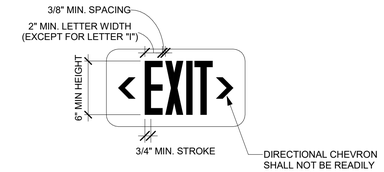
THE INDICATION OF AN UPPERCASE LETTER OR LETTERS SHALL ONLY BE USED BEFORE THE FIRST WORD OF SENTENCES, PROPER NOUNS AND NAMES, INDIVIDUAL LETTERS OF THE ALPHABET, INITIALS, AND ACRONYMS.



REF. 11B-703

12 ROOM SIGNAGE

A902 SCALE: 3" = 1'-0"



CBC 1013.1 WHERE REQUIRED
Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. The path of egress travel to exits and within exits shall be marked by readily visible exit signs to clearly indicate the direction of egress travel in cases where the exit or the path of egress travel is not immediately visible to the occupants. Intervening means of egress doors within exits shall be marked by exit signs. Exit sign placement shall be such that any point in an exit access corridor or exit passageway is within 100 feet (30 480 mm) or the listed viewing distance of the sign, whichever is less, from the nearest visible exit sign.

EXCEPTIONS:
1. Exit signs are not required in rooms or areas that require only one exit or exit access.
2. Main exterior exit doors or gates that are obviously and clearly identifiable as exits need not have exit signs where approved by the building official.
3. Exit signs are not required in occupancies in Group U and individual sleeping units or dwelling units in Group R-1, R-2 or R-3 or R-3.1.
4. Exit signs are not required where inmates are housed, or held in dayrooms, sleeping rooms or dormitories in occupancies in Group I-3.
5. In occupancies in Groups A-4 and A-5, exit signs are not required on the seating side of vomitories or openings into seating areas where exit signs are provided in the concourse that are readily apparent from the vomitories. Egress lighting is provided to identify each vomitory or opening within the seating area in an emergency.

CBC 1013.5 INTERNALLY ILLUMINATED SIGNS
Electrically powered, self-luminous and photoluminescent exit signs shall be listed and labeled in accordance with UL 924 and shall be installed in accordance with the manufacturer's instructions and Chapter 27. Exit signs shall be illuminated at all times.

CBC 1013.6 EXTERNALLY ILLUMINATED EXIT SIGNS
Externally illuminated exit signs shall comply with Sections 1013.6.1 through 1013.6.3.

CBC 1013.6.1 GRAPHICS
Every exit sign and directional exit sign shall have plainly legible letters not less than 6 inches (152 mm) high with the principal strokes of the letters not less than 3/4 inch (19.1 mm) wide. The word "EXIT" shall have letters having a width not less than 2 inches (51 mm) wide, except the letter "I," and the minimum spacing between letters shall be not less than 3/8 inch (9.5 mm). Signs larger than the minimum established in this section shall have letter widths, strokes and spacing in proportion to their height.

The word "EXIT" shall be in high contrast with the background and shall be clearly discernible when the means of exit sign illumination is or is not energized. If a chevron directional indicator is provided as part of the exit sign, the construction shall be such that the direction of the chevron directional indicator cannot be readily changed.

14 ILLUMINATED EXIT SIGN

A511 A902 SCALE: 1" = 1'-0"

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APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

ACCESSIBILITY DETAILS - SIGNAGE

NO.	REVISION	DATE
1		
2		
3		
4		
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PROJECT MANAGER
KH

DRAWN BY DK
CHECKED BY KF

DATE
APRIL 23, 2026

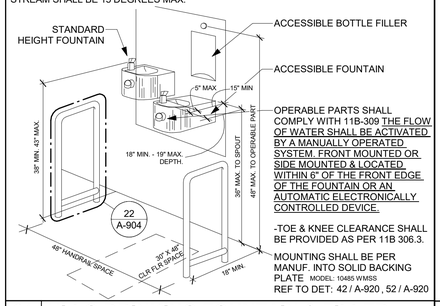
PROJECT NUMBER
0822-03-ED25

SHEET
A-902

DSA BACK CHECK 2

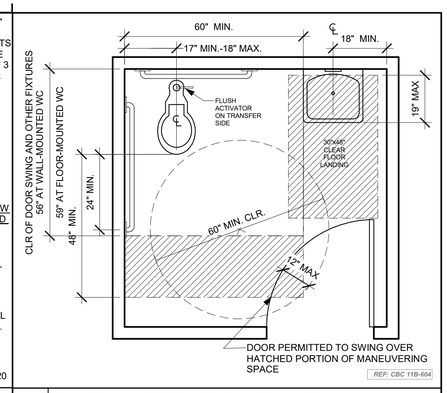
4/21/2026 10:34:52 AM
Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt

THE SPOUT SHALL PROVIDE A FLOW OF WATER 2" HIGH MIN. AND SHALL BE LOCATED 5" MAX. FROM THE FRONT OF THE UNIT. THE ANGLE OF THE WATER STREAM SHALL BE MEASURED HORIZONTALLY RELATIVE TO THE FRONT FACE OF THE UNIT. WHERE SPOUTS ARE LOCATED LESS THAN 2 INCHES FROM THE FRONT OF THE UNIT, THE ANGLE OF THE WATER STREAM SHALL BE 30 DEGREES MAX. WHERE SPOUTS ARE LOCATED BETWEEN 3 INCHES AND 5 INCHES MAX. FROM THE FRONT ON THE UNIT THE ANGLE OF THE WATER STREAM SHALL BE 15 DEGREES MAX.



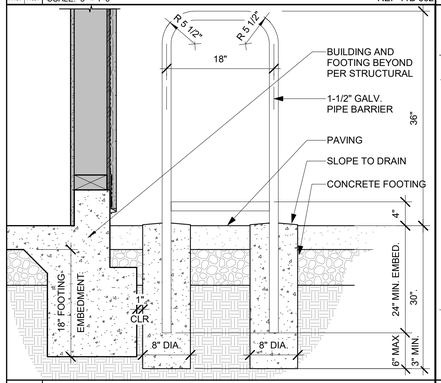
21 HI-LO DRINKING FOUNTAIN & FILLER

A-101 A-904 SCALE: 3" = 1'-0" REF 11B 602



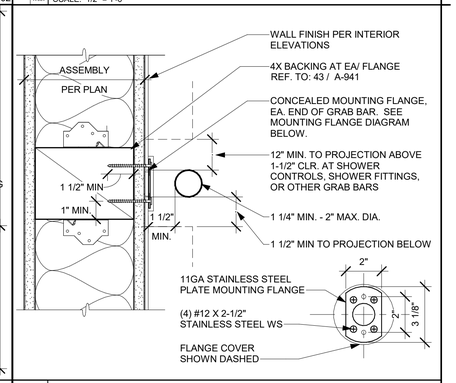
11 SINGLE-ACCOMODATION TOILET

A-904 SCALE: 1/2" = 1'-0"



22 DRINKING FOUNTAIN BARRIER RAIL

A-101 A-904 SCALE: 1" = 1'-0"



12 GRAB BAR ATTACHMENT

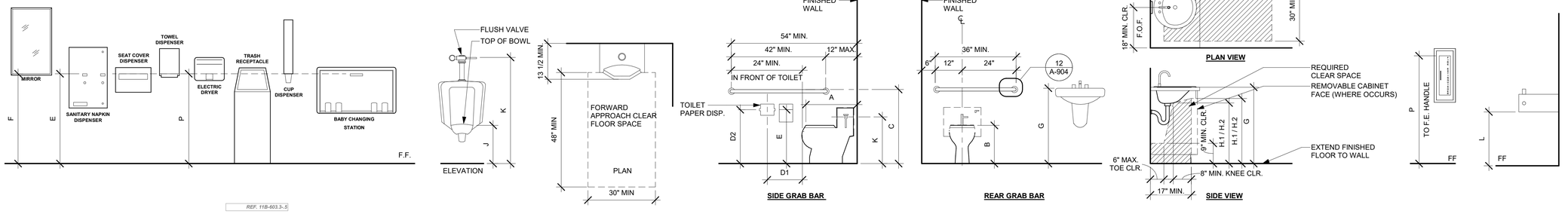
A-904 A-904 SCALE: 3" = 1'-0"

		AGE GROUP	ADULT
A	TOILET CL FROM WALL		17"-18"
B	TOILET SEAT HEIGHT		17"-19"
C	TOP OF GRAB BAR GRIPPING SURFACE		33"-36"
D1	FURTHEST TOILET PAPER IN FRONT OF TOILET		7"-9" AT CL
D2	DISPENSER HEIGHT		19"-24"
E	SANITARY NAPKIN DISPOSAL (HIGHEST OPERABLE PART A.F.F.)		19" MIN.
F	MIRROR - BOT. OF REFLECTIVE SURFACE A.F.F.		40" MAX. WHEN ABOVE SINK OR COUNTERTOP 35" MAX. NO LAV.
G	LAVATORY/SINK RIM HEIGHT		34" MAX.
H.1	LAVATORY KNEE CLEARANCE		17" MIN. AT 8" DEPTH 29" MIN. AT APRON
H.2	SINK KNEE CLEARANCE		
J	URINAL LIP HEIGHT		17" MAX.
K	URINAL FLUSH HANDLE HEIGHT		44" MAX.

		AGE GROUP	ADULT
L	LOW DRINKING FOUNTAIN APPROACH		PER 11B-306
	SPOUT HEIGHT AND LOCATION FROM EDGE OF UNIT INCLUDING BUMPERS		36" MAX. A.F.F & 5" MAX. FROM FRONT EDGE OF UNIT
	DRINKING FOUNTAIN OPERABLE PARTS FROM FRONT EDGE OF THE UNIT		6" MAX.
M	DRINKING FOUNTAIN KNEE CLEARANCE		27" MIN. CLR.
P	DISPENSERS/OPERABLE PARTS		40" MAX.
Q	REACH RANGE - FRONT & SIDE APPROACH		48" MAX.
R	BOTTOM OF OPENING/OUTLET		19" MIN.
S	TOE CLEARANCE AT TOILET PARTITION		9" MIN.
T	TOILET FLUSH CONTROL HEIGHT		

LAVATORY:
A FIXED BOWL OR BASIN WITH RUNNING WATER AND DRAINPIPE, AS IN A TOILET OR BATHING FACILITY, FOR WASHING OR BATHING PURPOSES.

SINK:
A FIXED BOWL OR BASIN WITH RUNNING WATER AND DRAINPIPE, AS IN A KITCHEN OR LAUNDRY, FOR WASHING DISHES, CLOTHING, ETC.



46 FIXTURE AND ACCESSORIES MOUNTING HEIGHTS AND CLEARANCES

A-904 SCALE: 1/2" = 1'-0"

NOTES:
1. HOT WATER AND DRAIN PIPES UNDER ACCESSIBLE LAVATORIES SHALL BE INSULATED OR OTHERWISE COVERED. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES.
2. THE DIP OF THE OVERFLOW SHALL NOT BE CONSIDERED IN DETERMINING KNEE & TOE CLEARANCES.
3. SINK SHALL BE 6-1/2" DEEP MAX.
4. OPERABLE PARTS OF SOAP OR OTHER DISPENSERS LOCATED ON THE BACK WALL OF THE LAVATORY ARE WITHIN REACH RANGE 40FI MAXIMUM AFF AND 17fi-19fi MAXIMUM DEEP DEPENDENT UPON TOE CLEARANCE BELOW PER CBC.
5. DISPENSERS MOUNTED ON THE GRAB BAR SIDE OF ACCESSIBLE TOILET SHALL NOT PROJECT MORE THAN 3-1/2" FROM FACE OF WALL, NOR BE LOCATED CLOSER THAN 1-1/2" CLEAR OF BOTTOM OF GRAB BAR.

FAUCET ACCESSIBILITY NOTES:
(CONTROLS FOR FAUCETS SHALL COMPLY WITH CBC 11B-309)

1. FAUCETS CONTROLS AND OPERATING MECHANISMS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST.
2. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GRATER THAN 5 POUND FORCE (22.2N). LEVER-OPERATED, PUSH-TYPE AND ELECTRONICALLY CONTROLLED MECHANISMS ARE EXAMPLES OF ACCEPTABLE DESIGNS. SELF-CLOSINGVALVES ARE ALLOWED IF THE FAUCET REMAINS OPEN FOR AT LEAST 10 SECONDS.

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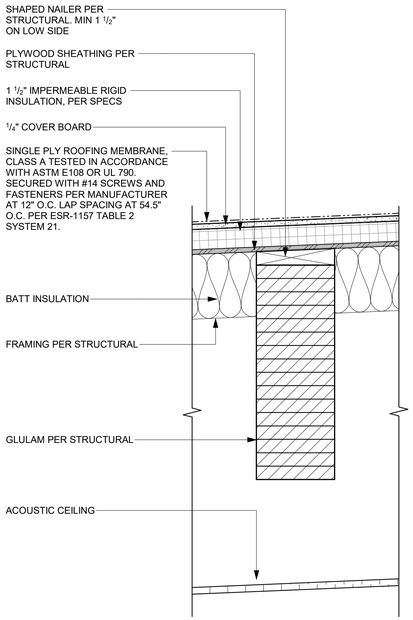
ACCESSIBILITY DETAILS - RESTROOM AND PLUMB. FIXTURES

NO.	REVISION	DATE

PROJECT MANAGER
KH
DRAWN BY: DK
CHECKED BY: KF
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
A-904

DSA BACK CHECK 2

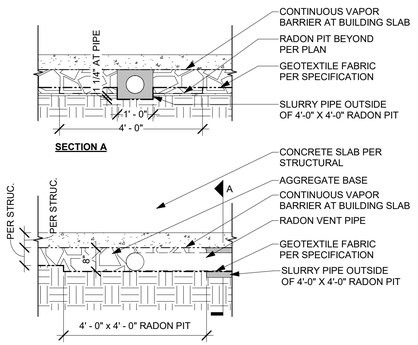
4/21/2026 10:34:53 AM
Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt



ROOF COVERING SHALL BE CLASS-A IN ACCORDANCE WITH CBC 705A. REFER TO ESR-1157. PROVIDE TABLE 1 - SYSTEM 2.

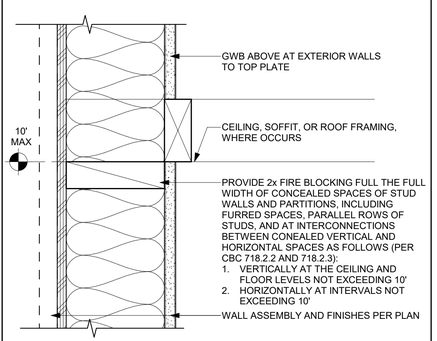
22 ROOF ASSEMBLY

A911 SCALE: 1 1/2" = 1'-0"



23 RADON PIT

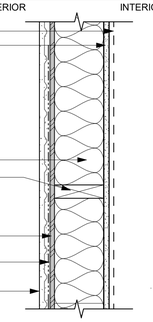
A102 A911 SCALE: 1/2" = 1'-0"



24 FIRE BLOCKING

A911 SCALE: 3" = 1'-0"

EXTERIOR INTERIOR



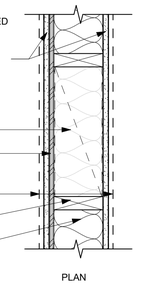
PLAN

NOTE:
WHERE REQ. PROVIDE FIRE BLOCKING IN CONCEALED COMBUSTIBLE LOCATIONS IN ACCORDANCE WITH ***CBC 718.1 & 718.2.*** REFER TO DETAIL:

A6 TYPE A - EXTERIOR NON-RATED

A911 SCALE: 1 1/2" = 1'-0"

INTERIOR INTERIOR



PLAN

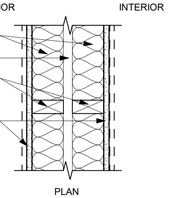
NOTE:
WHERE REQ. PROVIDE FIRE BLOCKING IN CONCEALED COMBUSTIBLE LOCATIONS IN ACCORDANCE WITH ***CBC 718.1 & 718.2.*** REFER TO DETAIL: 24 / A-911

B6 TYPE B - INTERIOR NON-RATED

A911 SCALE: 1 1/2" = 1'-0"

GA FILE NO. WP 5512
1-HR FIRE
50 TO 54 STC

INTERIOR INTERIOR



PLAN

FIRE DESIGN:
ONE LAYER 5/8" TYPE X GYPSUM WALLBOARD OR GYPSUM VENEER BASE APPLIED PARALLEL OR AT RIGHT ANGLES TO EACH SIDE OF DOUBLE ROW OF 2 × 4 WOOD STUDS 16" O.C. ON SEPARATE PLATES WITH 2" TYPE W SCREWS 7" O.C. TWO LAYERS 3-1/2" UNFACED GLASS FIBER INSULATION FRICTION FIT IN STUD CAVITY.

JOINTS STAGGERED 16" ON OPPOSITE SIDES. HORIZONTAL BRACING REQUIRED AT MID-HEIGHT. (LOAD-BEARING)

SOUND DESIGN:
SOUND TESTED WITH PLATES SPACED 1" APART.

C4 TYPE C - INTERIOR SOUND RATED

A911 SCALE: 1 1/2" = 1'-0"

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RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

ASSEMBLIES

NO.	REVISION	DATE
1		
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6		

PROJECT MANAGER
KH

DRAWN BY DK | **CHECKED BY** KF

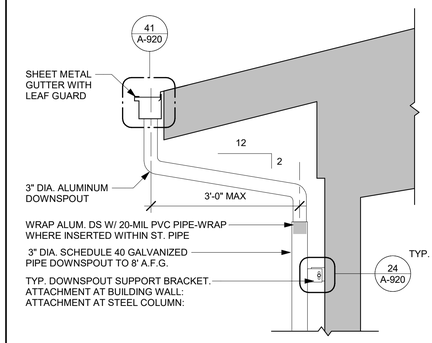
DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
A-911

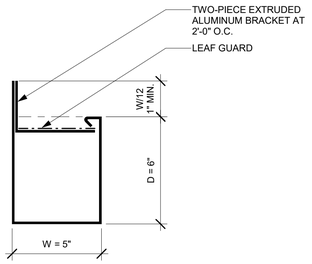
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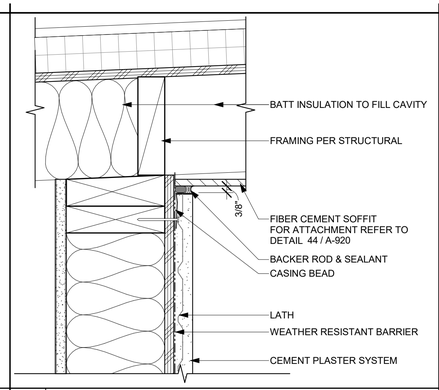
51 TYPICAL GUTTER TO DOWNSPOUT

A-920 SCALE: 3/4" = 1'-0"



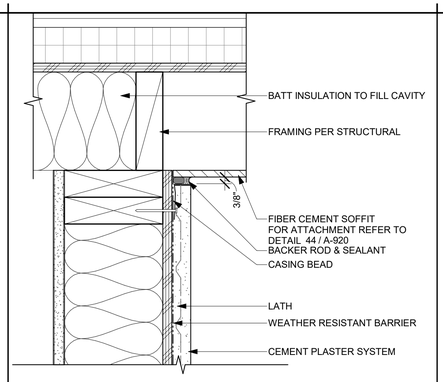
41 GUTTER PROFILE

A-920 A-920 SCALE: 3" = 1'-0"



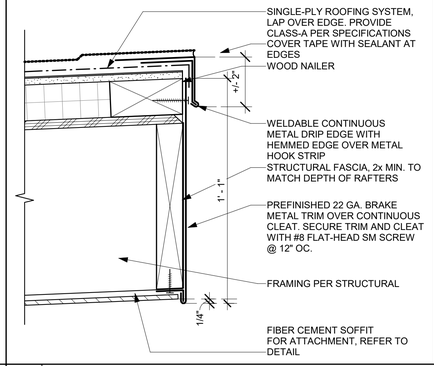
31 EXTERIOR WALL - TOP AT SLOPE

A-312 A-920 SCALE: 3" = 1'-0"



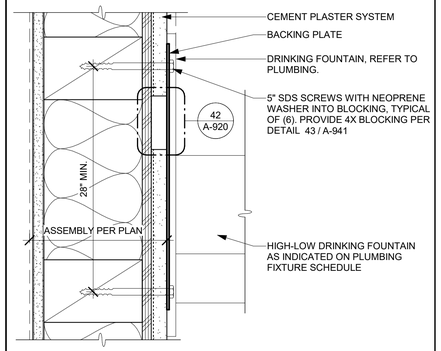
21 EXTERIOR WALL - TOP

A-311 A-920 SCALE: 3" = 1'-0"



11 EAVE - HIGH SIDE

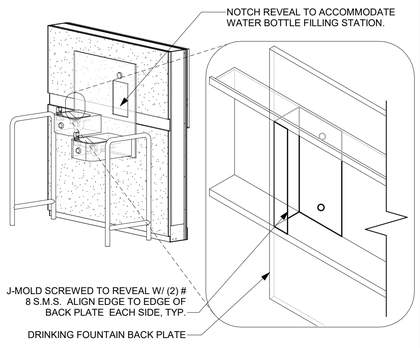
A-121 A-920 SCALE: 3" = 1'-0"



52 DRINKING FOUNTAIN BACKING

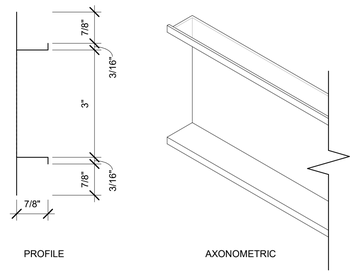
A-920 SCALE: 3" = 1'-0"

NOTE: CONDITION HAPPENS ON BOTH SIDES OF BACK PLATE



42 REVEAL AT DRINKING FOUNTAIN

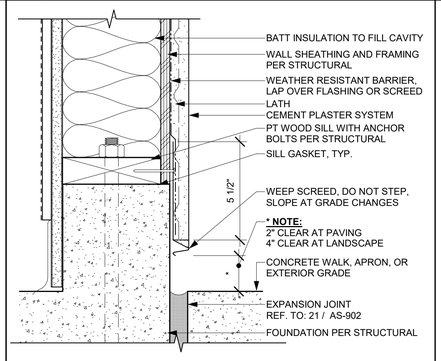
A-920 A-920 SCALE: 6" = 1'-0"



REVEAL AT CEMENT PLASTER

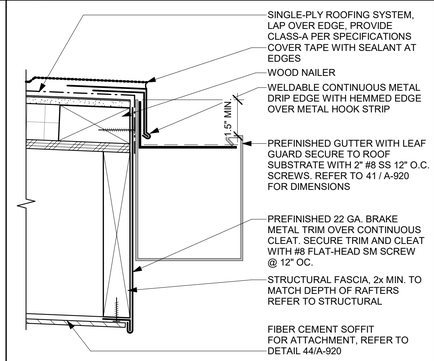
32 REVEAL PROFILE

A-920 A-920 SCALE: 6" = 1'-0"



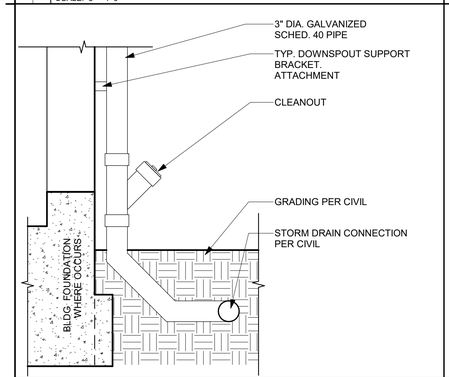
22 EXTERIOR WALL - BASE

A-321 A-920 SCALE: 3" = 1'-0"



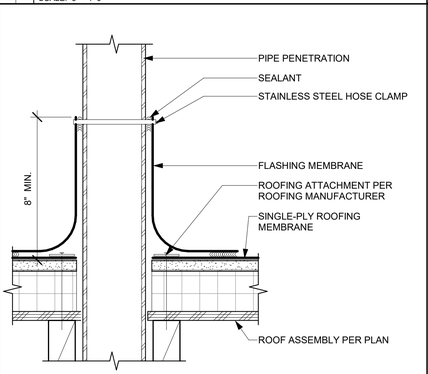
12 EAVE - LOW SIDE

A-121 A-920 SCALE: 3" = 1'-0"



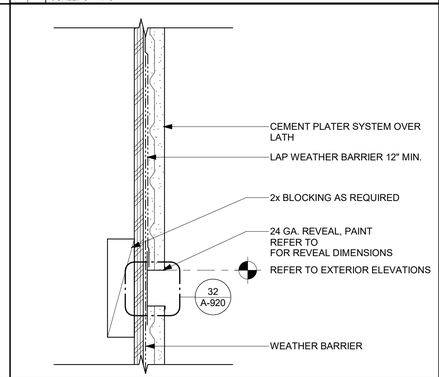
53 DOWNSPOUT TO STORM DRAIN

A-312 A-920 SCALE: 1" = 1'-0"



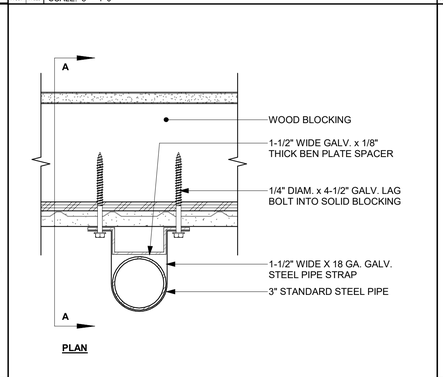
43 PIPE FLASHING

A-920 SCALE: 3" = 1'-0"



33 METAL REVEAL AT PLASTER WALL

A-920 SCALE: 3" = 1'-0"



PLAN

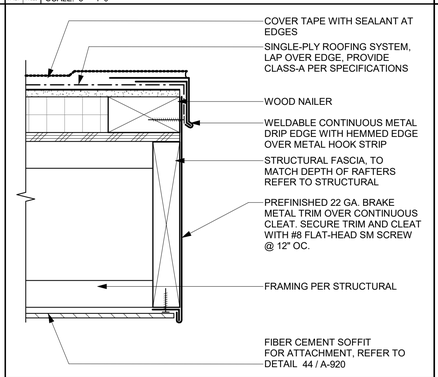
SECTION A-A

REFER TO DETAIL 53 / A-920 FOR TERMINATION AT STORM DRAIN

REFER TO CIVIL FOR STORM DRAIN CONNECTION

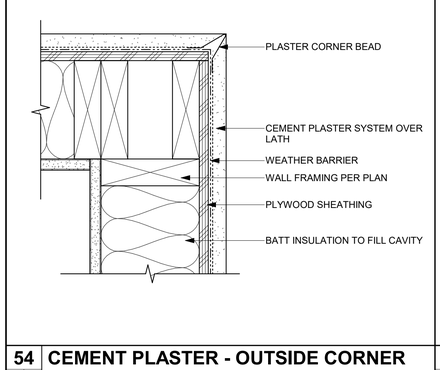
24 DOWNSPOUT ATTACHMENT

A-121 A-920 SCALE: 3" = 1'-0"



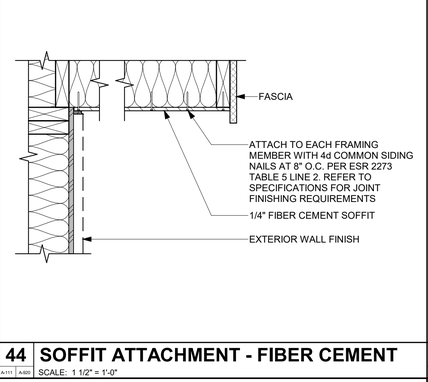
13 RAKE

A-121 A-920 SCALE: 3" = 1'-0"



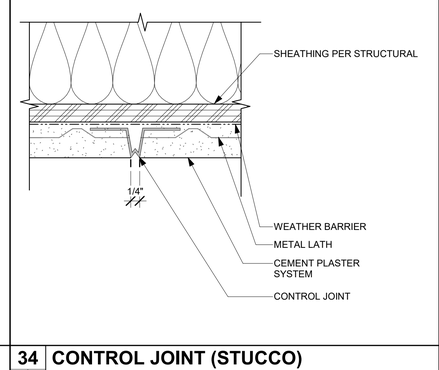
54 CEMENT PLASTER - OUTSIDE CORNER

A-920 SCALE: 3" = 1'-0"



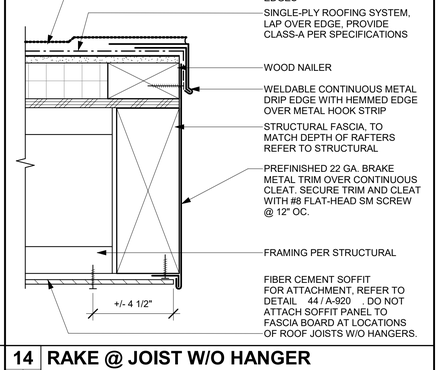
44 SOFFIT ATTACHMENT - FIBER CEMENT

A-111 A-920 SCALE: 1 1/2" = 1'-0"



34 CONTROL JOINT (STUCCO)

A-321 A-920 SCALE: 6" = 1'-0"



14 RAKE @ JOIST W/O HANGER

A-121 A-920 SCALE: 3" = 1'-0"

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SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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STATE OF CALIFORNIA

CONSULTANT

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2555 S HALCYON RD, ARROYO GRANDE, CA

EXTERIOR DETAILS

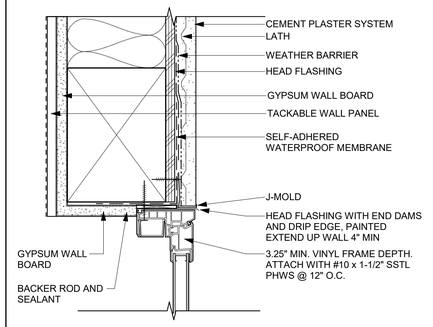
DSA BACK CHECK 2

NO.	REVISION	DATE

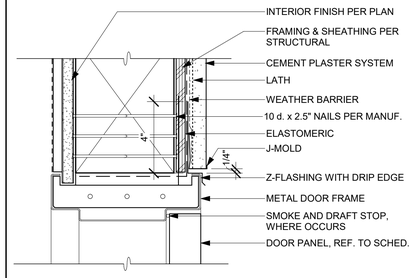
PROJECT MANAGER: KH
DRAWN BY: DK
CHECKED BY: KF
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: A-920

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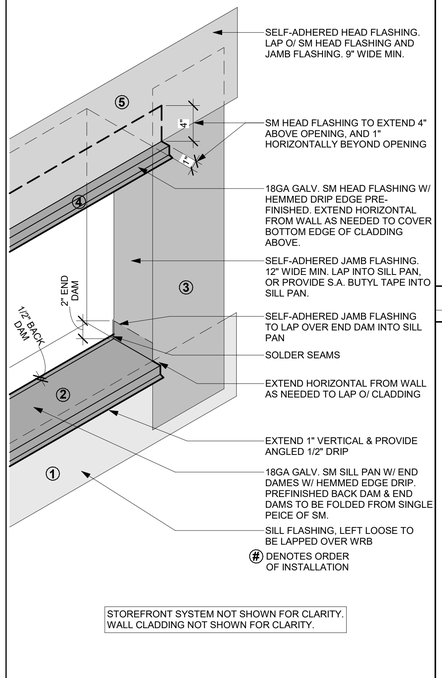
NOTE:
MANUFACTURED VINYL WINDOWS PER SPEC. 08 5313.



21 WINDOW HEAD
A312 A301 SCALE: 3" = 1'-0"



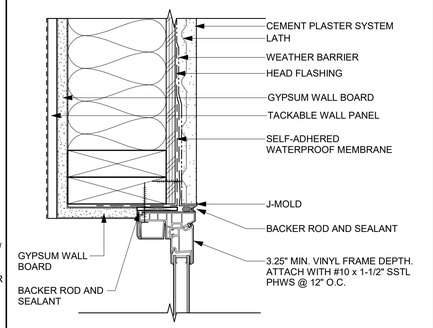
11 DOOR HEAD
A301 SCALE: 3" = 1'-0"



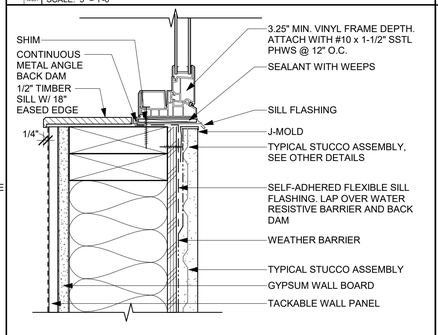
STOREFRONT SYSTEM NOT SHOWN FOR CLARITY.
WALL CLADDING NOT SHOWN FOR CLARITY.

33 STOREFRONT FLASHING
A301 SCALE: 1 1/2" = 1'-0"

NOTE:
MANUFACTURED VINYL WINDOWS PER SPEC. 08 5313.

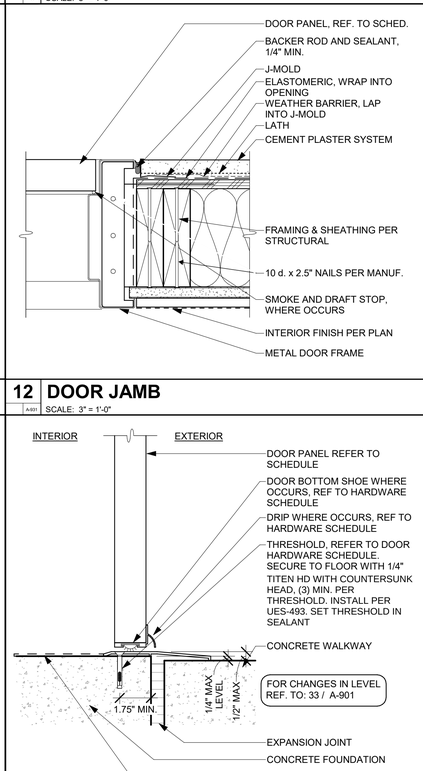


22 WINDOW JAMB
A301 SCALE: 3" = 1'-0"



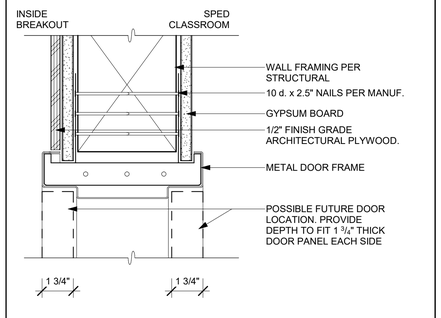
NOTE:
MANUFACTURED VINYL WINDOWS PER SPEC. 08 5313.

23 WINDOW SILL
A301 SCALE: 3" = 1'-0"



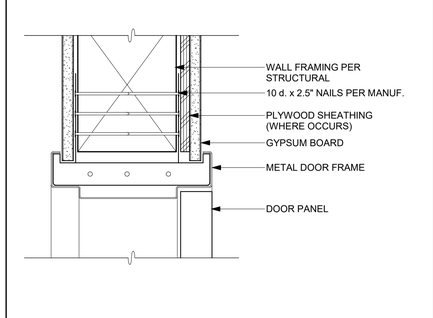
13 DOOR THRESHOLD
A301 SCALE: 3" = 1'-0"

HEAD/JAMB SIMILAR



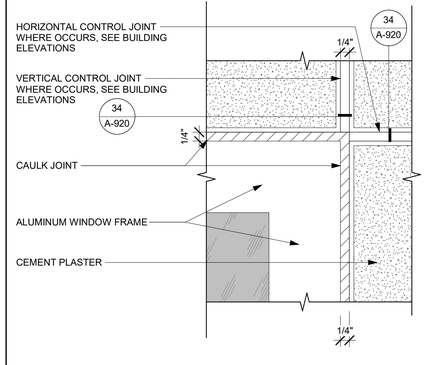
34 INTERIOR DOOR - DOUBLE RABBET
A311 A301 SCALE: 3" = 1'-0"

HEAD/JAMB SIMILAR



24 INTERIOR DOOR HEAD/JAMB
A301 SCALE: 3" = 1'-0"

12 DOOR JAMB
A301 SCALE: 3" = 1'-0"



14 ELEVATION @ TYP. WINDOW CORNER
A301 SCALE: 6" = 1'-0"

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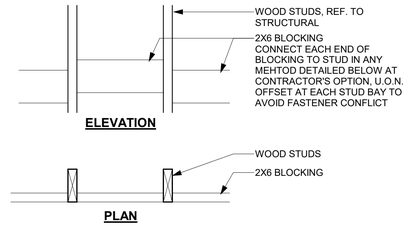
DOOR & WINDOW DETAILS

NO.	REVISION	DATE
1		
2		
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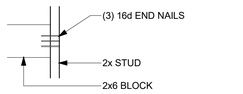
PROJECT MANAGER
KH
DRAWN BY DK
CHECKED BY KF
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
A-931

DSA BACK CHECK 2

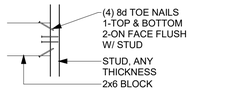
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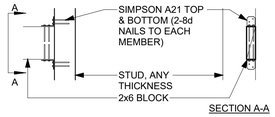
METHOD A
(AT 2X STUD ONLY)



METHOD B



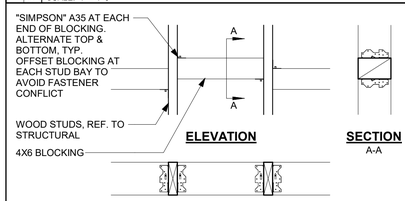
METHOD C



USE: #10 WOOD SCREW MIN. TO ATTACH ACCESSORIES TO BLOCKING, U.O.N.
FOR: MIRRORS, FLAT SIGNS, TACKBOARDS, CHALKBOARDS, MARKER BOARDS, BULLETIN BOARDS, FRAMED ARTWORK.

NOTES:
1. DO NOT CUT OR NOTCH STUDS TO INSTALL BLOCKING
2. VERIFY LENGTH, HEIGHT, QUANTITY, AND LOCATION FOR BLOCKING WITH ARCHITECTURAL DETAILS AND ACCESSORY MANUFACTURER
3. EXTEND BLOCKING TO FIRST STUD PAST END OF ACCESSORY
4. MAXIMUM FORCE ON BLOCK OF 150 POUNDS OUT OF PLAN, 150 POUNDS VERTICAL LOADING

42 TYP. 2X BLOCKING
A0.1 A0.1 SCALE: 1" = 1'-0"

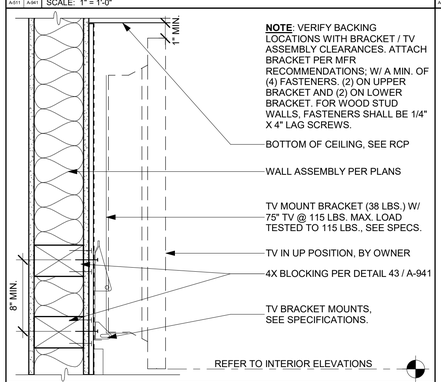


USE: #12 WOOD SCREW MIN. TO ATTACH ACCESSORIES TO BLOCKING, U.O.N.
FOR: TOILET & BATH ACCESSORIES, DOOR STOPS, DOOR HOLDERS, CABINETS, DISPLAY CABINETS, TOILET PARTITIONS

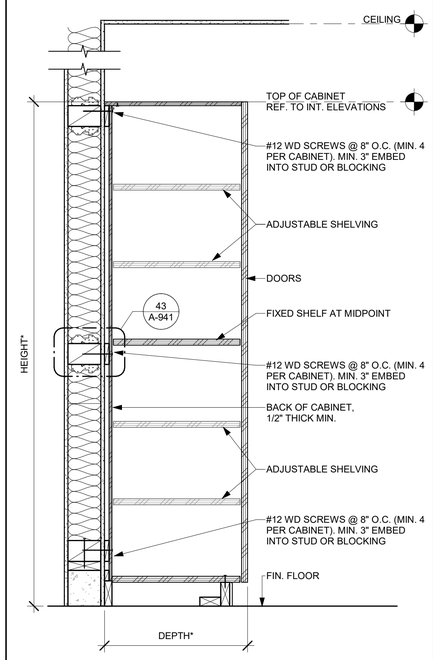
USE: # 14 WOOD SCREW MIN. OR 1/4" DIAMETER WOOD SCREW MIN. TO ATTACH ACCESSORIES TO BLOCKING, U.O.N.
FOR: HANDRAILS, GRAB BARS, SHOWER SEATS, SHELF BRACKETS, COUNTERTOP BRACKETS, URINAL SCREENS, WATER HEATER STRAPS, SINK BRACKETS, ETC.

NOTES:
1. DO NOT CUT OR NOTCH STUDS TO INSTALL BLOCKING
2. VERIFY LENGTH, HEIGHT, QUANTITY, AND LOCATION FOR BLOCKING WITH ARCHITECTURAL DETAILS AND ACCESSORY MANUFACTURER
3. EXTEND BLOCKING TO FIRST STUD PAST END OF ACCESSORY
4. REFER TO STRUCTURAL DETAIL S3/S-502 FOR MAXIMUM LOAD LIMITS ON BLOCKING

43 TYP. 4X BLOCKING
A0.1 A0.1 SCALE: 1" = 1'-0"

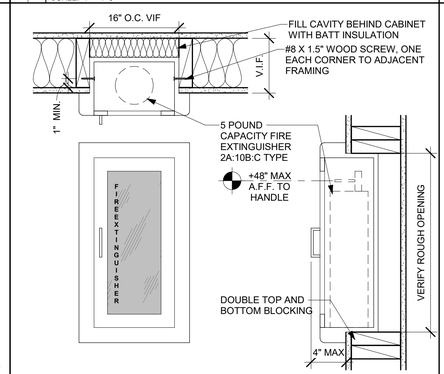


44 TV MOUNT AND BLOCKING
A0.1 A0.1 SCALE: 1 1/2" = 1'-0"

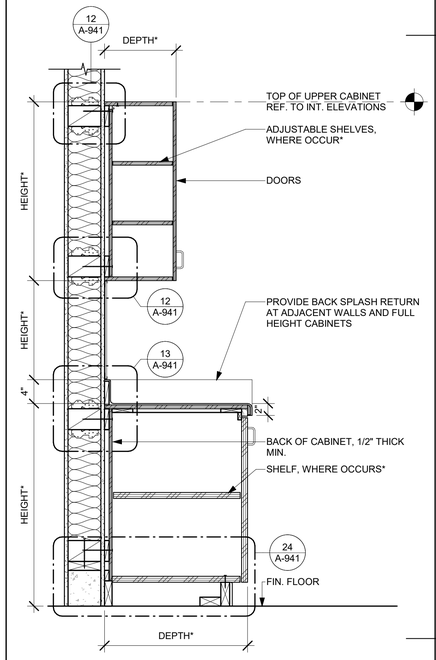


NOTE:
*PER INTERIOR ELEVATIONS
WHERE CABINET EXCEEDS 8'-0" IN HEIGHT, PROVIDE BLOCKING AND CONNECTION AT FOUR PLACES, SPACED EQUALLY

32 CABINET SECTION - FULL HEIGHT
A0.1 A0.1 SCALE: 1" = 1'-0"



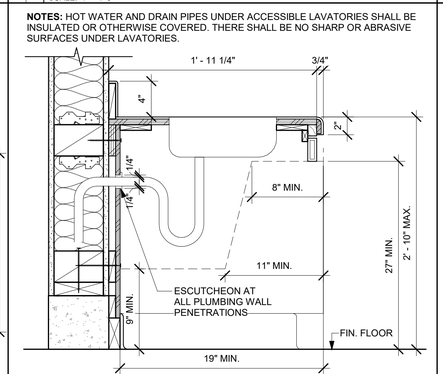
33 INT. FIRE EXTINGUISHER CABINET
A0.1 A0.1 SCALE: 1 1/2" = 1'-0"



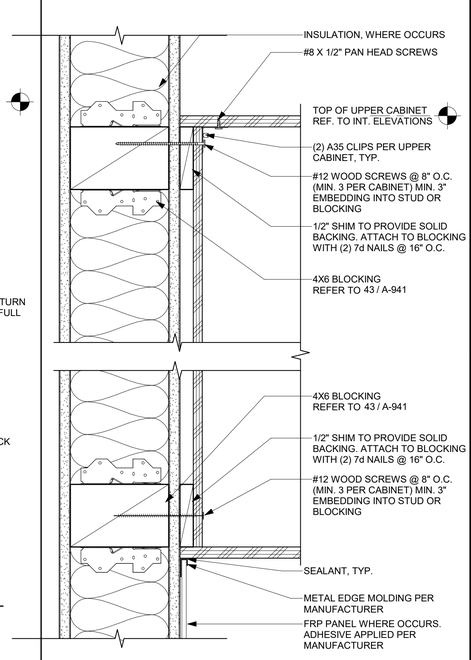
NOTE:
*PER INTERIOR ELEVATIONS

22 CABINET SECTION - UPPER & LOWER
A0.1 A0.1 SCALE: 1" = 1'-0"

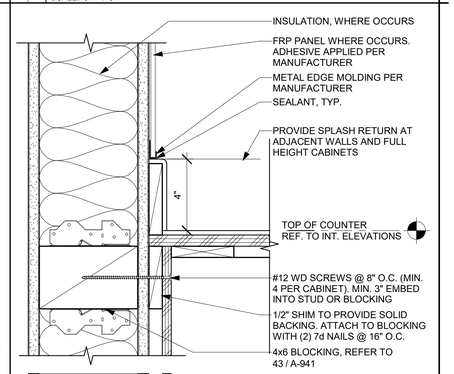
NOTES: HOT WATER AND DRAIN PIPES UNDER ACCESSIBLE LAVATORIES SHALL BE INSULATED OR OTHERWISE COVERED. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES.



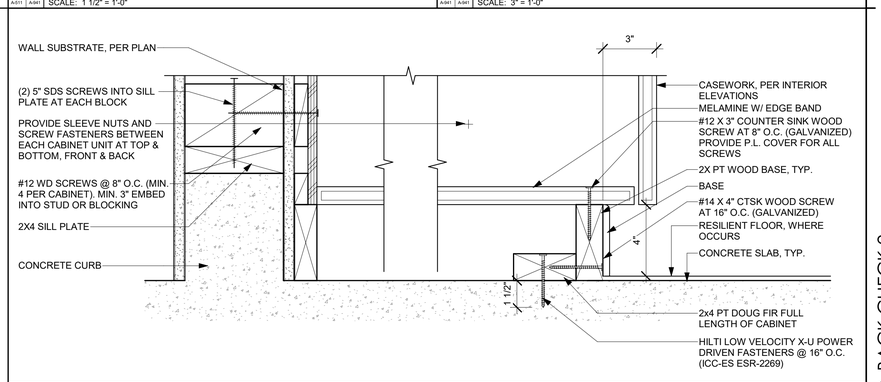
23 ACC. CABINET DETAIL
A0.1 A0.1 SCALE: 1 1/2" = 1'-0"



12 CABINET DETAIL - UPPER
A0.1 A0.1 SCALE: 3" = 1'-0"



13 CABINET DETAIL - COUNTER
A0.1 A0.1 SCALE: 3" = 1'-0"



24 CABINET DETAIL - BASE
A0.1 A0.1 SCALE: 3" = 1'-0"

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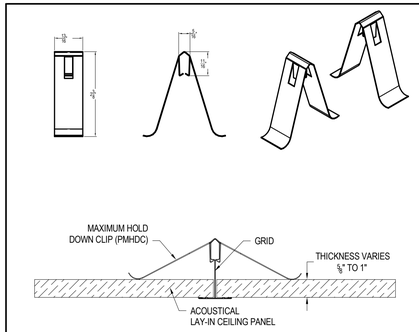
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NO.	REVISION	DATE

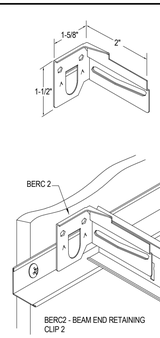
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KH
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DATE
APRIL 23, 2026
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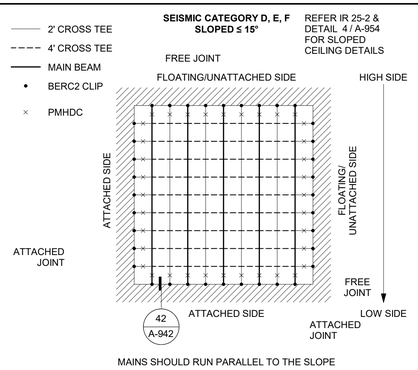


51 MAXIMUM HOLD DOWN CLIP (PMHDC)
A562 | A562 NTS



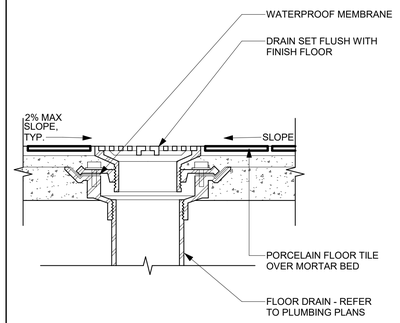
REFER TO 4 / A-956 FOR ESR-1308 DETAILS PROVIDE WALL SHIM(S) WHERE PERIMETER TRACK IS NOT 90 DEGREES TO ADJACENT WALL SURFACE

41 BERC2 CLIP
A562 | A562 NTS

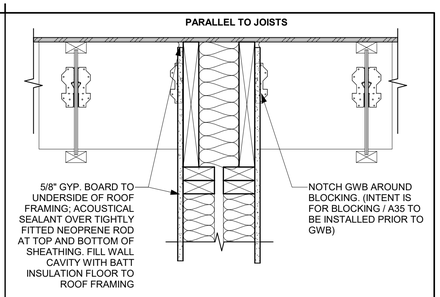


MAINS SHOULD RUN PARALLEL TO THE SLOPE

31 SLOPED CEILING LAYOUT
A111 | A562 SCALE: 1/8" = 1'-0"



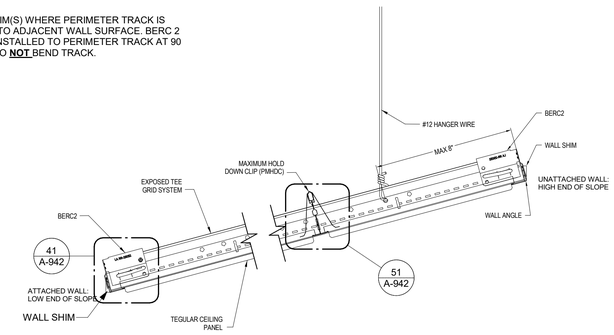
21 FLOOR DRAIN
A512 | A562 SCALE: 3" = 1'-0"



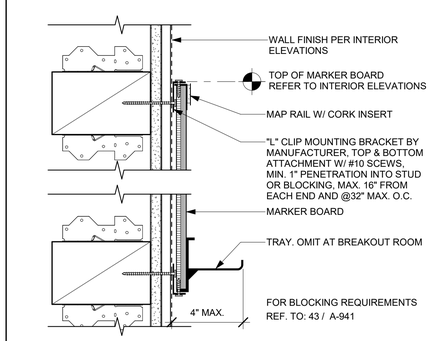
NOTE:
1. ANY PENETRATIONS THROUGH ACOUSTICALLY INSULATED WALLS TO BE SEALED ALL AROUND BOTH SIDE TO FULL DEPTH OF DRYWALL
2. OUTLET BOXES IN ACOUSTICALLY INSULATED WALL TO HAVE ACOUSTICAL BACKING PAD; LOWRY'S OUTLET BOX PAD OR EQUAL
3. REFER TO STRUCTURAL FOR FRAMING INFORMATION (32/S-511)

11 ACOUSTIC WALL TRANSITION AT CEILING
A311 | A562 SCALE: 1 1/2" = 1'-0"

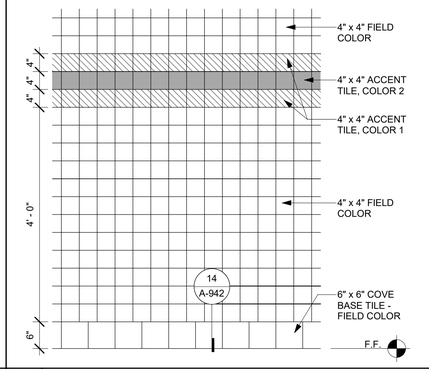
NOTE:
PROVIDE WALL SHIM(S) WHERE PERIMETER TRACK IS NOT 90 DEGREES TO ADJACENT WALL SURFACE. BERC 2 CLIP(S) MUST BE INSTALLED TO PERIMETER TRACK AT 90 DEGREES ONLY. DO **NOT** BEND TRACK.



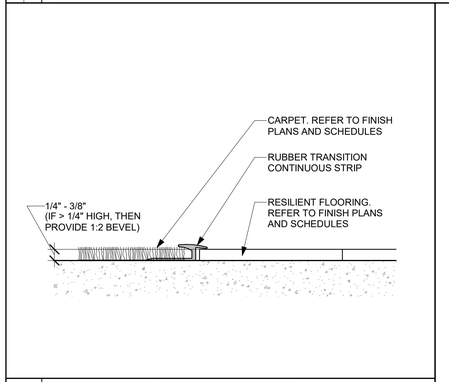
42 SLOPED CEILING AT PERIMETER
A562 | A562 NTS



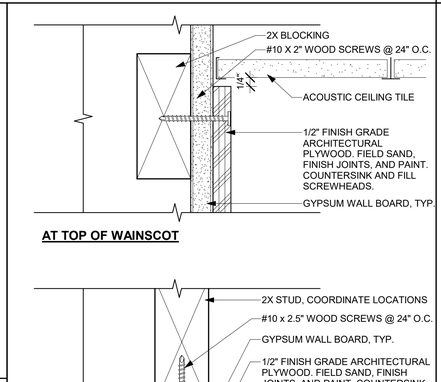
22 MARKER BOARD
A311 | A562 SCALE: 3" = 1'-0"



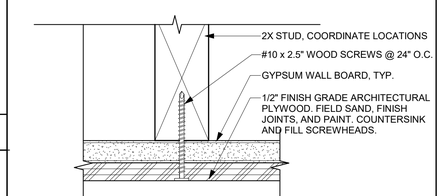
12 TILE WAINSCOT PATTERN
A512 | A562 SCALE: 3/4" = 1'-0"



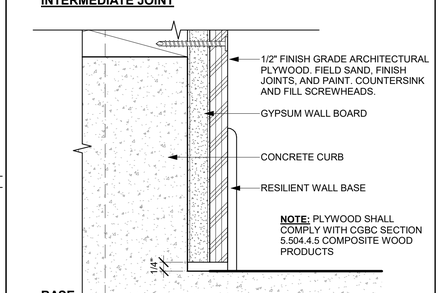
43 CARPET TO LVT REDUCER
A103 | A562 SCALE: 6" = 1'-0"



AT TOP OF WAINSCOT

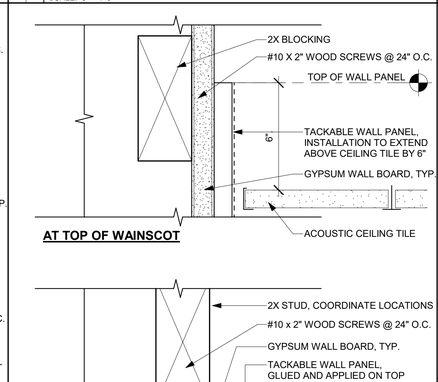


INTERMEDIATE JOINT

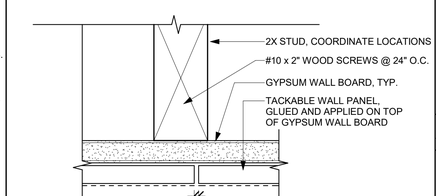


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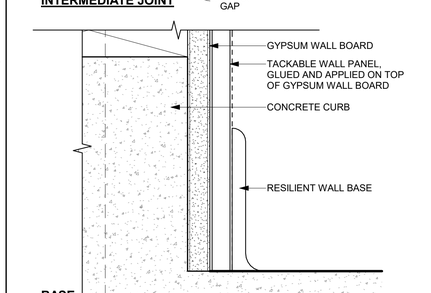
34 FINISHED PLYWOOD WALL APPLICATION
A311 | A562 SCALE: 6" = 1'-0"



AT TOP OF WAINSCOT

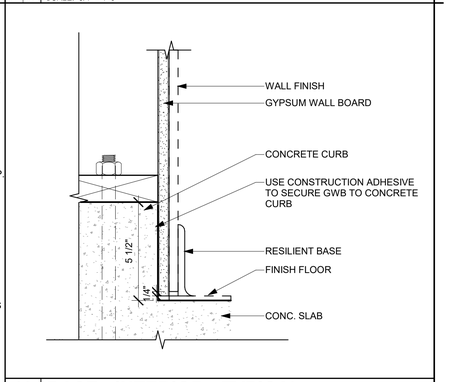


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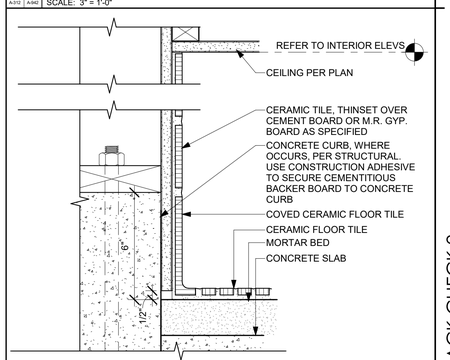


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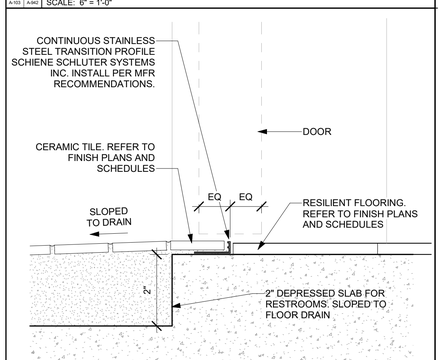
24 TACKABLE WALL PANEL
A311 | A562 SCALE: 6" = 1'-0"



13 BASE - INTERIOR - TYPICAL
A312 | A562 SCALE: 3" = 1'-0"



14 BASE - INTERIOR - CERAMIC TILE
A312 | A562 SCALE: 3" = 1'-0"



44 CERAMIC TILE TO LVT REDUCER
A103 | A562 SCALE: 6" = 1'-0"

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CONSULTANT

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NO.	REVISION	DATE

PROJECT MANAGER
KH

DRAWN BY DK | **CHECKED BY** KF

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
A-942

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ALL NOTES AND DETAILS ON SHEETS A-951 THROUGH A-956 ARE FROM DSA IR 25-2 REVISED 01/17/25 UNDER 2022 CBC

IR 25-2

SUSPENDED LAY-IN PANEL CEILING: 2022 CBC

1. CEILING SYSTEM GENERAL NOTES

1.01 Ceiling system components shall comply with ASTM C635 and Section 5.1 of ASTM E580.

1.02 The ceiling grid system shall be rated heavy duty as defined by ASTM C635.

1.03 Ceiling systems. The following ceiling system(s) is/are part of the scope of this project:

Manufacturer:	ARMSTRONG
Product Name:	PRELUDE XL WITH SEISMIC RX SUSPENSION SYSTEM
Evaluation Report Number:	ICC ESR 1308
Main Runner Part, Model, or Catalog Number:	7301
Cross Runner Part, Model, or Catalog Number:	XL7341

1.04 Seismic Wall Clip:

Manufacturer's Model:	BERC 2 CLIP

1.05 Ceiling panels shall not support any luminaires, air terminals, or devices.

1.06 For acoustical tile panels of any material other than mineral or glass fiber, a ¾" clearance shall be provided between the panel and the wall on the sides of the ceiling free to slip. Clearance between ceiling grid runners and walls shall comply with the details on these drawings regardless of ceiling tile material.

2. MATERIALS

2.01 Ceiling wire shall be Class 1 zinc coated (galvanized) carbon steel conforming to ASTM A641. Wire shall be #12 gauge (0.106" diameter) with soft temper and minimum ultimate tensile strength = 70 ksi.

2.02 Galvanized sheet steel (including that used for metal stud compression struts) shall conform to ASTM A653, or other equivalent sheet steel listed in Section A3.1 of the North American Specification for the Design of Cold-Formed Steel Structural Members, (AISI S100). Material 43 mil (18 gauge) thick and lighter shall have minimum yield strength of 33 ksi. Material 54 mil (16 gauge) thick and heavier shall have a minimum yield strength of 50 ksi.

2.03 Electrical metallic tube (EMT) shall conform to ANSI C80.3/UL 797 carbon steel with G90 galvanizing. EMT shall have minimum yield strength of 30 ksi and minimum ultimate strength of 48 ksi.

3. ATTACHMENT OF HANGER AND BRACING WIRES

3.01 All ceiling hanger and bracing wires shall be separated at least 6 inches from all unbraced ducts, pipes, conduit, etc.

3.02 Hanger and bracing wires shall not attach to or bend around obstructions including but not limited to piping, ductwork, conduit, and equipment.

3.03 Hanger wires that are more than one (horizontal) in six (vertical) out of plumb shall have counter-sloping wires.

Detail Title:	REV: 09/21/2015	Detail No.
CEILING NOTES	REV: 03/2022	1.00
	REV: 11/2023	

IR 25-2

SUSPENDED LAY-IN PANEL CEILING: 2022 CBC

3.04 Slack safety wires shall be considered hanger wires for installation and testing requirements.

3.05 Hanger and bracing wire anchorage to the structure shall be installed such that the direction of the anchorage aligns with the direction of the wire. Bracing wire ceiling clips shall be bent as shown in the details and rotated as required to align with the direction of the wire. Screws in wood shall be installed to align with the direction of the wire.

4. FASTENERS AND WELDING

4.01 Sheet metal screws shall comply with ASTM C1513 and ASME B18.6.3. Penetration of screws through joined material shall not be less than three exposed threads.

4.02 ~~Expansion anchors shall be: *[DP to specify manufacturer, product, evaluation report number, and test load for each size specified per CBC 1910A.5.4.]*~~ NOT APPLICABLE

4.03 ~~Power-Actuated Fasteners shall be: *[DP to specify manufacturer, product, evaluation report number.]*~~

4.04 If not otherwise specified in the evaluation report, power-actuated fasteners installed in steel shall be installed so the entire pointed end of the fastener is driven through the steel member.

4.05 Power-actuated fasteners in concrete or masonry are not permitted for bracing wires.

4.06 Concrete reinforcement and prestressing tendons shall be located by non-destructive means prior to installing post-installed anchors.

4.07 Welding shall be in accordance with AWS D1.3 using E60XX series electrodes.

5. TESTING

5.01 All field testing shall be performed in the presence of the project inspector.

5.02 Post-installed anchors in concrete used to support hanger wires shall be tested at a frequency of 10 percent. Power-actuated fasteners in concrete shall be field tested for 200 pounds in tension. All other post-installed anchors in concrete shall be tested in accordance with CBC Section 1910A.5.

5.03 Post-installed anchors in concrete used to attach bracing wires shall be tested at a frequency of 50 percent and in accordance with CBC Section 1910A.5.

6. LUMINAIRES

6.01 All luminaires shall be positively attached to the ceiling suspension systems by mechanical means to resist a horizontal force equal to the weight of the luminaire. A minimum of two screws or approved fasteners are required at each luminaire per ASTM E580 Section 5.3.1.

6.02 Surface-mounted luminaires shall be attached to the main runner with at least two positive clamping devices. The clamping device shall completely surround the supporting ceiling runner and be made of steel with a minimum thickness of #14 gauge. Rotational spring catches are not permitted. A #12 gauge slack safety wire shall be connected from each clamping device to the structure above. Additional supports shall be provided when a luminaire is 8 feet or longer or exceeds 56 pounds. Maximum spacing between supports shall not exceed 8 feet.

Detail Title:	REV: 09/21/2015	Detail No.
CEILING NOTES	REV: 03/2022	1.00
	REV: 11/2023	

IR 25-2

SUSPENDED LAY-IN PANEL CEILING: 2022 CBC

6.03 Luminaires weighing less than or equal to 10 pounds supported directly on the ceiling runners shall have a minimum of one #12 gauge slack safety wire connected from the fixture housing to the structure above.

6.04 Luminaires weighing greater than 10 pounds but less than or equal to 56 pounds supported directly on the ceiling runners shall have a minimum of two #12 gauge slack safety wires connected from the fixture housing at diagonal corners to the structure above.

Exception: All luminaires greater than two by four feet weighing less than 56 pounds shall have a #12 gauge slack safety wire at each corner.

6.05 All luminaires weighing greater than 56 pounds shall be independently supported from the structure above. See support details on these drawings for more information.

7. SERVICES WITHIN THE CEILING

7.01 All flexible sprinkler hose fitting mounting brackets, ceiling-mounted air terminals, or other services shall be positively attached to the ceiling suspension systems by mechanical means. Screws or other fasteners specified on the drawings are required. A minimum of two attachments are required at each component.

7.02 Ceiling-mounted services weighing less than or equal to 20 pounds shall have one #12 gauge slack safety wire attached from the terminal or service to the structure above.

7.03 Ceiling-mounted services weighing more than 20 pounds but less than or equal to 56 pounds shall have two #12 gauge slack safety wires (at diagonal corners) connected from the terminal or service to the structure above.

7.04 Ceiling-mounted services weighing more than 56 pounds shall be independently supported from the structure above. See support details on these drawings for more information.

8. OTHER DEVICES WITHIN THE CEILING

8.01 All lightweight miscellaneous devices, such as strobe lights, occupancy sensors, speakers, exit signs, etc., shall be attached to the ceiling grid. Devices weighing more than 10 pounds shall have a #12 gauge slack safety wire anchored to the structure above. Devices weighing more than 20 pounds shall be independently supported from the structure above.

Detail Title:	REV: 09/21/2015	Detail No.
CEILING NOTES	REV: 03/2022	1.00
	REV: 11/2023	

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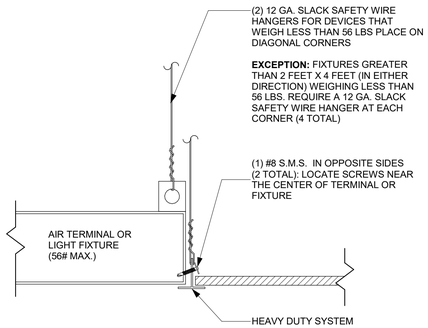
INTERIOR DETAILS

NO.	REVISION	DATE
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PROJECT MANAGER KH
DRAWN BY DK | **CHECKED BY** KF
DATE APRIL 23, 2026
PROJECT NUMBER 0822-03-ED25
SHEET A-953

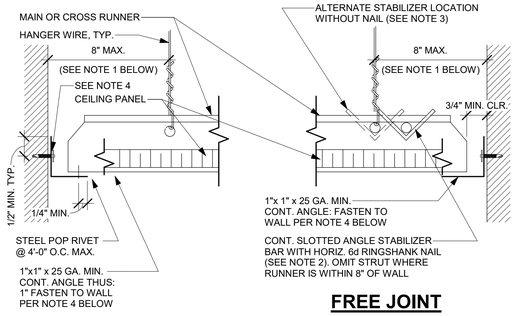
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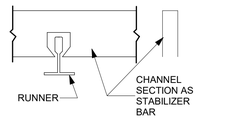


5 LUMINAIRE / AIR TERMINAL SUPPORT

A/954 SCALE: 3" = 1'-0"



ATTACHED JOINT **FREE JOINT**

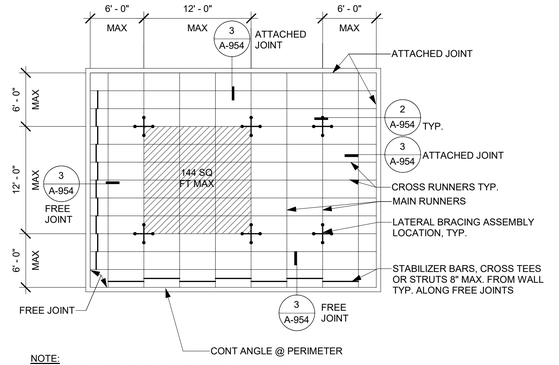


STABILIZER (SEE NOTE 3)

NOTES:
1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.
2. NAILS AT ENDS OF HORIZONTAL STABILIZERS ARE TO BE PLACED WITH NAIL HEAD TOWARD CENTER LINE OF SPAN OF STRUT.
3. STABILIZER BAR MAY BE SLOTTED APPROVED ANGLES OR CHANNELS WITH "DIAMOND POINTS" OF SPRING STEEL WHICH SNAP TIGHT TO PREVENT MOVEMENT OF STRUT.
4. FASTEN ANGLE TO WALL STUD OR BLOCKING AS FOLLOWS:
   A. METAL STUD (20 GA. MIN.) WALL: (1) #10 SMS AT 24" O.C. MAX.
   B. WOOD STUD WALL: #10x2" LONG WOOD SCREW AT 16" O.C. MAX.

3 CEILING PERIMETER

A/954 A/954 SCALE: 3" = 1'-0"



NOTE:
BRACING WIRES AND COMP. STRUT SHALL OCCUR AT EVERY 96 SQ. FT. MAX. IN ROOMS OVER 144 SQ. FT.

REFER TO 4 / A-954 FOR SLOPED CEILING CONDITIONS ≤ 15°

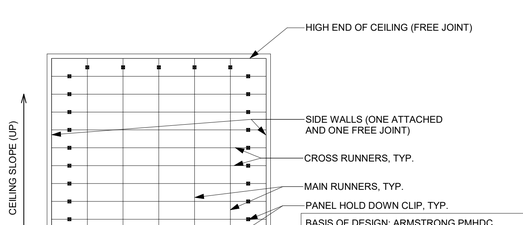
z/h =	0.80 LOW SIDE 0.81 HIGH SIDE
SDS =	0.834

z/h = 10.75' / 13.3' = 0.81

z/h = 9.33' / 11.66' = 0.80

1 TYP. CEILING PLAN FOR 8'x12' BRACE ASSEMBLY SPACING

A/954 SCALE: 1/8" = 1'-0"

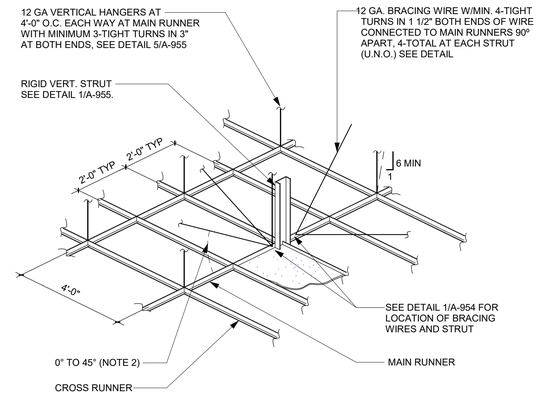


CEILING PLAN: SLOPE ≤ 15°

NOTE:
1. LATERAL FORCE BRACING ASSEMBLIES NOT SHOWN FOR CLARITY. REFER TO TYP. CEILING PLAN.
2. STABILIZER BARS, PERIMETER ANGLES, AND PROPRIETARY SEISMIC CLIPS NOT SHOWN FOR CLARITY. REFER TO TYP. CEILING PLAN.

4 PANEL HOLD DOWN CLIPS AT SLOPED CEILING

A/954 SCALE: 1/8" = 1'-0"



NOTES:
1. STRUTS SHALL NOT REPLACE HANGER WIRES.
2. THE MINIMUM ACCEPTABLE ANGLE IS DETERMINED SUCH THAT THE WIRES DO NOT INTERFERE WITH THE RUNNERS, LIGHT FIXTURES, ETC. AND REMAIN STRAIGHT AND UNOBSTRUCTED.

2 SUSPENSION AND LATERAL BRACING ASSEMBLY

A/954 A/954 SCALE: 3" = 1'-0"

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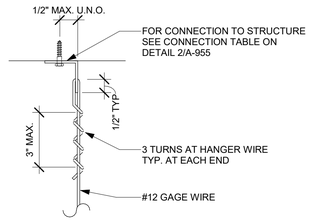
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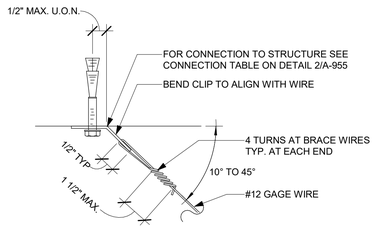
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ALL NOTES AND DETAILS ON SHEETS A-951 THROUGH A-956 ARE FROM DSA IR 25-2 REVISED 01/17/25 UNDER 2022 CBC



HANGER WIRE



BRACE WIRE

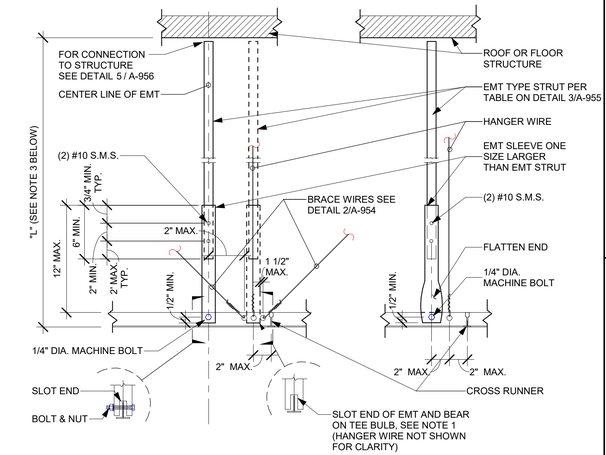
5 HANGER AND BRACING WIRE CONNECT.

A955 SCALE: 3" = 1'-0"

COMPRESSION STRUT EMT SECTION	MAXIMUM LENGTH
1/2" DIAMETER EMT (0.042" WALL THICKNESS)	3' - 11"
3/4" DIAMETER EMT (0.049" WALL THICKNESS)	6' - 4"
1" DIAMETER EMT (0.057" WALL THICKNESS)	9' - 9"
1 1/4" DIAMETER EMT (0.065" WALL THICKNESS)	12' - 9"
1 1/2" DIAMETER EMT (0.065" WALL THICKNESS)	14' - 9"
2" DIAMETER EMT (0.065" WALL THICKNESS)	18' - 10"

3 COMPRESSION STRUT TABLE

A955 SCALE: 12" = 1'-0"

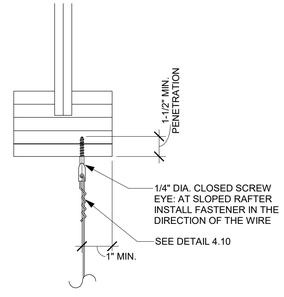


OPTION 1 **OPTION 3** (HANGER WIRE THROUGH STRUT, SEE NOTE 2) **OPTION 2** FOR INFO NOT SHOWN OR NOTED, SEE OPTION 1

NOTES:
1. MACHINE BOLT IS NOT REQUIRED ON OPTION 3.
2. OPTION 3 IS PERMITTED ONLY WHERE THE ROOF OR FLOOR STRUCTURE IS SAWN TIMBER WITHOUT GYPSUM BOARD.
3. DIMENSION "L" SHALL NOT TO EXCEED THE ALLOWABLE LENGTH GIVEN IN THE TABLE ON FOR THE COMPRESSION STRUT USED

1 COMPRESSION STRUT - EMT TYPE

A955 SCALE: 1 1/2" = 1'-0"



NOTES:
1. WHEN FIRE RATED GYP. BOARD IS INSTALLED ON THE BOTTOM FLANGES, USE SCREW EYES W/ SUFFICIENT LENGTH TO AVOID DAMAGING THE FIRE RATED GYP. BOARD AND MEET MIN. PENETRATION.

4 HANGER WIRE CONNECTION TO WOOD I-JOIST

A955 SCALE: 1 1/2" = 1'-0"

STRUCTURAL SYSTEM OF FLOOR/ ROOF ABOVE SUSPENDED CEILING	APPLICABLE HANGER WIRE DETAIL	APPLICABLE BRACE WIRE DETAIL
~~DARE METAL DECK~~	N/A	N/A
~~CONCRETE OVER METAL DECK~~	N/A	N/A
~~CONCRETE SLAB, BEAM, OR JOIST~~	N/A	N/A
~~STRUCTURAL STEEL~~	N/A	N/A
~~METAL STUD WALL~~	N/A	N/A
SAWN TIMBER	N/A	N/A
WOOD I-JOIST	4 / A-955	5 / A-955
~~WOOD CHORD TRUSS~~	N/A	N/A
~~OPEN WEB STEEL JOIST~~	N/A	N/A

2 HANGER AND BRACE WIRE CONNECTION TABLE

A955 SCALE: 12" = 1'-0"

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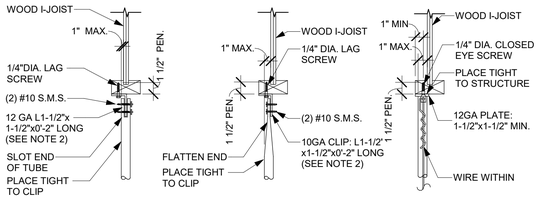
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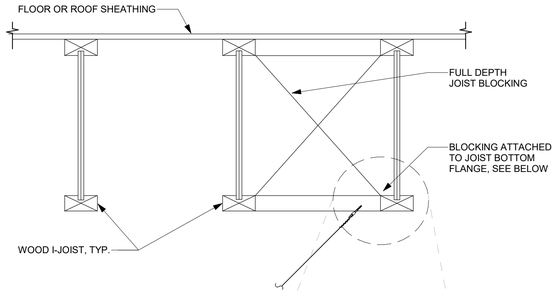
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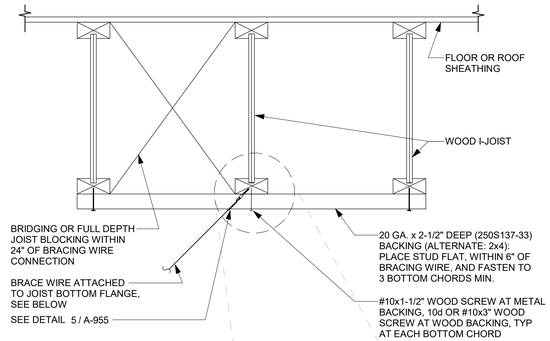


EMT STRUT: OPTION 1 | EMT STRUT: OPTION 2 | EMT STRUT: OPTION 3

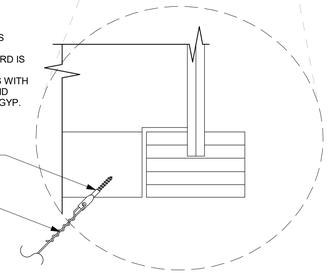
NOTES:
1. WEB OF CHANNEL TO BEAR WITHIN WIDTH OF WOOD MEMBER.
2. VERTICAL LEG OF MEMBER TO FALL WITHIN THE WIDTH OF THE WOOD MEMBER.
3. SEE DETAIL 5.50 FOR ADDITIONAL INFORMATION.
4. PEN = MINIMUM PENETRATION OF LAG SCREW THREADS INTO THE WOOD MEMBER.
5. NO. 14 WOOD SCREW MAY BE USED IN LIEU OF 1/4" LAG SCREW.

5 STRUT CONNECTION TO WOOD I-JOIST
A-956 SCALE: 1 1/2" = 1'-0"

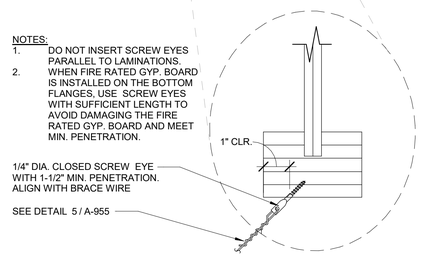




NOTES:
1. DO NOT INSERT SCREW EYES PARALLEL TO LAMANATIONS.
2. WHEN FIRE RATED GYP. BOARD IS INSTALLED ON THE BOTTOM FLANGES, USE SCREW EYES WITH SUFFICIENT LENGTH TO AVOID DAMAGING THE FIRE RATED GYP. BOARD AND MEET MIN. PENETRATION.



NOTES:
1. DO NOT INSERT SCREW EYES PARALLEL TO LAMINATIONS.
2. WHEN FIRE RATED GYP. BOARD IS INSTALLED ON THE BOTTOM FLANGES, USE SCREW EYES WITH SUFFICIENT LENGTH TO AVOID DAMAGING THE FIRE RATED GYP. BOARD AND MEET MIN. PENETRATION.



3 BRACE WIRE CONNECTION TO WOOD I-JOIST
A-956 NTS

ESR-1308 — ICC-ES Most Widely Accepted and Trusted — Page 16 of 23

THE FOLLOWING DETAILS ARE FROM ESR 1308

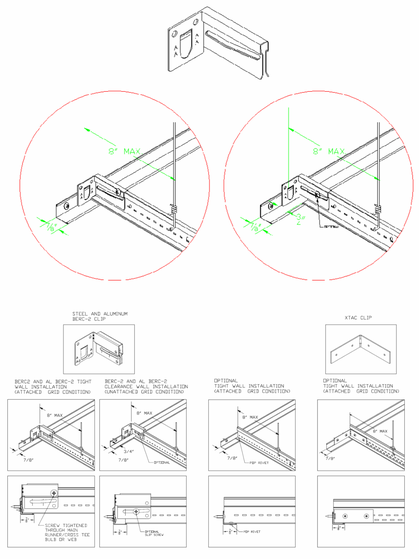
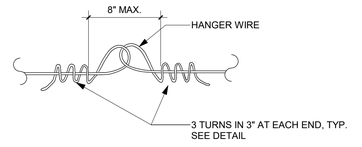


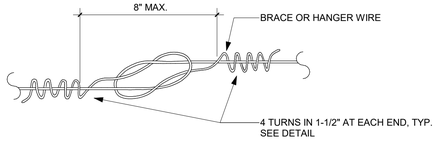
FIGURE 2—BERC-2, AL BERC-2, and XTAC CLIPS

NOTE:
PROVIDE WALL SHIM(S) WHERE PERIMETER TRACK IS NOT 90 DEGREES TO ADJACENT WALL SURFACE. BERC 2 CLIP(S) MUST BE INSTALLED TO PERIMETER TRACK AT 90 DEGREES ONLY. DO **NOT** BEND TRACK.

4 BERC2 CLIP-ESR 1308
A-956 NTS



HANGER WIRE ONLY



HANGER OR BRACE WIRE

NOTES:
1. WIRE SPLICES ARE SHOWN LOOSELY TIED FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE DRAWN TIGHT TO COMPLETE INSTALLATION WHEN CONSTRUCTED.
2. WIRE LOOPS SHALL BE TIGHTLY WRAPPED AND SHARPLY BENT TO PREVENT ANY VERTICAL MOVEMENT OR ROTATION WITHIN THE LOOPS.
3. EACH HANGER AND BRACE WIRE SHALL BE SPLICED NO MORE THAN ONCE ALONG ITS LENGTH.

2 6.10 - CEILING WIRE SPLICES
A-956 SCALE: 3" = 1'-0"

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SYMBOLS

DETAIL REFERENCE BUBBLE WITH LEADER

DETAIL REFERENCE BUBBLE

FULL HEIGHT SECTION INDICATOR

ELEVATION OF WALL OR FRAME

NORTH ARROW

TOP/BOTTOM OF ELEVATIONS

SLOPE

WELDED WIRE FABRIC (WWF LAYER)

STEPPED SURFACE; FLOOR DEPRESSION

SLOPED SURFACE

STEPPED FOOTING

BOTTOM STEPPED FOOTING

INDICATES SHEAR WALL TYPE AND LENGTH, PER SHEAR WALL SCHEDULE

INDICATES SPAN AND DIRECTION OF PREFABRICATED ROOF TRUSS (BY OTHERS)

INDICATES SPAN AND DIRECTION OF ROOF RAFTER OR FLOOR JOIST WITH WEB STIFFENER

INDICATES SPAN AND DIRECTION OF ROOF RAFTER OR FLOOR JOIST

INDICATES EXTENTS OF FRAMING OR OTHER STRUCTURAL ELEMENT

INDICATES HEADER @ OPENING PER HEADER SCHEDULE

EARTH LAYER

INDICATES SAND OR GROUT

INDICATES GRAVEL

STEEL IN CROSS SECTION

INDICATES BEARING WALL

SHADED AREA INDICATES CALIFORNIA FRAMING

SHADED AREA INDICATES FOOTPRINT OF FLOOR ABOVE

STEEL HSS TUBE COLUMN

STEEL HSS OR PIPE COLUMN

WIDE FLANGE STEEL COLUMN

WOOD POST

INDICATES TOP PLATE SPLICE NAILING PER SCHEDULE

INDICATES SHEAR WALL STRAP / HOLDOWN TYPE PER SCHEDULE

INDICATES PAD FOOTING TYPE PER SCHEDULE

INDICATES CONTINUOUS FOOTING TYPE PER SCHEDULE

ANGLE BRACE

DOUBLE ANGLE BRACE

DRAG STRUT CONNECTION

FULL HEIGHT STIFFENER CONNECTION

MOMENT CONNECTION

MEMBER SPLICE

TOP OF STEEL ± ELEVATION

NUMBER OF EVENLY SPACED SHEAR STUDS

SPECIAL STUD SPACING SEE TYPICAL STEEL DETAILS

BEAM CAMBER AT MID-SPAN

WALL TYPES

INDICATES PLYWOOD SIDE FOR SHEARWALL

INDICATES BEARING WOOD WALL BELOW

INDICATES BEARING WOOD WALL ABOVE

INDICATES NON-BEARING WOOD WALL BELOW

INDICATES NON-BEARING WOOD WALL ABOVE

INDICATES EXISTING BEARING WOOD WALL

INDICATES EXISTING NON-BEARING WOOD WALL

INDICATES BEARING CMU WALL BELOW

INDICATES BEARING CMU WALL ABOVE

INDICATES NON-BEARING CMU WALL BELOW

INDICATES NON-BEARING CMU WALL ABOVE

INDICATES EXISTING BEARING CMU WALL

INDICATES EXISTING NON-BEARING CMU WALL

INDICATES BEARING CONCRETE WALL BELOW

INDICATES BEARING CONCRETE WALL ABOVE

INDICATES NON-BEARING CONCRETE WALL BELOW

INDICATES NON-BEARING CONCRETE WALL ABOVE

INDICATES EXISTING BEARING CONCRETE WALL

INDICATES EXISTING NON-BEARING CONCRETE WALL

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S-504	TYPICAL WOOD DETAILS
S-511	ROOF FRAMING DETAILS

ABBREVIATIONS

A & B	ABOVE AND BELOW
AB	ANCHOR BOLT
ABV	ABOVE
ACI	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
ADJ	ADJACENT
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ALUM	ALUMINUM
ANCH	ANCHOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APA	ENGINEERED WOOD ASSOCIATION (FORMERLY THE AMERICAN PLYWOOD ASSOCIATION)
APPVD	APPROVED
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL; ARCHITECT
AWPA	AMERICAN WOOD PRESERVERS ASSOCIATION
AWS	AMERICAN WELDING SOCIETY
AITC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
BEL	BELOW
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BN	BOUNDARY NAIL
BOT OR B	BOTTOM
BRC	BRACE
BRG	BEARING
BTWN	BETWEEN
CANT	CANTILEVER
CAM OR C	CAMBER
CC	CENTER TO CENTER
CG	CENTER OF GRAVITY
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION JOINT; CONTROL JOINT
CL	CENTER LINE
CLR	CLEARANCE; CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPRESSION
CONC	CONCRETE
CONN	CONNECTION; CONNECT
CONSTR	CONSTRUCTION
CONT	CONTINUE; CONTINUOUS
CONTR	CONTRACTOR
CJP	COMPLETE JOINT PENETRATION WELD
CTR	CENTER
CTSK	COUNTERSINK; COUNTERSUNK
CU FT	CUBIC FOOT
d	PENNY (NAIL OR BAR DIA)
DBL	DOUBLE
DEPT	DEPARTMENT
DET	DETAIL
DF	DOUGLAS FIR/LARCH
DIA OR Ø	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIM	DIMENSION
DN	DOWN
DO	DO OVER
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMBED	EMBEDMENT
EN	EDGE NAIL
ENGR	ENGINEER
EQ	EQUAL OR EQUIVALENT
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXIST or (E)	EXISTING
EXT	EXTERIOR
FDN	FOUNDATION
FIN	FINISH
FJ	FLOOR JOIST
FLG	FLANGE
FLR	FLOOR
FN	FIELD NAIL
FOC	FACE OF CONCRETE
FOM	FACE OF MASONARY
FOS	FACE OF STUD
FOW	FACE OF WALL
FRMG	FRAMING
FT	FOOT; FEET
FTA	FLOOR TIE ABOVE
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GLB	GLUED LAMINATED BEAM
GR	GRADE
GRND	GROUND
H or HORIZ	HORIZONTAL
HDR	HEADER
HGR	HANGER
HP	HIGH POINT
HSH	HORIZONTALLY SLOTTED HOLES
HT	HEIGHT
ID	INSIDE DIAMETER
IF	INSIDE FACE
I-JST	I-JOIST
IN	INCH
INCL	INCLUDE
INFO	INFORMATION
INSP	INSPECTION
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIPS
KS	KING STUD
KP	KING POST
KSI	KIPS PER SQUARE INCH
LB(S) OR #	POUND(S)
LF	LINEAL FOOT
LIN	LINEAL; LINEAR
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
LSH	LONG SLOTTED HOLES
LSL	LAMINATED STRAND LUMBER
LT WT	LIGHTWEIGHT
LVL	LEVEL OR LAMINATED VENEER LUMBER
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM; MINUTE
MISC	MISCELLANEOUS
(N)	NEW
N	NORTH
NO or #	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
OSB	ORIENTED STRAND BOARD
PA	POST ABOVE
PARA OR //	PARALLEL
PC	PRECAST; PIECE
PERP	PERPENDICULAR
PI	PLYWOOD INDEX
℄ OR PL.	PLATE
PL	PROPERTY LINE
PLF	POUNDS PER LINEAL FOOT
PLCS	PLACES
PLY	PLYWOOD
PROP	PROPERTY
PT	PRESSURE TREATED
PW	PLATE WASHER
PJP	PARTIAL JOINT PENETRATION WELD
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PVMT	PAVEMENT
#	POUND; NUMBER
REF	REFERENCE
REINF	REINFORCE; REINFORCING
REQD	REQUIRED
RF	ROOF
RR	ROOF RAFTER
Ø	ROUND; DIAMETER
SCHED	SCHEDULE
SECT	SECTION
SEP	SEPARATION
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SOG	SLAB ON GRADE
SN	SHEAR NAIL
SPCG	SPACING
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
SSL	SHORT SLOTTED HOLES
STD	STANDARD
STGR	STAGGER
STIFF	STIFFENERS
STIRR	STIRRUP
STL	STEEL
STRUCT	STRUCTURAL
SW	SHEAR WALL
SYM	SYMMETRICAL
TB	TIE BEAM
T & B	TOP AND BOTTOM
T & G	TONGUE & GROOVE
TO	TOP OF
TOC	TOP OF CURB; TOP OF CONCRETE
TOF	TOP OF FOOTING
TEMP	TEMPERATURE; TEMPORARY
THRU	THROUGH
THK	THICKNESS/THICK
THR	THREADED
TOP or T	TOP
TOS	TOP OF STEEL/TOP OF SLAB
TOW	TOP OF WALL
TS	TRIMMER STUD
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UT	ULTRA-SONIC TEST
VERT	VERTICAL
VSH	VERTICAL SLOTTED HOLES
W/	WITH
W/O	WITHOUT
WO	WHERE OCCURS
WD	WOOD
WP	WORK POINT; WATERPROOF
WWF	WELDED WIRE FABRIC

STRUCTURAL STEEL SHAPES

W	W SHAPE
C	AMERICAN STD CHANNEL SHAPE
MC	MISC CHANNEL SHAPE
L	ANGLE SHAPE
WT, ST, MT	STRUCT TEE SHAPE
PIPE	STANDARD PIPE SHAPE
PIPE-X	EXTRA STRONG PIPE SHAPE
PIPE-XX	DBL EXTRA STRONG PIPE SHAPE
HSS	HOLLOW STRUCTURAL SECTION

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

DSA BACK CHECK 2

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

SHEET INDEX, ABBREVIATIONS & SYMBOLS

NO.	REVISION	DATE
1		
2		
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4		
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6		

PROJECT MANAGER
J. MEADOWS

DRAWN BY C. PRESSLER | **CHECKED BY** J. MEADOWS

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
S-101

N:\0801\0822-03-ed25-mesa-ms-new-science-sped-class-bldg\structural\ConDocs\sheet-files\0822-03-ED25 - S101.dwg, S101, Apr 22, 2026, 12:49pm, jellis

REINFORCING STEEL

1. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 19A OF THE CODE AND WITH THE PROVISIONS OF ACI 318-19, ASTM A706, GRADE 60 UNO. ASTM A615 GR 60 STEEL MAY BE SUBSTITUTED FOR ASTM A706 GR60 STEEL PER ACI 318-19 SECTION 20.2.2.5 PROVIDED THE FOLLOWING CONDITIONS ARE MET:
   A. THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED YIELD STRENGTH BY MORE THAN 18,000 PSI.
   B. THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRESS TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.
   C. WHERE REINFORCEMENT COMPLYING WITH ASTM A615 IS TO BE WELDED, CHEMICAL TESTS SHALL BE PERFORMED TO DETERMINE WELDABILITY IN ACCORDANCE WITH SECTION 26.6.4 OF ACI 318-19.
2. BARS SHALL BE CLEAN OF RUST, GREASE, OR OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
3. WELDED WIRE REINFORCEMENT (WWR), PLAIN OR DEFORMED, SHALL CONFORM TO ASTM A185. WELDED DEFORMED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A1064. ALL WWR FOR STAIR PANS AND ALL WWR FOR CONCRETE FILL ON METAL DECK TO BE PLAIN WWR. PROVIDE LAPS PER ACI 318-19 SECTION 25.5.3 OR 25.5.4 MINIMUM. WWR SHALL BE SUPPORTED ON APPROVED CHAIRS.
4. REINFORCING BAR LAP SPLICES SHALL BE MADE AS INDICATED ON THE DRAWINGS. LAP ALL HORIZONTAL BARS AT CORNERS AND INTERSECTIONS. STAGGER ALL SPLICES UNLESS NOTED OTHERWISE ON PLANS.
   A. MINIMUM LAP SPLICE LENGTH FOR REINFORCING STEEL BARS IN CONCRETE SHALL BE PER ACI 318-19 SECTION 25.5.2 AND THE REINFORCING SCHEDULE ON THE DRAWINGS.
5. ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION IS MADE. ALL REINFORCING CONFORMING TO DIFFERING ASTM SPECIFICATIONS AND/OR OF DIFFERING GRADES SHALL BE CLEARLY MARKED TO DIFFERENTIATE THEM FROM OTHER REINFORCING STEEL IF CONCURRENTLY PRESENT ON SITE.
6. WHERE WELDING OF REINFORCING IS APPROVED BY THE STRUCTURAL ENGINEER, IT SHALL BE DONE BY AWS CERTIFIED WELDERS USING E80XX OR APPROVED ELECTRODES. WELDING PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF STRUCTURAL WELDING CODE- REINFORCING STEEL', AWS-D1.4-15. REINFORCING BARS TO BE WELDED SHALL CONFORM TO THE REQUIREMENTS OF ASTM A706.
7. REINFORCING STEEL SHALL BE ACCURATELY PLACED, ADEQUATELY SUPPORTED AND SHALL BE SECURED AGAINST DISPLACEMENT, AND TIED BEFORE THE CONCRETE IS PLACED DURING CONSTRUCTION WITHIN PERMITTED TOLERANCES. ADEQUATE SUPPORTS ARE ALSO NECESSARY TO KEEP THE REINFORCING STEEL AT THE PROPER DISTANCE FROM THE FORMS. USE WIRE BAR SUPPORTS, PRECAST CONCRETE SUPPORTS, SPACERS, BOLSTERS, REINFORCEMENT OR OTHER MEANS OF SUPPORT PER THE "CRSI MANUAL OF STANDARD PRACTICE", LATEST EDITION.
8. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE "CRSI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.
9. COMPLETE AND DETAILED REINFORCING PLACEMENT DRAWINGS SHALL BE PREPARED AND SUBMITTED TO THE ARCHITECT FOR APPROVAL BY THE SEOR PRIOR TO FABRICATION IN ACCORDANCE WITH THE SPECIFICATIONS AND APPLICABLE CODES. THESE DRAWINGS SHALL BE AVAILABLE ON THE JOB SITE PRIOR TO PLACING OF CONCRETE. THE REINFORCING PLACEMENT DRAWINGS SHALL INCLUDE ALL PRIMARY REINFORCEMENT, LAP SPLICES, TIES, DOWELS, HEADED U-DOWELS, EMBED PLATES, ANCHOR BOLTS, ETC. AREAS OF CONGESTION SHALL BE DETAILED SUFFICIENTLY TO DEMONSTRATE THAT PLACEMENT OF REBAR MEETS SPACING REQUIREMENTS OF ACI 318-19.
10. MILL TEST REPORTS FOR GRADE 60 BARS SHALL BE SUBMITTED TO THE INSPECTOR OF RECORD PRIOR TO PLACEMENT OF CONCRETE PER ACI 318-19 SECTION 26.13.2.3 OF THE CODE.
11. INSPECTION OF CONCRETE SHALL INCLUDE INSPECTION DURING INSTALLATION OF REINFORCING STEEL. INSPECTION SHALL BE SCHEDULED SO THAT PLACEMENT OF REINFORCING STEEL, CONDUIT, SLEEVES, AND EMBEDDED ITEMS MAY BE CORRECTED PRIOR TO PLACEMENT OF OVERLYING GRIDS OR REINFORCING STEEL.
12. CONCRETE PROTECTION FOR REINFORCEMENT

THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT IN CAST-IN-PLACE CONCRETE (NON-PRESTRESSED):	MINIMUM COVER, IN.
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3
B. CONCRETE EXPOSED TO EARTH OR WEATHER: NO.6 THROUGH NO. 18 BAR NO.5 BAR, W31 OR D31 WIRE & SMALLER	2 1½"
C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS, WALLS, JOISTS: NO.14 AND NO.18 BARS NO.11 BAR & SMALLER BEAMS, COLUMNS: PRIMARY REINFORCEMENT TIES, STIRRUPS, SPIRALS	1½" ¾" 1½"

13. MECHANICAL BAR SPLICE CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318-19 SECTION 25.5.7 USE OF MECHANICAL CONNECTIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. SPLICES MUST BE TESTED AS INDICATED IN THE CONCRETE REINFORCEMENT SPECIFICATION. ACCEPTABLE PRODUCTS INCLUDE:

    LENTON STANDARD COUPLERS (IAPMO-ES 0129)
    LENTON FORM SAVERS, TYPE SA (IAPMO-ES 0129)
    LENTON WELDABLE HALF COUPLERS (IAPMO-ES 0129)
    LENTON LOCK COUPLERS PER (IAPMO-ES 0129)

    NOTE THAT REBAR ATTACHED TO PLATE USING LENTON WELDABLE HALF COUPLERS SHALL BE ASTM A706 PER IAPMO-ES 0129.

    ALL MECHANICAL BAR SPLICE CONNECTIONS IN SPECIAL STRUCTURAL WALLS, SPECIAL MOMENT FRAMES AND CONCRETE DIAPHRAGMS SHALL BE TYPE 2 CONFORMING TO THE REQUIREMENTS OF ACI 318-19 SECTION 18.2.7 & 18.12.7.4

CONCRETE

1. ALL CONCRETE CONSTRUCTION SHALL CONFORM WITH CHAPTER 19A OF THE CODE AND WITH THE PROVISIONS OF ACI 318-19.
2. CONCRETE MATERIALS SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

MATERIAL	ASTM STANDARD
PORTLAND CEMENT (TYPE II)	C150/C595
CONCRETE AGGREGATES (HARDROCK)	C33
WATER[A]	C1602
COAL FLY ASH OR POZOLLAN (CLASS F)	C618
NATURAL OR MANUFACTURED SAND	C33
SLAG	C989

   A. WATER SHOULD ONLY BE ADDED AT THE BATCH PLANT. IN NO CASE SHALL THE DESIGN WATER/ CEMENT RATIO BE EXCEEDED.

3. CONCRETE MIXES SHALL BE PROPORTIONED BASED ON SECTION 26.4.3 OF ACI 318-19. WHICH REFERENCES ACI 301-20 ARTICLE 4.2.3. MIX DESIGNS SHALL INCLUDE DOCUMENTATION OF MIX AVERAGE COMPRESSIVE STRENGTH THROUGH FIELD TEST DATA OR TRIAL MIXTURES IN ACCORDANCE WITH ACI 301-20 ARTICLE 4.2.3.4. SCHEDULE OF STRUCTURAL CONCRETE STRENGTHS AND LOCATIONS (UNO):

LOCATION IN STRUCTURE	MINIMUM STRENGTH (PSI)	DENSITY (PCF)	MAX SLUMP (IN±1)	MAX WATER/CEMENT RATIO	SLAG/ FLY ASH[A] (MAX)
CONCRETE FOUNDATIONS, GRADE BEAMS, TIE BEAMS	3,000	150	4	0.5	0.25
CONCRETE STEM WALLS	3,000	150	4	0.5	0.25
CONCRETE SLAB ON GRADE	3,000	150	4	0.45	0.25
STAIRS ON GRADE, CURBS AND OTHER NON-STRUCTURAL CONCRETE	3,000	150	4	0.5	0.25
SITE WALLS	3,000	150	4	0.5	0.25

   A. AS MEASURED BY CEMENTITIOUS WEIGHT

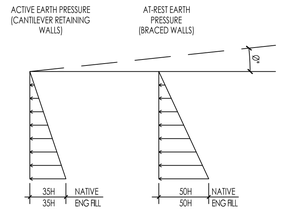
4. READY MIXED CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM C94 OR C685.
5. DEPOSITING AND CONVEYING OF CONCRETE SHALL CONFORM TO SECTION 26.5 OF ACI 318-19 AND PROJECT SPECIFICATIONS.
6. ALL CONCRETE SURFACES AGAINST WHICH NEW CONCRETE IS TO BE PLACED SHALL BE CLEANED AND ROUGHENED TO 1/4" AMPLITUDE.
7. ALL REINFORCING BARS, ANCHOR BOLT HOLDOWNS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED AND TIED IN POSITION PRIOR TO PLACING CONCRETE. IN NO CASE SHALL ANY REINFORCING BARS, ANCHOR BOLTS, HOLDOWNS OR OTHER CONCRETE INSERTS BE "WET SET" OR "WET-STABBED" INTO CONCRETE DURING THE POUR.
8. PROVIDE SLEEVES FOR PLUMBING AND ELECTRICAL OPENINGS IN CONCRETE BEFORE PLACING. DO NOT CUT ANY REINFORCING WHICH MAY CONFLICT. CORING IN CONCRETE IS NOT PERMITTED WITHOUT SEOR APPROVAL. NOTIFY THE SEOR IN ADVANCE OF CONDITIONS NOT SHOWN ON THE DRAWINGS. SEE THE DRAWINGS FOR ADDITIONAL RESTRICTIONS ON THE PLACEMENT OF OPENINGS IN SLABS AND WALLS.
9. PIPES EMBEDDED IN CONCRETE:
   A. CONCRETE
      a. PIPES LARGER THAN 1-1/2" DIAMETER SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED BY SEOR.
      b. PIPES SHALL NOT DISPLACE OR INTERRUPT REINFORCING BARS.
      c. DO NOT STACK CONDUITS. SPACE EMBEDDED PIPES AND CONDUITS AT A MINIMUM OF 3 DIAMETERS CLEAR FROM OTHER EMBEDDED PIPES/CONDUITS AND REBAR.

FOUNDATION

1. GEOTECHNICAL INFORMATION AND FOUNDATION DESIGN IS BASED ON THE FOLLOWING GEOTECHNICAL REPORTS AND SUPPLEMENTS/ADDENDUMS. COPIES OF THE REPORTS AND SUPPLEMENTAL LETTERS SHALL BE AVAILABLE AT THE JOBSITE AT ALL TIMES.

REPORT/ADDENDUM TITLE	PREPARED BY	DATE	PROJECT #
UPDATED GEOTECHNICAL ENGINEERING AND GEOLOGIC HAZARDS REPORT MESA MIDDLE SCHOOL SPED/SCIENCE BUILDING 2555 SOUTH HALCYON ROAD ARROYO GRANDE, CA	EARTH SYSTEMS PACIFIC	04/03/2025	301024-006

2. LATERAL EARTH PRESSURES:



   * FOR SLOPING BACKFILL ADD 1 PCF FOR EVERY 2 DEG. (ACTIVE CASE) AND 1.5 PCF FOR EVERY 2 DEG (AT REST)

3. SPREAD OR CONTINUOUS FOOTINGS:

ELEMENT	ALLOWABLE BEARING CAPACITY (PSF)[A]	ALLOWABLE LATERAL RESISTANCE[B]	
		PASSIVE RESISTANCE (PSF/FT BELOW GRADE)	FRICTION RESISTANCE (COEFFICIENT OF FRICTION)
COMPACTED FILL	1,200 DEAD ONLY 1,600 DEAD + LIVE	233	0.27
RET WALL	1,600		

   NOTES:
   A. THE ALLOWABLE CAPACITY MAY BE INCREASED BY ONE-THIRD WHEN CONSIDERING LOADS OF SHORT DURATION SUCH AS WIND OR SEISMIC FORCES.
   B. THE ALLOWABLE LATERAL RESISTANCE CAN BE TAKEN AS THE SUM OF THE FRICTIONAL RESISTANCE AND PASSIVE RESISTANCE WITHOUT REDUCTION TO EITHER VALUE.
   C. THE UPPER 1 FOOT OF SOIL NOT PROTECTED BY PAVEMENT SHALL BE NEGLECTED WHEN CALCULATING PASSIVE RESISTANCE.
   D. COMPACTED FILL SHOULD BE PREPARED PER SECTION 11.0 OF THE GEOTECHNICAL EVALUATION REPORT
   E. ASSUMES THAT THE GROUND IS HORIZONTAL FOR A DISTANCE OF 7 FEET.

4. SLAB ON GRADE SUPPORT SHALL BE PER THE GEOTECHNICAL INVESTIGATION REPORT AND TYPICAL DETAILS IN THE CONSTRUCTION DOCUMENTS.
5. WHERE NOT SHOWN ON THE DRAWINGS, CONTRACTOR TO PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEATHING AND SHORING REQUIRED AND SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY ORDINANCES.
6. CONTRACTOR TO PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM SURFACE WATER, GROUND WATER AND/OR SEEPAGE.
7. EXCAVATION FOR FOOTINGS SHALL BE APPROVED BY THE INSPECTOR AND GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE AND REINFORCING.
8. ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE CONCRETE OR GROUT HAS ATTAINED FULL DESIGN STRENGTH. CONTRACTOR SHALL BRACE OR PROTECT ALL BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED FULL DESIGN STRENGTH. CONTRACTOR SHALL PROVIDE FOR DESIGN, PERMITS AND INSTALLATION OF SUCH BRACING.
9. EXCAVATIONS SHALL BE CUT SQUARE AND SMOOTH, WITH LEVEL BOTTOMS.
10. FOOTING BACKFILL AND UTILITY TRENCH BACKFILL WITHIN BUILDING AREA SHALL BE MECHANICALLY COMPACTED IN LAYERS IN ACCORDANCE WITH THE GEOTECHNICAL INVESTIGATION REPORT AND APPROVED BY THE GEOTECHNICAL ENGINEER. FLOODING WILL NOT BE PERMITTED. ALL FILLS USED TO SUPPORT FOUNDATIONS SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER REPRESENTATIVE PER SECTION 1705A.6 OF THE CODE.
11. ALL ABANDONED FOOTINGS, UTILITIES, ETC. SHALL BE REMOVED. NEW FOOTINGS MUST EXTEND INTO FIRM RECOMPACTED SOIL.
12. PIPES WITHIN THE ZONE OF INFLUENCE OF BUILDING OR SITE ELEMENT FOUNDATIONS SHALL BE ENCASED IN LEAN CONCRETE AT THE DIRECTION OF THE GEOTECHNICAL ENGINEER OF RECORD.

EXISTING CONDITIONS

1. ALL INFORMATION SHOWN ON THE PLANS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE FROM PLANS SUPPLIED BY THE OWNER, BUT WITHOUT GUARANTEE OF ACCURACY.
2. WHERE ACTUAL CONDITIONS ARE NOT IN ACCORDANCE WITH THE INFORMATION PRESENTED, THE ARCHITECT AND/OR STRUCTURAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY. NO MODIFICATIONS OF THE PLANS FOR NEW CONSTRUCTION SHALL BE MADE WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT.

EXISTING UNDERGROUND UTILITIES

1. THE ARCHITECT AND ENGINEERS ARE NOT RESPONSIBLE FOR THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES WHETHER OR NOT SHOWN ON THE DRAWINGS. DRAWINGS, IF ANY, IS APPROXIMATE. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THE SITE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT AND/OR STRUCTURAL ENGINEER SHOULD ANY SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES WHICH MAY RESULT FROM HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ALL EXISTING UNDERGROUND UTILITIES.
3. AN UNDERGROUND SERVICE ALERT INQUIRY IDENTIFICATION NUMBER MUST BE OBTAINED AT LEAST TWO WORKING DAYS BEFORE STARTING WORK WITH THIS PERMIT.
   A. FOR PROJECTS IN SOUTHERN CALIFORNIA TELEPHONE NO. 1-800-422-4133.
   B. FOR PROJECTS IN NORTHERN CALIFORNIA TELEPHONE NO. 1-800-227-2600.

DESIGN INFORMATION

1. DEAD LOADS (2022 CBC SECTION 1603A):

DEAD LOADS		
LOCATIONS		UNIFORM (PSF)
ROOF:	SINGLE PLY W/ DROPPED CEILING	21
ROOF OVERHANG:	SINGLE PLY W/ FIBER CEMENT SOFFIT	17
EXTERIOR BEARING WALLS:	2x6 STUDS @ 16" OC W/ PLASTER FINISH	19
INTERIOR BEARING WALLS:	2x4 STUDS @ 16" OC W/ GYP & TACKBOARD	12
INTERIOR NON BEARING WALLS:	DBL 2x6 STUDS @ 16" OC W/ GYP & TACKBOARD	12
EXTERIOR NON BEARING WALLS:	2x6 STUDS @ 16" OC W/ GYP FINISH	14

2. FLOOR LIVE LOADS: (2022 CBC SECTION 1603A.1.1)

FLOOR LIVE LOADS			
OCCUPANCY OR USE	UNIFORM (PSF)	CONC. (LBS)	REFERENCE
SCHOOL CLASSROOMS	60	—	2022 CBC TABLE 1607A.1

3. ROOF LIVE LOADS (2022 CBC SECTION 1603A.1.2)

ROOF LIVE LOADS			
OCCUPANCY OR USE	UNIFORM (PSF)	CONC. (LBS)	REFERENCE
ROOF ORDINARY FLAT, PITCHED AND CURVED ROOFS (THAT ARE NOT OCCUPIABLE)	20	—	2022 CBC TABLE 1607A.1

4. ROOF SNOW LOADS (2022 CBC SECTION 1603A.1.3):

SNOW DESIGN DATA		
PARAMETER	VALUE	REFERENCE
GROUND SNOW LOAD	P_g = 0 PSF	ASCE 7-16 7.2

5. WIND DESIGN DATA (2022 CBC SECTION 1603A.1.4) :

WIND DESIGN DATA		
PARAMETER	VALUE	REFERENCE
ULTIMATE DESIGN WIND SPEED (3-SEC GUST)	V_{ULT} = 99 MPH	2022 CBC FIG. 1609A.3
NOMINAL DESIGN WIND SPEED (3-SEC GUST)	V_{ASD} = 77 MPH	2022 CBC 1609A.3.1
EXPOSURE CATEGORY	C	2022 CBC 1609A.4.3
INTERNAL PRESSURE COEFFICIENT:	GCpi = ± 0.18	ASCE 7-16 TABLE 26.13-1

COMPONENTS & CLADDING WIND PRESSURES (PSF)				
LOCATION		COMPONENT TRIBUTARY AREA (SQ FT)		
		10	100	500
ROOF	ZONE 1'	-19.6	-19.6	-16.0
	ZONE 1	-34.0	-26.8	-21.4
	ZONE 2	-44.9	-35.8	-28.6
	ZONE 3	-61.2	-42.2	-28.6
	ALL ZONES	16.0	16.0	16.0
OVERHANG	ZONE 1'	-34.0	-32.2	-21.4
	ZONE 1	-34.0	-32.2	-21.4
	ZONE 2	-44.9	-32.2	-23.2
	ZONE 3	-61.2	-39.5	-23.2
WALL	ZONE 4	-23.2	-20.1	-17.7
	ZONE 5	-28.6	-22.3	-17.7
	POSITIVE	21.4	17.7	16.0

6. EARTHQUAKE DESIGN DATA (2022 CBC SECTION 1603A.1.5):

SITE AND OCCUPANCY PARAMETERS		
PARAMETER	VALUE	REFERENCE
RISK CATEGORY	III	2022 CBC TABLE 1604A.5
SEISMIC IMPORTANCE FACTOR	I = 1.25	ASCE 7-16 TABLE 1.5-2
MAPPED SPECTRAL RESPONSE ACCELERATIONS:	S_S = 1.002 S_1 = 0.368	2022 CBC 1613A.2.1
SITE CLASS	D	2022 CBC 1613A.2.2
SPECTRAL RESPONSE COEFFICIENTS:	S_{DS} = 0.834 S_{D1} = 0.743	2022 CBC 1613A.2.4

BUILDING PARAMETERS		
PARAMETER	VALUE	REFERENCE
SEISMIC DESIGN CATEGORY	SDC = D	2022 CBC 1613A.2.5
BASIC SEISMIC FORCE RESISTING SYSTEM	LIGHT FRAME (WOOD) WALLS SHEATHED WITH WOOD STRUCTURAL PANELS RATED FOR SHEAR RESISTANCE	ASCE 7-16 TABLE 12.2-1
RESPONSE MODIFICATION FACTOR	R = 6½	
SYSTEM OVERSTRENGTH FACTOR	Ωo = 3	
DEFLECTION AMPLIFICATION FACTOR	Cd = 4	
DESIGN BASE SHEAR	V = 18.2k	ASCE 7-16 12.8.1
SEISMIC RESPONSE COEFFICIENTS	Cs = 0.160	ASCE 7-16 12.8.1.1
ANALYSIS PROCEDURE USED	EQUIVALENT LATERAL FORCE PROCEDURE	ASCE 7-16 12.8

7. GEOTECHNICAL INFORMATION (2022 CBC SECTION 1603A.1.6):
   REFER TO FOUNDATION GENERAL NOTES

GENERAL

1. ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE FOLLOWING CODES AND STANDARDS:
   A. 2022 CALIFORNIA BUILDING CODE, PART 2, VOLUME 2 OF 2, AND TITLE 24 C.C.R. 2022 EDITION AND LATEST REVISIONS (INCLUDING SUPPLEMENTS AND ERRATA) HEREIN REFERRED TO AS "THE CODE".
   B. ANY OTHER REGULATING AGENCIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK, INCLUDING THE STATE OF CALIFORNIA DIVISION OF OCCUPATIONAL SAFETY AND HEALTH (CAL/OSHA).
   C. CODES & STANDARDS REFERENCED IN THE CODE OR LISTED IN THESE NOTES AND SPECIFICATIONS.
2. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
3. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES. IN NO INSTANCE SHALL DIMENSIONS BE SCALED FROM THE DRAWINGS.
5. SEE ARCHITECTURAL DRAWINGS FOR THE FOLLOWING:
   A. SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS, EXCEPT AS NOTED
   B. SIZE AND LOCATION OF ALL INTERIOR AND EXTERIOR NON-BEARING PARTITIONS UNLESS NOTED AND/OR DETAILED ON THE STRUCTURAL DRAWINGS
   C. SIZE AND LOCATION OF ALL CONCRETE CURBS, EQUIPMENT PADS, PITS, FLOOR DRAINS, SLOPES, DEPRESSED AREAS, CHANGE IN LEVEL, CHAMFERS, GROOVES, INSERTS, ETC
   D. SIZE AND LOCATION OF ALL FLOOR AND ROOF OPENINGS EXCEPT AS SHOWN
   E. FLOOR AND ROOF FINISHES
   F. MISCELLANEOUS DRAINAGE AND WATERPROOFING
   G. ALL FIREPROOFING REQUIREMENTS INCLUDING FIREPROOFING OF STRUCTURAL STEEL
   H. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS
6. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
   A. PIPE RUNS, SLEEVES, HANGERS, TRENCHES, WALL AND SLAB OPENINGS, ETC., EXCEPT AS SHOWN OR NOTED.
   B. ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS IN WALLS AND SLABS.
   C. CONCRETE INSERTS FOR ELECTRICAL, MECHANICAL OR PLUMBING FIXTURES.
   D. SIZE AND LOCATION OF MACHINE OR EQUIPMENT BASES, ANCHOR BOLTS FOR MOTOR MOUNTS.
7. SEE CIVIL DRAWINGS FOR THE FOLLOWING:
   A. HEIGHT AND/OR ELEVATION OF:
      a. FINISHED SURFACE
      b. TOP OF WALL
      c. TOP OF GRADE
      d. FINISHED GRADE
      e. SLOPE
   B. SITE CONCRETE WALKWAYS, CURBS & PAVING
8. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT ETC. THE CONTRACTOR IS RESPONSIBLE FOR PROVISION OF TEMPORARY SHORING AND OTHER CONSTRUCTION AIDS, INCLUDING ALL ENGINEERING OF SUCH SYSTEMS, FOR TEMPORARY SUPPORT OF NEW AND/OR EXISTING STRUCTURAL ELEMENTS AS REQUIRED FOR ERECTION AND OTHER CONTRACTOR'S MEANS AND METHODS OF CONSTRUCTION (UNO). OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS OR CONCERN CONSTRUCTION MEANS AND METHODS OR CONSTRUCTION SAFETY.
9. BACKFILL SHALL NOT BE PLACED BEHIND EXTERIOR AND INTERIOR RETAINING WALLS UNTIL THE CONCRETE / CMU HAS ACHIEVED FULL DESIGN STRENGTH, FOR BRACED WALLS SUPPORTED BY STRUCTURAL DIAPHRAGMS. BACKFILL SHALL NOT BE PLACED BEHIND THE WALL UNTIL THE DIAPHRAGM HAS BEEN INSTALLED , AND FOR CONCRETE DIAPHRAGMS, HAS ACHIEVED FULL DESIGN STRENGTH.
10. THE CONTRACT STRUCTURAL DRAWINGS SHOW THE BUILDING IN ITS FINAL INTENDED POSITION. CONTRACTOR SHALL MAKE PROVISIONS IN THE LAYOUT OF THE BUILDING TO TAKE INTO ACCOUNTS SHRINKAGE, CREEP, SHORTENING, ETC..
11. OPENINGS, POCKETS, ETC., LARGER THAN 6" SHALL NOT BE PLACED IN CONCRETE SLABS, DECKS, WALLS, UNLESS SPECIALLY DETAILED ON THE STRUCTURAL DRAWINGS. NOTIFY THE STRUCTURAL ENGINEER WHEN DRAWINGS BY OTHERS SHOW OPENINGS, POCKETS, ETC., LARGER THAN 6" NOT SHOWN ON THE STRUCTURAL DRAWINGS, BUT WHICH ARE LOCATED IN STRUCTURAL MEMBERS.
12. ASTM SPECIFICATIONS ON THE DRAWINGS SHALL BE THE VERSION REFERENCED IN CHAPTER 35 OF THE CODE OR AS REFERENCED IN THE APPLICABLE DESIGN STANDARD.
13. CONTRACTOR SHALL INVESTIGATE SITE DURING CLEARING AND EARTHWORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC.. IF ANY SUCH STRUCTURES ARE FOUND, THE STRUCTURAL ENGINEER AND GEOTECHNICAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
14. CONSTRUCTION MATERIAL SHALL BE SPREAD OUT IF PLACED ON FRAMED ROOF OR FLOOR. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. THE CONTRACTOR TO DESIGN AND PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT ATTAINED DESIGN STRENGTH.
15. CONTRACTOR SHALL COORDINATE SHORING WITH DRAWINGS OF RECORD TO INSURE PROVISIONS FOR POCKETS, BLOCKOUTS, OFFSETS, STEPPED FOOTINGS AND ANY OTHER ITEMS AFFECTED BY THE SHORING. SHORING IS NOT THE RESPONSIBILITY OF THE SEOR. CONTRACTOR TO SUBMIT ANY SHORING DESIGN AND DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
16. AN UNDERGROUND SERVICE ALERT INQUIRY IDENTIFICATION NUMBER MUST BE OBTAINED AT LEAST TWO WORKING DAYS BEFORE STARTING WORK WITH THIS PERMIT.
   A. FOR PROJECTS IN SOUTHERN CALIFORNIA TELEPHONE NO. 1-800-422-4133.
   B. FOR PROJECTS IN NORTHERN CALIFORNIA TELEPHONE NO. 1-800-227-2600.
17. EDGE OF SLAB DIMENSIONS TO BE COORDINATED AND VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO FABRICATION.
18. THE CONTRACTOR SHALL ALLOW SUFFICIENT TIME FOR THE ENGINEER OF RECORD TO THOROUGHLY REVIEW SUBMITTAL PACKAGES (10 WORKING DAYS, MINIMUM) AND REQUESTS FOR INFORMATION (7 WORKING DAYS MINIMUM).

DIMENSIONS

1. DIMENSIONS SHALL BE DEFINED TO INCLUDE BOTH HORIZONTAL DIMENSIONS AND VERTICAL DIMENSIONS (ELEVATIONS).
2. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE. DRAWINGS SHALL NOT BE SCALED.
3. SEE ARCHITECTURAL DRAWINGS FOR DIMENSION NOT NOTED ON STRUCTURAL DRAWINGS.
4. SEE ARCHITECTURAL AND/OR CIVIL DRAWINGS FOR FINISH FLOOR ELEVATIONS.
5. SEE ARCHITECTURAL DRAWINGS FOR ALL TOP OF SHEATHING AND/OR ROOF ELEVATIONS.
6. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES OR INCONSISTENCIES.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

rrm design group
rrmdesign.com | (805) 543-1794
THE IMPLIED DRAWINGS, S

STRUCTURAL COMPOSITE LUMBER

1. STRUCTURAL COMPOSITE LUMBER SHALL HAVE STRUCTURAL CAPACITIES AND DESIGN PROVISIONS ESTABLISHED AND MONITORED IN ACCORDANCE WITH ASTM D5456 PER CODE SECTION 2303.1.10

2. STRUCTURAL COMPOSITE LUMBER SHALL BE IDENTIFIED WITH THE MANUFACTURER'S NAME AND/OR LOGO, THE NAME AND OR LOGO OF THE INSPECTION AGENCY (PFS CORP , INTERTEK,OR APA-EWS) AND THE EVALUATION REPORT NUMBER, THE PLANT NUMBER, PRODUCT DESIGNATION OR TYPE, PRODUCTION DATE, AND GRADE.

3. INSTALLATION, FABRICATION, IDENTIFICATION AND CONNECTION DETAILS SHALL BE IN ACCORDANCE WITH THE APPLICABLE ICC REPORT.

4. LAMINATED VENEER LUMBER (LVL)

   A. LAMINATED VENEER LUMBER SHALL BE ONE OF THE FOLLWING:
      a. REDLAM LAMINATED VENEER LUMBER GRADE 2.0E DF/LP/WH, MANUFACTURED BY REDBUILT IN ACCORDANCE WITH ICC-ESR 2993.

   B. IDENTIFICATION: IN ADDITION TO THE IDENTIFICATION LISTED FOR STRUCTURAL COMPOSITE LUMBER ABOVE, LVL SHALL BE IDENTIFIED WITH THE SPECIES OR SPECIES GROUP.

5. PRODUCTS FROM OTHER MANUFACTURER'S MAY BE USED WITH EQUAL OR GREATER CAPACITIES. REQUESTS FOR PRODUCT SUBSTITUTION SHALL BE SUBMITTED AS REVISION/ADDENDUM/CONSTRUCTIVE CHANGE DIRECTIVE TO DSA FOR REVIEW AND APPROVAL, AND FOLLOW THE REQUIREMENTS LISTED IN THE SUBMITTALS SECTION.

STRUCTURAL GLUED LAMINATED TIMBER

1. STRUCTURAL GLUED LAMINATED TIMBER SHALL MEET THE FOLLOWING MINIMUM STANDARDS EXCEPT WHERE OTHERWISE NOTED:

STRUCTURAL GLUED LAMINATED TIMBER PROPERTIES [C]

USE	COMBINATION SYBMOL	SPECIES OUTER/CORE	RATING [B]	APPEARANCE	REFERENCE [A]
SIMPLE SPAN	24F-V4	DF/DF	AITC OR APA-EWS	SEE NOTE D	2022 CBC 2303.1.3 (AITC/ANSI 190.1-07 OR ANSI 190.1-12 AND ASTM D3737)

TABLE NOTES:

A. GLUED LAMINATED MEMBERS SHALL BE MANUFACTURED AS REQUIRED IN ASTM D 3737 AND EITHER OF THE FOLLOWING STANDARDS:
   a. ANSI 117-15 (CODE REFERENCED)
   b. ANSI 190.1-22 (CURRENT STANDARD)

B. STRUCTURAL GLUED LAMINATED TIMBERS SHALL BE IDENTIFIED WITH A STAMP BEARING THE AITC QUALITY MARK OR AWA-EPS TRADEMARK. PLACE STAMPS ON SURFACES THAT WILL NOT BE EXPOSED TO VIEW IN THE COMPLETED STRUCTURE. SUBMIT CERTIFICATES OF CONFORMANCE INDICATING THAT THE GLULAM MEMBERS CONFORM TO THE REQUIREMENTS OF ANSI

C. REFER TO GENERAL WOOD NOTES FOR PRESERVATIVE TREATMENT.

D. STRUCTURAL GLUED LAMINATED MEMBERS SHALL BE OF THE FOLLOWING APPEARANCE GRADES, UNO:
   a. INDUSTRIAL: TYPICAL EXPOSURE FOR MEMBERS NOT EXPOSED TO VIEW IN THE COMPLETED WORK.

2. ADHESIVES USED IN THE GLULAM MANUFACTURING PROCESS SHALL CONFORM TO ANSI 405-18 (PREVIOUSLY AITC 405), STANDARD FOR ADHESIVES FOR USE IN STRUCTURAL GLUED LAMINATED TIMBER. ADHESIVES SHALL BE A WET-USE ADHESIVE MEETING THE REQUIREMENTS OF ASTM D5229.

3. MEMBERS SHALL HAVE A SEALER ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AFTER FABRICATION, END SEAL EACH END OF THE MEMBER IMMEDIATELY AFTER CUTTING.

4. PROVIDE CAMBER AS INDICATED ON THE DRAWINGS.

5. TRANSPORTATION, STORAGE, AND HANDLING:

   A. REFER TO AITC 111-05, RECOMMENDED PRACTICE FOR PROTECTION OF STRUCTURAL GLUED LAMINATED TIMBER DURING TRANSIT, STORAGE AND ERECTION.
      a. LOAD WRAP OR BUNDLE WRAP INDUSTRIAL APPEARANCE GRADE MEMBERS. ARCHITECTURAL OR PREMIUM GRADE MEMBERS SHALL BE WRAPPED INDIVIDUALLY AND REMAIN UNTIL PROTECTION IS NO LONGER REQUIRED FROM WEATHER, SUNLIGHT, SOILING, AND/OR OTHER TRADES. SLIT UNDERSIDE OF WRAPPINGS TO PREVENT ACCUMULATION OF MOISTURE.

   B. STORAGE:
      a. STORE GLULAM MEMBERS ON A FLAT SURFACE AT LEAST 6" ABOVE THE GROUND. PLACE SUPPORTS CLOSE ENOUGH TOGETHER TO PREVENT NOTICEABLE DEFLECTIONS.

PRE-FABRICATED WOOD I-JOIST NOTES

1. PREFABRICATED WOOD 'I' JOISTS SHALL HAVE STRUCTURAL CAPACITIES AND DESIGN PROVISIONS ESTABLISHED AND MONITORED IN ACCORDANCE WITH ASTM D5055 PER CODE SECTION 2303.1.2.

2. TJI SHALL BE AS MANUFACTURED BY REDBUILT AND THEIR MANUFACTURING AND INSTALLATION SHALL BE IN ACCORDANCE WITH ICC ESR 2994.

3. IDENTIFICATION: TJI'S SHALL BE IDENTIFIED BY A STAMP THAT INCLUDES THE PRODUCT DESIGNATION, EVALUATION REPORT (ICC-ESR 2994), MANUFACTURER'S NAME OR LOGO (TRUS JOIST, REDBUILT, PLANT NUMBER, PRODUCTION DATE AND INSPECTION AGENCY (PFS CORP OR APA)).

4. MATERIALS:
   A. FLANGES: FLANGE MATERIAL SHALL BE EITHER MICROLLAM LAMINATED VENEER LUMBER (LVL) IN ACCORDANCE WITH ICC ESR-2993.

   B. WEBS: WEB MATERIAL SHALL BE PERFORMANCE PLUS OSB CONFORMING TO DOC PS2, EXPOSURE 1 (REFER TO SHEATHING NOTES) AND FURTHER REQUIREMENTS PER THE REDBUILT MANUFACTURING STANDARDS.

5. PRODUCTS OF OTHER MANUFACTURERS WITH EQUAL OR GREATER CAPACITY MAY BE USED. SUBSTITUTIONS SHALL BE SUBMITTED AS REVISION/ADDENDUM/CONSTRUCTIVE CHANGE DIRECTIVE TO DSA FOR REVIEW AND APPROVAL, CLEARLY INDICATING NEW MEMBER CAPACITIES AND FOR WHICH MEMBER THEY ARE BEING SUBSTITUTED.

6. TRANSPORTATION, STORAGE, AND HANDLING:

   A. TRANSPORTATION
      a. IN TRANSPORTING MEMBERS ON OPEN TRUCK BEDS, COVER THE BUNDLES WITH A TARP.
      b. BUNDLES WRAPPED BY THE MANUFACTURER SHOULD REMAIN WRAPPED DURING TRANSPORTATION AND STORAGE.

   B. STORAGE
      a. STORE UNDER A ROOF, TARP OR WRAP IN A LOCATION WITH MINIMUM MOISTURE EXPOSURE.
      b. IF STORED OUTSIDE, PROTECT FROM ELEMENTS ON ALL SIDES.
      c. REPAIR ANY TEARS OR PUNCTURES IN THE PROTECTIVE WRAP WITH PRODUCT WRAP TAPE.
      d. ENSURE THAT NO WATER IS TRAPPED WITHIN THE WRAP BEFORE TAPING
      e. ALLOW PROPER VENTILATION WHEN COVERING WITH PLASTIC.
      f. USE SUPPORT BLOCKS AND STICKERS AT INTERVALS SPECIFIED BY THE MANUFACTURER TO PREVENT STORAGE CAMBER.

   C. HANDLING
      a. TJI'S SHOULD BE HANDLED IN A VERTICAL ORIENTATION.
      b. PROTECT THE EDGES AND ENDS FROM DAMAGE. KEEP THE LOAD LEVEL AND LIFT THE STACK FROM THE CENTER.

7. PROVIDE FULL DEPTH TJI BLOCKING FOR THE FOLLOWING CONDITIONS, UNLESS SHOWN OTHERWISE:
   A. BETWEEN JOISTS OVER SUPPORT.
   B. BETWEEN JOISTS OVER AND BELOW PARTITION WALLS.

8. WHEN GYPSUM CEILING IS NOT DIRECTLY APPLIED TO BOTTOM OF JOISTS, OR AS NOTED ON FRAMING PLANS, BRIDGING SHALL BE FULL DEPTH TJI BLOCKING, INSTALLED AS FOLLOWS:
   A. 'ROOF JOISTS: 12'-0" O.C. MAXIMUM, NOT MORE THAN 12'-0" FROM SUPPORT.

WOOD STRUCTURAL PANELS (SHEATHING)

1. WOOD STRUCTURAL PANELS SHALL MEET THE FOLLOWING MINIMUM STANDARDS EXCEPT WHERE OTHERWISE NOTED:

WOOD STRUCTURAL PANEL PROPERTIES

USE	PLY	BOND CLASSIFICATION [C]	SHEATHING GRADE	PERFORMANCE RATING	SPAN RATING	RATING [B]	REFERENCE [A]
ROOF	5	EXPOSURE 1	REFER TO TYPICAL DIAPHRAGM SCHEDULE			APA	2022 CBC 2303.1.5 (DOC PS 1-19 OR PS 2-18)
WALL	5	EXPOSURE 1	REFER TO TYPICAL SHEAR WALL SCHEDULE			APA	

TABLE NOTES:

A. WOOD STRUCTURAL PANELS SHALL CONFORM TO THE REQUIREMENTS FOR THEIR TYPE IN ACCORDANCE WITH THE FOLLOWING VOLUNTARY STANDARDS BY THE ENGINEERED WOOD ASSOCIATION (APA):
   a. VOLUNTARY PRODUCT STANDARD, STRUCTURAL PLYWOOD, PS 1-09
   b. VOLUNTARY PRODUCT STANDARD, PERFORMANCE STANDARD FOR WOOD-BASED STRUCTURAL-USE PANELS, PS 2-10

B. WOOD STRUCTURAL PANELS SHALL BE IDENTIFIED BY THE APA TRADEMARK INDICATING CONFORMANCE TO THE APPLICABLE VOLUNTARY STANDARD

C. WHERE PANELS ARE EXPOSED TO REPEATED WETTING AND REDRYING, LONG-TERM EXPOSURE TO WEATHER, OR CONDITIONS OF SIMILAR SEVERITY, "EXTERIOR" APA RATED PLYWOOD SHEATHING SHALL BE USED. C-D "EXPOSURE 1" APA RATED PLYWOOD SHEATHING (CDX) SHALL NOT BE USED FOR CONDITIONS INVOLVING LONG-TERM EXPOSURE TO WEATHER.
   a. EXCEPTION: WOOD STRUCTURAL PANEL ROOF SHEATHING EXPOSED TO THE OUTDOORS ON THE UNDERSIDE IS PERMITTED TO BE "EXPOSURE 1" TYPE.
   b. WOOD STRUCTURAL PANELS TO BE USED AS SIDING SHALL COMPLY WITH ANSI/APA PRP-210.

2. TRANSPORTATION, STORAGE, AND HANDLING:

   A. TRANSPORTATION
      a. IN TRANSPORTING PANELS ON OPEN TRUCK BEDS, COVER THE BUNDLES WITH A TARP.

   B. STORAGE
      a. ALWAYS STORE THE PANELS UNDER COVER WHENEVER POSSIBLE
      b. WHEN STORING PANELS OUTSIDE STACK THEM ON A LEVEL SURFACE ON TOP OF STRINGERS OR OTHER BLOCKING, THREE STRINGERS MINIMUM.
      c. NEVER LEAVE PANELS IN CONTACT WITH THE GROUND
      d. COVER THE STACK WITH A PLASTIC TARP, ENSURING THAT THE BUNDLE IS WELL VENTILATED TO PREVENT MILDEW.
      e. IF MOISTURE ABSORPTION IS EXPECTED, CUT THE STEEL BAND TO PREVENT DAMAGE
      f. KEEP SANDED OR OTHER APPEARANCE GRADE PANELS AWAY FROM HIGH TRAFFIC AREAS

   C. HANDLING
      a. ALWAYS PROTECT ENDS AND EDGES, ESPECIALLY TONGUE AND GROOVE PRODUCTS, FROM PHYSICAL DAMAGE.
      b. ACCLIMATIZE THE PANELS FOR 24 HOURS MINIMUM BEFORE INSTALLATION BY STANDING THE PANELS ON EDGE WITH A GAP BETWEEN EACH TO ALLOW FOR AIR CIRCULATION OR PER MANUFACTURER'S RECOMMENDATIONS.

3. PLYWOOD ORIENTATION

   A. ROOF AND FLOOR SHEATHING SHALL BE LAID WITH THE GRAIN OF THE OUTER PILES PERPENDICULAR TO THE FRAMING MEMBERS, SHALL BE CONTINUOUS OVER 2 JOIST BAYS MINIMUM AND END JOINTS SHALL BE JOINED OVER FRAMING AND STAGGERED. LEAVE A 1/8" GAP BETWEEN PANELS TO ALLOW FOR PANEL EXPANSION UNLESS RECOMMENDED OTHERWISE BY THE PANEL MANUF. REFER TO SPECIFIC DETAILS IN THE DRAWINGS FOR FURTHER PARAMETERS.

   B. PLYWOOD WALL SHEATHING MAY BE APPLIED VERTICALLY OR HORIZONTALLY. ALL END JOINTS BE JOINED OVER FRAMING AND STAGGERED.

4. BLOCKING:

   A. ROOF: ALL ROOF SHEATHING SHALL BE BLOCKED UNLESS SPECIFICALLY ALLOWED ON PLANS. WHERE PERMITTED TO BE UNBLOCKED, ALL UNBLOCKED EDGES SHALL BE TONGUE AND GROOVE.

   B. WALLS: ALL SHEAR WALLS SHALL BE FULLY BLOCKED AT PLYWOOD EDGES.

5. FASTENERS

   A. USE SHEATHING NAILS SAME GAUGE AS COMMON WIRE NAILS WITH LENGTHS AT LEAST EQUAL TO SHEATHING THICKNESS PLUS REQUIRED PENETRATION PER AWS SDPWS TABLE 4.2A OR 4.3A (AS REQUIRED).

   B. EQUIVALENT PNEUMATIC DRIVE NAILS MAY BE USED IF FASTENER MANUFACTURER HAS RECEIVED ICC OR IAPMO APPROVAL FOR THE INTENDED USE. FASTENERS TO BE SUBSTITUTED SHALL BE EQUIVALENT IN LATERAL AND WITHDRAWAL STRENGTH TO THE SIZE OF COMMON NAIL SPECIFIED.

   C. USE OF MACHINE NAILING IS SUBJECT TO A SATISFACTORY JOB SITE DEMONSTRATION FOR EACH PROJECT AND THE APPROVAL BY THE PROJECT ARCHITECT OR STRUCTURAL ENGINEER. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING WILL NOT BE APPROVED IN 5/16" PLYWOOD SHEATHING. IF NAIL HEADS PENETRATE THE OUTER PLY MORE T HAN WOULD BE NORMAL FOR A HAND HAMMER OR IF MINIMUM ALLOWABLE EDGE DISTANCES ARE NOT MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY.

   D. TYPICAL NAILING SHALL BE 10d AT 6" O.C. AT ALL SUPPORTED EDGES AND OVER SHEAR WALLS, AND 10D AT 12" O.C. AT ALL INTERMEDIATE SUPPORTS, UNLESS OTHERWISE NOTED, SEE PLANS AND REFER TO SHEAR WALL SCHEDULE.

SAWN LUMBER

1. FRAMING LUMBER SHALL MEET THE FOLLOWING MINIMUM STANDARDS EXCEPT WHERE OTHERWISE NOTED:

SAWN LUMBER PROPERTIES

USE	SIZE	SPECIES	GRADE	REFERENCE
MUDSILLS	2x4	D.F.	STANDARD OR BETTER PRESSURE TREATED	2022 CBC 2303.1.9
	2x6 AND LARGER	D.F.	NO. 2 OR BETTER PRESSURE TREATED	
	2x	REDWOOD	FOUNDATION GRADE	
HORIZONTAL FRAMING LUMBER				
ROOF JOISTS AND RAFTERS	2x	D.F.	NO. 2	WCLIB & WWPA
FLOOR JOISTS	2x	D.F.	NO. 2	
HEADERS AND BEAMS	4x	D.F.	NO. 2	
ANY OTHER HORIZONTAL	4x4 AND SMALLER	D.F.	NO. 2	
	6x6 AND LARGER	D.F.	NO. 1	
VERTICAL FRAMING LUMBER				
TOP PLATES	2x	D.F.	NO. 2	WCLIB & WWPA
STUDS	2x4 & 3x4	D.F.	STUD	
	2x6 & 2x8	D.F.	NO. 2	
POSTS	4x4 & 4x6 POSTS	D.F.	NO. 2	
	6x6 & LARGER POSTS	D.F.	NO. 1	
ALL OTHER FRAMING LUMBER				
ALL OTHER FRAMING LUMBER, UNO	ALL SIZES	D.F.	STANDARD & BETTER	WCLIB & WWPA

2. SAWN LUMBER SHALL BE GRADE STAMPED "S-DRY" WHICH INDICATES A MOISTURE CONTENT NOT EXCEEDING 19 PERCENT.

3. ALL SOLE PLATES AND TOP PLATES SHALL BE GRADE STAMPED "KD" WHICH INDICATES KILN DRIED WITH A MOISTURE CONTENT NOT EXCEEDING 15 PERCENT AT BUILDINGS WITH 4 OR MORE STORIES.

4. STUD WALLS SHOWN ON PLANS ARE NONBEARING PARTITIONS WALLS, BEARING WALLS OR SHEAR WALLS BELOW THE FRAMING LEVEL, UNLESS NOTED OTHERWISE. STUDS SHALL BE SIZE AND SPACING AS NOTED IN THE DRAWINGS, SEE PLANS AND ARCHITECTURAL DRAWINGS. UNLESS OTHERWISE NOTED.

5. MINIMUM FRAMING NAILING SHALL CONFORM TO CBC TABLE 2304.10.2. ALL NAILS SHALL BE COMMON WIRE NAILS. PREDRILL NAIL HOLES TO 70% OF NAIL SHANK DIAMETER WHERE NAILING TENDS TO SPLIT WOOD.

6. UNLESS OTHERWISE NOTED, ALL WOOD SILL PLATES UNDER BEARING, EXTERIOR, OR SHEAR WALLS IN CONTACT WITH CONCRETE OR MASONRY SHALL BE BOLTED TO THE CONCRETE OR MASONRY WITH 5/8" Ø X 12" BOLTS W/ 0.229" X 3" X 3" PLATE WASHER (GALV) AT 4'-0" O.C. BEGINNING AT 9" O.C. MAXIMUM FROM EACH END OF THE PLATES. THE BOLTS SHALL EXTEND A MINIMUM OF 7" INTO THE CONCRETE OR MASONRY. (POWDER DRIVEN PINS AT 1/3 OF THE BOLT SPACING OR 24" O.C. MAXIMUM MAY BE SUBSTITUTED FOR THE ANCHOR BOLTS AT INTERIOR NON-SHEAR WALLS ONLY).

7. PRESERVATIVE TREATMENT:

   A. WOOD MEMBERS SHALL BE PRESERVATIVE TREATED IN ACCORDANCE WITH AITC 109-07, STANDARD FOR PRESERVATIVE TREATMENT, BASED ON THE SERVICE CONDITION PER THE USE CATEGORIES (UC#) SPECIFIED IN AWPA U1-20.
      a. UC1 - INTERIOR CONSTRUCTION, ABOVE GROUND, DRY - NO PRESERVATIVE TREATMENT REQUIRED.
      b. UC2 - INTERIOR CONSTRUCTION, ABOVE GROUND, WET - PRESERVATIVE TREATMENT REQUIRED IF THE HUMIDITY OR MOISTURE CONDENSATION IS 20% OR GREATER.
      c. UC3 - EXTERIOR CONSTRUCTION ABOVE GROUND - PRESERVATIVE TREATMENT REQUIRED.

   B. FOR ALL TREATED WOOD MEMBERS, ALL CUTS, HOLES OR INJURIES SUCH AS ABRASIONS OR HOLES FROM REMOVAL NAILS AND SPIKES WHICH MAY PENETRATE THE TREATED ZONE SHALL BE FIELD TREATED IN ACCORDANCE WITH AWPA M4-15. THE FOLLOWING FILED TREATMENTS SHALL BE USED:
      a. BORED HOLES: HOLES FOR CONNECTORS OR BOLTS MAY BE TREATED BY PUMPING COAL TAR ROOFING CEMENT MEETING ASTM D5643 INTO HOLES USING A GREASE GUN OR SIMILAR DEVICE.
      b. EXTERIOR: COPPER NAPHTHENATE.
      c. INTERIOR: INORGANIC BORON PRESERVATIVES LIMITED TO USE IN APPLICATIONS NOT IN CONTACT WITH GROUND AND CONTINUOUSLY PROTECTED FROM LIQUID WATER.

   C. ALL LUMBER IN CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED LUMBER WITH AWPA TREATMENT C2 USING EITHER ALKALINE QUAT (ACQ TYPE B AND D), COPPER AZOLE (CBA-A, CA-B), OR SODIUM BORATES (SBX). ANCHOR BOLTS, FASTENERS, AND METAL FRAMING CONNECTORS IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE HOT-DIPPED GALVANIZED TO A RATING OF G-185 PER ASTM A653.

8. PROVIDE 2 STUDS UNDER ALL 4 X 10 AND LARGER BEAMS OR HEADERS AT SPANS 6 FEET OR LONGER, UNLESS OTHERWISE NOTED. WHERE POSTS OR MULTIPLE STUDS UNDER BEAMS OR HEADERS ARE CALLED FOR ON DRAWINGS THOSE POSTS OR MULTIPLE STUDS SHALL BE CARRIED TO THE FOUNDATION.

9. PROVIDE THE FOLLOWING BLOCKING AS A MINIMUM, UNLESS SHOWN OTHERWISE:
   2x FULL DEPTH SOLID BLOCKING BETWEEN JOISTS OVER SUPPORT.
   2x FULL DEPTH SOLID BLOCKING BETWEEN JOISTS OVER AND BELOW PARTITION WALLS.

10. BRIDGING SHALL BE 2 X SOLID BLOCKS, INSTALLED AS FOLLOWS:
    ROOF JOISTS MORE THAN 10" DEPTH, 8'-0" O.C. MAXIMUM, NOT MORE THAN 8'-0" FROM SUPPORT.

11. JOIST HANGERS AND OTHER METAL FRAMING ACCESSORIES ARE REFERRED TO ON PLANS BY PARTICULAR TYPE AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, STOCKTON, CALIFORNIA. ACCESSORIES OF OTHER MANUFACTURES WITH EQUIVALENT LOAD CARRYING CHARACTERISTICS MAY BE USED WITH APPROVAL BY SEOR.

12. FIRE STOPPING, BACKING FOR INTERIOR FINISHES, NONBEARING WALLS, AND OTHER NON-STRUCTURAL FRAMING ARE NOT NECESSARILY SHOWN ON STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS.

13. THE TOP OF NON-BEARING WALLS SHALL NOT BE IN CONTACT WITH JOISTS/TRUSSES/RAFTERS ABOVE. REFER TO THE REFERENCED DETAILS FOR REQUIRED GAP, 1/2" MINIMUM, UNLESS NOTED OTHERWISE IN DETAIL.

HARDWARE AND CONNECTORS

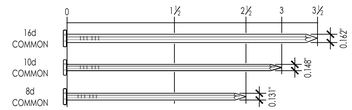
GENERAL:
USE ALL SPECIFIED FASTENERS AS SPECIFIED ON PLANS. IF NOT INDICATED ON PLANS PROVIDE FASTENERS PER MFR'S APPROVED ICC-ESR REPORT OR PRODUCT LITERATURE

HOLDOWNS:
1. DO NOT OVER TIGHTEN NUTS ON TIE-DOWN ANCHOR RODS OR BOLTS. TIGHTEN ANCHOR ROD NUTS ONE-THIRD TO ONE HALF TURN BEYOND FINGER TIGHT
2. INSTALL ALL HOLDOWNS TIGHT TO END STUDS/POST. DO NOT USE FILLER BLOCKS. FOR MISALIGNED ANCHOR BOLTS, EXTEND THE ANCHOR ROD AT A 1:6 (HORIZ/VERT) USING A COUPLER WITH EQUIVALENT ANCHOR ROD AND INSTALL THE HOLDOWN HIGHER ON END STUD / POST
3. FOR HOLDOWNS THAT BOLT TO END POSTS, INSTALL THE HEAD OF THE BOLT TO THE BRACKET SIDE, AND ON THE SIDE OPPOSITE THE BRACKET, INSTALL A WASHER BETWEEN THE NUT AND THE STUD / POSTS

TIE DOWN & COLLECTOR STRAPS:
1. TIE DOWN AND COLLECTOR STRAPS SHALL BE INSTALLED STRAIGHT AND TRUE. DO NOT FOLD, BEND, KINK OR OTHERWISE ALTER CONNECTOR STRAPS
2. INSTALL TIE DOWN STRAPS DIRECT TO POST IN LIEU OF OVER SHEATHING. STRAPS MAY BE INSTALLED ON THE UNSHEATHED SIDE OF THE END STUDS / POSTS

FASTENER INFORMATION

1. ALL NAILS SPECIFIED TO BE COMMON NAILS, UNLESS SPECIFIED OTHERWISE.



STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED BY AN APPROVED AND LICENSED FABRICATOR IN ACCORDANCE WITH AISC 360-16 AND CHAPTER 22A OF THE CODE.

2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE ASTM DESIGNATION AS INDICATED BELOW (UNO):

STRUCTURAL STEEL MATERIALS

SHAPE	ASTM/GRADE
PLATES (INCLUDING BASE PLATES)	A572 GR 50
HSS	A500 GR B
ANCHOR RODS (UNLESS NOTED ON DRAWINGS)	F1554 GR 36
COMMON/MACHINE BOLTS	A307 GR A

3. THE STRUCTURAL STEEL FABRICATOR SHALL FURNISH SHOP DRAWINGS OF ALL STEEL FOR REVIEW AND APPROVAL BY THE AOR AND SEOR PRIOR TO FABRICATION.

4. BOLT HOLES USED IN STEEL SHALL BE 1/16" LARGER IN DIAMETER THAN NOMINAL SIZE OF BOLT USED, EXCEPT AS NOTED.

5. ALL STRUCTURAL STEEL SURFACES THAT ARE ENCASED IN CONCRETE, MASONRY, SPRAY ON FIREPROOFING, OR ARE ENCASED BY BUILDING FINISH, SHALL BE LEFT UNPAINTED, EXCEPT AS REQUIRED FOR DESIGNATION OF PROTECTED ZONES.

6. PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED TO REINFORCED CONCRETE/MASONRY USING POST-INSTALLED ANCHORS, CONTRACTOR SHALL LOCATE ALL REINFORCEMENT AND CONFIRM CONSTRUCTABILITY OF ANCHOR LOCATIONS. SHOULD CONFLICTS WITH REINFORCEMENT OCCUR, CONTRACTOR SHALL COORDINATE AND SUBMIT ALTERNATE ANCHOR LOCATIONS AND REVISED STEEL FABRICATIONS TO SEOR FOR REVIEW AND APPROVAL. DO NOT CUT OR DAMAGE EXISTING REINFORCEMENT.

7. REFER TO ARCHITECTURAL DRAWINGS FOR STEEL FINISH. ALL STRUCTURAL STEEL AND MISCELLANEOUS METAL EXPOSED TO THE WEATHER SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. PROTECT FIELD WELDS EXPOSED TO THE WEATHER VIA PRIME AND PAINT OR BRUSH / COLD GALVANIZING. REFER TO ARCH DRAWINGS FOR STEEL FINISH.

8. ALL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL CONFORM TO REQUIREMENTS OF AISC 303-22.

9. ALL WELDING IS TO BE DONE BY CERTIFIED WELDERS USING E70XX ELECTRODES (UNO). ALL WELDS SHALL BE IN CONFORMANCE WITH THE PROJECT SPECIFICATIONS AND THE CODE FOR WELDING IN BUILDING CONSTRUCTION (AWS D1.1-15) OF THE AMERICAN WELDING SOCIETY. SEE SPECIAL INSPECTIONS SECTION FOR WELDING INSPECTION REQUIREMENTS.

10. THE CONTRACTOR SHALL SUBMIT ALL WELDING PROCEDURE SPECIFICATIONS FOR REVIEW AND APPROVAL BY SEOR. THE SUBMITTED WELDING PROCEDURES SHALL INCLUDE ONLY THOSE PROCEDURES RELEVANT TO THIS PROJECT. ALL WELDED JOINTS SHALL BE PREQUALIFIED PER AWS OR BE QUALIFIED BY TEST PER AWS. A PROCEDURE QUALIFICATION RECORD (PQR) SHALL BE INCLUDED WITH THE WPS IF THE WELDING PROCEDURE OR JOINT IS QUALIFIED BY TESTING. THE ELECTRODE MANUFACTURER AND PRODUCT/TRADE NAME SHALL BE IDENTIFIED IN THE WPS IN ADDITION TO THE AWS ELECTRODE CLASSIFICATION NAME. A COPY OF THE ELECTRODE MANUFACTURER'S TECHNICAL DATA SHEETS WITH THE RECOMMENDED WELDING PARAMETERS SHALL BE SUBMITTED WITH THE WPS.

11. IF INTERMIXING OF WELD FILLER MATERIAL IS REQUIRED AT SPECIFIC WELDED JOINTS, AND IF ONE OF THE FILLER METALS IS FCAW-S, SUBMIT A WELDING PROCEDURE SPECIFICATION (WPS) AND QUALIFY BY TESTING.

12. DISCONTINUITIES IN WELDS CREATED BY ERRORS OR BY FABRICATION OR ERECTION OPERATIONS, SUCH AS TACK WELDS, ERECTION AIDS, AIR ARC GOUGING AND FLAME CUTTING SHALL BE REPAIRED AS REQUIRED BY SEOR.

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REVIEWED FOR
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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

GENERAL NOTES

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PROJECT MANAGER
J. MEADOWS

DRAWN BY
C. PRESSLER

CHECKED BY
J. MEADOWS

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
S-103

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TESTING CRITERIA FOR POST-INSTALLED ANCHORS IN CONCRETE

1. CONDUCT TESTING OF POST- INSTALLED ANCHORS PER SECTION 1901A.3.4 OF THE CODE.

2. WHERE THE MANUFACTURER'S INSTALLATION INSTRUCTIONS OR APPLICABLE ICC-ES EVALUATION SERVICES REPORT CALL FOR THE APPLICATION OF AN INSTALLATION TORQUE, THE SPECIFIED TORQUE SHALL BE APPLIED WITH A CALIBRATED TORQUE WRENCH. THE SPECIFIED INSTALLATION TORQUE SHALL NOT BE EXCEEDED.

3. THE SPECIAL INSPECTOR SHALL BE ON THE JOBSITE DURING ANCHOR INSTALLATIONS AS REQUIRED PER CHAPTER 17A OF THE CODE, UNLESS OTHERWISE NOTED IN ICC-ES ESR, TO VERIFY ANCHOR, ANCHOR DIMENSIONS, CONCRETE TYPE, CONCRETE COMPRESSIVE STRENGTH, HOLE DIMENSIONS, ANCHOR SPACING, EDGE DISTANCES, SLAB THICKNESS, ANCHOR EMBEDMENT, AND INSTALLATION TORQUE.

4. TEST LOAD: REQUIRED TEST LOADS SHALL BE DETERMINED BY ONE OF THE FOLLOWING METHODS:

   A. TWICE THE MAXIMUM ALLOWABLE TENSION LOAD OR ONE AND A QUARTER (1 1/4) TIMES THE MAXIMUM DESIGN STRENGTH PROVIDED BY THE ICC REPORT OR DETERMINED PER ACI 318. THE TENSION TEST LOAD NEED NOT TO EXCEED 80 PERCENT OF THE NOMINAL YIELD STRENGTH OF THE ANCHOR (0.8 As Fy). SEE STRUCTURAL DETAILS FOR DESIGN-BASED TENSION TEST LOADS FOR ADHESIVE ANCHORS.

   B. THE MANUFACTURER'S RECOMMENDED INSTALLATION TORQUE AS APPROVED BY THE ICC REPORT.

5. TENSION OR TORQUE TESTING OF POST-INSTALLED ANCHORS SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO THE IOR AND ENFORCEMENT AGENCY.

6. THE SPECIAL INSPECTOR SHALL SELECT ANCHORS FOR TESTING AT RANDOM.

7. TEST FREQUENCY:

APPLICATION	QUANTITY
STRUCTURAL	100% OF BOLTS
NON-STRUCTURAL (SUCH AS EQUIPMENT ANCHORAGE)	50%; ALTERNATE BOLTS IN A GROUP (TEST AT LEAST HALF OF THE ANCHORS IN GROUP)
SILL PLATE BOLTING	10% OF BOLTS

   EXCEPTIONS:

   A. UNDERCUT ANCHORS THAT ALLOW VISUAL CONFIRMATION OF FULL SET SHALL NOT REQUIRE TESTING.

   B. WHERE THE FACTORED DESIGN TENSION ON ANCHORS IS LESS THAN 100 LBS AND THOSE ANCHORS ARE CLEARLY NOTED ON THE APPROVED CONSTRUCTION DOCUMENTS.

   C. WHERE ADHESIVE ANCHOR SYSTEMS ARE USED TO INSTALL REINFORCING DOWEL BARS IN HARDENED CONCRETE, ONLY 25 PERCENT OF THE DOWELS SHALL BE TESTED IF ALL OF THE FOLLOWING CONDITIONS ARE MET:

      - THE DOWELS ARE USED EXCLUSIVELY TO TRANSMIT SHEAR FORCES ACROSS JOINTS BETWEEN EXISTING AND NEW CONCRETE.
      - THE NUMBER OF DOWELS IN ANY ONE MEMBER EQUALS OR EXCEEDS 12.
      - THE DOWELS ARE UNIFORMLY DISTRIBUTED ACROSS SEISMIC FORCE RESISTING MEMBERS (SUCH AS SHEAR WALLS, COLLECTORS, AND DIAPHRAGMS).

   D. TESTING OF SHEAR DOWELS ACROSS COLD JOINTS IN SLAB ON GRADE, WHERE THE SLAB IS NOT PART OF THE LATERAL FORCE-RESISTING SYSTEM SHALL NOT BE REQUIRED.

   E. TESTING IS NOT REQUIRED FOR POWER ACTUATED FASTENERS USED TO ATTACH TRACKS OF INTERIOR NON-SHEAR WALL PARTITIONS FOR SHEAR ONLY, WHERE THERE ARE AT LEAST THREE FASTENERS PER SEGMENT OF TRACK.

8. TEST METHODS: TEST LOADS MAY BE APPLIED BY ANY METHOD THAT WILL EFFECTIVELY TRANSMIT A MEASURABLE TENSION LOAD TO THE ANCHOR. ACCEPTABLE METHODS INCLUDE:

   A. USE OF HYDRAULIC JACK, WHEREBY EITHER UNCONFINED OR CONFINED TESTING SHALL BE ACCEPTABLE;

   B. USE OF CALIBRATED SPRING LOADED DEVICES; OR

   C. USE OF A CALIBRATED TORQUE WRENCH FOR TORQUE-CONTROLLED EXPANSION ANCHORS.

9. TEST ACCEPTANCE CRITERIA: ACCEPTANCE CRITERIA FOR POST-INSTALLED ANCHORS SHALL BE BASED ON THE ICC REPORT OR MANUFACTURER'S WRITTEN INSTRUCTION AS ACCEPTABLE TO OSHPD. FIELD TESTS SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

   A. HYDRAULIC RAM METHOD: ANCHORS TESTED WITH A HYDRAULIC JACK OR SPRING LOADED DEVICES SHALL MAINTAIN THE TEST LOAD FOR A MINIMUM OF 15 SECONDS AND SHALL EXHIBIT NO DISCERNABLE MOVEMENT DURING THE TENSION TEST, E.G. AS EVIDENCED BY LOOSENING OF THE WASHER UNDER THE NUT. SCREW ANCHORS MAY BE LOOSENED A MAXIMUM ONE FULL TURN TO FACILITATE THE POSITIONING OF A TENSION TEST COLLAR.

   B. TORQUE WRENCH METHOD: ANCHORS TESTED WITH A CALIBRATED TORQUE WRENCH MUST ATTAIN THE SPECIFIED TORQUE WITHIN HALF (1/2) TURN OF THE NUT.

      EXCEPTIONS:

      - WEDGE OR SLEEVE TYPE: ONE-QUARTER (1/4) TURN OF THE NUT FOR A 3/8 INCH ANCHOR ONLY.
      - THREADED TYPE: ONE-QUARTER (1/4) TURN OF THE SCREW AFTER INITIAL SEATING OF THE SCREW HEAD.

10. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE, INSTALLED BY THE SAME TRADE, AND NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME INITIAL TEST FREQUENCY.

11. REQUIRED TORQUE TEST LOADS SHALL BE EQUAL TO THE MANUFACTURER'S RECOMMENDED INSTALLATION TORQUE PROVIDED IN THE ICC-ESR FOR THE SPECIFIC ANCHOR. TEST TORQUE VALUES ARE SUMMARIZED IN THE TABLE BELOW:

SIMPSON		
NOMINAL ANCHOR DIAMETER	INSTALLATION TORQUE (FT-LBS) CONCRETE SUBSTRATE	
INCHES	SIMPSON STRONG-BOLT2 (ICC ES ESR 3037)	SIMPSON TITEN HD (ICC ES ESR-2713)
¼	4	24
⅜	30	50
½	60	65
⅝	90	100
¾	150	150

HILTI		
NOMINAL ANCHOR DIAMETER		INSTALLATION TORQUE (FT-LBS) CONCRETE SUBSTRATE
INCHES	METRIC	HILTI KWIK-BOLT TZ2 (ICC ES ESR-4266) STAINLESS STEEL
¼	M6	--
⅜	M10	30
½	M12	40
⅝	M16	60
¾	M20	125

POST-INSTALLED ANCHORS IN CONCRETE

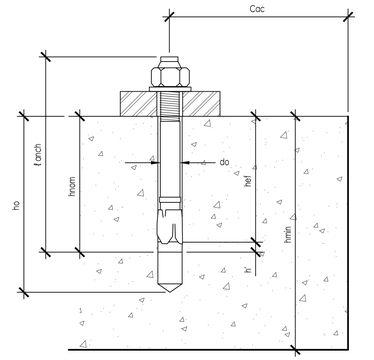
1. POST-INSTALLED ANCHOR CAPACITIES SHALL BE DETERMINED PER SECTION 1909A OF THE CODE USING STRENGTH DESIGN. POST INSTALLED ANCHORS IN CONCRETE USED FOR COMPONENT ANCHORAGE SHALL BE PREQUALIFIED FOR SEISMIC APPLICATIONS IN ACCORDANCE WITH ACI 355.2. POST INSTALLED ANCHORS IN MASONRY SHALL BE PREQUALIFIED FOR SEISMIC APPLICATIONS IN ACCORDANCE WITH APPROVED QUALIFICATION PROCEDURES.

2. INSTALLATION OF POST-INSTALLED ANCHORS SHALL BE IN ACCORDANCE WITH THE APPLICABLE ICC EVALUATION REPORT.

SUBSTRATE MATERIAL	ANCHOR TYPE	ANCHOR PRODUCT	ICC EVALUATION REPORT	ACCEPTANCE CRITERIA
CONCRETE	EXPANSION ANCHORS	SIMPSON STRONGBOLT 2	ICC ESR-3037	AC193
CONCRETE	SCREW ANCHOR	SIMPSON TITEN HD	ICC ESR-2713	AC193
CONCRETE	ADHESIVE ANCHORS	SIMPSON SET-3G	ICC ESR-4057	AC193
CONCRETE	POWER ACTUATED FASTENER**	SIMPSON PDPAW	ICC ESR-2138	AC70
CONCRETE	EXPANSION ANCHORS	HILTI KB-TZ2	ICC ESR-4266	AC193

3. EXPANSION ANCHOR EMBEDMENTS IN THE DRAWINGS ARE MINIMUM "EFFECTIVE EMBEDMENTS" (hef) AS SHOWN IN THE ICC REPORT CORRESPONDING TO THE ANCHOR.

   hef = EFFECTIVE EMBEDMENT DEPTH OF ANCHOR
   hmin = MINIMUM SUBSTRATE THICKNESS INTO WHICH ANCHOR IS EMBEDDED
   Cac = CRITICAL SUBSTRATE EDGE DISTANCE
   ho = MINIMUM HOLE DEPTH
   lanch = ANCHOR LENGTH
   h' = PROJECTION OF ANCHOR BEYOND EFFECTIVE EMBEDMENT DEPTH
   do = DIAMETER OF ANCHOR (EQUAL TO THREAD SIZE OF ANCHOR)
   hnom = NOMINAL EMBEDMENT DEPTH OF ANCHOR



4. LOCATE ALL EXISTING REINFORCEMENT BY NON-DESTRUCTIVE MEANS (X-RAY, PACOMETER, GPR, ETC.) PRIOR TO DRILLING OR INSTALLING POST-INSTALLED ANCHORS. COORDINATE POST-INSTALLED ANCHOR LOCATIONS WITH LOCATIONS OF EXISTING REINFORCEMENT. DO NOT CUT OR DAMAGE EXISTING REINFORCEMENT.

5. ALL POST-INSTALLED ANCHORS USED IN DRY INTERIOR CONDITIONS SHALL BE CARBON STEEL, U.N.O

6. ALL POST-INSTALLED ANCHORS USED AT EXTERIOR CONDITIONS, EXPOSED TO THE ELEMENTS, OR USED IN A DAMP ENVIRONMENT (I.E. KITCHENS) SHALL BE STAINLESS STEEL, U.N.O.

7. WHERE POST-INSTALLED MECHANICAL ANCHORS ARE USED FOR NON-VIBRATION ISOLATED MECHANICAL EQUIPMENT RATED OVER 10 HP, THEY SHALL BE QUALIFIED IN ACCORDANCE WITH ACI 355.2.

8. IF THE CONCRETE CRACKS DURING THE INSTALLATION OF AN ANCHOR, THE ANCHOR SHALL BE REMOVED OR ABANDONED.

9. ABANDONED ANCHORS AND ABANDONED ANCHOR HOLES:

   A. FILL ALL EMPTY ABANDONED ANCHOR HOLES WITH A DRY-PACK MORTAR.

   B. FOR ABANDONED EXPANSION ANCHORS WHICH CANNOT BE REMOVED WITHOUT DAMAGING THE SUBSTRATE, CUT/BURN OFF THE END OF THE BOLT FLUSH WITH THE FACE OF CONCRETE/MASONRY AND THEN DRIVE ABANDONED ANCHOR TO BOTTOM OF HOLE. FILL REMAINDER OF HOLE WITH A DRY-PACK MORTAR.

   C. FOR ABANDONED ADHESIVE OR UNDERCUT ANCHORS WHICH CANNOT BE REMOVED WITHOUT DAMAGING THE SUBSTRATE, BURN OFF THE END OF THE BOLT/ROD 1" BELOW THE SURFACE OF CONCRETE/MASONRY AND FILL REMAINDER OF HOLE WITH A DRY-PACK MORTAR.

   D. ABANDONED ANCHOR HOLES (WHETHER FILLED WITH DRY-PACK OR CONTAINING ABANDONED ANCHORS) MAY NOT BE LOCATED ANY CLOSER THAN 3x DIAMETER CENTER-TO-CENTER TO ANY ANCHOR IN SERVICE. ANCHORS NOT MEETING THIS MINIMUM SPACING MAY HAVE REDUCED CAPACITY AND SHALL BE REVIEWED WITH THE SEOR.

LIMITATIONS OF USE OF POWER ACTUATED FASTENERS:

PER SECTION 13.4.5 OF ASCE 7-16 POWER ACTUATED FASTENERS IN CONCRETE OR STEEL SHALL NOT BE USED FOR SUSTAINED TENSION LOADS OR FOR BRACE APPLICATIONS IN SEISMIC UNLESS APPROVED FOR SEISMIC LOADING. POWER ACTUATED FASTENERS IN MASONRY SHALL NOT BE PERMITTED UNLESS APPROVED FOR SEISMIC LOADING.
EXCEPTION: POWER ACTUATED FASTENERS IN CONCRETE USED FOR SUPPORT OF ACOUSTICAL TILE OR LAY-IN PANEL SUSPENDED CEILING APPLICATIONS AND DISTRIBUTED SYSTEMS WHERE THE SERVICE LOAD ON ANY INDIVIDUAL FASTENER DOES NOT EXCEED 90 LB.

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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

DSA BACK CHECK 2

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

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NO.	REVISION	DATE
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PROJECT MANAGER
J. MEADOWS
DRAWN BY C. PRESSLER
CHECKED BY J. MEADOWS
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
S-104

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REQUIRED VERIFICATION AND INSPECTIONS

SOILS
CODE TABLE 1705A.6

SPECIAL INSPECTION OR TEST	CONTINUOUS	PERIODIC
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	—	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	—	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	—	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	—
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	—	X

WOOD
CODE CHAPTER 17A AND REFERENCED 2018 NDS AND AWC SDPWS-2021

SPECIAL INSPECTION OR TEST	CONTINUOUS	PERIODIC	CBC REFERENCE
3. WOOD LATERAL FORCE-RESISTING SYSTEM - WOOD SHEAR WALLS - WOOD DIPHRAGMS - DRAG STRUTS - HOLD-DOWNS	—	X	1705A.12.2 1705A.13.2

REQUIRED VERIFICATION AND INSPECTIONS

CONCRETE CONSTRUCTION
CODE TABLE 1705.3

SPECIAL INSPECTION OR TEST	CONTINUOUS	PERIODIC	REFERENCED STANDARD	CBC REFERENCE
1. INSPECT REINFORCMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	—	X	ACI 318: CH 20, 25.2, 25.3, 26.6.1-26.6.3	—
2. REINFORCING BAR WELDING: a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706 b. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM $\frac{5}{16}$" AND c. INSPECT ALL OTHER WELDS	— — X	X X —	AWS D1.4 ACI 318: 26.6.4	—
3. INSPECT ANCHORS CAST IN CONCRETE	—	X	ACI 318: 26.7	—
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS [b] (a) ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS (b) MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.a.	X —	— X	ACI 318: 26.7.1 ACI 318: 26.7.1	— —
5. VERIFY USE OF REQUIRED MIX DESIGN	—	X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	—	ASTM C 172 ASTM C 31 ACI 318: 26.5, 26.12	—
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	—	ACI 318: 26.5	—
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	—	X	ACI 318: 26.5.3-26.5.5	—
9. INSPECT PRESTRESSED CONCRETE FOR: A. APPLICATION OF PRESTRESSING FORCES; AND B. GROUTING OF BONDED PRESTRESSING TENDONS	X X	— —	ACI 318: 26.10	—
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	—	X	ACI 318: 26.9	—
11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	—	X	ACI 318: 26.11.2	—
12. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	—	X	ACI 318: 26.11.1.2 (b)	—
SPECIAL INSPECTIONS LISTED FOR CONCRETE ALSO APPLY TO GROUTING OPERATIONS.				

a. WHERE APPLICABLE, SEE SECTION 1705.13.

b. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO THE COMMENCEMENT OF THE WORK.

REQUIRED VERIFICATION AND INSPECTIONS

STEEL
WELDING

INSPECTION TASKS PRIOR TO WELDING *(AISC 360-16 N.5.4-1)*	QC	QA	AWS 2015 D1.1 REFERENCE
1. WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE	P	P	6.3
2. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAIALABLE	P	P	6.2
3. WPS AVAILABLE	P	P	-
4. MATERIAL IDENTIFICATION (TYPE/GRADE)	O	O	6.2
5. WELDER IDENTIFICATION SYSTEM	O	O	6.4
6. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) - JOINT PREPARATION - DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) - CLEANLINESS (CONDITION OF STEEL SURFACES) - TACKING (TACK WELD QUALITY AND LOCATION) - BACKING TYPE AND FIT (IF APPLICABLE)	O	O	6.5.2 5.22 5.15 5.18 5.10, 5.22.1.1
7. FIT-UP OF GROOVE WELDS OF HSS T-, Y-, AND K-JOINTS WITHOUT BACKING (INCLUDING JOINT GEOMETRY) - JOINT PREPARATION - DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) - CLEANLINESS (CONDITION OF STEEL SURFACES) - TACKING (TACK WELD QUALITY AND LOCATION)	P	O	- - - -
8. CONFIGURATION AND FINISH OF ACCESS HOLES	O	O	6.5.2, 5.1.7 & AISC 360-16 J1.6
9. FIT-UP OF FILLET WELDS - DIMENSIONS (ALIGNMENT, GAPS AT ROOT) - CLEANLINESS (CONDITION OF STEEL SURFACES) - TACKING (TACK WELD QUALITY AND LOCATION)	O	O	5.22.1 5.15 5.18
10. CHECK WELDING EQUIPMENT	O	—	6.2, 5.11
INSPECTION TASKS DURING WELDING *(AISC 360-16 N.5.4-2)*			
1. CONTROL AND HANDLING OF WELDING CONSUMABLES -PACKAGING -EXPOSURE CONTROL	O	O	6.2 5.3.1 5.3.2 (SMAW) 5.3.3 (SAW)
2. NO WELDING OVER CRACKED TACK WELDS	O	O	5.18
3. ENVIRONMENTAL CONDITIONS - WIND SPEED WITHIN LIMITS - PRECIPITATION AND TEMPERATURE	O	O	5.12.1 5.12.2
4. WPS FOLLOWED - SETTINGS ON WELDING EQUIPMENT - TRAVEL SPEED - SELECTED WELDING MATERIALS - SHIELDING GAS TYPE/FLOW RATE - PREHEAT APPLIED - INTERPASS TEMPERATURE MAINTAINED (MIN/MAX) - PROPER POSITIONS (F, V, H, OH)	O	O	6.3.3, 6.5.2, 5.5, 5.21 5.6, 5.7
5. WELDING TECHNIQUES - INTERPASS AND FINAL CLEANING - EACH PASS WITHIN PROFILE LIMITATIONS - EACH PASS MEETS QUALITY REQUIREMENTS	O	O	6.5.2, 6.5.3, 5.24 5.30.1
6. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	P	P	-
INSPECTION TASKS AFTER WELDING *(AISC 360-16 N.5.4-3)*			
1. WELDS CLEANED	O	O	5.30.1
2. SIZE, LENGTH AND LOCATION OF WELDS	P	P	6.5.1
3. WELDS MEET VISUAL ACCEPTANCE CRITERIA - CRACK PROHIBITION - WELD/BASE-METAL FUSION - CRATER CROSS SECTION - WELD PROFILES - WELD SIZE - UNDERCUT - POROSITY	P	P	6.5.3 TABLE 6.1(1) TABLE 6.1(2) TABLE 6.1(3) TABLE 6.1(4), 5.24 TABLE 6.1(6) TABLE 6.1(7) TABLE 6.1(8)
4. ARC STRIKES	P	P	5.29
5. k-AREA	P	P	AISC 360-16 CA3.1c & J10.8
6. WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES [c]	P	P	-
7. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	P	P	5.10, 5.31
8. REPAIR ACTIVITIES	P	P	6.5.3, 5.26
9. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	P	P	6.5.4, 6.5.5
10. NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR	O	O	-

STEEL
BOLTING

INSPECTION TASKS PRIOR TO BOLTING *(AISC 360-16 N.5.6-1)*	QC	QA	2014 RCSC SPEC. REFERENCE
1. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	O	P	2.1, 9.1
2. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	O	O	FIGURE C-2.1, 9.1 (SEE ASTM STANDARDS)
3. CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	O	O	2.3.2, 2.7.2, 9.1
4. CORRECT BOLTING DETAILS SELECTED FOR THE JOINT DETAIL.	O	O	4, 8
5. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS.	O	O	3, 9.1, 9.3
6. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED.	P	O	7, 9.2
7. PROTECTED STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS, AND OTHER FASTENER COMPONENTS	O	O	2.2, 8, 9.1
INSPECTION TASKS DURING BOLTING *(AISC 360-16 N.5.6-2)*			
1. FASTENER ASSEMBLIES, PLACED IN ALL HOLES AND WASHERS AND NUTS ARE POSITIONED AS REQUIRED.	O	O	8.1, 9.1
2. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRE-TENSIONING OPERATION	O	O	8.1, 9.1
3. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	O	O	8.2, 9.2
4. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES.	O	O	8.2, 9.2
INSPECTION TASKS AFTER BOLTING *(AISC 360-16 N.5.6-3)*			
1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	P	P	—

O - OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
P - PERFORM THESE TAKS FOR EACH WELDED JOINT OR MEMBER, EACH BOLTED CONNECTION, OR STEEL ELEMENT.

REFER TO CONCRETE TABLE FOR REQUIRED GROUTING INSPECTIONS BELOW BASE PLATES.

SUBMITTALS

1. THE FOLLOWING SUBMITTALS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER:
   A. STEEL INCLUDING MISC. METALS
      a. SHOP DRAWINGS FOR FABRICATION AND ERECTION
      b. WELD PROCEDURES (INCLUDING PREQUALIFICATION RECORDS), TO BE SUBMITTED TO PROJECT CWI
      c. SHOP DRAWINGS FOR FABRICATION AND PLACEMENT

   B. REINFORCING STEEL

   C. CONCRETE MIX DESIGNS FOR ALL CONCRETE STRENGTHS 3,000 PSI AND ABOVE

   D. ROUGH CARPENTRY: WOOD PRODUCT DATA AND MANUFACTURER'S CERTIFICATES

2. BEFORE SUBMITTING EACH SUBMITTAL, (INCLUDES SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND SIMILAR SUBMITTALS), THE CONTRACTOR SHALL HAVE:
   A. REVIEWED AND COORDINATED EACH SUBMITTAL WITH OTHER SUBMITTALS AND WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS. THIS INCLUDES THE CONTRACTOR REVIEWING AND VERIFYING THAT THE SUBMITTAL IS COORDINATED AMONG ALL CONSTRUCTION TRADES:

   B. DETERMINED AND VERIFIED ALL FIELD MEASUREMENTS, QUANTITIES, DIMENSIONS , SPECIFIED PERFORMANCE AND DESIGN CRITERIA, INSTALLATION REQUIREMENTS, MATERIALS, CATALOG NUMBERS AND SIMILAR INFORMATION

   C. DETERMINED AND VERIFIED ALL INFORMATION RELATIVE TO THE CONTRACTOR'S RESPONSIBILITIES FOR MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, AND SAFETY PRECAUTIONS AND PROGRAMS.

   D. REVIEWED AND VERIFIED THAT THE ARCHITECT'S OR ENGINEER'S COMMENTS FROM PREVIOUS SUBMITTAL ROUNDS HAVE BEEN ADDRESSED.

3. EACH SUBMITTAL SHALL BEAR A STAMP OR SPECIFIC WRITTEN CERTIFICATION THAT THE CONTRACTOR HAS SATISFIED THEIR OBLIGATIONS UNDER THE CONTRACT DOCUMENTS WITH RESPECT TO THE CONTRACTOR'S REVIEW AND APPROVAL OF THAT SUBMITTAL.

4. THE CONTRACTOR'S OBLIGATION TO PERFORM AND COMPLETE THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS SHALL BE ABSOLUTE:
   a. REVIEW AND APPROVAL OF SHOP DRAWINGS BY THE ARCHITECT AND/OR ENGINEER DOES NOT CONSTITUTE APPROVAL OF A CHANGE REQUEST, SUBSTITUTION OR MODIFICATION TO THE CONTRACT DRAWINGS.
   b. THE ARCHITECT AND ENGINEER SHALL BE NOTIFIED OF CHANGE REQUESTS, SUBSTITUTIONS OR MODIFICATIONS TO THE CONTRACT DRAWINGS IN WRITING BEFORE AND SEPARATE FROM THE SUBMITTAL PRIOR TO SUBMISSION.

5. FABRICATION FOR ITEMS IN THESE DOCUMENTS SHALL NOT COMMENCE UNTIL THE SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE ENGINEER.

6. THE CONTRACTOR SHALL ALLOW SUFFICIENT TIME FOR THE ENGINEER OF RECORD TO THOROUGHLY REVIEW SUBMITTAL PACKAGES (10 WORKING DAYS, MINIMUM).

SHOP FABRICATION

1. SHOP FABRICATION REQUIRES SPECIAL INSPECTION IN ACCORDANCE WITH CODE SECTION 1704A.2.5.
   EXCEPTION: SHOP SPECIAL INSPECTIONS ARE NOT REQUIRED WHEN WORK IS DONE ON THE PREMISES OF FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK IN ACCORDANCE WITH CODE SECTION 1704A.2.5.1, THE FOLLOWING ACCREDITATIONS MEET THE REQUIREMENTS OF THIS EXCEPTION:
   A. STEEL BUILDINGS (OR STEEL ELEMENTS IN OTHER BUILDINGS)
      a. FOR GENERAL STEEL BUILDINGS OR ELEMENTS THE FABRICATOR SHALL BE AN AISC CERTIFIED FABRICATOR IN ACCORDANCE WITH THE AISC CERTIFICATION PROGRAM FOR STRUCTURAL STEEL FABRICATORS (AISC 201-06).
      b. OTHER ACCREDITATION DEEMED ACCEPTABLE BY THE AUTHORITY HAVING JURISDICTION.
      c. IF FABRICATION IS PERFORMED BY AN APPROVED FABRICATOR A CERTIFICATE OF COMPLIANCE MUST BE PROVIDED TO THE BUILDING INSPECTOR THAT THE MATERIALS SUPPLIED AND WORK PERFORMED BY THE FABRICATOR ARE IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS.
      d. IF FABRICATION IS NOT PERFORMED BY AN APPROVED FABRICATOR WELDING INSPECTION REPORTS MUST BE SUBMITTED TO THE BUILDING OFFICIAL BY AN APPROVED TESTING AGENCY.
         d.a. NONDESTRUCTIVE TESTING (NDT) MAY BE PERFORMED BY THE FABRICATOR, HOWEVER THE QA AGENCY SHALL REVIEW THE FABRICATOR'S NDT REPORTS.

   B. WOOD BUILDINGS
      a. STRUCTURAL GLUED LAMINATED TIMBER

STRUCTURAL OBSERVATIONS

1. IN ACCORDANCE WITH SECTION 1704A.6 OF THE CODE STRUCTURAL OBSERVATIONS SHALL BE PERFORMED FOR THE FOLLOWING ELEMENTS OF CONSTRUCTION:
   A. FOUNDATION REINFORCING AND ANCHORAGE, EXCLUDING THE SLAB ON GRADE REINFORCEMENT.

   B. SHEATHING NAILING FOR THE WOOD LATERAL FORCE-RESISTING SYSTEM, INCLUDING DIAPHRAGMS AND SHEAR WALLS.

   C. AT THE COMPLETION OF MECHANICAL, ELECTRICAL AND PLUMBING ROUGH-IN, PRIOR TO FINISHES BEING INSTALLED.

2. THE OBJECTIVE OF THE STRUCTURAL OBSERVATION IS TO BECOME FAMILIAR WITH THE PROGRESS AND QUALITY OF THE CONTRACTOR'S WORK AND DETERMINE IF THE WORK IS BEING COMPLETED IN GENERAL CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS

   A. STRUCTURAL OBSERVATIONS ARE NOT INSPECTIONS AND SHALL NOT BE USED AS A REPLACEMENT FOR THE SPECIAL INSPECTIONS REQUIRED BY THE CODE OR REFERENCED STANDARD OR FOR SPECIAL INSPECTIONS REQUIRED IN THIS DOCUMENT.

   B. THE PERSON COMPLETING THE STRUCTURAL OBSERVATIONS DOES NOT HAVE RESPONSIBILITY FOR ANY ACTS OR OMISSIONS BY THE CONTRACTOR OR OF ANY OTHER ENTITY PROVIDING MATERIALS OR SERVICES ON THE PROJECT.

3. ADEQUATE NOTIFICATION SHALL BE PROVIDED TO THE STRUCTURAL ENGINEER PERFORMING OBSERVATIONS, A MINIMUM OF (2) WORKING DAYS, PRIOR TO OBSERVATION OF THE WORK.

STATEMENT OF SPECIAL INSPECTIONS

1. THIS STATEMENT OF SPECIAL INSPECTIONS HAS BEEN PREPARED PURSUANT TO SECTION 1704A.3 OF THE CODE . THIS SECTION DETAILS BOTH REQUIRED SPECIAL INSPECTIONS AND TESTS INCLUDING TESTING PER SECTION 1705A OF THE CODE. THE FOLLOWING SHALL BE OBSERVED DURING THEIR IMPLEMENTATION:

   A. GENERAL:
      a. STRUCTURAL VERIFICATIONS, INSPECTIONS AND TESTS SHALL BE PERFORMED IN ACCORDANCE WITH CHAPTER 17 OF THE CODE AND/OR THE APPLICABLE REFERENCE STANDARD.

   B. OWNER REQUIREMENTS:
      a. THE OWNER OR OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN SECTION 1705A OF THE CODE AND IN THIS STATEMENT OF INSPECTIONS.

   C. SPECIAL INSPECTOR QUALIFICATIONS:
      a. THE SPECIAL INSPECTIONS SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING HIS OR HER COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING. THE EXPERIENCE OR TRAINING SHALL BE CONSIDERED RELEVANT WHEN THE DOCUMENTED EXPERIENCE OR TRAINING IS RELATED IN COMPLEXITY TO THE SAME TYPE OF SPECIAL INSPECTION ACTIVITIES FOR PROJECTS OF SIMILAR COMPLEXITY AND MATERIAL QUANTITIES.

   D. CONTRACTOR REQUIREMENTS:
      a. SPECIAL INSPECTION IS IN ADDITION TO THE CONTRACTOR'S QUALITY CONTROL INSPECTIONS AND TESTING. THE CONTRACTOR'S QUALITY CONTROL INSPECTIONS AND TESTING SHALL OCCUR PRIOR TO SPECIAL INSPECTION AND REPORTS SHALL BE AVAILABLE TO THE SPECIAL INSPECTOR.
      b. THE CONTRACTOR SHALL ENSURE THAT THE WORK FOR WHICH SPECIAL INSPECTION IS REQUIRED REMAINS ACCESSIBLE AND EXPOSED FOR SPECIAL INSPECTION PURPOSES UNTIL COMPLETION OF THE REQUIRED SPECIAL INSPECTION.
      c. ANY CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF THE MAIN WIND OR SEISMIC FORCE RESISTING SYSTEM SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL INSPECTION REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.

   E. SPECIAL INSPECTOR REPORT REQUIREMENTS:
      a. THE SPECIAL INSPECTOR SHALL KEEP RECORD OF INSPECTIONS
      b. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL AND TO THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD.
      c. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS.
      d. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.
      e. IF NOT CORRECTED DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD PRIOR TO THE COMPLETION OF THAT PHASE OF WORK.
      f. A FINAL REPORT DOCUMENTING SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES NOTED SHALL BE SUBMITTED TO THE BUILDING OFFICIAL.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

rrm design group
rrmdesign.com | (805) 543-1794

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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

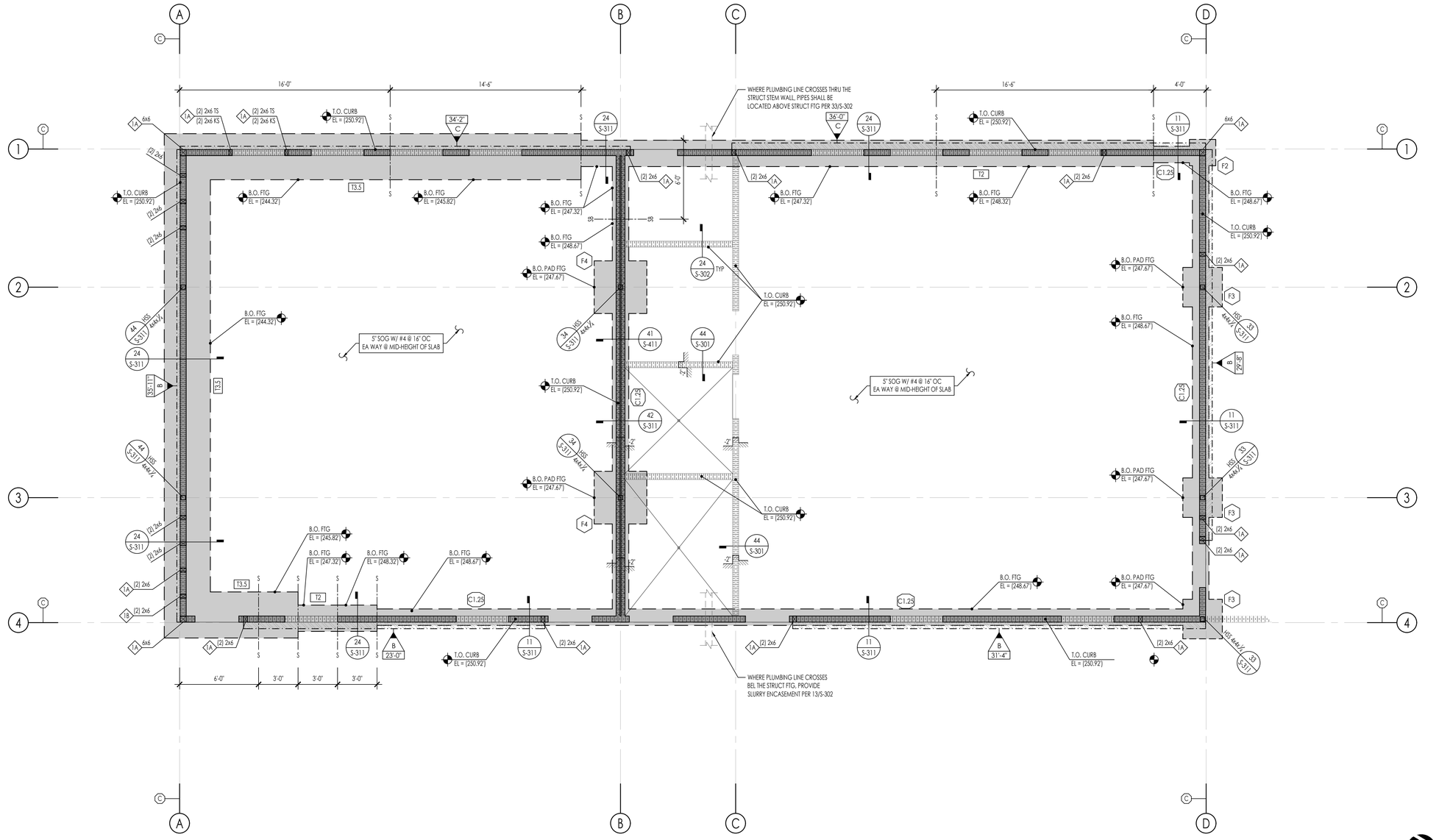
SPECIAL INSPECTIONS AND TESTS

NO.	REVISION	DATE
1		
2		
3		
4		
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6		

PROJECT MANAGER
J. MEADOWS
DRAWN BY: C. PRESSLER
CHECKED BY: J. MEADOWS
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
S-105

DSA BACK CHECK 2

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1 FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

FOUNDATION PLAN NOTES

1. REFER TO THE FOLLOWING SHEETS FOR TYPICAL DETAILS:

DESCRIPTION	SHEET (S)
SYMBOLS AND ABBREVIATIONS	S-101
STRUCTURAL GENERAL NOTES	S-102 - S-103
TESTING AND INSPECTION	S-104
TYPICAL CONCRETE DETAILS	S-301 - S-302
TYPICAL STEEL DETAILS	S-401
TYPICAL WOOD DETAILS	S-501 - S-504

2. SEE ARCHITECTURAL DRAWINGS FOR FINISHED FLOOR ELEVATIONS. REFERENCE CLASSROOM FINISHED FLOOR ELEVATION = 250.42' CORRESPONDS TO FINISHED FLOOR ELEVATION.
3. ALL DIMENSIONS SHOWN ARE FROM FACE OF CONCRETE, FACE OF SHEATHING, OR CENTERLINE OF COLUMN. ALL COLUMNS ARE CENTERED IN STUD WALLS, UNO.
4. FOR ANY DIMENSIONAL INFORMATION NOT SHOWN, SEE ARCHITECTURAL DRAWINGS.
5. SEE ARCHITECTURAL/CIVIL DRAWINGS FOR ANY EMBEDDED ITEMS AND ALL EXTERIOR CONCRETE PAVING.
6. SEE PLANS AND ARCHITECTURAL DRAWINGS FOR DEPRESSIONS AND/OR SLOPES IN CONCRETE SLABS.
7. SEE ARCHECTURAL DRAWINGS FOR SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS IN BEARING AND NON-BEARING WALLS.
8. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF INTERIOR NON-BEARING PARTITIONS.
9. SEE ARCHITECTURAL, PLUMBING, MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL EMBEDDED ITEMS AND SLAB PENETRATIONS.
10. FOR TYPICAL SLAB-ON-GRADE REQUIREMENTS, INCLUDING SLAB JOINTS, SEE DETAIL 31/S-301.
11. SHEATH ALL EXTERIOR WALLS WITH A MINIMUM 7/16" RATED SHEATHING - EXPOSURE 1 PLYWOOD (NAILING 8d 6" EN / 12" FN) IF SHEATHING IS NOT REQUIRED PER SHEAR WALL SCHEDULE.
12. PLATE WASHERS ARE REQUIRED FOR ALL SILL PLATE ANCHOR BOLTS. REFER TO 34/S-502 FOR PLATE WASHER REQUIREMENTS AT SHEAR WALLS.
13. ALL HOLDOWN ANCHOR NUTS SHALL BE TIGHTENED JUST PRIOR TO COVERING.
14. THE BUILDING PAD SHALL BE PREPARED AS OUTLINED IN DETAIL 53/S-301. THE BUILDING INSPECTOR OF RECORD OFFICIAL SHALL REQUIRE PAD CERTIFICATION BY GEOTECHNICAL ENGINEER OR RECORD AT THEIR DISCRETION.
15. BOTTOM OF FOOTING SHALL BE, UNLESS DEEPER FOUNDATIONS ARE REQUIRED BY THE BUILDING OFFICIAL:
    A. 12" BELOW THE LOWEST ADJACENT GRADE WITHIN 7 FEET LATERALLY FROM THE BOTTOM OF THE FOOTING. FOUNDATIONS FOR ALL RETAINING WALLS SHOULD HAVE A MINIMUM OVERALL DEPTH (NOT INCLUDING ANY KEYWAY) OF 18" BELOW THE LOWEST ADJACENT GRADE WITHIN 7 FEET LATERALLY OF ANY ADJACENT SLOPE.
    B. PAD ELEVATION DEFINED IN DETAIL 53/S-301.
    NOTE: FOOTING MUST BE DEEPENED LOCALLY PER DETAIL 32/S-301 TO ACCOMMODATE ANCHOR BOLT HOLDOWN EMBED DEPTHS.
16. DEEPEN FOOTINGS FOR DAYLIGHT DISTANCE PER 32/S-302.

SYMBOL LEGEND

- XX'-X" / X — INDICATES SHEAR WALL TYPE AND LENGTH, SEE SCHEDULE ON 13/S-502
- INDICATES CONCRETE CURB
- INDICATES CONCRETE CURB BELOW BEARING WALL
- INDICATES STEPPED FOOTING PER DETAIL 33/S-301
- INDICATES STEPPED BOTTOM OF FOOTING PER DETAIL 34/S-301

SCHEDULES

HOLDOWN SCHEDULE

SPECIFIES HOLDOWN/ STRAP DETAIL	INDICATES HOLDOWN/ STRAP TYPE	DETAIL
1A	INDICATES SIMPSON HOLDOWN W/ SB TO: CONC FOUNDATION:	14/S-311

STUD WALL SCHEDULE

WALL HATCH	STUD SIZE	STUD SPACING	HDR SIZE, UNO
	2x6 DF No. 2 STUDS	16" OC	32/S-501
	2x4 DF No. 2 STUDS	16" OC	32/S-501
	2x6 NON BRG WALLS	16" OC	43/S-501

CONTINUOUS FOOTING SCHEDULE

MARK	WIDTH	MIN EMBED BELOW LOWEST PAD GRADE	LONG REINF	TRANS REINF	DETAIL
C1.25	1'-3"	SEE NOTE 15	(2) #5 T&B	#4 @ 6" OC	PER PLAN

"STEM WALL" TYPE CONTINUOUS FOOTING SCHEDULE

TYPE	WIDTH	THICKNESS	LONG REINF	TRANS REINF	DETAIL
T2	2'-0"	PER DETAIL	PER DETAIL	PER DETAIL	PER PLAN
T3.5	3'-6"	PER DETAIL	PER DETAIL	PER DETAIL	PER PLAN

PAD FOOTING SCHEDULE

TYPE	WIDTH	LENGTH	THICKNESS	MIN EMBED BELOW LOWEST PAD GRADE	TOP REINF	BOT REINF	DETAIL UNO
F2	2'-0"	2'-0"	2'-0"	SEE NOTE 15	(3) #5, EW	(3) #5, EW	32/S-311
F3	3'-0"	3'-0"	2'-0"	SEE NOTE 15	(4) #5, EW	(4) #5, EW	33/S-311
F4	4'-0"	4'-0"	2'-0"	SEE NOTE 15	(5) #5, EW	(5) #5, EW	34/S-311

IDENTIFICATION STAMP
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APP: 03-125727 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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REGISTERED PROFESSIONAL ENGINEER — JESSICA M. MEADOWS — No. 6488 — STRUCTURAL — STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

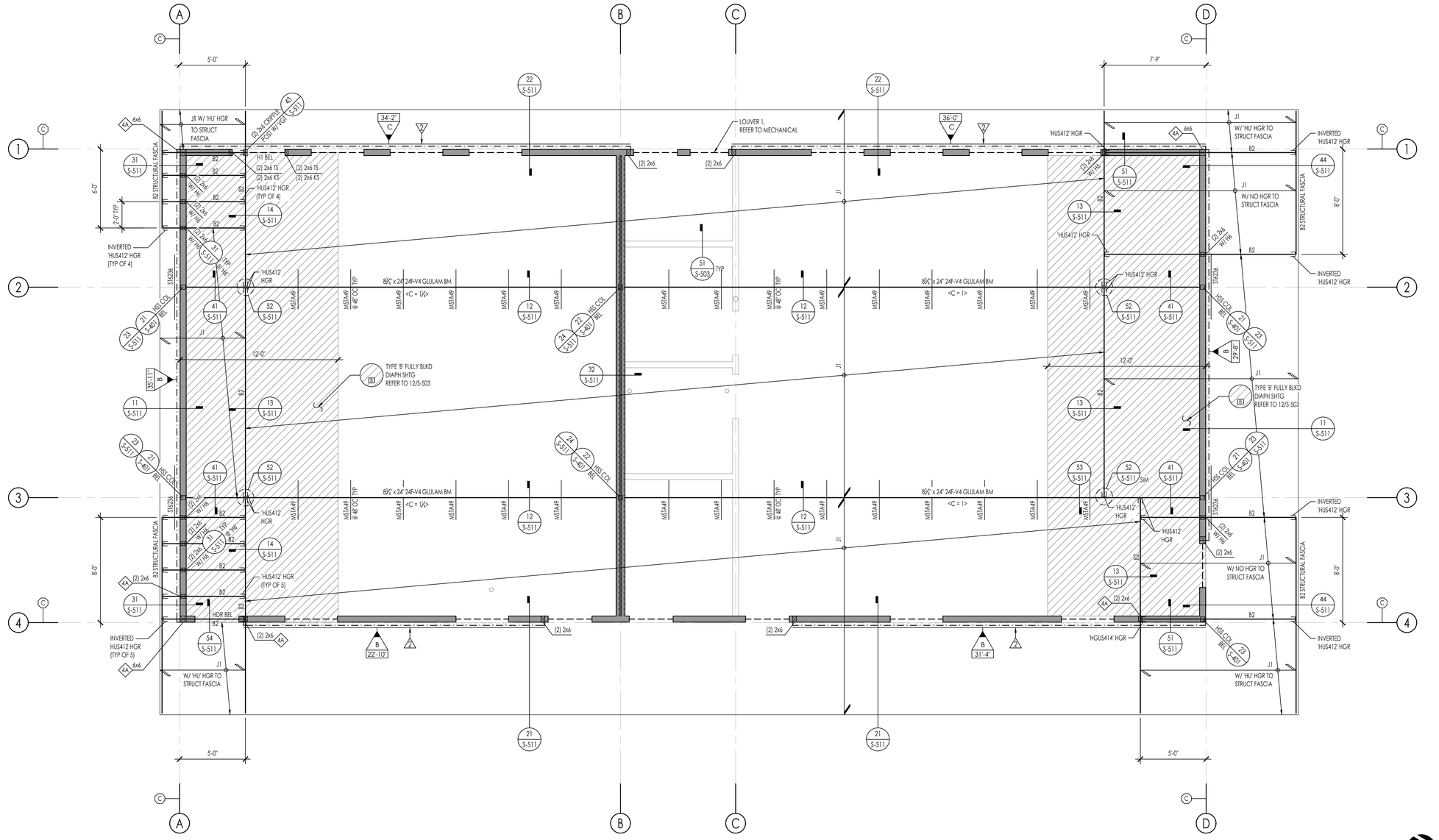
FOUNDATION PLAN

NO.	REVISION	DATE

PROJECT MANAGER: J. MEADOWS
DRAWN BY: C. PRESSLER
CHECKED BY: J. MEADOWS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: S-201

DSA BACK CHECK 2

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1 ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"

ROOF FRAMING NOTES

1. REFER TO THE FOLLOWING SHEETS FOR TYPICAL DETAILS:

DESCRIPTION	SHEET (S)
SYMBOLS AND ABBREVIATIONS	S-101
STRUCTURAL GENERAL NOTES	S-102 - S-104
TESTING AND INSPECTION	S-105
TYPICAL CONCRETE DETAILS	S-301 - S-302
TYPICAL STEEL DETAILS	S-401
TYPICAL WOOD DETAILS	S-501 - S-504

2. SEE ARCHITECTURAL DRAWINGS FOR ALL TOP OF SHEATHING AND TOP OF WALL ELEVATIONS.
3. SEE ARCHITECTURAL, PLUMBING, MECHANICAL AND ELECTRICAL DRAWINGS FOR SIZE AND LOCATION OF PIPES, DUCTS AND OTHER ROOF PENETRATIONS. FOR ROOF PENETRATIONS NOT SHOWN ON ROOF FRAMING PLAN, SEE DETAIL 23/S-503 FOR TYPICAL OPENINGS, UNO.
4. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS IN BEARING AND NON-BEARING WALLS.
5. TOP OF NON-BEARING STUD WALL SHALL BE AS SHOWN IN 51/S-503.
6. ALL LINES AND/OR MEMBERS INDICATED AS "STRUT" SHALL RECEIVE (2) ROWS OF BOUNDARY NAILING (BN), STGR.
7. SHEATH ALL EXTERIOR WALLS WITH A MINIMUM 7/16" RATED SHEATHING - EXPOSURE 1 PLYWOOD (NAILING 8d 6" EN / 12" FN) IF SHEATHING IS NOT REQUIRED PER SHEAR WALL SCHEDULE.
8. ALL INTERIOR WALLS NOT SHOWN ON THE STRUCTURAL FRAMING PLANS BUT SHOWN ON THE ARCHITECTURAL DRAWINGS SHALL BE CONSTRUCTED PER NON-BEARING PARTITION WALL DETAIL 43/S-501, UNO.
9. PLYWOOD SHEATED DIAPHRAMG TYPES:
   ALL ROOF DIAPHRAMGS SHALL BE TYPE A, UNO
   REFER TO 12/S-503
10. REFER TO DETAIL 52/S-503 FOR REQUIRED BRIDGING OF ROOF JOISTS.
11. FOR ALL DOUBLE STUD POSTS, REFER TO 14/S-502 FOR NAILING REQUIREMENTS.

SYMBOL LEGEND

XX"-"X" / X / *	INDICATES SHEAR WALL TYPE AND LENGTH, SEE SCHEDULE ON 13/S-502
*	INDICATES BLOCKING & STRAPPING ABOVE & BELOW WINDOW OPENINGS PER DETAIL 44/S-502
- - - -	INDICATES HEADER @ OPENING. REFER TO 32/S-501 FOR HEADER SIZE, UNO ON PLANS
X	INDICATES TOP PLATE SPLICE NAILING PER 33/S-503 NOTE THAT NAILING APPLIES TO ENTIRE LENGTH OF TOP PLATE. PROVIDE TYPE (C) SPLICE, UNO
POST SPEC TIE SPEC	INDICATES THE POST REQUIRED BELOW THE JOIST/BEAM AND THE SIMPSON TIE HARDWARE FROM THE JOIST/BEAM TO POST
<C = XX>	INDICATES BEAM CAMBER AT MIDSPAN IN INCHES

SCHEDULES

STUD WALL SCHEDULE

WALL HATCH	STUD SIZE	STUD SPACING	HDR SIZE, UNO
	2x6 DF No. 2 STUDS	16" OC	32/S-501
	2x4 DF No. 2 STUDS	16" OC	32/S-501
	2x6 NON BRG WALLS	16" OC	43/S-501

HOLDOWN SCHEDULE

SPECIFIES HOLDOWN/ STRAP DETAIL	INDICATES HOLDOWN/ STRAP TYPE	DETAIL
4A	INDICATES SIMPSON HOLDOWN FROM BM TO POST HOLDOWN BELOW:	24/S-504

ROOF BEAM SCHEDULE

MARK	SIZE	REMARKS
B1	5¼" x 14" LVL	
B2	3½" x 14" LVL	

ROOF HEADER SCHEDULE

MARK	SIZE	REMARKS
H1	6x8	

ROOF JOIST SCHEDULE

MARK	SIZE	REMARKS
J1	14" I-65 @ 24" OC	

DSA BACK CHECK 2

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DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC: A
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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 64188
STRUCTURAL
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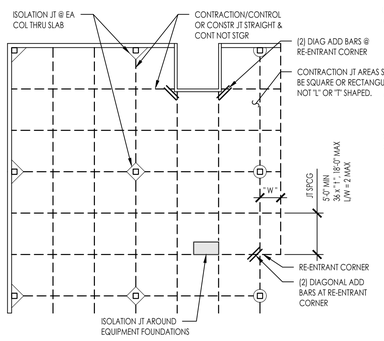
MESA MS SPED SCIENCE BUILDING
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ROOF FRAMING PLAN

NO.	REVISION	DATE

PROJECT MANAGER: J. MEADOWS
DRAWN BY: C. PRESSLER
CHECKED BY: J. MEADOWS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: S-202

N:\0801\0822-03-ed25-mesa-ms-new-science-sped-class-bldg\structural\ConDocs\sheet-files\0822-03-ED25 - Plans.dwg, S202, Apr 22, 2026 12:49pm, jellis

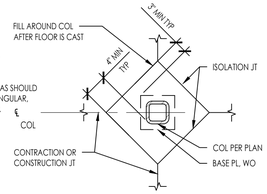


SLAB ON GRADE JOINTS

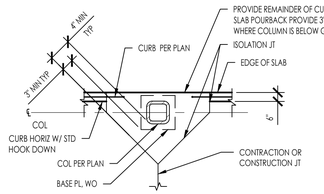
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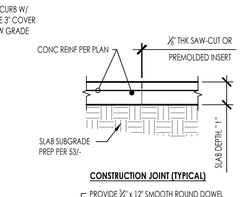
31



COLUMN ISOLATION JOINT



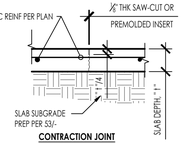
COLUMN ISOLATION JOINT



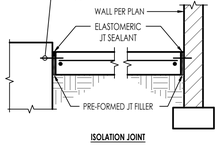
CONSTRUCTION JOINT (TYPICAL)

NOTES:

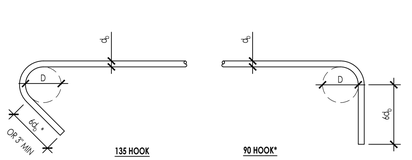
1. IF SAW CUT CONTRACTION OR CONTROL JOINT IS USED, SAW-CUT WITHIN 24 HOURS. EARLY ENTRY SAWS MAY BE USED WITHIN 1-4 HOURS OF POUR, AND CONVENTIONAL SAWS 4-12 HOURS OF POUR DEPENDING ON WEATHER.
2. FILL CONTRACTION JOINT WITH AN ELASTOMERIC JOINT COMPOUND RATED FOR ITS USE, FOR INDUSTRIAL FLOORS SUBJECTED TO HARD WHEELED TRAFFIC, USE SEALANTS RATED FOR SUCH APPLICATIONS BY THE MANUFACTURER.
3. DOWELS IN INDUSTRIAL FLOOR APPLICATIONS SHOULD BE SMOOTH ALIGNED, AND SUPPORTED SO THEY WILL REMAIN PARALLEL IN BOTH HORIZONTAL AND VERTICAL PLANES DURING PLACING AND FINISHING.
4. IN STEEL AND/OR CONC. BUILDINGS DO NOT POUR DIAMOND UNTIL STRUCTURAL STEEL AND CONCRETE ABOVE HAS BEEN INSTALLED.



CONTRACTION JOINT



ISOLATION JOINT



BAR SIZE	D
#3	1½"
#4	2"
#5	2½"

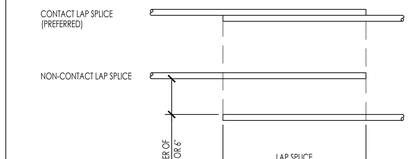
* PROVIDE 10d_b EXTENSIONS IN LIEU OF 6d_b AT ALL FRAME COLUMNS, GIRDERS, SHEAR WALLS AND SHEAR WALL BOUNDARY MEMBERS

REINF TIES AND STIRRUPS

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REINFORCING TENSION DEVELOPMENT LENGTH AND LAP SPLICE SCHEDULE

BAR SIZE	DEVELOPMENT LENGTH, ℓ_d (CLASS A LAP SPLICE)		LAP SPLICE, ℓ_s (CLASS B LAP SPLICE)	
	f'c (psi)		f'c (psi)	
	3,000	4,000	3,000	4,000
#3	1'-5"	1'-3"	1'-10"	1'-7"
#4	1'-10"	1'-7"	2'-5"	2'-1"
#5	2'-4"	2'-0"	3'-0"	2'-7"
#6	2'-9"	2'-5"	3'-7"	3'-2"
#7	4'-0"	3'-4"	5'-2"	4'-6"
#8	4'-7"	4'-0"	5'-11"	5'-2"
#9	5'-2"	4'-6"	6'-9"	5'-10"
#10	5'-10"	5'-1"	7'-7"	6'-7"
#11	6'-6"	5'-7"	8'-5"	7'-3"

NOTES:

1. VALUES ABOVE ARE FOR REINFORCEMENT WITH THE FOLLOWING PARAMETERS:
   - A. GRADE 60 REINFORCEMENT
   - B. NORMAL WEIGHT CONCRETE
     - a. FOR LIGHTWEIGHT CONCRETE MULTIPLY THE VALUES ABOVE BY 1.3
   - C. NON-EPOXY COATED REINFORCEMENT
   - D. HORIZONTAL BARS WITHOUT 12" OF CONCRETE BELOW (BOTTOM BARS), AND VERTICAL BARS
     - a. FOR TOP BARS WITH 12" OR MORE OF CONCRETE BELOW THE BAR MULTIPLY THE VALUES ABOVE BY 1.3
   - E. CLEAR SPACING NOT LESS THAN d_b, CLEAR COVER NOT LESS THAN d_b AND STIRRUPS THROUGH L_0 NOT LESS THAN MIN

     OR

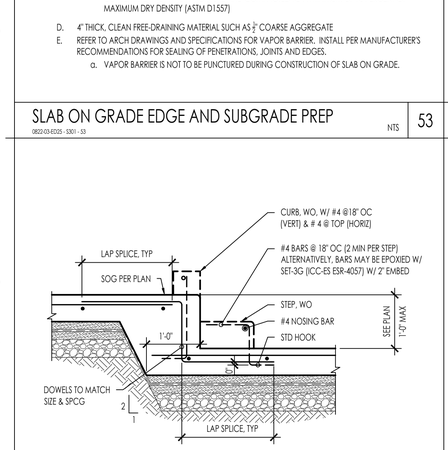
     CLEAR SPACING NO LESS THAN 2d_b AND CLEAR COVER NOT LESS THAN db
     - a. FOR OTHER SPACING AND COVER CONDITIONS MULTIPLY THE VALUES ABOVE BY 1.5
   - F. REINFORCEMENT NOT IN SHEAR WALLS
     - a. FOR REINFORCEMENT IN SHEAR WALLS MULTIPLY THE VALUES ABOVE BY 1.25
2. THE MULTIPLIERS LISTED IN NOTE 1 ABOVE ARE CUMULATIVE INCREASES IN DEVELOPMENT/LAP SPLICE LENGTH.
3. ALL LAP SPLICES REFERENCED IN THE PLANS SHALL BE CLASS B UNLESS NOTED OTHERWISE.
4. WHEN REINFORCING BARS OF TWO SIZES ARE LAP-SPLICED IN TENSION, USE THE LARGER OF THE TENSION CLASS B. LAP SPLICE LENGTH (ℓ_s) OF THE SMALLER BAR, AND THE CLASS A. TENSION DEVELOPMENT LENGTH (ℓ_d) OF THE LARGER BAR.

REINF DEVELOPMENT LENGTH AND SPLICES

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NOTES:

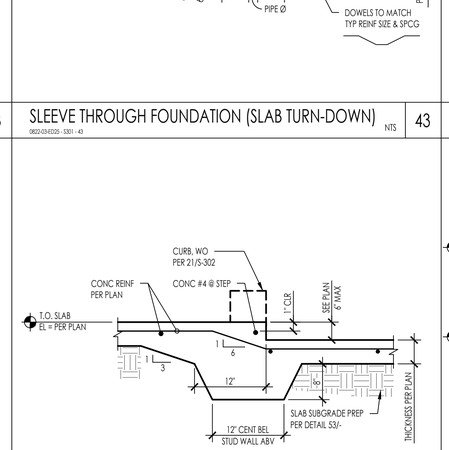
1. PREPARATION OF THE SLAB SUBGRADE SHALL BE AS FOLLOWS:
   - A. OVER-EXCAVATION SHALL EXTEND 5 FEET BEYOND PERIMETER FOUNDATION, TO PROPERTY LINES OR EXISTING IMPROVEMENTS, WHICHEVER IS LEAST.
   - B. NATIVE MATERIAL S
     - a. SHALL BE OVER-EXCAVATED 36" BELOW (E) GRADE OR TO 24" BELOW BOTTOM OF FOOTINGS (MEASURED FROM THE BOTTOM OF THE DEEPEST FOOTING); WHICHEVER IS GREATEST.
     - b. THE EXPOSED SURFACE SHALL BE SCARIFIED TO A DEPTH OF NOT LESS THAN 8 INCHES, MOISTURE CONDITIONED TO OPTIMUM MOISTURE CONTENT OR JUST ABOVE, AND COMPACTED TO A MINIMUM OF 90 PERCENT OF MAXIMUM DRY DENSITY (ASTM D1557)
   - C. STRUCTURAL FILL
     - a. THE SOILS REMOVED FROM THE BUILDING, RETAINING WALL AND FLATWORK AREAS, AS WELL APPROVED NON-EXPANSIVE SOIL, MAY BE USED AS FILL TO FINISH PAD GRADE WITHIN THE BUILDING AREA, AND TO FINISH GRADE.
     - b. STRUCTURAL FILL SHALL BE PLACED IN HORIZONTAL LAYERS, EACH APPROXIMATELY 8" THICK BEFORE COMPACTION, AND SHOULD BE CONDITIONS WITH WATER TO PRODUCE A SOIL WATER CONTENT NEAR OPTIMUM MOISTURE AND COMPACTED TO A MINIMUM OF 90 PERCENT OF MAXIMUM DRY DENSITY (ASTM D1557)
   - D. 4" THICK, CLEAN FREE-DRAINING MATERIAL SUCH AS ¾" COARSE AGGREGATE
   - E. REFER TO ARCH DRAWINGS AND SPECIFICATIONS FOR VAPOR BARRIER. INSTALL PER MANUFACTURER'S RECOMMENDATIONS FOR SEALING OF PENETRATIONS, JOINTS AND EDGES.
     - a. VAPOR BARRIER IS NOT TO BE PUNCTURED DURING CONSTRUCTION OF SLAB ON GRADE.

SLAB ON GRADE EDGE AND SUBGRADE PREP

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NTS

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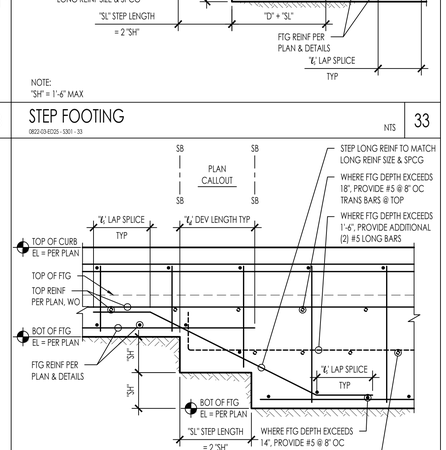


SLEEVE THROUGH FOUNDATION (SLAB TURN-DOWN)

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NTS

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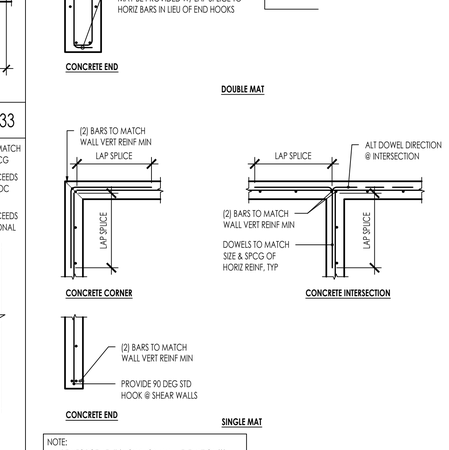
NOTE:
"SH" = 1'-6" MAX

STEP FOOTING

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NTS

33



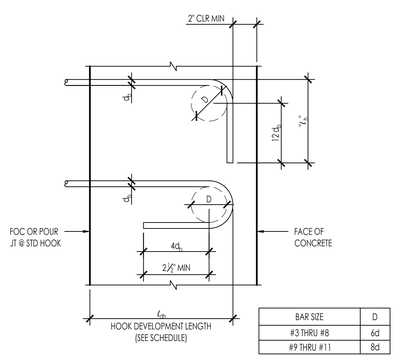
NOTE:
REINFORCEMENT SHOWN ON WALL ELEVATION(S), BOUNDARY REINFORCING DETAILS, AND OTHER SPECIFICALLY REFERENCED DETAILS SHALL TAKE PRECEDENCE OVER REINFORCEMENT SHOWN HERE.

CONC REINF @ INTERSECTION

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NTS

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BAR SIZE	D
#3 THRU #8	6d
#9 THRU #11	8d

STANDARD HOOK DEVELOPMENT LENGTH "ℓ_{dh}"

BAR SIZE	D	"ℓ_{dh}"	NORMAL WEIGHT	
			3,000	4,000
#3	2 1/4"	6"	0'-9"	0'-9"
#4	3"	8"	1'-0"	0'-11"
#5	3 3/4"	10"	1'-3"	1'-2"
#6	4 1/2"	12"	1'-6"	1'-5"
#7	5 1/4"	1'-2"	1'-9"	1'-8"
#8	6"	1'-4"	2'-0"	1'-10"
#9	9 1/2"	1'-7 1/2"	2'-3"	2'-1"
#10	10 3/4"	1'-10"	2'-7"	2'-4"
#11	12"	2'-0 1/2"	2'-10"	2'-7"

NOTES:

1. ALL HOOKED BARS SHALL EXTEND AS FAR AS POSSIBLE WITH A MINIMUM 2" END COVER AND WITH EMBEDMENT NOT LESS THAN SHOWN ON THE SCHEDULE UNLESS NOTED OTHERWISE ON PLANS.
2. MINIMUM SIDE COVER = 2½".
3. FOR LIGHTWEIGHT CONCRETE MULTIPLY LENGTHS IN SCHEDULE BY 1.3.

REINF HOOK DEVELOPMENT LENGTH AND BENDS

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STEP IN CONCRETE SLAB ON GRADE

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NTS

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SLAB ON GRADE DEPRESSION

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NTS

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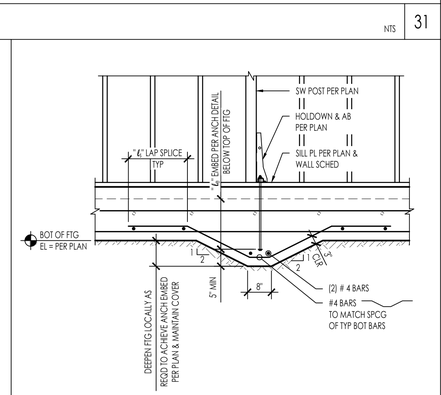
NOTE:
"SH" = 1'-6" MAX

STEPPED FOOTING (BOTTOM ONLY)

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NTS

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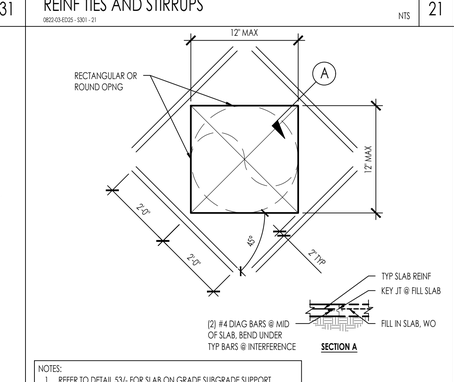


DEEPENED FTG @ ANCHOR BOLT

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NTS

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NOTES:
1. REFER TO DETAIL 53/- FOR SLAB ON GRADE SUBGRADE SUPPORT

SOG OPENING

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JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

DSA BACK CHECK 2

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

TYPICAL CONCRETE DETAILS

NO.	REVISION	DATE
△		
△		
△		
△		
△		
△		

PROJECT MANAGER
J. MEADOWS

DRAWN BY
C. PRESSLER

CHECKED BY
J. MEADOWS

DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
S-301

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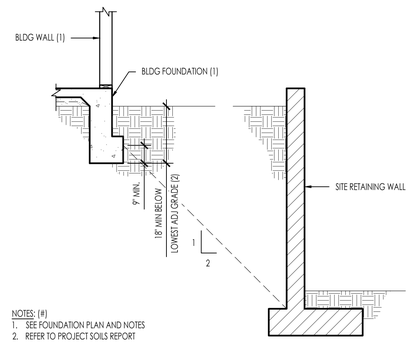
51

41

FTG BEHIND SITE WALL

0822 - 03 - ED25 - S302 - 31

NTS



NOTES: (#)
1. SEE FOUNDATION PLAN AND NOTES
2. REFER TO PROJECT SOILS REPORT

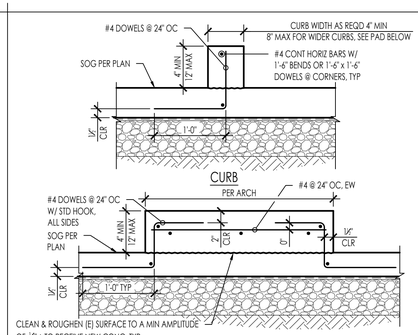
31

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CONCRETE CURBS & PADS

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NTS



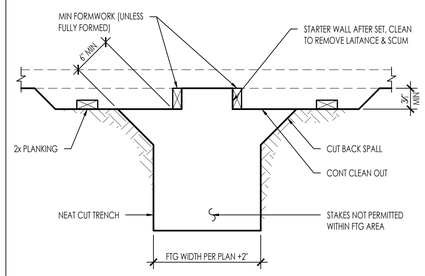
NOTES:
1. SEE ARCH FOR SIZE, HEIGHT AND LOCATION OF CURBS AND PADS
2. PROVIDE INSERTS AS REQD BY ARCH / MECH DRAWINGS

11

FOOTING POURED AGAINST EARTH

0822-03-ED25 - S302 - 11

NTS



NOTES:
1. FOUNDATION CONCRETE MAY BE PLACED DIRECTLY INTO NEAT EXCAVATIONS PROVIDED THE FOUNDATION TRENCH WALLS ARE STABLE AS DETERMINED BY THE GEOTECHNICAL ENGINEER
2. FOOTING WIDTHS SHALL NOT BE MORE THAN 4" WIDER THAN SHOWN ON PLAN
3. FORMWORK NOT PERMITTED BELOW GRADE UNLESS FULLY FORMED.

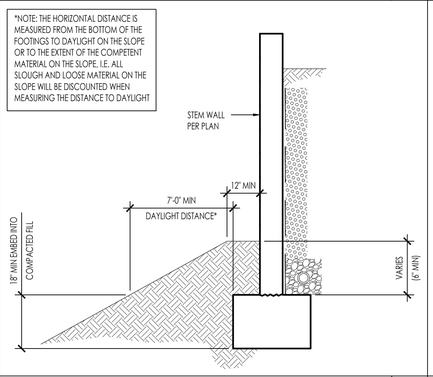
52

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DISTANCE TO SLOPE

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NTS



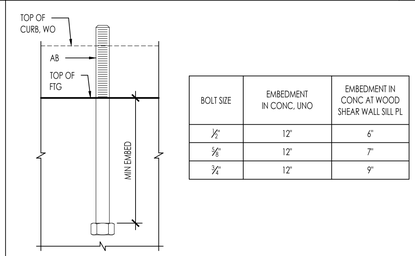
32

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CONCRETE ANCHOR BOLT SCHEDULE

0822-03-ED25 - S302 - 22

NTS



BOLT SIZE	EMBEDMENT IN CONC, UNO	EMBEDMENT IN CONC AT WOOD SHEAR WALL SILL PL
⅝"	12"	6"
⅝"	12"	7"
¾"	12"	9"

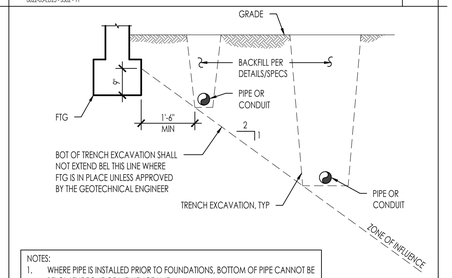
NOTES:
1. MINIMUM BOLT SPACING SHALL BE 12 BOLT DIAMETERS WITH A MINIMUM EDGE DISTANCE OF 12 DIAMETERS, UNLESS NOTED OTHERWISE.
2. ANCHOR BOLTS SHALL BE HEX HEADED WITH THE DIMENSIONS OF THE HEX CONFORMING TO ANSI/ASME B18.2.1 BENT BAR ANCHORS SHALL NOT BE USED.

12

PIPES PARALLEL TO FOOTINGS

0822-03-ED25 - S302 - 12

NTS



NOTES:
1. WHERE PIPE IS INSTALLED PRIOR TO FOUNDATIONS, BOTTOM OF PIPE CANNOT BE BELOW THE ZONE OF INFLUENCE LINE.
2. CONTRACTOR SHALL COORDINATE ALL PIPE LOCATIONS WITH BUILDING FOUNDATION REQUIREMENTS.
3. IF REQUIREMENTS AS SHOWN CANNOT BE MET STEP FOOTING PER TYPICAL "STEPPED FOOTING" DETAILS 33/S-301 & 34/S-301.

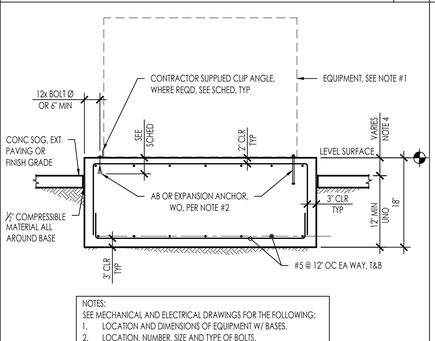
53

43

PIPES PERPENDICULAR TO FOOTINGS W/ STEM WALL

0822-03-ED25 - S302 - 33

NTS



NOTES:
1. FOOTINGS SHALL BE STEPPED PER DETAIL 33/S-301 & 34/S-301 SO THAT THIS DIMENSION DOES NOT EXCEED 3'-0".
2. CONTRACTOR SHALL COORDINATE ALL PIPE LOCATIONS WITH BUILDING FOUNDATION REQUIREMENTS.
3. TRENCH BELOW FOOTING SHALL BE FILLED WITH CONCRETE OR 3-SACK SLURRY BEFORE POURING FOOTING. CONCRETE FILL SHALL BE SAME WIDTH AS FOOTING AND FULL WIDTH OF PIPE TRENCH.
4. PIPES MAY BE WRAPPED IN 1" THICK LOOSE FOAM IN LIEU OF SLEEVING.
5. CONDUIT MAY BE RUN THRU STEM OR ENCASEMENT UNDER FOOTING WITHOUT SLEEVES OR FOAM WRAP.

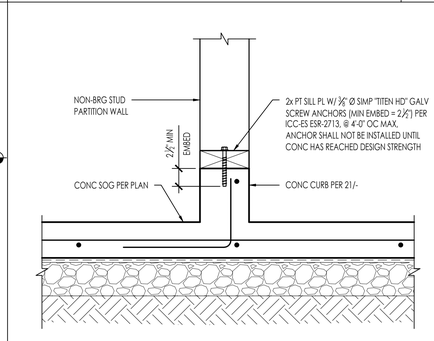
33

23

CURB REINF WELLDED TO HSS COLUMN

0822-03-ED25 - S302 - 24

NTS

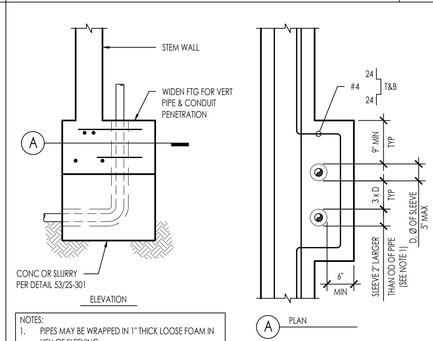


13

PIPES PERPENDICULAR TO FOOTINGS

0822-03-ED25 - S302 - 13

NTS



NOTES:
1. FOOTINGS SHALL BE STEPPED PER DETAIL & 33/S-301 SO THAT THIS DIMENSION DOES NOT EXCEED 3'-0".
2. CONTRACTOR SHALL COORDINATE ALL PIPE LOCATIONS WITH BUILDING FOUNDATION REQUIREMENTS.
3. TRENCH BELOW FOOTING SHALL BE FILLED WITH CONCRETE OR 3-SACK SLURRY BEFORE POURING FOOTING. CONCRETE FILL SHALL BE SAME WIDTH AS FOOTING AND FULL WIDTH OF PIPE TRENCH.
4. PIPES MAY BE WRAPPED IN 1" THICK LOOSE FOAM IN LIEU OF SLEEVING.
5. CONDUIT MAY BE RUN THRU STEM OR ENCASEMENT UNDER FOOTING WITHOUT SLEEVES OR FOAM WRAP.

54

44

CONCRETE BASE FOR EQUIPMENT

0822-03-ED25 - S302 - 34

NTS

NOTES:
SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
1. LOCATION AND DIMENSIONS OF EQUIPMENT W/ BASES.
2. LOCATION, NUMBER, SIZE AND TYPE OF BOLTS.
3. EMBEDMENT DEPTH OF POST-INSTALLED ANCHORS, WHERE OCCUR.
4. CURB HEIGHT, 2" MINIMUM, 6" MAXIMUM

34

24

NON-BEARING NON SHEAR WALLWALL ANCHORAGE @ SOG

0822-03-ED25 - S302 - 24

NTS

14

TYPICAL VERT PIPES OR COND THROUGH FOOTING

0822-03-ED25 - S302 - 14

NTS

NOTES:
1. PIPES MAY BE WRAPPED IN 1" THICK LOOSE FOAM IN LIEU OF SLEEVING.
2. CONDUIT MAY BE ROUTED UP THROUGH FOOTING WITHOUT SLEEVES OR FOAM WRAP.

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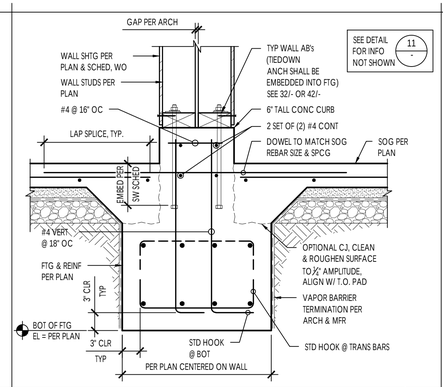
TYPICAL CONCRETE DETAILS

NO.	REVISION	DATE
1		
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3		
4		
5		
6		

PROJECT MANAGER
J. MEADOWS
DRAWN BY
C. PRESSLER
CHECKED BY
J. MEADOWS
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
S-302

DSA BACK CHECK 2

N:\08011.0822-03-ed25-mesa-ms-new-science-sped-class-bldg\structural\ConDocs\sheet-files\0822-03-ED25 - S302.dwg, S302, Apr 22, 2026 12:50pm, jellis



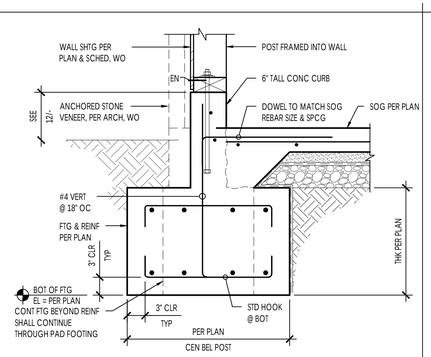
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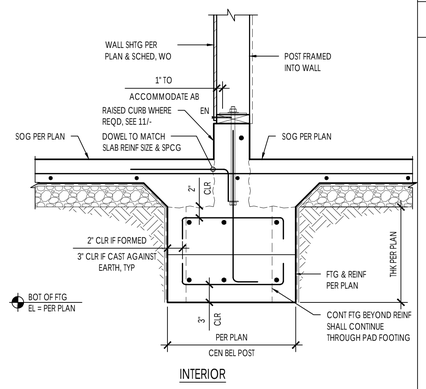
CONTINUOUS WALL FOOTING @ DBL WALL

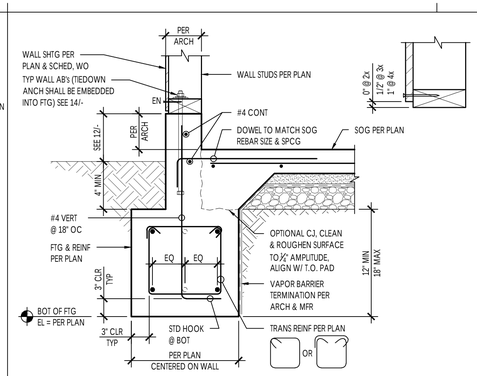
0822-03-ED25 - S311 - 41

1" = 1'-0"

41





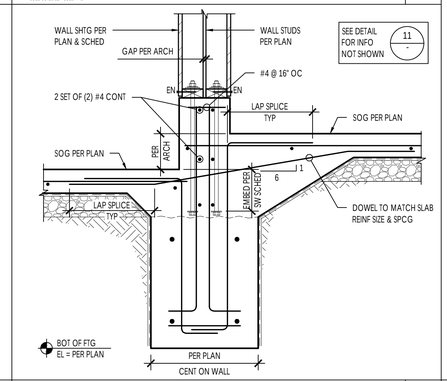


CONTINUOUS WALL FOOTING

0822-03-ED25 - S311 - 11

NTS

11



52

SOG DEPRESSION @ FTG W/ CURB

0822-03-ED25 - S311 - 42

1" = 1'-0"

42

PAD FOOTING

0822-03-ED25 - S311 - 32

1" = 1'-0"

32

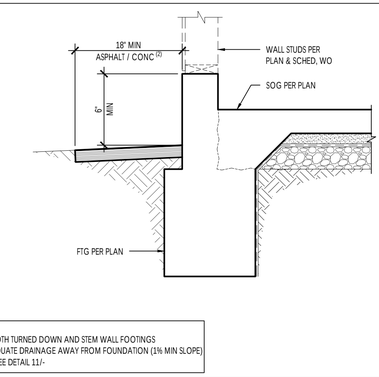
H_{ftg}	d_{ftg}	k	t_{stem} (IN)	B	C	W	REINF TOP T	REINF TOP L	REINF BOTTOM T	REINF BOTTOM L	REINF WALL HORIZ	REINF WALL VERT	S_{toe} MIN	S_{heel} MAX
2'-6"	1'-3"	N/A	8	0'-8"	0'-8"	2'-0"	#5 @ 8"	#5 @ 16"	#5 @ 8"	#5 @ 16"	#5 @ 16"	#5 @ 16"	0'-6"	2'-6"
5'-0"	1'-3"	10	8	1'-2"	1'-8"	3'-6"	#5 @ 8"	#5 @ 16"	#5 @ 8"	#5 @ 16"	#5 @ 16"	#5 @ 16"	0'-6"	5'-0"

DEEPENED FOOTING

0810-07-C121 - S311 - 14

1/2" = 1'-0"

24



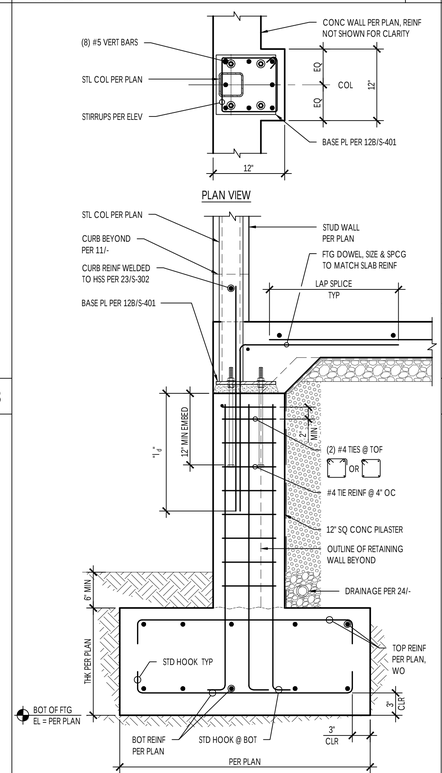
NOTES:
1. MIN DISTANCE TO EXPOSED EARTH APPLIES TO BOTH TURNED DOWN AND STEM WALL FOOTINGS
2. CONCRETE OR IMPERVIOUS SURFACE WITH ADEQUATE DRAINAGE AWAY FROM FOUNDATION (1% MIN SLOPE)
3. FOR BALANCE OF FOOTING INFO NOT SHOWN, SEE DETAIL 11/-

MINIMUM DISTANCE FROM GRADE TO WOOD FRAMING

0822-03-ED25 - S311 - 12

NTS

12



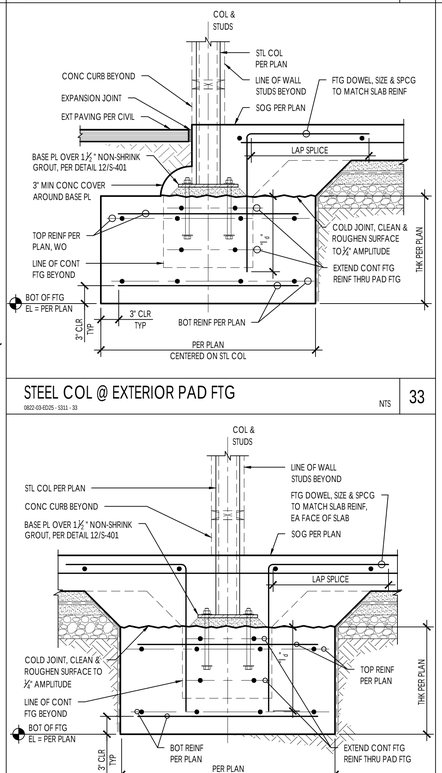
54

STEEL COL TO PILASTER @ RETAINING WALL

0822-03-ED25 - S311 - 44

1" = 1'-0"

44

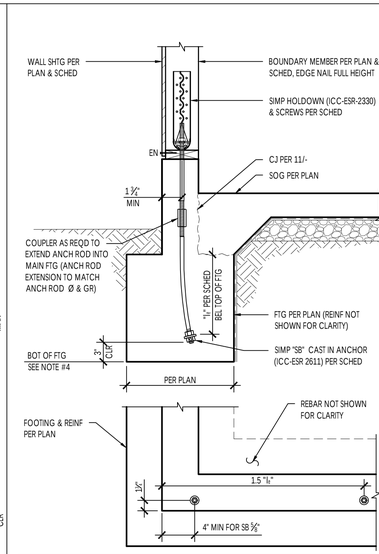


STEEL COL @ INTERIOR PAD FTG

0822-03-ED25 - S311 - 34

NTS

34



TYP	HOLDOWN	ANCHOR	DIA (IN)	FASTENERS	MIN EMBED "l" d (IN)	BOUNDARY MEMBER MIN THICKNESS x WIDTH	ALLOWABLE LOADS (lbs) CORNER	ALLOWABLE LOADS (lbs) MIDWALL
1A	HDUE3-SDS3	SB ⅝" x 24	⅝	(7) ¼" x 3" SDS	18	3" x 3½"	3,000*	3,000*
1B	HDUE5-SDS3	SB ⅝" x 24	⅝	(10) ¼" x 3" SDS	18	3" x 3½"	4,300*	4,300*
1C	HDUE9-SDS3.5	SB ⅝" x 24	⅝	(16) ¼" x 3½" SDS	18	3½" x 3½"	6,700*	6,700*
						4½" x 3½"	7,500*	7,500*
1D	HDUE13-SDS3.5	SB 1" x 30	1	(23) ¼" x 3½" SDS	24	5½" x 3½"	9,500*	9,500*
						7½" x 3½"	10,350*	10,350*

1. MINIMUM EDGE DISTANCE IS SHOWN ABOVE; ANCHOR LOCATIONS PER PLAN
2. MINIMUM ANCHOR TO ANCHOR SPACING IS 3 l_e
3. * = CAPACITY LIMITED BY HOLDOWN
4. DEEPEN FOOTING AT HOLDOWN ANCHOR AS REQ'D PER DETAIL 32/S-301
5. HDUE13-SDS3.5 HOLDOWN REQUIRES HEAVY HEX NUT

SB ANCHOR & HOLDOWN @ FOUNDATION

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14

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No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

CONCRETE DETAILS

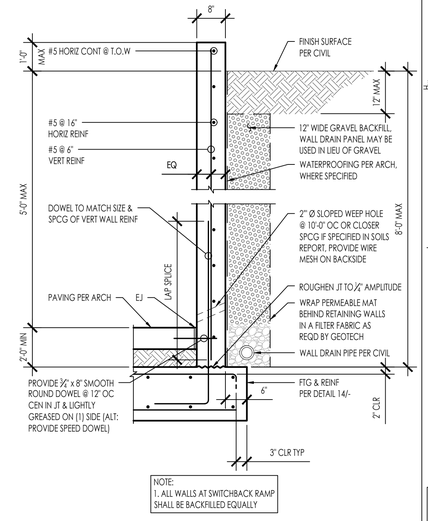
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1		
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PROJECT MANAGER
J. MEADOWS
DRAWN BY
C. PRESSLER
CHECKED BY
J. MEADOWS
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
S-311

DSA BACK CHECK 2

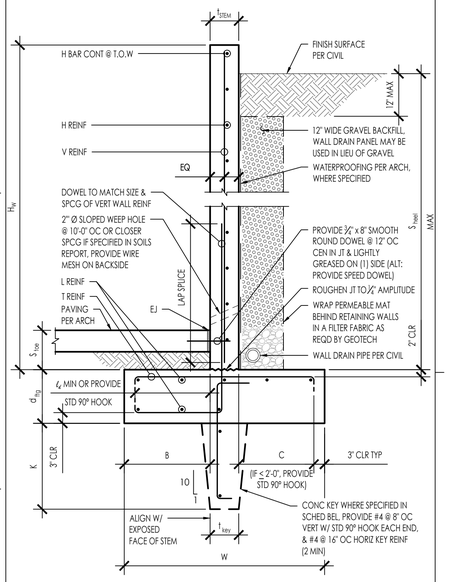
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51 | 41 | 31



NOTE:
1. ALL WALLS AT SWITCHBACK RAMP SHALL BE BACKFILLED EQUALLY

52 | 42 | 32 | CONC RETAINING WALL @ SWITCHBACK RAMP NTS | 0822-03-ED25 - S312 - 22 | 22

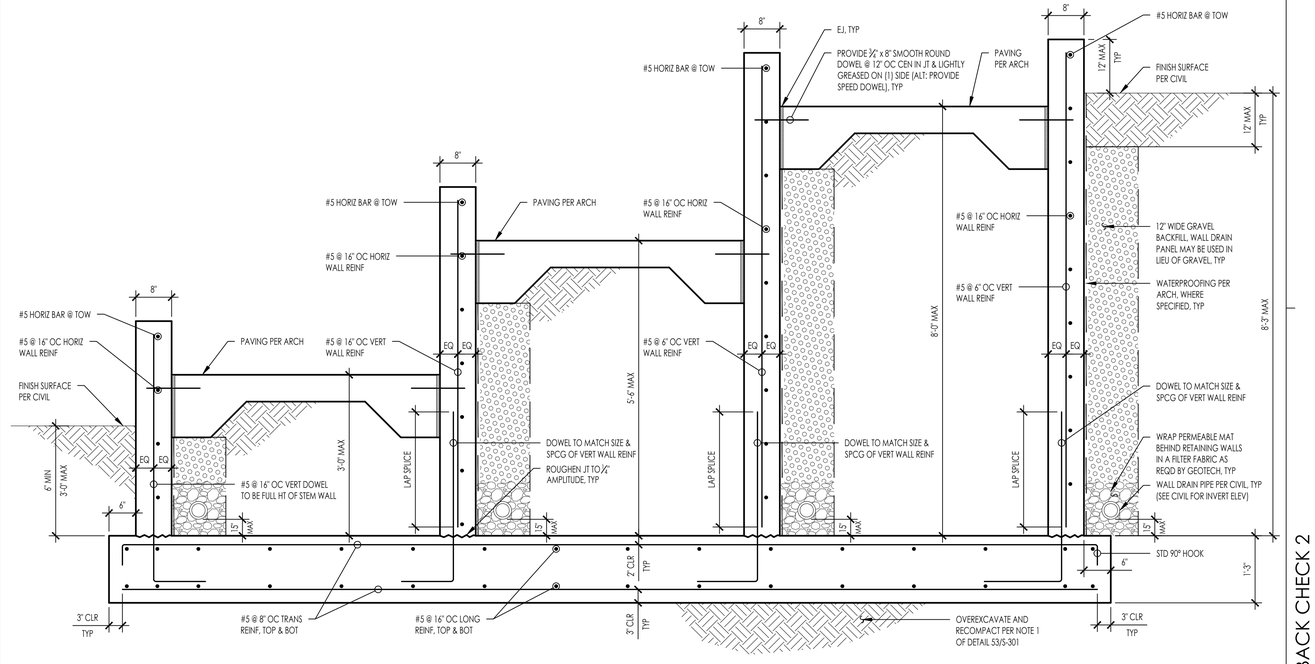


WALL TYPE	H_w	t_{STEM}	d_{ftg}	K	B	C	W	REINF						S_{min}	S_{max}
								TOP		BOTTOM		WALL			
								T	L	T	L	HORIZ	VERT		
A	3'-0"	8"	1'-3"	6	1'-1"	1'-1"	2'-9"	#5 @ 8"	#5 @ 16"	#5 @ 8"	#5 @ 16"	#5 @ 16"	#5 @ 16"	0'-6"	3'-0"

* FOR K ≤ 2'-0" t_{key} = 12"
FOR K > 2'-0" t_{key} = 18"

53 | 43

NOTE:
1. ALL WALLS AT SWITCHBACK RAMP SHALL BE BACKFILLED EQUALLY



54 | 44 | CONCRETE RETAINING WALLS @ SWITCHBACK RAMP NTS | 0822-03-ED25 - S312 - 14 | 14

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DSA BACK CHECK 2

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

CONCRETE DETAILS

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1		
2		
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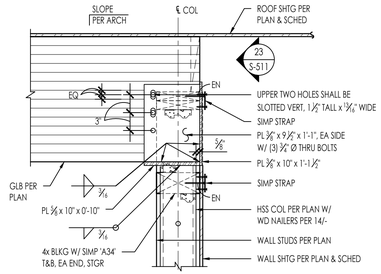
PROJECT MANAGER: J. MEADOWS
DRAWN BY: C. PRESSLER
CHECKED BY: J. MEADOWS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: S-312

N:\0801\0822-03-ed25-mesa-ms-new-science-sped-class-bldg\Structural\Corr\Docs\sheet-files\0822-03-ED25 - S312.dwg, S302, Apr 22, 2026 - 12:49pm, jellis

51

41

31

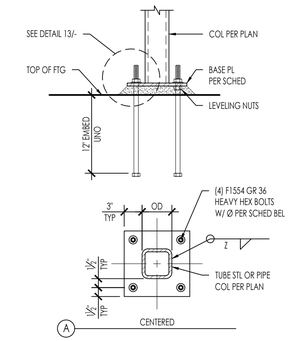


GLB TO STEEL COLUMN - END CONDITION

0822-03-ED25 - S401 - 21

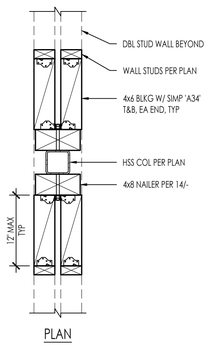
1" = 1'-0"

21



52

42



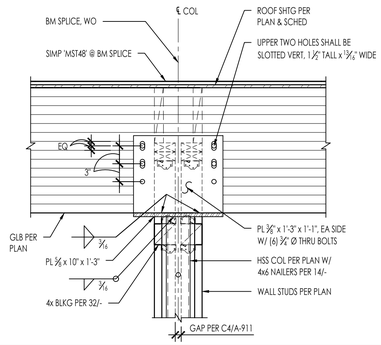
PLAN

HSS COLUMN NAILER @ DOUBLE WALL

0822-03-ED25 - S401 - 32

1" = 1'-0"

32

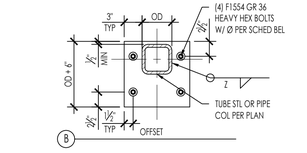


GLB TO STEEL COLUMN - MID CONDITION

0822-03-ED25 - S401 - 22

1" = 1'-0"

22



BASE PLATE SCHEDULE			
MEMBER SIZE (OD)	PL THICKNESS	WELD SIZE 'Z'	ANCHOR SIZE
4" OR LESS	⅜"	¼"	¾"Ø

BASE PLATE DETAIL

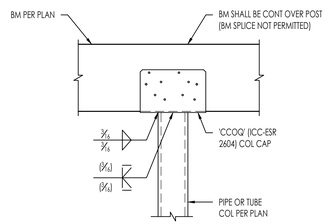
0822-03-ED25 - S401 - 12

NTS

12

53

43



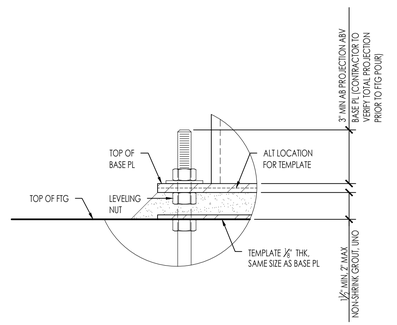
33

BEAM TO COL CONNECTION

0822-03-ED25 - S401 - 23

1" = 1'-0"

23



ANCHOR BOLT PROJECTION

0822-03-ED25 - S401 - 13

NTS

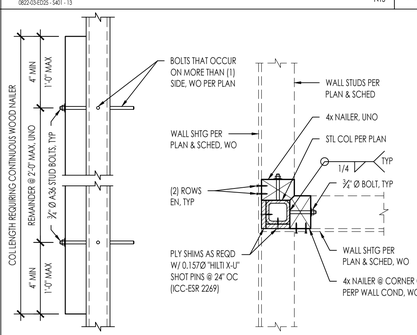
13

54

44

34

24



NOTE: WHERE NAILER OCCURS @ END OF WALL OR ADJACENT TO OPENING IN WALL, COUNTERBORE STUDS IN NAILER, 1" MAX

WOOD NAILER TO STEEL COLUMNS

0822-03-ED25 - S401 - 14

NTS

14

DSA BACK CHECK 2

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JESSICA M. MEADOWS
No. 64188
STRUCTURAL
STATE OF CALIFORNIA

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2555 S HALCYON RD, ARROYO GRANDE, CA

TYPICAL STEEL DETAILS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER
J. MEADOWS

DRAWN BY
C. PRESSLER

CHECKED BY
J. MEADOWS

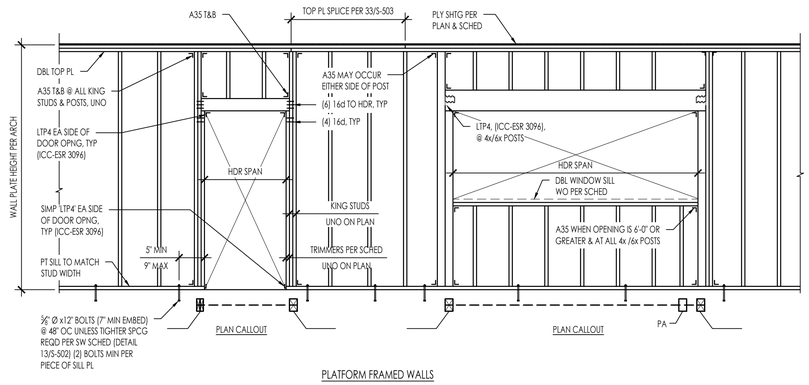
DATE
APRIL 23, 2026

PROJECT NUMBER
0822-03-ED25

SHEET
S-401

N:\08011.0822-03-ed25-mesa-ms-new-science-sped-class-bldg\structural\ConDocs\sheet-files\0822-03-ED25 - S401.dwg, S401, Apr 22, 2026 12:49pm, jellis

BEARING/SHEAR WALL HEADER SCHEDULE					
1-STORY	6 INCH WALLS				
1-STORY	HDR SPAN	6x HEADER	SILL AT WINDOW	POST / TRIMMER	KING STUDS
	UP TO 3'-0"	6x4	2x	2x6	2x6
	UP TO 5'-0"	6x6	2x	2x6	2x6
	UP TO 7'-0"	6x8	(2) 2x	2x6	(2) 2x6



PLATFORM FRAMED WALLS

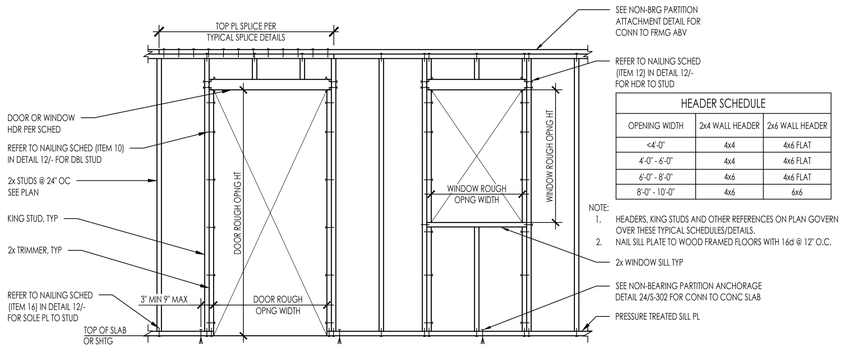
NOTES:
1. THIS DETAIL APPLIES AT ALL EXT WALLS AND INT LOAD BEARING WALLS AND ALSO APPLIES TO SHEAR WALL FRAMING
   A. FOR SHEAR WALLS SEE 34/S-402 FOR ADDTL REQUIREMENTS.
   B. FOR INTERIOR NON-BEARING PARTITIONS SEE DETAIL 43/-
2. HEADERS, KING STUDS AND OTHER REFERENCES ON PLAN GOVERN OVER THIS TYPICAL SCHED/DETAILS
3. PROVIDE A34 @ 4" WALLS & A35 @ 6" OR GREATER WALLS (IAPMO ER-112)

FASTENING SCHEDULE PER 2022 CBC 2304.10.1		
CONNECTION	FASTENING	LOCATION
1. BLOCKING BETWEEN CEILING JOISTS, RAFTERS OR TRUSSES TO TOP PLATE OR OTHER FRAMING BELOW	3-8d COMMON	EACH END, TOENAIL
2. BLOCKING BETWEEN RAFTERS OR TRUSS NOT AT THE WALL TO TOP PLATE, TO RAFTER OR TRUSS	2-8d COMMON	EACH END, TOENAIL
	2-16d COMMON	END NAIL
3. FLAT BLOCKING TO TRUSS AND WEB FILLER	16d COMMON @ 6" OC	FACE NAIL
4. CEILING JOIST TO TOP PLATE	3-8d COMMON	EACH JOIST, TOENAIL
5. CEILING JOIST NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS	3-16d COMMON	FACE NAIL
6. CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT)	3-16d COMMON	FACE NAIL
7. COLLAR TIE TO RAFTER	3-10d COMMON	FACE NAIL
8. RAFTER OR ROOF TRUSS TO PLATE	3-10d COMMON	TOENAIL[b]
9. ROOF RAFTER TO RIDGE VALLEY OR HIP RAFTER; OR ROOF RAFTER TO 2-INCH RIDGE BEAM	2-16d COMMON	END NAIL
	3-10d COMMON	TOENAIL
10. STUD TO STUD AND ABUTTING STUDS AT INTERSECTING WALL CORNERS	16d COMMON	16" OC FACE NAIL
11. BUILT-UP HEADER (2" TO 2" HEADER)	16d COMMON	16" OC EACH EDGE, FACE NAIL
12. CONTINUOUS HEADER TO STUD	4-10d COMMON	TOENAIL
13. TOP PLATE TO TOP PLATE	16d COMMON	16" OC FACE NAIL
14. TOP PLATE TO TOP PLATE, AT END JOINTS	8-16d COMMON	EACH SIDE OF END JOINT, FACE NAIL (MINIMUM 24" LAP SPLICE LENGTH EACH SIDE OF END JOINT)
15. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING	2-16d COMMON	16" OC FACE NAIL
16. STUD TO TOP OR BOTTOM PLATE	4-8d COMMON	TOENAIL
	2-16d COMMON	END NAIL
17. TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS	2-16d COMMON	FACE NAIL
18. JOIST TO SILL, TOP PLATE, OR GIRDER	3-8d COMMON	TOENAIL
20. RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL OR OTHER FRAMING BELOW	8d COMMON	6" OC, TOENAIL
21. 1"x6" SUBFLOOR OR LESS TO EACH JOIST	2-8d COMMON	FACE NAIL
22. 2" SUBFLOOR TO JOIST OR GIRDER	2-16d COMMON	FACE NAIL
23. BUILT-UP GIRDER AND BEAMS, 2" LUMBER LAYERS	20d COMMON (4" x 0.192")	32" OC FACE NAIL AT TOP AND BOTTOM STAGGERED ON APPOSITE SIDE
24. LEDGER STRIP SUPPORTING JOIST OR RAFTERS	3-16d COMMON	EACH JOIST OR RAFTER, FACE NAIL
26. JOIST TO BAND JOIST OR RIM JOIST	3-16d COMMON	END NAIL
27. BRIDGING OR BLOCKING TO JOIST, RAFTER OR TRUSS	2-8d COMMON	EACH END, TOENAIL

NOTES:
a. THIS NAILING SCHEDULE SHALL ONLY BE USED IF CONDITION IS NOT OTHERWISE DETAILED OR SPECIFIED ON THE CONSTRUCTION DOCUMENTS. COMMON NAILS SHALL BE USED EXCEPT WHERE OTHERWISE STATED
b. WHERE A RAFTER IS FASTENED TO AN ADJACENT PARALLEL CEILING JOIST IN ACCORDANCE WITH THIS SCHEDULE AND THE CEILING JOIST IS FASTENED TO THE TOP PLATE IN ACCORDANCE WITH THIS SCHEDULE, THE NUMBER OF TOENAILS IN THE RAFTER SHALL BE PERMITTED TO BE REDUCED BY ONE NAIL

EXTERIOR WALL / INTERIOR WALL BEARING WALL FRAMING

0822-03-ED25 - S501 - 32 — NTS — 32

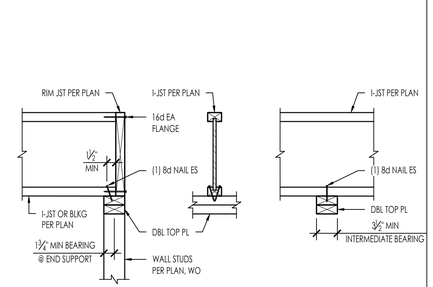


HEADER SCHEDULE		
OPENING WIDTH	2x4 WALL HEADER	2x6 WALL HEADER
<4'-0"	4x4	4x6 FLAT
4'-0" - 6'-0"	4x4	4x6 FLAT
6'-0" - 8'-0"	4x6	4x6 FLAT
8'-0" - 10'-0"	4x6	6x6

NOTE:
1. HEADERS, KING STUDS AND OTHER REFERENCES ON PLAN GOVERN OVER THESE TYPICAL SCHEDULES/DETAILS.
2. NAIL SILL PLATE TO WOOD FRAMED FLOORS WITH 16d @ 12" O.C.

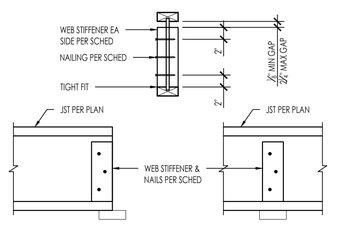
NAILING SCHEDULE

0822-03-ED25 - S501 - 12 — NTS — 12



INTERIOR NON-BEARING PARTITION WALL FRAMING

0822-03-ED25 - S501 - 43 — NTS — 43

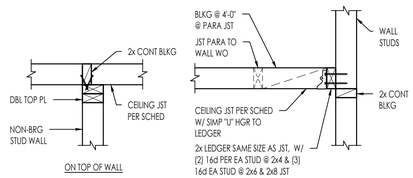


WEB STIFFENER REQUIREMENTS					
JOIST SERIES	DEPTH (IN)	MIN WEB STIFFENER SIZE	NAIL TYPE	# OF NAILS	
				END	INT
RED I-65	11 7/8"	1" X 2 5/16"[1]	8d (0.113" X 2½")	3	3

NOTES:
1. PSI SHEATHING, FACE GRAIN VERTICAL

CEILING JOIST SCHED & DETAILS

0822-03-ED25 - S501 - 33 — NTS — 33



CEILING JOIST SCHED	
JOIST SIZE	MAX SPAN
2x4 @ 16" OC	9'-0"
2x6 @ 16" OC	14'-0"
2x8 @ 16" OC	18'-0"

NOTE:
THIS DETAIL IS INTENDED FOR CEILING JST THAT SPAN FROM WALL TO WALL @ CONTRACTORS OPTION.

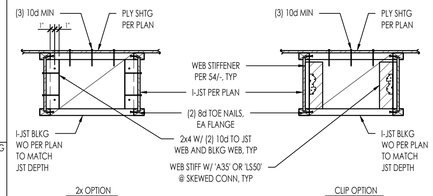
LOADING CRITERIA	
DEAD LOAD	10 PSF
LIVE LOAD	10 PSF

I-JOIST TO BEARING PLATE

0822-03-ED25 - S501 - 23 — NTS — 23

I-JOIST BLOCKING

0822-03-ED25 - S501 - 13 — NTS — 13

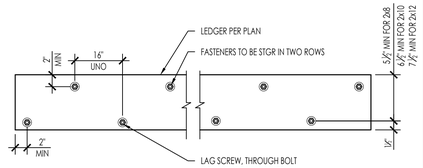


WEB STIFFENER ATTACHMENT

0822-03-ED25 - S501 - 54 — NTS — 54

LEDGER DETAIL

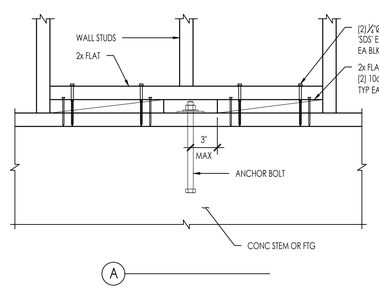
0822-03-ED25 - S501 - 44 — NTS — 44



NOTE:
THE TIP OF THE LAG SCREW SHALL FULLY EXTEND BEYOND THE INSIDE FACE OF THE BAND OR RIM JOIST

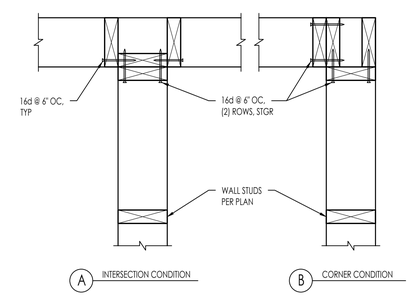
ANCHOR BOLT AT WOOD STUD

0822-03-ED25 - S501 - 34 — NTS — 34



TYPICAL WOOD STUD INTERSECTIONS

0822-03-ED25 - S501 - 24 — NTS — 24



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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
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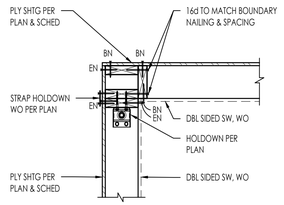
TYPICAL WOOD DETAILS

NO.	REVISION	DATE
1		
2		
3		
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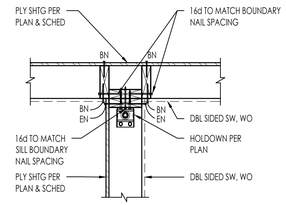
PROJECT MANAGER
J. MEADOWS
DRAWN BY
C. PRESSLER
CHECKED BY
J. MEADOWS
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
S-501

DSA BACK CHECK 2

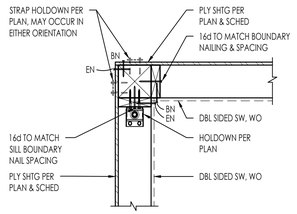
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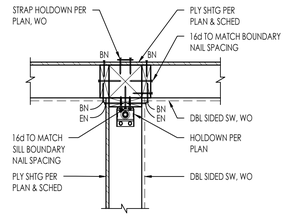
CORNER W/O POST



INTERSECTION W/O POST



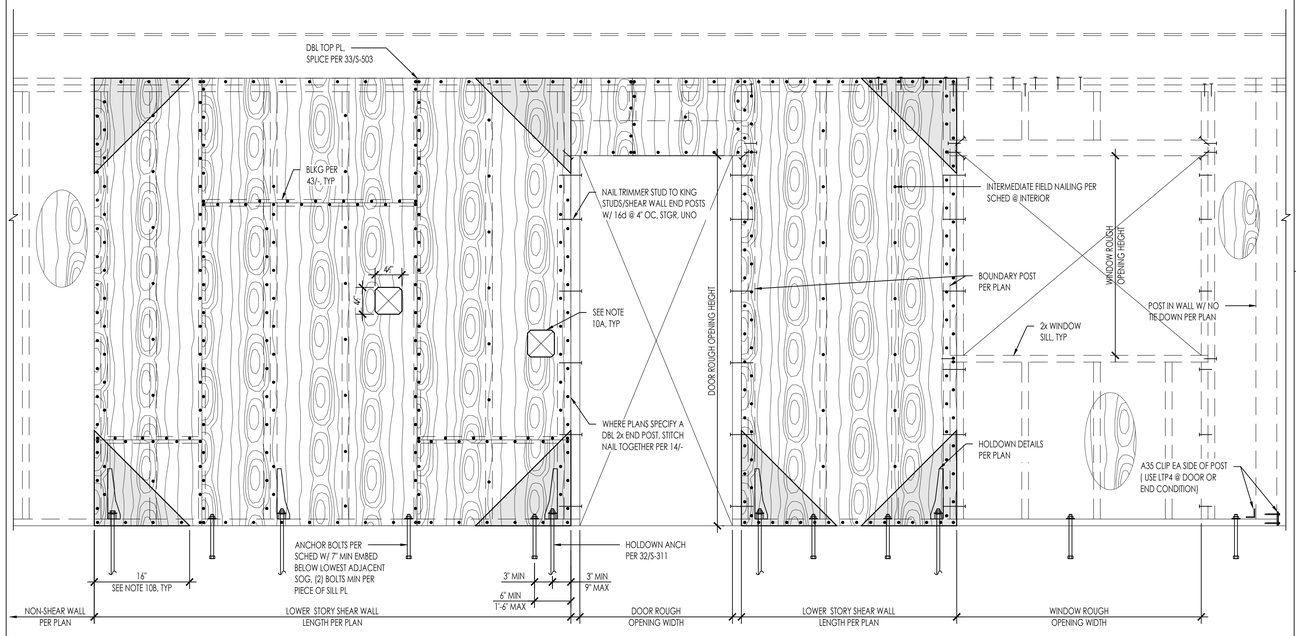
CORNER W/ POST



INTERSECTION W/ POST

SHEAR WALL INTERSECTION

0822-03-ED25 - S502 - 42 — NTS — 42



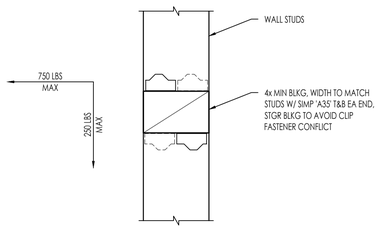
SHEAR WALL SHEATHING / NAILING SCHEDULE									
WALL SYMBOL	STRUCT SHEATHING [1]	FRAMING SIZE [6]	NAILING [2,3,4]			A35s	LTP4 ALT [12]		ANCHOR BOLTING [8, 9]
			(2) 2x STUD	EDGE	INTERMEDIATE SUPPORTS		UNDER SHTG	OVER SHTG	
A	15/32" STRUCT 1 PLYWOOD	2x	10d @ 9" OC	8d @ 6" OC	8d @ 12" OC	24" OC	24" OC	16" OC	5/8" DIA @ 48" OC
B	15/32" STRUCT 1 PLYWOOD	2x	10d @ 8" OC	10d @ 6" OC	10d @ 12" OC	16" OC	24" OC	16" OC	5/8" DIA @ 48" OC
C	15/32" STRUCT 1 PLYWOOD	2x	10d @ 5" OC	10d @ 4" OC	10d @ 12" OC	12" OC	16" OC	8" OC	5/8" DIA @ 32" OC
D	15/32" STRUCT 1 PLYWOOD	2x	10d @ 4" OC	10d @ 3" OC	10d @ 12" OC	8" OC	12" OC	8" OC	5/8" DIA @ 24" OC
E	15/32" STRUCT 1 PLYWOOD	3x	10d @ 3" OC	10d @ 2" OC	10d @ 12" OC	8" OC	8" OC	6" OC	5/8" DIA @ 24" OC
F	15/32" STRUCT 1 PLYWOOD (EACH FACE OF WALL)	3x	(2) 10d @ 5" OC	10d @ 4" OC	10d @ 12" OC	12" OC [11]	16" OC [11]	8" OC [11]	5/8" DIA @ 16" OC
G	15/32" STRUCT 1 PLYWOOD (EACH FACE OF WALL)	3x	(2) 10d @ 4" OC	10d @ 3" OC	10d @ 8" OC	8" OC [11]	12" OC [11]	8" OC [11]	5/8" DIA @ 16" OC
H	15/32" STRUCT 1 PLYWOOD (EACH FACE OF WALL)	3x	(2) 10d @ 3" OC	10d @ 2" OC	10d @ 6" OC	8" OC [11]	8" OC [11]	6" OC [11]	5/8" DIA @ 8" OC

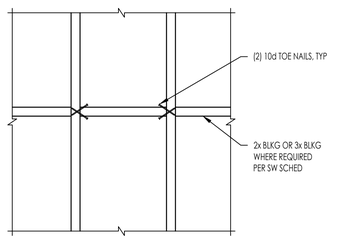
NOTES:
1. ALL PLYWOOD SHALL BE 5 PLY MINIMUM WITH A SPAN RATING OF 32/16 AND ALL PANEL EDGES SHALL BE BLOCKED. PROVIDE 1/8" GAP AT ALL PANEL JOINTS.
2. 8d NAIL DEFINED AS 0.131" DIAMETER SHANK x 2 1/2" LONG x 0.281 DIAMETER HEAD. 10d NAIL DEFINED AS 0.148" DIAMETER SHANK x 3" LONG x 0.312 DIAMETER HEAD.
3. PROVIDE E.N. AT ALL END STUDS, STUDS/POSTS WITH HOLDOWNS OR TIE DOWN STRAPS, SILL PLATES AND TOP PLATES.
4. WHERE 10d NAILS ARE 3 INCHES ON CENTER OR LESS, NAILS SHALL BE STAGGERED.
5. NAILS SHALL BE 1/2 INCH MINIMUM FROM PLYWOOD PANEL EDGE AND 3/8 INCH MINIMUM FROM CONNECTING MEMBER EDGE WHERE SHEAR EXCEEDS 300 PLF.
6. USE 3x FRAMING AT BOTTOM SILL PLATES, BLOCKING AND ALL STUDS AT ADJACENT PANEL EDGES WHERE SHEAR EXCEEDS 300 PLF. STRUCTURALLY ACCEPTABLE TO USE (2) 2x INSTEAD OF 3x FRAMING AT BOTTOM SILL PLATES.
7. SEE ELEVATION ABOVE FOR TYPICAL CONSTRUCTION.
8. REFER TO PLATE WASHER DETAIL FOR REQUIREMENTS
9. LENGTHEN ANCHOR BOLTS AS REQUIRED FOR EMBEDMENT AND SILL PLATE THICKNESS.
10. LIMITATIONS OF MECHANICAL PENETRATIONS IN SHEAR WALLS:
    A. 4 1/2" MAX PENETRATION
    B. NO CUTS OR HOLES IN SHEATHING WITHIN 16" OF CORNERS. SQUARE PENETRATIONS SHALL RADIUS EDGES. DO NOT OVER CUT HOLE WITH SAW
11. WALL W/ DOUBLE SIDED PLYWOOD REQUIRES (2) RIM BOARDS/BLOCKING, FASTENERS AND CLIPS WITH SPACING PER SCHED ARE REQUIRED ON EACH RIM BOARD OR BLOCKING LINE.
12. SIMPSON LTP4 CLIP SHALL BE INSTALLED IN A HORIZONTAL ORIENTATION. IF CLIP IS INSTALLED OVER THE SHEATHING, O.131" x 2 1/2" NAILS SHALL BE USED.

TYPICAL SHEAR WALL ELEVATION AND SCHEDULE

0822-03-ED25 - S502 - 13 — NTS — 13

MAXIMUM LOADS LISTED ONLY APPLY TO A SINGLE DIRECTION AT ANY LOCATION.





ELEVATION

BLOCKING AT WOOD STUDS

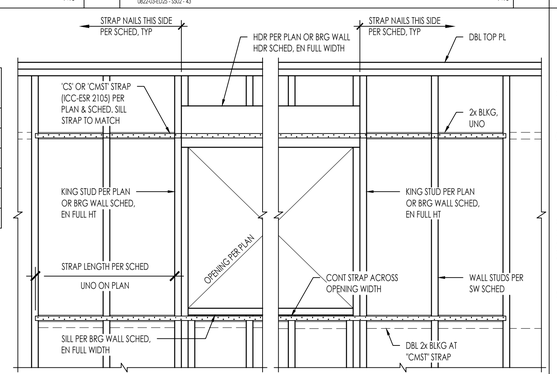
081407-CI21 - S501 - 44 — NTS — 53

TYPICAL SHEAR WALL BLOCKING DETAIL

0822-03-ED25 - S502 - 43 — NTS — 43

MARK	# OF BLKG	STRAP	NAILS EA SIDE OF OPENING	STRAP LENGTH (IN)	ALLOWABLE TENSION LOADS (LBS)
1	1	CS20	(12) 10d x 2½"	32[1]	1,030
2	1	CS16	(20) 10d x 2½"		1,705
3	1	CS14	(26) 10d x 2½"		2,490
4	2	CMSTC16	(50) 10d x 3½"		4,690
5	2	CMST14	(66) 10d x 2½"		6,475
6	2	CMST12	(86) 10d x 2½"	39	9,215

NOTES:
1. 2 BAYS OR 32" MIN STRAP LENGTH
2. EDGE NAILING FROM PLYWOOD TO STUDS / FRAMING SHALL OCCUR ALL AROUND OPENINGS AT THIS CONDITION
3. SEE TYPICAL SHEAR WALL ELEVATION FOR BALANCE OF INFO NOT SHOWN



FORCE TRANSFER AROUND OPENINGS

0822-03-ED25 - S502 - 44 — NTS — 44

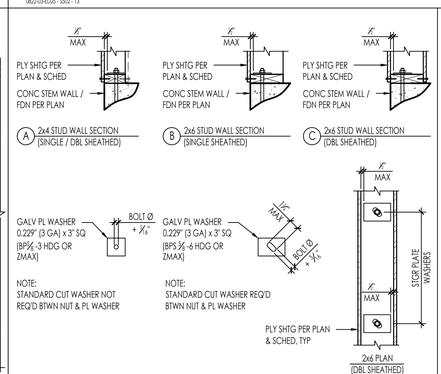
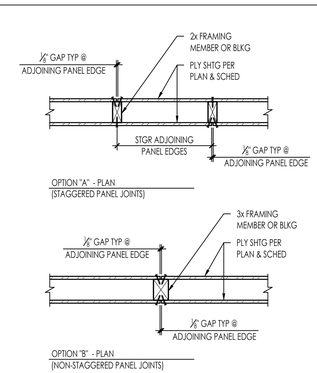


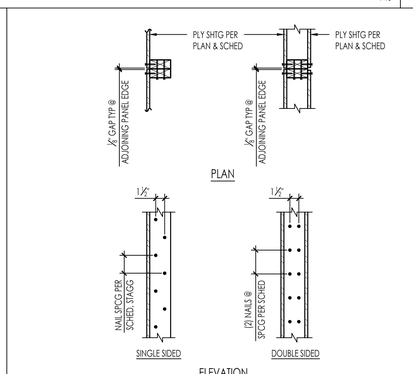
PLATE WASHER DETAIL

0822-03-ED25 - S502 - 34 — NTS — 34



DOUBLE SIDED SHEAR WALL

0822-03-ED25 - S502 - 24 — NTS — 24



2x STUD NAILING @ ADJOINING PANEL EDGES

0822-03-ED25 - S502 - 14 — NTS — 14

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CONSULTANT

DSA BACK CHECK 2

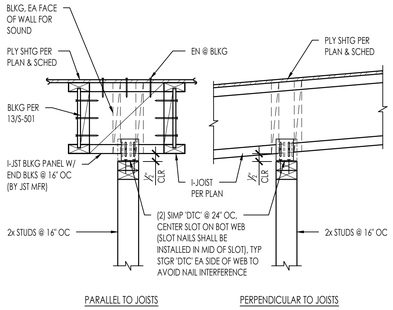
MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

TYPICAL WOOD DETAILS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		
7		

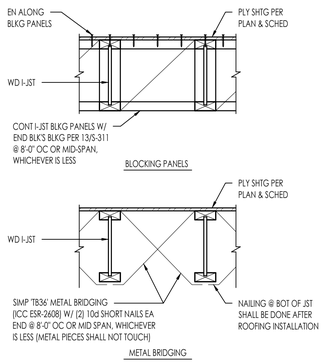
PROJECT MANAGER: J. MEADOWS
DRAWN BY: C. PRESSLER
CHECKED BY: J. MEADOWS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: S-502

N:\08011\0822-03-ed25-mesa-ms-new-science-sped-class-bldg\structural\ConDocs\sheet-files\0822-03-ED25 - S502.dwg, S502, Apr 22, 2026, 12:49pm, jsills



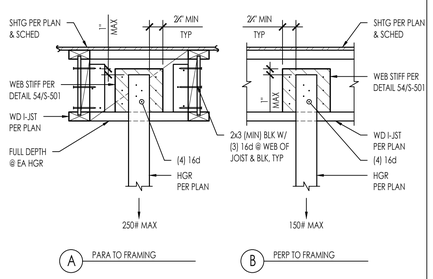
NON-BEARING TOP PLATE CONNECTION

0822-03-ED25 - S503 - 51 NTS 51



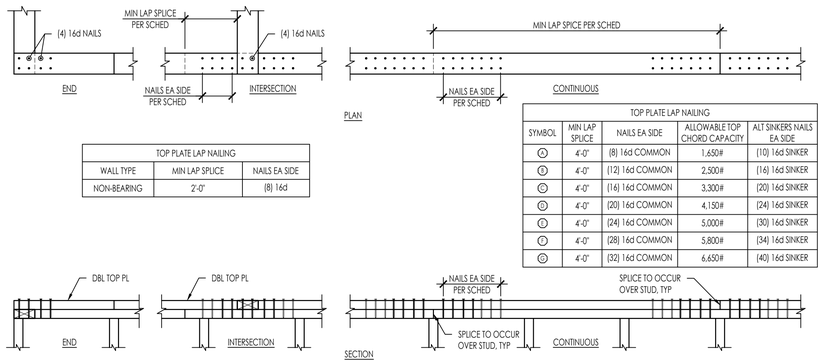
WOOD I-JOIST BRIDGING

0822-03-ED25 - S503 - 52 NTS 52



SOFFIT HANGER STUD @ I-JST

W-TYP-041 NTS 53



TOP PLATE LAP NAILING

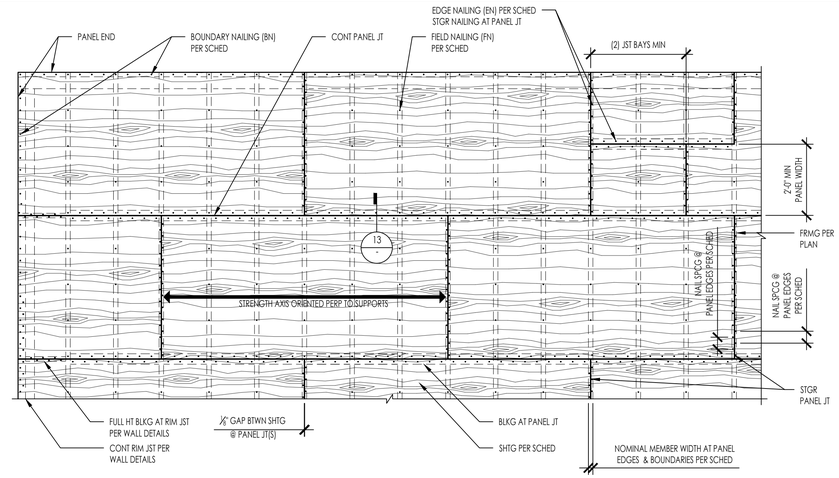
WALL TYPE	MIN LAP SPLICE	NAILS EA SIDE
NON-BEARING	2'-0"	(8) 16d

TOP PLATE LAP NAILING

SYMBOL	MIN LAP SPLICE	NAILS EA SIDE	ALLOWABLE TOP CHORD CAPACITY	ALT SINKERS NAILS EA SIDE
A	4'-0"	(8) 16d COMMON	1,650#	(10) 16d SINKER
B	4'-0"	(12) 16d COMMON	2,500#	(16) 16d SINKER
C	4'-0"	(16) 16d COMMON	3,300#	(20) 16d SINKER
D	4'-0"	(20) 16d COMMON	4,150#	(24) 16d SINKER
E	4'-0"	(24) 16d COMMON	5,000#	(30) 16d SINKER
F	4'-0"	(28) 16d COMMON	5,800#	(34) 16d SINKER
G	4'-0"	(32) 16d COMMON	6,650#	(40) 16d SINKER

DBL TOP PLATE SPLICE NAILING

0822-03-ED25 - S503 - 33 NTS 33



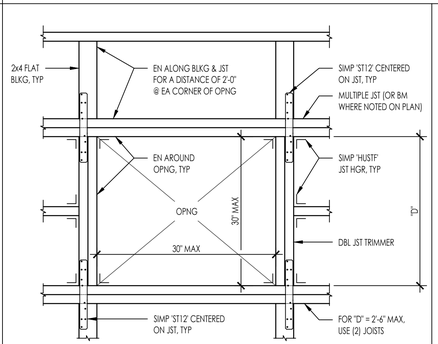
DIAPHRAGM SCHEDULE

TYPE	LOCATION	SHEATHING THICKNESS	SHEATHING GRADE	SPAN RATING	BLOCKING	NAILS	BOUNDARY NAILING (BN)	EDGE NAILING AT CONT. PANEL EDGES (EN)	EDGE NAILING AT OTHER PANEL EDGES (EN)	FIELD NAILING (FN)	PANEL EDGE SUPPORT OR NOMINAL MEMBER WIDTH AT PANEL EDGES	LINES OF FASTENERS
A	ROOF	15/32"	STRUCT 1	32 / 16	NO	10d	6	-	6	12	SIMP PSCA CLIP	1
B	ROOF	15/32"	STRUCT 1	32 / 16	YES	10d	4	6	6	12	2x	1

NOTES:
1. N/A
2. MINIMUM EDGE DISTANCE FOR NAILS SHALL BE ⅜" FROM SHEATHING EDGE AND ⅜" FROM LUMBER EDGE.
3. NAILS SHALL BE DRIVEN TIGHT TO TOP OF PLYWOOD SURFACE AND SHALL NOT PENETRATE THE TOP OF PLYWOOD MORE THAN COMMONLY EXPECTED WITH HAMMER DRIVEN NAILS.
4. WHERE PSCL CLIPS ARE SPECIFIED, THEY SHOULD BE INSTALLED AS FOLLOWS:
   A. ONE PSCL CLIP SHALL BE PLACED BETWEEN ABUTTING PANELS AT A LOCATION MIDWAY BETWEEN EACH PAIR OF TRUSSES, RAFTERS OR JOISTS. HOWEVER, (2) PSCL ARE REQUIRED BETWEEN SUPPORTS WHEN SPACED 48 INCHES ON CENTER
   B. USE THE SAME SIZE PANEL EDGE CLIP AS THE PANEL THICKNESS. PSCL CLIPS MUST FIT SNUGLY
   C. ABUTTING WOOD STRUCTURAL PANELS BE FITTED AS CLOSELY AS CLIPS PERMIT. OCCASIONAL MISFIT OF ABUTTING SHEETS MAY BE TOLERATED PROVIDING THAT GAPS DO NOT EXCEED MAXIMUM OPENING OF ⅛".

PLYWOOD DIAPHRAGM SHEATHING

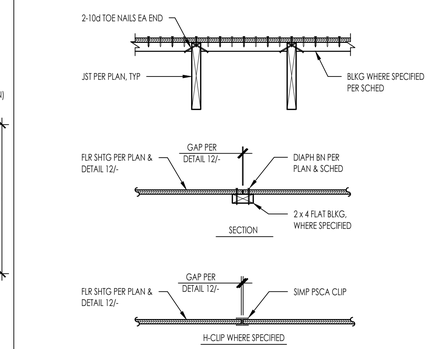
0822-03-ED25 - S503 - 12 NTS 12



NOTE:
FOR LARGER OPENINGS REFER TO FRAMING PLAN

OPENING AT ROOF FRAMING

0822-03-ED25 - S503 - 23 NTS 23



DIAPHRAGM PANEL JOINTS

0822-03-ED25 - S503 - 13 NTS 13

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 64488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

TYPICAL WOOD DETAILS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER: J. MEADOWS
DRAWN BY: C. PRESSLER
CHECKED BY: J. MEADOWS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: S-503

DSA BACK CHECK 2

N:\08011\0822-03-ed25-mesa-ms-new-science-sped-class-bldg\structural\ConDocs\sheet-files\0822-03-ED25 - S503.dwg, S503, Apr 22, 2026 12:50pm, jellis

31 41 51
32 42 52
33 44 53
34 54
23 24
12 13 14

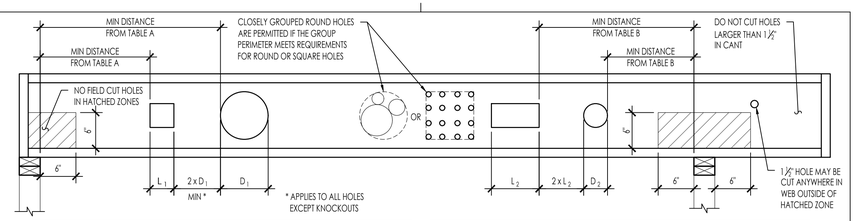


TABLE A - MINIMUM DISTANCE FROM EDGE OF HOLE TO INSIDE FACE OF NEAREST SUPPORT

Rec-I-Joist Series		ROUND HOLE SIZE (INCHES)									
JOIST DEPTH	JOIST SERIES	2"	4"	6"	8"	10"	12"	14"	16"	18"	20"
		SQUARE HOLE SIZE (INCHES)									
		1.25"	2.5"	4"	5"	6"	7"	8.5"	9.5"	10.5"	13"
14"	RED-I45	1'-0"	2'-0"	3'-0"	4'-0"	6'-0"					
	RED-I65	1'-0"	2'-6"	4'-0"	5'-6"	8'-0"					
	RED-I90 / RED-I90H	1'-0"	3'-0"	5'-0"	6'-6"	9'-0"					
	RED-I90HS	2'-0"	4'-0"	6'-0"	8'-0"						

TABLE B - MINIMUM DISTANCE FROM EDGE OF HOLE TO INSIDE FACE OF NEAREST INTERMEDIATE OR CANTILEVER SUPPORT

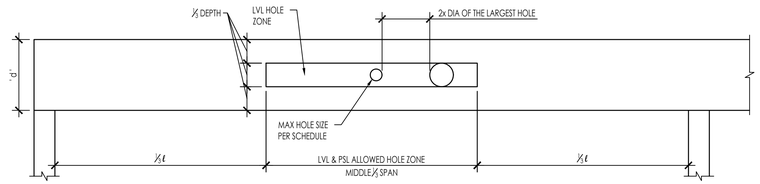
Rec-I-Joist Series		ROUND HOLE SIZE (INCHES)									
JOIST DEPTH	JOIST SERIES	2"	4"	6"	8"	10"	12"	14"	16"	18"	20"
		SQUARE HOLE SIZE (INCHES)									
		1.25"	2.5"	4"	5"	6"	7"	8.5"	9.5"	10.5"	13"
14"	RED-I45	1'-0"	1'-0"	3'-0"	5'-0"	7'-6"					
	RED-I65	1'-0"	1'-6"	4'-0"	7'-0"	10'-6"					
	RED-I90 / RED-I90H	1'-0"	3'-6"	6'-0"	9'-0"	12'-6"					
	RED-I90HS	4'-0"	6'-6"	9'-0"	11'-6"						

I-JOIST ALLOWABLE ROUND AND SQUARE LOCATIONS

0822-03-ED25 - S304 - 31

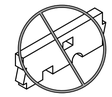
NTS

11



LVL BEAMS & HEADERS	
HEADER OR BEAM DEPTH	MAX ROUND HOLE SIZE
4⅞"	1"
5½"	1 ⅜"
7¼" - 20"	2"

LVL:
1. ALLOWED HOLE ZONE SUITABLE FOR HEADERS AND BEAMS WITH UNIFORM LOADS ONLY.
2. ROUND HOLES ONLY.
3. NO HOLES IN CANTILEVERS.
4. NO HOLES IN HEADERS OR BEAMS IN PLANK ORIENTATION.



DO NOT CUT, NOTCH, OR DRILL HOLES IN HEADERS OR BEAMS EXCEPT AS INDICATED IN THE ILLUSTRATIONS AND TABLES

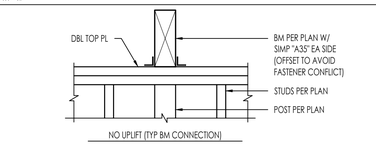
(A) LVL HEADERS & BEAMS

ALLOWABLE HOLES THRU ENGINEERED LUMBER HEADERS & BEAMS

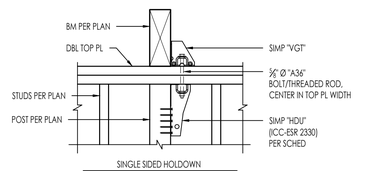
0822-03-ED25 - S304 - 32

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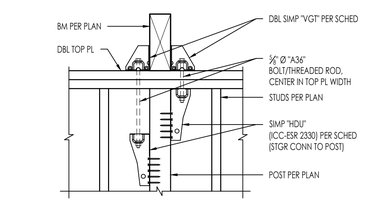
12



NO UPLIFT (TYP BM CONNECTION)



SINGLE SIDED HOLDOWN



DOUBLE HOLDOWN

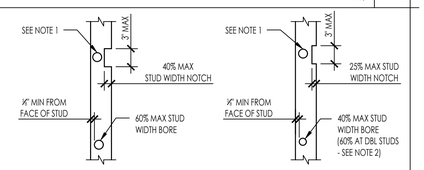
TYPE	HOLDOWN		MIN BM THICKNESS	FASTENERS		ALLOWABLE UPLIFT LOADS (LBS)
	TO GIRDER	TO POST		TO GIRDER	TO POST	
4A	(1) VGT	HDU4	3"	(16) SDS¼" x 3"	(6) SDS¼" x 1 1/2"	4,940
4B	(2) VGT	(2) HDU4	3"	(32) SDS¼" x 3"	(20) SDS¼" x 1 1/2"	7,185
			4½"	(32) SDS¼" x 3"	(20) SDS¼" x 1 1/2"	8,890
4C	(1) VGT R/L	HDU2	3"	(16) SDS¼" x 3"	(6) SDS¼" x 1 1/2"	2,230
4D	(2) VGT R/L	(2) HDU4	3"	(32) SDS¼" x 3"	(20) SDS¼" x 1 1/2"	5,545
4E	SIMPSON "A35"	-	-	-	-	--

BEAM TO WALL POST CONNECTION

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NTS

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NON-BEARING STUDS

EXTERIOR & BEARING STUDS

MAXIMUM BORED HOLE DIAMETER/NOTCH DEPTH			
STUD SIZE (IN)	APPLICATION	MAX HOLE DIAMETER (IN)	MAX NOTCH DEPTH (IN)
2X4	NON-BEARING	2½"	1 ⅜"
	EXTERIOR/BEARING	1 ⅜"	⅞"
2X6	NON-BEARING	3¼"	2 ⁵/₁₆"
	EXTERIOR/BEARING	2 ¾"	1 ⅜"

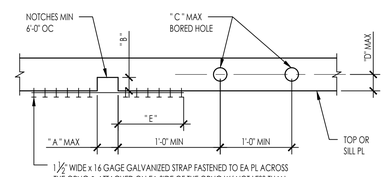
NOTES:
1. NOTCHING AND BORING NOT PERMITTED IN THE SAME STUD SECTION.
2. NO MORE THAN 2 SUCCESSIVE DBL. STUDS ARE PERMITTED TO HAVE 60% MAX BORED HOLES.

TYP WALL NOTCH AND BORING LIMITATIONS

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NTS

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NOTCH AND HOLE LIMITATIONS*						
TOP PL OR SILL PL	A	B	C	D	E	F
2X4	3½"	1½"	1¼"	1½"	5⅜"	6
2X6	4½"	2¼"	2¼"	2½"	8¼"	9

*BASED ON LADBS INFORMATIONAL BULLETIN/PUBLIC BUILDING CODE DOCUMENT No. P/BC 2020-007.

TOP PL AND SILL NOTCH AND BORING LIMITATIONS

0822-03-ED25 - S304 - 34

NTS

14

DSA BACK CHECK 2

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APP: 03-125727 INC: A
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DATE: 05/26/2026

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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 64188
STRUCTURAL
STATE OF CALIFORNIA

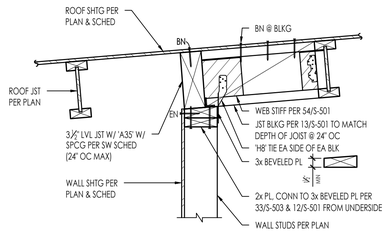
CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

TYPICAL WOOD DETAILS

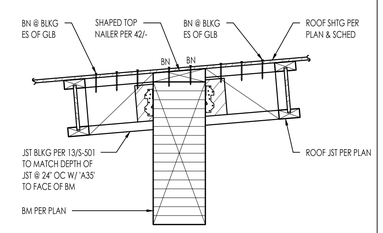
NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER
J. MEADOWS
DRAWN BY
C. PRESSLER
CHECKED BY
J. MEADOWS
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
S-504



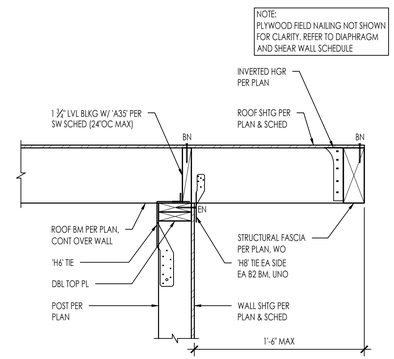
ROOF FRAMING PARA OVER SHEAR WALL BEL — 1" = 1'-0" — 51

0822-03-ED25 - S511 - 51



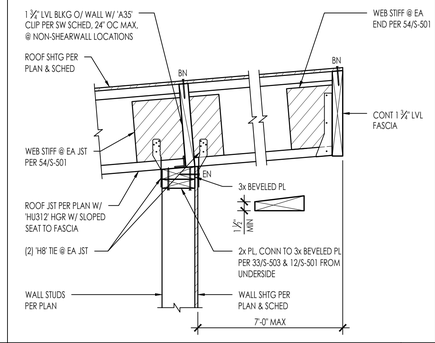
BEAM BRACING AT PARALLEL JOISTS — 1" = 1'-0" — 41

0822-03-ED25 - S511 - 41



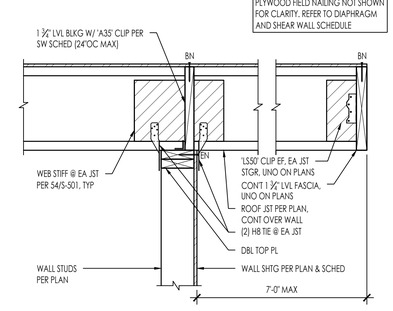
BM PERP TO BEARING WALL @ EAVE — 1" = 1'-0" — 31

0822-03-ED25 - S511 - 31



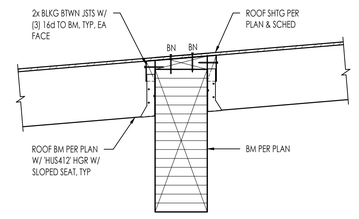
ROOF FRAMING @ EAVE — 1" = 1'-0" — 21

0822-03-ED25 - S511 - 21



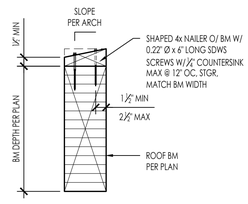
ROOF JOIST OVER WALL — 1" = 1'-0" — 11

0822-03-ED25 - S511 - 11



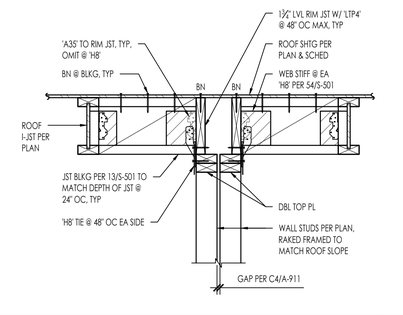
ROOF BEAM TO BEAM CONNECTION — 1" = 1'-0" — 52

0822-03-ED25 - S511 - 52



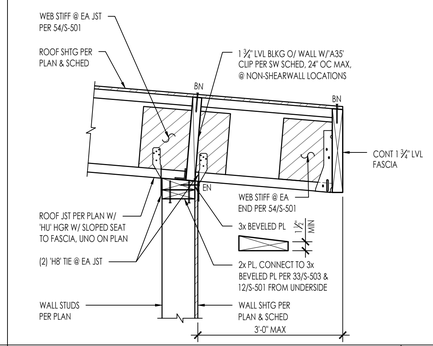
TOP NAILER @ GLB GIRDER — 1" = 1'-0" — 42

0822-03-ED25 - S511 - 42



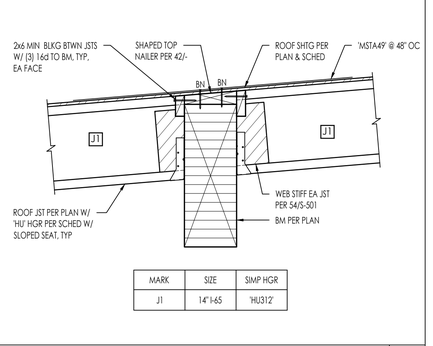
ROOF FRAMING PARA OVER WALL BELOW — 1" = 1'-0" — 32

0822-03-ED25 - S511 - 32



ROOF FRAMING @ EAVE — 1" = 1'-0" — 22

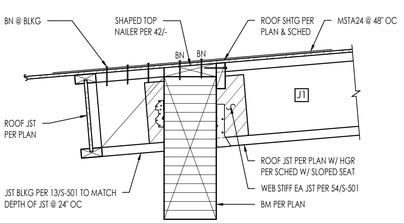
0822-03-ED25 - S511 - 22



MARK	SIZE	SIMP HGR
J1	14" I-65	'HU312'

ROOF JOIST TO BEAM CONNECTION — 1" = 1'-0" — 12

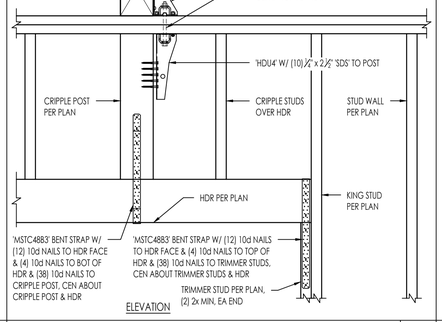
0822-03-ED25 - S511 - 12



PLAN MARK	SIZE	SIMP HGR
J1	14" I-65	'HU312'

ROOF JOIST TO BEAM CONNECTION — 1" = 1'-0" — 53

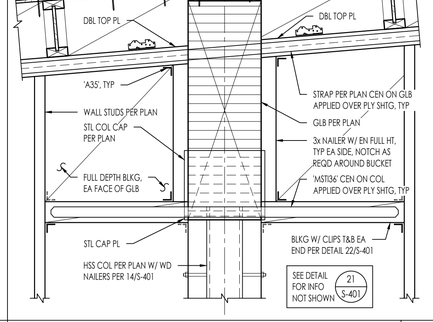
0822-03-ED25 - S511 - 53



BEAM TIE DOWN AT HEADER — NTS — 43

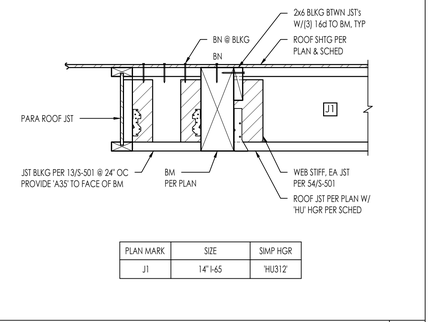
0822-03-ED25 - S511 - 43

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GLUE-LAMINATED BEAM TO COLUMN — NTS — 23

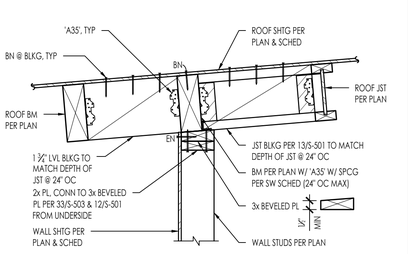
0822-03-ED25 - S511 - 23



PLAN MARK	SIZE	SIMP HGR
J1	14" I-65	'HU312'

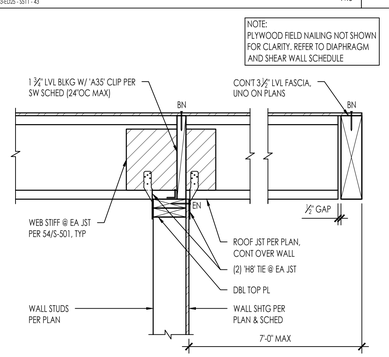
CHANGE OF DIRECTION @ BEAM — 1" = 1'-0" — 13

0822-03-ED25 - S511



ROOF FRAMING PARA OVER SHEAR WALL BELOW — 1" = 1'-0" — 54

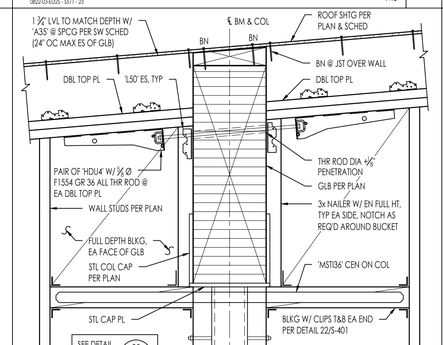
0822-03-ED25 - S511 - 54



ROOF JOIST OVER WALL — 1" = 1'-0" — 44

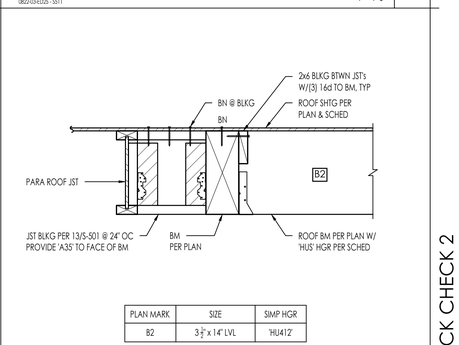
0822-03-ED25 - S511 - 44

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GLUE-LAMINATED BEAM TO COLUMN — NTS — 24

0822-03-ED25 - S511 - 24



PLAN MARK	SIZE	SIMP HGR
B2	3½" x 14" LVL	'HU412'

CHANGE OF DIRECTION @ BEAM — 1" = 1'-0" — 14

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REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

CONSULTANT

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

ROOF FRAMING DETAILS

NO.	REVISION	DATE
△		
△		
△		
△		
△		
△		

PROJECT MANAGER
J. MEADOWS
DRAWN BY
C. PRESSLER
CHECKED BY
J. MEADOWS
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
S-511

DSA BACK CHECK 2

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PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE	ADA	COMPONENTS	MANUFACTURER	MODEL	POWER V/Φ/HZ	DESCRIPTION	BRANCH PIPE SIZE				INSTALLATION DETAIL
								W	V	CW	HW	
DF-1	DRINKING FOUNTAIN DUAL HEIGHT	YES	FOUNTAIN	MOST DEPENDABLE FOUNTAINS, INC.	10485 WMSS	NA	WALL MOUNTED, STAINLESS STEEL, DUAL HEIGHT. PROVIDED WITH CARRIER PLATE. INSTALL PER ACCESSIBLE FACILITIES REQUIREMENTS	1-1/2"	1-1/2"	1/2"	NA	NA
FD-1	FLOOR DRAIN	NO	DRAIN	ZURN	Z415-BZ1	NA	6"Ø ROUND TOP NICKEL BRONZE STRAINER. NO HUB CONNECTION, VANDAL PROOF SCREWS AND TRAP PRIMER CONNECTION.	2"	1-1/2"	NA	NA	NA
HB-1	HOSE BIBB	NO	HOSE BIBB	ACORN	8121CP-LF	NA	EXPOSED, WALL MOUNT, POLISHED CHROME-PLATED FINISH. PROVIDE WITH VACUUM BREAKER AND REMOVABLE LOOSE TEE KEY HANDLE.	NA	NA	3/4"	NA	NA
HB-2	HOSE BIBB RECESSED	NO	HOSE BIBB	ACORN	8160	NA	RECESSED, WALL MOUNTED, FREEZELESS, PROVIDE WITH VACUUM BREAKER AND LOOSE TEE KEY.	NA	NA	3/4"	NA	NA
LAV-1	LAVATORY WALL MOUNTED	YES	SINK	KOHLER	K-2005	NA	WALL MOUNTED, VITREOUS CHINA, WHITE, 21-1/4x18-1/8. 0.5 GPM DECK MOUNTED FAUCET. PROVIDE WITH WALL CARRIER. INSTALL PER ACCESSIBLE FACILITIES REQUIREMENTS.	2"	1-1/2"	1/2"	1/2"	9/P-001
			FAUCET	CHICAGO	3600-E2805AB	NA						
			CARRIER	JOSAM	17100	NA						
S-1	SINK DROP-IN SINGLE BOWL	YES	SINK	JUST MANUFACTURING	CRA-ADA-1931A65-J	NA	31x19-1/2x6-1/2 DROP-IN STAINLESS STEEL SINK WITH FAUCET AND BUBBLER. LM SLOTTED HOLE CONFIGURATION. INSTALL PER ACCESSIBLE FACILITIES REQUIREMENTS.	2"	1-1/2"	1/2"	1/2"	NA
			FAUCET	CHICAGO	350-ABCP	NA						
			BUBBLER	HAWS	5054LF	NA						
S-2	SINK DROP-IN SINGLE BOWL	YES	SINK	JUST MANUFACTURING	CRA-ADA-1931A65-J	NA	31x19-1/2x6-1/2 DROP-IN STAINLESS STEEL SINK WITH FAUCET AND EYE WASH. LM SLOTTED HOLE CONFIGURATION. INSTALL PER ACCESSIBLE FACILITIES REQUIREMENTS.	2"	1-1/2"	1/2"	1/2"	NA
			FAUCET	CHICAGO	350-ABCP	NA						
			EYEWASH	HAWS	7612	NA						
WC-1	WATER CLOSET FLOOR MOUNT FLUSH VALVE	YES	WATER CLOSET	KOHLER	K-96057	NA	FLOOR MOUNTED, ELONGATED BOWL WITH OPEN FRONT SEAT. MANUAL FLUSH VALVE, 1.28 GPF. LOCATE HANDLE ON WIDE SIDE OF FIXTURE. INSTALL PER ACCESSIBLE FACILITIES REQUIREMENTS.	3"	2"	1-1/4"	NA	NA
			FLUSH VALVE	SLOAN	111	NA						
			SEAT	BEMIS	1955SSCT	NA						

GENERAL NOTES APPLICABLE TO ALL FIXTURES:
A. BRANCH PIPE SIZES TO INDIVIDUAL FIXTURES SHALL BE AS SCHEDULED UNLESS OTHERWISE SPECIFIED.
B. FIXTURES SCHEDULED AS ACCESSIBLE SHALL BE INSTALLED PER ACCESSIBLE FACILITIES REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS.
C. UNLESS OTHERWISE NOTED, COORDINATE SINK FAUCET MOUNTING HOLES WITH THE SPECIFIED FAUCET. FAUCETS SHALL BE CENTERED OVER THE BOWL. SINKS SHALL NOT BE PROVIDED WITH SPARE MOUNTING HOLES THAT ARE NOT COVERED BY THE FAUCET.
D. MANUAL FLUSH VALVES SHALL BE INSTALLED WITH THE HANDLE ON THE WIDE SIDE OF THE WATER CLOSET.

FLOW ACTIVATED ELECTRIC WATER HEATER SCHEDULE

TAG	MAKE	MODEL	INSTALLATION LOCATION	ACTIVATION (GPM)	FLOW (GPM / TEMP RISE)	ELECTRICAL DATA			OPERATING WEIGHT (LBS)	NOTES (SEE BELOW)	INSTALLATION DETAIL
						POWER V/Φ/HZ	WATTS	MOCP			
WH 1	CHRONOMITE	SR-15L/120	STUDENT RR / 304	0.35	0.35 / 47 0.50 / 33	120/1/60	1800	20	5	1	4/P-001
WH 2	CHRONOMITE	SR-15L/120	STAFF RR / 303	0.35	0.35 / 47 0.50 / 33	120/1/60	1800	20	5	1	4/P-001

NOTES: 1. DISCONNECT PROVIDED BY ELECTRICAL CONTRACTOR.

CONDENSATE PUMP SCHEDULE

TAG	MAKE	MODEL	HP	INSTALLATION TYPE	ELECTRICAL DATA			FEET OF HEAD	GPH	OPERATING WEIGHT LBS	INSTALLATION DETAIL
					POWER V/Φ/HZ	AMPS	WATTS				
CDP 1	LITTLE GIANT	VCMA-20	1/30	ON FINISHED FLOOR	120/1/60	1.5	93	10'	48	5	6/P-001

GENERAL NOTES APPLICABLE TO ALL UNITS:
A. DISCONNECT PROVIDED BY ELECTRICAL CONTRACTOR.

UNIT SPECIFIC NOTES:
1. PUMP IS PROVIDED WITH A INTEGRAL CHECK VALVE ON THE DISCHARGE.
2. PUMP DISCHARGE IS 3/8" OD BARBED ADAPTER. TRANSITION FROM BARBED CONNECTION TO 3/4" COPPER.

SHEET INDEX

SHEET NUMBER	SHEET TITLE
P-000	GENERAL & SCHEDULES
P-001	DETAILS
P-100	FLOOR PLAN - WASTE & VENT
P-110	FLOOR PLAN - HOT & COLD WATER

PROJECT TEAM LIST

TITLE	NAME	DESK NUMBER	EMAIL ADDRESS
PRINCIPAL IN CHARGE	BRIAN STARRETT	805.634.6159	BSTARRETT@EMCOR.NET
PROJECT MANAGER	DENVER STANGER	805.634.8711	DSTANGER@EMCOR.NET
MECHANICAL DESIGNER	MOE QADDOURA	805.595.0934	MQADDOURA@EMCOR.NET
PLUMBING DESIGNER	ELI FERMAN	805.634.8818	EFERMAN@EMCOR.NET
ENERGY COMPLIANCE	JORGE BRAVO	805.595.0894	JBRAVO@EMCOR.NET

MECHANICAL, ELECTRICAL AND PLUMBING ANCHORAGE NOTE

1. ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED ON THE DETAILS ON THE DSA-APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30.
   - A. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   - B. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
   - C. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.
2. THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:
   - A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
   - B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.
3. THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP	X	MD	X	PP	X	E	OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH THE PROJECT SPECIFIC NOTES AND DETAILS
MP		MD		PP		E	OPTION 2: SHALL COMPLY WITH HCAI (OSHPD) PREAPPROVAL (OPM #) #OPM-0052-13, AS INCLUDED IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES AND DETAILS.

NOTE: REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ITEMS RELATED TO THE ELECTRICAL SYSTEM. LOW VOLTAGE CONDUIT FOR MECHANICAL SYSTEM CONTROLS SHALL BE IN ACCORDANCE WITH THE ELECTRICAL REQUIREMENTS.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
		BALL VALVE
	COTG	CLEAN OUT TO GRADE
Ø	DIA	DIAMETER
		ELECTRICAL PHASE
	FCO	FLOOR CLEAN OUT
	HB	HOSE BIBB
		RECESSED HOSE BIBB
		SHUT OFF VALVE IN PIPE DROP OR PIPE RISER
	T&P	TEMPERATURE AND PRESSURE RELIEF VALVE
	TPV	TRAP PRIMER VALVE
		UNION
		PIPE DOWN
		PIPE UP
		PIPE TEE DOWN
		PIPE INTERSECTION
	PRV	PRESSURE REDUCING OR REGULATOR VALVE
WCO	WCO	WALL CLEANOUT
	CO	CLEANOUT
	WHA	WATER HAMMER ARRESTOR
	CW	COLD WATER
CD	CD	CONDENSATE DRAIN
	HW	HOT WATER
	V	SANITARY VENT
TP	TP	TRAP PRIMER WATER SUPPLY
	S/W	WASTE (BELOW GRADE)
22x30 MIN AP	AP	ACCESS PANEL. SIZE GIVEN INDICATES MINIMUM SIZE REQUIRED
FFE 0.00'	FFE	FINISHED FLOOR ELEVATION USED TO DETERMINE PIPING INVERT ELEVATIONS

PLUMBING GENERAL NOTES

1. COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING CODES:

   2022 CALIFORNIA ADMINISTRATIVE CODE (CAC): PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
   2022 CALIFORNIA BUILDING CODE (CBC): PART 2, TITLE 24 CCR
   2022 CALIFORNIA ELECTRICAL CODE (CEC): PART 3, TITLE 24 CCR
   2022 CALIFORNIA MECHANICAL CODE (CMC): PART 4, TITLE 24 CCR
   2022 CALIFORNIA PLUMBING CODE (CPC): PART 5, TITLE 24 CCR
   2022 CALIFORNIA ENERGY CODE (CENC): PART 6, TITLE 24 CCR
   2022 CALIFORNIA FIRE CODE (CFC): PART 9, TITLE 24 CCR
   2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CAL GREEN): PART 11, TITLE 24 CCR

   REPORT DEFICIENCIES WITHIN THIRTY (30) DAYS UPON AUTHORIZATION TO PROCEED.
2. NO PLUMBING SHALL BE INSTALLED UNTIL ALL REQUIRED PLUMBING PLAN CHECK PERMITS AND APPROVALS HAVE BEEN OBTAINED FROM ALL REQUIRED AGENCIES.
3. LAVATORY FAUCETS, SINK FAUCETS (NOT INCLUDING SERVICE SINK FAUCETS OR FAUCETS DESIGNATED AS INSTITUTIONAL) SHALL MEET THE FLOW REQUIREMENTS OUTLINED IN THE APPLIANCE EFFICIENCY STANDARDS.
4. COORDINATE WITH THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF PLUMBING FIXTURES AND DRAINS.
5. PROVIDE ALL TAILPIECES, TRAPS, STOPS, AND SUPPLY PIPES TO LAVATORIES DESIGNED AS ACCESSIBLE, WITH PREFORMED INSULATION JACKET.
6. COORDINATE AND SCHEDULE TIMING FOR ALL UTILITY SERVICE CONNECTIONS.
7. ALL LINES BELOW SLAB ON GRADE TO BE LOCATED AWAY FROM ALL LOAD BEARING FOOTINGS.
8. ALL VENTS THRU ROOF SHALL BE MINIMUM OF 36 INCHES ABOVE ANY MECHANICAL VENTILATION AIR INTAKE WITHIN 10 FEET. PROVIDE VANDAL PROOF HOODS ON ALL VENTS THROUGH ROOF.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF WALLS, ROOFS, FOOTINGS, FLOORS, INCLUDING ALL SAW CUTTING AND CORE DRILLING. COORDINATE ALL SAW CUTTING AND CORE DRILLING WITH STRUCTURAL DRAWINGS. ANY CUTTING AND DRILLING REQUIRED OF STRUCTURAL ELEMENTS THAT IS NOT SPECIFICALLY SHOWN ON THE PLANS SHALL BE BROUGHT TO THE ARCHITECTS ATTENTION PRIOR TO CUTTING AND DRILLING. CONTRACTOR SHALL SUBMIT PROPOSED LOCATION AND SIZES OF SUCH CUTTING AND DRILLING FOR THE ARCHITECTS AND STRUCTURAL ENGINEERS APPROVAL.
10. COORDINATE ALL EQUIPMENT LOCATIONS, PIPE PENETRATIONS AND EQUIPMENT PAD LOCATIONS WITH STRUCTURAL DRAWING PRIOR TO WORK.
11. COORDINATE INSTALLATION OF ALL EQUIPMENT AND PIPING WITH OTHER TRADES PRIOR TO INSTALLATION. ENSURE THAT ALL CONTROL DEVICES, SHUT-OFF VALVES, ETC. ARE ACCESSIBLE FOR MAINTENANCE. WHERE ACCESS PANELS IN FINISHED SPACES, OTHER THAN THAT SHOWN, CONTRACTOR SHALL PROVIDE AND COORDINATE EXACT LOCATION OF PANELS WITH ARCHITECT PRIOR TO INSTALLATION.
12. ANY STRUCTURAL FIREPROOFING DAMAGED DURING INSTALLATION OF PLUMBING EQUIPMENT, PIPING, ETC. SHALL BE REPAIRED AT NO COST TO THE OWNER. REPAIRS SHALL BE AS DIRECTED BY THE ARCHITECT.
13. ALL PIPING PASSING THROUGH CONCRETE/MASONRY WALLS AND FLOORS ARE TO BE SLEEVED.
14. NEW OR REPAIRED POTABLE WATER SYSTEMS SHALL BE DISINFECTED PRIOR TO USE PER 2022 CPC 609.10. THE METHOD TO BE FOLLOWED SHALL BE THAT PRESCRIBED BY THE HEALTH AUTHORITY OR, IN CASE NO METHOD IS PRESCRIBED BY IT, THE FOLLOWING:

A) THE PIPE SYSTEM SHALL BE FLUSHED WITH CLEAN, POTABLE WATER UNTIL POTABLE WATER APPEARS AT THE POINTS OF OUTLET.
B) THE SYSTEM OR PARTS THEREOF SHALL BE FILLED WITH A WATER-CHLORINE SOLUTION CONTAINING NOT LESS THAN 50 PARTS PER MILLION OF CHLORINE, AND THE SYSTEM OR PART THEREOF SHALL BE VALVED-OFF AND ALLOWED TO STAND FOR 24 HOURS; OR, THE SYSTEM OF PART THEREOF SHALL BE FILLED WITH A WATER-CHLORINE SOLUTION CONTAINING NOT LESS THAN 200 PARTS PER MILLION OF CHLORINE AND ALLOWED TO STAND FOR 3 HOURS.
C) FOLLOWING THE ALLOWED STANDING TIME, THE SYSTEM SHALL BE FLUSHED WITH CLEAN, POTABLE WATER UNTIL THE CHLORINE RESIDUAL IN THE WATER COMING FROM THE SYSTEM DOES NOT EXCEED THE CHLORINE RESIDUAL IN THE FLUSHING WATER.
D) THE PROCEDURE SHALL BE REPEATED WHERE IT IS SHOWN BY BACTERIOLOGICAL EXAMINATION MADE BY AN APPROVED AGENCY THAT CONTAMINATION PERSISTS IN THE SYSTEM.

PLUMBING TITLE 24 NOTES

1. PROVIDE WATER HEATERS CERTIFIED IN COMPLIANCE WITH CALIFORNIA ENERGY APPLIANCE EFFICIENCY STANDARDS.
2. PROVIDE DOMESTIC HOT WATER PIPING INSULATION IN ACCORDANCE WITH THE CALIFORNIA ENERGY EFFICIENCY STANDARDS.

PLUMBING CAL GREEN NOTES

1. LAVATORY FAUCETS IN PUBLIC USE RESTROOMS (NOT INCLUDING SLEEPING ROOM UNITS) SHALL BE THE SELF CLOSING TYPE.
2. LAVATORY FAUCETS: 0.5 GPM MAX.
3. SINK FAUCETS: 1.5 GPM MAX.
4. TOILETS: 1.28 GPF MAX.

PLUMBING ABBREVIATIONS

ABV	ABOVE	GPM	GALLONS PER MINUTE
ADA	AMERICANS WITH DISABILITIES ACT	GW	GREASE WASTE
AFF	ABOVE FINISHED FLOOR	HP	HORSE POWER
AG	ABOVE GRADE	HW	HOT WATER
AHJ	AUTHORITY HAVING JURISDICTION	IE	INVERT ELEVATION
ALUM	ALUMINUM	IN/H	INCHES PER HOUR
AMP	AMPERAGE	IWC	INCHES OF WATER COLUMN
AP	ACCESS PANEL	KW	KILOWATTS
ARCH	ARCHITECT, ARCHITECTURAL	LAV	LAVATORY
BEL	BELOW	LBS	POUNDS
BF	BELOW FLOOR	MAX	MAXIMUM
BG	BELOW GRADE	MBH	1000 BRITISH THERMAL UNITS PER HOUR
BFP	BACKFLOW PREVENTOR	MCA	MINIMUM CIRCUIT AMPS
BLDG	BUILDING	MECH	MECHANICAL
BOD	BASIS OF DESIGN	MFGR	MANUFACTURE OR MANUFACTURER
BTUH	BRITISH THERMAL UNIT PER HOUR	MIN	MINIMUM
CA	COMBUSTION AIR	(N)	NEW
CD	CONDENSATE DRAIN	NPS	NOMINAL PIPE SIZE
CFH	CUBIC FEET PER HOUR	NTS	NOT TO SCALE
CI	CAST IRON	PH	PHASE
CONN	CONNECTION	PSI	POUNDS PER SQUARE INCH
CONT	CONTINUATION	PW	PROCESS WASTE
CP	CHROME PLATED	RM	ROOM
CPC	CALIFORNIA PLUMBING CODE	RPM	REVOLUTIONS PER MINUTE
COTG	CLEAN OUT THROUGH GRADE	SDL	STORM DRAIN LEADER
CW	COLD WATER	SDO	STORM DRAIN OVERFLOW
DFU	DRAINAGE FIXTURE UNITS	SOV	SHUT OFF VALVE
DN	DOWN	SS	STAINLESS STEEL
DSA	DIVISION OF THE STATE ARCHITECT	TEMP	TEMPORARY, TEMPERATURE
(E)	EXISTING	TYP	TYPICAL
EC	EVAPORATIVE COOLER	UON	UNLESS OTHERWISE NOTED
EFF	EFFICIENCY	UTR	UP TO OR UP THROUGH ROOF
ELEC	ELECTRICAL	V	VENT
EQPT	EQUIPMENT	VAC	VACUUM
FCO	FLOOR CLEAN OUT	VEX	VEHICLE EXHAUST SYSTEM
FFE	FINISH FLOOR ELEVATION	VTR	VENT THROUGH ROOF
FLA	FULL LOAD AMPS	W	WASTE
FLR	FLOOR	WC	WATER CLOSET
FPS	FEET PER SECOND	WCO	WALL CLEAN OUT
FR	FROM	WHA	WATER HAMMER ARRESTOR
FT	FLUSH TANK	WSFU	WATER SUPPLY FIXTURE UNIT
FV	FLUSH VALVE	WT	WEIGHT EXPRESSED IN POUNDS
GA	GAGE OR GAUGE	W/	WITH
GPC	GALLONS PER CYCLE	W/O	WITHOUT
GPF	GALLONS PER FLUSH		

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KATHRYN ANNE NICOL
938079
2-28-27
RENEWAL DATE
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CONSULTANT

3C Engineering
an EMCOR Company
(805) 540-3343
1300 Pole St, San Luis Obispo, CA, 93401

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M 34068
EXP. 6/30/26
MECHANICAL
STATE OF CALIFORNIA

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

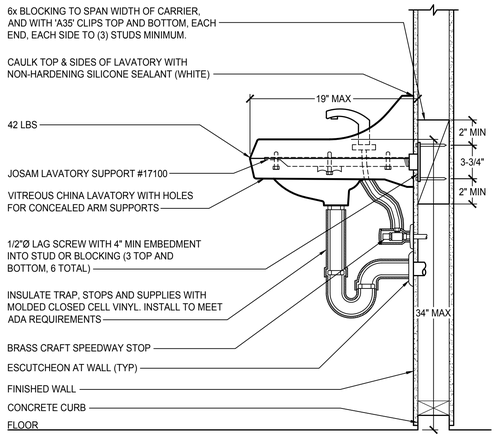
GENERAL & SCHEDULES

NO.	REVISION	DATE
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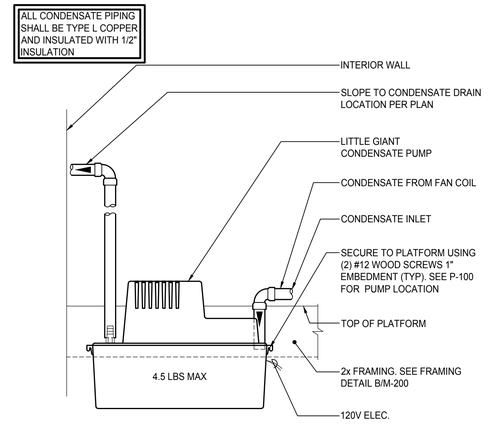
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DRAWN BY: TO
CHECKED BY: BS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: P-000

DSA BACK CHECK 2

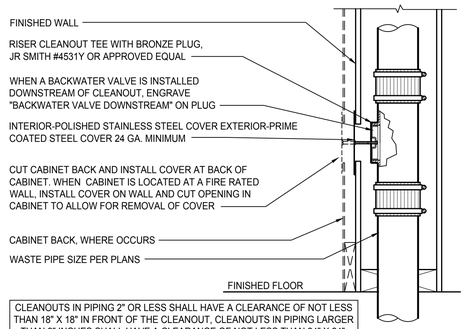
S:\ENG Projects\LMUSD Mesa MS Science & SPED\Engineering\LMUSD Mesa MS Science & SPED Plumbing Lead.rvg CHerlihy 778E Apr 23,2026-2:29pm



9 LAVATORY INSTALLATION
NTS



6 FAN COIL CONDENSATE PUMP
NTS

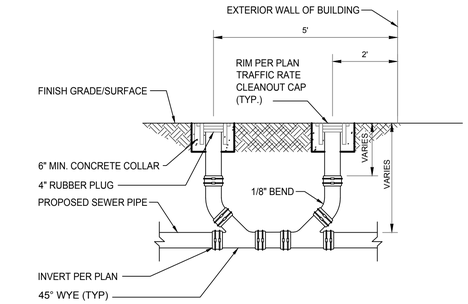


CLEANOUTS IN PIPING 2" OR LESS SHALL HAVE A CLEARANCE OF NOT LESS THAN 18" X 18" IN FRONT OF THE CLEANOUT, CLEANOUTS IN PIPING LARGER THAN 2" INCHES SHALL HAVE A CLEARANCE OF NOT LESS THAN 24" X 24".

CLEANOUTS: CPC TABLE 707.1

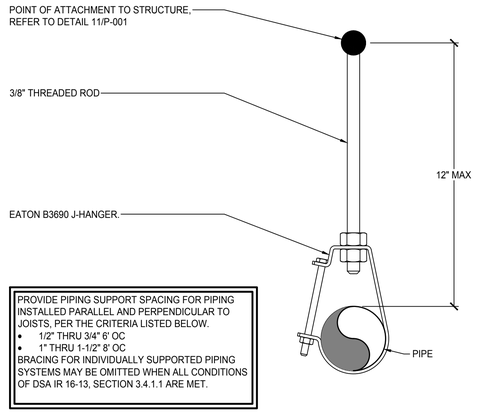
PIPE SIZE	CLEANOUT SIZE	THREADS (PER INCH)
1-1/2" - 2"	1-1/2"	11-1/2
2-1/2" - 3"	2-1/2"	8
4" & LARGER	3-1/2"	8

3 WALL CLEANOUT
NTS



NOTES:
1) CHIMNEY SIZE AND CONNECTIONS SHALL BE 4".
2) PIPE AND FITTINGS SHALL BE PVC
3) BEDDING AND BACKFILL SHALL BE THE SAME AS FOR MAIN SEWER.

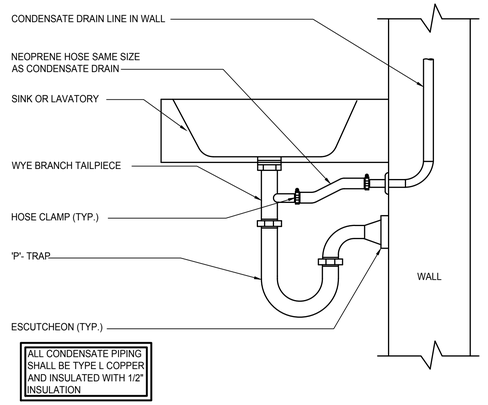
1 CLEANOUT TO GRADE
NTS



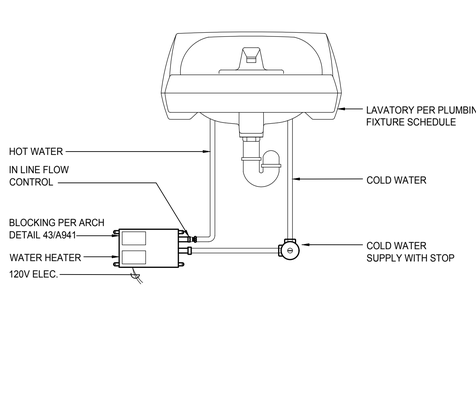
PROVIDE PIPING SUPPORT SPACING FOR PIPING INSTALLED PARALLEL AND PERPENDICULAR TO JOISTS, PER THE CRITERIA LISTED BELOW.
- 1/2" THRU 3/4" 6' OC
- 1" THRU 1-1/2" 8' OC

BRACING FOR INDIVIDUALLY SUPPORTED PIPING SYSTEMS MAY BE OMITTED WHEN ALL CONDITIONS OF DSA IR 16-13, SECTION 3.4.1.1 ARE MET.

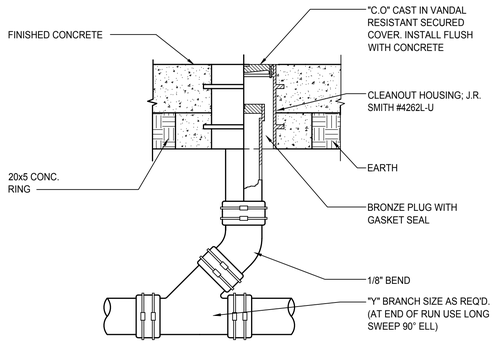
10 PIPE SUPPORT - SINGLE
NTS



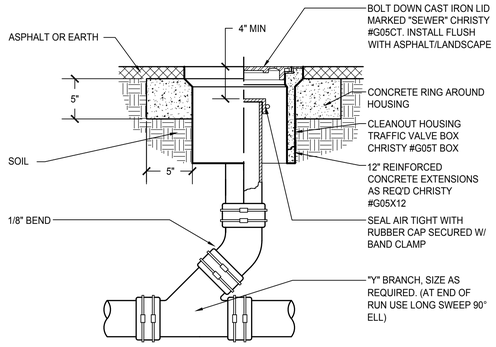
7 CONDENSATE TO TAIL PIECE DETAIL
NTS



4 POU TANKLESS ELECTRIC WATER HEATER
NTS



FINISHED CONCRETE AREAS



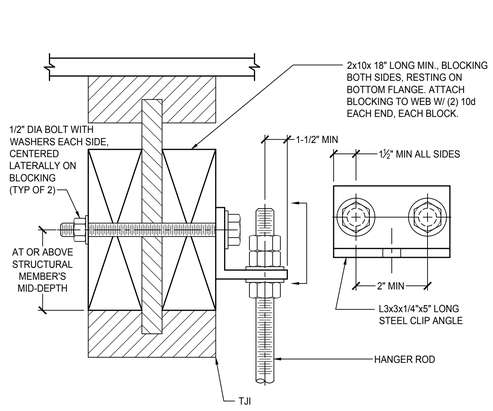
ASPHALT & LANDSCAPED AREAS

CLEANOUTS IN PIPING 2" OR LESS SHALL HAVE A CLEARANCE OF NOT LESS THAN 18" X 18" IN FRONT OF THE CLEANOUT, CLEANOUTS IN PIPING LARGER THAN 2" INCHES SHALL HAVE A CLEARANCE OF NOT LESS THAN 24" X 24".

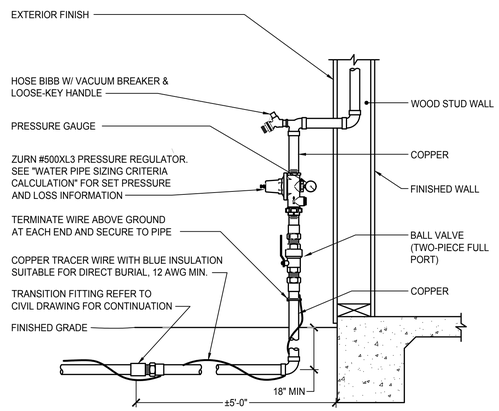
CLEANOUTS: CPC TABLE 707.1

PIPE SIZE	CLEANOUT SIZE	THREADS (PER INCH)
1-1/2" - 2"	1-1/2"	11-1/2
2-1/2" - 3"	2-1/2"	8
4" & LARGER	3-1/2"	8

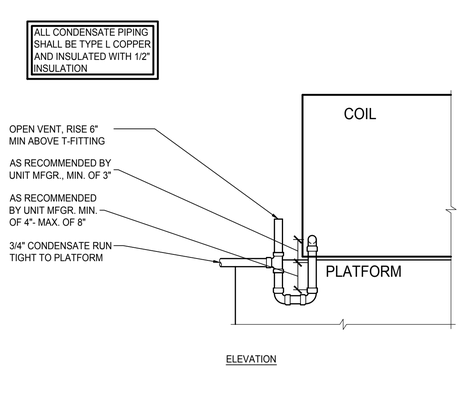
2 CLEANOUT TO GRADE
NTS



11 CONNECTION TO TJI
NTS



8 BUILDING WATER SUPPLY
NTS



ELEVATION

5 FAN COIL CONDENSATE DRAIN
NTS

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APP: 03-125727 INC: A
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SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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BRIAN P. STARKEY
M 34068
EXP. 6/30/26
MECHANICAL
STATE OF CALIFORNIA

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

DETAILS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER: DS
DRAWN BY: TO
CHECKED BY: BS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: P-001

DSA BACK CHECK 2

S:\ENG Projects\LMUSD Mesa MS Science & SPED\Engineering\LMUSD Mesa MS Science & SPED Plumbing Lead.dwg Cherilly778E Apr 23,2026-2:29pm

KEY NOTES

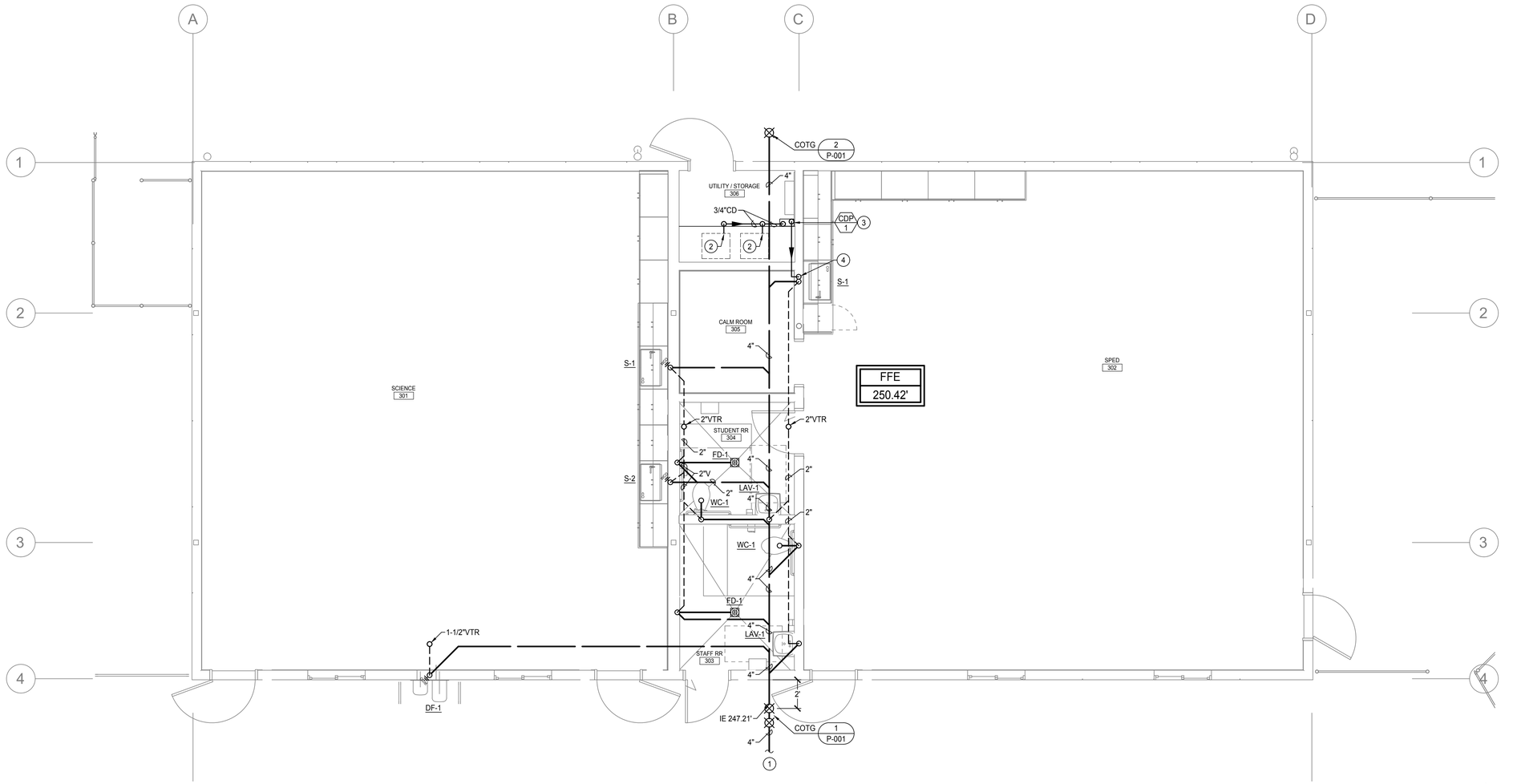
APPLICABLE TO THIS SHEET ONLY

1	REFER TO CIVIL PLANS FOR CONTINUATION.
2	3/4" CONDENSATE CONNECTION TO MECHANICAL EQUIPMENT. SEE DETAIL 5/P-001 FOR MORE INFORMATION.
3	3/4" CONDENSATE CONNECTION TO CONDENSATE PUMP. SEE DETAIL 6/P-001 FOR MORE INFORMATION.
4	3/4" CONDENSATE DOWN IN WALL. TERMINATE TO FIXTURE TAILPIECE SEE DETAIL 7/P-001 FOR MORE INFORMATION.

PLUMBING GENERAL NOTES

APPLICABLE TO THIS SHEET ONLY

1	SEE PLUMBING FIXTURE SCHEDULE FOR BRANCH PIPE SIZING.
2	SLOPE SANITARY WASTE PIPING MIN 2% IN DIRECTION OF FLOW UNLESS OTHERWISE NOTED.
3	SLOPE VENT PIPING UP TOWARDS VTR MIN 1%.
4	SLOPE CONDENSATE PIPING MIN 1% IN DIRECTION OF FLOW.
5	ALL ROOMS WITH FLOOR DRAINAGE MUST HAVE FLOORS SLOPED TOWARD DRAIN. SEE ARCHITECTURAL PLANS FOR REQUIRED SLOPE.
6	PROVIDE CLEANOUTS IN ALL LOCATIONS SHOWN. COORDINATE ALL WALL CLEANOUTS WITH PLUMBING FIXTURES, CASEWORK, AND ARCHITECTURAL ELEVATIONS. SEE DETAIL 2/P-001 FOR SIZING AND CLEARANCES REQUIRED.
7	PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE THE ROOF, NOR LESS THAN 12" FROM A VERTICAL SURFACE. MAINTAIN 10'-0" CLEARANCE FROM BUILDING AIR INTAKES.
8	REFER TO ARCHITECTURAL PLANS FOR THE LOCATION OF ALL FIXTURES, INCLUDING BUT NOT LIMITED TO FLOOR SINKS, FLOOR DRAINS, TRENCH DRAINS AND ROOF DRAINS. THE ARCHITECTURAL PLANS SHALL TAKE PRECEDENCE.
9	REFER TO MECHANICAL PLANS FOR LOCATIONS OF MECHANICAL EQUIPMENT AND DUCTWORK. COORDINATE ALL WORK TO FIT IN AVAILABLE SPACE.
10	COORDINATE PIPE ROUTING WITH LOCATION OF ELECTRICAL PANELS AND DATA EQUIPMENT. PIPING SHALL NOT BE ROUTED ABOVE THESE ITEMS.



FLOOR PLAN - WASTE & VENT

SCALE: 1/4" = 1'-0"

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REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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938079
2-28-27
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CONSULTANT

3C Engineering
An ENGEO Company
(805) 540-1043
1500 Park St, San Luis Obispo, CA, 93401

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REGISTERED PROFESSIONAL ENGINEER
BENJAMIN P. STARRETT
M 34068
EXP. 6/30/26
MECHANICAL
STATE OF CALIFORNIA

MESA MS SPED SCIENCE BUILDING

2555 S HALCYON RD, ARROYO GRANDE, CA

FLOOR PLAN - WASTE & VENT

NO.	REVISION	DATE
1		
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PROJECT MANAGER: DS
DRAWN BY: TO
CHECKED BY: BS
DATE: 1 APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: P-100

DSA BACK CHECK 2

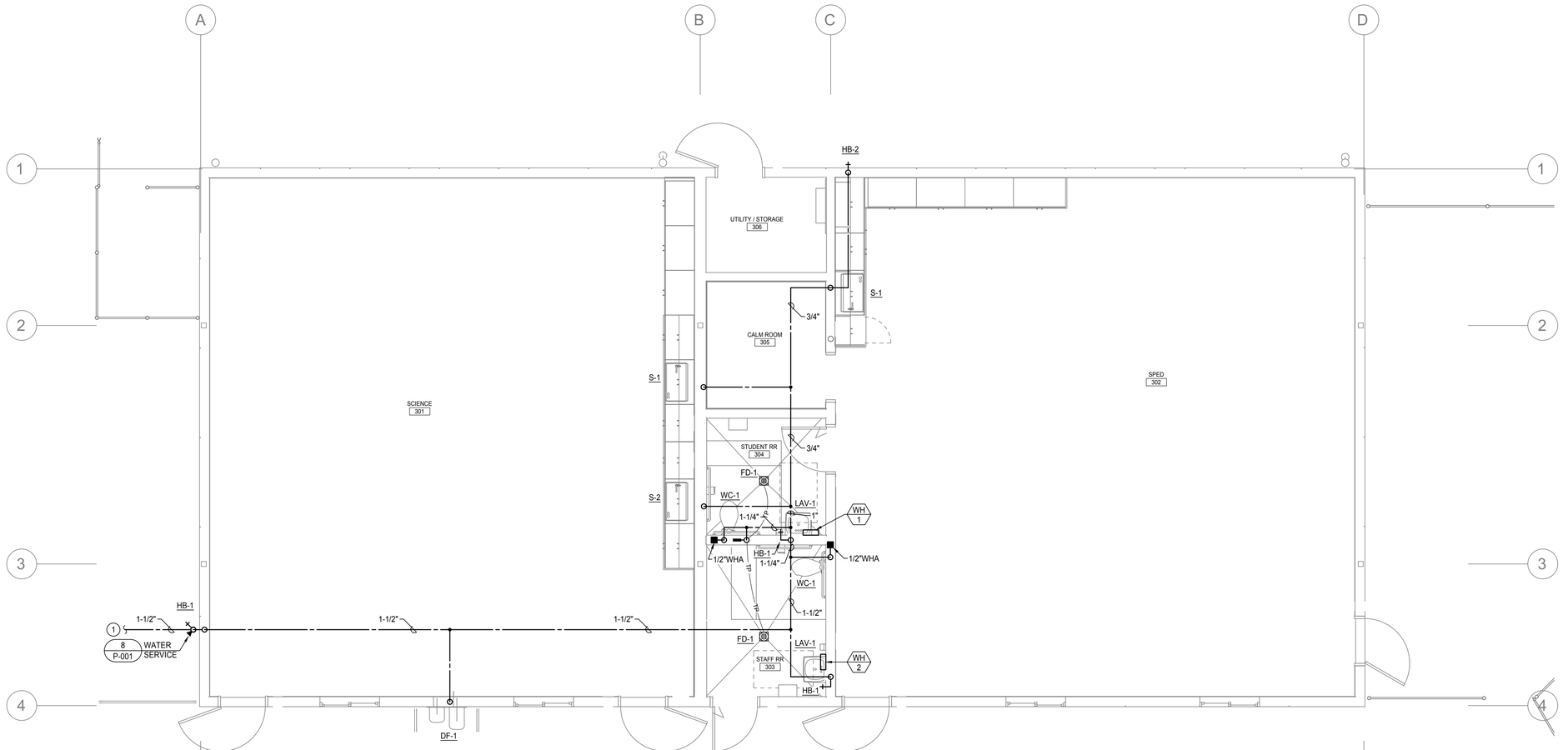
C:\Users\cherithy778\appdata\local\temp\AcPublish_17776\LMUSD Mesa MS Science & SPED Plumbing Plans.dwg CHerithy778E Apr 23,2026-2:29pm

KEY NOTES

	APPLICABLE TO THIS SHEET ONLY
1	REFER TO CIVIL PLANS FOR CONTINUATION.

PLUMBING GENERAL NOTES

	APPLICABLE TO THIS SHEET ONLY
1	SEE PLUMBING FIXTURE SCHEDULE FOR BRANCH PIPE SIZING.
2	PROVIDE ANGLE STOPS FOR ALL PLUMBING FIXTURE BRANCH PIPING LINES.
3	REFER TO MECHANICAL PLANS FOR LOCATIONS OF MECHANICAL EQUIPMENT AND DUCTWORK. COORDINATE ALL WORK TO FIT IN AVAILABLE SPACE.
4	COORDINATE PIPE ROUTING WITH LOCATION OF ELECTRICAL PANELS AND DATA EQUIPMENT. PIPING SHALL NOT BE ROUTED ABOVE THESE ITEMS.
5	PROVIDE SUSPENDED PIPE SUPPORT PER DETAIL 10/P-001 (TYP).



FLOOR PLAN - HOT & COLD WATER

SCALE: 1/4" = 1'-0"

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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2-28-27
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CONSULTANT

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An ENGEO Company
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1100 Park St, San Luis Obispo, CA, 93401

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BENJAMIN P. STARRETT
M 34068
EXP. 6/30/26
MECHANICAL
STATE OF CALIFORNIA

DSA BACK CHECK 2

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

FLOOR PLAN - HOT & COLD WATER

NO.	REVISION	DATE

PROJECT MANAGER: DS
DRAWN BY: TO
CHECKED BY: BS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: P-110

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 6 of 17)

C4. SOURCE ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual SOURCE Energy Use, kBtu/ft² /yr)

COMPLIES[2]

Energy Component	Standard Design (SOURCE)	Proposed Design (SOURCE)	Compliance Margin (SOURCE)[1]
Space Heating	1.2	3.47	-2.27
Space Cooling	0.51	0.59	-0.08
Indoor Fans	7.73	5.43	2.3
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	3.25	2.92	0.33
Indoor Lighting	2.58	2.58	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**15.27**	**14.99**	**0.28 (1.8%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**15.27**	**14.99**	**0.28 (1.8%)**

[1] *Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 3 of 17)

C1. COMPLIANCE SUMMARY

COMPLIES[3]

	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)
Standard Design	182.31	182.31	15.27
Proposed Design	179.19	179.19	14.99
Compliance Margins	**3.12**	**3.12**	**0.28**
	Pass	**Pass**	**Pass**

[1] *Efficiency measures include improvements like a better building envelope and more efficient equipment*
[2] *Compliance Totals include efficiency, photovoltaics and batteries*
[3] *New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded*
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

PROJECT TEAM LIST

TITLE	NAME	DESK NUMBER	EMAIL ADDRESS
PRINCIPAL IN CHARGE	BRIAN STARRETT	805.634.6159	BSTARRETT@EMCOR.NET
PROJECT MANAGER	DENVER STANGER	805.634.8711	DSTANGER@EMCOR.NET
MECHANICAL DESIGNER	DENVER STANGER	805.634.8711	DSTANGER@EMCOR.NET
PLUMBING DESIGNER	ELI FERMAN	805.634.8818	EFERMAN@EMCOR.NET
ENERGY COMPLIANCE	JORGE BRAVO	805.595.0894	JBRAVO@EMCOR.NET

SHEET INDEX

SHEET NUMBER	SHEET TITLE
T-240	ENERGY COMPLIANCE DOCUMENTATION
T-241	ENERGY COMPLIANCE DOCUMENTATION

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 7 of 17)

C5. SOURCE ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (SOURCE)	Proposed Design (SOURCE)	Compliance Margin (SOURCE)[1]
Receptacle	4.81	4.81	---
Process	---	---	---
Other Ltg	0.14	0.14	---
Process Motors	0.06	0.03	0.03
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**20.28**	**19.97**	**0.31 (1.5%)**

[1] *Notes: This table is not used for Energy Code Compliance.*

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 4 of 17)

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	9.64	28.46	-18.82
Space Cooling	14.88	15.73	-0.85
Indoor Fans	90.04	62.9	27.14
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	35.64	39.99	-4.35
Indoor Lighting	32.11	32.11	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**182.31**	**179.19**	**3.12 (1.7%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**182.31**	**179.19**	**3.12 (1.7%)**

[1] *Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 1 of 17)
Project Name: LMUSD Mesa MS Science & SPED	Date Prepared: 2025-11-03

A. General Information

1	Project Name	LMUSD Mesa MS Science & SPED			
2	Run Title	Title 24 Analysis			
3	Project Location	2555 S Halcyon Rd			
4	City	Arroyo Grande	5	Standards Version	Compliance 2022
6	Zip code	93420	7	Compliance Software (version)	EnergyPro 9.4
8	Climate Zone	5	9	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	11	Weather File	SAN-LUIS-OBISPO_STYP20.epw
12	Project Scope	• New envelope and mechanical	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft²)	2664	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft²)	159	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	2664	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 8 of 17)

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	0.7	2.2	-1.5	---	---	---
Space Cooling	1.7	1.7	0	---	---	---
Indoor Fans	8.5	5.9	2.6	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	3.7	4.4	-0.7	---	---	---
Indoor Lighting	3.3	3.3	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**17.9**	**17.5**	**0.4**	**0**	**0**	**0**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**17.9**	**17.5**	**0.4**	**0**	**0**	**0**
Receptacle	6.9	6.9	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	0.2	0.2	0	---	---	---
Process Motors	0.1	0	0.1	---	---	---
ENERGY USE TOTAL	**25.1**	**24.6**	**0.5**	**0**	**0**	**0**

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 5 of 17)

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	63.87	63.87	---
Process	---	---	---
Other Ltg	1.75	1.75	---
Process Motors	0.69	0.41	0.28
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**248.62**	**245.22**	**3.4 (1.4%)**

[1] *Notes: This table is not used for Energy Code Compliance.*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 2 of 17)

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Performance	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Performance	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

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938079
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RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

3C Engineering
an EMCOR Company
(805) 540-3343
1300 Pacific St, San Luis Obispo, CA, 93401

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BRIAN P. STARRETT
M 34068
EXP. 6/30/26
MECHANICAL
STATE OF CALIFORNIA

MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

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I1. WATER HEATER EQUIPMENT SUMMARY

01 Name	02 Heater Element Type	03 Tank Type	04 Qty	05 Tank Vol (gal)	06 Rated Input	07 Rated Input Unit	08 Efficiency	09 Efficiency Unit	10 Tank Insulation R-value Int/Ext	11 Standby Loss Fraction	12 1st Hr. Rating or Flow Rate (gal)	13 Heat Pump Type	14 Tank Location or Ambient Condition
Chronomite CMI-20L/120-NP2	Electricity	Instantaneous	1	1	2.4	kW	0.98	UEF	N/A	N/A	1	N/A	N/A
Chronomite CMI-20L/120-NP2 2	Electricity	Instantaneous	1	1	2.4	kW	0.98	UEF	N/A	N/A	1	N/A	N/A

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Envelope	NRCI-ENV-E - Envelope (for all buildings)
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems
Plumbing	NRCI-PLB-E - For all buildings with Plumbing Systems

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title & System Name(s)
Envelope	NRCA-ENV-02-F - NRFC label verification for fenestration
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
	HPC/FC-1 and HPC/FC-2.
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
	HPC/FC-1 and HPC/FC-2.

G7A. FENESTRATION ASSEMBLY SUMMARY (NONRESIDENTIAL)

01 Fenestration Assembly Name	02 Fenestration Type/ Product Type / Frame Type	03 Certification Method[1]	04 Assembly Method	05 Area (ft²)	06 Overall U-factor	07 Overall SHGC	08 Overall VT	09 Status[2]
Tubular Skylights	Skylight Fixed window Non-metal	Default 110.6	Manufactured	40	1.47	0.76	1	N
Double Non Metal Clear Window	Vertical fenestration Operable window N/A	NFRC	Site built	64	0.46	0.22	0.32	N
Double Non-Metal Tinted	Vertical fenestration Operable window Non-metal	Default 110.6	Site built	128	0.58	0.53	0.67	N

[1] Notes: Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix NA6 and are used in the analysis.
[2] Status: N - New, A - Altered, E - Existing

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01 Equipment Name	02 Equipment Type	03 Qty	04 Heating	05 Heating	06 Heating	07 Heating	08 Cooling	09 Cooling	10 Cooling	11 Economizer Type (if present)	12 Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
HPC/FC-1	Single Zone Heat Pump (SZHP) Air System	1	52.6	24.6	HSPF2	9	50.89	EER2 SEER2	11.7 17.1	No Economizer	N

[1] Status: N - New, A - Altered, E - Existing

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	30.34	29.73	0.61	2.01
NET EUI[1]	30.34	29.73	0.61	2.01

[1] Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.

D1. EXCEPTIONAL CONDITIONS

• The project uses the Simplified Geometry Performance Modeling Approach which is not capable of modeling daylighting controls and assumes the prescriptive Secondary Daylit Control requirements are met. PRESCRIPTIVE COMPLIANCE documentation (form NRCC-LTI-02-E) for the requirements of section 140.6(d) Automatic Daylighting Controls in Secondary Daylit Zones is required.
• Project is claiming Exception 2 to Section 140.10(a): No PV system is required where the required PV system size is less than 4 kWdc.
• Project is claiming Exception 2 to Section 140.10(b): No battery storage system is required in buildings with battery storage system requirements with less than 10 kWh rated capacity.
• Project is claiming Exception 3 to Section 140.10(b): No battery storage system required for tenant spaces less than or equal to 5,000 ft2.
• PV/Battery Building Type has been modified from software defaults for one or more spaces. Review project's PV/Battery Building Type(s) with documentation author. Refer to Energy Code section 140.10 for Nonresidential or 170.2(g) for more information.

G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

01 Opaque Surfaces & Orientation	02 Total Gross Surface Area (ft²)	03 Total Fenestration Area (ft²)	04 Window to Wall Ratio (%)
North-Facing[1]	446	0	0
East-Facing[2]	919	64	6.96
South-Facing[3]	446	0	0

Notes
[1]North-Facing is oriented to within 45 degrees of true north, including 4500'00" east of north (NE), but excluding 4500'00" west of north (NW),
[2]East-Facing is oriented to within 45 degrees of true east, including 4500'00" south of east (SE), but excluding 4500'00" north of east (NE),
[3]South-Facing is oriented to within 45 degrees of true south, including 4500'00" west of south (SW), but excluding 4500'00" east of south (SE),
[4]West-Facing is oriented to within 45 degrees of true west, including 4500'00" north of west (NW), but excluding 4500'00" south of west (SW),

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01 Equipment Name	02 Equipment Type	03 Qty	04 Heating	05 Heating	06 Heating	07 Heating	08 Cooling	09 Cooling	10 Cooling	11 Economizer Type (if present)	12 Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
HPC/FC-2	Single Zone Heat Pump (SZHP) Air System	1	52.6	24.6	HSPF2	9	50.89	EER2 SEER2	11.7 17.1	No Economizer	N

[1] Status: N - New, A - Altered, E - Existing

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01 Name or Item Tag	02 Qty	03 Design OA CFM	04 Supply Fan	05 Supply Fan	06 Supply Fan	07 Supply Fan	08 Return / Relief Fan	09 Return / Relief Fan	10 Return / Relief Fan	11 Return / Relief Fan	12 Return / Relief Fan	13 Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
HPC/FC-1	1	522.88	1,825	0.76	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
HPC/FC-2	1	461.32	1,825	0.76	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] Status: N - New, A - Altered, E - Existing

H5. GENERAL EXHAUST FAN SUMMARY

01 System ID	02 Zone Name	03 Qty	04 CFM	05 Power	06 Power Units	07 Continuous Operation?	08 Status[1]
Restrooms3-EF	1-Restrooms	1	75	0.01	BHP	No	N
Restrooms64-EF	4-Restrooms	1	75	0.01	BHP	No	N

[1] Status: N - New, A - Altered, E - Existing

G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

01 Opaque Surfaces & Orientation	02 Total Gross Surface Area (ft²)	03 Total Fenestration Area (ft²)	04 Window to Wall Ratio (%)
West-Facing[4]	801	128	15.98
Total	**2612**	**192**	**7.35**
Roof	2664	40	1.5

Notes
[1]North-Facing is oriented to within 45 degrees of true north, including 4500'00" east of north (NE), but excluding 4500'00" west of north (NW),
[2]East-Facing is oriented to within 45 degrees of true east, including 4500'00" south of east (SE), but excluding 4500'00" north of east (NE),
[3]South-Facing is oriented to within 45 degrees of true south, including 4500'00" west of south (SW), but excluding 4500'00" east of south (SE),
[4]West-Facing is oriented to within 45 degrees of true west, including 4500'00" north of west (NW), but excluding 4500'00" south of west (SW),

G4. NONRESIDENTIAL AIR BARRIER

01 Building Story Name	02 Air Barrier
Com-Floor 1	No air barrier

Documentation Author's Declaration Statement

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Jorge Bravo	Documentation Author Signature:
Company: EMCOR Services Mesa Energy Systems	Signature Date: 2025-11-03
Address: 1500 Palm St.	CEA/HERS Certification Identification (if applicable):
City/State/Zip: , San Luis Obispo, CA 93401	Phone: 805-540-3363

Responsible Person's Declaration statement

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections, and I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy, and I will take the necessary steps to accomplish these requirements.

Responsible Designer Name: Kathryn Hicks	Responsible Designer Signature:	
Company: RRM Design Group		
Address: 3765 South Higuera	Date Signed:	
City/State/Zip: San Luis Obispo, CA 93401	License #: C38079	
Phone: 805-543-1794	Title:	Scope:
Responsible Designer Name: Brian Starrett	Responsible Designer Signature:	
Company: 3C Engineering, Inc.		
Address: 1500 Palm St.	Date Signed: 2025-11-03	
City/State/Zip: San Luis Obispo, CA 93401	License #: M34068	
Phone: 805-540-3363	Title:	Scope:

H8. SYSTEM SPECIAL FEATURES

01 System Name	02 Equipment Type	03 Interlocks per 140.4(n)[1]	04 Other Special Features and Controls
HPC/FC-1	Single Zone Heat Pump (SZHP) Air System	No	N/A
HPC/FC-2	Single Zone Heat Pump (SZHP) Air System	No	N/A
WH 121 - SHW	Service Hot Water	N/A	Fixed Temperature Control

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.
[1] Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01 Zone Name	02 Mechanical Ventilation	03 Mechanical Ventilation	04 Mechanical Ventilation	05 Mechanical Ventilation	06 Conditioned Area (sf)	07 DCV or Occupant Sensor Controls, or both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-Restrooms	Exhaust - Toilets, private Education - Classrooms (ages 5-8)	34.77	522.88	75	1450	N/A
2-Classroom (ages 5-8)	Education - Classrooms (ages 5-8)	30.35	461.32	0	1214	N/A

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01 System ID	02 System Type	03 Qty	04 Rated Capacity (kBtu/h)	05 Rated Capacity (kBtu/h)	06 Airflow (cfm)	07 Airflow (cfm)	08 Airflow (cfm)	09 Fan	10 Fan	11 Fan	12 VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
1-Restrooms-Trm	Uncontrolled	1	N/A	N/A	1,825	N/A	0	N/A	N/A	N/A	☐
2-Classroom (ages 5-8)-Trm	Uncontrolled	1	N/A	N/A	1,825	N/A	0	N/A	N/A	N/A	☐

G5. OPAQUE SURFACE ASSEMBLY SUMMARY

01 Surface Name	02 Construction Type	03 Area (ft²)	04 Framing Type	05 Cavity R-Value	06 Continuous R-Value	06 Continuous R-Value	07 Units	08 Value	09 Description of Assembly Layers	10 Status[1]
					Interior	Exterior				
2x14 R-48 Batt 1.5 Rigid9	Roof	2,823	Wood	48	N/A	8.8	U-factor	0.0191	Single Ply Roofing - 1/4 in. Plywood - 1/4 in. Cellular polyisocyanurate (unfaced) - 1 1/2 in. R8.8 Plywood - 1/2 in. Composite-1	N
Slab On Grade11	Underground Floor	2,823	N/A	0	N/A	N/A	F-factor	0.73	Slab Type =Unheated slab on grade Insulation Orientation =None Insulation R-Value =none	N
2x6 16in OC R-21 Batt23	Exterior Wall	2,822	Wood	21	N/A	N/A	U-factor	0.0646	Stucco - 7/8 in. Vapor permeable felt - 1/8 in. Plywood - 1/2 in. Composite-2 Gypsum Board - 5/8 in.	N

[1] Status: N - New, A - Altered, E - Existing

G6A. OPAQUE DOOR SUMMARY (NONRESIDENTIAL)

01 Assembly Name	02 Area (ft²)	03 Overall U-factor	04 Status[1]
Metal Door25	144	0.7	N

[1] Status: N - New, A - Altered, E - Existing

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MECHANICAL ABBREVIATIONS

AC	AIR CONDITION, AIR CONDITIONING, AIR CONDITIONED
ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AMCA	AIR MOVEMENT AND CONTROL ASSOCIATION
AMB	AMBIENT
AP	ACCESS PANEL
ARCH	ARCHITECT, ARCHITECTURAL
AHRI	AIR CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS
BDD	BACK DRAFT DAMPER
BOD	BASIS OF DESIGN
BEL	BELOW
BHP	BRAKE HORSE POWER
BLDG	BUILDING
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMBUSTION AIR
CD	CONDENSATE DRAIN
CFD	CEILING FIRE DAMPER
CFM	CUBIC FEET PER MINUTE
CONT	CONTINUATION
CSD	CEILING SMOKE DAMPER
DB	DRY BULB TEMPERATURE
DN	DOWN
DSA	DIVISION OF THE STATE ARCHITECT
DTR	DOWN THROUGH ROOF
(E)	EXISTING
EA	EXHAUST AIR
EC	EVAPORATIVE COOLER
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EFF	EFFICIENCY
ELEC	ELECTRICAL
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
FA	FROM ABOVE
FC	FLEXIBLE CONNECTION
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FSC	FAN SPEED CONTROLLER
FSD	FIRE/SMOKE DAMPER
GA	GAGE, GAUGE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
GYP	GYPSUM
HD	HEAD
HP	HORSE POWER
HVI	HOME VENTILATING INSTITUTE
HZ	HERTZ
IDU	INDOOR UNIT
IWC	INCHES OF WATER COLUMN
KW	KILOWATT
LBS	POUNDS
LWT	LEAVING WATER TEMPERATURE
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MFGR	MANUFACTURE OR MANUFACTURER
MIN	MINIMUM
MUA	MAKE-UP AIR
(N)	NEW
NL	NOT LISTED
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
ODU	OUTDOOR UNIT
OSHPD	OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
PD	PRESSURE DROP
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
REF	REFRIGERANT, REFRIGERATION
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SEER	SEASONAL ENERGY EFFICIENCY RATION
SHT	SHEET
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SOV	SHUT OFF VALVE
SP	STATIC PRESSURE
SS	STAINLESS STEEL
SSE	STEADY STATE EFFICIENCY
SST	SATURATED SUCTION TEMPERATURE
TEMP	TEMPORARY, TEMPERATURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
TXV	THERMAL EXPANSION VALVE
UON	UNLESS OTHERWISE NOTED
UTR	UP TO OR UP THROUGH ROOF
VD	VOLUME DAMPER
VEX	VEHICLE EXHAUST SYSTEM
VRF	VARIABLE REFRIGERANT VOLUME
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
WG	WATER GAUGE
WT	WEIGHT EXPRESSED IN POUNDS

CONTROLS LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
T/CO2 AC-X	T/CO2	COMBINATION THERMOSTAT AND CARBON DIOXIDE SENSOR. ADJACENT TEXT INDICATES CONTROLLED EQUIPMENT
FSC EF-X	FSC	FAN SPEED CONTROLLER. ADJACENT TEXT INDICATES ASSOCIATED FAN

CAL GREEN CODE NONRESIDENTIAL MANDATORY MEASURES

SECTION 5.508 OUTDOOR AIR QUALITY

5.508.1 OZONE DEPLETION AND GREENHOUSE GAS REDUCTIONS. INSTALLATIONS OF HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT SHALL COMPLY WITH SECTIONS 5.508.1.1 AND 5.508.1.2.

5.508.1.1 CHLOROFLUOROCARBONS (CFCS). INSTALL HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT THAT DO NOT CONTAIN CFCS.

5.508.1.2 HALONS. INSTALL HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT THAT DO NOT CONTAIN HALONS.

SECTION 702.1 INSTALLER TRAINING

HVAC SYSTEM INSTALLERS SHALL BE TRAINED AND CERTIFIED IN THE PROPER INSTALLATION OF HVAC SYSTEMS INCLUDING DUCTS AND EQUIPMENT BY A NATIONALLY OR REGIONALLY RECOGNIZED TRAINING OR CERTIFICATION PROGRAM. UNCERTIFIED PERSONS MAY PERFORM HVAC INSTALLATIONS WHEN UNDER THE DIRECT SUPERVISION AND RESPONSIBILITY OF A PERSON TRAINED AND CERTIFIED TO INSTALL HVAC SYSTEMS OR CONTRACTOR LICENSED TO INSTALL HVAC SYSTEMS. EXAMPLES OF ACCEPTABLE HVAC TRAINING AND CERTIFICATION PROGRAMS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
1. STATE CERTIFIED APPRENTICESHIP PROGRAMS.
2. PUBLIC UTILITY TRAINING PROGRAMS.
3. TRAINING PROGRAMS SPONSORED BY TRADE, LABOR OR STATE-WIDE ENERGY CONSULTING OR VERIFICATION ORGANIZATIONS.
4. PROGRAMS SPONSORED BY MANUFACTURING ORGANIZATIONS.
5. OTHER PROGRAMS ACCEPTABLE TO THE ENFORCING AGENCY

MECHANICAL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
Ø	DIA	DIAMETER
ϕ		ELECTRICAL PHASE
		CEILING MOUNTED SUPPLY OR OUTSIDE AIR DIFFUSER
		CEILING MOUNTED RETURN AIR GRILLE
		CEILING MOUNTED EXHAUST AIR GRILLE
		SIDEWALL MOUNTED SUPPLY AIR DIFFUSER, RETURN AIR GRILLE, LOUVER
	24x12, 24x12 FO	RECTANGULAR, FLAT OVAL DUCT
	24x12L, 12ØL	LINED DUCT
		RECTANGULAR SUPPLY / OA, RETURN, EXHAUST / RELIEF DUCT PASSING THROUGH PLANE OF VIEW
		RECTANGULAR SUPPLY / OA, RETURN, EXHAUST / RELIEF DUCT TURNING DOWN
	12Ø	ROUND DUCT
		ROUND DUCT TURNING DOWN, ROUND DUCT TURNING UP
		90° ELBOW WITH TURNING VAINS
		FLEXIBLE DUCT 60" MAX LENGTH
	FC	FLEXIBLE CONNECTION
	VD	MANUAL VOLUME DAMPER
	CVD	CABLE OPERATED VOLUME DAMPER
		ACCESS CLEARANCE
		ROOF JACK
		ROOF CAP
		CEILING EXHAUST FAN
REF REF		REFRIGERATION LINES
22x30 MIN AP	AP	ACCESS PANEL. SIZE GIVEN INDICATES MINIMUM SIZE REQUIRED

PROJECT TEAM LIST

TITLE	NAME	DESK NUMBER	EMAIL ADDRESS
PRINCIPAL IN CHARGE	BRIAN STARRETT	805.634.6159	BSTARRETT@EMCOR.NET
PROJECT MANAGER	DENVER STANGER	805.634.8711	DSTANGER@EMCOR.NET
MECHANICAL DESIGNER	DENVER STANGER	805.634.8711	DSTANGER@EMCOR.NET
PLUMBING DESIGNER	ELI FERMAN	805.634.8818	EFERMAN@EMCOR.NET
ENERGY COMPLIANCE	JORGE BRAVO	805.595.0894	JBRAVO@EMCOR.NET

SHEET INDEX

SHEET NUMBER	SHEET TITLE
M-000	GENERAL
M-001	SCHEDULES
M-002	DETAILS
M-003	DETAILS
M-100	ZONE PLAN
M-200	FLOOR PLAN

CAL GREEN CODE NONRESIDENTIAL MANDATORY MEASURES

5.410.4 TESTING AND ADJUSTING. TESTING AND ADJUSTING OF SYSTEMS SHALL BE REQUIRED FOR NEW BUILDINGS LESS THAN 10,000 SQUARE FEET OR NEW SYSTEMS TO SERVE AN ADDITION OR ALTERATION SUBJECT TO 2022 CGBSC 303.1.
5.410.4.2 SYSTEMS. DEVELOP A WRITTEN PLAN OF PROCEDURES FOR TESTING AND ADJUSTING SYSTEMS. SYSTEMS TO BE INCLUDED FOR TESTING AND ADJUSTING SHALL INCLUDE AT A MINIMUM, AS APPLICABLE TO THE PROJECT:
1. HVAC SYSTEMS AND CONTROLS
2. WATER HEATING SYSTEMS
3. WATER REUSE SYSTEMS
5.410.4.3 PROCEDURES. PERFORM TESTING AND ADJUSTING PROCEDURES IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND APPLICABLE STANDARDS ON EACH SYSTEM.

AT A MINIMUM THE MECHANICAL CONTRACTOR SHALL OBTAIN THE LATEST START-UP CHECK LIST(S) FROM THE EQUIPMENT MANUFACTURER AND PERFORM ALL TESTS AND CHECKS APPLICABLE. AFTER COMPLETION OF THE START-UP CHECK LIST THE MECHANICAL CONTRACTOR SHALL MAKE ADJUSTMENTS TO PUT THE EQUIPMENT IN PEAK WORKING ORDER. MECHANICAL CONTRACTOR SHALL DOCUMENT ALL WORK PERFORMED. CLOSE OUT DOCUMENTATION PROVIDED TO THE GENERAL CONTRACTOR SHALL INCLUDE ALL COMPLETED CHECK LIST(S) AND DOCUMENTATION FOR ANY WORK PERFORMED. THE GENERAL CONTRACTOR SHALL SUBMIT THE CHECK LIST(S) AND WORK DOCUMENTATION TO ENGINEER OF RECORD.

5.410.4.3.1 HVAC BALANCING. IN ADDITION TO TESTING AND ADJUSTING, BEFORE A NEW SPACE-CONDITIONING SYSTEM SERVING A BUILDING OR SPACE IS OPERATED FOR NORMAL USE, THE SYSTEM SHALL BE BALANCED IN ACCORDANCE WITH THE PROCEDURES DEFINED BY THE TESTING ADJUSTING AND BALANCING BUREAU NATIONAL STANDARDS; THE NATIONAL ENVIRONMENTAL BALANCING BUREAU PROCEDURAL STANDARDS; ASSOCIATED AIR BALANCE COUNCIL NATIONAL STANDARDS OR AS APPROVED BY THE BUILDING ENFORCING AGENCY.

SEE SPECIFICATION SECTION 23 00 13 FOR HVAC BALANCING REQUIREMENTS.

5.410.4.4 REPORTING. AFTER COMPLETION OF TESTING, ADJUSTING AND BALANCING, PROVIDE A FINAL REPORT OF TESTING SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.

5.410.4.5 OPERATION AND MAINTENANCE (O&M) MANUAL. PROVIDE THE BUILDING OWNER OR REPRESENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTIES/WARRANTIES FOR EACH SYSTEM. O&M INSTRUCTIONS SHALL BE CONSISTENT WITH OSHA REQUIREMENTS IN CCR, TITLE 8, SECTION 5142, AND OTHER RELATED REGULATIONS.

5.410.4.5.1 INSPECTIONS AND REPORTS. INCLUDE A COPY OF ALL INSPECTION VERIFICATIONS AND REPORTS REQUIRED BY THE ENFORCING AGENCY.

DIVISION 5.5-ENVIRONMENTAL QUALITY

SECTION 5.504 POLLUTANT CONTROL

5.504.1 TEMPORARY VENTILATION. THE PERMANENT HVAC SYSTEM SHALL ONLY BE USED DURING CONSTRUCTION IF NECESSARY TO CONDITION THE BUILDING WITHIN THE REQUIRED TEMPERATURE RANGE FOR MATERIAL AND EQUIPMENT INSTALLATION. IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, USE RETURN AIR FILTERS WITH A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8, BASED ON ASHRAE 52.2-1999, OR AN AVERAGE EFFICIENCY OF 30% BASED ON ASHRAE 52.1-1992. REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY, OR, IF THE BUILDING IS OCCUPIED DURING ALTERATION, AT THE CONCLUSION OF CONSTRUCTION.

5.504.3 COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.

5.504.4.1 ADHESIVES, SEALANTS AND CAULKS. ADHESIVES, SEALANTS, AND CAULKS USED ON THE PROJECT SHALL MEET THE REQUIREMENTS OF THE FOLLOWING STANDARDS:
1. ADHESIVES, ADHESIVE BONDING PRIMERS, ADHESIVE PRIMERS, SEALANTS, SEALANT PRIMERS AND CAULKS SHALL COMPLY WITH LOCAL OR REGIONAL AIR POLLUTION CONTROL OR AIR QUALITY MANAGEMENT DISTRICT RULES WHERE APPLICABLE, OR SCAQMD RULE 1168 VOC LIMITS, AS SHOWN IN TABLES 5.504.4.1 AND 5.504.4.2. SUCH PRODUCTS ALSO SHALL COMPLY WITH THE RULE 1168 PROHIBITION ON THE USE OF CERTAIN TOXIC COMPOUNDS (CHLOROFORM, ETHYLENE DICHLORIDE, METHYLENE CHLORIDE, PERCHLOROETHYLENE AND TRICHLOROETHYLENE), EXCEPT FOR AEROSOL PRODUCTS AS SPECIFIED IN SUBSECTION 2, BELOW.
2. AEROSOL ADHESIVES, AND SMALLER UNIT SIZES OF ADHESIVES, AND SEALANT OR CAULKING COMPOUNDS (IN UNITS OF PRODUCT, LESS PACKAGING, WHICH DO NOT WEIGH MORE THAN ONE POUND AND DO NOT CONSIST OF MORE THAN 16 FLUID OUNCES) SHALL COMPLY WITH STATEWIDE VOC STANDARDS AND OTHER REQUIREMENTS, INCLUDING PROHIBITIONS ON USE OF CERTAIN TOXIC COMPOUNDS, OF CALIFORNIA CODE OF REGULATIONS, TITLE 17, COMMENCING WITH SECTION 94507.

TABLE 5.504.4.1 ADHESIVE VOC LIMIT
LESS WATER AND LESS EXEMPT COMPOUNDS IN GRAMS PER LITER

SPECIALTY APPLICATIONS	CURRENT VOC LIMIT
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
SPECIAL PURPOSE CONTACT ADHESIVE	250

1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.
2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168, HTTP://WWW.ARB.CA.GOV/DRDB/SC/CURHTML/R1168.PDF.

5.504.5.3 FILTERS. IN MECHANICALLY VENTILATED BUILDINGS, PROVIDE REGULARLY OCCUPIED AREAS OF THE BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR THAT PROVIDES AT LEAST A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 13. MERV 13 FILTERS SHALL BE INSTALLED PRIOR TO OCCUPANCY, AND RECOMMENDATIONS FOR MAINTENANCE WITH FILTERS OF THE SAME VALUE SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL. FILTERS SHALL BE CLEARLY LABELED BY THE MANUFACTURER INDICATING THE MERV RATING.

EXCEPTIONS:
1. EXISTING MECHANICAL EQUIPMENT.

SECTION 5.505 INDOOR MOISTURE CONTROL

5.505.1 INDOOR MOISTURE CONTROL. BUILDINGS SHALL MEET OR EXCEED THE PROVISIONS OF CALIFORNIA BUILDING CODE, CCR, TITLE 24, PART 2, SECTIONS 1202 (VENTILATION) AND CHAPTER 14 (EXTERIOR WALLS). FOR ADDITIONAL MEASURES NOT APPLICABLE TO LOW-RISE RESIDENTIAL OCCUPANCIES, SEE SECTION 5.407.2 OF THIS CODE.

SECTION 5.506 INDOOR AIR QUALITY

5.506.1 OUTSIDE AIR DELIVERY. FOR MECHANICALLY OR NATURALLY VENTILATED SPACES IN BUILDINGS, MEET THE MINIMUM REQUIREMENTS OF SECTION 120.1 (REQUIREMENTS FOR VENTILATION) OF THE 2022 CALIFORNIA ENERGY CODE, OR THE APPLICABLE LOCAL CODE, WHICHEVER IS MORE STRINGENT, AND DIVISION 1, CHAPTER 4 OF CCR, TITLE 8.

5.506.3 CARBON DIOXIDE (CO2) MONITORING IN CLASSROOMS. EACH PUBLIC K-12 SCHOOL CLASSROOM, AS LISTED IN TABLE 120.1-A OF THE CALIFORNIA ENERGY CODE, SHALL BE EQUIPPED WITH A CARBON DIOXIDE MONITOR OR SENSOR THAT MEETS THE FOLLOWING REQUIREMENTS:
1. THE MONITOR OR SENSOR SHALL BE PERMANENTLY AFFIXED IN A TAMPER-PROOF MANNER IN EACH CLASSROOM BETWEEN 3 AND 6 FEET ABOVE THE FLOOR AND AT LEAST 5 FEET AWAY FROM DOORS AND OPERABLE WINDOWS.
2. WHEN THE MONITOR OR SENSOR IS NOT INTEGRAL TO A DIRECT DIGITAL CONTROL (DDC) SYSTEM, THE MONITOR OR SENSOR SHALL DISPLAY THE CARBON DIOXIDE READINGS ON THE DEVICE. WHEN THE SENSOR IS INTEGRAL TO A DDC SYSTEM, THE CARBON DIOXIDE READINGS SHALL BE AVAILABLE TO AND REGULARLY MONITORED BY FACILITY PERSONNEL.
3. A MONITOR SHALL PROVIDE NOTIFICATION THROUGH A VISUAL INDICATOR ON THE MONITOR WHEN THE CARBON DIOXIDE LEVELS IN THE CLASSROOM HAVE EXCEEDED 1,100 PPM. A SENSOR INTEGRAL TO A DDC SYSTEM SHALL PROVIDE NOTIFICATION TO FACILITY PERSONNEL THROUGH A VISUAL AND/OR AUDIBLE INDICATOR WHEN THE CARBON DIOXIDE LEVELS IN THE CLASSROOM HAVE EXCEEDED 1,100 PPM.
4. THE MONITOR OR SENSOR SHALL MEASURE CARBON DIOXIDE LEVELS AT MINIMUM 15-MINUTE INTERVALS AND SHALL MAINTAIN A RECORD OF PREVIOUS CARBON DIOXIDE MEASUREMENTS OF NOT LESS THAN 30 DAYS DURATION.
5. THE MONITOR OR SENSOR USED TO MEASURE CARBON DIOXIDE LEVELS SHALL HAVE THE CAPACITY TO MEASURE CARBON DIOXIDE LEVELS WITH A RANGE OF 400 PPM TO 2000 PPM OR GREATER.
6. THE MONITOR OR SENSOR SHALL BE CERTIFIED BY THE MANUFACTURER TO BE ACCURATE WITHIN 75 PPM AT 1,000 PPM CARBON DIOXIDE CONCENTRATION AND SHALL BE CERTIFIED BY THE MANUFACTURER TO REQUIRE CALIBRATION NO MORE FREQUENTLY THAN ONCE EVERY 5 YEARS.

MECHANICAL GENERAL NOTES

1. COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING CODES:

   2022 CALIFORNIA ADMINISTRATIVE CODE (CAC): PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
   2022 CALIFORNIA BUILDING CODE (CBC): PART 2, TITLE 24 CCR
   2022 CALIFORNIA ELECTRICAL CODE (CEC): PART 3, TITLE 24 CCR
   2022 CALIFORNIA MECHANICAL CODE (CMC): PART 4, TITLE 24 CCR
   2022 CALIFORNIA PLUMBING CODE (CPC): PART 5, TITLE 24 CCR
   2022 CALIFORNIA ENERGY CODE (CENC): PART 6, TITLE 24 CCR
   2022 CALIFORNIA FIRE CODE (CFC): PART 9, TITLE 24 CCR
   2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CAL GREEN): PART 11, TITLE 24 CCR

   REPORT DEFICIENCIES WITHIN THIRTY (30) DAYS UPON AUTHORIZATION TO PROCEED.
2. THESE DRAWINGS ARE A GENERAL GRAPHIC PRESENTATION OF THE WORK. DUCTWORK, PIPING, AND EQUIPMENT, AS SHOWN, ARE SCHEMATIC. FABRICATE AND INSTALL BASED ON ACTUAL FIELD MEASUREMENT. COORDINATE WITH OTHER TRADES. ADHERE TO LOCATIONS AS CLOSELY AS POSSIBLE, VARY RUNS OR SHAPE OF DUCTWORK AS REQUIRED TO MEET STRUCTURAL AND OTHER INTERFERENCES AS REQUIRED BY THE ARCHITECT. PROVIDE A COMPLETE SET OF SHOP DRAWINGS REFLECTING ACTUAL DIMENSIONS, ACCESS REQUIREMENTS, AND DETAILS BASED UPON THE ACTUAL EQUIPMENT PROCURED. MAINTAIN AN UP TO DATE SET OF AS-BUILT DRAWINGS AT THE JOB SITE.
3. THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL ITEMS RELATED TO MECHANICAL SYSTEMS WITH THE WORK OF OTHER TRADES BEFORE PROCEEDING WITH PROCURING OR FABRICATION OF EQUIPMENT, DUCTWORK, PIPING ETC. ITEMS TO BE COORDINATED SHALL INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

   GRILLES, REGISTERS AND DIFFUSERS SHALL BE COORDINATED WITH THE REFLECTED CEILING PLAN.

   DUCTWORK LOCATIONS AND POTENTIAL INTERFERENCES WITH STRUCTURAL MEMBERS, FRAMING, FIRE SPRINKLER LINES, PLUMBING WASTE LINES, CABLE TRAYS AND CONDUIT.

   OPENINGS REQUIRED IN WALLS, FLOORS OR CEILINGS SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND/OR FRAMING CONTRACTOR PRIOR TO THE START OF CONSTRUCTION TO AVOID REWORK. ANY REWORK REQUIRED SHALL BE AT NO ADDITIONAL COST TO THE OWNER.

   PRIOR TO BIDDING THE PROJECT THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR TO DETERMINE WHO WILL BE RESPONSIBLE FOR PROCURING AND INSTALLING MOTOR STARTERS, CONDUIT FOR LOW VOLTAGE CONTROLS AND LINE VOLTAGE CONTROL DEVICES, SUCH AS SINGLE POLE SWITCHES.

   ACCESS TO VOLUME DAMPERS FOR BALANCING. ACCESS TO ALL EQUIPMENT, AS WELL AS PLATFORM AND CURB LOCATIONS.

   CONSTRUCTION OF PLATFORMS AND SHAPED RUNNERS OR OTHER MEANS TO MOUNT CURBS LEVEL. ALL PLATFORMS AND CURBS SHALL BE LEVEL UNLESS OTHERWISE NOTED OR DETAILED ON THE MECHANICAL PLANS.
4. REVIEW ALL DRAWINGS AND SPECIFICATIONS INCLUDING ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, PLUMBING, AND ELECTRICAL. ANY QUESTIONS SHALL BE BROUGHT UP, IN WRITING, TO THE ATTENTION OF THE ENGINEER BEFORE THE START OF CONSTRUCTION.
5. ALL EQUIPMENT SHALL BE INSTALLED WITH SUFFICIENT ACCESS TO CONTROLS, FILTERS, ELECTRIC MOTORS, ETC. ACCESS CLEARANCE SHALL BE 30" OR AS REQUIRED BY THE EQUIPMENT MANUFACTURER, WHICH EVER IS GREATER. CONTRACTORS SHALL PROVIDE ACCESS PANELS WHERE REQUIRED. WHERE VERTICAL SPACE ALLOWS, INSTALL DUCTWORK THAT IS IN CLOSE PROXIMITY TO MECHANICAL, ELECTRICAL OR ANY OTHER ITEM THAT REQUIRES ACCESS HIGH IN THE SPACE FOR EASE OF ACCESS.
6. PRIOR TO ROUGH-IN, COORDINATE THE ORIENTATION OF ELECTRICAL BOXES WITH THE DIMENSIONS OF THE DEVICE OR WALL PLATE THAT WILL BE INSTALLED IN OR ON THE ELECTRICAL BOX TO ENSURE THAT THE DEVICE IS CORRECTLY ORIENTED AND THE BOX IS PROPERLY ALIGNED TO BE COVERED BY THE DEVICE OR WALL PLATE.
7. HANDLE, STORE AND INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.
8. BRACE AND SUPPORT PIPES, CONDUIT, AND DUCTWORK IN ACCORDANCE TO SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL AND PLUMBING PIPING SYSTEM.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF DIFFUSERS, REGISTERS, GRILLES, AND ACCESS PANELS.
10. ALL DUCT DIMENSIONS, AS SHOWN ON MECHANICAL DRAWINGS ARE CLEAR INSIDE DIMENSIONS. INCREASE OUTER DUCT DIMENSION AS REQUIRED TO ACCOUNT FOR THE THICKNESS OF INTERNAL LINING WHERE APPLICABLE.
11. INSULATION AND FLEXIBLE DUCT SHALL COMPLY WITH STATE FIRE MARSHALL CRITERIA AND SHALL NOT EXCEED FLAME SPREAD OF 25 AND SMOKE DEVELOPED OF 50 PER ASTM-84, NFPA-223, AND UL 723.
12. INSULATE PIPING AND DUCTWORK IN ACCORDANCE TO THE GOVERNING CODES.
13. COMMISSION AND START-UP THE MECHANICAL SYSTEMS TO ASSURE A COMPLETE AND OPERATIONAL HVAC SYSTEM IN ACCORDANCE WITH ASHRAE AND NEBB.
14. ALL SQUARE ELBOWS IN SUPPLY DUCTWORK SHALL HAVE TURNING VANES. PROVIDE MANUAL VOLUME DAMPER AT EACH BRANCH DUCT TAKE-OFF SERVING EACH AIR TERMINAL DEVICE. PROVIDE BALANCING DAMPERS FOR EACH MAIN DUCT TAKE-OFF IN ACCORDANCE TO SMACNA IN ORDER TO ASSURE A COMPLETELY BALANCED SYSTEM.
15. CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF A ROOM OR AREA TO CONTROL COOLING, HEATING AND VENTILATING EQUIPMENT SHALL BE MOUNTED AT THE HEIGHTS GIVEN BY SECTION 11B-308.1 OF THE 2022 CBC. NOTIFY THE ARCHITECT IMMEDIATELY IF THE MOUNTING HEIGHTS REQUIRED BY THE 2022 CBC CANNOT BE OBTAINED AT THE LOCATION WHERE THE CONTROL DEVICE IS SHOWN ON THE MECHANICAL FLOOR PLANS.
16. DUCT SMOKE DETECTORS WHEN NOT PROVIDED PRE-INSTALLED BY THE EQUIPMENT MANUFACTURER SHALL BE INSTALLED IN THE SUPPLY AIR DUCT OF AIR-MOVING SYSTEMS SUPPLYING AIR IN EXCESS OF 2000 CFM. DETECTORS SHALL BE LOCATED BETWEEN THE SUPPLY AIR DUCT CONNECTION AT THE EQUIPMENT AND THE FIRST BRANCH DUCT OR DIFFUSER. WHERE FIRE-DETECTION OR ALARM SYSTEMS ARE PROVIDED FOR THE BUILDING, ALL SMOKE DETECTORS SHALL BE SUPERVISED BY SUCH SYSTEMS IN AN APPROVED MANNER, AND INSTALLED IN ACCORDANCE WITH NFPA 72 AND THE CALIFORNIA BUILDING AND FIRE CODES.
17. ALL EQUIPMENT SHALL BE LABELED AS TO THE SPACE THEY ARE SERVING.
18. HABITABLE SPACE SHALL BE PROVIDED WITH A HEATING SYSTEM CAPABLE OF MAINTAINING A MINIMUM INDOOR TEMPERATURE OF 68°F AT A POINT 3 FEET ABOVE THE FLOOR PER 2022 CBC 1203.
19. MATERIALS EXPOSED WITHIN ANY SPACE BEING USED AS AN AIR PLENUM SHALL BE NON COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT GREATER THAN 25 AND A SMOKE DEVELOPED INDEX NOT GREATER THAN 50, WHEN TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ONE OF THE FOLLOWING TEST METHODS: NFPA 255, METHOD OF TEST OF SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS, ASTM E84, SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS, OR UL 723, TEST FOR SURFACE BURNING CHARACTERISTIC OF BUILDING MATERIALS.
20. ANY MECHANICAL EQUIPMENT THAT PROVIDES POWER TO A ENERGIZED ACCESSORY MUST BE PROVIDED WITH A NAMEPLATE THAT REFLECTS THE ELECTRICAL CHARACTERISTICS OF THE COMPLETE SYSTEM AS INSTALLED WITH THE ENERGIZED ACCESSORY. NO EXCEPTIONS.
21. EQUIPMENT WITH REFRIGERANT ACCESS PORTS LOCATED OUTDOORS IN AN AREA THAT IS NOT SECURED BY WALLS OR FENCING REQUIRING KEY ACCESS SHALL BE PROTECTED FROM WITH LOCKING-TYPE TAMPER RESISTANT CAPS.

MECHANICAL TITLE 24 NOTES

1. HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE LATEST REQUIREMENTS OF THE CA ENERGY EFFICIENCY STANDARDS.
2. HVAC SYSTEMS SHALL MEET THE LATEST CONTROL REQUIREMENTS OF THE CA ENERGY EFFICIENCY STANDARDS.
3. DOORS AND WINDOWS SHALL MEET MINIMUM INFILTRATION REQUIREMENTS OF THE CA ENERGY EFFICIENCY STANDARDS.
4. ALL WORK SHALL BE IN ACCORDANCE WITH CITY AND COUNTY CODES, CALIFORNIA ENERGY CONSERVATION STANDARDS, TITLE - 24, AND ALL OTHER APPLICABLE CODES.
5. ALL PIPING AND DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE LATEST REQUIREMENTS OF THE CA ENERGY EFFICIENCY STANDARDS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

rrmdesign.com | (805) 543-1794

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LICENSED ARCHITECT
KATHRYN ANNE NICOL
938079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

3C Engineering
An EMCOR Company
(800) 540-3363
1520 Park St, San Luis Obispo, CA, 93401

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FAN COIL UNIT SCHEDULE

TAG	MATCHING UNIT TAG	MAKE	MODEL	NOM TONS	REFRIGERANT	FAN						OAI CFM	AUXILIARY ELECTRIC HEAT		ELECTRICAL DATA			AHRI PERFORMANCE								MERV 13 FILTER QUANTITY AND SIZE	OPERATING WEIGHT LBS	REMARKS SEE BELOW	INSTALLATION DETAIL
						HEATING		COOLING		SPEED	ESP							COOLING				HEATING							
						CFM	WATTS	CFM	WATTS				KW	BTUH	POWER V/ϕ/HZ	MCA	MOCP	BTUH	SEER [SEER2]	EER [EER2]	IEER	BTUH AT 47°F	BTUH AT 17°F	COP AT 47°F	HSPF [HSPF2]				
FC 1	HPC 1	TRANE	5TEM6D07	5.0	R-454B	1825	660	1775	665	NORMAL	0.7	530	7.2	24,600	208/1/60	52	60	53,000	[17.1]	[11.7]	NA	50,500	33,400	NA	[9]	NOTE 1	175	1,C1	3/M-002
FC 2	HPC 2	TRANE	5TEM6D07	5.0	R-454B	1825	660	1775	665	NORMAL	0.7	465	7.2	24,600	208/1/60	52	60	53,000	[17.1]	[11.7]	NA	50,500	33,400	NA	[9]	NOTE 1	175	1,C1	3/M-002

GENERAL NOTES APPLICABLE TO ALL UNITS:
A. DISCONNECT PROVIDED BY ELECTRICAL CONTRACTOR.
B. PROVIDE WITH REQUIRED ACCESSORY TO MAKE THE UNIT SINGLE POINT POWER.
C. BALANCE SYSTEM WITH THE FAN SET IN HEATING MODE.

UNIT SPECIFIC NOTES:
1. PROVIDE WITH (1)24x24x2 GLASFLOSS MERV-13 FILTER. FILTERS ARE LOCATED IN THE RETURN DUCT.

CONTROL NOTES:
C1. PROVIDE WITH PELICAN MODEL TC3 COMBINATION PROGRAMMABLE THERMOSTAT AND CO2 SENSOR.

HEAT PUMP CONDENSING UNIT SCHEDULE

TAG	MATCHING UNIT TAG	MAKE	MODEL	NOM TONS	REFRIGERANT	ELECTRICAL DATA			AHRI PERFORMANCE						PIPING SIZE		OPERATING WEIGHT LBS	REMARKS SEE BELOW	INSTALLATION DETAIL
									COOLING			HEATING							
						POWER V/ϕ/HZ	MCA	MOCP	BTUH	SEER [SEER2]	EER [EER2]	BTUH AT 47°F	BTUH AT 17°F	HSPF [HSPF2]	LIQUID	SUCTION			
HPC 1	FC 1	TRANE	5TWR7060	5.0	R-454B	208-230/1/60	39	60	53,000	[17.1]	[11.7]	50,500	33,400	[9]	NOTE B	NOTE B	235	NA	1/M-002
HPC 2	FC 2	TRANE	5TWR7060	5.0	R-454B	208-230/1/60	39	60	53,000	[17.1]	[11.7]	50,500	33,400	[9]	NOTE B	NOTE B	235	NA	1/M-002

GENERAL NOTES APPLICABLE TO ALL UNITS:
A. DISCONNECT PROVIDED BY ELECTRICAL CONTRACTOR.
B. SIZE REFRIGERATION LINES PER MANUFACTURERS REQUIREMENTS FOR TOTAL DEVELOPED LINE LENGTH.

EXHAUST FAN SCHEDULE

TAG	MAKE	MODEL	TYPE	DRIVE	PERFORMANCE					MOTOR		ACCESSORIES					OPERATING WEIGHT LBS	REMARKS SEE BELOW	INSTALLATION DETAIL
					CFM	ESP	RPM	OPERATING POWER WATTS [BHP]	SONES	POWER V/ϕ/HZ	NOM HP	BIRD GUARD	BACKDRAFT DAMPER	ROOF CURB	ROOF JACK	WALL CAP			
EF 1	GREENHECK	SP-A90	CEILING	DIRECT	75	0.125	748	9	<0.3	120/1/60	NA	YES	YES	NO	YES	NO	15	C1	5/M-002
EF 2	GREENHECK	SP-A90	CEILING	DIRECT	75	0.125	748	9	<0.3	120/1/60	NA	YES	YES	NO	YES	NO	15	C1	5/M-002

GENERAL NOTES APPLICABLE TO ALL UNITS:
A. DISCONNECT PROVIDED BY ELECTRICAL CONTRACTOR.
B. FAN SPEED CONTROLLERS SHALL BE PROVIDED FROM THE FACTORY WITH THE SPEED CONTROLLER INTERNALLY MOUNTED WITHIN THE FAN HOUSING AND WIRED.

CONTROL NOTES:
C1. INTERLOCK FAN WITH ROOM LIGHTING CONTROLS SO THAT THE FAN ENERGIZES WHEN THE ROOM LIGHTS ARE TURNED ON. PROVIDE 5 MINUTE TIMED DELAY OFF. INTERLOCK AND TIME DELAY BY ELECTRICAL.

COMMERCIAL GRILLE, REGISTER, DIFFUSER, LOUVER SCHEDULE

FD = FIRE DAMPER
FSD = FIRE/SMOKE DAMPER
OAI = OUTSIDE AIR INTAKE
X"Ø = INLET SIZE (IF APPLICABLE)

FD S1 400 12x12 — CFM; DIFFUSER, GRILLE, LOUVER; NECK SIZE (length x width or length x height) OR LINEAR DIFFUSER LENGTH; MARK: S = SUPPLY; R = RETURN; E = EXHAUST; T = TRANSFER; L = LOUVER; O = OUTSIDE AIR

CEILING SUPPLY DEFLECTION LEGEND (EXCEPT FOR 4-WAY DEFLECTION, SHADING INDICATES ACTIVE SECTION OF DIFFUSER)

4-WAY | 3-WAY | 2-WAY CORNER | 2-WAY OPPOSITE | 1-WAY

TAG	TYPE	MAKE	MODEL	BORDER TYPE		CONSTRUCTION	FINISH	IMAGE	REMARKS	INSTALLATION DETAIL
				GYP BOARD CEILING OR WALL	LAY-IN CEILING					
S1	CEILING SUPPLY	TITUS	TDC	1	3	STEEL	WHITE		MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR AND FRAMING CONTRACTOR TO INSURE OPENINGS IN HARD CEILINGS AND WALLS ARE CORRECTLY SIZED TO ACCOMMODATE THE SPECIFIED BORDER TYPE. NO EXCEPTIONS	4/M-002
R1	CEILING OR SIDEWALL RETURN AND EXHAUST	TITUS	350RL	1	3	STEEL	WHITE		MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR AND FRAMING CONTRACTOR TO INSURE OPENINGS IN HARD CEILINGS AND WALLS ARE CORRECTLY SIZED TO ACCOMMODATE THE SPECIFIED BORDER TYPE. NO EXCEPTIONS	4/M-002
L1	4" WALL LOUVER	GREENHECK	ESJ-401	PROVIDE WITH 1-1/2" FLANGE ACCESSORY		ALUMINUM	PRIMER		PROVIDE WITH BIRD SCREEN WHEN USED FOR OUTSIDE AIR INTAKE OR EXHAUST AIR DISCHARGE. PROVIDE WITH INSECT SCREEN WHEN USED FOR COMBUSTION AIR. PAINT PER ARCHITECTURAL REQUIREMENTS	NA

MECHANICAL, ELECTRICAL AND PLUMBING ANCHORAGE NOTE

1. ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30.
   - A. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   - B. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
   - C. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.
2. THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:
   - A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
   - B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.
3. THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK & ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE APPROVED INSTALLATION GUIDE (E.G., HCAi OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP	X	MD	X	PP	X	E

OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH THE PROJECT SPECIFIC NOTES AND DETAILS

MP	MD	PP	E

OPTION 2: SHALL COMPLY WITH HCAi (OSHPD) PREAPPROVAL (OPM #) # _____, AS INCLUDED IN THESE DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

NOTE: REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ITEMS RELATED TO THE ELECTRICAL SYSTEM. LOW VOLTAGE CONDUIT FOR MECHANICAL SYSTEM CONTROLS SHALL BE IN ACCORDANCE WITH THE ELECTRICAL REQUIREMENTS.

MECHANICAL SYSTEM ACCEPTANCE TESTING REQUIREMENTS

ACCEPTANCE TESTING RELATED TO THE MECHANICAL SYSTEMS SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR AND SHALL BE PERFORMED BY AN ACCEPTANCE TESTING TECHNICIAN WHO HAS BEEN CERTIFIED BY A CALIFORNIA ENERGY COMMISSION APPROVED ACCEPTANCE TEST TECHNICIAN CERTIFICATION PROVIDER PROGRAM. THE TEST AND BALANCE CONTRACTOR CAN ALSO BE THE ACCEPTANCE TESTING TECHNICIAN. FOR APPLICABLE ACCEPTANCE TESTS SEE THE ENERGY COMPLIANCE DOCUMENTATION.

ACCEPTANCE TESTING SHALL BE REQUIRED FOR SYSTEMS AND COMPONENTS LISTED ON THE ENERGY COMPLIANCE DOCUMENTS.
ACCEPTANCE TESTING SHALL BE PERFORMED BY A CERTIFIED MECHANICAL ACCEPTANCE TEST TECHNICIAN (CMATT).

S:\ENG Projects\LMUSD Mesa MS Science & SPED\Engineering\LMUSD Mesa MS Science & SPED Mechanical Lead.dwg MQaddoura978E Apr 22,2026-2:48pm

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CONSULTANT

3C Engineering — An ENCORE Company — (805) 540-3343 — 1504 Park St, San Luis Obispo, CA, 93401

REGISTERED PROFESSIONAL ENGINEER — BENJAMIN P. STARRETT — M 34068 — EXP. 6/30/26 — MECHANICAL — STATE OF CALIFORNIA

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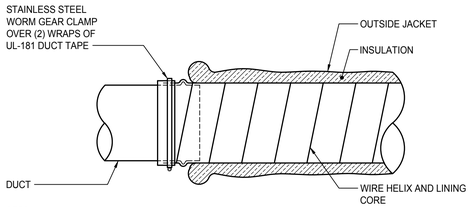
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SCHEDULES

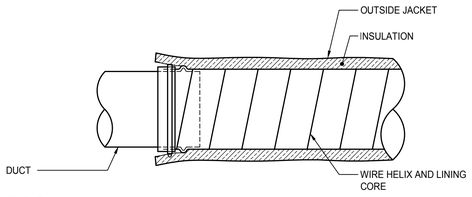
NO.	REVISION	DATE

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DRAWN BY: MQ
CHECKED BY: BS
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: M-001

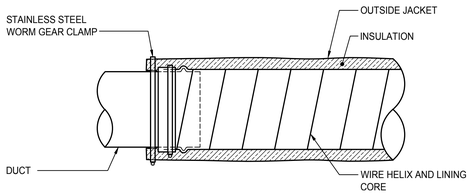
DSA BACK CHECK 2



STEP - 1:
FOLD BACK JACKET AND INSULATION. SLIDE AT LEAST 1" OF CORE OVER DUCT AND PAST THE BEAD. SEAL CORE TO DUCT WITH AT LEAST (2) WRAPS OF UL-181 LISTED DUCT TAPE. SECURE CONNECTION WITH A CLAMP PLACED OVER THE CORE AND TAPE PAST THE BEAD.

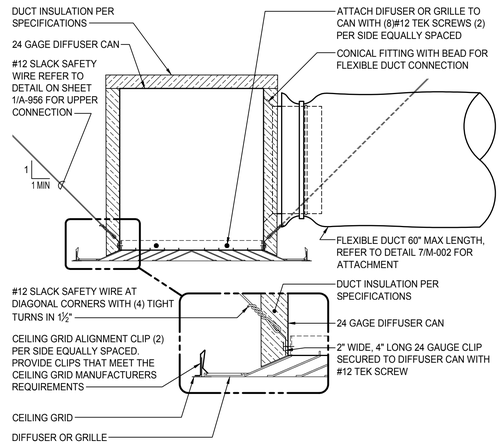


STEP - 2:
PULL THE INSULATION AND JACKET OVER THE TOP OF THE CORE AND THE CLAMP. TUCK THE OUTSIDE JACKET UNDER THE INSULATION.

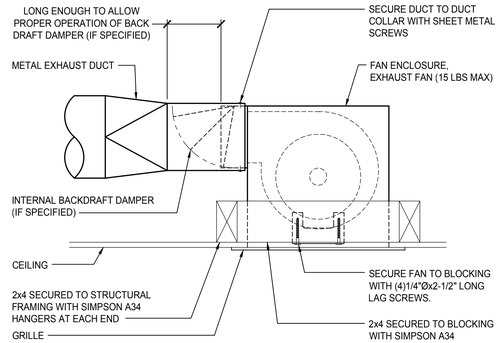


STEP - 3:
INSTALL A CLAMP AROUND THE ENTIRE FLEXIBLE DUCT ASSEMBLY

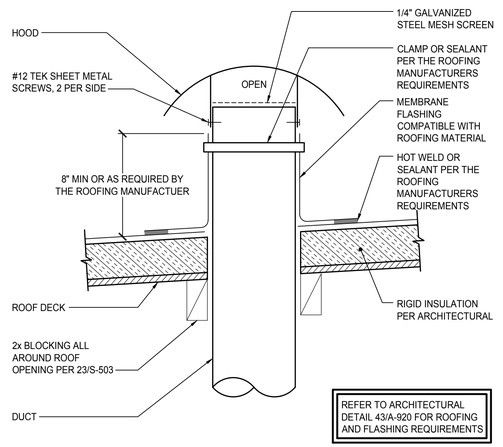
7 FLEXIBLE DUCT CONNECTION
NTS



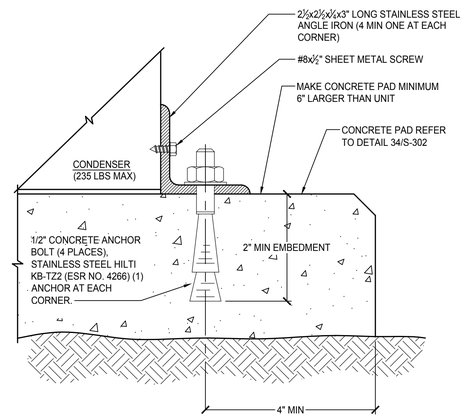
4 DIFFUSER OR GRILLE INSTALLATION (LAY-IN CEILING)
NTS



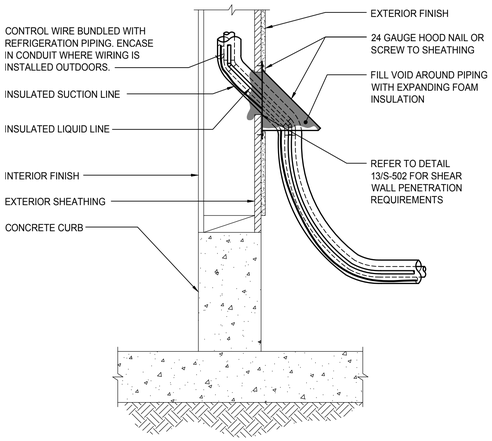
5 CEILING EXHAUST FAN
NTS



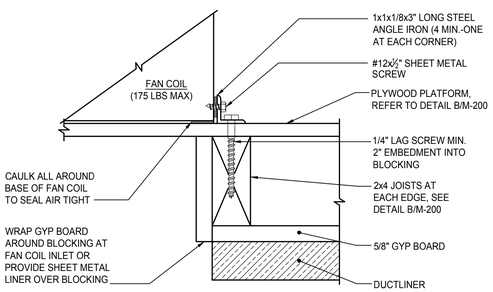
6 ROOF CAP
NTS



1 CONDENSING UNIT ANCHORAGE
NTS



2 REFRIGERATION PIPES THRU EXTERIOR WALL
NTS



3 FAN COIL ANCHORAGE
NTS

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KATHRYN ANNE NICOL
938079
2-28-27
RENEWAL DATE
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CONSULTANT

3C Engineering
An Ekotrope Company
(805) 540-3343
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REGISTERED PROFESSIONAL ENGINEER
BRYAN P. STARRETT
M 34068
EXP. 6/30/26
MECHANICAL
STATE OF CALIFORNIA

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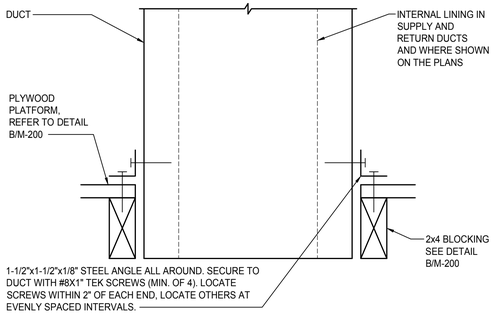
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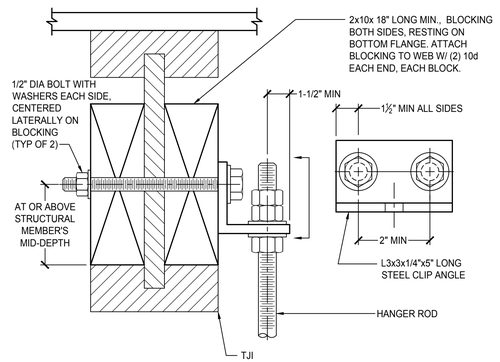
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CHECKED BY BS
DATE
APRIL 23, 2026
PROJECT NUMBER
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SHEET
M-002

DSA BACK CHECK 2

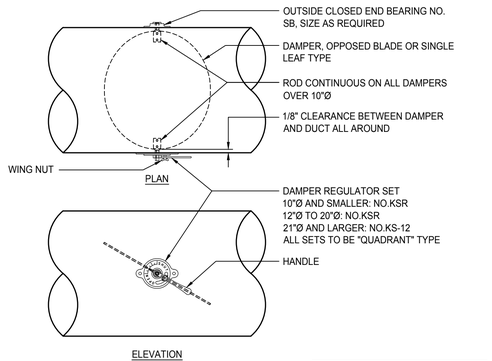
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7 RISER SUPPORT
NTS



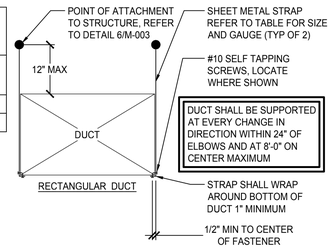
4 CONNECTION TO TJI
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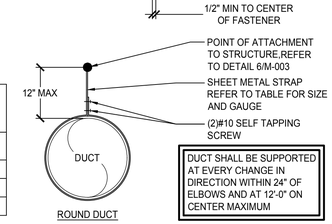
DUCT PENETRATIONS SHALL BE SEALED AIR TIGHT. ALL MODEL NUMBERS LISTED ARE DURO DYNE.

1 ROUND VOLUME DAMPER
NTS

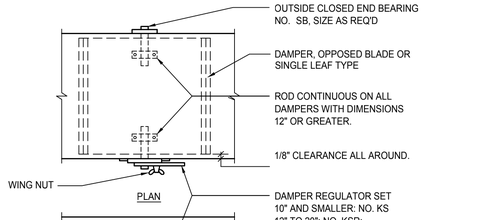
RECTANGULAR DUCT HANGER MINIMUM SIZE 8'-0"OC SPACING	
MAXIMUM HALF OF DUCT PERIMETER	**STRAP**
P/2 = 30"	1" x 20 GA
P/2 = 72"	1" x 20 GA



ROUND DUCT HANGER MINIMUM SIZE 12'-0"OC SPACING	
DUCT DIAMETER	**STRAP**
10Ø OR LESS	1" x 20 GA
11-18Ø	1" x 20 GA
19-24Ø	1" x 20 GA

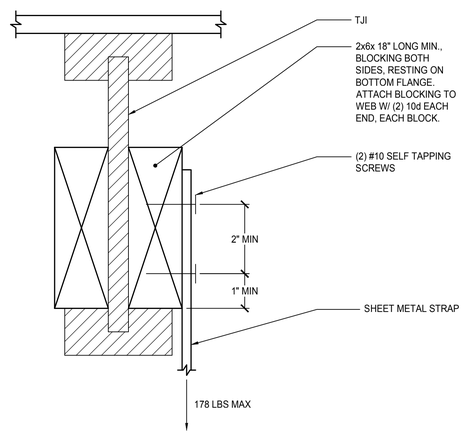


5 CONCEALED DUCT SUPPORT
NTS

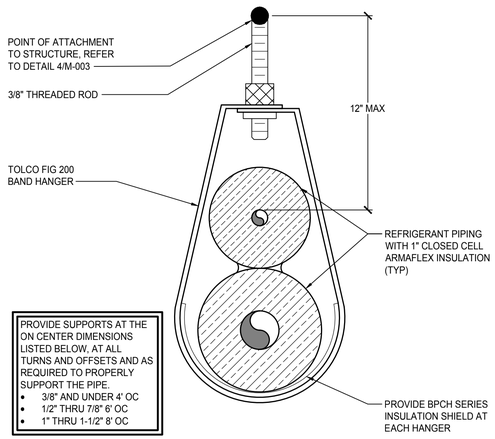


DUCT PENETRATIONS SHALL BE SEALED AIR TIGHT. ALL MODEL NUMBERS LISTED ARE DURO DYNE.

2 RECTANGULAR VOLUME DAMPER
NTS



6 SUPPORT CONNECTION
NTS



3 LINE SET SUPPORT DETAIL
NTS

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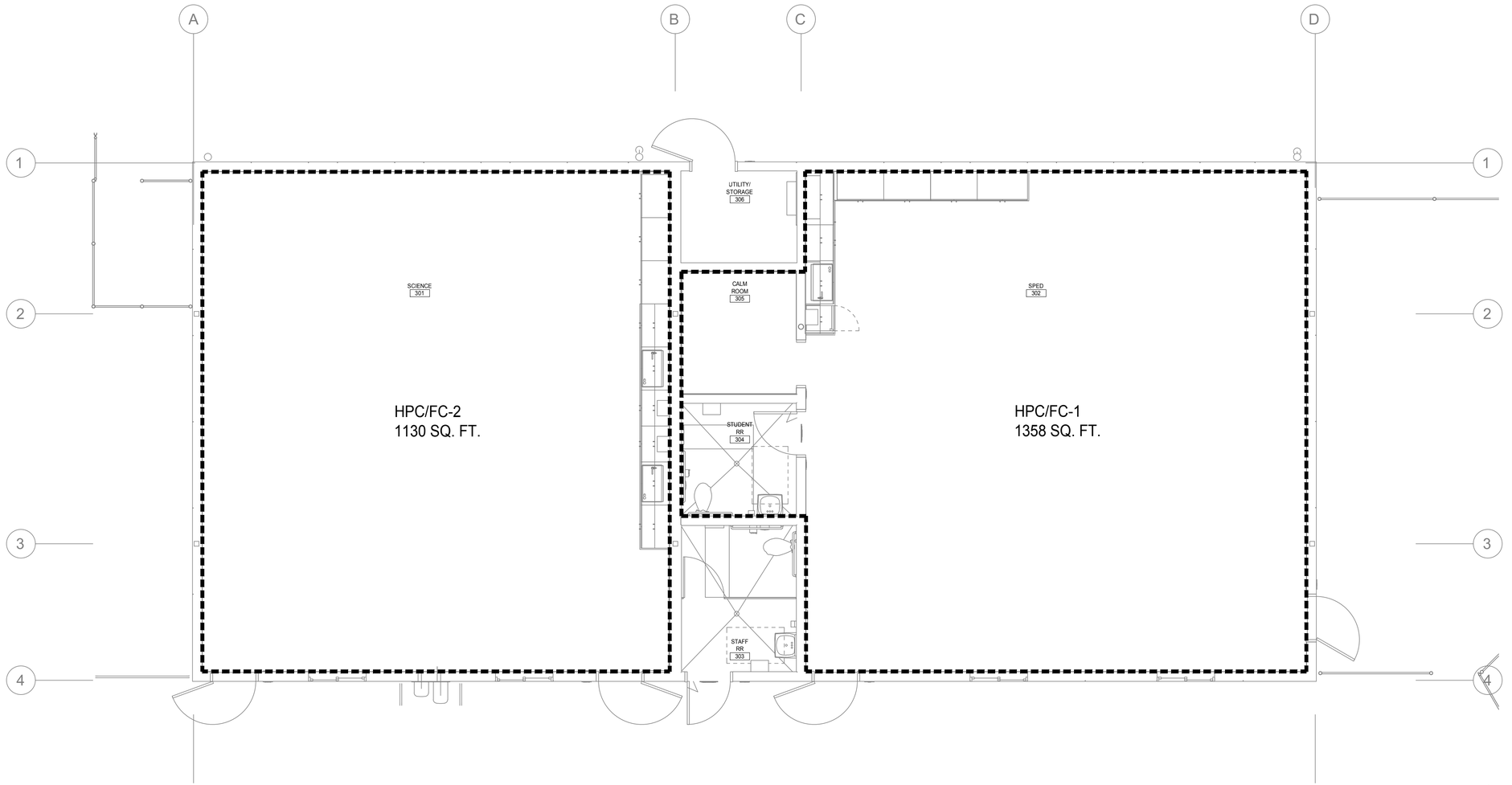
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PROJECT NUMBER
0822-03-ED25

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M-003

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ZONE PLAN

SCALE: 1/4" = 1'-0"

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REVIEWED FOR
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rrm design group

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KATHRYN ANNE NICOL
938079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

3C Engineering
An ENGEO Company
(805) 540-3343
1150 Palm St, San Luis Obispo, CA, 93401

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REGISTERED PROFESSIONAL ENGINEER
BENJAMIN P. STARRETT
M 34068
MECHANICAL
EXP. 6/30/26
STATE OF CALIFORNIA

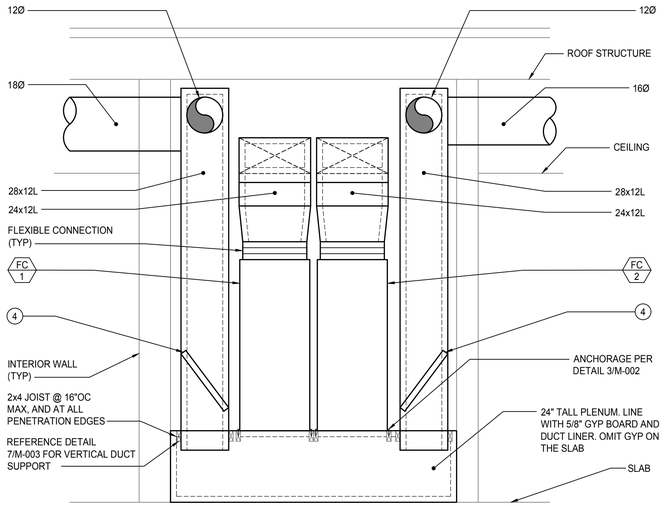
MESA MS SPED SCIENCE BUILDING
2555 S HALCYON RD, ARROYO GRANDE, CA

ZONE PLAN

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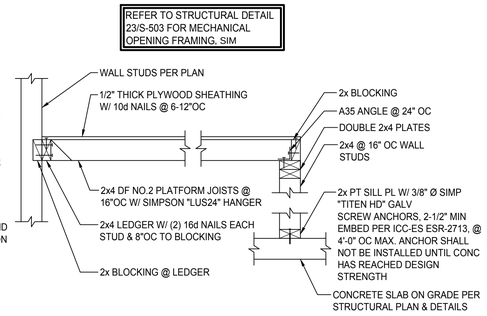
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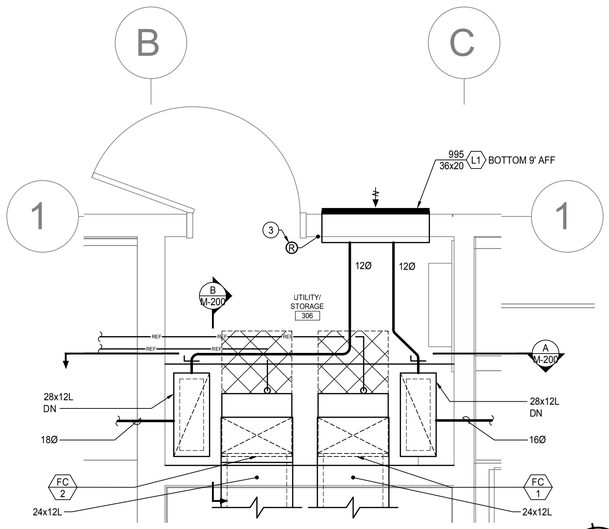
A SECTION VIEW - UTILITY ROOM

SCALE: 1/2" = 1'-0"



B PLATFORM FRAMING

SCALE: 1" = 1'-0"



1 ENLARGED FLOOR PLAN

SCALE: 1/2" = 1'-0"

KEY NOTES

APPLICABLE TO THIS SHEET ONLY

1	2-WAY CORNER DIFFUSER.
2	REFRIGERATION PIPES THRU EXTERIOR WALL. REFER TO DETAIL 2/M-002.
3	PELICAN MODEL WR900 REPEATER. SECURE HIGH ON WALL WITH SCREW MOUNT ON THE BACK OF THE UNIT. PROVIDE 120V RECEPTACLE WITHIN 48" OF THE DEVICE.
4	(1)24x24x2 MERV-13 FILTER. CONTRACTOR FABRICATED FILTER RACK. PROVIDE GASKETS OR OTHER MEANS TO CLOSE GAPS AROUND FILTERS TO PREVENT BYPASS. FILTER SHALL BE REMOVABLE FROM THE FRONT OF THE DUCT.

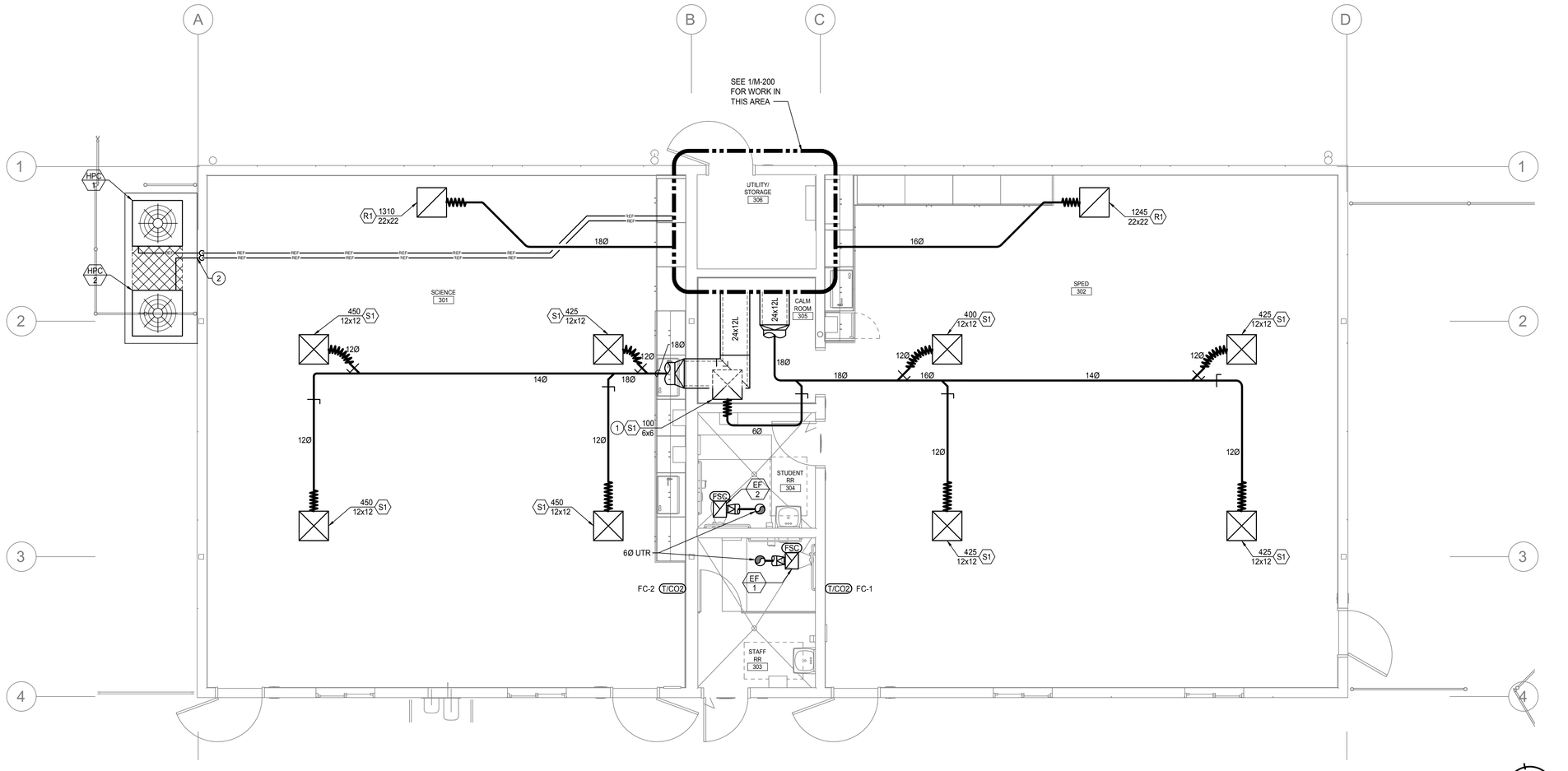
HVAC GENERAL NOTES

APPLICABLE TO THIS SHEET ONLY

1	PROVIDE MANUAL VOLUME DAMPERS IN ALL BRANCH DUCTS TO AIR OUTLETS / INLETS. VOLUME DAMPERS ABOVE HARD LID CEILINGS TO BE CABLE OPERATED UNLESS NOTED OTHERWISE. CABLE TO BE ACCESSED THRU THE FACE OF GRILLE. AFTER BALANCING TUCK CABLE INTO DIFFUSER SO THAT IT IS NOT VISIBLE.
2	REFER TO DETAIL 3/M-003 FOR REFRIGERANT PIPING SUPPORT. LINESET SIZES FOR HPC-1,2 SHALL BE 5/16" FOR LIQUID LINE AND 7/8" FOR VAPOR LINE.

PASSIVE MAKE-UP AIR SCHEDULE

ROOM	DOOR LOUVER MINIMUM FREE AREA FT²	DOOR UNDER CUT
STAFF RR 303	NA	1"
STUDENT RR 304	NA	1"



2 FLOOR PLAN

SCALE: 1/4" = 1'-0"

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CONSULTANT

3C Engineering
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(805) 542-1943
1530 Park St, San Luis Obispo, CA, 93401

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FLOOR PLAN

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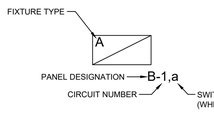
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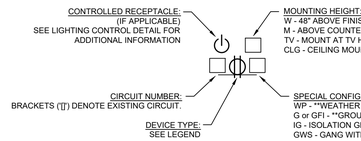
CIRCUITING LEGEND

LIGHTING PLAN



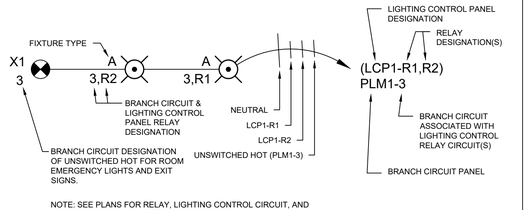
- PROVIDE ALL BRANCH CIRCUIT WIRING FROM FIXTURES TO PANEL(S) AS DESCRIBED BY CIRCUIT NUMBERS SHOWN.
- PROVIDE ALL WIRING BETWEEN FIXTURES AND CONTROL DEVICES AS DESCRIBED IN REFERENCE NOTES AND/OR SHOWN BY SWITCHLEG DESIGNATIONS.
- EXIT AND EMERGENCY LIGHT FIXTURES SHALL BE CONNECTED TO AN UNSWITCHED BRANCH CIRCUIT CONDUCTOR.
- HOME RUN CONDUITS SHALL BE 3/4"C., MAX OF (3) BRANCH CIRCUITS PER CONDUIT.
- PROVIDE ALL BRANCH CIRCUIT WIRING FROM MECH. EQUIPMENT TO PANELS.

POWER PLAN



- PROVIDE ALL BRANCH CIRCUIT WIRING FROM DEVICES TO PANEL(S) PER DESIGNATIONS/CIRCUIT NUMBERS.
- EACH BRANCH CIRCUIT SHALL HAVE A SEPARATE NEUTRAL AS INDICATED ON PANEL SCHEDULES.
- HOME RUN CONDUITS SHALL BE 3/4"C, MAX OF (3) BRANCH CIRCUITS PER CONDUIT.
- INCREASE HOME RUN CONDUIT SIZE TO 1"C FOR (4) BRANCH CIRCUITS OR MORE.
- (**) DENOTES SPECIAL DEVICE/NAMEPLATE REQUIREMENTS.

TYPICAL LIGHTING CONTROL PANEL CIRCUIT CONVENTION



NOTE: SEE PLANS FOR RELAY, LIGHTING CONTROL CIRCUIT, AND BRANCH CIRCUIT QUANTITIES & DESIGNATIONS

NOTE: THE INTENT OF THE DRAWINGS IS TO SHOW FIXTURE / DEVICE LOCATIONS AND PANEL DESIGNATIONS. ALL BRANCH CIRCUIT WIRING, MEETING THE CRITERIA NOTED ABOVE, WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. LIGHTING AND POWER PLANS SHOW AN ABOVE CEILING JUNCTION BOX / HOME RUN WITH CIRCUIT NUMBERS BY FIXTURES / DEVICES. PROVIDE ALL BRANCH CIRCUITING AS REQUIRED FOR A COMPLETE INSTALLATION. DOCUMENT ALL BRANCH CIRCUITING ON AS-BUILT DRAWINGS ACCURATELY REFLECTING THE INSTALLATION.

ABBREVIATIONS

A	AMPERE
AB	AMP BREAKER
ABAND	ABANDONED
ABV	ABOVE
AC	ALTERNATING CURRENT
AC-#	AIR CONDITIONER
ADJ	ADJACENT
AF	AMP FUSE, AMP FRAME
AFF	ABOVE FINISH FLOOR
AFG	BOVE FINISH GRADE
AIC	AMPERES INTERRUPTING CAPACITY
AI	ALUMINUM
AS	AMP SWITCH RATING
ATS	AUTOMATIC TIME SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIBLE/AUDIO VISUAL
AWG	AMERICAN WIRE GAGE
BFG	BELOW FINISH GRADE
BIL	BASIC IMPULSE LEVEL
BLDG	BUILDING
C	CONDUIT
-C-	CATV CONDUIT
CABT	CABINET
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER, CODE BLUE
CBC	CA. BUILDING CODE
CEC	CA. ELECTRICAL CODE
	CA. ENERGY COMMISSION
CF	COMPACT FLUORESCENT
CFC	CALIFORNIA FIRE CODE
CLG	CEILING
CL	CENTER LINE
CKT	CIRCUIT
CNT'R	CONTRACTOR
C.O.	CONDUIT ONLY (W/PULLROPE)
COND	CONDUIT, CONDUCTOR
CR	CRITICAL BRANCH
CSFM	CALIFORNIA SFM
CT	CURRENT TRANSFORMER
Cu	COPPER
CU-#	CONDENSING UNIT
D	DEPTH
DC	DIRECT CURRENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DPST	DOUBLE POLE SINGLE THROW
DW	DISHWASHER
EM	EMERGENCY
(E)	EXISTING
EA	EACH
EB	ELECTRONIC BALLAST
EC	ELECTRICAL CONTRACTOR
EC-#	EVAPORATIVE COOLER
EF-#	EXHAUST FAN
EL	EVENING LIGHT
ELEC	ELECTRICAL
EM	EMERG BATTERY BACKUP
	EMERGENCY BALLAST
EMERG	EMERGENCY
EOL	END OF LINE
EQUIPT	EQUIPMENT
ES	ENERGY SAVING
(EXN)	(E) IN (N) LOCATION
(EXR)	(E) TO BE (R)
EXT	EXTERIOR
F	FLUORESCENT
(F)	FUTURE
F-#	FURNACE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAT	FIRE ALARM TERMINAL
FAU	FORCED AIR UNIT
FBO	FURNISHED BY OTHERS
FC-#	FAN COIL
FLA	FULL LOAD AMPS
FLR	FLOOR
FLUOR	FLUORESCENT
FS	FUSIBLE SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
G	GROUNDING CONDUCTOR
GC	GENERAL CONTRACTOR
GD	GARBAGE DISPOSAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
GWS	GANG WITH SWITCH
H	HEIGHT, HIGH
HACR	HEATING, AC & REFRIG
HID	HIGH INTENSITY DISCHARGE
HO	HIGH OUTPUT
HOA	HAND-OFF-AUTO
hp	HORSEPOWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
IC	INTERCOM
ID	IDENTIFICATION
IF	INSIDE FROST
IG	ISOLATED GROUND
J-BOX	JUNCTION BOX
k	QUANTITY 1000
kVA	KILOVOLTAMPS
kW	KILOWATT
LC	LIGHTING CONTACTOR
LPS	LOW PRESSURE SODIUM
LRA	LOCKED ROTOR AMPS
LS	LIFE SAFETY BRANCH
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CKT AMPS
MCB	MAIN CIRCUIT BREAKER
MCTB	MAIN CATV TERMINAL BOARD
MCTC	MAIN CATV TERMINAL CABINET
MECH	MECHANICAL
MFR	MANUFACTURER
MFS	MAIN FUSIBLE SWITCH
MH	METAL HALIDE
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OCP
MSB	MAIN SWITCHBOARD
MT	MOUNT
MT HT	MOUNTING HEIGHT
MTS	MANUAL TRANSFER SWITCH
MTTB	MAIN TELEPHONE TERMINAL BOARD
MTTC	MAIN TELEPHONE TERMINAL CABINET
MW	MICROWAVE
N	NEUTRAL (GROUNDED CONDUCTOR)
(N)	NEW
N3R	NEMA 3R
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NAT'L ELEC MANUFACTURER'S ASSOC
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NPF	NORMAL POWER FACTOR
NTS	NOT TO SCALE
OC	ON CENTER
OCP	OVERCURRENT PROTECTION
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OSA	OFFICE of the STATE ARCHITECT
OSHPD	OFFICE of STATEWIDE HEALTH PLANNING & DEVELOPMENT
OVLD	OVERLOAD
P	POLE
PA	PUBLIC ADDRESS
PB	PULLBOX
PC	PULL CHAIN
PC	PHOTOCELL
PC	PLUMBING CONTRACTOR
ph	PHASE
PNL	PANEL
POC	POINT OF CONNECTION
-PP-	POWER PRIMARY
-PS-	POWER SECONDARY
PV	PHOTOVOLTAIC
(R)	RELOCATE(D)
RECEPT	RECEPTACLE
REF	REFRIGERATOR
REQ'D	REQUIRED
RLA	RATED LOAD AMPS
RM	ROOM
RMC	RIGID METAL CONDUIT
RMV	REMOVE
RPLC	REPLACE
RS	RAPID START
SC	SIGNAL CABINET
SCC	SHORT CKT CURRENT
SFM	STATE FIRE MARSHAL
SHT	SHEET
SL	SLIMLINE, SWITCH LEG
SPEC	SPECIFICATION
SPST	SINGLE POLE SINGLE THROW
SQ	SQUARE
STR'G	STORAGE
SURF	SURFACE
SVC	SERVICE
SW	SWITCH
T	TRANSFORMER, TERMINAL
-T-	TELEPHONE CONDUIT
(TBR)	TO BE REMOVED
TC	TIME CLOCK
TEL	TELEPHONE
TELCO	TELEPHONE COMPANY
TS	TIME SWITCH
TSO	TIME SWITCH OVERRIDE
TSP	TWISTED SHIELDED PAIR
TTB	TELEPHONE TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
TX	TRANSFORMER
TYP	TYPICAL
TYP SIM	TYPICAL SIMILAR
UC	UNDERCABINET, UNDERCOUNTER
UG	UNDERGROUND
UGPS	UNDERGROUND PULL SECTION
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
USA	UG SVC ALERT 800-642-2444
V	VOLT
VA	VOLT AMPERES
VAC	VOLT ALTERNATING CURRENT
VHO	VERY HIGH OUTPUT
VOLT	VOLTAGE
VR	VANDAL-RESISTANT
W	WIDTH, WATT, WIRE
WH-#	WATER HEATER
WP	WEATHERPROOF (NEMA 3R)
XFMR	TRANSFORMER
+48	INDICATES MOUNTING HEIGHT AFF

POWER PLAN NOTES

A. FUSING: ALL FUSIBLE SAFETY DISCONNECT SWITCHES SHALL BE PROVIDED WITH DUAL-ELEMENT TIME DELAY TYPE FUSES SIZED AND RATED PER EQUIPMENT MANUFACTURERS' RECOMMENDATIONS. VERIFY WITH EQUIPMENT NAMEPLATE BEFORE INSTALLATION.

B. INSTALL SEPARATE NEUTRALS FOR EACH 120V BRANCH CIRCUIT.

C. MOTOR OVERLOAD PROTECTION: WHERE REQUIRED BY CEC ARTICLE 430 PART III AND NOT SHOWN ON PLAN OR PROVIDED INTEGRAL WITH EQUIPMENT, PROVIDE AND INSTALL THERMAL OVERLOAD PROTECTION FOR ALL MOTORS.

D. SPARE CONDUIT FOR RECESSED PANELS: PROVIDE (1) 3/4" SPARE CONDUIT STUB UP TO ACCESSIBLE ABOVE CEILING SPACE AND/OR ACCESSIBLE SPACE BELOW FOR EVERY (3) SPARE BREAKER SPACES AS INDICATED ON PANEL SCHEDULES.

E. DEVICE LOCATIONS SHOWN ARE SCHEMATIC AND APPROXIMATE. EXACT LOCATIONS SHALL BE FIELD VERIFIED DURING ROUGH-IN WITH ARCHITECTURAL ELEVATIONS, CASEWORK SHOP DRAWINGS, FURNITURE, ETC. AND SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT WITH OTHER EQUIPMENT.

F. ELECTRICAL AND COMMUNICATIONS OUTLETS SHOWN IN THE SAME LOCATION, SHALL BE MOUNTED ON OPPOSITE SIDES OF THE SAME STUD. COORDINATE BETWEEN ELECTRICAL AND COMMUNICATIONS PLANS.

G. ALL 125V AND 250V, 15- AND 20-AMPERE NONLOCKING-TYPE RECEPTACLES WITHIN COMMON AREAS SHALL BE TAMPER-RESISTANT PER CEC 406.12.

LIGHTING PLAN NOTES

A. NIGHT LIGHT "NL" DESIGNATED LUMINAIRES IN INTERIOR LOCATIONS SHALL HAVE THE DRIVER CONTINUOUSLY ENERGIZED. LUMINAIRES IN EXTERIOR LOCATIONS SHALL BE AUTOMATICALLY CONTROLLED TO BE ON FROM DUSK TO DAWN.

B. LIGHTING FIXTURE LOCATIONS SHOWN ARE SCHEMATIC. REFER TO ARCHITECTURAL PLANS (REFLECTED CEILING, ELEVATIONS, ETC.) FOR EXACT LOCATIONS AND MOUNTING HEIGHTS PRIOR TO ROUGH-IN.

C. REFER TO ARCHITECT'S REFLECTED CEILING PLAN(S) FOR CEILING HEIGHTS, TYPES, FINISHES, ETC. IN EACH AREA. VERIFY FLANGE TYPES, TRIM KITS, STEM LENGTHS, ETC. FOR ALL FIXTURES PRIOR TO SUBMITTALS.

D. CONFIRM LOCATION OF ALL DOORS SWINGS WITH ARCHITECTURAL PLANS PRIOR TO ROUGH-IN OF SWITCHES.

E. PROVIDE UNSWITCHED HOT LEG OF ROOM LIGHTING BRANCH CIRCUIT TO EACH BATTERY POWERED EMERGENCY LIGHT AND EXIT SIGN FOR CONTINUOUS CHARGING.

LIGHTING CONTROL GENERAL NOTES

A. CONTRACTOR TO PROVIDE COMPLETE MANUFACTURERS SHOP DRAWINGS SPECIFIC TO THIS PROJECT FOR THE INTERIOR AND EXTERIOR LIGHTING CONTROL SYSTEM.

B. VERIFY OCCUPANCY SETTING FOR EACH TYPE OF ROOM WITH OWNER AND ADJUST AS DIRECTED BY OWNER.

C. VERIFY EACH RELAY PROGRAMMING WITH OWNER AND PROGRAM EACH AS DIRECTED BY OWNER.

D. PROVIDE OWNER IN SERVICE TRAINING FOR LIGHTING CONTROL SYSTEM.

E. WHERE MULTIPLE CHANNEL CONTROLS HAVE BEEN PROVIDED IN A ROOM OR SPACE, VERIFY FIXTURE ZONING REQUIREMENTS WITH OWNER PRIOR TO PRODUCING SHOP DRAWINGS AND INSTALLATION.

F. FOR CLARIFICATION ALL REQUIRED LOW VOLTAGE CONTROL DEVICES AND CABLING MAY HAVE NOT BEEN SHOWN, CONTRACTOR TO PROVIDE ALL LOW VOLTAGE DEVICES AND CABLING AS REQUIRED TO MAKE CONTROL SYSTEMS FULLY FUNCTIONAL.

CONDUIT SYSTEM NOTES

CONDUIT SYSTEMS USED ON THIS PROJECT SHALL BE AS FOLLOWS

1. PVC SCHEDULE 40 OR 80 - UNDERGROUND/BELOW SLAB WITH GRS ELBOWS AND RISERS TAPE WRAPPED.
2. ELECTRICAL METALLIC CONDUIT (EMT) - ABOVE GRADE/SLAB IN BUILDING CONSTRUCTION AND WHERE EXPOSED ABOVE 8'-0" AFF.
3. GALVANIZED RIGID STEEL (GRS) - WHERE EXPOSED BELOW 8'-0" AFF. AND/OR WHERE SUBJECT TO PHYSICAL DAMAGE.

REFER TO SECTION 260533 & 260500 OF SPECIFICATIONS FOR ADDITIONAL INFORMATION. CONDUITS SHALL BE MINIMUM 1/2" UNLESS OTHERWISE NOTED, 3/4" FOR ALL HOME RUN CONDUITS AND WHERE ROUTED BELOW SLAB OR UNDERGROUND. CONDUIT SIZES, WHERE NOT NOTED ON THE DRAWINGS, SHALL BE SIZED FOR MAXIMUM 40% FILL PER CEC 310.6.
ADDITIONAL CONDUIT REQUIREMENTS.

- PVC UNDERGROUND TO EACH PANEL AND COMM CABINET.
- EMT FOR PHOTOVOLTAIC AND WEATHERHEAD
- GRS FOR ANY EXPOSED AT EXTERIOR WALLS

LUCIA MAR UNIFIED SCHOOL DISTRICT STANDARDS

ALL WORK SHALL COMPLY WITH LUCIA MAR UNIFIED SCHOOL DISTRICT STANDARDS, CONTRACTOR TO CONTACT SCHOOL DISTRICT DIRECTLY, OBTAIN COMPLETE LIST OF DISTRICT STANDARDS, AND ADHERE ACCORDINGLY.

SHEET INDEX

SHEET NO.	SHEET DESCRIPTION
E001	ELECTRICAL GENERAL NOTES, LEGENDS AND ABBREVIATIONS
E002	COMMUNICATION GENERAL NOTES, BASIS OF DESIGN, AND DEVICE LENGEND
E003	ELECTRICAL SINGLE LINE DIAGRAM
E004	ELECTRICAL LUMINAIRE SCHEDULE AND CONTROL DIAGRAMS
E005	ELECTRICAL DETAILS
E006	ELECTRICAL DETAILS
E007	ELECTRICAL DETAILS
E100	ELECTRICAL SITE PLAN
E200	ELECTRICAL POWER & COMMUNICATION PLAN
E201	ELECTRICAL LIGHTING PLAN
E203	FIRE ALARM PLAN
E300	FIRE ALARM RISER DIAGRAM
E301	FIRE ALARM DETAILS
E302	FIRE ALARM CALCULATIONS
E401	COMMUNICATIONS RISER DIAGRAM

GENERAL NOTES

1. CODE COMPLIANCE: ALL WORK SHALL CONFORM TO AND BE PERFORMED IN ACCORDANCE WITH CODES, STANDARDS, AND ORDINANCES AS SET FORTH BY THE AUTHORITIES HAVING JURISDICTION AND THEIR LATEST ADOPTED EDITIONS (IN EFFECT AT TIME OF BUILDING PERMIT APPLICATION) OF THE FOLLOWING PUBLICATIONS:

   A. CALIFORNIA CODE OF REGULATIONS TITLE 24; INCLUDES 2022 CALIFORNIA ELECTRICAL CODE, 2022 CALIFORNIA FIRE CODE, 2022 CALIFORNIA BUILDING CODE, ETC. WITH DSA AMENDMENTS AS APPLICABLE.

   B. AMERICANS WITH DISABILITIES ACT (ADA).

2. SAFETY: THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL EQUIPMENT IN A SAFE AND RESPONSIBLE MANNER. KEEP DEAD FRONT EQUIPMENT IN PLACE WHILE EQUIPMENT IS ENERGIZED. CONDUCT ALL CONSTRUCTION OPERATIONS IN A SAFE MANNER FOR EMPLOYEES AS WELL AS OTHER WORKPERSONS OR ANYONE VISITING THE JOB SITE. PROVIDE BARRIERS, FLAGS, TAPE, ETC. AS REQUIRED FOR SAFETY. THE CONTRACTOR SHALL HOLD ALL PARTIES HARMLESS OF NEGLIGENT SAFETY PRACTICES, WHICH MAY CAUSE INJURY TO OTHERS ON OR NEAR THE JOB SITE.

3. FIRE RATED ASSEMBLIES SHALL MAINTAIN RATINGS AS SPECIFIED IN THE CALIFORNIA BUILDING CODE CHAPTER 7. CONTRACTOR SHALL PROVIDE AND INSTALL PHYSICAL ENCLOSURE AROUND FIXTURES, PANELS, ETC. AS REQUIRED. ALL ASSEMBLIES TO BE PENETRATED SHALL BE INSTALLED WITH APPLICABLE THROUGH-PENETRATION FIRESTOP SYSTEM AS DETERMINED BY UL CLASSIFICATION. BEFORE CONSTRUCTION, VERIFY AND COMPLY WITH REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION.

4. MOUNTING HEIGHTS SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:

   +15" AFF: RECEPTACLES, TELEPHONE, TV & DATA OUTLETS. (MEASURED BOTTOM OF OUTLET BOX)
   +46" AFF: OUTLET ABOVE COUNTER (MEAUSRED TOP OF OUTLET BOX)
   +48" AFF: LIGHT SWITCHES. (MEASURED TOP OF OUTLET BOX)
   +48" AFF: FIRE ALARM MANUAL PULL STATIONS, T-STATS. (MEASURED TOP OF OUTLET BOX)
   THE LOWER OF +80" AFF TO BOTTOM OF LENS, OR 6" BELOW CEILING: FIRE ALARM VISUALS.

   ELECTRICAL SWITCHES: CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHT AND RECEPTACLE OUTLETS, APPLIANCES OR COOLING, HEATING AND VENTILATING EQUIPMENT, SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE OUTLET BOX NOR LESS THAN 15 INCHES MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISH FLOOR OR WORKING PLATFORM. [CBC 11B-308.1.1]

   ELECTRICAL RECEPTACLE OUTLETS: ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES MEASURED FROM THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING TO THE LEVEL OF THE FINISH FLOOR OR WORKING PLATFORM [CBC 11B-308.1.2]

   BEFORE ROUGH-IN, VERIFY ALL MOUNTING HEIGHTS AND EXACT LOCATIONS FOR ALL EQUIPMENT ELECTRICAL CONNECTIONS, STUB-UPS, RECEPTACLES, OUTLETS, ETC. WITH ARCHITECT OR OWNER. PLACE DEVICES LOCATED ABOVE COUNTERS, SHELVING, ETC. AND IN BATHROOMS SO AS NOT TO CONFLICT WITH EDGES OF WAINSCOTING, COUNTER SPLASH, SHELVING, ETC. ARCHITECTURAL SHEETS SHALL GOVERN.

5. LABEL PANELS, CABINETS, BACKBOARDS, MAIN DEVICES, SAFETY SWITCHES, CONTACTORS AND OTHER SPECIFICALLY DESIGNATED EQUIPMENT SHOWN ON PLANS. USE ENGRAVED LAMINATED PLASTIC NAMEPLATES ATTACHED BY SCREWS OR RIVETS. FOR FEEDERS, NEATLY AND INDELIBLY LABEL CONDUIT DESTINATIONS ON BOTH VISIBLE ENDS OF CONDUIT RUNS WHERE CONDUITS TERMINATE AT DESIGNATED ENCLOSURES, STRUCTURES OR EQUIPMENT (INCLUDING PULL AND SPLICE BOXES).

6. ANCHORAGE AND BRACING NOTES:

   MEP COMPONENT ANCHORAGE NOTE

   ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

   1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G., HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 125/250 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
   3. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

   THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

   A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.

   B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

   THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

   PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE.

   PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8 AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

   THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

   MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

   MP ☐ MD ☐ PP☐ E☒ OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. REFER TO DETAILS ON SHEETS E-005 THROUGH E-007.

LEGEND

NOTE: INTERPRET IN CONTEXT

MISCELLANEOUS

- NUMBERED SHEET NOTES: REFERS TO NOTES ON SAME SHEET AS REFERENCE
- DETAIL REFERENCE: Z = DETAIL DESIGNATION, X = SHEET NUMBER REFERENCE
- MECHANICAL SYSTEMS TAG (REFER TO MECHANICAL SHEETS) Y = UNIT TYPE, X = UNIT NUMBER
- 3103 FEEDER SCHEDULE DESIGNATION (EXAMPLE: 3103 = 310 AMPERE, 600V, 3 CURRENT CARRYING CONDUCTORS, PREFIXES: 'M' INDICATES MEDIUM VOLTAGE, 'CO14' INDICATES CONDUIT ONLY, QUANTITY (1) AND SIZE (4")))

- MOTOR
- THERMOSTAT
- CIRCUIT BREAKER
- FUSIBLE SWITCH
- GROUND
- PHASE
- CLOCK
- CLOCK/SPEAKER COMBINATION
- WALL MOUNTED CLOCK
- PUSHBUTTON
- FLUSHMOUNT PANEL
- SURFACEMOUNT PANEL
- FLUSHMOUNT CABINET
- SURFACEMOUNT CABINET
- DAMPER MOTOR
- HUMIDISTAT
- MAGNETIC CONTACTOR
- COMBINATION STARTER
- SAFETY DISCONNECT
- SECURITY CAMERA

LIGHT FIXTURES

- CEILING SURFACEMOUNT
- WALL SURFACEMOUNT
- PENDANT MOUNT
- RECESSED DOWNLIGHT
- RECESSED WALLWASH
- RECESSED TROFFER
- SURFACE WRAP (WIDE)
- SURFACE WRAP (NARROW)
- FLUOR. STRIP UON
- POLE LIGHT
- BOLLARD
- TANDEM-WIRED LAMPS
- UNDERCABINET LIGHT
- WALL LINEAR
- PENDANT LINEAR FLUOR.
- RECESSED WALLMOUNT
- EXIT LIGHT- WALL
- EXIT LIGHT- CEILING (ARROW INDICATES DIRECTION)
- A LETTER ADJACENT INDICATES FIXTURE TYPE
- LED COVE LIGHT PER FIXTURE SCHEDULE

CONDUIT/WIRE

- NEW
- UNDERGROUND
- NEW POWER HOMERUN (3 HOTS & NEUT SHOWN)
- CONDUIT SEAL
- INDICATES LINE CONTINUES
- CONDUIT STUB (W/MARKER)
- FLEXIBLE CONNECTION

POWER

- DUPLEX RECEPTACLE
- A PROVIDE ARC FAULT BREAKER
- G (GFCI) GROUND FAULT CURRENT INTERRUPTER DEVICE
- M MOUNT ABOVE COUNTER PER ADA. REFER TO ARCH.
- W MOUNT AT +48" MEASURED TO TOP OF BOX.
- WP NEMA 3R COVER (MIDWEST #U010010 OR ENGINEER APPROVED EQUAL)
- 208V RECEPTACLE
- WIU WHILE-IN USE NEMA 3R COVER ((MIDWEST #U010010 OR ENGINEER APPROVED EQUAL)
- FLOOR MOUNTED OUTLET
- "CONTROLLED" DUPLEX RECEPTACLE PER CURRENT CA ENERGY CODE REQUIREMENTS 130-5 "CIRCUIT CONTROLS FOR 120V RECEPTACLES" (LEVITON 5362-S2X, HEAVY DUTY SPEC GRADE; LEVITON 16352-WPX)
- (1)CONTROLLED DUPLEX RECEPTACLE AND (1) DUPLEX RECEPTACLE
- TV COMBINATION POWER AND TELEVISION OUTLET. PROVIDE 3/4"ENT CONDUIT TO "CTB" (ARLINGTON TVBS50-DB OR EQUAL) VERIFY MOUNTING HEIGHT PRIOR TO ROUGH-IN.
- COMBINATION POWER/DATA FLOOR BOX. PROVIDE (1)"CONTROLLED" DUPLEX RECEPTACLE (LEVITON 5362-2PX) PER CURRENT CA ENERGY CODE REQUIREMENTS 130-5 AND (1) UN-CONTROLLED DUPLEX RECEPTACLE.
- GROUND BAR
- CLG CEILING MOUNTED OUTLET
- DUPLEX HALF SWITCHED
- SWITCH RECEPTACLE
- DUPLEX RECEPTACLE. REMOVE BREAK-OFF TAB. TOP OUTLET IS CONTROLLED AND BOTTOM OUTLET IS UN-CONTROLLED. CONTROLLED OUTLET SHALL HAVE A PERMANENT MARKING TO DIFFERENTIATE THEM FROM UNCONTROLLED OUTLET PER CURRENT CA ENERGY CODE REQUIREMENTS. (LEVITON 5362S1X, HEAVY DUTY SPEC GRADE, LEVITON 16352-1PX-DECORA)
- GWS GANG WITH SWITCH
- A 120V COMBINATION SMOKE ALARM AND CARBON MONOXIDE WITH SEALED LITHIUM BATTERY BACK-UP MOUNTED AT CEILING. ALL SMOKE ALARM MUST BE INTERCONNECTED SO THAT ALL DETECTORS SOUND AN ALARM WHEN SMOKE IS DETECTED BY ANY ONE OF THE DETECTORS ANYWHERE. (KIDDE #120105CO OR ENGINEER APPROVED EQUAL). PROVIDE ARC FAULT BREAKER.
- DIS

BASIS OF DESIGN

TELECOMMUNICATIONS ROOM ('TR' / 'IDF' / 'MDF') ROOM EQUIPMENT

MANUF.	MANUFACTURER'S PART NO. / SERIES NO.	DESCRIPTION
HUBBELL	HQC2424	QUADCAB WALL MOUNTED IDF CABINET. 24H"X24"D
LEVITON	5R2UM-F06	2RU FIBER OPTIC SPLICE ENCLOSURE AND PATCH PANEL
LEVITON	49255-H24	24 PORT, 1RU MODULAR PATCH PANEL (CAT6A) - COMPATIBLE WITH LEVITON QUICKPORT CONNECTORS
LEVITON	49255-H48	48 PORT, 2RU MODULAR PATCH PANEL (CAT6A) - COMPATIBLE WITH LEVITON QUICKPORT CONNECTORS
LEVITON	49253-LPM	5-RING HORIZONTAL MANAGER 1RU
LEVITON	49253-BCM	5-RING HORIZONTAL MANAGER 2RU
CHATSWORTH	13704-703	VERTICAL CABLING MANAGERS 6"W

CABLING

MANUF.	MANUFACTURER'S PART NO. / SERIES NO.	DESCRIPTION
BERK-TEK	"ADVENTUM"	INDOOR/OUTDOOR, GIGALITE-'AB', LOOSE TUBE 'OS2', 12-STRAND, SINGLE MODE FIBER OPTIC CABLE
BERK-TEK	LANMARK-1000*	CAT6 CABLE (INDOOR, RISER RATED, REFER TO SPECIFICATIONS FOR COLOR SCHEME)
BERK-TEK	LANMARK-1000* OSP	CAT6 CABLE (OSP, OUTDOOR RATED, REFER TO SPECIFICATIONS FOR COLOR SCHEME)
BERK-TEK	RDT UTP CMP	CAT6A CABLE (INDOOR, RISER RATED, REFER TO SPECIFICATIONS FOR COLOR SCHEME)
BERK-TEK	RDT I/O UTP CMP	CAT6A CABLE (OSP, OUTDOOR RATED, REFER TO SPECIFICATIONS FOR COLOR SCHEME)

INTERCOM/PA/BELLS/CLOCKS

(CONTRACTOR SHALL PROVIDE MOUNTING ACCORDING TO CEILING TYPE SHOWN ON ARCHITECTURAL REFLECTED CEILING PLAN)

MANUF.	MANUFACTURER'S PART NO. / SERIES NO.	DESCRIPTION
ALGO	8180 G2	IP SPEAKER FOR VOICE PAGING, EMERGENCY ALTERING, & LOUD RINGING (POE)
ALGO	8128	IP STROBE LIGHT FOR TELEPHONE, SAFETY, SECURITY & EMERGENCY ALTERING (POE) - ONLY USED WHEN A ROOM REQUIRES A VISUAL ALERTER.
ALGO	8186	WIDEBAND IP HORN SPEAKER FOR VOICE PAGING, EMERGENCY ALTERTING & LOUD RINGING (POE)

*NOTE: PROVIDE OSP OUTDOOR CABLE WHERE ROUTED OUTDOORS AND BETWEEN BUILDINGS.

TASK RESPONSIBILITY MATRIX

TASK	RESPONSIBLE PARTY
TELECOM - CONDUIT, BACKBOXES, FLOORBOXES, POKE-THRU'S, SLEEVES	CFCI
TELECOM - CONDUIT ID, LABELING, AND PULLSTRINGS	CFCI
TELECOM - EQUIPMENT STRUCTURAL SUPPORTS AND BACKING	CFCI
TELECOM - EQUIPMENT CEILING PREP (ACCESS POINTS, CAMERAS, INTRUSION)	CFCI
POWER TO TELECOM, RACKS, HEAD-END EQUIPMENT	CFCI
TELECOM EQUIPMENT RACKS, PATCH PANELS, CABLE MANAGEMENT, LADDER RACKING/TRAY	CFCI
TELECOM CABLING AND TERMINATION	CFCI
TELECOM FACEPLATES AND DIVIDERS	CFCI
NETWORK EQUIPMENT (SWITCHES, RACK-MOUNT UPS IN IDF'S, SERVERS, STORAGE)	OFOI
MISC. IT EQUIPMENT (TELEPHONES, COMPUTERS, MONITORS)	OFOI
WIRELESS ACCESS POINTS	OFCI
POE SPEAKERS	OFCI
CLOCK DEVICES	CFCI
HDMI CABLES	OFCI

CFCI = CONTRACTOR FURNISHED AND INSTALLED
OFCI = OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI = OWNER FURNISHED, OWNER INSTALLED

NOTE: CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING OWNER OF ALL HARDWARE NOTED WITHIN DRAWINGS OR SPECIFICATIONS AS FURNISHED OR PROVIDED BY OWNER AND CONTRACTOR INSTALLED. SUCH NOTICE SHALL BE PROVIDED TO OWNER AT CONTRACT NOTICE TO PROCEED, AND A CORRESPONDING SCHEDULE FOR WHEN SPECIFIC EQUIPMENT IS NECESSARY FOR INSTALLATION BY CONTRACTOR. ALL HARDWARE SHALL BE INSTALLED BY THE EC UNLESS NOTED OTHERWISE.

GENERAL COMMUNICATION PLAN NOTES

A. REFER TO PROJECT TELECOMMUNICATIONS PLANS AND SPECIFICATIONS FOR FURTHER INFORMATION.

B. SIGNAL AND COMMUNICATIONS SYSTEMS RACEWAYS AND BOXES: PROVIDE AND INSTALL 5" SQUARE ("RANDL, INC") RECESSED JUNCTION BOX WITH 1-GANG RING AND (1) 1-1/4" CONDUIT STUB TO ACCESSIBLE CEILING SPACE ABOVE OR UNDER FLOOR SPACE BELOW AS APPLICABLE AT EACH WALL TELECOMMUNICATIONS (PHONE, PHONE/DATA, DATA) OUTLET AND TELEVISION OUTLET LOCATION SHOWN ON THE PLANS UNLESS OTHERWISE NOTED. PROVIDE PATHWAYS BETWEEN COMMUNICATIONS EQUIPMENT ROOM LOCATIONS AND ACCESSIBLE CEILINGS FOR ROUTING OF PHONE/DATA CABLES.

WHERE NO ACCESSIBLE CEILING EXIST; RUN CONDUIT FROM OUTLETS (FLOOR OR WALL) TO COMMUNICATIONS EQUIPMENT LOCATION.

PROVIDE 1-1/4" CONDUIT MINIMUM FOR FLOOR BOX TELECOM, AS SHOWN ON TELECOM PLANS.

BEFORE CONSTRUCTION, COORDINATE AND VERIFY TELECOMMUNICATIONS OUTLET LOCATIONS WITH OWNER OR ARCHITECT.

C. CONDUIT STUBS FROM BACKBOXES SHALL BE ROUTED TO ABOVE NEAREST ACCESSIBLE CEILING SPACE WITH ACCESS TO PRIMARY PATHWAY BACK TO IDF OR MDF, UNLESS NOTED OTHERWISE

D. CONFIRM ALL DEVICE HEIGHTS WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH IN AND COORDINATE FINAL LOCATIONS WITH NEARBY DEVICE DICSIPLINES.

E. COORDINATE ALL ROUGH-IN FOR OFOI DEVICES WITH OWNER IT REPRESENTATIVE PRIOR TO ROUGH-IN.

F. PROVIDE EQUIPMENT RACKS, PATCH PANELS, CABLING, TERMINAL BLOCKS & COMPLETE OUTLET ASSEMBLIES.

G. DEVICE LOCATIONS SHOWN ARE SCHEMATIC AND APPROXIMATE. EXACT LOCATIONS SHALL BE FIELD VERIFIED DURING ROUGH-IN WITH ARCHITECTURAL ELEVATIONS, CASEWORK SHOP DRAWINGS, FURNITURE, ETC. AND SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT WITH OTHER EQUIPMENT.

H. ELECTRICAL AND COMMUNICATIONS OUTLETS SHOWN IN FIRE RATED, OR SOUND RATED (STC) ASSEMBLIES SHALL BE PROVIDED WITH PUTTY PADS LISTED FOR THE APPLICATION.

I. ELECTRICAL AND COMMUNICATIONS OUTLETS SHOWN IN THE SAME LOCATION, SHALL BE MOUNTED ON OPPOSITE SIDES OF THE SAME STUD. COORDINATE BETWEEN ELECTRICAL AND COMMUNICATIONS PLANS. ALTERNATIVELY, A DEVICE BRACKET MAY BE USED BETWEEN STUDS WITH 4-INCH SEPARATION BETWEEN POWER AND LOW VOLTAGE BOXES.

J. AVOID UNDERGROUND TELECOM CONDUIT RUNS UNLESS NECESSARY. WHERE UNDERGROUND CONDUIT IS USED, TELECOM CABLES SHALL BE WET LISTED.

K. CABLE LADDER DROP-OUTS SHALL BE INSTALLED WHEREVER NECESSARY TO FACILITATE CABLE TRANSITIONS AND MIN BEND RADIUSES. DROP-OUTS SHALL BE EQUIVALENT TO CHATSWORTH AND SOLID ONE PIECE CONSTRUCTION.

L. NO LOW-VOLTAGE SYSTEM MAY USE THE TELECOMMUNICATIONS PATHWAY AS DESCRIBED ON THE TECHNOLOGY PLANS AND SPECIFICATIONS. THE TELECOMMUNICATION SYSTEM CABLING SHALL BE THE ONLY SYSTEM TO UTILIZE THE INFRASTRUCTURE AND CABLE TRAY / CABLE RUNWAY SYSTEM:

TELECOMMUNICATIONS DEVICE SCHEDULE

SYMBOL	BACKBOX	MUD RING	CONDUIT STUB	CABLE TYPE	CABLE QUANTITY	CABLE COLOR	FACEPLATE	NOTES
n	EXTRA DEEP 5-SQUARE	SINGLE GANG	1-1/4"	CAT6/6A	4	(1) CAT6 CABLE (RISER), BLUE IN COLOR (1) CAT6 CABLE (RISER), BLUE IN COLOR (1) CAT6 CABLE (RISER), BLUE IN COLOR (1) CAT6 CABLE (RISER), BLUE IN COLOR	4-PORT, WHITE	STANDARD WORK AREA OUTLET. "n" = NUMBER OF CAT6/6A DATA DROPS. PROVIDE BLANK COVERS FOR UNUSED PORTS. SEE DETAIL 1/E007 AND 3/E007 FOR FACEPLATE NAMING CONVENTIONS.
+10" n	EXTRA DEEP 5-SQUARE	SINGLE GANG	1-1/4"	CAT6	2	CAT6 CABLE (RISER) BLUE IN COLOR	2-PORT, WHITE	DATA OUTLET AT 100" AT LOCATION SHOWN IN PLAN. "n" = NUMBER OF CAT6/6A DATA DROPS. COORDINATE MOUNTING HEIGHT AND LOCATION WITH OWNER PRIOR TO ROUGH IN. SEE DETAIL 4/E007 FOR RECESSED MEDIA LAYOUT.
* n	EXTRA DEEP 5-SQUARE	SINGLE GANG	1-1/4"	CAT6	2	(1) CAT6 CABLE (RISER), BLUE IN COLOR (1) CAT6 CABLE (RISER), BLUE IN COLOR	2-PORT, WHITE	ABOVE COUNTER WORK AREA OUTLET. "n" = NUMBER OF CAT6/6A DATA DROPS. PROVIDE BLANK COVERS FOR UNUSED PORTS. SEE DETAIL 1/E007 AND 3/E007 FOR FACEPLATE NAMING CONVENTIONS.
M	-	-	1-1/4"	CAT6A	2	CAT6A CABLE (RISER) WHITE IN COLOR	-	INTERIOR WIRELESS ACCESS POINT, DISTRICT PROVIDED (INCLUDING MOUNT) AND CONTRACTOR INSTALLED. MOUNTING PER DETAIL 2/E007 OR 6/E007.
H M WP	-	-	1-1/4"	CAT6A	1	CAT6A CABLE (RISER) WHITE IN COLOR	-	EXTERIOR (WP) WALL MOUNTED WIRELESS ACCESS POINT LOCATION, DISTRICT PROVIDED (INCLUDING MOUNT) AND CONTRACTOR INSTALLED. EC SHALL PROVIDE (1) CAT6A CABLE EACH. REFER TO MANUFACTURER'S MOUNTING REQUIREMENTS.
HDMI	4-11/16"	SINGLE GANG	1-1/4"	NONE	-	-	LEVITON BRUSHED	
S	-	-	1-1/4"	CAT6	1	CAT6 CABLE (RISER) BLUE IN COLOR	-	VOIP ENABLED CEILING MOUNTED SPEAKER (PART NUMBERS PER BASIS OF DESIGN). CONTRACTOR SHALL PROVIDE (1) BLUE CAT6 CABLE PER DEVICE FROM IDF WITH MINIMUM 10'-0" SERVICE LOOP TERMINATED IN BISCUIT INSIDE SPEAKER ENCLOSURE.
S	-	-	1-1/4"	CAT6	1	CAT6 CABLE (RISER) BLUE IN COLOR	-	VOIP ENABLED WALL MOUNTED SPEAKER (PART NUMBERS PER BASIS OF DESIGN). CONTRACTOR SHALL PROVIDE (1) BLUE CAT6 CABLE PER DEVICE FROM IDF WITH MINIMUM 10'-0" SERVICE LOOP TERMINATED IN BISCUIT INSIDE SPEAKER ENCLOSURE.
S WP	-	-	1-1/4"	CAT6	1	CAT6 CABLE (RISER) BLUE IN COLOR	-	WEATHER PROOF (WP) OUTDOOR SPEAKER (PART NUMBERS PER BASIS OF DESIGN). EC SHALL PROVIDE (N) (1) CAT6 CABLE PER SPEAKER WITH MINIMUM 10'-0" SERVICE LOOP TERMINATED IN BISCUIT INSIDE SPEAKER ENCLOSURE. EC SHALL COORDINATE WITH DISTRICT REPRESENTATIVE FOR FINISHED MOUNTING HEIGHT.
VS	EXTRA DEEP 5-SQUARE	SINGLE GANG	1-1/4"	CAT6	HARD LID = (1) T-BAR = (2)	CAT6 CABLE (RISER) BLUE IN COLOR	-	PROVIDE SINGLE GANG BOX, DATA PORT AND COVER WITH (1) CAT6 CABLE TO IDF FLUSH MOUNTED IN HARD LID CEILING FOR FUTURE VAPE SENSOR.
CAM	-	-	1-1/4"	CAT6	1	CAT6 CABLE (RISER) BLUE IN COLOR	-	FUTURE EXTERIOR CAMERA LOCATION, PROVIDE (1) BLUE CAT6 CABLE PER LOCATION, TERMINATED IN 1-PORT BISCUIT IN FLUSH MOUNTED WEATHERPROOF 5S BOX. EC SHALL PAINT WEATHERPROOF COVER TO MATCH EXISTING BUILDING. COORDINATE BOX HEIGHT WITH DISTRICT.

1 TELECOMMUNICATION DEVICE CABLE AND ROUGH-IN SCHEDULE
SCALE: NTS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

rrm design group
rrmdesign.com | (805) 543-1794

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938079
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RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT
thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA
EXPIRES: 09/30/26
THOMA #25-8026

DSA BACK CHECK 2

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

COMMUNICATION GENERAL NOTES, BASIS OF DESIGN, AND DEVICE SCHEDULE

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER: JC
DRAWN BY: AV
CHECKED BY: JC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: E002

Feb 20, 2026 - 4:55pm - jchachigua - K:\ENG\2025\25-8026\25-8026_E001 - E002_GN&A.dwg
5/13/2025 9:44:52 AM
Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt

COPPER FEEDER SCHEDULE

FEEDER NO.	RACEWAY QUANTITY/SIZE	CONDUCTORS
2004	(1) 2"C	(4) #3/0 THWN & (1) #6 GND.
(E) F1	(2) 4"C	(4) #400 KCMIL THWN & (1) #2 GND. EA.
(E) F2	(1) 2"C	(4) #3/0 THWN & (1) #6 GND.
(E) F3	(1) 1-1/2"C	(3) #2 THWN & (1) #8 GND.
(E) F4	(1) 2"C	(3) #2 THWN & (1) #8 GND.
(E) F5	(1) 3"C	(4) #4/0 THWN & (1) #4 GND.
(E) F6	(1) 1-1/2"C	(4) #2 THWN & (1) #8 GND.

WARNING
ARC FLASH HAZARD

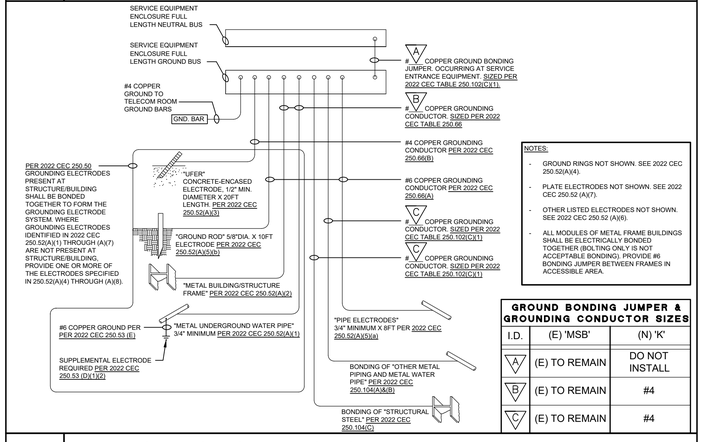
LINE SIDE of MAIN	FLASH PROTECTION BOUNDARY: HAZARD RISK CATEGORY: CLASS 2 INCIDENT ENERGY RANGE: 4 - 8 cal/cm²
LOAD SIDE of MAIN	FLASH PROTECTION BOUNDARY: HAZARD RISK CATEGORY: CLASS 0 INCIDENT ENERGY RANGE: 0 - 2 cal/cm²

PSE TQS#: #####.# Date Issued: April 2004 Study Rev. :0

LOCATION: BUS NAME PROTECTIVE DEVICE: UPSTREAM DEVICE

NOTE:
IN ACCORDANCE WITH CEC 110.16. PROVIDE ARC FLASH PROTECTION WARNING LABELS ON EACH SWITCHBOARD, PANELBOARD, AND TRANSFORMER. LABELS SHALL BE PER ANSI Z535.4 GUIDELINES PER THE ABOVE EXAMPLE.

1 TYPICAL ARC FLASH SIGNAGE

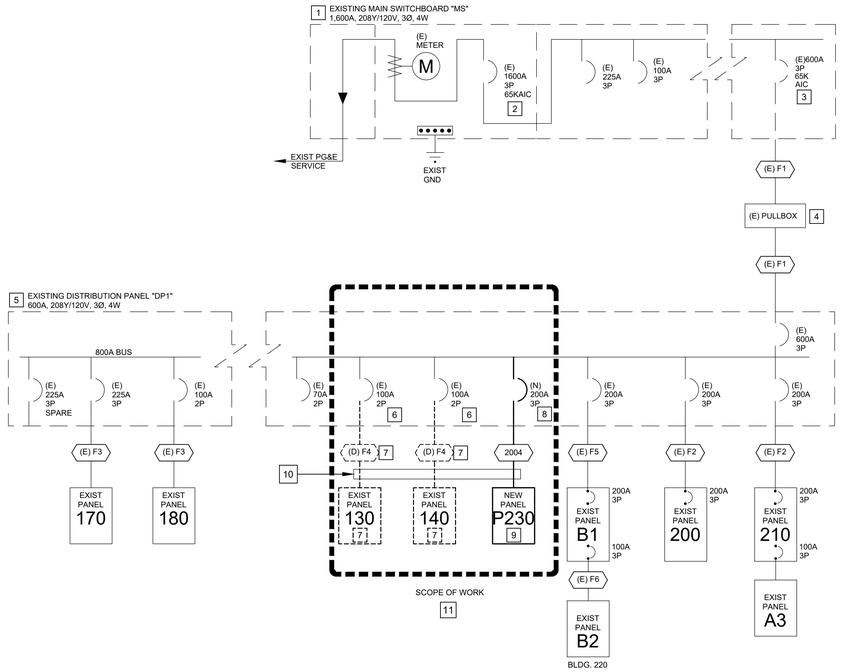


NOTES:
- GROUND RINGS NOT SHOWN. SEE 2022 CEC 250.52(A)(4).
- PLATE ELECTRODES NOT SHOWN. SEE 2022 CEC 250.52 (A)(7).
- OTHER LISTED ELECTRODES NOT SHOWN. SEE 2022 CEC 250.52 (A)(6).
- ALL MODULES OF METAL FRAME BUILDINGS SHALL BE ELECTRICALLY BONDED TOGETHER (BOLTING ONLY IS NOT ACCEPTABLE BONDING). PROVIDE #6 BONDING JUMPER BETWEEN FRAMES IN ACCESSIBLE AREA.

GROUND BONDING JUMPER & GROUNDING CONDUCTOR SIZES

I.D.	(E) 'MSB'	(N) 'K'
A	(E) TO REMAIN	DO NOT INSTALL
B	(E) TO REMAIN	#4
C	(E) TO REMAIN	#4

2 TYPICAL GROUND / BOND DETAIL



1 PARTIAL SINGLE LINE DIAGRAM
SCALE: NTS

(N) PANEL P230

BUS RATING: 225A 120/208V, 3PH, 4W
MAIN: 225A MAIN CIRCUIT BREAKER
SPACES: 42 FULL SIZE BOLT-ON CB SPACES
AIC RATING: 14 KAIC PANEL
CONNECTED VA
XXX MOUNT, NEMA 1
LOCATION XXX
WITH EQUIPMENT GND BUS

CKT %VD	DIST (FT)	NOTES	LOAD TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	NOTES	DIST (FT)	CKT %VD
1.49%	75		R	1	301 REC.	20	1	12	720			12	1	20	302 REC	2	R		75	1.49%
1.49%	75		R	3	301 REC.	20	1	12	720	720		12	1	20	302 REC	4	R		75	1.49%
1.49%	75		R	5	301 REC.	20	1	12		720	900	12	1	20	302 REC	6	R		100	2.48%
2.48%	100		R	7	301 REC.	20	1	12	900	420		12	1	20	302 LTG/EF-2	8	C		100	1.16%
1.11%	100		C	9	301 LTG./EF-1	20	1	12		900	540	12	1	20	302 REC	10	R		100	2.48%
0.52%	35		R	11	UTILITY/BREAK-OUT REC	20	1	12	540		1200	12	1	20	MICROWAVE	12	K		25	0.83%
0.82%	55		R	13	STUDENT RR 3.3/304	20	1	12		5408		-	1	20	SPARE	14				
0.32%	15		M	15	FC-1	60	2	6	5408			-	1	20	SPARE	16				
0.32%	15		M	17	-	-	-	6			5408	-	1	20	SPARE	18				
0.32%	15		M	19	FC-2	60	2	6	5408			-	2	60	SPARE	20				
0.32%	15		M	21	-	-	-	6		5408		-	-	-	-	22				
1.20%	75		M	23	HPC-1	60	2	6			4056				SPACE	24				
1.20%	75		M	25	"	-	-	6	4056						SPACE	26				
1.20%	75		M	27	HPC-2	60	2	6		4056					SPACE	28				
1.20%	75		M	29	-	-	-	6			4056				SPACE	30				
1.55%	50		M	31	WH-1	20	1	10	1800						SPACE	32				
0.12%	25		M	33	CDP	20	1	12		180					SPACE	34				
1.55%	50		M	35	WH-2	20	1	10			1800				SPACE	36				
1.32%	25		N	37	IDF CABINET	20	1	12	1920						SPACE	38				
0.08%	15		N	39	FACP	20	1	12		200					SPACE	40				
				41	SPACE										SPACE	42				
								CON:	16484	17997	18680									
								25%:	105	101	0									
								SUB:	0	0	0									
								TOT:	16589	18098	18680									
								AMPS	138	151	156									

LOAD (VA) LOAD TYPE LEGEND
7380 R RECEPTACLE
0 L LIGHTING (125% OF CONNECTED LOAD CEC 215.2)
41636 M MECHANICAL
1200 K KITCHEN APPLIANCE
2120 N NON-CONTINUOUS MISC.
825 C CONTINUOUS MISC. (125% OF CONNECTED LOAD CEC 215.2)

SINGLE LINE DIAGRAM REFERENCE NOTES

1. EXISTING MAIN SWBD INSTALLED UNDER DSA A#XX-XXXXXX TO REMAIN.
2. EXISTING MAIN CIRCUIT BREAKER. SCHEDULED TO REMAIN.
3. EXISTING BREAKER FEEDING DISTRIBUTION PANELBOARD 'DP1' SCHEDULED TO REMAIN.
4. EXISTING 3' X 5' PULLBOX W/ DRAIN.
5. EXISTING DISTRIBUTION PANELBOARD 'DP1' INSTALLED UNDER DSA#03-118807, SCHEDULED TO REMAIN.
6. BREAKER SHALL BE REMOVED AND RETURNED TO DISTRICT.
7. PANELBOARD AND FEEDERS ARE SCHEDULED TO BE REMOVED AND RETURN TO DISTRICT.
8. PROVIDE AND INSTALL NEW CIRCUIT BREAKER IN EXISTING EQUIPMENT COMPLETE WITH ALL REQUIRED MOUNTING HARDWARE, NEW CIRCUIT BREAKER AIC TO MATCH EXISTING EQUIPMENT MAIN CIRCUIT BREAKER AIC RATING, CONTRACTOR TO FIELD VERIFY EXISTING EQUIPMENT INFORMATION AND MATCH ACCORDINGLY. RATING AS INDICATED.
9. NEW PANELBOARD 'P230', RATING AS INDICATED ON THE ELECTRICAL SCHEDULES. INSTALL IN UTILITY/STORAGE ROOM AS SHOWN ON PLANS.
10. (E) VAULT SCHEDULED TO REMAIN. REFER TO SITE PLAN FOR VAULT LOCATION.
11. SCOPE OF WORK. AREA THAT WILL BE AFFECTED BY SCOPE OF WORK.

SINGLE LINE DIAGRAM NOTES

A. ALL CONDUCTORS SHALL BE COPPER WITH TYPE [THHN/THWN] INSULATION UNLESS OTHERWISE NOTED.

B. ALL SWITCHES, CIRCUIT BREAKERS AND OTHER EQUIPMENT, AS SPECIFIED, SHALL HAVE TERMINATION PROVISIONS LISTED AND IDENTIFIED FOR USE WITH 75 DEG. CONDUCTORS, AND ALL FEEDER CONDUCTORS, AND CONDUITS, ARE SIZE BASED ON USE OF 75 DEG. C COPPER WIRES TYPE THWN/THHN.

C. DESIGN SHOWN IS BASED ON [ ] PRODUCT. ENGINEER-APPROVED EQUAL ALTERNATE PRODUCT WILL BE ACCEPTABLE.

D. ALL EQUIPMENT SHALL HAVE ARC FLASH WARNING LABELS PER DETAIL 1/E003.

E. ALL EQUIPMENT SHALL HAVE AN APPROVED TESTING LABORATORY LABEL ATTACHED [UL, CSA, ETC.] (CEC 110-2).

F. REFER TO PANEL SCHEDULES FOR INDIVIDUAL BRANCH CIRCUIT VOLTAGE DROP AND/OR SINGLE LINE DIAGRAM FOR FEEDER VOLTAGE DROP CALCULATIONS.

G. BRANCH CIRCUIT/FEEDER DISTANCE IS SHOWN FOR REFERENCE ONLY AS THE BASIS OF VOLTAGE DROP CALCULATIONS. CONDUCTOR DISTANCE AS INDICATED SHALL NOT BE USED FOR BIDDING/CONSTRUCTION PURPOSES. SHOULD THE FEEDER DISTANCE EXCEED THE LENGTH NOTED PER INSTALLATION CONDITIONS, NOTIFY THE ENGINEER OF RECORD.

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DATE: 05/26/2026

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KATHRYN ANNE MCKEE
93807
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
THOMA #25-8026

DSA BACK CHECK 2

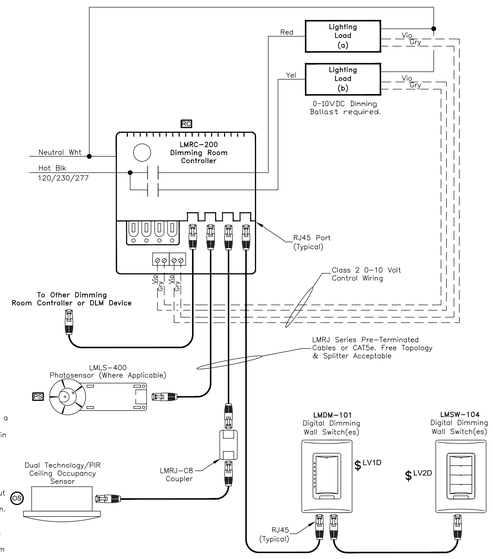
MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

ELECTRICAL SINGLE LINE DIAGRAM

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER
JC
DRAWN BY
AV
CHECKED BY
JC
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
E003

Feb 20, 2026 - 4:55pm - jchanhagua - K:\ENG\2025\25-8026\25-8026_E003_SLD & ELEC SCHEDULES.dwg
5/13/2025 9:44:52 AM
Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom\0822-03_Mesa Middle School - Science & SPED Classroom.rvt



DEVICES ARE PRESET FOR PLUG n' GO™ OPERATION, ADJUSTMENT IS OPTIONAL. Sequence of Operation: The LMLS-500 monitors the daylight contribution through a window and works with the room controller(s) to maintain design light levels in each lighting zone. WattStopper's exclusive control algorithm uses on/off or dimming setpoints and other control parameters to establish the correct light levels throughout the day regardless of changing daylight contribution. For full operational details, adjustments and more features of the product, see the DLM System Installation Guide at www.wattstopper.com

TYPICAL ROOM CONTROLLER WITH DUAL 0-10V RELAY WIRING DIAGRAM

3 NTS

LIGHTING CONTROLS SYMBOL LEGEND

SYMBOL	PRODUCT # WATTSTOPPER (UON)	DESCRIPTION
LV1D $	LMDM-101	1 CHANNEL ON/OFF TOGGLE WITH DIMMING LOW VOLTAGE; ON / OFF / RAISE / LOWER CONTROL
LV2D $	LMSW-104	2 CHANNEL, 4 BUTTON ON/OFF TOGGLE WITH DIMMING LOW VOLTAGE; ON / OFF / RAISE / LOWER CONTROL
RC	LMRC-212	20 AMP, DUAL RELAY ROOM CONTROLLER WITH 0-10V DIMMING CONTROL
OS	LMDC-100	STANDARD RANGE 360° SENSOR-CEILING MOUNT, LOW VOLTAGE, DUAL TECHNOLOGY OCCUPANCY SENSOR
DZC	LMZC-301	DLM ZONE CONTROLLER PROVIDES TIME OF DAY AND ASTRONOMICAL FUNCTIONS, AS WELL AS EVENT-BASED SCHEDULE ROUTINES, TO REMOTE DLM DEVICES.
PS	LMLS-500	MULTI-ZONE (3 ZONE MAX) SWITCHING AND DIMMING OPEN LOOP PHOTOSENSOR
OS $	DW-100	OCCUPANCY SENSOR WALL SWITCH, SINGLE-BUTTON, LINE VOLTAGE, DUAL TECHNOLOGY, STANDARD RANGE
OS,2P $	DW-200	OCCUPANCY SENSOR WALL SWITCH, TWO-BUTTON/RELAY, LINE VOLTAGE, DUAL TECHNOLOGY, STANDARD RANGE

NOTES:
A. VERIFY QUANTITY OF DEVICES REQUIRED TO PROVIDE COMPLETE COVERAGE AND CONTROL PER ROOM DIMENSIONAL REQUIREMENTS AND CONTROL FUNCTIONS SHALL SHOWN ON LIGHTING PLANS AND POWER PLANS.
B. PROVIDE A SHOP DRAWING OF THE BUILDING FLOOR PLANS WITH LAYOUT OF CONTROL DEVICES.
C. PROVIDE AT LEAST (1) LMCT-100 WIRELESS CONFIGURATION TOOL ON ALL WATTSTOPPER PROJECTS.

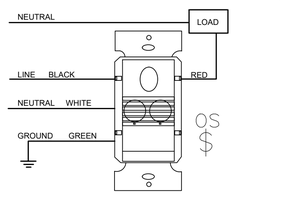
GENERAL NOTES

1. FOR THE LIGHTING CONTROL SYSTEM: OPEN CABLE INSTALLATION OF CAT 5 IN ACCESSIBLE CEILING SPACE IS ACCEPTABLE. CONDUIT SLEEVES SHALL BE PROVIDE AT ANY AREAS WITH INACCESSIBLE OR HARD LID CEILINGS.
2. OPEN CABLE INSTALLATION OF CAT 5 IN ACCESSIBLE CEILING SPACE SHALL BE INSTALLED IN AN ORGANIZED WORKMAN LIKE MANNER WITH J-HOOKS AND/OR CABLE SUPPORTS AT 8FT O.C. MINIMUM.
3. 0-10V CONTROL CABLE SHALL BE 600V RATED #18 THWN CU, OR AS PER LIGHTING CONTROL MANUFACTURERS REQUIREMENTS. INSTALLED IN LIGHTING BRANCH CIRCUIT CONDUITS.
4. LOCATE ROOM CONTROLLER ABOVE CEILINGS IN A CONSISTENT MANNER AT EACH ROOM TYPE. TYPICALLY LOCATE THE ROOM CONTROLLERS ABOVE THE LIGHTING CONTROL SWITCH(ES).

SWITCH TYPE	ENGRAVING	ZONES CONTROLLED	BUTTON PROGRAM	FUNCTION	APPLICABLE ROOMS
LV1D $	RAISE	REFER TO FLOOR PLAN	ON/RAISE	PRESS & HOLD FOR RAISE	CLASSROOMS
	LOWER	REFER TO FLOOR PLAN	OFF/LOWER	PRESS & HOLD FOR LOWER	
LMDM-101					

SWITCH TYPE	ENGRAVING	ZONES CONTROLLED	BUTTON PROGRAM	FUNCTION	APPLICABLE ROOMS
LV2D $	RAISE	REFER TO FLOOR PLAN	ON/RAISE	PRESS & HOLD FOR RAISE	CLASSROOMS
	LOWER	REFER TO FLOOR PLAN	OFF/LOWER	PRESS & HOLD FOR LOWER	
	RAISE	REFER TO FLOOR PLAN	ON/RAISE	PRESS & HOLD FOR RAISE	
	LOWER	REFER TO FLOOR PLAN	OFF/LOWER	PRESS & HOLD FOR LOWER	
LMSW-104					

DW 100
LINE VOLTAGE
SINGLE POLE WALL OCC SENSOR
(NOTE: DW 200 SWITCH SIMILAR EXCEPT TWO-POLE WIRING CAPABLE)



20-35 FOOT RADIAL COVERAGE

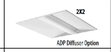
SWITCH ELEVATIONS AND SCHEDULES

4 NTS

LUMINAIRE SCHEDULE

for BRANCH ELEMENTARY SCHOOL KINDERGARTEN CLASSROOM

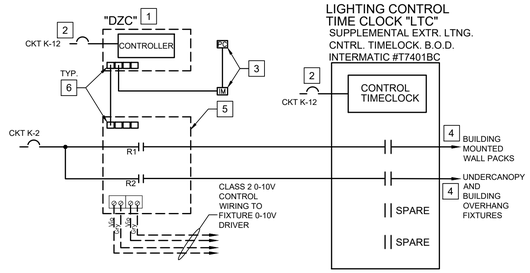
TE# 23-8005

TYPE	ILLUSTRATION	MANUFACTURER	CATALOG NUMBER	VOLTAGE	TOTAL INPUT WATTS (W)	LAMP TYPE	NOMINAL LUMEN OUTPUT (L)	LAMP COLOR TEMP (K)	MOUNTING TYPE	WEIGHT (LBS)	DESCRIPTION	REMARKS
A1B/ A1BEM		LITHONIA LIGHTING	2BLT2-33L-ADP-MVOLT-GZ10-LP840 A1BEM: ADD "E"	MVOLT	27	LED	3385	4000	RECESSED 3/E-402	4.1	2'X2' LED TROFFER RECESSED, STANDARD 0-10V DIMMING.	
A1G/ A1GEM		LITHONIA LIGHTING	2BLT2-40L-ADP-MVOLT-GZ10-LP840 A1BEM: ADD "E"	MVOLT	31	LED	4000	4000	RECESSED 3/E-402	4.1	2'X2' LED TROFFER RECESSED, STANDARD 0-10V DIMMING.	
A2/ A2EM		LITHONIA	2BLT4-60L-ADP-GZ10-LP840 EM: EM10WLCP	120/277	48	LED	6112	4000	RECESSED 3/E-402	17	2'X4' LED TROFFER WITH CURVED, RIBBED DIFFUSER, 0-10V DIMMING TO 10%.	
C1/ C1EM		LITHONIA	STL4-40L-GZ10-LP840 EM: E10WLCP	120/277	35	LED	3979	4000	SURFACE X/EXXX	13	1'X4' LED SURFACE WRAP WITH 0-10V DIMMING TO 10% AND WHITE FINISH.	
C2/ C2EM		LITHONIA	BLWP2-20L-ADP-GZ10-LP835 EM: E10WLCP	120/277	17	LED	1942	3500	SURFACE X/EXXX	5	6"X 2' LED SURFACE WRAP WITH 0-10V DIMMING TO 10% AND WHITE FINISH.	
D1		LITHONIA	LDN4-40/07-L04-AR-LSS-TRW-MVOLT-GZ10-	120/277	9	LED	751	4000	RECESSED X/EXXX	5	4" DIAMETER, LED DOWNLIGHT WITH CLEAR TRIM, SEMI SPECULAR TRIM FINISH, WHITE PAINTED FLANGE AND 0-10V DIMMING TO 10%	
S1/ S1EM		EXO LIGHTING	LNC2-48L-20-4K7-3-UNV-DBT EM: E	120/277	20	LED	2234	4000	SURFACE 6/E004	10	LED WALL PACK WITH TYPE 3 DISTRIBUTION AND DARK BRONZE MATTE TEXTURED FINISH.	CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDERING. B-0, U-0, G-1.
S2/ S2EM		KENALL LIGHTING	MS15FD-PP-MW-25L40K-DV EM: LEL	120/277	30	LED	3258	4000	SURFACE 6/E004	18	LED UNDER CANOPY LUMINAIRE WITH FULL FACE, 0-10V DIMMING TO 1% AND WHITE MATTE FINISH. WET LOCATION LISTED.	CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDERING. B-1 U-3 G-1
S3EM		LITHONIA	LDN6-40/20-L06-AR-LSS-TRW-MVOLT-GZ10-E10WCP	120/277	23	LED	2006	4000	RECESSED X/EXXX	5	6" DIAMETER, LED DOWNLIGHT WITH CLEAR TRIM, SEMI SPECULAR TRIM FINISH, WHITE PAINTED FLANGE AND 0-10V DIMMING TO 10%	CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDERING.
X1EM		LITHONIA	LE-S-W-1-R-EL N	120/277	2	LED	N/A	N/A	SURFACE 6/E004	5	LED EMERGENCY EXIT SIGN, 90-MINUTE BATTERY OPERATION (CA T20 COMPLAINT), WHITE HOUSING, SINGLE SIDED WHITE FACE, RED LETTERS.	MOUNT PER MANUFACTURER'S RECOMMENDATIONS

NOTES
- LUMINAIRE SUPPLIED VOLTAGE TO BE VERIFIED BY ELECTRICAL CONTRACTOR.
- WHERE NOT SPECIFIED; FINISHES TO BE VERIFIED WITH ARCHITECT.
- FOR FIXTURE TYPES ENDING IN "EM": PROVIDE WITH 90 MINUTE EMERGENCY BATTERY PACK.

LUMINAIRE SCHEDULE

1 NTS



DIGITAL ZONE CONTROLLER SCHEULE

"DZC" WATTSTOPPER LMZC-301

LOCATED: ROOM #22
CONTROL POWER CIRCUIT: K-12

CONNECT TO EXTERIOR LIGHTING ROOM CONTROLLER (LMRC-212) VIA WATTSTOPPER LMRJ CABLE

NEMA 1 ENCLOSURE
FLUSH _
SURFACE X

RELAY NO.	INPUT VA	CIRCUIT NO.	LOAD DESCRIPTION	SCHEDULED CONTROL DESCRIPTION	NOTES
R1	120	K-2	EXTERIOR BUILDING WALLPACK LTG	DUSK ON / TIMECLOCK OFF	1,4,5
R2	325	K-2	EXTERIOR UNDERCANOPY LTG	DUSK ON / TIMECLOCK OFF	1,4,5

NOTES:
1. PROGRAM RELAY FOR DUSK 'ON' WITH PROGRAMMED 'OFF' PER OWNER TIME SCHEDULE.
2. PROGRAM RELAY FOR DUSK TO DAWN (NIGHT LIGHT) OPERATION.
3. PROGRAM RELAY TO DIM TO 50% WHEN UNOCCUPIED AND 100% WHEN OCCUPIED.
4. EXTEND 0-10V WIRES TO FIXTURE(S) FOR DIMMING CONTROL CAPABILITY.
5. INCLUDE AN UNSWITCHED HOT LEG OF LIGHTING CIRCUIT TO PROVIDE CONTINUOUS CHARGING OF EMERGENCY BATTERY PACKS OR TO SERVE OTHER ROOMS WITH LOCAL CONTROLS.

* INCLUDE EXTERIOR PHOTOCELL (WATTSTOPPER LMPO-200 WITH CONNECTION TO WATTSTOPPER PHOTOCELL INPUT MODULE LMIO-301) INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATION TO CONTROL DUSK TO DAWN, AND DUSK TO TIME CLOCK OFF OPERATIONS.
* PROVIDE LOW VOLTAGE OVERRIDE SWITCH ADJACENT TO PANEL WITH WEATHER PROOF LOCKABLE COVER. PROGRAM SWITCH FOR 2-HOUR OVERRIDE OF ALL EXTERIOR LIGHTING RELAYS. LABEL SWITCH "OVERRIDE".

EXTERIOR LIGHTING CONTROL DIAGRAM

2 NTS

☐ REFERENCE NOTES

1. DIGITAL ZONE CONTROLLER "DZC" WITH INTEGRAL ASTRONOMICAL TIME CLOCK PER CALIFORNIA ENERGY CODE (CEnC 130.2(c)1 & 2). PROGRAM PER OWNER AND TITLE 24 REQUIREMENTS. SEE PANEL SCHEDULE ON THIS SHEET.
2. DEDICATED CIRCUIT TO CONTROLLER(S) POWER SUPPLY.
3. PROVIDE NEW PHOTOCELL (WATTSTOPPER LMPO-200) AT ROOF. (ORIENT WINDOW NORTH). PROVIDE 1/2"C DOWN TO PHOTOCELL INPUT MODULE (LMIO-301) WITH (2)#18 AWG, THEN PROVIDE LMRJ CABLE CONNECTION BETWEEN PHOTOCELL INPUT MODULE AND DIGITAL ZONE CONTROLLER "DZC".
4. TO LIGHTING FIXTURES, SEE SITE PLAN AND FLOOR PLANS.
5. DEDICATED EXTERIOR LIGHTING ROOM CONTROLLER (WATTSTOPPER LMRC-212, EQUIPPED WITH TWO 0-10V RELAYS FOR SWITCHING AND DIMMING CAPABILITY TO SATISFY CEnC 130.2(c)2 A & B). CONNECT TO WATTSTOPPER DLM ZONE CONTROLLER (LMZC-301; LOCATION PER LIGHTING FLOOR PLAN) TO ENABLE SCHEDULED EVENTS AND ASTRONOMICAL TIME CLOCK CONTROL OF EXTERIOR LUMINAIRES. ROOM CONTROLLER REQUIRES CONSTANT HOT INPUT.
6. RJ45 PORTS FOR CONNECTION OF DEVICES TO WATTSTOPPER DLM NETWORK VIA LMRJ SERIES PRE-TERMINATED CABLES OR CAT5E.

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DATE: 05/26/2026

rrm design group
rrmdesign.com | (805) 543-1794

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CONSULTANT
Thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA
EXPIRES: 09/30/26
THOMA #25-8026

DSA BACK CHECK 2

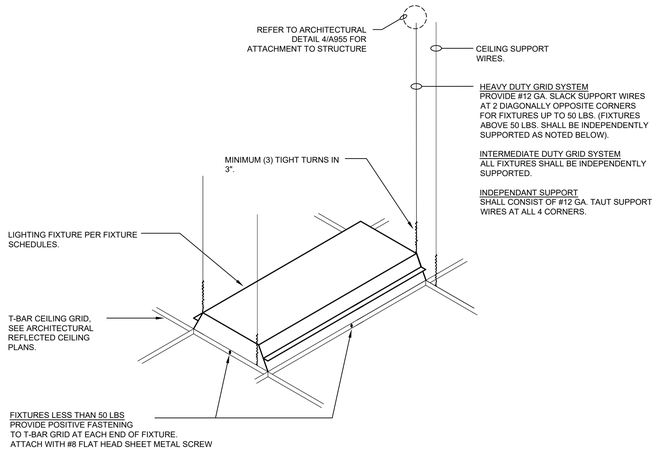
MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA

ELECTRICAL LUMINAIRE SCHEDULE AND CONTROL DIAGRAMS

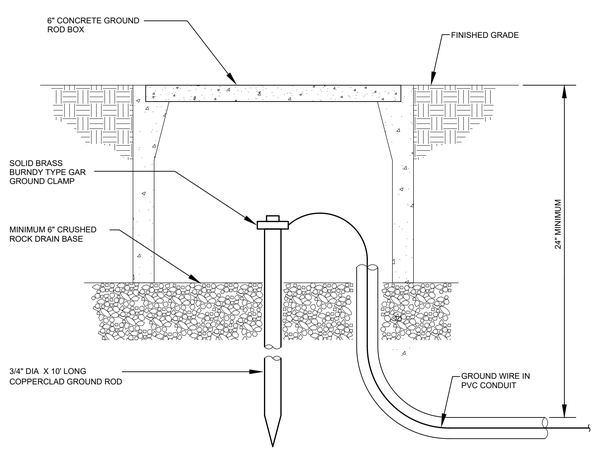
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PROJECT MANAGER: JC
DRAWN BY: AV
CHECKED BY: JC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: E004

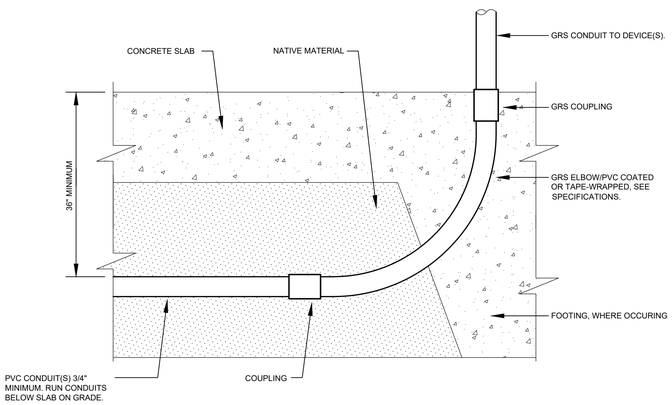
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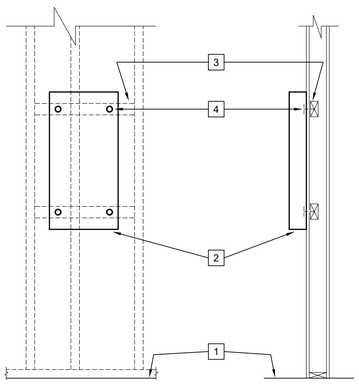
7 LAY-IN TROFFER FIXTURE MOUNTING DETAIL
SCALE: NTS



4 GROUND ROD/GROUND WELL
SCALE:



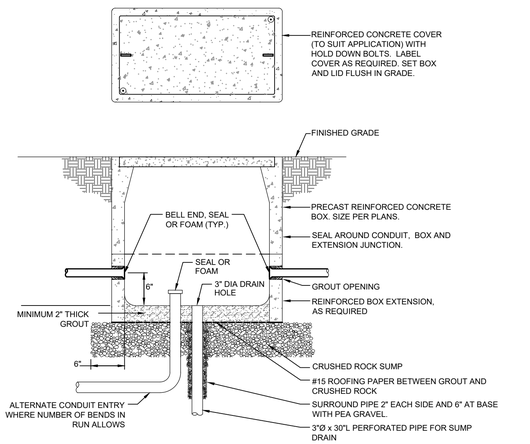
1 CONDUIT RISER DETAIL
SCALE:



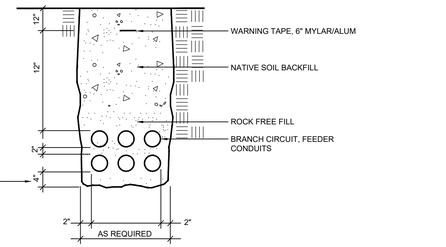
☐ REFERENCE NOTES

1. FINISHED FLOOR
2. EQUIPMENT. MAXIMUM WEIGHT - 150 LBS
3. PROVIDE BLOCKING WHERE VERTICAL STUD IS NOT AVAILABLE FOR ATTACHMENT. REFER TO STRUCTURAL DETAIL 53/S-502.
4. ATTACH WITH #8x1-1/2" WOOD SCREWS AND 1/2" DIAMETER WASHER, (1) EACH CORNER.

8 INVERTER MOUNTING DETAIL
SCALE: MAXIMUM WEIGHT - 150 LBS



5 TYPICAL PULL BOX, SMALLER THAN 24" X 36"
SCALE:



2 TYPICAL CONDUIT IN TRENCH DETAIL
SCALE:

PORTABLE SYSTEM KIT

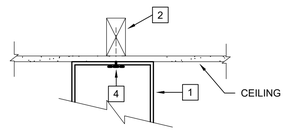
TWO SETS OF ASSISTED LISTENING SYSTEMS SHALL BE STORED IN A DESIGNATED AREA (COORDINATE WITH DISTRICT) AND SHARED AS NECESSARY TO COMPLY WITH EACH CLASSROOM AREA REQUIRING ASSISTED LISTENING SYSTEMS (ALS). PORTABLE SYSTEM SHALL BE MANUFACTURED BY WILLIAMS SOUND:

(2) FM ADA KIT 37 - EACH KIT CONSISTS OF THE FOLLOWING COMPONENTS:

A. (1) PPA T46 TRANSMITTER
B. (4) PPA R37 RECEIVERS
C. (4) HED 027 HEADPHONES
D. (1) MIC 090 LAPEL MIC
E. (1) MIC 049 DESKTOP CONFERENCE MIC
F. (1) CCS 029 CARRY CASE
G. (2) NKL 001 NECKLOOPS (HEARING AID COMPATIBLE)
H. (5) BAT 001-2 AA ALKALINE BATTERIES
I. IDP 008 ADA WALL PLAQUE (<-- EC SHALL COORDINATE TO WALL-MOUNT ON EACH ROOM)

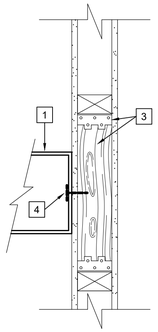
REFER TO ARCHITECTURAL SHEETS FOR ALS SIGNAGE REQUIREMENTS.

9 ASSISTED LISTENING COMPONENT LISTS
SCALE: NTS



☐ REFERENCE NOTES

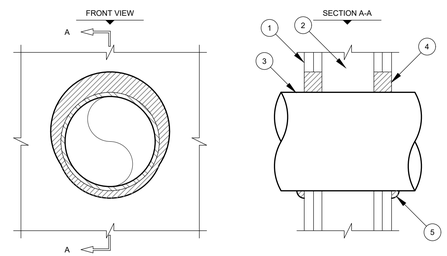
1. SMALL SURFACE MOUNTED LIGHT FIXTURE.
2. FRAMING ABOVE OR BLOCKING WITH A35 CLIP AT EACH END.
3. PROVIDE 3x6 BLOCKING WITH A35 CLIP AT EACH END WHERE VERTICAL STUD IS NOT AVAILABLE FOR ATTACHMENT.
4. ATTACH WITH #8x1-1/2" WOOD SCREW AND 1/2" DIAMETER WASHER. (2) REQUIRED PER FIXTURE.



6 WALL/CEILING FIXTURE MOUNTING DETAIL
SCALE: MAXIMUM WEIGHT - 20 LBS

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ FT.
L-RATING AT 400°F = LESS THAN 1 CFM/SQ FT.

1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300, U400, OR V400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 30" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" NOMINAL DIAMETER CAST IRON OR DUCTILE IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE OR TUBING.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. HILTI CP 606 FLEXIBLE FIRESTOP SEALANT:
   A. MINIMUM 5/8" DEPTH OF SEALANT FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH OF SEALANT FOR A 2-HR. FIRE-RATING.
5. MINIMUM 1/2" BEAD HILTI CP 606 FLEXIBLE FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.



NOTES:
1. MAXIMUM DIAMETER OF OPENING = 8".
2. ANNULAR SPACE IN 1-HR. WALLS = MINIMUM 0", MAXIMUM 1".
3. ANNULAR SPACE IN 2-HR. WALLS = MINIMUM 0", MAXIMUM 2".
4. PENETRANT MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45° FROM PERPENDICULAR.

3 METAL PIPE THROUGH 1-HR OR 2-HR GYPSUM WALL
SCALE:

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9380 79
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CONSULTANT

thoma ENGINEERING
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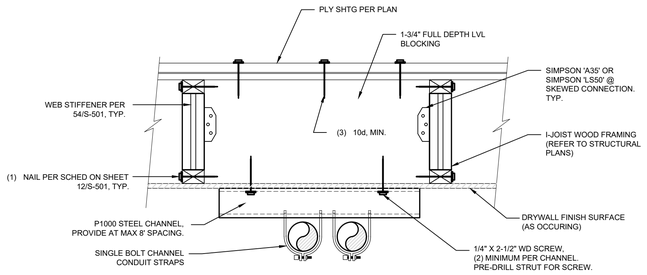
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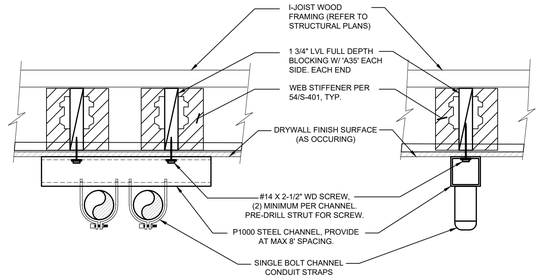
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APRIL 23, 2026
PROJECT NUMBER
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CONDUIT PARALLEL TO FRAMING

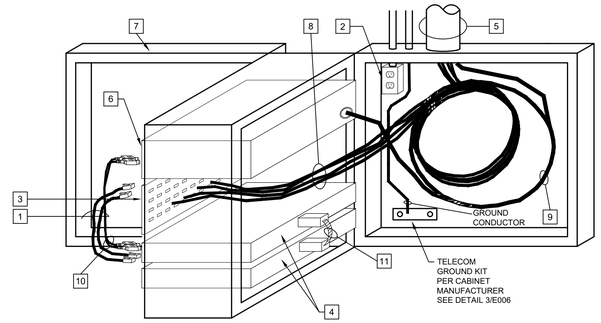


CONDUIT PERPENDICULAR TO FRAMING

NOTES:
1. CONDUIT SUPPORTS SHALL BE SPACED AT A MAXIMUM OF 8FT. O.C. AND AT 5FT. O.C. WHERE LOCATED BELOW 8FT AFF.
2. LAG SCREWS SHALL BE INSTALLED INTO PRE-DRILLED LEAD HOLES.

6 TYPICAL CONDUIT ANCHORAGE DETAILS

SCALE: NTS



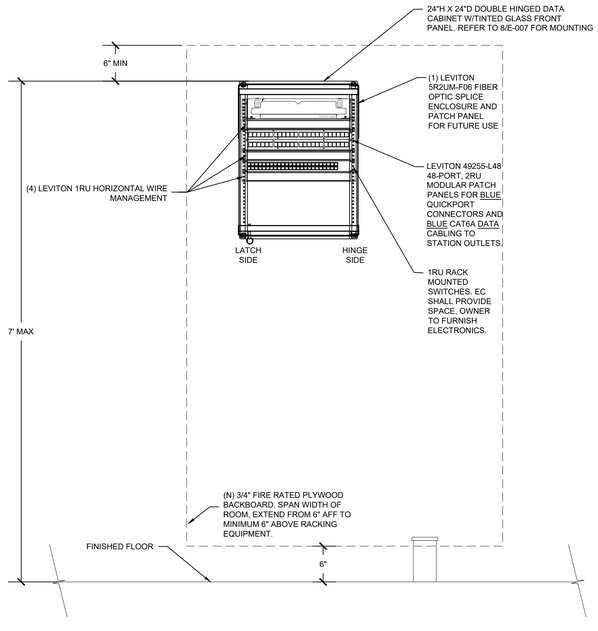
☐ REFERENCE NOTES

1. 1M CAT6A UTP PATCH CORDS TO BE BLUE IN COLOR. 1M CAT6A UTP PATCH CORDS TO BE BLUE IN COLOR.
2. DEDICATED 20A 120V POWER CIRCUIT TO RECEPTACLE.
3. INSTALL RACK MOUNTED 19" MODULAR PATCH PANEL, SEE RISER DIAGRAM FOR PORT COUNT. WHERE CAT6 IS TERMINATED, USE BLUE MODULAR JACK COLOR, WHERE CAT6A IS TERMINATED USE BLUE MODULAR JACK COLOR.
4. SYSTEM ELECTRONICS TO BE PROVIDED AND INSTALLED BY OTHERS.
5. (E) AND (N) RACEWAY FOR HORIZONTAL CABLING TO USER STATIONS AND INCOMING FIBER OPTIC CABLE.
6. INSTALL FIBER OPTIC SPLICE TRAY, LEVITON OPT-X 1000i SERIES OR EQUIVALENT. FUSION SPLICE ALL FIBER CABLE ACCORDING TO RISER DIAGRAM.
7. DOUBLE HINGED IDF CABINET HUBBELL QUADCAB, 24"W X 24""H X 24"D OR EQUIVALENT WITH TINTED GLASS FRONT PANEL. THERMOSTATICALLY CONTROLLED FAN/FILTER KIT AND SURGE-PROTECTED OUTLET KIT SHALL BE INSTALLED.
8. (N) INCOMING CATEGORY 6A CABLE. PROVIDE SERVICE LOOP INSIDE CABINET.
9. (N) INCOMING FIBER OPTIC CABLE, PROVIDE SERVICE LOOP INSIDE CABINET.
10. DUPLEX FIBER OPTIC PATCH CORD. LC-LC, CONNECTOR TYPE, MATCH INCOMING FIBER TYPE.
11. CABLE PROVIDED BY OTHERS TO SUPPORT LOGICAL STACKED SWITCH. PROVIDED ONLY WHEN (2) OR MORE NETWORK SWITCHES ARE INSTALLED INTO CABINET.

4 IDF CABINET

SCALE: NTS

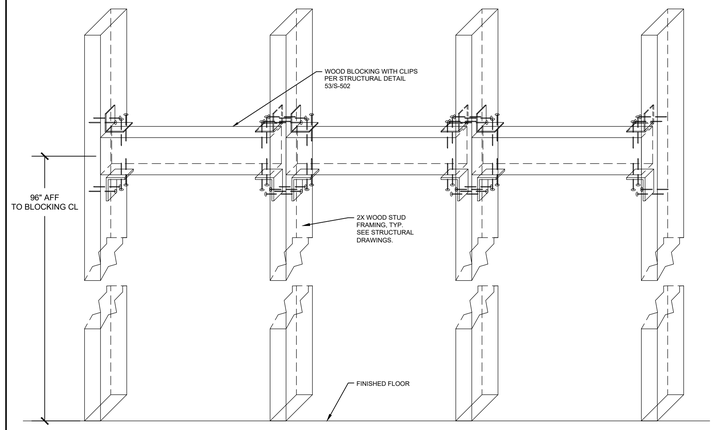
MAXIMUM WEIGHT (INCLUDING CABINET) - 300 LBS



5 IDF WALL MOUNTED CABINET ELEVATION

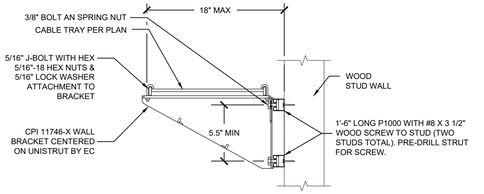
SCALE: NTS

MAXIMUM WEIGHT (INCLUDING CABINET) - 300 LBS

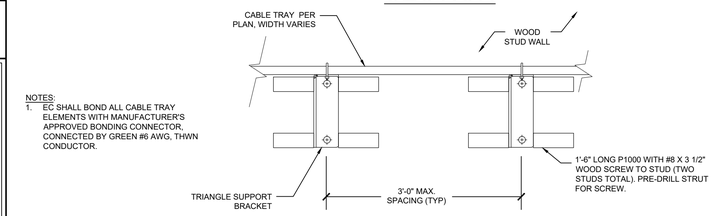


1 BLOCKING FOR TELEVISION

SCALE:



SECTION



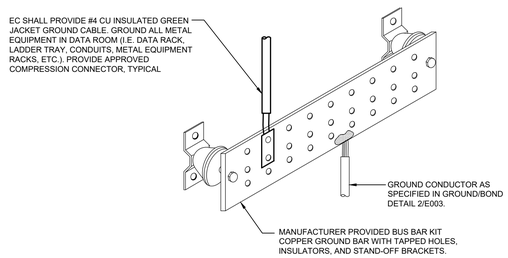
NOTES:
1. EC SHALL BOND ALL CABLE TRAY ELEMENTS WITH MANUFACTURER'S APPROVED BONDING CONNECTOR, CONNECTED BY GREEN #6 AWG, THWN CONDUCTOR.

ELEVATION

2 WALL MOUNT LADDER TRAY

SCALE:

MAXIMUM WEIGHT - 25LBS./FT.



NOTE:
- PROVIDE A GROUND BAR PER THIS DETAIL IN CUSTOMER DATA ROOM.

3 TYP. TELECOM GROUND BAR

SCALE:

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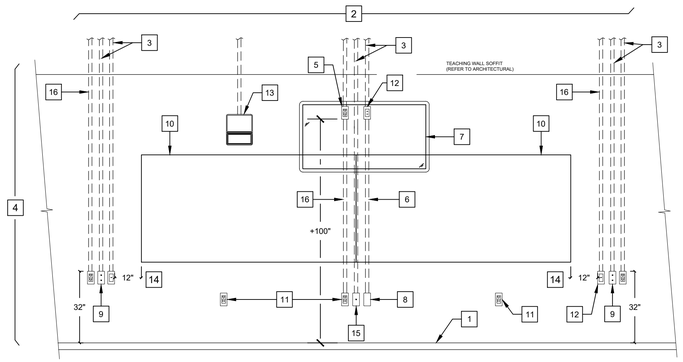
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PROJECT MANAGER: JC
DRAWN BY: AV
CHECKED BY: JC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: E006

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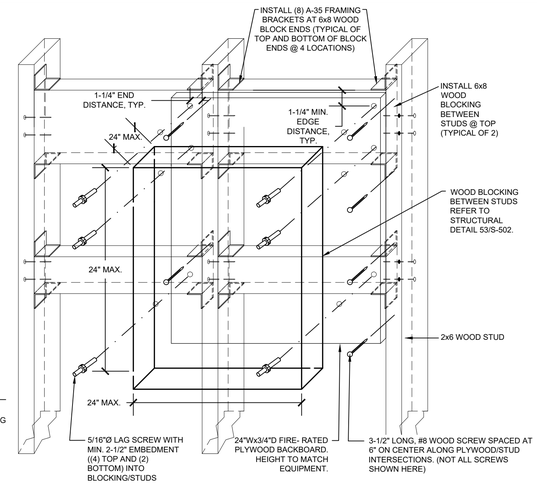


☐ REFERENCE NOTES

1. FINISHED FLOOR.
2. ACCESSIBLE CEILING SPACE.
3. (N)(2) 1-1/4" CONDUITS (LOW VOLTAGE CABLING).
4. FINISHED WALL. REFER TO ARCHITECTURAL ELEVATIONS FOR DEVICE MOUNTING HEIGHTS. COORDINATE WITH OWNER PRIOR TO ROUGH-IN.
5. (N) DUPLEX RECEPTACLE PROVIDED BEHIND TELEVISION. EXACT LOCATION TO BE COORDINATED PRIOR TO ROUGH-IN WITH TELEVISION MOUNTING HARDWARE AND VERIFIED WITH DISTRICT REPRESENTATIVE.
6. (1) 1-1/4" C BETWEEN LOW VOLTAGE BOXES AS SHOWN.
7. TELEVISION AND TELEVISION MOUNT (REFER TO ARCHITECTURAL DETAIL 44/A-941) SHALL BE INSTALLED BY OWNER. PROVIDE BLOCKING PER DETAIL 1/E006.
8. 5S BACKBOX WITH SINGLE GANG MUD RING WITHOUT CABLES AND BLANK FACEPLATE.
9. 2-PORT DATA OUTLET IN TRUE 5S BACKBOX AS SHOWN ON PLAN. FIELD VERIFY FINAL LOCATION WITH DISTRICT REPRESENTATIVE PRIOR TO ROUGH-IN.
10. WHITE BOARDS PER ARCHITECTURAL PLANS. WHITEBOARD LOCATION IN ELEVATION VIEW DOES NOT REFLECT ACTUAL CONDITION, REFER TO ARCHITECTURAL SHEETS FOR REQUIREMENTS. CONFIRM LOCATIONS WITH OWNER PRIOR TO ROUGH-IN.
11. (N) DUPLEX RECEPTACLE MOUNTED BELOW WHITE BOARD AT 16" AFF UNLESS OTHERWISE NOTED. (+15" MINIMUM AFF TO BOTTOM OF BOX)
12. HDMI BRUSHED PASS-THROUGH 4-11/16" SQUARE BACKBOX WITH WALL PLATE IN MULTI-GANG CONFIGURATION.
13. VOIP SPEAKER. 5S BOX WITH SINGLE-GANG PLASTER RING. 3/4" CONDUIT TO ACCESSIBLE CEILING SPACE.
14. MAINTAIN 12" SEPARATION FROM WHITEBOARD EDGE. MAINTAIN 32" BOX HEIGHT (TOP OF BOX). REFER TO ARCH FOR ACTUAL WHITE BOARD DIMENSIONS.
15. SINGLE-PORT DATA OUTLET IN TRUE 5S BACKBOX AS SHOWN ON PLAN. FIELD VERIFY FINAL LOCATION WITH DISTRICT REPRESENTATIVE PRIOR TO ROUGH-IN.
16. (N) (1) 3/4" CONDUIT (POWER).

4 RECESSED MEDIA - TEACHING WALL

SCALE:



MAXIMUM IDF CABINET WEIGHT: 300 LBS.

NOTES:

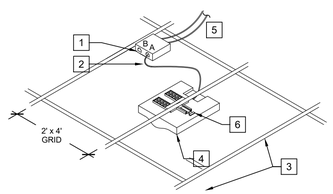
1. CABINET SHALL NOT SUPPORT MORE THAN 300LBS (INCLUDING CABINET WEIGHT).

8 SURFACE MOUNTED IDF CABINET

SCALE: MAXIMUM WEIGHT (INCLUDING CABINET) - 300 LBS

5 NOT USED

SCALE:



GENERAL NOTES

ALL HARDWARE NOTED AS "PROVIDED BY OWNER" SHALL BE BROUGHT TO THE ATTENTION OF OWNER REPRESENTATIVE AT NOTICE TO PROCEED FOR SCHEDULING OF EQUIPMENT ARRIVAL WITHIN CONSTRUCTION TIMELINE. ALL HARDWARE SHALL BE INSTALLED BY THE CONTRACTOR UNLESS DIRECTED OTHERWISE BY OWNER.

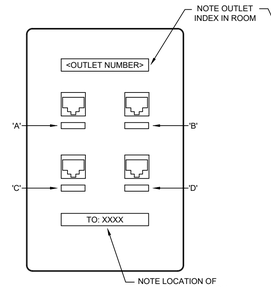
☐ REFERENCE NOTES

1. 2-PORT BISCUIT MOUNTED IN ACCESSIBLE CEILING SPACE. CONTRACTOR SHALL PROVIDE LABELS FOR EACH CABLE AT BISCUIT, AND SHALL TERMINATE (FEMALE) AND TEST BOTH CABLES, AND PROVIDE TEST RESULTS TO OWNER.
2. (1) (N) WHITE, 2-METER CAT6A PATCH CABLE BETWEEN NEW WIRELESS ACCESS POINT AND CAT6A TERMINATION BISCUIT. PATCH CABLE SHALL BE INSERTED INTO RJ-45 PORT LABELED 'PoE' ON WIRELESS ACCESS POINT, AND 'A' CABLE ON BISCUIT.
3. (E) T-BAR CEILING. PENETRATIONS THROUGH CEILING TILES SHALL BE SEALED SO AS TO MAINTAIN FIRE RATING OF CEILING TILE IF APPLICABLE.
4. (N) WIRELESS ACCESS POINT (NOT TO EXCEED 18"X18"X6", WEIGHING NO MORE THAN 8 LBS), TO BE PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR. CONTRACTOR SHALL NOTIFY OWNER OF ACCESS POINT QUANTITIES AND LOCATIONS A MINIMUM OF 6-WEEKS PRIOR TO INSTALLATION DATE.
5. (2) (N) WHITE CAT6A CABLES FROM IDF TO BISCUIT. ALL CAT6A CABLE AND TERMINATION HARDWARE (INCLUDING MODULAR JACKS, PATCH CABLES, ETC.) SHALL BE WHITE IN COLOR.
6. WAP MANUFACTURER PROVIDED T-BAR MOUNTING CLIP. ADHERE STRICTLY TO MANUFACTURER PROVIDED INSTALLATION INSTRUCTIONS.

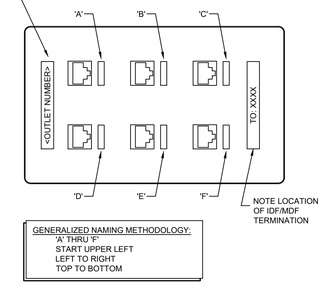
6 INDOOR WIRELESS ACCESS POINT T-BAR MOUNTING

SCALE: MAXIMU WEIGHT - 8LBS.

VERTICAL ORIENTATION



HORIZONTAL ORIENTATION



GENERALIZED NAMING METHODOLOGY:
'A' THRU 'F'
START UPPER LEFT
LEFT TO RIGHT
TOP TO BOTTOM

NOTES:

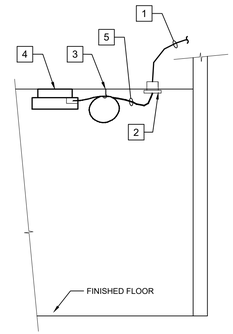
- ALL JACK LOCATIONS ASSIGNED BY POSITION IN ROOM, SEE "DATA OUTLET NAMING CONVENTIONS WITHIN ROOM" DETAIL FOR ASSIGNMENT METHODOLOGY.
- ALL JACKS TERMINATED AS T568B PINOUT.
- ALL JACKS COLOR TO MATCH INCOMING CABLE PLANT.
- PROVIDE IDENTICAL LABEL AT CORRESPONDING PATCH PANEL LOCATION AND ON CABLE PLANT ITSELF.

1 DATA OUTLET NAMING CONVENTIONS AT FACEPLATE

SCALE:

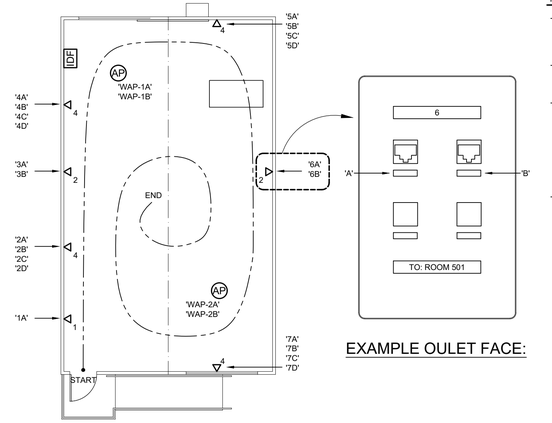
☐ REFERENCE NOTES

1. DATA CABLING BACK TO TELECOMMUNICATIONS ROOM, WAP CABLING TYPE/COLORS AS DETAILED ON RISER DIAGRAM.
2. (1) (N) 5-SQUARE RECESSED BOX WITH (2) (N) CAT6A FEMALE RJ-45 TERMINATED. FOLLOW COLOR CODING OUTLINED ON RISER DIAGRAM.
3. J-HOOK OR APPROVED MOUNTING AND RETENTION OF SERVICE LOOP
4. WIRELESS ACCESS POINT FLUSH-MOUNT BRACKET. MOUNT TO CEILING FRAME USING MANUFACTURER PROVIDED GUIDELINES AND HARDWARE.
5. (2) NEW 2-METER CAT6A PATCH CABLE BETWEEN NEW WIRELESS ACCESS POINT AND OUTLET FACEPLATE. PATCH CABLE TO BE INSERTED INTO RJ-45 PORT LABELED 'PoE'



2 INDOOR WIRELESS ACCESS POINT - HARD LID MOUNT

SCALE: MAXIMU WEIGHT - 8LBS.



EXAMPLE OULET FACE:

NOTES:

- ALL OUTLET INDICES SHALL BE ASSIGNED BY POSITION IN ROOM. LABELS SHALL START AT OCCUPANT ENTRANCE TO ROOM.
- WHERE MORE THAN ONE ENTRANCE IS PRESENT, LABEL SHALL BEGIN AT ANY ENTRANCE.
- OUTLET NUMBERS SHALL BE ASSIGNED ACCORDING TO "SPIRAL INWARD" METHOD WHEREBY USER STARTS AT ENTRANCE AND INCREMENTS OUTLET ASSIGNMENT IN CLOCKWISE PATTERN. SEE ABOVE DIAGRAM FOR EXAMPLE ILLUSTRATION.
- WIRELESS ACCESS POINTS SHALL HAVE ADDITIONAL PREFIX 'WAP', AND INDEX SHALL BE SEPARATELY MAINTAINED.

3 DATA OUTLET NAMING CONVENTIONS WITHIN ROOM

SCALE:

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CONSULTANT
thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
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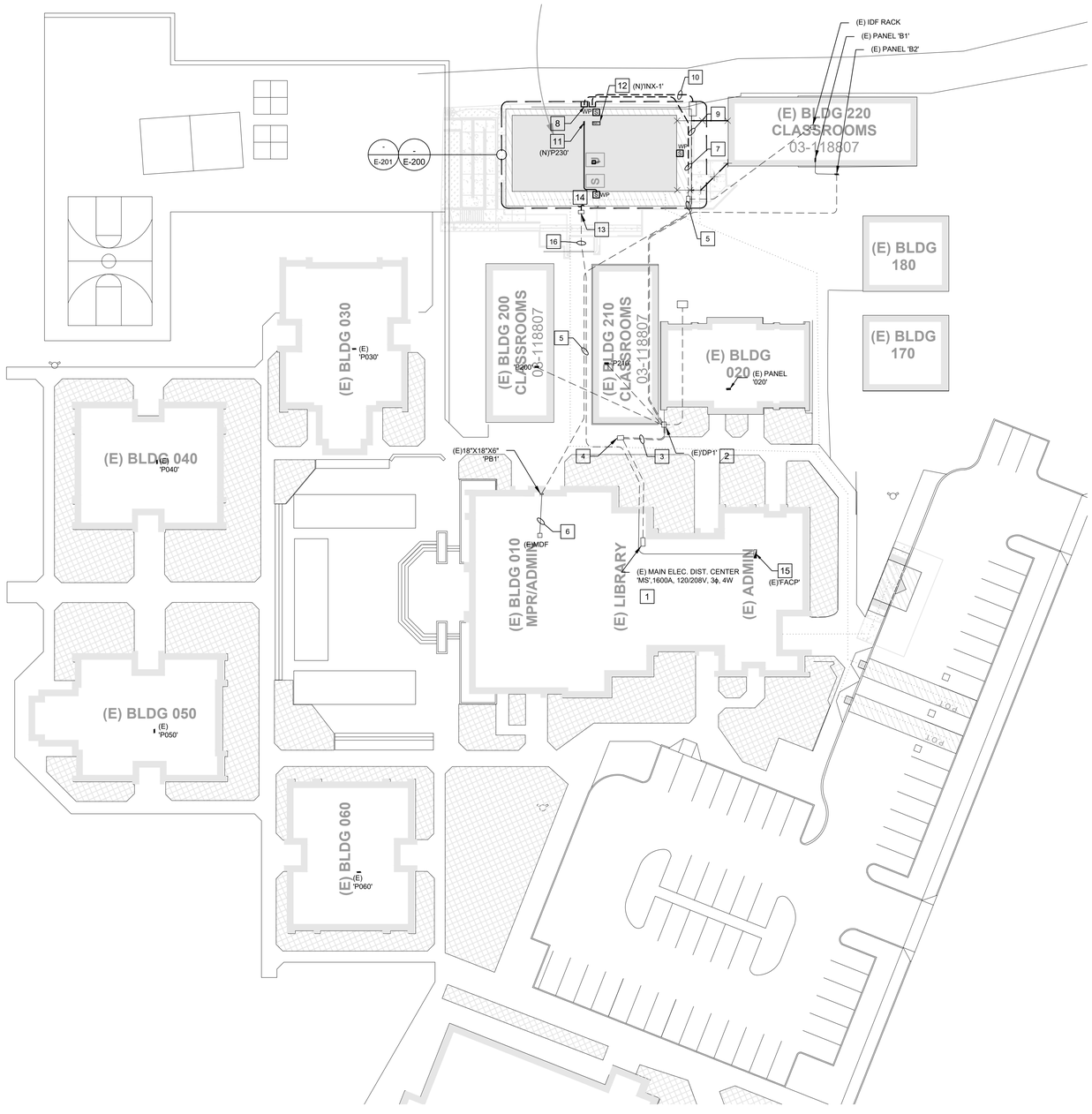
ELECTRICAL DETAILS

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ELECTRICAL SITE PLAN

SCALE: 1" = 30' - 0"

NORTH

REFERENCE NOTES

1. EXISTING MAIN SWITCHBOARD 'MS'. RATING AS INDICATED AND SCHEDULED TO REMAIN.
2. EXISTING DISTRIBUTION PANELBOARD 'DP1'. REFER TO SINGLE LINE DIAGRAM FOR PANELBOARD RATING.
3. EXISTING (2) 4" CONDUITS SHALL REMAIN.
4. EXISTING 2' X 3' PULLBOX SHALL REMAIN.
5. EXISTING (2) 2" CONDUITS FOR COMMUNICATION TO EXISTING PULL BOX SHALL REMAIN. CONTRACTOR SHALL RE-USE PATHWAY AND PULL NEW FIBER TO NEW IDF CABINET.
6. EXISTING (2) 4" CONDUITS FROM MDF TO EXISTING COMM BOX. SCHEDULED TO REMAIN.
7. INTERCEPT AND EXTEND EXISTING COMM CONDUITS FOR BUILDING 230.
8. CONTRACTOR TO EXTEND TO NEW IDF CABINET. FIELD COORDINATE ROUTING AND SWEEP TO NEW IDF CABINET.
9. CONTRACTOR SHALL RE-USED EXISTING (2) 2" CONDUITS THAT EXTEND FROM EXISTING DISTRIBUTION PANELBOARD 'DP1' TO EXISTING VAULT.
10. CONTRACTOR SHALL EXTEND NEW FEEDER FROM EXISTING VAULT TO NEW PANELBOARD 'P230'. REFER TO SINGLE LINE DIAGRAM FOR FEEDER SPECIFICATION.
11. NEW PANELBOARD 'P230'. REFER TO SINGLE LINE DIAGRAM AND ELECTRICAL SCHEDULES FOR PANELBOARD INFORMATION. BASIS OF DESIGN: PANELBOARD TO BE SQUARE D NQOD SERIES.
12. NEW FIRE ALARM INX TRANSPONDER 'INX-1'.
13. EXISTING 3' X 2' PULLBOX FOR FIRE ALARM SCHEDULED TO REMAIN.
14. CONTRACTOR SHALL EXTEND 2" CONDUIT W/ FIRE ALARM CONDUCTORS, REFER TO FIRE ALARM RISER.
15. EXISTING FIRE ALARM CONTROL PANEL, 'FACP'.
16. EXISTING 1" CONDUIT FROM FIRE ALARM PANEL TO EXISTING PULLBOX. CONTRACTOR SHALL RE-USE CONDUIT AND EXTEND NEW FIRE ALARM CONDUCTORS. REFER TO FIRE ALARM RISER.

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CONSULTANT
thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
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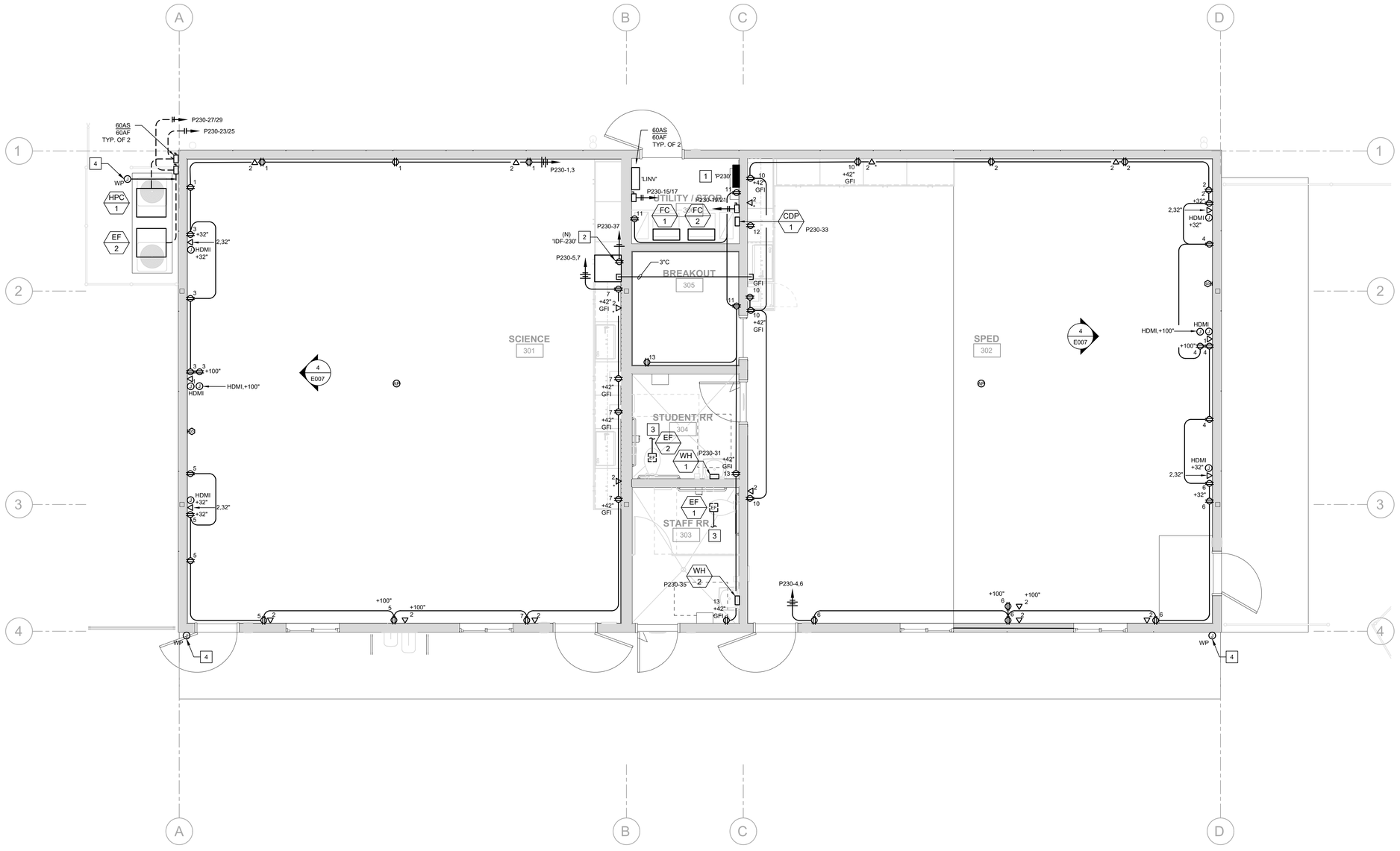
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ELECTRICAL POWER & COMMUNICATION PLAN

SCALE: 1/4" = 1'-0"

NORTH

REFERENCE NOTES

1. NEW PANELBOARD 'P230'. REFER TO SINGLELINE DIAGRAM AND ELECTRICAL SCHEDULES FOR PANELBOARD RATING AND ADDITIONAL INFORMATION.
2. PROVIDE DEDICATED POWER CONNECTION TO CABINET. ONE (1) 20A, 120V DUPLEX RECEPTACLE INSIDE IDF CABINET.
3. REFER TO LIGHTING PLANS FOR EXHAUST FAN CIRCUIT CONNECTION.
4. CONTRACTOR SHALL INSTALL JUNCTION BOX FOR CAMERA. INSTALL 1" CONDUIT FROM JUNCTION BOX TO IDF CABINET (CAMERA AND WIRING BY OTHERS).

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thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
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NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

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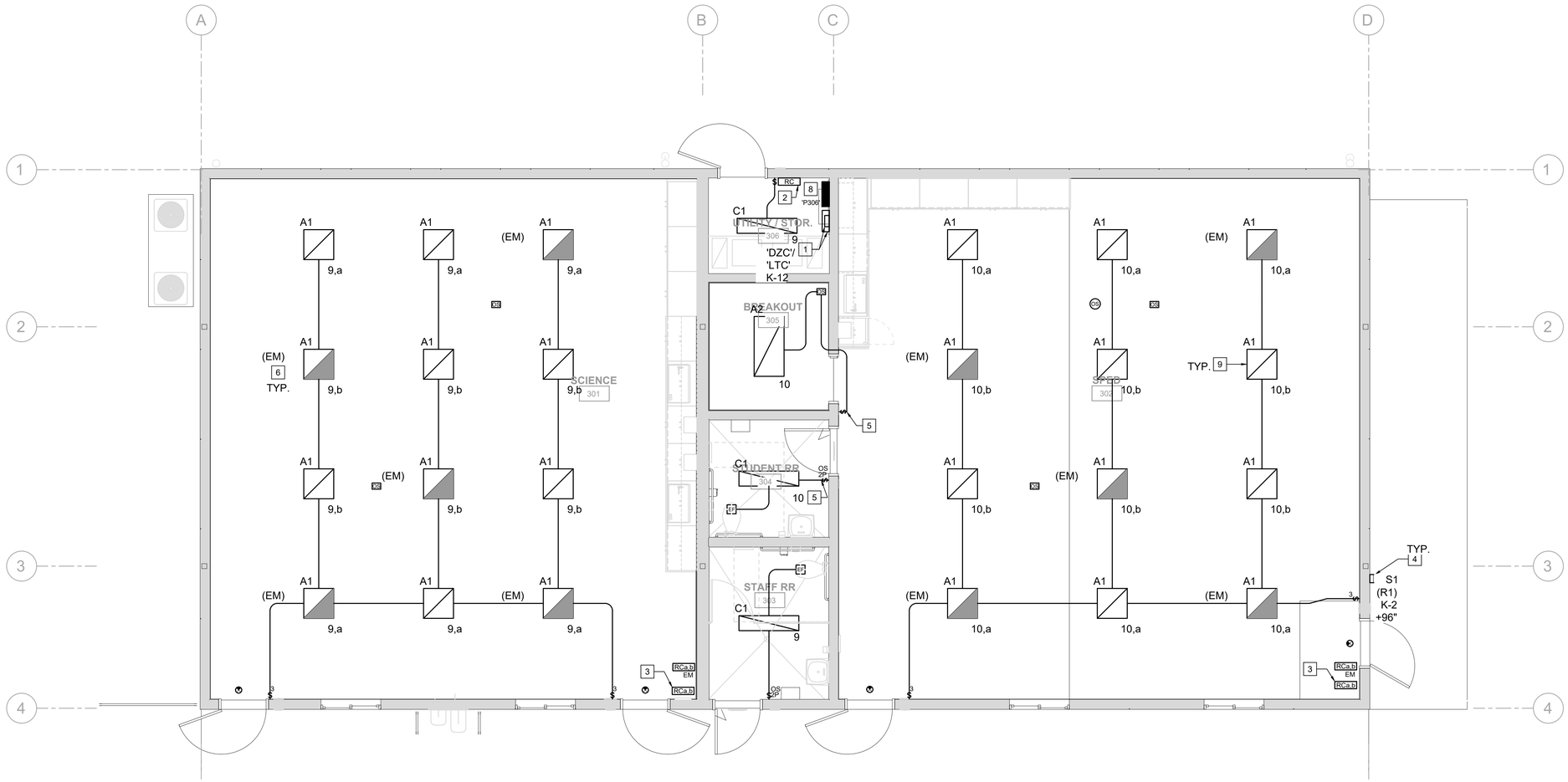
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ELECTRICAL LIGHTING PLAN

SCALE: 1/4" = 1'-0"

NORTH

REFERENCE NOTES

1. PROVIDE WATTSTOPPER DLM ZONE CONTROLLER 'DZC' (LMZC-301; PRODUCT WEIGHT IS 18LBS) WALL MOUNTED AS SHOWN TO PROVIDE SCHEDULED EVENTS AND ASTRONOMICAL TIME CLOCK CONTROL OF EXTERIOR LUMINAIRES. MOREOVER, PROVIDE SUPPLEMENTAL MECHANICAL EXTERIOR LIGHTING CONTROL TIME CLOCK 'LTC' (INTERMATIC #T7401BC OR DISTRICT APPROVED EQUAL; PRODUCT WEIGHT IS 9.5LBS). ALL BUILDING MOUNTED EXTERIOR LIGHTING FOR NEW KINDER BUILDING TO BE WIRED THROUGH THE MECHANICAL TIME CLOCK IN ADDITION TO THE EXTERIOR LIGHTING ROOM CONTROLLER (REFER TO REFERENCE NOTE #2 ON THIS SHEET). SEE LIGHTING CONTROL DIAGRAM DETAIL 2/E-004.
2. DEDICATED EXTERIOR LIGHTING ROOM CONTROLLER (WATTSTOPPER LMRC-212, EQUIPPED WITH TWO 0-10V RELAYS). LOCATE IN A CONCEALED SPACE INSIDE (NOT NECESSARILY WHERE SHOWN ON PLAN). CONNECT TO WATTSTOPPER DLM ZONE CONTROLLER (LMZC-301) TO ENABLE SCHEDULED EVENTS AND ASTRONOMICAL TIME CLOCK CONTROL OF EXTERIOR LUMINAIRES (REFER TO LIGHTING CONTROL DIAGRAM DETAIL 2/E-004 FOR FURTHER INFORMATION). ROOM CONTROLLER WEIGHT IS 0.375LBS.
3. WATTSTOPPER ROOM CONTROLLER FOR LIGHTING CONTROL, PER CALIFORNIA ENERGY CODE 130.1(b) & (c). LOCATE IN A CONCEALED SPACE (NOT NECESSARILY WHERE SHOWN ON PLAN). REFER TO SHEET E-004 FOR LIGHTING CONTROL SYSTEM LEGEND AND WATTSTOPPER SYSTEM WIRING DIAGRAMS. TEXT ADJACENT TO "RC" (WHERE PROVIDED) IN ROOM CONTROLLER SYMBOL INDICATES SWITCH LEGS BEING CONTROLLED (I.E., "RCa,b" ARE RELAYS FOR SWITCH LEGS 'a' and 'b' LUMINAIRES) IN A GIVEN ROOM/SPACE. ROOM CONTROLLER WEIGHT IS 0.375LBS.
4. ROUTE EXTERIOR LIGHTING BRANCH CIRCUIT THROUGH DEDICATED EXTERIOR LIGHTING ROOM CONTROLLER (WATTSTOPPER LMRC-212, EQUIPPED WITH TWO 0-10V RELAYS). RELAY NUMBER INDICATED BY '(R#)' NOMENCLATURE BEFORE CIRCUIT ID; SEE LIGHTING CONTROL DIAGRAM DETAIL 2/E-004.
5. INTERLOCK EXHAUST FAN WITH LIGHTING IN RESTROOM VIA LINE VOLTAGE WITH OCCUPANCY SENSING SWITCH. PROVIDE 5-MINUTE TIME DELAY OFF FOR EXHAUST, PER MECHANICAL PLANS.
6. "EM" DESIGNATION ON LUMINAIRE TYPE INDICATES LUMINAIRE EQUIPPED WITH INTEGRAL EMERGENCY BATTERY PACK (TYP). REFER TO LUMINAIRE SCHEDULE FOR FURTHER INFORMATION.
7. WATTSTOPPER DAYLIGHT HARVESTING PHOTOCELL (LMLS-500) FOR AUTOMATIC DAYLIGHTING CONTROL OF LUMINAIRES IN PRIMARY AND SECONDARY DAYLIT ZONES, PER CA T24 ENERGY CODE 130.1(d) REQUIREMENTS. SURFACE MOUNT TO CEILING VIA JUNCTION BOX MOUNTING BRACKET (WATTSTOPPER PART NO. LMLS-MB1) TO STANDARD 4" SQUARE JUNCTION BOX (REFER TO MANUFACTURER INSTALLATION INSTRUCTIONS). REFER TO X/E-003 FOR FURTHER INFORMATION ON PLACEMENT GUIDELINES. PHOTOCELL WEIGHT IS 0.25LBS.
8. (N) BUILDING ELECTRICAL PANEL--REFER TO SINGLE LINE DIAGRAM FOR FEEDER CONDUIT AND CONDUCTOR SIZE, AND PANEL SCHEDULE FOR CIRCUITED LOADS.
9. ELECTRICAL CONTRACTOR SHALL VERIFY ORIENTATION OF TYPE 'A1' 2X2 LIGHT FIXTURES (FOR AESTHETICS OF VISIBLE FELT) IN CLASSROOM AREAS WITH ARCHITECT PRIOR TO INSTALLATION. MOREOVER, GENERAL CONTRACTOR SHALL ENSURE EACH TYPE 'A1' FIXTURE IS PROVIDED WITH A 2X2 ACOUSTICAL CEILING TILE MATCHING THE TYPE SPECIFIED BY THE ARCHITECT ON THE ARCHITECTURAL RCP IN THE ASSOCIATED ROOM AND PROJECT SPECIFICATIONS FOR USE WITH THE FIXTURE (TYPE 'A1' FIXTURES ARE INDIRECT LIGHTING FIXTURES THAT UTILIZE PROJECT CEILING TILES AS A REFLECTIVE SURFACE).
10. INSTALL LIGHT SWITCH FOR CALM ROOM OUTSIDE OF ROOM. FIELD COORDINATE FINAL LOCATION.

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thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
THOMA #25-8026

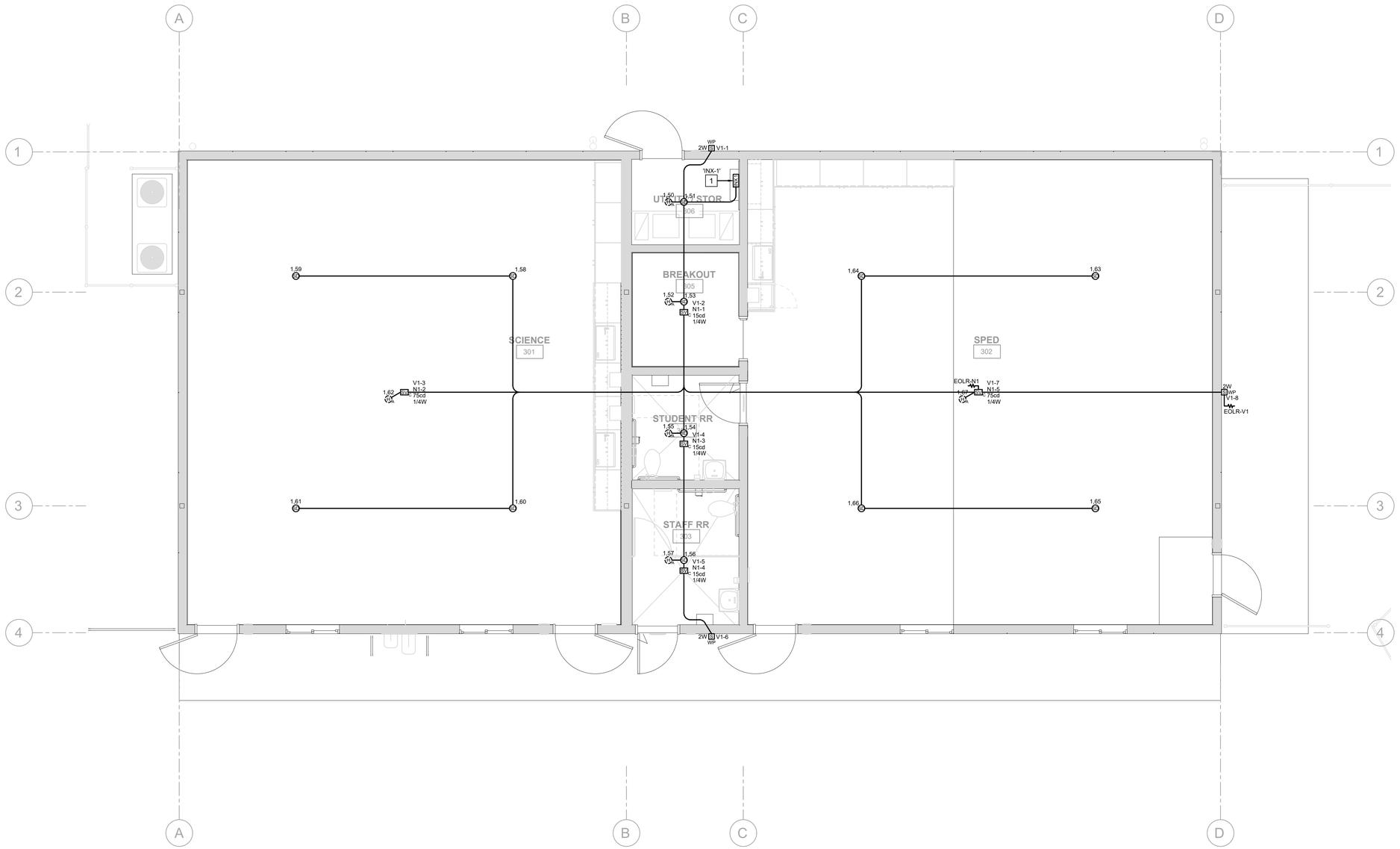
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FIRE ALARM PLAN

SCALE: 1/4" = 1'-0"

NORTH

REFERENCE NOTES

1. NEW FIRE ALARM INX TRANSPONDER "INX-1". SEE FIRE ALARM RISER DIAGRAM SHEET E300.

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CONSULTANT

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
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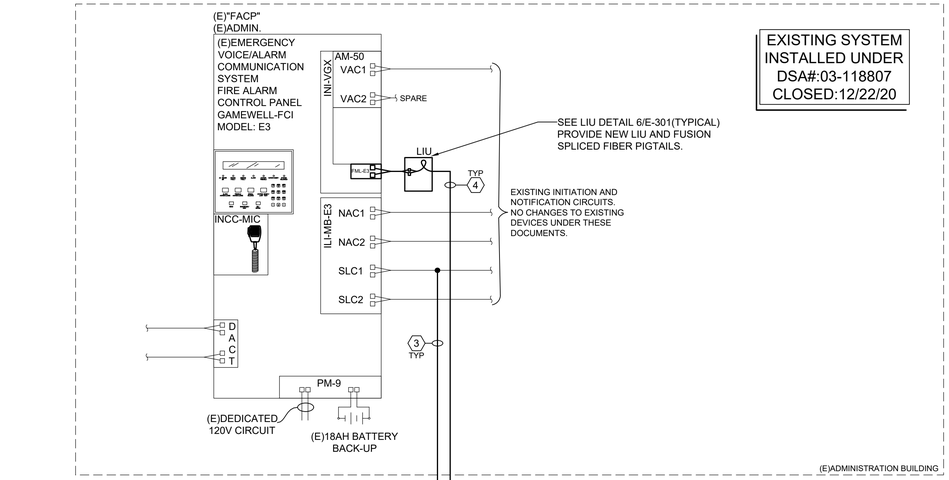
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PROJECT NUMBER
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FIRE ALARM SYMBOLS LEGEND:

SYMBOL	MODEL #	CSFM #
FACP	(E)EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM(EV/ACS) FIRE ALARM CONTROL PANEL GAMEWELL-FCI: MODEL E3 WITH: INTELEGENT LOOP INTERFACE MASTER BOARD: ILI-MB-E3 DIGITAL ALARM COMMUNICATOR TRANSMITTER: DACT-E3 LCD KEYPAD DISPLAY: LCD-E3 MICROPHONE: INCC-MIC TRANSPONDER VOICE GATEWAY: INI-VGX AMPLIFIER: AM-50 POWER SUPPLY MODULE: PM-9	7165-1703:0125 EXISTING STYTEM INSTALLED UNDER DSA#:03-118807
	(N)FIBER LOOP MODULE FML-E3	7165-1703:0176
INX-1	INTELLIGENT NETWORK TRANSPONDER GAMEWELL-FCI: -INI-VGX -FML-E3 -AM-50 -PM-9	7165-1703:0125
SD	PHOTO SMOKE DETECTOR GAMEWELL-FCI: ASD-PL3 BASE- GAMEWELL-FCI: B300-6	7272-1703:0501 7300-1653:0109
H A (ATTIC)	HEAT DETECTOR-HIGH TEMP GAMEWELL-FCI: ATD-L3H BASE- GAMEWELL-FCI: B300-6	7270-1703:0502 7300-1653:0109
CM	CONTROL MODULE GAMEWELL-FCI: AOM-2SF	7300-1703:0102
S WP	SPEAKER (WEATHER PROOF)* WHEELOCK: EL4XSPST-NR (2W EXTERIOR)	7320-0785:0167
SV C (**cd/ ***W)	SPEAKER/STROBES-CEILING* WHEELOCK: ELSPSTRC (**SIZES AS PER PLANS) (.5W INTERIOR)	7320-0785:0505
DSM	DUAL SYNC MODULE WHEELOCK: DSM-12/24-4	7300-0785-0132
	END OF LINE RESISTOR (EOLR)	–

* ENSURE NOTIFICATION DEVICES IS NOT PROVIDED WITH ANY "FIRE" MARKING OR IMPRINT ON THE DEVICE SINCE THIS DEVICE IS USED FOR BOTH FIRE NOTIFICATION AND CARBON MONOXIDE NOTIFICATION.

** DEVICE HAS MULTIPLE CANDELA RATINGS. THE E.C. IS RESPONSIBLE FOR CORRECTLY SETTING EACH STROBE OR SPEAKER/STROBE DEVICE ACCORDING TO THESE FIRE ALARM DRAWINGS.

*** DEVICE HAS MULTIPLE WATTAGE SETTINGS. THE E.C. IS RESPONSIBLE FOR CORRECTLY SETTING EACH SPEAKER OR SPEAKER/STROBE DEVICE ACCORDING TO THESE FIRE ALARM DRAWINGS.

GENERAL NOTES

APPLIES TO ALL RISER SHEETS

1. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT, 1"MINIMUM.
2. 120 VAC WIRING WILL BE MINIMUM #12 AWG.
3. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. CONDUCTORS MUST BE CUT AND WIRED "IN" AND "OUT" SO THAT ADEQUATE SUPERVISION OF THE CIRCUIT CAN BE MAINTAINED.
4. ALL DEVICES POLARITY MUST BE OBSERVED.
5. FIRE ALARM CONDUIT AND WIRING INSTALLATION SHALL COMPLY WITH CALIFORNIA ELECTRICAL CODE #760.
6. THIS IS A COMPLETE FIRE ALARM SUBMITTAL: If an alternate system is proposed, Contractor shall submit a separate set of engineered plans, specifications, and engineering calcs. for prior approval to the Owner, Division of State Architect (DSA), Architect, and Engineer including but not necessaliriy limited to:
   a. All CSFM listing numbers and Manufacturers model numbers for all system components proposed for this system.
   b. Complete Riser Diagram with point to point wiring diagrams including battery and voltage drop calculations for the entire system.
   c. Indication of conductor type(s), power-limited or non-power limited system.
   d. Information as required to demonstrate compliance with all applicable code(s) and to obtain approval of all Authority(ies) having Jurisdiction (AHJ). In the event of a substitution, installation shall not begin until separate approval has been obtained and all of the above has been accepted and signed by the (AHJ) and the Architect, see Specification Section 01631 regarding substitutions. If routing differs significantly from these plans, approval of the Engineer must be obtained before installation. After construction, provide an accurate set of field record drawings to Owner.
7. FIRE ALARM SYSTEM SHALL BE SURVIVABILITY LEVEL-0.

CABLING SCHEDULE

1. VISUALS - (2)#14 TWISTED UNSHIELDED, WINDY CITY WIRE 767960(INTERIOR), 729110VNQ(EXTERIOR) (CSFM# 7161-1727:0100) OR CABLING AS PER MANUFACTURERS RECOMMENDATIONS.
2. SPEAKERS - (2)#14 TWISTED SHIELDED PAIR, WINDY CITY WIRE 767920(INTERIOR), 712110VNQ(EXTERIOR), (CSFM# 7161-1727:0100) OR CABLING AS PER MANUFACTURERS RECOMMENDATIONS.
3. SLC&LCD - (2)#18 TWISTED UNSHIELDED PAIR, WINDY CITY WIRE 762360(INTERIOR), 727110VNQ(EXTERIOR) (CSFM# 7161-1727:0100) OR CABLING AS PER MANUFACTURERS RECOMMENDATIONS.
4. ARCNET - MULTIMODE 6-STRAND FIBER OPTIC, OM4, 50UM. (OSP). RED JACKET WITH LC CONNECTORS. LABEL AS FIRE ALARM NETWORK IN EACH PULL BOX. ALL FIBER SHALL BE TERMINATED USING PRE-FABRICATED PIGTAILS, CONTRACTOR SHALL FUSION SPLICE ALL PIGTAILS AND CONNECTORS IN WALL MOUNTED FIBER SPLICE ENCLOSURE. FIELD TERMINATED CONNECTORS ARE NOT ACCEPTABLE. CONTRACTOR SHALL PROVIDE ALL JUMPERS IN SUFFICIENT LENGTH BETWEEN FIBER SPLICE ENCLOSURE AND FIBER OPTIC MODULES IN EQUIPMENT. REFER TO DETAIL 3/FA-305 FOR FIBER CABLING LABEL REQUIREMENTS.
5. 120 VAC DEDICATED CIRCUIT. PROVIDE CIRCUIT BREAKER LOCKING DEVICE WITH RED HANDLE AND LABEL "FIRE ALARM CIRCUIT". SEE FLOOR PLANS AND PANEL SCHEDULES FOR CIRCUIT DESIGNATION(S).

** CONDUIT SIZE SHALL BE 1" MINIMUM, UNLESS OTHERWISE NOTED ON PLANS, REFER TO SITE AND FLOOR PLANS FOR ADDITIONAL FIRE ALARM CONDUIT SIZE REQUIREMENTS. EC SHALL SUBMIT CABLE MAKE/MODEL/CSFM LISTING (OR APPROVED EQUAL) WITH FIRE ALARM PROJECT DATA.

SYSTEM DESCRIPTION

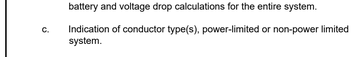
INITIATING CIRCUIT CLASS: 'B'

SYSTEM TYPE: AUTOMATIC

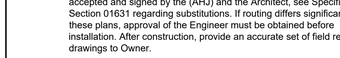
INDICATING CIRCUIT CLASS: B

THE FIRE ALARM SYSTEM SHALL BE OF A TYPE THAT UPON ACTIVATION INITIATES NOTIFICATION BY MEANS OF AN EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM (EV/ACS).

SIGNAL DEVICE CIRCUITING LEGEND



INITIATING DEVICE CIRCUITING LEGEND



VOICE NOTIFICATION MESSAGE

EV/ACS SHALL HAVE THE FOLLOWING PROGRAMMED MESSAGES IN BOTH ENGLISH AND SPANISH:

-(MESSAGE TONE)"THIS IS A TEST OF THE EMERGENCY AUDIO SYSTEM."(PROVIDE A 2 SECOND PAUSE)(REPEAT THE MESSAGE.)

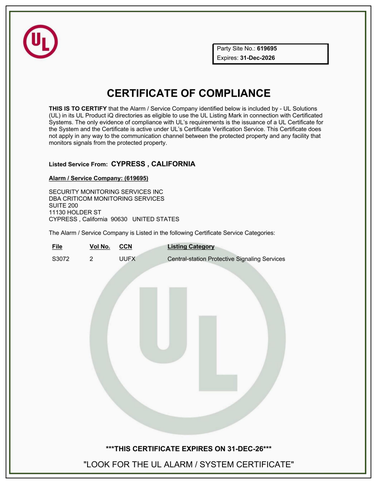
-(TEMPORAL 3 TONE FOLLOWED BY) "MAY I HAVE YOUR ATTENTION PLEASE! MAY I HAVE YOUR ATTENTION PLEASE! THE SIGNAL YOU JUST HEARD INDICATED A REPORT OF AN EMERGENCY IN THIS BUILDING. PLEASE PROCEED TO THE NEAREST EXIT AND LEAVE THE BUILDING. DO NOT RE-ENTER THE BUILDING UNLESS DIRECTED TO DO SO BY THE PROPER AUTHORITIES." (PROVIDE A 2 SECOND PAUSE.)(REPEAT THE MESSAGE.)

-(TEMPORAL 4 TONE FOLLOWED BY) MAY I HAVE YOUR ATTENTION PLEASE! MAY I HAVE YOUR ATTENTION PLEASE! CARBON MONOXIDE HAS BEEN DETECTED IN THE BUILDING. PLEASE PROCEED TO THE NEAREST EXIT AND LEAVE THE BUILDING. DO NOT RE-ENTER THE BUILDING UNLESS DIRECTED TO DO SO BY THE PROPER AUTHORITIES.(PROVIDE A 2 SECOND PAUSE.)(REPEAT THE MESSAGE.)

-(MESSAGE TONE)"YOUR ATTENTION PLEASE. THE BUILDING EMERGENCY CONDITION HAS BEEN CLEARED. YOU MAY RETURN TO YOUR NORMAL ACTIVITY. THE BUILDING EMERGENCY CONDITION HAS BEEN CLEARED. YOU MAY RETURN TO YOUR NORMAL ACTIVITY.(PROVIDE A 2 SECOND PAUSE.)(REPEAT THE MESSAGE TWICE.)

FIRE ALARM SYSTEM NOTES

- FIRE ALARM SYSTEM SHALL BE SUPERVISED BY AN APPROVED, UL LISTED CENTRAL STATION (UUFX) OR REMOTE STATION (UUJS) MONITORING COMPANY. (REF: CFC, 907.6.6.4, 2022 EDITION)
- A DOCUMENTATION CABINET SHALL BE INSTALLED AT THE SYSTEM CONTROL UNIT OR AT ANOTHER APPROVED LOCATION AT THE PROTECTED PREMISES. (NFPA 72, 7.7.2.1, 2022 EDITION)
- ALL RECORD DOCUMENTATION SHALL BE STORED IN THE DOCUMENTAION CABINET. NO RECORD DOCUMENTATION SHALL BE STORED IN THE CONTROL UNIT.(NFPA 72, 7.7.2.3, 2022 EDITION)
- THE DOCUMENTATION CABINET SHALL BE PROMINENTLY LABELED "SYSTEM RECORD DOCUMENTS". (NFPA 72, 7.7.2.5, 2022 EDITION)



Party Site No.: **619695**
Expires: **31-Dec-2026**

CERTIFICATE OF COMPLIANCE

THIS IS TO CERTIFY that the Alarm / Service Company identified below is included by - UL Solutions (UL) in its UL Product iQ directories as eligible to use the UL Listing Mark in connection with Certificated Systems. The only evidence of compliance with UL's requirements is the issuance of a UL Certificate for the System and the Certificate is active under UL's Certificate Verification Service. This Certificate does not apply in any way to the communication channel between the protected property and any facility that monitors signals from the protected property.

Listed Service From: CYPRESS , CALIFORNIA

Alarm / Service Company: (619695)

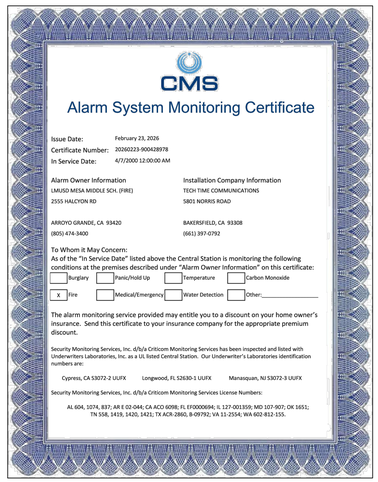
SECURITY MONITORING SERVICES INC
DBA CRITICOM MONITORING SERVICES
SUITE 200
11130 HOLDER ST
CYPRESS , California 90630 UNITED STATES

The Alarm / Service Company is Listed in the following Certificate Service Categories:

File	Vol No.	CCN	Listing Category
S3072	2	UUFX	Central-station Protective Signaling Services

*****THIS CERTIFICATE EXPIRES ON 31-DEC-26*****

"LOOK FOR THE UL ALARM / SYSTEM CERTIFICATE"



CMS

Alarm System Monitoring Certificate

Issue Date: February 23, 2026
Certificate Number: 20260223-900428978
In Service Date: 4/7/2000 12:00:00 AM

Alarm Owner Information	Installation Company Information
LMUSD MESA MIDDLE SCH. (FIRE)	TECH TIME COMMUNICATIONS
2555 HALCYON RD	5801 NORRIS ROAD
ARROYO GRANDE, CA 93420	BAKERSFIELD, CA 93308
(805) 474-3400	(661) 397-0792

To Whom it May Concern:
As of the "In Service Date" listed above the Central Station is monitoring the following conditions at the premises described under "Alarm Owner Information" on this certificate:

☐ Burglary ☐ Panic/Hold-Up ☐ Temperature ☐ Carbon Monoxide
☒ Fire ☐ Medical/Emergency ☐ Water Detection ☐ Other:

The alarm monitoring service provided may entitle you to a discount on your home owner's insurance. Send this certificate to your insurance company for the appropriate premium discount.

Security Monitoring Services, Inc. d/b/a Criticom Monitoring Services has been inspected and listed with Underwriters Laboratories, Inc. as a UL listed Central Station. Our Underwriter's Laboratories identification numbers are:

Cypress, CA S3072-2 UUFX Longwood, FL S2630-1 UUFX Manasquan, NJ S3072-3 UUFX

Security Monitoring Services, Inc. d/b/a Criticom Monitoring Services License Numbers:

AL 604, 1074, 837; AR E 02-044; CA ACO 6098; FL EF0000694; IL 127-001359; MD 107-907; OK 1651; TN 558, 1419, 1420, 1421; TX ACR-2860, B-09792; VA 11-2554; WA 602-812-155.

1 CENTRAL STATION UL LISTING

SEQUENCE OF OPERATIONS

ACTIVATE VISUAL ALARM SIGNAL	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE SUPERVISORY ALARM AT FACP	ANNUNCIATE AT FIRE CONTROL REMOTE ANNUNCIATOR (alarm & trouble)	ANNUNCIATE AT FIRE CONTROL PANEL (alarm & trouble)	ANNUNCIATE AT 24-HOUR ATTENDED REMOTE LOCATION (alarm & trouble)	FUNCTION / DEVICE
YES	YES	YES	YES	YES	YES	AREA SMOKE & HEAT DETECTOR
NO	NO	NO	YES	YES	YES	NOTIFICATION APPLIANCE CKT. SHORT
NO	NO	NO	YES	YES	YES	OPEN CIRCUIT
NO	NO	NO	YES	YES	YES	BUILDING POWER FAILURE
NO	NO	NO	YES	YES	YES	EARTH GROUND FAULT
NO	NO	NO	YES	YES	YES	FA SYSTEM LOW BATTERY

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

rrm design group
rrmdesign.com | (805) 543-1794

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RRM IS A CALIFORNIA CORPORATION

LICENSED ARCHITECT
KATHRYN ANNE MACK
938079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT
thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA
EXPIRES: 09/30/26
THOMA #25-8026

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA
FIRE ALARM RISER DIAGRAM

NO.	REVISION	DATE

PROJECT MANAGER: JC
DRAWN BY: AV
CHECKED BY: JC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: E300

DSA BACK CHECK 2

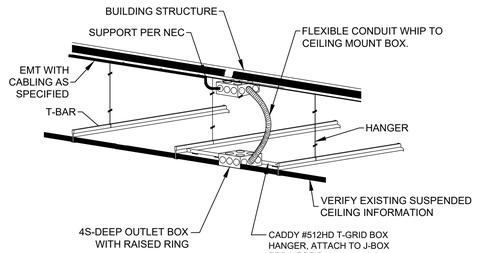
Apr 22, 2026 - 10:27pm - sbhadhagua - K:\ENG\2022\25-802\925-802\E_E300_FA RISER DIAGRAM.dwg
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Autodesk Docs://0822-03-ED25-Mesa Middle School Classroom/0822-03_Mesa Middle School - Science & SPED Classroom.rvt

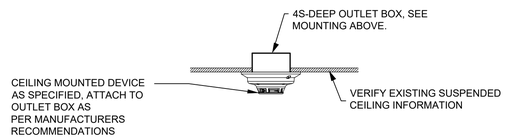
GL-2 FIRE ALARM NOTES CHECKLIST:

1. APPLICABLE STANDARD NFPA 72, AS ADOPTED AND AMENDED IN CBC CHAPTER 35
2. INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTS AND SPECIFICATION, INCLUDING STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM, HAS BEEN APPROVED BY DSA.
3. UPON COMPLETION OF SYSTEM INSTALLATION, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF A DSA PROJECT INSPECTOR.
4. A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION.
5. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE ARCHITECT/ENGINEER OF THE PROJECT.
6. DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND /OR TESTING.
7. ALL PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER APPROVED LAB TESTING CRITERIA. APPROVED TYPES OF MATERIALS SHALL BE IDENTIFIED WITHIN THE PROJECT SPECIFICATIONS WITHIN THE FIRE ALARM SECTION.
8. WALL MOUNTED VISIBLE NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80" MINIMUM AND 96" MAXIMUM FROM FINISHED FLOOR.
9. WALL MOUNTED AUDIBLE NOTIFICATION DEVICES SHALL HAVE THEIR TOPS MOUNTED AT 90" MINIMUM AND 100" MAXIMUM FROM FINISHED FLOOR AND NO CLOSER THAN 6" TO A HORIZONTAL STRUCTURE.
10. AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 DECIBELS (DBA) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR FIVE DBA ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIABLE SPACE WITHIN THE BUILDING.
11. AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.

    2.16 APPLICABLE CODES: ENSURE THE CURRENT CODES ARE LISTED ON THE PLANS.

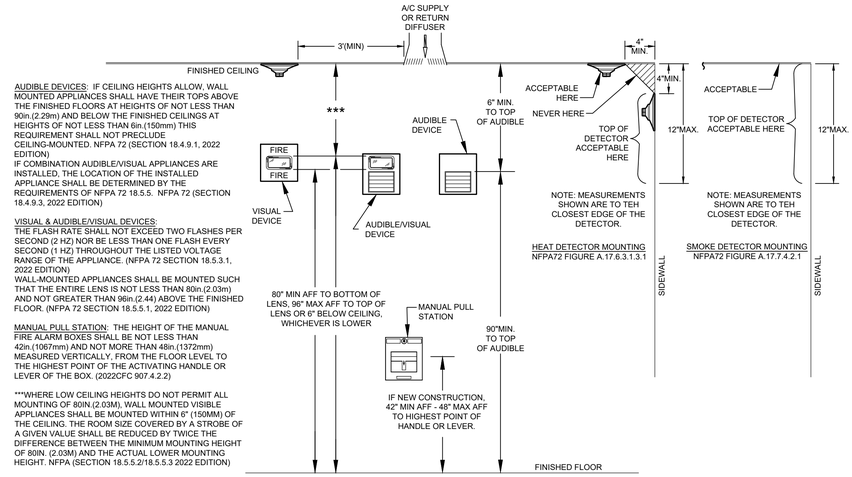
12. THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
13. VISIBLE DEVICES SHOULD NOT EXCEED TWO FLASHES PER SECOND AND SHOULD NOT BE SLOWER THAN ONE FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELLA. VISIBLE DEVICES WITHIN 55' FROM EACH OTHER SHALL BE SYNCHRONIZED.
14. UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATER TIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
15. ALL FIRE ALARM WIRING SHALL BE FPL OR FPLP (FIRE POWER LIMITED OR FIRE POWER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE TYPE THHN OR THWN.
16. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
17. SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1' FROM FIRE SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEWLY INSTALLED FIRE ALARM, DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
18. ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE CEILINGS, UNDER FLOORS AND IN WALLS IN A NEAT AND PROTECTED MANOR AS INDICATED ON DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
19. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
20. A DEDICATED BRANCH CIRCUIT SHALL BE PROVIDED FOR FIRE ALARM EQUIPMENT. THIS CIRCUIT SHALL BE ENERGIZED FROM THE COMMON USE AREA PANEL AND SHALL HAVE NO OTHER OUTLETS. THE BREAKER SHALL HAVE A RED LOCKING DEVICE TO BLOCK THE HANDLE IN THE "ON" POSITION. THE CIRCUIT BREAKER SHALL BE LABELED "FIRE ALARM CIRCUIT CONTROL." CIRCUIT ID TO BE LABELED AT FIRE PANEL/EXTENDERS.
21. THE INSTALLING CONTRACTOR SHALL PROVIDE A COMPLETED "SYSTEM RECORD OF COMPLETION" PER NFPA 72, FIGURE 17.8.2.
22. FIRE ALARM CONTROL PANELS AND REMOTE ANNUNCIATORS SHALL BE INSTALLED WITH THEIR BOTTOMS MOUNTED AT 48" ABOVE THE FINISHED FLOOR.
23. MICROPHONES ASSOCIATED WITH EMERGENCY VOICE ALARM COMMUNICATION SYSTEMS (EVAC) SHALL BE ACCESSIBLE FOR USE, INSTALLED IN COMPLIANCE WITH CBC SECTIONS 11B-305 AND 11B-308.
24. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
25. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
26. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.





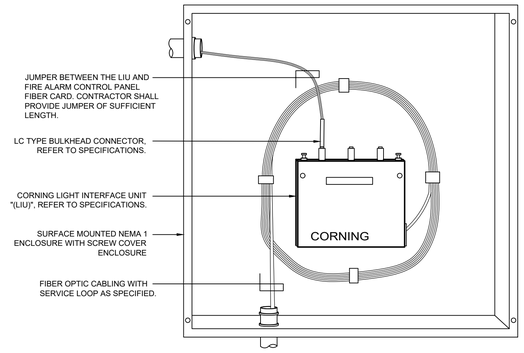
5 TYPICAL DEVICE MOUNTING DETAIL AT T-BAR CEILINGS

NTS



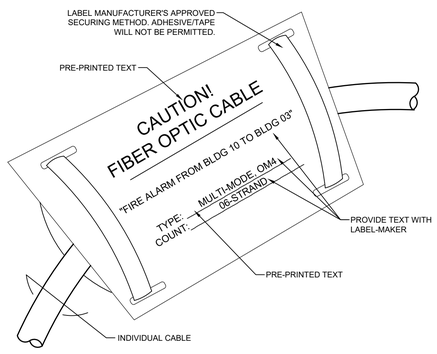
1 DEVICE ELEVATION DETAIL

SCALE: N.T.S.



6 TYPICAL LIGHT INTERFACE UNIT 'LIU' INSTALLATION

NTS

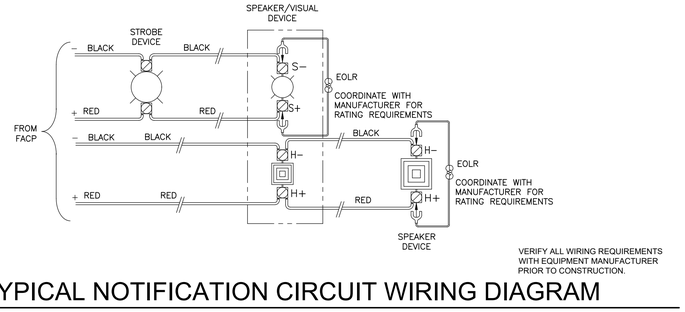


NOTES:

- LABEL SHALL CONTAIN THE WORDS "CAUTION! FIBER OPTIC CABLE"
- LABEL SHALL CLEARLY IDENTIFY THE SOURCE AND DESTINATION OF THE FIBER CABLE.
- LABEL SHALL CLEARLY IDENTIFY THE TYPE AND STRAND COUNT CONTAINED WITHIN THE CABLE.
- ALL LABEL MARKINGS SHALL BE MADE IN INDELIBLE INK
- LABEL SHALL BE SELF LAMINATED AND SUITABLE FOR OUTDOOR, SUBMERGED APPLICATIONS WITHOUT DEGRADATION.
- WHERE USED FOR CAMPUS FIRE ALARM CABLING, TAG COLORS SHALL BE BLACK AND RED.

7 FIBER OPTIC CABLE LABEL

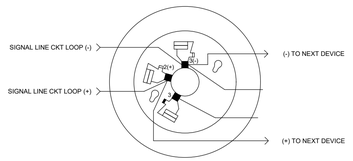
NTS



VERIFY ALL WIRING REQUIREMENTS WITH EQUIPMENT MANUFACTURER PRIOR TO CONSTRUCTION.

2 TYPICAL NOTIFICATION CIRCUIT WIRING DIAGRAM

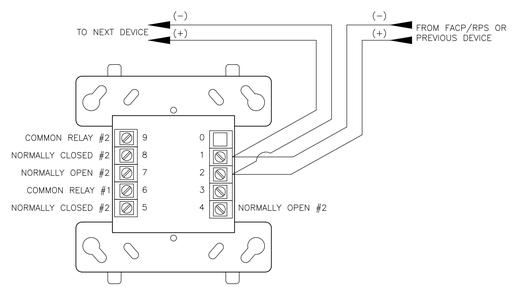
NTS



VERIFY ALL WIRING REQUIREMENTS WITH EQUIPMENT MANUFACTURER PRIOR TO CONSTRUCTION.

3 ADDRESSABLE SMOKE AND HEAT DETECTOR WIRING DIAGRAM

NTS



VERIFY ALL WIRING REQUIREMENTS WITH EQUIPMENT MANUFACTURER PRIOR TO CONSTRUCTION.

4 TYPICAL ADDRESSABLE CONTROL MODULE WIRING DIAGRAM

NTS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

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KATHRYN ANNE NICOL
9380 79
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
THOMA #25-8026

DSA BACK CHECK 2

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS

2555 S HALCYON RD, ARROYO GRANDE, CA

FIRE ALARM DETAILS

NO.	REVISION	DATE
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PROJECT MANAGER JC
DRAWN BY AV | **CHECKED BY** JC
DATE APRIL 23, 2026
PROJECT NUMBER 0822-03-ED25
SHEET E301

Feb 20, 2026 - 4:55pm - jchachagua - K:\ENG\2025\25-8026\25-8026_E301_FA DETAILS.dwg
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VOLTAGE DROP (VD) CALCULATION

PROJ. NAME	Mesa M.S. Sci. & SPED C.R.
VAC/VOICE SIG CKT#	V1

CKT./DEVICE #	V1-1	V1-2	V1-3	V1-4	V1-5	V1-6	V1-7	V1-8	V1-9	V1-10
GAUGE WIRE	14	14	14	14	14	14	14	14	14	14
DISTANCE (FT.)	30	30	45	45	25	25	60	35	0	0
AMPS @ DEVICE	0.083	0.0104	0.0208	0.0104	0.0104	0.083	0.0208	0.083	0	0
AMPS DEVELOPED	0.3218	0.2388	0.2284	0.2076	0.1972	0.1868	0.1038	0.083	0	0
VOLT. DROP	0.049	0.036	0.052	0.047	0.025	0.024	0.031	0.015	0.000	0.000

CKT./DEVICE #	V1-11	V1-12	V1-13	V1-14	V1-15	V1-16	V1-17	V1-18	V1-19	V1-20
GAUGE WIRE	14	14	14	14	14	14	14	14	14	14
DISTANCE (FT.)	0	0	0	0	0	0	0	0	0	0
AMPS @ DEVICE	0	0	0	0	0	0	0	0	0	0
AMPS DEVELOPED	0	0	0	0	0	0	0	0	0	0
VOLT. DROP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FORMULA	
I X FEET X OHMS / FT	
SIGNAL CIRCUIT =	V1
TOTAL CKT AMPS.=	0.3218 (7.72W)
CIRCUIT LENGTH =	295FT
CKT VOLTAGE=	20.4
TOTAL CKT V.D.=	0.278
VOLTAGE AT FINAL DEVICE=	20.122
% VOLTAGE DROP=	1.363

SPEAKER LOAD	
INTERIOR	.25W = .0104A
INTERIOR	.5W = .0208A
EXTERIOR	2W = .0830A

WIRE SIZE	RESIS. /M FT.	CIRC. MILS
6	0.5	26240
10	1.21	10380
12	1.59	6530
14	2.52	4110
16	4.02	2580
18	6.39	1620
20	10.1	1020
22	16.2	640
24	25.7	404

VOLTAGE DROP (VD) CALCULATION

PROJ. NAME	Mesa M.S. Sci. & SPED C.R.
NAC/VISUAL SIG CKT#	N1

CKT./DEVICE #	N1-1	N1-2	N1-3	N1-4	N1-5	N1-6	N1-7	N1-8	N1-9	N1-10
DEVICE	S/V15cd-C	S/V75cd-C	S/V15cd-C	S/V15cd-C	S/V75cd	0	0	0	0	0
GAUGE WIRE	14	14	14	14	14	14	14	14	14	14
DISTANCE (FT.)	25	35	35	35	30	0	0	0	0	0
AMPS @ DEVICE	0.022	0.06	0.022	0.022	0.06	0	0	0	0	0
AMPS DEVELOPED	0.186	0.164	0.104	0.082	0.06	0	0	0	0	0
VOLT. DROP	0.023	0.029	0.018	0.014	0.009	0.000	0.000	0.000	0.000	0.000

CKT./DEVICE #	N1-11	N1-12	N1-13	N1-14	N1-15	N1-16	N1-17	N1-18	N1-19	N1-20
DEVICE	0	0	0	0	0	0	0	0	0	0
GAUGE WIRE	14	14	14	14	14	14	14	14	14	14
DISTANCE (FT.)	0	0	0	0	0	0	0	0	0	0
AMPS @ DEVICE	0	0	0	0	0	0	0	0	0	0
AMPS DEVELOPED	0	0	0	0	0	0	0	0	0	0
VOLT. DROP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FORMULA	
I X FEET X OHMS / FT	
SIGNAL CIRCUIT =	N1
TOTAL CKT AMPS.=	0.186
CIRCUIT LENGTH =	160FT
CKT VOLTAGE=	20.4
TOTAL CKT V.D.=	0.094
VOLTAGE AT FINAL DEVICE=	20.306
% VOLTAGE DROP=	0.462

DEVICE LEGEND	
SPEAKER/VISUAL	=S/V
VISUAL DEVICE	=V
CANDELA RATING	=XXcd
CEILING	=C
WALL	=(BLANK)

WIRE SIZE	RESIS. /M FT.	CIRC. MILS
6	0.5	26240
10	1.21	10380
12	1.59	6530
14	2.52	4110
16	4.02	2580
18	6.39	1620
20	10.1	1020
22	16.2	640
24	25.7	404

BATTERY CALCULATIONS

PROJECT: **Mesa M.S. Sci. & SPED C.R.-(E)'FACP'**
Based on 24 Hour Standby

Device	Manufacturer	#	QTY	Standby Amps	Total Standby Amps	Alarm Amps	Total Alarm Amps
(E)Fire Alarm Control Pnl. -EV/ACS	Gamewell-FCI	E3-Series	--	--	0.0000	--	0.0000
(E)Intelegent Loop Interface Master Board	Gamewell-FCI	ILI-MB-E3	1	0.08100	0.0810	0.15000	0.1500
(E)LCD Keypad Display	Gamewell-FCI	LCD-E3	1	0.02400	0.0240	0.02800	0.0280
(E)Addressable Switch Module	Gamewell-FCI	ASM-16	1	0.01100	0.0110	0.01100	0.0110
(E)Digital Alarm Communicator Transmitter	Gamewell-FCI	DACT-E3	1	0.01800	0.0180	0.01800	0.0180
(E)Transponder Voice Gateway W/ INC-MIC	Gamewell-FCI	IN-VGX	1	0.15000	0.1500	0.15000	0.1500
(E)Amplifier	Gamewell-FCI	AM-50	1	0.08600	0.0860	2.20600	2.2060
Fiber Loop Module	Gamewell-FCI	FML-E3	1	0.05300	0.0530	0.05300	0.0530
Power Supply Module	Gamewell-FCI	PM-9	1	0.05000	0.0500	0.05000	0.0500
Smoke Detector	Gamewell-FCI	ASD-PL3	12	0.00020	0.0024	0.00200	0.0240
(E)Smoke Detector	Gamewell-FCI	ASD-PL2F	9	0.00030	0.0027	0.00650	0.0585
Heat Detector	Gamewell-FCI	ATD-L3(H)	6	0.00020	0.0012	0.00200	0.0120
(E)Heat Detector	Gamewell-FCI	ATD-L2F	1	0.00030	0.0003	0.00650	0.0065
(E)Relay Control Module	Gamewell-FCI	AOM-2RF	8	0.00038	0.0030	0.00650	0.0520
Control Module	Gamewell-FCI	AOM-2SF	2	0.00038	0.0008	0.00650	0.0130
(E)Control Module	Gamewell-FCI	AOM-2SF	2	0.00038	0.0008	0.00650	0.0130
(E)Dual Monitor Module	Gamewell-FCI	AMM-2IF	2	0.0075	0.0150	0.0057	0.0114
(E)Monitor Module	Gamewell-FCI	AMM-2F	11	0.00038	0.0041	0.00060	0.0066
(E)Monitor Module	Gamewell-FCI	AMM-4SF	7	0.00030	0.0021	0.00520	0.0364
(E)NAC Circuit - N1	---	---	1	0.00000	0.0000	2.00000	2.0000
(E)NAC Circuit - N2	---	---	1	0.00000	0.0000	2.00000	2.0000
			0	0.00000	0.0000	0.00000	0.0000
				Total:	0.5053	Total:	6.8994

Total Standby Amps =	0.505	x 24	Hours =	12.1278	Amp-Hours
Total Alarm Amps =	6.899	x 0.25	Hours = (15 minutes)	1.7249	Amp-Hours
Total Amp-Hours required after 24 hours standby and 15 minutes alarm.				13.8527	Amp-Hours
Total Battery Amp-Hours required:					
Total Amp-Hours required x 1.25 =				17.3158	Amp-Hours
Total Amp-Hours Supplied=				18.0000	Amp-Hours
Spare Capacity=				0.6842	Amp-Hours

BATTERY CALCULATIONS

PROJECT: **Mesa M.S. Sci. & SPED C.R.-'INX-1'**
Based on 24 Hour Standby

Device	Manufacturer	#	QTY	Standby Amps	Total Standby Amps	Alarm Amps	Total Alarm Amps
Inteligent Network Voice Gateway	Gamewell-FCI	INI-VGX	1	0.1500	0.150	0.1500	0.150
Amplifier Sub-assembly	Gamewell-FCI	AM-50	1	0.0860	0.086	2.2060	2.206
Fiber Loop Module	Gamewell-FCI	FML-E3	1	0.05300	0.0530	0.05300	0.0530
Dual Sync Module	Wheelock	DSM-12/24	1	0.0000	0.000	0.0500	0.050
Power Supply	Gamewell-FCI	PM9	1	0.0500	0.050	0.0500	0.050
Speaker-Weatherproof (2Watts)	Wheelock	EL4XSPK-NR	3	0.00000	0.0000	0.08300	0.2490
Speaker/Strobe-Ceiling -15cd/(.25Watts Speaker)	Wheelock	ELSPSTRC	3	0.00000	0.0000	0.03240	0.0972
Speaker/Strobe-Ceiling -75cd/(.5Watts Speaker)	Wheelock	ELSPSTRC	2	0.00000	0.0000	0.08080	0.1616
			0	0.0000	0.000	0.0000	0.000
				Total:	0.339	Total:	3.017

Total Standby Amps =	0.339	x 24	Hours =	8.136	Amp-Hours
Total Alarm Amps =	3.017	x 0.25	Hours = (15 minutes)	0.754	Amp-Hours
Total Amp-Hours required after 24 hours standby and 15 minutes alarm.				8.890	Amp-Hours
Total Battery Amp-Hours required:					
Total Amp-Hours required x 1.25 =				11.11	Amp-Hours
Total Amp-Hours Supplied=				18	Amp-Hours
Spare Capacity=				6.887	Amp-Hours

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KATHRYN ANNE NICOL
938079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

CONSULTANT

THOMA ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
THOMA #25-8026

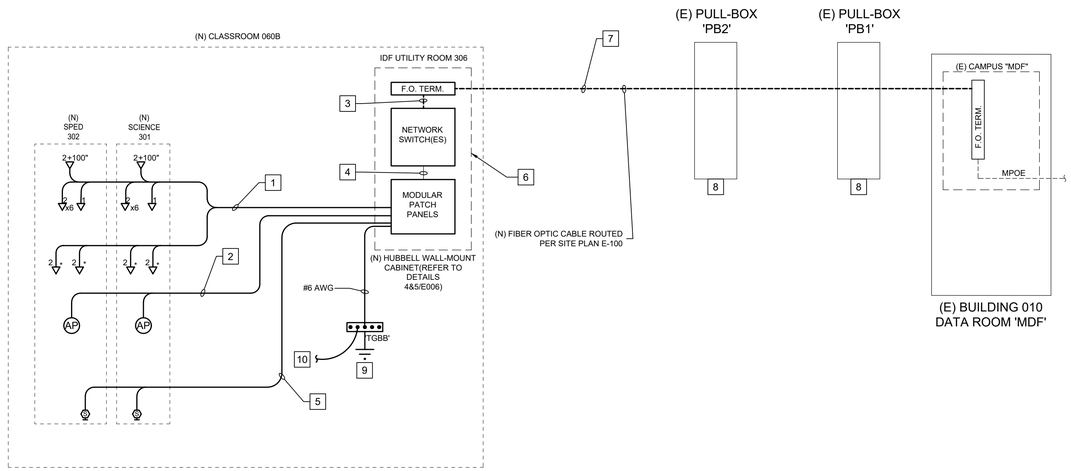
MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA
FIRE ALARM CALCULATIONS

NO.	REVISION	DATE
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PROJECT MANAGER
JC
DRAWN BY AV
CHECKED BY JC
DATE
APRIL 23, 2026
PROJECT NUMBER
0822-03-ED25
SHEET
E302

DSA BACK CHECK 2

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PARTIAL CAMPUS COMMUNICATIONS RISER DIAGRAM

☐ REFERENCE NOTES

1. (N) CAT6 TO EACH DATA OUTLET (QUANTITY PER RISER; BLUE JACKET).
2. (N) (2) CAT6A AT EACH CLASSROOM WAP (WHITE JACKET).
3. F.O. JUMPERS - TO MATCH CABLE PLANT (2M MAX).
4. CAT 6/6A JUMPERS - TO MACH CABLE PLANT (2M MAX).
5. (N) (1) CAT6 CABLE PER EACH SPEAKER DEVICE TERMINATED IN BISCUIT IN TRUE 5S BACKBOX ON WALL. USE WEATHERPROOF BOXES AND METHODS FOR EXTERIOR SPEAKERS. SPEAKER DEVICE SHALL BE PROVIDED BY DISTRICT AND INSTALLED BY CONTRACTOR. EC SHALL TERMINATE AND TEST BISCUIT IN PREPARATION FOR (N) DEVICE.
6. CONTRACTOR SHALL COORDINATE WITH DISTRICT IT STAFF FOR INSTALLATION AND SCHEDULING OF NEW EQUIPMENT TO BE PROVIDED BY THE IT DEPT.
7. (N) 12 STRAND SINGLE-MODE (OS2) IN A SINGLE JACKET (AQUA IN COLOR) AND PLACED IN CONDUIT (SIZES/QUANTITIES PER SITE PLAN). ALL STRANDS SHALL BE TERMINATED IN FIBER SPLICE ENCLOSURES AT EACH END OF THE CABLE INSTALLATION. ALL CABLING BETWEEN EXISTING CAMPUS MDF AND NEW BUILDING IDFS SHALL BE UNDERGROUND/WET LOCATION LISTED. VERIFY CABLE TYPES WITH DISTRICT PRIOR TO SUBMITTALS. REFER TO ELECTRICAL SITE PLANS FOR ROUTING.
8. REFER TO ELECTRICAL SITE PLAN FOR LOCATION.
9. (N) WALL MOUNTED TELECOMMUNICATIONS GROUND BUS BAR PER DETAIL 3/E0.06.
10. (N) THWN, GREEN JACKETED GROUND CONDUCTOR BETWEEN TELECOMMUNICATIONS ROOM GROUND BUS BAR AND BUILDING MAIN ELECTRICAL PANEL EQUIPMENT GROUND BUS ROUTE IN (N) 1" CONDUIT.

GENERAL NOTES

A. CATEGORY CABLING, MODULAR JACKS, AND PATCH CABLES SHALL MATCH COLOR OF (N) CABLE PLANT AS FOLLOWS:
   - CAT6 = BLUE IN COLOR.
   - CAT6A = WHITE IN COLOR.

B. CAT6 AND CAT6A CABLES, TOTAL LENGTH FROM IDF TO ENDPOINT SHALL NOT BE MORE THAN 295'-0"; CONTRACTOR SHALL BRING TO THE ATTENTION OF THE ENGINEER ANY LENGTHS IN EXCESS OF 295'-0" PRIOR TO ROUGH-IN INSPECTION.

C. CAT6 AND CAT6A CABLES SHOWN AS ROUTED UNDERGROUND BETWEEN BUILDINGS SHALL BE OUTDOOR PLANT RATED AS SHOWN.

D. EC SHALL PROVIDE 10' SERVICE LOOP AT EACH (E) AND (N) PULL-BOX FOR CABLE SHOWN AS (N).

E. DISTRICT TO PROVIDE VOIP (VOICE OVER INTERNET PROTOCOL) PHONE HAND SETS AT EACH NEW CLASSROOM.

F. CABLING TYPES SHALL BE SUITABLE AND RATED FOR THE APPLICATION INSTALLED (PLENUM, UNDERGROUND, ETC.).

G. ALL FIBER OPTIC CABLES SHALL BE FUSION SPLICED TO PRE-TERMINATED/POLISHED PIG-TAILS IN APPROVED FIBER SPLICE ENCLOSURES AND SPLICE TRAYS.

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DATE: 05/26/2026

rrm design group
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KATHRYN ANNE NICOL
938079
2-28-27
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STATE OF CALIFORNIA

CONSULTANT

thoma ENGINEERING
THOMA ELECTRIC, INC.
P.O. Box 1167 - 3562 Empleo St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829
cad@thomaelec.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26
THOMA #25-8026

DSA BACK CHECK 2

MESA MIDDLE SCHOOL SCIENCE AND SPED CLASSROOMS
2555 S HALCYON RD, ARROYO GRANDE, CA
COMMUNICATIONS RISER DIAGRAM

NO.	REVISION	DATE
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6		

PROJECT MANAGER: JC
DRAWN BY: AV | CHECKED BY: JC
DATE: APRIL 23, 2026
PROJECT NUMBER: 0822-03-ED25
SHEET: E401

Feb 20, 2026 - 4:55pm - jchanhagua - K:\ENG\2025\25-8026\25-8026_E401_COMM RISER.dwg
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LUCIA MAR UNIFIED SCHOOL DISTRICT

Engage.Challenge.Inspire

2555 S Halcyon Rd, Arroyo Grande, CA 93420

Mesa Middle School
SPED & Science Building

Date: 04/17/2026

Project Tracking Number: 68759-132

DSA File Number: 40-39
DSA Application Number: 03-125727

RRM Design Group
3765 South Higuera, Suite 102
San Luis Obispo CA, 93401

Back of Front Cover

Mesa Middle School
SPED & Science Building

Project Tracking Number: 68759-132

DSA File Number 40-39

DSA Application Number 03-125727

Date: April 17, 2026

Owner: Lucia Mar Unified School District
Facilities & Maintenance
222 Stanley Avenue
Arroyo Grande, CA 93420

Architect and Consulting Engineers:

Kathryn Hicks, Architect
RRM DESIGN GROUP
3765 S. Higuera Street, Ste. 102
San Luis Obispo, CA 93401
(805) 543-1794

LICENSED ARCHITECT
KATHRYN ANNE HICKS
C 38079
2-28-27
RENEWAL DATE
STATE OF CALIFORNIA

Robert Camacho
RRM DESIGN GROUP
3765 S. Higuera Street, Ste. 102
San Luis Obispo, CA 93401
(805) 543-1794

REGISTERED PROFESSIONAL ENGINEER
ROBERT A. CAMACHO
No. 76597
CIVIL
STATE OF CALIFORNIA

Jeff Thoma, P.E.
THOMA ELECTRIC COMPANY
3562 Empleo Street, Ste. C
San Luis Obispo, CA 93401
(805) 543-3850

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. THOMA
NO. 20823
ELECTRICAL
STATE OF CALIFORNIA

EXPIRES: 09/30/26

Jessica Meadows, S.E.
RRM DESIGN GROUP
3765 S. Higuera Street, Ste. 102
San Luis Obispo, CA 93401
(805) 543-1794

REGISTERED PROFESSIONAL ENGINEER
JESSICA M. MEADOWS
No. 6488
STRUCTURAL
STATE OF CALIFORNIA

Architect and Consulting Engineers, Cont'd:

Brian P. Starrett
3C ENGINEERING
1500 Palm St.
San Luis Obispo, CA 93401
(805) 540-3363



Chris Dufour
RRM DESIGN GROUP
3765 S. Higuera Street, Ste. 102
San Luis Obispo, CA 93401
(805) 543-1794



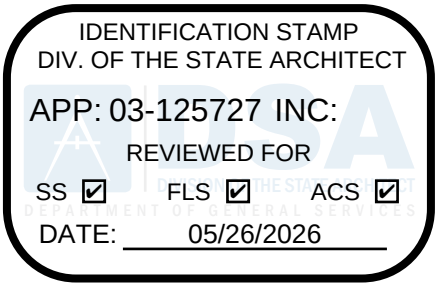


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08 3100 **ACCESS DOORS AND PANELS**

08 5313 **VINYL WINDOWS**

08 7100 **DOOR HARDWARE**

08 8000 **GLAZING**

DIVISION 09 - FINISHES

09 0561 **COMMON WORK RESULTS FOR FLOORING PREPARATION**

09 2116 **GYPSUM BOARD ASSEMBLIES**

09 2236 **LATH**

09 2400 **CEMENT PLASTERING**

09 3000 **TILING**

09 5100 **ACOUSTICAL CEILINGS**

09 6500 **RESILIENT FLOORING**

09 6519 **RESILIENT TILE FLOORING**

09 6813 **TILE CARPETING**

09 9113 EXTERIOR PAINTING

09 9123 INTERIOR PAINTING

DIVISION 10 - SPECIALTIES

10 1100 VISUAL DISPLAY UNITS

10 1400 SIGNAGE

10 2113.19 PLASTIC TOILET COMPARTMENTS

10 2813 TOILET ACCESSORIES

10 4400 FIRE PROTECTION SPECIALTIES

DIVISION 11 - EQUIPMENT

11 5210 ASSISTIVE LISTENING EQUIPMENT

DIVISION 12 - FURNISHINGS

12 3600 COUNTERTOPS

DIVISION 22 - PLUMBING

22 0000 PLUMBING

DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

23 0000 HEATING, VENTILATION, AND AIR CONDITIONING

23 0013 GENERAL MECHANICAL REQUIREMENTS

DIVISION 26 - ELECTRICAL

26 0500 COMMON WORK RESULTS FOR ELECTRICAL

26 0519 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

26 0533 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

26 0553 IDENTIFICATION OF ELECTRICAL SYSTEMS

26 0923 NETWORK LIGHTING CONTROLS

26 2416 PANELBOARDS

26 2726 WIRING DEVICES

26 2816 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

26 5100 INTERIOR LIGHTING

26 5600 EXTERIOR LIGHTING

26 5670 LIGHTING ACCEPTANCE TESTING

26 7700 ASSISTIVE LISTENING SYSTEM

DIVISION 27 - COMMUNICATIONS

27 1300 INTERCOMMUNICATION SYSTEMS

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

28 3100 FIRE ALARM AND DETECTION SYSTEMS

DIVISION 31 - EARTHWORK

31 1000 SITE CLEARING

31 2200 GRADING

31 2316 EXCAVATION

31 2316.13 TRENCHING

31 2323 FILL

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 0190 OPERATION AND MAINTENANCE OF PLANTING

32 1123 AGGREGATE BASE COURSES

32 1216 ASPHALT PAVING

32 1313 CONCRETE PAVING

32 1723 PAVEMENT MARKINGS

32 1726 TACTILE WARNING SURFACING

32 3113 CHAIN LINK FENCES AND GATES

32 8423 IRRIGATION SYSTEM

32 9223 SODDING

32 9300 PLANTS

DIVISION 33 - UTILITIES

33 0110.58 DISINFECTION OF WATER UTILITY PIPING SYSTEMS

33 1416 SITE WATER UTILITY DISTRIBUTION PIPING

33 3113 SITE SANITARY SEWERAGE GRAVITY PIPING

33 4100 SUBDRAINAGE

33 4211 STORMWATER GRAVITY PIPING

Section 01 1000
Summary

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Mesa Middle School Science and SPED Building

B. District's Name: Lucia Mar Unified School District.

C. The Project consists of the construction of an approximately 2,800 SF classroom building and associated site work, including walkways, ramps, accessibility upgrades and associated above grade and underground utilities..

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Instructions ot Bidders.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is shown on drawings and specified in Section 32 0505 Selective Demolition for Exterior Improvements

B. Scope of alterations work is shown on drawings and includes:
   1. Extension of domestic water lines
   2. Extension of sewer lines
   3. Electrical and low voltage conduits, boxes, and vaults
   4. Paving including asphalt concrete and concrete.
   5. Irrigation sleeving

1.04 WORK BY OWNER

A. Landscape planting and irrigation

B. District will supply the following for installation by Contractor:

1.05 OWNER OCCUPANCY

A. District intends to continue to occupy adjacent portions of the existing building during the entire construction period.

B. District intends to occupy the Project by the date stated in the Agreement as the contract completion date.

C. Cooperate with District to minimize conflict and to facilitate District's operations.

D. Schedule the Work to accommodate District occupancy.

E. Coordinate with the District to maintain fire apparatus access to the rear of campus.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Arrange use of site and premises to allow:
   1. District occupancy of the portions of the site outside of the construction fence.

B. Provide access to and from site as required by law and by District:
   1. Do not obstruct roadways, sidewalks, or other public ways without permit.

C. Time Restrictions:
   1. Limit conduct of especially noisy exterior work to the hours of instruction.
      a. Instruction Hours: Monday to Friday: 8:00 a.m. to 2:30 p.m.
      b. Coordinate with district for other days when minimal or no construction noise is required, e.g. state testing days.
   2. Limit delivery of materials during times of peak traffic on site as follows
      a. Drop off Monday: 8:45 am to 9:20 am
      b. Drop off Tuesday to Friday: 7:45 am to 8:20 am
      c. Pick Up Monday to Friday: 2:00 pm to 2:45 pm
      d. Coordinate with district for minimum days and holidays during the course of construction.

D. Utility Outages and Shutdown:
   1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to District and authorities having jurisdiction.
   2. Prevent accidental disruption of utility services to other facilities.

E. Refer to 01 5000 Construction Facilities and Temporary Controls for additional information

1.07 WORK SEQUENCE

A. Coordinate construction schedule and operations with District.

1.08 CHANGES TO THE WORK

A. Construction Change Directives (CCDs) shall be submitted to DSA if required by DSA IR A-6. Contractor to comply with all applicable provisions and preform work to the requirements of DSA approved CCDs.
   1. If reapproval is required as a result of a contractor generated change, e.g. a substitution request, the contractor will reimburse the District for review or redesign services by the architect and re-approval fees by authorities, agencies, or the District.

B. Contractor to comply with all District requirement and provisions of Division 0 when preparing change orders or other revisions to the DSA approved drawings and specifications.

END OF SECTION

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Section 01 2500
Substitutions

PART 1 - GENERAL

1.01 "OR EQUAL" SUBSTITUTIONS

A. One Product Specified: Unless the Specifications state that no substitution is permitted, whenever in the Contract Documents any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction is indicated or specified by name, make, trade name, or catalog number, with or without the words “or equal”, such specification shall be deemed to be used for the purpose of facilitating description of material, process, or article desired and shall be deemed to be followed by the words “or equal”. Contractor may, unless otherwise stated, offer any material, process, or article, which shall be substantially equal or better in every respect to that so indicated or specified and will completely accomplish the purpose of the Contract Documents.

B. Two or More Products Specified: When two or more acceptable products are specified for an item of the Work, the choice will be up to the Contractor. Contractor shall utilize the same product throughout the Project. If a timely substitution request as set forth in Section 1.02.A. is not provided and an “or equal” substitution is requested, the District may consider the substitution only if the product specified is no longer commercially available.
   1. The burden of proof as to the equality of any material, process or article shall rest with the Contractor, and the Contractor shall submit all data substantiating a request for an “or equal” substitution item as provided in Section 3400 of the Public Contract Code, Specification Section 01 3300 and other specific sections of the specifications prior to Award of Contract.

1.02 REQUEST FOR SUBSTITUTIONS

A. Substitute Request Form: Requests for substitutions of products, materials, or processes other than those specified must be made on the Substitution Request form attached. Requests must be submitted fourteen (14) calendar days prior to the date of the Bid Opening to be considered. An addendum will be issued seven (7) calendar days prior to Bid Opening, identifying all equipment and materials deemed equivalent to those specified and approved by the Architect.

B. Substitution Request Content: A substitution request must constitute a representation that the subcontractor/general contractor:
   1. Has investigated proposed product and determined that it is equal in quality and serviceability of the specified item.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other work, which may be required for the work to be complete with no additional cost to General Contractor / Owner.
   4. Will be acceptable in consideration of the required design and artistic effect.
   5. Will require no excessive or more expensive maintenance including adequacy and availability of replacement parts.

6. Waives claims for additional costs or time extension, which may subsequently become apparent.
7. Will reimburse District for review or redesign services by the Architect and re-approval fees by authorities, agencies, or the District.

C. Substitution Submittal Procedure:
1. Contractor shall furnish one (1) digital copy of the requested information sufficient to determine whether the proposed substitution is equivalent including, but not limited to, all drawings, specifications, samples, performance data, calculations, and other information as may be required to assist the Architect and the District in determining whether the proposed substitution is acceptable.
   a. Substitutions will not be considered without a point by point comparative data table attached to the request.
2. The final decision shall be the District's. District may condition its approval of the substitution upon delivery to District of an extended warranty or other assurances of adequate performance of the substitution.
3. If the Substitution is Permitted: The Contractor shall be solely and directly responsible for fitting approved substituted material and equipment into the available space in a manner acceptable to the District and for the proper operation of the substituted equipment with all other equipment with which it may be associated. The Contractor shall bear all costs of meeting the above requirements for presenting a proposed substitution, and if the substitution is accepted, the Contractor must bear all costs involved including costs of Construction Manager's, Architect's, and Engineer's services required in adapting the substituted material or equipment to the installation to the complete satisfaction of the District.
4. Submission to DSA: The Contractor shall bear all costs of the Architect's and Engineer's services required in adapting an approved substituted material for submission to DSA when the approved substitution requires a submission of a "Type-A" CCD through DSA.
5. Contract extensions will not be granted to the contractor when a contractor requested substitution generates DSA CCD Type A or Type B that causes a schedule delay.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SUBSTITUTION REQUEST

Date: Specification Number:
From Company: Specification Title:

Contact Person: Description:

Telephone:
Email:

Proposed Substitution:

Differences between proposed substitution and specified product:

□ Point-by-Point Comparative data attached
List of Supporting Data Attached:
Reason for not providing specified item:

Proposed substitution changes Contract Time: □ Yes □ No
Added or Deducted Days:_____
Proposed substitution changes Contract Amount: □ Yes □ No
Added or Deducted Days:_____

The Undersigned Certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to the specified product.
- The same warranty will be furnished for the proposed substitution as for the specified product.
- The same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

SIGNED: _____

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Section 01 2613
Interpretation of Contract Documents (Prior to Bid)

PART 1 - GENERAL

1.01 INTERPRETATION OF CONTRACT DOCUMENTS

A. If any firm contemplating submitting a bid for the proposed contract is in doubt as the true meaning of any part of the drawings, specifications, or other Contract Documents, or finds discrepancies in, or omissions from the drawings or specifications, he or she shall submit to the Architect a written request (use attached "Request for Interpretation" form) for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the Contract Documents will be made only by Addendum and will be faxed or e-mailed and/or mailed to each person receiving set of such documents. District will not be responsible for any other explanation or interpretation of the Contract Documents.

B. Submit RFI's to design team in case of inconsistencies between approved drawings and approved specifications in the descriptions of work to be done, equipment to be provided or material to be used. It shall be that the more stringent, the more restrictive, the higher quality, and the greater quantity of Work shall apply. Submit revised drawings or specifications as result of such RFI's to DSA via CCD's if required by IR A-6

1.02 REQUESTS FOR INTERPRETATION

A. Page 2 of Section 01 2613 is a form titled, "Request for Interpretation". Bidders are to use this form to submit written requests for interpretations or corrections by fax or e-mail to the District

Lucia Mar Unified School District
Fax: (805) 473-5594
Attention:Andy Stenson, Director of FacilitiesA
E-mail address: andy.stenson@lmusd.org

To expedite the interpretation process, interpretations may be faxed or e-mailed to bidders as addenda, follow-up hard copies may be delivered by mail.

B. All information must be filled out on the form as pertains to the Contractor's information: Company name, address, phone number, fax number, e-mail, contact person, date, and time of request. Questions or Requests for Clarification are to be printed or typed on these forms. If bidders have several questions, which will not fit on one form, the bidder is to photo copy the form, number each page, and submit multiple forms.

C. Deadline for Requests for Interpretation: All requests for interpretation must be received by noon on the tenth (10th) calendar day preceding the bid date.

END OF SECTION

REQUEST FOR INTERPRETATION OF CONTRACT DOCUMENTS

DATE: **TIME:**

COMPANY:

CONTACT PERSON:

ADDRESS:

TELEPHONE: **FAX:**

E-MAIL:

PLAN SHEET:

SPECIFICATION SECTION:

INTERPRETATION REQUESTED:

REPLY: SEE ADDENDUM # _____ ITEM # _____

ISSUED:

Section 01 3119
Project Meetings

PART 1 - GENERAL

1.01 PRECONSTRUCTION CONFERENCE

A. Prior to commencement of work, a preconstruction conference will be held to discuss procedures to be followed during the progress of the work.

B. Location: A convenient site for all parties designated by the District.

C. Attending shall be:
1. District's Representative
2. Architect or Architect's designated representative.
3. Contractor
4. Contractor's Superintendent
5. Major Listed Subcontractors
6. Others subcontractors as appropriate
7. Testing Lab and Inspector of Record (IOR)

1.02 LABOR COMPLIANCE PROGRAM MEETING

A. Prior to commencement of work, a labor compliance conference will be held to discuss procedures to be followed during the progress of the work.

B. Location: A convenient site for all parties designated by the District.

C. Attending shall be:
1. District's Representative
2. Architect or Architect's designated representative.
3. Contractor
4. Contractor's Superintendent
5. All Subcontractors
6. Testing Lab and Inspector of Record

1.03 PREINSTALLATION CONFERENCE

A. Prior to commencement of the work listed below, a preinstallation conference will be held to discuss procedures to be followed during the progress of the work.
1. Slab Layout including locaiton of plumbing and structural embeds.
2. Irrigation.
3. Others as requested by the District and Architect

B. Location: A convenient site for all parties designated by the District.

C. Attending shall be:
   1. District's Representative
   2. Project Inspector
   3. Architect or Architect's designated representative
   4. Contractor
   5. Contractor's Superintendent
   6. Affected Subcontractors

1.04 PROPOSED PROGRESS MEETINGS

A. Bi-weekly progress meetings will be conducted by the Architect and District.

B. Location: Construction field office

C. Attending shall be:
   1. Project Inspector
   2. Contractor's Project Manager
   3. Contractor's Superintendent
   4. Subcontractors, as appropriate to the issues to be reviewed
   5. Suppliers, as appropriate to the issues to be reviewed
   6. Others, as appropriate to the issues to be reviewed
   7. District's Representative
   8. Architect or Architect's designated representative.
      a. Consultants, as appropriate to the issues to be reviewed, as determined by the Architect.

D. Architect will take and distribute meeting notes to the attendees. Attendees taking exception to anything in the meeting notes shall state same in writing, directed to Construction Manager within five (5) working days following receipt of meeting notes.

1.05 BILLING MEETINGS

A. As part of the last progress meeting each month, the Construction Manager may schedule and hold a billing meeting for the purpose of agreeing on the percentage of the work completed up to that date and establishing the amount to be requested in the Application for Payment.

B. Location: Contractor's field office or via electronic communication

C. Attending shall be:
   1. District's Representative
   2. Contractor
   3. Architect or Architect's designated representative.
   4. Inspector of Record

D. Prepare an itemized draft of the month's proposed billing for review with the Project Team at the billing meeting.

E. Following review of the proposed billing, revise as required, prepare Application for Payment, and submit to the Construction Manager. The Construction Manager will review, certify, and forward it to the District, who will authorize payment upon receipt of partial waivers of lien from the Contractor for previous payment, monthly certified payroll, and updated progress schedule.

1.06 GUARANTEE/WARRANTIES, BONDS, AND SERVICE AND MAINTENANCE CONTRACTS REVIEW MEETING

A. Eleven months following date of final completion and acceptance of the Owner, the Contractor shall arrange for and hold a meeting at the Project Site for the purpose of review of guarantees/warranties, bonds, and service and maintenance contracts for materials and equipment. Contractor shall notify the following attendees of the date and time at least seven (7) days in advance. Contractor shall take action as appropriate to implement repair or replacement of defective items, and to extend service and maintenance contracts.

B. Attending shall be:
1. The District's Representative
2. Construction Manager
3. Architect or Architect's designated representative.
4. Contractor
5. Subcontractors, as appropriate to the agenda
6. Suppliers, as appropriate to the agenda
7. Others, as appropriate to the agenda

PART 2 - PRODUCTS - NOT USED.

PART 3 - EXECUTION - NOT USED.

End of Section

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Section 01 3126
Electronic Communication Protocols

PART 1 GENERAL

1.01 SUMMARY

A. Utilize a web based construction project management collaboration software to submit, track, distribute and collaborate on project documentation and action items.

B. The intent of utilizing a web based construction management application is to reduce cost and schedule risk, improve quality and safety, and maintain a healthy team dynamic by improving information flow, reducing non-productive activities, reducing rework and decreasing turnaround times.

1.02 SOFTWARE CAPABILITIES (INCLUDING BUT NOT LIMITED TO)

A. Daily Log
   1. Provide daily log entry from web and mobile with automatic capture of daily weather conditions.
   2. Provide ability to attach photographs to entries directly from mobile.
   3. Provide reporting capabilities to easily report on man-hours and activities for a certain time frame and contractor.

B. Dashboards
   1. Provide a dashboard that shows the status of all currently assigned items with drill down capability to see the subject, assignee and due date of each item.

C. Deficiency Tracking
   1. Provide a means for recording, assigning and confirming completion of any deficiency or observation noted during the course of construction. Must be accessible from web and mobile.

D. Directory
   1. Provide a directory of all team member's contact information that is accessible from web and mobile.

E. Documents
   1. Provide a storage location for miscellaneous project documents with the ability to have a folder hierarchy and privacy settings on folders.
   2. There should not be a storage limit.
   3. Provide download tracking.
   4. Provide the ability to revision and check out files, with access to all previous revisions.

F. Drawings

1. Provide access to a system maintained current set of drawings on web and mobile, with access to all previous revisions as well.
2. Provide automatic hyperlinking capability for detail callouts.
3. Provide drawing markup capabilities on web and mobile.
4. Provide ability to link RFIs, Submittals, Punchlist Items, Photos and Project Documents to the drawings.
5. Drawing Markups should be carried forward when new revisions are uploaded.
6. Markups and linked documentation should be able to be public or private.

G. Meetings
1. Provide ability to create, edit and view meeting minutes from web and mobile.
2. Provide ability to create action items with assignees and due dates from a meeting item.

H. Mobile Accessibility
1. Provide native mobile applications for iOS and Android phones at a minimum that provide access to relevant project documentation, including as-built versions of Drawings and Specifications, even when there is no internet access.

I. Photos
1. Provide ability to upload and view photos from web and mobile.
2. Provide ability to markup photos from mobile to clarify anything important in the photo.
3. Provide ability to link photos to specific locations on drawings.

J. Punchlist
1. Provide ability to create punchlist items from web and mobile and link them to specific locations on the drawings.
2. Provide ability to distribute punchlist items to all contractors, for contractors to mark them as resolved with photographic proof of resolution via mobile, and for the items to be marked as complete via mobile or web.

K. Requests for Information (RFIs)
1. Provide ability to create RFIs with assignees, due dates and attachments.
2. Provide ability for assignees to respond to RFIs both via the software and by responding to the system generated email.
3. Provide an auto-generated log of all RFIs.

L. Schedule
1. Provide ability to display schedules from typical scheduling software such as Microsoft Project, Primavera P3, Primavera P6 or Asta Powerproject.

M. Specifications
1. Provide ability to upload project specifications and manage them at the individual specification level.
2. Provide ability to view and search specifications on web and mobile.
3. Provide ability to upload revisions to individual specifications and maintain all revision history.
4. Provide an auto-generated current specification log that provides access to the current version of each specification.

5. Provide ability to link specifications to submittals and view the specification from the submittal.

N. Submittals
   1. Provide ability to upload a submittal register of all expected submittals.
   2. Provide ability to create multi-step approval workflows for submittals, with reminder notifications for the current assignee.
   3. Provide the ability to upload any file type without size restrictions.
   4. Provide an auto-generated submittal log.

1.03 TECHNOLOGY

A. Fully web based with mobile apps for Windows, iOS and Android phones.

B. Accessible without logging in through a virtual private network (VPN).

C. Works on the current version of Internet Explorer, Google Chrome, Mozilla firefox and Apple Safari browsers.

D. Can generate emails automatically, and all attachments are included in the emails via download links to avoid emails not being delivered due to size.

E. PDF output of forms such as RFIs, Submittals, Meetings, Change Orders, etc. should be available and customizable.

1.04 TRAINING AND SUPPORT

A. The software must provide support to all parties via email, phone and live chat at no additional charge.

B. The software must provide training in the form of self-paced learning videos as well as interactive webinars.

C. The contractor shall hold a kickoff meeting with the Owner and applicable consultants at the beginning of the project to discuss how the software will be used, routing & naming protocols, etc.

PART 2 PRODUCTS

2.01 UTILIZATION OF WEB BASED CONSTRUCTION PROJECT MANAGEMENT COLLABORATION SOFTWARE

A. This project will utilize a web based construction project management collaboration software system for all project documentation. Contrator and subcontractors will be invited to, and are required to create a username (email) and password if they do not already have one. Contrators will be expected to obtain drawings, sketches, RFIs, meeting minutes, coordination drawings, change information, etc. via this application. Contractor will notify subcontractors as relevant

items are added. It will be the responsibility of the Contractor to regularly check and review updated documents as they are added.

B. It is recommended that the Contractor provide mobile iOS or Android devices with the Procore App installed to at least one individual on-site to provide real-time access to current posted drawings, specifications, RFIs, submittals, project documents, as well as any deficient observations or punch list items. Providing mobile access will improve communication, efficiency, and productivity for all parties.

C. Submittals
   1. Product Data , Shop Drawings, and other digital submittal materials shall be presented in a searchable PDF format. Scans will not be accepted.

PART 3 EXECUTION

3.01 PROCEDURES

A. RFIs and Submittals
   1. The Contractor will be responsible for submitting all RFIs and Submittals through the software and assigning them to the appropriate parties.
   2. Architects / Engineers / Consultants etc. are responsible for posting all responses to these items via the software, including all relevant attachments.
   3. The Contractor will distribute responses to all affected subcontractors and confirm agreement with the response by closing the item.

B. Construction Documentation
   1. The Contractor will manage Drawings, Specifications and Documents in the software to ensure that the current version of all applicable construction documentation is available to the entire team via web and mobile.
   2. The Contractor will ensure that all RFIs which modify the current drawings are posted to the drawings and available via web and mobile within 24 hours of the RFI being responded to.

C. Contractor will record and distribute meeting minutes and action items via the software.

D. Contractor will take daily site photos and make them publicly available.

E. Punchlist
   1. All punchlist items will be managed through the software.
   2. Punchlist items will be created by the Contractor while walking with the Owner and applicable consultants.
   3. It will be at the Owner’s discretion whether or not Punchlist Items can be closed while a representative from the Owner or applicable consultant is not present.

F. General
   1. It is intended that the contractor will utilize the software for at least all functions identified in “Section 1.02 - Software Capabilities.”

3.02 PRICING

A. The software must allow for unlimited users to ensure that all parties have access to the system.

END OF SECTION

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Section 01 3216
Construction Progress Schedule

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work under this section shall consist of furnishing computerized Critical Path Method (CPM) contract schedule showing in detail how the Contractor plans to execute and coordinate the work.

1.02 SUBMITTALS

A. CPM Contract Schedule
   1. Within seven (7) calendar days after receiving Notice to Proceed, Contractor shall furnish the District's Representative, Architect each, two (2) prints of a CPM contract schedule (four copies total).
   2. Architect and District will review the CPM contract schedule for conformance with the requirements of the contract. Within seven (7) calendar days after receipt, District's Representative will accept the CPM contract schedule or will return it with comments. If the proposed CPM contract schedule is not accepted, Contractor shall revise the schedule to incorporate comments and resubmit the schedule for acceptance within seven (7) calendar days after receiving it.

B. Construction Progress Schedule
   1. Contractor shall submit to the Construction manager, Architect and District's Representative each month an up-to-date status report of the work.

1.03 GENERAL REQUIREMENTS

A. The contract schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. The responsibility for developing the contract schedule and monitoring actual progress as compared to the schedule rests with the Contractor.

B. Failure of the contract schedule to include any element of the work, or any inaccuracy in the contract schedule, will not relieve the Contractor from responsibility for accomplishing all the work in accordance with the contract.

C. No constraint on any activity is allowed in the schedule unless it is required by the contract. The schedule should reflect a logical flow of the project activities.

D. Acceptance of the official contract schedule will not relieve the Contractor of the responsibility for accomplishing the work in accordance with the contract.

1.04 CONSTRUCTION PROGRESS SCHEDULE

A. The Contractor's monthly Construction Progress Schedule report shall include:
   1. Contractor's estimated percentage complete for each activity not yet completed.
   2. Actual start/finish dates for activities as appropriate.
   3. Identification of processing errors, if any, on the previous update reports.
   4. Revisions, if any, to the assumed activity durations, including revisions for weather impact, for any activities due to the effect of the previous update on the schedule.
   5. Identification of activities which are affected by Cost Request Bulletin issued during the update period.
   6. Resolution of conflict between actual work progress and schedule logic. When out-of-sequence activities develop in the contract schedule because of actual construction progress, the Contractor shall submit a revision to schedule logic to conform to current status and direction.

B. Progress payments pursuant to the contract will require an update of the construction progress schedule.

1.05 SHORT INTERVAL SCHEDULE:

A. Short Interval Scheduling (SIS) may be used throughout the on-site construction activity.

B. The interval shall be a three (3) week projection and shall include the week submitted and two (2) weeks thereafter.

C. It shall contain sufficient detail to evaluate daily milestones and manpower/equipment loading, and shall identify/tie into the monthly updated contract schedule.

D. Short interval schedule shall be approved by the Construction Manager and District's Representative.

E. Short interval schedule shall be submitted weekly.

F. During the weekly construction meeting, the Construction Manager and the Contractor will review and discuss short interval schedules.

1.06 SCHEDULE REVISIONS

A. Should the Contractor, after acceptance of the contract schedule, intend to change his plan of construction, the Contractor shall submit his requested revisions to the Construction Manager and District's Representative along with a written statement of the revision; including a description of the logic for rescheduling the work, methods of maintaining adherence to intermediate milestones, and other specific dates and the reasons for the revisions. If the requested changes are acceptable to the District's Representative, they will be incorporated into the contract schedule in the next reporting period.

B. Schedule revisions shall be submitted at least seven (7) calendar days prior to the date of submission of update information. The District will have seven (7) calendar days to review the revisions.

C. If the sequence of construction differs significantly from the contract schedule, as determined by the District's Representative or the Construction Manager, the Contractor shall submit within fifteen (15) calendar days a revised schedule to the District's Representative for acceptance.

1.07 SCHEDULE CHANGES

A. When a Cost Request Bulletin is issued which has the potential to impact specified completion dates, a network window shall be prepared by the Contractor to reflect the impact of such changes, said network window shall be submitted to the District's Representative and Construction Manager. After the network window has been accepted, by the District's Representative and Construction Manager, and the Contractor ordered to proceed with the Cost Request Bulletin, it shall be incorporated into the contract schedule. Time extensions will be considered only to the extent there is insufficient remaining float to accommodate these changes, and pursuant to Part 1 of these specifications. No additional cost beyond that provided in the General Conditions will be allowed for the incorporation of approved Cost Request Bulletin into the contract schedule.

B. The Contractor shall submit to the Construction Manager, Architect and District's Representative, a network window for all claimed time extension requests showing the impact of claimed delay on the contract schedule. Time extensions shall be negotiated per the requirements of the General Conditions.

C. Float or Slack Time is the amount of time between the earliest start date and the late start date or between the earliest finish date and the latest finish date of activities of the contract schedule. No time extensions or delay costs will be allowed for delays caused by the District, on paths or activities containing float time, providing such delay does not exceed the float time per the latest updated version of the contract schedule.

D. The District's Representative and Construction Manager shall have no obligation to consider any time extension request unless the requirements of the contract documents are complied with; the District shall not be responsible or liable to the Contractor for any construction acceleration due to failure of the District to grant time extensions under the contract documents should the Contractor fail to substantially comply with the submission requirements and the justification requirements of this contract for time extension requests. The Contractor's failure to perform in accordance with the contract schedule shall not be excused because the Contractor has submitted time extension requests; until, and unless, such requests are approved by the District.

1.08 RECOVERY SCHDEULE:

A. If the contract schedule falls fourteen (14) calendar days behind schedule on milestone dates or completion dates, the Contractor shall be required to prepare and submit a Recovery Schedule to the Construction Manager and District's Representative, with form and detail appropriate to

the need to explain, and display, how they intend to reschedule activities to regain compliance with the contract schedule during the immediate subsequent pay period.

B. Upon acceptance by the Construction Manager and District's Representative, the recovery schedule shall be incorporated into the contract schedule by the Contractor.

1.09 PAYMENTS WITHHELD:

A. Progress payments may be withheld in whole or in part should the Contractor fail to comply with the requirements of this section.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

Section 01 3300
Submittals

PART 1 - GENERAL

1.01 DESCRIPTION

A. To ensure that specified products are furnished and installed in accordance with plans and specifications, transmittal procedures have been established for submittals for review by the Construction Manager, the Architect, and the Owner.

B. Make all following submittals in strict accord with provisions of this Section and with requirements of the General Conditions:
   1. Progress Schedule.
   2. Schedule of Values
   3. Certification.
   4. Shop Drawings.
   5. Descriptive Data/Material Lists.
   6. Samples.
   7. Alternatives (Substitutions).

1.02 RELATED REQUIREMENTS

A. General Conditions.

B. Section 01 7700 - Contract Closeout:

C. Section 01 3216 - Construction Progress Schedule

D. Test Reports: Pertinent Specification Sections.

PART 2 - PRODUCTS

2.01 PROGRESS SCHEDULE

A. Prepare and submit progress schedule of procurement and fabrication activities, and component deliveries as required by Section 01 3216 - Construction Progress Schedule and within the time of completion identified in Notice to Bidders.

2.02 SHOP DRAWINGS

A. Submittals shall include eight complete copies of each original, name and location of project, name of Contractor, and contract numbers and cross references to contract documents. Number shop drawings consecutively. Make drawings legible and complete in every respect. Refer to General Conditions.

B. If shop drawings show variations from Contract requirements because of standard shop practice or other reason, make specific mention of such variations in letter of transmittal, as well as on drawings, in order that (if acceptable) suitable action may be taken for proper adjustment of Contract. Unless specific changes have been noted and accepted, no deviations from Contract Documents will be permitted.

2.03 PRODUCT DATA/MATERIAL LISTS

A. Manufacturer's Standard Schematic Drawings:
   1. Modify drawings to delete information, which is not applicable to Project.
   2. Supplement standard information to provide additional information applicable to Project.

B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data:
   1. Clearly mark each copy to identify pertinent materials, products, or models.
   2. Show dimensions and clearances required.
   3. Show performance characteristics and capacities.
   4. Show wiring diagrams and controls.
   5. Include calculations when applicable.

2.04 SAMPLES -- WHERE REQUIRED BY THE SPECIFICATIONS AND BY CHANGE ORDERS, THE CONTRACTOR SHALL PROVIDE AT NO ADDITIONAL COST:

A. Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.

B. Where size of samples is not specified, office samples should be of sufficient size and quantity to clearly illustrate:
   1. Functional characteristics of product or material, with integrally related parts and attachment devices.
      a. After review, samples may be used in construction of project.

PART 3 - EXECUTION

3.01 SUBMISSION REQUIREMENTS

A. Schedule submissions at least eight weeks before dates reviewed submittals will be needed. Some submissions may be required to be submitted even earlier.

B. All submittals and shop drawings to be provided in a searchable PDF format.
   1. **SCANS WILL NOT BE ACCEPTED.**

C. Identification: Identify all submittals with names and location of project, name of Contractor and contract numbers.
   1. Submittals shall be accompanied by letter of transmittal addressed to Construction Manager following format and procedures established at the Preconstruction Conference.

2. Each submittal shall be consecutively numbered and shall contain list of items submitted, properly identified as to drawing numbers, Specifications Section or other identification.
3. Submittals not adequately identified will be returned to Contractor for correction and resubmittal.

D. Architect will review submittals for conformance with Contract Documents and acceptance by Architect covers only such conformance. Responsibility for accuracy and correction and resubmittal shall be the Contractor's.

E. Acceptance of submittals will be general and shall not relieve Contractor from responsibility for proper fitting and construction of work, nor from furnishing materials and work required by Contract, which may not be indicated on submittals.

F. No portion of work requiring submittals that affect the construction shall be commenced until submittal has been reviewed and accepted by Architect. All such portions of work shall be in accordance with accepted submittals.

G. Number of copies required by Architect: Provide copies as follows; or greater quantity where so specified in individual Specification Section. Add number of copies required by Contractor for distribution to the following numbers:
1. Schedule of Values: Two (2) copies AIA form G107 with back up sheets.
2. Certification: Three (3) copies
3. Samples: As specifically indicated in pertinent Specification Section.
4. Samples for Color/Pattern Selection. Three (3) sets of manufacturer's complete range for initial selection: and additional samples as requested of selected color/pattern for inclusion in final color schedule.
5. Alternatives: Six (6) copies of all required related data and information.

H. When digital copies are provided via an electronic construction managment software, the quantities above may be reduced to one digital copy except as noted below:
1. Provide physical material samples for color selection when requested by the District or Architect.

3.02 SUBMITTALS SHALL INCLUDE (WHERE APPLICABLE):

A. Date and revision dates.
1. Project title and work order number.
2. Names of Contractor, subcontractor and supplier or manufacturer.
3. Identification of product or material.
4. Relation to adjacent structure or material.
5. Field dimensions, clearly identified as such.
6. Specification Section number.
7. Consecutive submittal number.
8. Blank space for Architect's stamp and approving agency as required.
9. Contractor's stamp, initialed or signed, certifying review of submittal, verification of field measurements and compliance with Contract Documents.

End of Section

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Section 01 4000
Quality Control

PART 1 - GENERAL

1.01 DEFINITIONS

A. Soils Engineer and Testing Laboratory: The District will retain a qualified soils engineer and testing laboratory to perform tests and report on work as specified in the contract documents, and as otherwise required.

B. Testing Agency: An organization other than the testing laboratory, retained and paid by the District to perform tests and report on whether or not designated items of work comply with the requirements of the contract documents.

1.02 TESTS

A. The District will select an independent testing laboratory to conduct the tests. Selection of the material required to be tested shall be by the laboratory or the District's representative and not by the Contractor.

B. The Contractor shall notify the District's representative a sufficient time in advance of the manufacture of material to be supplied by him under the contract documents, which must by terms of the Contract be tested, in order that the District may arrange for the testing of same at the source of supply.

C. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.

D. The District will select and pay testing laboratory costs for all tests and inspections, but may be reimbursed by the Contractor for such costs under the contract documents.

1.03 TESTING LABORATORY

A. General: Services of a testing laboratory are required for work specified in various individual specification Sections.

B. Contractor Responsibilities:
   1. Contractor shall cooperate with testing laboratory personnel.
   2. Furnish copies of product test reports as specified.
   3. Furnish incidental labor and facilities:
      a. To provide access to work to be tested
      b. To obtain and handle samples at the project site or at the source of the product to be tested as requested by the testing lab
      c. To facilitate inspections and tests

d. To facilitate storage and curing of test samples
e. To fabricate testing samples as indicated

1.04 TEST REPORTS

A. The testing laboratory will distribute reports as follows:
   1. Construction Manager (1 copy)
   2. Architect (1 copy)
   3. Applicable Consultants (1 copy each)
   4. State Agencies as appropriate
   5. District's Project Inspector

B. The Owner shall distribute reports in the same manner and number as for the testing laboratory.

1.05 RETESTING

A. The District Representative shall have the right to order additional tests as instructed if he has reasonable doubt that materials comply with Specification requirements.
   1. If additional tests establish that materials comply with Specification requirements, costs for such tests will be paid by the District.
   2. If additional tests establish that materials do not comply with Specification requirements, costs for such retests shall be paid by the Contractor.

1.06 INSPECTION BY THE DISTRICT

A. The District, Construction Manager and Architect shall, at all times, have access for the purpose of inspection to all parts of the work and to the shops wherein the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

B. The District, Architect and Construction Manager shall have the right to reject materials and quality of work, which are defective, or to require their correction. Rejected work quality shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the District. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the District may correct same and charge the expense to the Contractor.

C. Should it be considered necessary or advisable by the District, Architect or Construction Manager, at any time before final acceptance of the entire work to make an examination of the work already completed by removing or tearing out the same, the Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any respect due to the fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

1.07 PROJECT INSPECTOR - DISTRICT'S

A. A Project Inspector retained by the District in accordance with the requirements of the California Code of Regulations, Title 24, will be assigned to the work. His duties are specifically defined in Title 24, Part I, Sec. 4-342.

B. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Project Inspector. He shall have free access to any or all parts of the work at any time. The Contractor shall furnish the Project Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 2 - PRODUCTS - NOT USED.

2.01

PART 3 - EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.
   1. Submit qualifications of observer to Architect 30 days in advance of required observations.
   2. Observer subject to approval of Architect.
   3. Observer subject to approval of District.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.05 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

Section 01 4213
Abbreviations

PART 1 - GENERAL

1.01 ABBREVIATIONS

A. The following abbreviations may be used in the contract documents:
1. AAMA Architectural Aluminum Manufacturers' Association
2. AASHTO American Association of State Highway and Transportation Officials
3. ACI American Concrete Institute
4. AIA American Institute of Architects
5. AIMA Acoustical and Insulation Materials Association
6. AISC American Institute of Steel Construction
7. ANSI American National Standards Institute
8. APA American Plywood Association
9. ASHRAE American Society of Heating, Refrigerating, and air-conditioning Engineers
10. ASME American Society of Mechanical Engineers
11. ASTM American Society for Testing and Materials
12. AWI Architectural Woodwork Institute
13. AWPI American Wood Preservers' Association
14. AWS American Welding Society
15. BHMA Builders Hardware Manufacturers' Association
16. BMP Best Mangement Practices
17. BTU British Thermal Unit
18. CAC California Administrative Code
19. CAL/OSHA State of California Construction Safety Orders
20. CBC California Building Code
21. CEC California Electric Code
22. CFC Chlorofluorocarbon
23. CLFMI Chain Link Fence Manufacturers' Institute
24. CMC California Mechanical Code
25. CPC California Plumbing Code
26. CRSI Concrete Reinforcing Steel Institute
27. CALTRANS State of California, Business and Transportation Agency, Department of Transportation, "Standard Specifications"
28. ESO Electrical Safety Orders
29. FAA Federal Aviation Administration
30. FGMA Flat Glass Marketing Association
31. FM Factory Mutual System, Factory Mutual Engineering Corporation
32. FS Federal Specifications
33. FSC Forest Stewardship Council
34. HVAC Heating, Ventilation, & Air Conditioning
35. IAQ Indoor Air Quality
36. IBC International Building Code

37. LEED Leadership in Energy and Environmental Design
38. MM State of California, Business and Transportation Agency, Department of Transportation, "Materials Manual"
39. NEC National Electrical Code
40. NEMA National Electric Manufacturers' Association
41. NFPA National Fire Protection Association
42. PS United States Department of Commerce Product Standard
43. RIS Redwood Inspection Service
44. SFM State of California, Office of State Fire Marshal
45. SMACNA Sheet Metal and Air Conditioning Contractors National Association, Inc.
46. SRI Solar Reflectance Index
47. TCA Tile Council of America
48. UBC Uniform Building Code
49. UL Underwriters Laboratories, Inc.
50. USGBC United States Green Building Council
51. USS United States Standard
52. VOC Volotile Organic Compound
53. WCLIB West Coast Lumber Inspection Bureau
54. WI Woodwork Institute

B. Additional abbreviations used only on the drawings are listed and defined thereon.

PART 2 - PRODUCTS - NOT USED.

PART 3 - EXECUTION - NOT USED.

END OF SECTION

Section 01 4533
Code-Required Special Inspections and Procedures

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Code-required special inspections.

B. Testing services incidental to special inspections.

C. Submittals.

D. Manufacturers' field services.

E. Fabricators' field services.

1.02 RELATED REQUIREMENTS

A. DSA-103 List of Required Structural Tests & Special Inspections: List of required tests and inspections

B. Drawing Sheet 2-G-001: See Title 24CCR Notes for additional information

1.03 DEFINITIONS

A. Code or Building Code: CBC, 2022 Edition of the California Building Code and specifically, Chapter 17A - Special Inspections and Tests.

B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.

C. DSA: Division of the State Architect. The AHJ for public school construction in California.

D. Special Inspection:
   1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved Contract Documents and the referenced standards.
   2. Special inspections are separate from and independent of tests and inspections conducted by District or Contractor for the purposes of quality assurance and contract administration.

1.04 REFERENCE STANDARDS

A. ACI 318 - Building Code Requirements for Structural Concrete; 2019 (Reapproved 2022).

B. AISC 360 - Specification for Structural Steel Buildings; 2022.

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2022.

E. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.

F. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2019.

G. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2021.

H. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2021.

I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

J. ICC (IBC)-2018 - International Building Code; 2018.

1.05 SUBMITTALS

A. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
   1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
   3. Submit certification that Special Inspection Agency is acceptable to AHJ.

B. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one to the AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of Special Inspector.
      d. Date and time of special inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of special inspection.
      h. Date of special inspection.
      i. Results of special inspection.
      j. Compliance with Contract Documents.
   2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.

C. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one to AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test or inspection.
      h. Date of test or inspection.
      i. Results of test or inspection.
      j. Compliance with Contract Documents.

1.06 SPECIAL INSPECTION AGENCY

A. District or Architect will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.

B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.

C. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.07 TESTING AND INSPECTION AGENCIES

A. District or Architect may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code.

B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.08 QUALITY ASSURANCE

A. Special Inspection Agency Qualifications:
   1. Independent firm specializing in performing testing and inspections of the type specified in this section.
   2. Approved by AHJ

B. Testing Agency Qualifications:
   1. Independent firm specializing in performing testing and inspections of the type specified in this section.
   2. Approved by AHJ

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
   1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
   2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

3.02 SPECIAL INSPECTIONS FOR STEEL CONSTRUCTION

A. Structural Steel: Comply with quality assurance inspection requirements of ICC (IBC).

B. Weld Filler Material:
   1. Verify identification markings comply with AWS standards specified in the approved Contract Documents and to AISC 360, Section A3.5; periodic.
   2. Submit manufacturer's certificates of compliance; periodic.

C. Welding:
   1. Structural Steel and Cold Formed Steel Deck:
      a. Complete and Partial Joint Penetration Groove Welds: Verify compliance with AWS D1.1/D1.1M; continuous.
      b. Multipass Fillet Welds: Verify compliance with AWS D1.1/D1.1M; continuous.
      c. Single Pass Fillet Welds Less than 5/16 inch Wide: Verify compliance with AWS D1.1/D1.1M; periodic.
      d. Plug and Slot Welds: Verify compliance with AWS D1.1/D1.1M; continuous.

3.03 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION

A. Reinforcing Steel, Including Prestressing of Tendons and Placement: Verify compliance with approved Contract Documents and ACI 318, Sections 3.5 and 7.1 through 7.7; periodic.

B. Anchors Cast in Concrete: Verify compliance with ACI 318, 17.8.2; periodic.

C. Anchors Post-Installed in Hardened Concrete: Verify compliance with ACI 318.

D. Anchors Installed in Hardened Concrete: Verify compliance with ACI 318, Sections 3.8.6, 8.1.3, and 21.2.8; periodic.

E. Design Mix: Verify plastic concrete complies with the design mix in approved Contract Documents and with ACI 318, Chapter 4 and 5.2; periodic.

F. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M and ACI 318, Sections 5.6 and 5.8 and record the following, continuous:
   1. Slump.
   2. Air content.
   3. Temperature of concrete.

G. Specified Curing Temperature and Techniques: Verify compliance with approved Contract Documents and ACI 318, Sections 5.11 through 5.13; periodic.

H. Formwork Shape, Location and Dimensions: Verify compliance with approved Contract Documents and ACI 318, Section 6.1.1; periodic.

3.04 SPECIAL INSPECTIONS FOR GLUED LAMINATED TIMBER WOOD CONSTRUCTION

A. Manufacturing and fabrication of glued laminated beams
   1. Continuous inspection by an approved agency.
   2. Verify proper quality control procedures and test have been employed for all materials and the manufacturing process.
   3. Visual inspection of the finished product.
   4. Each inspected member shall be stamped by the approved agency with an identification mark.

3.05 SPECIAL INSPECTIONS FOR SOILS

A. Materials and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
   1. Design bearing capacity of material below shallow foundations; periodic.
   2. Design depth of excavations and suitability of material at bottom of excavations; periodic.
   3. Materials, densities, lift thicknesses; placement and compaction of backfill: continuous.
   4. Subgrade, prior to placement of compacted fill verify proper preparation; periodic.

B. Testing: Classify and test excavated material; periodic.

3.06 SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

A. Mechanical and Electrical Components:
   1. Installation and anchorage of other electrical equipment; periodic.

B. Designated Seismic System Verification: Verify label, anchorage or mounting complies with certificate of compliance provided by manufacturer or fabricator.

C. Structural Observations for Seismic Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

3.07 OTHER SPECIAL INSPECTIONS

A. Provide for special inspection of all work as identified on approved DSA form 103

3.08 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

A. Special Inspection Agency shall:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified reference standards.
   3. Ascertain compliance of materials and products with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests or inspections specified.

B. Limits on Special Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the work.

C. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

D. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.09 TESTING AGENCY DUTIES AND RESPONSIBILITIES

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests or inspections specified.

B. Limits on Testing or Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the work.

C. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.

D. Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.10 CONTRACTOR DUTIES AND RESPONSIBILITIES

A. Contractor Responsibilities, General:
   1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
   2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to work to be tested or inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
      c. To facilitate tests or inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
   5. Arrange with District's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

3.11 MANUFACTURERS' AND FABRICATORS' FIELD SERVICES

A. When specified in individual specification sections, require material suppliers, assembly fabricators, or product manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, to test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

END OF SECTION

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Section 01 5000
Construction Facilities & Temporary Controls

PART 1 GENERAL

1.01 WORK INCLUDED

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. Temporary utilities include, but are not limited to, the following:
   1. Water service and distribution.
   2. Temporary electric power and light.
   3. Sanitary facilities, including drinking water and washing facilities.
   4. Storm and sanitary sewer.

C. Support facilities include, but are not limited to, the following:
   1. Field offices and storage sheds.
   2. Temporary enclosures.
   3. Waste disposal services.
   4. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:
   1. Temporary fire protection.
   2. Barricades, warning signs, and lights.
   3. Enclosure fence for the site.
   4. Environmental protection.

1.02 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
   1. Building code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, fire department, and rescue squad rules.
   5. Environmental protection regulations.

B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.03 STANDARDS - COMPLY WITH THE FOLLOWING LISTED STANDARDS

A. NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations

B. ANSI A10 Series standards for "Safety Requirements for Construction and Demolition

C. NECA Electrical Design Library "Temporary Electrical Facilities

D. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

E. NFPA 10 "Standard for Portable Fire Extinguishers"

F. NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

1.04 SUBMITTALS

A. Construction Site Plan: Provide plan showing proposed locations of temporary site constructions including temporary utilities, construction facilities, construction fencing and gates, and laydown areas.

1.05 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Open-Mesh Fencing: Provide 0.120-inch- (3-mm-) thick, galvanized 2-inch (50-mm) chain link fabric fencing 6 feet (2 m) high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches (38 mm) I.D. for line posts and 2-1/2 inches (64 mm) I.D. for corner posts.
   1. Provide privacy screening at all fencing adjacent to student occupies areas.

2.02 EQUIPMENT

A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4-inch (19-mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

E. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
   1. Office shall have secure space for use by the Inspector of Record (IOR).

F. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Provide self contained washing facilities, stocked with soap, disposable towels, and drinking cups; Use only potable water in Health Dept. approved containers.

G. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
   1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 EXECUTION

3.01 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
   1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.

2. Obtain easements to bring temporary utilities to the site where the District's easements cannot be used for that purpose.
3. Use Charges: Cost or use charges for temporary facilities are not chargeable to the District or Architect. Neither the District nor Architect will accept cost or use charges as a basis of claims for Change Orders.

B. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switchgear.
1. Install electric power service underground, except where overhead service must be used.
2. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

C. Temporary Internet Access: Provide high speed internet access in the job trailer for use by superintendent and project staff. Provide high speed internet access to District trailer.

D. Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs. Maintain service until District allows use of permanent facilities.
1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.

E. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.

3.03 SUPPORT FACILITIES INSTALLATION

A. Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.
1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at the Project Site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:

C.

D. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where

feasible, utilize the same facilities. Maintain the site, excavations, and construction free of water.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

F. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.

B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
   1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
   2. Store combustible materials in containers in fire-safe locations.
   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
   4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

D. Enclosure Fence: Before excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.

E. Provide open-mesh, chainlink fencing with posts set in a compacted mixture of gravel and earth or portable fencing, if appropriate, with sufficient hold down weight to prevent overturning.
   1. Provide privacy screening at all fencing adjacent to student occupied areas.

F. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

G. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

H. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

I. Storm Water Protection: Provide rumble strips, straw waddles, silt fences or other measures as required to provide protection of storm water. Comply with all regulations for the protection of storm water resources

3.05 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.
   2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.
   3. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
      a. Replace air filters and clean inside of ductwork and housings.

b. Replace significantly worn parts and parts subject to unusual operating conditions.
c. Replace lamps burned out or noticeably dimmed by hours of use.

End of Section

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Section 01 5713
Temporary Erosion and Sediment Control

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Performance bond.

E. Compensation of District for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 3700 - Riprap: Temporary and permanent stabilization using riprap.

B. Section 32 1123 - Aggregate Base Courses: Temporary and permanent roadways.

1.03 REFERENCE STANDARDS

A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus; 2021.

B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 2022.

C. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015 (Reapproved 2023).

D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a.

E. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile; 2021a.

F. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).

G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.

1.04 PERFORMANCE REQUIREMENTS

A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.

B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

C. Provide to District a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.

D. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

E. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.

F. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the District

G. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the District.

H. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to the District; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

I. Open Water: Prevent standing water that could become stagnant.

J. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mulch: Use one of the following:
   1. Straw or hay.
   2. Erosion control matting or netting.

B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

C. Bales: Air dry, rectangular straw bales.
   1. Cross Section: 14 by 18 inches, minimum.
   2. Bindings: Wire or string, around long dimension.

D. Bale Stakes: One of the following, minimum 3 feet long:
   1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot.
   2. Wood, 2 by 2 inches in cross section.

E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
   1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
   2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491/D4491M.
   3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
   4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
   5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
   6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533/D4533M.

7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.

F. Silt Fence Posts: One of the following, minimum 5 feet long:
   1. Hardwood, 2 by 2 inches in cross section.

G. Riprap: See Section 31 3700.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 20 feet, minimum.
   2. Length: 50 feet, minimum.
   3. Provide at each construction entrance from public right-of-way.
   4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.
   1. Provide linear sediment barriers:
      a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
   2. Space sediment barriers with the following maximum slope length upslope from barrier:
      a. Slope of Less Than 2 Percent: 100 feet..
      b. Slope Between 2 and 5 Percent: 75 feet.
      c. Slope Between 5 and 10 Percent: 50 feet.
      d. Slope Between 10 and 20 Percent: 25 feet.
      e. Slope Over 20 Percent: 15 feet.

D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
   1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
   2. Straw bale row blocking entire inlet face area; anchor into pavement.

E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

G. Soil Stockpiles: Protect using one of the following measures:
   1. Cover with polyethylene film, secured by placing soil on outer edges.
   2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.

I. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Traffic-Bearing Aggregate Surface:
   1. Excavate minimum of 6 inches.
   2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
   3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.

B. Silt Fences:
   1. Store and handle fabric in accordance with ASTM D4873/D4873M.
   2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
   3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
   4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
   5. Install with top of fabric at nominal height and embedment as specified.
   6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
   7. Fasten fabric to wood posts using one of the following:
      a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gauge, 0.083 inch shank diameter.
      b. Five staples per post with at least 17 gauge, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.
   8. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

C. Straw Bale Rows:
   1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
   2. Install bales so that bindings are not in contact with the ground.
   3. Embed bales at least 4 inches in the ground.

4. Anchor bales with at least two stakes per bale, driven at least 18 inches into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
5. Fill gaps between ends of bales with loose straw wedged tightly.
6. Place soil excavated for trench against bales on the upslope side of the row, compacted.

D. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Straw Bale Rows:
1. Promptly replace bales that fall apart or otherwise deteriorate unless need has passed.
2. Remove silt deposits that exceed one-half of the height of the bales.
3. Repair bale rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

E. Clean out temporary sediment control structures weekly and relocate soil on site.

F. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

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Section 01 6000
Product Requirements

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Re-use of existing products.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations.

E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

A. Section 01 4000 - Quality Requirements: Product quality monitoring.

B. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Unforeseen historic items encountered remain the property of the District; notify District promptly upon discovery; protect, remove, handle, and store as directed by District.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the District, or otherwise indicated as to remain the property of the District, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:
   1. Containing lead, cadmium, or asbestos.

C. Where other criteria are met, Contractor shall give preference to products that:
   1. Have longer documented life span under normal use.
   2. Result in less construction waste. See Section 01 7419

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.02 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Comply with manufacturer's warranty conditions, if any.

H. Do not store products directly on the ground.

I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

K. Prevent contact with material that may cause corrosion, discoloration, or staining.

L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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Section 01 6400
Owner Furnished Items

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: District Furnished Items and installed by the Contractor.

1.02 PROCEDURES

A. Contractor shall coordinate delivery schedule with District

B. Contractor shall make arrangements with ODistrict to ascertain required arrangements for warehousing, delivery to Project site, and installation.

C. Contractor shall be responsible for District-furnished products when they are delivered to the site or are turned over by the District's vendor or distributor.

D. Contractor's warranty for District-furnished items shall be limited to installation only.

PART 2 - PRODUCTS

2.01 OWNER-FURNISHED ITEMS/CONTRACTOR INSTALLED ITEMS (OFCI)

A. Item includes:
   1. Toilet Paper Dispensers (Contractor Installed)
   2. Paper Towel Dispensers (Contractor Installed)
   3. Soap Dispensers (Contractor Installed)

2.02 OWNER-FURNISHED/OWNER INSTALLED ITEMS (OFOI)

A. Items includes:
   1. Window shades

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install each item in accordance with manufacturer’s instructions, specified and shown.

B. Coordinate with other trades. Provide back plates and connections.

C. Each item shall be fully functional and operable after installation.

D. Correct work performed that does not meet technical or design requirements at no cost to the District.

END OF SECTION

Section 01 7123
Field Engineering

PART 1 - GENERAL

1.01 DESCRIPTION

A. Lay out and install the work to the lines and grades indicated and specified.

B. Retain and pay expenses of a qualified civil engineer or land surveyor to establish on the site the required reference points and bench marks. Establish building lines and elevations, check structural framework for plumbness, and establish the required basic grid lines from which work of other SECTIONS shall be laid out.

1.02 QUALIFICATIONS OF ENGINEER OR SURVEYOR - THE ENGINEER OR LAND SURVEYOR SHALL BE LICENSED IN THE STATE OF CALIFORNIA AND SHALL BE ACCEPTABLE TO THE OWNER.

1.03 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the Project are indicated on the Horizontal Control Plan and Grading and Drainage Plan .

B. Locate and protect control points prior to starting site work, and preserve permanent reference points during construction.
   1. Make no changes or relocations without prior written notice from the District's Representative and Architect.
   2. Report to the District's Representative and Architect if a reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
   3. Require the civil engineer or land surveyor to replace control points which become lost or destroyed; base replacements on original survey control.

1.04 PROJECT SURVEY REQUIREMENTS

A. Establish and maintain lines and levels, locate and lay out:
   1. Site Improvements
      a. Stakes for grading, fill, and topsoil placement
      b. Utility slopes and invert elevations
   2. Batter boards for structures
   3. Building foundations, column locations, floor level, and retaining walls.
   4. Controlling lines and levels required for mechanical and electrical work

B. From time to time verify layouts

1.05 RECORDS

A. Maintain a complete, accurate log of control and survey work as it progresses.

1.06 SUBMITTALS

A. Submit name and address of civil engineer or land surveyor.

B. Upon request, submit documentation to verify accuracy of field engineering work.

PART 2 - PRODUCTS - NOT USED.

PART 3 - EXECUTION - NOT USED.

END OF SECTION

Section 01 7135
Restoration of Improvements

PART 1 - GENERAL

1.01 STRUCTURES

A. The Contractor shall carefully cut and or remove such existing structures, utilities, and improvements as required to complete the work, including but not limited to: curbs, gutters, pipelines, sidewalks and utility poles, as may be necessary for the performance of the work and shall rebuild the structures thus removed in as good a condition as found. The Contractor shall also repair existing structures or improvements, which may be damaged as a result of the work under this contract.

1.02 ROADS AND STREETS

A. Unless otherwise specified, roads and streets in which the surface is removed, broken, or damaged, or in which the ground has caved or settled during the work under this contract, shall be resurfaced and brought to the original grade and section by the Contractor. Roadways used by the Contractor shall be cleaned and repaired to local and State Standards. Before resurfacing material is placed, edges of pavements shall be trimmed back far enough to provide clean solid, saw-cut vertical faces, and shall be free of loose material.

1.03 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

A. Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored to their original condition or better.

B. Existing guard posts, barricades, and fences shall be protected and replaced if damaged.

C. Special attention shall be given to avoid trees, bushes and shrubs not indicated for removal.

1.04 PROTECTION OF EXISTING INSTALLATIONS

A. The Contractor shall immediately correct or replace existing equipment, controls or systems that are damaged as a result of his operations.

B. Contractor shall protect existing utilites in place and shall immediately correct or replace existing utility systems that are damaged as a result of his operations.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

Section 01 7329
Cutting and Patching

PART I - GENERAL

1.01 SECTION INCLUDES

A. Proceedures for cutting and patching as may be required to complete the work of this project.

1.02 RELATED SECTIONS

A. Section 01 5000 - Construction Facilties and Temporary Controls

B. Section 01 7135 - Restoration of Improvements

C. Section 01 7420 - Cleaning

D. Section 01 7419 - Construction Waste Mangement & Disposal

1.03 DEFINITONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.04 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut or patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut or patch in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.03 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or

adjoining construction. If possible, review proposed procedures with original installer, comply with original installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
      a. Clean, piping, conduit, and similar features before applying paint or other finishing materials.
      b. Restore damaged pipe covering to its original condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

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Section 01 7419
Construction Waste Management and Disposal

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. District requires that this project generate the least amount of trash and waste possible with the goal of diverting 65% of waste from the landfill.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
   1. Aluminum and plastic beverage containers.
   2. Corrugated cardboard.
   3. Wood pallets.
   4. Clean dimensional wood.
   5. Land clearing debris, including brush, branches, logs, and stumps; see Section 31 1000 - Site Clearing for use options.
   6. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
   7. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (http://flooring.dupont.com) and Interface (www.interfaceinc.com) conduct reclamation programs.

E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

G. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

A. Section 01 3300 - Submittals: Additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. Section 01 5000 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

C. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

D. Section 01 7000 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

E. Section 31 1000 - Site Clearing: Handling and disposal of land clearing debris.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

A. Submit Waste Management Plan within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.

B. Waste Management Plan: Include the following information:
   1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
   2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
   3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
   4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
   5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
   6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

C. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
   1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
   2. Submit Report on a form acceptable to District.
   3. Landfill Disposal: Include the following information:

a. Identification of material.
b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.

4. Recycled and Salvaged Materials: Include the following information for each:
   a. Identification of material, including those retrieved by installer for use on other projects.
   b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
   c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
   e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
5. Material Reused on Project: Include the following information for each:
   a. Identification of material and how it was used in the project.
   b. Amount, in tons or cubic yards.
   c. Include weight tickets as evidence of quantity.
6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. Waste management and diversion goals may be achieved by the following methods:
   1. Roll Off Waste Container: Contractor may hire a company which provides a roll off waste container which is then sorted off site.
   2. On Site Sorting: Contractor to sort waste on site.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, District, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Prebid meeting.
   2. Preconstruction meeting.
   3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. Provide containers as required.
   2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

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Section 01 7420
Cleaning

PART 1GENERAL

1.01 SECTION INCLUDES

A. Cleaning throughout the construction period, and final project cleaning prior to the acceptance tour.

1.02 RELATED SECTIONS

A. Section 01 5000 - Construction Facilities and Temporary Controls

1.03 QUALITY ASSURANCE

A. Inspection: Conduct daily inspection, and more often if necessary, to verify that requirements of cleanliness are being met.

B. Codes and Standards: In addition to the requirements specified herein, comply with pertinent requirements of authorities having jurisdiction.

PART 2PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

A. Use cleaning materials and equipment that are compatible with the surfaces being cleaned, as recommended by the manufacturer of the material to be cleaned.

PART 3 EXECUTION

3.01 PROGRESS CLEANING

A. General:
   1. Retain stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
   2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this work. Debris shall be removed from the site and disposed

of in a lawful manner. Disposal receipts or dump tickets shall be furnished to Architect upon request.

3. At least twice each month, and more often if necessary, remove scrap debris, and waste material from the job site.
4. Provide adequate storage for items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

B. Site:
1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove items to the place designated for their storage. Flammable waste shall be kept in sealed metal containers until removed from the site.
2. Weekly, and more often if necessary, inspect, arrangements of materials stored on the site; restack, tidy, or otherwise service arrangements to meet the requirements specified above.
3. Maintain the site in a neat and orderly condition.

C. Structures:
1. Weekly, and more often if necessary, inspect the structures and pick up scrap, debris, and waste material. Remove items to the place designated for their storage.
2. Weekly, and more often if necessary, sweep interior spaces clean.
   a. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a handheld broom, i.e., "broom-clean".
3. As required preparatory to installation of succeeding materials, clean the structures of pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the required cleanliness.
4. Following the installation of finish floor materials, clean the finish floor daily, and more often if necessary, and while work is being performed in the space in which finish materials have been installed.
   a. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material that, in the opinion of the Architect, may be injurious to the finish floor material, i.e., "vacuum-clean".

D. General: The General Conditions require general cleaning during construction. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste, conduct final progress cleaning as described below.

E. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions. Unless otherwise specifically directed by the Architect, water and broom clean paved areas on the site and public paved areas directly adjacent to the site. Remove resultant debris

F. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
1. Remove labels that are not permanent labels.

2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

G. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces. Sweep and mop vinyl and rubber surfaces.

H. Structures:
1. Exterior: In areas affected by the work under this contract, visually inspect exterior surfaces and remove traces of soil, waste material, smudges, and other foreign matter. Remove traces of splashed material from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure.
2. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no additional cost to the District.

I. Interior: In areas affected by the work under this contract, visually inspect interior surfaces and remove traces of soil waste material, smudges, and other foreign matter. Remove traces of splashed materials from adjacent surfaces. Remove paint drippings, spots, stains, and dirt from finished surfaces. Use only the cleaning materials and equipment instructed by the manufacturer of the surface material.

J. Glass: Clean glass inside and outside.

K. Polished surfaces: On surfaces requiring the routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished. Glossy surfaces shall be cleaned and shined as intended by the manufacturer
1. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
2. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

L. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests.

M. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

N. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the District's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

O. Extra Materials: Where extra materials of value remain after completion of associated Work, they become the District's property. Dispose of these materials as directed by the Owner.

P. Timing: Schedule final cleaning as accepted by the Architect to enable the District to accept a completely clean project.

Q. Cleaning During District's Occupancy
1. Should the District occupy the work or any portion thereof prior to its completion by the Contractor and acceptance by the District, responsibilities for interim and final cleaning of the occupied spaces shall be determined by the Architect in accordance with the General Conditions of the Contract.

END OF SECTION

Section 01 7700
Contract Closeout

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Closeout Procedures.

B. Project Record Documents.

C. Operation and Maintenance Data.

D. Guaranties, Warranties, Bonds and Waivers.

E. Spare Parts and Maintenance Materials.

1.02 RELATED REQUIREMENTS

A. General Conditions: Fiscal provisions, legal submittals and other administrative requirements.

B. Section 01 1100 - Summary of Work

C. Section 01 3300 - Submittals

D. Section 01 7135 - Restoration of Improvements

E. Section 01 7420 - Cleaning

1.03 PRELIMINARY PROCEDURES

A. Comply with procedures stated in General Conditions of the Contract.

B. When Contractor considers work has reached substantial completion, submit written certification that work is ready for inspection.

C. Before requesting an inspection for final completion, complete the following and note any exceptions:
   1. In the Application for Progress Payment that coincides with, or first follows, the date final completion is claimed, show 100 percent completion for the work claimed as substantially complete.
      a. Include supporting documentation for completion as indicated and an accounting of changes to the Contract Sum
      b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
   2. Advise the District of pending insurance changeover requirements.

3. Changeover to permanent keying including advising District of changeover in security provisions.
4. Submission of closeout submittals as specified in Section 1.05 below.
5. System startup and instructions to District's personnel.
6. Disconnection and removal of temporary facilities, mockups, and tools.
7. Final cleanup.

D. The Contractor shal "pre-punch list" its own work and work of subcontractors. A "Zero Punchlist" approach is expected on this Project.
1. Contractor shall plan to ensure work tasks are completed correctly and expeditiously the first time.
2. Contractor shall recognize quality issues and correct defective work as soon as possible to minimize interference with other work ongoing and impact on the Construction Schedule.

E. When Contractor considers the Work or a designated prtion of the Work is complete, an inspection to determine acceptance of the Project will be performed by the Architect, District, and District's Project Inspector.

F. If the Architect determines there are items to be performed, corrected, or completed before the Project will be accepted, it will attach a "punch list" listing and describing these items.

G. The Architect's "punch list" work shall be completed within thirty days, unless otherwise mutually agreed, and prior to acceptance of the Project by the Architect and District.
1. Exceptions:
a. Change Order work that is approved too late to be completed by the Contract completion date
b. Warranty work

1.04 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Each trade/subcontractor responsible for installation shall be responsible for and not limited to the following:
1. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to final application for payment inspection.
2. Remove unused or temporary underground utilities or installations completely.
3. Clean and repair damage caused by installation or use of temporary work.
4. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.05 PROJECT RECORD DRAWINGS AND SPECIFICATIONS

A. General
1. Maintain, on daily basis, Record Drawings showing "as-built" condition of project; subject to monthly review by Architect, Project Inspector, or District.
2. Store documents separate from those used for construction.
3. At time of installation, installed locations of all work relating to above and underground utilities, architectural, structural, heating, ventilation, air conditioning, plumbing, electrical, and other scopes of work as may be required, shall be recorded on prints

maintained at the jobsite by Contractor, and reviewed with the Project Inspector. Do not conceal work until required information is recorded.

4. The Contractor will make available jobsite as-builts or provide scans or photographs of recorded information for Architect or District review as requested.
    a. All information entered on reproducible prints shall be neat, legible, and emphasized by drawing "clouds" around changed items.
    b. Locate and dimension all work, including stubs for future connections, with reference to permanent landmarks or buildings and indicate approximate depth below finish grade.
    c. Symbols and designations used in preparing Record Drawings shall match those used in Contract Drawings.
5. Prior to final inspection, submit project record documents with transmittal letter containing date, project title, Contractor's name and address, list of documents and signature of Contractor.
    a. Failure of the Contractor to comply with this section in total or in part may constitute reason for the withholding of all or part of the monthly progress payment due the Contractor for that month.
6. Prior to processing the Contractor's monthly payment request, Project Inspector, Architect, or District's Representative will meet with the Contractor to review and verify that the Record Documents have been updated.
7. Label and date each Record Drawing “RECORD DOCUMENT” in legibly printed letters.

B. Record Drawing Information:
1. Record the following information:
    a. Locations of work buried under or outside each building, such as plumbing and electrical lines and conduits.
    b. Actual numbering of each electrical circuit.
    c. Locations of significant work concealed inside each building whose general locations are changed from those shown on the Contract.
    d. Locations of all items, not necessarily concealed, which vary from the Contract Documents.
    e. Installed location of all cathodic protection anodes.
    f. Deviations from the sizes, locations and other features of installation shown in the Contract Documents.
    g. Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
    h. Sufficient information to locate work concealed in each building with reasonable ease and accuracy; in some instances, this may be by dimension. In others, it may be in relation to the spaces in the building near which it was installed.
2. Provide additional drawings as necessary for clarification.

C. Record Specifications
1. District's Representative will provide Contractor with one (1) set of Contract Specifications, which shall be labeled “Record Document” in legible letters.
2. Mark each section legibly to record manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

1.06 OPERATION AND MAINTENANCE DATA

A. Provide data for other Sections as required by the Contract Documents.

B. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch three ring side binders with durable plastic covers; with identification on, or readable through, front cover stating general nature of manual.

C. Provide a separate volume for each system, with a table of contents and index tabs for each volume; all material neatly typewritten; each volume containing:
   1. Part 1: Directory, listing names, addresses and telephone numbers of District's Representative.Contractor, and relevant Sub-Contractors; and index furnishing complete information as to location in manual of all emergency data regarding installation.
   2. Part 2: Operation and maintenance instructions, arranged by system. For each system, give names, addresses and telephone numbers of subcontractors and suppliers; and include the following:
      a. List of equipment.
      b. Parts list; including complete nomenclature and names and address of nearest vendor of parts.
      c. Detailed operating instructions.
      d. Maintenance instructions, equipment, including routine maintenance cards with time frequency of routine maintenance noted.
      e. Maintenance instructions, finishes.
      f. Shop drawings and product data, including changes made during construction.
      g. Copies of Guaranties/Warranties.

D. Extraneous Data: Where contents of manuals include manufacturers' catalog pages, clearly indicate precise items included in this installation and delete, or otherwise clearly indicate, all manufacturer's data with which this installation is not concerned.

E. Final inspection will not be scheduled until all maintenance/operating manuals are delivered to the District Representative.

F. Contractor will be responsible for training of District's personnel for operation of all building systems. Use operation and maintenance manuals for each piece of equipment or system as the basis of instruction. Review contents in detail to explain all aspects of operation and maintenance.

1.07 GUARANTIES, WARRANTIES, AND BONDS

A. Standard Guarantee: Guarantee all work executed under this Contract to be free of all defects of work quality and materials for a period of one (1) year after completion and acceptance by the District. Refer to General Conditions and to other specific product and installation warranties listed in individual sections.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS EXTRA STOCK

A. Provide products, spare parts, and maintenance materials in guaranties specified in each section, in addition to that used for construction of work. Coordinate with the Construction Manager and deliver to project site. Provide with a detailed transmittal and obtain receipt prior to final payment.

1.09 FINAL ADJUSTMENT OF ACCOUNTS

A. Application for Final Payment shall be made in accordance with the General Conditions reflecting all adjustments to the Contract Sum as follows:
   1. The original Contract Sum.
   2. Additions and deductions resulting from:
      a. Previous Change Orders
      b. Deductions for uncorrected Work.
      c. Other adjustments
   3. Total Contract Sum, as adjusted.
   4. Previous payments.
   5. Sum remaining due.
   6. Receipts if requested by Architect.

B. A final Change Order will reflect approved adjustments to the Contract Sum not previously made by Change Orders.

END OF SECTION

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Section 02 4100
Demolition

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

D. Section 01 5713 - Temporary Erosion and Sediment Control.

E. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

F. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

G. Section 31 1000 - Site Clearing: Vegetation and existing debris removal.

H. Section 31 2323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

1.03 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Material: As specified in Section 31 2323 - Fill.

PART 3 EXECUTION

3.01 SCOPE

A. Remove paving and curbs as required to accomplish new work.

B. Within area of new construction, remove foundation walls and footings in their entirety or as indicated on the Drawings.
   1. Protect in place utilities and site elements noted to remain.

C. Outside area of new construction, remove foundation walls and footings to a minimum of 2 feet below finished grade or as needed to implement new construction.

D. Remove fences and gates not noted to reamin.

E. Remove other items indicated, for salvage, relocation, and recycling.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

B. Do not begin removal until receipt of notification to proceed from District.

3.03 EXISTING UTILITIES

A. Protect existing utilities to remain from damage.

B. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to District.

C. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to District.

D. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

E. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

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Section 03 0516
Underslab Vapor Barrier

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet vapor barrier under new concrete slabs on grade.

1.02 RELATED REQUIREMENTS

A. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.

B. Section 03 2000 - Concrete Reinforcing.

C. Section 03 3000 - Cast-in-Place Concrete: Preparation of subgrade, granular fill, placement of concrete.

1.03 REFERENCE STANDARDS

A. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2018.

B. ASTM D1709 - Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method; 2016a, with Editorial Revision (2017).

C. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2024.

D. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products.
   1. Manufacturer’s samples and literature.
   2. Manufacturer’s installation instructions for placement, seaming, penetration prevention and repair, and perimeter seal per ASTM E1643.
   3. Summary of test results per paragraph 9.3 of ASTM E1745.
   4. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1

C. Test Data: Submit report of tests showing compliance with specified requirements.

D. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction.

1.05 QUALITY ASSURANCE

A. Pre-Installation Meeting: Installing contractor shall hold a pre-installation meeting with the manufacturer's representative to review manufacturer's installation details.

B. After the underslab vapor barrier is installed, contractor shall arrange for inspection by manufacturer's representative. Any deviations shall be addressed so that manufacturer's representative can provide letter stating that to the best of their knowledge, based on their observation, installation has been completed per the manufacturer's recommendations.

PART 2 PRODUCTS

2.01 MATERIALS

A. Underslab Vapor Barrier:
1. Water Vapor Permeance: Not more than 0.010 perms, maximum [grains/(ft^2/hr/inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
2. Puncture Resistance: Minimum 2,200 grams when tested per ASTM D1709.
3. Tensile Strength: Minimum 70 lbf/in when tested per ASTM D882
4. Complying with ASTM E1745 Class A.
5. Thickness: 15 mils.
6. Manfacturers:
   a. Stego Industries LLC; Stego Wrap Vapor Barrier (15-mil) Basis of Design: www.stegoindustries.com.
   b. Perminator 15 mils, polyolefin by W.R. Meadows.
   c. Moistop Ultra 15 mils, polyolefin by Fortifiber
   d. VaporBlock 15 mils, polyethylene by Raven Industries.
   e. X-Treme 15 mils, polyolefin by Tex-Trude

B. Accessory Products: Vapor barrier manufacturer's recommended tapes, adhesive, mastic, etc., for sealing seams and penetrations in vapor barrier and forming/screeding accessories to prevent undue penetrations of the membrane.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surface over which vapor barrier is to be installed is complete and ready before proceeding with installation of vapor barrier.

3.02 INSTALLATION

A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643.

1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments, such as dowels, water stops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.
3. Apply seam tape/textured tape/double-sided tape to a clean and dry vapor barrier.
4. Seal all penetrations (including pipes) per manufacturer’s instructions.
5. Avoid the use of stakes driven through vapor barrier by utilizing screed and forming systems that will not leave punctures in the vapor barrier.
6. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile.

B. Lap joints minimum 6 inches and seal with manufacturer's tape.

C. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.

D. No penetration of vapor barrier is allowed except for permanent utilities.

E. Repair damaged vapor retarder before covering with other materials.

F. Where installing in existing building tie into existing vapor barrier if possible.

END OF SECTION

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Section 03 1000
Concrete Forming and Accessories

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.

B. Installation of items to be embedded in concrete, such as anchor bolts, inserts, embeds, and sleeves.

C. Openings for other work.

D. Form accessories.

E. Form stripping.

1.02 RELATED REQUIREMENTS

A. Section 03 2000 - Concrete Reinforcing.

B. Section 03 3000 - Cast-in-Place Concrete.

C. Section 05 1200 - Structural Steel Framing: Placement of embedded steel anchors and plates in cast-in-place concrete.

1.03 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).

C. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).

D. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

E. PS 1 - Structural Plywood; 2023.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide data on void form materials and installation requirements.

C. Keep an accurate record of the dates of removal of forms, form shores and reshores, and furnish copies to the SEOR.

1.05 QUALITY ASSURANCE

A. Comply with the pertinent provisions of 01 4000 - Quality Requirements

B. Construct forms according to ACI PRC-347, "Guide to Formwork for Concrete," and conforming to tolerances of ACI SPEC-117, "Specifications for Tolerances for Concrete Construction"

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of 01 6000 - Product Requirements delivering materials in a timely manner to ensure uninterrupted progress.

B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

D. Comply with relevant portions of ACI CODE-318, ACI PRC-347, and ACI SPEC-301.

2.02 WOOD FORM MATERIALS

A. Softwood Plywood: PS 1, B-B Medium or High Density Concrete Form Overlay, Class I, grade marked, not mill oiled.

B. Lumber: DF species; WCLIB Construction grade or better, WWPA No. 1 grade or better; with grade stamp clearly visible.

2.03 FORMWORK ACCESSORIES

A. Form ties: Prefabricated rod, flat band, wire, internally threaded disconnecting type, or equal, not leaving metal within 1-1/2" of concrete surface.

B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
   1. Composition: Colorless, reactive, water-based or solvent-based compound.
   2. Do not use materials containing diesel oil or petroleum-based compounds.
   3. VOC Content: In compliance with applicable local, State, and federal regulations.

C. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 1200 - Structural Steel Framing .

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

A. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete. Sides of all footings and grade beams shall be formed, unless the member detail provides at least 3" clear cover to reinforcement and indicates the member is cast against earth. Remove formwork prior to backfilling operations.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI SPEC-301.

B. Rigidly construct forms to prevent mortar leakage, sagging, displacement or bulging between studs. Use clean, sound, approved form material, coated with specified materials only, not oil. Provide backing on all plywood joints.

C. Coat forms with the specified resin coating, not form oil. Construct forms to exact shapes, sizes, lines and dimensions required to obtain level, plumb, and straight surfaces. Provide openings, offsets, keys, reglets, anchorages, recesses, moldings, chamfers, blocking, screeds, drips, bulkheads, and all other required features. Make forms easily removable without hammering or prying against concrete. Space forms apart with metal spreaders. Construct forms to accurate alignment, locations and grades, and provide against sagging, leakage of concrete mortar, or displacement occuring during and after placing of concrete. Coordinate installation of inserts and anchors in forms according to shop drawings and requirements for work of other sections.

D. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

E. Corners and angles: Provide 3/4" x 3/4" beveled chamfer strips for all exposed concrete corners and angles square unless indicated otherwise.

F. Reglets and Rebates: Form required reglets and rebates to receive frames, flashing and other equipment. Obtain required dimensions, details, and precise positions for work to be installed under other sections and form concrete accordingly.

G. Form Joints: Align joints and make watertight. Keep form joints to a minimum. Fill joints to produce smooth surfaces, intersections, and arises. Use polymer foam or equivalent fillers at joints and where forms abut or overlap existing concrete to prevent leakage of mortar.

H. Recesses, Drips, and Profiles: Provide smooth milled wood or pre-formed rubber or plastic shapes of types shown and required.

I. Cleanouts and Cleaning: Provide Temporary openings in all wall forms and other vertical forms for cleaning and inspection. Clean forms and surfaces to receive concrete prior to placing.

J. Re-Use: Clean and Recondition form material before re-use.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. All necessary pipe sleeves, anchors, or other required inserts shall be accurately installed as part of the work of other sections, according to Specification Section 03 30 00, Section 1.3.B for submittal requirements related to this scope.

B. Obtain approval before framing openings in structural members that are not indicated on drawings.

C. Provide formed openings where required for items to be embedded in passing through concrete work.

D. Locate and set in place items that will be cast directly into concrete.

E. Conduits or pipes:
   1. Locate so as not to reduce strength of the concrete
   2. Do not place pipes, other than conduits, in a slab 4-1/2" thick or less in any case. Conduit buried in a concrete slab shall not have an outside dimension greater than 1/3 the slab thickness nor be placed below the bottom reinforcing or over the top reinforcement.
   3. Sleeves: Pipe sleeves may pass through the slab or walls if not exposed to rusting or other deterioration and are of uncoated or galvanized iron or steel. Provide sleeves of diameter large enough to pass any hub or coupling on pipe, including any insulation.

4. Conduits may be embedded in walls only if the outside diameter does not exceed 1/3 the wall thickness, are spaced no closer than 3 diameters on centers and not impair the strength of the structure.
5. Clusters of Conduits
   a. Clusters of conduits embedded in a concrete slab shall not exceed 6 conduits per cluster and each conduit per cluster shall be spaced as per the above requirements. Conduit clusters exceeding this requirement shall be reviewed and approved by the Structural Engineer of Record prior to installation of the conduits.
   b. If more than one conduit cluster is required in a specific area of the slab, routing and spacing of the clusters shall be reviewed and approved by the structural engineer of record prior to installation of the conduits.
   c. At no time shall the quantity and routing of clusters of conduits impair the strength of the concrete construction.

F. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

G. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

H. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement. Heat seal joints so they are watertight.

I. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

J. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

3.07 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI SPEC-117, unless otherwise indicated.

B. Deflection: Limit Deflection of forming surfaces from concrete pressure to L/240.

C. Finish Lines: Position formwork to maintain hardened concrete finish lines within following permissible deviations.
1. Variation from Plumb:

In 10'-0"	1/4 inch
In any story or 20'-0"	3/8 inch
In 40'-0" or more	3/4 inch

2. Variation from Level or Grades Indicated
   In 10'-0" 1/4 inch
   In any story or 20'-0" 3/8 inch
   In 40'-0" or more 3/4 inch
3. Cross-Sectional Dimensions
   a. Minus 1/4 inch
   b. Plus 1/2 inch

3.08 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.09 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and all superimposed loads as determined by testing field cured cylinders, but not sooner than specified in ACI PRC-347 Section 3.6.2.3. Load supporting forms may be removed when concrete has attained 75 percent of required 28 day compressive strength, but no sooner than 3 days, provided construction is reshored. Vertical formwork for cast in place concrete walls may be removed no sooner than 1 day following concrete placement, provided that the contractor can demonstrate that no sloughing or sagging of concrete will occur.
   1. Reshore structural members as specified per ACI PRC-347.
   2. Remove formwork progressively so unbalanced loads are not imposed on the structure.
   3. Avoid damage to concrete surfaces during removal.
   4. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration.

END OF SECTION

Section 03 2000
Concrete Reinforcing

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing Steel for Concrete Foundations

B. Reinforcing Steel for Concrete Slabs on Grade
   1. Reinforcing steel for cast-in-place concrete.

C. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03 1000 - Concrete Forming and Accessories.

B. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

A. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

B. ACI 315 - Manual of Standard practice for Detailing Reinforced Concrete Structures; 2011.

C. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

E. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2022a.

F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

G. AWS D1.4/D1.4M - Structural Welding Code - Steel Reinforcing Bars; 2018, with Amendment (2020).

H. CRSI (DA4) - Manual of Standard Practice; 2023.

I. CRSI (P1) - Placing Reinforcing Bars, 10th Edition; 2019.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include the following:
1. complete bar layout
2. representative sections
3. details for congested conditions
4. proposed layout where vertical and horizontal bars intersect
5. bar schedules
6. typical bending diagrams and offsets
7. shapes of bent bars
8. spacing of bars
9. splice lengths and locations

C. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.05 QUALITY ASSURANCE

A. Comply with the pertinent provisions of 01 4000 - Quality Requirements

B. Perform work of this section in accordance with ACI SPEC-301.

1.06 DELIVERY STORAGE AND HANDLING

A. Comply with pertinent provisions of 01 6000 - Product Requirements delivering materials in a timely manner to ensure uninterrupted progress.

B. Bundle bars, tag with identification, and transport and store so as not to damage any material. Use metal tags indicating size, length and other marking shown on placement drawings. Maintain tags after bundles are broken

C. Avoid exposure to dirt, moisture or conditions harmful to reinforcement.

1.07 EXTRA MATERIAL

A. Provide an allowance of an additional 10% of the total reinforcing steel tonnage in addition to the quantities shown on the drawings. This additional steel shall be installed in sizes and locations as directed by the structural engineer.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
1. Deformed billet-steel bars.
2. Unfinished.

3. Only to be used for conditions where bars will not be welded.

B. Reinforcing Steel: ASTM A706/A706M, Grade 60 (60,000 psi) deformed low-alloy steel bars.
   1. Unfinished.
   2. Used in all cases where welding of bars is required.

C. Steel Welded Wire Reinforcement (WWR): Galvanized, deformed type; ASTM A1064/A1064M.

D. Reinforcement Accessories:
   1. Tie Wire: ASTM A1064/A1064M , Annealed copper bearing steel, minimum 16 gage, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement. Standard manufactured products shall conform to the Concrete Reinforcing Institute, "Manual of Stand Practice," latest edition.
   3. Use dense precast concrete supports with embedded wire ties for reinforcement placed on grade. Elsewhere, use wire bar supports.

E. Welding electrodes: AWS D1.4/D1.4M, Table 5.1 and 5.3, low hydrogen electrodes, E8018 for Grade 60 Steel.

2.02 RE-BAR SPLICING:

A. Coupler Systems: Mechanical devices for splicing reinforcing bars conforming to the requirements of ACI CODE-318 Section 25.5.7.1; capable of developing 1.25fy of the steel reinforcing yield strength in tension and compression.

   All mechanical splices in Special Structural Walls, Special Moment Frames and Concrete Diaphragms shall be Type 2 conforming to the requirements of ACI CODE-318 Section 18.2.7.1-18.2.7.2 & 25.5.7.1; capable of developing 1.25fy of the steel reinforcing yield strength in tension and compression and develop the specified tensile strength of the spliced bars.
   1. Products:
      a. Dayton Superior Corporation; Bar Lock Coupler System: www.daytonsuperior.com (ICC-ESR 2481.
      b. Lenton Lock Couplers (IAPMO-ES 129).

B. Dowel Bar Splicer with Dowel-Ins: Mechanical devices for splicing reinforcing bars.
   1. Comply with ACI CODE-318 steel reinforcing design strength requirements for splices in tension and compression.
   2. Products:
      a. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
      b. Lenton Form Savers (IAPMO-ES 129).

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Bending and Forming
   1. Fabricate bars of the indicated sizes and bend and form to required shapes and lengths by methods not injurious to materials
   2. Do not heat reinforcement for bending
   3. Bend bars No. 6 size and larger in the shop only.
   4. Bars with unscheduled kinks or bends are subject to rejection.
   5. Use only tested and approved bar materials

C. Locate reinforcing splices not indicated on drawings at point of minimum stress. Review locations of splices with SEOR.

PART 3 EXECUTION

3.01 PLACEMENT

A. Before placing bars, and again before concrete is placed, clean bars of loose rust and/or mill scale, dirt, oil, or any other coating that may be deleterious or could reduce bond with the concrete.

B. Securing in place:
   1. Accurately place bars and wire tie in precise position where bars cross.
   2. Bend ends of wire ties away from the forms.
   3. Wire tie bars to the corners of ties and stirrups.
   4. Support bars according to the Concrete Reinforcing Steel Institute (CRSI) "Placing Reinforcing Bars," using approved accessories and chairs.
   5. Place precast concrete cubes with embedded wire ties to supporting reinforcing steel bars in concrete placed on grade and in footings.
   6. Take adequate precautions to ensure that reinforcing bar position and spacing is maintained during concrete placement.

C. Do not displace or damage vapor barrier.

D. Maintain concrete cover around reinforcing as follows:
   1. Refer to Drawings for cover requirements

E. Splices:
   1. Do not splice reinforcing bars at the points of maximum stress except where indicated.
   2. Lap splices as shown or required to develop the full strength or stress of the bars.
   3. Stagger splices in horizontal wall bars at least 48" longitudinally in alternate bars and opposite faces.

3.02 FIELD QUALITY CONTROL

A. Comply with all pertinent provisions of Division 01 Section 01 40 00 "Quality Requirements".

B. Supervision: Perform Work to this Section under supervision of a capable superintendent.

C. An independent testing agency, as specified in 01 4000 - Quality Requirements, shall inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

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Section 03 3000
Cast-in-Place Concrete

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Section Includes cast-in-place concrete, concrete materials, mixture design, placement procedures and finishes for the following:

B. Floors and slabs on grade.

C. Joint devices associated with concrete work.

D. Miscellaneous concrete elements, including equipment pads, light pole bases, thrust blocks, and manholes.

E. Concrete curing.

F. Concrete Foundations

1.02 RELATED REQUIREMENTS

A. Section 03 0516 - Underslab Vapor Barrier

B. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.

C. Section 03 2000 - Concrete Reinforcing.

D. Section 03 3511 - Concrete Floor Finishes: Densifiers and hardeners.

E. Section 32 1313 - Concrete Paving: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.

C. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.

D. ACI PRC-308 - Guide to External Curing of Concrete; 2016.

E. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

G. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2022.

H. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

I. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

J. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete; 2020.

K. ASTM C40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete; 2020.

L. ASTM C88 - Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate; 2018.

M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.

N. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.

O. ASTM C117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing; 2017.

P. ASTM C131/C131M - Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine; 2020.

Q. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.

R. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

S. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2020.

T. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.

U. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).

V. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.

W. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete; 2023.

X. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).

Y. ASTM C595/C595M - Standard Specification for Blended Hydraulic Cements; 2021.

Z. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.

AA. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.

BB. ASTM C989/C989M - Standard Specification for Slag Cement for Use in Concrete and Mortars; 2024.

CC. ASTM C1157 - Standard Performance Specification for Hydraulic Cement; 2023.

DD. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

EE. ASTM D75 - Standard Practice for Sampling Aggregates; 2019.

FF. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate; 2022.

GG. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2024.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Comply with the pertinent provisions of Section 01 6000 - Product Requirements Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. Material Certificates: For Each of the following, signed by the manufacturer(s)
      a. Cementitious materials
      b. Admixtures
      c. Curing compounds
      d. Non-shrink grout
   2. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with the requirements:
      a. Aggregates

C. Mix Design: Submit proposed concrete mix design(s). For each concrete mixture:
   1. Inidcate Intended Locations for use
   2. Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.
   3. Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.

a. Mixes shall be based on existing approved compressive strength test data for concrete mixes in accordance with ACI 318 Section 5.3.1.1 and requirements below:
   1) Strength Requirements: Design mixes for structural concrete for minimum 28-day compressive strengths required by Drawings and Specifications. The trial batch strength for each mix shall exceed indicated or specified strength by 750 psi or a lesser amount based on the standard deviations of strength test records according to ACI 318.
   2) Normal Weight Concrete Mix Design: Design all mixes for workability and durability of concrete. Control the mixes in accordance with the CBC, ACI 318 Section 5.2, ACI 211.1, and ACI CODE-318 Chapter 4, Building Code Requirements for Reinforced Concrete. Make adjustments in cement content required for concrete strengths at Contractor's expense and do not exceed 0.50 (or as indicated on concrete general notes of approved plans) absolute water-cement or cement plus fly ash or slag ratio by weight. Do not use calcium chloride or any admix containing such material. Admixtures containing a material releasing nitrates in solution are limited to 0.06 percent by weight for the chloride ion.
      Design the mixes with 1" maximum size, except maximum 1-1/2" size for foundations as submitted by the contractor and approved by the Architect and Structural Engineer of Record.
   3) ACI 318 Section 5.3.1.1 with test records. Where a testing laboratory acceptable to the enforcement agency has records of compressive strength tests, a standard deviation shall be established. Test records from which a standard deviation is calculated shall:
      (a) Represent materials, quality control procedures and conditions similar to those expected, and changes in materials and proportions within the test records shall not have been more restricted than those for proposed work.
      (b) Represent concrete produced to meet a specified strength or strengths f' c within 1,000 psi of that specified for proposed work.
      (c) Must consist of at least 30 consecutive tests or two groups of consecutive tests totaling at least 30 tests as defined in ACI 318 Section 5.3.1.1, except as provided in ACI 318 Section 5.3.1.2.
4. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

D. Test Reports: Submit report for each test or series of tests specified.

E. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

F. Delivery Tickets: With each transit truck provide delivery ticket, signed by an authorized representative from the batch plan, containing all information required by ASTM C94/C94M , as well as time batched, type of brand of cement, cement content, maximum size of aggregate and total water content.

1.05 QUALITY ASSURANCE

A. Comply with the pertinent provisions of 01 4000 - Quality Control

B. Qualifications
   1. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance. Adequate numbers of trained and experienced personnell shall be used.
   2. Manufacturer Qualifications: The production facility supplying hydraulic cement concrete shall have a current Certification of Ready Mixed Concrete Production Facilities from the National Ready Mixed Concrete Association, or equivalent.
   3. Concrete Testing and Inspection Services: The owner shall engage a qualified Independent Testing Agency to perform evaluation test and special inspections per Structural Notes on Drawings and as required per the code. Personnel conducting test shallbe qualified as ACI Concrete Field Testing Technician, Grade 1 according to ACI CP-1 or an equivalent program.

C. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
   1. Maintain one copy of each document on site.

D. Follow recommendations of ACI PRC-305 when concreting during hot weather.

E. Follow recommendations of ACI PRC-306 when concreting during cold weather.

F. Source Quality Control: Refer to the following paragraphs for specific procedures. Concrete materials which, by previous tests or actual service, have shown conformance may be used without testing when so approved by SEOR. Testing laboratory shall perform the following conformance testing
   1. Cementitious Material Test. In accorance with the 2022 CBC 1913.1.5 the concrete supplier shall furnish to the enforcement agency certification from the cement manufacturer that the cement proposed for use on the project has been manufactured and tested in compliance with the requirements of ASTM C150/C150M for Portland cement and ASTM C595/C595M or ASTM C1157 for blended hydraulic cement, whichever is applicable. When a mineral admixture or ground granulated blast-furnace slag is proposed for use, the concrete supplier shall furnish to the enforcement agency certification from the manufacturer that they have been manufactured and tested in compliance with ASTM C618 or ASTM C989/C989M, whichever is applicable. If such information is not available, one grab sample of cementitious material used on the project shall be taken for each day's pour and shall be tested as directed by the structural engineer, architect or enforcement agency.
   2. Aggregates for Normal Weight Concrete: Test the aggregate before and after concrete mix is designed and whenever character of aggregate varies or source of material is changed in accordance with ASTM C33/C33M and CBC. Include a sieve analysis. Obtain samples of aggregates at the dry batching or ready-mix concrete plant in accordance with ASTM D75 and perform tests for the properties listed in the following table:

Physical Properties		
Physical Properties, units	Test Method	Minimum Values
Sieve analysis	ASTM C136/C136M	Loss after 5 cycles not more than 8 percent of coarse aggregate, nor

Physical Properties		
Physical Properties, units	Test Method	Minimum Values
		more than 10 percent of fine aggregate
Organic impurities	ASTM C40	Fine aggregate not darker than reference standard color
Soundness	ASTM C88	
Abrasion	ASTM C131/C131M	Weight loss not more than 10.5 percent after 100 revolutions, 42 percent after 500 revolutions
Deleterious materials	ASTM C33/C33M A STM C330/C330M	
Materials finer than No. 200 sieve	ASTM C117	Not over 1 percent for gravel, 1.5 percent for crushed aggregate
Reactivity potential	ASTM C227, C289, C342	Ratio of silica released to reduction in alkalinity not to exceed 1.0.
Sand equivalent	ASTM D2419	California sand equivalent values operating range not below 71 percent

3. Concrete Batch Plant Inspections: Conform to CBC and ACI. Continuous batch plant inspection is required for structural concrete, performed by a specially qualified inspector.

G. Compliance with Regulations: All materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organic compounds, and with FDA rules and regulations for dangerous substances in construction products.

H. Allowable Tolerances: Construct concrete conforming to the tolerances specified in ACI 117, as applicable, unless exceeded by the requirements of regulatory agenciesor otherwise indicated or specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 6000 - Product Requirements.

B. Ready-mix concrete shall be mixed and delivered in accordance with ASTM C94/C94M . Each batch of concrete delivered to the Project site shall be accompanied by a time slip bearing departure time and signature of batch plant supervisor. Concrete shall be placed within 90 minutes after start of mixing. Concrete which has developed initial set shall not be used.

Concrete which has partially hardened shall not be used. Deliver all materials in timely manner to ensure uninterrupted progress of the work.

C. Deliver, store and handle all cement and aggregate materials so as to prevent their deterioration or intrusion by foreign matter. Deteriorated or contaminated materials shall not be furnished.

1.07 JOB CONDITIONS

A. Cold Weather Requirements:
   1. Follow recommendations of ACI 306R A when concreting during cold weather.
   2. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. Surfaces, in which concrete is to come in contact with, shall be free from frost or ice. No frozen materials or materials containing ice shall be furnished.
   3. When placing concrete during freezing or near-freezing weather the mix shall have a temperature of at least 50 degrees F., but not more than 90 degrees F. when cement is added. Concrete shall be maintained at a temperature of at least 50 degrees F. for at least 72 hours after placing or until it has thoroughly hydrated. When necessary, concrete materials shall be heated before mixing. Special precautions shall be provided for protection of transit-mixed concrete.

B. Hot Weather Requirements:
   1. Follow recommendations of ACI 305R when concreting during hot weather.
   2. During hot weather, proper attention shall be provided for ingredients, production methods, handling, placing, protection and curing, to prevent excessive concrete temperatures or water evaporation which could impair required strength or durability.

PART 2 PRODUCTS

2.01 FORMWORK

A. Comply with requirements of Section 03 1000.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 2000.

2.03 CONCRETE MATERIALS

A. Cement:ASTM C595/C595M or ASTM C150/C150M, Type II - Moderate Portland type, low alkali. Provide Type V where concrete is in contact with soil corrosive to concrete.

B. Concrete aggregate is to be well graded (in Zone 2) per the Coarseness Factor Method.

C. Water: Water shall be potable and free from deleterious matter or shall otherwise satisfy the requirements of ASTM C1602/C1602M.
   1. Acquire aggregates for entire project from same source.

D. Pozzolan: ASTM C618, Class F or N Fly Ash (Class C Not permitted) subject to the conditions of the CBC, containing two percent or less carbon. Fly ash shall not be used in excess of 25 percent by weight of total cement quantity for structural concrete. Where fly ash replacement is 25% or higher, maximum water-cement ratio shall be 0.45. Fly ash need not be included in lightweight concrete mix designs.

E. Ground Granulated Blast Furnace Slag: ASTM C989/C989M Slag shall not be used in excess of 25 percent by weight of total cement quantity for structural concrete.
   1. Slag shall not be used in concrete to be polished.

F. Water: Clean, potable and not detrimental to concrete, complying with ASTM C94/C94M and ASTM C1602/C1602M

2.04 ADMIXTURES

A. Admixtures to be used in concrete shall be subject to prior approval by the Structural Engineer. Where more than one admixture is used, they shall be compatible. Use of admixtures shall be consistent throughout Work.

B. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

C. Air Entrainment Admixture: ASTM C260/C260M.

D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
   1. Super-Plasticizers (High Range Water Reducers): ASTM C494/C494M , Type F. Capable of producing concrete which can be placed at 8 11 inch slump without segregation, capable of maintaining slump within 2" of that initially mixed for 2 hours, and of maintaining concrete temperature within 2 degrees F. from time of batching for 2 hours minimum.

E. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
   1. Only one brand. When used, are subject to approval of Structural Engineer of Record, and must reduce the mixing water at least 10 percent without entraining air in excess of 2 percent by volume. If the water reducing agent entrains more than 2 percent air, the water reduction shall be at least 12 percent, but in no case shall the water reducing agent entrain air in excess of 4 percent.

F. Water Reducing Admixture: ASTM C494/C494M Type A.
   1. Only one brand. When used, are subject to approval of Structural Engineer of Record, and must reduce the mixing water at least 10 percent without entraining air in excess of 2 percent by volume. If the water reducing agent entrains more than 2 percent air, the water reduction shall be at least 12 percent, but in no case shall the water reducing agent entrain air in excess of 4 percent.

2.05 ACCESSORY MATERIALS

A. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
   1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
   2. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.
   3. Non-gas-forming and free of oxidizing catalysts and inorganic accelerators, used as dry or damp pack, or mixed to a 20-second flow (CRC-C 611), without segregation or bleeding at any temperature between 45 degrees F and 100 degrees F.
   4. Low-Slump, Dry Pack Products:
      a. Drypack: Field mixture of I part Portland cement to 2 parts fine aggregate mixed to a damp consistency such that a ball molded in the hands will stick together and hold its shape. In lieu of field mixing, Contractor may use factory mixed drypack material, such as Master Builders "Set Grout." f'c shall be equal to 5,000 psi.

B. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, nonmetallic aggregate, and activator.

2.06 BONDING AND JOINTING PRODUCTS

A. Bonding Agent: "Weld-Crete," manufactured by Larsen Products Co., P.O. Box 2127, Rockville, MD 20852, Master Builders "Concresive," or equal.

B. Construction Joint Materials: "Key-Kold" or "Kwik-Joint," of profiles indicated.

C. Expansion Joint Fillers: Preformed strips, non-extruding and resilient bituminous type, of thickness indicated, conforming to ASTM D 1751 and ASTM D1752.

2.07 FINISHING AND CURING MATERIALS

A. Finishing Aids: Liquid applied at time of concrete finish to increase hydrolysis and improve workability and finish.
   1. Products:
      a. Hydrocrete: HydroCrete or HydroGrind :www.hydro-crete.com/
      b. Wagman Metal Products: G3 Finish Aid: www.wagmanmetal.com
      c. Penetron; Peneseal FH-PS: www.penetron.com/#sle.
      d. Solomon Colors; Solomon Colors Lythic Day1: www.solomoncolors.com/#sle.

B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
   1. Application: Use at exterior flatwork.
   2. Product dissipates within 4 to 6 weeks.

C. Curing Agent, Water-Cure Equivalent Type: Clear, water-based, non-film-forming, liquid-water cure replacement agent.
   1. Application: Use at interior slabs.
   2. Comply with ASTM C309 standards for water retention.

3. Compressive Strength of Treated Concrete: Equal to or greater than strength after 14-day water cure when tested in accordance with ASTM C39/C39M.
4. VOC Content: Zero.

D. Moisture-Retaining Sheet: ASTM C171.
1. Curing paper, regular.
2. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.

2.08 CONCRETE MIXING

A. Furnish ready-mixed concrete from an approved commercial off-site plant. Conform to ASTM C 94, except materials, testing, and mix designs as specified herein. Use transit mixer trucks equipped with automatic devices for recording number of revolutions of drum. Comply with CBC Section, 1905.

B. Admixtures: All approved admixtures shall be introduced into the concrete at the batch plant. Field additions are not acceptable.

C. Slump: Adjust quantity of water so concrete at point and time of placing does not exceed the slumps per plans when tested according to ASTM C143. Use the minimum water necessary for workability required by part of structure being cast.

D. For compressive strength, density, fly ash or slag content, slump, and water-cement ratio, refer to the general notes in the plans.

2.09 MIXING

A. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 GENERAL

A. Time of Placing: Do not place concrete until reinforcement, conduits, outlet boxes, anchors, hangers, sleeves, bolts, and other embedded materials are securely fastened in place. Contact the inspector at least 24 hours before placing concrete; do not place concrete until inspected by the inspector.

B. Pouring Record: A record shall be kept on the Project site of time and date of placing concrete in each portion of structure. Such record shall be maintained on the Project site until Substantial Completion and shall be available for examination by the SEOR.

3.03 PREPARATION

A. Earth Subgrade: Dampen 24 hours before placing concrete, but do not muddy. Re-roll where necessary for smoothness and remove loose material.

B. Verify that forms are clean and free of rust before applying release agent.

C. Reglets and Rebates:
   1. Form reglets and rebates in concrete to receive flashing, frames and other equipment as detailed and required. Coordinate dimensions and locations required with other related Work.
   2. If concrete slabs on grade adjoin a wall or other perpendicular concrete surface, form a reglet in wall to receive and carry horizontal concrete Work. Reglet shall be full thickness of the slab and shall be 3/4 inch wide, unless otherwise indicated. Requirement does not apply to exterior walks, unless specifically indicated.

D. Screeds: Install screeds accurately and maintain at required grade or slab elevations after steel reinforcement has been installed , but before starting to place concrete. Install screeds adjacent to walls and in parallel rows not to exceed 8 feet on centers.

E. Screeds Over Vapor Barrier: Use weighted pad or cradle type screeds and do not drive stakes through the vapor barrier. Check with an instrument level, transit, or laser.

F. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

G. Remove all free water from forms before concrete is deposited. Remove hardened concrete, debris, and foreign materials from interior surfaces of forms, exposed reinforcing, and from surfaces of mixing and conveying equipment.

H. Wetting: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce absorption and to help maintain concrete workability.

I. Gravel Fill: Recompact disturbed gravel and bring to correct elevation.

J. All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.

3.04 PLACING CONCRETE

A. Sheet Vapor Retarders:
   1. Place, protect, and repair sheet vapor retarder according to ASTM E1643, section 03 0516 - Underslab Vapor Barrier, and manufacturer's written instructions.

B. Conveying and Placing:
   1. Do not place concrete until reinforcing steel and forms or decks have been approved by the Inspector and other authorities having jurisdiction. Concrete shall be placed only

under direct observation of the inspector. Do not place concrete outside of regular working hours, unless the inspector has been notified at least 48 hours in advance.

2. Comply with CBC Sections 1905.9 and 1905.10.
3. Concrete shall be conveyed from mixer to location of final placement by methods, which will prevent separation or loss of materials. Place concrete in horizontal layers not more than 18" thick within 90 minutes after water is first added to the batch.
4. In placing concrete in columns, walls or thin sections, provide openings in forms, elephant trunks, tremies or other recognized devices, to prevent segregation and accumulation of partially hydrated concrete on forms or metal reinforcement above level of concrete being placed. Such devices shall be installed so that concrete will be dropped vertically. Unconfined vertical drop of concrete from end of such devices to final placement surface shall not exceed 5-feet for concealed concrete or over 3-feet for exposed concrete.
5. Concrete shall be placed as a continuous operation until placing of panel or section is completed. Top surfaces of vertically formed lifts shall be level.
6. Concrete shall be thoroughly consolidated during placement, and shall be worked around reinforcement and embedded fixtures with mechanical vibrators.
7. Where new concrete is placed against or on old or existing concrete, apply bonding agent to surface of old concrete prior to placement of new concrete.

C. Compaction and Screeding:
1. Compacting: Compact each layer of the concrete as placed with mechanical vibrators or equivalent equipment. Transmit vibration directly to concrete and in no case through the forms unless approved. Accomplish thorough compaction. Supplement by rodding or spading by hand adjacent to forms. Compact concrete into corners and angles of forms and around reinforcement and embedded fixtures. Recompact deep sections with congestion due to reinforcing steel as required.
2. Operation of Vibrators: Do not horizontally transport concrete in forms with vibrators nor allow vibrators to contact forms or reinforcing. Push vibrators vertically into the preceding layers that are still plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. In no case disturb concrete that has partially set. Vibrate at intervals not exceeding two-thirds the effective visible vibration diameter of the submerged vibrator. Avoid excessive vibration that causes segregation.
3. Concrete must be vibrated at all headers, junction boxes and duct to insure that the concrete completely fills underneath the duct system. Care must be taken not to over vibrate. Shrinkage and temperature reinforcement above the duct systems shall be in accordance with ACI 318. Care shall be taken during concrete placement and, in particular, during concrete vibration, to prevent rising of top reinforcement within the slab. Contractors placing the concrete shall carefully hand finish a minimum of 24" [610mm] adjacent to junction box access openings so that the top of finished concrete and junction box access openings are flush with each other.
4. Tamp freshly placed concrete with a heavy tamper until at least 3/8 inch of mortar is brought to surface. Concrete shall then be tamped with a light tamper and screeded with a heavy straightedge until depressions and irregularities are eliminated, and surface is true to finish grades or elevations. Remove excess water and debris.
5. Where slabs are to receive separate cement finish or mortar setting bed, continued tamping to raise mortar to surface is not performed. Laitance shall be removed by brushing with a stiff brush or by light sandblasting to expose clean top surface of coarse aggregate.

6. Where concrete is to recieve polished finish:
    a. Screed with a vibratory straightedge and strike off at correct elevations.
    b. Do not leave the vibratory screed at any one location while the vibrator is running; move it continuously across the slab.
    c. Do not use a highway straightedge or bump cutter on the concrete surface during finishing operations.

D. Floating and Troweling:
1. After concrete has been placed, struck off, consolidated, and restraightened, concrete shall not be worked further until ready for floating. Restraightening operation is best accomplished by use of 8 foot to 10 foot wide bull float. Power floating operations shall begin when the water sheen has disappeared, and when the mix has stiffened sufficiently to permit proper operation of power-driven float.
2. Consolidate surface with power-driven floats. Hand floating with wood or cork faced floats shall be used in locations inaccessible to power driven machine. Surface shall be restraightened at this stage with ten foot highway straightedge applied at not less than two different angles.
3. High spots shall be cut down and low spots filled during this procedure to produce planes checking true under straightedge in any direction. Uniformly slope surfaces to drains where occurs.
4. Restraightening operation shall be followed by final float pass to uniform, smooth, granular texture.
5. Concrete Slab Finishes
    a. Exposed sealed concrete: Smooth trowel
    b. Concrete to recieve finish flooring: smooth trowel
    c. Exterior paving: Refer to 32 1313 - Concrete Paving

E. Joints: Comply with CBC Section 1906.4. Locate joints in concrete only where shown or approved and obtain prior approval for points of stoppage of any pour. Clean and roughen surface of construction joints by removing entire surface and exposing 1/4" of clean coarse aggregate solidly embedded in mortar matrix by chipping, use of an approved retarder agent, or equal. Water and keep hardened concrete wet for not less than 24 hours before placing the next lift or abutting concrete. Cover the horizontal surfaces of existing or previously placed and hardened concrete with a 2" thick layer of fresh concrete of required mix less 50 percent of coarse aggregate just before balance of concrete is placed.

F. Vertical Elements: Stop placement of concrete in walls and columns 1 1/2" below bottom of beams or supported slabs. Stop placement at sills and heads of wall openings in the same manner. Allow concrete in vertical elements to be in place at least 2 hours and until vertical settlement has ceased before placing concrete for floor framing.

G. Correction of Segregation: Before placing next layer of concrete, and at the top of each placement for vertical elements, remove all concrete containing excess water or fine aggregate, or showing deficiency of coarse aggregate, and fill the space with compacted concrete of correct proportions. Comply with CBC Section, 1906.4.

H. Filling, Leveling and Patching:

1. Concrete slabs exhibiting high or low spots and indicated to receive resilient floor covering or soft floor covering, shall have surfaces repaired. High spots shall be honed, or ground with power-driven machines to required tolerances. Low spots shall be filled with latex underlayment, installed in strict accordance with manufacturer's written recommendations.
2. Holes resulting from form ties or sleeve nuts shall be solidly packed, through exterior walls, by pressure grouting with cement grout, as specified. Grouted holes on exposed surfaces shall be screeded flush and finished to match adjoining surfaces.

I. Cement Base: Cement base shall be of the height, thickness, and shape detailed. Base shall be reinforced with one inch mesh, 18 gage, zinc-coated wire fabric. Base finish mixture shall be one part Portland cement, 2 parts of fine aggregate and one part pea gravel. Colored cement base shall include a chemically inert mineral oxide pigment in the mix.

3.05 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch in 10 feet.
   2. Under Seamless Resilient Flooring: 1/8 inch in 10 feet.
   3. Under Carpeting: 1/4 inch in 10 feet.

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.06 CURING AND PROTECTION

A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. All curing shall be per CBC Section 1905A.11. Keep forms containing concrete in a wet condition until removed. Keep concrete continuously moist for not less than 7 days after placement. Keep concrete above 50ºF and moist with a fine fog water spray until protected by curing media.

D. Forms containing concrete, top of concrete between forms, and exposed concrete surfaces after removal of forms shall be maintained in a thoroughly wet condition for at least 7 consecutive days after placing. Use the water curing method, curing sheet material, or a clear liquid membrane-forming curing compound except as otherwise specified.

E. During times of dry or excessive winds, high ambient temperature, low humidity, or other ambient conditions causing rapid drying, use specified evaporation retardant and finishing aid material according to the manufacturers instructions and cure concrete with a fine fog spray of

water, or equal, applied both during and after finishing and continued until final curing operations are started.

F. Within 24 hours after finishing, exterior slabs and paving, and interior slabs to receive cement topping or mortar setting beds, shall be covered with sand to a depth of 2 inches and kept thoroughly wet for 7 days.
   1. Instead of sand covering, exterior walks and paving where no other surface treatment is specified, may be cured with clear liquid curing compound immediately installed in accordance with manufacturer's directions.
   2. At areas to recieve polished concrete finish, silcate curing compounds are prohibited.

G. Where fly ash or slag replacement is 20% or higher, floor slabs shall receive a 3 day moist cure and then 1 coat of approved curing compound. All other surfaces, with the exception of foundations, shall receive a coat of approved curing compound immediately after removal of formwork.

3.07 GROUTING AND DRYPACKING

A. Install as indicated or required. Where grouting and drypacking is part of the work of other sections, it shall conform to the following requirements, as applicable.

B. Drypacking: Mix materials thoroughly with minimum amount of water. Install drypack by forcing and rodding to fill voids and provide complete bearing under plates. Finish exposed surfaces smooth and cure with damp burlap or liquid curing compound.

C. Non-Shrink Grouting:
   1. Mixing: Mix the approved non-shrink grout material with sufficient water per manufacturers recommendations.
   2. Application: Surfaces to receive the non-shrink grout shall be clean, and shall be moistened thoroughly immediately before placing the mortar. Before grouting, surfaces to be in contact shall be roughened and cleaned thoroughly, all loose particles shall be removed and the surface flushed thoroughly with neat cement grout immediately before the grouting mortar is placed. Place fluid grout from one side only and puddle, chain, or pump for complete filling of voids; do not remove the dams or forms until grout attains initial set. Finish exposed surfaces smooth, and cure as recommended by grout manufacturer.

3.08 FIELD QUALITY CONTROL

A. Comply with pertinent provisions of Section 01 4000 - Quality Control.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Testing/Evaluation of Concrete: Conform to CBC and ACI. Testing Laboratory shall perform following tests. Samples for testing shall be obtained in accordance with AASTM C172/C172M, and shall be taken from as close to point of placement as possible.
   1. Compressive Strength Tests: Cast one set of three or more cylinders from each days placing and each 50 cubic yards, or fraction thereof, or not less than once for each 2,000

square feet of surface area for slabs and walls, of each strength of structural concrete. Date cylinders, assign record number, and tag showing the location from which sample was taken. Also record slump test result of sample. Do not make more than two series of tests from any one location or batch of concrete.

2. Test Cylinders: Samples will be made in accordance with ASTM C172/C172M . Cast cylinders according to ASTM C31/C31M ; 24 hours later, store cylinders under moist curing conditions at about 70 F. Test according to ASTM C39/C39M at 7 and 28 day ages. The remaining cylinder shall be kept in reserve in case tests are unsatisfactory.

D. Core Tests: Comply with CBC and ACI. If tests show that compressive strength of any concrete falls below required minimum at 28 day age, additional curing and testing of concrete which unsatisfactory test reports represent may be directed. Testing Laboratory shall take and test drilled cores as directed in accordance with ASTM C42. Contractor shall refill core holes with drypack concrete of the same compressive strength required for cored concrete. If core tests results are unsatisfactory, Contractor shall furnish required labor, equipment, and weights, and the Testing Laboratory shall conduct load testing on involved parts of building or structure as directed. Contractor shall bear additional curing and test costs, including Testing Laboratory costs, for concrete not meeting required compressive strength at 28 day age even if testing demonstrates that concrete has eventually attained required minimum compressive strength, and all costs for required corrections or removals and replacements as directed and required for approved construction.

E. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

F. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

G. Slab Testing: Cooperate with manufacturer of specified moisture vapor reducing admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.

3.09 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.10 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

Section 03 3511
Concrete Floor Finishes

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface treatments for concrete floors and slabs.

B. Liquid densifiers and hardeners.

C. Clear penetrating sealers.

D. Polished concrete.

E. Sealant at joints

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.03 REFERENCE STANDARDS

A. ANSI A326.3 - American National Standard Test Method for Measuring Dynamic Coefficient of Friction of Hard Surface Flooring Materials; 2021.

B. ASME B46.1 - Surface Texture (Surface Roughness, Waviness, and Lay); 2009.

C. ASTM F2508 - Standard Practice for Validation, Calibration, and Certification of Walkway Tribometers Using Reference Surfaces; 2016.

D. CSDA-ST-115 - Measuring Concrete Micro Surface Texture; 2014.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with concrete floor placement and concrete floor curing.

B. Concrete floor finishing sub-contractor to attend pre-installation meeting with concrete placement sub-contractor prior to placement of concrete.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

C. Product Data: Manufacturer's published data and installation instructions for concrete polishing system and finishing products, including manufacturer's installation instructions, information on compatibility of different products, and limitations.

D. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

E. Provide letter of certification from concrete floor finish manufacturer for polished concrete system stating that the installer is a certified applicator of the polished concrete system and is farmiliar with proper procedures and installation requirements required by the manufacturer.

F. Provide copy of tribometer testing and validation reports per ASTM F2508

1.06 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Use an experienced installer and adequate number of skilled workmen who are thoroughly trained and experienced in the necessary craft.
   2. The special concrete finish manufacturer shall certify applicator.
   3. Applicator shall be familiar with the specified requirements and the methods needed for proper performance of work of this section.

1.07 MOCK-UP

A. For coatings, construct mock-up area under conditions similar to those that will exist during application, with coatings applied.

B. Mock-Up Size: 100 feet square for each specified finish and color .

C. Locate where directed.

D. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's sealed packaging, including application instructions.

1.09 FIELD CONDITIONS

A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.

1.10 PROTECTION

A. No satisfactory chemical or cleaning procedure is available to remove petroleum stains from the concrete surface. Prevention is therefore essential.

1. All hydraulic powered equipment must be diapered to avoid staining of the concrete.
2. No trade will park vehicles on the inside slab. If necessary to complete their scope of work, drop cloths will be placed under vehicles at all times.
3. No pipe cutting machine will be used on the inside floor slab.
4. Steel will not be placed on interior slab to avoid rust staining.
5. Acids and acidic detergents will not come into contact with slab.
6. All trades are to be informed that the slab must be protected at all times.

B. Concrete Floor Protection Plan: Concrete floor finish Subcontractor shall assist Contractor in development of Concrete Floor Protection Plan (CFPP). Plan to include
1. Signage to communicate with subcontractors protection requirements. (Available from ASCC as free download)
2. Concrete floor protection materials and placement
3. Plans for maintenance of protection materials

C. Concrete Floor Protection: Placement, maintenance, removal, and disposal of floor protection as per the CFPP shall be the responsibility of Contractor.

1.11 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two-year period commencing on the Date of Substantial Completion.

C. Finish Warranty: Provide two-year manufacturer warranty against excessive degradation of finish. Include provision for refinishing areas with excessive loss of gloss.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH APPLICATIONS

A. Liquid Densifier and Hardener:
1. Use at following locations: All locations shown on plans to have exposed concrete floors (not polished).

B. Polished Finish:
1. Use at following locations: As shown on drawings..

2.02 DENSIFIERS AND HARDENERS

A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores, hardening, and dustproofing.
1. Composition: Lithium silicate.
2. Products:
a. Ashford Formula; Curecrete Distribution, Inc.: www.ashfordformula.com
b. Euclid Chemical Company; ULTRASIL LI+: www.euclidchemical.com/#sle.
c. Hi-Tech Systems; ConDense LS: www.hitechpolyurea.com/#sle.

d. L&M Construction Chemicals, Inc; LiON HARD: www.lmcc.com/#sle.
e. PROSOCO, Inc; Consolideck LS/CS: www.prosoco.com/consolideck/#sle.
f. Sinak Corporation; LithoHard: www.sinak.com/#sle.
g. W. R. Meadows, Inc; Liqui-Hard Ultra: www.wrmeadows.com/#sle.
h. Universal Polishing Systems; Series 35 Diamond Glass Densifier: universalpolishingsystems.com
i. Complete Crete Systems; Lithium Nano Densifier: completecretesystems.com
j. Hydro-crete; Hydro-Dense Nano: hydro-crete.com

2.03 POLISHED CONCRETE SYSTEM

A. Polished Concrete System: Materials, equipment, and procedures designed and furnished by a single manufacturer to produce dense polished concrete of the specified sheen.
   1. Acceptable Systems:
      a. Curecrete Distribution, Inc; RetroPlate: www.curecrete.com/#sle.
      b. PROSOCO, Inc; Consolideck Polished Concrete System: www.prosoco.com/consolideck/#sle.
      c. W. R. Meadows, Inc; Induroshine and Bellatrix Concrete Enhancer: www.wrmeadows.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that floor surfaces are acceptable to receive the work of this section.

B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

3.02 GENERAL

A. Apply materials in accordance with manufacturer's instructions.

3.03 CONCRETE POLISHING

A. Execute using materials, equipment, and procedures specified by manufacturer, using manufacturer approved installer.

B. In areas with floor drains, maintain design floor elevation at walls; slope surfaces uniformly to drains at 1/8 inch per foot nominal unless noted otherwise.

C. Final Grind Level:Class B - Fine Aggregate - Salt and Pepper
   1. Aggregate Appearance Classes Per ASCC Concrete Polishing Council for reference
      a. Class A – Cement Fines (Commonly called: Cream Finish) 85-95% fines; 5-15% fine aggregate - No Exposed Aggregate.

b. Class B – Fine Aggregate (Commonly called: Salt/Pepper Finish) 85-95% fine aggregate; 5-15 % blend of fines and coarse aggregate - Exposed Sand and small aggregate.
c. Class C – Coarse Aggregate 80-90% coarse aggregate; 10-20% cement fines and fine aggregates - 1/4" to 1/2" exposed aggregate.
d. Special Aggregate (to be applied to concrete durring concrete pour):

D. Final Polished Sheen: B-1 Semigloss finish; other sheens are included as comparison to illustrate required sheen; final sheen is before addition of any sealer or coating, regardless of whether that is also specified or not.
1. Final polish sheen shall be measured using a texture meter as per CSDA-ST-115 and ASME B46.1

Surface Texture Finish Chart - CSDA-ST-115			
(STG) Surface Texture Grade	**Unit of measure = Ra**		**Surface Grade**
	µ in	**µ m**	
A-1	2	0.0508	High Polish-Very High Gloss
A-2	4	0.1016	High Polish - High Gloss
A-3	8	0.2032	High Polish-Gloss
B-1	16	0.4064	Medium Polish -Semigloss
B-2	32	0.8128	Low Polish - Matte
B-3	64	1.6256	Honed Smooth
C-1	125	3.175	Honed
C-2	250	6.35	Ground
C-3	500	12.7	Heavy Texture

E. Slip Resistance:
1. Minimum wet dynamic coeficient of friction: 0.42 when measured per ANSI A326.3
2. Minimum floor roughness of 0.41 micrometers (16 micro inches) when measured per ASME B46.1

F. Protect finished surface as required and as recommended by manufacturer of polishing system.

END OF SECTION

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Section 05 1200
Structural Steel Framing

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members, support members.

B. Base plates.

C. Grouting under base plates.

1.02 RELATED REQUIREMENTS

A. Section 05 3100 - Steel Decking: Support framing for small openings in deck.

B. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual; 2023, with Errata (2025).

B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2022.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

F. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2021a.

G. ASTM A673 - Standard Specification for Sampling Procedure for Impact Testing of Structural Steel; 2012

H. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2022.

I. ASTM E23 - Standard Test Methods for Notched Bar Impact Testing of Metallic Materials; 2016b

J. ASTM E709 - Standard Guide for Magnetic Particle Testing; 2021.

K. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2020.

L. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

N. California Building Code, 2022 Edition - California Building Code; 2022 Edition.

O. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019.

P. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2020.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Shop Drawings:
   1. Submit Structural Steel Shop Drawings,:
      a. Include complete details and schedules for fabrication and shop assembly of members,
      b. Include a fully detailed, well controlled sequence and technique plan for shop and field welding that minimizes locked in stresses and distortion
      c. Submit sequence and technique plan for review by the SEOR.
      d. Include details of cuts, connections, camber, and holes in accordance with Figure 4.5 of AWS D1.1-10 or AISC 360 Section J1.8, weld position plan and other pertinent data. Indicate welds by standard AWS symbols, and show size, length and type of each weld.
      e. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed for Work specified in other sections.
      f. Submit a list of steel items to be galvanized.

C. Product Data:
   1. Submit copies of fabricator’s specifications and installation instructions for the following products. Include laboratory test reports and other data required demonstrating compliance with these Specifications:
      a. Structural Steel Including Chemical and Physical properties.
      b. Welding electrodes
      c. Welding Gas
      d. Structural Steel Primer Paint
   2. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.

D. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

E. Mill Test Reports: Indicate structural tensile and yield strength, destructive test analysis and non-destructive test analysis.

F. Charpy-V-Notch (CVN) Impact Test: Submit certified copies of Charpy-V-Notch (CVN) Impact Test by the manufacturer for applicable steel members and components.
   1. Charpy-V-Notch (CVN) Impact Test for Base Metal: Structural steel which is to be complete joint penetration welded and subjected to Charpy-V-Notch impact test in accordance with ASTM E 23 and ASTM A 673.
      a. Other Structural Steel
   2. Exception: Rolled shapes with flange thickness exceeding 2 inches that are spliced via complete joint penetration (CJP) welds shall be tested in accordance with ASTM A6/A6M, Supplementary Requirement S30, Charpy V-Notch Impact Test for Structural Shapes – Alternate Core Location. The impact test shall meet a minimum average value of 20 ft-lbs at 70° F.
   3. Charpy-V-Notch test shall be performed by the manufacturer employing Test Frequency (P) in accordance with ASTM A 673 and utilizing standard specimen sizes shown in Figure 6 of ASTM E 23. The absorbed energy in a CVN impact test shall not be less than that specified in Material Part 2 of this section.

G. Welders Certificates: Field welders shall be Project certified in accordance with AWS D1. 1-10. Shop welders shall be Project certified for FCAWS in accordance with AWS D1. 1-10.

H. Weld Procedures: Submit weld procedures for all connections. Weld procedures shall be prequalified or qualified as described in AWS D1.1, Section 4, Part B for self shielded FCAW, Weld procedures shall indicate joints details and tolerances, preheat and interpass temperature, post-heat treatment, single or multiple stringer passes, peening of stringer passes for groove welds except for the first and the last pass, electrode type and size, welding current, polarity and amperes and root treatment. The welding variables for each stringer pass shall be recorded and averaged, from these averages the weld heat input shall be calculated. Welding shall not proceed until WPS have been reviewed and approved by the Engineer of Record.

1.05 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with the following Codes and Provisions as a Minimum Requirement:
   1. California Building Code, 2022 Edition Chapter 22A, & Chapter 17A.
   2. AISC Standards:
      a. AISC 303-16 - Code of Standard Practice for Steel Buildings and Bridges
      b. AISC 360-16 - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings
   3. AWS Standards:
      a. AWS D1.1 - Structural Welding Code - Steel

B. Maintain one copy of each document on site.

C. Fabricator Qualifications: A qualified steel fabricator that is accredited by one of the following:
   1. the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel (AC172).
   2. AISC Certification in accordance with the AISC Certification Program for Structural Steel Fabricators - Standard for Steel Building Structures (AISC 201-06)

D. Erector: Company specializing in performing the work of this section

E. Testing Laboratory shall perform conformance testing in accordance with the CBC:
   1. Identified Structural Steel: Tests are waived for steel identified by heat number, accompanied by mill analyses and mill test reports, and properly tagged with an Identification Certificate so as to be readily identified for conformance with applicable ASTM. Comply with the CBC.
   2. Unidentified Structural Steel: Steel not identified and certified as specified above shall be tested according to following requirements. Structural steel fabricator shall cut samples under direction of the Special Inspector and Testing Laboratory shall machine or otherwise prepare the specimens and perform testing of each 5 tons or fraction thereof for each size of unidentified steel except, in the case of random pieces or of steel having Fy greater than 36 Ksi, testing of each piece is required. Tests required are:
      a. For pipe, one tension and elongation test and one flattening test for each size.
      b. For all other steel, one tension and elongation test and one bend test for each size.
      c. Contractor shall reimburse to Owner all costs paid by Owner for testing unidentified steel.

F. Testing & Inspection shall comply with the following:
   1. All steel used for structural purposes shall be identified.. Manufacturer's mill analyses and test reports are acceptable for properly identified steel, but the enforcement agency may require additional testing to determine the quality of the steel if there is any doubt as to its acceptability. Any steel not properly identified shall be tested to meet the minimum chemical and mechanical requirements of the ASTM standard appropriate for the steel specified for the structure.
   2. AISC 360-16 Chapter N - Tests of High-strength Bolts, Nuts and Washers. High-strength bolts, nuts and washers shall be sampled and tested by an approved independent testing laboratory for conformance with the requirements of Division III.
   3. AISC 360-16 Chapter N - Tests of End-welded Studs. End-welded studs shall be sampled, tested and inspected per the requirements of the Structural Welding Code – Steel, published by the American Welding Society.
   4. Inspection of shop fabrication shall be required for significant structural detailed connection and fabrication work as directed by the enforcement agency. This inspection shall be made by a qualified inspector approved by the enforcement agency. The inspector shall furnish the architect, structural engineer and the enforcement agency with a report that the materials and workmanship conform to the approved plans and specifications.
   5. Inspection of Welding. Inspection of all shop and field welding operations, including the installation of automatic end-welded stud shear connectors shall be made by a qualified welding inspector approved by the enforcement agency. Such inspector shall be a person trained and thoroughly experienced in inspecting welding operations. The inspector's ability to distinguish between sound and unsound welding shall be reliably established. The minimum requirements for a qualified welding inspector shall be as those for an AWS certified welding inspector (CWI), as defined in the provisions of the ANSI/AWS QCI-1-96, Standard for AWS Certification of Welding Inspectors published by the American Welding Society. All welding inspectors shall be approved by the enforcement agency. The ability of each welder to produce sound welds of all types required by the work shall be established by welder qualification satisfactory to the enforcement agency.

6. Welding inspection of structural welding shall conform to the requirements of AWS D1.1 Structural Welding Code – Steel, published by the American Welding Society, except as modified by this section.
7. The welding inspector shall make a systematic record of all welds. This record shall include in addition to other required records:
   a. Identification marks of welders.
   b. List of defective welds.
   c. Manner of correction of defects.
8. The welding inspector shall check the material, equipment, details of construction and procedure, as well as the welds. The inspector shall also check the ability of the welder. The inspector shall verify that the installation procedure for automatic end-welded stud shear connectors is in accordance with the requirements of AWS D1.1, Structural Welding Code – Steel, published by the American Weld Society and the approved plans and specifications. The inspector shall furnish the architect, structural engineer and the enforcement agency with a verified report that the welding is proper and has been done in conformity with AWS D1.1, Structural Welding Code – Steel, published by the American Welding Society and the approved plans and specifications. The inspector shall use all means necessary to determine the quality of the weld. The inspector may use gamma ray, magnaflux, trepanning, sonics or any other aid to visual inspection, which the inspector may deem necessary to be assured of the adequacy of the welding.
9. Inspection of High Strength Bolt Installations. Inspection of high-strength bolt installations shall be made by an inspector specially approved for that purpose by the enforcement agency. The inspector shall check the materials, equipment, details of construction and installation procedure. The inspector shall furnish the architect, structural engineer and the enforcement agency with a report that the work has been completed in every material respect in compliance with the approved plans and specifications.

1.06 DELIVERY STORAGE AND HANDLING

A. Store structural steel above grade on platforms, skids or other supports.

B. Protect steel from corrosion.

C. Storage and Care of Electrodes: Coatings of low-hydrogen type electrodes shall be thoroughly dry as used. Conform to AWS D1.1; use electrodes as taken from hermetically sealed packages within time limit specified therein after package is opened. Electrodes not used within allowable time period and electrodes that have been exposed more than one hour to air having a relative humidity of 75% or greater, or as required by the manufacturer, shall be dried according to AWS D1.1 before they are used, or shall be reconditioned according to electrode manufacturer's recommendations. Electrodes so dried or reconditioned not used within allowable time period after drying is completed shall be redried before use. Electrodes of any class that have been wet shall not be used under any conditions.

D. Store other materials in a weathertight and dry place until installed into the Work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel W Shapes and Tees: ASTM A992/A992M.

B. Steel Plates and Bars: ASTM A572/A572M, Grade 50 (345) high-strength for non-weathered steel

C. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B for non-weathered steel

D. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A and galvanized in compliance with ASTM A153/A153M Class C.

E. Unheaded Anchor Rods: ASTM F1554, Gr 36, 55 (with S1 weld supplement requirements) or 105 as inidcated on the drawings, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436 Type 1 washers.

F. Headed Anchor Rods: ASTM F1554 Grade 36, plain.

G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
   1. Electrodes: AWS D5.1, E70XX Series Low Hydrogen Electrodes as required for intended use. All electrodes shall have a minimum Notch -Toughness of 20 FT-Lb at -20 degree F.

H. Grout: Non-shrink, non-metallic aggregate type, complying with ASTM C1107/C1107M and capable of developing a minimum compressive strength of 7,000 psi at 28 days.

2.02 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Cleaning and Straightening: Thoroughly wire brush material, clean of loose mill scale and rust, and straighten by methods that will not injure the steel prior to fabrication. Remove twists or bends after punching or working component parts of a member before the parts are assembled. Produce finished members free from twists, bends, and open joints when erected.

C. Contact: Pin components parts of built-up members and maintain in close contact using clamps or temporary bolting during welding operations. Accurately mill compression bearing surfaces of joints depending on contact bearings or saw cut square to axis, or as detailed. Cut other joints straight and true.

D. Joining: Provide members of the sizes, weights, shapes, and arrangements indicated, closely fitted and finished true to line and in precise position as necessary to allow proper joining of parts in the field. Drifting to enlarge unfair holes is not allowed without prior approval.

E. Drilling, Punching, and Reaming: Hole burning to make or enlarge previous holes is allowed only with prior approval. Prepare required holes in structural steel members for attachment or passage of Work of other trades. Precisely locate finished holes to ensure passage of all bolts

through steel assemblies without drifting. Enlarge holes only by reaming. Poor matching of holes is cause for rejection.

F. Holes For Anchor Bolts: Punch and drill or ream holes in base and bearing plates. Do not make or enlarge the holes by burning except for grouting holes in column bases without prior approval by the Architect.

G. Gas Cutting: Use of a cutting torch is allowed where the metal being cut is not stressed during the operation, and provided stresses are not transmitted through a flame-cut surface. Make all gas cuts with a smooth regular contour. Deduct 1/8" from width of gas cut edges to determine effective width of members that are gas cut. Make radius of re-entrant gas cuts as large as possible, but 1" minimum.

H. Galvanizing: After fabrication, items indicated or specified to be galvanized shall be galvanized in largest practical sizes. Fabrication includes operations of shearing, punching, bending, forming, assembling or welding. Galvanized items shall be free from projections, barbs, or icicles resulting from the galvanizing process.

I. Welding:
   1. Type of steel furnished in welded structures shall provide chemical properties suitable for welding as determined by chemical analysis. Welds shall conform to the requirements of CBC Chapter 17A.
   2. Materials and workmanship shall conform to the requirements specified herein and to CBC requirements, modified as follows:
      a. No welded splices shall be permitted except those indicated on Drawings unless specifically reviewed by the Engineer of Record and the DSA.
      b. Drawings will designate joints in which it is important that welding sequence and technique be controlled to minimize shrinkage stresses and distortion.
   3. Welding shall be performed in accordance with requirements of the AWS Structural Welding Code.

J. Shop Finish:
   1. Notify the Inspector when Work is ready to receive shop prime coat. Work shall be inspected by the Inspector before installation of primer.
   2. Structural steel and fittings, except galvanized items, which will be exposed when building is completed, shall receive a coat of primer.
   3. The primer specified shall be spray applied, filling joints and corners and covering surfaces with a smooth unbroken film. The minimum dry film thickness of the primer shall be 2.0 mils.

2.03 CONNECTIONS

A. Make connections with bolts as noted on the Structural Drawings.

B. High-Strength Steel Bolting: For joints connected by high strength steel bolts, hardened washers, and nuts tightened to high tension, conform materials, method of installation and tension control, and wrenches to Reference Standards. Install all high-strength bolts under inspection.

1. Connections shall be the “bearing bolt type” (A325-N) unless noted to be “slip-critical” (A325-SC and A490-SC). Refer to drawings.
2. Bolt lengths shall be the grip plus 1-1/4".
3. Tightening of nuts shall be done with properly calibrated wrenches or by the turn-of-the-nut method for A325-SC and A490-SC bolts. Tightening of the nuts for A325-N bolts to snug tightness shall be to Ref. Spec.
4. Check calibrated wrenches individually for accuracy not less than once daily for actual conditions of application.
5. Clean all contact surfaces of bolted parts and threads free of scale, slag, burrs, pits, dirt, paint, and other foreign material or defects which would prevent solid seating of connected parts.
6. Install hardened washers per AISC Standards
7. Tighten bolts systematically from most rigid part of connection to the free edges.
8. Retighten first installed bolts that may have loosened by tightening of subsequent bolts so all bolts are tightened to correct tension.
9. Mark fully tightened bolts with identifying symbol.
10. The contractor shall torque test 25% of the bolts in connections designated with A325-SC or A490-SC Bolts.

2.04 WELDING:

A. Conform to CBC Section 1705A.2, AWS D1.1 as modified by referenced AISC Standards, and as indicated or noted on Drawings. Employ welding operators qualified in accordance with AWS D1.1, as applicable, who are thoroughly trained and experienced in arc welding and that produce uniformly reliable groove and fillet welds in flat, vertical, and overhead positions, and make neat and consistent welds. Weld all structural steel joints by shielded electric-arc method unless otherwise shown, specified, or approved. Conform welding in both shop and field, including the prequalification of welds and welder qualifications, to AWS D1.1.

B. Preparation: Clean steel surfaces to be welded of all paint, grease, oil, mill scale, and foreign matter. Clean weld each time the electrode is changed. Chip full surface of hand guided and controlled flame cut edges before welding. Surfaces prepared with automatic or mechanically guided and controlled equipment need not be ground or chipped before welding.

C. Weld Finishing: Grind exposed welds subject to contact to smooth surfaces free of holes, slag, or other defects, flush with the adjoining surfaces. No finish treatment is required for permanently concealed welds and other exposed welds.

D. Procedures: During assembling and welding, hold components of a built-up member with adequate clamps or other means to keep parts straight and in close contact. Do no welding in wind until adequate protective screening is set up. Cut out defective welds or parts of welds with a chisel or air arc and replace.

E. Weld Characteristics: Conform to AWS D1.1. Clean and wire brush all welds. Visual inspection of finished welds must show uniform section, smoothness of welded metal, feather edges without undercuts or overlays, freedom from porosity and inclusions, and good fusion and penetration into base metal at edges and ends of fillet welds.

2.05 FINISH

A. Clean surfaces according to AISC Specifications. Apply one shop coat of specified metal primer to minimum 1.0 mil dry film thickness. Work primer into joints. Do not prime the following:

B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.

2.06 SOURCE QUALITY CONTROL

A. An AWS CWI certified special inspector shall inspect welded connections. The Owner will provide an independent testing laboratory to perform tests and prepare test reports in accordance with the CBC. The Inspector shall be responsible for monitoring the work of the special inspector and testing laboratories to ensure that the testing program is satisfactorily completed.

B. The independent testing laboratory shall conduct and interpret test and state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.

C. Provide access to all places where structural steel Work is being fabricated or produced so required inspection and testing can be performed.

D. The independent testing laboratory may inspect and/or test structural steel at plant before shipment; however, the Engineer of Record reserves the right at any time before Final Completion to deem materials not in compliance with the specified requirements as defective Work.

E. Correct defects in structural Work when inspections and laboratory test reports indicate noncompliance with specified requirements. Perform additional tests as may be required to reconfirm noncompliance of original Work, and as may be required to show demonstrate compliance of corrected Work.

F. Welding: Inspect and test during fabrication and erection of structural steel assemblies as follows:
   1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in the Work. Record Work required and performed to correct deficiencies.
   2. Inspect welds. Welds shall be visually inspected before performing any non-destructive testing. Groove weld shall be inspected by ultrasonic or other approved non-destructive test methods.
   3. Ultrasonic testing shall be performed by a specially trained and qualified technician who shall operate the equipment, examine welds, and maintain a record of welds examined, defects found, and disposition of each defect. Repair and test defective welds.
   4. Rate of Testing: Complete joint penetration welds contained in joints and splices shall be tested 100 percent either by ultrasonic testing or by radiography.

5. Base metal thicker than 1-1/2 inches, when subjected to through-thickness weld shrinkage strains, shall be ultrasonically inspected by shear wave methods for discontinuities directly behind such welds. Tests shall be performed at least 48 hours after completed joint has cooled down to ambient air temperature.
6. Any material discontinuities shall be reviewed based on the defect rating in accordance with the criteria of AWS D1.1 table 6.3 by the SEOR.
7. Other method of non-destructive testing and inspection, for example, liquid dye penetrate testing, magnetic particle inspection or radiographic inspection may be performed on weld if required.
8. Lamellar Tearing: Lamellar-tearing resulting from welding is a crack (with zero tolerance) and shall be repaired in accordance with AWS D1.1.
9. Lamination: The rejection criteria shall be based on ASTM A 435.
10. Where testing reveals lamination or conditions of lamellar tearing in base metal, the steel fabricator shall submit a proposed method of repair for review by the Architect. Test repaired areas as required.
11. Magnetic Particle Testing: Magnetic particle testing when required shall be provided in accordance with AWS D1.1 for procedure and technique. The standards of acceptance shall be in accordance with AWS D1.1 - Qualification.

G. Welded studs shall be tested and inspected by the special inspector in accordance with requirements of AWS D1.1 – Stud Welding.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

B. Verify governing dimensions and conditions of the Work before commencing erection Work. Verify elevations of concrete and masonry bearing surfaces, and locations of anchor rods, bearing plates and other Embedments.

C. Provide temporary shoring and bracing, and other support during performance of the Work. Remove after steel is in place and connected, and after cast-in-place concrete has reached its design strength.

3.02 ERECTION

A. Erect structural steel in compliance with AISC 303.

B. Employ qualified riggers and plan erection to require minimum cutting. Erect members plumb, true to line and level, and in precise positions. Provide temporary bracing and guying to resist loads and stresses to which the structure may be subjected, including those due to erection equipment and its operation.

C. Anchor Bolts: Furnish and deliver anchor bolts with setting drawings and templates. Verify position of bolts prior to delivery of steel; report errors or deviation for correction.

D. Clean surfaces of base plates and bearing plates.
   1. Install base and bearing plates for structural members on wedges, shims, or setting nuts as required.
   2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims; cut off flush with edge of base or bearing plate before packing with grout.

E. Maintain erection tolerances of structural steel within AISC Code of Standard Practice for Steel Buildings and Bridges.

F. Align and adjust steel members. Adjust for variations in elevation or alignment. Level and plumb structural members.

G. Do not permit thermal cutting during erection of structural steel.

H. Connections: Hold steel in correct position during welding and bolting, and provide for dead loads, wind, and all erection stresses. Do no welding or final bolting until members have been aligned and plumbed.
   1. Field Welding: Conform to requirements for shop fabrication.
   2. Common Bolts: Tighten and upset bolt threads to preclude loosening, or use approved self-locking nuts.
   3. High-Strength Bolting: Tighten by turn of the nut method or with calibrated torque wrenches as specified for the shop high-strength bolting and according to Code, AISC Standards and the Reference Standard.

I. Where indicated for field connections, provide standard bolts complying with ASTM A325.

J. Install high strength steel bolts at locations indicated. Assembly and installation shall be in accordance with CBC requirements.

K. Erect structural steel plumb and level and to proper tolerances as set forth in the AISC Manual. Provide temporary bracing, supports or connections required for complete safety of structure until final permanent connections are installed.

L. Steel Columns: Set column bases in exact position for alignment, plumb and straight, supported on adjustable bolt supports or shims until grout has set. Set center of base true to column center within 1/16" and adjust column height exactly. Maintain bases at exact position and level during grouting. Fill grout space solid with non-shrink grout.

M. Damaged Members: During erection, straighten or replace members which are bent, twisted, or damaged as directed. If heating is required, perform heating by methods that ensure a uniform temperature throughout the entire member. When directed, remove members damaged to an extent impairing appearance, strength, or serviceability and replace with new members at no extra cost to the Owner.

N. Do not field cut or alter structural members without approval of Structural Engineer.

O. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

P. Grout solidly between column or other bearing plates and concrete/masonry bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 FINISHING

A. After erection, spots or surfaces where paint has been removed, damaged, or burned off and field rivets, bolts, and other field connections not concealed in the Work, shall be cleaned of dirt, oil, grease, and burned paint and furnished with a spot coat of the same primer installed during shop priming.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Install paint to exposed areas with the same material installed during shop painting. Install by brush or spray to provide a minimum dry film thickness of 1.5 mils.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From true Alignment: 1/4 inch.

3.05 FIELD QUALITY CONTROL

A. Testing Agency The owner will engage An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. All welders shall be qualified for each process and position per AWS D1.1 Chapter 4, Part C - Performance Qualifications.

C. Testing Agency The owner will engage An independent testing agency will perform field quality control tests for all field welds and bolted connections as detailed in Section 1.5 above.
   1. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts".
   2. Welded Connections: Visually inspect all field-welded connections. For all CJP welds test 100 percent of welds using the following:
      a. Ultrasonic testing performed in accordance with ASTM E164. An AWS Certified Welding Inspector shall operate ultrasonic testing equipment, examine welds, and maintain a record of welds examined, defects found, and disposition of each defect. Defective welds shall be repaired in accordance with AWS D1.1, latest revision, and costs for retesting defective welds shall be responsibility of the Contractor. Tests shall be complete tests according to AWS D1.1, latest revision.
      b. Backing Strips: Remove backing strips whenever ultrasonic indications arising from weld roots can be interpreted as either a weld defect or a backing strip, and retest weld if no root defect is visible. If no defect is disclosed by retest and no significant amount of the base and weld metal is removed, joint needs no further repair or welding. Repair all defects disclosed. Contractor shall bear the cost of removals and repairs.

c. Ultrasonic Instrumentation: Calibrated by technician to evaluate the quality of welds in accordance with AWS D1.1-06, Sections 5 and 6.
d. Acceptance Criteria: In accordance with larger reflector criteria of AWS D1.1, latest revision.

3.06 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.07 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

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Section 05 5213
Pipe and Tube Railings

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stair railings.

B. Railings at ramps

C. Barrier rails at drinking fountains

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Blocking for rail supports

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

E. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

F. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications:
   1. A company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 50 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

D. Allow for expansion and contraction of members and building movement without damage to connections or members.

E. Dimensions: See drawings for configurations and heights. Where conflicts occour, use the more robust stuctural section.
   1. Handrails
      a. Railings: 1-1/2 inches diameter, round schedule 40.
      b. Posts: 1-1/2 inches diameter, round schedule 40..
   2. Guardrails
      a. Intermediate Rails: 1-1/2 inches square.
      b. Railings: 1-1/2 inches diameter, round round schedule 40.
      c. Top Rails and Posts: 2 inches square, .125" wall thickness
      d. Balusters: 5/8 inch square

F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

2.02 STEEL RAILING SYSTEM

A. Steel Pipe: ASTM A53/A53M Grade B Schedule 40, galvanized finish.

B. Galvanizing: In accordance with requirements of ASTM A123/A123M.
   1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic.

C. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
   1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
   3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

2.04 PRODUCTS

A. Steel Guardrails and Handrails: Fabricated

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

C. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.03 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

B. Install railings in compliance with ADA Standards for accessible design at applicable locations.

C. All exterior railings to be hot dip galvanized. No field welding of joints after fabrication.

D. Fabricate to maximum lengths as required for galvanizing. Join lengths of railing with slip joints.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

Section 06 0573
Wood Treatment

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Site applied termiticide for wood materials.

1.02 RELATED REQUIREMENTS

A. Section 01 3514 - LEED Credit Summary

B. Section 01 3515 - LEED Certification Procedures

1.03 SUBMITTALS

A. Product Data: Provide technical data on application instructions and EPA registered label specimen.

B. Provide LEED submittal forms with the product submittal for each different product and manufacturer. Recycled content, regional distance and materials costs must be identified for each manufacturer and product. Submittals without the LEED forms will be rejected as incomplete. Refer to Specification Section 01 3516 – LEED Submittal Forms.

C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

1.04 WARRANTY

A. Provide 5 year manufacturer warranty for damage to the wood structure from decay fungi and subteranian, formosan, or drywood termites.

PART 2 PRODUCTS

2.01 SITE APPLIED WOOD TREATMENT

A. Site Applied Termiticide and Mildewcide: Borate mineral salt based, spray applied termiticide, mildewcide and mold growth preventative.
   1. Provide an EPA-Registered termiticide, complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.

a. Basis-of-Design: Subject to compliance with requirements, provide Nisus Corporation; BORA-CARE® Commercial Termiticide or other approved product.
   1) Active Ingredient: 40% Disodium Octaborate Tetrahydrate (DOT)
   2) Penetrant: Glycol mixture.

PART 3 EXECUTION

3.01 PREPARATION

3.02 INSTALLATION - GENERAL

A. Provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 SITE APPLIED WOOD TREATMENT

A. Termiticide:
   1. Mix termiticide treatment solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label. Apply to the following so that a continuous horizontal and vertical termiticide barrier or treated zone is established at the foundation of building construction. Distribute treatment evenly.
      a. All structural Treat concrete, block, steel &wood and sill plates within 36 inches, minimum, of point of contact with foundation.
      b. All wood, wood based and cellulosic sheathing within 36 inches, minimum, of point of contact with foundation.
   2. Concrete foundations 2 inches, minimum, from sill plate.
   3. Open bath traps and concrete slab within 12 inches, minimum, of bath trap.
   4. All pipe and plumbing penetrations up to 36 inches, minimum, above slab and slab surface within 6 inches, minimum, of pipe or penetration.
   5. Six inches, minimum, on either side of control joints and construction joints in slabs and joints between slabs and abutting material.

END OF SECTION

Section 06 1000
Rough Carpentry

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Nonstructural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Sheathing.

E. Roofing nailers.

F. Preservative treated wood materials.

G. Miscellaneous framing and sheathing.

H. Concealed wood blocking, nailers, and supports.

I. Miscellaneous wood nailers, furring, and grounds.

J. Wall sheathing

K. Roof sheathing

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 3000 - Cast-in-Place Concrete: Setting anchors in concrete.

C. Section 05 1200 - Structural Steel Framing: Prefabricated beams and columns for support of wood framing.

D. Section 06 1733 - Wood I-Joists.

E. Section 06 1800 - Glued-Laminated Construction.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025.

C. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2018, with Errata (2019).

D. AWPA U1 - Use Category System: User Specification for Treated Wood; 2022.

E. PS 1 - Structural Plywood; 2023.

F. PS 1-19 - PS 1-19; Dec 2019.

G. PS 2 - Performance Standard for Wood Structural Panels; 2018.

H. PS 20 - American Softwood Lumber Standard; 2021.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 1-19 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Stud Framing (2 by 2 through 2 by 8):
   1. Species: Per plan.
   2. Grade: Per plan.

D. Joist, Rafter, Small Beam, and Posts Framing (2 by 6 through 4 by 16):
   1. Species and Grades: As indicated on drawings for various locations.

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 .
   2. Boards: S4S, No. 2.

2.03 TIMBERS FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry (19 percent maximum).

C. Beams and Posts 5 inches and over in thickness:
   1. Species: Douglas Fir-Larch.
   2. Grade: No. 1.

2.04 STRUCTURAL COMPOSITE LUMBER

A. Structural Composite Lumber: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
   1. Beams: Use laminated veneer lumber with manufacturer's published E (modulus of elasticity): 2,000,000 psi, minimum. Fb = 2,900 psi, minimum.
   2. Products:
      a. RedBuilt LLC; Redbuilt Laminated Veneer Lumber: www.redbuilt.com//#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.05 CONSTRUCTION PANELS

A. Roof Sheathing: PS 2 type, rated Structural I Sheathing.
   1. Bond Classification: Exterior.
   2. Span Rating: 32.
   3. Performance Category: 1/2 PERF CAT.

B. Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I, rated Structural I Sheathing.

C. Other Applications:
   1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
   2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
   3. Other Locations: PS 1, C-D Plugged or better.

2.06 ACCESSORIES

A. Metal and Finish of Fasteners:
   1. Preservative-Treated Wood:
      a. Nails, timber rivets, wood screws, and lag screws - general use: Hot-dip galvanized steel complying with ASTM A153/A153M Class D.
   2. Untreated Wood: Unfinished steel.

B. Joist Hangers: Hot dipped galvanized steel, sized as noted on plans.
   1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.
   2. Provide hangers manufactured by Simpson Strong-Tie.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.

F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

G. Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.

H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

C. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

D. Provide nonstructural framing and blocking to support the following:
1. Cabinets and shelf supports.
2. Wall brackets.
3. Handrails.
4. Grab bars.
5. Towel and bath accessories.
6. Wall-mounted door stops.
7. Chalkboards and marker boards.
8. Wall paneling and trim.
9. Joints of rigid wall coverings that occur between studs.
10. Other wall- or ceiling-mounted items indicated on drawings.
11. Decorative panels

3.05 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.06 INSTALLATION OF CONSTRUCTION PANELS

A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
1. At long edges use sheathing clips where joints occur between roof framing members.
2. At long edges provide solid edge blocking where joints occur between roof framing members, where noted on plans.
3. Nail panels to framing; staples are not permitted.

B. Wall Sheathing: Secure with long dimension parallel to wall studs, with ends over firm bearing and staggered, using nails.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.08 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

3.09 CLEANING

A. Waste Disposal: See Section 01 7419 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

Section 06 1733
Wood I-Joists

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood I-joists for roof framing.

B. Bridging, bracing, and anchorage.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 1000 - Rough Carpentry: Material requirements for blocking, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS

A. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions; 2012a (Reapproved 2018).

B. ASTM D5055 - Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists; 2019, with Editorial Revision (2020).

C. PS 1 - Structural Plywood; 2023.

D. PS 2 - Performance Standard for Wood Structural Panels; 2018.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Manufacturer's literature describing materials, dimensions, allowable spans and spacings, bearing and anchor details, bridging and bracing requirements, and installation instructions; identify independent inspection agency.

C. Shop Drawings: Indicate sizes and spacing of joists, bracing and bridging, bearing stiffeners, holes to be cut (if any), and framed openings between joists.

D. Certificate: Certification by joist manufacturer that products delivered are of the same design and construction as those evaluated by the independent inspection agency.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in manufacturer's original packaging with manufacturer's name and product identification intact and legible.

B. Protect products from damage due to weather and breakage.

C. Protect joists from warping or other distortion by stacking in upright position, braced to resist movement, with air circulation under coverings and around stacks.

D. Handle individual joists in the upright position.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood I-Joists:
   1. RedBuilt LLC; Redbuilt I-Joist: www.redbuilt.com//#sle. (ICC-ES ESR-2994)
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Wood I-Joists: Laminated veneer lumber top and bottom flanges and oriented strand board (OSB) webs bonded together with structural adhesive, with published span rating to meet project requirements.
   1. Span Rating: Established and monitored in accordance with ASTM D5055 by independent inspection agency.
   2. Oriented Strand Board: Comply with PS 2.
   3. Adhesive: Tested for wet/exterior service in accordance with ASTM D2559.
   4. Depth: As indicated on drawings.
   5. Fabrication Tolerances:
      a. Flange Width: Plus/minus 1/32 inch.
      b. Flange Thickness: Minus 1/16 inch.
      c. Joist Depth: Plus 0, minus 1/8 inch.
   6. Marking: Mark each piece with depth, joist spacing, and allowable span for joist spacing.
   7. Provide bearing stiffeners at all points of bearing, and at all joist hangers.

B. Wood-Based Components:
   1. Wood fabricated from old growth timber is not permitted.

C. Joist Hangers: Per plan and details.

D. Joist Bridging: Per plan and details.

E. Wood Blocking, Plates, and Miscellaneous Framing: Softwood lumber, any species, construction grade, maximum moisture content of 19 percent.

F. Fasteners: Electrogalvanized steel, type to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that supports and openings are ready to receive joists.

B. Verify that field measurements are as indicated on shop drawings.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 ERECTION

A. Install joists in accordance with manufacturer's instructions.

B. Set structural members level and plumb, in correct position.

C. Make provisions for erection loads and for sufficient temporary bracing to maintain structure plumb and in true alignment until completion of erection and installation of permanent bracing.

D. Do not field cut or alter structural members without approval of Structural Engineer of Record.

E. Install permanent bridging and bracing.

F. Install headers and supports to frame openings required.

3.04 TOLERANCES

A. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION

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Section 06 1800
Glued-Laminated Construction

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glue laminated wood beams and columns.

B. Steel hardware and attachment brackets.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ANSI 117 - Standard Specification for Structural Glued Laminated Timber of Softwood Species; 2020.

B. ANSI A190.1 - Product Standard for Structural Glued Laminated Timber; 2022.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

E. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2021, with Editorial Revision.

F. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

G. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; 2019.

H. WWPA G-5 - Western Lumber Grading Rules; 2021.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide technical data on wood treatment.

C. Shop Drawings: Indicate framing system, sizes and spacing of members, loads and cambers, bearing and anchor details, bridging and bracing, framed openings .

D. Manufacturer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Manufacturer/Fabricator Qualifications: Company specializing in manufacture of glue laminated structural units with three years of documented experience, and certified by AITC in accordance with ANSI A190.1.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect members to AITC requirements for not wrapped.

B. Leave individual wrapping in place until finishing occurs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glued-Laminated Structural Units:
   1. Boise Cascade Company; ____: www.bc.com/#sle.
   2. RedBuilt LLC; Redbuilt I-Joist: www.redbuilt.com//#sle.
   3. Sentinel Structures, Inc; _____: www.sentinelstructures.com/#sle.
   4. Western Wood Structures, Inc; _____: www.westernwoodstructures.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 GLUED-LAMINATED UNITS

A. Glued-Laminated Units: Fabricate in accordance with ANSI 117 Industrial grade.
   1. Verify dimensions and site conditions prior to fabrication.
   2. Cut and fit members accurately to length to achieve tight joint fit.
   3. Fabricate member with camber built in.
   4. Do not splice or join members in locations other than those indicated without permission.
   5. Fabricate steel hardware and connections with joints neatly fitted, welded, and ground smooth.
   6. Welding: Perform welding in accordance with AWS D1.1/D1.1M.
   7. After end trimming, seal with penetrating sealer in accordance with AITC requirements.

2.03 MATERIALS

A. Lumber: Softwood lumber complying with RIS (GR) grading rules with 12 percent maximum moisture content before fabrication. Strength and grade as noted on drawings.

B. Steel Connections and Brackets: ASTM A572/A572M.

2.04 FABRICATION

A. Fabricate glue laminated structural members in accordance with AITC Architectural grade.

B. Welding: Perform welding in accordance with AWS D1.1/D1.1M.

C. Verify dimensions and site conditions prior to fabrication.

D. Cut and fit members accurately to length to achieve tight joint fit.

E. Fabricate member with camber built in.

F. Do not splice or join members in locations other than those indicated without permission.

G. Fabricate steel hardware and connections with joints neatly fitted, welded, and ground smooth.

H. After end trimming, seal with penetrating sealer in accordance with AITC requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that supports are ready to receive units.

B. Verify sufficient end bearing area.

3.02 ERECTION

A. Lift members using protective straps to prevent visible damage.

B. Set structural members level and plumb, in correct positions or sloped where indicated.

C. Provide temporary bracing and anchorage to hold members in place until permanently secured.

D. Fit members together accurately without trimming, cutting, splicing, or other unauthorized modification.

3.03 TOLERANCES

A. Framing Members: 1/2 inch maximum from true position.

END OF SECTION

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Section 06 2000
Finish Carpentry

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Shop finishing.

1.02 RELATED REQUIREMENTS

A. Section 09 9113 - Exterior Painting.

B. Section 09 9123 - Interior Painting.

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress; 2019.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Samples: Submit two samples of wood trim 12 inch long.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

B. Protect from moisture damage.

C. Handle materials and products to prevent damage to edges, ends, or surfaces.

1.06 PROJECT CONDITIONS

A. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

B. Coordinate the work with installation of associated and adjacent components.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

A. Hardwood Lumber: Birch species, smooth sawn, maximum moisture content of 6 percent ; with vertical grain , of quality suitable for transparent finish.
   1. Grading: In accordance with NHLA G-101 Grading Rules; www.nhla.com.

2.02 SHEET MATERIALS

A. Hardwood Plywood: Face species as indicated, plain sawn, veneer core, glue type as recommended for application.

2.03 FASTENINGS

A. Fasteners: Of size and type to suit application and as detailed

2.04 SITE-FINISHING MATERIALS

2.05 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.06 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Set and secure materials and components in place, plumb and level.

B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

END OF SECTION

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Section 06 4100
Architectural Wood Casework

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop finishing.

B. Cabinet and drawer hardware.

C. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry.

B. Section 07 9200 - Joint Sealants

C. Section 12 3600 - Countertops.

D. Division 22 Plumbing

E. Division 23 Mechanical

F. Division 26 Electrical

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. BHMA A156.9 - Cabinet Hardware; 2020.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

E. ASTM D 1037 - 99 Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes. Shop Drawings shall have WI, Certified Compliance Label affixed to first page of drawing set.

C. Product Data: Provide data for hardware accessories. Provide MSDS Sheets for all composite wood and agrifiber products, adhesives, and sealants used.

D. Samples: Submit actual sample items of proposed pulls, hinges, and shelf standards, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with WI Manual of Millwork, Custom quality, unless other quality is indicated for specific items. The millwork supplier shall issue a W.I. Certificate Compliance Certificate indicating the grade of millwork products to be furnished for this job and certifying that they will fully meet all the requirements of the grade specified. Each unit of casework shall bear the W.I. Certificate Compliance label. Each plastic laminate countertop shall bear the W.I. Certified Compliance label. Upon the completion of the installation, a W.I. Certified Compliance shall be issued for the installation. The type of construction used must meet the seismic force requirements of Title 24.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect Units from moisture damage.

B. Delivery shall only be made when the area of operation is enclosed, all wet work is dry, all overhead work is complete, and the area broom clean.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same level planned for occupancy.

B. The HVAC system shall be on and functioning, and the architectural millwork shall be acclimated to these conditions for 72 hours prior to installation.

PART 2 PRODUCTS

2.01 ARCHITECTURAL WOOD CASEWORK

A. Provide casework and casework components in sizes and profiles as indicated on drawings.

2.02 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.03 WOOD-BASED COMPONENTS

A. Hardwood Faced Plywood: HPVA HP-1; graded in accordance with WI Manual of Millwork, core of lumber; exterior glue ; thickness 3/4";
   1. Exposed Open Shelving
   2. Semi Exposed Shelving

B. Particleboard shall not be used

C. Medium Density Fiberboard (MDF): ANSI A208.2; type as specified in WI Manual of Millwork; composed of wood fibers pressure bonded with moisture resistant formaldehyde free adhesive to suit application; sanded faces; thickness as indicated.
   1. Medite II, as manufactured by Roseburg, or approved equal
   2. Located at all casework construction, except as identified above.

2.04 LAMINATE MATERIALS

A. Manufacturers:
   1. Panolam Industries International, Inc: www.panolam.com/#sle.
   2. Wilsonart LLC; (District Standard): www.wilsonart.com/#sle.
   3. Or approved equal, prior to bidding

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for all exposed applications as scheduled.
   1. Post-Formed Horizontal Surfaces: HGP, 0.039 inch nominal thickness, through color, color and finish as indicated on the drawings.

2.05 CONCEALED CABINET BASE COMPONENTS

A. Cabinet Base Toe-Kick Subfronts: Pressure treated size as indicated on the drawings

B. Cabinet Base Blocking and Stretchers: Pressure treated size as indicated on the drawings.

C. Cabinet Base Sleepers: Pressure treated size as indicated on the drawings.

D. Where materials are not in direct contact with concrete, pressure treated lumber is not required.

2.06 WOOD AND WOOD-BASED MATERIALS

A. Melamine finish at all semi-exposed cabinet shelving, divisions and faces.

B. Interior faces of cabinet doors to be faced with the same material as exposed surfaces.

2.07 ACCESSORIES

A. Adhesive: Type recommended by WI to suit application.

B. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
   1. Color: As selected by Architect from manufacturer's full range to match cabinet face.
   2. Use at door and drawer edges.
   3. All adhesives must meet or exceed the VOC limits of the CBC / Cal Green

2.08 HARDWARE

A. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards and coordinated self rests, satin finish, for nominal 9/16 inch spacing adjustments.
   1. Standards, SP-1820, manufactured by Sugatsune or approved equal.
   2. Supports; SP-15, manufactured by Sugatsune or approved equal.

B. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, ~ 4" inch centers
   1. Hafele #116.07.621 by Hafele
   2. EPCO
   3. Sugatsune

C. Keyed Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish.
   1. Pin tumbler cylinder cam lock, National Lock 8102 Series or approved equal.
   2. Keying as selected. All locks shall be installed in a hole shaped the same shape as the cylinder of the lock to eliminate rotation. Round lock cylinders installed in round holes will not be allowed.
   3. Cabinet locks are to be installed at the following cabinet doors with the following requirements:
      a. All locks will be keyed with one master key.
      b. Provide 8 copies of the master key.

D. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Heavy Duty grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Features: Self closing/ stay closed.
   6. Manufacturers:
      a. Accuride International, Inc; Heavy-Duty Drawer Slides: www.accuride.com/#sle.

E. Hinges: Full-mortise 5-knuckle institutional type, steel with nickel-plated finish.
   1. Manufacturers:
      a. Rockford Process Control, Inc: rockfordprocess.com - 450 series.
      b. Or approved equal,

F. Silencers: Clear vinyl silencers to be installed at each cabinet door

G. Wardrobe Hook
   1. # 582 Double, Aluminum, Manufactured by Ives or approved equal.

2.09 FABRICATION

A. Cabinets shall be fabricated to Woodwork Institute standards
   1. Grade: Premium

B. Exceptions to WI standards
   1. Wall Hung Cabinets : Depth 14 inches
   2. Shelves shall be designed as per schools and libraries, for a 50lb per square foot live load as per table 15-1.
   3. Exterior Edges: Include doors, drawer fronts, and front edge of vertical end panels and leg panels. Exterior edges are to be edged with heavy-duty 3mm PVC edgebanding, color to match door or drawer front.

C. Fabricate to maximum extents plausible, including doors, drawers, and hardware; fabricate units in sizes transportable through building openings.

D. When necessary to cut and fit on site, provide materials with sufficient allowance for cutting.

E. Wood Casework with Laminate Cladding: Apply laminates in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline.

F. Provide cutouts for plumbing fixtures; verify locations of cutouts from on-site dimensions. Sand and seal cut edges.

G. Edgebanding: Apply where specified; do not use more than one piece for any single length.

H. Hardware: Install hardware in accordance with hardware manufacturer's written instructions; use fasteners supplied by hardware manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify casework and materials required for installation have been delivered, handled and stored as specified.

B. Verify wood blocking that provides casework backing is installed as indicated on drawings.

C. Verify location and sizes of rough-in plumbing and rough-in electrical associated with work of this section.

3.02 CASEWORK INSTALLATION

A. Install and secure work of this section in accordance with specified performance requirements.

B. Secure upper cabinets, counter bases, full height cabinets, and counter partitions to floor and wall using appropriate angles and anchorages to obtain seismic restraint per Title 24 Section 2336

3.03 ADJUSTING

A. Adjust hardware for smooth operation in accordance with hardware manufacturer's documented instructions.

3.04 CLEANING

A. Defective work shall be repaired or replaced as directed by the Owner or his representative upon completion of installation.

B. Shop finished surfaces shall be cleaned, touched-up as required and damaged or unrepairable areas shall be refinished or replaced as directed.

C. Clean cabinetry free of debris. Installer shall be responsible for the immediate removal of all trash, crating, etc., associated with the cabinet installation.

3.05 SCHEDULES

A. Finishes to be selected by architect from full line of colors and patterns. (Colors and Patterns are based on Formica Brand as a standard of quality unless otherwise noted.)

END OF SECTION

Section 07 2100
Board and Batt Insulation

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation and integral vapor retarder at over roof deck and over roof sheathing.

B. Thermal batt insulation in exterior wall, ceiling, and roof construction.

C. Rigid foam board insulation at low slope (Flat) roof areas.

D. Sound insulation at all interior demising walls not otherwise thermally insulated - size to fill void 3 5/8" min.

E. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

A. Section 07 5400 - Thermoplastic Membrane Roofing: Installation requirements for board insulation over low slope roof deck.

1.03 QUALITY ASSURANCE

A. Installer - Work to be performed only by workers thoroughly skilled and specially trained in the techniques of insulation, and who are completely familiar with the published recommendations of the manufacturer of the material being used. Installer to take care that facing material of batt insulation is not torn or punctured.

B. Materials of this section shall provide continuity of thermal barrier at building enclosure elements.

1.04 REFERENCE STANDARDS

A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

D. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2024.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.06 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.07 PRODUCT HANDLING

A. Protection
   1. Insulating materials to be stored at the job site in a safe, dry place with all labels intact and legible at time of installation.
   2. Comply with manufacturer's recommendations for handling, storage and protection during installation. Use all means to protect insulating materials before, during, and after installation. Do not allow products to become wet, damp, or punctured.

B. Replacements - In the event of damage, including water intrusion, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation in Wood Framed Walls: Batt insulation with integral vapor retarder.

B. Insulation in Wood Framed Ceiling Structure: Batt insulation with no vapor retarder.

C. Insulation Over Roof Deck: Polyisocyanurate board.

2.02 FOAM BOARD INSULATION MATERIALS

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, comply with ASTM C1289.
   1. Classifications:
      a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.

1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of core foam.
2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi (138 kPa), minimum.
3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 2 - 8.0 (1.41), minimum, at 75 degrees F.

2. Flame Spread Index (FSI): Class B - 26 to 75, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
4. Water Vapor Permeance: 1.5 perm, maximum, at 1 inch thickness, and when tested in accordance with ASTM E96/E96M, desiccant method.
5. Board Size: 48 inch by 96 inch.
6. Board Thickness: 1.5 inch.
7. Weight: .32 lbs/sf at 1.5" thick
8. Board Edges: Square.
9. Products:
   a. Sarnatherm ISO; Sika: usa.sika.com; basis of design.
   b. Substitutions: See Section 01 6000 - Product Requirements.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Batt Insulation: ASTM C 665; preformed glass fiber batt; friction fit, conforming to the following:
   1. Surface Burning Characteristics: Flame spread index of 25 or less; smoke developed index of 50 or less, when tested in accordance with ASTM E 84.
   2. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   3. Formaldehyde Content: Zero.
   4. Thermal Resistance: (Unless otherwise noted on plans with an increase value)
      a. At Low Sloped Pitched Roof Area: R-48 unfaced batts
      b. At Exterior Walls: R-21 Kraft Face Batts.
      c. Interior Wall Sound Insulation: fiberglass sound control batts 3-5/8" thick
   5. Products:
      a. CertainTeed Corporation: www.certainteed.com.
      b. Johns Manville: www.jm.com.
      c. Owens Corning Corp: www.owenscorning.com.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

A. Provide all other materials and products necessary for the proper completion of the work.

B. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.

C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.

D. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

C. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where installation can properly begin.

D. Verify that specified products may be installed in accordance with the original design and the manufacturer's recommendations.

3.02 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

A. Board Installation Over Roof Deck, General:
   1. See applicable roofing specification section for specific board installation requirements.
   2. Fasten insulation to deck in accordance with roofing manufacturer's written instructions and applicable Factory Mutual requirements.
   3. Do not apply more insulation than can be covered with roofing on the same day.

3.03 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Install with factory-applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.

F. Staple or nail facing flanges in place at maximum 6 inches on center.

G. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

H. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap and seal sheet retarder joints over face of member.

I. Tape seal tears or cuts in vapor retarder.

J. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.

3.04 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

End of Section

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Section 07 2500
Weather Barriers

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air Barriers: Materials that form a system to stop passage of air through exterior walls and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS

A. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.

1.03 DEFINITIONS

A. Weather Barriers: Materials or assemblies forming water-resistive barriers, air barriers, vapor retarders, or combination of one or more assemblies.

B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.

C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
   1. Water Vapor Permeance: For purposes of conversion, 57.2 ng/(Pa s sq m) = 1 perm.

D. Water-Resistive Barriers: Materials or assemblies installed behind exterior wall coverings; designed to prevent liquid water from further penetration into exterior wall assembly.

1.04 REFERENCE STANDARDS

A. AATCC Test Method 127 - Test Method for Water Resistance: Hydrostatic Pressure; 2018, with Editorial Revision (2019).

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

D. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

1.05 SUBMITTALS

A. Product Data: Provide data on material characteristics and performance criteria.

1.06 MOCK-UPS

A. Install air barrier materials in mock-up
   1. Mock up to include representative details including at a minimum a window and door opening.
   2. Approved mock up may remain as part of the work.

B. Mock up to be reviewed and approved by manufacturer's representative.

1.07 WARRANTY

A. Installed product to be covered by a 10 year product and labor warranty.

B. Contractor shall provide a job site checklist and observation report generated by a manufacturer's representative.

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

A. Air Barrier:
   1. On outside surface of sheathing of exterior walls use air barrier sheet, mechanically fastened type.

2.02 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

A. Air Barrier Sheet, Mechanically Fastened:
   1. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
   2. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure A (Desiccant Method) at 73.4 degrees F.
   3. Water Penetration Resistance: Withstand a water head of 21 inches, minimum, for minimum of 5 hours, when tested in accordance with AATCC Test Method 127.
   4. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to 180 days of weather exposure.
   5. Surface Burning Characteristics: Flame spread index of 25 or less, and smoke developed index of 50 or less, when tested in accordance with ASTM E84.
   6. Seam and Perimeter Tape: Polyethylene self adhering type, mesh reinforced, 2 inches wide, compatible with sheet material; unless otherwise specified.
   7. Manufacturers:
      a. DuPont de Nemours, Inc; Tyvek ConstructionWrap with Tyvek Fluid Applied Flashing - Brush Formulation, Tyvek Fluid Applied Flashing and Joint Compound,

FlexWrap, StraightFlash, VersaFlange, Tyvek Wrap Caps, and Tyvek Tape: building.dupont.com/#sle.

2.03 ACCESSORIES

A. All accessories used in weather barrier system shall by produced by a single manufacturer or shall be approved by the manufacturer for use with their system.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.

C. Mechanically Fastened Sheets:
1. Install sheets in shingle fashion to shed water; align horizontally.
2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.
4. For applications indicated to be airtight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners as recommended by manufacturer.
5. Install water-resistive barrier over jamb flashings.
6. Install air barrier and vapor retarder underneath the jamb flashings.
7. Install head flashings under water-resistive barrier.
8. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.

D. Openings and Penetrations in Exterior Water-Resistive Barriers:
1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.

3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.04 FIELD QUALITY CONTROL

A. District's Inspection and Testing: Cooperate with District's testing agency.
   1. Allow access to work areas and staging.
   2. Notify District's testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
   3. Do not cover work of this section until testing and inspection is accepted.

B. Do not cover installed water-resistive barriers until required inspections have been completed.

C. Obtain approval of installation procedures from water-resistive barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

D. Take digital photographs of each portion of installation prior to covering up weather barriers.

3.05 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

Section 07 4646
Fiber-Cement Siding

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiber-cement trim and soffit panels.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Siding substrate.

B. Section 07 9200 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.

C. Section 07 9005 - Joint Sealers.

1.03 REFERENCE STANDARDS

A. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets; 2022.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
1. Manufacturer's requirements for related materials to be installed by others.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Installation methods, including nail patterns.
5. Manufacturer's operation and maintenance instructions.

C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
1. Indicate atypical non-standard applications outside of manufacturer's standard details and specifications.

D. Test Report: Applicable model code authority evaluation report (e.g. ICC-ES).

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store materials under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.

PART 2 PRODUCTS

2.01 FIBER-CEMENT SIDING

A. Trim: Trim boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
   1. Style: Standard lap style.
   2. Texture: Simulated cedar grain.
   3. Length: 12 ft, nominal.
   4. Thickness: 1 inch
   5. Width: Varies
   6. Finish: Factory applied primer.
   7. Warranty: 50 year limited; transferable.
   8. Manufacturers:
      a. James Hardie Building Products, Inc; ICC ESR-2273: www.jameshardie.com.
      b. Or approved equal.

B. Soffit Panels: Panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
   1. Texture: Smooth.
   2. Length: 96 inches, nominal.
   3. Width: As specified in ICC ESR-2273
   4. Thickness: 1/4 inch
   5. Finish: Factory applied primer.
   6. Non-vented.
   7. Manufacturer: Same as trim

2.02 ACCESSORIES

A. Trim: Same material and texture as soffit.

B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate, 1-1/4 inches, minimum.

C. Joint Sealer: As specified in Section 07 9200 - Joint Sealants.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Do not begin until unacceptable conditions have been corrected.

C. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Install siding in accordance with manufacturer's instructions and recommendations and in accordance with ESR-2273.
   1. Read warranty and comply with terms necessary to maintain warranty coverage.
   2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
   3. Use trim details as indicated on drawings.
   4. Touch up field cut edges before installing.
   5. Pre-drill nail holes if necessary to prevent breakage.

B. Site specific installation
   1. Installation of panels shall be neat, clean and square, and but joints shall be neatly fit.
   2. Joints at adjapanels edges shall be neatly finished and feathered to prevent cracking, min 4" each side of joint.
   3. Installation of panel fasteners shall be flush wtih panel suraface. Do not over or under driven fasteners.
   4. Care shall be taken and appropriate tools used during installation to prevent denting or damaging fo panel surface, aand to maintain the smooth finish of panels.

C. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.

3.03 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

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Section 07 5400
Thermoplastic Membrane Roofing

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mechanically attached system with thermoplastic roofing membrane.

B. Cover boards.

C. Flashings.

D. Roofing stack boots.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood sheathing and backing for edge strips.

B. Section 07 2100 - Board and Batt Insulation

C. Section 07 6200 - Sheet Metal Flashing and Trim: Counterflashings, reglets.

D. Section 08 6223 - Tubular Skylights:

E. Section 22 0000 - Plumbing: Vent pipes

1.03 REFERENCE STANDARDS

A. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer; 2016 (Reapproved 2022).

B. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing; 2021.

C. ASTM D751 - Standard Test Methods for Coated Fabrics; 2019.

D. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

E. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011 (Reapproved 2019).

F. CBC, Chapter 15 - Roof Assemblies and Rooftop Structures; 2019.

G. NRCA (RM) - The NRCA Roofing Manual; 2025.

H. UL (DIR) - Online Certifications Directory; Current Edition.

I. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide data indicating membrane materials, flashing materials, surfacing, fasteners, and ESR or UL reports.

C. Shop Drawings: Indicate joint or termination detail conditions and conditions of interface with other materials.

D. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.

E. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, and supplementary instructions given.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Warranty Documentation:
   1. Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.
   2. Submit installer's written verification that installation complies with warranty conditions for waterproof membrane.

I. Warranty: Submit manufacturer warranty and ensure forms have been completed in District's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of this section with at least three years of documented experience.
   1. With minimum three years documented experience.

C. Roof assembly shall comply with CBC, Chapter 15

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact, unless otherwise indicated.

B. Remove manufacturer supplied plastic covers, and over tore materials in weather protected environment, clear of ground and moisture.

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. Protect foam insulation from direct exposure to sunlight.

1.08 WARRANTY

A. Material Warranty: Provide membrane manufacturer's warranty agreeing to replace material that shows manufacturing defects within five years after installation.

B. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes including all accessories and labor.
   1. Warranty Term: 25 years.
      a. Non-Prorated provide for No Dollar Limit (NDL)
   2. For repair and replacement include costs of both material and labor in warranty.
   3. Exceptions are not Permitted:
      a. Ponding water
      b. Damage due to winds speeds less than 60 mph

C. Installer Warranty: Provide separate 2 (2) year workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within the Installer warranty term, defective or otherwise not in accordance with the Contract Documents, the Installer shall repair that defect at no cost to the Owner. The Installer's warranty obligation shall run directly to the Owner, and a copy shall be sent to the manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Thermoplastic Polyvinyl Chloride (PVC) Membrane Roofing Materials:
   1. GAF; 80 mil: www.gaf.com
   2. Sika Corporation Roofing; Sarnafil PVC S327: usa.sarnafil.sika.com. - Basis of Design
   3. Carlisle Construction Materials Inc:www.carlislesytec.com
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ROOFING

A. Thermoplastic Membrane Roofing: One ply membrane, mechanically fastened, over insulation and minimum 1/4-inch DensDeck Roof Board.

B. Roofing Assembly Requirements:
   1. Solar Reflectance Index (SRI): 107 , minimum initial, calculated in accordance with ASTM C1549 .
      a. Three year aged solar reflectance index: 0.73
      b. Field applied coating may not be used to achieve specified SRI.
   2. Roof Covering External Fire Resistance Classification: UL (FRD) Class A per ESR-1157 system number 2.

C. Acceptable Insulation Types one or more layers:
   1. Polyisocyanurate or polystyrene or combination

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Basis of Design: Sarnafil S327 by Sika, Basis of Design

B. Location: All low slope roofs

C. A smooth type, polyester scrim reinforced PVC membrane for use as a single ply roofing membrane. Meets or exceeds the minimum requirements of ASTM D-4434, Type III. UL Listed, FM Approved.
   1. 10' x 80', each roll contains 800 sq. ft. of material weighing 422 lbs.
   2. Half sheet rolls are required to be used in the perimeter for mechanically attached systems.
   3. Color: White

D. Typical Physical Properties
   1. Reinforcing Material: Polyester
   2. Overall Thickness, min., inches (mm): 80 mil. per ASTM D751.
   3. Tensile Strength, min lbf (N): 64 (285) per ASTM D751

2.04 FLASHING MATERIAL AND ACCESSORIES

A. Flashing Material - Note: All Flashing touching thermoplastic roof system is to be provided as part of this specification by the roofing contractor.
   1. Wall/Curb Flashing
      a. Flashing membrane shall be of the same type and thickness as the roof membrane installed in accordance with manufacturer adhesive options.
         1) Thickness: 60 mil per ASTM D751 at vertical applications only not subject to foot traffic, otherwise thickness as specified above.
      b. PVC-Coated Flashing
         1) A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Flashing is a minimum 24-gauge, G90 galvanized metal sheet with a 20 mil (1 mm) unsupported membrane laminated on one side.
   2. Perimeter Edge Flashing

a. PVC-Coated Flashing
1) A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Flashing is a minimum 24-gauge, G90 galvanized metal sheet with a 20 mil (1 mm) unsupported membrane laminated on one side.

3. Miscellaneous Flashing
a. Pipe Flashing
1) A prefabricated vent pipe flashing made from 0.048-inch (48 mil/1.2 mm) thick membrane. Available in four (4) different sizes.
b. Corners
1) Prefabricated outside and inside flashing corners made of 0.060-inch (60 mil/1.5 mm) thick membrane that is heat-welded to membrane or clad base flashings.
c. Multi-Purpose Sealant
1) Use sealant as recommended by membrane manufacturer

2.05 INSULATION AND COVER BOARD

A. Insulation
1. Refer to Specification Section 07 2100 - Board and Batt Insulation
2. Rigid closed cell polyisocyanurate insulation board with fiber reinforced felt facers
a. Thickness: 1 1/2"

B. Cover Board
1. Basis of Design: Dens-Deck® Roof Board, mechanically fastened with the following characteristics:
a. Board Thickness: 1/4" minimum
b. Board Size: 4' x 8'
c. Minimum Compressive Strength: 80 psi
d. Thermal Resistance (LTTR value) of: >2.5

2.06 ADHESIVES, SEALANTS AND PRIMERS

A. As recommended by membrane manufacturer for compatibility with membrane material.

2.07 FASTENERS AND ASSOCIATED COMPONENTS

A. Insulation Plates: Used with various Fasteners to attach insulation boards to roof deck. Plate is a 3 inch square or round, 26 gauge stamping of SAE 1010 steel with an AZ 55 Galvalume coating.

B. Fastener #14: A #14 corrosion-resistant fastener used with Plates to attach insulation boards to steel or wood roof decks. Fastener #14 has a modified buttress thread, a shank diameter of approximately 0.190 inch and a thread diameter of approximately 0.214 inch (5 mm). The driving head has a diameter of approximately 0.245 inch with a #3 Phillips recess for positive engagement.

C. Fastener-XP: A #15, heavy-duty, corrosion-resistant fastener used with Plate to attach insulation or Stop and Bar to attach G410 roof membrane to steel or wood roof decks. Fastener-XP has a shank diameter of approximately 0.21 inch and the thread diameter is approximately

0.26 inch. The driving head has a diameter of approximately 0.435 inch with a #3 Phillips recess for positive engagement.

D. Stop: An extruded aluminum, low profile bar used with certain Fasteners to attach to the roof deck or to walls/curbs at terminations, penetrations and at incline changes of the substrate. Stop is a 1 inch wide, flat aluminum bar 1/8 inch thick that has predrilled holes every 6 inches on center.

E. Bar: An FM-approved, heavy-duty, 14 gauge, galvanized or stainless, roll-formed steel bar used to attach membrane to roof decks. The formed steel is pre-punched with holes every 1 inch on center to allow various Fastener spacing options.

2.08 MISCELLANEOUS RELATED MATERIALS

A. Aluminum Tape
   1. A 2-inch (50 mm) wide pressure-sensitive aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as a bond-breaker under the coverstrip at clad joints. As recommended by membrane manufacturer.

B. Sealing Tape Strip
   1. Compressible foam with pressure-sensitive adhesive on one side. Used with metal flashings as a preventive measure against air and wind blown moisture entry. As recommended by membrane manufacturer.

C. Multi-Purpose Tape
   1. A high performance sealant tape with used with metal flashings as a preventive measure against air and wind blown moisture entry. As recommended by membrane manufacturer.

D. Solvent
   1. A high quality solvent cleaner used for the general cleaning of residual asphalt, scuff marks, etc., from the membrane surface. Solvent is also used daily to clean seam areas prior to hot-air welding in tear off or dirty conditions or if the membrane is not welded the same day it is unrolled. As recommended by membrane manufacturer.

2.09 MISCELLANEOUS FASTENERS AND ANCHORS

A. All fasteners, anchors, nails, straps, bars, etc. shall be post-galvanized steel, aluminum or stainless steel. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. All concrete fasteners and anchors shall have a minimum embedment of 1¼ inch (32 mm) and shall be approved for such use by the fastener manufacturer. All miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch (25 mm) and shall be approved for such use by the fastener manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and reglets are in place.

3.02 PREPARATION - WOOD DECK

A. Verify flatness and tightness of joints in wood decking; fill knot holes with latex filler.

B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.03 INSTALLATION, GENERAL

A. Perform work in accordance with manufacturer's instructions, ICC Reports, and applicable requirements.

B. Do not apply roofing membrane during cold or wet weather conditions.

C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.04 INSULATION - UNDER MEMBRANE

A. Attachment of Insulation:
   1. Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions ESR-1157 Table 2 System 21.

B. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions ESR-1157 Table 2 System 21.

C. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer or as recommended by the manufacturer.

D. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

E. Do not install more insulation than can be covered with membrane in same day.

3.05 INSTALLATION - MEMBRANE

A. Install components in accordance with manufacturer's installation instructions and at locations indicated on drawings.

B. INSTALLATION - MEMBRANE
   1. Membrane installation shall be in accordane with ICC ESR-1157, Table 2, system 21 and manufacturer's requirements
   2. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
   3. Shingle joints on sloped substrate in direction of drainage.
   4. Mechanically fasten adhesion discs to substrate. Install adhesive to discs and bond membrane. Fully adhere one roll before proceeding to adjacent rolls.
   5. Overlap edges and ends and seal seams by heat welding, minimum 1.5 inches. Seal permanently waterproof in accodance with manufacturer's instructions.
   6. Mechanical Attachment: Install membrane and mechanical attachment devices in accordance with manufacturer's instructions.
   7. At intersections with vertical surfaces:
      a. Extend membrane up a minimum of 8 inches onto vertical surfaces.
      b. Fully adhere flexible flashing over membrane and up to nailing strips.
   8. Around roof penetrations, seal flanges and flashings with flexible flashing.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Provide daily on-site attendance of roofing and insulation manufacturer's representative during installation of this work.

C. General
   1. All seams shall be hot air welded. Seam overlaps should be as per manufacturer recommendation for the specified system and warranty.
   2. Welding equipment shall be provided by or approved by membrane manufacturer. All mechanics intending to use the equipment shall have successfully completed a training course provided by a manufacturer's technical representative prior to welding.
   3. All membrane to be welded shall be clean and dry.

D. Hand-Welding
   1. Hand-welded seams shall be completed in two stages as recommended by membrane manufacturer.

E. Machine Welding
   1. Machine welded seams are to be achieved by the use of membrane manufactuer's recommended automatic welding equipment. When using this equipment, manufactuter's instructions shall be followed and local codes for electric supply, grounding and over current protection observed.

F. Quality Control of Welded Seams
   1. The Applicator shall check all welded seams for continuity using a rounded screwdriver. On-site evaluation of welded seams shall be made daily by the Applicator to locations as directed by the Owner's Representative or membrane manufacturer's representative. One-inch (25 mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.

3.07 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

C. Repair or replace defaced or damaged finishes caused by work of this section.

3.08 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

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Section 07 6200
Sheet Metal Flashing and Trim

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, and exterior penetrations.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood nailers for sheet metal work.

B. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025.

C. ASTM B32 - Standard Specification for Solder Metal; 2020.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

F. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.

G. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

H. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2024).

I. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

J. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim:
1. ATAS International, Inc. : atas.com
2. Petersen Aluminum Corporation: www.pac-clad.com
3. Berridge Manufacturing Co.: berridge.com
4. McElroy Metals : www.mcelroymetal.com

B. Exterior Penetration Flashing Panel:
1. Quickflash Weatherproofing Products, Inc: www.quickflashproducts.com
2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SHEET MATERIALS

A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal.

B. Pre-Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper , 3005 alloy, H12 or H14 temper; 20 gauge, 0.032 inch thick; plain plain finish shop pre-coated with silicone modified polyester silicone modified polyester coating.

1. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.
2. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
3. Color: Roman Blue: To match district standard.

C. Note: Flashing directly contacting the thermoplastic roof membrane is to be flashed with clad metal by the roofing manufacture.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

G. Fabricate flashings to allow toe to extend 2 inches over roofing . Return and brake edges.

2.04 GUTTER FABRICATION

A. Gutters: SMACNA (ASMM) Rectangular profile.
1. Color: Roman Blu

B. Accessories: Profiled to suit gutters and downspouts.
1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
2. Gutter Supports: Brackets.im think
3. Downspout Supports: Brackets.

C. Downspout Boots: Plastic.

D. Seal metal joints.

2.05 FLASHING

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.06 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer Type: Zinc chromate.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Plastic Cement: ASTM D4586/D4586M, Type I, asbestos-free.

F. Screens: Tightly fitted screens to prevent the accumulation of leaves and debris in the gutter in accordance with CBC 705A.4

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

C. In the event of a discrepancy, immediately notify the Architect.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Gutters and exposed flashings to be prefinished aluminum.

B. Galvanized sheet metal flashings are only to be used in locations not exposed to view, such as pan flashings at windows.

C. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.

D. Apply plastic cement compound between metal flashings and felt flashings.

E. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

F. Secure gutters and downspouts in place with concealed fasteners.

G. Connect downspouts to downspout boots, and grout connection watertight.

END OF SECTION

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Section 07 9200
Joint Sealants

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

B. Section 07 4646 - Fiber Cement Siding: Sealants installed as part of installation

C. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

D. Section 09 3000 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

E. 32 1313 - Concrete Paving: Sealant at expansion joints

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

C. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.

B. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Bostik Inc: www.bostik-us.com.
3. Dow Corning Corporation: www.dowcorning.com/construction/sle.
4. Hilti, Inc: www.us.hilti.com/#sle.
5. Pecora Corporation: www.pecora.com.
6. Tremco Global Sealants: www.tremcosealants.com.
7. Sherwin-Williams Company: www.sherwin-williams.com.
8. Sika Corporation: www.usa-sika.com.
9. W.R. Meadows, Inc: www.wrmeadows.com/sle.

B. Self-Leveling Sealants:
1. Bostik Inc: www.bostik-us.com.
2. Dow Corning Corporation: www.dowcorning.com/construction/sle.
3. Pecora Corporation: www.pecora.com.
4. Tremco Global Sealants: www.tremcosealants.com.
5. Sika Corporation: www.usa-sika.com.
6. W.R. Meadows, Inc: www.wrmeadows.com/sle.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to:
   a. Wall expansion and control joints.
   b. Joints between different exposed materials.
   c. Expansion joints in paving.
   d. Other joints indicated below.
2. Do Not Seal:
   a. Intentional weep holes in masonry.
   b. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.

c. Joints where sealant installation is specified in other sections.

B. Exterior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
1. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.

C. Interior Joints: Use nonsag polyurethane polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Nonwet Areas: Acrylic emulsion latex Acrylic emulsion latex sealant.
2. Joints between Tile in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white white.
3. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.

D. Interior Wet Areas: restrooms; fixtures in wet areas include plumbing fixtures, countertops, and cabinets.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 6116.

B. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

C. Colors: As as selected by architect from manufacturer's full range

2.04 NONSAG JOINT SEALANTS

A. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: Match adjacent finished surfaces.

B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.

C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, nonstaining, nonbleeding, nonsagging; not intended for exterior use.
1. Color: Standard colors matching finished surfaces, Type OP (opaque).

2.05 SELF-LEVELING JOINT SEALANTS

A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
1. Movement Capability: Plus and minus 25 percent, minimum.

2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
3. Color: Gray.
4. Products:
   a. Pecora Corporation; Urexpan NR-200 and/or Dynatred: www.pecora.com.
   b. Sherwin-Williams Company; Loxon SL1 Polyurethane Self-Leveling Sealant: www.sherwin-williams.com.
   c. Sherwin-Williams Company; Loxon SL2 Polyurethane Self-Leveling Sealant: www.sherwin-williams.com.
   d. Sika Corporation; Sikaflex-1c SL: usa.sika.com/#sle.
   e. Sika Corporation; Sikaflex-2c SL: usa.sika.com/#sle.

2.06 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width, i.e., at low temperature in thermal cycle. Report failures immediately and repair them.

END OF SECTION

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Section 08 1113
Hollow Metal Doors and Frames

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Thermally insulated hollow metal doors with frames.

D. Accessories, including glazing, louvers, and matching panels.

1.02 RELATED REQUIREMENTS

A. Section 08 1416 - Wood Doors

B. Section 08 7100 - Door Hardware.

C. Section 08 8000 - Glazing: Glass for doors and borrowed lites.

D. Section 09 9113 - Exterior Painting: Field painting.bortro

E. Section 09 9123 - Interior Painting: Field painting.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. HMMA: Hollow Metal Manufacturers Association.

C. NAAMM: National Association of Architectural Metal Manufacturers.

D. NFPA: National Fire Protection Association.

E. SDI: Steel Door Institute.

F. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025.

G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2024.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

I. ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2022.

J. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2024.

K. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

L. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.

O. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2017.

P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

Q. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2019.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
2. Titan Metal Products, Inc: www.titanmetalproducts.com/#sle.
3. Curries Company; an Assa Abloy Group company.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
4. Door Edge Profile: Manufacturers standard for application indicated.
5. Typical Door Face Sheets: Flush.
6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
    a. Based on NAAMM HMMA Custom Guidelines: Provide at least A25/ZF75 (galvannealed) for interior applications, and at least A60/ZF180 (galvannealed) or G60/Z180 (galvanized) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

C. Frame Anchors: ASTM A879/A879M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
    1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M, hot-dip galvanized according to ASTM A153/A153M, Class B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

E. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.

2.03 HOLLOW METAL DOORS

A. Exterior Doors: Thermally insulated.
    1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
        a. Level 3 - Extra Heavy-duty.
        b. Physical Performance Level A 1 000 000 cycles; in accordance with ANSI/SDI A250.4.
        c. Model 1 - Full Flush.
        d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
        e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
    2. Core Material: Vertical steel stiffeners with fiberglass batts.
    3. Door Thermal Resistance: R-Value of 2.67 per ASTM C1363
    4. Door Thickness: 1-3/4 inches, nominal.
    5. Top Closures for Outswinging Doors: Flush with top of faces and edges.
    6. Weatherstripping: Refer to Section 08 7100.
    7. Door Finish: Factory primed and field finished.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Full profile/continuously welded type.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
   2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
   3. Weatherstripping: Separate, see Section 08 7100.
   4. Exterior doors shall have 1 inch deep exterior stucco flange with a minimum of 1 inch return flush with exterior wall.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
   1. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
   2. Frame Finish: Factory primed and field finished.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 ACCESSORIES

A. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

B. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

C. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Install door hardware as specified in Section 08 7100.

3.03 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.04 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

Section 08 1416
Wood Doors

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood doors with high pressure laminated faces

1.02 RELATED REQUIREMENTS

A. Section 08 1113 - Hollow Metal Doors and Frames. Steel frames for wood doors

B. Section 08 7100 - Door Hardware.

C. Section 08 8000 - Glazing.

D. Section 09 9123 - Interior Painting: Field finishing of doors.

1.03 REFERENCE STANDARDS

A. AAMA 1304; Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

D. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2022.

E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

F. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2021, with Errata (2022).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Obtain hardware templates from hardware manufacturer prior to starting fabrication.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Indicate door core and edge materials and construction; laminate, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

D. Samples: Submit two samples of door construction, 6 by 6 inches in size cut from top or bottom corner illustrating core and plastic laminate pattern and color.

E. Manufacturer's Installation Instructions: Indicate special installation instructions.

F. Warranty, executed in Owner's name.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.08 WARRANTY

A. Manufacturer Warranty: Provide manufacturer's warranty on interior doors for the life of the installation. Complete forms in District's name and register with manufacturer.
   1. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

B. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Western Oregon Door: www.oregondoor.com
   2. Eggers Industries: www.eggersindustries.com.
   3. Haley Brothers: www.haleybros.com.

4. Marshfield DoorSystems, Inc; Signature Series, extra heavy duty: www.marshfielddoors.com.
5. Algoma Hardwoods Inc.: www.algomahardwoods.com
6. VT Industries Inc.: www.vtindustries.com
7. Maiman Company, an Assa Abloy Company: www.assaabloywooddoors.com

2.02 DOOR

A. Doors: See drawings for locations and additional requirements.
   1. Quality Level: Custom Grade, Extra Heavy Duty performance, in accordance with WDMA I.S. 1A.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.
   2. Wood veneer facing with factory transparent finish.
   3. Construction: No added urea formaldehyde resins

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: Natural birch, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with slip match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face, four matches maximum per door.

2.05 ACCESSORIES

2.06 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other throughbolted hardware.

C. Where supplementary protective edge trim is required, install trim after veneer facing has been applied full-width.

D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

F. Provide edge clearances in accordance with the quality standard specified.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

END OF SECTION

Section 08 3100
Access Doors and Panels

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall-mounted access units.

B. See Division 22 and Plumbing drawings for additional access panels at plumbing fixtures.

C. See Division 23 and Mechanical drawings for additional access panels at HVAC units.

1.02 RELATED REQUIREMENTS

A. Section 09 9113 - Exterior Painting: Field paint finish.

B. Section 09 9123 - Interior Painting: Field paint finish.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

A. Wall-Mounted Units:
   1. Location: As indicated on drawings.
   2. Panel Material: Steel, hot-dipped zinc or zinc-aluminum-alloy coated.
   3. Size: 12 by 12 inches, or as indicated on the drawings.
   4. Door/Panel: Hinged, standard duty, with cylinder lock and no handle.
   5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.

B. Wall-Mounted Units in Wet Areas:
   1. Location: As indicated on drawings.
   2. Panel Material: Stainless steel.
   3. Size: 12 by 12 inches, or as indicated on the drawings.
   4. Door/Panel: Hinged, standard duty, with cylinder lock and no handle.
   5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.

2.02 WALL-MOUNTED ACCESS UNITS

A. Manufacturers:
   1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle.
   2. ACUDOR Products Inc; FW-5050-ACF: www.acudor.com/#sle.
   3. Karp Associates, Inc; -: www.karpinc.com.
   4. Milcor by Commercial Products Group of Hart & Cooley, Inc; -: www.milcorinc.com.

B. Wall-Mounted Units: Factory-fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
   1. Style: Exposed frame with door surface flush with frame surface.
   2. Door Style: Single thickness with rolled or turned in edges.
   3. Heavy-Duty Frames: 14-gauge, 0.0747-inch minimum thickness.
   4. Heavy-Duty Single Steel Sheet Door Panels: 14-gauge, 0.0747-inch minimum thickness.
   5. Steel Finish: Primed.
   6. Stainless Steel Finish: No.4 brushed finish.
   7. Hardware:
      a. Hinges for Non-Fire-Rated Units: Continuous piano hinge.
      b. Latch/Lock: Screw driver slot for quarter turn cam latch at doors within ceilings
      c. Latch/Lock: Cylinder lock operated cam latch, two keys for each unit at doors exposed to public.
         1) All units to be keyed alike.
      d. Number of Locks/Latches Required: As recommended by manufacturer for size of unit.
      e. Inside Latch Release: Mechanism that allows the panel to be opened from the inside where access door is intended for the passage of a person into an interior space.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.03 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

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Section 08 5313
Vinyl Windows

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Horizontal Sliding Windows

B. Picture Windows

C. Half Vent Below Windows

D. Operating hardware.

E. Insect screens.

1.02 RELATED REQUIREMENTS

A. Section 07 2500 - Weather Barriers: Sealing frames to water-resistive barrier installed on adjacent construction.

B. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

C. Section 08 8000 - Glazing

1.03 REFERENCE STANDARDS

A. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products; 2021.

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022.

B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

C. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).

D. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).

E. ASTM E1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation; 2022.

F. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2019c.

G. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2017.

H. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2020.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide manufacturer product data, component dimensions, anchors, fasteners, glass, and internal drainage.

C. Shop Drawings: Include window schedule, elevations, sections, details, opening dimensions, head, sill and jamb conditions, operable parts &direction/handing, framed opening tolerances, affected related work, and installation requirements.

D. Manufacturer's Certificate: Certify that products of this section meet or exceed specified requirements.

E. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
1. Evidence of AAMA Certification.
2. Evidence of WDMA Certification.
3. Evidence of CSA Certification.
4. Test report(s) by independent testing agency itemizing compliance.

F. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than 10 years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified, with minimum 5 years of documented experience.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide 10-year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for

degradation of vinyl color finish. Complete form in District's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Vinyl Windows:
   1. Milgard Tuscany Series, V400; Basis of design; www.milgard.com.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DESCRIPTION

A. Vinyl Windows: Factory-fabricated frame and sash members of extruded, hollow, ultraviolet-resistant, glass-fiber reinforced polyvinyl chloride (PVC) with integral color; with factory-installed glazing, hardware, related flashings, anchorage and attachment devices.
   1. Configuration: As indicated on drawings.
   2. Color: White.
   3. Exterior Color: As selected by Architect from manufacturer's full line of colors.
   4. Size to fit openings with minimum clearance around perimeter of assembly providing necessary space for perimeter seals.
   5. System Internal Drainage: Drain to exterior side by means of weep drainage network any water entering joints, condensation within glazing channel, or other migrating moisture within system.
   6. Glazing Stops, Trim, Flashings, and Accessory Pieces: Formed of rigid PVC, fitting tightly into frame assembly.
   7. Insect Screens: Tight fitting for operating sash location.

2.03 PERFORMANCE REQUIREMENTS

A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
   1. Performance Class (PC): R.
   2. Performance Grade (PG): 15, with minimum design pressure (DP) of 15.0 psf.

B. Overall Thermal Transmittance (U-value): 0.18, maximum, including glazing, measured on window sizes required for this project.

C. Acoustic Performance: Minimum outdoor-indoor transmission class (OITC) rating of 25, when tested in accordance with ASTM E90 and ASTM E1332.

2.04 COMPONENTS

A. Horizontal Slider - V400 Series, block frame
   1. Frame: 3-1/4" minimum depth

B. Insect Screens: Aluminum, extruded or roll-formed frame with mitered and reinforced corners; apply screen mesh taut to frame; secure to window with hardware to allow easy removal.

1. Hardware: Manufacturer's standard; quantity as required per screen.
2. Screen Mesh: Vinyl-coated fiberglass, window manufacturer's 18 x 16 mesh.
3. Frame Finish: Manufacturer's standard, color to match window frame and sash color.

2.05 HARDWARE

A. Horizontal Sliding Sash: Rigid PVC interfacing tracks with dual brass wheel and stainless steel axle assembly housing, provide two sets for each operating sash and opening stops in head and sill track as required.

B. Finish of Exposed Hardware: Baked enamel, match interior sash and frame color.

C. Window shall be operable with one hand and shall not require tight grasping, pinshing, or twisting of the wrist, and force required to activate shall be 5 lbs. max.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify wall openings and adjoining water-resistive barrier seal materials are ready to receive this work.

3.02 INSTALLATION

A. Install window unit assemblies in accordance with manufacturers instructions and applicable building codes.

B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities as necessary.

C. Align window plumb and level, free of warp or twist, and maintain dimensional tolerances and alignment with adjacent work.

D. Set sill members and sill flashing in continuous bead of sealant.

E. Install glass and infill panels in accordance with glazing method required to achieve performance criteria; see Section 08 8000 - Glazing.

3.03 TOLERANCES

A. Maximum Variation from Level or Plumb: 0.06 inches every 3 ft non-cumulative or 0.5 inches per 100 ft, whichever is less.

3.04 FIELD QUALITY CONTROL

A. Provide services of vinyl window manufacturer's field representative to observe for proper installation of system and submit report.

B. See Section 01 4000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.

C. Provide field testing of installed vinyl windows by independent laboratory in accordance with AAMA 502 and AAMA/WDMA/CSA 101/I.S.2/A440 during construction process and before installation of interior finishes.
   1. Conduct tests on individual windows prior to 5 percent and 50 percent completion of this work.
   2. Field test for water penetration in accordance with ASTM E1105 using Procedure B - cyclic static air pressure difference; test pressure shall not be less than 1.9 psf.
   3. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 6.27 psf.

D. Repair or replace fenestration components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 ADJUSTING

A. Adjust hardware for smooth operation and secure weathertight closure.

3.06 CLEANING

A. See Section 01 7419 - Construction Waste Management and Disposal for additional requirements.

B. Remove protective material from pre-finished surfaces.

C. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean including interior and exterior face of glass.

END OF SECTION

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Section 08 7100
Door Hardware

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood and hollow metal doors.

B. Thresholds.

C. Weatherstripping, seals and door gaskets.

1.02 RELATED REQUIREMENTS

A. Section 07 9200: Joint Sealants; applicable to threshold installation

B. Section 08 1113 - Hollow Metal Doors and Frames.

C. Section 08 1416 - Wood Doors.

1.03 REFERENCE STANDARDS

A. AWI – Architectural Woodwork Institute, Architectural Woodwork Standards, current edition

B. BHMA (CPD) - Certified Products Directory; Current Edition.

C. BHMA A156.1 - Standard for Butts and Hinges; 2021.

D. BHMA A156.3 - Exit Devices; 2020.

E. BHMA A156.6 - Standard for Architectural Door Trim; 2021.

F. BHMA A156.18 - Materials and Finishes; 2020.

G. BHMA A156.21 - Thresholds; 2019.

H. BHMA A156.22 - Standard for Gasketing; 2021.

I. DHI – Door and Hardware Institute

J. CBC Chapter 11B - California Building Code - Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing; 2022.

K. WHI – Warnock Hersey as Incorporated State of California Building Code

1.04 ADMINISTRATIVE REQUIREMENTS

A. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

1.05 SUBMITTALS

A. See 01 3300 - Submittals, for submittal procedures.

B. See Section 01 2500 - Substitutions for proceedures for substitutions. Materials in this section are based on District standards. Substitutions shall be considered only for those items which are not listed as "No Substitutions". A copy of the District's standard is available for review to the contractor at the cost of printing, handling and shipping.

C. Hardware Schedule: Organize vertically formatted schedule into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Minimum 10pt font size. Include following information:
   1. Type, style, function, size, quantity and finish of hardware items.
   2. Use BHMA A156.1 Finish codes.
   3. Name, part number and manufacturer of each item.
   4. Fastenings and other pertinent information.
   5. Location of hardware set coordinated with floor plans and door schedule.
   6. Explanation of abbreviations, symbols, and codes contained in schedule.
   7. Mounting locations for hardware.
   8. Door and frame sizes, materials and degrees of swing.
   9. List of manufacturers used and their nearest representative with address and phone number.
   10. Catalog cuts.

D. Bid and submit manufacturer’s updated/improved item if scheduled item is discontinued.

E. Deviations: Highlight, encircle or otherwise identify deviations from “Schedule of Finish Hardware” on submittal with notations clearly designating those portions as deviating from this section.

F. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, note the discrepancy in the submittal and request direction from Architect for resolution.

G. Substitutions per 01 2500 - Substitutions. Include product data and indicate benefit to the Project. Furnish operating samples on request.

H. Items listed with no substitute manufacturers have been requested by Owner to meet existing standard.

I. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, riser and point-to-point wiring diagrams, manufacturers’ installation, adjustment and maintenance information, and supplier’s final inspection report.

J. Keying Schedule: Submit for approval of District.

K. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in District's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Qualifications:
   1. Hardware supplier shall be a direct factory contract supplier who has in his employment a certified hardware consultant (AHC or DHC) who is available at all reasonable times during the course of the Work for project hardware consultation to the Owner, Architect, and Contractor.

B. Hardware to be free of defects, belemishes and excessive play. Obtain each kind of hardware (latch and lock sets, exit devices, hinges, and closers) from one manufacturer.

C. Exit Doors: Operable at all times from the inside without the use of a key or any special knowledge or effort.

D. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions and code requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery**:** coordinate delivery to appropriate locations (shop or field).
   1. Permanent keys and cores: secured delivery direct to Owner's representative.

B. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.08 PROJECT CONDITIONS AND COORDINATION

A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect’s approval.

B. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents. Furnish related trades with the following information:
   1. Location of embedded and attached items to concrete.
   2. Location of wall-mounted hardware, including wall stops.
   3. Location of finish floor materials and floor-mounted hardware.
   4. At masonry construction, coordinate with the anchoring and hollow metal supplier prior to frame installation by placing a strip of insulation, wood, or foam, on the back of the hollow metal frame behind the rabbet section for continuous hinges, as well as at rim

panic hardware strike locations, silencers, coordinators, and door closer arm locations. When the frame is grouted in place, the backing will allow drilling and tapping without dulling or breaking the installer's bits.

5. Coordinate: flush top rails of doors at outswinging exteriors, and throughout where adhesive-mounted seals occur.
6. Manufacturers' templates to door and frame fabricators.

C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.

D. Environmental considerations: segregate unused recyclable paper and paper product packaging, uninstalled metals, and plastics, and have these sent to a recycling center. Refer to 01 7419 - Construction Waste Management and Disposal

1.09 WARRANTY

A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties.

B. Include factory order numbers with close-out documents to validate warranty information, required for Owner in making future warranty claims:

C. Minimum warranties:

1.	Locksets:	Three years.
2.	Extra Heavy Duty Cylindrical Lock:	Seven years
3.	Exit Devices:	Three years mechanical
4.	Closers:	Thirty years mechanical
5.	Hinges:	One year
6.	All other Hardware:	Two years.

1.10 COMMISSIONING

A. Conduct these tests prior to request for certificate of substantial completion:
1. With installer present, test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation. Specifically verify postive latching, maxium operating force, and time to close in addition to general operation.

1.11 REGULATORY REQUIREMENTS

A. Locate latching hardware between 34 inches to 44 inches above the finished floor, perCBC Chapter 11B - 404.2.7.
1. Panic hardware: locate between 36 inches to 44 inches above the finished floor.

B. Handles, pull, latches, locks, other operable parts:
1. Readily openable from egress side with one hand and without tight grasping, tight pinching, or twisting of the wrist to operate. CBC Section 11B-309.4.

2. Force required to activate the operable parts: 5.0 pounds maximum, per CBC Section 11B-309.4.

C. Adjust doors to open with not more than 5.0-pounds pressure to open at exterior doors and 5.0-pounds at interior doors. As allowed per CBC Section 11B-404.2.9, authority having jurisdition may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15-pounds.
   1. Exception: exterior doors' pressure-to-open may be increased to 8.5-pounds if: at a single location, and one of a bank of eight leafs or fraction of eight, and one leaf of this bank is fitted with a low- or high-energy operator.

D. Adjust door closer sweep periods so that from an open position of 90 degrees, the door will take at least 5 seconds to move to a point 12 degrees from the latch, measured to the landing side of the door, per CBC Section 11B-404.2.7.
   1. Spring hinges: adjust for 1.5 seconds minimum for 70 degrees to fully-closed.

E. Smooth surfaces at bottom 10 inches of push sides of doors, facilitating push-open with wheelchair footrests, per CBC Section 11B-404.2.10.
   1. Applied kickplates and armor plates: bevel the left and right edges; free of sharp or abrasive edges.
   2. Tempered glass doors without stiles: bottom rail may be less than 10 inches if top leading edge is tapered 60 degrees minimum.

F. Door opening clear width no less than 32 inches, measured from face of frame stop, or edge of inactive leaf of pair of doors, to door face with door opened to 90 degrees. Hardware projection not a factor in clear width if located above 34 inches and below 80 inches, and the hardware projects no more than 4 inches. CBC Section 11B-404.2.3.
   1. Exception: doors not requiring full passage through the opening, that is, to spaces less than 24 inches in depth, may have the clear opening width reduced to 20 inches. Example: shallow closets.
   2. Door closers and overhead stops: not less than 78 inches above the finished floor or ground, per CBC 11B-307.4.

G. Thresholds: floor or landing no more than 0.50 inches below the top of the threshold of the doorway, per CBC Section 11B-404.2.5. Vertical rise no more than 0.25 inches, change in level between 0.25 inches and 0.50 inches: beveled to slope no greater than 1:2 (50 percent slope). CBC Section 11B-303.2 & ~.3.

H. Floor stops: Do not locate in path of travel. Locate no more than 4 inches from walls

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Listed acceptable alternate manufacturers:

ITEM:	MANUFACTURER:	ACCEPTABLE ALTERNATE:

Hinges	(IVE) Ives	Hagar, Bommer, McKinney, Stanley
Key System	(SCH) Schlage	Sargent
Mechanical Locks	(SCH) Schlage	Sargent
Exit Devices	(VON) Von Duprin	Sargent
Closers	(LCN) LCN	Owner standard
Push & Pull Plates	(IVE) Ives	Trimco
Vandal Pulls	(TRI) Trimco	Owner standard
Kickplates	(IVE) Ives	Trimco
Stops & Holders	(IVE) Ives	Trimco
Thresholds	(PEM) Pemko	Zero
Seals & Bottoms	(ZER) Zero	NGP, Reese, Pemko

2.02 LOCKS AND LATCHES

A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
   1. If no hardware set is indicated for a swinging door provide an office lockset.
   2. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
   3. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.

2.03 HINGES

A. Drawings typically depict doors at 90 degrees. Doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.

B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.

C. Conventional Hinges: Steel or stainless steel pins and approved bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.
   1. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins and security studs.
   2. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.

D. Continuous Hinges:
   1. Geared-type aluminum.
      a. Use wide-throw units where needed for maximum degree of swing, advise architect if commonly available hinges are insufficient.

b. If units are used at storefront openings, color-coordinate hinge finish with storefront color. Custom anodizing and custom powdercoat finishes subject to Architect approval.

2. Pinned steel/stainless steel type: continuous stainless steel, 0.25-inch diameter stainless-steel hinge pin.
   a. Use engineered application-specific wide-throw units as needed to provide maximum swing degree of swing, advise architect if required width exceeds 8 inches.

E. Hinges: Provide hinges on every swinging door.
1. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
2. Provide ball-bearing hinges at all doors having closers.
3. Provide hinges in the quantities indicated.
4. Provide non-removable pins on exterior outswinging doors.

2.04 PUSH/PULLS

A. Push/Pulls: Comply with BHMA A156.6.
1. Provide push and pull on doors not specified to have lockset, latchset, exit device, or auxiliary lock.

2.05 MORTISE LOCKSETS

A. Motise Locksets and Latchsets as scheduled:
1. Chassis: cold-rolled steel, handing field-changeable without disassembly.
2. Universal lock case - 10 functions in one case.
3. Floating mounting tabs automatically adjusts to fit a beveled door edge.
4. Latchbolts: 0.75 inch throw stainless steel anti-friction type.
5. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable.
   a. Spindles: security design independent breakaway. Breakage of outside lever does not allow access to inside lever's hubworks to gain wrongful entry.
   b. Inside lever applied by screwless shank mounting - no exposed trim mount screws.
   c. Levers rotate up or down for ease of use.
6. Furnish solid cylinder collars with wave springs. Wall of collar to cover rim of mortise cylinder.
7. Turnpieces: accessible offset turn-lever design not requiring pinching or twisting motions to operate.
8. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
9. Scheduled Lock Series and Design: Schlage L series, 06N design.
10. Certifications:
    a. ANSI A156.13, 1994, Grade 1 Operational.
    b. ANSI/ASTM F476-84 Grade 31 UL Listed.
11. Accessibility: Require not more than 5lb. to retract the latchbolt or deadbolt, or both, per CBC 11B-404.2.7 and 11B-309.4.

B. District Standard: No substitutions

2.06 EXIT DEVICES

A. General features:
   1. Independent lab-tested 1,000,000 cycles.
   2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
   3. Deadlocking latchbolts, 0.75 inch projection.
   4. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
   5. No exposed screws to show through glass doors.
   6. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
   7. Releasable in normal operation with 15-pound maximum operating force per UBC Standard 10-4, and with 32-pound maximum pressure under 250-pound load to the door.
   8. Accessibility: Require not more than 5 lb to retract the latchbolt, per CBC 11B-404.2.7 and 11B-309.4.
      a. Mechanical method: Von Duprin "AX-" feature, where touchpad directly retracts the latchbolt with 5 lb or less of force. Provide testing lab certification confirming that the mechanical device is independent third-party tested to meet this 5 lb requirement.

B. Specific features:
   1. Non-Fire Rated Devices: cylinder dogging with security indicator.
   2. Lever Trim: breakaway type, forged brass or bronze escutcheon min. 0.130 inch thickness, compression spring drive, match lockset lever design.

C. Owner Standard: No substitutions.

2.07 CLOSERS

A. Surface Closers:
   1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
   2. ISO 2000 certified. Units stamped with date-of-manufacture code.
   3. Independent lab-tested 10,000,000 cycles.
   4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
   5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
   6. Adjust doors to open with not more than 5.0-pounds pressure to open at exterior doors and 5.0-pounds at interior doors. As allowed per CBC Section 11B-404.2.9, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15-pounds.
   7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action as scheduled. Closing speed shall be such that it must take at least 5 seconds for the door to move from the 90-degree position to a point 12 degrees from closed position.
   8. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.

9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
10. Exterior doors: seasonal adjustments not required for temperatures from 120 degrees F to -30 degrees F, furnish checking fluid data on request.
11. Non-flaming fluid, will not fuel door or floor covering fires.
12. Pressure Relief Valves (PRV) not permitted.
13.

B. District Standard: No substitutions

2.08 OTHER HARDWARE

A. Kickplate: Provide on push side of every door with closer
   1. Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

B. Door Stops: Provide stops to protect walls, casework or other hardware.
   1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used provide wall type. If neither can be used, provide overhead type.

C. Gaskets: Complying with BHMA A156.22.
   1. On each exterior door, provide weatherstripping gaskets, unless otherwise indicated; Four-fingered type at head and jambs; inelastic, rigid back, not subject to stretching. Self-compensating for warp, thermal bow, door settling, and out-of-plumb. Adhesive wrranted for life of installation.
   2. On each exterior door, provide door bottom sweep, unless otherwise indicated.

D. Thresholds: Complying with BHMA A156.21 and CBC Chapter 11B-404.2.5
   1. At each exterior door, provide a threshold unless otherwise indicated.
   2. Field cut threshold to frame for tight fit.
   3. Saddle thresholds: 0.125 inches minimum thickness.
   4. Exteriors: Seal perimeter to exclude water and vermin. Use sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Minimum 0.25 inch diameter fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors. National Guard Products' "COMBO" or Pemko Manufacturing's "FHSL".
   5. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

2.09 FINISH

A. Generally to be BHMA 626 Satin Chromium.
   1. Areas using BHMA 626 shall have push, pulls and kick plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.

B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

2.10 KEYING REQUIREMENTS

A. Keying of cylinder locks shall be coordinated with the Owner. Contact the District for keying requirements. Keying system shall be approved by District's representative and Architect in writing. All locks to be IC core and supplied with construction cores that will be returned to the vendor at the completion of the project, and after the permanent cores have been installed in all the locks.
   1. Key system shall be Schlage “Everest GP Primus” core cylinder system.
   2. Key blanks available only from factory-direct sources, not available from after-market keyblank manufacturers.
   3. All keys to be stamped with "Do Not Duplicate" as well as the keying symbol.
   4. Initiate and conduct meeting(s) with Owner and I-R Security Technologies representatives to determine system keyway(s). Furnish Owner’s written approval of the system; do not order keys or cylinders without written confirmation of actual requirements from the Owner.

B. Locks shall be keyed at the factory of the lock manufacturer where permanent records are maintained.

C. Permanent keys and cylinder cores shall be delivered only to District's representative.
   1. For estimate: 3 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.
   2. For estimate: VKC stamping plus “DO NOT DUPLICATE”.

D. Keying schedule: Submit three (three) copies of separate detailed schedule indicating clearly how the District's final instructions on keying of locks has been fulfilled.

E. Supply a factory master key bitting sheet from the manufacturer delivered directly from the manufacturer to the District's representative.

PART 3 EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. Can read and understand manufacturers’ templates, suppliers’ hardware schedule and printed installation instructions. Can readily distinguish drywall screws from manufacturers’ furnished fasteners. Available to meet with manufacturers’ representatives and related trades to discuss installation of hardware.

3.02 EXAMINATION

A. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.

3.03 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
   1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps
   2. Use templates and fasteners provided by hardware item manufacturer

C. Mounting heights for hardware from finished floor to center line of hardware item. As indicated in the following list; unless noted otherwise in Door Hardware Sets Schedule or on the drawings.
   1. Locksets: 38 inch.
   2. Push/Pulls: 40 inch.
   3. Dead Locks: 44 inch.
   4. Exit Devices: 40 inch.

D. Set exterior door thresholds with full-width bead of elastomeric sealant on each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

E. Locate floor stops no more than 4 inches from walls and not within paths of travel. See paragraph above regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.

F. Drill pilot holes for fasteners in wood doors and/or frames.

3.04 ADJUSTING

A. Adjust hardware for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

B. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

A. Clean adjacent surfaces soiled by hardware installation. Clean finished hardware per manufacturer's instructions after final adjustments has been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 SCHEDULE OF FINISH HARDWARE

A. See Door Schedule in drawings for hardware set assignments.

B. Do not order material until submittal has been reviewed, stamped, and signed by Architect's door hardware consultant.

C. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

END OF SECTION

Schedule:

Door Numbers	Hw Set#
301A	01
301B	02
302A	02
302B	02
303	03
304	04
306	05
307	06

Opt. #: OPT0441666-V1

HARDWARE GROUP NO. 01
Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW SH 4.5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-NL-OP-110MD		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX XQ11-948 36-083		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR910 NL SNB		630	IVE
1	EA	SURFACE CLOSER	4111 AVB SHCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA AS REQ'D		AA	ZER
1	SET	GASKETING	429AA-S		AA	ZER
1	EA	DOOR SWEEP	8192AA		AA	ZER
1	EA	THRESHOLD	103A-223 OR AS DETAILED		A	ZER

HARDWARE GROUP NO. 02
Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW SH 4.5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-NL-OP-110MD		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX XQ11-948 36-083		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR910 NL SNB		630	IVE
1	EA	SURFACE CLOSER	4111 AVB EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	FLOOR STOP/HOLDER	FS40/41/42/43 AS REQ'D		626	IVE
1	EA	RAIN DRIP	142AA AS REQ'D		AA	ZER
1	SET	GASKETING	429AA-S		AA	ZER
1	EA	DOOR SWEEP	8192AA		AA	ZER
1	EA	THRESHOLD	103A-223 OR AS DETAILED		A	ZER

HARDWARE GROUP NO. 03
Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW SH 4.5 X 4.5 NRP		630	IVE
1	EA	FACULTY RESTROOM/HOTEL	L9485T 06A L583-363		626	SCH
1	EA	FSIC CORE	30-120		626	SCH
1	EA	LOCK GUARD	LG12		630	IVE
1	EA	SURFACE CLOSER	4111 AVB SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA AS REQ'D		AA	ZER
1	SET	GASKETING	429AA-S		AA	ZER
1	EA	DOOR SWEEP	8192AA		AA	ZER
1	EA	THRESHOLD	547A-223 OR AS DETAILED		A	ZER

HARDWARE GROUP NO. 04
Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	PRIVACY LOCK	L9040 06A L583-363		626	SCH
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	SET	GASKETING	429AA-S		AA	ZER

HARDWARE GROUP NO. 05
Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1HW SH 4.5 X 4.5 NRP		630	IVE
1	EA	STOREROOM LOCK	L9080T LLL 06A L283-150		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR900 SNB		630	IVE
1	EA	SURFACE CLOSER	4111 AVB EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	FLOOR STOP/HOLDER	FS40/41/42/43 AS REQ'D		626	IVE
1	EA	RAIN DRIP	142AA AS REQ'D		AA	ZER
1	SET	GASKETING	429AA-S		AA	ZER
1	EA	DOOR SWEEP	8192AA		AA	ZER
1	EA	THRESHOLD	103A-223 OR AS DETAILED		A	ZER

HARDWARE GROUP NO. 06
Provide each SGL door(s) with the following:

1	EA	GATE CLOSER	MAMMOTH180		689	LOX
1	EA	PANIC HARDWARE	OUT-PA-AX-98-NL-OP-110MD-WH		630	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX XQ11-948 36-083		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	WELD-IN LOCK BX	K-BXED-V990NL-2		600	KEE
1	EA	DOOR PULL	VR910 NL SNB		630	IVE
1	EA	CLOSER BRACKET KIT	CLB-MAMMOTH		689	LOX
	SET	NOTE	REMAINDER OF HARDWARE BY GATE MANUFACTURER/SUPPLIER			B/O

END OF SECTION

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Section 08 8000
Glazing

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing units.

C. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 08 5313 - Vinyl Windows: Glazing provided by window manufacturer.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).

E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

G. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

H. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.

I. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

J. GANA (GM) - GANA Glazing Manual; 2022.

K. GANA (SM) - GANA Sealant Manual; 2008.

L. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2020.

M. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2020.

N. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data on Insulating Glass Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 12 by 12 inch in size of glass units.

E. Certificate: Certify that products of this section meet or exceed specified requirements.

F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM) for glazing installation methods.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.06 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from

normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
1. Warranty Period: 10 years.

C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
1. Warranty Period: 10 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
1. Guardian Industries Corp: www.sunguardglass.com.
2. Pilkington North America Inc: www.pilkington.com/na.
3. PPG Industries, Inc; Basis of Design: www.ppgideascapes.com.
4. Oldcastle Building Envelope: www.obe.com

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
2. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7.
3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
4. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
1. In conjunction with weather barrier related materials described in other sections, as follows:

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.

2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
   1. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
   2. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
   1. Glass: Any of the manufacturers specified for float glass.
   2. Fabricator certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.

B. Insulating Glass Units: Types as indicated.
   1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
   2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
   3. Spacer Color: Black.
   4. Edge Seal:
      a. Color: Black.
   5. Purge interpane space with dry air, hermetically sealed.

C. Type IG-1 - Insulating Glass Units: Vision glass, double glazed safety glazing.
   1. Applications: Exterior glazing unless otherwise indicated.
   2. Space between lites filled with air.
   3. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
      a. Tint: Graylite II, semi-reflective
      b. Coating: Self-cleaning type, on #1 surface.
      c. Coating: Low-E (solar control type), Solarban 67 on #2 surface.
   4. Inboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
   5. Total Thickness: 1 inch.
   6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.29, maximum.
   7. Visible Light Transmittance (VLT): .05, nominal.
   8. Solar Heat Gain Coefficient (SHGC): .12, maximum.
   9. Glazing Method: Dry glazing method, gasket glazing.

2.05 ACCESSORIES

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

D. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

F. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

G. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

C. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry immediately before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

Section 09 0561
Common Work Results for Flooring Preparation

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.

B. Preparation of new concrete floor slabs for installation of floor coverings.

C. Testing of concrete floor slabs for moisture and alkalinity (pH).

D. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs at no cost to the Owner unless testing agency's report indicates that failure to meet specified moisture or alkalinity levels is due to a condition not under Contractor's control.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.

B. Section 09 0562 - Remedial Floor Coating

1.03 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

B. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

C. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Site Meeting: Testing Agency, Owner, Architect and Contractor shall meet 30 days prior to flooring installation to discuss testing requirements, specifications and locations prior to testing.

B. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.05 INDEPENDENT TESTING AGENCIES

A. Approved Testing Agencies:
   1. Dennis Czarnecki of Independent Floor Testing & Inspection, Inc.; Concord, CA: (800) 490-3657 x 234 office, (510) 414-5312 cell.
   2. Ed Vincent, Santa Maria, CA: (805) 925-7845 office, (805) 878-1352 cell

B. Other as approved by the architect

1.06 SUBMITTALS

A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

B. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Submit report directly to District.
   7. Submit report not more than two business days after conclusion of testing.

C. Adhesive Bond and Compatibility Test Report.

1.07 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.

C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

D. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.
   5. Notify District when specified ambient conditions have been achieved and when testing will start.

E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Keep materials from freezing.

1.09 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Remedial Floor Coating: Refer to Section 09 0562 - Remedial Floor Coating

B. Moisture Test, ASTM F 1869 Test kit:
   1. Non-recycled anhydrous calcium chloride at 94% purity.
   2. Dome with self adhesive butyl sealant.
   3. Calcium chloride container:
      a. Content weight limited to 16 grams +/- 1 gram.
      b. Dimensions: 69 mm +/- 1 mm diameter with 16 mm +/- 1 mm height.
   4. Products:
      a. American Moisture Test, Inc. www.DomeTest.com (866) 670-9700.
      b. Sinak.
      c. Or equal.

C. Gram Scale: Calibrated to 0.1 grams as specified by ASTM

D. Alkalinity Test, ASTM F 710 Meter:
   1. Digital wide range 1-14 pH meter.
   2. Waterproof flat tip.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.

B. Perform following operations in the order indicated:
   1. Preliminary cleaning.
   2. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
      a. Perform all gram scale weights on site.
      b. Expose dome for 60 to 72 hours.
      c. Report results as pounds of emission.
      d. Mark each test location by marker for future identification.
   3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
      a. Apply manufacture solution to form a 1 inch diameter circle directly to interior of moisture dome.
      b. Allow to absorb into concrete for 1 minute.
      c. Expose flat tip pH meter to solution and allow to calculate.
   5. Specified remediation, if required.
   6. Patching, smoothing, and leveling, as required.
   7. Other preparation specified.
   8. Adhesive bond and compatibility test.
   9. Protection.

3.02 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.03 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.04 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.05 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

END OF SECTION

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Section 09 2116
Gypsum Board Assemblies

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cementitious backing board.

B. Gypsum wallboard.

C. Joint treatment and accessories.

D. Textured finish system.

E. Acoustic (sound-dampening) wall and ceiling board.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry.

B. Section 07 2100 - Board and Batt Insulation

C. Section 07 9200 - Joint Sealants

D. Section 09 3000 - Tiling

1.03 REFERENCE STANDARDS

A. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

D. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2024.

E. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

F. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

G. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2024.

H. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022, with Editorial Revision (2023).

I. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.

J. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

K. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

L. ASTM E413 - Classification for Rating Sound Insulation; 2022.

M. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 3 years of experience.

PART 2 PRODUCTS

2.01 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Georgia-Pacific Gypsum: www.gpgypsum.com.
   3. National Gypsum Company: www.nationalgypsum.com.
   4. USG Corporation: www.usg.com.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required within 10 feet of a sink and other plumbing fixtures and within at least 2 feet around and perpendicular to exterior door openings.
   3. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 5/8 inch.

C. Backing Board For Wet Areas:
   1. Application: Surfaces behind tile in wet areas including full length of walls in toilet rooms and vestibule where plumbing fixtures are mounted..
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.

D. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
   1. Application: Walls and ceilings at toilet rooms and vestibule where there is no plumbing fixture mounted..
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Regular Board Thickness: 5/8 inch.
   4. Edges: Tapered.
   5. Products:
      a. American Gypsum Company; M-Bloc: www.americangypsum.com/#sle.
      b. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
      c. Georgia-Pacific Gypsum; ToughRock Mold-Guard Gypsum Board: www.gpgypsum.com/#sle.
      d. Georgia-Pacific Gypsum; DensShield Tile Backer.
      e. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.

E. Acoustical Sound Dampening Wall and Ceiling Board: Two layers of heavy paper-faced, high-density gypsum board separated by a viscoelastic polymer layer and capable of achieving STC rating of 50 or more in typical stud wall assemblies as calculated in accordance with ASTM E413 and when tested in accordance with ASTM E90.
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place continuous bead at perimeter of each layer of gypsum board.

C. Caulking for Sound Control: Insulate construction with caulk as indicated on Drawings. In additon, caulk penetrations at conduit, pipes, ducts, registers, etc., so that such openings are sealed tight against passage of airborne sound.

1. Holes smaller than 1" but too large to cauld shall be packed with glass fiber, sealed over with 1/16 inch thick sheet lead and then cauled airtight.
2. Seal the back of electrical boxes in sound insulated construction airtight using specified resilient sealer pads.
3. Conceal caulking and sealing where possible; where caulking must remain exposed, use skinning type material and neatly tool.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

D. Cementitious Backing Board: Install over wood framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

E. Installation on Wood Framing: For nonrated assemblies, install as follows:
   1. Single-Layer Applications: Screw attachment.

F. Installation over concrete curbs: adhesive application

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Corner Beads: Install at external corners, using longest practical lengths.

B. Edge Trim: Install at exposed edges and ends and at untrimmed joints lwhere gypsum board abuts dissimilar materials. Where edge trim is required at wallboard edget, and headers, studs, still or other backing are not available for positive fastening of trim, apply trim to board with contact type adhesive..

C. Moisture Guard Trim: Install on bottom edge of gypsum board according to manufacturer's instructions and in locations indicated on drawings.

3.05 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.06 CLEANING

A. Do not allow the accumulation of scraps and debris arising from the work of this Section but maintain the premises in a neat and orderly condition. In the event of spilling or splashing compound onto other surfaces, immediately remove the spilled or splashed material and trace residue to the approval of the Architect.

END OF SECTION

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Section 09 2236
Lath

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal lath for cement and gypsum plaster.

1.02 RELATED REQUIREMENTS

A. Section 07 2500 - Weather Barriers: Water-resistive barrier under exterior plaster and stucco.

B. Section 08 3100 - Access Doors and Panels: Product requirements for metal access panels integral with metal lath.

C. Section 09 2400 - Cement Plastering.

1.03 REFERENCE STANDARDS

A. ASTM A641 - Standard Specification for Zinc–Coated (Galvanized) Carbon Steel Wire

B. ASTM C847 - Standard Specification for Metal Lath; 2018 (Reapproved 2024).

C. ASTM C933 - Standard Specification for Welded Wire Lath; 2018.

D. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

E. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

F. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster; 2023.

1.04 SUBMITTALS

A. Product Data: Provide data on furring and lathing components, structural characteristics, material limitations, and finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with specifications, provide products as manufactured by one of the following
   1. Metal Lath and Accessories:
      a. Alabama Metal Industries Corporationwww.amico-lath.com.
      b. Cemcowww.cemcosteel.com. (Basis of Design)
      c. Clarkwestern Dietrich Building Systems LLCwww.clarkdietrich.com.
      d. Fry Reglet: fryreglet.com

2.02 LATH

A. All lath must be recognized by a current evaluation report issued by ICC ES.

B. Diamond Mesh Metal Lath: ASTM C847, galvanized; self-furring, paper backed.
   1. Weight: 3.4 lb/sq yd.

C. Ribbed Metal Lath: ASTM C847, galvanized; 3/8 inch thick, paper backed.
   1. Weight: 3.4 lb/sq yd.

D. Welded Wire Lath: ASTM C933; galvanized per ASTM A641/A641M; with 1 1/2 inch by 1 1/2 inch openings
   1. 17 gauge wire
   2. Self furring depth: 3/16 inch minimum
   3. Self furring spacing: 3 inches on center

E. Strip Mesh: Expanded metal lath, same weight as diamond mesh lath, 4 inch wide by 24 inch long; galvanized.

F. Beads, Screeds, Joint Accessories, and Other Trim: Depth governed by plaster thickness, and maximum possible lengths.
   1. Material: Aluminum, 6063 T5 alloy, clear anodized
   2. Casing Beads with Weep Holes: Square edges.
   3. Corner Beads: Straight corners.
      a. Products:
         1) Clark Dietrich; Wire Corner Reinforcement.
         2) Clark Dietrich; V Truss Corner Reinforcing.
         3) Cemco; Cemcorner.
      b. Galvanized wire
   4. Base Screeds: Bevelled edges.
      a. Products:
      b. 7/8 inch ground
      c. 26 ga.
      d. Galvanized
      e. 3 1/2 inch minimum vertical attachment flange
   5. Reveal Joints: One piece with vertical sides.

a. Size: Width varies, 1 inch and 3 inch, see architectural elevations for locations.
b. Material: 6063 T5 aluminum
c. Color: Clear annodized
d. Product: Fry Reglet, PA.1

2.03 ACCESS PANELS

A. Anchorage: Tie wire, nails, and other metal supports, of type and size to suit application; to rigidly secure materials in place, galvanized and conforming with ASTM C-1063

B. Line Wire: 18 gauge steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that the substrate to apply the metal lath framing is free of gaps, protrusions or other foreign objects that would impair the integrity of the stucco membrane. If stucco system will be applied over wood sheathing, verify the sheathing has a 1/8" gap on all edges of every sheet. Do not begin work unless this condition exists.

B. Do not begin until unacceptable conditions have been corrected.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION - GENERAL

A. Install lath and furring for Portland cement plaster in accordance with the ESR for submitted product and according to manufacturer's recommendations.

3.03 CONTROL AND EXPANSION JOINT INSTALLATION

A. Control Joint Spacing: 8 feet on center vertically, horizontally and otherwise as indicated on drawings..

3.04 LATH INSTALLATION

A. Apply metal lath as per ICC report and as indicated below.

B. Apply lath taut, with long dimension perpendicular to supports.

C. Lap ends minimum 2 inch. Secure end laps with tie wire where they occur between supports.

D. Continuously reinforce internal angles with corner mesh, except where the metal lath returns 3 inches from corner to form the angle reinforcement; fasten at perimeter edges only.

E. Place corner bead at external wall corners; fasten at outer edges of lath only.

F. Place base screeds at termination of plaster areas; secure rigidly in place.

G. Place 4 inch wide strips of lath centered over junctions of dissimilar backing materials, and secure rigidly in place.

H. Place lath vertically above each top corner and each side of door frames to 6 inches above ceiling line.

I. Place casing beads at terminations of plaster finish. Butt and align ends. Secure rigidly in place.

J. Place additional strip mesh diagonally at corners of lathed openings. Secure rigidly in place.

K. Weep Screeds: The #7 FHA flange shall be installed over the first layer on substrate and under the second layer of Grade D paper, running the paper down the 3.5" flange.

L. Horizontal lath: Horizontal lath shall be either flat ribbed metal lath or alternate product complying with ASTM C 847
   1. Structa Wire VTruss Walls & Ceiling, ESR 2017 is an approved alternate

END OF SECTION

Section 09 2400
Cement Plastering

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cement plastering.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood stud framing for plaster.

B. Section 07 9200 - Joint Sealants

C. Section 09 2236 - Lath: Lath, furring, beads, screeds, and joint accessories for plaster base.

D. Section 09 9113 - Exterior Painting.

1.03 REFERENCE STANDARDS

A. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

B. ASTM C897 - Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters; 2015 (Reapproved 2020).

C. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster; 2023a.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittals procedures.

B. Product Data: Provide data on plaster materials and trim accessories.

C. Samples:
1. Submit two samples, 24 by 24 inch in size illustrating finish color and texture.
(Note texture and color sample may be applied to gypsum board or cement backer board)

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.06 MOCK-UPS

A. Construct mock-up of exterior wall, 8 feet long by 8 feet wide, illustrating surface finish.
   1. Locate where directed.
   2. Mock-up may remain as part of this work.

1.07 FIELD CONDITIONS

A. Exterior Plaster Work: Do not apply plaster when substrate or ambient air temperature is 40 degrees F or lower, or when temperature is expected to drop below 40 degrees F within 48 hours of application.

PART 2 PRODUCTS

2.01 CEMENT PLASTER APPLICATIONS

A. Lath Plaster Base: Metal lath.
   1. Plaster Type: Factory prepared plaster mix.
   2. Number of Coats: Three.
   3. First Coat: Apply to a nominal thickness of 3/8 inch.
   4. Second Coat: Apply to a nominal thickness of 3/8 inch.
   5. Finish Coat: Apply to a nominal thickness of 1/8 inch.
      a. Texture: Sand fine.
   6. Finish: Acrylic.

2.02 FACTORY PREPARED CEMENT PLASTER

A. Exterior Portland cement plaster system made of scratch and brown base coat, leveling coat with reinforcing mesh, and acrylic finish coat; install in accordance with ASTM C926.

B. Premixed Textured Coating: Polymer modified acrylic coating, integrally colored, and trowel applied to substrates prepared in accordance with manufacturer's written installation instructions.
   1. Color: As indicated on drawings, or to match district standard exterior paint color "Sawyers Fence".
   2. Manufacturers:
      a. Parex USA Inc; AquaSol Swirl Fine: www.parex.com
      b. Sto Corp; Powerflex Fine: www.stocorp.com

2.03 ACCESSORIES

A. Lath: See Section 09 2236.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are properly in place.

3.02 MIXING

A. Mix only as much plaster as can be used prior to initial set.

B. Mix materials dry, to uniform color and consistency, before adding water.

C. Protect mixtures from frost or freezing temperatures, contamination, and excessive evaporation.

3.03 APPLICATION

A. Apply plaster in accordance with manufacturer's written instructions and comply with ASTM C926.

B. Base Coats:
   1. Apply base coat(s) to fully embed lath and to specified thickness.
   2. Follow guidelines in ASTM C926 and manufacturer's written installation instructions for moist curing base coats and application of subsequent coats.

C. Leveling Coat:
   1. Apply leveling coat to specified thickness.
   2. Fully embed reinforcing mesh in leveling coat.

D. Finish Coats:
   1. Cement Plaster or Acrylic Plaster:
      a. Apply with sufficient material and pressure to ensure complete coverage of base to specified thickness.
      b. Apply desired surface texture while mix is still workable.

3.04 TOLERANCES

A. Maximum Variation from True Flatness: 1/4 inch in 10 feet.

3.05 REPAIR

A. Patching: Remove loose, damaged or defective plaster and replace with plaster of same composition; finish to match surrounding area.

END OF SECTION

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Section 09 3000
Tiling

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Cementitious backer board as tile substrate.

D. Ceramic trim.

1.02 RELATED REQUIREMENTS

A. Section 03 5400 - Cast Underlayment: Hydraulic and cementitious underlayments where required by TCNA (HB) or TCNA (HB-GP) method specified.

B. Section 07 9200 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

C. Section 09 2116 - Gypsum Board Assemblies for cementitious backer board

D. Section 10 2813 Toilet Accessories

1.03 REFERENCE STANDARDS

A. ANSI A108/A118/A136.1 - Specifications for the Installation of Ceramic Tile; 2020.
   1. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.
   2. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.
   3. ANSI A118.1 - American National Standard Specifications for Dry-Set Cement Mortar; 2019.
   4. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.
   5. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation; 2019.
   6. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2019.

B. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2024.

C. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2023.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

D. Samples: Submit tile and grout samples for each type, color and/or pattern selected.
1. Mount tile and apply grout on rigid panel, minimum 12" by 12" inches in size illustrating pattern, color variations, and grout joint size variations.
2. Each type of edge trim and accessory, 6" long, in each color.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements for slip resistance.

F. Installer's qualification statement.
1. Submit documentation of National Tile Contractors Association (NTCA) or Tile Contractors' Association of America (TCAA) accreditation; www.tile-assn.com/#sle

1.06 QUALITY ASSURANCE

A. Installer Qualifications:
1. Company specializing in performing tile installation, with minimum of five years of documented experience.

PART 2 PRODUCTS

2.01 FLOOR TILE

A. All tile used for flooring, both interior and exterior, shall comply with ANSI A326.3 with a minimum dynamic coefficient of friction of 0.42 and to be slip-resistant.

2.02 TILE

A. Manufacturers: All products by the same manufacturer.

1. American Olean Corporation: www.americanolean.com/#sle.
2. Dal-Tile Corporation; Basis of Design: www.daltile.com/#sle.
3. Emser Tile, LLC: www.emser.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Porcelain Mosaic Tile: ANSI A137.1 standard grade.
1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
2. Size: 2 by 2 inch, nominal.
3. Shape: Square.
4. Edges: Square.
5. Surface Finish: Unglazed.
6. Products:
    a. Dal-Tile Corporation; Keystones Colorbody Porcelain: www.daltile.com/#sle.

C. Glazed Wall Tile: ANSI A137.1 standard grade.
1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
2. Edges: Cushioned.
3. Size: As indicated on drawings .
4. Surface Finish: High gloss.
5. Color(s): As indicated on drawings.
6. Pattern: As indicated on drawings.
7. Trim Units: Matching cove and cove base corner shapes in sizes indicated.
8. Products:
    a. Dal-Tile Corporation; Color Wheel Classic: www.daltile.com/#sle.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same manufacturer.

B. Manufacturers:
1. Custom Building Products: www.custombuildingproducts.com/#sle.
2. LATICRETE International, Inc: www.laticrete.com/#sle.
3. MAPEI Corporation; Basis of design; www.mapei.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

C. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
1. Products:
    a. MAPEI Corporation; Ultraflex 2 polymer-modified thinset mortar.

D. Mortar Bed Materials: Pre-packaged mix of Portland cement, sand, and water.
1. Products:
    a. MAPEI Corporation; Mapecem Premix mortar.

2.04 GROUTS

A. Provide setting and grout materials from same manufacturer.

B. Manufacturers:

1. Custom Building Products: www.custombuildingproducts.com/#sle.
2. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
3. MAPEI Corporation; www.mapei.com MAPEI Corporation; Basis of design; www.mapei.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

C. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Applications: Use where indicated on drawings and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color: As selected by Architect from manufacturer's full line.
4. Products:
   a. MAPEI Corporation; Keracolor S premixed sanded grout at floors.
   b. MAPEI Corporation; Keracolor U premixed un-sanded grout at walls.

2.05 THICK-BED MATERIALS

2.06 ACCESSORY MATERIALS

A. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 5/8 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
1. Products:
   a. As specified in Section 09 2116..

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive tile.

B. Verify wall surfaces are smooth and flat within tolerances specified for that type of work, are dust-free, and are ready to receive tile.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to feather edge.

3.03 INSTALLATION - GENERAL

A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) recommendations.

B. Lay tile with full tile starting at back wall. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Allow for installation of thresholds where indicated.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep control and expansion joints free of mortar, grout, and adhesive.

I. Keep expansion joints free of adhesive or grout. Apply sealant to joints.

J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

K. Grout tile joints unless otherwise indicated on drawings. Use standard grout unless otherwise indicated on drawings.

L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

M. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - MORTAR BED METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F114, unless otherwise indicated on drawings.
   1. Where epoxy or furan grout is indicated on drawings, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F114, with waterproofing membrane.

B. Mortar Bed Thickness: 1 1/2 inch min. inches, unless otherwise indicated on drawings.

3.05 INSTALLATION - WALL TILE

A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

3.06 CLEANING

A. Clean tile and grout surfaces.

END OF SECTION

Section 09 5100
Acoustical Ceilings

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 08 6223 - Tubular Skylights

B. Section 23 0013 - General Mechanical Requirements: Air diffusers in ceiling

C. Section 26 5100 - Interior Lighting

D. Section 28 3100 - Fire Alarm and Detection Systems

1.03 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.

D. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2022.

E. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

F. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2024.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide data on suspension system components and acoustical units.

C. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

D. Samples: Submit two samples each, 6 inches long, of suspension system main runner, cross runner, and perimeter molding.

E. Maintenance Materials: Furnish the following for District's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: 80 sq ft of each type and size.

1.06 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

B. Before installing canopies, permit them to reach room temperature and a stabilized moisture content.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. USG Corporation: www.usg.com.

B. Suspension Systems:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. USG Corporation: www.usg.com/ceilings/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category D, E, or F and complying with the following:
   1. DSA IR 25-2: suspended Lay-In Panel Ceiling: Current edition
   2. ICC-ES Evaluation Report No. ESR-1308 Armstrong.

2.03 ACOUSTICAL UNITS

A. Manufacturers:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. USG; Product Radar High-NRC / High-CAC (Basis of design): www.usg.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

B. Acoustical Panels: Painted mineral fiber, with the following characteristics:
   1. Classification: ASTM E1264 Type A.
   2. Size: 24 by 48 inches as depicted on Drawings.
   3. Thickness: 3/4 inch.
   4. Light Reflectance: 82 percent, determined in accordance with ASTM E1264.
   5. NRC Range: .70, determined in accordance with ASTM E1264.
   6. Ceiling Attenuation Class (CAC): 40, determined in accordance with ASTM E1264.
   7. Panel Edge: Square.
   8. Color: White.
   9. Suspension System: Exposed
   10. Products:
      a. USG Corporation; Radar Education Acoustical Panels: www.usg.com/ceilings/#sle.

2.04 SUSPENSION SYSTEMS

A. Manufacturers:
   1. Armstrong World Industries, Inc: www.armstrong.com, basis of design.
   2. USG: www.usg.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

B. Exposed Suspension System: Hot-dip galvanized steel grid and cap.
   1. Application(s): Seismic.Category D.
   2. Structural Classification: Heavy-duty, when tested in accordance with ASTM C635/C635M.
   3. Profile: Tee; 15/16 inch face width.
   4. Finish: Baked enamel.
   5. Color: White.
   6. Products:
      a. Armstrong World Industries, Inc; Prelude XL Grid: (Basis of Deisgn) www.armstrongceilings.com/#sle.
      b. USG Corporation; Donn Brand DX/DXL 15/16 inch Acoustical Suspension System: www.usg.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.05 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.

D. Perimeter Seismic Clips: Armstrong "BERC2" beam end retaining clip, or equal, and in accordance with ICC-ES Report ESR-1308.

E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions, as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Locate system on room axis according to reflected plan.

D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.

E. Seismic Suspension System, Seismic Design Categories D, E, F: Hang suspension system with grid ends attached to the perimeter molding on two adjacent walls; on opposite walls, maintain a 3/4 inch clearance between grid ends and wall.

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

I. Do not eccentrically load system or induce rotation of runners.

J. Form expansion joints per approved details. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

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Section 09 6500
Resilient Flooring

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient base.

B. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

B. Section 09 2116 - Gypsum Board Assemblies.

C. Section 09 6813 - Tile Carpeting.

1.03 REFERENCE STANDARDS

A. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.

B. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; 2002.

C. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

1.05 FIELD CONDITIONS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; style as scheduled.
   1. Manufacturers:
      a. Burke Flooring: www.burkeflooring.com/#sle.
      b. Johnsonite, a Tarkett Company: www.johnsonite.com/#sle.
      c. Flexco; Base 2000; www.flexcofloors.com (Basis of design).
   2. Height: 4 inches.
   3. Thickness: 0.125 inch.
   4. Color: As indicated on drawings.
   5. Accessories: Premolded external corners and internal corners.

2.02 ACCESSORIES

A. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
   1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of the South Coast Air Quality Management District Rule No.1168 and the Bay Area Air Quality Management District Regulation 8, Rule 51.

B. Adhesive for Rubber Flooring:
   1. As recommended by manufacturer..

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.02 PREPARATION

A. Prepare substrates as recommended by resilient floor base manufacturers.

B. Remove substrate ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of substrate conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

3.04 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.05 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.06 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

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Section 09 6519
Resilient Tile Flooring

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09 0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 REFERENCE STANDARDS

A. ASTM E492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine; 2022.

B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2025.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns, and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

D. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum ____ ten years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity, and run numbers.

B. Store all materials off the floor in an acclimatized, weathertight space .

C. Do not double stack pallets.

1.07 FIELD CONDITIONS

A. Acclimate material at jobsite between 65 to 85 degrees F and 35 percent to 85 percent relative humidity for 48 hours prior to installation. Temperature and relative humidity should also be maintained at the same levels during installation, and after installation.

B. Spread unopened cartons no more than 6 cartons high and at least 4 inches apart.

C. Keep away from heating and cooling ducts and direct sunlight.

D. If permanent HVAC is not operational, temporary means should be used to maintain the recommended temperature and relative humidity levels.

E. Close areas to traffic during installation of flooring and accessories.

1.08 WARRANTY

A. See 01 7800 - Closeout Submittals , for additional warranty requirements.

B. 15-Year Limited Commercial Material Warranty. Coverage includes:
   1. Materials replacement for the entire duration of warranty including but not limited
      a. Wear out
   2. Joint failure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Shaw Contract; www.shawcontract.com (basis of design)

B. Or approved equal

2.02 RESILIENT TILE FLOORING

A. Luxury Vinyl Tile
   1. Product: Shaw Contract: In Unison 2.5
   2. Color: Smoky Oak 91516 - to match district standard
   3. Tile Size: 9 inch x 36 inch
   4. Wear Layer Thickness: 20 mil (0.51mm)

5. Total Thickness: 0.098 inch (2.5mm)
6. Edge: Squared
7. Installation Pattern: Ashlar (1/2 running bond) to be verified by Architect and District

2.03 INSTALLATION ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
   1. VOC Content Limits: As specified in Section 01 6116.
   2. As recommended by manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Install flooring and accessories after other operations (including painting) have been completed.

B. Acceptance of Conditions: Carefully examine all installation areas with installer/applicator present, for compliance with requirements affecting work performance.

C. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

D. Test substrates as required by manufacturer to verify proper conditions exist.

E. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Obtain instructions if test results are not within limits recommended by resilient flooring and adhesive material manufacturers.

F. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 09 0561.

B. Flooring installation should not begin until all site conditions have been assessed, testing has been completed and subfloor conditions have been approved.

C. Subfloor preparation must comply with ASTM F710 for the installation of Resilient Flooring and in strict accordance with manufacturer

D. The subfloor must be smooth, level, free from undulations, clean and dust-free.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Fit joints and butt seams tightly.
   2. Set flooring in place; press with heavy roller to attain full adhesion.

D. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

E. Install flooring under cabinets with out doors.

3.04 INSTALLATION - TILE

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

B. Lay tile with joints parallel to building lines to produce symmetrical pattern.

C. Install square tile to ashlar pattern. Allow minimum 1/2 full-size tile width at room or area perimeter.

D. Install loose-laid tile; fit interlocking edges tightly.

3.05 CLEANING

A. Remove excess adhesive from floor and wall surfaces without damage.

B. Clean, seal, and wax in accordance with manufacturer's written instructions.

3.06 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

Section 09 6813
Tile Carpeting

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED REQUIREMENTS

A. Section 01 7419 - Construction Waste Management and Disposal: Reclamation/Recycling of new carpet tile scrap.

B. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.

C. Section 09 0561 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

A. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2016 (Reapproved 2021).

B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2025.

C. ASTM E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials; 2021a, with Editorial Revision.

D. CRI 104 - Standard for Installation of Commercial Carpet; 2015.

E. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

D. Accessory Samples: Submit two 6 inch long samples of edge strip.

E. Maintenance Materials: Furnish the following for District's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting - Field:
   1. Mannington Commercial: www.manningtoncommercial.com#sle.
   2. District Standard - No Substitutions.

2.02 MATERIALS

A. All carpet tile shall be compliant with the provisions of CAL Title 24 P2 Chapter 11B-302.2 Carpet.
   1. Carpet tile shall be securely attached and shall have a firm cushion, pad, or backing, or no cushion or pad.
   2. Carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture.
   3. Pile height shall be 1/2 inch maximum.
   4. Exposed edges of carpet shall be fastened to floor surfaces, and shall have trim on the entire length of the exposed edge.
   5. Carpet trim shall comply with CBC 11B-303.

B. Tile Carpeting, Type CPT-1: Tufted, manufactured in one color dye lot.
   1. Product: Dispatch manufactured by Mannington Commercial.
   2. Tile Size: 24 by 24 inch, nominal.
   3. Pile Thickness: 0.083 inch.
   4. Color: Haptics.
   5. Flammability: Class I when tested in accordance with ASTM E648 or NFPA 253.
   6. Smoke: < 450 when tested in accordance with ASTM E662 NBS smoke chamber.

7. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
8. Gage: 5/64 inch.
9. Stitches: 9.67 per inch.
10. Construction: Textured patterned loop
11. Face Fiber: Type 6, 6 Nylon
12. Pile Weight: 21 oz/sq yd.
13. Treatment: Tiles to be treated with soil protective treatment and antimicrobal treatment.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Rubber, color as selected by Architect.

C. Adhesives:
1. Compatible with materials being adhered; maximum VOC content of 50 g/L; CRI (GLP) certified.

D. Carpet Tile Adhesive:
1. As recommended by carpet tile manufacturer[<>].

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
1. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction alternating to next unit, set parallel to building lines.

F. Trim carpet tile neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

Section 09 9113
Exterior Painting

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Exposed steel surfaces such as structural steel elements
   2. Exposed galvanized metal surfaces such as sheet metal flashing, vents, and trim.
   3. Roof accessories and exposed elements on the roof
   4. Exposed edge of slab or curb

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, copper, and lead.
   6. Floors, unless specifically indicated.
   7. Glass.
   8. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 07 4646 Fiber Cement Siding

B. Section 09 2400 - Portland Cement Plastering

C. Section 09 9123 - Interior Painting.

D. Section 32 1723 - Pavement Markings: Painted pavement markings.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2023.

D. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

F. South Coast Air Quality Management District (SCAQMD) Rule 1113.

G. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

H. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

I. SSPC-SP 13/NACE No.6 - Surface Preparation of Concrete; 2018.

1.05 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").

B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.

C. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience and approved by manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.09 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace paint that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer.

B. Paints:
   1. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Substitutions: Specified products are a District standard - no substitutions

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each paint material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      b. Architectural coatings VOC limits of California.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Colors: As indicated on drawings.
   1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to District.
   2. Extend colors to surface edges; colors may change at any edge as directed by Architect.

2.03 EXTERIOR SCHEDULE - NEW CONSTRUCTION

A. Concrete and plaster:
   1. 1st Coat: Loxon Exterior Acrylic Masonry Primer A24W8300
   2. 2nd Coat: Super-Paint Exterior Acrylic Satin Enamel A89W1151 Series
   3. 3rd Coat: Super-Paint Exterior Acrylic Satin Enamel A89W1151 Series

B. Concrete - curbing:
   1. 1st Coat: Pro-Park Waterborne Traffic Marking Paint B97 Series
   2. 2nd Coat: Pro-Park Waterborne Traffic Marking Paint B97 Series

C. Wood - fascia, eaves and trim:
   1. 1st Coat: Pro-Block Int/Ext Acrylic Primer B51W620 Series
   2. 2nd Coat: Super-Paint Exterior Acrylic Satin Enamel A89W1151 Series
   3. 3rd Coat: Super-Paint Exterior Acrylic Satin Enamel A89W1151 Series

D. Fiber Cement - soffit and trim:
   1. 1st Coat: Pro-Block Int/Ext Acrylic Primer B51W620 Series
   2. 2nd Coat: Super-Paint Exterior Acrylic Satin Enamel A89W1151 Series
   3. 3rd Coat: Super-Paint Exterior Acrylic Satin Enamel A89W1151 Series

E. Galvanized Metal - gutter, downspouts, flashing, exposed decking and conduit, and miscellaneous galvanized accessories:
   1. Pretreatment: Jasco Metal Prep & Primer
   2. 1st Coat: Pro-Cryl Universal Acrylic Metal Primer B66W310 Series
   3. 2nd Coat: Sher-Cryl HPA Acrylic Semi-Gloss Coating B66W351 Series
   4. 3rd Coat: Sher-Cryl HPA Acrylic Semi-Gloss Coating B66W351 Series

F. Ferrous Metal - doors & frames, structural steel, steel fascia, and miscellaneous ferrous metal:
   1. 1st Coat: Shop applied primer
   2. 2nd Coat: Pro-Cryl Universal Acrylic Metal Primer B66W310 Series
   3. 3rd Coat: Sher-Cryl HPA Acrylic Semi-Gloss Coating B66W351 Series
   4. 4th Coat: Sher-Cryl HPA Acrylic Semi-Gloss Coating B66W351 Series

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Exterior Plaster and Stucco: 12 percent.
   2. Fiber Cement Siding: 12 percent.
   3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Clean surfaces with pressurized water. Use pressure range of 1,500 to 4,000 psi at 6 to 12 inches. Allow to dry.
   3. Repair any spalling or cracking. Allow sufficient time for repairs to cure before painting.
   4. Clean concrete according to ASTM D4258. Allow to dry.
   5. Prepare surface as recommended by top coat manufacturer and in accordance with SSPC-SP 13/NACE No.6.

H. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

I. Exterior Plaster: Fill hairline cracks, small holes, and imperfections with exterior patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

J. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

K. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

L. All surfaces exhibiting mold/mildew shall be treated with a solution of bleach and water. Mix 3 parts clean water with 1 part bleach and apply to effected surfaces. Allow solution to remain on surface for 15 minutes prior to rinsing with clean water.

M. All surfaces to receive paint and all surfaces with the bleach solution shall be pressure washed with a minimum of 2400 psi to remove all loose and peeling paint, mold, mildew, loose/flaky rust, dirt, chalk and any other surface contamination.

N. Any loose and peeling paint, rust and other surface contamination shall be removed with hand or power tool cleaning to a tightly adherent paint film or rusty surface.

O. Glossy surfaces, such as gutters, downspouts, doors, door frames and windows shall be sanded to remove gloss prior to priming.

P. Reset any loose nails at all wood fascia/trim areas.

Q. Spot prime rusty nail heads with Rust Destroyer aerosol rust-inhibiting primer prior to priming/finish coating.

R. Remove all failed sealant and recaulk using NP1 Sealant - exterior application only.

S. Follow all manufacturers' written instructions on application, application temperatures and re-coat times.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.

E. Mask off and paint metal access doors and other trim located within or adjacent to other surfaces with appropriate paint per schedule above.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect adjacent surfaces not being painted.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

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Section 09 9123
Interior Painting

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Prime surfaces to receive wall coverings.
   3. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
   6. Floors, unless specifically indicated.
   7. Ceramic and other tiles.
   8. Glass.
   9. Acoustical materials, unless specifically indicated.
   10. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 08 1416 - Wood Doors

C. Section 09 9113 - Exterior Painting.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

1.05 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. Cross-reference to specified paint system products to be used in project; include description of each system.

B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.
   3. Allow 30 days for approval process, after receipt of complete samples by Architect.
   4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as factory finished metals and wood cabinets, have been approved.

C. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer.

B. Paints:
1. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Substitutions: Specified products are District standard - no substitutions.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
3. Supply each paint material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: See Section 01 6116.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: As indicated on drawings.

1. Allow for minimum of two colors for each system, unless otherwise indicated, without additional cost to District.
2. Extend colors and sheens to surface edges; colors may change at any edge as directed by Architect.
3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 INTERIOR SCHEDULE - NEW CONSTRUCTION

A. Drywall - walls & ceilings - all areas:
   1. 1st Coat: Pro Mar 200 VOC Interior Acrylic Primer B28W2600.
   2. 2nd Coat: Pro Mar 200 0 VOC Interior Acrylic Semi-Gloss Enamel B31W2651 Series.
   3. 3rd Coat: Pro Mar 200 0 VOC Interior Acrylic Semi-Gloss Enamel B31W2651 Series.

B. Ferrous Metal - doors & frames and miscellaneous ferrous metal:
   1. 1st Coat: Shop applied primer.
   2. 2nd Coat: Pro-Cryl Universal Acrylic Metal Primer B66W310 Series.
   3. 3rd Coat: Sher-Cryl HPA Acrylic Semi-Gloss Coating B66W351 Series.
   4. 4th Coat: Sher-Cryl HPA Acrylic Semi-Gloss Coating B66W351 Series.

C. Galvanized metal - only paint metal 8' and above:
   1. Pretreatment: Jasco Metal Prep & Primer.
   2. 1st Coat: Pro-Cryl Universal Acrylic Metal Primer B66W310 Series.
   3. 2nd Coat: Sher-Cryl HPA Acrylic Semi-Gloss Coating B66W351 Series.
   4. 3rd Coat: Sher-Cyrl HPA Acrylic Semi-Gloss Coating B66W351 Series.

D. Concrete:
   1. 1st Coat: Loxon Int/Ext Acrylic Masonry Primer A24W8300.
   2. 2nd Coat: Pro Mar 200 0 VOC Interior Acrylic Semi-Gloss Enamel B31W2651 Series.
   3. 3rd Coat: Pro Mar 200 0 VOC Interior Acrylic Semi-Gloss Enamel B31W2651 Series.

E. Concrete - floors at utility closets:
   1. 1st Coat: Macropoxy 646 Fast Cure Epoxy B58W610/B58V600 Series.
   2. 2nd Coat: Macropoxy 646 Fast Cure Epoxy B58W610/b58V600 Series.

F. Wood - paint-grade:
   1. 1st Coat: Premium Interior Acrylic Wall & Wood Primer B28W8111.
   2. 2nd Coat: Pro Classic Interior Acrylic Semi-Gloss Enamel B31W1151 Series.
   3. 3rd Coat: Pro Classic Interior Acrylic Semi-Gloss Enamel B31W1151 Series.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been adequately prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

F. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

G. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

H. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

G. Sand wood and metal surfaces lightly between coats to achieve required finish.

H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

END OF SECTION

Section 10 1100
Visual Display Units

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Porcelain enamel steel markerboards.

B. Tackable wall panels.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Blocking and supports.

B. Section 09 2116 - Gypsum Board Assemblies: Concealed supports in metal stud walls.

C. Section 09 9000 - Painting and Coatings

1.03 REFERENCE STANDARDS

A. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

B. ANSI A208.1 - American National Standard for Particleboard; 2022.

C. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling; 2018.

D. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2022.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

F. ASTM F793/F793M - Standard Classification of Wall Coverings by Use Characteristics; 2015.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide manufacturer's data on porcelain enamel steel markerboard, tackboard, tackboard surface covering, trim, and accessories.

C. Samples: Color charts for selection of color and texture of tackboard, tackboard surface covering, and trim.

D. Samples: Two, 6" by 6" in size illustrating materials and finish, color and texture of tackboard, tackboard surfacing, and trim.

E. Test Reports: Show compliance to specified surface burning characteristics requirements.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide five year warranty for chalkboard and markerboard to include warranty against discoloration due to cleaning, crazing or cracking, and staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Claridge Products and Equipment, Inc; "LCS3 Porcelain"; "Tack Walls";: www.claridgeproducts.com/#sle.

B. Polyvision Corporation; "e3 Ceramicsteel": www.polyvision.com/#sle.

C. ASI Visual Display Products; "ASI Porcelain": www. asi-visualdisplayproducts.com

D. Chatfield-Clarke Co.; "Vinyl Tackboard Panels": www. chatfieldclarke.com

E. G&S Acoustics "Tackable Wall Panels TW": www.gsacoustics.com/

2.02 VISUAL DISPLAY UNITS

A. Porcelain Enamel Steel Markerboards:
1. Color: White.
2. Steel Face Sheet Thickness: 24 gauge, 0.0239 inch .
3. Core: Particleboard, manufacturer's standard thickness, laminated to face sheet.
4. Backing: Aluminum foil, laminated to core.
5. Height: 48 inches.
6. Length: 8 feet, in one piece.
7. Frame Finish: Anodized, natural.
8. Accessories: Provide marker tray and map rail.

B. Tackable Wall Panels: Fabric laminated to fiberboard; Factory-fabricated.
1. Fabric: Vinyl-coated fabric.
2. Color, Pattern, and Texture: As selected from manufacturer's full range.
3. Backing: Fiber board, 1/2 inch thick, laminated to tack surface.
4. Surface Burning Characteristics: Flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.
5. Panel Width: 48 inches.
6. Edge Treatment: Square edge unless detailed otherwise.
7. Edge Molding: Provide metal "J-mold" type edge trim for exposed edges at door and window openings and similar conditions.

8. Adhesives: Provide manufacturer's recommended adhesive, primer, and sealer, produced for use on substrate shown on drawings. Provide materials which are mildew-resistant and non staining to wallcovering.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

3.02 INSTALLATION

A. Install boards in accordance with manufacturer's instructions.

B. Secure units level and plumb.

C. Butt Joints: Install with tight hairline joints.

D. Carefully cut holes in boards for thermostats, wall switches, and other device requiring penetrations through wall.

E. Install tackable wall panels in accordance with manufacturer's recommendations on specified substrates with concealed attachments.
   1. Locate joints where indicated on drawin
   2. Re-wrap top, bottom or side edges for cutting panels around door or window openings, abutting trim, protruding objects, and at other openings, including x-cut at receptacles, light switches, and other openings.
      a. Wrap minimum 2 inches around back of panel.
      b. Carefully cut fiber board, leaving vinyl wallcovering intact. Wrap wallcovering tightly around edge of board and adhere continuously around back of panel with manufacturer's recommended vinyl wallcovering adhesive.

3.03 CLEANING

A. Clean board surfaces in accordance with manufacturer's instructions.

B. Cover with protective cover, taped to frame.

C. Remove temporary protective cover at Date of Substantial Completion.

END OF SECTION

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Section 10 1400
Signage

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Room identification signs

B. Restroom door signs

C. Building identification signs.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry

1.03 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. CBC Chapter 11B - California Building Code - Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing; 2022.

D. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

E. NFPA 170 - Standard for Fire Safety and Emergency Symbols; 2021.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Shop Drawings and Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
   1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
   2. When content of signs is indicated to be determined later, request such information from District through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
   3. Submit for approval by District through Architect prior to fabrication.

C. Samples: Submit one sample of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

D. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:
1. Best Sign Systems, Inc: www.bestsigns.com. Basis of Design
2. Mohawk Sign Systems, Inc: www.mohawksign.com/#sle.
3. Signs for Success, Inc.: https://signsforsuccess.com/
4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with CBC Chapter 11B-703, ADA Standards, and ICC A117.1, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room Identification Signs: As indicated on drawings
1. Sign Type: Flat signs with applied character panel media as specified.
2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
3. Character Height: 5/8 inch.
4. Sign Height: 4 inches, unless otherwise indicated.
5. Classrooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
6. Restrooms: Identify as "ALL-GENDER", and duplicate in braille.
7. Exit Signs

C. Restroom Door Plaques: Provide superimposed geometric symbols that comply with applicable requirements of CBC 11B-703.7.2.6 and as indicated on drawings.
1. Sign Type: Laminated colored acrylic
2. Non-tactile sign

2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.
   1. Edges: Square.
   2. Corners: Radiused.
   3. Wall Mounting of One-Sided Signs: Stainless steel vandal-proof pin-in-head torx screw surface mounted to wall with concealed anchors.

B. Color and Font: Unless otherwise indicated on drawings
   1. Character Font: Helvetica, Arial, or other sans serif font.
   2. Character Case: Upper case only.
   3. Background Color: #501 - Blue.
   4. Character Color: White color.
   5. At locations where contrast requirements wtih wall behind are not met, invert character and background colors.

2.04 TACTILE SIGNAGE MEDIA

A. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
   1. Total Thickness: 1/8 inch.
   2. Letter Thickness: 1/8 inch.
   3. Letter Edges: Square.

2.05 NON-TACTILE SIGNAGE MEDIA

A. Color coated acrylic plastic sheet: Use nonfading colored coatings recommended by acrylic manufacturer for optimum adherence to surface.
   1. Sign Color: #201 White circle; #501 Blue Triangle
   2. Thickness: 1/4" thick triangle superimposed on a 1/4" thick circle

2.06 ACCESSORIES

A. Exposed Screws: Stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs and mount at heights indicated on drawings and in accordance with CBC Chapter 11B, ADA Standards and ICC A117.1.

D. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

3.03 FIELD INSPECTION

A. Per CBC Chapter 11B signs and identification devices shall be field inspected after installation and approved by the enforcing agency prior to the issuance of a final certificate of occupancy per Chapter 1, Division II, Section 111, or final approval where no certificate of occupancy is issued. The inspection shall include, but not be limited to, verification that Braille dots and cells are properly spaced and the size, proportion and type of raised characters are in compliance with these regulations.

END OF SECTION

Section 10 2113.19
Plastic Toilet Compartments

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Solid plastic toilet compartments.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Blocking and supports.

B. Section 10 2813 - Toilet Accessories.

1.03 REFERENCE STANDARDS

A. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2024.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate work with placement of support framing and anchors in walls and ceilings.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide data on panel construction, hardware, and accessories.

C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall and floor supports, and door swings.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Solid Plastic Toilet Compartments:
   1. ASI Accurate Partitions: www.asi-accuratepartitions.com/#sle.
   2. Hadrian: www.hadrian-inc.com/#sle.
   3. Partition Systems International of South Carolina: www.psisc.com/#sle.
   4. Scranton Products; Hiny Hiders Partitions: www.scrantonproducts.com/#sle. (Basis of Design)

2.02 PLASTIC TOILET COMPARTMENTS

A. Solid Plastic Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286; floor-mounted headrail-braced.

B. Doors:
   1. Thickness: 1 inch.
   2. Width: 24 inches.
   3. Width for Handicapped Use: 36 inch.
   4. Height: 55 inches.

C. Panels:
   1. Thickness: 1 inch.
   2. Height: 55 inches.

D. Pilasters:
   1. Thickness: 1 inch.
   2. Height: Floor to ceiling

E. Fabrication
   1. Fabricate toilet compartment components to sizes indicated in shop drawings.
   2. Coordinate requirements and provide cutouts for through-partition toilet accessories.

F. Materials

2.03 ACCESSORIES

A. Pilaster Shoes: Plastic, to match compartments, 3 inches high; concealing floor fastenings.
   1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
   2. Ceiling Attachment: Use two adjustable hanging studs, attached to above-ceiling framing.

B. Headrails: Extruded aluminum, anti-grip profile.
   1. Size: Manufacturer's standard size.

C. Wall and Pilaster Brackets: Stainless steel; continuous type.

D. Attachments, Screws, and Bolts: Stainless steel, tamper-proof type.
   1. Bracket Attachment to Panels and Pilasters: Through-bolts and nuts; tamper proof.

E. Hinges: Stainless steel; satin finish.
   1. Continuous-type hinge, self-closing.

F. Door Hardware: Stainless steel, manufacturer's standard finish.
   1. Door Latch: Slide type with exterior emergency access feature.
   2. Door Strike and Keeper with Rubber Bumper: Mount on pilaster in alignment with door latch.

3. Provide door pull for outswinging doors.

G. Coat Hook: One per compartment, mounted on door.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and interfaces with other work.

B. Verify spacing of and between plumbing fixtures.

C. Verify location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's written instructions.

B. Maintain 3/8-to-1/2-inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate headrail joints at pilaster center lines.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/4 inch.

B. Maximum Variation from Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust hinges to position doors in partially open position when unlatched. Return outswinging doors to closed position.

B. Adjust adjacent components for consistency of line or plane.

END OF SECTION

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Section 10 2813
Toilet Accessories

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Under-lavatory pipe supply covers.

C. District will furnish paper towel, toilet paper, and soap dispensers to be installed by contractor.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 Rough Carpentry: Concealed supports for accessories, including in wall framing and plates.

B. Section 09 3000 - Tiling

C. Section 10 2113.19 - Plastic Toilet Compartments.

D. Section 22 0000 Plumbing: Toilet and lavatory fixtures

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM C1036 - Standard Specification for Flat Glass; 2021.

C. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Bobrick.

B. Other Acceptable Manufacturers:
1. ASI - American Specialties, Inc: www.americanspecialties.com.
2. Bradley Corporation: www.bradleycorp.com.
3. Substitutions: Section 01 6000 - Product Requirements.

C. Provide products of each category type by single manufacturer.

2.02 OWNER FURNISHED CONTRACTOR INSTALLED ACCESSORIES

A. Paper Towel Dispenser: GP Pro Universal Push-Paddle Paper Towel Dispenser #54338
1. Dimensions: 12.5"W x 14.4"H x 10.6"D
2. Color: Translucent Smoke

B. Toilet Paper Dispenser: Teh Tung Corp., Twin Roll Toilet Tissue Dispenser (Continuous flow)
1. Dimensions: 5.9"W x 13"H x 5.9"D
2. Color: Clear Plastic

C. Soap Dispenser: GOJO Industries FMX-12 #5150-06; www.gojo.com
1. Dimensions: 6.5Wx 11.66"H 4.68"D
2. Color: White

2.03 CONTRACTOR FURNISHED AND INSTALLED ACCESSORIES

A. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
1. Tempered Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
2. Size: 18 inches wide by 24 inches tall.
3. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
4. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
5. Product: B-165 manufactured by Bobrick.

B. Seat Cover Dispenser: Stainless steel, surface-mounted, reloading by concealed opening at base, tumbler lock.
1. Minimum capacity: 250 seat covers.
2. Product: B-221 as manufactured by Bobrick

C. Grab Bars: Stainless steel, smooth surface.
1. Standard Duty Grab Bars:
a. Push/Pull Point Load: 250 pound-force, minimum.

b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
c. Finish: Satin.
d. Length and Configuration: As indicated on drawings.
e. Products: B-5806 as manufactured by Bobrick

D. Clothes Hook: Bobrick B-7672

E. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, removable receptacle.
1. Product: B-270 manufactured by Bobrick.

2.04 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. Under-Lavatory Pipe and Supply Covers:
1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
3. Construction: 1/8 inch flexible PVC.
4. Color: White.
5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.
6. Products:
a. Plumberex Specialty Products, Inc; Plumberex Pro-Extreme: www.plumberex.com
b. Or equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

END OF SECTION

Section 10 4400
Fire Protection Specialties

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Roughed in wall openings

1.03 REFERENCE STANDARDS

A. FM (AG) - FM Approval Guide; Current Edition.

B. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

C. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Product Data: Provide extinguisher ratings and classifications and color and finish.

C. Operation and Maintenance Data: Include test, refill, or recharge schedules and recertification requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
1. Activar Construction Products Group, Inc. - JL Industries; Cosmic Extinguisher - Multipurpose Chemical: www.activarcpg.com/#sle.
2. Larsen's Manufacturing Co; MP5 - Basis of Design: www.larsensmfg.com.
3. Potter-Roemer; 3005: www.potterroemer.com/#sle.

B. Fire Extinguisher Cabinets and Accessories:
1. Activar Construction Products Group, Inc. - JL Industries; Academy Series: www.activarcpg.com/#sle.

2. Larsen's Manufacturing Co; Architectural Series - Basis of Design: www.larsensmfg.com.
3. Potter-Roemer; Alta Series #7042: www.potterroemer.com.

C. Fire extinguishers and cabinets shall be furnished from single manufacturer.

D. Cabinets shall meet CBC requirements for mounting height and projection from wall.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated on drawings.

B. Multipurpose Dry-Chemical-Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
1. Stored Pressure Operated: Deep drawn.
2. Class: 2A:10B:C.
3. Size: 5 lb.
4. Finish: Baked polyester powder coat; color as selected by Architect.
5. Model: MP5 as manufactured by Larsen's
6. Temperature range: Minus 40 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS

A. Cabinet Configuration: Semi-recessed type.
1. Size to accommodate accessories.
2. Trim: 2-1/2" Rolled edge

B. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape, and set in resilient channel glazing gasket.

C. Cabinet Mounting Hardware: Appropriate to cabinet, with predrilled holes for placement of anchors.

D. Fabrication: Weld, fill, and grind components smooth.

E. Finish of Cabinet Exterior Trim and Door: clear anodized.

F. Finish of Cabinet Interior: Clear anodized aluminum.

G. Lettering: Vertical, Red

H. Model: Larsen's Architectural Series AL 2409-6R Vertical Duo

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and interfaces with other work.

B. Verify substrate and site conditions for product installation are in accordance with manufacturer's written instructions.

C. Verify rough openings for cabinet are sized and located in accordance with manufacturer's written instructions.

D. Notify Architect in writing of conditions detrimental to completion of work. Do not proceed with installation until detrimental conditions are corrected.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install cabinets plumb and level in wall openings, maximum 48" inches from finished floor to top of cabinet pull handle.

END OF SECTION

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Section 11 5210
Assistive Listening Equipment

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Portable assistive listening equipment.

1.02 RELATED REQUIREMENTS

A. Section 01 77 Contract Closeout: Provision of equipment prior to substantial completion

B. Section 10 1400 - Signage: Assistive Listening signage

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. CBC Chapter 11B - California Building Code - Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing; 2022.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Provide assistive listening system to District prior to requesting final walk through

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Submit manufacturers data sheet including specifications, installation instructions, and general recommendations for each piece of equipment specified.

C. Manufacturer's Installation Instructions: Indicate special installation requirements.

D. Maintenance data for materials and products, for inclusion in Operating and Maintenance Manual specified in Division 1. Provide complete manual material concurrently with system submittal. Update manual throughout project and provide as-built manual at project close-out. Include instructions for basic troubleshooting, preventive maintenance and cleaning of all equipment supplied. Include maintenance data for batteries including type.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the types of products specified in this section, with minimum three years of documented experience.

1.07 REGULATORY REQUIREMENTS

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. All electronic equipment shall be new and of current model. Transmitter systems shall be guaranteed for a period of five (5) years from the date of completion against defective materials, inferior workmanship or improper installation adjustment. Accessory items shall be guaranteed for a period of ninety (90) days from date of completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Portable Assisted Listening Systems
   1. Williams Sound: FM ADA Kit 37 RCH; www.williamssound.com (Basis of Design)
   2. Comtek: comtek.com
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. The assistive listening system shall comply with the requirements of CBC Chapter 11B and ADA Standards.
   1. Receiver Jacks: A 3.2 mm mono jack shall be included
   2. Receiver Hearing-Aid Compatability: Receivers shall interface with telecoils in hearing-aids through the provision of neckloops.
   3. Sound Pressure Level: Minimum 110 dB and maximum 118 dB with a dynamic range on the volume control of 50dB.
   4. Signal-to-noise Ratio: 18dB minimum
   5. Peak Clipping Level: No to exceed 18dB clipping relative to the peaks of speech

2.03 COMPONENTS

A. Transmitter:
   1. Battery powered and capable of being worn, 30 hours of operation with alkaline batteries, 20 hours with rechargable batteries.
   2. 16 selectable channels on FM frequencies between 72 and 76 MHz
   3. Frequency Response: 200Hz to 13kHz
   4. Connector: 3.5mm accepts input from microphone and line level signals
   5. Controls: On/Off, Volume, Mute button with indicator, Channel selector
   6. Internal compression to reduce peak distortion and noise

B. Receivers:
   1. Battery powered and capable of being worn, 50 hours of operation with alkaline batteries, 32 hours with rechargable batteries.
      a. Enters sleep mode if no RF signal detected for 6 minutes
   2. Channels: 17 between 72 and 76 MHz
      a. Unit shall have ability to lock channel to prevent accidental change of channel
   3. Deviation: 75kHz
   4. De-Emphasis: 75µS
   5. Range: AFC Range ±120kHz
   6. Sensitivity: 2µV @ 12dB Sinad with Squelch Defeated
   7. Max Input Signal: 100mV
   8. Frequency Response 200Hz - 15kHz
   9. Modulation FM, ±75kHz Peak Deviation
   10. Signal to Noise Ratio 65dB Min @ 100µV
   11. Output Level 35mW Max, Peak into 16 Ohms
   12. Connectors 3.5mm Stereo/Mono Headphone Jack

C. Headphones: Heavy duty, folding, mono
   1. Drivers 1.6" (40 mm)
   2. Plug 3.5 mm mono
   3. Cord 39" (99 cm)
   4. Nominal Impedance 16 Ohms
   5. Frequency Response 20 Hz - 20 kHz
   6. Maximum Input 100 mW
   7. Sensitivity 96 dB @ 1 kHz

D. Lapel Microphone
   1. Element: Electret condenser
   2. Pickup Pattern: Omni-directional
   3. Impedance: 1.5 kOhms
   4. Frequency Response 20 Hz to 18 kHz
   5. Dynamic Range 79 dB
   6. Sensitivity -56 dB (±3 dB)
   7. Signal-to-Noise Ratio (SNR) 63 dB
   8. Plug: 3.5 mm
   9. Cable Length 3.3' / 1.0 m

E. Desktop Conference Microphone
   1. Element: Electret condenser
   2. Pickup Pattern: Omni-directional
   3. Impedance: 1.5 kOhms
   4. Frequency Response 20 Hz to 18 kHz
   5. Dynamic Range 79 dB
   6. Sensitivity -56 dB (±3 dB)
   7. Signal-to-Noise Ratio (SNR) 63 dB
   8. Plug: 3.5 mm
   9. Cable Length 3.3' / 1.0 m

F. Neckloops: designed to magnetically couple an audio signal to a telephone coil-equipped (T-Switch) hearing aid.
   1. Magnetic Field Strength: 25 mW input at 1000 Hz produces 1.7 A/m 6" above the center of loop 85µW input produces 0.1 A/m (IEC Standard)
   2. Input Power: 500 mW max
   3. Impedance 8 to 16 Ohms
   4. Connector: 3.5 mm mono mini-plug

G. System Carry Case: Heavy-duty carrying case lined with foam and capable of containing entire system.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Operational Test: Perform tests that confirm proper operation of system and proper coverage in area where equipment will be used.

3.02 CLOSEOUT ACTIVITIES

A. Demonstration and Instruction of Owner's Personnel: Train District's site adminstrative personnel to adjust, operate, and maintain equipment as specified.

3.03 SCHEDULES

A. Transmitter: two (2)

B. Receivers: six (6)

C. Headphones: six (6)

D. Lapel Microphone: two (2)

E. Desktop Conference Microphone: two (2)

F. Neckloops: two (2)

G. Carry Case: two (2)

END OF SECTION

Section 12 3600
Countertops

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 DESCRIPTION OF WORK

A. Countertops over new casework.

1.03 RELATED REQUIREMENTS

1.04 REFERENCE STANDARDS

A. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2022.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

D. PS 1 - Structural Plywood; 2023.

1.05 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

B. Verification Samples: For each finish product specified, minimum size 3 inches square, representing actual product, color, and patterns.

C. Materials must be compliant with the VOC restrictions of California Green Building Standards Code, Section 4.504
   1. Adhesive, adhesive bonding primers, adhesive primer, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management district rule where applicable or SQAQMD Rule 1168 VOC limits, as shown in Table 4.504.1 or 4.504.2, as applicable. Such products also shall comply with the Rule 1168 prohibition on the use of cetain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products, as specified in subsection 2 below.

2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than 1 pound and do not consist of more that 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with Section 94507.

1.06 QUALITY ASSURANCE

A. A. Fabricator and Installer Qualifications: Minimum [2] years experience in work of this Section.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.
   1. Laminate Sheet: NEMA LD 3, Grade HGS, 0.048 inch nominal thickness.
      a. Manufacturers:
         1) Wilsonart(District Standard): www.wilsonart.com/#sle.
      b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
      c. Finish: Matte or suede, gloss rating of 5 to 20.
      d. Surface Color and Pattern: As indicated on drawings.
   2. Exposed Edge Treatment: Postformed laminate; front edge substrate built up to minimum 1-1/4 inch thick with radiused edge, integral coved backsplash with square top edge.
   3. Back and End Splashes: Same material, same construction.

B. Epoxy Resin Countertops: Filled epoxy resin molded into homogenous, non-porous sheets; no surface coating and color and pattern consistent throughout thickness; with integral or adhesively seamed components.
   1. Manufacturers:
      a. Durcon, Inc: www.durcon.com/#sle.
      b. Prime Industries, Inc, Classic Tops: www.piilab.com/#sle. (Basis of Design)
      c. Substitutions: See Section 01 6000 - Product Requirements.
   2. Flat Surface Thickness: 1 inch, nominal.
   3. Flammability: Self-extinguishing, when tested in accordance with ASTM D635.
   4. Surface Finish: Smooth, non-glare.
   5. Color: Black.
   6. Back and End Splashes: Same material, same thickness; separate for field attachment.

2.02 ACCESSORY MATERIALS

A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

C. Joint Sealant: Mildew-resistant silicone sealant, clear.

2.03 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless otherwise indicated.
   3. Profile: Square

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Plumber to provide cut out templates and countertop fabricator to prepare cut out for sink, whether rim set or bottom mounted, as well as fixtures.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 1/2 inch.

C. Attach epoxy resin countertops using compatible adhesive.

D. Seal joint between back/end splashes and vertical surfaces.

3.04 CLEANING

A. Clean countertops surfaces thoroughly.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

Section 22 00 00
Plumbing

PART 1 GENERAL

1.01 Description

A. Related Documents

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

2. Where the requirements of the Section exceed those in other Contract Documents, Contractor shall comply with the requirements of this Section.

B. Codes and Regulations:

1. In addition to complying with the specified requirements, comply with pertinent regulations of the Authority Having Jurisdiction. All work must comply with the version of the code that was in effect at the time of the initial permit application date.

i. CALGreen – California Green Building Standards Code

ii. CBC – California Building Code

iii. CEBC – California Existing Building Code

iv. CEC – California Electrical Code

v. CEnC – California Energy Code

vi. CFC – California Fire Code

vii. CMC – California Mechanical Code

viii. CPC – California Plumbing Code

ix. CRC – California Residential Code

x. DPH – Department of Public Health

xi. DWR – Department of Water Resources

xii. DSA – Division of the State Architect

xiii. HCD – Housing and Community Development

xiv. NFPA – National Fire Protection Association

xv. SFM – Office of the State Fire Marshal

xvi. Reach Codes that have been adopted by the Authority Having Jurisdiction

xvii. Local Building Department

xviii. Local Fire Marshall

C. Included: Work includes, but is not limited to, the following.

1. The Work covered by this Specification shall include furnishing labor, material, equipment, and services to construct, install and place in operation, the complete Plumbing Systems to the extent as indicated, and as shown on the Drawings and specified herein. The Work covered under this Section shall hereinafter be referred to as the Plumbing System.

i. WASTE AND VENT

1. Soil piping
2. DWV - Drain Waste and Vent Piping
3. Indirect waste piping
4. Floor drains.
5. Traps.
6. Vent flashings.

ii. SEWERS (To five feet beyond building)

1. Including metallic or non-metallic piping used to convey sewage and other waste to, and including, connection with offsite utility or onsite treatment and disposal system.
2. Manholes (pre-cast or pre-formed), cesspools, septic tank systems, and leaching lines, backwater valves and lift stations.

iii. WATER

1. Potable water piping systems including above and below grade tanks, pressure reducing valves, relief valves, balancing valves, water hammer shock absorbers, air chambers.

2. Isolation, Zone and Control Valves.

3. Hot water systems including heaters and storage tanks.

4. Disinfecting of water systems.

5. Insulation of piping and equipment for heat, sound, and vibration.

iv. ALL PLUMBING FIXTURES AND SUPPORTS

1. Including, but not limited to:

a Sinks, lavatories, water closets, urinals, tubs, service sinks, etc., - all materials

b Supports (backing) for all plumbing fixtures and accessories

c Installation of sinks in or part of drainboards - all materials

v. PIPE IDENTIFICATION

vi. Refer to section 23 00 13

vii. CONNECTIONS

1. Utilities-Sanitary sewer, , water

2. The joining of pipe by any mode or method including, but not limited to, acetylene and arc welding, brazing, lead burning, plastics welding, soldering, wiped joints, caulked joints expanded or rolled joints, etc., used in connection with any of the work listed herein.

viii. LAYOUT AND CUTTING

1. Holes, chases, channels, the setting and erection of bolts, inserts, stands, brackets, stanchions, supports, sleeves, escutcheon plates, thimbles, hangers, conduits, and boxes.

ix. EXCAVATION, TRENCHING AND BACKFILL

1. In connection with plumbing and piping work shown herein

x. PIPE HANGERS, SUPPORTS, ANCHORS, GUIDES, EXPANSION JOINTS

1. Including:

a Supports for equipment to which pipe is connected, such as tank supports

b Isolators-dielectric and vibration

c Anchors and thrust blocks of concrete, metal, etc.

d Seismic bracing

1 Anvil/Badger, Mason Industries, B-Line/TOLCO or approved equal.

2 Seismic hanger system design shall comply with the 2022 CBC requirements and ASCE 7-16.

xi. SIGNS AND NOTICES

xii. ROOF FLASHINGS FOR PIPING PENETRATIONS

xiii. TESTS

1. Piping, for tightness
2. Equipment for performance
3. Operating instructions
4. Final operation

1.1 **Accessible Plumbing Fixtures**

D. Accessible plumbing fixtures shall comply with all of the requirements of the 2022 CBC 11B-213, 11B-305, &11B-308.

1.02 Quality Assurance

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. Welder's Qualifications: Comply with ASME B31.8. The pipe welder shall have a copy of a certified ASME B31.8 qualification test report. Contractor shall also conduct a qualification test. Submit each welder's identification symbols, assigned number, or letter, used to identify work of the welder. Affix symbols immediately upon completion of welds. Welders making defective welds after passing a qualification test shall be given a requalification test and, upon failing to pass this test, shall not be permitted to work this contract.

1.03 Submittals

A. Comply with pertinent provisions of Architectural Sections.

B. Product Data: Within 35 calendar days after the Contractor has received the Notice to Proceed, submit to the Architect for approval prior to acquisition:

1. Materials list of items proposed to be provided under this Section.

2. Manufacturer's specifications, cut sheets, and other data needed to prove compliance with the specified requirements. All pieces of equipment shall be clearly identified on corresponding manufacturer's literature being submitted. All information for each item shall be correlated.

3. Shop Drawings or other data as required to indicate method of installing and attaching equipment and piping, except where such details are fully shown on the Drawings.

4. Submittals for the entire Project shall be submitted at the same time. Incomplete or noncompliant submittals may be rejected.

5. Submittals shall be provided in PDF format.

1.04 Design Changes Caused By Product Substitutions

A. If the domestic water heater is substituted with a different brand or model than what is specified on the Drawings the Authority Having Jurisdiction may require the energy compliance calculations to be updated. The contractor shall be responsible for all costs related to updating the calculations. If the substituted equipment does not comply, the contractor shall be responsible for providing equipment that meets or exceeds the performance of the specified equipment at no additional cost to the owner.

B. Contractor shall pay costs of design and installation for changes resulting from substitution of alternate products.

C. Acceptance of alternate products by Architect does not change this requirement.

1.05 Product Handling

A. Comply with pertinent provisions of Architectural Sections.

PART 2 PRODUCTS

2.01 Waste, Vent, Sewer

A. Above Grade

1. All waste, vent, sewer and storm lines shall be of cast iron soil pipe and fittings and shall conform to the requirements of CISPI Standard 301, ASTM A-888 or

ASTM A-74 for all pipe and fittings. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute and be listed by NSF International.

i. Acceptable Manufacturers:

1. AB&I Foundry
2. Charlotte Pipe and Foundry
3. Tyler Pipe Company

ii. Joints

1. Joints for hubless pipe and fittings shall conform to the manufacturer's installation instructions and local code requirements. Hubless coupling gaskets shall conform to ASTM Standard C-564 and be listed with NSF International. Couplings shall consist of a 304 stainless steel shields, clamp assembly and a high quality elastomeric gasket conforming to ASTM 564. Clamp shall be 4 band construction, Husky HD 4000 or approved equal.

iii. Mandatory Referenced Standards

1. Cast Iron Soil Pipe Institute Standard Specifications - Latest Issue
    a CISPI 301: Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
    b CISPI 310: Couplings for use in connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
2. ASTM Standard Specifications - Latest Issue
    a A-888: Standard Specifications for Hubless Cast Iron Soil Pipe and Fittings.
    b C-564: Standard Specifications for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

B. Below Grade:

1. Schedule 40 Solid wall PVC plastic DWV pipe with solvent-cemented drainage pattern fittings complying with ASTM D 1785 - Latest Issue.

i. SCH. 40 Solid Core PVC plastic DWV pipe with solvent-cemented drainage pattern fittings complying with ASTM D 4396 may be used at Contractor's option for vent piping. -Latest Issue.

2. Schedule 40 Solid wall ABS plastic DWV pipe with solvent-cemented fittings complying with ASTM D-2661 - Latest Issue.

i. SCH. 40 Solid Core ABS plastic DWV pipe with solvent-cemented drainage pattern fittings complying with ASTM D 3965 may be used at Contractor's option for vent piping. -Latest Issue.

C. Condensate (sized per CMC) and indirect waste drains

1. Type L Copper Water Tube ASTM B88 with wrought Copper solder fittings, ANSI-B16.22

2.02 Domestic Water Piping

A. Below Grade (Water Service)

1. 3" NPS and smaller, Schedule 40 PVC Plastic Pipe and fittings. ASTM D1785, D2466, with Solvent Cement Joints ASTM D2564.

B. Above Grade (Distribution System)

1. Piping

i. For soldered, brazed and mechanical joints, 4" and smaller Copper Water Tube Type L Annealed Temper (Hard Drawn) ASTM B75 or ASTM B88.

2. Fittings

i. Wrought Copper Pressure Solder Fittings, ASME B16.22 or ASME B16-25, 95-5 Tin-Antimony Filler Metal.

ii. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

iii. Copper Unions: MSS SP-123, cast-copper alloy, hexagonal-stock body, with ball-and-socket, met-to-metal seating surfaces, and solder-joint or threaded ends.

iv. Press Fitting: Copper press fittings shall conform to the material and sizing requirements of ASME B16.18 or ASME B16.22. O-rings for copper press fittings shall be EPDM. Press fittings shall have an inboard bead design.

1. Copper Press Fittings: Viega/Rigid Tool Company, NIBCO, Elkhart/Apollo Xpress or approved equal.

2. 2"NPS and smaller: Wrought copper fitting with EPDM-rubber O-ring seal in each end.

3. 2-1/2" to 4"NPS: Cast-bronze or wrought copper fitting with EPDM-rubber O-ring seal in each end.

C. Below Grade (Distribution System)

1. Piping

i. All underground water piping within the building boundaries shall be ASTM B88-93a Type "L" annealed (soft) copper tube made up without fittings below the floor level.

2.03 Valves

A. Acceptable Manufacturers: Milwaukee, Hammond, NIBCO, Jomar, Watts, others as noted.

Type	Size Range	Part Number
Ball	2” and smaller (2 piece)	Milwaukee UPBA400 Hammond UP8301A NIBCO 585-80-LF
Ball	2-1/2” and larger (3 piece)	Milwaukee UPBA300 Hammond UP8604 NIBCO 595Y-LF
Note: Stem extensions of non-thermal-conductive material and protective sleeve that meets UL 2043 approved for inside air plenum and allows operation of the valve without breaking the vapor seal shall be used on insulated pipe. NIBCO NIB-Seal handle or acceptable equal.		
Gate	2” and smaller	Milwaukee UP115 Hammond UP645 NIBCO T-113-LF
Gate	2-1/2” or larger	NIBCO F-619-RW
Gate-Underground	3” and larger	Mueller A-2362 NIBCO F-619-RW
Check-Swing	2” and smaller	Milwaukee UP509 Hammond UP943 NIBCO 413Y-LF
Check-Spring	2” and smaller	Milwaukee UP548T NIBCO 480Y-LF
Check-Swing	2½” and larger	Apollo 61YLF NIBCO F-910-B-LF
Check-Spring	2-1/2” and larger	NIBCO F-938--33
Gas Cock (ball)	2” and smaller	Milwaukee BA475B Hammond 8901 NIBCO FP600

Gas Cock (plug)	1/2" to 4”	Homestead 611/612 Walworth 1796/1797 (with wrench)

B. All below grade ball valves shall have stainless steel handles.

2.04 Hangers And Supports

A. In general, all pipe hangers and supports shall conform to the following except where special pipe hangers and supports are detailed on the Drawings. In all cases hanger and support details on the Drawings shall take precedent over the following:

Items	TOLCO	Anvil
Pipe Hanger	1; 2; 200	260
Side Beam Clamp for Wood Joist	58	207
Beam Coupling for Steel Beams	65	92
Rod Coupling for Connection to “Hilti”	70	135
Inserts in Concrete Decks	107;109A;109AF	N/A
Trapeze Hangers	Tolstruct A12	AS200
Pipe Clamp	Tolco Cush Clamp	AS004OD – AS098OD

B. Similar items by Anvil International, Erico-Caddy, or TOLCO/B-Line will be acceptable.

C. Hanger Rods shall conform to the following table:

Tube/Pipe Size	Rod Diameter
1/2” to 4”	3/8”
5” to 8”	1/2”
10” to 12”	5/8”

D. Trapeze hangers may be used where parallel runs of pipe occur. All rods on trapeze hangers shall be 1/2" minimum size.

E. Hanger Support Spacing shall be as follows unless shown otherwise on the Drawings:

1. Horizontal:

i. Cast Iron: Every other joint unless over 4 feet, then at every joint.

ii. Copper: Every 6 feet for 1-1/2 inch and smaller, and 10 feet for 2 inch and larger.

iii. Schedule 40 PVC or ABS DWV: Every 4 feet for all sizes. Provide for expansions every 30 feet.

2. Vertical:

i. Cast Iron: Base and every floor not to exceed 15 feet.

ii. Copper: Every floor not to exceed 10 feet.

iii. Schedule 40 PVC or ABS DWV: Base and every floor with mid-floor guides. Provide for expansion every 30 feet.

F. Refer to the plumbing code for materials not listed above.

G. At all points where insulated pipe contacts a hanger or support, the point of contact shall be protected by a metal insulation pipe shield #B3153 as manufactured by B-Line. Equivalent pipe protectors will be considered provided the substitute item meets the same standard of quality and performance as the specified item.

H. Seismic restraint devices

1. Available Manufacurers:

i. Anvil/Badger

ii. Mason Industries

iii. B-Line Tolco Division of Eaton

2. Seismic hanger system design shall meet the requirements of IBC, the 2022 CBC and ASCE 7-16.

2.05 Wall And Floor Penetrations

A. Fire walls and floors:

1. Wall and floor penetrations shall be protected with a U.L. approved fire rated system. The system shall be per the Drawing Details, or other manufacturer's installation instructions.

2. Fire stopping materials by Hilti, Metacaulk, or 3M are considered equal. The material shall be the same as called out for in the U.L. approved system.

B. Poured concrete walls and floors.

1. Pipes penetrating poured concrete walls and floors shall be protected by providing the following:

i. A Schedule 40 PVC sleeve one (1) size larger than the pipe or one quarter (1/4) inch of foam material wrapped around and secured to the pipe or packed and caulked with mineral wool.

ii. Protection shall end flush with the wall or floor surface.

C. All walls and floors:

1. Piping passing through walls and floors exposed to view shall be provided with chrome plated split-ring escutcheon plates in finished areas. Brass or galvanized escutcheon plates may be used elsewhere.

2.06 Flashing

A. All flashing shall be 4 lb. sheet lead and all vents penetrating the roof shall be flashed and counter-flashed. Stoneman Co. roof flashing assembly with 10" skirt or equal may be used.

B. The flashing for vents penetrating a metal roof shall have a corrosion resistant aluminum base compatible with the roofing system. A rubber type flashing by "Tech Specialties" shall be installed between the flashing and pipe.

C. For single ply roofing, provide flashing per roofing manufacturer recommendations or installation instructions.

2.07 Valve Boxes

A. Brooks Products Inc., Christy Co., or equal with the word "Water" or "Gas" cast in cover as applicable.

2.08 Cleanouts

A. Provide cleanouts per Drawings and details on Drawings. Cleanouts as manufactured by J. R. Smith, Mifab, Wade, or Zurn are approved equals.

B. Cleanout tops to be installed with tamper-proof screws.

2.09 Floor Drains

A. Provide drains as specified on the Plumbing Schedule. However, drains as manufactured by Watts, J.R. Smith, Mifab, Wade, or Zurn will be acceptable provided they are equal.

2.10 Water Hammer Arrestors

A. Provide Watts #LF15M2, Wilkins Piston Model #1260XL, Sioux Chief #65X-X or equal, as sized on the Drawings or required by PDI. Install per manufacturer’s instructions.

2.11 Automatic Trap Primers

A. Provide Precision Plumbing Products, J.R. Smith, Mifab or Sloan as specified on the Drawings. Install per manufacturer's instructions.

2.12 Plumbing Fixtures

A. Fixture locations, quantities, types, sizes and connections shall be as shown on both the Plumbing and Architectural Drawings. If a conflict in fixture location is noted between the Plumbing and Architectural Drawings, the Architectural Drawings shall take precedence.

B. Fixtures shall be thoroughly protected against damage to the chrome plate or enamel, by chipping, scratching or other damage during the entire period of construction. Roof drains, floor sinks and drains, toilet and sink drains, plumbing vents, and all other similar fixtures shall be covered to prevent trash from entering the pipes until final installation of grates, domes, fixtures or other protective devices.

C. Provide fixtures as specified in the Plumbing Schedule. American Standard, Crane, Kohler, or Just are acceptable substitutes as equal if approved by Engineer.

D. Fixture carrier numbers listed are as specified on the Plumbing Schedule; however, carriers as manufactured by J.R. Smith, Mifab, Wade, or Zurn, are acceptable provided they are equal.

2.13 Connectors

A. Provide Brass Craft "Speedway" or equal heavy pattern iron pipe size brass stops, rigid or flexible supplies and chrome plated brass "P" traps. Stops in "Public" areas to have screwdriver slots and those in "Private" areas to have all cross handles.

B. Provide Brass Craft or equal flexible stainless steel braided water supplies to appliances. They may also be used to fixtures as an option to rigid supplies. Aquaflo is an acceptable substitute.

C. Provide Brass Craft flexible or equal, stainless steel gas appliance connectors. Dormont is an acceptable substitute. Diameter of connector to be as recommended by manufacturer based on connector length and rated capacity of equipment.

2.14 Access Panels

A. See section 23 00 13 for access panels.

2.15 Pressure Gages And Thermometers

A. Provide Marsh Quality gages or equal with 3-1/2" dial, gage cock, in type required. For pump suction, provide compound type.

B. Provide Trerice 7" BX or 3" Bimetal Dial series thermometers or equal, straight, angle, or oblique as required, equipped with separable sockets and well. Provide extension necks as required on insulated line.

C. Arrange gages and thermometers for easy reading.

2.16 Pressure Regulators And Backflow Preventors

A. Provide the pressure regulator(s) and backflow preventer(s) as specified on the drawings and/or as required by the governmental authority having jurisdiction.

B. Pressure regulators and/or backflow preventers by Febco, Hersey, Watts or Wilkins are considered equal when their pressure fall-off/loss is equal to or less than the specified regulators/preventer's loss for the given flow rate.

C. Provide all potable water outlets with hose attachments with non-removable hose bibb backflow preventers per the C.P.C.

2.17 Water Heaters

A. Provide water heaters as specified in Plumbing Schedule or approved equal of size, capacity, recovery, and KW/BTUH input. American, A.O. Smith and State are considered equal. Heater shall be A.G.A. or U.L. listed.

1. Provide approved flexible copper supplies for the water heater water connections.

2. Instantaneous tankless water heaters shall be with water flow activated switch to energize the electrical/gas power source, a safety high water temperature limit, and all standard factory trim.

2.18 Water Heater Seismic Restraints

A. Seismic restraints shall be Holdrite model QS-50 or QS-120 or approved equal as applicable for the water heater specified.

2.19 Protective Insulation (Ada Fixtures)

A. Provide approved manufactured, EVA foam antimicrobial material protective pipe and fitting covering for exposed waste and drain assembly and for hot and cold water supplies and stops. Protective system shall consist of pre-formed pipe or tubing sleeve and pre-formed fitting patterns for trap and stops.

B. Provide protective covering for off-set drain assembly and disposer at kitchen sinks.

C. Foam pipe wrap, duct tape, baggy-type covers, tie-strap fasteners are not acceptable.

D. Acceptable manufacturers:

1. Oatey Dearborn "Safety Series"

2. Truebro "Lav-Guard"

3. Plumberex "Pro-Xtreme"

2.20 Pipe Insulation

A. Article includes insulating the following plumbing piping services:

1. Domestic hot-water piping.

2. Domestic hot-water return piping, including the piping between where the return piping intercepts the domestic cold water supply piping and the water heater.

3. Domestic cold-water piping where the following conditions occur:

i. Last 8 feet of piping to the water heater including piping between a storage tank and a heat trap, for a nonrecirculating storage system.

ii. Piping in unheated areas of the building.

iii. Piping exposed outside the building.

B. Domestic cold-water piping in unheated areas of the building and where exposed outside the building shall be insulated with 1" insulation. Where insulation is required in other areas the insulation shall conform to the requirements for domestic hot water supply and return piping.

C. Insulation material shall meet requirements of flame spread not to exceed 25 and smoke developed not to exceed 50 as tested by Procedure ASTM-E-84, NFPA 225 or UL 723.

D. Domestic hot water supply and return piping shall be insulated with Owens-Corning Fiberglass heavy density pipe insulation 25 ASJ/SSL-II (All Service Jacket/Double/ Self-Sealing Lap). Insulation shall have a k-factor of 0.24 @ 100 degrees F mean temperature, an embossed vapor barrier laminated and pressure sealing lap adhesive. All lap and butt strips shall have integral pressure-sensitive strips and shall be applied in strict accordance with manufacturer's instructions. Insulation thickness shall be as follows:

PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE °F	INSULATION CONDUCTIVITY			NOMINAL PIPE DIAMETER IN INCHES			
	k FACTOR	MEAN RATING TEMPERATURE °F		< 1	1 to < 1.5	1.5 to < 4	4 to < 8
Service Water Heating Systems				Minimum Pipe Insulation Require (Thickness in inches or R-value)			
141-200	.25-.29	125	Inches	1.5	1.5	2.0	2.0
			R-Value	R-11.5	R-11	R-14	R-11
105-140	.22-.28	100	Inches	1.0	1.5	1.5	1.5
			R-Value	R-7.7	R-12.5	R-11	R-9

E.

PART 3

A. Insulation materials not meeting the specified conductivity range shall be submitted for approval. Submittal shall clearly identify compliance with this article.

PART 4 EXECUTION

4.01 General Conditions

A. Examine the areas and conditions under which Work of this Section will be performed. Conditions detrimental to timely and proper completion of the Work shall be brought to the attention of the Architect before the installation of materials. Do not proceed until unsatisfactory conditions are corrected. Incorrectly installed materials requiring changes will be at Contractor's expense.

B. All plumbing fixtures, appliances, and appurtenances furnished with manufacturer's installation instructions shall be installed per those instructions.

4.02 Plumbing System Layout

A. Lay out the plumbing system in careful coordination with the Drawings. Determine proper elevations for all components of the system and use only the minimum number of bends to produce a satisfactorily functioning system.

B. Follow the general layout shown on the Drawings in all cases except where other Work may interfere.

C. Lay out pipes to fall within partitions, walls, or roof cavities, and to not require furring other than as shown on the Drawings.

4.03 Piping Installation

A. Pipe sizes as shown on drawings are Nominal Pipe Size (NPS) or Iron Pipe Size (IPS). Drawings and fixture schedule indicate pipe sizing per the 2022 CPC and Standard Engineering Practice. Pipe sizes shall be maintained to fixtures, appliances and equipment. Approved reducing fittings shall be installed at all points of connections.

B. Install piping generally square with building, free of traps or air pockets, and true to line and grade. Keep all piping tight to the building structure, unless pipe slope is required. Do not install piping in any locations where, in the Architect's opinion, it will interfere with the use of the building or create a safety hazard. Where space is inadequate, notify the Architect in time to avoid unnecessary Work. Install all exposed piping as high as possible without interfering with other trades.

C. Make changes in direction with manufactured fittings; use long radius elbows. Street elbows, bushings, close nipples and bending of pipe or tubing will not be allowed.

D. Provide "P" traps at sanitary sewer drainage devices without integral traps.

E. Underground plastic pipe will horizontally transition to metal pipe 5 feet before the above ground riser. Install plastic pipe with a minimum of 36" of cover when located under areas of possible vehicle traffic. Approved metallic pipe must be used if the minimum depth is not met. A tracer wire, terminating at each end at an exposed location, will be installed with all underground plastic pipe.

    1. Piping may terminate a maximum of one foot above ground when encased in a listed metallic transition riser.

F. Use friction wrenches when installing brass, polished, or soft metal piping, and when installing piping exposed in finished areas. Replace piping showing wrench marks.

G. Attach escutcheon plates to pipes with set screws or spring clamps with concealed hinges. Continue insulation through escutcheon plates.

H. General:

1. Proceed as rapidly as the building construction will permit.

2. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.

3. Cut pipe accurately, and work into place without springing or forcing, properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.

4. Show no tool marks or threads on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.

5. Provide sufficient swing joints, ball joints, expansion loops, and devices necessary for a flexible piping system, whether or not shown on the Drawings.

6. Support piping independently at pumps, coils, tanks, and similar locations, so that weight of pipe will not be supported by the equipment. Support the equipment independently from the pipe.

7. Pipe the drains from mechanical equipment, drip pans, relief valves, air vents and similar locations, to an open sight drain, floor drain, or other acceptable discharge point, and terminate with an air break or air gap per the 2022 CPC.

8. Securely bolt all equipment, isolators, hangers, and similar items in place.

4.04 Pipe Support Installation

A. Support pipes from structure with assemblies specified. Provide auxiliary members, anchors, guides, and sway braces necessary to maintain pipe alignment and prevent excessive movement or strain on piping system or components; allow for expansion and contraction of piping. Provide at least one hanger for each branch. Do not use powder driven fasteners, wire, perforated tape, nails, wood blocking, or other makeshift devices to support pipe.

B. Attach supports to structure with bolts, screws or concrete anchors, per support manufacturer’s requirements.

4.05 Joints And Connections

A. Cut pipe shall be reamed to full inside diameter of pipe. Cut threads straight and true. Insure all filings have been removed from inside of the pipe. Apply liquid Teflon to male pipe threads and not inside fittings. Use graphite on cleanout plug threads.

B. Joints in cast iron "No-Hub" soil/waste pipe and fittings shall be made up with neoprene gaskets and stainless steel bands conforming to CISPI 310, torque to the manufacturer's specification with an approved torque wrench.

C. Joints in copper tube shall be made with 95-5 tin-antimony or lead-free solder, applied in strict accordance with the manufacturer's directions.

D. Dissimilar metals shall be isolated with dielectric couplings, "EPCO" or approved equal. Provide access panels at all hidden couplings.

E. All plastic pipe shall be joined in accordance with the manufacturer's recommendations for their pipe and IAPMO Installation Standard per the 2022 CPC.

F. Press Connections: Copper press fittings shall be made in accordance with the manufacturer’s installation instructions. The tubing shall be fully inserted into the fitting and the tubing marked at the shoulder of the fitting. The fitting alignment shall be checked against the mark on the tubing to assure the tubing is fully engaged (inserted) in the fitting. The joints shall be pressed using the tool approved by the manufacturer.

G. Pipe Protection: Provide protection against abrasion where copper tubing is in contact with other building members by wrapping with an approved tape, pipe insulation or otherwise suitable method of isolation.

H. Penetration Protection: Provide allowance for thermal expansion and contraction of copper tubing passing through a wall, floor, ceiling or partition by wrapping with an approved tape or pipe insulation, or by installing through an appropriately sized sleeve. Penetrations of fire resistance rated assemblies shall maintain the rating of the assembly

4.06 Sanitary Sewer, Vent And Indirect Waste System Installation

A. Install horizontal drainage piping at a minimum 2%, condensate 1%, slope unless otherwise noted. Where this is impractical notify the Architect before installing the pipes.

B. Install vent piping to drain back into the sewer system.

C. Provide cleanouts where shown on Drawings and where required by governmental agencies having jurisdiction.

1. All cleanouts to grade shall be firmly secured by means of a concrete block 20" square by 5" thick, and shall be flush with finished grade, unless otherwise noted on the plans.

D. Provide automatic trap primers as specified at floor sinks and drains as indicated on Drawings or where required by governmental agencies having jurisdiction. Provide access panels for all hidden mechanical trap primers.

4.07 Valve Installation

A. Provide valves in the water, air, and gas systems. Locate and arrange so as to give a complete regulation of apparatus, equipment, and fixtures.

B. Provide valves in at least the following locations:

1. In branches and/or headers of water piping serving a group of fixtures.

2. On both sides of apparatus and equipment.

3. For shutoff of risers and branch mains.

4. For flushing and sterilizing the system.

5. Where shown on the Drawings.

C. Locate valves for easy accessibility and maintenance. Provide access panels for all hidden valves.

D. Unions shall be installed downstream of all screwed valves.

E. All gas pressure regulating valves shall be vented to the atmosphere.

4.08 Cleanouts

A. Horizontal drainage pipe shall be provided with a cleanout at its upper terminal, and each run of piping, that is more than 100 feet in total developed length, shall be provided with a cleanout for each 100 feet, or fraction therof, in length of such piping. An additional cleanout shall be provided in a drainage line for each aggregate horizontal change in direction exceeding 135 degrees. A cleanout shall be installed above the fixture connection fitting, serving each urinal, regardless if the location of the urinal in the building.

1. Exceptions – See 2022 CPC 707.4

4.09 Water Hammer Arrestor Installation

A. Provide water hammer arrestor on hot and cold water lines.

1. Install at all quick closing valves, solenoids, and supply headers at plumbing fixture groups.

2. Locate and size as shown on Drawings, and where not shown, locate in accordance with Plumbing and Drainage Institute Standard WH-201.

3. Install water hammer arrestor behind access panels.

4.10 Backflow Prevention Installation

A. Protect plumbing fixtures, faucets, hose connections, and other equipment having plumbing connection, against possible back-siphonage.

B. Arrange for testing of backflow devices as required by the governmental agencies having jurisdiction.

4.11 Plumbing Fixture Installation

A. Connect plumbing services to fixtures as shown on Drawings and as specified.

B. Install compression stops and flexible supplies per fixture manufacturer's recommendation or as high as possible on wall directly below fixtures.

C. Install fixtures at right angles to, and tightly against, building surfaces, and in proper alignment. Fill gaps between fixtures and building surfaces with white grout. Mounting heights and locations shall be as shown on the Drawings, or, if not shown, as directed by the Architect.

4.12 Insulation Installation

A. Clean and dry surfaces prior to application of insulation or adhesives.

B. Insulate piping, fittings, valves, and strainers. Leave unions exposed. Where insulation terminates, bevel ends of insulation and continue jacket over insulation and secure to pipe. Do not interrupt insulation at hangers, supports, clamps, or penetrations through structure. Fittings shall be finished with "Zeston" or approved equal fitting closures. If fitting closures not available, use 8 oz. canvas dipped in "Seal-Fas".

C. Attach longitudinal jacket laps and butt strips with factory applied pressure sensitive adhesive. On concealed piping only, outward clinching coated staples at two inch spacing may be used. Cover elbows with one piece polyvinyl chloride covers. Secure with tack fasteners. Tape ends of covers with matching tape on exposed piping. Seal off all cut ends with canvas and Benjamin Foster 30-36.

D. Install closed cell polyethylene foam per manufacturers instructions.

4.13 Testing And Adjusting

A. Provide personnel and equipment, and arrange for and pay the costs of, all required tests and inspections required by governmental agencies having jurisdiction. See Section 23 00 13 for test requirements.

B. Where tests show materials or workmanship to be deficient, replace or repair as necessary, and repeat the tests until the specified standards are achieved.

C. Adjust the system to optimum standards of operation.

4.14 Cleaning (For Potable Water Systems.)

A. Disinfection: The hot and cold water distribution system shall be disinfected prior to being placed in service. The system shall be disinfected within 3 weeks of occupancy in accordance with AWWA C651 or the following requirements:

1. The piping system shall be flushed with potable water until discolored water does not appear at any of the outlets.

2. The system shall be filled with a water chlorine solution containing at least 50 parts per million of chlorine. The system shall be valved off and allowed to stand for 24 hours. Or, the system shall be filled with a water chlorine solution containing at least 200 parts per million of chlorine. The system shall be valved off and allowed to stand for 3 hours.

    i. To prevent reduced service life of system components, disinfection solutions should not stand in the system longer than 24 hours.

3. Following the standing time, the system shall be flushed with water until the chlorine is purged from the system.

4. Provide bacteriological sampling and analysis results to the Engineer for review.

4.15 Warranty

A. The contractor shall warranty all of the systems for proper operation installed by the contractor for not less than one calendar year from date of project completion. This completion date shall be set by the Architect or owner.

END OF SECTION

SECTION 23 00 00
HEATING, VENTILATION, AND AIR CONDITIONING

PART 1 GENERAL

1.01 Description

A. Related Documents:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

2. Section 01 91 13 General Commissioning Requirements.

3. Where the requirements of the Section exceed those in other Contract Documents, Contractor shall comply with the requirements of this Section.

B. Codes and Regulations:

1. In addition to complying with the specified requirements, comply with pertinent regulations of the Authority Having Jurisdiction. All work must comply with the version of the code that was in effect at the time of the initial permit application date.

i. CALGreen – California Green Building Standards Code
ii. CBC – California Building Code
iii. CEBC – California Existing Building Code
iv. CEC – California Electrical Code
v. CEnC – California Energy Code
vi. CFC – California Fire Code
vii. CMC – California Mechanical Code
viii. CPC – California Plumbing Code
ix. CRC – California Residential Code
x. DPH – Department of Public Health
xi. DWR – Department of Water Resources
xii. DSA – Division of the State Architect
xiii. HCD – Housing and Community Development
xiv. NFPA – National Fire Protection Association
xv. SFM – Office of the State Fire Marshal
xvi. Reach Codes that have been adopted by the Authority Having Jurisdiction
xvii. Local Building Department

xviii. Local Fire Marshall

2. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirements will govern when so directed by the Architect.

C. Included: Work includes, but is not limited to, the following.

1. The Work covered by this Specification shall include furnishing labor, material, equipment, and services to construct, install and place in operation, the complete Heating, Ventilating and Air Conditioning Systems to the extent as indicated, and as shown on the Drawings and specified herein. The Work covered under this Section shall hereinafter be referred to as the Mechanical System.

i. Fan Coil Units
ii. Heat Pump Units
iii. Centrifugal Exhaust Fans and Roof Exhausters
iv. Duct systems complete with supports, dampers, grilles, registers, diffusers and louvers.
    1. Supply Air
    2. Return Air
    3. Exhaust Air
    4. Outside Air
v. Filters and Filter Boxes
vi. Duct, Pipe and Equipment Insulation
vii. Low Voltage Controls
viii. Refrigerant Piping
ix. Vibration Isolators

2. A system of temperature controls shall be furnished and installed complete as hereinafter described. Low voltage wiring and conduit, complete with electrical accessories and materials as required for the installation of the temperature control system shall be furnished and installed under this Section of the Contract but shall conform to the Specification requirements as set forth under Division 26.

D. Work Not Included In This Section:

1. Blocking, framing and wood supports required for the purpose of accommodating the Mechanical System unless specifically called for under this Division. The contractor is responsible for the correct location of such items and shall bear the expenses covering their omission or improper location.

2. Electrical connections to motors, electric starters, disconnect and over-current protective devices, unless specifically called for by this Section, or unless the equipment is furnished as an integral part of the Mechanical System Equipment, as hereinafter specified, or noted on the Drawings.

3. Line voltage electrical wiring and conduit, except where specifically called for on the Drawings or hereinafter in this Section.

4. Painting, except when supplied as factory finish, or specifically called for in this Section or on Drawings.

1.02 Quality Assurance

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

1.03 Submittals

A. Comply with pertinent provisions of Architectural Section.

B. Product data: Within 35 calendar days after the Contractor has received the Notice to Proceed, submit the following to the Architect for approval prior to acquisition:

1. Materials list of items proposed to be provided under this Section.

2. Manufacturer's specifications, cut sheets, and other data needed to prove compliance with the specified requirements. All pieces of equipment shall be clearly identified on corresponding manufacturer's literature being submitted. All information for each item shall be correlated.

3. Shop Drawings or other data as required to indicate method of installing and attaching equipment, ductwork and piping except where such details are fully shown on the Drawings.

4. Submittals for the entire Project shall be submitted at the same time. Incomplete or noncompliant submittals may be rejected.

5. Submittals shall be provided in pdf format.

1.04 Design Changes Caused By Product Substitutions

A. If the heating and/or air conditioning equipment is substituted with a different brand or model than that specified on the Drawings the Authority Having Jurisdiction may require the energy compliance calculations to be updated. The contractor shall be responsible for all cost related to updating the calculations. If the substituted equipment does not comply the contractor shall be responsible for providing equipment that meets or exceeds the performance of the specified equipment at no additional cost to the Owner.

B. Contractor shall pay costs of design and installation for changes resulting from substitution of alternate products.

C. Acceptance of alternate products by Architect does not change this requirement.

1.05 Product Handling

A. Comply with pertinent provisions of Architectural Sections.

PART 2 PRODUCTS

2.01 Heating, Ventilating And Air Conditioning Equipment

A. Heating, Ventilating, and Air Conditioning Equipment: Equipment shall be as specified on the Drawings. All other equipment shall be pre-approved by the Mechanical Engineer.

B. It shall be the responsibility of the Contractor to see that any substituted equipment performs similarly to that which is specified and fits in the same area as specified. Cost of any additional Work caused by the substitution of equipment shall be borne by the Contractor.

2.02 Air Distribution Equipment

A. Grilles, registers and ceiling diffusers and other accessory equipment shown on the Drawings and "Grille, Register and Diffuser Schedule" shall be manufactured by Titus unless shown otherwise.

B. Any substitutions of the above equipment which may be proposed by the Contractor shall be re-sized to suit his equipment by the proposed manufacturer and submitted in tabular form listing components proposed for each location in the System, identifying each as to location, design, air quantity passing through the devices, pressure drop, noise criteria data, velocities of air leaving the device and "K" flow factors for each item. Manufacturer's data sheets showing dimensions and recommended method of installation for each component must also be included.

2.03 Louvers

A. 4" deep louvers, Greenheck, Model ESJ-401, or approved equal. Deflection blades shall be spaced on 4" centers having 1/2" high vertical baffle and an additional lateral center rain hood. The edges of louver blades shall be folded or beaded to exclude driving rain. Louvers blades shall be oriented to minimize the entrainment of rainwater. Louver blades, heads, sills, jambs, braces and mullions shall be made of aluminum. Louvers shall be provided with flanges.

B. Provide 1/2" aluminum bird screen on outside air intake louvers and 1/4" aluminum insect screen on combustion air louvers.

2.04 Rectangular Sheet Metal Ductwork

A. Rectangular supply, return, outside air and exhaust ducts, single leaf dampers and plenums shall be fabricated from prime grade galvanized steel sheets of lock form quality and shall be constructed in accordance with appropriate tables of the latest ASHRAE "Guide and Data Book" and SMACNA "HVAC Duct Construction Standards" handbook and Chapter 6 of the 2022 CMC.

B. Transverse Duct Joints shall be made with The Ductmate System. When using The Ductmate System, construction of the duct such as gage, reinforcing, etc. shall be as indicated in the latest addition of the applicable SMACNA standards. With proper data, an equal may be submitted, providing the corners have a downset and corner clips to insure airtight integrity. Testing must be done by a nationally recognized testing laboratory. The standard Ductmate 35 System joint is the equivalent of a SMACNA "J" connection. The Ductmate 25 System joint is the equivalent of a SMACNA "F" connection. The installation of the Ductmate System shall be in accordance with the latest manufacturer's printed Assembly and Installation Instructions.

C. Each duct or plenum shall be diagonally cross-broken for rigidity.

D. Duct bends, fittings, transitions, etc. shall be fabricated in accordance with Fabrication Standards as shown on the Drawings or in accordance with latest SMACNA "HVAC Duct Construction Standards" where not shown on Drawings.

E. Support ducts to joists or similar structural members. Except where indicated otherwise, ducts with a side of 24" or more shall be supported on Ductmate trapeze duct hangers consisting of 2" high x 1-1/2" wide x 18" gauge channel and 3/8" diameter hanger rods hung from support brackets bolted to structural members. See also Special Fabrications as shown on the Drawings. Duct supports shall be eight (8) feet maximum on center.

F. At branch ducts, provide manually operated dampers of the type and arrangement shown on the Drawings, two gages heavier than the duct (if single leaf type) in which installed, and equipped with locking quadrants and closed end bearings.

G. Sizes shown on Drawings are net inside dimensions. Enlarge duct to accommodate lining.

2.05 Round Ductwork And Fittings

A. 2-10" w.g. round duct through 61" in diameter shall be United Sheet Metal spiral lockseam unseal duct, or approved equal, manufactured from galvanized steel meeting the ASTM A-527-71 in the following gages:

Diameter	Metal Thickness
3-13"	26 ga.
14-23"	24 ga.
24-37"	22 ga.
38-51"	20 ga.
52-61"	18 ga.

B. Round duct shall be new and exclusively obtained for this project. Each piece shall be in 20' lengths. Ducts shall be cut to length required with joints only at fitting locations, except on duct runs longer than 20 feet.

C. Spiral duct and fitting connections, 15" diameter and larger shall be Ductmate Spiralmate round duct connectors. The connector system shall consist of two mating round duct connector flanges roll-formed from hot dipped galvanized steel with an integral sealant and closure ring roll-formed from hot dipped galvanized steel.

D. Fittings shall be United Sheet Metal galvanized fittings in the following gauges:

Diameter	Metal Thickness
3-13"	24 ga.
14-23"	22 ga.
24-37"	20 ga.
38-51"	18 ga.
52-61"	16 ga.

E. Spiral duct fittings must be manufactured as separated fittings and shall not be saddle taps, stubs or tap-in fittings tapped into spiral duct, nor may they be dove-tailed tap-ins into pipe or fittings.

F. Reducers shall occur after a branch tap occurs on the main portion of the fitting. Divided-flow fittings shall be used unless shown otherwise on the Drawings.

G. Joints on ducts and fittings shall be covered and sealed with 4" wide, 6 oz. canvas saturated with Arabol lagging adhesive, or Hardcast DT tape in conjunction with Hardcast FTA-20, non flammable, non-toxic adhesive, or GlenKote duct sealer or other approved mastic type sealer. Duct tape will not be allowed. Where exposed to weather, paint lagging strips with two coats of silver enamel paint.

H. All ductwork shall be constructed and supported in accordance with appropriate tables of the latest SMACNA "HVAC Duct Construction Standards" handbook and Chapter 6 of the 2022 CMC. Duct gauges to be in accordance with this section.

I. At branch ducts, provide manually operated dampers of the type and arrangement shown on the Drawings, two gages heavier than the duct (if single leaf type) in which installed and equipped with locking quadrants and closed end bearings.

2.06 Flexible Duct

A. Flexible air duct shall be Hart & Cooley Model F218. Duct shall consist of an inner core having two layers of polyester film encapsulating a steel wire helix surrounded by a blanket of fiberglass insulation and sheathed in a metalized polyester vapor barrier reinforced with fiberglass scrim. All air ducts shall be UL listed under the UL-181 standard as a Class 1 Air Duct also conforming to NFPA standards 90A and 90B. This air duct shall have a certified thermal resistance rating of R-8 in accordance with ASTM C518 at 75^0F and carry the ADC "Thermal Performance" seal.

1. Products listed as Air Connectors are not allowed to be used in lieu of products listed as Flexible Duct.

B. Flexible air duct shall be JP Lamborn Co., AMF-07.Flexible duct shall be factory made with a sound absorbing, spun-bonded, non-woven inner core. R-4.2 insulation to encompass core and a metalized polyester reinforced vapor barrier surrounding entire duct. Ends shall have factory attached sheet metal collars secured with UL-181 FX tape. Length to be 5 feet. Duct shall be Class I, UL approved, and meet NFPA 90A, 90B and CMC minimum requirements.

1. Products listed as Air Connectors are not allowed to be used in lieu of products listed as Flexible Duct.

C. Use only the minimum length required to make the connection. In no case shall any section of flexible duct exceed 5 feet in length.

D. Use two layers of UL listed 181 duct tape to connect flexible duct to the metal duct if flexible duct does not have S.M. collars.

E. The number of bends shall not exceed a combined total of 90 degrees. 90 degree bends will not be allowed at diffuser connections.

2.07 Duct Specialties

A. Damper Regulators and Bearings: Duro-Dyne "Specline" SR-Series or approved equal, lever type with matching end bearing. Regulator set shall include rubber gasket between regulator and duct, spring washer between core and housing, wedge pin, dial indicator and handle. Matching end bearing shall be closed end with rubber gasket:

Model	Size
148	10” and Under
388	20” and Under
128	21” and Above

B. Access Panels: Access panels shall be located at all points where adjustable mechanisms are installed internal to or on the surfaces of the ductwork. Where adjustable mechanisms are concealed by walls or ceilings, "Elmdor" or approved equal access doors shall be installed. Size shall be suitable for convenient servicing. Tile Walls: Doors and Frame: Stainless Steel. Other areas: recess type to receive ceiling or wall finish in order to provide "Blind Finish".

C. Fire Dampers: Fire dampers shall be installed where shown on the Drawings and/or required, and shall be of a type approved by the U.L. Laboratories, Inc. and the State of California Fire Marshal. Dampers shall be installed per manufacturer's instructions. Provide access door in duct at each fire damper such that damper is easily accessible.

D. Volume Dampers:

1. In rectangular ducts greater than 1.5 sq. ft., provide Pottorff Model CD42, or equal, factory fabricated opposed blade damper, 16 gauge blades, and brass bearings. Blade width shall not exceed six inches.

2. In rectangular ducts 1.5 sq. ft. and less, provide single leaf dampers as described in Section 23 00 00, 2.3 (a. and g.).

3. In round ducts 15" in diameter and less, provide shop fabricated galvanized sheet metal plate dampers. Plate shall be 18 gauge or shall be two even gauges heavier than duct; minimum thickness 22 gauge. Provide stiffening beads at 1/3 points in dampers lighter than 18 gauge.

4. In round ducts 16" and greater, provide Pottorff opposed blade damper Model CD22R or approved equal.

5. In round ducts 4" – 24" in diameter, above "hard" ceilings, provide DuroZone Cable Operated Damper. Cable length to be between 3 and 15 FT long. Contractor to determine proper length to be use. Cable shall be routed inside the duct to the face of the grille or diffuser. Tuck cable up behind diffuser after balancing.

E. Provide 20 gauge galvanized sheet metal escutcheon plates at duct penetrations of finished building surfaces. Install tight against surface and securely attached to duct. Continue insulation through openings.

2.08 Flexible Connections

A. Provide fireproof, insulated, non-porous, flexible connections between fans and ducts or casings and where ducts are of dissimilar metals. For round ducts, securely fasten flexible connections by zinc coated steel clinch-type drawbands. Flexible connections shall be DuroDyne "Insulfab" or "Insulflex" or approved equal.

B. Provide a duct support next to each flex connector to prevent any strain on connection.

2.09 Pipe Hangers And Supports

A. In general, pipe hangers and supports shall conform to the following except where special pipe hangers and supports are detailed on the Drawings. In cases hanger and support details on the Drawings shall take precedent over the following:

Pipe 6" Size and Smaller	
Items	Superstrut Number
Pipe Hanger	710
Side Beam Clamp for Wood Joist	540
Beam Coupling for Steel Beams	U563-U562
Rod Coupling for Connection to "Hilti"	H-119
Inserts in Concrete Decks	
Trapeze Hangers	A1200-A1202
Pipe Clamp	A716 or 701W/S-716

B. Similar items by Unistrut, Securstrut, Michigan, or B-Line will be acceptable.

C. Hanger Rods shall conform to the following table:

Tube/Pipe Size	Rod Diameter
½ to 4”	⅜”

D. Hanger Support Spacing shall be as follows unless shown otherwise on the Drawings:

1. Horizontal:

i. Copper: Every 6 feet for 1-1/2 inch and smaller, and 10 feet for 2 inch and larger.
ii. Steel, Gas: Every 6 feet for 1/2 inch, 8 feet for 3/4 inch and 1 inch, and 10 feet for 1-1/4 inch and larger.

2. Vertical:

i. Copper: Every floor not to exceed 10 feet.
ii. Steel, Gas: Same as horizontal spacing except 1-1/4" and larger at every floor.

2.10 Damper Actuator

A. Actuators shall be Belimo. Substitutions will not be acceptable. Actuator shall be direct coupled over the shaft, spring return type, unless specified otherwise

2.11 Electrical Equipment

A. Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for motor control specified. Mount starter adjacent to equipment. See electrical drawing. Maintain minimum of 3' clearance to front of device.

B. Motor Starters: Shall be NEMA I or III as appropriate, general purpose, weather-resistant, with watertight enclosure where required.

2.12 Insulation

A. General: Insulation and lining material shall meet requirements of flame spread not to exceed 25 and smoke developed not to exceed 50 as tested by Procedure ASTM-E-84, NFPA 255 or U.L. 723 and shall conform to NFPA 90A and 90B.

B. Heating and cooling duct and related heating and cooling equipment insulation shall conform to 2015 Building Energy Efficiency Standards, Administrative Regulations, Title 24, Part I, Section 124, except to the extent that this Specification supersedes the minimum standards as established by the Code, in which case this Specification shall take precedent.

C. Unless noted otherwise, insulation shall be Fiberglass, or approved equal material. Application Work shall be performed in accordance with the best accepted practice of the trade and the manufacturer's recommendations. The performance of insulation Work shall be by experienced insulation applicators. Insulation shall be installed after the specified tests

have been applied to the piping and duct systems, and the systems have been inspected and approved. Fiberglass trade names and/or numbers have been used to establish a standard of quality.

D. External Duct Insulation – Outdoors, in a space between the roof and an insulated ceiling, in a space directly under a roof with fixed vents or openings to the outside or unconditioned spaces, in an unconditioned crawlspace; or other unconditional spaces: Shall be applied to concealed heating and cooling, supply and return duct except duct that is internally lined. Insulation on duct shall be Manville Microlite FSK duct insulation, 3" thick, minimum installed R value of 8.0 or greater, FSK aluminum foil reinforced with fiberglass, scrim laminated to U.L. rated Kraft, or approved equal. Adhere to duct surfaces with Foster's 85-62 or approved equal, adhesive applied in strips of 6" wide on approximately 12" centers. Circumferential seams shall be butted together and sealed over joints with 3" wide pressure sensitive foil vapor barrier tape. Longitudinal edges shall be lapped 2" and secured with outward clinching staple 6" on center then sealed with pressure sensitive foil vapor barrier tape. Duct wrap shall be installed to allow maximum fullness at corners (avoid excessive compression) minimum thickness at corners shall be 1". Where ducts are over 24" in width, the duct wrap shall be additionally secured to the bottom of the rectangular ducts with mechanical fasteners spaced on 18" centers (Max.) to prevent sagging insulation.

E. External Duct Insulation – All other locations not listed above: Shall be applied to concealed heating and cooling, supply and return duct except duct that is internally lined. Insulation on duct shall be Manville Microlite FSK duct insulation, 2" thick, type 100, minimum installed R value of 6.0 or greater, FSK aluminum foil reinforced with fiberglass, scrim laminated to U.L. rated Kraft, or approved equal. Adhere to duct surfaces with Foster's 85-62 or approved equal, adhesive applied in strips of 6" wide on approximately 12" centers. Circumferential seams shall be butted together and sealed over joints with 3" wide pressure sensitive foil vapor barrier tape. Longitudinal edges shall be lapped 2" and secured with outward clinching staple 6" on center then sealed with pressure sensitive foil vapor barrier tape. Duct wrap shall be installed to allow maximum fullness at corners (avoid excessive compression) minimum thickness at corners shall be 1". Where ducts are over 24" in width, the duct wrap shall be additionally secured to the bottom of the rectangular ducts with mechanical fasteners spaced on 18" centers (Max.) to prevent sagging insulation

F. Internal Duct Insulation – All other spaces not listed above: Shall be applied to all heating and cooling supply and return duct and plenums where shown on Drawings. Manufacturer shall be Manville Microlite, or approved equal. Duct Liner shall be Linacoustic R, 1 ½" thick, 1.5 pcf, with a "K" value of 2.2 in. for a total "R" installed value of 6 or greater. Insulation shall withstand velocities of up to 5000 FPM and temperatures up to 250 degrees F

G. Portions of duct receiving Duct Liner shall be completed with transverse joints neatly butted with no gaps or interruptions. The duct liner shall be adhered to the sheet metal with 100% coverage of adhesive and exposed leading edges and transverse joints coated with adhesive. Adhesive shall be a water based product. In addition, this shall be secured with mechanical fasteners which shall compress the liner sufficiently in place. The liner shall be cut to assure overlapped and compressed longitudinal corner joints. Application procedures shall comply with the recommendations of the Sheet Metal and Air Conditioning Contractor's National Association's Duct Liner Application Standard, Second Edition.

H. External Duct Insulation Exposed to Weather: Shall be applied to heating and cooling supply and return ducts and plenums exposed to weather if not noted to be internally insulated. Insulation shall be Knauf Type ASJ, or approved equal, rigid board fiberglass, 3.0 # per cubic foot minimum density, 2" min. thickness, 8.0 min. R value. The board shall be neatly cut and fitted to the surface with joints tightly butted together and against standing seams. The insulation shall be secured to the duct with adhesive and mechanical fasteners starting 3" from butt joints and 18" on center each direction. Vapor-barrier tape shall be then applied over joints, seams, breaks and any penetrations of the insulation vapor barrier jacket. A weather-barrier mastic compound reinforced with fabric or mesh shall be applied as a finish coat. Finish by painting with two (2) coats of aluminum paint.

I. Ducts: Ducts shall be constructed, installed, sealed and insulated in accordance with the 2022 CMC. The above paragraph(s) shall supersede if more stringent.

2.13 Temperature Controls

A. Temperature controls shall be furnished as indicated in schematic Drawing on Plans including room thermostats, relays and other necessary combustion, operating and safety controls.

B. Wiring and Conduit

1. Control wiring and conduit shall be the responsibility of this section and be installed as follows:

i. In equipment rooms/attics – Conductors shall be run in conduit. Final connection to equipment shall be flexible conduit.

ii. Concealed in building construction (wall/inaccessible ceilings) - Conductors shall be run in conduit.

iii. Roof mounted/exterior equipment yards – Conductors shall be in conduit. All flexible conduit shall be seal-tite with weatherproof connections. Equipment on grade and detached from the building a distance greater than 36” shall have underground control conduit routed to equipment.

iv. Above accessible ceiling spaces – Control cable will be allowed to be installed without conduit in accessible areas above ceilings as follows:

1. Cable is an approved type for the application.
2. Cable is bundled/organized in management devices routed square with building lines (no diagonals) and kept clear of electrical devices (i.e., ballasts, transformers, etc.) that could cause interference.
3. Conduit sleeves are provided between accessible ceiling spaces (i.e., across soffits, gypboard ceilings, etc.) as required to maintain future access to cable.

v. Cable routed in accessible ceiling spaces shall comply with EIA/TIA standards for communications cabling. Communication bus wire shall be W183C-2058Y Connect Air, yellow shielded cable.

C. Electric wiring, conduit and other electric devices required to complete the installation of the temperature control systems shall comply with requirements as set forth in the Electrical Section of this Specification.

D. After completion of the installation, the Contractor shall adjust thermostats, motors and other equipment provided under this Contract. He shall place them in complete operating condition subject to approval of the Architect.

E. The Control System herein specified shall be free from defects in workmanship and material under normal use and service. If, within twelve (12) months from date of acceptance by the Architect, any of the equipment herein described is proved to be defective in workmanship or material, it will be adjusted, repaired or replaced free of charge by the Contractor.

F. The final connections and supervision of control wiring and interlock wiring shall be the responsibility of this Contractor.

G. The Contractor shall submit to the Architect for approval, the required number of shop drawings of the entire control system before starting Work.

H. Upon completion of the Work, the Contractor will provide diagrammatic layouts of the Automatic Control Systems specified herein. Layouts shall show control equipment and the function of each item shall be indicated.

I. The temperature control system shall be installed by persons in the direct employment of the temperature controls manufacturer(s) exclusive contracting representative. The Mechanical Contractor shall not install the temperature controls unless pre-approved by the Mechanical Engineer.

2.14 Refrigerant Piping

A. Refrigerant piping shall be flushed clean with nitrogen and the ends capped prior to installation. Refrigerant piping shall be Type L copper with wrought copper fittings. Use 45% minimum silver brazing alloy with melting point higher than 1100 F. for making the joints.

B. Insulate refrigerant suction line with 3/4" thick Owens-Corning Fiberglass or Armstrong Armaflex foamed plastic flexible tubing insulation applied with No. 500 adhesive. Use multiple layers and miter insulation to cover joints and all other items as required to prevent condensation.

C. VRV OR VRF and Heat pump systems: Insulate all refrigerant lines with 1" thick Owens-Corning Fiberglass or Armstrong Armaflex foamed plastic flexible tubing insulation applied with No. 500 adhesive. Use multiple layers and miter insulation to cover joints and all other items as required to prevent condensation.

D. When piping & insulation are installed outside of building, insulation shall be aluminum jacketed. Jacketing shall be minimum 0.016” thick, 3105 or 3003 alloy aluminum with moisture barrier & stucco embossed finish. Provide aluminum elbow covers at all pipe bends equivalent in construction to jacketing.

2.15 REFRIGERANT PIPING ACCESSORIES

A. Stop valves shall be Henry Type 622, 500 psi pressure rating brass, soldered, packless diaphragm, globe shut-off pattern.

B. Solenoid valves shall be Sporlan Type MA14, 450 psi rating, brass body.

C. Filter dryer shall be Sporlan "Catch-All" with soldered connections.

PART 3 EXECUTION

3.01 Surface Conditions

A. Examine the areas and conditions under which Work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 Coordination

A. Coordinate as required with other trades to assure proper and adequate provision in the Work of those trades for interface with the Work of this Section.

3.03 Preparation

A. Holes in concrete:

1. Provide sleeves, accurately dimensioned and shaped to permit passage of items of this Section.

2. Deliver such sleeves, with accurate setting drawings and setting information, to the trades providing the surfaces through which such items must penetrate, and in a timely manner to assure inclusion in the Work.

B. Flashing:

1. Where items of this Section penetrate the roof, outer walls, or waterproofing of any kind, provide under this Section base flashing and counterflashing required at such penetration.

2. Provide on each pipe passing through the roof a 4 pound seamless lead flashing and counterflashing assembly.

3.04 General Installation Requirements

A. Conceal piping, ductwork, and equipment in spaces provided unless specifically shown otherwise. If spaces are inadequate, notify Architect in time to avoid unnecessary Work. Do not cut or notch structural members without specific approval of the Architect.

B. Follow manufacturer's instructions on items not specifically covered in drawings and specifications. Report discrepancies to Architect for clarification before starting Work.

3.05 Equipment Interface

A. Provide required shut off valves, unions, and final connections of piping to the Work of this Section.

B. For electrically operated equipment, verify the electrical characteristics actually available for the Work of this Section and provide equipment meeting those characteristics.

3.06 Painting

A. Paint inside of air outlets and connecting plenums with one coat of flat black paint, or provide all such items factory prepainted.

B. For roof-mounted equipment, provide factory pre-finish on exposed surfaces.

C. Touch-up scratches and abrasions to be invisible to the unaided eye from a distance of 5 feet.

3.07 Installation Of Ductwork

A. Ductwork shall be delivered to the Project site with surfaces clean and free of loose dirt and rust. Special care shall be exercised by the Contractor to store the duct in a clean area to prevent the accumulation of dirt prior to installation. Fabricated or partially fabricated duct sections shall not be stored in open fields or on dirt areas surrounding the construction site. Paved areas may be used, if available, provided adequate protection is provided to prevent the accumulation of dirt on duct surfaces. If possible, the Contractor should arrange to deliver duct to the project site and store on the floor of the area in which it is to be installed.

B. Before installation of ductwork, the Contractor shall inspect each section of duct and wipe internal surfaces clean. At the end of each Work period, or when ends of duct are left installed for future extension, the open ends shall be tightly closed off with a plastic sheet and taped securely to the open end of the duct.

C. Construct and install sheet metal in accordance with latest SMACNA recommendations. Provide variations in duct size and additional duct fittings as required and approved by the Architect at no extra cost to the owner.

D. The throat radius of bends shall be 1-1/2 times the width of the duct. Provide turning vanes in any mitered turn greater than 45 degrees.

E. Transition slopes shall be no less than one to five where space permits.

F. Abrupt offsets in the duct system greater than 30 degrees will not be allowed.

3.08 Temperature Control Installation

A. Install wiring and tubing parallel to walls and floors and securely clipped to structure or mechanical system components. Group parallel runs for neat appearance.

B. Install room thermostats and other control devices at 48 inches above finished floor unless a lower mounting height is required for access by handicapped.

C. Install outside air sensor in a location where it is not directly affected by radiation from the sun or any heat generating device or by a conditioned air stream or any other location that would produce a false reading.

D. Upon completion of the installation calibrate all equipment and adjust controls for proper operation.

3.09 Refrigerant System Charging Procedure

A. Pressurize the system with refrigerant and hold for 24 hours with no drop in pressure; test joints and equipment for evidence of leaks after satisfactory pressure test.

B. Provide 1/2" angle type charging and purging valves adjacent to high and low side of the condensing unit to accomplish the procedure described hereinafter. Connect the vacuum pump to both the high and low side of the system. Do Work when ambient air temperature is above 60 degrees F during the evacuation process.

C. Operate the vacuum pump until the system is evacuated to 2.5 mm Hg absolute. Break the system vacuum with nitrogen or refrigerant.

D. After the system has been evacuated to 2.5 mm Hg absolute, close the vacuum pump suction valve and stop the pump.

E. Charge system to required capacity with specified refrigerant.

3.10 Control Device Identification Labels

A. Thermostats and Exhaust fan switches shall have labels mounted on or just above the control device labeled with the equipment being controlled. As an example, for a exhaust fan controlled by a switch the label would read “EXHAUST FAN # 1” or if a thermostat the label would read “AC-1”.

1. Labels shall be 2" x 1" x 1/8" thick Formica/plastic engraving stock beveled on both sides and with two 3/16" diameter holes near the top uppermost tag corners.

2. Labels shall be white with 3/8" high red engraved letters.

3. Labels shall be attached to the equipment with adhesive.

3.11 Warranty

A. The contractor shall warranty all of the systems for proper operation installed by the contractor for not less than one calendar year from date of project completion. This completion date shall be set by the Architect or owner.

3.12 Shop Drawings

A. The Contractor shall prepare shop drawings covering duct systems, equipment and Mechanical Room piping systems. The drawings shall be prepared in 3/8" scale and shall be submitted to the Architect for approval prior to any fabrication. In preparing the shop drawings, the Contractor shall coordinate the location of duct, piping and equipment with the Work of other trades.

3.13 Mechanical System Start-Up Responsibility

A. Start up Mechanical Systems, and perform any such Work as may be required to adjust the systems to meet the requirements of the Contract Documents. Air distribution balancing shall be performed in accordance with Article "MECHANICAL SYSTEMS BALANCING".

B. Install new clean specified filters in equipment containing filters immediately prior to owner occupancy. Contractor to bear all costs for this work.

3.14 Mechanical Systems Balancing

A. Testing and air balancing shall be performed by an independent balancing company certified by Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB) or Testing, Adjusting, and Balancing Bureau (TABB). Testing and balancing shall be performed by a company other than the mechanical system installers/contractor. The name of the firm that the Contractor proposes to engage to perform this Work of balancing the system shall be submitted to the Engineer for approval prior to commencing the Work.

B. After Systems have been tested as outlined, air and water flow rates shall be balanced, and control devices adjusted. Balance and testing shall not begin until systems have been completed and are in full working order. Upon completion of the balancing operation and prior to final acceptance of the systems, the balancing firm shall submit a report, with six (6) copies, certifying to the proper performance of the system for approval by the Mechanical Engineer.

1. The following information shall be included in the Air Side Report:

i. Fan speeds.
ii. Motor current readings and voltage readings.
iii. Air quantities in CFM at supply, return, exhaust terminals, and outside air intakes, both at design value and actual measured value. Test and adjust each terminal to within +10% of design requirements.
iv. Air velocities in FPM at supply, return, and exhaust terminals at design value and actual measured value.
v. Positive static pressure, negative and total pressures and total air quantities for each fan system.
vi. Equipment nameplate data.

END OF SECTION

Section 23 00 13
General Mechanical Requirements

PART 1 GENERAL

1.01 Description

A. Related Documents:

1. The other Contract Documents complement the requirements of this Section.
2. Division 1 - General Requirements applies to the Work of this Section.
3. Where requirements of this Section exceed those in other Contract Documents, Contractor shall comply with the requirements of this Section.

B. Codes and Regulations:

1. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction.

C. Included: Work includes, but is not limited to the following:

1. Heating, Ventilating, Air Conditioning and System Balancing
2. Plumbing
3. Fire Protection
4. Carpentry and metal Work required for Work of this Section and not specifically shown under another Section. Openings in concrete or masonry construction shall be either core drilled or saw cut unless indicated otherwise on Drawings.
5. Excavation and Backfill
6. Coordination Drawings

D. Related Work:

1. Painting (Division 9)
2. Cutting and Patching (Division 1)
3. Low voltage electrical control (Division 26)

1.02 Definitions

A. Furnish: Purchase and deliver to job site in new condition.

B. Install: Receive and store at job site until required; place secure and connect; furnish required appurtenances.

C. Provide: Furnish and install as defined above.

D. Section: Refers to a Section of these Specifications.

E. Standards: The issue in effect as of the date of the contract documents.

1.03 Project Record Drawings

A. Comply with pertinent provisions of Architectural Sections (Division 1).

1.04 Service Interruptions

A. When Work of this Section requires temporary shutdown of existing systems for connections, the shutdown shall be made only during pre-arranged time agreeable to the Owner.

1.05 Correlation, Interpretation And Intent Of Contract Documents

A. The Mechanical Drawings are, in general, made to scale and the Contractor may obtain approximate distances and dimensions by scaling the Plans. It is distinctly understood, however, that it is done entirely at the Contractor's responsibility. Refer to Architect's Plans and Specifications for construction details, which will affect the Work and equipment. Examine the Architectural, Civil, Structural, Mechanical, Electrical, Landscape, Irrigation, Data, Fire Protection and Plumbing Plans and Specifications to ensure that this work does not conflict with the above trades. Plumbing, Mechanical and Electrical Plans are diagrammatic and, therefore, do not necessarily represent the exact installation. However, pipe sizing for utility services and ductwork are calculated per their respective codes and Standard Engineering Practice and shall be installed as sized from point of origin to terminal point. It shall remain the Contractor's responsibility to submit Shop Drawings if he/she has any questions about the final arrangement. Nothing on these Plans or Specifications shall be construed to permit work not conforming to all applicable codes and regulations.

PART 2 PRODUCTS

2.01 Access Panels

A. If not called for under other Sections, furnish Milcor, Elmdor, or Jay R. Smith access panels where shown on the Drawings or required for maintenance access to completed Work of this Section. Submit size, type, and location of proposed access panels not specifically shown, for review by Architect.

B. Access panels shall be constructed of 16 gauge prime coated steel or stainless steel with screwdriver operated cam latch, concealed hinges, and fire rating equal to adjacent construction.

C. Provide flush type doors with:

1. Stainless steel finish for tiled surfaces.
2. Prime coated finish for other surfaces.

2.02 Flashing

A. Provide watertight flashing at all openings through exterior walls and roof. Refer to Architectural Drawings.

2.03 Belt Drives

A. All belts shall be "Vee" type, or approved equal. Sheaves shall be adjustable and shall be sized to drive fan at scheduled RPM when set at midpoint of adjustment range. All belt drive assemblies shall be rated at 150% of drive motor horsepower. OSHA approved belt guards shall be provided over all drive assemblies. The Contractor shall change any belts and drives as required to produce the specified CFM.

2.04 Vibration Isolation And Noise Control

A. All fans, heating and ventilating units, air conditioning units, blowers and similar equipment shall be securely mounted to and/or supported from the structure.

B. Isolate all bare water piping from structural members or hangers with "Trisolators" or submitted and approved equal insulating sleeves. Install hangers on outside of insulated jacket on all insulated lines.

2.05 Weatherproofing

A. All equipment exposed to weather shall be protected by means of a suitable finish (i.e. paint). All fan cabinets, roof-mounted equipment, and ductwork shall be fabricated in such a manner to prevent leakage through seams and joints. Water rated, exterior hoods shall be provided over motors, belts, and other devices to insure against damage by water. At all locations where pipes and/or ducts penetrate exterior walls, or roofs, suitable rain tight flashing shall be provided.

2.06 Pipe Wrapping

A. All pipe, metal components, and joints buried in ground shall be primed and protected with 10-mil tape double wrapped or approved equal per IAPMO IS 13-2006. Before tape application, all bare pipe and fittings to be wrapped must be coated with pipe wrap primer. Stretch first layer of tape to conform to the surface while spirally half-lapping, apply a second layer, half-lapped and spiraled as the first layer with spirals perpendicular to first wrapping. In lieu of tape wrap, heat shrinkable 10-mil minimum thick polyethylene sleeve may be used.

B. When applying tape, use only enough pull to cause the tape to properly conform to the irregular surfaces of the item. The proper amount of pull is reached when the tape surface is smooth without any wrinkles. Continue tape 4" above grade. End overlaps should point down. Tape shall be applied per manufacturer’s installation instructions.

2.07 Electric Motors And Electrical Devices

A. All Electric motor current characteristics are as shown in equipment schedules on drawings and as specified hereinafter in this Specification. The Contractor shall refer to the Electrical Plans and shall confirm all motor voltage, amperage and phase characteristics before processing submittals or ordering equipment. If any equipment is installed different from the

supplied electrical power, it is the contractor's responsibility to correct equipment to the required electrical characteristics.

B. All electrical devices of a type normally listed by Underwriters Laboratories, Inc. shall bear U.L. label of approval.

C. Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for motor control specified. Mount starter adjacent to equipment. See electrical drawing. Maintain minimum of 3' clearance to front of device.

D. Motor Starters: Shall be NEMA I or III as appropriate, general purpose, weather-resistant, with watertight enclosure where required.

2.08 Painting And Finishing

A. Provide the coating specified below unless otherwise specifically called for under Painting, Division 09900. Exclude non-ferrous items, stainless steel, items to be insulated, and factory-finished items. Conform to requirements of the Painting Section where requirements are not specified in this Section.

B. All materials used, except as otherwise specified in carrying out the provisions of the contract, are to be Fuller-O'Brien manufacturer or approved equal. Numbers given below are Fuller-O'Brien Company designation unless noted otherwise.

1. Primer coat for all exterior and interior materials: 1 Coat - Primer #66850
2. Finish coats as listed below:

Exterior concrete and concrete block	2 Coats – Semi-Gloss #664XX
Interior concrete and concrete block	2 Coats – Semi-Gloss #214XX
Exterior metal	2 Coats – Semi-Gloss #664XX
Interior metal	2 Coats – Semi-Gloss #214XX
Exterior galvanized metal	2 Coats – Semi-Gloss #664XX
Exterior stucco	2 Coats – Flat #668XX
Interior of Grilles, Diffusers, and Registers	1 Coat – Flat (black) #31202

3. Furnish equipment with factory or field-applied prime coat and finish coat of enamel. Restore damaged finishes to match original.

PART 3 EXECUTION

3.01 General Equipment Installation Requirements

A. Install equipment to provide neat appearance, required manufacturer's access, and required space to allow replacement or maintenance. Provide bases, supports, anchor bolts, and other items required to install equipment. Installation shall be level and braced per CBC.

B. Equipment shall operate quietly and without objectionable vibration. Excessive vibration, other than from specified equipment operating at optimum conditions, shall be the Contractor's responsibility and shall be eliminated as directed by Architect.

3.02 Coordination Of Work

A. Coordinate Work of this Section with Work of other Sections to avoid conflicts. If required, provide shop drawings and submit to Architect for approval.

B. Insure that Work of other Sections is suitable to accommodate Work of this Section.

3.03 Adequacy Of Furring

A. Conceal piping and ductwork in spaces provided unless specifically shown otherwise. If spaces are inadequate, notify Architect prior to ordering materials and fabrication of components.

3.04 Protection And Cleaning

A. Protect equipment from dirt, moisture, and mechanical damage during construction. Restore or replace damaged equipment to original condition.

B. Keep interior of piping and ductwork free of foreign material during construction. Flush piping systems with test medium specified under Piping Tests before installing equipment and appurtenances or making final connections.

3.05 Closing-In Of Uninspected Work

A. Do not conceal or cover Work before tests and observations are completed. Uncover Work prematurely closed in and repair resulting damage to all Work, if requested by Architect, Engineer, or Project Inspector.

3.06 Damage

A. Repair or replace items damaged by leaks or overflow from Work provided under this Section and for any damage to any part of the project site, for a period of 1 year after notice of completion date. This is in addition to and not a limitation of other rights the Owner may have against the contractor under the Contract Documents.

3.07 Painting And Finishing

A. The contractor shall examine carefully all surfaces to be finished under the contract; and before beginning any of his work shall see that the work of other trades has been left or installed in a workmanlike condition to receive paint, or a particular finish.

B. The contractor shall take the necessary steps to protect his work and the work of other contractors during the time his work is in process and the contractor shall be responsible for any and all damage to the work or property of other contractors caused by his employees or by himself.

C. Provide protective covers or drop cloths to protect floors, fixtures, and equipment. Exercise care to prevent paint being spattered on to surfaces which is not to be painted. Surfaces, from which such paint cannot be satisfactorily removed, shall be painted or repainted, as required to produce a finish satisfactory to the Architect.

D. Cracks, holes, or imperfections in concrete or plaster are to be filled with patching plaster and smoothed off to match adjoining surfaces.

E. All surfaces shall be in a proper condition to receive finish. Clean surfaces as necessary to receive paint. Remove all grease from metal surfaces before painting.

F. Each coat of paint shall be applied at proper consistency and brushed evenly, free of brush marks, sags, runs, and with no evidence of poor workmanship. Color between coats of paint shall differ; (Color variations between coats should be enough to impair hiding.) Care shall be exercised to avoid lapping of paint on glass or hardware. Paint to be sharply cut to lines. Finished paint surfaces to be free from defects or blemishes.

G. Exposed piping, ducts, and mechanical equipment (except for factory finished items) shall be painted. Exposed piping, except for identification banding, shall be painted to match surfaces adjacent. Each coat to be inspected when dry and subsequent coat not to be applied until approval received.

H. Paint all surfaces visible through grille, diffuser and register faces, flat black.

I. The contractor shall store all painting materials and equipment outside of the building. The receiving and moving of all paint materials and mixing shall be done outside of the building. Any other arrangements shall be made only with Architects approval.

J. All necessary precautions shall be taken to prevent fire. Rags, waste, etc., soiled with paint or cleaning material, shall be removed from the premises at the end of each day's work.

3.08 Mechanical System Testing

A. Furnish all test pumps, gauges, and equipment. Test all safety controls and devices.

B. For air tests, install a calibrated test pressure gauge in the piping system to observe any loss in pressure. Calibrate the test pressure gauge with a dead weight tester within 15 days before use and certify by initial and date on a sticker applied to the dial face. Maintain the required test pressure for the time indicated. Brush joints with a soapy water solution to check for leaks if the required pressure cannot be maintained.

C. After any test, repair all leaks found as directed and re-test as necessary until the system is proven tight.

D. Before applying test pressure to any piping systems the Contractor shall be responsible for isolating all equipment e.g. control valves, regulators, relief devices, tanks and any other line accessories, which would otherwise be damaged by the test pressure.

1. Soil, Waste, Vent, Roof, and Condensate Drainage:
   i Entire System: Tightly close all openings except the highest one. Fill to overflowing with water.
   ii Sections of System: Tightly close all openings except the highest opening of the section under test. Fill section with water to test each section with a

minimum 10-foot head of water except for the uppermost 10 feet of the system.

iii Allow to stand for (4) hours or longer, as required to complete the inspection.

2. Domestic Water: Fill with water and test at 150 psig. Retain for (4) hours.
3. Refrigerant: Pressurize the system with nitrogen to 150 psig and hold for 24 hours with no drop in pressure; test joints and equipment for evidence of leaks after satisfactory pressure test.

E. After all Systems have been tested as outlined, all flow rates shall be balanced, and all control devices adjusted. See Section 23 00 00.

F. The equipment and installations shall be operated by the Contractor and he shall demonstrate that all Systems are performing according to the requirements of the Plans and Specifications and to the satisfaction of the Architect, Engineer and Owner.

G. Acceptance Testing Requirements: For applicable acceptance tests see the energy compliance documentation. Acceptance testing shall be the responsibility of the mechanical contractor and shall be performed by an Acceptance Testing Technician who has been certified by a California Energy Commission approved Acceptance Test Technician Certification Provider Program. The Test and Balance Contractor can also be the Acceptance Testing Technician

3.09 Cutting And Patching

A. The Contractor shall do all cutting and patching which may be required for the installation of the Work under this Division of the Specifications. Patching shall be of the same quality, materials and finish as, and shall match accurately, all surrounding construction. No cutting of the Structure shall be permitted without the approval of the Architect.

B. Wherever concrete or paved surfaces are cut to provide for the installation under this Section, the Contractor shall restore the surfaces to their original condition. Subgrade materials, concrete, and paving materials, along with the placement of same, shall be in accordance with the respective Sections of this Specification as they apply to the installation of such material.

3.10 Excavation And Backfill: (Buried Pipes Within The Building Walls And To 5 Feet From The Building.)

A. Dig trenches straight and true to line and grade; bottom shall be left smoothed of rock points. Pipe shall be supported for the entire length on undisturbed, original earth. The minimum trench width shall be 16" and all pipe shall be 2 feet below the finished grade, minimum, wherever conditions permit. Sewer pipes to be below grade a s necessary to meet the slope and invert on the Drawing. Whenever substantial variations of pipe bury is indicated by field conditions, the proposed changes in depth of bury shall be submitted, in writing, to the Architect for approval.

B. All piping shall be laid on a bed of clean dry sand not less than 6" thick. The space between the pipe and the sides of the trench shall be backfilled with clean dry sand to a point 6" above the crown of the pipe. Both sides of the pipe shall be filled at the same time.

C. The remainder of the trench shall be backfilled with native soil in lifts no greater than 12" and shall be mechanically compacted by tamping so to maintain a minimum relative dry density of 95%, determined by California Impact Test Method No. 216.

D. All backfilling shall be brought flush with finished subgrade.

E. Excess material shall be removed from the site. Trenches shall be backfilled immediately after approval.

3.11 Installation Of Piping, Ductwork And Equipment

A. The installation of piping, ductwork, and equipment shall be made in such a manner to clear beams and obstructions. Do not cut into or reduce the size of plates or any load carrying members without approval of the Architect. Check Drawings and Work of others to prevent interference. Deviations of the Work determined by the Architect shall be installed by the Contractor without additional cost.

B. Install piping and ductwork promptly, cap or plug open ends of pipe. No piping shall be permanently covered by construction before inspection and approval. Piping and ductwork shall be installed in accordance with best practice and recommendations of the manufacturer.

C. Conceal piping and ductwork unless indicated otherwise. Inspect each piece of pipe, tubing, fittings, and equipment for defects and obstructions. Remove defective material from site. Install piping generally level, free of traps and unnecessary bends to conform with building requirements, and provide space for other work. Piping to be free of unusual noises. Avoid any possible galvanic action by isolating dissimilar metals with suitable Dielectric Insulating Fittings.

D. Unless called for otherwise, hereinafter in this Specification or by specific detail on the Drawings, all water pipes in contact with structure and/or hangers shall be suitably isolated. In the case of uninsulated pipe, "Trisolators" or equal shall be used.

E. Protect enameled or polished equipment from damage, tool marks, etc.

3.12 Sterilization Of Pipes

A. After preliminary purging of the Systems, the entire domestic potable water system pertaining to Work under this Contract shall be chlorinated in accordance with American Water Works Association, State of California Health and Safety Code procedure for disinfecting water mains. A thorough flushing operation shall be run upon completion of sterilization. Contractor shall then arrange with local health authority for test on mains and water systems and provide three (3) copies of test results to the Architect.

3.13 Equipment Identification Tags

A. Major pieces of equipment shall include, but are not limited to: water heaters, air conditioners, unit heaters, supply and exhaust fans, and shall be tagged.

1. Tags shall be 2" x 2" x 1/8" thick Formica/plastic engraving stock beveled on both sides and with two 3/16" diameter holes near the top uppermost tag corners.
2. Tags shall be white with 3/8" high red engraved letters.
3. Tags shall be attached to the equipment with bolts, screws or chains as per valves.
4. Tags shall have the following information:
   i Equipment number and nomenclature corresponding to the information on the mechanical contract drawings.
   ii Examples:

WH	EF	AC
1	2	3

3.14 Identification Of Piping Systems

A. Building Systems:

1. Piping systems installed anywhere within the scope of the Work shall be identified as to contents using a color banding and marking system as outlined and in compliance with Federal OSHA requirements.
2. This Work includes furnishing and application of all snap-around and/or self-sticking pipe markers. Formica valve tags, chains, wires, and related materials proper for the completion of the Work.
3. Pipe markers shall be permanently shaped vinylite plastic snap-around pipe markers as manufactured by Seton Nameplate Corporation, Wilmington Plastic Company, or approved equal.
4. A maximum of four basic background colors shall be used and they shall conform to the American Standards Association Standard A13.1, "Scheme For Identification of Piping Systems" The names of materials (pipe contents) shall be superimposed on these ANSI background colors. Work legends shall conform to ANSI A13.1 to avoid confusion and mistakes. Basic background colors and content classification are:

Yellow	Dangerous Materials
Red	Fire Protection
Bright Blue	Protective Materials
Green	Safe Materials

5. Pipe marking and installation shall be as follows:
   i Apply "Plastic Pipe Marker" at each valve to show proper identification of pipe contents.
   ii Use an "Arrow Marker" with each "Pipe Content Marker". The Arrow shall always point away from the "Pipe Marker" and in the direction of the flow.
   iii If flow can be in both directions, use a double-header "Arrow Marker".
   iv Apply "Pipe Marker" and "Arrow Marker" at every point of pipe entry and exit where the line goes through the wall, floor or roof.
   v Apply "Pipe Marker" and "Arrow Marker" on each riser and "T" joint.
   vi Apply "Pipe Marker" and "Arrow Marker" every 50 feet on long continuous lines.
   vii Identifying long continuous lines with "Pipe Marker and "Arrow Marker at every bay or aisle within the building. All branch runs from mains on the

roof shall be identified with "Pipe Marker" and "Arrow Marker" at the point of takeoff.

viii Apply "Markers" on the two lower quarters of the pipe where view is unobstructed. In this position "Markers" are read at a glance from ground floor level and dust will not obscure the "Marker". Roof-mounted piping "Markers" shall be so located that they can be read from a standing position on the roof.

ix All identification markers located out of doors and exposed to the sun and the elements shall receive one coat of clear lacquer after application to the pipe, to seal edges and to act as a protective coating.

x Each "Arrow Marker" must have the same ANSI background color as its companion "Pipe Marker". Arrow must point away from "Pipe Marker" and indicate direction of flow.

xi "Pipe Markers" shall be guaranteed to stay on pipe systems for a period of not less than five years.

6. Following is a list of, but not necessarily limited to, the more commonly used piping systems that require identification "Pipe Markers" and "Arrow Markers".

Abbreviations on Drawings	Wording to Put on Pipe Marker	ANSI Color Background
CW	Domestic Cold Water	Green
DHWS	Domestic Hot Water Supply	Yellow
DHWR	Domestic Hot Water Return	Yellow
S	Gravity Sewer or Drain	Green
V	Vent	Green
RL	Refrigerant Liquid	Yellow
RS	Refrigerant Suction	Yellow
All lettering shall be black on the yellow background and white on all other background.		

3.15 Seismic Bracing

A. It shall be required that pipes, ducts and conduits be supported and braced per the SMACNA "Seismic Restraints Manual Guidelines for Mechanical Systems", 2006 Edition.

B. When the SMACNA "Seismic Restraint Manual Guidelines for Mechanical Systems" does not specifically address the size of duct or pipe to be braced, the following shall apply:

1. All ducts shall be braced and guyed to prevent lateral or horizontal swing to the satisfaction of the Architect, Engineer, and State Inspector.
2. All pipes shall be braced and guyed to prevent lateral or horizontal swing to the satisfaction of the Architect, Engineer, and State Inspector. Absolutely, no "Plumber's Tape" shall be used anywhere on this project.

3.16 Operation And Instruction

A. The Contractor shall furnish competent Technicians to supervise start-up operations of equipment specified by the Architect or Engineer and to instruct Owner's operators. The

Contractor shall furnish six complete sets of operating instructions and service manuals to the Architect.

B. Instruction period shall be started after instruction books and service manuals have been submitted to and approved by the Architect and shall be at hours (regular and non-regular) arranged by the Architect.

C. Service manuals shall include oiling, cleaning, and servicing data, compiled in clearly and easily understood form and in a durable binder. Data shall show all serial numbers of every piece of equipment and complete list of replacement parts.

3.17 Warranty

A. The contractor shall warranty all of the systems for proper operation installed by the contractor for not less than one calendar year from date of project completion. This completion date shall be set by the Architect or Owner.

END OF SECTION

SECTION 26 0500
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. Materials and equipment shall be furnished and installed in support of electrical work described in these plans and specifications as required for a complete and fully functional system.
2. Complete fire alarm and annunciation system as shown and/or required by the (local jurisdiction having authority, California State Fire Marshal) including monitoring equipment and wiring for central station connection.
3. Lighting systems, both interior and exterior as shown on the plans and as specified herein, including controls, occupancy sensors, lumen sensors, photocell controls, lamps, dimmers, racks, dimming ballasts/drivers, supports, fasteners, straps, and miscellaneous mounting hardware and support structures for such equipment.
4. Site work as shown and/or required.
5. Duct banks and raceways for all power and communications systems as shown and/or required. Duct banks shall include all trenching, racking, conduit, concrete, backfill, boxes, pads, substructures required for a fully developed and useable pathway for cables, conductors, as shown on site, etc.
6. HVAC and plumbing electrical: Conduit, conductors and terminations for all line voltage power, line voltage controls and fusible and/or non-fusible safety disconnect switches for HVAC equipment, including but not limited to air conditioners, furnaces, fans, heat pumps, system pumps, condensing units, etc. Provide protective equipment unless otherwise noted, including protective devices.
7. Plumbing Electrical: Conduit, conductors and terminations for plumbing equipment with power requirements including necessary fusible and/or non-fusible safety disconnect devices. Provide motor starters where required unless provided by mechanical specification.
8. Power and Lighting Distribution: Furnish and install power and lighting distribution systems including but not limited to panels, feeders, transformers, branch circuits, devices, fixtures, disconnect switches, contactors, controls, etc. for a complete working system.
9. Data systems infrastructure including all boxes, raceways, dedicated branch circuits, sleeves and penetrations, etc. as described and as shown in plans, risers, specifications, EIA/TIA standards and/or required for a complete and operating system.
10. Lighting acceptance testing, documentation and completion of required forms as specified in Section 26 5670, LIGHTING ACCEPTANCE TESTING.

11. Allocation of time to adequately train the Owner on the use and operation of all systems installed within the facility or on the property. Minimum two week advance notice shall be coordinated with the Owner and his representatives. Training shall be as outlined in individual system specifications identified to follow.

B. Related Sections Under Other Divisions:
1. Mechanical Wiring: Control circuit wiring, energy management controls and interlocks for mechanical equipment shall be installed by Mechanical Contractor.
2. Painting of electrical equipment where exposed and required by the Architect to be painted as described elsewhere in the specification.
3. Irrigation System: Provide all line voltage (50 volts or above) connections to irrigation system equipment, time clocks and or powered satellite controls. Coordinate locations of this work with the Landscape Contractor.
4. HVAC Control Raceway: Raceways, boxes, and control wiring for thermostats, temperature sensors and control components specified within the mechanical specifications, shall be furnished and installed as required by Division 25 and installed in accordance with the minimum wiring methods allowed for branch circuit wiring in Division 26 (the DDC systems/EMS systems and components are installed in accordance with Division 25).

1.03 SYSTEM DESCRIPTION

A. The electrical plans indicate the general layout and arrangement; the architectural drawings and field conditions shall determine exact locations. Field verify all conditions and modify as required to satisfy design requirements as well as code minimums. Maintain all required working clearances as described in CEC Article 110 as well as other applicable articles.

B. Discrepancies shall be brought immediately to the attention of the Architect for clarification. The Architect shall approve any changes. Prior to rough-in, refer to architectural plans that shall take precedence over electrical plans with respect to locations.

1.04 SUBMITTALS AND SHOP DRAWINGS

A. Before construction, submit in (accordance with the General Conditions of this Specification) a complete list of all materials proposed to be furnished and installed under this section. Any material procured without review and approval of the engineer and/or owner’s representative, will solely be at the contractor’s risk.

B. Manufacturers' specifications, catalog cuts and shop drawings as required to demonstrate compliance with the specifications. Identify specific intended use for each component where submittal may be ambiguous. Submit entire bound submittal at one time; partial submittals will not be accepted. At a minimum, submittals will be required for the following:
1. Site work equipment including ducts, conduits, fittings, concrete manholes, concrete and fiberglass pull, manhole, boxes, vaults, trench racks, accessories, etc.
2. Distribution equipment including distribution/branch panels breakers, grounding, transient voltage surge suppressors, etc.

3. Electrical equipment including disconnects, fuses, raceways, straps and racks, fittings, conductors, boxes, gutters, devices, plates, etc.
4. Lighting equipment including fixtures, ballasts/drivers, lamps, mounting accessories, color charts (where required), etc.
5. Lighting control equipment including low voltage switching system, dimmer switchbank / accessories, occupancy sensing equipment, time clocks, contactors, photocells, lumen sensors, etc.
6. Constructability review letter/comments for lighting acceptance testing as required by Section 26 5670, LIGHTING ACCEPTANCE TESTING.
7. Complete system component submittals and shop drawings for:
    a. Sound Systems with assisted listening devices as required to meet ADA.
    b. Fire Alarm System
    c. Communication Systems including but not limited to: cable, fiber, terminations, cable management, patch panels, equipment racks, specified active electronics (where called for), cabinets, jacks, plates, cable labeling, testing procedure.
8. Conduit including all fittings, etc.
9. Wiring and cable, terminations, etc.
10. Fire rating penetration materials, details, etc.

C. The intent of these specifications is to establish a standard of quality for materials and equipment. Therefore, some items are identified by manufacturer or trade name designation. Substitutions shall be subject to the Architect's approval. Samples of the proposed and substitute materials may be required for inspection prior to approval. Costs, if any, for evaluation of substitutions shall be the Contractor's responsibility. The decision of the Architect shall be final. Where the substitution will affect other trades, coordinate all changes with those trades concerned and pay any additional costs incurred by them as a result of this substitution. Approval of substitutions shall not relieve the Contractor from providing an operational system in accordance with all applicable codes and ordinances.

D. SUPPORTING DEVICES
1. Provide all details of suspension and support for ceiling hung equipment.
2. Where walls, floor, slabs or supplementary steel work are used for seismic restraint locations, details of acceptable attachment methods for ducts, conduit and pipe must be included and approved before the submittals must include spacing, static loads and seismic loads at all attachment and support points.
3. Provide seismic details of seismic restraints and anchors; including number, size and locations for each piece of equipment.

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage of equipment for the job is the responsibility of the Electrical Contractor and shall be scheduled for delivery to the site, as the equipment is required. Damage to the equipment delivered to the site or in transport to the job shall be the responsibility of the Electrical Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall be new and bear the label of or be listed by a nationally recognized testing laboratory. The quality and suitability of all materials shall conform to the standards and practices of this trade.

B. Supplied materials shall be of a current manufactured product line. Discontinued products are not acceptable. Where products are identified on the contract documents by part number, supply the current product model or series which meets the specification and intended use of the specified component.

2.02 SUPPORTING DEVICES

A. Hangers: Kindorf B-905-2A Channel, H-119-D washer, C105 strap, 3/8" rod with ceiling flange.

B. Concrete Inserts: Kindorf D-255, cast in concrete for support fasteners for loads up to 800 lbs.

C. Pipe Straps: Two-hole galvanized or malleable iron.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Professionalism and appearance of installations shall be in accordance with accepted practices of this trade. Installation methods shall conform to manufacturers' specifications and recommendations. The Contractor shall man the job with qualified journeymen and helpers in this trade for the duration of the job. It is the Contractor's responsibility to communicate with and keep the job superintendent appraised of changes or clarifications, etc.

B. Employment of any person on any job in the capacity of an electrician is not permitted unless such person has qualified for and holds a valid Journeyman Electrician Pocket Card or General Journeyman Electrician Certificate issued by the State of California Division of Apprenticeship Standards except, Contractor may employ electrical helpers or apprentices on any job of electrical construction, new or existing, when the work of such helpers or apprentices is performed under the direct and constant personal supervision of a journeyman electrician holding a valid Pocket Card accepted by the State of California Division of Apprenticeship Standards.

1. Each Pocket Card carrying journeyman electrician will be permitted to be responsible for the quality of workmanship for a maximum of one helper or apprentice during any same time period, provided the nature of work is such that good supervision can be maintained and the quality of workmanship is the best, as expected by Owner and implied by the latest edition of the National Electrical Code.

2. Before each journeyman electrician commences work, deliver to Owner at the project site, a photocopy of the journeyman's valid Pocket Card.

C. Materials shall be installed in accordance with the manufacturers' specification and recommendations. They must conform to the approval AHJ adopted codes and standards, but not less than the 2022 CEC and all applicable codes and standards, including but not necessarily limited to California Code of Regulations Title 24, NFPA, National Electrical Manufacturers Association, ANSI, CBC, and any other adopted ordinances of applicable agencies having jurisdiction. Refer to general conditions of specifications.

D. Electrical Contractor shall lay work out in advance in order to avoid unnecessary cutting, chasing, and drilling of floors, walls, ceilings and other surfaces. Work of this nature shall be carefully done so as not to damage work already performed by other trades. Any damage which results must be properly repaired at no extra cost to the Owner. Such alterations shall not depreciate the integrity of the structure. Approval for cuts or penetrations in structural members shall be by the Architect.

E. Supporting Devices:
1. Verify mounting height of all luminaires or items prior to installation when heights are not detailed.
2. Install vertical support members for equipment and luminaires, straight and parallel to building walls. Provide independent supports to structural member for electrical luminaires, materials, or equipment installed in or on ceiling, walls or in void spaces or over furred or suspended ceilings.
3. Do not use other trade's fastening devices as supporting means for electrical equipment, materials or luminaires. Do not use supports or fastening devices to support other than one particular item.
4. Support conduits within 18" of outlets, boxes, panels, cabinets and deflections. Maximum distance between supports not to exceed 8' spacing.
5. Securely suspend all junction boxes, pull boxes or other conduit terminating housings located above suspended ceiling from the floor above or roof structure to prevent sagging and swaying.
6. Provide seismic bracing per UBC requirements for this building location.
7. Supporting Devices: Safety factor of 4 required for every fastening device or support for electrical equipment installed. Support to withstand four times weight of equipment it supports. Bracing to comply with seismic design category "SDC" per Structural Engineer.

F. Coordinate work with other trades as required to eliminate any delays during construction. Coordinate changes with other prime contractors to avoid construction conflicts.

G. Engineer's Field Observation: Site visits during construction for field observations and reports will be conducted by electrical engineer when directed by the Architect. A list of items that need to be addressed will be submitted to the Architect for forwarding to the Contractor. A written response to all items shall be submitted for Owner's review once complete. When Electrical Engineering representative performs a field observation, the Electrical Contractor shall be present and available to remove equipment covers as needed.

H. Drawings of Record: Provide a full and accurate set of field record drawings marked up in a neat and understandable manner submitted to the Owner Representative, Construction Manager, or Architect upon completion of the work and prior to issuance of a certificate of completion. The drawings shall dimension all electrical facilities including but not limited to underground conduit, vaults, boxes as well as conduit routing scaled to within 12" of actual field conditions and shall be kept up to date on a daily basis reflecting changes or deviations. Electrical facilities shall be accurately drawn on the plan to scale. Refer to the general conditions of these specifications for additional requirements. Record drawings shall be required to identify both horizontal and vertical dimensions to visible and fixed points such as concrete, asphalt, buildings, sidewalks, etc.

I. Identification: Provide engraved laminated plastic nameplates for all switchboards, panelboards, fire alarm terminal cabinets, telephone and cable television backboards, main devices, control panels, time clocks, contactors and safety disconnect switches accurately identifying each device. Labels shall be attached to the equipment by means of screws or rivets. Self-adhering labels will not be acceptable. Refer to Section 26 0553, IDENTIFICATION OF ELECTRICAL SYSTEMS.

J. Safety: The Electrical Contractor is responsible to maintain equipment in a safe and responsible manner. Keep dead front equipment in place while equipment is energized. Conduct construction operations in a safe manner for employees as well as other work persons or anyone visiting the job site. Provide barriers, trench plates, flags, tape, etc. The Contractor shall hold all parties harmless of negligent safety practices that may cause injury to others on or near the job site.

K. Guarantees: Equipment and labor shall be guaranteed and warranted free of defects, unless otherwise stated to be more restrictive, for a period of one year from the date of final acceptance by the Owner. A written warranty shall be presented to the Architect at the time of completion prior to final acceptance. Equipment deemed to be damaged, broken or failed should be repaired or replaced at no additional cost to the Owner. Materials or system requiring longer than a one-year warranty as described herein shall be separately warranted in separate letters of guarantee stating the duration of warranty.

L. Operating and Installation Manuals: Provide two copies each of manuals, operating and installation instructions for equipment indicated in submittal packages. Instruct the Owner's representative as to the operation and location of equipment necessary to allow them to operate the facility upon final acceptance. This instruction period shall be prearranged with the Owner's representative prior to occupancy of the facility and the weeks prior to training scheduled.

M. Lighting Acceptance Testing: Provide two copies of lighting acceptance testing results and equipment operating manuals as specified in Section 26 5670, LIGHTING ACCEPTANCE TESTING. Instruct the Owner on operation of control systems.

END OF SECTION

SECTION 26 0519
LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Wires and cables.
2. Connectors.
3. Lugs and pads.

1.03 SYSTEM DESCRIPTION

A. Provide wires, cables, connectors, lugs, strain reliefs, racking insulators for a complete and operational electrical system.

1.04 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Provide product data for the following equipment:
1. Wires.
2. Cables.
3. Connectors.
4. Lugs.
5. Splice Kits.
6. Strain Relief Fittings.
7. Cable Racking and Insulators.

C. Provide the insulation cable testing report in the project closeout documentation, refer to Closeout Requirements in the General Conditions portion of this specification.

1.05 REGULATORY REQUIREMENTS

A. Conform to requirements of the CEC, latest adopted version with amendments by local Authority Having Jurisdiction (AHJ).

B. Furnish products listed by UL or other testing firm acceptable to AHJ.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Wires and Cables: General Cable, Okonite, Southwire, or approved equal.

B. Connectors: Burndy, Ilsco, Thomas & Betts, or approved equal.

C. Wire connectors shall be minimum 75 degree centigrade rated and properly sized for the number of conductors being connected, terminated, spliced etc. All above grade connectors shall be solderless lug or plastic wire nut type, screw on, pressure cable type (wire nut or spring nut type), 600 volt, 105 degree C, with skirt to cover all portions of stripped wires. Connector shall be U.L. rated for number and size of conductors being joined together as a splice.

D. Splices:
1. Branch Circuit Splices: Ideal, Scotch-Lock, 3M, or approved.
2. Feeder Splices: Compression barrel splice with two layers Scotch 23 and four layers of Scotch 33+ as vapor barrier.
3. Screw Terminal Lugs.
4. Kearney Split Bolt.

2.02 WIRES AND CABLES FOR LINE VOLTAGE SYSTEM AND CONTROLS. WIRE AND CABLE SHALL BE:

A. Copper, 600 volt rated throughout. Conductors 14AWG to 10AWG, solid or stranded. Conductors 8AWG and larger, stranded.

B. Phase color to be consistent at all feeder terminations; A-B-C, top to bottom, left to right, front to back. Phasing tape shall be permitted on sizes #6 and larger.

C. Color Code Conductors as Follows:

PHASE	**208 VOLT**
A.	Black
B.	Red
C.	Blue
Neutral	White
Ground	Green

D. All conductors shall be copper unless otherwise noted. Minimum size for individual conductors shall be #12 AWG unless otherwise noted. Sizes #8 AWG and larger shall be stranded conductor. Individual conductors shall be insulated with type, XHHW, THW, THHN/THWN 600-volt insulation unless otherwise noted. Control, signal, communication conductors shall be as dictated by the vendor of that equipment or as specified here-in. Proper insulation type shall be used for the proper environmental application (i.e., waterproof, wet location, plenum, temperature rated). If a condition exists where the application is uncertain, contact the Engineer for direction. Contractor is responsible to follow specific cabling requirements described in other sections of this specification relative to various communications and controls systems as well as the respective riser diagrams shown on plans. If a discrepancy occurs, communicate such discrepancy to the Architect and Engineer immediately for resolution.

E. Insulation types THWN, THHN or XHHW. Minimum insulation rating of 90C for branch circuits.

F. Refer to signal and communications specification sections for cable requirements.

2.03 CONNECTORS

A. Copper Pads: Drilled and tapped for multiple conductor terminals.

B. Lugs: Indent/compression type for use with stranded branch circuit or control conductors.

C. Solid Conductor Branch Circuits: Spring connectors, wire nuts, for conductors 18 through 8AWG.

2.04 LUGS AND PADS

A. Ampacity: Cross-sectional area of pad for multiple conductor terminations to match ampere rating of panelboard bus or equipment line terminals.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation: Conductors shall not be installed until after conduit systems are permanently in place. Use an approved non hardening type wire pulling lubricant if lubricant is to be used. Maintain all conduits and wire pulls free from foreign material. If due to field conditions, more than a total of 300 degrees of bend are required; a pull box shall be furnished and installed for ease of installation. Said pull boxes must be sized and rated for the appropriate application and must remain easily accessible upon completion of the project (approval of the location shall be obtained from the Architect prior to installation). Show these pullboxes on the field record drawings. Conductors installed in underground raceways on site shall be duct sealed and taped where they exit the raceway to prevent the entrance of foreign material and moisture after the conductors are installed. Proper drainage shall be provided for underground pull and splice boxes.

B. Insulation: Use proper insulation types where temperature and environment are a factor.

C. Splices at or below grade level shall be made with wet location rated and approved mechanical connectors and shall be encapsulated in epoxy or plastic molded poured kits. The connections must be assured to be watertight. Splices at or below grade shall always be avoided and minimized. Prior approval is required for feeder splices below grade. Submit proposed materials and exhibit showing location of intended splices for Engineer's review and approval prior to commencing with the work.

D. Labeling: All conductors in panels, switchboards, terminal cabinets, vaults, pull boxes, and junction boxes shall be labeled with tape number markers indicating circuit number and identifying system. All labeling shall be permanent. In manholes and vaults, provide embossed

brass tags identifying system serviced and function. See Section 26 0553 IDENTIFICATION OF ELECTRICAL SYSTEMS.

E. All conductors, wiring, cable where installed below floor, slab or underground shall be considered wet locations, and shall be rated accordingly. Non waterproof cabling is not allowed in any below grade or wet application.

F. Cable and conductors routed through pull boxes and vaults shall be properly supported on porcelain or equal insulators mounted on steel rack inserts. Bend radius of cable or conductor shall not be less than six times the overall cable diameter.

G. Wires and Cables:
1. Conductor Installation:
    a. Install conductors in raceways having adequate, code size cross-sectional area for wires indicated.
    b. Install conductors with care to avoid damage to insulation.
    c. Do not apply greater tension on conductors than recommended by manufacturer during installation.
    d. Use of pulling compounds is permitted. Clean residue from exposed conductors and raceway entrances after conductor installation.
2. Conductor Size and Quantity:
    a. Install no conductors smaller than 12AWG unless otherwise shown.
    b. Provide all required conductors for a fully operable system.
3. Provide dedicated neutrals (one neutral conductor for each phase conductor) in the following single phase circuits:
    a. Lighting and power branch circuits.
    b. Dimmer controlled circuits.
    c. Isolated ground circuits.
    d. Ground fault and arc fault protected circuits where a GFI and arc fault breakers are used in panelboards.
    e. Other electronic equipment which produces a high level of harmonic distortion including but not limited to computers, printers, plotters, copy machines, fax machines, where indicated.
4. Conductors in Cabinets:
    a. Cable and train all wires in panels and cabinets for power and control neatly and uniformly. Use plastic ties in panels and cabinets.
    b. Tie and bundle feeder conductors in wireways of panelboards.
    c. Hold conductors away from sharp metal edges.
    d. Connectors: Retighten mechanical type lugs and connectors for conductors to equipment prior to Notice of Completion.

3.02 FIELD QUALITY CONTROL

A. Tests:
1. Test conductor insulation on feeders of 400 amp and greater for conformity with 1000 volt megohmmeter. Use Insulated Cable Engineers Association testing procedures. Minimum insulation resistance acceptable is 1 megohm for systems 600 volts and below.

2. Test Report: Prepare a typed tabular report indicating the testing instrument, the feeder tested, amperage rating of the feeder, insulation type, voltage, the approximate length of the feeder, conduit type, and the measured resistance of the megohmmeter test. Submit report with operating and maintenance manual.

END OF SECTION

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SECTION 26 0526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Grounding and bonding requirements of electrical installations for personnel safety and to provide a low impedance path for possible ground fault currents as described in CEC Article 250.
   2. "Grounding electrode system" refers to all electrodes required by CEC, as well as including made, supplementary, lightning protection system and telecommunications system grounding electrodes.
   3. The terms "connect" and "bond" are used interchangeably in this specification and have the same meaning.

B. Related Work:
   1. Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 0519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 GROUNDING AND BONDING CONDUCTORS

A. Equipment grounding conductors shall be UL 83 insulated stranded copper, except that sizes No. 10 AWG and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes No. 4 AWG and larger shall be permitted to be identified per CEC.

B. Bonding conductors shall be ASTM B8 bare stranded copper, except that sizes smaller than No. 2 AWG shall be ASTM B1 solid bare copper wire.

C. Conductor sizes shall not be less than what is shown on the drawings and not less than required by the CEC, whichever is greater.

2.02 GROUND RODS

A. Copperclad steel, 5/8" diameter by 10’ long, conforming to UL 467 unless otherwise noted on drawings and details.

B. Quantity of rods shall be as required to obtain the specified ground resistance or additional rods shall be driven to obtain specified resistance or less.

2.03 SPLICES AND TERMINATION COMPONENTS

A. Components shall meet or exceed UL 467 and be clearly marked with the manufacturer, catalog number, and permitted conductor size(s).

PART 3 - EXECUTION

3.01 GENERAL

A. Ground in accordance with the CEC, as shown on drawings, and as hereinafter specified.

B. System Grounding:
1. Secondary service neutrals: Ground at the supply side of the secondary disconnecting means and at the related transformers.
2. Separately derived systems (transformers downstream from the service entrance): Ground the secondary neutral.

C. Equipment Grounding: Metallic structures (including ductwork and building steel), enclosures, fire sprinklers, plumbing piping, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be bonded and grounded.

3.02 INACCESSIBLE GROUNDING CONNECTIONS

A. Make grounding connections which are buried or otherwise normally inaccessible (except connections for which periodic testing access is required) by exothermic weld.

3.03 SECONDARY EQUIPMENT AND CIRCUITS

A. Main Bonding Jumper: Bond the secondary service neutral to the ground bus in the service equipment.

B. Metallic Piping, Building Steel, and Supplemental Electrode(s):

1. Provide a grounding electrode conductor sized per CEC between the service equipment ground bus and all metallic water and gas pipe systems, building steel, and supplemental or made electrodes. Jumper insulating joints in the metallic piping. All connections to electrodes shall be made with fittings that conform to UL 467.
2. Provide a supplemental ground electrode and bond to the grounding electrode system.

C. Service Disconnect: Provide a ground bar bolted to the enclosure with lugs for connecting the various grounding conductors.

D. Switchgear, Switchboards, Unit Substations, and Motor Control Centers:
1. Connect the various feeder equipment grounding conductors to the ground bus in the enclosure with suitable pressure connectors.
2. For service entrance equipment, connect the grounding electrode conductor to the ground bus.
3. Connect metallic conduits, which terminate without mechanical connection to the housing, by grounding bushings and grounding conductor to the equipment ground bus.

E. Transformers:
1. Exterior: Exterior transformers supplying interior service equipment shall have the neutral grounded at the transformer secondary. Provide a grounding electrode at the transformer.
2. Separately derived systems (transformers downstream from service equipment): Ground the secondary neutral at the transformer. Provide a grounding electrode conductor from the transformer to nearest component of the grounding electrode system and the ground bar at the service equipment.

F. Conduit Systems:
1. Ground all metallic conduit systems. All metallic conduit systems shall contain an equipment grounding conductor sized per CEC.
2. Non metallic conduit systems shall contain an equipment grounding conductor.
3. Metal conduit containing only a grounding conductor, and which is provided for mechanical protection of the conductor, shall be bonded to that conductor at the entrance and exit from the conduit.

G. Feeders and Branch Circuits: Install equipment grounding conductors with all feeders, power and lighting branch circuits.

H. Boxes, Cabinets, Enclosures, and Panelboards:
1. Bond the equipment grounding conductor to each pullbox, junction box, outlet box, device box, cabinets, and other enclosures through which the conductor passes.
2. Provide lugs in each box and enclosure for equipment grounding conductor termination.
3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs to terminate the equipment grounding conductors.

I. Motors and Starters: Provide lugs in motor terminal box and starter housing or motor control center compartment to terminate equipment grounding conductors.

J. Receptacles shall not be grounded through their mounting screws. Ground with a jumper from the receptacle green ground terminal to the device box ground screw and the branch circuit equipment grounding conductor.

K. Ground lighting fixtures to the equipment grounding conductor of the wiring system when the green ground is provided; otherwise, ground the fixtures through the conduit systems. Fixtures connected with flexible conduit shall have a green ground wire included with the power wires from the fixture through the flexible conduit to the first outlet box.

L. Fixed electrical appliances and equipment shall be provided with a ground lug for termination of the equipment grounding conductor.

3.04 CONDUCTIVE PIPING

A. Bond all conductive piping systems, interior and exterior, to the building to the grounding electrode system. Bonding connections shall be made as close as practical to the equipment ground bus.

3.05 TELECOMMUNICATIONS SYSTEM

A. Bond telecommunications system grounding equipment to the electrical grounding electrode system. Refer to Section 27 1300, INTERCOMMUNICATIONS SYSTEMS.

3.06 GROUND RESISTANCE

A. Grounding system resistance to ground shall not exceed 25 ohms. Make necessary modifications or additions to the grounding electrode system for compliance without additional cost to the Owner. Final tests shall assure that this requirement is met and test results shall be submitted to the Owner with final close out documents.

B. Resistance of the grounding electrode system shall be measured using a four-terminal fall-of-potential method as defined in IEEE Standard 81. Ground resistance measurements shall be made before the electrical distribution system is energized and shall be made in normally dry conditions not less than 48 hours after the last rainfall. Resistance measurements of separate grounding electrode systems shall be made before the systems are bonded together below grade. The combined resistance of separate systems may be used to meet the required resistance, but the specified number of electrodes must still be provided.

C. Below-grade connections shall be visually inspected by the IOR prior to backfilling. The Contractor shall notify the IOR 24 hours before the connections are ready for inspection.

D. Furnish a copy of tests to Owner at completion of project.

3.07 GROUND ROD INSTALLATION

A. Drive each rod vertically in the earth, not less than 8’ in depth.

B. Where permanently concealed ground connections are required, make the connections by the exothermic process to form solid metal joints. Make accessible ground connections with mechanical pressure type ground connectors.

C. Where rock prevents the driving of vertical ground rods, install angled ground rods or grounding electrodes in horizontal trenches to achieve the specified resistance.

3.08 GROUNDING FOR RF/EMI CONTROL

A. Install bonding jumpers to bond all conduit, sleeves and equipment for low voltage signaling and data communications circuits. Bonding jumpers shall consist of 4" wide copper strip or two No. 10 copper conductors spaced minimum 4" apart. Use No. 6 copper where exposed and subject to damage.

B. Comply with the following when shielded cable is used for communication circuits.
   1. Shields shall be continuous throughout each circuit.
   2. Connect shield drain wires together at each circuit connection point and insulate from ground. Do not ground the shield.
   3. Do not connect shields from different circuits together.
   4. Shield shall be connected at one end only. Connect shield to signal reference at the origin of the circuit. Consult with equipment manufacturer to determine signal reference.

END OF SECTION

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SECTION 26 0533
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Conduit and fittings.
2. Outlet boxes.
3. Weatherproof outlet boxes.
4. Junction and pull boxes.
5. Cabinets, termination cabinets.
6. Gutters.
7. Concrete boxes and vaults.
8. Fiberglass or composite boxes and vaults.

B. Related Work:
1. Installation of all wire, cable, conductor, boxes/gutters, pull ropes, fiber optic cable raceway, conduit, innerduct, cable sleeve and duct as described on the plans and/or as specified here-in. This scope shall include pathways to be installed underground on site, underslab, above grade, both concealed and exposed, overhead concealed and exposed as appropriately applied. Raceways/boxes shall be installed in accordance with their intended and allowed uses and as specified here-in whichever is more restrictive. Size and capacity of all raceway/boxes shall be as specified here-in or as depicted on the drawings, but shall not be less than that required by code. Larger raceway sizes may be specified than code would permit. The specifications shall govern.
2. Listed products for termination, coupling, extending, benching supports of raceways shall be used.
3. Raceways/boxes described by this section shall include, but not be limited to: power for site utilities and lighting, site and building communications, controls, fire alarm, data system, energy management systems, power distribution, lighting, lighting controls, voice communications, intercom, HVAC and other building low voltage/communications systems controls as may be required.
4. Protection of and cleanliness of pathways and raceways must be assured during the construction process in order to eliminate the possibility of debris entering the conduit, duct, pathway resulting in decreased wire capacity and potential damage to installed conductors and cables.
5. Pathways are shown in a diagrammatic way and are generally accurate as to routing, however, it is the Contractor's responsibility as a means and methods process to coordinate with all other trades that require space within a building. The Contractor shall

obtain approval for installation of raceways routing through structural footings, retaining walls, columns, beams, purlins, grade beams, etc.

6. It is the Contractor's responsibility to ensure that all raceway and boxes systems penetrate fire assemblies and sound rated assemblies in an approved manner using the appropriate and listed products for the purpose.
7. Trenching and backfilling for all underground conduit systems installed by the Electrical Contractor shall be the responsibility of the Contractor. Conduits shall have minimum cover requirement of 24" below finish grade. More stringent depth requirements may be imposed by the local agency and shall be adhered to, and / or this specification or as detailed on the plans. Joint trenching may be utilized where practicable and where permitted by this specification. Concrete, native material and sand shall be used as backfill material and shall be compacted in accordance with and coordinated with the grading and site preparation requirements. Conduits shall rest in a minimum of 4" bed of sand prior to backfill and compaction. Locations of existing underground (UG) utility systems shall be determined by calling Underground Service Alert (USA) at least 48 hours prior to any excavation.
8. Minimum conduit size shall be 3/4" except if plan shows or code requires larger size. Exception: Use minimum 1" for underslab and below grade applications outside of building exterior walls.
9. All electrical, control, communications systems shall be installed in metallic conduit system. This shall include but not be limited to all systems described in Section B.3 above, except for voice and data systems which shall be installed as described on these plans and as specified here-in but shall not be less than the recommendations of EIA/TIA standards.
10. All line voltage wiring within the building shall be installed in metallic conduit.
11. All conduit, concrete pads, underground concrete or fiberglass substructures shall be furnished and installed with the approved materials and type for the application. Provide proper traffic control during construction as well as barriers and protection of all excavations and trenching.
12. Empty or future conduits shall be properly plugged with plastic caps or inserts with a 3/8" polyethylene pull rope. Plastic or "duct" tape will not be acceptable.
13. Exterior installations: After conductors are installed, seal conduit ends to prevent entrance of foreign material using pliable duct seal, caps or waterproof expanding foam.
14. All low voltage systems including intercom, fire alarm, public address, etc. shall be in dedicated conduit systems. Voice / Data and Direct Digital Control (DDC) systems for HVAC cabling shall be routed as specified in Section 27 1300, INTERCOMMUNICATIONS SYSTEMS and as recommended by EIA/TIA standards. It shall be the contractor's responsibility to provide raceway down walls to outlet boxes and to provide sleeves across inaccessible ceiling spaces.
15. Underground conduits entering building shall have the open end of conduit within building above the elevation of the conduit outside the building such that water cannot enter building through conduit. If such a condition exists, a pull box outside of building footprint shall be installed in conduit route before conduit enters building whereby top of pull box is below finish floor of building and moisture may exit box before entering building.
16. No single conduit run of any type shall exceed 300 degrees of radius bend from termination box to termination box.

17. Separate Raceway System: Provide a separate dedicated raceway system for each system installed, do not combine different systems into a raceway or cable tray system, unless otherwise noted or allowed.
18. Spare, Future Conduits: Conduits labeled conduit only, spare, or for future use, shall be provided with a pullrope, capped at each end, labeled as spare with destination marked, and turned over to the Owner in an unused state. Contractor shall not utilize these conduits for the installation of cabling or conductors as part of this scope of work. Contractor to verify and install at no additional cost to the Owner, additional conduits as required for the installation of the systems being installed.
19. Outlet System: Provide electrical boxes and fittings as required for a complete installation. Including but not limited to outlet boxes, junction boxes, pull boxes, bushings, locknuts, covers and all other necessary components.
20. Code Compliance: Comply with CEC as applicable to construction and installation of electrical boxes and fittings and size boxes according to CEC 312, 314 and 366 except as noted otherwise.
21. Outlets to be flush mounted: Maintain integrity of insulation and vapor barrier. Unless otherwise noted, flush mount all outlet boxes.
22. Provide putty pads of proper type around outlet boxes and/or as detailed on plan to meet sound transmission restrictions and fire ratings of walls.

1.03 SUBMITTALS

A. Provide Shop Drawings and Product Data for the Following Equipment:
1. Conduit and fittings.
2. Outlet boxes.
3. Weatherproof outlet boxes.
4. Junction and pull boxes.
5. Cabinets, termination cabinets.
6. Gutters.
7. Concrete boxes and vaults.
8. Fiberglass or composite boxes and vaults.
9. Raceways

1.04 REGULATORY REQUIREMENTS

A. Conform to requirements of the CEC, latest adopted version with amendments by local AHJs.

B. Furnish products listed by UL or other independent and nationally recognized testing firm.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Heavy wall Rigid Non-Metallic Conduit, shall be PVC schedule 40 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.

B. Extra heavy wall non-metallic conduit, shall be PVC schedule 80 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.

C. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.

D. Electrical Metallic Tubing (EMT) shall be zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.

E. Flexible Metal Conduit (FMC) shall be continuous wound reduced wall galvanized steel produced to UL standards. Aluminum Flexible Metal Conduit will NOT be allowed.

F. Liquid tight flexible metal conduit shall have a thermoplastic cover over a galvanized steel core containing an integral copper ground in sizes to 1 1/4" and shall be in compliance with UL standards and CEC Article 350. Aluminum Liquid Tight Flexible Metal Conduit will NOT be allowed.

G. Wire basket tray shall be 12” wide with 4” side rails unless otherwise noted. It shall be U.L. listed and use listed connectors, elbows, tees, etc. and be cut and installed using listed equipment. Material shall be zinc electroplated steel.

H. Manufacturers:
1. Outlet Boxes: Bowers, Raco, Steel City or equal.
2. Weatherproof Outlet Boxes: Bell, Red Dot, [Carlon] or equal.
3. Junction and Pull Boxes: Circle AW, Hoffman, Wireguard or equal.
4. Box Extension Adapter: Bell, Red Dot, [Carlon] or equal.
5. Conduit Fittings: O-Z Gedney, Thomas & Betts, or equal.
6. Vaults: Christy, Brooks, Utility Vault or equal.
7. Heavy wall rigid non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
8. Extra heavy wall non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
9. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.
10. Electrical Metallic Tubing (EMT) shall be zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.
11. Flexible Metal Conduit (FMC), Alflex, American Flexible Conduit or equal.
12. Liquid tight flexible metal conduit, Anacanda (type UA), Electri-flex Liquatite or equal.
13. Wire basket tray, B-line, GS Metals, Cablofil or equal.
14. Exterior In-Grade Boxes for Non-Utility Company, Precast concrete or polymer concrete, Utility Vault and Christy.

2.02 OUTLET BOXES

A. NEMA 1 gutter, junction and pull boxes shall be fabricated from code gage steel finished in grey enamel with screw cover fronts and concentric knockouts in all sides.

B. NEMA 3R gutter, junction and pull boxes shall be fabricated from code gage galvanized steel with screw cover fronts and concentric knockouts in the bottom only. Any penetrations to the side, top or back shall be weatherproofed in an approved manner such as “MYERS” gasketed type hub.

C. Steel outlet boxes and plaster rings shall be galvanized rigid assemblies, either one piece pressed or factory welded construction containing the size and number of knockouts required. Steel outlet boxes shall be manufactured, sized and installed in accordance with CEC Article 314. Device Outlet: Installation of one or two devices at common location, minimum 4” square, minimum 1 1/2" deep. Single or 2 gang flush device plaster ring. Raco Series 681 and 686 or equal. HDMI boxes shall be 4-11/16” square and all data/communications outlets boxes shall be true 5” square (RANDL Industries or approved equal).

D. Luminaire Outlet: minimum 4” square with correct plaster ring depth, minimum 1 1/2” deep with 3/8” luminaire stud if required. Provide proper depth plaster ring on bracket outlets and on ceiling outlets.

E. Multiple Devices: Three or more devices at common location. Install 1 piece gang boxes with 1 piece device plastering. Install one device per gang unless otherwise allowed.

F. Construction: Provide galvanized steel interior outlet wiring boxes, of the type, shape and size, including depth of box, to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices. Boxes shall be properly secured to the structure such that they are flush with the finish surface. Boxes shall be made structurally secure by means of the proper fastening devices.

G. Accessories: Provide outlet box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, plaster rings, luminaire studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual wiring situations.

2.03 WEATHERPROOF OUTLET BOXES

A. Construction: Provide corrosion-resistant cast iron, with zinc finish, weatherproof outlet wiring boxes, of the type, shape and size, including depth of box, with threaded conduit ends, cast metal face plate with spring-hinged waterproof cap suitably configured for each application, including face plate gasket, blank plugs and corrosion proof fasteners. Weatherproof boxes to be constructed to have smooth sides, zinc, galvanized finish.

B. Surface mounted die cast aluminum device boxes shall be provided with screw holes to accommodate cast device covers.

C. Cover plates on outlet boxes mounted flush in the wall shall be gasketed to the wall in a watertight manner. Weatherproof boxes in wet locations as described in CEC 406.8 (B) shall be provided with a “while-in-use” cover. When on-grade, unit to be Midwest #U010010GRP or #U012010GRP or approved equivalent. When on roof, red dot ‘CK’ Series of aluminum die-cast construction, NEMA 3R, with lacquer finish, or approved equivalent.

2.04 JUNCTION AND PULL BOXES

A. Construction: Provide galvanized sheet steel junction and pull boxes, with screw-on covers; of the type shape and size, to suit each respective location and installation; with welded seams and equipped with steel nuts, bolts, screws and washers.

B. Location:
1. Install junction boxes above accessible ceilings for drops into walls for receptacle outlets from overhead.
2. Install junction boxes and pull boxes as required to facilitate the installation of conductors and limiting the accumulated angular sum of bends between boxes, cabinets and appliances to 300 degrees.
3. Locations: Junction boxes shall be located only where necessary and only in equipment rooms, closets, and accessible attic and underfloor spaces. A horizontal distance of 24" shall separate outlet boxes on opposite sides of occupancy separation walls, fire-rated walls or partitions.
4. Labeling: Junction box covers shall be marked with indelible ink indicated the circuit numbers passing through the box.

2.05 BOX EXTENSION ADAPTER

A. Construction: Cast iron with gasket.

B. Location: Install over flush wall outlet boxes to permit flexible raceway extension from flush outlet to fixed or movable equipment.

2.06 CONDUIT FITTINGS

A. Requirements: Provide corrosion-resistant punched-steel box knockout closures, conduit locknuts and plastic conduit bushings of the type and size to suit each respective use and installation.

B. A bushing shall be required at all conduit terminations into distribution equipment, service equipment and pull boxes/vaults.

C. Steel boxes may allow for field knock-out modifications, but shall in all other ways conform to code requirements.

2.07 EXTERIOR IN-GRADE BOXES FOR NON-UTILITY COMPANY USE SHALL BE:

A. Precast concrete or polymer concrete type with full bottoms and draining into gravel drywell. Open bottom splice/pull boxes smaller than 24" x 36" shall be open bottom, with minimum 12" of gravel below for drainage, only if a vault is not already specified on the plans.

B. Flushmount in hardscape and 1" above grade in softscape.

C. Provided with correct traffic type lid, i.e., full vehicular, intermediate incidental vehicular or pedestrian-rated as applicable stamped with “ELECTRIC”, “LIGHTING”, COMMUNICATIONS”, etc. cover identification as shown on the drawings or as applicable. All boxes or vaults located in streets, driveways, sidewalks wider than 8’, and turf areas where mowing takes place shall be traffic rated.

D. Provided with brass hold-down bolts in cover.

E. Provided with necessary box extensions to gain proper depth.

F. Seal all conduit in underground boxes with duct seal after conductors have been installed. All conduit penetrations into underground boxes, enclosures and pad mounted equipment shall be provided with bell ends.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Conduit systems listed below are for use in installations where they are permitted to be used by CEC and/or other occupancy restrictions. The below installation methods do not intend to suggest that these materials be installed in conflict with any applicable code. Special attention to applications shall be made in building types such as Educational, Health Care, wet location, hazardous locations, assembly occupancy and multi-story, but not limited to these. Requirements which are more restrictive than the CEC may be called for by the drawings and / or these specifications. These requirements must be adhered to. The Electrical Contractor shall be responsible to use the proper conduit system for the application. Exposed conduit is not allowed below ceilings or above slab of floor, without the permission and approval of the Architect. All conduits shall be concealed except in electrical and telecommunication rooms or where shown to be surface mounted. Exposed conduit (where allowed) shall be run square and plumb with building lines in an approved manner. Strap conduits to blocks with proper sized conduit straps. Spacing of support shall be a minimum as provided for in the CEC. All exposed conduit mounted below 8’ above finished grade shall be strapped at a minimum of 5’ spacing.

B. Non-Metallic Rigid Conduit shall be used in concrete slabs, below concrete slabs on grade, or underground outside of a building slab or foundation. Maintain minimum depth requirements and cover with appropriate fill material. Minimum 4” of bedding and cover of backfill material 1/4" size grain and smaller maximum. Conduit shall be heavy wall Schedule 40 or 80, rigid PVC only. Rigid utility P&C duct shall not be used in any application. Properly sized grounding conductors shall be installed per CEC article 250, in all non-metallic conduit branch circuit and feeder runs. PVC conduit shall be formed or field bent only with the use of properly approved bending tools such as to not decrease the internal bore of the conduit. All conduits shall be cut square and reamed of burrs. Approved and compatible glue shall be used on all PVC fittings to attain watertight joints. All non-metallic conduit runs over 150’ in length and over 1 1/4" trade size conduit shall utilize galvanized rigid steel elbows.

C. Galvanized Rigid Steel (GRS) conduit shall be used where exposed less than 8’–0” above finished grade to 18” below finished grade and where subject to physical damage. Conduits

shall be cut square and reamed to remove burrs and sharp edges. Strap conduit below 8' above grade at 5' intervals. Unless otherwise noted, threadless setscrew and threadless weathertight fittings may be used in lieu of threaded fittings. All threaded ends entering a junction box of any type shall require one locknut on the inside and one on the outside of the enclosure and be provided with a plastic bushing or grounding bushing where necessary for proper grounding. Where exposed to moisture, a watertight hub or other approved method shall be required. All conduits shall be stubbed up straight and uniform into junction boxes, panels, cabinets, etc., and shall be (GRS) properly supported and strapped. All GRS conduit located below grade, shall be tape wrapped. Exposed threads on GRS shall be coated with a cold galvanized paint.

D. Electrical Metallic Tubing (EMT) shall be used as allowed by code and as permitted by this specification. It shall not be in contact with soil or the concrete slab on the ground floor of any structure. Connectors and couplings shall be diecast non-insulated set screw type where installed in indoor dry locations not subject to moisture. Where the potential for moisture is present, compression type weathertight fittings are required. One hole conduit straps are permitted from 1/2" to 1" and two hole conduit straps are required for size 1 1/4" and larger. EMT shall not be allowed in areas subject to severe physical damage. Install copper ground wire sized per CEC 250-122 in all EMT conduits.

E. Flexible conduit may be used where concealed in building construction or above dropped ceilings, but shall meet the following criteria: No individual circuit path from distribution panel to last device shall exceed a cumulative length of 20' of flexible conduit from start to end. Flexible conduit shall not exceed a total directional change of 270 bending degrees in any one run between conduit terminations. Squeeze type or Jake type steel flex fittings of a grounding type are required. Flexible conduit must be supported in accordance with CEC. Where exposed to the weather, moisture, or spray down flexible conduit shall be of the liquidtight type. Fittings shall be manufactured for use with liquidtight flexible conduit. All motor connections shall be made with liquidtight flex. Flexible conduit may not be used where exposed except for last 2' of equipment connection and unless otherwise noted or approved. A copper ground wire sized per CEC 250-122 shall be installed in all flexible conduit runs. Flexible conduit may not be used exposed. Weatherproof liquid tight conduit shall not be used at roof level for equipment connections with lengths exceeding 24" nor shall it be used to circumvent a rigid conduit system in a horizontal direction. Steel flexible metal conduit shall be limited to areas where conduit must be fished in inaccessible spaces or for interior appliance applications when accessible or exposed.

F. Underground conduits and transition to above grade/slab shall be as follows:
1. PVC elbows allowed if top of elbow is minimum 18" BFG or below top of slab, otherwise GRS elbows are required.
2. GRS elbows are required if conduit run is 150' or greater.
3. GRS risers are required from elbow below grade to equipment (device, outlet, panel, cabinet, etc.) above grade.
4. GRS elbows/risers to be PVC coated or 10 MIL taped wrapped (1/2" lapped) to 3" above finish grade or top of slab.

G. Conduit Supports: Conduit runs may be supported by one-hole and two-hole straps or supports as manufactured by Unistrut, Minerallac, Caddy or equals. All strut ends shall be deburred and coated with a cold galvanized paint. Supports may be fastened by means of anchors, shields, beam clamps, toggle bolts, or other approved methods appropriate for the application and size

of conduit. Pipe nailers (J-hooks) are not allowed. Conduit support methods are subject to review by the engineer and authority having jurisdiction for adequacy. Installations deemed inadequate shall be corrected by the contractor at no cost to the Owner.

H. Bends and offsets shall be made with approved tools for the type of conduit being utilized. Bends shall be made without kinking or destroying the smooth bore of the conduit. Parallel conduits shall be run straight and true with bends uniform and symmetrical. Minimum radii shall be per CEC 344-24.

I. Conduit Stub-outs below grade shall be capped with plastic cap, and identified by placing a pull box marked with correctly identified utility such as “Elec”, “Tel”, etc. Dimension for exact location on field record drawings. Provide lids for proper field application (i.e. traffic, incidental, pedestrian).

J. Conduit Seals: Where below grade conduits enter structure through slab or retaining wall of building or basement, seal the inside of each conduit as follows:
1. Provide damming material around conductors 3” into conduit.
2. Fill 3” of conduit with 3M #2123 sealing compound.
3. Wrap conductors where they exit the conduit with 3M #2229 "Scotch Seal" mastic tape. Lap tape to approximate diameter of the raceway and wrap outside of conduit opening with (minimum) one turn.
4. Use conduit sealing bushings type CSB (O-Z/Gedney) or equal.
5. Empty conduits shall be sealed with standard non-hardening duct seal compound and then capped to prevent entrance of moisture and gases and to meet fire resistance requirements.
6. Provide cable drip loop minimum 12” high.

K. Marker tape: Place 6” wide mylar/aluminum traceable marker tape at 12” below finish grade along and above buried conduits. Label tape "CAUTION: ELECTRICAL LINES BELOW" or similar wording. Color code marker tape as follows:
1. Electrical Power – RED
2. Communications - ORANGE

L. Conduits for high voltage (12kv) systems shall be separated from all other conduits by a minimum of 12”. All power system conduits shall be separated from low voltage systems by a minimum of 12” when running parallel to each other and no less than 6” when running perpendicular to each other at conduit crossings.

M. Electrical and communications systems raceways routed underground shall not occupy the same trench as plumbing utilities such as sewer, water, storm drain, gas or other wet or dry gaseous utility system. A minimum of 12” of undisturbed earth is required. Where utilities must cross in closer proximity to each other due to physical constraints, 6” minimum crossing distances are allowed, however 18” on all sides of a utility crossing must be concrete encased.

N. Duct bank defined here-in shall be four or more conduits in a common trench, conduit spacers and saddles shall be required in all trenches where more than two conduits over 2” in diameter travel in the same trench. Proper spacing between systems as outlined above shall be required and spacers shall be located each 5’ (maximum) along trench route from point to point.

O. Conduits, routed below footings, slabs, grade beams, columns, and other structural elements shall be installed in strict compliance with structural details and criteria shown on structural plans. Clearances below structural elements and sleeves through structural elements must be carefully planned to avoid conflict and must be approved by the structural engineer if conflict arises.

P. All conduit or raceways passing through fire rated walls, floors, or ceilings shall be installed with a listed penetration method which protects the opening to the same rating as the assembly and is non hardening.

Q. Expansion Joints
1. Conduits 3" and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install the couplings in accordance with the manufacturer's recommendations.
2. Provide conduits smaller than 3" with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5" vertical drop midway between the end. All conduit shall have a copper green grounding bonding conductor installed.

R. Seismic Joints
1. At seismic joints, provide conduits rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes or approved fittings, on both sides of the joint. Connect conduits to junction boxes with sufficient slack flexible conduit such that these slack conduits are 1 1/2 times the distance between conduit ends. Flexible conduit shall have a copper green ground bonding jumper installed.

S. Wire basket tray shall be used in all concealed spaces (above ceiling spaces, under buildings in access tunnels, below raised floors, etc.) unless otherwise noted. Wire basket tray installations shall conform to the requirements of CEC Article 318. The contractor shall provide all mounting hardware, connectors and bracing as required and as recommended by the manufacturer for a complete system installation. All cutting of wire basket tray shall be per the manufacturer's recommendation using tools designed for that purpose. Cable loading shall not exceed the listing of the system and its support.

T. Location: Locate boxes and conduit bodies so as to ensure accessibility of electrical wiring.

U. Anchoring: Secure boxes rigidly to the substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.

V. Special Application: Provide weatherproof outlets for locations exposed to weather or moisture.

W. Knockout Closures: Provide knockout closures to cap unused knockout holes where blanks have been removed.

X. Mount outlet boxes, unless otherwise required by ADA, or noted on drawings, the following distances above the finished floor:
1. Receptacles, Telephone, TV & Data outlets. (measured to bottom of outlet box): +15".
2. Outlet above counter (measured to top of outlet box): +46".

3. Control (light) Switches. (measured to top of outlet box): +48".
4. Fire Alarm Manual Pull Stations, T-stats. (measured to top of outlet box): +48".
5. Fire Alarm Visuals: the lower of +80" to bottom of lens, or 6" below ceiling.
6. Other Outlets: As indicated in other sections of specifications or as detailed on drawings.

Y. Coordinate all electrical device locations with the architectural floor plan and interior and exterior elevations to prevent mounting devices within elements that they may conflict such as cabinetry, mirrors, planters, etc.

Z. Size outlet and junction boxes to minimum wire fill space requirements. Upsize box as required to allow ease of wire installation and device installation.

AA. Outlet and junction boxes in fire rated walls shall be gauged and spaced so as not to exceed the maximum penetration allowed by the assembly without compromising the fire rating. If a conflict arises relative to a specific condition, the contractor shall follow the requirements of the fire authority and ask for guidance from the design team. At no time should a larger box be installed prior to resolution of conflict.

END OF SECTION

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SECTION 26 0553
IDENTIFICATION OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Nameplates and warning signs where specified herein and as shown on contract documents including the following:
      a. Nameplates and warning signs permanently installed on all electrical equipment and devices including, but not limited to, the following items:
         1) Enclosures for switchboards, panels, pullboxes, cabinets, motors.
         2) Enclosures for all separately enclosed devices including, but not limited to, disconnect switches, circuit breakers, contactors, time switches, control stations and relays, fire alarm panels and lighting control panel.
         3) Wall switches not within sight of outlet controlled.
         4) Special systems such as, but not limited to fire alarm and signal systems. Identification shall be at each equipment rack, terminal cabinet, control panel, annunciator and pullbox.
         5) Devices mounted within and part of equipment including circuit breakers, switches, control devices, control transformers, relays, indication devices and instruments.
   2. Conductor and Cable Identification.

B. Related Work:
   1. Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 0519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
   3. Section 26 2416, PANELBOARDS.
   4. Section 26 2816, ENCLOSED SWITCHES AND CIRCUIT BREAKERS.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 EQUIPMENT LABEL DESIGNATIONS

A. Equipment labels indicating equipment designations both emergency and normal. Designation data per drawings or to be supplied with shop drawings approval.

B. Panelboard labels showing panel designation, voltage, phase and source.

C. In accordance with CEC 110.16, provide arc flash protection warning labels on all switchboards, panelboards, distribution panels, transformers, safety switches, transfer equipment, etc. Labels shall be per ANSI Z535.4 guidelines.

2.02 MATERIALS

A. For Labels: Three layer laminated plastic or micarta with engraved white letters over black background.

B. For Emergency Equipment: Use engraved white letters over red background.

C. For Warning Signs: Minimum 18 gauge steel with red lettering on white porcelain enamel finish.

D. Arc flash labels shall be provided as required by CEC Article 70E.

E. Conductor tape number markers: TayMac MX4280 Series non-fading permanent adhesive.

PART 3 - EXECUTION

3.01 MOUNTING

A. Equipment labels shall be mounted by self-tapping, threaded screws and bolts, or by rivets. Adhesive types are not acceptable unless specifically noted in this section.

B. Conductor tape markers shall be consistently placed for ready conductor identification.

3.02 HEIGHTS ON LABELS

A. Panelboards, Switchboards and Special Systems Enclosures: 1/4" identify equipment designation; 1/8” identify voltage rating and source.

B. Individual Circuit Breakers, Switches, and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 3/16” identify circuit and load served, including location of equipment.

C. Enclosed Circuit Breakers, Enclosed Switches, and Motor Starters: 3/16” identify load served.

3.03 WARNING SIGNS

A. Warning signs shall be permanently mounted with cadmium plated steel screws or nickel-plated brass bolts.

B. Warning signs to read "DANGER - HIGH VOLTAGE", with letters 1 1/2" high, 3/16” stroke minimum.

C. Provide warning sign on all doors or immediately next to door for equipment rooms, enclosures or closets containing equipment energized above 150 volts to ground as per CEC, and/or as directed by the Architect. For interior finish spaces and interior doors, signage shall be coordinated and approved with the Architect in advance of installation.

END OF SECTION

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SECTION 26 0923
OCCUPANCY SENSORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Related Work:
1. Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.
2. Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
3. Section 26 0519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
4. Section 26 2726, WIRING DEVICES.
5. Section 26 5670, LIGHTING ACCEPTANCE TESTING.

1.02 SYSTEM DESCRIPTION

A. The occupancy sensors shall sense the presence of human activity within the desired space and enable or disable the on/off manual lighting control function provided by local switches.

B. Upon detection of human activity by the detector, initiate a time delay to maintain the lights on for a preset period of time. Field adjustable time delay setting from 30 seconds to 15 minutes.

C. Sensors shall have factory set PIR sensing sensitivity for maximum sensitivity. Provide time delay at 10 minutes.

D. Install system in accordance with manufacturer's recommendations and instructions.

E. All line voltage sensors, control units, and relays UL listed

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Provide, on reproducible architectural floor plan, a layout of sensors indicating their sensing distribution.

C. Provide wiring diagrams indicating low voltage and line voltage wiring requirements.

PART 2 - PRODUCTS

2.01 PASSIVE INFRARED SENSORS - GENERAL

A. The passive infrared sensors shall detect presence, in the floor area being controlled, by detecting changes in the Infrared energy. Detect small movements, i.e., when a person is writing while seated at a desk.

B. Provide a temperature compensated dual element sensor and a multi element fresnel lens.

C. The sensor shall utilize DIP switch adjustments for "on" mode operation, time delay, and sensitivity.

D. Provide a daylight filter which ensures that the sensor is insensitive to short-wavelength infrared waves, i.e., those emitted by the sun.

E. The sensors not to protrude more than 1 1/2" from the wall or ceiling and should blend in aesthetically.

F. Conceal adjustments and mounting hardware under a removable cover to prevent tampering with adjustments and hardware.

G. Low Voltage Sensors:
1. Sensor shall provide complete coverage of the controlled area.
2. Sensors shall operate on 24VDC power.
3. Sensors shall operate remote power switch packs.
4. Sensors can be wired in parallel to allow coverage of large areas.
5. Manufacturers: The Watt Stopper CI Series, or approved.

H. Wall Switch Sensors:
1. 300 sq. ft. area coverage, with a field of view of 180 degrees.
2. Completely self-contained sensor system that fits into a standard single gang box. Internal transformer power supply, a latching dry contact relay switching mechanism compatible with electronic ballasts, compact fluorescent, and inductive loads. Triac and other harmonic generating devices are not allowed.
3. Rated to switch loads from 0 to 800 watt incandescent or fluorescent 120 volt and 0 to 1000 watts for 277 volt.
4. Provide adjustable daylight feature that holds lighting "off" when a desired footcandle level is present.
5. Provide integral off override switch with no leakage current to the load or ground.
6. Provide hard 1mm poly IR2 lens, soft lens is not acceptable.
7. Manufacturers: The Watt Stopper PW Series, or approved.
8. Dual Relay: Watt Stopper PW-200, or approved.

2.02 ULTRASONIC OCCUPANCY SENSORS

A. The occupancy sensors capable of detecting presence, in the controlled floor area by detecting Doppler shifts in transmitted ultrasound.

B. Occupancy sensors are precision crystal controlled and shall not interfere with each other when two or more are placed in the same area. Provide ultrasonic circuit with solid state crystal controlled with advanced signal processing.

C. Furnish each sensor with a convenient shunt provision enabling an individual to bypass the sensor in the event of failure. This bypass provision pin or device shall remain in the sensor and be visible from the floor as a constant reminder that the automatic function has been bypassed.

D. Ceiling mounted with maximum protrusion of 1.5” and blend in aesthetically with the ceiling.

E. Provide multi-directional transmitter and ultrasonic receivers that are temperature and humidity resistant.

F. Sensors can be wired in parallel to allow coverage of large areas.

G. Sensitivity adjustment shall range from off at "0" to maximum at "10."

H. Sensors shall operate on 24VDC power.

I. UL listed power pack consisting of a transformer and contact closure relay in one package. Provide a transformer that is capable of operating up to three occupancy sensors.

J. Manufacturers: The Watt Stopper Ultrasonic/UW Series, or approved.

2.03 DUAL TECHNOLOGY SENSORS

A. Utilize same technologies as passive infrared and ultrasonic.

B. Upon a person entering a space, motion from both technologies must be sensed before lighting will be turned on. After this has occurred, detection by either technology will hold lighting on for the set time period. Sensor shall have a retrigger time delay where only one motion is necessary to turn on the lights within 5 seconds after turning off.

C. Manufacturers: The Watt Stopper DT Series, or approved.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install occupancy sensors as directed by manufacturer's instructions. Complete all electrical connections to all control circuits, occupancy sensors, power supply pack and low voltage wiring.

B. Verify with manufacturer's representative that the sensors are laid out in compliance to manufacturer’s published sensing distribution. Provide additional sensors for complete coverage of the space being sensed.

3.02 QUALITY CONTROL

A. Use manufacturer's published testing and adjusting procedures to adjust sensors time delay, daylight sensitivity, and passive infrared sensitivity to satisfaction of the Owner.

END OF SECTION

SECTION 26 0943
NETWORK LIGHTING CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Distributed Digital Lighting Control System: System includes
   1. Digital Lighting and Plug Load Controls

1.02 RELATED SECTIONS

A. 26 5100 - INTERIOR LIGHTING

1.03 REFERENCES

A. NFPA 70 - National Electrical Code; National Fire Protection Association.

B. NEMA - National Electrical Manufacturers Association

C. FCC emission standards

D. UL - Underwriters Laboratories, Inc. Listings

E. UL 2043 - Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products Installed in Air-Handling Spaces.

F. UL 20 - General Use Switches, Plug Load Controls

1.04 DESIGN / PERFORMANCE REQUIREMENTS

A. Digital Lighting Management System shall accommodate the square-footage coverage requirements for each area controlled, utilizing room controllers, digital occupancy sensors, switches, daylighting sensors and accessories that suit the required lighting and electrical system parameters.

B. System shall conform to requirements of NFPA 70.

C. System shall comply with FCC emission standards specified in part 15, sub-part J for commercial and residential application.

D. System shall be listed under UL sections 916 and/or 508.

1.05 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Catalog sheets and specifications.
   2. Ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.

3. Storage and handling requirements and recommendations.
4. Installation instructions.

C. Shop Drawings: Wiring diagrams for the various components of the System specified including:
1. Composite wiring and/or schematic diagram of each control circuit as proposed to be installed.
2. Show location of all devices, including at minimum sensors, load controllers, and switches/dimmers for each area on reflected ceiling plans.
3. Provide room/area details including products and sequence of operation for each room or area. Illustrate typical acceptable room/area connection topologies.
4. Network riser diagram including floor and building level details. Include network cable specification. Illustrate points of connection to integrated systems. Coordinate integration with mechanical and/or other trades.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Closeout Submittals:
1. Project Record Documents: Record actual installed locations and settings for lighting control devices.
2. Operation and Maintenance Manual:
a. Include approved Shop Drawings and Product Data.
b. Include Sequence of Operation, identifying operation for each room or space.
c. Include manufacturer's maintenance information.
d. Operation and Maintenance Data: Include detailed information on device programming and setup.
e. Include startup and test reports.

F. Title 24 Acceptance Testing Documentation: Submit Certification of Acceptance and associated documentation for lighting control acceptance testing performed in accordance with CAL TITLE 24 P6, as specified in Part 3 of this specification under "COMMISSIONING".

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing of centralized and distributed lighting control systems with a minimum of 10 years documented experience.

B. Installer Qualifications: Company certified by the manufacturer and specializing in installation of networked lighting control products with minimum three years documented experience.

C. System Components: Demonstrate that individual components have undergone quality control and testing prior to shipping.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Do not install equipment until following conditions can be maintained in spaces to receive equipment:
   1. Ambient temperature: 32 to 104 degrees F (0 to 40 degrees C).
   2. Relative humidity: Maximum 90 percent, non-condensing.

1.09 WARRANTY

A. Products Warranty: Manufacturer shall provide a 5 year limited warranty on products within this installation, except where otherwise noted, and consisting of a one for one device replacement.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. This specification is based on products from Watt Stopper/Legrand, Santa Clara, CA. Any other system wishing to be considered must submit descriptive information 10 days prior to bid. Prior approval does not guarantee final approval by the electrical engineer. The contractor shall be completely responsible for providing a system meeting this specification in its entirety. All deviations from this specification must be listed and individually signed off by the consultant.

2.02 DISTRIBUTED DIGITAL LIGHTING CONTROL SYSTEM

A. System General: Provide a WattStopper, Provide Digital Lighting Management System (DLM) complete with all necessary enclosures, wiring, and system components to ensure a complete and properly functioning system as indicated on the Drawings and specified herein. If a conflict is identified, between the Drawing and this Specification, contact the Architect for clarification prior to proceeding.
   1. Space Control Requirements: Provide occupancy/vacancy sensors with Manual- or Partial-ON functionality as indicated in all spaces except toilet rooms, storerooms, library stacks, or other applications where hands-free operation is desirable and Automatic-ON occupancy sensors are more appropriate. Provide Manual-ON occupancy/vacancy sensors for any enclosed office, conference room, meeting room, open plan system and training room. For spaces with multiple occupants, or where line-of-sight may be obscured, provide ceiling- or corner-mounted sensors and Manual-ON switches.
   2. Task Lighting / Plug Loads: Provide automatic shut off of non essential plug loads and task lighting in spaces as required by the applicable energy code. Provide Automatic-ON of plug loads whenever spaces are occupied. For spaces with multiple occupants a single shut off consistent with the overhead lighting may be used for the area.
   3. Daylit Areas: Provide daylight-responsive automatic control in all spaces (conditioned or unconditioned) where daylight contribution is available as defined by relevant local building energy code:
      a. All luminaires within code-defined daylight zones shall be controlled separately from luminaires outside of daylit zones.

b. Daytime setpoints for total ambient illumination (combined daylight and electric light) levels that initiate dimming shall be programmed in compliance with relevant local building energy codes.
c. Multiple-level switched daylight harvesting controls may be utilized for areas marked on drawings.
d. Provide smooth and continuous daylight dimming for areas marked on drawings. Daylighting control system may be designed to turn off electric lighting when daylight is at or above required lighting levels, only if system functions to turn lamps back on at dimmed level, rather than turning full-on prior to dimming.

4. Conference, meeting, training, auditoriums, and multipurpose rooms shall have controls that allow for independent control of each local control zone. Rooms larger than 300 square feet shall instead have at least four preset lighting scenes unless otherwise specified. Occupancy / vacancy sensors shall be provided to turn off all lighting in the space. Spaces with up to four moveable walls shall include controls that can be reconfigured when the room is partitioned.

B. Equipment Required: Lighting Control and Automation system as defined under this section covers the following equipment.
1. Digital Lighting Management (DLM) local network: Free topology, plug-in wiring system (Cat 5e) for power and data to room devices.
2. Digital Room Controllers: Self-configuring, digitally addressable one, two or three relay plenum-rated controllers for on/off control. Selected models include 0-10 volt or line voltage forward phase control dimming outputs and integral current monitoring capabilities.
3. Digital Plug Load Controllers: Self-configuring, digitally addressable, single relay, plenum-rated application-specific controllers. Selected models include integral current monitoring capabilities.
4. Digital Occupancy Sensors: Self-configuring, digitally addressable, calibrated occupancy sensors with LCD display and two-way active infrared (IR) communications.
5. Digital Switches: Self-configuring, digitally addressable pushbutton on/off, dimming, and scene switches with two-way active infrared (IR) communications.
6. Handheld remotes for personal control: On/Off, dimming and scene remotes for control using infrared (IR) communications. Remote may be configured in the field to control selected loads or scenes without special tools.
7. Digital Daylighting Sensors: Single-zone closed loop, multi-zone open loop and single-zone dual-loop daylighting sensors with two-way active infrared (IR) communications for daylight harvesting using switching, bi-level, tri-level or dimming control.
8. Configuration Tools: Handheld remote for room configuration and relay panel programming provides two way infrared (IR) communications to digital devices and allows complete configuration and reconfiguration of the device / room from up to 30 feet away.
9. Digital Lighting Management (DLM) segment network: Linear topology, BACnet MS/TP network (1.5 twisted pair, shielded) to connect multiple DLM local networks for centralized control.
10. Emergency Lighting Control Unit (ELCU) – allows a standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building

C. Local Network LMRJ-Series: DLM local network is a free topology lighting control

physical connection and communication protocol designed to control a small area of a building.

1. Features of the DLM local network include:
    a. Plug n' Go automatic configuration and binding of occupancy sensors, switches and lighting loads to the most energy-efficient sequence of operation based upon the device attached.
    b. Simple replacement of any device in the local DLM network with a standard off the shelf unit without requiring significant commissioning, configuration or setup.
    c. Push n' Learn configuration to change the automatic configuration, including binding and load parameters without tools, using only the buttons on the digital devices in the local network.
    d. Two-way infrared communications for control by handheld remotes, and configuration by a handheld tool including adjusting load parameters, sensor configuration and binding, within a line of sight of up to 30 feet from a sensor, wall switch or IR receiver.
2. Digital room devices connect to the local network using pre-terminated Cat 5e cables with RJ-45 connectors, which provide both data and power to room devices. Systems that utilize RJ-45 patch cords but do not provide serial communication data from individual end devices are not acceptable.
3. If manufacturer's pre-terminated Cat5e cables are not used for the installation each cable must be individually tested and observed by authorized service representative following installation.

2.03 DIGITAL LOAD CONTROLLERS (ROOM, PLUG LOAD AND FIXTURE CONTROLLERS)

A. Digital Load Controllers: Digital controllers for lighting zones, fixtures and/or plug loads automatically bind room loads to the connected control devices in the space without commissioning or the use of any tools. Provide controllers to match the room lighting and plug load control requirements. Controllers are simple to install, and do not have dip switches/potentiometers, or require special configuration for standard Plug n' Go applications. Control units include the following features

1. Automatic room configuration to the most energy-efficient sequence of operation based upon the devices in the room.
2. Simple replacement using the default automatic configuration capabilities, a room controller may be replaced with an off-the-shelf device.
3. Multiple room controllers connected together in a local network must automatically arbitrate with each other, without requiring any configuration or setup, so that individual load numbers are assigned starting with load 1 to a maximum of 64, assigned based on each controller's device ID's from highest to lowest.
4. Device Status LEDs to indicate:
    a. Data transmission
    b. Device has power
    c. Status for each load
    d. Configuration status
5. Quick installation features including:
    a. Standard junction box mounting
    b. Quick low voltage connections using standard RJ-45 patch cable

6. Based on individual configuration, each load shall be capable of the following behavior on power up following the loss of normal power:
    a. Turn on to 100 percent
    b. Turn off
    c. Turn on to last level
7. Each load be configurable to operate in the following sequences based on occupancy:
    a. Auto-on/Auto-off (Follow on and off)
    b. Manual-on/Auto-off (Follow off only)
8. Polarity of each load output shall be reversible, via digital configuration, so that on is off and off is on.
9. BACnet object information shall be available for the following objects:
    a. Load status
    b. Schedule state, normal or after-hours
    c. Demand Response enable and disable
    d. Room occupancy status
    e. Total room lighting and plug loads watts
    f. Electrical current
    g. Total watts per controller
    h. Total room watts/sq ft.
    i. Force on/off all loads
10. UL 2043 plenum rated
11. Manual override and LED indication for each load
12. Zero cross circuitry for each load
13. All digital parameter data programmed into an individual room controller or plug load controller shall be retained in non-volatile FLASH memory within the controller itself. Memory shall have an expected life of no less than 10 years.
14. Dimming Room Controllers shall share the following features:
    a. Each load shall have an independently configurable preset on level for Normal Hours and After Hours events to allow different dimmed levels to be established at the start of both Normal Hours and After Hours events.
    b. Fade rates for dimming loads shall be specific to bound switch buttons, and the load shall maintain a default value for any bound buttons that do not specify a unique value.
    c. The following dimming attributes may be changed or selected using a wireless configuration tool:
        1) Establish preset level for each load from 0-100 percent
        2) Set high and low trim for each load
        3) Initiate lamp burn in for each load of either 0, 12 or 100 hours
    d. Override button for each load provides the following functions:
        1) Press and release for on/off control
        2) Press and hold for dimming control
    e. Each dimming output channel shall have an independently configurable minimum and maximum calibration trim level to set the dimming range to match the true dynamic range of the connected ballast or driver. LED level indicators on bound dimming switches shall utilize this new maximum and minimum trim.
    f. Each dimming output channel shall have an independently configurable minimum and maximum trim level to set the dynamic range of the output within the new 0-100 percent dimming range defined by the minimum and

maximum calibration trim.

g. Calibration and trim levels must be set per output channel. Devices that set calibration or trim levels per controller (as opposed to per load) are not acceptable.

h. All configuration shall be digital. Devices that set calibration or trim levels per output channel via trim pots or dip-switches are not acceptable.

B. On/Off Room Controllers shall include:
1. Dual voltage (120/277 VAC, 60 Hz) capable rated for 20A total load
2. One or two relay configuration
3. Simple 150 mA switching power supply (Only 4 100 series devices on a Cat 5e local network)
4. Three RJ-45 DLM local network ports with integral strain relief and dust cover
5. WattStopper product numbers: LMRC-101, LMRC-102

C. On/Off/0-10V Dimming KO Mount Room Controllers shall include:
1. Dual voltage (120/277 VAC, 60 Hz) capable rated for 10A total load
2. Optional real time current and voltage monitoring (with - M Monitoring option).
3. One or two relays configurations
4. Smart 150 mA switching power supply
5. Two RJ-45 DLM local network ports. Provide molded strain relief ring
6. One dimming output per relay
    a. 0-10V Dimming - Where indicated, one 0-10 volt analog output per relay for control of compatible ballasts and LED drivers. The 0-10 volt output shall automatically open upon loss of power to the Room Controller to assure full light output from the controlled lighting
7. Units capable of providing both Class 1 or Class 2 wiring for the 0-10V output
8. WattStopper product numbers: LMRC-111, LMRC-111-M, LMRC-112, or LMRC-112-M.

D. On/Off/0-10V Dimming Enhanced Room Controllers shall include:
1. Dual voltage (120/277 VAC, 60 Hz) capable or 347 VAC, 60 Hz. 120/277 volt models rated for 20A total load; 347 volt models rated for 15A total load
2. Built in real time current monitoring
3. One, two or three relays configurations
4. Smart 250 mA switching power supply
5. Four RJ-45 DLM local network ports. Provide integral strain relief
6. One dimming output per relay
    a. 0-10V Dimming - Where indicated, one 0-10 volt analog output per relay for control of compatible ballasts and LED drivers. The 0-10 volt output shall automatically open upon loss of power to the Room Controller to assure full light output from the controlled lighting (LMRC-110 series and 210 series).
7. WattStopper product numbers: LMRC-211, LRMC-212, LRMC-213.

E. On/Off/ Forward Phase Dimming Room Controllers shall include:
1. Dual voltage (120/277 VAC, 60 Hz) rated for 20A total load, with forward phase dimmed loads derating to 16A for some load types
2. Built in real time current monitoring
3. One or two relays configurations

4. Smart 250 mA switching power supply
5. Four RJ-45 DLM local network ports. Provide integral strain relief
6. One dimming output per relay
    a. Line Voltage, Forward Phase Dimming - Where indicated, one forward phase control line voltage dimming output per relay for control of compatible two-wire or three-wire ballasts, LED drivers, MLV, forward phase compatible ELV, neon/cold cathode and incandescent loads. (LMRC-220 series)
7. WattStopper product numbers: LMRC-221, LMRC-222

F. Plug Load Controllers shall include:
1. 120 VAC, 60 Hz rated for 20A total load. Controller carries application-specific UL 20 rating for receptacle control.
2. One relay configuration with additional connection for unswitched load
3. Configurable additive time delay to extend plug load time delay beyond occupancy sensor time delay (e.g. a 10 minute additive delay in a space with a 20 minute occupancy sensor delay ensures that plug loads turn off 30 minutes after the space is vacated).
4. Factory default operation is Auto-on/Auto-off, based on occupancy
5. Real time current monitoring of both switched and un-switched load (LMPL-201 only)
6. Switching power supply
    a. Simple 150mA - Only 4 100 series devices on a Cat 5e local network (LMPL-101)
    b. Smart 250mA (LMPL-201)
7. RJ-45 DLM local network ports
    a. Three RJ-45 ports (LMPL-101)
    b. Four RJ-45 ports (LMPL-201)
8. Provide a wireless transmitter that can be connected to any Cat 5e network of the lighting controls that will communicate the room's occupancy state to receptacles mounted in the area with integral relays. Binding of the transmitter to the receptacles shall be accomplished by pressing a test button on the transmitter, and then a test button on the receptacle.
9. WattStopper product numbers:
    a. Plug Load Controllers: LMPL-101, LMPL-201.
    b. Wireless Transceiver and Receptacle: WRC-TX-LM, WRC-15-1/2, WRC-20-1/2

2.04 DIGITAL WALL OR CEILING MOUNTED OCCUPANCY SENSOR

A. Digital Occupancy Sensors shall provide graphic LCD display for digital calibration and electronic documentation. Features include the following:
1. Digital calibration and pushbutton configuration for the following variables:
    a. Sensitivity, 0-100 percent in 10 percent increments
    b. Time delay, 1-30 minutes in 1 minute increments
    c. Test mode, Five second time delay
    d. Detection technology, PIR, Ultrasonic or Dual Technology activation and/or re-activation.
    e. Walk-through mode
2. Load parameters including Auto/Manual-ON, blink warning, and daylight enable/disable when photosensors are included in the DLM local network.
3. Programmable control functionality including:

a. Each sensor may be programmed to control specific loads within a local network.
b. Sensor shall be capable of activating one of 16 user-definable lighting scenes.
c. Adjustable retrigger time period for manual-on loads. Load will retrigger (turn on) automatically within a configurable period of time (default 10 seconds) after turning off.
d. On dual technology sensors, independently configurable trigger modes are available for both Normal (NH) and After Hours (AH) time periods. The retrigger mode can be programmed to use the following technologies:
e. Ultrasonic and Passive Infrared
f. Ultrasonic or Passive Infrared
g. Ultrasonic only
h. Passive Infrared only
i. Independently configurable sensitivity settings for passive infrared and ultrasonic technologies (on dual technology sensors) for both Normal (NH) and After Hour (AH) time periods.

4. One or two RJ-45 port(s) for connection to DLM local network.
5. Two-way infrared (IR) transceiver to allow remote programming through handheld commissioning tool and control by remote personal controls.
6. Device Status LEDs, which may be disabled for selected applications, including:
   a. PIR detection
   b. Ultrasonic detection
   c. Configuration mode
   d. Load binding
7. Assignment of occupancy sensor to a specific load within the room without wiring or special tools.
8. Manual override of controlled loads.
9. All digital parameter data programmed into an individual occupancy sensor shall be retained in non-volatile FLASH memory within the sensor itself. Memory shall have an expected life of no less than 10 years.

2.05 DIGITAL WALL SWITCH OCCUPANCY SENSORS

A. Digital Occupancy Sensors shall provide scrolling LCD display for digital calibration and electronic documentation. Features include the following:
   1. Digital calibration and pushbutton configuration for the following variables:
      a. Sensitivity: 0-100 percent in 10 percent increments
      b. Time delay: 1-30 minutes in 1 minute increments
      c. Test mode: Five second time delay
      d. Detection technology: PIR, Dual Technology activation and/or re-activation.
      e. Walk-through mode
      f. Load parameters including Auto/Manual-ON, blink warning, and daylight enable/disable when photosensors are included in the DLM local network.
   2. Programmable control functionality including:
      a. Each sensor may be programmed to control specific loads within a local network.
      b. Sensor shall be capable of activating one of 16 user-definable lighting scenes.
      c. Adjustable retrigger time period for manual-on loads. Load will retrigger (turn on) automatically during the configurable period of time (default 10 seconds) after turning off.
      d. On dual technology sensors, independently configurable trigger modes are

available for both Normal (NH) and After Hours (AH) time periods. The retrigger mode can be programmed to use the following technologies:
1) Ultrasonic and Passive Infrared
2) Ultrasonic or Passive Infrared
3) Ultrasonic only
4) Passive Infrared only

3. Independently configurable sensitivity settings for passive infrared and ultrasonic technologies (on dual technology sensors) for both Normal (NH) and After Hour (AH) time periods.
4. Two RJ-45 ports for connection to DLM local network.
5. Two-way infrared (IR) transceiver to allow remote programming through handheld configuration tool and control by remote personal controls.
6. Device Status LEDs including
   a. PIR detection
   b. Ultrasonic detection
   c. Configuration mode
   d. Load binding
7. Assignment of any occupancy sensor to a specific load within the room without wiring or special tools.
8. Assignment of local buttons to specific loads within the room without wiring or special tools
9. Manual override of controlled loads
10. All digital parameter data programmed into an individual wall switch sensor shall be retained in non-volatile FLASH memory within the wall switch sensor itself. Memory shall have an expected life of no less than 10 years.

B. Units shall not have any dip switches or potentiometers for field settings.

C. Multiple occupancy sensors may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration will be required.

D. Two-button wall switch occupancy sensors, when connected to a single relay dimming room or fixture controller, shall operate in the following sequence as a factory default:
1. Left button
   a. Press and release - Turn load on
   b. Press and hold - Raise dimming load
2. Right button
   a. Press and release - Turn load off
   b. Press and hold - Lower dimming load

E. Low voltage momentary pushbuttons shall include the following features:
1. Load/Scene Status LED on each switch button with the following characteristics:
   a. Bi-level LED
   b. Dim locator level indicates power to switch
   c. Bright status level indicates that load or scene is active
2. The following button attributes may be changed or selected using a wireless configuration tool:
   a. Load and Scene button function may be reconfigured for individual buttons (from Load to Scene, and vice versa).

b. Individual button function may be configured to Toggle, On only or Off only.
c. Individual scenes may be locked to prevent unauthorized change.
d. Fade Up and Fade Down times for individual scenes may be adjusted from 0 seconds to 18 hours.
e. Ramp rate may be adjusted for each dimmer switch.
f. Switch buttons may be bound to any load on any load controller or relay panel and are not load type dependent; each button may be bound to multiple loads.
g. WattStopper part numbers: LMPW, LMDW. Available in white, light almond, ivory, grey, red and black; compatible with wall plates with decorator opening.

2.06 DIGITAL WALL SWITCHES

A. Low voltage momentary pushbutton switches in 1, 2, 3, 4, 5 and 8 button configuration. Wall switches shall include the following features:
1. Two-way infrared (IR) transceiver for use with personal and configuration remote controls.
2. Removable buttons for field replacement with engraved buttons and/or alternate color buttons. Button replacement may be completed without removing the switch from the wall.
3. Configuration LED on each switch that blinks to indicate data transmission.
4. Load/Scene Status LED on each switch button with the following characteristics:
a. Bi-level LED
b. Dim locator level indicates power to switch
c. Bright status level indicates that load or scene is active
d. Dimming switches shall include seven bi-level LEDs to indicate load levels using 14 steps.
5. Programmable control functionality including:
a. Button priority may be configured to any BACnet priority level, from 1-16, corresponding to networked operation allowing local actions to utilize life safety priority
b. Scene patterns may be saved to any button other than dimming rockers. Once set, buttons may be digitally locked to prevent overwriting of the preset levels.
6. All digital parameter data programmed into an individual wall switch shall be retained in non-volatile FLASH memory within the wall switch itself. Memory shall have an expected life of no less than 10 years.

B. Two RJ-45 ports for connection to DLM local network.

C. Multiple digital wall switches may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration shall be required to achieve multi-way switching.

D. Load and Scene button function may be reconfigured for individual buttons from Load to Scene, and vice versa.
1. Individual button function may be configured to Toggle, On only or Off only.
2. Individual scenes may be locked to prevent unauthorized change.
3. Fade Up and Fade Down times for individual scenes may be adjusted from 0 seconds to 18 hours.
4. Ramp rate may be adjusted for each dimmer switch.
5. Switch buttons may be bound to any load on any load controller or relay panel and are

not load type dependent; each button may be bound to multiple loads.

6. WattStopper product numbers: LMSW-101, LMSW-102, LMSW-103, LMSW-104, LMSW-105, LMSW-108, LMDM-101. Available in white, light almond, ivory, grey, red and black; compatible with wall plates with decorator opening.

2.07 DLM HANDHELD USER INTERFACE REMOTES

A. Battery-operated handheld devices in 1, 2 and 5 button configurations for remote switching or dimming control. Remote controls shall include the following features:
   1. Two-way infrared (IR) transceiver for line of sight communication with DLM local network within up to 30 feet.
   2. LED on each button confirms button press.
   3. Load buttons may be bound to any load on a load controller or relay panel and are not load type dependent; each button may be bound to multiple loads.
   4. Inactivity timeout to save battery life.

B. Provide with a wall mount holster and mounting hardware for each remote.

C. WattStopper part numbers: LMRH-101, LMRH-102, LMRH-105.

2.08 DIGITAL DAYLIGHTING SENSORS

A. Digital daylighting sensors shall work with load controllers and relay panels to provide automatic switching, bi-level, or tri-level or dimming daylight harvesting capabilities for any load type connected to the controller or panel. Daylighting sensors shall be interchangeable without the need for rewiring.
   1. Closed loop sensors measure the ambient light in the space and control a single lighting zone.
   2. Open loop sensors measure incoming daylight in the space, and are capable of controlling up to three lighting zones.
   3. Dual loop sensors measure both ambient and incoming daylight in the space to insure that proper light levels are maintained as changes to reflective materials are made in a single zone

B. Digital daylighting sensors shall include the following features:
   1. Sensor's internal photodiode shall only measure lightwaves within the visible spectrum. The photodiode's spectral response curve shall closely match the entire photopic curve. Photodiode shall not measure energy in either the ultraviolet or infrared spectrums. Photocell shall have a sensitivity of less than 5 percent for any wavelengths less than 400 nanometers or greater than 700 nanometers.
   2. Sensor light level range shall be from 1-6,553 foot-candles (fc).
   3. Capability of ON/OFF, bi-level or tri-level switching, or dimming, for each controlled zone, depending on the selection of load controller(s) and load binding to controller(s).
   4. For switching daylight harvesting, the photosensor shall provide a field-selectable deadband, or a separation, between the "ON Setpoint" and the "OFF Setpoint" that will prevent the lights from cycling excessively after they turn off.
   5. For dimming daylight harvesting, the photosensor shall provide the option, when the daylight contribution is sufficient, of turning lights off or dimming lights to a field-selectable minimum level.

6. Photosensors shall have a digital, independently configurable fade rate for both increasing and decreasing light level in units of percent per second.
7. Photosensors shall provide adjustable cut-off time. Cut-off time is defined by the number of selected minutes the load is at the minimum output before the load turns off. Selectable range between 0-240 minutes including option to never cut-off.
8. Optional wall switch override shall allow occupants to reduce lighting level to increase energy savings or, if permitted by system administrator, raise lighting levels for a selectable period of time or cycle of occupancy.
9. Integral infrared (IR) transceiver for configuration and/or commissioning with a handheld configuration tool, to transmit detected light level to wireless configuration tool, and for communication with personal remote controls.
10. Configuration LED status light on device that blinks to indicate data transmission.
11. Status LED indicates test mode, override mode and load binding.
12. Recessed switch on device to turn controlled load(s) ON and OFF.
13. BACnet object information shall be available for the following daylighting sensor objects, based on the specific photocell's settings:
    a. Light level
    b. Day and night setpoints
    c. Off time delay
    d. On and off setpoints
    e. Up to three zone setpoints
    f. Operating mode - on/off, bi-level, tri-level or dimming
14. One RJ-45 port for connection to DLM local network.
15. A choice of accessories to accommodate multiple mounting methods and building materials. Photosensors may be mounted on a ceiling tile, skylight light well, suspended lighting fixture or backbox. Standard tube photosensors accommodate mounting materials from 0-0.62 inch thick (LMLS-400, LMLS-500). Extended tube photosensors accommodate mounting materials from 0.62 to 1.25 inches thick (LMLS-400-L, LMLS-500-L). Mounting brackets are compatible with J boxes (LMLS-MB1) and wall mounting (LMLS-MB2). LMLS-600 photosensor to be mounted on included bracket below skylight well.
16. Any load or group of loads in the room can be assigned to a daylighting zone
17. Each load within a daylighting zone can be individually enabled or disabled for discrete control (load independence).
18. All digital parameter data programmed into a photosensor shall be retained in non-volatile FLASH memory within the photosensor itself. Memory shall have an expected life of no less than 10 years.

C. Closed loop digital photosensors shall include the following additional features:
1. An internal photodiode that measures light in a 100-degree angle, cutting off the unwanted light from bright sources outside of this cone.
2. Automatic self-calibration, initiated from the photosensor, a wireless configuration tool or a PC with appropriate software.
3. Automatically establishes application-specific setpoints following self-calibration. For switching operation, an adequate deadband between the ON and OFF setpoints shall prevent the lights from cycling; for dimming operation a sliding setpoint control algorithm with separate Day and Night setpoints shall prevent abrupt ramping of loads.
4. WattStopper Product Number: LMLS-400, LMLS-400-L.

D. Open loop digital photosensors shall include the following additional features:
1. An internal photodiode that measures light in a 60-degree angle (cutting off the unwanted light from the interior of the room).
2. Automatically establishes application-specific setpoints following manual calibration using a wireless configuration tool or a PC with appropriate software. For switching operation, an adequate deadband between the ON and OFF setpoints for each zone shall prevent the lights from cycling; for dimming operation, a proportional control algorithm shall maintain the design lighting level in each zone.
3. Each of the three discrete daylight zones can include any non overlapping group of loads in the room.
4. WattStopper Product Number: LMLS-500, LMLS-500-L.

E. Dual loop digital photosensors shall include the following additional features:
1. Close loop portion of dual loop device must have an internal photodiode that measures light in a 100 degree angle, cutting off the unwanted light from sources outside of this con
2. Open loop portion of dual loop device must have an internal photodiode that can measure light in a 60 degree angle, cutting off the unwanted light from the interior of the room.
3. Automatically establishes application-specific set-points following self-calibration. For switching operation, an adequate deadband between the ON and OFF setpoints shall prevent the lights from cycling; for dimming operation a sliding setpoint control algorithm with separate Day and Night setpoints shall prevent abrupt ramping of load.
4. Device must reference closed loop photosensor information as a base line reference. The device must be able to analyze the open loop photosensor information to determine if an adjustment in light levels is required.
5. Device must be able to automatically commission setpoints each night to provide adjustments to electrical lighting based on changes in overall lighting in the space due to changes in reflectance within the space or changes to daylight contribution based on seasonal changes.
6. Device must include extendable mounting arm to properly position sensor within a skylight well.
7. WattStopper product number LMLS-600

2.09 HANDHELD CONFIGURATION TOOLS

A. Provide a wireless configuration tool to facilitate customization of DLM local networks using two-way infrared communications, and/or PC software that connects to each local network via a USB interface.

B. Features and functionality of the wireless configuration tool shall include but not be limited to:
1. Two-way infrared (IR) communication with DLM IR-enabled devices within a range of approximately 30 feet.
2. High visibility organic LED (OLED) display, pushbutton user interface and menu-driven operation.
3. Must be able to read and modify parameters for load controllers and relay panels, occupancy sensors, wall switches, daylighting sensors, network bridges, and identify DLM devices by type and serial number.
4. Save up to eight occupancy sensor setting profiles, and apply profiles to selected sensors.

5. Temporarily adjust light level of any load(s) on the local network, and incorporate those levels in scene setting. Set room mode for testing of Normal Hours (NH) and After Hours (AH) parameter settings.
6. Adjust or fine-tune daylighting settings established during auto-configuration, and input light level data to complete configuration of open loop daylighting controls.
7. Set room mode for testing of Normal Hours (NH) and After Hours (AH) parameter settings.
8. Verify status of building level network devices.

C. WattStopper Product Numbers: Handheld LMCT-100

2.10 EMERGENCY LIGHTING CONTROL DEVICE

A. Emergency Lighting Control Unit – A UL 924 listed device that monitors a switched circuit providing normal lighting to an area. The unit provides normal ON/OFF control of emergency lighting along with the normal lighting. Upon normal power failure the emergency lighting circuit will close, forcing the emergency lighting ON until normal power is restored. Features include:
1. 120/277 volts, 50/60 Hz, 20 amp ballast rating
2. Push to test button
3. Auxiliary contact for remote test or fire alarm system interface

B. WattStopper Product Numbers: ELCU-100, ELCU-200.

PART 3 - EXECUTION

3.01 PREPARATION

A. Do not begin installation until measurements have been verified and work areas have been properly prepared.

B. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Install system in accordance with the approved system shop drawings and manufacturer's instructions.

B. Install all room/area devices using manufacturer's factory-tested Cat 5e cable with pre-terminated RJ-45 connectors.
1. If pre-terminated cable is not used for room/area wiring, each field-terminated cable shall be tested following installation and testing results submitted to the Manufacturer's Representative for approval prior to proceeding with the Work.
2. If fixtures have internal DLM Control Modules, ensure that they are also connected with Cat 5e cable.
3. Install all room to room network devices using manufacturer-supplied LM-MSTP network wire or wireless devices. Network wire substitution is not permitted and may result in loss of product warranty.
4. Low voltage wiring topology must comply with manufacturer's specifications.
5. Route network wiring as indicated on the Drawings as closely as possible. Document

final wiring location, routing and topology on as built drawings.

C. All line voltage connections shall be tagged to indicate circuit and switched legs.

D. Test all devices to ensure proper communication.

E. Calibrate all sensor time delays and sensitivity to guarantee proper detection of occupants and energy savings. Adjust time delay so that controlled area remains lighted while occupied.

F. Provide written or computer-generated documentation on the configuration of the system including room by room description including:
1. Sensor parameters, time delays, sensitivities, and daylighting setpoints.
2. Sequence of operation, (e.g. manual ON, Auto OFF. etc.)
3. Load Parameters (e.g. blink warning, etc.)

G. Post start-up tuning - Adjust sensor time delays and sensitivities to meet the Owner's requirements 30 days from beneficial occupancy. Provide a detailed report to the Architect / Owner of post start-up activity.

H. Tighten all panel Class I conductors from both circuit breaker and to loads to torque ratings as marked on enclosure UL label.

I. All Class II cabling shall enter enclosures from within low-voltage wiring areas and shall remain within those areas. No Class I conductors shall enter a low-voltage area.

J. Run separate neutrals for any phase dimmed branch load circuit. Different types of dimming loads shall have separate neutral.

K. Verify all non-panel-based lighting loads to be free from short circuits prior to connection to room controllers.

3.03 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing. Notify Architect and Manufacturer in writing a minimum of 3 weeks prior to system start-up and testing.

B. Tests and Inspections: Manufacturer's service representative shall perform the following inspections and prepare reports.
1. Verify Class I and II wiring connections are terminated properly by validating system performance.
2. Set IP addresses and other network settings of system front end hardware per facilities IT instructions.
3. Verify / complete task programming for all switches, dimmers, time clocks, and sensors.
4. Verify that the control of each space complies with the Sequence of Operation.
5. Correct any system issues and retest.

C. Provide a report in table format with drawings, or using a software file that can be opened in the manufacturer's system software including each room or space that has lighting control

installed. Indicate the following:
1. Date of test or inspection.
2. Loads per space, or Fixture Address identification.
3. Quantity and Type of each device installed
4. Reports providing each device's settings.

3.04 COMMISSIONING ASSISTANCE

A. Title 24 Acceptance Testing Service; Include additional costs for Lighting Control Manufacturer to provide a technician for one additional day while the CLCATT performs lighting control acceptance testing in accordance with CAL TITLE 24 P6 including submission of required documentation.

3.05 DEMONSTRATION AND TRAINING

A. Before Substantial Completion, arrange and provide a one-day Owner instruction period to designated Owner personnel. Set-up, starting of the lighting control system and Owner instruction includes:
1. Confirmation of entire system operation and communication to each device.
2. Confirmation of operation of individual relays, switches, and sensors.
3. Confirmation of system Programming, photocell settings, override settings, etc.
4. Provide training to cover installation, programming, operation, and troubleshooting of the lighting control system.

3.06 PRODUCT SUPPORT AND SERVICE

A. Factory telephone support shall be available at no cost to the Owner following acceptance. Factory assistance shall consist of assistance in solving application issues pertaining to the control equipment.

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SECTION 26 2416
PANELBOARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. Panelboards.

B. Related Work:
1. Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.
2. Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
3. Section 26 0519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Cables and wiring.
4. Section 26 0526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. Underwriters Laboratories, Inc. (UL):
1. No. 50 Enclosures for Electrical Equipment
2. No. 67 Panelboards
3. No. 489 Molded Case Circuit Breakers and Circuit Breaker enclosures

C. National Fire Protection Association (NFPA):
1. No. 70-2022 California Electrical Code (CEC)

D. National Electrical Manufacturers Association (NEMA):
1. No. PB-1 Panelboards.

2. No. AB-3 Molded Case Circuit Breakers and Their Application.

PART 2 - PRODUCTS

2.01 PANELBOARDS

A. Panelboards shall be in accordance with UL, NEMA, NEC, CEC and as shown on the drawings. Approved manufacturers are Square D (NQ Series or I-Line). Eaton may be substituted if pre-approved by the Engineer of Record and only if Square D is not available. Siemens and General Electric will NOT be permitted.

B. Panelboards shall be standard manufactured products. All components of the panelboards shall be the product and assembly of the same manufacturer. All similar units of all panelboards to be of the same manufacturer.

C. All panelboards shall be dead front safety type. Arrange sections for easy removal without disturbing other sections.

D. All panelboards shall be completely factory assembled with molded case circuit breakers. All factory wiring shall be checked for correct tightness and visually inspected to insure that bussing and terminations have not become loose in transit to job site.

E. Panelboards shall have main breaker or main lugs, bus size, voltage, phase, top or bottom feed, and flush or surface mounting as scheduled on the drawings. Refer to single line diagram and panel schedules on drawings. Terminals shall be minimum 75 degree rated. Back fed main circuit breakers are not allowed. Main circuit breakers shall be vertically mounted.

F. Panelboards shall have the following features:
   1. Nonreduced size copper bus bars, and connection straps bolted together and rigidly supported on molded insulators. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of branch circuit devices.
   2. Full size copper neutral bar, mounted on insulated supports.
   3. Copper ground bar and isolation ground bar (where called for in panel schedule) with sufficient terminals for all grounding wires. Buses braced for the available short circuit current.
   4. All breakers and phase bus connections shall be arranged so that it will be possible to substitute a 2-pole breaker for two single pole breakers, and a 3-pole breaker for three single pole breakers, when trip is 30 amps or less and frame size is 100 amperes or less, without having to drill and tap the main bus bars at bus straps. Where used for heating and air conditioning, and refrigeration equipment, use only HACR type U.L. listed circuit breakers.
   5. Design interior so that protective devices can be replaced without removing adjacent units, main bus connectors, and without drilling or tapping.
   6. Where designated on panel schedule as "space", include all necessary bussing, device support and connections. Provide blank cover for each space.

7. In two section panelboards, the main bus in each section shall be full size. The first section shall be furnished with subfeed lugs on the line side with cable connections to the second section. Panelboard sections with tapped bus or crossover bus are not acceptable.
8. Series rated panelboards are not permitted.
9. Label all panels in accordance with Section 26 0553, IDENTIFICATION OF ELECTRICAL SYSTEMS.
10. Recessed panel space conduit: Provide (1) ¾ inch spare conduit stubbed to accessible ceiling space and/or interstitial space below floor for every (5) spaces and spares indicated on panel schedules.

G. Panelboards serving as building mains shall be “service entrance rated” and UL Listed as “service equipment”.

2.02 CABINETS AND TRIMS

A. Cabinets:
1. Provide galvanized steel cabinets to house panelboards. Cabinets for outdoor panels shall be factory primed and suitably treated with a corrosion-resisting paint finish meeting UL standard for outdoor applications.
2. All ventilated openings in panelboards and switchboards, shall be furnished with dust filters to prevent entrance of dust and debris.
3. Cabinets for panelboards may be of one piece formed steel or of formed sheet steel with end and side panels welded, riveted, or bolted as required.
4. Provide necessary hardware for "in" and "out" adjustment of panel interior.
5. Cabinets for two section panelboards shall be arranged side by side, and shall be the same height. Flush mounted cabinets should be 1 1/2" apart and coupled by conduit nipple if necessary.
6. Gutter size in panel boxes, on all sides, shall be in accordance with the CEC. Penetrations through gutter to live area of the panelboard shall incorporate approved non-metallic-grommet type of insulation to protect wire passing through.

B. Trims:
1. Fabricate trim of sheet steel consisting of frame with door attached by concealed hinges. Provide flush or surface trim as shown on the drawings.
2. Flush trims shall overlap the box by at least 3/4" all around.
3. Surface trim shall have the same width and height as the box.
4. Flush or surface trims shall not have ventilating openings.
5. Secure trims to back boxes by indicating trim clamps.
6. Provide a welded angle on rear of trim to support and align trim to cabinet.
7. Provide separate trims for each section of multiple section panelboards. Trims and doors of sections shall be of the same height.

C. Doors:
1. Provide doors with flush type latch and manufacturer's standard lock. Doors over 48 inches in height shall have a vault handle and a three-point catch, arranged to fasten door at top, bottom, and center.
2. In making switching devices accessible, doors shall not uncover any live parts.
3. Provide concealed hinges welded to the doors and trims.

4. For lighting or power contactors incorporated in panelboards, provide separate doors for the contactors.
5. Provide keyed alike system for all panelboards.
6. Provide a directory card, metal holder, and transparent cover. Permanently mount holders on inside of doors.

D. Painting:
1. Thoroughly clean and paint trims and doors at the factory with primer and manufacturer's standard finish.

2.03 MOLDED CASE CIRCUIT BREAKERS FOR PANELBOARDS

A. Breakers shall be UL listed and labeled, in accordance with the CEC, as shown on the drawings, and as specified.

B. Circuit breakers in panelboards shall be bolt on type on phase bus bar or branch circuit bar.
1. Molded case circuit breakers for lighting and appliance branch circuit panelboards shall have minimum interrupting rating as indicated.
2. Molded case circuit breakers shall have automatic, trip free, non-adjustable, inverse time, and instantaneous magnetic trips for 100 ampere frame or less. Magnetic trip shall be adjustable from 3 times to 10 times for breakers with 600 ampere frames and higher. Factory setting shall be HI, unless otherwise noted.

C. Breaker features shall be as follows:
1. Integral housing of molded insulating material.
2. Silver alloy contacts.
3. Arc quenchers and phase barriers for each pole.
4. Quick-make, quick-break, operating mechanisms.
5. A trip element for each pole, thermal magnetic type with long time delay and instantaneous characteristics, a common trip bar for all poles and a single operator.
6. Electrically and mechanically trip free.
7. An operating handle which indicates ON, TRIPPED, and OFF positions.
   a. Line connections shall be bolted.
   b. Interrupting rating shall not be less than the maximum short circuit current available at the line terminals as indicated on the drawings. The interrupting rating shall not be less than the minimum identified requirement.
8. An overload on one pole of a multipole breaker shall automatically cause all the poles of the breaker to open.

2.04 SEPARATELY ENCLOSED MOLDED CASE CIRCUIT BREAKERS

A. Where separately enclosed molded case circuit breakers are shown on the drawings, provide circuit breakers in accordance with the applicable requirements of those specified for panelboards.

B. Enclosures are to be of the NEMA types shown on the drawings. Where the types are not shown, they are to be the NEMA type most suitable for the environmental conditions where the breakers are being installed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with CEC, as shown on the drawings, and as specified.

B. Locate panelboards so that the present and future conduits can be conveniently connected. Coordinate the sizes and layout of cabinets within the designated spaces. All equipment must be dimensioned in order to physically fit in the spaces provided and to comply with all code required clearances.

C. Install a typewritten schedule of circuits in each panelboard. Include the room numbers (as finally described by the Owner) and items served on the cards. Obtain final room numbers from Architect prior to creating schedule.

D. Mount the panelboard so that maximum height of the top circuit breaker above finished floor shall not exceed 78 inches.

E. For panelboards located in areas accessible to the public, paint the exposed surfaces of the trims, doors, and boxes with finishes to match surrounding surfaces after the panelboards have been installed.

F. Circuit numbers shall correspond to the approved panel schedule. Provide as-built drawings showing the actual circuit numbers being used for each device on each branch circuit if changes are required.

G. Verify depth of all flush mounted enclosures in walls to be certain wall depth will accommodate panel depth prior to installation.

H. All openings in switchgear and panelboards that are unused shall be sealed with bolts and washers. Use caulking where holes or openings cannot be sealed by way of a washer, or bolts or conduit seals.

END OF SECTION

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SECTION 26 2726
WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Wiring devices.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Related Work:
   1. Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
   3. Section 26 0519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
   4. Section 26 0526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

PART 2 - PRODUCTS

2.01 RECEPTACLES

A. General: All receptacles shall be listed by Underwriters Laboratories, Inc.
   1. Mounting straps shall be plated steel, with break-off plaster ears and shall include a self-grounding feature (this feature does not substitute for a grounding conductor terminated on grounding strap of device). Terminal screws shall be brass, brass plated or a copper alloy metal.
   2. Receptacles shall be of a screw terminal type, “pressure type quick wire” terminations are not allowed.
   3. 15 ampere and 20 ampere, 125-volt and 250-volt non-locking receptacles shall be tamper resistant type receptacles unless the application is specifically listed as an exception to CEC 406.12.
   4. Receptacles shall be “wet rated” when used in an exterior location.

B. Duplex receptacles shall be premium specification grade single phase, 20 ampere, 120 volts, 2-pole, 3-wire, and conform to the NEMA 5-20R configuration in NEMA WD 6. The duplex type shall have bussing break-off feature for two-circuit operation. The ungrounded pole of each receptacle shall be provided with a separate terminal.
   1. Bodies shall be white in color. Contractor to verify device color with Architect prior to procurement.
   2. Switched duplex receptacles shall be wired so that only the top receptacle is switched. The remaining receptacle shall be unswitched.
   3. Controlled receptacles; installed per requirements of 2016 BUILDING ENERGY EFFICIENCY STANDARDS / Efficiency Standards, California Code of Regulations, Title 24, Part 6. SECTION 130.5 (d) – ELECTRICAL POWER DISTRIBUTION SYSTEMS as Circuit Controls for 120-Volt Receptacles and / or Controlled Receptacles. Shall be provided with an approved means of including a permanent and durable marking identifying the controlled receptacles or circuits to differentiate them from uncontrolled receptacles or circuits. Where shown on associated floor plans, and or required by the Standards; a duplex noted to be controlled shall be 'split-wire', so the top outlet shall be switched and the bottom outlet shall be unswitched. A double duplex (fourplex) noted to be controlled: one of the duplex receptacles shall be controlled and the other duplex receptacle shall be unswitched.
   4. Duplex Receptacles on Emergency Circuit: Receptacle bodies shall be red in color. Wall plates shall also be powder coat painted red finish. Cover shall be labeled with panel and circuit number.
   5. Ground Fault Interrupter Duplex Receptacles: Shall be an integral unit suitable for mounting in a standard outlet box.
      a. Ground fault interrupter shall be commercial grade and consist of a differential current transformer, solid state sensing circuitry and a circuit interrupter switch. It shall be rated for operation on a 60 Hz, 120 volt, 20-ampere branch circuit. Device shall meet CEC requirements. Device shall have a minimum nominal tripping time of 1/30th of a second. Devices shall meet UL 943.

C. Receptacles; 20, 30 and 50 ampere, 250 volts: Shall be complete and match with appropriate cord grip plug. Devices shall meet UL 231.

D. Weatherproof Receptacles: Shall consist of a listed weather resistant duplex receptacle, mounted in box with a gasketed, while in use weatherproof, cast metal cover plate and cap receptacle opening. The cap shall be permanently attached to the cover plate by a spring-hinged flap. All on-grade weatherproof receptacles to be Midwest #U010010GRP or #U012010GRP. Otherwise, all non-on-grade weatherproof receptacles permitted to be Intermatic WP10 Series, Thomas & Betts/Red Dot 2CK Series, or engineer approved equal.

2.02 SWITCHES AND DIMMERS

A. Toggle switches shall be totally enclosed tumbler type with bodies of phenolic compound. Toggle handles color to match receptacle device color unless otherwise specified.
   1. Shall be single unit toggle, butt contact, quiet AC type, heavy-duty general-purpose use with an integral self grounding mounting strap with break-off plasters ears and be of a screw terminal type.

2. Shall be color coded for current rating, listed by Underwriters Laboratories, Inc., and meet the requirements of NEMA WD 1, Heavy-Duty and UL 20.
3. Ratings:
   a. 120 volt circuits: 20 amperes at 120-277 volts AC.
   b. 277 volt circuits: 20 amperes at 277 volts AC.
4. The switches shall be mounted on the strike plate side of doors.
5. Incorporate barriers between switches with multi-gang outlet boxes where required by the CEC.
6. All toggle switches shall be of the same manufacturer.

B. Coordinate lighting control device requirements with 26 0943 Network Lighting Controls System.

2.03 WALL PLATES

A. Wall plates for switches and receptacles shall be type 302 stainless steel.

B. Standard NEMA design, so that products of different manufacturers will be interchangeable. Dimensions for openings in wall plates shall be accordance with NEMA WD1.

C. For receptacles or switches ganged together, wall plates shall be a single ganged plate.

D. Wall plates for data, telephone or other communication outlets shall be as specified in the associated specification.

E. Surface mounted boxes, NEMA1, shall be industrial grade raised galvanized steel covers. In shop areas all receptacles shall be dust proof and or waterproof where applicable.

F. Waterproof device covers shall be cast iron, 4-corner screw type, for FS and FD type mounting. Device covers shall be zinc galvanized finish. Weatherproof covers shall be lockable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Switches installed in hazardous areas shall be explosion proof type in accordance with the CEC and as shown on the drawings.

B. Installation shall be in accordance with the CEC, NECA “Standard of Installation”, and as shown as on the drawings.

C. Ground terminal of each receptacle shall be bonded to the outlet box with an approved green bonding jumper, and also be connected to the green equipment grounding conductor.

D. General: Devices shall be of the type specified herein. All devices shall be installed with “pigtailed” leads from the outlet box. No device shall be used in the “feed through” application.

Screw terminals shall be used to connect all devices to the circuit and shall be grounded by means of a ground wire where grounding terminals are provided in the device.

E. Installation: Devices and plates shall be installed in a "plumb" condition and must be flush with the finish surface of the wall where boxes are recessed.

F. Mounting heights: All control and convenience devices shall comply with California Code of Regulations Title 24 and ADA with respect to accessibility requirements. Mounting heights indicated on plans shall have precedence.

G. Install switches with the off position down.

H. Clean debris from outlet boxes.

I. Provide extension rings as required to bring outlet boxes flush with finished surface or casework.

J. Test each receptacle device for proper polarity.

K. Receptacles shall be wired and mounted in a "ground-up" configuration, such that the topmost receptacle's ground connection is in the top-position of the finished outlet.

END OF SECTION

SECTION 26 2816
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Disconnect and safety switches where shown on the contract drawings and specified herein.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Related Work:
   1. Section 26 0553, IDENTIFICATION OF ELECTRICAL SYSTEMS.

PART 2 - PRODUCTS

2.01 GENERAL

A. Approved Manufacturers: Square-D. Eaton may be substituted if pre-approved by the Engineer of Record.

B. Disconnect Switches: Provide with devices enabling the switch to be locked in the open or closed positions.

C. Manual Motor Switches: Tumbler type rated 3HP, 240 Volts with or without overload heaters as required to protect equipment served.

D. Externally Operable Safety Switches: To have quick-make, quick-break mechanism, capable of switching 10 times switch rating, with cover interlock to prevent opening with switch in ON position and defeat mechanism for maintenance.

E. Switches: Shall be general duty (GD) for 240 volt and below and heavy duty (HD) for 277/480 volt type unless otherwise indicated. Provide NEMA 1 enclosures for interior locations and NEMA 3R enclosures for exterior or wet locations. Provide with number of poles, ampacity,

voltage and HP rating, fusible or nonfusible as indicated. Copper blades shall be visible in off position.

F. Fusible Switches: Equip them with rejection clips for UL Class R fuses. Switches having a dual rating when used with dual element fuses shall have a rating so indicated and shall be confirmed by equipment vendor being connected.

G. 600 Amperes or Less Fuses: UL Class RKI with a minimum interrupting rating of 200,000 Amperes, Bussmann "Low-Peak Type" or equal.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Locations: Install switches, disconnects and safety where indicated on the Contract Drawings or as required by CEC.

B. Fastenings: Securely fasten switches to structural members or unistrut support as directed by the manufacturer. All strut end to be deburred and coated with a cold galvanized paint.

C. Label all disconnect switches in accordance with Section 26 0553, IDENTIFICATION OF ELECTRICAL SYSTEMS.

D. Fuse: All fuses shall be as indicated on the plan or as required by the equipment. Verify fuse size with equipment manufacturer requirements, prior to installation. Use current limiting fuses as indicated on plan. Provide one spare fuse cabinet in each electrical room with one complete set of spare fuses for all sizes of main fuses, subpanel fuses, HVAC equipment fuses and fire alarm.

E. Terminals shall be minimum 75 degree rated.

END OF SECTION

SECTION 26 5100
INTERIOR LIGHTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. Interior lighting systems, including luminaires, ballasts, lamps and emergency lighting equipment.

B. Related Work:
1. Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.
2. Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.
3. Section 26 0519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.
4. Section 26 0526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
5. Section 26 5600, EXTERIOR LIGHTING.
6. Section 26 5670, LIGHTING ACCEPTANCE TESTING.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Include electrical ratings, dimensions, mounting, details, materials, terminations, wiring and connection diagrams, photometric data, drivers, luminaires, lamps and controls.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM).

C. American National Standards Institute (ANSI).

D. Aluminum Association Inc. (AA).

E. Illuminating Engineering Society of North America (IESNA).

F. National Electrical Manufacturers Association (NEMA).

G. National Fire Protection Association (NFPA).

H. Underwriters Laboratories, Inc. (UL).

1.05 DEFINITIONS

A. Lighting terminology used herein is defined in IES

B. Exception: The term "driver" is used herein to cover both drivers and power supplies, where applicable.

C. Clarification: The term "LED light source(s)" is used herein per IES to cover LED package(s), module(s), and array(s).

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be in accordance with CEC, UL, ANSI, and as shown on the drawings and specified.

B. Approved manufacturers: Cree, Lithonia preferred. Columbia is acceptable for troffers.

2.02 LIGHTING FIXTURES (LUMINAIRES)

A. Shall be in accordance with NFPA 70, UL 1598 and shall be as shown on drawings and as specified. All luminaires shall have been certified to the California Energy Commission by its manufacturer to comply with the efficiency standards as per California Code of Regulations Title 24, Part 6, Section 111 referencing the Appliance Efficiency Regulations in Title 20. Post certification with building permit.

B. Sheet Metal:
1. Shall be formed to prevent warping and sagging. Housing, trim and lens frame shall be true, straight (unless intentionally curved) and parallel to each other as designed.
2. Wireways and fittings shall be free of burrs and sharp edges and shall accommodate internal and branch circuit wiring without damage to the wiring.

3. When installed, any exposed fixture housing surface, trim frame, door frame and lens frame shall be free of light leaks; lens doors shall close in a light tight manner.
    a. Hinged door closure frames shall operate smoothly without binding when the fixture is in the installed position, and latches shall function easily by finger action without the use of tools.

C. Ballasts (where applicable) shall be serviceable while the fixture is in its normally installed position, and shall not be mounted to removable reflectors or wireway covers.

D. Recessed fixtures shall be of the type approved for the ceiling and insulation conditions and appropriate for the installation location. Insulation must be held back from the fixture to provide manufacturers' recommended clearances for proper operation. Thermal tripping shall be the installer's responsibility to correct. Where installed in fire rated ceilings, coordinate installation of fire rated enclosures around the ceiling penetrations. Fixtures shall contain the proper through wiring capacity for that which is shown on the plans.

E. Recessed fixtures shall be provided with the appropriate trims and hardware compatible with the ceiling type shown. Plaster frames are required where plaster or gypsum board ceilings are encountered.

F. Mechanical Safety: Lighting fixture closures (lens doors, trim frame, hinged housings, etc.) shall be retained in a secure manner by captive screws, chains, captive hinges or fasteners such that they cannot be accidentally dislodged during normal operation or routine maintenance.

G. Metal Finishes:
1. The manufacturer shall apply standard finish (unless otherwise specified) over a corrosion resistant primer, after cleaning to free the metal surfaces of rust, grease, dirt and other deposits. Edges of pre-finished sheet metal exposed during forming, stamping or shearing processes shall be finished in a similar corrosion resistant manner to match the adjacent surface(s). Fixture finish shall be free of stains or evidence of rusting, blistering, or flaking.
2. Interior light reflecting finishes shall be white with not less than 85 percent reflectances, except where otherwise specified on the drawing.
3. Exterior finishes shall be as shown on the drawings.

H. Provide all lighting fixtures with a specific means for grounding metallic wireways and housings to an equipment grounding conductor.

I. Recessed fixtures shall be manufactured specifically for LED lamps with drivers integral to the fixture. Assemblies designed to retrofit fixtures are prohibited except when described in this fashion. Fixtures shall be designed for lamps as specified.

J. Provide wire lamp guard on all exposed lamp fixture/luminaires.

2.03 LED LUMINAIRE REQUIREMENTS

A. General Requirements:
1. Luminaire shall have an external label per ANSI C136.15
2. Luminaire shall have an internal label per ANSI C136.22.

3. Luminaires shall start and operate in -20°C to +40°C ambient.
4. LED light source(s) and driver(s) shall be RoHS compliant.

2.04 EMERGENCY POWER SUPPLY FOR LIGHTING FIXTURES

A. Self-contained battery-operated power supply for operating each fixture indicated on the plans for a minimum output of 90 minutes.

B. The power supply shall be installed integral to the luminaire. Provide with test switch and charge indicator installed integral to the luminaire. The test switch and charge indictor may be installed in a remote ceiling mounted flush J-box for recessed downlights which cannot accept integral components.

C. Performance: Emergency operation lumen output for fixtures shall be a minimum of 1100 lumens (or 640 lumens in downlights), unless specifically noted otherwise on the associated electrical drawings.

D. Provide access hatches (for emergency battery future access) adjacent to recessed 6-inch or less diameter downlights installed in inaccessible ceilings.

2.05 LED DRIVER

A. Driver
1. Rated case temperature shall be suitable for operation in the luminaire operating in the ambient temperatures as indicated.
2. Shall accept the voltage or voltage range indicated, and shall operate normally for input voltage fluctuations of plus or minus 10 percent. Consistent with NEMA SSL 1.
3. Shall have a minimum Power Factor (PF) of 0.90 at full input power and across specified voltage range.
4. 0-10 volt drivers only.

B. Electromagnetic interference
1. Shall have a maximum Total Harmonic Distortion (THD) of 20% at full input power and across specified voltage range.
2. Shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.

C. The following shall be in accordance with corresponding sections of ANSI C136.37
1. Wiring and grounding
2. All internal components shall be assembled and pre-wired using modular electrical connections.
3. Mounting provisions
4. Terminal blocks for incoming AC lines
5. Latching and hinging
6. Ingress protection

2.06 LAMPS

A. Provide lamps for all luminaires.

B. LED LIGHT SOURCE
1. Minimum Color Rendering Index (CRI): 60.
2. Correlated Color Temperature (CCT)
a. CCT shall be as listed in Table 1 below:

Table 1. Allowable CCT

Manufacturer-Rated Nominal CCT (K)	Allowable LM-79 Chromaticity Values Measured CCT (K)
2700	2580 to 2870
3000	2870 to 3220
3500	3220 to 3710
4000	3710 to 4260
4500	4260 to 4746
5000	4745 to 5311
5700	5310 to 6020
6500	6020 to 7040

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation and furnishing of lighting fixtures shall be in accordance with the CEC, manufacturer's instructions and as shown on the drawings or specified. Fixtures damaged in transit and storage prior to completion shall be replaced at Contractor’s expense.

B. Align, mount and level the lighting fixtures uniformly.

C. Avoid interference with and provide clearance for equipment. Where the indicated locations for the lighting fixtures conflict with the locations for equipment, change the locations for the lighting fixtures by the minimum distances necessary as approved by the Architect. The Architectural reflected ceiling plan will take precedence over electrical plans.

D. For suspended lighting fixtures, the mounting heights shall provide the clearances between the bottoms of the fixtures and the finished floors as shown on the drawings.

E. Lighting Fixture Supports:
1. Contractor shall provide support for all of the fixtures independent of suspended ceilings. Supports may be anchored to channels of the ceiling construction, to the structural slab or to structural members within a partition, or above a suspended ceiling.
2. Shall maintain the fixture positions after cleaning.
3. Shall support the lighting fixtures without causing the ceiling or partition to deflect.
4. Hardware for recessed fluorescent fixtures:

a. Fixtures shall be supported as detailed on drawings and as required by DSA standards.
b. Installation: Fixtures shall be securely mounted on ceilings and walls with appropriate fastening devices. "Drop-in" type T-bar fixtures shall be secured with #12 gauge safety "earthquake wires" as described by California Code of Regulations Title 24 Part 2, Chapter 47. "Earthquake clips" will be required for fastening to the T-bar system in addition to safety wire. Surface mounted fluorescent fixtures shall be solidly screwed or clipped into framing above drywall with 4-#10 sheet metal screws into each fixture. Provide blocking for screw supports behind all surface mounted lighting fixtures weighing more than 15 lbs.

5. Surface mounted lighting fixtures:
   a. Fixtures shall be bolted against the ceiling independent of the outlet box at four points spaced near the corners of each unit. The bolts shall be minimum ¼-20 bolt, secured to structural ceiling. Non-turning studs may be attached to the building structure by 12 gauge safety hangers.
6. Fixtures mounted in open construction shall be secured directly to the building structure with approved bolting and clamping devices.
7. Single or double pendent mounted lighting fixtures:
   a. Each stem shall be supported by an approved outlet box, mounted swivel joint and canopy which holds the stem captive and provides spring load (or approved equivalent) dampening of fixture oscillations. Outlet box shall be supported vertically from the building structure and be allowed to swing to a 45 degree angle.
8. Outlet boxes for support of lighting fixtures (where permitted) shall be secured directly to the building structure with approved devices or supported vertically in a hung ceiling from the building structure with a nine gauge wire hanger, and be secured by an approved device to a main ceiling runner or cross runner to prevent any horizontal movement relative to the ceiling.

F. Furnish and install the specified lamps for all lighting fixtures as part of this project.

G. Coordinate between the electrical and ceiling trades to ascertain that approved lighting fixtures are furnished in the proper sizes and installed with the proper devices (hangers, clips, trim frames, flanges), to match the ceiling system being installed.

H. Bond lighting fixtures and metal accessories to the grounding system as specified in Section 26 0526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

I. At completion of project, clean all fixtures, lenses, diffusers and louvers that have accumulated dust/dirt during construction.

J. Provide unswitched leg of interior lighting branch circuit to integral emergency battery pack light fixtures, exit signs and night lights as applicable per lighting plans.

K. Wallmount fixtures in walkway areas shall not project more than 4 inches from wall when projection occurs lower than 80 inches.

END OF SECTION

SECTION 26 5600
EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies the furnishing, installation, and connection of exterior luminaires, controls, and supports.

1.02 RELATED WORK

A. Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.

C. Section 26 0519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.

D. Section 26 0526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

E. Section 26 5100, INTERIOR LIGHTING.

F. Section 26 5670, LIGHTING ACCEPTANCE TESTING.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
   1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
   2. Include electrical ratings, dimensions, mounting, details, materials, required clearances, terminations, wiring and connection diagrams, photometric data, drivers, luminaires, lamps and controls.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM).

C. American Concrete Institute (ACI).

D. American National Standards Institute (ANSI).

E. Aluminum Association Inc. (AA).

F. Illuminating Engineering Society of North America (IESNA).

G. National Electrical Manufacturers Association (NEMA).

H. National Fire Protection Association (NFPA).

I. Underwriters Laboratories, Inc. (UL).

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be in accordance with CEC, UL, ANSI, as shown on the drawings and as specified.

B. Approved Manufacturers:
1. LED type (wall pack): Current Lighting LNC2 series or Cree XSPW series.
2. LED type (other): Gardco/Signify, Cree, Lithonia, Hubbell

C. Exterior Lighting Control Timeclocks:
1. In addition to lighting controls required by CEC, mechanical timeclocks shall be installed. For 7 Day use Intermatic #T7401BC (mechanical with 24-hour backup). For 24 Hour use Intermatic #T103. Install in accordance with the drawings.

2.02 LUMINAIRES

A. UL 1598 and ANSI C136.17. Luminaries shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp heat.

B. Light emitting diode (LED)-based solid state lighting (SSL) products shall be factory tested in accordance to the International Engineering Society (IES) LM-79 recommendations and meet ANSI C78.377-2008 standards.

C. LED light sources shall be factory tested in accordance to IES LM-80 recommendations.

D. LED-based SSL product shall incorporate an external heat sink, integral to the luminaire.

E. Incorporate associated ballasts and drivers within the luminaire housing.

F. Lenses shall be frame-mounted heat-resistant, borosilicate glass, prismatic refractors. Attach the frame to the luminaire housing by hinges or chain.

G. Pre-wire internal components to terminal strips at the factory.

H. Bracket mounted luminaries shall have leveling provisions and clamp type adjustable slip-fitters with locking screws.

I. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.

J. LED-based SSL luminaires shall be manufactured specifically for LED lamps with drivers integral to the luminaire housing.

2.03 LAMPS

A. Luminaires shall be listed for the lamp specified on the associated electrical plans. Install the proper lamps in every luminaire installed.

B. Lamps shall be clear or coated as recommended by luminaire manufacturer to provide for maximum luminaire efficiency in fixture used.

2.04 LED-BASED SOLID STATE DRIVERS

A. Shall be listed by either U.L. or equal listing agency and comply with IEEE C.62.41-1991, Class A operation.

B. Provide a minimum power factor of 0.9.

C. Minimum operating temperature appropriate for outdoor environments.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install lighting in accordance with the CEC, as shown on the drawings, and in accordance with manufacturer's recommendations.

3.02 GROUNDING

A. Ground noncurrent-carrying parts of equipment including metal poles, luminaries, mounting arms, brackets, and metallic enclosures as specified in Section 26 0526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially treated or alloyed connectors suitable and listed for this purpose.

END OF SECTION

SECTION 26 5670
LIGHTING ACCEPTANCE TESTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. The Contractor shall be responsible for the Certificate of Acceptance, but coordinate with the Certified California Lighting Controls Test Technician to assure that all required documents have been filed with and approved by the enforcement agency prior to receiving a final occupancy permit. The Certificate of Acceptance will indicate that the Contractor has demonstrated acceptance requirements of the plans and specifications, that current requirements for installation certificates are met, and that currently required operating and maintenance information (as well as the Certificate of Acceptance) were provided to the building Owner.
2. Testing, evaluation and calibration of lighting controls equipment provided, installed and connected in Division 26.
3. Documentation of test results, completion of "Certificate of Acceptance" and "Certificate of Installation" forms and filing with the enforcement agency for approval.
4. Specific Jobsite Conditions:
    a. Acceptance testing must be tailored for each specific design, job site, and climactic conditions. While the steps for conducting each test remain consistent, the application of the tests to a particular site may vary. The Contractor shall review the construction documents and include all required time, material, testing equipment, etc. as required to complete the requirements of this section.

B. Related Work:
1. Section 26 000, COMMON WORK RESULTS FOR ELECTRICAL.
2. Section 26 5100, INTERIOR LIGHTING.
3. Section 26 5600, EXTERIOR LIGHTING.
4. Section 26 0943, NETWORK LIGHTING CONTROLS
5. Section 26 0923, OCCUPANCY SENSORS.

1.03 REFERENCES

A. Acceptance Testing Criteria: 2022 Building Energy Efficiency Standards Non-Residential Compliance Manual.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements:
   1. All material, equipment, labor and technical supervision to perform tests, calibrations and documentation specified herein.

B. Scope of Testing, Evaluation and Calibration (as applicable):
   1. Automatic (master) time switches.
   2. Occupancy sensors.
   3. Automatic daylighting controls.
   4. Photo electric sensors.
   5. Outdoor astronomical time switches.
   6. Area controls.

1.05 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Test Reports:
   1. Written record of all tests and completion of forms included in this section.
   2. At completion of project, assemble a final test report. Submit report to the enforcement agency and the Owner prior to final occupancy to include:
      a. Summary of project.
      b. Description of systems and equipment tested.
      c. Visual inspection report.
      d. Description of tests.
      e. Test results.
      f. Conclusions and recommendations.
   3. Report shall be bound in booklet form, include on the Contractor's letterhead the title of the report and the systems tested.

C. Constructability Plan Review
   1. The Contractor shall review the construction drawings and specifications to understand the scope of the acceptance tests and raise critical issues that might affect the success of the acceptance tests prior to starting construction. Any constructability issues associated with the lighting system should be forwarded to the design team for review/modifications prior to equipment procurement and installation. The Contractor shall submit on company letterhead, with the lighting control equipment required by Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL, 1.4B, a letter confirming that the constructability review has been completed and their company has reviewed and is prepared to complete the lighting acceptance testing required by this section.

PART 2 - PRODUCTS

2.01 FORMS

A. Lighting Installation forms and verification procedures for lighting systems that require acceptance testing can be downloaded from the following website: https://energycodeace.com/nonresidentialforms

B. Lighting Acceptance forms are to be provided by a Certified California Lighting Controls Acceptance Test Technician. The California Energy Commission adopted changes to the California building Efficiency Standards (Title 24, Parts 1 and 6) that require lighting controls and devices to be certified as properly installed and operational, prior to issuance of occupancy permits. All Acceptance Technicians must be employed by an Acceptance Test employer that provides support as well as quality control. Certified California Lighting Controls Acceptance Test Technicians can be found at the following website: www.calctp.org/acceptance-technicians/contractors

C. These completed forms will be the deliverable product to the enforcement agency and Owner as described in 1.4 of this section.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

A. Tests:
1. Contractor's Responsibilities:
   a. Perform all required tests required by this section.
   b. Schedule testing with building Owner.
   c. Provide Installation forms
   d. Acceptance forms provided by California Certified Lighting Controls Technician hired by Contractor.
   e. Calibration of equipment such as light meters, photo electric controls, etc.
   f. Programming of time switches (interior/exterior lighting) for operations as directed by the Owner.

3.02 ADJUSTING

A. Final Settings: The Contractor shall be responsible for implementing all final settings and adjustments on controls equipment as required for a complete and operating system

END OF SECTION

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SECTION 26 7700
ASSISTIVE LISTENING SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide assisted listening systems as described herein.

1.02 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 Assisted Listening Systems

A. Provide and install complete, ADA compliant Assisted Listening Systems as follows:
   1. The campus shall have (as a minimum):
      a. (1) Portable system consisting of a hard suitcase-style carrying case and containing:
         1) (1) Battery operated, belt (clip) FM transmitter unit with lapel microphone.
         2) (4) Battery operated, belt (clip) receivers with built in ambient (environmental) microphone and single (bud-style) earphone.
         3) (4) Battery operated, heavy-duty folding headphones
         4) (1) Omnidirectional desktop conference microphone with 36” cord.
         5) (2) 18” neckloops for use with hearing aids or cochlear implants equipped with T-coil switch.
      b. The portable systems shall be located in the Administration Office available for check out. Refer to Architectural specifications for signage requirements at conference rooms and assembly areas.
      c. Acceptable Products: Williams Sound “FM ADA Kit 37”

B. The entire system shall be of one manufacturer and shall carry a 2-year (minimum) warranty. The system shall be as manufactured by Williams Sound Corp. or engineer approved equal.

C. The quantity of wireless headsets on-site shall satisfy the ADA requirement of 4% of the occupancy in the largest conference room and/or assembly area. Refer to architectural sheets for occupancy loads/types.

D. In accordance with California Building Code, Assistive Listening Devices shall comply with all requirements set forth in 11B-706.
   1. Receivers required for use with an Assistive Listening System shall include a 1/8-inch (3.2mm) standard mono jack.

2. Receivers required to be hearing-aid compatible shall interface with telecoils in hearing aids through the provision of neckloops.
3. Assistive listening systems shall be capable of providing a sound pressure level of 110dB minimum and 118dB maximum with a dynamic range on the volume control of 50dB.
4. The signal-to-noise ratio for internally generated noise in assistive listening systems shall be 18dB minimum.
5. Peak clipping shall not exceed 18dB of clipping relative to the peaks of speech.

E. In accordance with California Building Code, Assistive Listening Devices shall comply with all signage requirements set forth in 11B-216.10
1. Each assembly area required to provide assistive listening systems (portable or fixed) shall provide signs informing patrons of the availability of the assistive listening system. The sign shall include wording that states “Assistive-Listening System Available” and shall be posted in a prominent place at or near the assembly area entrance. Assistive listening signs shall comply with California Building Code (CBC) Section 11B-703.5 and shall include the International Symbol of Access for Hearing Loss complying with CBC Section 11B-703.7.2.4.

PART 3 - EXECUTION

3.01 COMMISSIONING

A. Train Owner's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, and servicing of the system. Provide a minimum of 2 hours training. Operators Manuals and Users Guides shall be provided at the time of this training.

B. Schedule training with Owner through the Architect, with at least seven days advance notice.

END OF SECTION

SECTION 27 1300
INTERCOMMUNICATION SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
   1. Telecommunications Cabling at the new or remodeled buildings for the project. Backbone and horizontal cabling comprised of copper and fiber cabling, and support systems are covered under this document.
   2. The Horizontal (workstation) Cabling System shall consist of a minimum of two (2) 4-pair Unshielded Twisted Pair (UTP) Copper Cables to each work area outlet unless otherwise noted for specific locations. The cables shall be installed from the Work Area Outlet to the Telecommunications Room (TR) located on the same floor, and routed to the appropriate rack serving that area and terminated as specified in this document.
   3. All cables and related terminations, support and grounding hardware shall be furnished, installed, wired, tested, labeled, and documented by the Telecommunications contractor as detailed in this document.
   4. Product specifications, general design considerations, and installation guidelines are provided in this document. Quantities of telecommunications outlets, typical installation details, cable routing and outlet types will be provided as an attachment to this document. If the bid documents are in conflict, this specification shall take precedence. The successful vendor shall meet or exceed all requirements for the cable system described in this document.

1.03 REGULATORY REFERENCES

A. All work and materials shall conform in every detail to the rules and requirements of the National Fire Protection Association, the local Electrical Code and present manufacturing standards.

B. All materials shall be UL Listed and shall be marked as such. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label, the entire system shall be so labeled.

C. All modular jacks, patch cords, consolidation point, and patch cords performance shall be verified (not just tested) by a third party to be category 6 or 6A component and channel compliant, as applicable to the component being installed.

D. The cabling system described in this is derived from the recommendations made in recognized telecommunications industry standards. The following documents are incorporated by reference:
   1. ANSI/TIA/EIA - 568-C.0, Generic Telecommunications Cabling for Customer Premises
   2. ANSI/TIA/EIA - 568-C.1, Commercial Building Telecommunications Cabling Standard.
   3. ANSI/TIA/EIA - 568-C.2, Balanced Twisted Pair Cabling Components, Addendum 1 –
   4. ANSI/TIA/EIA - 568-C.3, Optical Fiber Cabling Components
   5. ANSI/TIA/EIA – 569-A, Commercial Building Standard for Telecommunications Pathways and Spaces, February, 1998.
   6. ANSI/TIA/EIA – 606-A, Administration Standard for Telecommunications Infrastructure of Commercial Buildings, February, 2002.
   7. ANSI/TIA/EIA – 607-A, Commercial Building Grounding and Bonding Requirements for Telecommunications, August, 1994.
   8. ANSI/ TIA/EIA – 758, Customer-Owned Outside Plant Telecommunications Cabling Standard, April 1999.
   9. BICSI - TDMM, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM) – 10th Edition, 2003.
   10. National Fire Protection Agency (NFPA – 70), National Electrical Code (NEC) –2019.

E. If this document and any of the documents listed above are in conflict, then the more stringent requirement shall apply. All documents listed are believed to be the most current releases of the documents. The Contractor has the responsibility to determine and adhere to the most recent release when developing the proposal for installation.

F. This document does not replace any code, either partially or wholly. The contractor must be aware of local codes that may impact this project.

1.04 APPROVED CONTRACTOR

A. The Telecommunications Contractor must be a Certified Installer for the products and/or system being supplied. A copy of certification documents must be submitted with the quote in order for such quote to be valid. The Telecommunications contractor is responsible for workmanship and installation practices in accordance with said certification. At least (1) for every (3) members of the copper installation and termination crew must be certified to a Technician Level of training by the product manufacturer or BICSI. At least (1) for every (5) members of the optical fiber installation and termination crew must be certified by the product manufacturer or other approved organizations in Optical Fiber installation and termination practices.

1.05 WORK INCLUDED

A. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this structured cabling system in compliance with the specifications and drawings. The Telecommunications contractor will provide and install all of the required material to form a complete system.

B. The work shall include, but not be limited to the following:

1. Furnish and install a complete telecommunications wiring infrastructure as described on the plans and in these specifications.
2. Furnish, install, and terminate all UTP and Optical Fiber cable.
3. Furnish and install all wall plates, jacks, patch panels, and patch cords.
4. Furnish and install all required cabinets and/or racks as required and as indicated.
5. Furnish any other material required to form a complete system.
6. Perform link testing (100% of horizontal and/or backbone links) and certification of all components.
7. Furnish test results of all cabling to the owner on disk and paper format, listed by each closet, then by workstation ID.
8. Adhere and comply with all requirements of the product certification programs.
9. Provide owner training and documentation. (Testing documentation and As-built drawings).

1.06 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Under the provisions of this request for proposal, prior to the start of work the telecommunications contractor shall:
   1. Submit copies of the certification of the company and names of staff that will be performing the installation and termination of the installation to provide proof of compliance of this spec.
   2. Submit proof from manufacturer of contractor’s good standing in manufacturer’s program.
   3. Submit appropriate cut sheets and samples for all products, hardware and cabling with highlighted or otherwise denoted specific products to be used. If product cut-sheets are submitted without specific products highlighted the engineer shall return submittal immediately with “Revise and Resubmit” response.

C. Work shall not proceed without the Owner's approval of the submitted items.

D. The telecommunications contractor shall receive approval from the Owners on all substitutions of material. No substituted materials shall be installed except by written approval from the Owner.

1.07 QUALITY ASSURANCE

A. The telecommunications contractor shall staff the project with qualified personnel. All products shall be new and in good condition.

1.08 DELIVERY, STORAGE AND HANDLING

A. Delivery and receipt of products shall be at the site described in the Scope Section.

B. Cable shall be stored according to manufacturer's recommendations as a minimum. In addition, cable must be stored in a location protected from vandalism and weather. If cable is stored outside, it must be covered with opaque plastic or canvas with provision for ventilation to prevent condensation and for protection from weather. If air temperature at cable storage location will be below 40 degrees F., the cable shall be moved to a heated (50 degrees F. minimum) location. If necessary, cable shall be stored off site at the contractor's expense.

C. If the telecommunications contractor wishes to have a trailer on site for storage of materials, arrangements shall be made with the Owner.

1.09 DRAWINGS

A. It shall be understood that the electrical details and drawings provided with the specification package are diagrammatic. They are included to show the intent of the specifications and to aid the telecommunications contractor in bidding the job. The telecommunications contractor shall make allowance in the bid proposal to cover whatever work is required to comply with the intent of the plans and specifications.

B. The telecommunications contractor shall verify all dimensions at the site and be responsible for their accuracy.

C. Prior to submitting the bid, the telecommunications contractor shall call the attention of the Engineer to any materials or apparatus the telecommunications contractor believes to be inadequate and to any necessary items of work omitted.

PART 2 - PRODUCTS

2.01 EQUIVALENT PRODUCTS

A. The Owner and engineer have selected specific products that achieve the desired level of performance and preference. The project has been designed around said products. Proposed substitutions must demonstrate equivalent performance in all areas to the satisfaction of the Owner and must be submitted for review at least 10 days prior to bid. The Owner shall not be required to entertain substitutions submitted after bid.

2.02 WORK AREA OUTLETS

A. Work area cables shall each be terminated at their designated work area location in the connector types described in the subsections below. Included are modular telecommunication jacks. These connector assemblies shall snap into a faceplate.

B. The Telecommunications Outlet Assembly shall accommodate:
   1. A minimum of four (4) modular jacks.
   2. Each modular jack shall match in color and category performance the incoming cable plant to each jack location. (i.e. – if incoming cable plant is a BLUE, Category 6 cable, the modular jack shall match Category 6 performance and shall also be BLUE in color).

3. Additional accommodations for specific locations as noted in the plans for optical fiber and/or additional copper cables as necessary.
4. A blank filler will be installed when extra ports are not used.
5. All modular jacks shall have their circuit number on the faceplate identifier strip.
6. Multiple jacks that are identified in close proximity on the drawings (but not separated by a physical barrier) may be combined in a single assembly. The telecommunications contractor shall be responsible for determining the optimum compliant configuration based on the products proposed.
7. The same orientation and positioning of jacks and connectors shall be utilized throughout the installation. Prior to installation, the telecommunications contractor shall submit the proposed configuration for each outlet assembly for review by the Owner.
8. The modular jack shall incorporate printed label strip on the dust cap module for identifying the outlet. Printed labels shall be permanent and compliant with ANSI/TIA/EIA–606-A standard specifications. Labels shall be printed using a printer such as a Brady hand held printer. Hand printed labels shall not be accepted.

C. Faceplates: The faceplates shall:
1. Be as appropriate to fit the modular jack used.
2. Be UL listed and CSA certified.
3. Be constructed of type 302 stainless steel (except where noted otherwise).
4. Shall match the faceplate color used for other utilities in the building or match the color of the raceway if installed in surface raceway.
5. Be compliant with the above requirements along with the following when incorporating optical fiber:
    a. Be a low profile assembly,
    b. Incorporate a mechanism for storage of cable and fiber slack needed for termination,
    c. Position the fiber optic couplings to face downward or at a downward angle to prevent contamination and,
    d. Incorporate a shroud that protects the optical couplings from impact damage.
6. Be available as single-gang or dual-gang.
7. Provide easy access for adds, moves, and changes by front removal of jack modules.
8. Possess recessed designation windows to facilitate labeling and identification.
9. Include a clear plastic cover to protect labels in the designation window.
10. Have mounting screws located under recessed designation windows.
11. Comply with ANSI/TIA/EIA-606-A work area labeling standard.
12. Allow for the UTP modules to be inverted in place for termination purposes.
13. Be manufactured by an ISO 9001 registered company.

D. Voice / Data Jacks
1. Voice/Data jacks, also known as telecommunications jacks, shall be 8-position modular jacks and shall be Category 6 or 6A performance (as matching the installed cable plant) as defined by the references in this document including ANSI/TIA/EIA-568-C.2. All pair combinations must be considered, with the worst-case measurement being the basis for compliance. Modular jack performance shall be third-party verified by a nationally recognized independent testing laboratory.
2. The modular jack shall use dual reactance modular contact array.
3. The modular jack shall be both component, link and channel compliant to category specifications in ANSI/TIA/EIA-568-C.

4. The modular jack's performance shall be third-party verified to ANSI/TIA/EIA-568-C Category 6 or Category 6A specifications (as appropriate to match the installed cable plant).
5. The modular jack shall have low emission IDC contacts.
6. The modular jack shall use standard termination practice using 110 impact tool or manufacturer approved tool using trained technician.
7. The modular jack shall be backwards compatible to Category 3, 5, 5e, and 6.
8. The modular jack shall be center tuned to category 6 or category 6A test specifications (as appropriate to match the installed cable plant).
9. Dust covers shall be used on each termination.

2.03 MODULAR PATCH PANELS

A. The Modular Patch Panels shall:
1. Meet category 6A component compliance and be verified by a third-party nationally recognized independent testing laboratory.
2. Use low emission IDC contacts.
3. Use dual reactance technology to enhance the signal-to-noise ratio.
4. Require standard termination practices using a 110 impact tool or manufacturer approved termination tool.
5. Use a single piece IDC housing designed to accept larger Category 6A conductors.
6. Support both T568B and T568A wiring.
7. Include easy to follow wiring labels.
8. Include label fields.
9. Allow for the use of icons.
10. Include full length metal rear cable management.
11. Be available in standard or high density. Installation shall prefer standard density.
12. Be backward compatible to category 3, 5, 5e, and 6.
13. Be center tuned to category 6A test specifications.
14. Design Make:
    a. Leviton 49255-H24, 24-port patch panel suitable for Category 6A applications.

2.04 RACKS

A. All racks and wire management shall be of one manufacturer or designed specifically to work together. The equipment rack shall provide vertical cable management and support for the patch cords at the front of the rack and wire management, support, and protection for the horizontal cables inside the legs of the rack. Waterfall cable management shall be provided at the top of the rack for patch cords and for horizontal cables entering the rack channels for protection and to maintain proper bend radius and cable support. Wire management shall also be mounted above each patch panel and/or piece of equipment on the rack. The rack shall include mounting brackets for cable tray ladder rack to mount to the top of the rack. Velcro cable ties shall be provided inside the rack channels to support the horizontal cable. Rack shall be black in color to match the patch panels and cable management.

B. Wall Mounted Rack

1. Wall mounted rack shall be one of two types of cabinets with requirements as listed below.
2. Large – surface mounted, enclosed cabinet with tinted front glass, such that I.T. equipment is mounted parallel with finished floor. This type of rack shall be used only where the installed location is normally unoccupied by students, or as noted on plans. Large wall mounted rack shall:
    a. Provide the necessary strain relief, bend radius and cable routing for proper installation of high performance cross connect products, meeting all specifications of ANSI/TIA/EIA-568-C.
    b. Have top cable trough to route patch and distribution cables between racks.
    c. Have EIA hole pattern on front and rear.
    d. Rack height shall be specified as 36” or 4.0 ft/1.22 m (22 rack units).
    e. Be available with a 6.5” (165 mm) or 14” (356 mm) channel depth.
    f. Be available with hook and loop straps for securing cables inside the vertical U-channels.
    g. Be available with vertical cable management rings for cord routing organization and strain relief.
    h. Be available with vertical U-channels to protect and conceal distribution cables.
    i. Provide floor and ceiling access for cable management and distribution.
    j. Have wall mount braces with locator posts for easy wall mounting.
    k. Have side access points that allow for access to manage/install distribution cables in the vertical channels.
    l. Be available in standard color of black.
    m. Be available with double-hinge for easy access to rear of equipment and incoming cable plant.
    n. Be manufactured by an ISO 9001 registered company.
    o. Be installed with additional accessories as follows:
        1) Ground bus kit for equipment and enclosure bonding.
        2) Thermostatically controlled fan kit with integral filter.
    p. Approved manufacturers of large wall mounted racks are: Chatsworth Cube-IT with tinted front glass.
3. Small – surface mounted, enclosed cabinet with minimal depth from finished wall, such that I.T. equipment is mounted perpendicular with finished floor. This type of rack shall be used only where installed location is normally occupied by staff or students, or as noted on plans. Small wall mounted rack shall:
    a. Provide the necessary strain relief, bend radius and cable routing for proper installation of high performance cross connect products, meeting all specifications of ANSI/TIA/EIA-568-C.
    b. Have top cable trough to route patch and distribution cables between racks.
    c. Have EIA hole pattern on top and bottom, including door mounting, if applicable.
    d. Cabinet height shall be specified as 42”, which shall contain (5) rack units for equipment and (4) rack units for patch panel space.
    e. Be available with a 6.5” (165 mm) or 14” (356 mm) channel depth.
    f. Be available with hook and loop straps for securing cables inside the vertical U-channels.
    g. Be available with cable management rings for cord routing organization and strain relief.
    h. Provide floor and ceiling access for cable management and distribution.
    i. Have wall mount braces with locator posts for easy wall mounting.

j. Have side access points that allow for access to manage/install distribution cables in the vertical channels.
k. Be available in standard color of black.
l. Be manufactured by an ISO 9001 registered company.
m. Be installed with additional accessories as follows:
   1) Ground bus kit for equipment and enclosure bonding.
   2) Thermostatically controlled fan kit with integral filter.
n. Approved manufacturers of small wall mounted racks are: Hubbell RE-BOX "RE4X" unless otherwise noted.

2.05 HORIZONTAL DISTRIBUTION CABLE

A. All horizontal data station cable and voice cable shall terminate on modular patch panels (copper or fiber), 110 cross-connecting blocks (copper), or patch/splice cabinets (fiber) in their respective Telecommunications Room or Equipment Room as specified on the drawings.

B. 100 OHM Category 6 UNSHIELDED TWISTED PAIR CABLE (UTP)
1. Physical Characteristics:
   a. The diameter of the insulated conductor shall be .023 in. maximum.
   b. The outer jacket of the overall cable shall be BLUE in color.
   c. Shall consist of (4) twisted pairs.
   d. Shall be suitable for the environment in which they are to be installed.
   e. The color coding of pairs shall be in accordance with T-568B:

Pair 1	Pair 2	Pair 3	Pair 4
W-BL; BL	W-O; O	W-G; G	W-BR; BR

   f. The overall diameter of the cable shall be 0.230"nominal.
   g. The ultimate breaking strength measured in accordance with ASTM D 4565 shall be 400 N minimum.
   h. Cable shall withstand a bend radius of 1" at -20 degrees Celsius without jacket or insulation cracking.
   i. Cable shall be third party verified to meet ANSI/TIA/EIA-568-C.2.
2. Transmission Characteristics:
   a. DC resistance of any conductor shall not exceed 9.38 Ohms per 100m max. at 20°C. Measured in accordance with ASTM D 4566.
   b. The mutual capacitance of any pair at 1 kHz for 100m of cable shall not exceed 4.4 Nf.
   c. DC resistance unbalance between any two conductors of any pair shall not exceed 3% when measured at or corrected to 20°C in accordance with ASTM D 4566.
   d. The capacitance unbalance to ground at 1 kHz of any pair shall not exceed 330 pF per 100m.
3. Cable shall be Berk-Tek LANmark-1000 UTP or approved equal.
4. Cable installed underground/below slab in conduit shall be Berk-Tek LANmark-6 OSP (wet location) or approved equal.

C. 100 OHM Category 6A UNSHIELDED TWISTED PAIR CABLE (UTP)
1. Physical Characteristics:
   a. The diameter of the insulated conductor shall be .023 in. maximum.
   b. The outer jacket of the overall cable shall be WHITE in color.

c. Shall consist of (4) twisted pairs.
d. Shall be suitable for the environment in which they are to be installed.
e. The color coding of pairs shall be in accordance with T-568B:

Pair 1	Pair 2	Pair 3	Pair 4
W-BL; BL	W-O; O	W-G; G	W-BR; BR

f. The overall diameter of the cable shall be 0.320" nominal.
g. The ultimate breaking strength measured in accordance with ASTM D 4565 shall be 400 N minimum.
h. Cable shall withstand a bend radius of 1.2" at -20 degrees Celsius without jacket or insulation cracking.
i. Cable shall be third party verified to meet ANSI/TIA/EIA-568-C.2.

2. Transmission Characteristics:
   a. DC resistance of any conductor shall not exceed 9.38 Ohms per 100m max. at 20°C. Measured in accordance with ASTM D 4566.
   b. The mutual capacitance of any pair at 1 kHz for 100m of cable shall not exceed 5.1 Nf.
   c. DC resistance unbalance between any two conductors of any pair shall not exceed 3% when measured at or corrected to 20°C in accordance with ASTM D 4566.
   d. The capacitance unbalance to ground at 1 kHz of any pair shall not exceed 330 pF per 100m.
3. Cable shall be Berk-Tek LANmark-10G2 UTP or approved equal.
4. Cable installed underground/below slab in conduit shall be Berk-Tek LANmark 10G2 OSP series category 6A (wet location) or approved equal.

2.06 FIBER OPTIC CABLE

A. Indoor/outdoor optical fiber non-conductive loose tube HYBRID CABLE with both laser enhanced multimode and singlemode fiber strands.
   1. Each singlemode fiber must adhere strictly to Section 2.7.C.
   2. Each multimode fiber must adhere strictly to Section 2.7.B.
   3. Physical Characteristics (in addition to those outlined below):
      a. Overall jacket of the HYBRID style cable shall be Aqua.
      b. Fiber used for fire alarm system shall have an overall jacket that is RED.

B. MULTIMODE FIBER: Indoor/Outdoor Optical Fiber Non-Conductive Loose Tube with Laser Enhanced 50/125 Optical Fibers
   1. Each Multimode Fiber shall be:
      a. Graded-index optical fiber wave-guide with nominal 50/125um-core/cladding diameter, OM4 or better industry rating.
      b. The fiber shall comply with the latest revision of ANSI/EIA/TIA-4920000.
      c. Attenuation shall be measured in accordance with ANSI/EIA/TIA-455-46, 53 or 61.
      d. Information transmission capacity shall be measured in accordance with the latest revision of ANSI/EIA/TIA-455—204.
      e. The measurements shall be performed at 23 degrees C +/- 5 degrees.
      f. Maximum attenuation dB/Km @ 850/1300 nm: 3.5/1.5.
      g. Bandwidth 4700 MHz-km @ 850nm.
      h. Bandwidth 500 MHz-km @ 1300nm.

i. Optical Fiber shall be laser optimized and guarantee Gigabit Ethernet distances of 750m/600m for 850nm and 1300nm respectively and 10 gigabit distances of min. 300m for both 850nm and 1300nm.

2. Physical Characteristics:
   a. Shall be suitable for use in both outdoor and indoor applications without the use of a transition at the building entrance.
   b. Shall be suitable for use in risers, plenums and horizontal applications.
   c. Shall have a dry water blocking system for cable core and buffer tubes.
   d. Shall be available with a fiber strand count range from 6 to 72.
   e. Shall have a 3.0 mm sub-unit diameter.
   f. Shall have and be marked with an UL-OFNP and OFN FT6 Flame Rating.
   g. Shall comply with the requirements of ICEA S-83-596 & ANSI/ICEA S-87-640.
   h. Strength members shall be dielectric and may be either fiberglass or aramid yarn.
   i. Suitable for underground or aboveground conduits.
   j. Loose Tube fibers shall be color coded in accordance with EIA / TIA 598 with an overall dark blue jacket.
   k. Shall have a ripcord for overall jacket.
   l. Suitable for operation between -40° to +75° C.
   m. Shall be UV resistant.
   n. Shall be of an all dielectric design.
   o. Shall have a maximum installation tension of 300 lbs for cables without dielectric strength member and 600 lbs for cables with dielectric strength members.
3. Design Make:
   a. Berk-Tek “Adventum” optical fiber cable with GIGAlite-10FB 50/125 micron fiber or approved equal.

C. SINGLEMODE FIBER: Indoor/Outdoor Optical Fiber Non-Conductive Plenum (OFNP) Loose Tube with Laser Enhanced 9/125 Optical Fibers
1. Each Singlemode Fiber shall be:
   a. Graded-index optical fiber wave-guide with nominal 9/125um-core/cladding diameter, OS2 or better industry rating.
   b. The fiber shall comply with the latest revision of ANSI/EIA/TIA-4920000.
   c. Attenuation shall be measured in accordance with ANSI/EIA/TIA-455-46, 53 or 61.
   d. Information transmission capacity shall be measured in accordance with the latest revision of ANSI/EIA/TIA-455—204.
   e. The measurements shall be performed at 23 degrees C +/- 5 degrees.
   f. Maximum attenuation dB/Km @ 1310/1550 nm: 0.4/0.3.
   g. Optical Fiber shall be laser optimized and guarantee Gigabit Ethernet distances of >5000m for 1310nm and 10 Gigabit Ethernet distances of >5000m for 1310nm.
2. Physical Characteristics:
   a. Shall be suitable for use in both outdoor and indoor applications without the use of a transition at the building entrance.
   b. Shall be suitable for use in risers, plenums and horizontal applications.
   c. Shall have a dry water blocking system for cable core and buffer tubes.
   d. Shall be available with a fiber strand count range from 6 to 72.
   e. Shall have a 3.0 mm sub-unit diameter.
   f. Shall have and be marked with an UL-OFNP and OFN FT6 Flame Rating.
   g. Shall comply with the requirements of ICEA S-83-596 & ANSI/ICEA S-87-640.

h. Strength members shall be dielectric and may be either fiberglass or aramid yarn.
i. Suitable for underground or aboveground conduits.
j. Loose Tube fibers shall be color coded in accordance with EIA / TIA 598 with an overall dark blue jacket.
k. Shall have a ripcord for overall jacket.
l. Suitable for operation between -40° to +75° C.
m. Shall be UV resistant.
n. Shall be of an all dielectric design.
o. Shall have a maximum installation tension of 300 lbs for cables without dielectric strength member and 600 lbs for cables with dielectric strength members.

3. Design Make:
   a. Berk-Tek "Adventum" OS2 optical fiber cable (Singlemode-AB) with 9/125 micron fiber or approved equal

2.07 FIBER OPTIC CONNECTORS

A. LC Fiber Optic Connectors:
   1. Each LC fiber optical connector shall be factory terminated onto a factory cut and polished "Pig-Tail" in preparation for field termination by fusion splice only. Mechanical field terminations or gel-matched connector types will not be permitted.
   2. Each LC Fiber Connector shall:
      a. Be a pre-polished fiber connector with a fiber stub or field-polish fiber connector.
      b. Be available in single mode and multimode versions.
      c. Have a domed zirconia ferrule.
      d. Be a PC polish type connector.
      e. Accept a nominal fiber diameter of 125 micrometers.
      f. Have a typical insertion loss of 0.1 dB for multimode and 0.1 dB for single mode.
      g. Have repairable tips.
      h. Have an insertion loss change of less than 0.2 dB after 500 reconnects.
      i. Be stable over an operating range of –40C to +75 degrees C.
   3. Design Make:
      a. Leviton LC Fiber Optic Connectors on pre-terminated pig-tails or approved equal.
      b. Fiber optic pigtails shall be fusion spliced only in submitted and approved fiber optic splice trays and enclosures.

2.08 FIBER OPTIC SPLICE ENCLOSURES

A. All incoming fiber optic cable shall be fusion spliced to pre-terminated and polished "pig-tails" as noted above. This fusion splice shall be mechanically protected using a splice enclosure with modular fiber patching bulk-heads. Each fiber optic splice enclosure shall be mounted inside a physically secure cabinet, or mounted to a free-standing rack inside an IT designated area on premises. Each fiber optic splice enclosure shall:
   1. Be able to use interchangeable bulk-heads for both single-mode and multi-mode patching.
   2. Be able to hold one or more 12-strand splice trays
   3. Splice trays shall be:
      a. Capable of handling maximum of 12 fiber splices per tray, including heat-shrink.

b. Capable of being stacked for using in multi-tray installations
4. Contain integral strain-relief for installed fiber plant.
5. Be installed with all un-used positions in fiber bulk-heads populated with dust-caps.
6. Be manufactured by an ISO 9001 registered company
7. Design Make:
   a. Installations with 12 or fewer strands shall use Corning "SPH-01P"
   b. Installations with more than 12 strands shall use Leviton OPT-X 1000i series

2.09 PATCH CORDS

A. The contractor shall provide factory terminated and tested UTP and optical fiber patch cords and equipment cords for the complete cabling system. The UTP patch cables shall meet the requirements of ANSI/TIA/EIA-568-B for patch cord testing.

B. Copper (UTP) patch cords shall:
1. Use 8-position connector with impedance matched contacts and designed using dual reactance.
2. Be constructed of 100 ohm, 4 pair stranded conductor, unshielded twisted pair copper per the requirements of the ANSI/TIA/EIA-568-B.2 and ANSI/TIA/EIA-568-B.2–1 standard.
3. Meet TIA category 6 or 6A (corresponding to the matching cable plant) component specifications in ANSI/TIA/EIA-568-B.2-1
4. 100% factory tested to meet category 6 or 6A corresponding to the matching cable plant performance.
5. ETL or any other nationally recognized 3rd party verification
6. Be center tuned to category 6A performance specifications by using paired bi-level contact array.
7. Be capable of universal T568A or T568B wiring schemes.
8. Modular connector shall maintain the paired construction of the cable to facilitate minimum untwisting of the wires.
9. Have a performance marking indelibly labeled on the jacket (by the manufacturer).
10. Have the ability to accept color-coded labels and icons to comply with ANSI/TIA/EIA-606-A labeling specifications.
11. Have "snagless" protection for the locking tab to prevent snagging and to protect locking tab in tight locations and provide bend relief.
12. Be provided and installed in colors that match installed cable plant.
    a. Cables with Category 6 performance shall be BLUE.
    b. Cables with Category 6A performance shall be WHITE.
13. Be available in 3 foot, 5 foot, 7 foot, 9 foot, and 15 foot standard lengths.
14. Be backwards compatible to Category 3, 5 and 5e.
15. Be manufactured by an ISO 9001 registered company.

C. Optical Fiber patch cords shall:
1. Contain two (2) multi-mode or single mode optical fibers, corresponding with the matching installed cable plant.
2. Use multi-mode, graded-index fibers with a 50 micron core or use single mode fibers with a 9 micron core, corresponding with installed cable plant.
3. Be capable of transmission at both 850 nm and 1300 nm wavelengths for multi-mode and 1310 nm and 1550 nm for single-mode.

4. Include listing of actual loss of patchcord when packaged.
5. Be manufactured in standard lengths of 1 m (3.27 ft), 2 m (6.56 ft), 3 m (9.84 ft), 4 m (13.11 ft), 7 m (22.95 ft), and 10 m (32.79 ft), and special ordered in any other lengths.
6. Be manufactured by an ISO 9001 registered company.

2.10 GROUNDING AND BONDING

A. The facility shall be equipped with a Telecommunications Bonding Backbone (TBB). This backbone shall be used to ground all telecommunications cable shields, equipment, racks, cabinets, raceways, and other associated hardware that has the potential to act as a current carrying conductor. The TBB shall be installed independent of the building's electrical and building ground and shall be designed in accordance with the recommendations contained in the ANSI/TIA/EIA-607 Telecommunications Bonding and Grounding Standard.

B. The main entrance facility/equipment room in each building shall be equipped with a telecommunications main grounding bus bar (TMGB). Each telecommunications room shall be provided with a telecommunications ground bus bar (TGB). The TMGB shall be connected to the building electrical entrance grounding facility. The intent of this system is to provide a grounding system that is equal in potential to the building electrical ground system. Therefore, ground loop current potential is minimized between telecommunications equipment and the electrical system to which it is attached.

C. All racks, metallic backboards, cable sheaths, metallic strength members, splice cases, cable trays, ungrounded conduits, etc. entering or residing in the TR or ER shall be grounded to the respective TGB or TMGB using a minimum #6 AWG stranded copper bonding conductor and compression connectors.

D. All wires used for telecommunications grounding purposes shall be identified with a green insulation. Non-insulated wires shall be identified at each termination point with a wrap of green tape. All cables and bus bars shall be identified and labeled in accordance with the System Documentation Section of this specification.

2.11 FIRESTOP

A. A firestop system is comprised of the item or items penetrating the fire rated structure, the opening in the structure and the materials and assembly of the materials used to seal the penetrated structure. Firestop systems comprise an effective block for fire, smoke, heat, vapor and pressurized water stream.

B. All penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate firestop system. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire rated structure). Any penetrating item i.e., riser slots and sleeves, cables, conduit, cable tray, and raceways, etc. shall be properly firestopped.

C. Firestop systems shall be UL Classified to ASTM E814 (UL 1479) and shall be approved by a qualified Professional Engineer (PE), licensed (actual or reciprocal) in the state where the work

is to be performed. A drawing showing the proposed firestop system, stamped/embossed by the PE shall be provided to the Owner's Technical Representative prior to installing the firestop system(s).

PART 3 - EXECUTION

3.01 WORK AREA OUTLETS

A. Cables shall be coiled in the in-wall or surface-mount boxes if adequate space is present to house the cable coil without exceeding the manufacturer's bend radius. In hollow wall installations where box-eliminators are used, excess wire can be stored in the wall. No more than 12" of UTP and 12" of fiber slack shall be stored in an in-wall box, modular furniture raceway, or insulated walls. Excess slack shall be loosely coiled and stored in the ceiling above each drop location when there is not enough space present in the outlet box to store slack cable.

B. Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA/EIA-568-C.0 document, manufacturer's recommendations and best industry practices.

C. Pair untwist at the termination shall not exceed 12 mm (one-half inch).

D. Bend radius of the horizontal cable shall not be less than 4 times the outside diameter of the UTP cable.

E. The cable jacket shall be maintained to within 25mm (one inch) of the termination point.

F. Data jacks, unless otherwise noted in drawings, shall be located in the bottom position(s) of each faceplate. Data jacks in horizontally oriented faceplates shall occupy the right-most position(s).

G. Voice jacks shall occupy the top position(s) on the faceplate. Voice jacks in horizontally oriented faceplates shall occupy the left-most position(s).

3.02 HORIZONTAL DISTRIBUTION CABLE INSTALLATION

A. Cable shall be installed in accordance with manufacturer's recommendations and best industry practices.

B. A pull cord (nylon; 1/8" minimum) shall be co-installed with all cable installed in any conduit.

C. Cable raceways shall not be filled greater than the ANSI/TIA/EIA-569-A maximum fill for the particular raceway type or 40%.

D. Cables shall be installed in continuous lengths from origin to destination (no splices) except for transition points, or consolidation points.

E. Where transition points, or consolidation points are allowed, they shall be located in accessible locations and housed in an enclosure intended and suitable for the purpose.

F. The cable's minimum bend radius and maximum pulling tension shall not be exceeded.

G. If a J-hook or trapeze system is used to support cable bundles all horizontal cables shall be supported at a maximum of 48 to 60 inch (1.2 to 1.5 meter) intervals. At no point shall cable(s) rest on acoustic ceiling grids or panels.

H. Horizontal distribution cables shall be bundled in groups of no more than 50 cables. Cable bundle quantities in excess of 50 cables may cause deformation of the bottom cables within the bundle and degrade cable performance.

I. Cable shall be installed above fire-sprinkler systems and shall not be attached to the system or any ancillary equipment or hardware. The cable system and support hardware shall be installed so that it does not obscure any valves, fire alarm conduit, boxes, or other control devices.

J. Cables shall not be attached to ceiling grid or lighting fixture wires. Where support for horizontal cable is required, the contractor shall install appropriate carriers to support the cabling.

K. Any cable damaged or exceeding recommended installation parameters during installation shall be replaced by the contractor prior to final acceptance at no cost to the Owner.

L. Cables shall be identified by a self-adhesive label in accordance with the System Documentation Section of this specification and ANSI/TIA/EIA-606-A. The cable label shall be applied to the cable behind the faceplate on a section of cable that can be accessed by removing the cover plate.

M. Unshielded twisted pair cable shall be installed so that there are no bends smaller than four times the cable outside diameter at any point in the run and at the termination field.

N. Pulling tension on 4-pair UTP cables shall not exceed 25-lbf for a four-pair UTP cable.

O. Cables installed underground or below slab shall be suitable for use in wet locations and outdoors in duct or conduit. If wet location cable is exposed in the building after exiting the wet area, it must transition to an appropriate category dry cable within 50 feet (15m) of exiting conduit.

3.03 HORIZONTAL COPPER TERMINATION AND INSTALLATION

A. Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA/EIA-568-C standard, manufacturer's recommendations and best industry practices.

B. Pair untwist at the termination shall not exceed 13 mm (0.5 inch).

C. Bend radius of the cable in the termination area shall not exceed 4 times the outside diameter of the cable.

D. Cables shall be neatly bundled and dressed to their respective panels or blocks. Each panel or block shall be fed by an individual bundle separated and dressed back to the point of cable entrance into the rack or frame.

E. The cable jacket shall be maintained as close as possible (within 25mm – 1 inch) to the termination point.

F. Each cable shall be clearly labeled on the cable jacket behind the patch panel at a location that can be viewed without removing the bundle support ties. Cables labeled within the bundle, where the label is obscured from view shall not be acceptable.

3.04 OPTICAL FIBER TERMINATION HARDWARE

A. Fiber slack shall be neatly coiled within the fiber splice tray or enclosure. No slack loops shall be allowed external to the fiber panel.

B. Each cable shall be individually attached to the respective splice enclosure by mechanical means. The cables strength member shall be securely attached the cable strain relief bracket in the enclosure.

C. Each fiber bundle shall be stripped upon entering the splice tray and the individual fibers routed in the splice tray.

D. Each cable shall be clearly labeled at the entrance to the splice enclosure. Cables labeled within the bundle shall not be acceptable.

E. A maximum of 12 strands of fiber shall be spliced in each tray.

F. All spare strands shall be installed into spare splice trays.

G. All terminated strands shall be accounted on patch-panel labels which follow District labelling standards.

H. All un-used fiber positions in fiber termination bulk-head (also known as adapter plate) shall be populated with manufacturer provided dust caps.

3.05 BACKBONE CABLE INSTALLATION

A. Backbone cables shall be installed separately from horizontal distribution cables

B. A pull cord (nylon; 1/8" minimum) shall be co-installed with all cable installed in any conduit.

C. Where cables are housed in conduits, the backbone and horizontal cables shall be installed in separate conduits

D. Where backbone cables are installed in an air return plenum, riser rated cable shall be installed in metallic conduit.

E. Where backbone cables and distribution cables are installed in a cable tray or wireway, backbone cables shall be installed first and bundled separately from the horizontal distribution cables.

F. All backbone cables shall be securely fastened to the sidewall of the TR on each floor.

G. Backbone cables spanning more than three floors shall be securely attached at the top of the cable run with a wire mesh grip and on alternating floors or as required by local codes.

H. Vertical runs of cable shall be supported to messenger strand, cable ladder, or other method to provide proper support for the weight of the cable.

I. Large bundles of cables and/or heavy cables shall be attached using metal clamps and/or metal banding to support the cables.

3.06 RACKS

A. Racks shall be securely attached to the concrete floor using a minimum 3/8" hardware or as required by local codes.

B. Racks shall be placed with a minimum of 36-inch clearance from the walls on all sides of the rack. When mounted in a row, maintain a minimum of 36 inches from the wall behind and in front of the row of racks and from the wall at each end of the row.

C. All racks shall be grounded to the telecommunications ground bus bar in accordance with Section 3.8 of this document.

D. Rack mount screws not used for installing patch panels and other hardware shall be bagged and left with the rack upon completion of the installation.

E. Wall mounted termination block fields shall be mounted on 4' x 8' x .75" void free plywood. The plywood shall be mounted vertically 12" above the finished floor. The plywood shall be painted with two coats of white fire retardant paint.

F. Wall mounted termination block fields shall be installed with the lowest edge of the mounting frame 18" from the finished floor.

3.07 FIRESTOP SYSTEM

A. All firestop systems shall be installed in accordance with the manufacturer's recommendations and shall be completely installed and available for inspection by the local inspection authorities prior to cable system acceptance.

3.08 GROUNDING SYSTEM

A. The TBB shall be designed and/or approved by a qualified PE, licensed in the state that the work is to be performed. The TBB shall adhere to the recommendations of the ANSI/TIA/EIA-607 standard, and shall be installed in accordance with best industry practice.

B. Installation and termination of the main bonding conductor to the building service entrance ground shall be performed by a licensed electrical contractor.

3.09 IDENTIFICATION AND LABELING

A. The contractor shall provide and install a complete labeling system for the intercommunications installation in accordance with ANSI/TIA/EIA-606A, and identified using the following methodology:
   1. FACEPLATES (Workstation Outlets): Faceplates in work areas shall be labeled consecutively starting at "1" and incrementing moving in a clockwise motion around each room. Index "1" in each room shall begin at the occupant entrance to the room and shall increment at each occurrence of a new/different faceplate in a clockwise and outermost-to-innermost pattern (spiraling inward). In this manner, labeling of wall outlets will be done first, and floor-boxes will be labeled next.
      a. The following special configuration prefixes shall be used in front of the nameplate index and port position:
         1) Wireless Access Points: shall have additional "WAP" prefix to the index assigned by method 1 above. (Example: WAP2A and WAP2B may share a 2-port biscuit)
         2) IP enabled speakers: shall have additional "SPK" prefix to the index assigned by method 1 above. (Example: SPK3A)
         3) IP enabled cameras: shall have additional "CAM" prefix to the index assigned by method 1 above. (Example: CAM1A)
      b. Labeling within each faceplate (or biscuit): Each modular jack shall be identified by a letter to index the individual port within any faceplate, starting at the letter "A". Each port shall be indexed starting in the upper-left and incrementing right-to-left first and then top-to-bottom.
   2. RACK EQUIPMENT: Intermediate Distribution Frames (IDF) and Main Distribution Frames (MDF) shall be labeled according to their District-wide recognized room name at the time of installation. The IDF or MDF shall be labelled according to the following naming template:
      a. Small telecom cabinet shall be of the format: "TIC" <ROOM NAME> (Example: TIC901B is a small IDF cabinet in room 901B).
      b. Large telecom cabinet or IDF rack shall be of the format: "IDF" <ROOM NAME> (Example: "IDF1205" for a free-standing 2-post rack in room 1205)
      c. MDF room equipment shall be of the format: "MDF" <ROOM NAME> (Example: "MDF-LIB01" for the main distribution frame in room LIB01)
      d. During construction, a room name may not correspond to the District recognized room name, therefore Contractor shall seek approval from District IT for recognized room names prior to start of labeling.
      e. If more than one rack within the IDF or MDF is installed, contractor shall seek special instructions on naming conventions.

B. The labeling system shall clearly identify all components of the system: racks, cables, panels and outlets. The labeling system shall designate the cables origin and destination within the system. Racks and patch panels shall be labeled to identify the location within the cable system infrastructure. All labeling information shall be recorded on the as-built drawings and all test documents shall reflect the appropriate labeling scheme. Labeling shall follow the guidelines of ANSI/TIA/EIA-606-A.

C. Outside Plant cables passing through a pull box or vault shall have a cable label that is water and mud proof.

D. All label printing will be machine generated by Ortronics LabelMo, or similar software, using indelible ink ribbons or cartridges. Self-laminating labels will be used on cable jackets, appropriately sized to the OD of the cable, and placed within view at the termination point on each end. Outlet, patch panel and wiring block labels shall be installed on, or in, the space provided on the device.

3.10 FIBER OPTIC DATA CHANNEL

A. All fiber optic strands within a fiber optic cable shall be installed so as to complete an end-to-end, full-duplex data channel, known as the cable plant. The cable plant shall only be connected at each end to active optical networking equipment/electronics via one patch cable at each end of the installed cable plant. Cable plant shall not be “cross-patched” from one fiber pair to another, even at a specified fiber bulk-head, without explicit approval from Engineer and Owner.

B. Data throughput shall only be limited by the characteristics of the cable or the capability of the active electronics equipment attached. Cable shall not be limited by channel disturbances, such as kinks, breaks, tears, lossy splices, mating optical patches, etc.

C. Where plans or specifications call for additions or modifications to an existing fiber channel, Contractor shall only complete the addition or modification using approved fiber optic cable fusion splices, in submitted and approved termination enclosures.

3.11 HORIZONTAL COPPER DATA CHANNEL

A. All 4-pair, 8-position copper data cables (Category cabling) shall be installed as a complete end-to-end, full duplex ethernet channel, known as the cable plant. The cable plant shall only be connected at each end to active networking equipment/electronics via one patch cable at each end of the installed cable plant. Cable plant shall not be “cross-patched” from one ethernet cable to another without explicit approval from Engineer and Owner.

B. Data throughput shall only be limited by the characteristics of the cable or the capability of the active electronics equipment attached. Cable shall not be limited by channel disturbances, such as kinks, breaks, tears, additional patch cables, additional punch-downs, etc.

C. Where plans or specifications call for additions or modifications to an existing data channel, Contractor shall only complete the addition or modification using approved fiber optic cable fusion splices, in submitted and approved termination enclosures.

3.12 TESTING AND ACCEPTANCE

A. General
1. All cables and termination hardware shall be 100% tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA/EIA-568-B. All pairs of each installed cable shall be verified prior to system acceptance. Any defect in the cabling system installation including but not limited to cable, connectors, feed through couplers, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100% useable conductors in all cables installed.
2. All cables shall be tested in accordance with this document, the ANSI/TIA/EIA standards, the Certification Program Information Manual provided by the product manufacturer and best industry practice. If any of these are in conflict, the Contractor shall bring any discrepancies to the attention of the project team for clarification and resolution.

B. Copper Link Testing
1. All twisted-pair copper cable links shall be tested for continuity, pair reversals, shorts, opens and performance as indicated below. Additional testing is required to verify Category performance.
2. Horizontal cabling shall be tested using a Level III test unit for category 6 and category 6A performance compliance, corresponding with the installed cable type.
3. The basic tests required are:
    a. Wire Map
    b. Length
    c. Attenuation
    d. NEXT (Near end crosstalk)
    e. Return Loss
    f. ELFEXT Loss
    g. Propagation Delay
    h. Delay skew
    i. PSNEXT (Power sum near-end crosstalk loss)
    j. PSELFEXT (Power sum equal level far-end crosstalk loss)
4. Continuity - Each pair of each installed cable shall be tested using a test unit that shows opens, shorts, polarity and pair-reversals, crossed pairs and split pairs. Shielded/screened cables shall be tested with a device that verifies shield continuity in addition to the above stated tests. The test shall be recorded as pass/fail as indicated by the test unit in accordance with the manufacturers' recommended procedures, and referenced to the appropriate cable identification number and circuit or pair number. Any faults in the wiring shall be corrected and the cable re-tested prior to final acceptance.
5. Length - Each installed cable link shall be tested for installed length using a TDR type device. The cables shall be tested from patch panel to patch panel, block to block, patch panel to outlet or block to outlet as appropriate. The cable length shall conform to the maximum distances set forth in the ANSI/TIA/EIA-568-C Standard. Cable lengths shall be recorded, referencing the cable identification number and circuit or pair number. For multi-pair cables, the shortest pair length shall be recorded as the length for the cable.
6. Category 6 Performance Shall meet the link requirements outlined below for a 90-meter, 4-connector permanent link.

Frequency (MHz)	Maximum Insertion Loss (dB)	Minimum NEXT (dB)	Minimum PSNEXT (dB)	Minimum ELFEXT (dB)	Minimum PSELFEXT (dB)	Minimum Return Loss (dB)
1.0	2.1	69.0	64.0	65.3	62.3	21.0
4.0	4.0	67.0	62.5	53.2	50.2	21.0
10.0	6.3	60.6	46.0	45.3	42.3	21.0
20.0	9.0	55.6	51.0	39.2	36.2	21.0
31.25	11.3	52.4	47.7	35.4	32.4	19.1
62.5	16.4	47.4	42.6	29.3	26.3	16.1
100.0	21.2	43.9	39.1	25.3	22.3	14.0
155.0	26.6	40.7	35.8	21.4	18.4	12.1
200.0	31.5	38.8	33.9	19.2	16.2	11.0
250.0	36.0	37.1	32.4	17.3	14.3	10.0

7. Category 6A performance shall meet the link requirements outlined below for a 90-meter, 4-connector permanent link.

Frequency (MHz)	Maximum Insertion Loss (dB)	Minimum NEXT (dB)	Minimum PSNEXT (dB)	Minimum ELFEXT (dB)	Minimum PSELFEXT (dB)	Minimum Return Loss (dB)
1.0	2.1	74.3	72.3	-	-	20.0
4.0	3.8	65.3	63.3	-	-	23.0
10.0	5.9	59.3	57.3	-	-	25.0
16.0	7.5	56.2	54.2	-	-	25.0
20.0	8.4	54.8	52.8	-	-	25.0
31.25	10.5	51.9	49.0	-	-	23.6
62.5	15.0	47.4	45.4	-	-	21.5
100.0	19.1	44.3	42.3	-	-	20.1
250.0	31.1	38.3	36.3	-	-	17.3
350.0	37.2	36.1	34.1	-	-	16.3
400.0	40.1	35.3	33.3	-	-	15.9
500.0	45.3	33.8	31.8	-	-	15.2

NOTE: For ELFEXT and PSELFEXT, follow TIA guidelines for Cat6A.

C. Fiber Testing
1. All fiber testing shall be performed on all fibers in the completed end-to-end system. Testing shall consist of an end-to-end power meter test performed per EIA/TIA-455-53A. The system loss measurements shall be provided at 850 and/or 1300 nanometers for multimode fibers and 1310 and/or 1550 nanometers for single mode fibers. These tests also include continuity checking of each fiber.
2. Backbone multimode fiber cabling shall be tested at both 850 nm and 1300 nm (or 1310 and 1550 nm for singlemode) in both directions.
3. Test set-up and performance shall be conducted in accordance with ANSI/EIA/TIA-526-14 Standard, Method B.

4. Where links are combined to complete a circuit between devices, the Contractor shall test each link from end to end to ensure the performance of the system. ONLY LINK TEST IS REQUIRED. The contractor can optionally install patch cords to complete the circuit and then test the entire channel. The test method shall be the same used for the test described above. The values for calculating loss shall be those defined in the ANSI/TIA/EIA Standard.
5. Attenuation testing shall be performed with an approved hand held tester from an industry recognized test equipment manufacturer.

3.13 SYSTEM INTEGRATION AND TESTING

A. Contractor shall provide to client representative, at contract notice to proceed, a list of all devices and/or locations where equipment is noted on plans as “District” or “Owner” provided. Contractor shall be responsible for coordinating the receipt and safe handling of each piece of equipment until installation is complete.

B. Equipment provided by the client shall be handled and installed by the Contractor, this may include network switches, Wireless Access Points, Power-Over-Ethernet injectors, security cameras, etc. All equipment shall be installed by the Contractor in their respective locations as shown on the plans.

C. Upon complete install of the equipment, Contractor shall provide and install appropriate patching of equipment to network infrastructure (Cat 6, Cat 6A, fiber-optic cable, etc.) as necessary to deliver a fully functional network solution.

3.14 SYSTEM DOCUMENTATION

A. Upon completion of the installation, the telecommunications contractor shall provide three (3) full documentation sets to the Engineer for approval. Documentation shall include the items detailed in the sub-sections below.

B. Documentation shall be submitted within ten (10) working days of the completion of each testing phase (e.g. subsystem, cable type, area, floor, etc.). This is inclusive of all test result and draft as-built drawings. Draft drawings may include annotations done by hand. Machine generated (final) copies of all drawings shall be submitted within 30 working days of the completion of each testing phase. At the request of the Engineer, the telecommunications contractor shall provide copies of the original test results.

C. The Engineer may request that a 10% random field re-test be conducted on the cable system, at no additional cost, to verify documented findings. Tests shall be a repeat of those defined above. If findings contradict the documentation submitted by the telecommunications contractor, additional testing can be requested to the extent determined necessary by the Engineer, including a 100% re-test. This re-test shall be at no additional cost to the Owner.

3.15 TEST RESULTS

A. Test documentation shall be provided on disk within three weeks after the completion of the project. The disk shall be clearly marked on the outside front cover with the words "Project Test Documentation", the project name, and the date of completion (month and year). The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document. Unless the manufacturer specifies a more frequent calibration cycle, an annual calibration cycle is anticipated on all test equipment used for this installation. The test document shall detail the test method used and the specific settings of the equipment during the test as well as the software version being used in the field test equipment. The test documentation shall be compatible with common, license-free computer software such as Adobe Acrobat (PDF), or with Microsoft Excel or Word.

B. The field test equipment shall meet the requirements of ANSI/TIA/EIA-568-C including applicable TSB's and amendments. The appropriate Level III tester shall be used to verify Category 6 cabling systems.

C. Printouts generated for each cable by the wire (or fiber) test instrument shall be submitted as part of the documentation package. The telecommunications contractor must furnish this information in electronic form CD-ROM). If needed, provide manufacturers software require to read the test results.

D. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be documented.

PART 4 - WARRANTY AND SERVICES

4.01 WARRANTY

A. The manufacturer shall provide the warranty directly to the end-user.

B. An Extended Product Warranty shall be provided which warrants functionality of all components used in the system for a minimum of 20 years from the date of registration. The Extended Product Warranty shall warrant the installed horizontal and/or backbone copper, and both the horizontal and the backbone optical fiber portions of the cabling system.

C. The Application Assurance Warranty shall cover the failure of the wiring system to support the applications that are designed for the link/channel specifications of ANSI/TIA/EIA–568-C.0. These applications include, but are not limited to, 10BASE-T, 100BASE-T, 1000BASE-T, 155Mb/sATM, and 1Gb/s ATM.

D. The contractor shall provide a warranty on the physical installation.

4.02 FINAL ACCEPTANCE AND SYSTEM CERTIFICATION

A. Completion of the installation, in-progress and final inspections, receipt of the test and as-built documentation, and successful performance of the cabling system for a two-week period will constitute acceptance of the system. Upon successful completion of the installation and subsequent inspection, the end user shall be provided with a numbered certificate, from the product manufacturer, registering the installation.

END OF SECTION

SECTION 28 3100
FIRE ALARM AND DETECTION SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section Includes:
1. Provide a complete, fully addressable, power limited, fire detection and evacuation system as shown on the drawings and/or as required for a complete and operating system. The system shall be connected, tested, verified by AHJ to be acceptable and left in first class operating condition. All equipment herein specified shall be engineer-approved and California State Fire Marshal (CSFM) listed. The entire installation shall conform to the National Fire Protection Association (NFPA) Standard 72, 90A & CEC Article 760 and authorities having jurisdiction as applicable. The system specified and depicted on the plan is a complete and approved system. Substitution of system components or manufacturer will require the contractor to separately obtain approval with the CSFM at Contractor's expense and shall meet all requirements of the system as designed and pre-approved. The entire fire alarm system has been submitted and approved by the Division of the State Architect as a complete submittal. Any routing of the system wiring that is significantly different than shown on the approved drawings shall have the approval of the engineer and must be obtained prior to construction.
2. Provide all work and material as shown and / or required to provide a fully functional and adequate system as described hereon and as required by the California State Fire Marshal.
3. Supervision: The fire alarm system shall monitor the integrity of all alarm initiating and indicating appliance circuits and provide local and remote status of all connected systems. The system shall be provided with automatically charged standby batteries to maintain system operation for 24 HRS in the normal supervisory mode and 5 minutes of alarm. Batteries shall be supervised for connection to the system and low voltage threshold. The automatic battery charger shall be capable of charging fully discharged system batteries to 100% in 8 hours.
4. The system wiring and installation shall be as stated in drawings and as required by the manufacturer. All wiring shall be color coded, tagged and verified to assure that it is free from shorts and grounds and shall be rated for the appropriate environmental conditions such as well locations.
5. Testing: The completed system shall be tested in accordance with NFPA Standard 72-7-1.
6. Warranty: The equipment and wiring shall be warranted to be free from electrical and mechanical defects for a period of two (2) years commencing with final acceptance by Owner.
7. All Fire Alarm wiring shown in drawings shall be installed in conduit.

8. System Operation shall include:
    a. Separate zone signaling and device status indication for all initiating devices.
    b. Audible to sound the California uniform fire alarm signal in temporal mode. Devices shall be at least 15dBA above average ambient sound level, but not less than 75dBA at 10' or more than 120dBA.
    c. Visual devices shall not exceed 2 flashes per second and shall not be slower than 1 flash per second. Visual devices shall be synchronized when 3 or more devices are within the same field of view.
    d. Supervision of all circuits to indicate any abnormal wiring condition.
    e. One (1) N.O./N.C. integral relay for external device interface or as indicated on drawings.
    f. Central station connection capable of indicating (3) distinct separate signals as being tamper, trouble and alarm with point reporting capabilities.
9. All work shall be completed as shown on the plans and or as specified within this specification and shall include the following (but is not limited to):
    a. Life safety fire alarm detection and signaling system.
    b. Furnishing and installation of equipment and devices.
    c. Conductors, connections and interconnections where specified and all in conduit system.
    d. Testing, cleaning and adjusting of completed work.
    e. Wiring diagrams, as-built drawings and three (3) sets of equipment operations and maintenance instructions for Owner.
    f. Complete maintenance for two years. Proposal for subsequent maintenance contract.
    g. All work and material for complete and operable systems as indicated or specified.
    h. Permits, inspections and fees.
    i. Identification and instruction to Owner Representative. Training shall consist of a minimum or two (2) 6-hour sessions.
10. Coordination with Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
11. Furnishing of special back boxes where required for installation of fire alarm devices.
12. All conductors to be installed in conduit pursuant to Specification Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
13. Qualifications: Contractor shall receive written approval and verified test results which shall be submitted to the owner for system from manufacturers recognized representative prior to completion and acceptance.
14. All initiating devices shall be separately addressed for individual identification at control panel.
15. As-Built Drawings: A complete set of reproducible "as-built" drawings showing installed wiring, color coding, wire tag notations exact locations of all installed equipment, specific interconnections between all equipment and internal wiring of the equipment shall be delivered to the owner upon completion of the system.
16. Maintenance Instructions: Three (3) submittals of maintenance instructions shall be provided and shall be complete, easy to read, understandable and shall provide the following information:
    a. Instructions for replacing any components of the system, including internal parts.
    b. Instructions for periodic cleaning and adjustments of equipment with a schedule of these functions.

c. A complete list of all equipment and components with information as to the address and telephone number of both the manufacturer and local supplier of each item.
d. User operating instructions shall be prominently displayed on a separate sheet located next to the control unit in accordance with UL Standard 864. The contractor shall warrant all equipment and wiring free from inherent mechanical and electrical defects for two years from the date of final acceptance.

1.03 SUBMITTALS

A. Submit in accordance with Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL.

B. The submittal shall include certification from the manufacturer verifying that the distributor is an authorized agent, who is qualified and trained by the manufacturer in the proper installation, operation and service of the system.

C. Shop Drawings:
1. A complete list of all supplied equipment including model numbers with catalog data sheets on each component and CSFM number.
2. Provide schematic layout, floor plan, drawings indicating location of all components and equipment, required size and location of conduit and outlets and type and quantity of system conductors. Include voltage drop calculations and battery calculations based on actual number of devices to be installed. Note: It shall be acceptable to provide written acknowledgement that the engineer-prepared approved fire alarm drawings will be used as project fire alarm shop drawings and no exceptions are taken.
3. Include wiring diagrams for overall system and components including control panels, annunciators, power supplies, initiating circuits, notification appliances, control devices and FATC. Address numbers shall be noted on all appliances.
4. Include physical and electrical characteristics of equipment to indicate conformance with the Specifications.
5. Describe system characteristics and function as well as device wiring diagrams.
6. Voltage drop and battery calculations for each control panel and power supply and initiating circuits.
7. System operational matrix.

D. Data Sheets: Show California State Fire Marshal Listing, U.L. listing, equipment ratings, dimensions and finishes.

E. Manufacturer's Certificate: Note whether the system meets or exceeds specified requirements.

F. Operating and Maintenance Instruction Manual:
1. Manual shall include the following tailored to this specific project:
a. Operational description.
b. Coded cabling plan.
c. Two wire circuit diagrams.
d. Wiring destination schedule.
e. Schematic component diagrams and PC board layouts.

f. Maintenance and alignment procedures.
g. Voltage drop and battery calculations.

1.04 COORDINATION

A. Refer to the electrical and mechanical drawings and specifications to determine quantities and location of devices and required scope of work and coordinate work with mechanical and electrical installers. Provide function described under mechanical section Sequence of Control, for fire and/or emergency conditions. Submit conduit and pathing requirements to electrical installer.

1.05 SYSTEM DESCRIPTION

A. General: System to be listed by Underwriters Laboratories and the California State Fire Marshal, designed to meet the functional requirements of NFPA 72.

B. Features:
1. Fire control command center panel with graphic annunciator, printer (where specified) and alarm communicator transmitter (DACT) where specified and/or required.
2. Alarm/trouble point transmitters.
3. Manual alarm reporting stations (addressable).
4. Ionization smoke detectors (addressable).
5. NAC extender panels.
6. Heat detectors (addressable).
7. Combination speaker/visual alarm signal devices.
8. Speaker and audible devices.
9. Visual alarm signal device.
10. Exterior bell.
11. Connection to sprinkler waterflow and pressure switches (addressable).
12. Sprinkler valve supervision (addressable).
13. Provision for connection to off-site central station via leased telephone lines.
14. Control module.
15. Monitor module.
16. Sync. Module.

1.06 SYSTEM OPERATION

A. System to be the active interrogate/respond type alarm system, 24 volt DC noncoded, positive, non-interfering, successive operation, in which all devices are constantly sending status signals to the main fire control command center from remote data transmitter panels approximately every one second. A change in status to be reported twice to determine that it is a valid signal, and be automatically and permanently recorded.

B. Wiring, equipment and devices for alarm initiation, annunciation, and audible signaling to be continuously supervised for opens, shorts or grounds (trouble). Each alarm initiating device

circuit to be provided with illuminated and audible annunciation of both trouble and alarm conditions. Non-illumination indicates a normal condition.

C. Any alarm or trouble condition shall sound an audible signal at the fire command center and the remote annunciator. Signal shall be silenced by a momentary contact switch which shall transfer the signal to a visual indicator. Subsequent trouble conditions shall cause the signal to resound and in turn may be silenced. Upon restoration to normal, the trouble signal silencing indicator shall extinguish automatically.

D. Activation of any automatic or manual alarm initiating device shall cause the following to occur:
   1. Sound an audible alarm and illuminate the visual indicator for zone and type of alarm at the fire command center, the remote annunciator and fire alarm control panel.
   2. Sound, at building of origin, the audible alarm signal over the system audible devices and activate the visual signal devices.
   3. Transmit alarm signal to energy management system for shutdown of building air handler.
   4. Transmit alarm signal to the central station office.

E. System shall not incorporate a time delay for any of the alarm initiating devices. All alarms shall be considered confirmed alarms.

F. Detection shall be addressable and reporting of fire conditions to be accomplished by the following basic methods:
   1. Smoke detectors.
   2. Heat detectors.
   3. Waterflow switches.
   4. Carbon Monoxide detectors.

G. Fire alarm system inputs to be further subdivided as follows, for a more defined indication of the location and nature of the fire or trouble condition:
   1. Smoke/heat detector by device and location.
   2. Waterflow or pressure switch by device and location.
   3. Sprinkler valve position indication by device and location.

H. Alarm condition shall override trouble indication. Trouble indication shall reappear after alarm reset.

I. Fire Alarm Zones shall be as indicated on drawings.

J. Printout on system printer of all alarm and trouble reports, indicating type of device, condition, time and date and alarm clearing.

K. Selective manual testing of any device point or zone in the system to determine normal, trouble or alarm status.

L. Command center shall have annunciator indicating building floor, room number and zone.

M. System shall be capable of manual operation in the event of malfunction of the central processor. Supplier shall include a statement in the system shop drawing submittal explaining the manual operating capability of the system. System shall provide redundant processor capabilities to duplicate primary processor function.

N. Operation: All components shall be interconnected in accordance with the manufacturer's instructions to provide a complete and operable system as described.

1.07 LOADS OF EQUIPMENT AND COMPONENTS

A. Follow IEEE Standard where applicable.

B. Provide fuse protection for equipment and spare fuses.

C. Design systems for operation at 120 volts, normal or emergency power as indicated, 60 Hz nominal input.

D. Operating voltage dissipated by resistors shall not exceed 25% of ratings.

E. Operating voltage of capacitors shall not exceed 80% of rated voltage.

F. Operating loads and voltages on transistors and solid-state devices shall not exceed manufacturer's recommendation for normal full load operation.

G. Use electronic components of types and rating commonly available from stock of established commercial distribution.

1.08 GUARANTEE

A. Conform to applicable provisions of the GENERAL REQUIREMENTS.

B. Service technicians and replacement components for the system shall be available locally from a service representative of the manufacturer who is able to provide evidence of technical training and authorization by the manufacturer.

C. For a period of two years from date of final acceptance, the system shall be under full guarantee for materials and labor at no cost to the Owner. The system shall be under a service contract with a technician authorized by the manufacturer. Replacement parts and labor shall be readily available during normal business hours while the service contract is in effect. A complete system inspection and test shall be performed at five months and again at eleven months after final acceptance. Tests shall include all smoke detector sensitivity settings.

D. All component failures shall be remedied to the satisfaction of the Owner.

E. A continuing service contract shall be offered at time of bid to commence at the expiration of warranty included with the system.

PART 2 - PRODUCT

2.01 MATERIALS

A. Fire Alarm Control Panel (FACP) and system shall be UL listed for power-limited application, (as described on the plans). System shall be as manufactured by Gamewell Fire Control Instruments (FCI).

B. Peripheral Devices
   1. Analog Photoelectric Smoke Sensors (refer to drawings for model number).
      a. Analog photoelectric sensors shall have a low profile and be capable of being set at five sensitivity settings of "LOW, LOW MEDIUM, MEDIUM, MEDIUM HIGH, and HIGH" levels.
      b. Automatic and manual functional sensitivity and performance tests shall be possible without the need for generating smoke. This method shall test all sensor circuitry and a "Failed Test" indication shall display for any failed test.
      c. Two LEDs providing 360-degree visibility of operating status and alarm indication shall be provided on each sensor. The LEDs shall pulse periodically indicating that the sensor is receiving power and communication is taking place. This feature shall be field programmable. Upon alarm, these LEDs shall light continuously. An alarm output shall be available for remote annunciation.
      d. The system shall check the sensitivity of each sensor periodically. If a sensor alarm threshold sensitivity has changed, due to again and/or dust accumulation, the system shall automatically compensate for this change (drift compensation).
      e. Each sensor shall allow for the setting of two sensitivity levels. These levels may be programmed so that when the building is occupied, a sensor will be less sensitive than when the building is unoccupied. This feature permits sensors to be more reliable and at the same time reduces/minimizes unwanted alarms. This feature shall also provide for programmable weekend days, where the sensor will remain at an unoccupied sensitivity level.
      f. The sensor screen and cover assembly shall be removable for field cleaning.
   2. Addressable Thermal Sensor (refer to drawings for model number):
      a. Addressable thermal sensors shall have a low-profile and operate on the combination "rate-of-rise" and "fixed temperature" principals with the fixed temperature set point at 135ºF. They shall contain dual thermistor sensing circuitry for fast response.
   3. Addressable Subloop Monitor Module (refer to drawings for model number):
      a. An addressable monitor module with an initiating circuit capable of being configured Class B, Style B. The module shall contain a yellow status LED that shall flash when in a quiescent mode and light continuously when in alarm. The LED shall be field programmable not to provide quiescent status indication, if so desired.

C. Fire Alarm remote power supply, NAC panel, shall be UL listed for power-limited application. Provided with (4) four-signal circuits minimum capacity or as required to make system fully operational with an output current of 6 to 9 amps as required for proper operation.

D. System Devices and components shall be provided as specified on the fire alarm equipment legend and as shown on associated electrical drawing:

E. Fire Alarm terminal cabinet shall be Square D Class 6650. Size as shown on drawings or as required.

F. Conduit and Wire
1. Conduit
a. Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements.
b. Where required, all wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.
c. Fire alarm cabling above accessible ceilings may be installed without conduit in "open-wired" fashion. Support labels with J-hooks or similar means.
d. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760-29.
e. Wiring for 24 volt DC control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
f. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the FACP manufacturer.
g. Conduit shall be 3/4" (19.1 mm) minimum.
2. Wire
a. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG (1.63 mm) for Notification Appliance Circuits.
b. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
c. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NFPA 70 (e.g., FPLR).
d. Wiring used for the multiplex communication circuit (SLC) shall be twisted and unshielded and support a minimum wiring distance of 12,500 feet. The design of the system shall permit use of IDC and NAC wiring in the same conduit with the SLC communication circuit.
e. All field wiring shall be electrically supervised for open circuit and ground fault.
f. The fire alarm control panel shall be capable of t-tapping Class B (NFPA Style 4) Signaling Line Circuits (SLCs). Systems that do not allow or have restrictions in, for example, the amount of t-taps, length of t-taps etc., are not acceptable.

G. Substitutions

1. The fire alarm System has been designed and approved as a “complete system”. Substitute equipment will be approved when the following conditions are met:
   a. A request for substitution shall be made prior to bid for the Owner’s and design team consideration and approval.
   b. Submit detailed fire alarm plans, specifications and engineering calculations including but not necessarily limited to:
      1) CSFM listing #’s and Manufacturer Model #’s for every system component which is to be interconnected as a part of this project.
2. Single line, riser and point to point wiring diagrams including battery and voltage drop calculations for the entire system in compliance with NFPA 72. Indicating appliance shall be calculated on the bases of the highest current rating possible at that device.
3. Indication of conductor type(s), power-limited or non-power-limited system, independent of interconnected to existing system.
4. Submit / obtain approval from the Owner for the entire system.
   a. The party requesting the substitution shall be responsible for any additional cost acquired during the approval.

PART 3 - EXECUTION

3.01 GENERAL

A. Comply with all applicable paragraphs in Section 26 0500, COMMON WORK RESULTS FOR ELECTRICAL, apply as though repeated herein.

B. Install system(s) in accordance with manufacturer's instructions.

C. Include services of certified technicians to supervise installation, provide adjustments, provide final connections, system testing and system training to Owner Representative.

3.02 GROUNDING

A. All equipment to be grounded by means of green ground wire to "U" contact of duplex receptacles and bonded to ground provided under 26 0526, GROUNDING AND BONDING OF ELECTRICAL SYSTEMS.

3.03 INSPECTION

A. Systems to meet all the requirements of the CSFM and IOR and AHJ and shall be approved thereby before installation and prior to final acceptance.

3.04 LOCATION

A. Before installation, verify exact location of control equipment and outlets. The Owner reserves the right to relocate system components within a radius of 10' at no increase in cost before rough-in work is started for the respective component.

3.05 WIRING

A. Furnish all conductors, equipment, terminal strips, etc., and labor to install a complete and operable system. All cable conductors shall be color coded and numbered for identification at all terminals. Green shall be for grounding conductor only. Use red insulation and or red jacketing on all fire alarm cable.

3.06 TESTING

A. After all equipment specified herein for each system has been installed and is in operating condition, conduct performance tests to determine if the installation and components comply with these specifications. Furnish competent personnel, all test material and approved test instruments and conduct the tests under supervision of factory personnel, in the presence of the Engineer, the building and fire inspecting agencies.
   1. The contractor's job foreman, in the presence of a representative of the manufacturer, a representative of the owner, and the fire department shall operate every installed device to verify proper operation and correct annunciation at the control panel.
   2. At least on half of all tests shall be performed on battery standby power.
   3. Where application of heat would destroy any detector, it may be manually activated.
   4. The signaling line circuits and notification appliance circuits shall be opened in at least two (2) locations to verify the presence of supervision.
   5. When the testing has been completed to the satisfaction of the contractor representative IOR, representatives of the manufacturer and owner, a notarized letter co-signed by each attesting to the satisfactory completion of said testing shall be forwarded to the owner and the authority having jurisdiction.
   6. The contractor shall leave the fire alarm system in proper working order, and, without additional expense to the owner, shall replace any defective materials or equipment provided by him under this contract within two years from the date of final acceptance by the awarding authority.
   7. The local responding fire department must be notified prior to the final test in accordance with local requirements and when requested, participate in system testing and evaluation.

3.07 REPORT

A. Prepare written report of final test results, signed by witnessing parties. Submit to the Engineer in triplicate for final approval.

END OF SECTION

Section 31 1000
Site Clearing

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clearing and protection of vegetation.

B. Removal of existing debris.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Sequencing and staging requirements.

B. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

C. Section 01 5713 - Temporary Erosion and Sediment Control.

D. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.

E. Section 02 4100 - Demolition: Removal of built elements and utilities.

F. Section 31 2200 - Grading: Topsoil removal.

G. Section 31 2200 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

H. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

I. Section 31 2323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

A. Comply with other requirements specified in Section 01 7000.

B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Protect existing structures and other elements that are not to be removed.

3.03 VEGETATION

A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds.

B. Do not remove or damage vegetation beyond the limits indicated on drawings.

C. Vegetation Removed: Do not burn, bury, landfill, or leave on site.
   1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.

D. Dead Wood: Remove all dead trees (standing or down), limbs, and dry brush on entire site; treat as specified for vegetation removed.

E. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to District.

3.04 DEBRIS

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

Section 31 2200
Grading

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of topsoil.

B. Rough grading the site for site structures and building pads.

C. Finish grading.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing.

B. Section 31 2316 - Excavation.

C. Section 31 2316.13 - Trenching: Trenching and backfilling for utilities.

D. Section 31 2316.26 - Rock Removal.

E. Section 31 2323 - Fill: Filling and compaction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: See Section 31 2323.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

B. Verify the absence of standing or ponding water.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect from damage above- and below-grade utilities to remain.

D. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.

E. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

3.03 ROUGH GRADING

A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

B. Do not remove topsoil when wet.

C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

D. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.

E. When excavating through roots, perform work by hand and cut roots with sharp axe.

F. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

G. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL

A. Stockpile topsoil to be re-used on site; remove remainder from site.

B. Stockpile subsoil to be re-used on site; remove remainder from site.

C. Stockpiles: Use areas designated on site or as directed by the District; pile depth not to exceed 4 feet; protect from erosion.

3.05 FINISH GRADING

A. Before Finish Grading:
   1. Verify building and trench backfilling have been inspected.
   2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.

C. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches and per the Project Geotechnical Report.

D. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

E. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 REPAIR AND RESTORATION

A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.

C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.07 FIELD QUALITY CONTROL

A. See Section 31 2323 for compaction density testing.

3.08 CLEANING

A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.

B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

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Section 31 2316
Excavation

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for building volume below grade, footings, pile caps, slabs-on-grade, paving, site structures, and utilities within the building.

B. Trenching for utilities outside the building to utility main connections.

C. Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

A. Updated Geotechnical Engineering and Geologic Hazard Report; Prepared by Earth Systems Pacific, Dated: April 3, 2025

B. Section 01 5713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.

C. Section 02 4100 - Demolition: Shoring and underpinning existing structures.

D. Section 21 0553 - Identification for Fire Suppression Piping and Equipment: Underground warning tapes at underground fire suppression lines.

E. Section 22 0553 - Identification for Plumbing Piping and Equipment: Underground warning tapes at underground plumbing lines.

F. Section 23 0553 - Identification for HVAC Piping and Equipment: Underground warning tapes at underground HVAC lines.

G. Section 26 0553 - Identification for Electrical Systems: Underground warning tapes at underground electrical lines.

H. Section 31 1000 - Site Clearing: Vegetation and existing debris removal.

I. Section 31 2200 - Grading: Grading.

J. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.

K. Section 31 2316.26 - Rock Removal: Removal of rock during excavating.

L. Section 31 2323 - Fill: Fill materials, backfilling, and compacting.

M. Section 31 3700 - Riprap.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.04 QUALITY ASSURANCE

A. Temporary Support and Excavation Protection Plan:
   1. Bracing and shoring design to meet requirements of OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

PART 2 PRODUCTS

2.01 MATERIALS

A. Bedding and Fill to Correct Over-Excavation:
   1. See Section 31 2323 for bedding and corrective fill materials at general excavations.
   2. See Section 31 2316.13 for bedding and corrective fill materials at utility trenches.

B. Underground Warning Tapes:
   1. See Section 22 0553 for underground warning tapes at underground plumbing lines.
   2. See Section 23 0553 for underground warning tapes at underground HVAC lines.
   3. See Section 26 0553 for underground warning tapes at underground electrical lines.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 1000 for clearing, grubbing, and removal of existing debris.

C. See Section 31 2200 for topsoil removal.

D. Locate, identify, and protect utilities that remain and protect from damage.

E. Notify utility company to remove and relocate utilities.

F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

G. Protect plants, lawns, rock outcroppings, and other features to remain.

H. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

3.04 EXCAVATING

A. Excavate to accommodate new structures and construction operations.
   1. Cut utility trenches wide enough to allow inspection of installed utilities.
   2. See Section 31 2316.26 for required excavation clearances for pipes in utility trenches.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Do not interfere with 45 degree bearing splay of foundations and as recommended by the Project Geotech Engineer.

D. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 SUBGRADE PREPARATION

A. See Section 31 2323 for subgrade preparation at general excavations.

B. See Section 31 2316.13 for subgrade preparation at utility trenches.

3.06 FILLING AND BACKFILLING

A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.

B. Install underground warning tape at buried utilities according to Sections 21 0553, 22 0553, 23 0553, and 26 0553.

C. See Section 31 2323 for fill, backfill, and compaction requirements at general excavations.

D. See Section 31 2316.13 for fill, backfill, and compaction requirements at utility trenches.

E. See Section 31 2200 for rough and final grading and topsoil replacement requirements.

3.07 REPAIR

A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.

3.08 CLEANING

A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.

B. Remove excavated material that is unsuitable for re-use from site.

C. Remove excess excavated material from site.

3.09 PROTECTION

A. Divert surface flow from rains or water discharges from the excavation.

B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

Section 31 2316.13
Trenching

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

A. Document "Updated Geotechnical Engineering and Geological Hazards Report" Dated: April 3, 2025

B. Section 31 0519 - Geosynthetics for Earthwork.

C. Section 31 2200 - Grading: Site grading.

D. Section 31 2316 - Excavation: Building and foundation excavating.

E. Section 31 2316.26 - Rock Removal: Removal of rock during excavating.

F. Section 31 2323 - Fill: Backfilling at building and foundations.

1.03 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

1.04 REFERENCE STANDARDS

A. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2022, with Errata .

B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012 (Reapproved 2021).

C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where designated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Complying with the City of Arroyo Grande standards, specifications and the project geotechnical report.

B. Structural Fill: Complying with the City of Arroyo Grande standards, specifications and the project geotechnical report.

C. Granular Fill: Complying with the City of Arroyo Grande standards, specifications and the project geotechnical report.

D. Granular Fill - Pea Gravel: Natural stone; washed, free of clay, shale, organic matter and per the City of Arroyo Grande standards, specifications and the project geotechnical report.

E. Sand: Complying with the City of Arroyo Grande Standards and Specifications.

2.02 ACCESSORIES

A. Geotextile: See Section 31 0519.

2.03 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. If tests indicate materials do not meet specified requirements, change material and retest.

C. Compaction testing is not required where trenching occurs outside of hadscape areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 2200 for additional requirements.

C. Locate, identify, and protect utilities that remain and protect from damage.

D. Notify utility company and to remove and relocate utilities.

E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

F. Protect plants, lawns, rock outcroppings, and other features to remain.

G. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect.

3.03 TRENCHING

A. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

C. Do not interfere with 45 degree bearing splay of foundations.

D. Cut trenches wide enough to allow inspection of installed utilities.

E. Hand trim excavations. Remove loose matter.

F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.

G. Remove excavated material that is unsuitable for re-use from site.

H. Remove excess excavated material from site.

I. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

J. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains or as directed by the Architect.

3.04 PREPARATION FOR UTILITY PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

A. Backfill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

F. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.

G. Compaction Density Unless Otherwise Specified or Indicated:
   1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density or as directed by Soils Engineer and project Geotecnical Report.

H. Reshape and re-compact fills subjected to vehicular traffic.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated by project Soils Engineer and Geotechnical Report. Also, refer to the City of Arroyo Grande standards and specifications.

B. Utility Piping:
   1. Bedding: Use sand.
   2. Cover with general fill.

C. At Pipe Culverts:
   1. Bedding: Use sand unless otherwise specified or indicatied by project Soils Engineer and Geotechnical Report.
   2. Place filter fabric specified in Section 33 0561 over compacted bedding.
   3. Cover with general fill.

3.07 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.08 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"), AASHTO T 180, or ASTM D698 ("standard Proctor").

C. If tests indicate work does not meet specified requirements, remove work, replace and retest.

D. Frequency of Tests: _____.

3.09 CLEANING

A. Leave unused materials in a neat, compact stockpile.

B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

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Section 31 2323
Fill

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for building volume below grade, footings, slabs-on-grade, paving, and utilities within the building.

B. Backfilling and compacting for utilities outside the building to utility main connections.

C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

A. Document ["Updated Geotechnical Engineering and Geological Hazards Report"] Dated: April 3, 2025

B. Section 01 5713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.

C. Section 31 2200 - Grading: Site grading.

D. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.

1.03 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

1.04 REFERENCE STANDARDS

A. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2022, with Errata .

B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012 (Reapproved 2021).

C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Compaction Density Test Reports.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill and backfill material shall comply with the City of Arroyo Grande standards and specifications or as directed by the project Soils Engineer.

2.02 ACCESSORIES

A. Geotextile: Non-biodegradable, nonwoven.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Fill up to subgrade elevations unless otherwise indicated.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

F. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

G. Compaction Density Unless Otherwise Specified or Indicated:
   1. As recommended by Soils Report

H. Reshape and re-compact fills subjected to vehicular traffic.

I. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

A. General Fill and backfill material shall comply with the City of Arroyo Grande standards and specifications or as directed by the project Soils Engineer.

3.05 TOLERANCES

A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.

B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.

C. If tests indicate work does not meet specified requirements, remove work, replace and retest.

D. Frequency of Tests: As directed by Project Soils Engineer.

E. Compaction testing is not required where trenching occurs outside of hardscape areas.

3.07 CLEANING

A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

B. Leave unused materials in a neat, compact stockpile.

END OF SECTION

Section 32 0190
Operation and Maintenance of Planting

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Maintain plants in manner that promotes health, growth, color and appearance, to quality levels specified; replace dead, dying, and damaged plants at no extra cost to District.
   1. It is Contractor's responsibility to determine type and quantity of soil amendments and fertilizer required.

B. Maintain newly planted landscape plants, including turf (lawns), trees, shrubs, ground cover, flowering bulbs, and annuals.

C. Operate permanent irrigation system.

D. Clean up landscaped areas.

E. Maintenance Period: The time frame covered by these requirements is 90 days:

1.02 RELATED REQUIREMENTS

A. Section 32 8423 - Irrigation System.

B. Section 32 9300 - Plants.

1.03 REFERENCE STANDARDS

A. ANSI A300 Part 1 - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning); 2017.

B. ANSI Z133.1 - American National Standard for Arboricultural Operations - Safety Requirements; 2017.

C. ASTM D4972 - Standard Test Methods for pH of Soils; 2019.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Soil Tests and Analysis: Submit report showing number of samples, test results, and recommendations for soil amendments and fertilizer.

C. Product Data: Manufacturer's data sheets on each fertilizer, herbicide, pesticide, and other chemical material to be used, showing trade name, chemical composition, mixing instructions, recommended application rate, storage and handling instructions, and application instructions.

D. Installer Qualifications: As specified.

1.05 QUALITY ASSURANCE

A. Installer Qualifications:

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver U.S. EPA-controlled materials to site in original containers with legible labels indicating registration number and registered uses.

B. Deliver fertilizer and manufactured soil amendments to site in original containers bearing manufacturer's chemical analysis, name, trade name or trademark, and indication of compliance with applicable state and federal laws and regulations ; alternatively, bulk delivery with equivalent certificate is acceptable.

C. Store fertilizer, soil amendments, and mulch in dry locations away from contaminants.

D. Do not store pesticides, herbicides, or other chemical treatment materials in locations where they could damage seeds or plants.

PART 2 PRODUCTS

2.01 FERTILIZERS AND SOIL AMENDMENTS

A. Fertilizers: Free flowing granular organic type containing nitrogen, phosphorus, and potassium, plus trace minerals and micro-nutrients; controlled release type is preferred.
   1. Determine type and quantity based on soil analysis.

B. Soil Amendments: Type and quantity as required to achieve specified results, based on soil analysis.

PART 3 EXECUTION

3.01 EXAMINATION

A. If soil analysis has not already been performed, take sufficient samples to obtain a comprehensive analysis; perform analysis in accordance with ASTM D4972.

3.02 LANDSCAPE MAINTENANCE - GENERAL

A. Protect existing vegetation, pavements, and facilities from damage due to maintenance activities; restore damaged items to original condition or replace, at no extra cost to District.

B. General Cleanup: Remove debris from all landscape areas at least once a week and from turf areas before each mowing.
   1. Debris consists of trash, rubbish, dropped leaves, downed branches and limbs of all sizes, dead vegetation, rocks, and other material not belonging in landscaped areas.
   2. Remove debris from site and dispose of properly.

C. Watering, Soil Erosion, and Sedimentation Control: Comply with federal, state, local, and other regulations in force; prevent over-watering, run-off, erosion, puddling, and ponding.
   1. Repair temporary erosion control mechanisms provided by others.
   2. Repair eroded areas and replant, when caused by inadequate maintenance.
   3. Prevent sediment from entering storm drains.

D. Trees: Exercise care to avoid girdling trees; provide protective collars if necessary; remove protective collars at end of maintenance period.

E. Fertilizing: Apply fertilizer only when directed by District per District standards.

F. Drainage Channels: Remove obstructions in gutters, catch basins, storm drain inlets, yard drains, swales, ditches, and overflows.
   1. Remove grates from catch basins to clean.
   2. Prevent encroachment of other vegetation on turfed surface drainage channels.

G. Health Maintenance: Inspect all plants regularly for health:
   1. Eradicate diseases and damaging pests, regardless of severity or speed of effect.
   2. Treat accidental injuries and abrasions.
   3. If a plant is unhealthy but not yet dead, according to specified definitions, determine reason(s) and take remedial action immediately.
   4. Remove dead plants immediately upon determining that they are dead.

H. Pesticide and Herbicide Application: Comply with manufacturer's instructions and recommendations and applicable regulations.
   1. Obtain District's approval prior to each application.
   2. Apply in manner to prevent injury to personnel and damage to property due to either direct spray or drifting, both on and off District's property.
   3. Use backflow preventers on hose bibbs used for mixing water; prevent spills.
   4. Inspect equipment daily before application; repair leaks, clogs, wear, and damage.
   5. Do not dispose of excess mixed material, unmixed material, containers, residue, rinse water, or contaminated articles on site; dispose of off site in legal manner.
   6. Rinse water may be used as mix water for next batch of same formulation.
   7. Contractor is responsible for all recordkeeping, submissions, and reports required by laws and regulations.

I. Replanting: Perform replacement and replanting immediately upon removal of dead plant.

3.03 IRRIGATION

A. Irrigation: Do not allow plants to wilt; apply water as required to supplement rainfall; do not waste water; do not water plants or areas not needing water; do not water during rainfall; shut off water flow when finished; repair leaks.
   1. New automatic irrigation system may be used.

B. Automatic Irrigation System: Obtain and follow manufacturer's operating and maintenance instructions.
   1. Adjust to water landscape areas only.
   2. Adjust sprinkler heads, drippers, valves, pumps, and controllers as required for optimum operation.
   3. Drain and prepare for freezing weather; prepare and start up in spring.
   4. During system warranty period notify Architect and system installer promptly of defects and leaks that adversely affect irrigation performance.

3.04 PLANTING BED MAINTENANCE

A. Planting beds include all planted areas except turf.

B. Begin maintenance immediately after plants have been installed; inspect at least once a week and perform needed maintenance promptly.

C. Keep planting beds free of pests; remove weeds and grass by hand before reaching 1 inch height.

D. Do not allow climbing, twining, or creeping plants to encroach into other species.

E. Replace mulch as required and remove debris.

3.05 TREE AND SHRUB MAINTENANCE

A. Trees will be considered dead when main leader has died back or when 25 percent or more of crown has died ; except as otherwise indicated for palm trees.

B. Shrubs will be considered dead when 25 percent or more of plant has died.

C. Inspect woody plants for health by scraping up to 1/16 inch square area of bark; no green cambium layer below bark shall be evidence of death.

D. Adjust stakes, guys and turnbuckles, ties, and trunk wrap as required to promote growth and avoid girdling.

E. Pruning: Unless otherwise indicated, prune only to maintain balanced natural shape; follow recommendations of ANSI A300 and ANSI Z133.1 and best local practices for species involved.

F. Shrubs: Prune at least once during maintenance period at best time to influence ultimate shape and size for the particular species.
   1. Prune to balance the plant's form and according to its natural growth characteristics.
   2. Remove water shoots, suckers, and branches not complying with desired shape and size.

3.06 CLEANING

A. Remove fallen deciduous leaves in Fall; removal may wait until all leaves have fallen.

B. Clean adjacent pavements of plant debris and other debris generated by maintenance activities.

C. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner; District's trash collection facilities may be used.

D. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner.
   1. Biodegradable Debris: District will designate a compost pile on site where biodegradable debris may be deposited; branches and bark are not considered biodegradable.
   2. Branches and Bark: District will designate a wood chip storage area; machine-chip all branch and bark debris.
   3. Non-Biodegradable Debris: District's trash collection facilities may be used.

END OF SECTION

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Section 32 1123
Aggregate Base Courses

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aggregate base course.

B. Paving aggregates.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of site for base course.

B. Section 31 2316.13 - Trenching: Compacted fill over utility trenches under base course.

C. Section 31 2323 - Fill: Topsoil fill at areas adjacent to aggregate base course.

D. Section 31 2323 - Fill: Compacted fill under base course.

E. Section 32 1216 - Asphalt Paving: Finish and binder asphalt courses.

F. Section 32 1313 - Concrete Paving: Finish concrete surface course.

G. Section 33 0561 - Concrete Manholes: Manholes including frames.

1.03 REFERENCE STANDARDS

A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil–Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).

B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2022, with Errata .

C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.

D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012 (Reapproved 2021).

E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2024.

F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.

H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).

I. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

B. Materials Sources: Submit name of imported materials source.

C. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

D. Compaction Density Test Reports.

1.05 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When aggregate materials need to be stored on site, locate where directed by District.

C. Aggregate Storage, General:
1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 MATERIALS

Non-ecycled- coarse aggregate, conforming to Section 26 of the State of California Department of Transportation Standards and Specifications, latest edition.

A. The aggregate shall be free from vegatable matter and other deleterious substances.

B. Aggregate shall consist of material which at least 60% by wait shall be crushed particles as determined by California Test method 205 of the Department of Transportation.

C. Herbicide: As approved .

2.02 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for general requirements for testing and analysis of aggregate materials.

B. If tests indicate materials do not meet specified requirements, change material and retest.

C. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

A. Spread aggregate over prepared substrate to a total compacted thickness as shown on plans.

B. Place aggregate in maximum 4 inch layers and roller compact to specified density.

C. Level and contour surfaces to elevations and gradients indicated.

D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

G. Apply herbicide to finished surface.

3.04 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

3.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for general requirements for field inspection and testing.

B. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

C. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.06 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

Section 32 1216
Asphalt Paving

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aggregate base course.

B. Single course bituminous concrete paving.

C. Double course bituminous concrete paving.

D. Surface sealer.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of site for paving and base.

B. Section 31 2323 - Fill: Compacted subgrade for paving.

C. Section 32 1123 - Aggregate Base Courses: Aggregate base course.

D. Section 33 0561 - Concrete Manholes: Manholes, including frames; gutter drainage grilles, covers, and frames for placement by this section.

1.03 REFERENCE STANDARDS

A. AI MS-2 - Asphalt Mix Design Methods; 2015.

B. AI MS-19 - Basic Asphalt Emulsion Manual; 2008.

C. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction; 2009a.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with State of CA Highways standard Section 39 and per the City of Arroyo Grande Standards and Specifications.

B. Mixing Plant: Complying with State of CA Highways standard.

C. Obtain materials from same source throughout.

1.05 FIELD CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Comply with applicable code for paving work on public property.

2.02 MATERIALS

A. Asphalt Cement: ASTM D946.

B. Aggregate for Base Course: In accordance with State of CA Highways standards and in conformance with the city of Arroyo Grande Standards and Specifications.

C. Aggregate for Binder Course: In accordance with State of CA Highways standards.

D. Aggregate for Wearing Course: In accordance with State of CA Highways standards.

E. Fine Aggregate: In accordance with State of CA Highways standards.

F. Tack Coat: Homogeneous, medium curing, liquid asphalt.

G. Seal Coat: Per AI MS-19 standards

H. Grade of asphalt shall be PG 64-10

I. Mineral aggregate shall be Type A, 1/2" maximum size aggregate, medium grading and shall conform to the requirements set forth in Section 39 of the Standard Specification.

J. Reclaimed Asphalt Pavement (RAP) is not allowed unless District says otherwise.

2.03 ASPHALT PAVING MIXES AND MIX DESIGN

A. Asphalt Base Course: 3.0 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.

B. Asphalt Binder Course: 4.5 to 6 percent of asphalt cement by weight in mixture in accordance with AI ____.

C. Asphalt Wearing Course: 5 to 7 percent of asphalt cement by weight in mixture in accordance with AI MS-2.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.02 AGGREGATE BASE COURSE

A. Place and compact aggregate base course.

B. See Section 32 1123.

3.03 PREPARATION - PRIMER

A. Apply primer in accordance with manufacturer's instructions.

B. Apply primer on aggregate base or subbase at uniform rate of 1/3 gal/sq yd.

C. Apply primer to contact surfaces of curbs, gutters.

D. Use clean sand to blot excess primer.

3.04 PREPARATION - TACK COAT

A. Apply tack coat in accordance with manufacturer's instructions.

B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.

C. Apply tack coat to contact surfaces of curbs, gutters and other concrete and existing asphalt edges.

3.05 PLACING ASPHALT PAVEMENT - SINGLE COURSE

A. Install Work in accordance with State of CA Highways standards.

B. Place asphalt within 24 hours of applying primer or tack coat.

C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

D. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.06 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. Place asphalt binder course within 24 hours of applying primer or tack coat.

B. Place asphalt wearing course within two hours of placing and compacting binder course.

C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

D. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.07 SEAL COAT

A. Apply seal coat to asphalt surface course and asphalt curbs in accordance with AI MS-19.

3.08 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Variation from True Elevation: Within 1/2 inch.

3.09 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for quality control.

B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.

3.10 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury until surface temperature is less than 140 degrees F.

END OF SECTION

Section 32 1313
Concrete Paving

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete sidewalks, stair steps, integral curbs, and gutters

B. Concrete collars for water valves and cleanouts.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of site for paving and base.

B. Section 31 2323 - Fill: Compacted subbase for paving.

C. Section 32 1123 - Aggregate Base Courses: base course.

D. Section 32 1216 - Asphalt Paving: Asphalt wearing course.

E. Section 33 0561 - Concrete Manholes: Structures, including frames; gutter drainage grilles, covers, and frames for placement by this section.

F. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

A. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

1.03 REFERENCE STANDARDS

A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

B. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

C. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

D. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.

E. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

F. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).

G. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.

H. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).

I. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.

J. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.

K. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types); 2023.

L. ASTM D1752 - Standard Specification for Preformed Sponge Rubber, Cork, and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2018 (Reapproved 2023).

1.04 SUBMITTALS

A. See Special Provisions for Submittal Requirements.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

A. Comply with applicable requirements of ACI SPEC-301.

B. Concrete Sidewalks and Curbs: minimum 4 inches thick, natural color and per recommendations of the project soils engineer.

2.02 FORM MATERIALS

A. Wood form material, profiled to suit conditions.
   1. Materials shall be free from defects which would impair the appearance of structural quality of the completed work
   2. Provide stakes and bracing materials as required to hold forms securely in place.

B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
   1. Thickness: 1/2 inch.

2.03 REINFORCEMENT

A. Reinforcing Steel and Welded Wire Reinforcement: Types specified in Section 03 2000.

B. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; unfinished finish.

2.04 CONCRETE MATERIALS

A. Obtain cementitious materials from same source throughout.

B. Concrete Materials: Provide in accordance with State of CA Highways standards.

2.05 ACCESSORIES

A. Curing Compound: ASTM C309, Type 1, Class A.

2.06 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.

B. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended by manufacturer.

C. Concrete Properties:
1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 3000 psi.
2. Water-Cement Ratio: Maximum 50 percent by weight.
3. Maximum Slump: 4 inches.

2.07 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.

B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

A. See Section 32 1123 for construction of base course for work of this Section.

3.03 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.04 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

A. Place reinforcement per section 03 2000 - Concrete Reinforcement, and the project's soils report.

3.06 PLACING CONCRETE

A. Place concrete as specified in Section 03 3000.

B. Do not place concrete when base surface is wet.

C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

E. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

3.07 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Place expansion joints at intervals indicated in the Improvement Plans, Specifications and Landscape's Construction Plan.

C. Provide Control joints as indicated in the City of Arroyo Grande, specifications and Landscape's Construction Plan.

3.08 FINISHING

A. Area Paving: Medium broom, texture perpendicular to pavement direction. ____. Concrete finish to be slip resistant.

B. Sidewalk Paving: Medium broom, texture perpendicular to direction of travel. _____ with troweled and radiused edge 1/4 inch radius. Concrete finish to be slip resistant.

C. Curbs and Gutters: Medium broom, texture parallel to pavement direction. _____.

D. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.09 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

B. Maximum Variation From True Position: 1/4 inch.

3.10 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
   1. Provide free access to concrete operations at project site and cooperate with appointed firm.

3.11 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over pavement until 75 percent design strength of concrete has been achieved.

END OF SECTION

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Section 32 1723
Pavement Markings

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Painted pavement markings.

1.02 RELATED REQUIREMENTS

A. Section 32 1216 - Asphalt Paving.

1.03 SUBMITTALS

A. See Section 01 3300 - Submittals for submittal procedures.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.05 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.06 SEQUENCING

A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of markings.

PART 2 PRODUCTS

2.01 PAINTED PAVEMENT MARKINGS

A. Painted Pavement Markings: As indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify existing markings for removal.

B. Verification of Conditions: Verify that pavement is dry and ready for installation.

C. Notify Architect of unsatisfactory conditions before proceeding.

3.02 PREPARATION

A. Establish survey control points for locating and dimensioning of markings.

B. Place barricades, warning signs, and flags as necessary to alert approaching traffic.

C. Clean surfaces prior to installation.
   1. Remove dust, dirt, and other debris.
   2. Remove rubber deposits, existing paint markings, and other coatings.

D. Apply paint stencils by type and color at necessary intervals.

3.03 INSTALLATION

A. General:
   1. Position pavement markings as indicated on drawings.
   2. Field location adjustments require approval of Architect.

B. Painted Pavement Markings:
   1. Apply in accordance with manufacturer's instructions.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Perform field inspection for deviations from true alignment or material irregularities.

C. If inspections indicate work does not meet specified requirements, rework and reinspect at no cost to the District

3.05 PROTECTION

A. Prevent approaching traffic from crossing newly applied pavement markings.

B. Replace damaged or removed markings at no additional cost to the District.

C. Preserve survey control points until pavement marking acceptance.

END OF SECTION

Section 32 1726
Tactile Warning Surfacing

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Plastic tactile and detectable warning tiles for pedestrian walking surfaces.

1.02 RELATED REQUIREMENTS

A. Section 32 1313 - Concrete Paving: Concrete sidewalks.

1.03 REFERENCE STANDARDS

A. 49 CFR 37 - Transportation Services for Individuals with Disabilities (ADA); current edition.

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

D. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; 2011.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Manufacturer's Qualification Statement.

C. Warranty: Submit manufacturer warranty; complete forms in District's name and register with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.

B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Plastic Tiles: Provide manufacturer's standard five year warranty against manufacturing defects, breakage or deformation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Plastic Tactile and Detectable Warning Surface Tiles:
   1. Access Tile, a brand of Access Products, Inc: www.accessproducts.com/#sle.
   2. Armor-Tile, a brand of Engineered Plastics, Inc: www.armortiletransit.com/#sle.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 TACTILE AND DETECTABLE WARNING DEVICES

A. Plastic Tactile and Detectable Warning Tiles: ADA Standards compliant, glass fiber and carbon fiber reinforced, exterior grade, matte finish polyester sheet with truncated dome pattern, solid color throughout, internal reinforcing of sheet and of truncated domes, integral radius cut lines on back face of tile; with factory-applied removable protective sheeting.
   1. Pattern: In-line pattern of truncated domes complying with ADA Standards.

2.03 ACCESSORIES

A. Fasteners: ASTM A666/A666M, Type 304 stainless steel
   1. Type: Countersunk, color matched composite sleeve anchors
   2. Size: 1/4 inch diameter and 1-1/2 inches long and as approved by surfacing tile manufacturer.

B. Adhesive: Type recommended and approved by surfacing tile manufacturer.

C. Sealant: Elastomeric sealant of color to match adjacent surfaces; approved by surfacing tile manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. When installation location is near site boundary or property line, verify required location using property survey.

B. Verify that work area is ready to receive work:
   1. If existing conditions are not as required to properly complete the work of this section, notify Architect.

2. Do not proceed with installation until deficiencies in existing conditions have been corrected.

C. Verify that dimensions, tolerances, and attachment methods for work in this section are properly coordinated with other work on site.

3.02 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's written instructions.
1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.

B. Field Adjustment:
1. Locate relative to curb line in compliance with ATBCB PROWAG, Sections 304 and 305.
2. Orient so dome pattern is aligned with the direction of ramp.

C. Install units fully seated to substrate, square to straight edges and flat to required slope.

3.03 INSTALLATION, CAST IN PLACE PLASTIC TILES

A. Tamp and vibrate units as recommended by manufacturer.

B. Place and position weights on units while concrete cures as recommended by manufacturer. Ensure no voids or air pockets exist between top surface of concrete and underside of units.

3.04 INSTALLATION, SURFACE APPLIED PLASTIC TILES

A. Cure concrete surfaces for a minimum of 4 days before installing units.

B. Mechanically roughen surface as required to remove contaminants and prepare surface for adhesive and sealant application.

C. Drill fastener holes straight, true and to depth recommended by manufacturer.

D. Apply adhesive to back of unit as recommended by manufacturer.

E. Mechanically fasten to substrate. Avoid striking or damaging the unit itself during installation.

F. Apply sealant to edges in cove profile.

3.05 CLEANING PLASTIC UNITS

A. Remove protective plastic sheeting within 24 hours of installation.

B. Remove excess sealant or adhesive from joints and edges.

C. Clean four days prior to date of scheduled inspection.

3.06 PROTECTION

A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.

B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

END OF SECTION

Section 32 3113
Chain Link Fences and Gates

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Posts, rails, and frames.

B. Wire fabric.

C. Manual gates with related hardware.

D. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Concrete anchorage for posts.

B. Section 08 7100 - Door Hardware: Gate locking device.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a (Reapproved 2022).

D. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.

E. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2014a (Reapproved 2019).

F. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and Other Polymer-Coated Steel Chain Link Fence Fabric; 2017 (Reapproved 2022).

G. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 2018 (Reapproved 2022).

H. CLFMI CLF-PM0610 - Product Manual; 2017.

I. FS RR-F-191/1D - Fencing, Wire and Post Metal (Chain-Link Fence Fabric); 1990.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.

C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, rail sizes, hardware anchorage, and schedule of components.

D. Fence Installer Qualification Statement.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

B. Fence Installer: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.
   1. Provide District with a list of three similar projects successfully completed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Chain Link Fences and Gates:
   1. Master-Halco, Inc: www.masterhalco.com/#sle.
   2. Merchants Metals: www.merchantsmetals.com/#sle.
   3. Fence Factory.

2.02 MATERIALS

A. Posts, Rails, and Frames: As follows:
   1. ASTM F1083 Schedule 40 hot-dipped galvanized steel pipe, welded construction, minimum yield strength of 30 ksi.
   2. Posts shall be one continuous piece with no welds, patches or splicing allowed.
   3.

B. Formed from hot-dipped galvanized steel sheet, ASTM A653/A653M, HSLAS, Grade 50, with G90 (Z275) with polymer coating.
   1. Color: Black

C. Line Posts: Type I round in accordance with FS RR-F-191/1D.

D. Wire Fabric: 6 gauge, 1 inch diamond mesh interwoven wire, top selvage knuckle end closed, bottom selvage end closed.

E. ASTM F668 polymer-coated steel chain link fabric.
   1. Color: Black

F. Comply with CLFMI CLF-PM0610.

G. Concrete: See Cast in Place Concrete 03 3000:

H. Ready-mixed, complying with ASTM C94/C94M; normal Portland cement; 2800 psi strength at 28 days, 3 inch slump; 3/4 inch nominal size aggregate.

2.03 COMPONENTS

A. Line Posts: 2 5/8 inch diameter minimum unless otherwise noted.

B. Corner and Terminal Posts: 3.5 inch diameter minimum unless otherwise noted.

C. Gate Posts: 3.5 inch minimum unless otherwise noted.

2.04 MANUAL GATES AND RELATED HARDWARE

A. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; plunger rod with padlock per District Standard Plans; keeper to hold gate in fully open position.

B. Hardware for Double Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.

C. Hinges: Finished to match fence components.

2.05 ACCESSORIES

A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; galv. steel.

C. Finish: Black to match fabric and posts.

2.06 GATES

A. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; accessible latch per plans; keeper to hold gate in fully open position.

B. Hardware for Double Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.

C. Latch and Lock shall be per Lucia Mar USD locksmith standards and hardware schedule.

2.07 FINISHES

A. Components and Fabric: Vinyl coated over coating of 1.8 ounces per square foot galvanizing.

B. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.

C. Accessories: Same finish as framing.

D. Color(s): Black.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that areas are clear of obstructions or debris and gates will swing with full motion without bottoming out..

3.02 PREPARATION

A. Removal: Obstructions or debris.

B. Ground Preparation: Clear and grub existing area. Provide finish grading to allow for positive drainage so no ponding occurs at base of fencing.

C. Grade back grass areas that impede on swing of gates. Repair grass areas per plans.

3.03 INSTALLATION

A. Install framework, fabric, accessories and gates in accordance with ASTM F567.

B. Campus perimeter: Place fabric on outside of posts and rails. Campus interior: Place fabric on side facing walkway unless notified otherwise by District.

C. Set intermediate posts plumb , in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.

D. Do not stretch fabric until concrete foundation has cured 28 days.

E. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

F. Position bottom of fabric 2 inches above finished grade.

G. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

H. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

I. Install bottom tension wire stretched taut between terminal posts.

J. Do not attach the hinged side of gate to building wall; provide gate posts.

K. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.

L. Peen all bolts upon installation.

3.04 FINISH TOUCH UP

A. Provide field touch up spray over field welds, scratches, and other imperfections. Rustoleum or approved equal.

3.05 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch.

B. Maximum Offset From True Position: 1 inch.

C. Do not infringe on adjacent property lines.

3.06 CLEANING

A. Leave immediate work area neat at end of each work day.

B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.

C. Clean fence with mild household detergent and clean water rinse well.

D. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

END OF SECTION

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Section 32 8423
Irrigation System

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe and fittings, and accessories.

B. Automatic valves

C. Manual valves

D. Control system.

E. Drip Irrigation

F. Backflow prevention

1.02 DESCRIPTION

A. Provide all material, labor, equipment transportation, and services necessary for the furnishing and installation of the complete automatic sprinkler irrigation system as shown on the drawings and as specified herein. The work includes, but is not limited to:
   1. Trenching, stockpiling excavation materials and refilling trenches.
   2. Providing a complete system including piping, valves, fittings, backflow prevention device(s), rotors, sprinklers, automatic controls, dripline, and emitters and final adjustment of heads to ensure complete coverage.
   3. Line voltage connections to all irrigation controllers; low voltage control wiring from controller to remote control valves.
   4. Electrical service and hookup to automatic controller
   5. Automatic controller assembly and installation.
   6. Submittals, tests, as-built and record drawings.
   7. Erosion control and repair of damage due to over watering and erosion.
   8. Warranty replacement.
   9. Cleanup, inspection and approval.

1.03 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.

B. Section 31 2316 - Excavation: Excavating for irrigation piping.

C. Section 31 2316.13 - Trenching: Excavating and backfilling for irrigation piping.

D. Section 31 2323 - Fill: Backfilling for irrigation piping.

E. Section 32 9300 - Plants

1.04 REFERENCE STANDARDS

A. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2020.

B. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2020.

C. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Detail Drawings: Submit detailed drawings for Owner approval, for all assemblies not detailed on the drawings.

C. Controller Charts:
1. The Architect shall accept Record drawings before controller charts are prepared. Provide one controller chart for each controller supplied. The chart shall show the area controlled by the automatic controller and shall be the maximum size that the controller door will allow.
2. The chart is to be a reduced drawing of the actual “as-built” system. However, in the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a size that will be readable when reduced. The chart shall be a black line or blue line ozalid print and a different color shall be used to indicate the area of coverage for each station. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum of 10 mils. These charts shall be completed by the Contractor and approved by the Architect prior to final observation of the irrigation system.

D. Operation and Maintenance Data:
1. Provide instructions for operation and maintenance of system and controls, seasonal activation and shutdown, and manufacturer's parts catalog.
2. Provide schedule indicating length of time each valve is required to be open to provide a determined amount of water.

E. Irrigation Schedule:
1. Watering schedule shall include watering times and start times for each valve. Schedule shall indicate watering times for each day of the week as applicable. The schedule shall be broken out to include seasonal adjustments.
2. Submit the Watering Schedule to the Architect for approval. The amount of water used per the irrigation schedule shall not exceed the projected water usage shown on the irrigation calculations and plans.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Handling of PVC Pipe and Fittings: The Contractor is cautioned to exercise care in handling, loading, unloading, storing and installation of PVC pipe and fittings. All PVC pipe shall be transported in a vehicle that allows the length of pipe to lie flat so as not to subject it to undue bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded and, if installed, shall be replaced with new piping.

1.07 JOB CONDITIONS

A. The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in engineering. Such obstructions or differences should be brought to the attention of the Architect. In the event this notification is not performed, the irrigation Contractor shall assume full responsibility for any revision necessary.

1.08 SUBSTITUTIONS

A. Procedure: Submit information in conformance with the substitution requirements of Division 01, General Provisions.

B. Provide descriptive catalog literature, performance charts and flow charts for each item to be substituted.

1.09 REGULATORY REQUIREMENTS

A. Requirements of Regulatory Agencies: All work and materials shall be in full conformance with the latest rules and regulations of the California Plumbing and Electric codes.

B. Manufacturer's Directions: Manufacturer's directions and detailed drawings shall be followed in all cases where the manufacturers of articles used in this contract furnish directions covering points not shown in the drawings and specifications.

C. Underwriters Laboratories: Electrical wiring, controls, motors, and devices shall be UL listed, and so labeled.

1.10 INSTALLATION MEETINGS

A. Contractor shall be responsible for notifying the Architect or Designated Representative in advance for the following observation meetings, according to the time indicated: (Certain meetings may be grouped if prior approval is granted).
   1. Coordinate one week prior to commencing work of this Section.
   2. Pressure supply line installation and testing: 48 hours.
   3. Automatic controller location: 48 hours.
   4. Coverage test: 48 hours.
   5. Final site review: 7 days.

B. When observations have been conducted by other than the Architect or Designated Representative, show evidence in writing of when and by whom these observations were made.
   1. Final Observation:
      a. The Contractor shall operate each system in its entirety for the Architect or Designated Representative at time of final observation. Any items deemed not acceptable by the Architect or Designated Representative, or not in compliance with these specifications and drawings, shall be reworked to the complete satisfaction of the Architect or Designated Representative.
      b. The Contractor shall show evidence to the Architect or Designated Representative that the District has received all accessories, charts, record drawings, and equipment as required before final observation can occur.

1.11 COORDINATION

A. Coordinate the work with site backfilling, landscape grading and delivery of plant life.

1.12 WARRANTY

A. The warranty for the sprinkler irrigation system shall be made in accordance with the following form.

B. A copy of the warranty form shall be included in the operations and maintenance manual.

C. The warranty form shall be retyped onto the Contractor's letterhead and contain the following information

D. WARRANTY FOR SPRINKLER IRRIGATION SYSTEM
   1. We hereby warrant that the sprinkler irrigation system we have furnished and installed is free from defects in materials and work quality, and the work has been completed in accordance with the drawings and specification. We agree to repair or replace any defects in material or work quality that may develop during the period of one year from the date of acceptance, except those that may be caused by ordinary wear and tear, unusual abuse or neglect. We also agree to repair or replace any damage resulting from the repairing or replacing of such defects at no additional cost to the District. We shall make such repairs or replacements within a reasonable time, as determined by the District, after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt of written notice from District, we authorize the District to proceed to have said repairs or replacements made at our expense, and we will pay the costs and charges therefore upon demand.
   2. PROJECT:_____
   3. CONTRACTOR:_____PHONE NO.:_____
   4. ADDRESS:_____BY:_____
   5. _____
   6. DATE OF ACCEPTANCE:_____BY:_____

PART 2 PRODUCTS

2.01 IRRIGATION SYSTEM

A. Manufacturers:
   1. As shown on plans.

B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PIPE MATERIALS

A. PVC Mainline Pipe (Sizes up through 3"): SCH 40 PVC ASTM D 2241; 200 psi pressure rated upstream from controls, 160 psi downstream; solvent welded sockets.

B. PVC Mainline Pipe (3" - 6" sizes): Class 200 PVC ASTM D 2241; 200 psi (1.38 MPa) pressure rated upstream from controls, 160 psi (1.10 MPa) downstream; rubber gasketed joints.

C. Pressure and Non-Pressure Main Line Fittings: Sizes 2 1/2 inches and smaller shall be Schedule 80 PVC.

D. Non-pressure lines (buried): Shall be PVC Schedule 40.

E. Pipe Risers at Valves: 160 psi PVC pipe.

F. Solvent Cement: ASTM D2564 for PVC pipe and fittings.

G. Sleeve Material: PVC Material per plan.

H. PVC nipples: Schedule 80 with molded threads.

I. All PVC pipe must bear the following markings:
   1. Manufacturer’s name.
   2. Nominal pipe size.
   3. Schedule or class.
   4. Pressure rating in AST (not required on drip tubing).
   5. NSF (National Sanitation Foundation) approval (not required on drip tubing).
   6. Date of extrusion.

2.03 OUTLETS

A. Manufacturer:
   1. As indicated on the drawings.
   2. Substitutions: See Division 01, General Provisions

B. Emitter: Non-clogging, self-cleaning per the model numbers shown on the drawings.

C. Tree Bubbler: Fixed outlet capable of watering deep root systems directly.

2.04 VALVES

A. Manufacturers:
   1. As indicated on the drawings
   2. Substitutions: See Division 01, General Provisions

B. Backflow Preventers: Bronze body construction, reduced pressure zone type.

C. Backflow Enclosure: Vandal and weather resistant nature manufactured entirely of marine grade aluminum alloy 5052-H32. The mounting base shall be manufactured entirely of stainless steel. The length of the enclosure shall be expandable to allow for site adjustment. The enclosure shall have a mounting lip on one end and a locking mechanism on the other end. The handle controlling the locking mechanism shall be concealed within the surface of the enclosure and provide for a padlock.

D. Remote Control Valves
   1. Valve Type: Spring loaded, packless diaphragm activated, normally closed type with brass body, equipped with flow control and pressure regulation capabilities where noted.
   2. Valve Solenoid: 24 volt AC, 4.5 watt maximum, 500 milli-amp maximum surge, corrosion-proof, stainless steel construction, epoxy encapsulated to form a single integral unit unless otherwise noted on plans.
   3. Provide bleeder valve to permit operation in the field without power at the controller.

E. Valve Boxes
   1. Remote control Valves: 14” x 19” of concrete material with locking cover.
   2. Gate valves, ball valves and quick couplers: 10" round of concrete material with locking cover.
   3. Valve box extensions shall be by the same manufacturer as the valve box.
   4. Emboss, letters on valve boxes to indicate contents of valve box. (ie. GV = Gate Valve, QC = Quick Coupler, RC = Remote Control Valve, MV = Master Valve, BV = Ball Valve)

2.05 CONTROLS

A. Manufacturers:
   1. As indicated on the drawings.
   2. Substitutions: See Division 01, General Provisions.

B. Controller Enclosure: The enclosure shall be of a vandal and weather resistant nature manufactured entirely of 304-grade stainless steel, and the top shall be 12 gauge and the body 14 gauge with lockable hinged door. The main housing shall be louvered upper and lower body to allow for cross flow ventilation.
   1. Controller(s) shall be labeled inside and outside. The labels shall also alert the system's maintenance personnel of any important constraints on the operation of the system.

2.06 ELECTRICAL (LOW VOLTAGE)

A. All electrical connections must be waterproof and moisture-resistant and shall be done with 3M™ Scotchcast™ 3570G Connector Sealing Packs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify location of existing utilities.

B. Verify that required utilities are available, in proper location, and ready for use.

3.02 PREPARATION

A. Drawings are generally diagrammatic and indicative of the work to be installed. Due to the scale of drawings, it is not possible to indicate all offsets, fittings, sleeves, etc., which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of his work and plan accordingly, furnishing such fittings, etc., as may be required.

B. All scaled dimensions are approximate. The Contractor shall check and verify all size dimensions and receive Architect or Designated Representative's approval prior to proceeding with work under this section.

C. Coordinate installation of irrigation system, including pipe, so there will be NO interference with utilities or other construction or difficulty in planting trees, shrubs, and ground covers. The Contractor shall carefully check all grades to satisfy him/her that he may safely proceed before starting work on the irrigation system.

D. All piping or equipment shown diagrammatically on drawings outside planting areas shall be installed inside planting areas whenever possible.

E. Layout and stake locations of system components.

F. Review layout requirements with other affected work. Coordinate locations of sleeves under paving to accommodate system.

3.03 TRENCHING

A. Trench and backfill in accordance with Section 31 2316 and Section 31 2323.

B. Excavate trenches to required depths. Follow approved layout for each system.

C. Trench bottom shall be flat to ensure piping is supported continuously on an even grade.

D. Where lines occur under paved areas, consider dimension to be below the subgrade.

E. Trench Size:

1. As indicated on the drawings.

F. Trench to accommodate grade changes and slope to drains.

G. Maintain trenches free of debris, material, or obstructions that may damage pipe.

3.04 INSTALLATION

A. Assemblies:
1. Install pipe, valves, controls, and outlets in accordance with manufacturer's instructions.
2. Line Clearance: All lines shall have a minimum clearance of 6 inches from each other and from lines of other trades. Parallel lines shall not be installed directly over one another.
3. Connect to utilities.
4. Install all assemblies specified herein in accordance with respective detail. In absence of detail drawings or specification pertaining to specific items required to complete work, perform such work in accordance with best standard practice, with prior approval from Architect or Designated Representative.
5. PVC pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before installation. Installation and solvent welding methods shall be as recommended by the pipe and fitting manufacturer.
6. On PVC to metal connections, the Contractor shall work the metal connections first. Teflon tape or approved equal shall be used on all threaded PVC to PVC, and on all threaded PVC to metal joints. Light wrench pressure is all that is required. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded.
7. Set outlets and box covers 1 inch above finish grade in turf areas and 2 inches above finish grade in shrub planters.
8. Provide for thermal movement of components in system.
9. Use threaded nipples for risers to each outlet.

B. Mechanical Joints:
1. Use for pipe sizes 4" and larger.

C. Electrical Supply:
1. Low voltage wiring shall be placed in the same ditch and taped on bottom side of main lines unless otherwise approved.
2. Wire is to be taped a maximum 12 feet on center.
3. Provide a minimum 12-inch expansion loop at each connection and directional change.
4. Use a continuous wire between controller and remote control valves. Except as otherwise approved, do not splice wire at any point. All approved splices shall be enclosed in an acceptable box.
5. Each controller shall be provided with separate 2-wire path.

D. Mark valves with neoprene valve markers containing locking device. Set valve markers in pipe risers extending from top of valve to finish grade.

E. System Flush: After piping is installed, but before outlets are installed and backfilling commences, open valves and flush system with full head of water.

F. Sprinkler Heads:
   1. Install the sprinkler heads as designated on the drawings and in accordance with their respective detail.
   2. Spacing of heads shall not exceed the maximum indicated on the drawings. In no case shall the spacing exceed the maximum recommended by the manufacturer.

G. Valve Boxes:
   1. All buried valves and equipment shall be installed with a proper box as specified in part 2 - products.
   2. Fill area under box with a minimum of 1 cubic feet of pea gravel before box is installed.
      a. Identification tags shall be attached to each remote control valve, showing number that corresponds with controller sequence. Tags shall be manufactured of polyurethane Behr Desopaid, yellow in color with black letters 2-3/4 inches by 2-1/4 inches.
      b. All boxes shall be permanently marked on top, designating type of equipment installed as noted in drawing.

3.05 FIELD QUALITY CONTROL

A. Prior to backfilling, test system for leakage at main piping to maintain 100 psi pressure for two hours.

B. System is acceptable if no leakage or loss of pressure occurs and system self drains during test period.

C. Testing of pressure main lines shall occur prior to installation of electrical control valves, quick couplers or any other equipment that might prevent a proper test from being performed.

D. All piping under paved areas shall be tested under hydrostatic pressure of 150 pounds per square inch, and proved watertight, prior to paving.

E. If leaks develop, replace joints and repeat test until entire system is proven watertight.

F. All hydrostatic tests shall be made only in the presence of the Architect or Designated Representative of the District. No pipe shall be completely backfilled until it has been inspected, tested and approved in writing.

G. Furnish necessary force pump and all other test equipment.

H. Upon completion of each phase of work, entire system shall be tested and adjusted to meet site requirements.

I. Low voltage wire under paving shall be tested for continuity, prior to paving.

3.06 BACKFILLING

A. Backfill trench and compact to specified subgrade elevation. Protect piping from displacement.

B. Buried pipe in trenches shall be center loaded only until all required tests are performed. Trenches shall be carefully backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand or other approved materials, free from large clods of earth or stones. Backfill shall be mechanically compacted in landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill will conform to adjacent grades without dips, sunken areas, humps or other surface irregularities.

C. A fine granular material backfill will be initially placed on all lines. No foreign matter larger than 1/2 inch in size will be permitted in the initial backfill.

D. Flooding of trenches will be permitted only with approval of the Architect or Designated Representative.

E. If settlement occurs and subsequent adjustments in pipe, valves, sprinkler heads, lawn or planting, or other construction are necessary, the Contractor shall make all required adjustments without cost to the District.

3.07 TEMPORARY REPAIRS

A. The District reserves the right to make temporary repairs as necessary to keep the sprinkler system equipment in operating condition. The exercise of this right by the District shall not relieve the Contractor of his responsibilities under the terms of the warranty as herein specified.

3.08 SYSTEM STARTUP

A. Prepare and start system in accordance with manufacturer's instructions.

B. Adjust control system to achieve time cycles required.

3.09 MAINTENANCE

A. The entire sprinkler irrigation system shall be under full automatic operation for a period of seven days prior to any planting.

B. The Architect or Designated Representative reserves the right to waive or shorten the operation period.

3.10 CLEANUP

A. Cleanup shall be performed as each portion of the work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be broomed or washed down, and any damage sustained to the work of others shall be repaired and work returned to its original condition.

3.11 OPERATING INSTRUCTIONS

A. The Contractor shall be required to train District's maintenance personnel in proper operation of all major equipment. Provide written evidence of the person or persons so trained to the Architect or Designated Representative.

3.12 CLOSEOUT ACTIVITIES

A. Instruct District's personnel in operation and maintenance of system. Use operation and maintenance material as basis for demonstration.

B. Irrigation Schedule: See Submittal Requirements above.

C. Irrigation Audit: Shall be performed by a third party representative hired by the District. Contractor shall coordinate keys to controllers and valve boxes for use by the auditor.

3.13 MAINTENANCE

A. See Section 01 7000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

END OF SECTION

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Section 32 9223
Sodding

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of subsoil.

B. Placing topsoil.

C. Fertilizing.

D. Maintenance.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.

B. Section 31 2323 - Fill: Topsoil material.

1.03 DEFINITIONS

A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 REFERENCE STANDARDS

A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; 2006.

1.05 SUBMITTALS

A. Certificate: Certify grass species and location of sod source.

B. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer .

C. Herbicides: Submit manufacturer's analysis. Schedule for application of herbicides must be approved by the Inspector.

D. Test Reports: Provide the following soils tests and submit the results to the Inspector: Test reports shall be performed by a certified soils laboratory.

1. Existing Site Soil: Test for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendment, and fertilization during the maintenance period.
2. Import Soil: Submit test reports of representative sample(s) for approval prior to delivery and for every 100 yards delivered to the site. Test for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendment, and fertilization during the maintenance period.
3. Organic Amendments, Fir Bark: Test for partial organic amendment evaluation.
4. All Other Fertilizers and Amendments: For standard products, submit manufacturer's analysis. For all other products, submit analysis by testing laboratory.

E. All submittals for soil amendments and fertilizers must be accompanied by a letter on contractor's company stationary listing exact quantities in gallons, lbs, tons, cubic yards or cubic feet. These quantities will be checked for accuracy before construction and with delivery tickets during construction.

1.06 QUALITY ASSURANCE

A. Sod Producer: Company specializing in sod production and harvesting with minimum five years experience, and certified by the State of California.

B. Installer Qualifications: Company approved by the sod producer.

C. Testing Laboratory: Recognized laboratory for soil and plant disease analysis for ornamental horticulture, approved by the Inspector. Testing laboratory is to perform all work in accordance with the current methods of the Association of Official Agricultural Chemists.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Sod:
1. Deliver sod on pallets. Protect exposed roots from dehydration.
2. Do not deliver more sod than can be laid within 24 hours.
3. Notify Owner's Representative of delivery schedule in advance so material can be inspected upon arrival at project site. Immediately remove unacceptable material from project site.

B. Fertilizer:
1. Fertilizer: Deliver inorganic or chemical fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark and conformance to state law, bearing name and warranty of producer.

1.08 PROJECT/SITE CONDITIONS

A. General: Do not perform work when climate and existing site conditions will not provide satisfactory results.

B. Vehicular accessibility on site shall be as directed by District authorized representative. Repair damage to prepared ground and surfaces caused by vehicular movement during work under this section to original condition at no additional cost to the District.

C. Perform soil preparation just prior to planting operations and in accordance with final planting schedule. Coordinate with irrigation system installation to avoid damage to work of one by the other.

D. Utilities: Determine location of underground utilities (irrigation lines included) and perform work in a manner which will avoid damage, Hand excavate, as required.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sod:
1. Field Turfgrass Sod quality; cultivated grass sod; type indicated in plant schedule on Drawings; or Approved Equal to Match Existing Lawn Mix, with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sq ft. Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.

B. Topsoil:
1. General: Sandy Loam Soil with 70-75% sand, silt 12.5-20%, clay 8%-15%
2. All soils to be used in areas to be planted on the project shall be free of rocks over one inch in diameter, and free of foreign debris. Soil shall be free from sub-soil, refuse, plants or roots, clods, weeds, viable weed seeds, sticks, solvents, petroleum products, concrete, base rock, or other deleterious or extraneous material. Soil shall be free of soil-borne diseases, and capable of sustaining healthy plant life.
    a. Imported Topsoil:
        1) Make all arrangements for obtaining and testing imported topsoil. Submit test results of a representative sample of the proposed supply for approval by the Inspector well in advance of its scheduled delivery to the site. The approved sample will establish the standards to which all imported topsoil used on the job must conform.
        2) Do all work necessary to bring imported topsoil to standards specified above.
        3) Transport imported topsoil directly from source to final position. If stockpiling is required, locations and amounts of stockpiles will be designated by the Inspector.
        4) The Inspector reserves the right to take additional samples of imported topsoil at the site. If subsequent testing proves material to be at variance with the approved sample, remove rejected soil from the site and replace immediately at no additional cost to the Owner.
        5) All topsoil shall be tested as outlined above. No turfgrass sod shall be placed on soil which has been treated with soil sterilants or herbicides until sufficient time has elapsed to permit the dissipation of toxic materials. The landscape contractor shall assume full responsibility for any loss or damage to turfgrass sod arising from improper use of sterilants or due to his or her failure to allow sufficient

time to permit dissipation of toxic materials, whether or not such sterilants are specified herein.

C. Organic Composted Soil Amendment
   1. General: Soil tests shall be made to determine requirements for organic soil amendments.
   2. Basic Requirements: Basic requirements are intended for bidding purposes only. Actual organic soil amendment requirements shall be determined by results of soils test.
      a. Compost must have the following characteristics:
         1) pH of less than 8.5
         2) Screened to 1/2" minus
         3) Organic content above 30% (dry sample)
         4) Shall be free of glass, metal and visible plastics
         5) Odor shall be soil-like (musty or moldy) not sour, ammonia-like or putrid
         6) Can have no ntirogenized wood product in it, or redwood, or cedar
         7) Quantities:
            (a) All turf areas: 3.1 cubic yards/1,000 sq. ft.

D. Fertilizers:
   1. General: Soil tests shall be made to determine requirements for lime, and fertilizer. All fertilizers shall be uniform in composition and free- flowing.
   2. Basic Requirements: Basic requirements are intended for bidding purposes only. Actual fertilizer requirements shall be determined by results of soils test.
      a. Pre- Plant Fertilizer:
         1) Acid/Calcium based control release liquid phosphorus
            (a) pH less than 1
            (b) Nutrient analysis: 5.5-10-0-2.4Ca
            (c) Approved product -THI PHOS 10 (no known equal)
            (d) Quantity: 2 gallons/1000 sq. ft.
         2) Concentrated Organic Growth Medium
            (a) pH less than 8.5
            (b) 25%+ organic content
            (c) Salts EC less than 3
            (d) Calcium (Ca) 10%+
            (e) Magnesium (Mg) 2%+
            (f) Iron (Fe) 2.5%+
            (g) Approved product: THI Concentrated Organic Growth Medium #604 (no known equal).
            (h) Quantity: 3.41 tons/acre
         3) Concentrated Granule Gypsum with the following analysis:
            (a) Ca: 23%,
            (b) Quantity: 1.1136 tons/acre
         4) Granular 11-52-0 Phosphorus Fertilizer
            (a) Quantity: 2.5 lbs/1,000 sq. ft.
         5) Granular 0-0-50 Potassium Fertilizer
            (a) Quantity: 1.88 lbs/1,000 sq. ft.
      b. Post-Plant Fertilizer
         1) Liquid Organic Fertilizer
            (a) From soybean extract

(b) 10-4-4 nitrogen product or as otherwise approved.

3. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

2.02 ACCESSORIES

A. Herbicide: As approved. Herbicide shall not inhibit or damage grass development.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared soil base is ready to receive the work of this section.

B. Verity the soils analysis reports are adequate.

3.02 PREPARATION

A. Prepare subgrade in accordance with Section 31 2200.

3.03 FERTILIZING

A. Apply soil amendments in accordance with soils analysis results and manufacturer's instructions.

B. Apply fertilizer in accordance with soils analysis results and manufacturer's instructions.

C. Verify adequate time has elapsed to allow herbicides to deplete enough from soils to avoid damage to sod.

D. Apply after smooth raking of topsoil and prior to installation of sod.

E. Apply fertilizer no more than 48 hours before laying sod.

F. Mix thoroughly into upper 2 inches of topsoil.

G. Lightly water to aid the dissipation of fertilizer.

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Section 32 9300
Plants

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of subsoil and topsoil.

B. Topsoil bedding.

C. New trees, plants, and ground cover.

D. Mulch and Fertilizer.

E. Warranty Replacement

F. Tree Pruning.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.

B. Section 32 8200 - Irrigation

C. Section 32 0190 - Operation and Maintenance of Planting: Post-occupancy maintenance.

1.03 DEFINITIONS

A. Weeds: Any plant life not specified or scheduled.

B. Plants: Living trees, plants, and ground cover specified in this Section , and described in ANSI Z60.1.

1.04 REFERENCE STANDARDS

A. ANSI/AHIA Z60.2 - American Standard for Nursery Stock; 2025.

1.05 SUBMITTALS

A. Submit list of plant life sources.

B. Submit purchase invoices from nurseries for review.

C. Samples: Submit the following to the District for acceptance:

1. Soil Separator: One square foot minimum, accompanied by product data.
2. Drain Rock: One-half cubic foot.
3. Wood Bark Mulch: One-half cubic foot.
4. Root Control Barrier: One square foot sample panel, accompanied by product data.

D. Product Data: Submit the following product information to the District for acceptance:
1. Tree Staking Materials: Manufacturer's literature.
2. Herbicides: Schedule for application of herbicides must be approved by the District.

E. Test Reports: Soil tests shall be performed by a certified soils analyst by the state of California. Provide the following tests and submit the results to the District:
1. Existing Site Soil: Provide two separate tests at distinctly separate on-site locations, for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendment, and fertilization during the maintenance period.
2. Import Soil: Submit test reports of representative sample(s) for approval prior to delivery and for every 100 yards delivered to the site. Test for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendment, and fertilization during the maintenance period.
3. Organic Amendments, Fir Bark: Test for partial organic amendment evaluation.
4. All Other Fertilizers and Amendments: For standard products, submit manufacturer's analysis. For all other products, submit analysis by testing laboratory.

1.06 QUALITY ASSURANCE

A. Nursery Qualifications: Company specializing in growing and cultivating the plants with three years documented experience.

B. Installer Qualifications: Company specializing in installing and planting the plants with five years experience.

C. Testing Laboratory: Recognized laboratory for soil and plant disease analysis for ornamental horticulture, approved by the Inspector. Testing laboratory is to perform all work in accordance with the current methods of the Association of Official Agricultural Chemists.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer. Store fertilizers and amendments, bark mulch, soil mixes, and other materials which could stain concrete and similar surfaces in such a manner that staining does not occur.

B. Plants: Maintain all plant material in a healthy growing condition prior to and during planting operations. Protect plants at all times from sun and drying winds. Plants that cannot be planted immediately upon delivery shall be kept in the shade, well protected and watered. Plant material delivered to the site must be planted within 3 days of site delivery. Plants that cannot be installed on this work schedule shall be returned to the grower until installation requirements can be met.

1.08 SUBSTITUTIONS, ADDITIONS, DELETIONS

A. General: Submit proposals for substitutions in accordance with the requirements of Division 1 Specification Sections. Acceptance by the Inspector is required prior to proceeding with the work under this Section.

B. The Architect reserves the right to substitute plant material of sizes equal to material specified, as the work progresses, at no additional cost to the District.

C. When requesting substitutions for plant material, the Contractor shall provide the Architect with the following:
   1. Contact information for nurseries Contractor was unable to obtain plant material. Minimum of three are required.
   2. Three (3) alternate plant suggestions as part of the initial request. Provide foliage/flower color, growth habit, and sunset zone of each.
   3. Substitution requests which do not include the above requirements will be denied until requirements have been met.

1.09 FIELD CONDITIONS

A. General: Become familiar with the anticipated growing conditions prior to commencement of work. Notify the Inspector immediately in writing of any conditions, which will prevent the proper execution of the warranty responsibilities specified. Failure to so notify the Inspector constitutes acceptance of the growing conditions. Any removal, repair or replacement of plant material required by unsuitable conditions found after work has begun shall be done at no additional cost to the District.

B. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.

C. Do not install plant life when wind velocity exceeds 30 mph.

1.10 WARRANTY

A. Plant Material: Warrant that all trees under this Contract will be vigorous, healthy, free of dead or dying branches and branch tips, bearing foliage of normal density and color, and will otherwise comply with the requirements of this Section, for a period of one year from date of Final Acceptance. Any delay in completion of planting operations which extends the planting into more than one growing season shall extend the warranty period correspondingly.

B. Replacements: Without cost to the District, in a timely manner and as directed by the Inspector, replace all plants not meeting the requirements above throughout the course of the warranty period. Replacements shall closely match adjacent specimens of the same species in size and shall comply with all requirements of this specification.

C. Species: Replace all plant material determined by the District within two years following the final acceptance of the project, to be untrue to the species, clone and/or variety specified, to the

equal condition of adjacent plants at the time of replacement, at no additional cost to the District.

PART 2 PRODUCTS

2.01 PLANTS

A. Trees, Plants, and Ground Cover: Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the Work.
   1. Size:
      a. Plants shall conform to measurements specified. Measure plants when branches are in their normal position. Height and spread dimensions specified refer to the main body of plant and not branch tip to tip. Take caliper measurements at a point on the trunk 6 inches above natural ground line for trees up to 4 inches in caliper, and at a point 12 inches above the natural ground line for trees over 4 inches in caliper.
      b. The measurements specified are the measurements after pruning, where pruning is required. Plants that meet the measurements specified, but do not possess a normal balance between height, spread, and caliper, shall be rejected.
      c. Plants larger than specified may be used if approved by the District, and if provided at no additional cost to the District. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant; irrigation system shall also be adjusted as required to accommodate larger plants.

B. Acclimatization: The General Contractor is responsible for supplying plant material that has been properly acclimated and conditioned, in accordance with good horticultural practices, for the exposure, wind and humidity levels, soil conditions, etc., encountered at the project site and in the proposed plant location.

C. Coordination: The Contractor shall coordinate his acclimatization schedule with the District as to allow an adequate conditioning period for the plant material prior to the approved date of planting commencement. Notify the District in writing prior to proceeding with any acclimatization work if approved work schedule allows insufficient time to acclimate the material.

D. Quality: Plants shall be superior in form, compactness and symmetry; sound, healthy and vigorous, well branched and densely foliated when in leaf; free of disease, insect pests, eggs or larvae, and free from physical damage or adverse conditions that would prevent thriving growth.

E. Species: Tag one of each plant prior to delivery to the site; label with genus, species and variety. Any plants not so identified will be subject to rejection by the District. Plants may be cross referenced with nurseries invoice at the discretion of the Architect.

F. Root Ball:
   1. Do not supply any bare root or ball and burlapped stock unless approved by the District.
   2. Sizes: As specified on the plans. Where no root ball dimensions have been specified, supply material in container sizes specified.

3. Material: Root ball shall consist of a soil or soil mix that is compatible with the soil or soil mix into which the plant will be planted, and that provides for thorough drainage, aeration, and adequate moisture and nutrient retention. Having sufficient density and firmness that when planted, the plant will stand upright and stable without need for additional support.
4. Containers: All plant material shall have been grown in the containers in which delivered for at least six months, but not over two years. Stock appearing to not have been in their containers for this term shall be rejected.
5. Root Pruning: Where root pruning is required to provide material of the specified size, or for planting in the sloped containers, the pruning is to be done under the direction of a Certified Arborist. No root pruning is to be done within one year of installation unless approved by the District.

G. Trunks and Branches: Do not prune plants before delivery. All trunks are to be straight and of uniform taper, larger at the bottom unless otherwise specified. Plants with damaged or crooked leaders, or multiple leaders, unless specified, will be rejected. Plants with abrasions of the bark, sun scalds, disfiguring knots, or fresh cuts of limbs over 3/4 inch, which have not completely callused, will be rejected. Any plant unable to stand upright without support will be rejected.

2.02 SOIL MATERIALS

A. General: All soils to be used in areas to be planted on the project shall be free of rocks over one inch in diameter, and free of foreign debris. Soil shall be free from sub-base/aggregate, refuse, plants or roots, clods, weeds, viable weed seeds, sticks, solvents, petroleum products, concrete, base rock, or other deleterious or extraneous material. Soil shall be free of soil-borne diseases, and capable of sustaining healthy plant life.

B. Imported Topsoil:
1. Topsoil shall be fertile, friable soil of loamy character, containing an amount of organic matter normal to the region. All imported topsoil used on the job shall be from the same source.
   a. Make all arrangements for obtaining and testing imported topsoil. Submit test reports of a representative sample of the proposed supply for approval by the District well in advance of its scheduled delivery to the site. The approved sample will establish the standards to which all imported topsoil used on the job must conform.
   b. Transport imported topsoil directly from source to final position. If stockpiling is required, locations and amounts of stockpiles will be designated by the District.
   c. The District reserves the right to take additional samples of imported topsoil at the site. If subsequent testing proves material to be at variance with the approved sample, remove rejected soil from the site and replace immediately at no additional cost to the District.

C. Existing On-Site Soils: Existing site soils shall be amended per the recommendations of the approved soils testing laboratory. The following soil amendments and fertilizers are to be used FOR BIDDING PURPOSES ONLY.
1. Site Soil: Top 6 inches of site soil shall be amended with following blend of amendments per 1000 square feet.

Amount	Ingredient

6 cubic yards	Nitrogen Stabilized 0” - 1/4” Fir Bark
15 lbs	12-12-12 Commercial Fertilizer as approved
15 lbs	Soil Sulfur
100 lbs	Agricultural Gypsum

2. Backfill Mix (on-grade locations): Amend site soil as follows per cubic yard.

Amount	Ingredient
3/5 cubic yard	Surface Soil
2/5 cubic yard	Nitrogen Stabilized 0” to 1/4” Fir Bark
1 lb	12-12-12 Commercial Fertilizer as Specified
2 lbs	Iron Sulfate as Specified
10 lbs	Agricultural Gypsum

3. Additional Amendments: Soil amendment recommendations will vary for planting areas if imported topsoil is required to establish finish grade. Provide all additional amendments as may be required by subsequent soil testing of approved imported topsoil and as directed by the Inspector.

2.03 SOIL AMENDMENT MATERIALS

A. Nitrogen Stabilized Fir Bark On-Grade: Meeting the following specifications:
1. Particle Size (dry weight basis):

Sieve Size	Percent Passing
6.35 mm (1/4 inch)	95 - 100
2.38 mm (No. 8, 8 mesh)	50 - 80
500 micron (No. 35, 32 mesh)	0 - 25

2. Organic Content: Determined by ash analysis. Minimum 92% based on dry weight.
3. Nitrogen: Minimum 0.8% nitrogen based on dry weight.
4. Salinity: Maximum saturation extract conductivity 3.5 millimhos per cm at 25 degrees centigrade.
5. Iron: Minimum 0.08% dilute acid soluble Fe based dry weight, if iron treated.
6. Bulk Density: 400 pounds per cubic yard.

B. Fertilizer: Containing fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated in analysis.
1. Fertilizers shall be approved by the Organic Materials Review Institute (OMRI).
2. Contractor shall obtain District's written approval of proposed fertilizer(s) prior to use.

C. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous growth of plants.

2.04 MULCH MATERIALS

A. Planter Mulching Material: Cedar species wood shavings, free of growth or germination inhibiting ingredients. Mulch shall have been baked to remove unwanted seed growth.

2.05 ACCESSORIES

A. Drain Rock: 3/4" diameter river rock or approved equal.

B. Soil Separator: Soil Separator: "Mirafi 140N", as manufactured by Mirafi, Charlotte, NC, "Trevira Spunbond 1120", as manufactured by Hoechst Fibers Industries, Spartanburg, SC, or approved equal.

C. Stakes: Softwood lumber, pointed end.
   1. Lodgepole stakes. Length as required to meet dimensions required per plans.

D. Root Control Barrier: "Deep Root Control Barrier", stock number UB24-2 as manufactured by Deep Root Corp., 15040 Golden West Circle, Westminister, CA 92683 (714) 898-0563, or approved equal.

2.06 SOURCE QUALITY CONTROL

A. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt and organic matter; pH value and any deficincies.

B. Submit minimum 10 oz sample of topsoil proposed. Forward sample to testing laboratory in sealed containers to prevent contamination.

C. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 ORDERING, REVIEW AND ACCEPTANCE OF PLANT MATERIAL

A. Ordering:
   1. Within 30 days after award of contract, submit written certification to the District of the quantity and species of plant material ordered, and the nursery(s) supplying the material.
   2. The Contractor is responsible for providing all plant material in the quantities and sizes specified on the drawings, and for making all arrangements in advance that may be required to obtain these materials. If any material specified will be unavailable at the time of planting, submit written verification to the District along with the bid.

B. Review of Plant Material: Before planting operations begin, all plant materials shall be reviewed for conformance to the design intent of the Contract Documents by the District. Submit written request for review of plant material at least 10 days prior to commencement of planting operations. Review by the District does not waive the right of rejection during planting or any time thereafter.

C. Rejection of Material: The District reserves the right to review and reject plant material at any time, and at the place of growth, for nonconformance to the Specifications. Do not install plant material, which has not been reviewed at the project site by the District.

3.02 EXAMINATION

A. Verify that prepared subsoil and planters are ready to receive work.

B. Saturate soil with water to test drainage.

C. Verify that required underground utilities are available, in proper location, and ready for use.

3.03 GRADING

A. General: All areas to be planted on the project shall be free of rocks over one inch in diameter to a depth of 8" minimum below finish grade, and free of foreign debris, subsoil, refuse, plants or roots, clods, weeds, sticks, solvents, petroleum products, concrete, base rock, or other deleterious or extraneous material. Areas to be planted shall be free of soil-borne diseases and capable of sustaining healthy plant life. Do all work necessary to bring site soil, import soil and planter backfill to compliance with these requirements. Remove from the project site and dispose of in a legal manner any soils and material not meeting these requirements. Subject to acceptance of the District, all soil and material not meeting these requirements shall be the property of the Contractor.
   1. Surface Drainage: Contractor is responsible for proper surface drainage of planted areas. Report in writing to the District any discrepancies in the Contract Documents, obstructions on the site, or any other conditions, which the Contractor feels prevent establishing proper drainage, and obtain the Inspector's instructions prior to proceeding with the work affected.
   2. Final Contouring:
      a. Handle and place the soil to depths required. Remove all rocks and clods over one inch in diameter. Provide for surface drainage and cut all necessary drain swales.
      b. Work soil sufficiently so that after rolling and after full settlement has occurred, the site will be graded to within ±0.10 of a foot from the lines, grades and elevations shown, and as may be directed by the Inspector. Finished surface shall be smooth and uniform and shall be free of depressions that retain standing water or any surface irregularities that would impede proper drainage. Unless otherwise noted, all soil finish grades shall be 1-1/2 inches below finish grade of adjacent walks, pavements and curbs, and top of wall elevations.
   3. Erosion Repair: Repair all erosion damage that occurs until Final Acceptance. Take all measures necessary to prevent erosion occurring during work under this Section. Provide and amend replacement soil in accordance with this Section.

3.04 PREPARATION OF SUBSOIL

A. Amend subsoil as indicated in analysis.

B. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

C. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.

D. Scarify subsoil to a depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

E. Dig plant pits and beds twice the size of the rootball as directed per the drawings.

3.05 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 6 inches over area to be planted. Rake smooth.

B. Place topsoil during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.

D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

E. Install topsoil into pits and beds intended for plant root balls, to a minimum thickness of 6 inches.

F. Place topsoil mix to the depths specified to obtain finish grades shown on the drawings. Soil mix shall be handled in a manner so as to prevent segregation of ingredients. Thoroughly water planter backfill mix after placement to compact and settle mix.

3.06 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after initial raking of topsoil.

C. Mix thoroughly into upper 2 inches of topsoil.

D. Lightly water to aid the dissipation of fertilizer.

3.07 EXCAVATION OF PLANTING PITS ON-GRADE

A. General: Excavate plant pits by hand or with a backhoe; use of augers will not be permitted. Prior to planting and backfill, scarify the sides and bottom of the pit as required to eliminate any glazed surfaces. Excavate container-grown tree, shrub, and vine holes to the following dimensions:
   1. 1, 5, and 15 gallon containers: Two times the size of the root ball in width and depth.
   2. 24-inch boxes and larger: Large enough to allow one foot of space around the ball in all directions.
   3. Holes on mounds: Dig plant holes on mounds deeper than normal.
   4. Excess Soil: Transport and dispose of off-site in a legal manner any excess excavated soil.
   5. Obstructions: If rocks, underground construction work, tree roots or other unknown obstructions are encountered in the excavation of plant holes, alternate locations may be selected by District. Report all such conditions in writing to the District. If a change in the location of the planting pit is unacceptable to the District, the original planting pit shall

be over-excavated to remove the obstructions to a minimum dimension of 12" beyond the sides and bottom of the tree pit as typically specified. Obtain the District's instructions prior to proceeding with the work affected.

3.08 DETRIMENTAL SOILS AND DRAINAGE

A. General: Prior to planting, test drain all planting areas as follows:
   1. On-Grade Plant Pits: Fill with 12 inches of water. Water should drain completely in 48 hours.
   2. Plant Beds: Irrigate until soil is saturated. Saturated condition should not remain after 24 hours.

B. Drainage Chimneys:
   1. General: For plant pits failing the initial drainage test, provide drainage chimneys as shown on the drawings and as directed by the District.
   2. Neatly auger drainage chimneys to a depth directed by the District. Remove loose soil from hole and plant pit. Locate chimneys at perimeter of plant pit. Repeat test for proper drainage.
   3. Once required drainage test has been passed, backfill chimneys with drain rock, flush with bottom of pit. Cover chimneys with soil separator.

C. Failure of Drainage Test: report in writing to the District all areas not passing these tests and all soil conditions that the Contractor considers detrimental to growth of plant material. State condition and proposal and cost estimate for correcting the condition. Obtain the District's instructions prior to proceeding with the work affected. Repeat drainage testing and correction of conditions in this manner as necessary until tests are passed. Failure to perform drainage tests and/or to notify the District in writing of the conditions specified above renders the Contractor responsible for all plant failure that occurs as a result of inadequate drainage or detrimental soil conditions, as determined by the District.

3.09 PLANTING

A. General: Do not plant any material that has not been reviewed by the Inspector upon delivery to the project site or that has been rejected for any reason. Do not plant under unfavorable weather conditions.

B. Place plants for best appearance.

C. Set plants vertical.

D. Remove non-biodegradable root containers. After removing plants from their containers, disentangle any small roots that encircle the container. Do not cut or otherwise disturb the root ball. Inspect all plants for rootbound condition; do not install rootbound plants or plants found to have cracked or broken root balls when taken from the container.

E. Care should be exercised to prevent damage or breakage to limbs, and ropes or other lines should not be allowed to damage bark.
   1. Container Stock:

a. General: Do not lift or handle container plants by tops, stems, or trunks at any time.
b. Boxed Stock: Remove bottom of box prior to placement of plant in planting pit. Cut bands and remove box sides just prior to backfilling.
c. Canned Stock: Remove canned stock carefully after cans have been cut on two sides with acceptable cutter. Do not use spade to cut cans.
d. Ball and Burlap Stock: Dig ball and burlap (B & B) plants with firm balls of earth of diameter not less than that recommended by the American Standard for Nursery Stock, and of sufficient depth to include the fibrous and feeder roots. Plants moved with ball will not be accepted if the ball is cracked or broken before or during planting operations.

F. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.

G. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.

H. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

I. Top-dress Fertilizing On-Grade: When plant installation is complete, fertilize all planting areas (excluding lawn areas) with top-dress fertilizer at the rate of 4 lbs. per 100 square feet.

J. Anti-Desiccant: At Contractor's option, spray all evergreen and deciduous plant material in full leaf with anti-desiccant, in accordance with manufacturer's instructions. Apply an adequate film over trunks, branches, twigs and foliage. Take precautions as necessary to prevent damage, particularly from sun scald.

K. Mulching: Mulch all planting areas (excluding lawn areas) with 3 inch layer of wood bark mulch unless otherwise shown. Spread mulch uniformly to form a smooth cover free of bare spots and mounds.
1. Settlement: As shown on the drawings, the crowns of all plants shall be at least 1/2 inch above the surrounding grade after all settlement has occurred.
2. Watering Basins On-Grade: Form a watering basin, an excavated ring around the root ball of the plant for each tree and shrub. Do not form watering basins in lawn areas.

3.10 GROUND COVER PLANTING

A. Pre-emergent herbicide Application On-Grade Only: Apply pre-emergent herbicide, Surflan A.S. at the rate of 5-1/3 pounds per acre applied in 25 gallons of water to all on-grade locations. Apply before wood bark mulch application.

B. Planting: Plant ground cover plants through wood bark mulch at the specified triangular spacings. Make planting hole with a hand mattock avoiding mixing surface applied herbicide into planting hole.
1. Activation of Herbicide On-Grade Only: After planting, irrigate with at least one inch of water to activate the herbicide. Water areas carefully taking care to avoid erosion. Repair erosion occurring from careless watering immediately. Remove, repair and replace adjacent planting and soil damaged by careless watering and translocation of herbicide.

3.11 LAYOUT OF PLANT MATERIAL

A. General: The District will review for conformance to the design intent of the Contract Documents locations of all plants in the field prior to planting. Notify the District and schedule layout review sufficiently in advance of planting to allow for review and adjustment without disrupting construction schedule.

B. Adjustments: The District reserves the right to make minor adjustments in the layout of all plant material; adjust irrigation system as necessary.

3.12 INSTALLATION OF ACCESSORIES

A. Install trunk protectors on all new trees located in turf areas.

3.13 PLANT SUPPORT

A. General: Complete staking and guying immediately after planting. Perform in accordance with reference standards, unless otherwise shown on the drawings or directed by the District. Securely stake or guy all trees planted on the site using staking or guying type shown on the drawings. The District reserves the right to make modifications to staking and guying procedures as required to accommodate field conditions at no additional cost to the District.
   1. Staking: Stake trees with one as shown on the drawings.

3.14 PRUNING

A. Prune plants only at the direction of the District and according to reference standards to preserve the natural character of the plant. Remove all dead wood, suckers and broken or badly bruised branches. Remove sucker basal and lateral growth to prevent resprouting; retain normal side branching. Use only disinfected, sharp tools. Improperly pruned trees will be subject to rejection by the District. Apply tree seal to cuts over one inch diameter in accordance with manufacturer's instructions.

B. Prune trees as recommended in ANSI A300 Part 1.

C. Prune newly planted trees as required to remove dead, broken, and split branches.

3.15 FIELD QUALITY CONTROL

A. Plants will be rejected if a ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

B. Deficient Soils: Remove all soils determined by the District to be deficient and provide all additional amendments as directed to modify deficient soils at no additional cost to the District.

3.16 MAINTENANCE

A. See Section 32 0190 - Operation and Maintenance of Planting for post-occupancy maintenance.

3.17 CLEANUP

A. Sweep site clean of all excess materials used in these operations. Excess soils shall be swept up and removed off site. Do not wash excess materials into adjacent drainage facilities.

END OF SECTION

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Section 33 0110.58
Disinfection of Water Utility Piping Systems

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Disinfection of site domestic water lines specified in Section 33 1416.

1.02 RELATED REQUIREMENTS

A. Section 33 1416 - Site Water Utility Distribution Piping.

1.03 REFERENCE STANDARDS

A. AWWA B300 - Hypochlorites; 2018.

B. AWWA B301 - Liquid Chlorine; 2018.

C. AWWA B302 - Ammonium Sulfate; 2016.

D. AWWA B303 - Sodium Chlorite; 2018.

E. AWWA C651 - Disinfecting Water Mains; 2014, with Addendum (2020).

1.04 SUBMITTALS

A. See Section 01 3300 - Administrative Requirements, for submittal procedures.

B. Test Reports: Indicate results comparative to specified requirements.

C. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.

D. Disinfection report:
   1. Type and form of disinfectant used.
   2. Date and time of disinfectant injection start and time of completion.
   3. Test locations.
   4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
   5. Date and time of flushing start and completion.
   6. Disinfectant residual after flushing in ppm for each outlet tested.

E. Bacteriological report:
   1. Date issued, project name, and testing laboratory name, address, and telephone number.
   2. Time and date of water sample collection.

3. Name of person collecting samples.
4. Test locations.
5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
6. Coliform bacteria test results for each outlet tested.
7. Certification that water complies, or fails to comply, with bacterial standards of _____.

1.05 QUALITY ASSURANCE

A. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this Section with minimum three years documented experience.

B. Testing Firm: Company specializing in testing potable water systems, certified by governing authorities of California.

C. Submit bacteriologist's signature and authority associated with testing.

PART 2 PRODUCTS

2.01 DISINFECTION CHEMICALS

A. Chemicals: AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, and AWWA B303 Sodium Chlorite.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping system has been cleaned, inspected , and pressure tested.

B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

3.02 DISINFECTION

A. Use method prescribed by the applicable state or local codes, or health authority or water purveyor having jurisdiction, or in the absence of any of these follow AWWA C651.

B. Provide and attach equipment required to perform the work.

C. Inject treatment disinfectant into piping system.

D. Maintain disinfectant in system for 24 hours.

E. Flush, circulate, and clean until required cleanliness is achieved; use municipal domestic water.

F. Replace permanent system devices removed for disinfection.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 4000.

B. Test samples in accordance with AWWA C651.

END OF SECTION

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Section 33 1416
Site Water Utility Distribution Piping

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water pipe for site conveyance lines.

B. Pipe valves.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Concrete for thrust restraints.

B. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.

C. Section 33 0110.58 - Disinfection of Water Utility Piping Systems: Disinfection of site service utility water piping.

1.03 REFERENCE STANDARDS

A. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.

B. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2021a.

C. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40; 2023.

D. ASTM D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80; 2020.

E. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2020.

F. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals; 2019.

G. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; 2018.

H. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; 2019.

I. AWWA C504 - Rubber-Seated Butterfly Valves; 2015.

J. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; 2015.

K. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances; 2017.

L. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. through 60 In. (100 mm through 1500 mm); 2022.

M. UL 246 - Hydrants for Fire-Protection Service; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, polyethylene encasement and accessories.

C. Manufacturer's recommended installation procedures.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with utility company requirements and the City of Arroyo Grande Standards and Specifications.

B. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 WATER PIPE

A. Ductile Iron Pipe: AWWA C151/A21.51:
   1. Fittings: Ductile iron, standard thickness.
   2. Joints: AWWA C111, rubber gasket with rods.
   3. Jackets: AWWA C105/A21.5 polyethylene jacket.

B. Copper Tubing: ASTM B88, Type K, Annealed:
   1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
   2. Joints: Compression connection or AWS A5.8M/A5.8, BCuP silver braze.

C. PVC Pipe: ASTM D1785 Schedule 40.
   1. Fittings: ASTM D2466, PVC.
   2. Joints: ASTM D2855, solvent weld.

D. PVC Pipe: AWWA C900 Class 100:
   1. Fittings: AWWA C111/A21.11, Schedule 40 per ASTM D2466 or schedule 80 per ASTM D2467.
   2. Joints: ASTM D3139 compression gasket ring.

E. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Water Service" in large letters.

2.02 VALVES

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Gate Valves Up To 3 Inches as specified by the City of Arroyo Grande standards and specifications.
   1. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, compression ends, with control rod, post indicator, valve key, and extension box.

C. Gate Valves 3 Inches and Over as specified by the City of Arroyo Grande standards and specifications.
   1. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, flanged ends, control rod, post indicator, valve key, and extension box.

2.03 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Section 31 2316.13.

B. Cover: As specified in Section 31 2316.13.

2.04 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type specified in Section 03 3000 and the County of San Luis Obispo Standards and Specifications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

3.02 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.03 TRENCHING

A. See the sections on excavation and fill for additional requirements.

B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.04 INSTALLATION - PIPE

A. Maintain separation of water main from sewer piping in accordance with CA standards.

B. Install ductile iron piping and fittings to AWWA C600.

C. Route pipe in straight line.

D. Install pipe to allow for expansion and contraction without stressing pipe or joints.

E. Install trace wire 6 inches above top of pipe; coordinate with Section 31 2316.13.

F. Install polyethylene wrap around ductile iron fittings, valves and appurtenances.

3.05 INSTALLATION - VALVES AND HYDRANTS

A. Set valves on solid bearing soil.

B. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.06 SERVICE CONNECTIONS

A. Provide water service to utility company requirements with reduced pressure backflow preventer and water meter with bypass valves and sand strainer.

3.07 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Perform field inspection and testing in accordance with Section 01 4000.

C. Closing un-inspected work:
   1. Do not allow or cause any of the work of this Section to be covered up or enclosed until after it has been completely inspected and tested, and has been approved by the Engineer.

D. Hydrostatic tests:

1. Where any section of a water line is provided with concrete thrust blocking for fittings, do not make hydrostatic tests until at least five days after installation of the concrete thrust blocking, unless otherwise directed by the Engineer.
2. Devise a method for disposal of wastewater from hydrostatic tests, and for disinfection, as approved in advance by the Engineer.
3. Backfill and compaction shall be completed prior to the final 2-hour pressure test.
4. Each section of the pipe to be tested shall be slowly filled with water, and all air shall be expelled from the pipe.
    a. The release of the air can be accomplished by opening hydrants and service cocks at the high points of the system and the blowoffs at all dead ends.
    b. The valve controlling the admission of water into the section of pipe to be tested shall be opened wide before shutting the hydrants or blowoffs.
    c. After the system has been filled with water and all air expelled, all the valves controlling the section to be tested shall be closed.
    d. The line shall be allowed to set for a period of not less than 24 hours.
    e. The pipe shall then be refilled, if necessary, prior to the pressure tests.

E. Pressure tests:
1. Bring newly laid piping and valved sections of water distribution and service piping to a hydrostatic pressure of 200 psi for two hours.
2. Open and close each valve several times during the test.
3. Carefully examine exposed pipe, joints, fittings, and valves.
4. Replace or remake joints showing visible leakage.
    a. Remove cracked pipe, defective pipe, and cracked or defective joints, fittings, and valves. Replace with sound material and repeat the test until results are satisfactory.
    b. Make repair and replacement without additional cost to the Owner.

F. Leakage test:
1. Conduct leakage test after the pressure test has been completed satisfactorily.
2. Duration of each leakage test: Minimum two (2) hours.
3. During the test, subject water lines to a pressure of 200 psi.
4. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.
    a. No piping installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula:
        1) L = 0.00304 ND x sq. root of P
        2) (L = 0.00054 ND x sq root of P); where
        3) L = allowable leakage in gallons per hour;
        4) N = number of joints in length of pipe under test;
        5) D = nominal diameter of pipe in inches; and
        6) P = average test pressure in lbs per sq inch.
        7) The allowable leakage in gallons per hour, per joint, at 200 psi average test pressure shall be in accordance with Table II.
        8) Should any test of pipe disclose leakage greater than that specified in Table II, locate and repair the defective joint or joints until the leakage is within the specified allowance, and at no additional cost to the Owner.
    b. Table II:

5. Diameter:Leakage in gal:Diameter: Leakage in gal:
    a. 0.015312”0.0915
    b. 0.023114”0.1070
    c. 0.030616”0.1225
    d. 0.045818”0.1375
    e. 0.061020”0.1530
    f. 0.076524”0.1830

G. Time for making test:
    1. Except for joint material setting, or where concrete reaction backing necessitates a five day delay, pipelines jointed with rubber gaskets, mechanical, or push-on joints, or couplings may be subjected to hydrostatic pressure, inspected, and tested for leakage at any time after partial completion of backfill.

H. Disinfection:
    1. Disinfect per Section 33 0110.58 - Disinfection of Water Utility Piping Systems.

END OF SECTION

Section 33 3113
Site Sanitary Sewerage Gravity Piping

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary sewerage drainage piping, fittings, and accessories.

B. Connection of building sanitary drainage system to municipal sewers.

C. Cleanout access.

1.02 RELATED REQUIREMENTS

A. Section 31 2316 - Excavation: Excavating of trenches.

B. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.

C. Section 31 2323 - Fill: Bedding and backfilling.

1.03 REFERENCE STANDARDS

A. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2021a.

B. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.

C. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2021.

D. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2021.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents:
   1. Record location of pipe runs, connections, manholes, cleanouts, and invert elevations.

2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

A. Provide products that comply with City of Arroyo Grande Standards and Specifications

B. Plastic Pipe: ASTM D2729, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of ____ inches, bell and spigot style solvent sealed joint end.

C. Plastic Pipe: ASTM D3034, Type PSM, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of ____ inches, bell and spigot style solvent sealed joint end.

D. Use extra strength, minimum of SDR 35.

E. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.02 PIPE ACCESSORIES

A. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Sewer Service" in large letters.

2.03 CLEANOUT MANHOLE

A. Lid and Frame: Traffic Rated Lid. Use Two-Way Cleanout as shown on planes and in conformance with the City of Arroyo Grande Standards and Specifications.

2.04 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: As specified in Section 31 2316.13.

B. Pipe Cover Material: As specified in Section 31 2316.13.

PART 3 EXECUTION

3.01 GENERAL

A. Perform work in accordance with City of Arroyo Grande.

3.02 TRENCHING

A. See Section 31 2316.13 for additional requirements.

B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.03 INSTALLATION - PIPE

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
   1. Plastic Pipe: Also comply with ASTM D2321.

C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

D. Connect to building sanitary sewer outlet .

E. Install trace wire 6 inches above top of pipe; coordinate with Section 31 2316.13.

3.04 INSTALLATION - CLEANOUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.

C. Establish elevations and pipe inverts for inlets and outlets as indicated.

D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 4000.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to District.

3.06 PROTECTION

A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

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Section 33 4100
Subdrainage

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Building Perimeter and Retaining Wall Drainage Systems.

B. Filter aggregate and fabric and bedding.

1.02 RELATED REQUIREMENTS

A. Section 31 2316.13 - Trenching: Excavating and backfilling for site subdrainage systems.

B. Section 31 2323 - Fill: Backfilling over filter aggregate, up to subgrade elevation.

1.03 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide data on pipe drainage products and pipe accessories, and _____.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Comply with applicable code for materials and installation of the work of this section.

B. Refer to "Updated Geotechnical Engineering and Geologic Hazards Report" Dated: 04/03/2025 prepared by Earth Systems Pacific for subdrainage reco

2.02 PIPE MATERIALS

A. Corrugated Plastic Tubing: Flexible type; 4 and 6 inch diameter, with required fittings.

B. Use perforated pipe at subdrainage system; unperforated through sleeved walls.

2.03 AGGREGATE AND BEDDING

A. Filter Aggregate Material: Granular fill as specified in Section 31 2323.

2.04 ACCESSORIES

A. Pipe Couplings: Solid plastic.

B. Filter Fabric: Water pervious type, black polyolefin.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

3.02 PREPARATION

A. Hand trim excavations to required elevations. Correct over-excavation with _____.

B. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

3.03 INSTALLATION

A. Place drainage pipe on clean cut subsoil.

B. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

C. Place pipe with perforations facing down. Mechanically join pipe ends.

D. Install pipe couplings.

E. Place filter fabric over levelled top surface of aggregate cover prior to subsequent backfilling operations.

F. Connect to storm sewer system with unperforated pipe .

3.04 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION

Section 33 4211
Stormwater Gravity Piping

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stormwater drainage piping.

B. Stormwater pipe accessories.

C. Catch basins, Plant area drains, site surface drainage and swales.

1.02 RELATED REQUIREMENTS

A. Section 31 2316 - Excavation: Excavating of trenches.

B. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.

C. Section 31 2323 - Fill: Bedding and backfilling.

1.03 REFERENCE STANDARDS

A. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.

B. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2021.

C. ASTM F-405/f-667 - Corrugated polyethylene tubing and fittings.

D. AASHTO M252 - Specification for Corrugated Polyethylene Drainage Tubing, 3- to 10- inch Diameter.

E. AASHTO M294 - Specification for Corrugated Polyethylene Pipe, 12- to 36- Inch Diameter.

F. ASTM D1056 - Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.

G. ASTM D1248 - Specification for Polyethylene Plastics Molding and Extrusion Material.

H. ASTM D3350 - Specification for Polyethylene Plastics Pipe and Fittings Materials.

I. ASTM D2321 - Standard practice for underground installation.

1.04 SUBMITTALS

A. Comply with pertinent provisions of Division 01 - General Requirements – Administrative Requirements.

B. Product data: Within 35 calendar days after the Contractor has received the Notice to Proceed, submit:
   1. Materials list of items proposed to be provided under this Section;
   2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
   3. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the work.

1.05 PRODUCT HANDLING

A. Comply with pertinent provisions of Division 01 - General Requirements - Product Requirements

1.06 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories.

PART 2 PRODUCTS

2.01 STORM WATER DRAINAGE PIPE MATERIALS

A. Provide pipe and associated materials of the size indicated on the Drawings and meeting the following requirements.
   1. High Density Polyethylene Pipe (HDPE):
      a. Acceptable products:
         1) "Hi-Q" High Density Polyethylene storm drain and fittings, manufactured by Hancor, Inc., P.O. Box 1047, Findlay, OH 45839. Phone: (800)892-3351
         2) "N-12" High Density Polyethylene storm drain and fittings, manufactured by Advanced Drainage Systems, 4640 Trueman Boulevard, Hillard, OH 43026. Phone: (800) 821-6710, Fax: (614) 658-0204.
         3) Approved equivalent.
   2. High Density Polyethylene material shall comply with:
      a. AASHTO M252 for material from 3" – 10" in size.
      b. AASHTO M294 for material 12" – 36" in size.
      c. STM D1248 for standard specifications for Polyethylene Plastics Molding and Extrusion Materials.
      d. ASTM D3350 for pipe and fitting.
      e. ASTM D2321 standard practice for underground installation.
   3. High Density Polyethylene Pipe:

a. The material supplied under this specification shall be high density polyethylene corrugated exterior/smooth interior pipe. The 12" – 36" diameter shall conform to AASHTO M294 Type S; the 3" – 10" diameter material shall meet the strength requirement of AASHTO M252 with the addition that the pipe shall have a smooth interior liner. Material shall conform to ASTM D3350.

4. Joints and Fittings:
   a. Pipe joints and fitting shall conform to AASHTO M252 and AASHTO M294, or be approved by the engineer.
   b. Coupling bands shall cover at least one full corrugation on each section of pipe. When gasketed couple bands are required, the gasket shall be made of closed-cell synthetic expanded rubber meeting the requirements of ASTM D1056, Grade RE42. All coupling bands shall meet or exceed the soils-tightness requirements of the AASHTO Standard Specifications for Highway Bridges, Section 23, paragraph 23.3.2.5.4.(e).
   c. All fittings shall conform to AASHTO M294.

B. Plastic Pipe: ASTM D2729, Poly Vinyl Chloride (PVC) material; inside nominal diameter per plan, bell and spigot style solvent sealed joint end.

2.02 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

B. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Stormwater Service" in large letters.

2.03 CATCH BASIN, TRENCH DRAIN, CLEANOUT, AND AREA DRAIN COMPONENTS

A. General:
   1. Construct manholes, inlets, and junction structures of reinforced concrete or precast reinforce concrete, complete with metal frames and covers or gratings, and with fixed ladder rungs where indicated on the Drawings or required by codes. Prefabricated structures may be used when shown on the plans and approved by the engineer.
   2. Rungs shall be individual wall-mounted aluminum, plastic-covered steel, or galvanized steel rungs are acceptable.

B. Materials:
   1. Concrete: Comply with provisions for 3,250 psi concrete specified in Section 02750 Concrete Pavement.
   2. Mortar for pipe joints and connections to other drainage structures, and manhole construction.
      a. Comply with requirements of ASTM C270, type M, except the maximum placement time shall be one hour.
      b. Hydrated lime complying with ASTM C141, type B, may be added to the mixture of sand and cement in an amount equal to 25% of the volume of cement used.

c. Provide a quantity of water in the mixture sufficient to produce a stiff workable mortar, which shall be clean and free from harmful acids, alkalis, and organic impurities. Use the mortar within 30 minutes after water is added to the mix.

3. Precast reinforced concrete manholes:
   a. Comply with ASTM C478, precast rings and cone sections.
   b. Fully bed the joints between precast concrete risers and tops in mortar, and smooth both interior and exterior surfaces uniformly.
   c. Acceptable products:
      1) Manufactured by Ameron Pipe Products Group, El Monte, California.
      2) Manufactured by Santa Rosa Cast Products Company, 471 West College Avenue, Santa Rosa, CA 95401. Phone: (707) 546-5016, Fax: (707) 571-7768.
      3) Manufactured by Associated Concrete Products, Inc., 4301 W. Mac Arthur Boulevard, Santa Ana, CA 92704. Phone: (800) 862-6465, Fax: (714)540-0538.
      4) Approved equivalent.
4. Reinforcement: Provide intermediate grade billet steel complying with ASTM A 615, grade 40.
5. Frames and covers or gratings:
   a. Provide all gratings or covers from the same manufacturer.
   b. Provide standard black finish, supplied as a total unit, sized as shown on the Drawings or larger sizes except where in a pavement area, and with the wording "STORM DRAIN" cast into the cover.
   c. Acceptable products:
      1) Manufactured by Alhambra Foundry, Alhambra, California.
      2) Approved equivalent.
6. Precast concrete catch basins:
   a. Provide reinforced and bottom open for field pouring to ensure slope through the structure.
   b. Contractor may select this option in lieu of cast-in-place concrete catch basins.
      1) Acceptable products:
      2) Manufactured by Christy, 44100 Christy Street, Fremont, CA 94538. Phone: (800) 486-7070, Fax: (510) 490-6804.
      3) Manufactured by Central Precast Concrete Inc., 471 West College Avenue, Santa Rosa, CA 95401. Phone: (707) 546-5016, Fax: (707) 571-7768.
      4) Manufactured by Brooks Products, 1850 Parco Avenue, Ontario, CA 91761. Phone: (888) 307-7470, Fax: (909) 947-7741.
      5) Approved equivalent.

C. Trench Drain System: Trench drain system assembled from factory fabricated, polyester fiberglass plastic castings with or without built in slope; with integral joints and optional grating support rails; includes gratings.

2.04 IN-LINE DRAINS

A. The inline drain shall be manufactured from PVC pipe stock, utilizing a thermo-molding process to reform the pipe stock to the furnished configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The pipe bell spigot

shall be joined to the inline drain body by use of a swage mechanical joint. The pipe stock used to manufacture the inline drain body and pipe bell spigot of the surface drainage inlets shall meet the mechanical property requirements for fabricated fittings as described by ASTM D3034, Standard for Sewer PVC Pipe and Fittings; ASTM F1336, Standard for PVC Gasketed Sewer Fittings.

B. The grates furnished for all surface drainage inlets shall be ductile iron grates for sizes 8", 10", 18", 24" and 30" (12" and 15" frames are cast iron) shall be made specifically for each fitting so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Inline drain grates for traffic loading areas and turf areas shall be flat and capable of supporting H-20 wheel loading for heavy-duty traffic. Grates in shrub and planter areas shall be domed and capable of a minim H-10 loading for pedestrian traffic. Grates in 12" and 15" will be hinged to the frame using pins. Metal used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05 for ductile iron and ASTM A-48-83 Class 30B for 12" and 15" cast iron frames. Grates shall be provided painted black.

C. Acceptable Product:
   1. Model ADS 27XXAG N, manufactured by Advanced Drainage Systems, 4640 Trueman Boulevard, Hilliard, OH 43026. Phone: (800) 821-6710, Fax: (614) 658-0204.
   2. Drain-Rite, manufactured by Hancor, 6106 North Prospect, Fresno, CA 93711. Phone: (559) 435-6680, Fax: (559) 435-6667.
   3. Approved equal.

2.05 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Section 31 2316.13.

B. Cover: As specified in Section 31 2316.13.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the work.

C. Do not proceed until unsatisfactory conditions are corrected.

3.02 TRENCHING

A. See Section 31 2316.13 for additional requirements.

B. Excavate, trench, and bed for site drains as follows:

C. Movement of construction machinery:
   1. Use means necessary to avoid displacement of, and injury to, pipe and structure while compacting by rolling or operating equipment parallel to the pipe.

2. Movement of construction machinery over a culvert or storm drain at any stage of construction is solely at the Contractor's risk.

D. Bedding:
   1. Provide a bedding surface for the pipe with a firm foundation of uniform density throughout the entire length of the pipe.
   2. Bed the pipe carefully in a soil foundation accurately shaped and rounded to conform to the lower ¼ of the outside perimeter of circular pipe, or set the pipe in a bed of sand.
   3. Tamp bedding where necessary.
   4. Provide bell holes and depressions for pipe joints of only the length, depth, and width required for making the particular pipe joint properly.
   5. Where plastic pipe is used, provide a minimum of 4" of sand bedding over the top and under the pipe.

3.03 INSTALLATION

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. General:
   1. Carefully examine each pipe prior to placing.
      a. Promptly set aside defective pipe and damaged pipe.
      b. Clearly identify defects.
      c. Do not install defective pipe or damaged pipe.
   2. Place pipe to the grades and alignment indicated, with a tolerance of one in 1000 vertical and one in 500 horizontal, unless otherwise directed by the Architect.
   3. Provide adequate facilities for lowering pipe safely into the trenches.
   4. Do not place pipe in water, nor place pipe when trench or weather is unsuitable for such work.

C. Polyvinyl chloride pipe joints: Install with the specified materials and in accordance with the manufacturer's recommendations as approved by the Engineer, applying solvent cement to pipe and fitting as recommended in ASTM D285.

D. High Density Polyethylene: Installation shall be in accordance with ASTM D2321 and as recommended by the pipe manufacturer. Backfill shall be ASTM D2321 Class I, II, or III soils, or USCS material corresponding to these ASTM designations. Backfill material shall be placed in 6-inch lifts and compacted to 90 percent minimum density per AASHTO T99.

E. Joining pipes of different materials: Provide fittings or couplings made for the pipe material jointing, or provide a concrete collar as approved by the Engineer.

F. Joining pipe of different sizes:
   1. Provide reducer fittings to the larger pipe.
   2. Where pipes are different materials as well as different sizes, use the same material for reducer fittings as in the larger pipe.
   3. Use saddle connection when branch lines join a main or collector main.
   4. Use eccentric collar joint when the slope of the pipe is less than 1%.

G. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
   1. Plastic Pipe: Also comply with ASTM D2321.

H. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

I. Connect to building storm drainage system, foundation drainage system, and utility/municipal system.

J. Install continuous trace wire 6 inches above top of pipe; coordinate with Section 31 2316.13.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection in accordance with Division 01 - General Requirements.

B. Visually inspect the pipe for deflection.
   1. Deflection is limited to 7.5% of the base diameter.
   2. If the visual inspection determines the pipe may have deflection problems, the engineer can direct a mandrel test be performed.
   3. Such test will be performed at the contractor's expense.
   4. If required, the procedure can be conducted within the first 30 days after installation. Recommended madrel settings reflectin 7.5% of the base diameter for piper are shown in the table below:

	PIPE MEETING ASTM AND AASHTO STANDARDS		PIPE MEETING CSA STANDARDS	
NOMINAL DIAMETER INCHES	BASE DIAMETER INCHES	MANDREL SETTING INCHES	BASE DIAMETER MM	MANDREL SETTING MM
4	3.87	3.58	96.92	89.7
6	5.80	5.36	145.42	134.5
8	7.73	7.15	193.84	179.3
10	9.66	8.94	242.34	224.2
12	11.60	10.73	290.83	269.0
15	14.50	13.41	363.65	336.4
18	17.40	16.09	436.18	403.5
21	20.30	18.78	508.86	470.7
24	23.20	21.46	581.67	538.0
Pipe size greater than 24" is tested by visual inspection				

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to District.

3.05 PROTECTION

A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

DSA

103-19

LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS-2019 CBC

☑ Project has a geotechnical report or construction documents require special inspection by a geotechnical engineer.
☐ Project does NOT have and does NOT require a geotechnical report.

	TYPE	BY
S1 | SOILS - GENERAL		
☑ S1a: Site Preparation	Periodic	GE
S2 | COMPACTION AND FILL		
☑ S2a: Fill Materials	Test	LOR*
☑ S2b: Fill Placement	Continuous	GE*
☑ S2c: Compaction	Test	LOR*
S3 | DRIVEN DEEP FOUNDATIONS (PILES)		
☐ S3a: Materials and Members	Continuous	GE*
☐ S3b: Pile Capacity	Test	LOR*
☐ S3c: Driving Operations	Continuous	GE*
☐ S3d: Pile Installation	Continuous	GE*
☐ S3e: Steel Piles	*	*
☐ S3f: Concrete Piles	*	*
☐ S3g: Specialty Piles	*	*
S4 | CAST-IN-PLACE DEEP FOUNDATIONS (PIERS)		
☐ S4a: Drilling Operations	Continuous	GE*
☐ S4b: Pier Construction	Continuous	GE*
☐ S4c: Bearing Strata	Continuous	GE*
☐ S4d: Concrete Piers	*	*
S5 | RETAINING WALLS		
☑ S5a: Backfill Placement	Continuous	GE*
☑ S5b: Soil Reinf. and Drainage	Continuous	GE*
☐ S5c: Segmental Retaining Walls	Continuous	GE*
☑ S5d: Concrete Retaining Walls	*	*
☐ S5e: Masonry Retaining Walls	*	*
S6 | OTHER SOILS		
☐ S6a: Soil Improvement Test	Test	GE*
☐ S6b: Soil Improvement Inspection	Continuous	GE*
☐ S6c: Not used.	N/A	N/A
☐ S6d: Not used.	N/A	N/A
☐ S6e: Not used.	N/A	N/A
☐ S6f: Not used.	N/A	N/A
☐ S6g: Not used.	N/A	N/A
☐ S6h: Not used.	N/A	N/A
☐ S6i: Not used.	N/A	N/A
☐ S6j: Not used.	N/A	N/A

* See Appendix for additional information.

	TYPE	BY
C1 | CAST-IN-PLACE CONCRETE		
☑ C1a: Mix Design	Periodic	SI
☑ C1b: Reinforcing Steel	Test	LOR
☑ C1c: Concrete Material	Test	LOR
☑ C1d: Strength Test	Test	LOR
☑ C1e: Batch Plant Inspection	Continuous	SI
☐ C1f: Welding Reinforcing steel	*	*
C2 | PRESTRESSED CONCRETE		
☐ C2a: Tendons and Anchorage	Test	LOR
☐ C2b: Tendon Placement	Periodic	SI
☐ C2c: Concrete Strength	Periodic	SI
☐ C2d: Stressing Operations	Continuous	SI
C3 | PRECAST CONCRETE		
☐ C3a: General Fabrication	Continuous	SI
☐ C3b: General Erection	Periodic	SI*
C4 | SHOTCRETE		
☐ C4a: Placement	Continuous	SI
☐ C4b: Shotcrete Material	Test	LOR
C5 | POST-INSTALLED ANCHORS		
☑ C5a: Inspection	See notes	SI*
☑ C5b: Test	Test	LOR
C6 | OTHER CONCRETE		
☐ C6a: Not used.	N/A	N/A
☐ C6b: Not used.	N/A	N/A
☐ C6c: Not used.	N/A	N/A
☐ C6d: Not used.	N/A	N/A
☐ C6e: Not used.	N/A	N/A
☐ C6f: Not used.	N/A	N/A
☐ C6g: Not used.	N/A	N/A
☐ C6h: Not used.	N/A	N/A
☐ C6i: Not used.	N/A	N/A
☐ C6j: Not used.	N/A	N/A
☐ C6k: Not used.		

* See Appendix for additional information.

Project Name: **Mesa Middle School - Science and SPED Building** Application No.:**03-125727** Increment:
School District: **Lucia Mar Unified School District** File No.: **40-39**

LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

	TYPE	BY
M1 | STRUCTURAL MASONRY f'm PSI =		
☐ M1a: Mill Certificates - Reinf.	Periodic	SI*
☐ M1b: Material Certificates	Test	LOR
☐ M1c: Strength Test	Test	LOR
☐ M1d: Mortar Proportions	Periodic	SI
☐ M1e: Grout Proportions	Periodic	SI
☐ M1f: Batch Plant Inspection		SI
☐ M1g: Core Tests	Test	LOR
☐ M1h: Prisms	Continuous	SI
☐ M1i: Dowels and Supports	Periodic	SI
☐ M1j: Reinforcement and Members	Periodic	SI
☐ M1k: Reinforcement Placement	Continuous	SI
☐ M1l: Grout Placement	Continuous	SI
☐ M1m: Unit Layup and Joints	Periodic	SI
☐ M1n: Cold/Hot Weather Work	Periodic	SI*
☐ M1o: Anchors and Embeds	Continuous	SI
☐ M1p: Grout Cavity	Continuous	SI
☐ M1q: Welding Reinforcing Steel	*	*
M2 | VENEER OR GLASS BLOCK PARTITIONS		
☐ M2a: Mortar and Grout	Periodic	SI
☐ M2b: Unit Layup and Joints	Periodic	SI
☐ M2c: Wires and Connector	Periodic	SI
☐ M2d: Anchors and Embeds	Periodic	SI
☐ M2e: Cold/Hot Weather Work	Periodic	SI*
☐ M2f: Adhered Veneer Bond	Test	LOR
M3 | POST-INSTALLED ANCHORS		
☐ M3a: Inspection	Varies*	SI*
☐ M3b: Test	Test	LOR
M4 | OTHER MASONRY		
☐ M4a: Not used.	N/A	N/A
☐ M4b: Not used.	N/A	N/A
☐ M4c: Not used.	N/A	N/A
☐ M4d: Not used.	N/A	N/A
☐ M4e: Not used.	N/A	N/A
☐ M4f: Not used.	N/A	N/A
☐ M4g: Not used.	N/A	N/A
☐ M4h: Not used.	N/A	N/A
☐ M4i: Not used.	N/A	N/A
☐ M4j: Not used.	N/A	N/A
☐ M4k: Not used.		
☐ M4l: Not used.		
☐ M4m: Not used.		

* See Appendix for additional information.

	TYPE	BY
S/A1 | STEEL AND ALUMINUM		
☑ S/A1a: Material Identification	Periodic	SI
☑ S/A1b: Unidentified Material	Test	LOR
☑ S/A1c: HSS Seam Welds	Periodic	SI
☑ S/A1d: Steel Fabrication	Periodic	SI
☐ S/A1e: Buckling Restrained Brace	Test	LOR
S/A2 | HIGH-STRENGTH BOLTS		
☐ S/A2a: Product Verification	Periodic	SI
☐ S/A2b: Bolts, Nuts, and Washers	Test	LOR
☐ S/A2c: Snug Tight	Periodic	SI
☐ S/A2d: Pretensioned / Slip-Critical	*	SI
S/A3 | WELDING		
☑ S/A3a: Weld Material	Periodic	SI
☑ S/A3b: Certificate of Compliance	Periodic	SI
☑ S/A3c: WPS and Qualifications	Periodic	SI
S/A4 | SHOP WELDING		
☐ S/A4a: Weld Category A	Continuous	SI
☑ S/A4b: Weld Category B	Periodic	SI
☑ S/A4c: Stairs and Railing	Periodic	SI
☐ S/A4d: Reinf. Steel Weldability	Periodic	SI
☐ S/A4e: Reinforcing Steel	Continuous	SI
S/A5 | FIELD WELDING		
☐ S/A5a: Weld Category A	Continuous	SI
☑ S/A5b: Weld Category B	Periodic	SI
☐ S/A5c: End Welded Studs	Periodic	SI
☐ S/A5d: Deck Weldss	Periodic	SI
☐ S/A5e: Cold-Formed Steel	Periodic	SI*
☑ S/A5f: Stairs and Railing	Periodic	SI*
☑ S/A5g: Reinf. Steel Weldability	Periodic	SI
☑ S/A5h: Reinforcing Steel	Continuous	SI
S/A6 | NONDESTRUCTIVE TESTING		
☐ S/A6a: Ultrasonic	Test	LOR
☐ S/A6b: Magnetic Particle	Test	LOR
☐ S/A6c:Not used.	N/A	N/A
☐ S/A6d:Not used.	N/A	N/A
☐ S/A6e:Not used.	N/A	N/A
S/A7 | STEEL JOISTS AND TRUSSES		
☐ S/A7a: Fabrication	Continuous	SI
S/A8 | SPRAYED FIRE-RESISTANT MATERIALS		
☐ S/A8a: Surface and Installation	Periodic	SI
☐ S/A8b: Density	Test	LOR
☐ S/A8c: Bond: Adhesion/Cohesion	Test	LOR

* See Appendix for additional information.

Project Name: **Mesa Middle School - Science and SPED Building** Application No.:**03-125727** Increment:

School District: **Lucia Mar Unified School District** File No.: **40-39**

LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

	TYPE	BY
S/A9 | ANCHOR BOLTS AND ANCHOR RODS		
☑ S/A9a: Anchor Rods and Bolts	Test	LOR
☑ S/A9b: Other Threaded Rods	Test	LOR
S/A10 | OTHER STEEL AND ALUMINUM		
☐ S/A10a: Not used.	N/A	N/A
☐ S/A10b: Not used.	N/A	N/A
☐ S/A10c: Not used.	N/A	N/A
☐ S/A10d: Not used.	N/A	N/A
☐ S/A10e: Not used.	N/A	N/A
☐ S/A10f: Not used.	N/A	N/A
☐ S/A10g: Not used.	N/A	N/A
☐ S/A10h: Not used.	N/A	N/A
☐ S/A10i: Not used.	N/A	N/A
☐ S/A10j: Not used.	N/A	N/A
W1 | PREFABRICATED WOOD TRUSSES		
☐ W1a: Open Web Truss Fabrication	Continuous	SI
☐ W1b: Metal Plate Truss Fabrication	Continuous	SI
W2 | MANUFACTURED WOOD ELEMENTS		
☑ W2a: GL Timber Fabrication	Continuous	SI
☐ W2b: CLT Fabrication	Continuous	SI
☐ W2c: Mass Timber Erection	Periodic	SI
☐ W2d: Connections Type A	Periodic	SI
☐ W2e: Connections Type B	Continuous	SI
☐ W2f: Sealants	Periodic	SI
W3 | OTHER WOOD		
☐ W3a: Not used.	N/A	N/A
☐ W3b: Not used.	N/A	N/A
☐ W3c: Not used.	N/A	N/A
☐ W3d: Not used.	N/A	N/A
☐ W3e: Not used.	N/A	N/A
☐ W3f: Not used.	N/A	N/A
☐ W3g: Not used.	N/A	N/A
☐ W3h: Not used.	N/A	N/A
Not used.		
Not used.		
Not used.		

* See Appendix for additional information.

	TYPE	BY
X | OTHER		
☐ X01: Product Load Test*	Test	LOR
☐ X02: Non-HSB Installation Torque	Continuous	SI*
☑ X03: Electrical Grounding	Test	PI
☐ X04: Not used.	N/A	N/A
☐ X05: Not used.	N/A	N/A
☐ X06: Not used.	N/A	N/A
☐ X07: Not used.	N/A	N/A
☐ X08: Not used.	N/A	N/A
☐ X09: Not used.	N/A	N/A
☐ X10: Not used.	N/A	N/A

EXEMPTIONS

Those items identified on the DSA-approved construction documents with a note indicating they are not part of the DSA approval and those items checked below are exempt from test and special inspection requirements. The project inspector shall verify all construction complies with the approved construction documents.

- ☐ Soils: Eligible deep foundation elements**.
- ☑ Soils: Eligible shallow foundation elements**.
- ☑ Concrete/Masonry: Eligible post-installed anchors**.
- ☐ Concrete: Batch plant inspection for items listed in and complying with CBC Section 1705A.3.3.2.
- ☐ Masonry: Freestanding site walls and retaining walls per DSA IR 21-1.
- ☑ Concrete: Epoxy shear dowels in nonstructural slab-on-grade per CBC Section 1910A.5.4, Exception #4.
- ☐ Concrete/Masonry: Reinforcing bar testing for items listed in and complying with CBC Section 1910A.2.
- ☐ Welding: Eligible fences and gates**.
- ☐ Welding: Eligible railing and ramps**.
- ☐ Welding: Eligible interior cold-formed steel framing**.
- ☐ Welding: Eligible equipment curbs**.
- ☑ Welding: Eligible components supporting MEP distribution systems**.
- ☑ Welding: Eligible mounts and recreational equipment**.
- ☐ Welding: Eligible nonstructural components**.

** See Appendix for eligibility requirements.

Project Name: **Mesa Middle School - Science and SPED Building** Application No.:**03-125727** Increment:

School District: **Lucia Mar Unified School District** File No.: **40-39**

LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The exemption appendix at the end of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of nonstructural components, etc., per Title 24, Part 2, Chapter 17A.

Legend to TYPE and BY Columns:

Continuous - Indicates continuous special inspection is required.

Periodic - Indicates periodic special inspection is required.

Test - Indicates a test is required.

GE – Indicates special inspection shall be performed by a registered geotechnical engineer or his/her authorized representative, usually associated with the Laboratory of Record.

LOR – Indicates test or special inspection shall be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program (i.e., the Laboratory of Record for the project). See CAC Section 4-335.

PI - Indicates special inspection may be performed by a project inspector when specifically approved by DSA.

SI - Indicates special inspection shall be performed by an appropriately qualified/approved special inspector.

Required Verified Reports:

1. Soils Testing and Inspection: Form DSA 293
2. Structural Testing and Inspection: Form DSA 291
3. Concrete Batch Plant Inspection: Form DSA 291
4. Post-installed Anchors: Form DSA 291 or DSA 292
5. Shop Welding Inspection: Form DSA 291 or DSA 292
6. Field Welding Inspection: Form DSA 291 or Form DSA 292
7. Mass Timber Inspection: Form DSA 291 or DSA 292

Verified reports are required on the following DSA forms:

DSA 291: Laboratory of Record Verified Report

DSA 292: Special Inspectors Employed Directly by the District Verified Report

DSA 293: Geotechnical Verified Report

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends against using secured electronic or digital signatures.

Name of Design Professional in General Responsible Charge:

Kathryn Hicks, RA

Name of Structural Engineer of Record (when applicable):

Jessica Meadows, SE

Signature of Architect or Structural Engineer: **Date:**

04.17.26

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125727 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/26/2026

Project Name: **Mesa Middle School - Science and SPED Building**

School District: **Lucia Mar Unified School District**

Application No.:**03-125727** Increment:

File No.: **40-39**

Appendix LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

NOTE: Undefined sections and table references found in this appendix are from the CBC, or California Building Code.

S1. GENERAL:	
Test or Special Inspection	**Code References and Notes**
S1a: Site Preparation | Verify that: • Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations. • Foundation excavations are extended to proper depth and have reached proper material. • Materials below footings are adequate to achieve the design bearing capacity.	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) form for exemptions.)

S2. SOIL COMPACTION AND FILL:	
Test or Special Inspection	**Code References and Notes**
S2a: Fill Materials | Perform classification and testing of fill materials.	* Under the supervision of the geotechnical engineer.
S2b: Fill Placement | Verify use of proper materials, densities and inspect lift thicknesses, placement and compaction during placement of fill.	* By geotechnical engineer or his or her qualified representative. (Refer to specific items identified in the Appendix (end of this form) form for exemptions where soils SI and testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil SI and test reporting requirements for the exempt items.)
S2c: Compaction | Compaction testing.	* Under the supervision of the geotechnical engineer. (Refer to specific items identified in the Appendix (end of this form) for exemptions where soils testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil test reporting requirements for the exempt items.)

S3. DRIVEN DEEP FOUNDATIONS (PILES):	
Test or Special Inspection	**Code References and Notes**
S3a: Materials and Members | Verify pile materials, sizes and lengths comply with the requirements.	* By geotechnical engineer or his or her qualified representative.
S3b: Pile Capacity | Determine capacities of test piles and conduct additional load tests as required.	* Under the supervision of the geotechnical engineer.

S3c: Driving Operations | Inspect driving operations and maintain complete and accurate records for each pile.	* By geotechnical engineer or his or her qualified representative.
S3d: Pile Installation | Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.	* By geotechnical engineer or his or her qualified representative.
S3e: Steel piles.	Provide tests and inspections per STEEL section below.
S3f. Concrete piles and concrete filled piles.	Provide tests and inspections per CONCRETE section below.
S3g: Specialty Piles | For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.	* As defined on drawings or specifications.

S4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):	
Test or Special Inspection	**Code References and Note**
S4a: Drilling Operations | Inspect drilling operations and maintain complete and accurate records for each pier.	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) for exemptions.)
S4b: Pier Construction | Verify pier locations, diameters, plumbness, bell diameters (if applicable), lengths and embedment into bedrock (if applicable); record concrete or grout volumes.	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) for exemptions.)
S4c: Bearing Strata | Confirm adequate end strata bearing capacity.	* By geotechnical engineer or his or her qualified representative. (See Appendix (end of this form) for exemptions.)
S4d: Concrete Piers	Provide tests and inspections per CONCRETE section below.

S5. RETAINING WALLS:	
Test or Special Inspection	**Code References and Notes**
S5a: Backfill Placement | Placement, compaction and inspection of backfill.	1705A.6.1. * By geotechnical engineer or his or her qualified representative. (See section S2 above).
S5b: Soil Reinf. and Drainage | Placement of soil reinforcement and/or drainage devices.	* By geotechnical engineer or his or her qualified representative.
S5c: Segmental Retaining Walls | Segmental retaining walls; inspect placement of units, dowels, connectors, etc.	* By geotechnical engineer or his or her qualified representative. See DSA IR 18-2.
S5d: Concrete Retaining Walls	Provide tests and inspections per CONCRETE section.
S5e: Masonry Retaining Walls	Provide tests and inspections per MASONRY section.

S6 | OTHER SOILS	
Test or Special Inspection	**Code References and Notes**
S6a | Soil Improvements	Submit a comprehensive report documenting final soil improvements constructed, construction observation and the results of the confirmation testing and analysis to CGS (California Geological Survey) for final acceptance. * By geotechnical engineer or his or her qualified representative.
S6b | Inspection of Soil Improvements	* By geotechnical engineer or his or her qualified representative.
S6c. | Not used.	N/A
S6d. | Not used.	N/A
S6e. | Not used.	N/A
S6f. | Not used.	N/A
S6g. | Not used.	N/A
S6h. | Not used.	N/A
S6i. | Not used.	N/A
S6j. | Not used.	N/A
S6k. | Not used.	N/A
S6l. | Not used.	N/A

Appendix LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

C1. CAST-IN-PLACE CONCRETE	
Test or Special Inspection	**Code References and Notes**
C1a: Mix Design | Verify use of required design mix.	**Table 1705A.3 Item 5, 1910A.1.**
C1b: Reinforcing Steel | Identify, sample, and test reinforcing steel.	**1910A.2;** ACI 318-14 Section 26.6.1.2; DSA IR 17-10. (See Appendix (end of this form) for exemptions.)
C1c: Concrete Material | During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	**Table 1705A.3 Item 6**; ACI 318-14 Sections 26.5 & 26.12.
C1d: Strength Test | Test concrete (f'c).	**1905A.1.15;** ACI 318-14 Section 26.12.
C1e: Batch Plant Inspection | Batch plant inspection: Continuous	Default of **'Continuous'** per **1705A.3.3**. If approved by DSA, batch plant inspection may be reduced to **'Periodic'** subject to requirements in Section **1705A.3.3.1,** or not required per **1705A.3.3.2.** See IR 17-13. (See Appendix (end of this form) for exemptions.)

C2. PRESTRESSED / POST-TENSIONED CONCRETE (IN ADDITION TO SECTION C1):	
Test or Special Inspection	**Code References and Notes**
C2a: Tendons and Anchorage | Sample and test prestressing tendons and anchorages.	**1705A.3.4, 1910A.3**
C2b: Tendon Placement | Inspect placement of prestressing tendons.	**1705A.3.4, Table 1705A.3 Items 1 & 9.**
C2c: Concrete Strength | Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	**Table 1705A.3 Item 11.** Special inspector to verify specified concrete strength test prior to stressing.
C2d: Stressing Operations | Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	**1705A.3.4, Table 1705A.3 Item 9;** ACI 318-14 Section 26.13

C3. PRECAST CONCRETE (IN ADDITION TO SECTION C1):	
Test or Special Inspection	**Code References and Notes**
C3a: General Fabrication | Inspect fabrication of precast concrete members.	ACI 318-14 Section 26.13
C3b: General Erection | Inspect erection of precast concrete members.	**Table 1705A.3 Item 10.** * May be performed by PI when specifically approved by DSA.

C4. SHOTCRETE (IN ADDITION TO SECTION C1):	
Test or Special Inspection	**Code References and Notes**
C4a: Placement | Inspect shotcrete placement for proper application techniques.	**1705A.19, Table 1705A.3 Item 7, 1908A.6, 1908A.7, 1908A.8, 1908A.9, 1908A.11, 1908A.12.** See ACI 506.2-13 Section 3.4, ACI 506R-16.
C4b: Shotcrete Material | Sample and test shotcrete (f'_c).	**1908A.5, 1908A.10**

C5. POST-INSTALLED ANCHORS:	
Test or Special Inspection	**Code References and Notes**
C5a: Inspection | Inspect installation of post-installed anchors	**1617A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic), 1705A.3.8** (See Appendix (end of this form) for exemptions). ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA.
C5b: Test | Test post-installed anchors.	**1910A.5.** (See Appendix (end of this form) for exemptions.)

C6. OTHER CONCRETE:	
Test or Special Inspection	**Code References and Notes**
C6a. | Not used.	N/A
C6b. | Not used.	N/A
C6c. | Not used.	N/A
C6d. | Not used.	N/A
C6e. | Not used.	N/A
C6f. | Not used.	N/A
C6g. | Not used.	N/A
C6h. | Not used.	N/A
C6i. | Not used.	N/A
C6j. | Not used.	N/A
C6k. | Not used.	Not used.
C6l. | Not used.	Not used.

Appendix LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

M1. STRUCTURAL MASONRY:	
Test or Special Inspection	**Code References and Notes**
M1a: Mill Certificates - Reinf. | Mill certificate indicates compliance with requirements for reinforcement, anchors, ties, fasteners and metal accessories. See item C1(b) for identification, sampling and testing of reinforcing steel.	**2103A.4**; TMS 602-13 Article 1.5B.2 & 2.4. * To be performed by qualified LOR representative. Applicable testing by LOR. See IR 17-10 for unidentified reinforcing steel.
M1b: Material Certificates | Producer's certificate of compliance for masonry units, mortar and grout materials.	**1705A.4, 2103A.2.1, 2103A.3, 2103A.5;** TMS 602-16 Articles 1.5B.2 2.1, 2.2, 2.6A and 2.6B, and Table 6 footnote 3.
M1c: Strength Test | Test masonry (f'm).	**1705A.4. For Unit Strength: 2105A.3**; TMS 602-16 Articles 1.4B.2 ,1.5B.1 & 1.5B.2. **For Prism (required when f'_m > 2000 psi):2105A.2;** TMS 602-16 Articles 1.4B.3, 1.4B.4, 1.5B.1 & 1.5B.2.
M1d: Mortar Proportions | Verify proportions or properties of site-prepared, premixed or preblended mortar.	TMS 602-16, Table 3 (row 5), Table 4 Item 1a. DSA PR 20-01. (See Appendix (end of this form) for exemptions.)
M1e: Grout Proportions | Verify proportions or properties of site-prepared, premixed or preblended grout.	TMS 602-16, Table 3 (row 5), Table 4 Item 2d. (See Appendix (end of this form) for exemptions.)
M1f: Batch Plant Inspection | Batch plant inspection: Periodic	Default of **'Continuous'** per **1705A.3.3**. If approved by DSA, batch plant inspection may be reduced to **'Periodic'** subject to requirements in Section **1705A.3.3.1,** or not required per **1705A.3.3.2.** See IR 17-13. (See Appendix (end of this form) for exemptions.)
M1g: Core Tests | Test core-drilled samples.	**2105A.4**. (See Appendix (end of this form) for exemptions.)
M1h: Prisms | Inspect preparation of prisms.	TMS 602-16 Articles 1.4.B.3 & 1.4.B.4 & Table 4 Item 4.
M1i: Dowels and Supports | Verify size, location and condition of all dowels, construction supporting masonry, etc.	
M1j: Reinforcement and Members | Verify size, grade and type of reinforcement, connectors, and anchor bolts. Verify size and location of structural members.	TMS 602-16 Table 4, Items 1c & 3c.
M1k: Reinforcement Placement | Inspect placement of reinforcement, anchor bolts, and connectors.	TMS 602-16 Table 4 Item 2c.
M1l: Grout Placement | Placement, consolidation, and reconsolidation of grout.	TMS 602-16 Table 4 Item 3h.
M1m: Unit Layup and Joints | Inspect placement of masonry units and construction of mortar joints.	TMS 602-16 Table 4 Item 3b.
M1n: Cold/Hot Weather Work | Verify preparation, construction and protection of masonry during cold weather (temperature below 40º F) or hot weather (temperature above 90º F).	TMS 602-16 Table 4 Item 3f. * May be performed by the project inspector when specifically approved by DSA.

M1o: Anchors and Embeds | Inspect type, size and location of anchors and all other items to be embedded in masonry including other details of anchorage of masonry to structural members, frames and other construction.	TMS 602-16 Table 4 Item 3d.
M1p: Grout Cavity | Inspect grout space, including mortar protrusions, prior to placement of grout.	TMS 602-16 Table 4 Item 2a.
M1q: Welding Reinforcing Steel	TMS 602-16 Table 4 Item 3e. Provide special inspection per STEEL, Category S/A4(d) & (e) and/or S/A5(g) & (h) below.

M2. VENEER OR GLASS BLOCK PARTITIONS:	
Test or Special Inspection	**Code References and Notes**
M2a: Mortar and Grout | Verify proportions of site prepared mortar and grout and/or verify certification of premixed mortar.	TMS 602-16 Table 3 (row 5) and Table 4 Items 1a & 2d.
M2b: Unit Layup and Joints | Inspect placement of units and construction of mortar joints.	TMS 602-16 Table 4 Item 3b.
M2c: Wires and Connector | Inspect placement of wire, connectors and anchors	TMS 602-16 Table 4 Item 2c.
M2d: Anchors and Embeds | Inspect type, size and location of anchors and all other items to be embedded in masonry veneer including details of anchorage of masonry to veneer backing, frames and other construction.	TMS 602-16 Table 4 Item 3d.
M2e: Cold/Hot Weather Work | Verify preparation, construction and protection of masonry during cold weather (temperature below 40º F) or hot weather (above 90º F).	TMS 602-16 Table 4 Item 3f. * May be performed by the project inspector when specifically approved by DSA.
M2f: Adhered Veneer Bond | Test adhered veneer bond strength.	**1410.2.1;** TMS 402 Article 12.3.2.4. **(Field constructed mock-up laboratory tested in accordance with ASTM C482).**

M3. POST-INSTALLED ANCHORS IN MASONRY:	
Test or Special Inspection	**Code References and Notes**
M3a: Inspection | Inspect installation of post-installed anchors	**1617A.1.19, 1705A.4, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic);** ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA. (See Appendix (end of this form) for exemptions.)
M3b: Test | Test post-installed anchors.	**1705A.4, 1910A.5.** (See Appendix (end of this form) for exemptions.)

M4. OTHER MASONRY:	
Test or Special Inspection	**Code References and Notes**
M4a. | Not used.	N/A
M4b. | Not used.	N/A
M4c. | Not used.	N/A
M4d. | Not used.	N/A
M4e. | Not used.	N/A
M4f. | Not used.	N/A
M4g. | Not used.	N/A
M4h. | Not used.	N/A
M4i. | Not used.	N/A
M4j. | Not used.	N/A
M4k. | Not used.	Not used.
M4l. | Not used.	Not used.

Appendix LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

S/A1. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES	
Test or Special Inspection	**Code References and Notes**
S/A1a: Material Identification | Verify identification of all materials and: • Mill certificates indicate material properties that comply with requirements. • Material sizes, types and grades comply with requirements.	**Table 1705A.2.1 Item 3a–3c.** 2202A.1**;** AISI S100-16 Section A3.1 & A3.2, AISI S240-15 Section A3 & A5, AISI S220-15 Sections A4 & A6. * By special inspector or qualified technician when performed off-site.
S/A1b: Unidentified Material | Test unidentified materials	**2202A.1.**
S/A1c: HSS Seam Welds | Examine seam welds of HSS shapes	DSA IR 17-3.
S/A1d: Steel Fabrication | Verify and document steel fabrication per DSA- approved construction documents.	Not applicable to cold-formed steel light-frame construction, except for trusses (**1705A.2.4**).
S/A1e: Buckling Restrained Brace	Testing and special inspections in accordance with IR 22-4.

S/A2. HIGH-STRENGTH BOLTS:	
Test or Special Inspection	**Code References and Notes**
S/A2a: Product Verification | Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA-approved documents.	**Table 1705A.2.1 Items 1a & 1b, 2202A.1;** AISC 360-16 Section A3.3, J3.1, and N3.2; RCSC 2014 Section 1.5 & 2.1; DSA IR 17-8 & DSA IR 17-9.
S/A2b: Bolts, Nuts, and Washers | Test high-strength bolts, nuts and washers.	**Table 1705A.2.1 Item 1c, 2213A.1**; RCSC 2014 Section 7.2; DSA IR 17-8.
S/A2c: Snug Tight | Bearing-type ("snug tight") connections.	**Table 1705A.2.1 Item 2a, 1705A.2.6, 2204A.2**; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Section 9.1; DSA IR 17-9.
S/A2d: Pretensioned / Slip-Critical | Pretensioned and slip-critical connections.	**Table 1705A.2.1 Items 2b & 2c, 1705A.2.6, 2204A.2;** AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Sections 9.2 & 9.3; DSA IR 17-9*. *"Continuous" or "Periodic" depends on the tightening method used.

S/A3. WELDING:	
Test or Special Inspection	**Code References and Notes**
S/A3a: Weld Material | Verify weld filler material identification markings per AWS designation listed on the DSA-approved documents and the WPS.	**1705A.2.5, Table 1705A.2.1 Items 4 & 5**; AWS D1.1 and AWS D1.8 for structural steel; AWS D1.2 for Aluminum; AWS D1.3 for cold-formed steel; AWS D1.4 for reinforcing steel; DSA IR 17-3.
S/A3b: Certificate of Compliance | Verify weld filler material manufacturer's certificate of compliance.	DSA IR 17-3.
S/A3c: WPS and Qualifications | Verify WPS, welder qualifications and equipment.	DSA IR 17-3.

S/A4. SHOP WELDING (IN ADDITION TO SECTION S/A3):	
Test or Special Inspection	**Code References and Notes**
S/A4a: Weld Category A | Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	**Table 1705A.2.1 Items 5a.1–4;** AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
S/A4b: Weld Category B | Inspect single-pass fillet welds ≤ 5/16", floor and roof deck welds.	**1705A.2.2, Table 1705A.2.1 Items 5a.5 & 5a.6;** AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
S/A4c: Stairs and Railing | Inspect welding of stairs and railing systems.	**1705A.2.1**; AISC 360-16 (and AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3.
S/A4d: Reinf. Steel Weldability | Verification of reinforcing steel weldability other than ASTM A706.	**1705A.3.1**; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
S/A4e: Reinforcing Steel | Inspect welding of reinforcing steel.	**Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8;** AWS D1.4; DSA IR 17-3.

S/A5. FIELD WELDING (IN ADDITION TO SECTION S/A3):	
Test or Special Inspection	**Code References and Notes**
S/A5a: Weld Category A | Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	**Table 1705A.2.1 Items 5a.1–4;** AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
S/A5b: Weld Category B | Inspect single-pass fillet welds ≤ 5/16".	**Table 1705A.2.1 Item 5a.5;** AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
S/A5c: End Welded Studs | Inspect end-welded studs (ASTM A-108) installation (including bend test).	**2213A.2**; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1; DSA IR 17-3.
S/A5d: Deck Welds | Inspect floor and roof deck welds.	**1705A.2.2, Table 1705A.2.1 Item 5a.6;** AISC 360-16 (AISC 341-16 as applicable); AWS D1.3; DSA IR 17-3.
S/A5e: Cold-Formed Steel | Inspect welding of structural cold-formed steel.	**1705A.2.5; AWS D1.3; DSA IR 17-3.** The quality control provisions of AISI S240-15 Chapter D shall also apply. * May be performed by the project inspector when specifically approved by DSA.
S/A5f: Stairs and Railing | Inspect welding of stairs and railing systems.	**1705A.2.1;** AISC 360-16 (AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
S/A5g: Reinf. Steel Weldability | Verification of reinforcing steel weldability.	**1705A.3.1**; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
S/A5h: Reinforcing Steel | Inspect welding of reinforcing steel.	**Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8;** AWS D1.4; DSA IR 17-3.

Appendix LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

S/A6. NONDESTRUCTIVE TESTING:	
Test or Special Inspection	**Code References and Notes**
S/A6a: Ultrasonic | Ultrasonic	**1705A.2.1, 1705A.2.5;** AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
S/A6b: Magnetic Particle | Magnetic Particle	**1705A.2.1, 1705A.2.5;** AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
S/A6c: Not used.	**N/A**
S/A6d: Not used.	**N/A**
S/A6e: Not used.	**N/A**

S/A7. STEEL JOISTS AND TRUSSES:	
Test or Special Inspection	**Code References and Notes**
S/A7a: Fabrication | Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	**1705A.2.3, Table 1705A.2.3;** AWS D1.1; DSA IR 22-3 for steel joists only. **1705A.2.4;** AWS D1.3 for cold-formed steel trusses.

S/A8. SPRAYED FIRE-RESISTANT MATERIALS:	
Test or Special Inspection	**Code References and Notes**
S/A8a: Surface and Installation | Examine structural steel surface conditions, inspect application, take samples, measure thickness and verify compliance of all aspects of application with DSA-approved documents.	**1705A.14.**
S/A8b: Bond Strength | Test bond strength.	**1705A.14.6**
S/A8c: Density | Test density.	**1705A.14.5**

S/A9. ANCHOR BOLTS AND ANCHOR RODS:	
Test or Special Inspection	**Code References and Notes**
S/A9a: Anchor Rods and Bolts | Anchor Bolts and Anchor Rods	Sample and test anchor bolts and anchor rods not readily identifiable per procedures noted in DSA IR 17-11.
S/A9b: Other Threaded Rods | Threaded rod not used for foundation anchorage.	Sample and test threaded rods not readily identifiable per procedures noted in DSA IR 17-11.

S/A10. Other Steel	
Test or Special Inspection	**Code References and Notes**
S/A10a. | Not used.	N/A
S/A10b. | Not used.	N/A
S/A10c. | Not used.	N/A
S/A10d. | Not used.	N/A
S/A10e. | Not used.	N/A
S/A10f. | Not used.	N/A
S/A10g. | Not used.	N/A
S/A10h. | Not used.	N/A
S/A10i. | Not used.	N/A
S/A10j. | Not used.	N/A
S/A10k. | Not used.	Not used.
S/A10l. | Not used.	Not used.

Appendix LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

W1. PREFABRICATED WOOD TRUSSES:	
Test or Special Inspection	**Code References and Notes**
W1a: Open Web Truss Fabrication | Inspect fabrication of manufactured open-web trusses.	**1705A.5.5;** DSA IR 23-8.
W1b: Metal Plate Truss Fabrication | Inspect fabrication of manufactured metal-plate- connected trusses.	**1705A.5, 1705A.5.2;** DSA IR 23-4.

W2. MANUFACTURED WOOD STRUCTURAL ELEMENTS:	
Test or Special Inspection	**Code References and Notes**
W2a: GLS Timber Fabrication | Inspect fabrication of structural glued-laminated timber.*	* See **1705A.5.4** for exceptions
W2b: CLT Fabrication | Inspect fabrication of cross-laminated timber.	**1705A.5.4**
W2c: Mass Timber Erection | Inspect erection of mass timber.	**Table 1705A.5.7**, Item 2
W2d: Connections Type A | Inspect mass timber connections with threaded fasteners, bolts, and/or adhesive anchors other than described in item e below. Inspect concealed mass timber connections.	**Table 1705A.5.7**, Items 3.1, 3.3, 3.4, 3.5. For threaded fasteners: Verify use of proper installation equipment. Verify use of pre-drilled holes where required. Inspect screws, including diameter, length, head type, spacing, installation angle, and depth.
W2e: Connections Type B | Inspect mass timber connections with adhesive anchors installed in a horizontal or upward orientation.	**Table 1705A.5.7**, Item 3.2
W2f: Sealants | Inspect sealing of mass timber sealants or adhesives.	**1705A.20, 703.9**

W3. OTHER Wood:	
Test or Special Inspection	**Code References and Notes**
W3a. | Not used.	N/A
W3b. | Not used.	N/A
W3c. | Not used.	N/A
W3d. | Not used.	N/A
W3e. | Not used.	N/A
W3f. | Not used.	N/A
W3g. | Not used.	N/A
W3h. | Not used.	N/A
W3i. | Not used.	N/A
W3j. | Not used.	N/A
W3k. | Not used.	Not used.
W3l. | Not used.	Not used.

Appendix LIST OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

X1. OTHER:	
Test or Special Inspection	**Code References and Notes**
X01. | Load test for identified product(s):	1709A.2, 1709A.3. Testing is not required for: 1) a product with a valid evaluation service report per DSA IR A-5, or 2) a product that can be justified by structural calculation.
X02. | Installation torque for non-HS bolts	Applicable to communication towers identified as Essential Service Facility Projects (ESFP). Calibrated wrench use required, verified by SI during installation. DSA Policy PL 18-01: Communication Towers, Poles and Buildings Utilized by State Agencies for Essential Services Communications.*EXCEPTION: Non-ESFP may use PI without need for notification to DSA.
X03. | Electrical Grounding	-
X04. | Not used.	N/A
X05. | Not used.	N/A
X06. | Not used.	N/A
X07. | Not used.	N/A
X08. | Not used.	N/A
X09. | Not used.	N/A
X10. | Not used.	N/A

EXEMPTIONS

SOILS - EXEMPTIONS:
Soils: Eligible deep foundation elements | Deep foundations acting as a cantilever footing with a design based on minimum allowable pressures per CBC Table 1806A.2 and without a geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
Soils: Eligible shallow foundation elements | Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill.

CONCRETE/MASONRY - EXEMPTIONS:
Concrete/Masonry: Eligible post-installed anchors | Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment – see item 7 for "Welding" in the Appendix below) given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding" in the Appendix below
Concrete: Batch plant inspection for items listed in and complying with CBC Section 1705A.3.3.2. | Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.
Masonry: Freestanding site walls and retaining walls per DSA IR 21-1. | Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per DSA IR 21-1. Refer to construction documents for specific exemptions accordingly for each applicable wall condition shown in Appendix A of IR 21-1.
Concrete: Epoxy shear dowels in nonstructural slab-on-grade per CBC Section 1910A.5.4, Exception #4. | Epoxy shear dowels in site flatwork and/or other non-structural concrete.
Concrete/Masonry: Reinforcing bar testing for items listed in and complying with CBC Section 1910A.2. | Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that sections.

WELDING - EXEMPTIONS:
Welding: Eligible fences and gates | Solid-clad and open-mesh fences, gates with maximum leaf span of 10', and gates with a maximum rolling section of 10' all having an apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates/fences are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
Welding: Eligible railing and ramps | Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds shall not be ground flush.
Welding: Eligible interior cold-formed steel framing | Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-

weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
Welding: Eligible equipment curbs | Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
Welding: Eligible components supporting MEP distribution systems | Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
Welding: Eligible mounts and recreational equipment | TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for sections S/A3, S/A4 and/or S/A5 located in the Steel/Aluminum category of listing above).
Welding: Eligible nonstructural components | Any support for exempt non-structural components given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# or resulting composite center of mass (including component's center of mass) ≤4' above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

UPDATED GEOTECHNICAL ENGINEERING
AND GEOLOGIC HAZARDS REPORT
MESA MIDDLE SCHOOL
SPED/SCIENCE BUILDING
2555 SOUTH HALCYON ROAD
ARROYO GRANDE, CALIFORNIA

April 3, 2025

Prepared for

Mr. Andy Stenson
Lucia Mar Unified School District

Prepared by

Earth Systems Pacific
4378 Old Santa Fe Road
San Luis Obispo, CA 93401

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EARTH SYSTEMS
4378 Santa Fe Road | San Luis Obispo, CA 93401 | (805) 544-3276 | www.earthsystems.com

April 3, 2025

File No.: 301024-006

Mr. Andy Stenson
Lucia Mar Unified School District
222 Stanley Avenue
Arroyo Grande, CA 93420

PROJECT: MESA MIDDLE SCHOOL
SPED/SCIENCE BUILDING
2555 HALCYON ROAD
ARROYO GRANDE, CALIFORNIA

SUBJECT: Updated Geotechnical Engineering and Geologic Hazards Report

CONTRACT REF: Purchase Order No. 251762 by Lucia Mar Unified School District (LMUSD), dated January 30, 2025, Referencing Earth Systems Pacific Proposal to Provide an Updated Geotechnical Engineering and Geologic Hazards Report, Mesa Middle School, Two Classroom Building, 2555 South Halcyon Road, Arroyo Grande, California, Doc. No. SLO-2501-043.PRP, dated January 23, 2025

Dear Mr. Stenson:

In accordance with the referenced Purchase Order, this updated geotechnical engineering and geologic hazards report has been prepared for use in the development of plans and specifications for the SPED/Science Building planned at Mesa Middle School in Arroyo Grande, California. Updated geotechnical recommendations are presented herein for site preparation, grading, utility trenches, foundations, slabs-on-grade, retaining walls, asphalt concrete (AC) paths, drainage and maintenance, and observation and testing. This report also provides updated information regarding general geologic characteristics, existing and potential geologic hazards, and the impacts that the geologic conditions may have upon the project. Electronic copies of this report are furnished for your use.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. If there are any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,

Earth Systems Pacific

REGISTERED PROFESSIONAL ENGINEER
Nicholas B. Zoetewey
GE 3137
Geotechnical
STATE OF CALIFORNIA

Nick Zoetewey, GE
Senior Engineer

REGISTERED GEOLOGIST
DARRIN G. HASHAM
NO. 2423
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Darrin Hasham, CEG
Engineering Geologist

Doc. No.: 2504-003.SGR/cr

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APPENDICES

APPENDIX A	Figure 1 – Site Vicinity Map Figure 2 – Exploration Location Map Boring Log Legend Boring Log – ESP 2025 Boring Logs – ESP 2018
APPENDIX B	Geotechnical Engineering and Geologic Hazards Report, Mesa Middle School Modular Classrooms, Earth Systems Pacific, Doc. No. 1806-116.SGR, dated June 28, 2018, revised December 10, 2018
APPENDIX C	Laboratory Test Results
APPENDIX D	Figure 3 – Geologic Map Figure 4 – Historical Seismicity Map
APPENDIX E	Site Specific Ground Motion Analysis – Tables E-1 through E-4

1.0 INTRODUCTION

The proposed SPED/Science Building within Mesa Middle School at 2555 Halcyon Road in Arroyo Grande, California, (see Figure 1 – Site Vicinity Map in Appendix A), will be constructed on the west side of the campus, in an area previously occupied by relocatable buildings that have been removed. The building will be approximately 2,800 square feet in plan; it will be of conventional steel frame and/or stud construction, and it may be either site-built or of prefabricated modular construction. The building will be supported by conventional spread (pad) and continuous shallow foundations, with either raised floor systems or concrete slabs-on-grade. Maximum wall and column loads on the order of 1.5 kips per linear foot and 25 kips, respectively, have been assumed. Additional improvements may consist of retaining walls less than 4 feet in height, exterior pedestrian flatwork and utilities, which will be connected to the existing campus utility systems. Cuts and fills on the order of 3 feet or less from the existing topography have been assumed. No drainage basins or low impact development/best management practices (LID/BMP) features requiring infiltration testing will be constructed.

It is our understanding that this project will be designed and constructed under the jurisdiction of the Division of the State Architect (DSA).

2.0 SCOPE OF SERVICES

The scope of work for this report included review of a previous Geotechnical and Geologic Hazards Report at the school prepared by this firm for the Modular Classrooms project (ESP 2018; a copy of this report is included in Appendix B); a field reconnaissance by a registered geotechnical engineer; subsurface exploration; limited geotechnical laboratory testing of samples obtained during the subsurface exploration; geotechnical and geologic analyses of the data; and preparation of this report. The analysis and subsequent recommendations were based on project information provided by Ms. Kathryn Hicks of RRM Design Group (2025).

This report and updated recommendations are intended to comply with the considerations of Sections 1803A.1 through 1803A.7, J104.3 and J104.4, as applicable, of the California Building Code (CBC) (CBSC 2022); California Geological Survey (CGS) Note 48 (2022); Interpretation of Regulations (IR) Document A-4 (DSA 2021); and common geotechnical engineering and engineering geology practice in this area under similar conditions at this time. The geotechnical test procedures were accomplished in general conformance with the standards noted, as modified by common geotechnical engineering practice in this area under similar conditions at this time.

Updated geotechnical recommendations for site preparation, grading, utility trenches, foundations, slabs-on-grade, asphalt concrete (AC) paths, retaining walls, drainage and maintenance, and observation and testing are provided in this report. This report, either within or by reference, also describes the general geologic characteristics, identifies existing and potential geologic hazards, and discusses the impacts the geologic conditions may have upon the project. Previously completed corrosivity testing and analyses with mitigation recommendations, which were subcontracted to HDR Engineering, Inc., are also included by reference. These items are presented to guide the development of project plans and specifications. It is our intent that this geotechnical/geologic report be used exclusively by the client to form the geotechnical/geologic basis of the design, and in the preparation of plans and specifications. Application beyond this intent is strictly at the user's risk.

This report does not address dewatering and other issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, excavatability, shoring, temporary slope angles, construction means and methods, etc. Analyses of the soil for mold potential, asbestos in man-made products, lead, radioisotopes, hydrocarbons, or chemical properties (other than geotechnical corrosivity) are beyond the scope of this report. Ancillary features such as temporary access roads, and non-structural fills are not within our scope and are also not addressed.

As there may be unresolved geotechnical and/or geologic issues with respect to this project, the geotechnical engineer and engineering geologist should be retained to provide consultation as the design progresses, to review project plans as they near completion, to assist in verifying that pertinent geotechnical and geologic issues have been addressed, and to aid in conformance with the intent of this report. In the event that there are any changes in the nature, design, or location of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions of this report are verified or are modified in writing. The criteria presented in this report may be modified following a peer review or review by any jurisdiction or following a review by the geotechnical engineer and/or engineering geologist of conditions in the field during construction; modification of the recommendations must be completed in writing.

3.0 SITE SETTING

The planned building location on the west side of the existing campus has approximate coordinates and an elevation, as obtained from the Google Earth website (Google Earth 2025), of latitude 35.0760N, longitude 120.5822W, and 247 feet above mean sea level (MSL), respectively.

The building location is bounded by an AC hardcourt to the south, classroom buildings to the east and north, and a developed residential neighborhood to the west. The site is currently vacant of structures and is partially paved with AC. The existing topography is generally flat, with very slight slopes to both the north and south (Google Earth 2025).

4.0 FIELD INVESTIGATION

The subsurface exploration for the current field investigation consisted of drilling one boring in the project area on February 13, 2025, to a depth of approximately 24.5 feet below the existing ground surface (bgs). The boring was drilled with a GTech GT-8 truck mounted drill rig, equipped with 6-inch outside diameter hollow stem auger and an automatic trip hammer for sampling. The approximate location of the boring is shown on Figure 2 – Exploration Location Map in Appendix A. As the boring was drilled, soil samples were obtained at selected depths using a ring-lined barrel sampler (ASTM D 3550-17 with shoe similar to D 2937-17); a bulk sample was obtained from the auger cuttings. The boring was backfilled per the requirements of the governing jurisdiction.

Soils encountered in the boring were categorized and logged in general accordance with the Unified Soil Classification System and ASTM D 2488-17. A copy of the boring log and a Boring Log Legend are also included in Appendix A. In reviewing the boring log and legend, the reader should recognize that the legend is intended as a guideline only, and there are a number of conditions that may influence the soil characteristics as observed during drilling. These include, but are not limited to, the presence of cobbles or boulders, cementation, variations in soil moisture, presence of groundwater, and other factors.

Previous explorations performed by this firm for the Modular Classrooms project (ESP 2018) consisted of six borings, which were drilled to depths of 51.5 feet bgs (one boring) and 21.5 feet bgs (five borings). Two of the previous borings (Nos. 2 and 3) were in the vicinity of this project; the logs of these borings have been included in Appendix A, and the locations are also indicated on the Exploration Location Map in Appendix A.

5.0 LABORATORY ANALYSIS

Selected ring samples obtained from the current boring were tested for unit weight and moisture (ASTM D 2937-17, modified for ring liners). These current geotechnical laboratory test results are presented in Appendix C.

Laboratory test results for the Modular Classrooms project (ESP 2018) are also included in the full copy of the report in Appendix B.

Two soil samples were submitted to HDR Engineering, Inc. for geotechnical corrosivity testing for the Modular Classrooms project (ESP 2018). The Soil Corrosivity Study by HDR, Inc. is included in the previous report in Appendix B.

6.0 GENERAL SUBSURFACE AND GEOLOGIC PROFILE

Older Dune Sand was encountered for the full depth of the currently drilled Boring 1; this material consisted of medium dense poorly graded sand to 6 feet bgs, dense silty sand to 10.0 feet bgs, and dense to very dense poorly graded sand to the boring termination depth of 24.5 feet bgs.

The subsurface conditions encountered in the borings performed for the Modular Classrooms project (ESP 2018) were similar to those from the current investigation, with Older Dune Sand consisting of loose to very dense silty sand and poorly graded sand, to the maximum boring depth of 51.5 feet bgs.

Groundwater was not encountered in any of the borings during either investigation. Please refer to the boring logs in Appendix A of this report, and in the Modular Classrooms report (ESP 2018) in Appendix B, for a more complete description of the subsurface conditions.

7.0 GEOLOGY

Geologic Setting

The site lies upon the Nipomo Mesa, in the Coast Ranges geomorphic province of California (CGS 2002). The northern and southern coast ranges are separated by a depression containing the San Francisco Bay. The Nipomo Mesa, in the vicinity of the site, is bounded between the Pacific Ocean to the west, Arroyo Grande Valley to the north, Santa Maria Valley to the south, and Nipomo Valley to the east (USGS 2025a). This portion of coastal central California has been described in the context of *seismotectonic domains* by Clark and others (1994). Each domain is separated by predominantly northwest-southeast trending quaternary boundary faults. The Nipomo Mesa is within the triangular shaped Santa Maria basin-San Luis Range domain, which is

bounded by the offshore Hosgri fault zone to the west, the Los Osos fault system to the northeast, and the Santa Ynez fault to the south (Clark et al 1994). Tectonically, the region is dominated by the Los Osos and San Luis Range faults (Lettis and Hall 1994).

According to the Geologic Map of the Oceano Quadrangle by Holland (2013), the project site is underlain by late Pleistocene eolian deposits (Qoe) which are old sand dunes comprised of well sorted/poorly graded sand with weak soil development in places (see Figure 3 – Geologic Map in Appendix D). Our subsurface explorations performed for this site encountered unconsolidated deposits of poorly graded sand (SP) and silty sand (SM), which are consistent with the geologic units mapped by Holland.

Faulting

Faults are classified by the State of California based on the likelihood of generating ground motions and surface rupture. The classification system applies to known faults that have been compiled by numerous researchers through various methods of investigation. The State evaluates faults with documented ground rupture during the last 11,700 years and considers them for inclusion in Earthquake Fault Zones requiring investigation (A-P Zones) which encompass traces of *Holocene-active* faults, as defined by the State's Alquist-Priolo Earthquake Fault Zoning Act (State of California 1972). The State's guidance is intended to prohibit developments and structures for human occupancy across the trace of active faults (CGS 2018). Other active faults capable of generating strong ground motion are present in the region but are not included in A-P Zones because they do not meet the criteria of "sufficiently active and well-defined."

<u>Significant Faults</u>

The site is within a seismically active region and the project will experience seismic shaking during its design life. Known faults and fault systems within the region that could potentially generate earthquakes affecting the site include the San Luis Range, Los Osos, Oceanic-West Huasna, Hosgri-San Simeon, Rinconada, and San Andreas faults (USGS 2025a). These are several of the known faults within a 65-mile radius of the site; other faults exist in the region and movement on any of these known or unknown faults could affect the proposed development during its design life.

The site is approximately equidistant between the inferred traces of the Pre-Holocene Oceano and Wilmar Avenue faults, both faults of the San Luis Range fault system. These faults, along

with the San Luis Bay fault, are considered bounding faults of the San Luis Range, which has been tectonically uplifted on the northeast side of the faults. Each of these faults are depicted on the regional geologic map (Holland 2013) as about a mile from the site, but the locations are poorly constrained. The closest *Holocene-active* fault to the site included in an A-P Zone is the Irish Hills segment of the Los Osos fault, located approximately 6 miles northeast of the site. The zoned portion of the Los Osos fault is located approximately 12 miles from the site (Treiman 1989, SLOCO 2021). The Regional faults and locations of historic earthquake events are depicted on Figure 4 – Historical Seismicity Map in Appendix D.

San Luis Range Fault System

The San Luis Range fault system consists of a series of west-northwest trending faults that include the Santa Maria River, Wilmar Avenue, Oceano, San Luis Bay, and San Miguelito faults. The Wilmar Avenue fault extends from northern Nipomo to Pismo Beach, where it is exposed in the ocean bluff at the end of Wilmar Avenue. At this location, Pleistocene terrace deposits are displaced in the face of the bluff. The Oceano fault is a 12-mile-long northwest-trending fault extending from the town of Nipomo to the offshore area of San Luis Bay (Lettis and Hall 1994). The San Luis Range fault (south margin) is considered capable of a magnitude 7.49 earthquake (USGS 2014).

Los Osos Fault

The Los Osos fault zone is comprised of four distinct segments. From northwest to southeast the segments are Estero Bay, Irish Hills, Lopez Reservoir, and Newsom Ridge (Lettis and Hall 1994). The Los Osos fault is approximately 5.6 miles from the site. The Irish Hills segment of the Los Osos fault, located approximately 12 miles to the north, is the closest *Holocene-active* fault to the site included in a State Earthquake Fault Zone under the Alquist-Priolo Act (Hart and Bryant 2007). The Los Osos fault is considered capable of a magnitude 7.15 earthquake (USGS 2014).

Oceanic-West Huasna Fault

The Oceanic-West Huasna fault zone separates the Santa Lucia and San Rafael mountains from a series of distinct tectonic domains stretching from Cambria to the western Transverse Ranges (Lettis et al 2004). This fault system trends northwest-southeast for approximately 75 miles and is located about 7.7 miles northeast of the site. The Oceanic-West Huasna fault is considered capable of a magnitude 7.2 earthquake (USGS 2014).

Hosgri-San Simeon Fault System

The Hosgri-San Simeon Ffault system lies offshore approximately 13.5 miles west of the site. A northwest-trending strike-slip fault, the San Simeon fault extends from offshore of Ragged Point to just offshore of San Simeon Point, where it joins the northern end of the Hosgri fault; from this point the Hosgri fault extends to an ocean shelf 2 miles west of Point Buchon, and then trends toward the Point Sal area. The fault system is considered *Holocene-active* and is included in an A-P Zone between San Simeon Point and Arroyo de le Cruz (CDMG 1986b, 1986c). The Hosgri-San Simeon fault is considered capable of a magnitude 7.54 earthquake (USGS 2014).

Rinconada Fault Zone

The Rinconada fault zone lacks obvious Holocene offset and therefore does not meet the State's criteria for inclusion in an A-P zone; nonetheless, it is considered an active fault and is included as a seismic source in regional models. The Rinconada fault is a northwest trending high angle fault that forms the boundary between two dissimilar geologic terranes. Northeast of the Rinconada fault is the Salinian Block, composed of crystalline plutonic and metamorphic rock overlain by a thick sequence of marine sedimentary rocks. Southwest of the Rinconada fault is the Coastal Block, composed of Franciscan mélange overlain by marine sedimentary rocks (Dibblee 1976). The Rinconada fault is mapped as several anastomosing strands with the seismogenic plane modeled approximately 14.8 miles northeast of the site. The Rinconada fault is estimated to be capable of a magnitude 7.5 earthquake (Cao et al 2003).

San Andreas Fault

The San Andreas fault is considered the potential source of the largest regional earthquake. The San Andreas fault has a total length of approximately 671 miles and is divided into segments based on geometry and known historic behavior with some segments capable of earthquakes up to magnitude 7.5 (Cao et. al. 2003). Simultaneous rupture of more than one segment can cause an earthquake of magnitude 8 or more. The Cholame-Carrizo segment is located approximately 42 miles east of the site, is approximately 201 km long and is in an A-P Zone (CDMG 1986a). This fault ruptured during the magnitude 7.9 earthquake in 1857 (USGS 2019).

Groundwater

Groundwater was not encountered in borings completed for the current field investigation, and for the previous investigation (ESP 2018) to a maximum depth of 51.5 feet bgs. No recent groundwater well data was available in the immediate site area to evaluate long term trends. As previously noted (ESP 2018), data within approximately ¼-mile of the site indicated historical groundwater levels to be approximately 170 feet or more bgs at those locations (CDWR 2025).

8.0 SEISMICITY

Earthquake History

The historic seismicity in the site's region was researched using a catalog of historical California earthquakes (ANSS 2025). We compiled the epicentral distance for earthquakes within the search parameters: Richter magnitudes greater than 5.0, within a 65-mile radius from the site, from 1800 to December 2024. The epicentral distances should be considered estimates, particularly for earthquake data prior to 1932, when modern instruments were first used to record earthquake data. The site coordinates used in this search were latitude 35.0760N and longitude 120.5822W. Figure 4 – Historical Seismicity Map presented in Appendix B graphically depicts historical earthquake epicenters, their corresponding magnitudes, and the faults within the general region of the project.

Results of the search indicated that within the search parameters, 26 earthquakes with magnitude greater than or equal to 5.0 have occurred within 65 miles of the site (see Figure 4 – Historical Seismicity Map in Appendix B). The largest magnitude earthquake that occurred during the 224-year time period was the November 4, 1927 Lompoc earthquake with a calculated magnitude of 7.1. The closest earthquake to the site occurred approximately 16.5 miles from the site on September 5, 1922, and had an estimated magnitude of 5.5. The historical earthquakes are presented in Table E-2, Historical Earthquakes in Vicinity of Project Site, M≥5.0, in Appendix E.

Historical earthquakes that resulted in damage within the region include the Lompoc earthquake of 1927. This event is believed to have occurred on the offshore Hosgri fault (Helmberger et. al. 1992). The event triggered a tsunami that was measured by tidal gauges at San Francisco and San Diego and liquefaction phenomenon, including sand boils, at several locations within and around Lompoc. Reportedly, structures were damaged in Arroyo Grande and Guadalupe (SCEDC 2020).

The San Simeon earthquake that occurred on December 22, 2003, is an example of a significant regional earthquake during recent times, the results of which are well documented. Significant reports of damage were reported from Paso Robles to Oceano. The highest recorded PGA from the San Simeon earthquake was at the hospital in Templeton and liquefaction effects were concentrated at Oceano, approximately 50 miles south of the earthquake epicenter suggesting a PGA of 0.4g or greater (EERI 2005).

Ground Motion Analyses

In accordance with CGS Note 48 (2022), the CBC (CBSC 2022) and ASCE 7-16 (2017, 2018, 2021), an assessment was made to determine the need for employing "Site-Specific Ground Motion Procedures" to calculate the seismic design parameters for the project. Based on our site evaluation and Standard Penetration Tests (SPT), the subsurface characteristics are those of Site Class D (Stiff Soil) as defined by ASCE 7-16 (2017) Table 20.3-1, Site Classification. The mapped S_1 ground motion value obtained from the Structural Engineers Association of California website (SEAOC 2025), using ASCE 7-16 (2017) and Site Class D (Stiff Soil), was 0.368 g, which is greater than 0.2; therefore, per Section 11.4.8 of ASCE 7-16, the project requires site-specific ground motion analyses unless certain procedures are used during the structural design that comply with the exceptions allowed. To provide flexibility for the structural design professionals, we have provided "General Procedure" seismic design parameters, which are only valid if structural calculations are performed in accordance with the exception permitted by Supplement 3 of ASCE 7-16 (ASCE 2021), and "Site-Specific" seismic design parameters developed through a site-specific ground motion hazard analysis in accordance with Chapter 21 of ASCE 7-16 (2017, 2018, 2021).

The site may be subject to strong ground shaking due to potential fault movements along regional faults including the San Luis Range fault system. Engineered design and earthquake-resistant construction increase safety and allow development of seismic areas. The minimum seismic design should comply with the CBC (CBSC 2022) and ASCE 7-16 (2017, 2018, 2021) using the seismic design coefficients given in the following sections.

Seismic Design Category

Section 1613A.2.5 of the CBC (CBSC 2022) states that structures classified as Risk Category I, II, or III that are located where the mapped spectral response acceleration parameter at 1-second period, S_1, is greater than or equal to 0.75 shall be assigned to Seismic Design Category E…others shall be assigned to Seismic Design Category D. The S_1 for the site is 0.368, which is less than 0.75; therefore, the site should be assigned to Seismic Design Category D. We understand that the site falls under Risk Category II, per Table 1604A.5 of the CBC (CBSC 2022).

General Procedure Seismic Design Parameters

The General Procedure seismic parameters presented in Table 1 below consider Seismic Site Class D, and an earthquake probability of 2-percent in 50 years, equivalent to a 2,475-year return period. The general procedure seismic design parameters presented below are only valid if structural calculations are performed in accordance with the exception permitted by Supplement 3 of ASCE 7-16 (ASCE 2021).

Table 1 - General Procedure Seismic Parameters (2022 CBC)

Site Class (ASCE 7-16)	D
Occupancy (Risk) Category	II
Seismic Design Category	D
Maximum Considered Earthquake (MCE) Ground Motion	
Spectral Response Acceleration, Short Period – S_s	1.002 g
Spectral Response Acceleration at 1 sec. – S_1	0.368 g
General Procedure Site Coefficient – F_a	1.10
General Procedure Site Coefficient – F_v	1.93
Site-Modified Spectral Response Acceleration, Short Period – S_{MS}	1.101 g
Site-Modified Spectral Response Acceleration at 1 sec. – S_{M1}	0.711 g
Design Earthquake Ground Motion	
Short Period Spectral Response – S_{DS}	0.734 g
One Second Spectral Response – S_{D1}	0.474 g
Site Modified Peak Ground Acceleration - PGA_M	0.51 g
Design Response Spectrum Transition Periods (Seconds)	
T_0 = 20% of S_{D1}/S_{DS}	0.13
$T_S = S_{D1}/S_{DS}$	0.65
T_L = Mapped Long Period Transition	8

Site Specific Seismic Design Parameters

As an alternative, we have also developed Site-Specific seismic design parameters for the site. The site-specific seismic design parameters are summarized in Table 2 below, and the results of our analysis are presented in Appendix E, Tables E-3 and E-4.

A risk-targeted maximum considered earthquake (MCE_R) modeling procedure was performed in accordance with ASCE 7-16 (2017, 2018, 2021), including a Probabilistic Seismic Hazard Analysis (PSHA) using ground motion data from the United States Geologic Survey Earthquake Hazard Toolbox (USGS 2025b), based on the National Seismic Hazard Model (NSHM) Conterminous U.S. 2023, and a Deterministic Seismic Hazard Analysis (DSHA) using the Third Uniform California Earthquake Rupture Forecast (UCERF3) fault model (USGS 2013) and NGA-West2 ground motion prediction equations (PEER 2015). These analyses are based on knowledge of the regional tectonic setting, geology, and seismicity. These analyses were performed as described in ASCE 7-16 (2018) Section 21.2.1.1 (Method 1) to estimate the peak ground motion corresponding to

the uniform hazards earthquake and MCE_R which has a 2 percent probability of being exceeded in 50 years. Our site-specific ground motion hazard analysis considered the ground response anticipated resulting from a magnitude 7.49 earthquake on the San Luis Range fault (south margin, community fault model 3.2). Fault parameters used in our analyses are summarized in Table E-1, Fault Parameters, presented in Appendix E, modified in accordance with the USGS Earthquake Scenario web page (BSSC 2014).

Table 2 - Site Specific Seismic Parameters (2022 CBC/ASCE 7-16)

Seismic Design Category	D
Occupancy (Risk) Category	II
Site Class	D
Mapped and Code Based Ground Motion	
Short Period Spectral Response, S_s	1.002 g
1 second mapped Spectral Response, S_1	0.368 g
Design Earthquake Ground Motion	
Short Period Spectral Response, S_{DS}	0.834 g
1 second Spectral Response, S_{D1}	0.743 g
Peak Ground Acceleration (PGA_M)	0.497 g
MCE Spectral Response Acceleration	
Short Period Spectral Response, S_{MS}	1.251 g
1 Second Period Spectral Response, S_{M1}	1.115 g
Site Amplification Factors	
Short Period Site Coefficient, F_a	1.10
1 Second Period Site Coefficient, F_v	2.50
Vertical Site Coefficient, C_v	1.30
Risk Coefficient (Short Period), C_{Rs}	0.903
Risk Coefficient (1 Second Period), C_{R1}	0.907
Design Response Spectrum Transition Periods (Seconds)	
T_0 = 20% of S_{D1}/S_{DS}	0.178
$T_S = S_{D1}/S_{DS}$	0.891
T_L = Mapped Long Period Transition	8

9.0 GEOLOGIC HAZARDS

A comprehensive assessment of the potential geologic hazards at the site was provided in our Geotechnical Engineering and Geologic Hazards Report (copy in Appendix B) for the Modular

Classrooms Project at the site (ESP 2018). That geologic hazards assessment is generally considered to be applicable for the SPED/Science Classroom project; we reevaluated the geologic hazards and have compiled the following summary of findings:

- The site is not within a State, County, or community designated hazard zone for fault rupture.
- An inferred strand of the San Luis Range fault (Oceano fault) has been mapped and is modeled by USGS (2013) trending northwest-southeast approximately 0.5 mile (0.7 km) southwest of the campus. This fault is mapped as "inferred" and the location is poorly constrained. The USGS fault model is based on widely spaced "nodes" and is noted to be potentially several kilometers from the actual fault location. The mapped location of the Oceano fault is presented on Figure 3 - Geologic Map, in Appendix D. The distances of faults from the site presented in Table E-1 in Appendix E are based on the modeled geometry provided by USGS and may not represent the actual distance to the faults.
- The site is in a County-designated zone of moderate liquefaction potential (SLOCO 2025). However, as noted in the previous report (ESP 2018), due to the lack of groundwater and the increasing density of the sands with depth, in our opinion, the potential for liquefaction is very low. Also as noted in the previous report (ESP 2018), potential seismic settlement of the unsaturated soils in the upper 50 feet bgs is not anticipated to exceed ¼-inch.
- The site is in a County-designated zone of low landslide potential (SLOCO 2025).
- The site is not within any State, County, or community designated hazard zone for tsunami inundation. The forecast runup elevation for tsunami is approximately 20 feet locally, while the site is at an elevation of approximately 247 feet (ASCE 2025).
- The Site is not within the downstream inundation zone for Lopez dam (GEI 2017).
- FEMA has mapped the site within a Zone X (area of minimal flood hazard) (FEMA 2012).
- The site is in a State-designated zone of low radon potential (Churchill 2008).
- The potential for naturally occurring asbestos on site is low because serpentinite or serpentinized ultramafic rocks are not exposed at the ground surface, nor are they known to be present at shallow depths that may be disturbed by development at the site.

10.0 CONCLUSIONS

In our opinion, the site is suitable for the proposed building and associated improvements, as described in the "Introduction" Section of this report, provided the recommendations contained in the previous Modular Classrooms report (ESP 2018), as modified in the following Section 11.0 Geotechnical Recommendations, are implemented. The primary geotechnical concerns are the potentials for strong ground shaking and differential settlement, and the soil's corrosive potential and erodible nature. The site soils are nonexpansive, therefore no special measures with respect to expansive soils are considered necessary. Frost depth is also not a concern on this site. Provided that the building area is prepared as recommended, continuous perimeter and interior spread (pad) foundations may be used to support the proposed building.

Strong Ground Shaking

The site is in a region of high seismic activity, with the potential for large seismic events that could generate strong ground shaking. A seismic analysis was undertaken to provide current seismic acceleration design parameters. Our methods and the results of the seismic analysis are presented in the "Seismicity" Section of this report. Seismic acceleration parameters should be utilized in the design of the structure so that potential damage is reduced during a seismic event.

Differential Settlement

Differential soil moisture and density conditions were found in the upper zones of the current and previous (ESP 2018) borings drilled in the project area. If not mitigated, such conditions have the potential to stress and possibly damage foundations, which could result in severe cracks and displacement. To reduce this potential and the minor (less than ¼-inch) potential for dynamic settlement, a program of overexcavation and recompaction of the bearing soils in the building area is recommended prior to foundation construction.

Corrosion Potential

As indicated in the Soil Corrosivity Study by HDR Engineering, Inc. (ESP 2018, in Appendix B), electrical resistivities of the samples tested were in the mildly corrosive category with as received moisture contents; when saturated, the resistivities were in the mildly and moderately corrosive categories. Soil pH values were in the neutral to mildly alkaline category. The soluble salt contents of the soils were low. Chloride and sulfate were detected at low concentrations. Nitrate was also detected in low concentrations. The soils were classified as moderately corrosive to ferrous metals.

Soil Erosion

The soils are considered to be highly erodible. It is essential that all surface drainage be controlled and directed to appropriate discharge points, and that surface soils, particularly those disturbed during construction, are stabilized by vegetation or other means during and following construction. The architect/engineer should ensure appropriate nonerosive overland escape if storm water drainage systems fail or are overwhelmed during significant storm event(s), so that soils are not eroded.

11.0 UPDATED GEOTECHNICAL RECOMMENDATIONS

All geotechnical recommendations contained in the previous report (ESP 20218) are considered applicable for the current project, with the following additions or modifications:

General (All Sections as Applicable):

- References to ASTM test methods should be understood to mean the latest published versions.
- All references to the 2016 CBC should be understood to mean the equivalent section in the 2022 CBC (CBSC 2022).
- All references to American Concrete Institute (ACI) Documents 318 and 302.1R should be understood to mean the latest published versions.
- All references to the Caltrans Standard Specifications should be understood to mean the 2024 version (Caltrans 2024).
- Any mention of “buildings” in the previous report, as three buildings were planned, should be understood to mean “building”, as only one is planned for this project.

Definitions Section: No Updated Recommendations

Site Preparation Section: No Updated Recommendations

Grading Section:

- Add Paragraph 12: “The architect/engineer should incorporate appropriate measures for grading operations, as needed, to mitigate the low potential for radon activity.”

- Add Paragraph 13: "Housekeeping slabs ("rat slabs"), if used below raised wood floors, should have a minimum thickness of 2 inches. These slabs can be placed directly on subgrade soil that has been moisture conditioned and compacted. Depending on tolerable cracking, as determined by the architect/engineer and/or the client, housekeeping slabs can be unreinforced, or welded wire mesh (6x6 – 10x10) could be placed at the slab midpoint, or minimum rebar meeting the criteria of ACI 318 could be used. If housekeeping slabs will not be used, subfloor areas should be properly drained per the "Drainage and Maintenance" Section of this report."

Utility Trenches Section:

- Renumber Paragraph 9 to Paragraph 10.
- Add Paragraph 9: "The architect/engineer should incorporate appropriate measures for utility improvements, as needed, to mitigate the low potential for radon activity."

Foundations Section:

- Add Paragraph 9: "The architect/engineer should incorporate appropriate measures for foundations, as needed, to mitigate the low potential for radon activity."

Slabs-on-Grade Section:

- Interior Slabs-on-Grade - No Updated Recommendations
- Exterior Pedestrian Flatwork - No Updated Recommendations
- Slabs-on-Grade – General - Add Paragraph 4: "The architect/engineer should incorporate appropriate measures for slabs-on-grade, as needed, to mitigate the low potential for radon activity."

Retaining Walls Section:

- Replace Paragraph 1 with the following: "Retaining walls should be founded in firm soil that has been recompacted per the "Grading" Section of this report. Foundations for all retaining walls should have minimum overall depths (not including any keyway) of 18 inches below lowest grade within 7 feet laterally of any adjacent slope."
- Add Paragraph 14: "The architect/engineer should incorporate appropriate measures for foundations, as needed, to mitigate the low potential for radon activity."

AC Paths Section: No Updated Recommendations

Drainage and Maintenance Section: No Updated Recommendations

Observation and Testing Section:

- Add Paragraph 19: "If houskeeping slabs ("rat slabs") are not used, subfloor areas below all raised floors should be graded to a low point or a series of low points, and drainage inlets should be provided at the low points, to direct any accumulated water to an appropriate outlet. As an alternative to drainage inlets in the subfloor areas, gravel intercept drains can be provided to collect and discharge accumulated water. The gravel drains should be a minimum of 12 inches wide and 12 inches deep, wrapped with geotextile filter fabric, and drained with a rigid perforated PVC pipe to an appropriate outlet."

12.0 CLOSURE

Our intent was to provide this update report in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee is either expressed or implied. This update report is intended for the exclusive use by the client as discussed in the "Scope of Services" Section. Application beyond the stated intent is strictly at the user's risk.

This report is valid for conditions as they exist at this time for the type of project described herein. The conclusions and recommendations contained in this report could be rendered invalid, either in whole or in part, due to changes in building codes, regulations, standards of geotechnical or construction practice, changes in physical conditions, or the broadening of knowledge.

If changes with respect to the project become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions used in the preparation of this report are not correct, this firm shall be notified for modifications to this report. Any items not specifically addressed in this report should comply with the CBC of other applicable standards, and the requirements of the governing jurisdiction.

The recommendations presented in this updated geotechnical report are based upon the geotechnical conditions encountered at the site and may be augmented by additional requirements of the client, or by additional recommendations provided by the geotechnical

engineer based on peer or jurisdiction reviews, or conditions exposed at the time of construction. If Earth Systems Pacific is *not* retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising therefrom.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Pacific. This report shall be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Pacific, the client, and the client's authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems Pacific.

Thank you for this opportunity to have been of service. If you have any questions, please feel free to contact this office at your convenience.

End of Text.

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APPENDIX A

Figure 1 – Site Vicinity Map

Figure 2 - Exploration Location Map

Boring Log Legend

Boring Logs – ESP 2025

Boring Logs – ESP 2018



N

BASE MAP PROVIDED BY: GOOGLE EARTH (2025)

NOT TO SCALE

Earth Systems Pacific
4378 Old Santa Fe Road, San Luis Obispo, CA 93401
www.earthsystems.com
(805) 544-3276 ● Fax (805) 544-1786

SITE VICINITY MAP

Mesa Middle School SPED/Science Building
2555 South Halcyon Road
Arroyo Grande, California

Date
March 2025

Project No.
301024-006

Figure 1

301024-006 Mesa MS SPED-Science Building – Maps.dwg



LEGEND

1 Boring Location, ESP 2025 (Approx.)

3 Boring Location, ESP 2018 (Approx.)

N

BASE MAP PROVIDED BY: CLIENT (2024)

NOT TO SCALE

Earth Systems Pacific
4378 Old Santa Fe Road, San Luis Obispo, CA 93401
www.earthsystems.com
(805) 544-3276 ● Fax (805) 544-1786

EXPLORATION LOCATION MAP

Mesa Middle School SPED/Science Building
2555 South Halcyon Road
Arroyo Grande, California

Date
March 2025

Project No.
301024-006

Figure 2

301024-006 Mesa MS SPED-Science Building – Maps.dwg

Earth Systems Pacific

BORING LOG LEGEND

SAMPLE / SUBSURFACE WATER SYMBOLS	GRAPH. SYMBOL
CALIFORNIA MODIFIED	
STANDARD PENETRATION TEST (SPT)	
SHELBY TUBE	
BULK	
SUBSURFACE WATER DURING DRILLING	
SUBSURFACE WATER AFTER DRILLING	

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

MAJOR DIVISIONS	GROUP SYMBOL	TYPICAL DESCRIPTIONS	GRAPH. SYMBOL
COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE SIZE)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GP	POORLY GRADED GRAVELS, OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES	
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES	
	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
	SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES	
	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES	
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES	
FINE GRAINED SOILS (HALF OR MORE OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE)	ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	

OBSERVED MOISTURE CONDITION

DRY	SLIGHTLY MOIST	MOIST	VERY MOIST	WET (SATURATED)

CONSISTENCY

COARSE GRAINED SOILS			FINE GRAINED SOILS		
BLOWS/FOOT		DESCRIPTIVE TERM	BLOWS/FOOT		DESCRIPTIVE TERM
SPT	CA SAMPLER		SPT	CA SAMPLER	
0-10	0-16	LOOSE	0-2	0-3	VERY SOFT
11-30	17-50	MEDIUM DENSE	3-4	4-7	SOFT
31-50	51-83	DENSE	5-8	8-13	MEDIUM STIFF
OVER 50	OVER 83	VERY DENSE	9-15	14-25	STIFF
			16-30	26-50	VERY STIFF
			OVER 30	OVER 50	HARD

GRAIN SIZES

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENING		
# 200	# 40	# 10	# 4	3/4"	3"	12"

SILT & CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

TYPICAL BEDROCK HARDNESS

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
EXTREMELY HARD	CORE, FRAGMENT, OR EXPOSURE CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CAN ONLY BE CHIPPED WITH REPEATED HEAVY HAMMER BLOWS
VERY HARD	CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CORE OR FRAGMENT BREAKS WITH REPEATED HEAVY HAMMER BLOWS
HARD	CAN BE SCRATCHED WITH KNIFE OR SHARP PICK WITH DIFFICULTY (HEAVY PRESSURE); HEAVY HAMMER BLOW REQUIRED TO BREAK SPECIMEN
MODERATELY HARD	CAN BE GROOVED 1/16 INCH DEEP BY KNIFE OR SHARP PICK WITH MODERATE OR HEAVY PRESSURE; CORE OR FRAGMENT BREAKS WITH LIGHT HAMMER BLOW OR HEAVY MANUAL PRESSURE
SOFT	CAN BE GROOVED OR GOUGED EASILY BY KNIFE OR SHARP PICK WITH LIGHT PRESSURE, CAN BE SCRATCHED WITH FINGERNAIL; BREAKS WITH LIGHT TO MODERATE MANUAL PRESSURE
VERY SOFT	CAN BE READILY INDENTED, GROOVED OR GOUGED WITH FINGERNAIL, OR CARVED WITH KNIFE; BREAKS WITH LIGHT MANUAL PRESSURE

TYPICAL BEDROCK WEATHERING

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
UNWEATHERED	NO DISCOLORATION, NOT OXIDIZED
SLIGHTLY WEATHERED	DISCOLORATION OR OXIDATION IS LIMITED TO SURFACE OF, OR SHORT DISTANCE FROM, FRACTURES: SOME FELDSPAR CRYSTALS ARE DULL
MODERATELY WEATHERED	DISCOLORATION OR OXIDATION EXTENDS FROM FRACTURES, USUALLY THROUGHOUT; Fe-Mg MINERALS ARE "RUSTY", FELDSPAR CRYSTALS ARE "CLOUDY"
HIGHLY WEATHERED	DISCOLORATION OR OXIDATION THROUGHOUT; FELDSPAR AND Fe-Mg MINERALS ARE ALTERED TO CLAY TO SOME EXTENT, OR CHEMICAL ALTERATION PRODUCES IN SITU DISAGGREGATION
DECOMPOSED	DISCOLORATION OR OXIDATION THROUGHOUT, BUT RESISTANT MINERALS SUCH AS QUARTZ MAY BE UNALTERED; FELDSPAR AND Fe-Mg MINERALS ARE COMPLETELY ALTERED TO CLAY

drafting/masters/Boring Log Legend 062719.dwg

Earth Systems Pacific

Boring No. 1

LOGGED BY: L. Johnson
DRILL RIG: GTech GT8 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301024-006
DATE: 2/13/25

MESA MIDDLE SCHOOL
SPED/SCIENCE BUILDING
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SP	POORLY GRADED SAND: light brown, medium dense, moist, fine grained sand (Older Dune Sand)	1.0 - 5.0	○			10
2			2.0 - 3.5	■	104.3	10.0	16 24
5			5.0 - 6.5	■	105.5	13.4	9 20 32
6	SM	SILTY SAND: dark brown, dense, moist, fine grained sand					
10	SP	POORLY GRADED SAND: light brown, dense, moist, fine grained sand	10.0 - 11.5	■	104.7	6.2	11 25 37
15		very dense	15.0 - 16.5	■			11 29 50/5.75
20			20.0 - 21.5	■			9 21 33
21		dense, slight oxidation staining, medium grained sand					
23			23.0 - 24.5	■			11 21 32
24		fine and medium grained sand					
25		End of Boring @ 24.5' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

JOB NO.: 301024-002
DATE: 4/30/18

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0			2" AC over 6" AB					
1	SP		POORLY GRADED SAND: yellow brown, medium dense, moist, fine to medium sand (Older Dune sand)					
2				2.0 - 3.5	■	100.3	3.9	6, 11, 14
3								
4								
5				5.0 - 6.5	■	106.6	6.3	6, 13, 23
6								
7								
8								
9								
10			light yellow brown, dense	10.0 - 11.5	■	103.9	3.0	9, 19, 32
11								
12								
13								
14								
15			medium dense	15.0 - 16.5	●		3.3	3, 7, 11
16								
17								
18								
19								
20				20.0 - 21.5	●			3, 4, 7
21								
22			End of Boring @ 21.5' No subsurface water encountered					
23								
24								
25								
26								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 3
PAGE 1 OF 1
JOB NO.: 301024-002
DATE: 4/30/18

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0			3" AC over 5.5" AB					
1	SP		POORLY GRADED SAND: light brown, loose, moist, fine to medium sand (Older Dune Sand)					
2			medium dense, thin lenses of brown silty sand	2.0 - 3.5	■	102.5	10.2	4 9 13
3				2.0 - 5.0	○			
5				5.0 - 6.5	■	96.3	8.8	6 10 14
6			yellow brown					
10				10.0 - 11.5	■	106.0	9.4	7 14 19
15			dense, light yellow brown	15.0 - 16.5	●		6.6	8 18 18
20				20.0 - 21.5	●			4 13 18
22			End of Boring @ 21.5' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

APPENDIX B

Geotechnical Engineering and Geologic Hazards Report, Mesa Middle School Modular Classrooms, Earth Systems Pacific, Doc. No. 1806-116.SGR, dated June 28, 2018, revised December 10, 2018

GEOTECHNICAL ENGINEERING
AND GEOLOGIC HAZARDS REPORT
MESA MIDDLE SCHOOL
MODULAR CLASSROOMS
2555 SOUTH HALCYON ROAD
ARROYO GRANDE, CALIFORNIA

June 28, 2018
(Revised December 10, 2018)

Prepared for

Mr. Andy Stenson
Assistant Superintendent of Business
Lucia Mar Unified School District

Prepared by

Earth Systems Pacific
4378 Old Santa Fe Road
San Luis Obispo, CA 93401

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Earth Systems
4378 Old Santa Fe Road | San Luis Obispo, CA 93401 | Ph: 805.544.3276 | www.earthsystems.com

June 28, 2018
(Revised December 10, 2018)

FILE NO.: 301024-002

Mr. Andy Stenson
Assistant Superintendent of Business
Lucia Mar Unified School District
222 Stanley Avenue
Arroyo Grande, CA 93420

PROJECT: MESA MIDDLE SCHOOL
MODULAR CLASSROOMS
2555 SOUTH HALCYON ROAD
ARROYO GRANDE, CALIFORNIA

SUBJECT: Geotechnical Engineering and Geologic Hazards Report

CONTRACT REF: Purchase Order No. 182680 by Lucia Mar Unified School District, dated May 4, 2018, Referencing Earth Systems Pacific Proposal to Provide a Geotechnical Engineering Investigation, Soil Corrosivity Testing and Geologic Hazards Assessment, dated April 18, 2018

Dear Mr. Stenson:

As requested by Mr. Shane Maples of IBI Group and in accordance with the referenced Purchase Order, this geotechnical engineering and geologic hazards report has been prepared for use in the development of plans and specifications for the modular classroom buildings planned at Mesa Middle School in Arroyo Grande, California. This report has been revised to reflect the removal of "preliminary" when referring to geotechnical recommendations. Geotechnical recommendations are presented herein for site preparation, grading, utility trenches, foundations, slabs-on-grade, retaining walls, AC paths, drainage and maintenance, and observation and testing. This report also describes the general geologic characteristics, identifies existing and potential geologic hazards, and discusses the impacts the geologic conditions may have upon the project. A geotechnical corrosivity study, which was subcontracted to HDR Engineering, Inc., is also included. Two bound copies and an electronic copy of this report are furnished for your use.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. If there are any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,

Earth Systems Pacific

REGISTERED PROFESSIONAL ENGINEER
KEITH P. ASKEW
GE 2946
GEOTECHNICAL
STATE OF CALIFORNIA

REGISTERED GEOLOGIST
DARRIN G. HASHAM
NO. 2423
CERTIFIED ENGINEERING GEOLOGIST
12/29/20
STATE OF CALIFORNIA

Keith P. Askew, GE
Principal Engineer

Darrin Hasham, CEG
Engineering Geologist

Copy to: LMUSD, Attn.: Ms. Cindy Naaer and Mr. Bryan Hagwood
IBI Group, Attn.: Mr. Shane Maples

Doc. No.: 1806-116.SGR/cr

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1.0 INTRODUCTION

The proposed project at Mesa Middle School will consist of constructing three new classroom buildings and the associated surface and subsurface improvements. In some cases, the construction of these buildings will require the removal of existing structures.

Each of the three classroom buildings will have a footprint of roughly 2,500 to 3,000 square feet, and will contain two classrooms; one of the buildings will also contain restroom facilities. We understand that the buildings will all be single-story, of steel and/or stud-frame construction, and will be a combination of modular and on-site construction. Buildings will have Portland cement concrete (PCC) slab-on-grade floors. For the purposes of this report, we have assumed maximum continuous loads of 1 klf and maximum isolated loads of 8 kips. The buildings will be served by the existing campus utility systems.

Cuts and fills with a thickness on the order of 2 feet from the existing grade have generally been assumed. Retaining walls for sitework, or connected to or forming part of the structures, are anticipated to be 3 feet in height or less. Pedestrian PCC flatwork and/or asphalt concrete (AC) paths to provide classroom access will also be constructed. No vehicle pavement or other improvements are planned.

It is our understanding that this project will be designed and constructed under the jurisdiction of the Division of the State Architect (DSA). It is also our understanding that there are no current geologic hazards or corrosivity testing reports for this campus.

2.0 SCOPE OF SERVICES

The scope of work for this report included a field reconnaissance by a registered geotechnical engineer and a certified engineering geologist, subsurface exploration, laboratory testing (geotechnical and corrosivity) of samples obtained during the field investigation, geotechnical, geologic and corrosivity (subcontracted to HDR Engineering, Inc.) analyses of the data, and preparation of this report. The analysis and subsequent recommendations were based on information provided by Mr. Shane Maples of IBI Group, which included a site plan dated March 5, 2018 depicting the approximate locations of the proposed buildings.

This report and geotechnical recommendations are intended to comply with the considerations of Sections 1803A.1 through 1803A.7, J104.3 and J104.4, as applicable, of the 2016 California Building Code, California Code of Regulations (CBC 2016); California Geological Survey (CGS) Note 48 (CGS 2013); Interpretation of Regulations (IR) Document A-4.13 (DSA 2016); and common geotechnical engineering and engineering geology practice in this area under similar conditions

at this time. The geotechnical test procedures were accomplished in general conformance with the standards noted, as modified by common geotechnical engineering practice in this area under similar conditions at this time.

Geotechnical recommendations for site preparation, grading, utility trenches, foundations, slabs-on-grade, retaining walls, AC paths, drainage and maintenance, and observation and testing are provided in this report. This report also describes the general geologic characteristics, identifies existing and potential geologic hazards, and discusses the impacts the geologic conditions may have upon the project. The results of corrosivity testing and analyses with mitigation recommendations are also included; this scope of work was subcontracted to HDR Engineering, Inc. The items above are presented to guide the development of project plans and specifications. It is our intent that this geotechnical/geologic report be used exclusively by the client to form the geotechnical/geologic basis of the design, and in the preparation of plans and specifications. Application beyond this intent is strictly at the user's risk.

This report does not address dewatering and other issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, excavatability, shoring, temporary slope angles, construction means and methods, etc. Analyses of the soil for mold potential, asbestos (naturally occurring or in man-made products), lead, radioisotopes, hydrocarbons, or chemical properties (other than geotechnical corrosivity) are beyond the scope of this report. Ancillary features such as temporary access roads, and nonstructural fills are not within our scope and are also not addressed.

As there may be unresolved geotechnical issues with respect to this project, the geotechnical engineer should be retained to provide consultation as the design progresses, to review project plans as they near completion to assist in verifying that pertinent geotechnical issues have been addressed and to aid in conformance with the intent of this report. In the event that there are any changes in the nature, design, or location of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are verified or are modified in writing. The criteria presented in this report may be modified based on peer review or review by any jurisdiction, or conditions observed by the geotechnical engineer in the field during construction.

3.0 SITE SETTING

The site is located within the northwest portion of the Mesa Middle School campus at 2555 South Halcyon Road in the City of Arroyo Grande, California. The approximate site location is shown on

Figure 1, Site Vicinity Map in Appendix A. The school property is bounded to the northeast by South Halcyon Road, which provides the only access, and residential or undeveloped properties on the other sides. The project area currently consists of the existing middle school modular classroom buildings, AC pavement, and other improvements. The remainder of the school property includes school buildings, AC vehicle pavement, turf playfields, and AC hardcourts. The locations and dispositions of utility lines in the project area are generally unknown, but utility lines are anticipated within the new building areas.

The approximate coordinates and elevation of the center of the project area, as obtained from the Google Earth website (Google Earth 2018), are latitude 35.0761N, longitude 120.5820W, and 247 feet above mean sea level. Topographically, the site is relatively flat, and drainage is by sheet flow.

4.0 FIELD INVESTIGATION

Six exploratory borings were drilled in the project area on April 30 and May 1, 2018 to a maximum depth of approximately 51.5 feet below the existing ground surfaces (bgs). The borings were drilled with a Mobile Drill Model B-53 truck mounted drill rig, equipped with 6-inch outside diameter hollow stem auger and an automatic trip hammer for sampling. The approximate locations of the borings are shown on Figure 2, Exploration Location Map in Appendix A. As the borings were drilled, soil samples were obtained using a ring-lined barrel sampler (ASTM D 3550-17 with shoe similar to D 2937-17). Standard penetration tests were also performed (ASTM D 1586-11) at selected depths. Bag soil samples were obtained from the auger cuttings. The borings were backfilled per the requirements of the governing jurisdiction, and, where applicable, patched at the surface with cold-mix asphalt concrete.

Soils encountered in the borings were categorized and logged in general accordance with the Unified Soil Classification System and ASTM D 2488-17. Copies of the boring logs and a Boring Log Legend are included in Appendix A. In reviewing the boring logs and legend, the reader should recognize that the legend is intended as a guideline only, and there are a number of conditions that may influence the soil characteristics as observed during drilling. These include, but are not limited to, the presence of cobbles or boulders, cementation, variations in soil moisture, presence of groundwater, and other factors. Consequently, the logger must exercise judgment in interpreting the subsurface characteristics, possibly resulting in descriptions that vary somewhat from the legend.

5.0 LABORATORY ANALYSIS

Selected samples obtained from the borings were tested for unit weight and moisture (ASTM

D 2937-17, modified for ring liners), moisture (ASTM D 2216-10), maximum density and optimum moisture content (ASTM D 1557-12), direct shear strength (ASTM D 3080-11, recompacted to 90 percent of maximum dry density, and modified for consolidated, undrained conditions), expansion index (ASTM D 4829-11), and particle size (ASTM D 422-63/07). The geotechnical laboratory test results are presented in Appendix B.

Two soil samples were submitted to HDR Engineering, Inc. for geotechnical corrosivity testing. The Soil Corrosivity Study by HDR Engineering, Inc. is presented in Appendix C.

6.0 GENERAL SUBSURFACE AND GEOLOGIC PROFILE

AC was present at the surface in Borings 2 and 3. The pavement sections ranged from 2 to 3 inches of AC over 5.5 to 6 inches of aggregate base (AB). AB was present at the surface in Boring 1 with a thickness of 4 inches.

Below the AB in Borings 1, 2, and 3, and at the surface in other areas, Older Dune Sand was encountered to the maximum depth explored of 51.5 feet bgs. The Older Dune Sand consisted of poorly graded sand and silty sand in a moist condition, with a loose to very dense consistency. Groundwater was not encountered in the upper 51.5 feet. The general geologicconditions are depicted on Figure 3, Geologic Cross Section A-A'.

7.0 GEOLOGY

Geologic Setting

The site lies upon the Nipomo Mesa, in the Coast Ranges geomorphic province of California (CGS 2002). The northern and southern coast ranges are separated by a depression containing the San Francisco Bay. The Nipomo Mesa, in the vicinity of the site, is bounded between the Pacific Ocean to the west, Arroyo Grande Valley to the north, Santa Maria Valley to the south, and Nipomo Valley to the east (USGS 2018a). This portion of coastal central California has been described in the context of *seismotectonic domains* by Clark and others (1994). Each domain is separated by major, predominantly quaternary, boundary faults. The Nipomo Mesa is within the triangular shaped Santa Maria basin-San Luis Range domain, which is bounded by the offshore Hosgri fault zone to the west, the Los Osos fault system on the northeast, and the Santa Ynez fault on the south (Clark et al 1994). Tectonically, the region is dominated by the Los Osos and the San Luis Range Faults (Lettis and Hall, 1994).

According to the Geologic Map of the Oceano Quadrangle by Holland (2013), the project site is underlain by older eolian deposits (Qoe) which are old sand dunes (see Figure 4, Geologic Map). Our subsurface exploration performed for this site encountered unconsolidated deposits of

poorly graded sand (SP) and silty sand (SM), which are consistent with the geologic units mapped by Holland.

Faulting

Faults are classified by the State of California based on the likelihood of generating ground motions and surface rupture. The classification system applies to known faults that have been compiled by numerous researchers through various methods of investigation. The State evaluates faults with documented ground rupture during the last 11,700 years and considers them for inclusion in Earthquake Fault Zones requiring investigation (A-P Zones) which encompass traces of *Holocene-active* faults, as defined by the State's Alquist-Priolo Earthquake Fault Zoning Act (California 1972). The State's guidance is intended to prohibit developments and structures for human occupancy across the trace of active faults (CGS 2018a). Other active faults capable of generating strong ground motion are present in the region but are not included in A-P Zones because they do not meet the criteria of "sufficiently active and well-defined."

Significant Faults

The site is within a seismically active region and the project will experience seismic shaking during its design life. Known faults and fault systems within the region that potentially could generate earthquakes affecting the site include the San Luis Range, San Andreas, Los Osos, Casmalia, and Hosgri-San Simeon Faults (USGS 2018b). These are several of the known faults within a 65-mile radius of the site; other unknown faults may exist in the region and movement on any of these faults could affect the proposed development during its design life.

The closest significant mapped fault to the site is the late Pre-Holocene Oceano Fault segment of the San Luis Range Fault System, located approximately 3,000 feet southwest of the site. At this location, the fault is buried by old dune sediments and its location is approximate. The closest *Holocene-active* fault to the site included in an A-P Zone is the Irish Hills segment of the Los Osos Fault, located approximately 17 miles northwest (Treimen 1989). Regional faults and locations of historic earthquake events are depicted on Figure 5, Historical Earthquake/Fault Map in Appendix D.

San Luis Range Fault System

The San Luis Range Fault System consists of a series of west-northwest trending faults that include the Santa Maria River, Wilmar Avenue, Oceano, San Luis Bay, and San Miguelito Faults. The Wilmar Avenue Fault extends from northern Nipomo to Pismo Beach, where it is exposed in the ocean bluff at the end of Wilmar Avenue. At this location, Pleistocene terrace deposits are

displaced in the face of the bluff. The Oceano Fault is a 12-mile long northwest-trending fault extending from the town of Nipomo to the offshore area of San Luis Bay. At its closest point, the Oceano Fault is about 3,000 feet southwest of the site. Because of thick dune sand and alluvial deposits, the onshore trace of the fault is buried or obscured, and the fault's geometry is inferred from geophysical and well data (Lettis and Hall 1994).

San Andreas Fault

The San Andreas Fault is considered the most active fault in the region; it lies about 42 miles east of the site. The last major quake (magnitude 8.0 or greater) was on the south end of the fault in 1857. In the immediate vicinity of Parkfield, there is a 20-mile segment that is locked, generating an earthquake every 20 years or so, on average. Dated quakes on this segment are 1881, 1901, 1922, 1934, 1966, and 2004, and are usually in the magnitude 5.5 to 6.0 range (Bakun 1988). A 6.0 magnitude earthquake occurred on this fault segment on September 28, 2004 (Holzer et al 2004). The epicenter of this earthquake was in the general area of the 1934 earthquake, which occurred approximately 56 miles northeast of the site.

Los Osos Fault

The Los Osos fault zone is comprised of 4 distinct segments. From northwest to southeast the segments are Estero Bay, Irish Hills, Lopez Reservoir, and Newsom Ridge (Lettis and Hall 1994). The Newsom Ridge segment is approximately 6.5 miles from the site. The Irish Hills segment of the Los Osos Fault, located approximately 17 miles to the northwest, is the closest *Holocene-active* fault to the site, included in a State Earthquake Fault Zone under the Alquist-Priolo Act (Hart and Bryant 2007). A report prepared by Pacific Gas & Electric (PG&E 1988) suggests that the Irish Hills segment displays the best expressed geomorphic features, displacing late Pleistocene and Holocene deposits.

Hosgri-San Simeon Fault System

The Hosgri Fault lies approximately 14 miles west of the site. The San Simeon fault extends from offshore of Ragged Point to just offshore of San Simeon Point, where it joins the northern end of the Hosgri fault; from this point the Hosgri fault extends to an ocean shelf 2 miles west of Point Buchon, and then trends toward the Point Sal area. A segment of the San Simeon fault between San Simeon Point and Arroyo de le Cruz is considered *Holocene-active* and is included in an A-P Zone (CDMG, 1986).

Groundwater

Groundwater was not encountered in any of the borings within the maximum depth explored of

approximately 51.5 feet. Limited groundwater data was available in the immediate site area; however, data within approximately ¼ mile or less of the site indicated historical groundwater levels to be approximately 170 feet or more below existing surface grades at those locations (CDWR 2018).

8.0 SEISMICITY

Earthquake History

The historic seismicity in the region was researched using EQSEARCH (Blake 2000). The ground motion attenuation relationship used was Boore et al (1997) for a 2016 CBC Site Class D – Stiff Soil profile. EQSEARCH is a software program that performs automated searches of a catalog of historical California earthquakes. As the program searches the catalog, it computes the epicentral distance from the selected site to each of the earthquakes within the specified search area. The epicentral distances should be considered estimates, particularly for earthquake data prior to 1932, when modern instruments were first used to record earthquake data. The parameters used for the search consisted of earthquake Richter magnitudes ranging from 5.0 to 9.0 that occurred within a 65-mile radius from the site from 1800 to 2016. Figure 4 – Historical Earthquake/Fault Map in Appendix D graphically depicts the results of the search, including historical earthquake epicenters, their corresponding magnitudes, and faults within the general region of the project.

Results of the search indicated that within the search parameters, 37 earthquakes have occurred (see the Historical Earthquake/Fault Map). The highest peak horizontal ground acceleration estimated to have occurred at the site from those historical earthquakes is 0.40g. This earthquake had a 7.5 magnitude, occurred in 1927, and was located approximately 10.4 miles southwest of the site. This earthquake occurred on the Hosgri Fault and was known as the "Lompoc Earthquake." The largest magnitude earthquake that the search revealed was a 7.9 magnitude earthquake. This earthquake was located approximately 48 miles southeast and was known as the 1857 earthquake on the San Andreas fault. It produced an estimated peak horizontal ground acceleration of 0.16g at the site. The earthquake to have occurred closest to the site had a magnitude of 5.0 and produced a peak horizontal ground acceleration of 0.17g, was centered approximately 5 miles southwest, and was an aftershock of the 1927 Lompoc Earthquake. The 2003 San Simeon Earthquake occurred approximately 56 miles northwest of the project site. It had a magnitude of 6.5 and produced a peak horizontal ground acceleration of 0.06g. The earthquake that occurred on the Parkfield segment of the San Andreas fault on September 28, 2004 was estimated to have produced a peak horizontal ground acceleration of 0.05g at the site.

Design Acceleration Parameters

In accordance with CGS Note 48 Checklist (CGS 2013), Item 16, an assessment was made to determine the need for employing "Site Specific Procedures" to determine the ground motion parameters for the project. A determination was made that the site is not located in an Alquist-Priolo Earthquake Fault Zone. In addition, the S_1 ground motion value obtained from the United States Geological Survey Earthquake Hazards Program website (USGS 2018) using the ASCE 7-10 (2013) Standard Analysis Method, for Site Class D – Stiff Soil profile, was below 0.75g (S_1= 0.439g, see Table 1). Therefore, the project does not require a site-specific ground motion analysis.

To characterize the seismicity at the site and to provide seismic design parameters for the architect/engineer, a General Procedure Ground Motion Analysis was performed to calculate the potential ground motions at the site, using the methods previously described. The results of this analysis are presented in the following table:

TABLE 1: SUMMARY OF DESIGN RESPONSE ACCELERATION PARAMETERS

Mapped Spectral Response Acceleration for Site Class B		**Site Coefficients for Site Class D**		**Adjusted MCE Spectral Response Accelerations for Site Class D**		**Design Spectral Response Accelerations for Site Class D**	
Seismic Parameter	Value (g)	Site Coefficient	Value	Seismic Parameter	Value (g)	Seismic Parameter	Value (g)
S_S	1.190	F_a	1.024	S_{MS}	1.218	S_{DS}	0.812
S_1	0.439	F_v	1.561	S_{M1}	0.685	S_{D1}	0.457
Peak Mean Ground Acceleration (PGA_M) = 0.496 g							

Seismic Design Category

Section 1613A.3.5 of the 2016 CBC indicates that structures will be assigned to Seismic Design Category D unless $S_1 \geq 0.75$. The S_1 calculated for the site is 0.439g; therefore, the site is classified as Seismic Design Category D.

9.0 GEOLOGIC HAZARDS

Surface Ground Rupture

Surface ground rupture generally occurs at sites that are traversed by, or lie very near to, an active fault. The site is not located in any State Earthquake Fault Zones (Hart and Bryant 2007) and there are no mapped faults crossing the site. The closest mapped *Holocene-active* fault to the site is the Irish Hills segment of the Los Osos Fault System, located approximately 17 miles

Northwest. The San Luis Range Faults (San Luis Obispo Bay, Oceano, Wilmar Ave., Olson, and Santa Maria River faults) are considered active but are not included in A-P Zones. The closest strand of the San Luis Range Fault System to the site is the Oceano Fault located approximately 3,000 feet southwest of the site. Because there are no mapped active faults on the site the potential for surface fault rupture to occur at the site is considered very low.

Seismically Induced Settlement

Liquefaction refers to a phenomenon that tends to occur in saturated soils (soils below the groundwater table) of low density that have grain sizes within a certain range, usually fine- to medium-grained poorly graded sands, silty sands, and silts. A sufficiently strong earthquake is also required to cause liquefaction. During liquefaction, the energy from the earthquake causes the water pressure within the pores of the soil to increase. The increase in water pressure decreases the friction between the soil grains, allowing the soil grains to move relative to one another. During this state, the soil will behave as a viscous liquid, temporarily losing its ability to support foundations and other improvements. The high pressure water will flow through the soil along the path of least resistance. As the pressure is released, the soils typically settle in a process called "dynamic settlement." Dynamic settlement can cause damage to structures and other surface and subsurface improvements.

Dynamic settlement may also occur within unsaturated soils during a seismic event. Unsaturated loose to medium dense cohesionless soils above the groundwater table may also settle during seismic shaking.

The site is located in an area mapped by the County as having a moderate potential for liquefaction (County of San Luis Obispo 2018). Due to the lack of groundwater, the potential for liquefaction at the site is considered very low. The potential for dynamic settlement of the unsaturated, loose to medium dense sand layers was assessed. The "Dynamic Settlement" discussion in the "Conclusions" Section of this report provides a more detailed discussion of the potential for dynamic settlement on this site.

Slope Stability

The site is located in an area mapped by the County as having low potential for landsliding (County of San Luis Obispo 2018). The site is generally flat with no significant natural slopes on or adjacent to the site; therefore, the potential for slope instability or landsliding to impact the site is considered very low.

Flooding

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map No. 06079C1604G (FEMA 2012), the site is located within a Flood Zone X, which indicates areas of minimal flooding outside of any mapped flood zone. The flood hazard zone for this site is presented on Figure 6, FEMA Flood Zone Map in Appendix D. The site is not within any mapped downstream inundation zone for Dam failure

Tsunami and Seiche Potential

According to the State of California Tsunami Inundation Zone map for the County of San Luis Obispo, Oceano Quadrangle (State of California 2009), the project site does not lie within a Tsunami Inundation Zone. Furthermore, the site is located approximately 2.7 miles from the Pacific Ocean at an approximate elevation of 242 feet above sea level; therefore, the potential for a tsunami to flood the site is considered very low.

A seiche is a water wave that can be generated in a reservoir, lake or pond as the result of long-period surface waves generated by strong local earthquakes or larger earthquakes at farther distances. The site is not within proximity to any impounded or natural body of water; therefore, the potential for a seiche to affect the project site is considered very low.

Naturally Occurring Asbestos

There are no naturally occurring asbestos-bearing rock formations (serpentinite or ultramafic rock) known on the site. The site is underlain by old sand dune deposits, which are not asbestos-bearing geologic units. Therefore, the potential for naturally occurring asbestos on the site is considered very low.

Radon

Radon is a naturally-occurring, colorless, odorless gas present in certain soils and rock, which is derived from the decay of radium atoms. The occurrence of radon correlates with the presence of specific minerals, and its concentrations in soil or rock will vary depending on the mineralogy of the surrounding bedrock, temperature, barometric pressure, moisture and other factors. Prolonged exposure to elevated levels of radon is associated with an increased risk of lung cancer. The route of exposure is via inhalation in an enclosed space, such as a structure.

No rock types associated with elevated radon were observed during our investigation. According to the State of California interactive data viewer, the site is in an area mapped as low radon potential (Churchill 2008, California Dept. of Conservation 2018), as shown on Figure 7, Indoor Padon Potential Map.

10.0 CONCLUSIONS

In our opinion, the site is suitable, from a geotechnical engineering standpoint, for the construction of the proposed improvements as described in the "Introduction" Section of this report, provided the recommendations contained herein are implemented in the design and construction. The primary geotechnical engineering concerns are the potential for dynamic settlement, differential settlement, the corrosive potential, and the erodible nature of the soils. Provided that the building areas are prepared as recommended in the "Grading" Section of this report, continuous perimeter and interior spread (pad) foundations may be used to support the proposed structures. The upper soils were tested and found to be nonexpansive; therefore, no special measures with respect to expansive soils are considered necessary.

Dynamic Settlement

As discussed in the Geologic Hazards Section of the report the potential for liquefaction to occur is considered very low based on the lack of subsurface water. Due to the cohesionless soils encountered in the exploratory borings and calculated PGA, we also assessed the potential for dynamic "dry" settlement of these soils. Dynamic settlement is not anticipated to exceed 1/4-inch due to the recommended grading program and the presence of the moist, medium dense to very dense soil that underlies the site.

Differential Settlement

Variable soil conditions exist throughout the site. Differential settlement can occur when foundations or surface improvements span materials having variable consolidation characteristics, such as the Older Dune Sand encountered within our borings. Such conditions have the potential to stress and possibly damage foundations, often resulting in severe cracks and displacement if they are not mitigated. To reduce this potential for differential settlement, a program of overexcavation and recompaction of the existing soil in the building areas is recommended prior to foundation construction.

Corrosion Potential

As indicated in the Soil Corrosivity Study by HDR Engineering, Inc. (see Appendix C), electrical resistivities of the samples tested were in the mildly corrosive category with as received moisture contents; when saturated, the resistivities were in the mildly and moderately corrosive categories. Soil pH values were in the neutral to mildly alkaline category. The soluble salt contents of the soils were low. Chloride and sulfate were detected at low concentrations. Nitrate was also detected at in low concentrations. The soils were classified as moderately corrosive to ferrous metals.

Soil Erosion

The soils are considered to be highly erodible. It is essential that all surface drainage be controlled and directed to appropriate discharge points, and that surface soils, particularly those disturbed during construction, are stabilized by vegetation or other means during and following construction. The architect/engineer should ensure appropriate nonerosive overland escape if storm water drainage systems fail or are overwhelmed during significant storm event(s), so that soils are not eroded.

11.0 GEOTECHNICAL RECOMMENDATIONS

The following recommendations are for improvements constructed as described in the "Introduction" section of this report. If locations, elevations, structural loads, etc., change, the recommendations contained herein may require modification. In developing the following recommendations, it was assumed that irrigated landscaping or flatwork will be installed within a zone of at least five feet around the perimeter of all improvements; the intent is to keep the soils in a relatively uniform moisture condition year round.

Unless otherwise noted, the following definitions are used in the recommendations presented below. Where terms are not defined, definitions commonly used in the construction industry are intended.

- **Building Areas –** The building areas are defined as the area within and extending a minimum of 5 feet beyond the perimeter of the foundations for the buildings. The building area includes any retaining walls, covered walkways or other improvements that are connected to the structure and that are intended to act in a manner similar to it.
- **Exterior Pedestrian Flatwork and AC Path Areas** – The areas within the footprints of all exterior pedestrian flatwork and all AC paths for pedestrian use.
- **Retaining Wall Areas** – The areas within and extending a minimum of 3 feet beyond the foundation limits of the retaining walls.
- **Grading Area –** The entire area to be graded, including the building, exterior pedestrian flatwork and AC path, and retaining wall areas.
- **Existing Grade –** Elevations of the site that existed as of the date of this report.
- **Finish Pad Grade –** The elevation in the building area where earthwork operations are typically considered to be complete. It does not include any sand or gravel that might be placed below slabs-on-grade in association with vapor protection for the slabs.

- **Subgrade –** The elevation in exterior pedestrian flatwork and AC path areas where soil or AB are placed to support the flatwork or AC.
- **Scarified –** Plowed or ripped in two orthogonal directions to a depth of not less than 8 inches.
- **Moisture Conditioned –** Adjusting the soil moisture to optimum moisture content, or just above, prior to application of compactive effort, unless stated otherwise.
- **Compacted/Recompacted –** Soils placed in level lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 90 percent of maximum dry density, based on maximum dry density by ASTM D 1557-12 and field density by ASTM D 6938-17a, or other methods acceptable to the geotechnical engineer and jurisdiction.

Site Preparation

1. The ground surface in the grading areas should be prepared for construction by removing the existing structures, existing AC pavement, AB, and flatwork, and all other improvements, vegetation, large roots, debris, organic topsoil, and other deleterious materials. Existing utility lines that will not remain in service should be either removed or abandoned. The appropriate method of abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary.

2. Voids created by the removal of materials or utilities described above should be called to the attention of the geotechnical engineer. No fill should be placed unless the underlying soil has been observed by the geotechnical engineer.

Grading

1. Following site preparation, existing soil in the building areas should be removed to a level plane at a minimum depth of 2 feet below the bottom of foundation elevation or 3 feet below existing grade, *whichever is deeper*. The resulting level excavated surfaces should be scarified, moisture conditioned, and recompacted.

2. Following site preparation and prior to the placement of fill, the soil in the exterior pedestrian flatwork and AC path areas should be removed to proposed subgrade elevation or to a minimum of 1 foot below existing grade, *whichever is deeper*. The resulting excavated soil surfaces should then be scarified, moisture conditioned, and compacted.

3. Following site preparation, the existing soils in retaining wall areas should be overexcavated to a level plane at a minimum of 2 feet below the bottom of footing elevation (not including any keyway). The resulting excavated soil surfaces should be scarified, moisture conditioned and compacted. Overexcavation elevations may be stepped where retaining walls are stepped to conform to any site contours. To reduce the potential for cracking in retaining walls, construction joints should be placed in the wall and the foundation where overexcavation operation have been stepped to conform to any site contours.

4. Following site preparation and any excavations to grade, and prior to placement of fill, the soil in any other areas to be graded should be scarified, moisture conditioned and recompacted.

5. Voids created by dislodging cobbles and/or debris during scarification should be backfilled and recompacted, and the dislodged materials should be removed from the work area.

6. Previously removed site soils and similar imported soils may be placed as fill within and beyond the building areas. The onsite soils are nonexpansive, therefore all imported soils used within the building areas should also be nonexpansive.

7. Nonexpansive materials are defined as soils (imported or derived from selective site grading) that fall in the GW, GM, GC, SP, SW, SC and SM categories per ASTM D 2487-17, and that have an expansion index of 10 or less (ASTM D 4829-11).

8. Imported soils used in the building areas (if required to achieve design grades) should have strength qualities equal to or better than the site soils, and they should not exceed the geotechnical corrosivity potential of the site soils. See the Soil Corrosivity Study in Appendix C for the corrosivity parameters of the site soils. Proposed imported materials should be reviewed by the geotechnical engineer before being brought to the site, and on an intermittent basis during placement.

9. All materials used as fill should be cleaned of any debris and rocks larger than 3 inches in diameter. When fill material includes rocks, the rocks should be placed in a sufficient soil matrix to ensure that voids caused by nesting of the rocks will not occur and that the fill can be properly compacted.

10. If the soils are overly moist so that they become unstable, or if the minimum recommended compaction cannot be readily achieved, drying the soil so that it is nearer

optimum moisture content may be necessary. Placement of gravel layers or geotextiles may also be necessary to help stabilize unstable soils. Additional overexcavation may also be recommended to correct unstable conditions or if soft or loose conditions are encountered during grading. No fill should be placed in any grading area if the underlying soil is unstable.

11. The recommended soil moisture content should be maintained throughout construction, and during the lives of the structures and all other improvements. Failure to maintain the soil moisture content can result in desiccation cracks and disturbance, which are an indication of degradation of the soil compaction. If desiccation cracks are allowed to develop, or if soils near improvements such as foundations, flatwork, etc. are otherwise disturbed, damage to those improvements may result. Soils that have cracked or are otherwise disturbed should be removed, moisture conditioned, and recompacted.

Utility Trenches

1. Utility trenches adjacent to foundations should not be excavated within the zone of foundation influence, defined as a 2:1 plane projected down, beginning at 9 inches up from bottom of footing.

2. Utilities that must pass beneath foundations should be placed with properly compacted utility trench backfill and the foundation should be designed to span the trench.

3. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utilities. The site soil or approved import soil may be used for trench backfill above the select material. In exterior pedestrian flatwork and AC path areas, trench backfill should match the thickness of AB used to support these improvements.

4. In general, trench backfill should be compacted to a minimum of 90 percent of maximum dry density. Trench backfill in the upper 12 inches of subgrade and all AB in AC areas should be compacted to a minimum of 95 percent of maximum dry density. A minimum of 85 percent of maximum dry density will generally be sufficient where trench backfill is located in landscaped or other unimproved areas, where settlement of trench backfill would not be detrimental.

5. Prior to applying compactive effort, trench backfill should be moisture conditioned. Trench backfill should be placed in level lifts not exceeding 6 inches in loose thickness and compacted to the minimums recommended above.

6. Compaction of trench backfill by jetting or flooding is not recommended at this site, as the site soils are highly erodible. However, to aid in *encasing* utility conduits, particularly corrugated drain pipes, and multiple, closely-spaced conduits in a single trench with the bedding and shading material, jetting or flooding may be useful. Flooding or jetting should only be attempted with extreme caution, and any flooding or jetting operation should be subject to review by the geotechnical engineer.

7. Long-term settlement of properly compacted imported sand should be assumed to be about 0.25 to 0.5 percent of the depth of the backfill. Where trenches are backfilled with site soils, the anticipated settlement would be about twice that of imported sand. Improvements that are constructed over or near trenches should be designed to accommodate the potential for settlement.

8. The Soil Corrosivity Study by HDR Engineering, Inc. in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for utility improvements.

9. The recommendations of this section are minimums only, and may be superseded by the architect/engineer based upon soil corrosivity or the requirements of pipe manufacturers, utility companies or the governing jurisdiction.

Foundations

1. The buildings may be supported by continuous and spread footings bearing in firm, compacted fill, as recommended in the "Grading" Section of this report.

2. All footings should have a minimum embedment depth of 12 inches below the lowest adjacent grade within 7 feet laterally from the bottom of the footing, and a minimum width of 12 inches. Spread footings should be at least 24 inches square.

3. Continuous footings should be reinforced in accordance with the requirements of the architect/engineer; minimum continuous footing reinforcement should consist of two No. 4 rebars, one at the top and one at the bottom. Spread footing reinforcement should be determined by the architect/engineer.

4. Footings bearing in firm recompacted soil may be designed using maximum allowable bearing capacities of 1,200 psf dead load and 1,600 psf dead plus live loads. Using these criteria, total maximum and differential settlements (including static and seismic

settlements) are expected to be on the order of 3/4-inch and 3/8-inch over a horizontal distance of 25 feet, respectively.

5. Allowable bearing capacities may be increased by one-third when transient loads such as wind or seismicity are included. Foundations may be designed as necessary using the values contained in Table 1: Summary of Design Response Acceleration Parameters in this report.

6. To calculate resistance to lateral loads, a passive equivalent fluid pressure of 350 psf and a coefficient of friction of 0.40 can be used. Lateral capacity is based on the assumption that any backfill adjacent to foundations has been properly compacted. Passive and friction components of resistance may be combined in the analysis without reduction to either value.

7. Footing excavations should be observed by the geotechnical engineer prior to placement of reinforcing steel. Footing excavations should be lightly moistened and no desiccation cracks should be present prior to concrete placement.

8. The Soil Corrosivity Study by HDR Engineering, Inc. in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for foundations.

Slabs-on-Grade

Interior Slabs-On-Grade

1. Interior slabs-on-grade should have a minimum thickness of 4 inches. They should be reinforced and doweled to foundations per the specifications of the architect/engineer. At a minimum, interior slabs should be reinforced with No. 4 rebar at 24 inches on center each way. All structural slabs should contain minimum rebar meeting the criteria of ACI 318, Section 7.6.1.1 (ACI 2014). At a minimum, foundation dowels should be lap spliced to the slab rebar. The size and spacing of the dowels should match the size and spacing of the slab rebar.

Exterior Pedestrian Flatwork

1. Exterior pedestrian flatwork should have a minimum thickness of 4 inches. Minimum reinforcement for exterior pedestrian flatwork should consist of No. 3 rebar placed at 24 inches on-center each way

2. In conventional construction, it is common to use 4 to 6 inches of imported sand beneath exterior pedestrian flatwork. As the site soils are nonexpansive, this common practice would be suitable on this site. If additional cost savings are desired with minimal potential for loss of support, exterior pedestrian flatwork can be constructed directly over compacted site soils.

3. To reduce the risk of movement of flatwork due to seasonal moisture variations or loss of soil from erosion, thickened edges or grade beams can be provided around the perimeters of the flatwork. At a minimum, any thickened edge or grade beam should be reinforced by two No. 4 rebar, one at the top and one at the bottom.

4. It is recognized that the measures recommended in the previous paragraph for protecting exterior flatwork from seasonal moisture variations or loss of soil by erosion are an added expense, possibly more expensive than simply replacing flatwork that has settled and/or cracked. Consequently, the above measures for protecting exterior flatwork are only suggestions for consideration by the owner and/or architect/engineer. The degree to which exterior flatwork is protected is left to the discretion of the owner and/or architect/engineer.

5. Flatwork should be constructed with frequent joints to allow articulation as the flatwork moves in response to seasonal soil temperature and moisture variations. The soil below flatwork should be moisture conditioned prior to casting the flatwork.

6. Flatwork at doorways, and at other areas where maintaining the elevation of the flatwork is desired, should be doweled to the perimeter foundations, at a minimum, by No. 3 dowels lapped to the flatwork rebar at 24 inches on center. In other areas, the flatwork may be doweled to the foundation or the flatwork may be allowed to "float free," at the discretion of the architect/engineer. Flatwork that is intended to float free should be separated from foundations by a felt joint or other means.

<u>Moisture Vapor Transmission</u>

1. Due to the current use of impermeable floor coverings, water-soluble flooring adhesives, and the speed at which buildings are now constructed, moisture vapor transmission through slabs is a much more common problem than in past years. Where moisture vapor transmitted from the underlying soil would be undesirable, slabs should be protected from subsurface moisture vapor. A number of options for vapor protection are discussed below; however, the means of vapor protection, including the type and thickness of the vapor retarder, if specified, are left to the discretion of the architect/engineer.

2. Where specified, vapor retarders should conform to ASTM Standard E 1745-17. This standard specifies properties for three performance classes; Class A, B and C. The appropriate class should be selected based on the potential for damage to the vapor retarder during placement of slab reinforcement and concrete. Unless it is determined that a permeance of 0.10 perms will not allow vapor to accumulate beneath moisture-sensitive flooring, adhesives, stored products and/or equipment, then a vapor retarder permeance of 0.010 perms is recommended, per ACI 302.1-15. Permeance of vapor retarders should remain below 0.010 perms after the conditioning tests of ASTM E 1745-17.

   Note: ASTM E 1745-17 has the same permeance threshold for Class A, B and C (0.1 perms). The class that is chosen will make a difference in how resistant the vapor retarder is to punctures and tears, but it will not ensure any better permeance values to protect floor coverings.

3. Several recent studies, including those of American Concrete Institute Committee 302 (ACI 2015), have concluded that excess water above the vapor retarder increases the potential for moisture damage to floor coverings and could increase the potential for mold growth or other microbial contamination. The studies also concluded that it is preferable to eliminate the typical sand layer beneath the slab and place the slab concrete in direct contact with a Class A vapor retarder, particularly during wet weather construction. However, placing the concrete directly on the vapor retarder requires special attention to using the proper vapor retarder, a very low water-cement ratio in the concrete mix, and special finishing and curing techniques.

4. Another option that may be a reasonable compromise between effectiveness and cost considerations is the use of a subslab vapor retarder protected by a sand layer. If a Class A vapor retarder is specified, the retarder can be placed directly on the subgrade. The retarder should be covered with a minimum 2 inches of clean sand. If a less durable vapor retarder is specified (Class B or C), a minimum of 4 inches of clean sand should be provided, and the retarder should be placed in the center of the clean sand layer. Clean sand is defined as a well or poorly graded sand (ASTM D 2487-17) of which less than 3 percent passes the No. 200 sieve.

5. Regardless of the underslab vapor retarder selected, proper installation of the retarder per ASTM E 1643-18a is critical for optimum performance. Where utilized, the vapor retarder should be placed a minimum of 1 inch above the flow line of the drainage path

surrounding the structures, or 1 inch above the area drain grates if area drains are used to collect runoff around the structures. As required by ASTM E 1643-18a, all seams and utility penetrations should be properly sealed. At terminating edges of the vapor retarder, the vapor retarder should be effectively sealed with accessories specifically designed to seal the material to new or existing concrete; details for edge sealing of the vapor retarder should be provided by the architect/engineer.

6. If the sand is used between the vapor retarder and the slab, it should be moistened only as necessary to promote concrete curing; saturation of the sand should be avoided, as the excess moisture would be on top of the vapor retarder, potentially resulting in vapor transmission through the slab for months or years.

7. Positive drainage away from the structure should be maintained; see the "Drainage and Maintenance" section of this report for additional discussion of this issue. If water is allowed to pond near the structure, it may seep into the ground and migrate laterally through cracks or utility penetrations in the foundation, ultimately gaining access above the vapor retarder.

Slabs-on-Grade - General

1. To reduce shrinkage cracks in all interior and exterior slabs-on-grade, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, contraction joints should be installed, and the concrete should be properly cured. This is particularly applicable to slabs that will be cast directly upon a vapor retarder and those that will be protected from transmission of vapor by use of admixtures or surface sealers. Concrete materials, placement, and curing specifications should be at the direction of the architect/engineer; AC 302.1R-15 (ACI 2015) is suggested as a resource for the architect/engineer in preparing such specification.

2. To provide stability for curbs adjacent to exterior pedestrian flatwork, they should be set back a minimum distance equal to one-third the height of any adjacent descending slope, but not less than 5 feet from the tops of slopes. Alternately, curbs may be deepened to provide stability. The geotechnical engineer should review, on an individual basis, any situation where curbs must be deepened to meet this recommendation.

3. The Soil Corrosivity Study by HDR Engineering, Inc. in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for slabs-on-grade.

Retaining Walls

1. Retaining walls should be founded in firm soil that has been recompacted per the "Grading" Section of this report. Foundations for all retaining walls should have minimum overall depths (not including any keyway) of 13 inches below lowest grade within 7 feet laterally of any adjacent slope.

2. Retaining wall footings should be reinforced in accordance with the requirements of the architect/engineer; minimum retaining wall footing reinforcement should consist of two No. 4 rebars, one at the top and one at the bottom.

3. Retaining wall design may be based on the following parameters:

Table 2: Retaining Wall Design Parameters

Parameter	Backfill Type	Value
Active Equivalent Fluid Pressure	Onsite Soils	35 pcf
	Imported Sand/Gravel	35 pcf
At-rest Equivalent Fluid Pressure	Onsite Soils	50 pcf
	Imported Sand/Gravel	50 pcf
Passive Equivalent Fluid Pressure	Onsite or Imported	350 pcf
Maximum Toe Pressure	Onsite or Imported	1,600 psf
Coefficient of Sliding Friction	Onsite	0.40

4. No surcharges are taken into consideration in the values presented in the previous paragraph. The maximum toe pressure is an *allowable* value; no factors of safety, load factors or other factors have been applied to the remaining values. With the exception of the maximum toe pressure, these values will require application of appropriate factors of safety, load factors, and/or other factors as deemed appropriate by the architect/engineer.

5. The upper foot of backfill behind all retaining walls should consist of native soil, except in areas where AC pavement, or exterior pedestrian flatwork, will abut the top of the wall. In such cases, the gravel should extend to the aggregate base or other material below the improved surface, as appropriate. If gravel backfill is utilized, the gravel should be encased in a permeable synthetic filter fabric conforming to standard specification section 96-1.02B – Class C (Caltrans 2015).

6. The active and at-rest pressures presented in Table 2 are applicable to a horizontal

retained surface behind the wall. Walls having a retained surface that slopes upward from the wall should be designed for an additional equivalent fluid pressure of 1 pcf for the active case and 1.5 pcf for the at-rest case, for every two degrees of slope inclination.

7. It is assumed that retaining wall heights will not exceed 6 feet; therefore, per Section 1803A.5.12.1 of the 2016 CBC, dynamic seismic lateral earth pressures are not required. If retaining walls are planned that will retain more than 6 feet of backfill, the geotechnical engineer should be notified to provide dynamic seismic lateral earth pressure increments, as needed.

8. Long-term settlement of properly compacted sand or gravel retaining wall backfill should be assumed to be about 0.25 to 0.5 percent of the depth of the backfill; long-term settlement of properly compacted site soil retaining wall backfill would be about twice that of sand or gravel backfill. Improvements that are constructed near the tops of retaining walls should be designed to accommodate long-term settlement.

9. All retaining walls should be drained with perforated pipe encased in a free-draining gravel blanket. The pipe should be placed perforations downward, and should discharge in a nonerosive manner away from foundations and other improvements. The gravel blanket should have a width of approximately 1 foot and should extend upward to approximately 1 foot from the top of the wall backfill. The upper foot should be backfilled with native soil, except in areas where pavement or exterior pedestrian flatwork will abut the top of the wall. In such cases, the gravel should extend to the imported nonexpansive material, sand, aggregate base, or other material below the improved surface, as appropriate. To reduce infiltration of the soil into the gravel, a permeable synthetic filter fabric conforming to Standard Specifications Section 96-1.02B – Class C (Caltrans 2015), should be placed between the two. Manufactured synthetic drains, such as Miradrain or Enkadrain are acceptable alternatives to the use of gravel, provided that they are installed in accordance with the recommendations of the manufacturer.

10. Where weep hole drainage can be properly discharged, the perforated pipe may be omitted in lieu of weep holes on maximum 4-foot centers. A filter fabric as described above should be placed between the weep holes and the drain gravel.

11. Walls facing areas where moisture transmission through the wall would be undesirable should be thoroughly waterproofed in accordance with the specifications of the architect/engineer.

12. The architect/engineer should bear in mind that retaining walls by their nature are flexible structures, and that surface treatments on walls often crack. Where walls are to be plastered or otherwise have a finish applied, the flexibility should be considered in determining the suitability of the surfacing material, spacing of horizontal and vertical control joints, etc. The flexibility should also be considered where a retaining wall will abut or be connected to a rigid structure, and where the geometry of the wall is such that its flexibility will vary along its length.

13. The Soil Corrosivity Study by HDR in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for retaining walls.

AC Paths

1. Paths for pedestrian access may be constructed of AC over AB. Design methods for AC pavement do not typically consider pedestrian loading only; the section design is typically based on local experience and anticipated life span. For this application, a minimum pavement section of 2 inches of AC over 4 inches of AB is considered appropriate.

2. Paths should be constrained by curbs, gutters, flatwork, walls, etc.; free edges to the paths should be avoided.

3. AB should conform to the requirements of Section 26 of the Standard Specifications (Caltrans 2015). AC should conform to the requirements of Section 32 of the Standard Specifications (Caltrans 2015).

4. All AB in AC path areas should be compacted to a minimum of 95 percent of maximum dry density. Subgrade and AB should be firm and unyielding when proofrolled with heavy, rubber-tired grading equipment prior to continuing construction.

5. To reduce migration of surface drainage into the subgrade, maintenance of pavement areas is critical. Any cracks that develop in pavement should be promptly sealed.

6. The local jurisdiction may have additional requirements for pavement that could take precedence over the above recommendations.

Drainage and Maintenance

1. Per Section 1804A.4 of the 2016 CBC, unpaved ground surfaces should be *finish graded* to direct surface runoff away from foundations and other improvements at a minimum 5 percent grade for a minimum distance of 10 feet. The site should be similarly sloped to

drain away from foundations, and other improvements during construction. Where this is not practicable due to other improvements, etc., swales with improved surfaces, area drains, or other drainage facilities, should be used to collect and discharge runoff.

2. All eaves of the buildings should be fitted with roof gutters. Runoff from flatwork, roof gutters, downspouts, planter drains, area drains, etc. should discharge in a non-erosive manner away from foundations and other improvements in accordance with the requirements of the governing agencies. Erosion protection should be placed at all discharge points unless the discharge is to a pavement surface.

3. To reduce the potential for planter drainage gaining access to subslab areas, any raised planter boxes adjacent to foundations should be installed with drains and sealed sides and bottoms. Drains should also be provided for areas adjacent to the structures and in landscape areas that would not otherwise freely drain.

4. The on-site soils are highly erodible. If soils are disturbed during construction, stabilization of soils by vegetation or other means, *during* and *following* construction, is essential to reduce erosion damage. Care should be taken to establish and maintain vegetation. The landscaping should be planned and installed to maintain the surface drainage recommended above. Surface drainage should also be maintained during construction.

5. Maintenance of drainage and other improvements is critical to the long-term stability of the site and the integrity of the structures. Site improvements should be maintained on a regular basis.

6. Finished flatwork surfaces should be sloped to freely drain toward appropriate drainage facilities. Water should not be allowed to stand or pond on or adjacent to exterior pedestrian flatwork, or other improvements as it could infiltrate into the AB and/or subgrade, causing premature deterioration of flatwork or other improvements.

7. All exterior drains, retaining wall drains, and drain outlets should be maintained to be free-flowing. Care should be taken to establish and maintain vegetation. Vegetation and erosion matting (if utilized) should be maintained or augmented as needed. Irrigation systems should be maintained so that soils around structures are maintained at a relatively uniform year-round moisture content, and are neither over-watered nor allowed to dry and desiccate.

8. To reduce the potential for disruption of drainage patterns and undermining of structures, fill areas, etc., all rodent activity should be aggressively controlled.

Observation and Testing

1. It must be recognized that the recommendations contained in this report are based on a limited number of borings and rely on continuity of the subsurface conditions encountered.

2. It is assumed that the geotechnical engineer will be retained to provide consultation during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

3. At a minimum, the geotechnical engineer should be retained to provide:

    - Professional observation during grading, trench backfill, and foundation construction
    - Oversight of special inspection and compaction testing grading, trench backfill, and foundation construction

4. Special inspection of grading and backfill should be provided as per Section 1705A.6 and Table 1706A.6 of the CBC. The special inspector should be under the direction of the geotechnical engineer. At a minimum, the following items should be inspected and/or tested by the special inspector:

    - Stripping and clearing of all existing improvements, vegetation, and deleterious materials
    - Removal and replacement of existing fill within the building areas to the recommended depths
    - Scarification and moisture conditioning of other grading areas
    - Fill quality, placement, moisture conditioning and compaction
    - Utility trench backfill
    - Retaining wall drains and backfill
    - Foundation excavations

5. A program of quality assurance should be developed prior to beginning construction. At a minimum, the program should include all geotechnical items shown on the testing and

inspection schedule of the approved plans. It should also include any additional inspection items required by the engineer and/or the governing jurisdiction. These items should be discussed at a preconstruction site meeting among a representative of the owner, the geotechnical engineer, special inspector, the project inspector, the engineer, and contractors. The geotechnical engineer should be notified at least 48 hours prior to beginning grading operations.

6. Locations and frequency of compaction tests should be per the recommendation of the geotechnical engineer at the time of construction. The recommended test location and frequency may be subject to modification by the geotechnical engineer, based upon soil and moisture conditions encountered, size and type of equipment used by the contractor, the general trend of the results of compaction tests, or other factors.

12.0 CLOSURE

Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client as discussed in the "Scope of Services" section. Application beyond the stated intent is strictly at the user's risk.

This report is valid for conditions as they exist at this time for the type of project described herein. The conclusions and recommendations contained in this report could be rendered invalid, either in whole or in part, due to changes in building codes, regulations, standards of geotechnical or construction practice, changes in physical conditions, or the broadening of knowledge.

If changes with respect to the project become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions used in the preparation of this report are not correct, this firm shall be notified for modifications to this report. Any items not specifically addressed in this report should comply with the CBC of other applicable standards, and the requirements of the governing jurisdiction.

The recommendations presented in this geotechnical report are based upon the geotechnical conditions encountered at the site, and may be augmented by additional requirements of the client, or by additional recommendations provided by the geotechnical engineer based on peer or jurisdiction reviews, or conditions exposed at the time of construction. If Earth Systems Pacific is *not* retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising therefrom.

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Thank you for this opportunity to have been of service. If you have any questions, please feel free to contact this office at your convenience.

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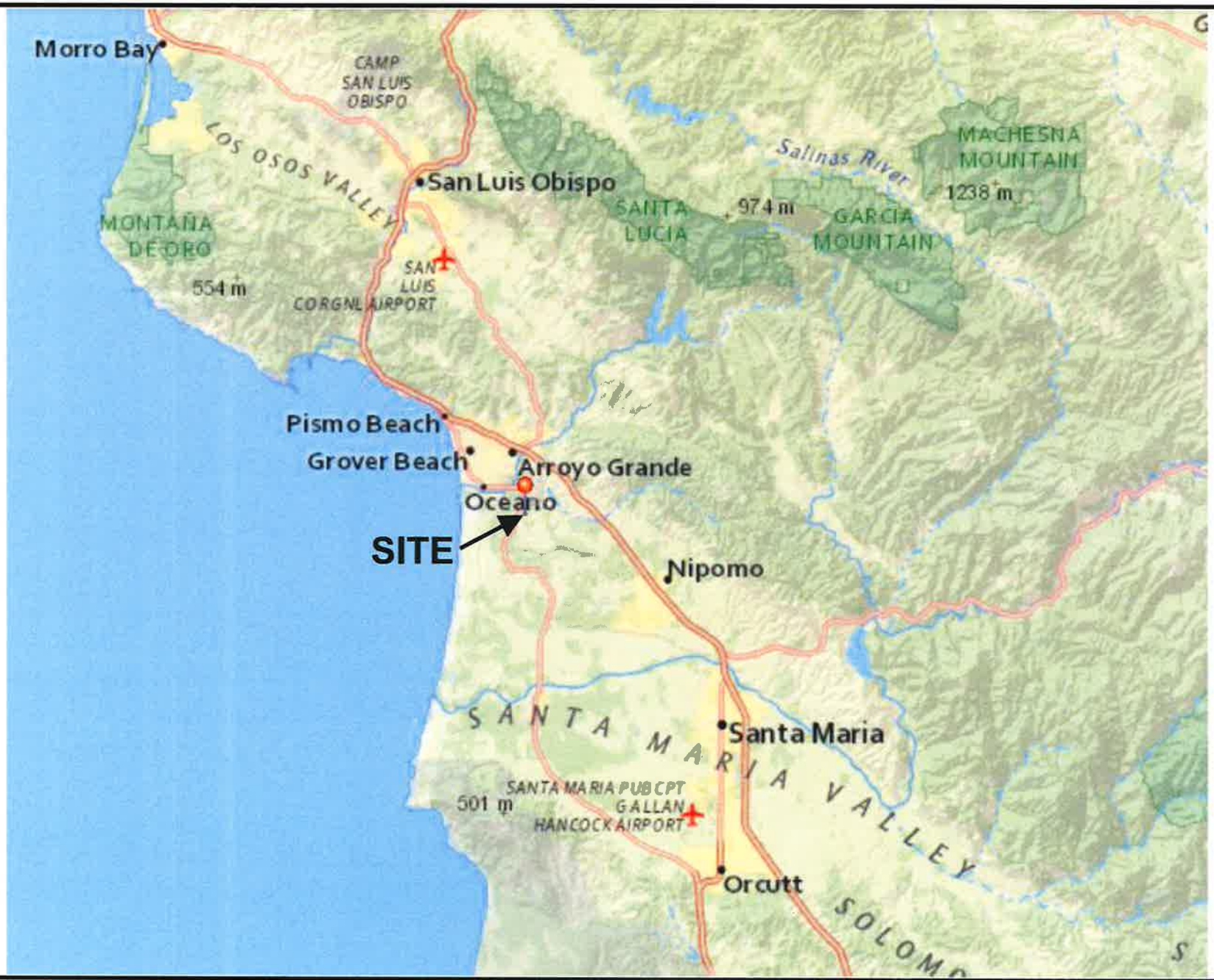
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APPENDIX A

Figure 1 – Site Vicinity Map
Figure 2 – Exploration Location Map
Figure 3 – Geologic Cross Section A - A’
Boring Log Legend
Boring Logs



EARTH SYSTEMS PACIFIC
4378 Old Santa Fe Road, San Luis Obispo, CA 93401
www.earthsystems.com - email: esp@earthsystems.com
(805) 544-3276

Site Location Map

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

FIGURE 1

Date
June 2018

Project No.
301024-001



LEGEND

6 Boring Location (Approx.)

A — A' Cross Section Location (Approx.)

Qoe Geologic Symbol, Older Dune Sand

BASE MAP PROVIDED BY: IBI GROUP

N

NOT TO SCALE

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www.earthsystems.com
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EXPLORATION LOCATION MAP

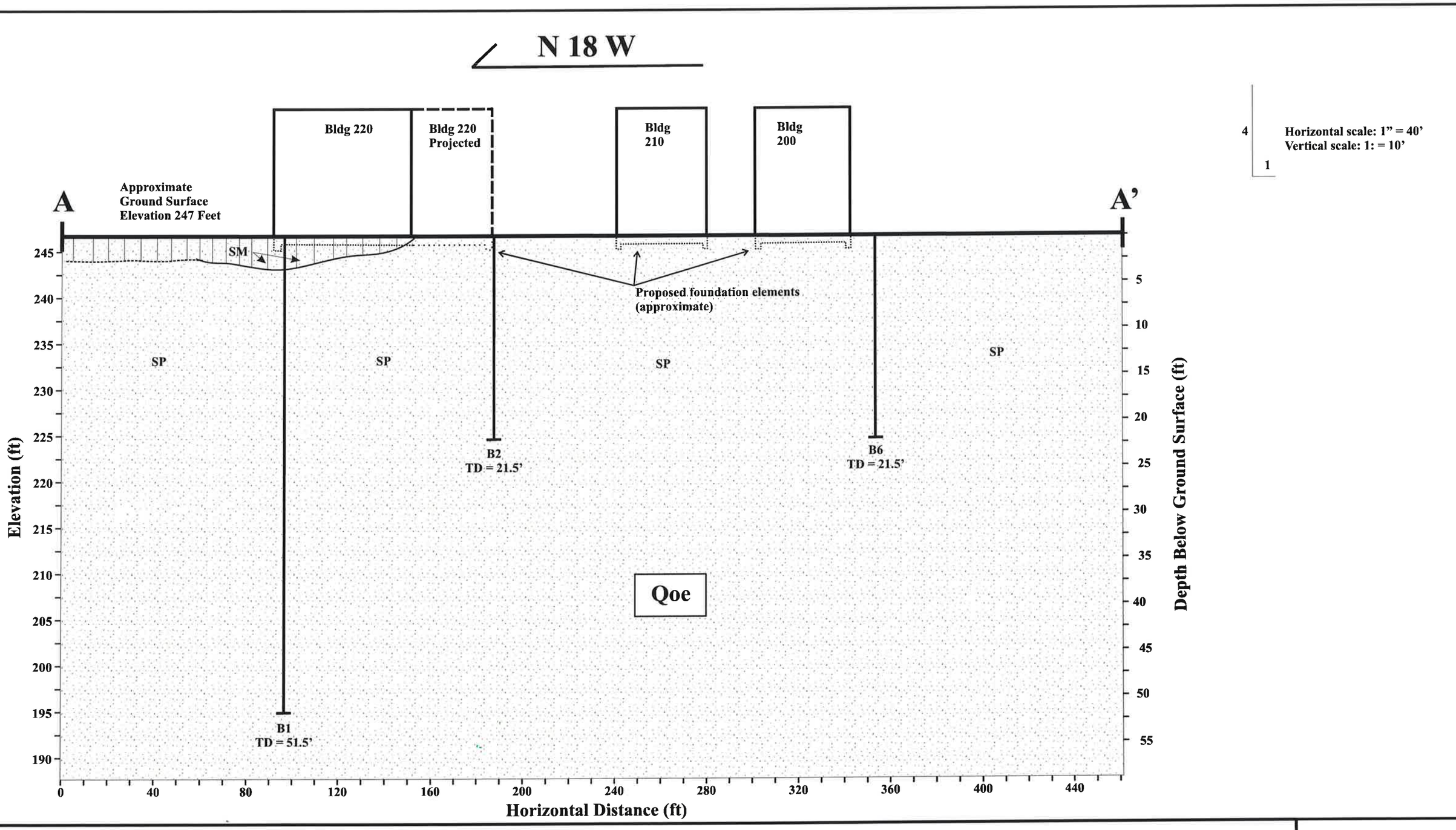
Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

Date
June, 2018

Project No.
301024-002

Figure 2

MESA MIDDLE SCHOOL MODULAR CLASSROOMS-050218maps



Earth Systems Pacific
4378 Old Santa Fe Road, San Luis Obispo, CA 93401
(805) 544-3276 Fax - (805) 544-1786
www.earthsystems.com - email: esp@earthsystems.com

GEOLOGIC CROSS SECTION A-A'

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

Figure 3

Date
June 2018

Project No.
301024-001

Earth Systems Pacific

BORING LOG LEGEND

SAMPLE / SUBSURFACE WATER SYMBOLS	GRAPH. SYMBOL
CALIFORNIA MODIFIED	■
STANDARD PENETRATION TEST (SPT)	●
SHELBY TUBE	▭
BULK	○
SUBSURFACE WATER DURING DRILLING	▼
SUBSURFACE WATER AFTER DRILLING	▽

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

MAJOR DIVISIONS	GROUP SYMBOL	TYPICAL DESCRIPTIONS	GRAPH. SYMBOL
COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE SIZE)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GP	POORLY GRADED GRAVELS, OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES	
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES	
	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
	SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES	
	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES	
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES	
FINE GRAINED SOILS (HALF OR MORE OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE)	ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	

OBSERVED MOISTURE CONDITION

DRY	SLIGHTLY MOIST	MOIST	VERY MOIST	WET (SATURATED)

CONSISTENCY

COARSE GRAINED SOILS			FINE GRAINED SOILS		
BLOWS/FOOT		DESCRIPTIVE TERM	BLOWS/FOOT		DESCRIPTIVE TERM
SPT	CA SAMPLER		SPT	CA SAMPLER	
0-10	0-16	LOOSE	0-2	0-3	VERY SOFT
11-30	17-50	MEDIUM DENSE	3-4	4-7	SOFT
31-50	51-83	DENSE	5-8	8-13	MEDIUM STIFF
OVER 50	OVER 83	VERY DENSE	9-15	14-25	STIFF
			16-30	26-50	VERY STIFF
			OVER 30	OVER 50	HARD

GRAIN SIZES

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENING		
# 200	# 40	# 10	# 4	3/4"	3"	12"

SILT & CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

TYPICAL BEDROCK HARDNESS

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
EXTREMELY HARD	CORE, FRAGMENT, OR EXPOSURE CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CAN ONLY BE CHIPPED WITH REPEATED HEAVY HAMMER BLOWS
VERY HARD	CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CORE OR FRAGMENT BREAKS WITH REPEATED HEAVY HAMMER BLOWS
HARD	CAN BE SCRATCHED WITH KNIFE OR SHARP PICK WITH DIFFICULTY (HEAVY PRESSURE); HEAVY HAMMER BLOW REQUIRED TO BREAK SPECIMEN
MODERATELY HARD	CAN BE GROOVED 1/16 INCH DEEP BY KNIFE OR SHARP PICK WITH MODERATE OR HEAVY PRESSURE; CORE OR FRAGMENT BREAKS WITH LIGHT HAMMER BLOW OR HEAVY MANUAL PRESSURE
SOFT	CAN BE GROOVED OR GOUGED EASILY BY KNIFE OR SHARP PICK WITH LIGHT PRESSURE, CAN BE SCRATCHED WITH FINGERNAIL; BREAKS WITH LIGHT TO MODERATE MANUAL PRESSURE
VERY SOFT	CAN BE READILY INDENTED, GROOVED OR GOUGED WITH FINGERNAIL, OR CARVED WITH KNIFE; BREAKS WITH LIGHT MANUAL PRESSURE

TYPICAL BEDROCK WEATHERING

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
FRESH	NO DISCOLORATION, NOT OXIDIZED
SLIGHTLY WEATHERED	DISCOLORATION OR OXIDATION IS LIMITED TO SURFACE OF, OR SHORT DISTANCE FROM, FRACTURES; SOME FELDSPAR CRYSTALS ARE DULL
MODERATELY WEATHERED	DISCOLORATION OR OXIDATION EXTENDS FROM FRACTURES, USUALLY THROUGHOUT; Fe-Mg MINERALS ARE "RUSTY", FELDSPAR CRYSTALS ARE "CLOUDY"
INTENSELY WEATHERED	DISCOLORATION OR OXIDATION THROUGHOUT; FELDSPAR AND Fe-Mg MINERALS ARE ALTERED TO CLAY TO SOME EXTENT, OR CHEMICAL ALTERATION PRODUCES IN SITU DISAGGREGATION
DECOMPOSED	DISCOLORATION OR OXIDATION THROUGHOUT, BUT RESISTANT MINERALS SUCH AS QUARTZ MAY BE UNALTERED; FELDSPAR AND Fe-Mg MINERALS ARE COMPLETELY ALTERED TO CLAY

drafting/masters/Boring Log Legend121714.dwg

Earth Systems Pacific

Boring No. 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

JOB NO.: 301024-002
DATE: 5/1/18

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0			4" AB					
1	SM		SILTY SAND: light brown, medium dense, moist, fine to medium sand (Older Dune Sand)	1.0 - 5.0	○			9
2				2.0 - 3.5	■	102.1	2.8	16
3								18
4	SP		POORLY GRADED SAND, light brown, medium dense, moist, fine to medium sand					5
5				5.0 - 6.5	■	100.2	3.2	11
6								16
7			yellow brown, thin lenses of brown silty sand					
8								
9								
10				10.0 - 11.5	■	105.9	7.1	10
11								19
12								21
13								
14								
15			light brown	15.0 - 16.5	●		11.0	7
16								10
17								14
18								
19								
20			light yellow brown, dense	20.0 - 21.5	●		6.5	7
21								16
22								23
23								
24								
25				25.0 - 26.5	●			6
26								14
								22

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 1
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

JOB NO.: 301024-002
DATE: 5/1/18

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SP		POORLY GRADED SAND: as above					
30			medium dense	30.0 - 31.5	●			11 12 12
35				35.0 - 36.5	●			5 10 16
40			dense	40.0 - 41.5	●			10 19 26
45			very dense	45.0 - 46.5	●			12 21 30
50				50.0 - 51.5	●			11 20 31
51			End of Boring @ 51.5' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

JOB NO.: 301024-002
DATE: 4/30/18

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0			2" AC over 6" AB					
1	SP		POORLY GRADED SAND: yellow brown, medium dense, moist, fine to medium sand (Older Dune sand)					
2				2.0 - 3.5	■	100.3	3.9	6, 11, 14
3								
4								
5				5.0 - 6.5	■	106.6	6.3	6, 13, 23
6								
7								
8								
9								
10			light yellow brown, dense	10.0 - 11.5	■	103.9	3.0	9, 19, 32
11								
12								
13								
14								
15			medium dense	15.0 - 16.5	●		3.3	3, 7, 11
16								
17								
18								
19								
20				20.0 - 21.5	●			3, 4, 7
21								
22			End of Boring @ 21.5' No subsurface water encountered					
23								
24								
25								
26								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 3
PAGE 1 OF 1
JOB NO.: 301024-002
DATE: 4/30/18

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0			3" AC over 5.5" AB					
1	SP		POORLY GRADED SAND: light brown, loose, moist, fine to medium sand (Older Dune Sand)					
2			medium dense, thin lenses of brown silty sand	2.0 - 3.5	■	102.5	10.2	4 9 13
3				2.0 - 5.0	○			
5				5.0 - 6.5	■	96.3	8.8	6 10 14
6			yellow brown					
10				10.0 - 11.5	■	106.0	9.4	7 14 19
15			dense, light yellow brown	15.0 - 16.5	●		6.6	8 18 18
20				20.0 - 21.5	●			4 13 18
22			End of Boring @ 21.5' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 4

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

PAGE 1 OF 1
JOB NO.: 301024-002
DATE: 4/30/18

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SP		POORLY GRADED SAND: yellow brown, loose, moist, fine to medium sand (Older Dune Sand)	1.0 - 5.0	○			1
2				2.0 - 3.5	■	97.4	5.2	1 1
5			medium dense	5.0 - 6.5	■	106.7	6.9	5 11 16
10			light yellow brown	10.0 - 11.5	■	105.6	11.4	4 12 16
15				15.0 - 16.5	■	102.1	4.2	9 21 25
20			dense	20.0 - 21.5	●			7 16 22
22			End of Boring @ 21.5' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 5

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

PAGE 1 OF 1
JOB NO.: 301024-002
DATE: 4/30/18

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SP		POORLY GRADED SAND: light brown, loose, moist, fine to medium sand (Older Dune Sand)					
2			yellow brown, medium dense	2.0 - 3.5	Ring	106.4	13.2	4, 8, 14
5				5.0 - 6.5	Ring	107.1	10.1	8, 16, 20
6			thin lenses of brown silty sand					
10				10.0 - 11.5	Ring	108.1	7.3	9, 18, 26
15			dense, light yellow brown	15.0 - 16.5	SPT		4.1	8, 14, 21
20				20.0 - 21.5	SPT			8, 14, 20
22			End of Boring @ 21.5' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 6

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53 with Automatic Hammer
AUGER TYPE: 6" Hollow Stem Auger

PAGE 1 OF 1
JOB NO.: 301024-002
DATE: 4/30/18

Mesa Middle School Modular Classrooms
2555 South Halcyon Road
Arroyo Grande, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SP		POORLY GRADED SAND: light brown, loose, moist, fine to medium sand (Older Dune Sand)	1.0 - 4.0	○			4
2				2.0 - 3.5	■	103.2	8.8	7 12
3			yellow brown					
5			medium dense	5.0 - 6.5	■	106.1	16.5	5 10 16
10			moist, thin lenses of brown silty sand	10.0 - 11.5	■	108.0	8.0	8 16 22
15			light yellow brown	15.0 - 16.5	●		5.1	7 8 12
20				20.0 - 21.5	●			7 13 17
22			End of Boring @ 21.5' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

APPENDIX B

Geotechnical Laboratory Test Results

Mesa Middle School
Modular Classrooms

301024-002

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

May 8, 2018

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
1	3.0 - 3.5	2.8	105.0	102.1
1	6.0 - 6.5	3.2	103.4	100.2
1	11.0 - 11.5	7.1	113.4	105.9
2	3.0 - 3.5	3.9	104.2	100.3
2	6.0 - 6.5	6.3	113.3	106.6
2	11.0 - 11.5	3.0	107.0	103.9
3	3.0 - 3.5	10.2	113.0	102.5
3	6.0 - 6.5	8.8	104.8	96.3
3	11.0 - 11.5	9.4	115.9	106.0
4	3.0 - 3.5	5.2	102.5	97.4
4	6.0 - 6.5	6.9	114.1	106.7
4	11.0 - 11.5	11.4	117.6	105.6
4	16.0 - 16.5	4.2	106.4	102.1
5	3.0 - 3.5	13.2	120.5	106.4
5	6.0 - 6.5	10.1	117.9	107.1
5	11.0 - 11.5	7.3	115.9	108.1
6	3.0 - 3.5	8.8	112.2	103.2
6	6.0 - 6.5	16.5	123.6	106.1
6	11.0 - 11.5	8.0	116.6	108.0
1	15.5 - 16.5	11.0	--	--
1	20.5 - 21.5	6.5	--	--
2	15.5 - 16.5	3.3	--	--
3	15.5 - 16.5	6.6	--	--
5	15.5 - 16.5	4.1	--	--
6	15.5 - 16.5	5.1	--	--

EXPANSION INDEX TEST RESULTS

ASTM D 4829-11

BORING NO.	DEPTH feet	EXPANSION INDEX
4	1.0 - 5.0	0

Mesa Middle School
Modular Classrooms

301024-002

PARTICLE SIZE ANALYSIS

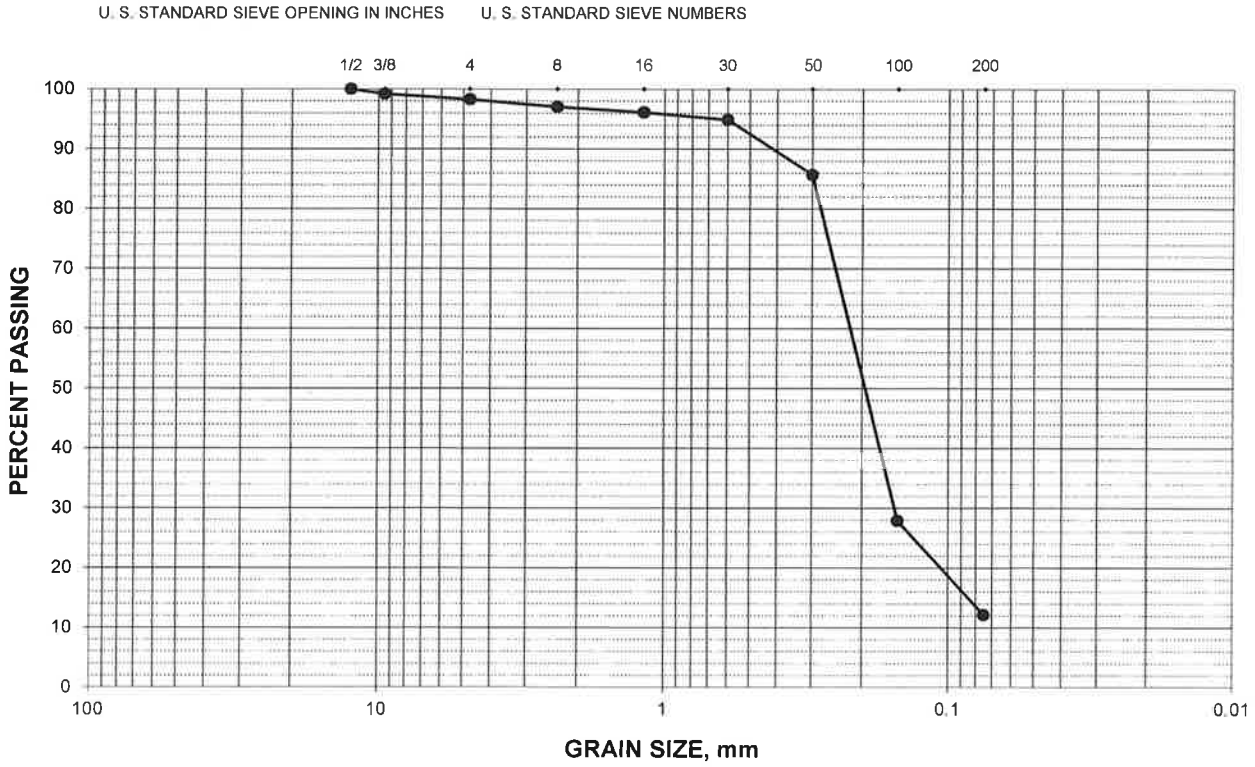
ASTM D 422-63/07; D 1140-17

Boring #1 @ 1.0 - 5.0'

May 8, 2018

Silty Sand (SM)

Sieve size	% Retained	% Passing
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	1	99
#4 (4.75-mm)	2	98
#8 (2.36-mm)	3	97
#16 (1.18-mm)	4	96
#30 (600-µm)	5	95
#50 (300-µm)	14	86
#100 (150-µm)	72	28
#200 (75-µm)	88	12



Mesa Middle School
Modular Classrooms

301024-002

MOISTURE-DENSITY COMPACTION TEST

ASTM D 1557-12 (Modified)

PROCEDURE USED: A

PREPARATION METHOD: Moist

RAMMER TYPE: Mechanical

SPECIFIC GRAVITY: 2.65 (assumed)

May 8, 2018

Boring #1 @ 1.0 - 5.0'

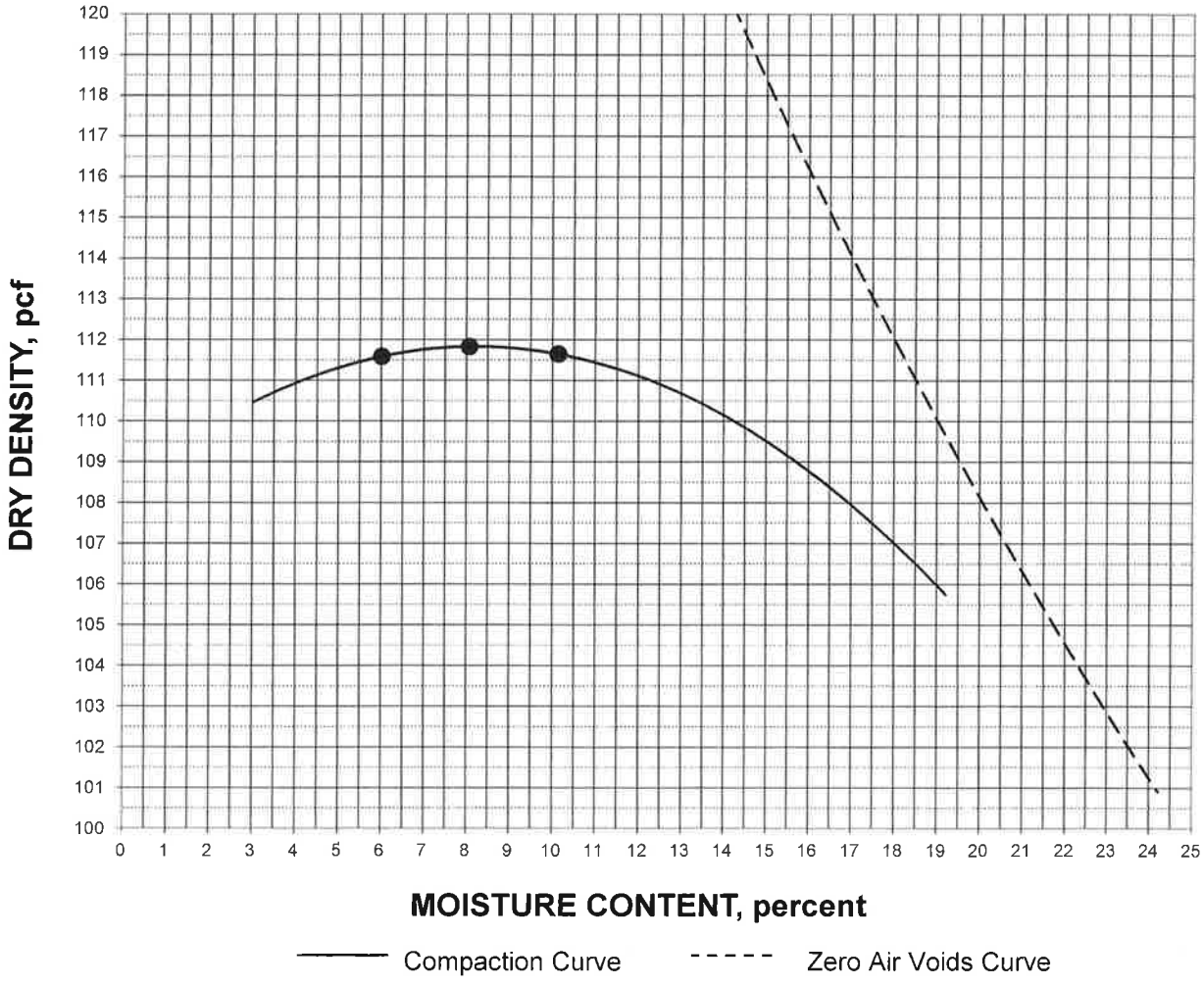
Light Brown Poorly Graded Sand (SP)

SIEVE DATA:

Sieve Size	% Retained (Cummulative)
3/4"	0
3/8"	1
#4	2

MAXIMUM DRY DENSITY: 111.8 pcf

OPTIMUM MOISTURE: 8.2%



Mesa Middle School
Modular Classrooms

301024-002

PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

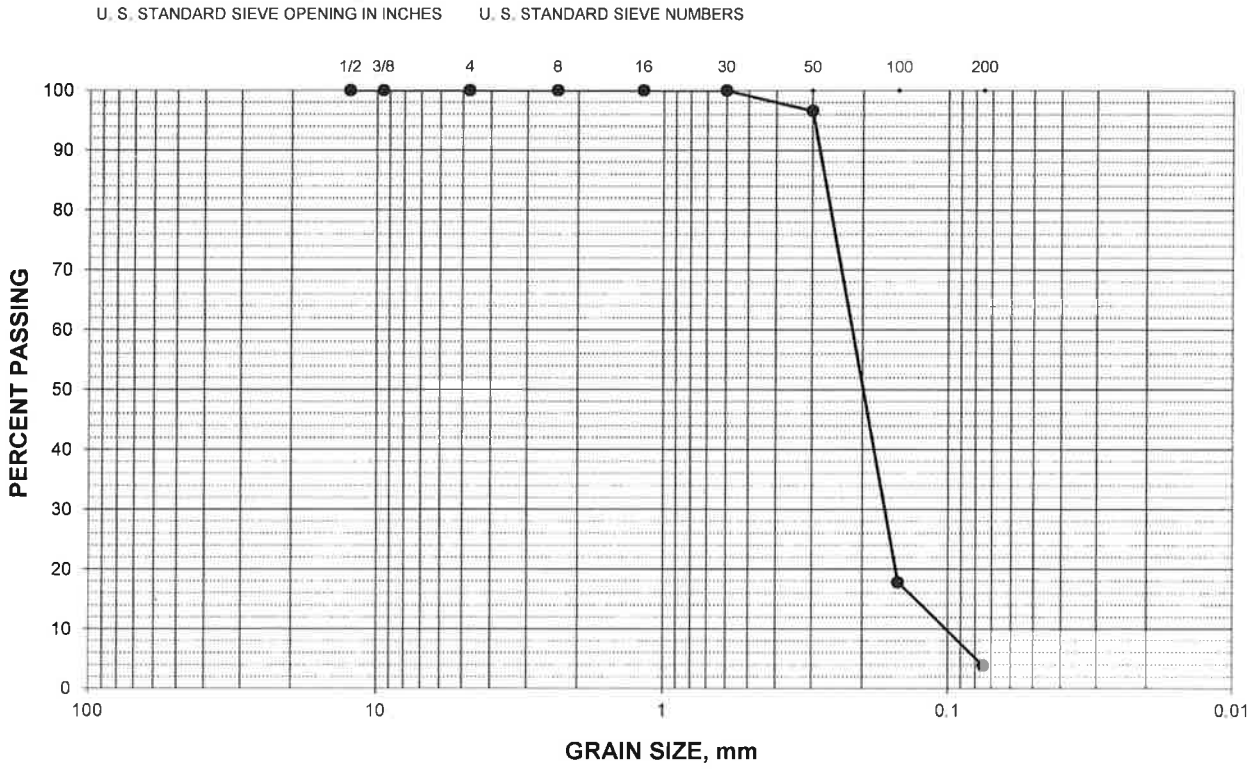
Boring #1 @ 6.0 - 6.5'

May 8, 2018

Poorly Graded Sand (SP)

Cu = 2.1; Cc = 1.3

Sieve size	% Retained	% Passing
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600-µm)	0	100
#50 (300-µm)	3	97
#100 (150-µm)	82	18
#200 (75-µm)	96	4



Mesa Middle School
Modular Classrooms

301024-002

PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

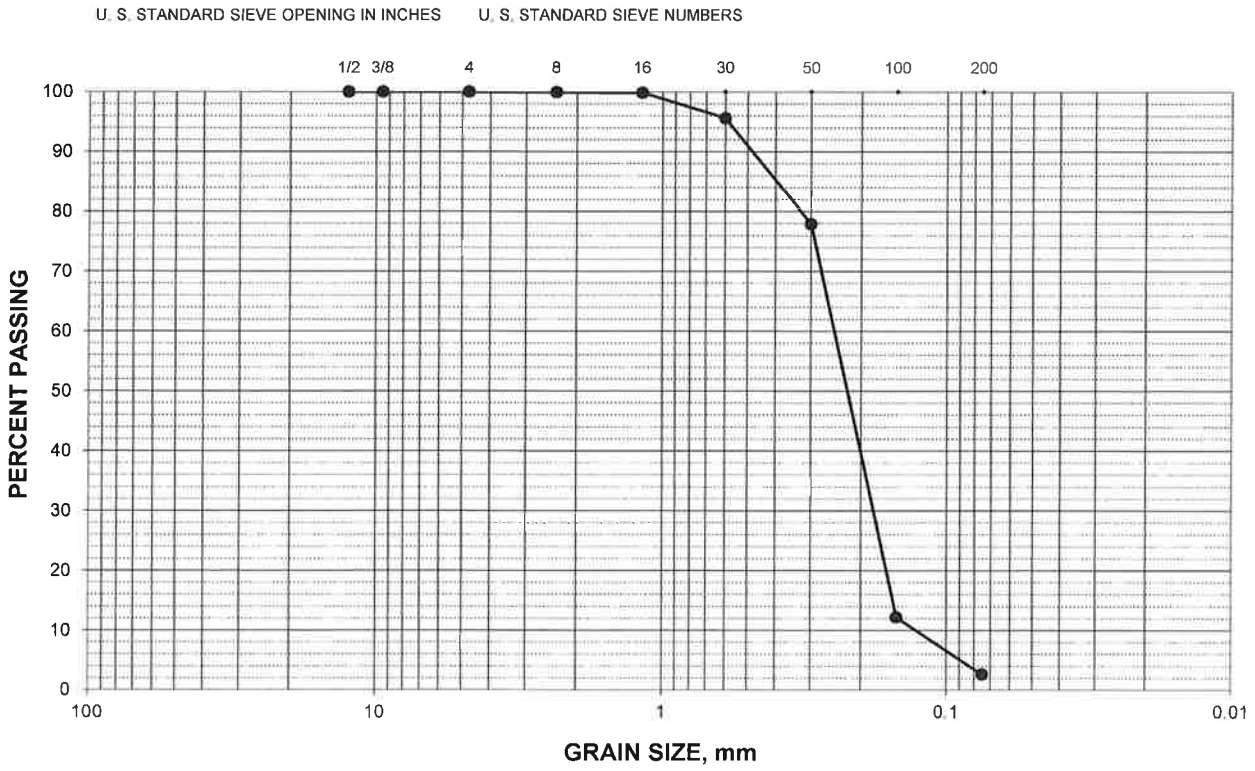
Boring #4 @ 1.0 - 5.0'

May 8, 2018

Poorly Graded Sand (SP)

Cu = 1.9; Cc = 1.0

Sieve size	% Retained	% Passing
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600-µm)	4	96
#50 (300-µm)	22	78
#100 (150-µm)	88	12
#200 (75-µm)	97	3



Mesa Middle School
Modular Classrooms

301024-002

MOISTURE-DENSITY COMPACTION TEST

ASTM D 1557-12 (Modified)

PROCEDURE USED: A

PREPARATION METHOD: Moist

RAMMER TYPE: Mechanical

SPECIFIC GRAVITY: 2.65 (assumed)

May 8, 2018

Boring #4 @ 1.0 - 5.0'

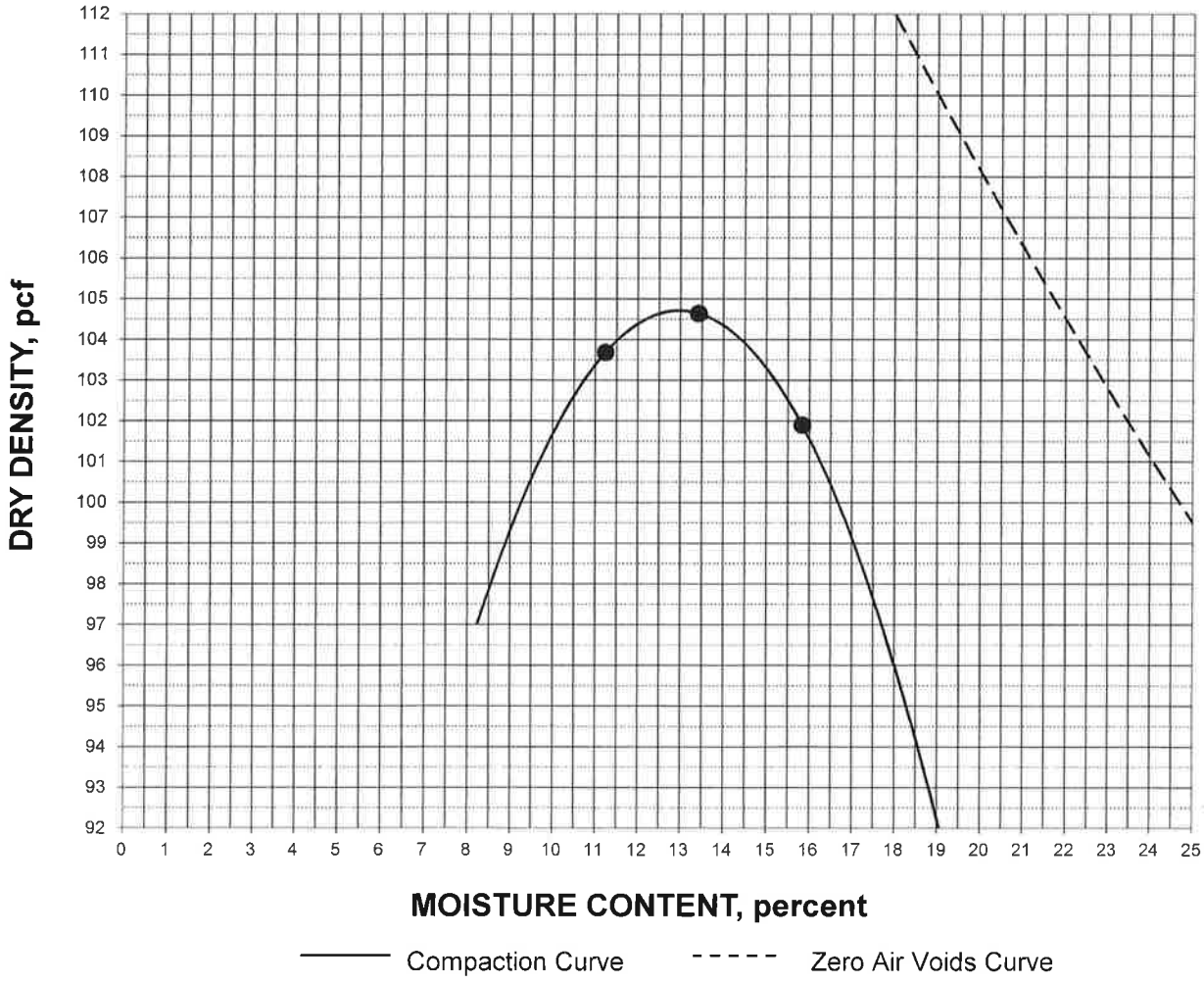
Yellow Brown Poorly Graded Sand (SP)

SIEVE DATA:

Sieve Size	% Retained (Cummulative)
3/4"	0
3/8"	0
#4	0

MAXIMUM DRY DENSITY: 104.7 pcf

OPTIMUM MOISTURE: 13.0%



Mesa Middle School
Modular Classrooms

301024-002

DIRECT SHEAR

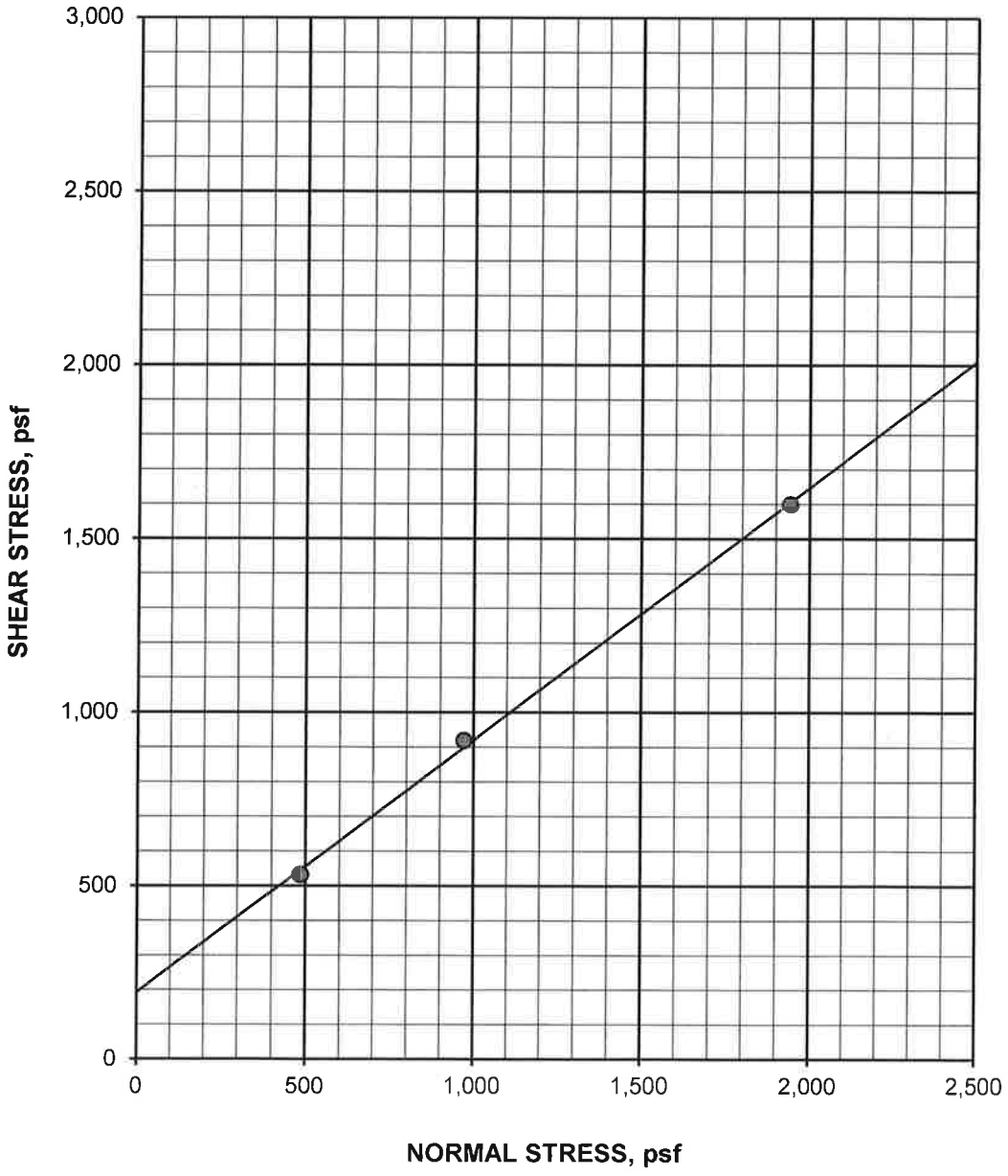
ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

May 8, 2018

Boring #4 @ 1.0 - 5.0'
Poorly Graded Sand (SP)
Compacted to 90% RC, saturated

INITIAL DRY DENSITY: 94.2 pcf
INITIAL MOISTURE CONTENT: 13.0 %
PEAK SHEAR ANGLE (Ø): 36°
COHESION (C): 193 psf

SHEAR vs. NORMAL STRESS



Mesa Middle School
Modular Classrooms

301024-002

DIRECT SHEAR continued

ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

Boring #4 @ 1.0 - 5.0'

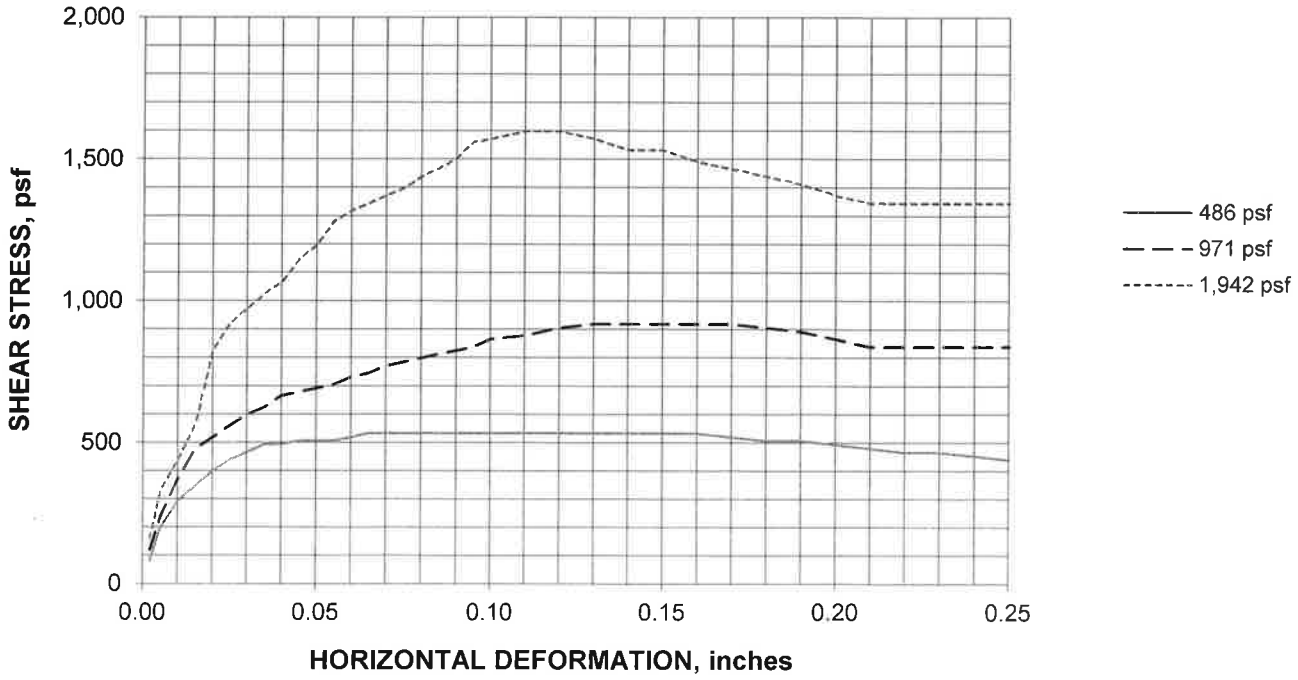
May 8, 2018

Poorly Graded Sand (SP)

Compacted to 90% RC, saturated

SPECIFIC GRAVITY: 2.65 (assumed)

SAMPLE NO.:	1	2	3	AVERAGE
INITIAL				
WATER CONTENT, %	13.0	13.0	13.0	13.0
DRY DENSITY, pcf	94.2	94.2	94.2	94.2
SATURATION, %	45.7	45.7	45.7	45.7
VOID RATIO	0.755	0.755	0.755	0.755
DIAMETER, inches	2.410	2.410	2.410	
HEIGHT, inches	1.00	1.00	1.00	
AT TEST				
WATER CONTENT, %	27.7	27.2	26.1	
DRY DENSITY, pcf	95.4	96.2	97.9	
SATURATION, %	100.0	100.0	100.0	
VOID RATIO	0.734	0.720	0.690	
HEIGHT, inches	0.99	0.98	0.96	



APPENDIX C

Soil Corrosivity Study by HDR Engineering, Inc.

Thursday, May 31, 2018 via email: nzoetewey@earthysystems.com

EARTH SYSTEMS PACIFIC
4378 Old Santa Fe Road
San Luis Obispo, CA 93401

Attention: Mr. Nick Zoetewey, PE

Re: Soil Corrosivity Study
Mesa Middle School Modular Classrooms
Arroyo Grande, California
HDR #18-0365SCS, ESP #301024-002

Introduction

Laboratory tests have been completed on two soil samples provided for the referenced project. The purpose of these tests was to determine if the soils might have deleterious effects on underground utility piping and concrete structures. HDR Engineering, Inc. (HDR) assumes that the samples provided are representative of the most corrosive soils at the site.

The proposed structures have one story and no subterranean levels. The site is located at 2555 South Halcyon Road in Arroyo Grande, California, and the water table is reportedly at least 25 feet deep.

The scope of this study is limited to a determination of soil corrosivity and general corrosion control recommendations for materials likely to be used for construction. HDR's recommendations do not constitute, and are not meant as a substitute for, design documents for the purpose of construction. If the architects and/or engineers desire more specific information, designs, specifications, or review of design, HDR will be happy to work with them as a separate phase of this project.

Laboratory Soil Corrosivity Tests

The electrical resistivity of each sample was measured in a soil box per ASTM G187 in its as-received condition and again after saturation with distilled water. Resistivities are at about their lowest value when the soil is saturated. The pH of the saturated samples was measured per CTM 643. A 5:1 water:soil extract from each sample was chemically analyzed for the major soluble salts commonly found in soil per ASTM D4327, ASTM D6919, and Standard Method 2320-B[1]. Laboratory test results are shown in the attached Table 1.

Soil Corrosivity

A major factor in determining soil corrosivity is electrical resistivity. The electrical resistivity of a soil is a measure of its resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. Corrosion currents, following Ohm's Law, are inversely proportional to soil resistivity. Lower electrical resistivities result from higher moisture and soluble salt contents and indicate corrosive soil.

A correlation between electrical resistivity and corrosivity toward ferrous metals is:[2]

Soil Resistivity in ohm-centimeters	Corrosivity Category
Greater than 10,000	Mildly Corrosive
2,001 to 10,000	Moderately Corrosive
1,001 to 2,000	Corrosive
0 to 1,000	Severely Corrosive

[1] *American Public Health Association (APHA). 2012. Standard Methods of Water and Wastewater. 22nd ed. American Public Health Association, American Water Works Association, Water Environment Federation publication. APHA, Washington D.C.*

[2] *Romanoff, Melvin. Underground Corrosion, NBS Circular 579. Reprinted by NACE. Houston, TX, 1989, pp. 166–167.*

Other soil characteristics that may influence corrosivity towards metals are pH, soluble salt content, soil types, aeration, anaerobic conditions, and site drainage.

Electrical resistivities were in the mildly corrosive category with as-received moisture. When saturated, the resistivities were in the mildly and moderately corrosive categories.

Soil pH values varied from 7.3 and 7.6. This range is neutral to mildly alkaline.[3] These values do not particularly increase soil corrosivity.

The soluble salt content of the samples was low. Chloride and sulfate were detected at low concentrations. Nitrate was also detected in low concentrations.

Tests were not made for sulfide and oxidation-reduction (redox) potential because these samples did not exhibit characteristics typically associated with anaerobic conditions.

This soil is classified as moderately corrosive to ferrous metals.

Corrosion Control Recommendations

The life of buried materials depends on thickness, strength, loads, construction details, soil moisture, etc., in addition to soil corrosivity, and is, therefore, difficult to predict. Of more practical value are corrosion control methods that will increase the life of materials that would be subject to significant corrosion.

The following recommendations are based on the soil conditions discussed in the Soil Corrosivity section above. Unless otherwise indicated, these recommendations apply to the entire site or alignment.

---

[3] *Romanoff, Melvin. Underground Corrosion, NBS Circular 579. Reprinted by NACE. Houston, TX, 1989, p. 8.*

Steel Pipe

1. Underground steel pipe with rubber gasketed, mechanical, grooved end, or other nonconductive type joints should be bonded for electrical continuity. Electrical continuity is necessary for corrosion monitoring and the possible future application of cathodic protection.

2. Install corrosion monitoring test stations to facilitate corrosion monitoring and the possible future application of cathodic protection:

    a. At each end of the pipeline.

    b. At each end of all casings.

    c. Other locations as necessary so the interval between test stations does not exceed 1,200 feet.

3. To prevent dissimilar metal corrosion cells and to facilitate the possible future application of cathodic protection, electrically isolate each buried steel pipeline per NACE SP0286 from:

    a. Dissimilar metals.

    b. Dissimilarly coated piping (cement-mortar vs. dielectric).

    c. Above ground steel pipe.

    d. All existing piping.

    Insulated joints should be placed above grade or in vaults where possible. Wrap all buried insulators with wax tape per AWWA C217.

4. Choose one of the following corrosion control options:

    OPTION 1

    a. Apply a suitable dielectric coating intended for underground use such as:

        i. Polyurethane per AWWA C222 *or*

        ii. Extruded polyethylene per AWWA C215 *or*

iii. A tape coating system per AWWA C214 *or*

iv. Hot applied coal tar enamel per AWWA C203 *or*

v. Fusion bonded epoxy per AWWA C213.

b. Although it is customary to cathodically protect bonded dielectrically coated structures, cathodic protection is not recommended at this time due to moderately corrosive soils. Joint bonds, test stations, and insulated joints should still be installed and will facilitate the application of cathodic protection in the future if needed to control leaks.

OPTION 2

a. As an alternative to dielectric coating and possible future cathodic protection, apply a ¾-inch cement mortar coating per AWWA C205 or encase in concrete 3 inches thick, using any type of ASTM C150 cement. Joint bonds, test stations, and insulated joints are still recommended for this alternative.

NOTE: Some steel piping systems, such as for oil, gas, and high-pressure piping systems, have special corrosion and cathodic protection requirements that must be evaluated for each specific application.

Ductile Iron Pipe

1. To prevent dissimilar metal corrosion cells and to facilitate the possible future application of cathodic protection, electrically insulate underground iron pipe from dissimilar metals and from above ground iron pipe with insulating joints per NACE SP0286.

2. Bond all nonconductive type joints for electrical continuity. Electrical continuity is necessary for corrosion monitoring and possible future application of cathodic protection.

3. Install corrosion monitoring test stations to facilitate corrosion monitoring and the possible future application of cathodic protection:

    a. At each end of the pipeline.

    b. At each end of any casings.

c. Other locations as necessary so the interval between test stations does not exceed 1,200 feet.

4. Choose one of the following corrosion control options:

OPTION 1

a. Apply a suitable coating intended for underground use such as:

i. Polyethylene encasement per AWWA C105; *or*

ii. Epoxy coating; *or*

iii. Polyurethane; *or*

iv. Wax tape.

NOTE: The thin factory-applied asphaltic coating applied to ductile iron pipe for transportation and aesthetic purposes does not constitute a corrosion control coating.

b. Although it is customary to cathodically protect coated structures, cathodic protection is not recommended at this time due to moderately corrosive soils. Joint bonds, test stations, and insulated joints should still be installed and will facilitate the application of cathodic protection in the future if needed to control leaks.

OPTION 2

a. As an alternative to the coating systems described in Option 1 and possible future cathodic protection, concrete encase all buried portions of metallic piping so that there is a minimum of 3 inches of concrete cover provided over and around surfaces of pipe, fittings, and valves using any type of ASTM C150 cement.

NOTE: Some iron piping systems, such as for fire water piping, have special corrosion and cathodic protection requirements that must be evaluated for each specific application.

Cast Iron Soil Pipe

1. Protect cast iron soil pipe with either a double wrap 4-mil or single wrap 8-mil polyethylene encasement per AWWA C105.
2. It is not necessary to bond the pipe joints or apply cathodic protection.
3. Provide 6 inches of clean sand backfill all around the pipe.

Clean Sand Backfill

1. HDR recommends the following parameters for clean sand backfill:
    a. Minimum saturated resistivity of no less than 3,000 ohm-cm; *and*
    b. pH between 6.0 and 8.0.
2. All backfill testing should be performed by a corrosion engineering laboratory.

Copper Tubing

1. Electrically insulate underground copper pipe from dissimilar metals and from above ground copper pipe with insulating devices per NACE SP0286.
2. Electrically insulate cold water piping from hot water piping systems.
3. Place cold water copper tubing in an 8-mil polyethylene sleeve or encase in double 4-mil thick polyethylene sleeves and bed and backfill with clean sand at least 2 inches thick surrounding the tubing. Copper tubing for cold water can also be treated the same as for hot water.
4. Hot water tubing may be subject to a higher corrosion rate. Protect hot copper tubing by one of the following measures:
    a. Preventing soil contact. Soil contact may be prevented by placing the tubing above ground or encasing the tubing with PVC pipe with solvent-welded joints. *or*
    b. Applying cathodic protection per NACE SP0169. The amount of cathodic protection current needed can be minimized by coating the tubing.

Plastic and Vitrified Clay Pipe

1. No special corrosion control measures are required for plastic and vitrified clay piping placed underground.

2. Protect all metallic fittings and valves with wax tape per AWWA C217, or with epoxy and appropriately sized cathodic protection per NACE SP0169.

All Pipe

1. On all pipes, appurtenances, and fittings not protected by cathodic protection, coat bare metal such as valves, bolts, flange joints, joint harnesses, and flexible couplings with wax tape per AWWA C217 after assembly.

2. Where metallic pipelines penetrate concrete structures such as building floors, vault walls, and thrust blocks use plastic sleeves, rubber seals, or other dielectric material to prevent pipe contact with the concrete and reinforcing steel.

Concrete Structures and Pipe

1. From a corrosion standpoint, any type of ASTM C150 cement may be used for concrete structures and pipe because the sulfate concentration is negligible, from 0 to 0.10 percent.[4,5,6]

2. Standard concrete cover over reinforcing steel may be used for concrete structures and pipe in contact with these soils due to the low chloride concentrations[7] found onsite. Limit the water-soluble chloride ion content in the concrete mix design to less than 0.3 percent by weight of cement.

---

[4] *2015 International Building Code (IBC) which refers to American Concrete Institute (ACI) 318-14 Table 19.3.2.1*

[5] *2015 International Residential Code (IRC) which refers to American Concrete Institute (ACI) 318-14 Table 19.3.2.1*

[6] *2016 California Building Code (CBC) which refers to American Concrete Institute (ACI) 318-14 Table 19.3.2.1*

[7] *Design Manual 303: Concrete Cylinder Pipe. Ameron. p.65*

Closure

The analysis and recommendations presented in this report are based upon data obtained from the laboratory samples. This report does not reflect variations that may occur across the site or due to the modifying effects of construction. If variations appear, HDR should be notified immediately so that further evaluation and supplemental recommendations can be provided.

HDR's services have been performed with the usual thoroughness and competence of the engineering profession. No other warranty or representation, either expressed or implied, is included or intended.

Please call if you have any questions.

Respectfully Submitted,
HDR Engineering, Inc.



James Keegan



5/31/2018

Greg Frost, PE

Enc: Table 1

Table 1 - Laboratory Tests on Soil Samples

Earth Systems Pacific
Mesa Middle School Modular Classrooms
Your #301024-002, HDR Lab #18-0365SCS
29-May-18

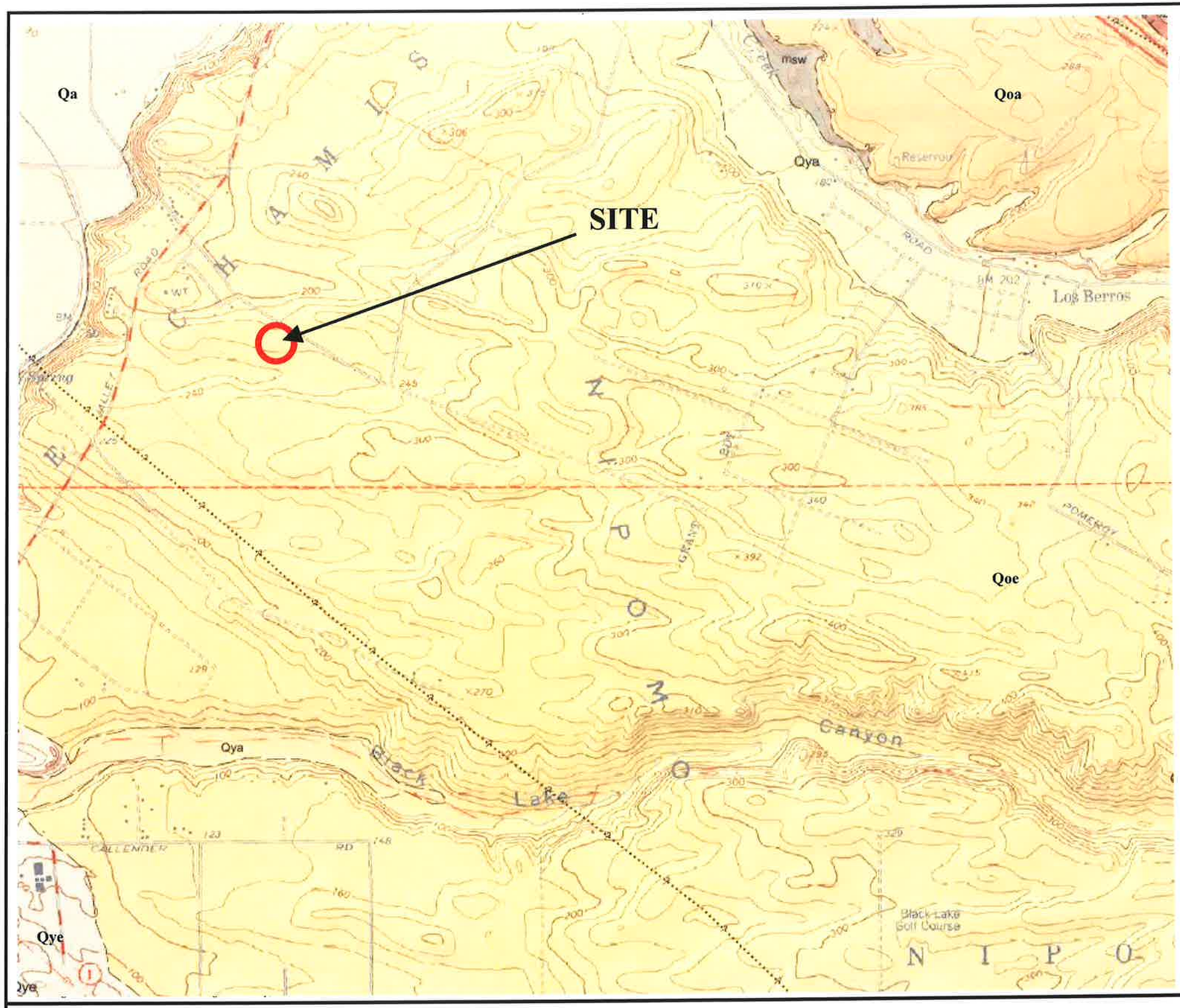
Sample ID			Bulk sample 3 @ 2-5'	Bulk sample 6 @ 1-4'
Resistivity		**Units**		
as-received		ohm-cm	20,800	10,800
saturated		ohm-cm	15,200	5,600
pH			7.3	7.6
Electrical Conductivity		mS/cm	0.02	0.08
Chemical Analyses				
Cations				
calcium	Ca^{2+}	mg/kg	9.7	22
magnesium	Mg^{2+}	mg/kg	9.9	14
sodium	Na^{1+}	mg/kg	13	45
potassium	K^{1+}	mg/kg	1.7	4.0
Anions				
carbonate	CO_3^{2-}	mg/kg	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	64	85
fluoride	F^{1-}	mg/kg	ND	ND
chloride	Cl^{1-}	mg/kg	4.1	30
sulfate	SO_4^{2-}	mg/kg	10	40
phosphate	PO_4^{3-}	mg/kg	ND	ND
Other Tests				
ammonium	NH_4^{1+}	mg/kg	ND	ND
nitrate	NO_3^{1-}	mg/kg	1.9	17
sulfide	S^{2-}	qual	na	na
Redox		mV	na	na

Resistivity per ASTM G187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per APHA 2320-B.
Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

431 West Baseline Road · Claremont, CA 91711
Phone: 909.962.5485 · Fax: 909.626.3316

APPENDIX D

Figure 4 - Geologic Map
Figure 5 - Historical Earthquake/Fault Map
Figure 6 - FEMA Flood Zone Map
Figure 7 – Radon Potential Map



EXPLANATION

Qa — **Alluvial flood-plain deposits (late Holocene)** – Active and recently active flood-plain deposits. Consists of unconsolidated sandy, silty, and clay-bearing alluvium.

Qye — **Young eolian deposits (Holocene)** – Vegetated stationary sand dune deposits displaying dune morphology. Well-sorted white to brown windblown sand. Inception of dune sheet occurred at approximately 3.5 to 4.3 ka (Knott and Eley, 2006).

Qya — **Young alluvial valley deposits, undivided (Holocene to late Pleistocene)** – Unconsolidated sand, silt and clay-bearing alluvium deposited on flood-plains and along valley floors. Surfaces are slightly dissected and display weak soil development. Approximately 4.3 to 11 ka in the Santa Maria Valley (Knott and Eley, 2006).

Qoe — **Old eolian deposits (late Pleistocene)** – well sorted red to brown wind blown sand with weak soil development in places. Surfaces are dissected and dune morphology is generally obscured.

Qoa — **Older alluvium (late to middle Pleistocene)** – Unconsolidated boulders, cobbles, gravel, sand, silt and clay poorly to moderately sorted; some discontinuous horizontal bedding, weakly to strongly cemented horizons (duripans) present locally, clasts generally consist of Franciscan Complex, Obispo and Monterey Formation lithologies.

Qm — **Marine deposits (middle to late Pleistocene)** – Unconsolidated, well to moderately sorted cobbles and sand; clasts are typically subrounded to rounded and consist of Franciscan Complex, Obispo and Monterey Formation lithologies. (Hansen, et al, 1994).

Tot — **Obispo Formation (lower Miocene)** – Coarse-grained tuff with subangular clasts of pumice (5%-50%), perlite (5%-15%), white to dark-gray glass shards (20%) and feldspar (5%) in a vitric ashy matrix; locally zeolitized or silicified (Tor) and commonly altered to montmorillonite (Hall, 1973).

Tor — **Zeolitized tuff** – Resistant, hard, fine-grained, zeolitized or silicied tuff. Forms resistant outcrops.

Tr — **Rincon Shale (Oligocene to lower Miocene)** – Dark brown siltstone that is exposed in a road cut along Highway 101.

sp — **Serpentinite**

msw — **Mélange and slope wash** – Areas surrounding resistant blocks interpreted to be mélange matrix largely covered by slope wash.

N

Approximate Scale: 1' = 2,000 feet

Source: Holland, 2013, Preliminary Geologic Map of the Oceano 7.5 minute Quadrangle

Earth Systems Pacific
4378 Old Santa Fe Road, San Luis Obispo, CA 93401
(805) 544-3276 Fax - (805) 544-1786
www.earthsystems.com - email: esp@earthsystems.com

Geologic Map

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

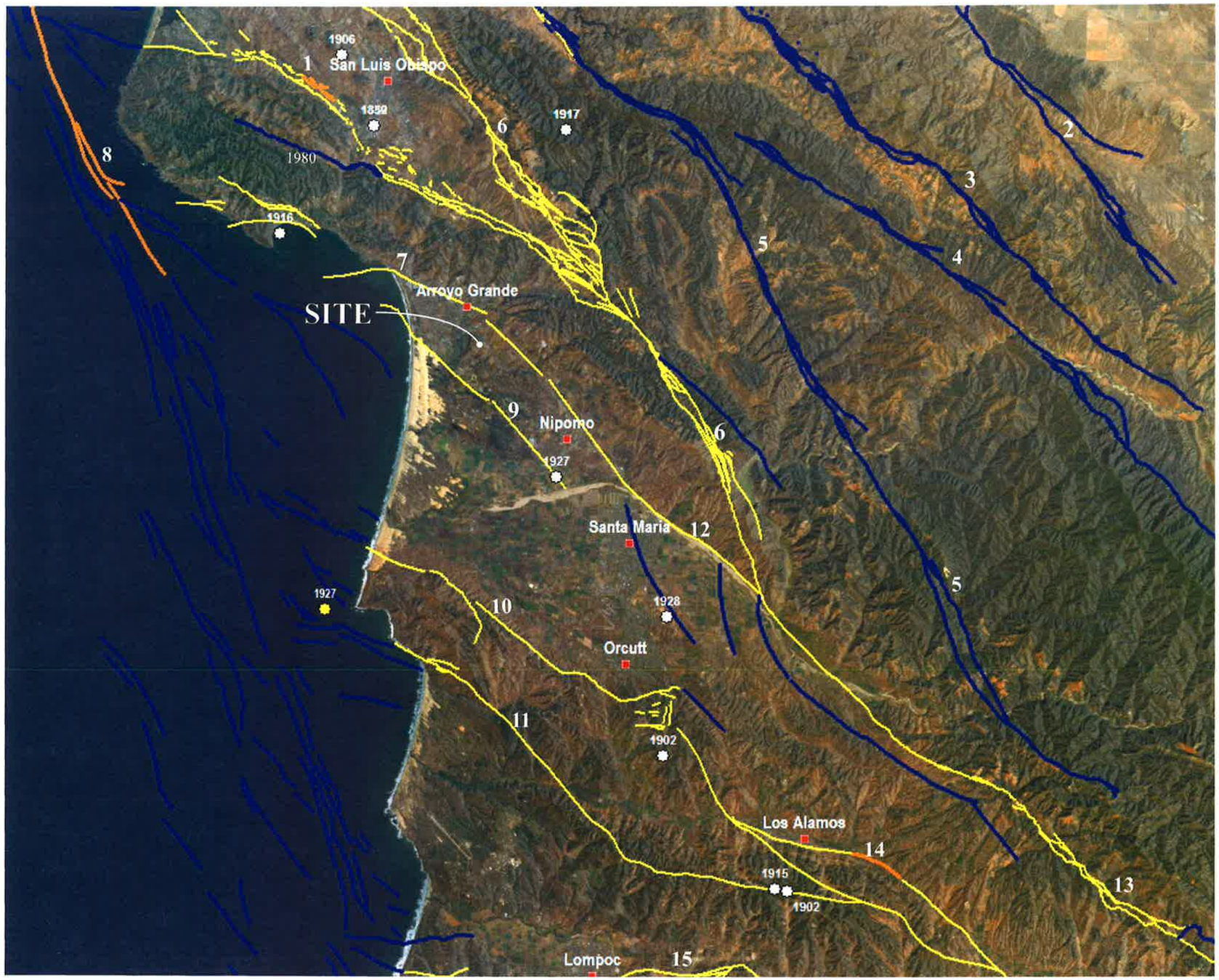
Figure 4

Date
June 2018

Project No.
301024-001

HISTORICAL EARTHQUAKE/ FAULT MAP

Santa Maria Area



LEGEND

- Historic rupture (<200 years)
- Holocene fault (<10,000 years)
- Late Quaternary (<700,000 years)
- Quaternary fault (<1.6 million)

HISTORICAL EARTHQUAKE MAGNITUDE

○ 5.0 to 5.9 ● 6.0 to 6.9 ● 7.0 to 7.9

FAULTS

1	Los Osos	11	Lions Head
2	San Juan	12	Santa Maria River
3	La Panza	13	Little Pine
4	South Cuyama	14	Los Alamos
5	East Huasna	15	Santa Ynez River
6	West Huasna		
7	Wilmar Avenue		
8	Hosgri-San Simeon		
9	Oceano		
10	Orcutt Frontal (Casmalia)		

Note: Not all faults are shown on map

REFERENCES

Blake, T.F., EQSEARCH, updated 2010
Campbell & Bozorgnia, 1997 Rev.

N

(Approximate Scale: 1" = 6 miles)

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www.earthsystems.com - e-mail: esp@earthsystems.com

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

FIGURE 5

Date
June 2018

Project No.
301024-002



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www.earthsystems.com - email: esp@earthsystems.com
(805) 544-3276

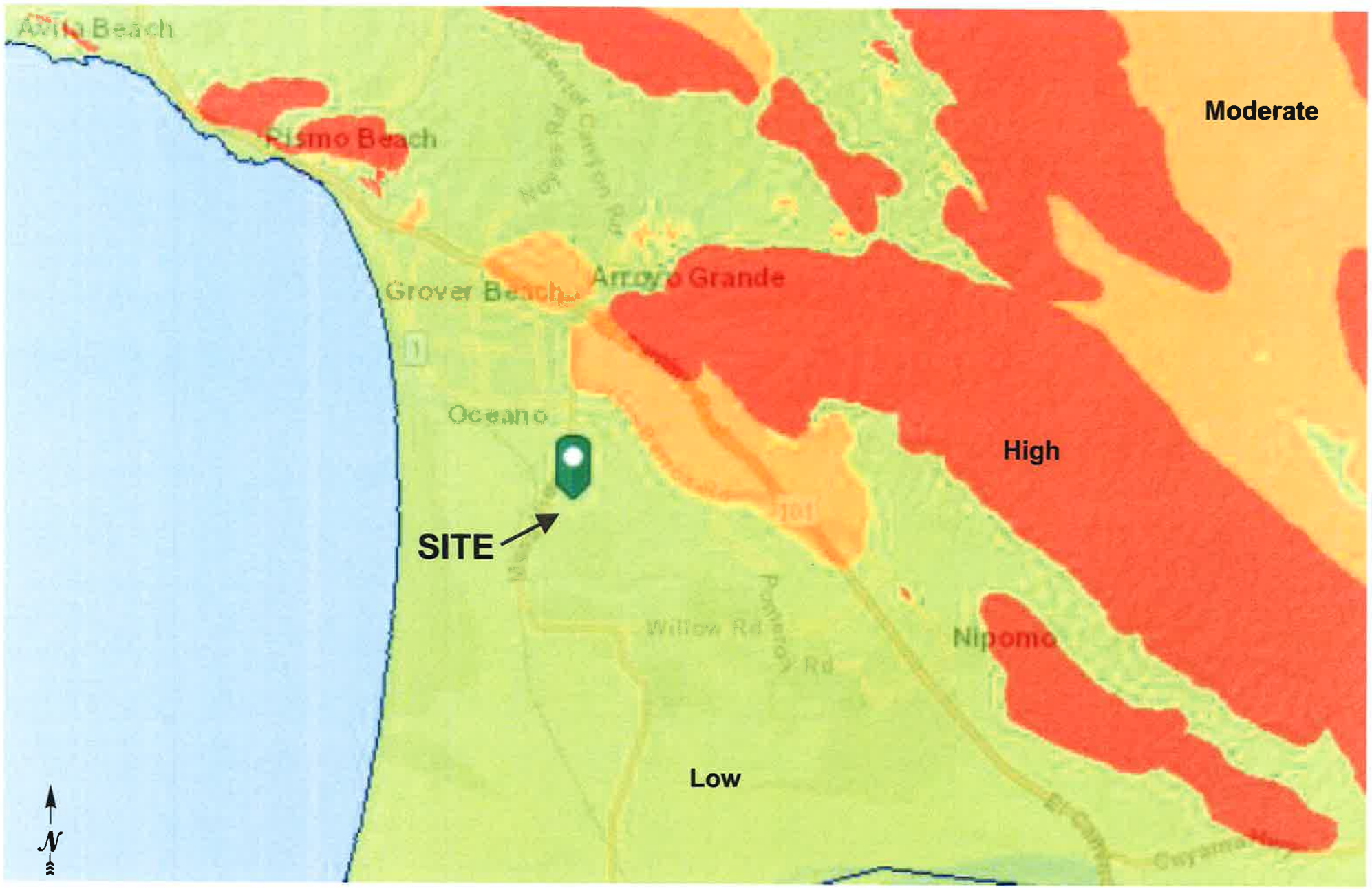
FEMA Flood Map

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

FIGURE 6

Date
June 2018

Project No.
301024-001



EARTH SYSTEMS PACIFIC
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www.earthsystems.com - email: esp@earthsystems.com
(805) 544-3276

Indoor Radon Potential Map

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

FIGURE 7

Date
June 2018

Project No.
301024-001

APPENDIX C

Laboratory Test Results

Mesa Middle School
SPED/Science Building

301024-006

BULK DENSITY TEST RESULTS

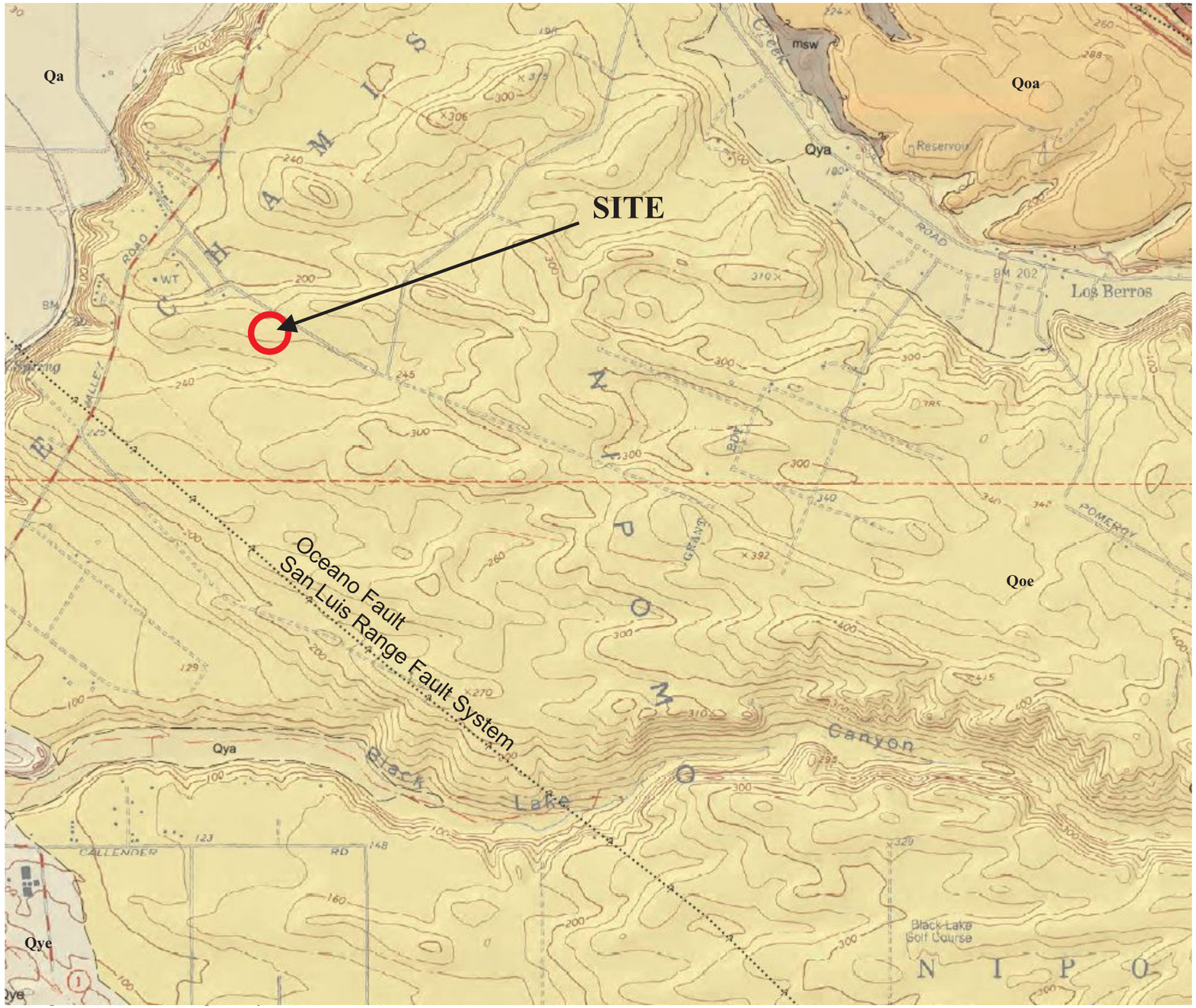
ASTM D 2937-17 (modified for ring liners)

February 21, 2025

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
1	3.0 - 3.5	10.0	114.7	104.3
1	6.0 - 6.5	13.4	119.6	105.5
1	11.0 - 11.5	6.2	111.2	104.7

APPENDIX D

Figure 3 – Geologic Map
Figure 4 – Historical Seismicity Map



EXPLANATION

Qa	**Alluvial flood-plain deposits (late Holocene)** - Active and recently active flood-plain deposits. Consists of unconsolidated sandy, silty, and clay-bearing alluvium.
Qye	**Young eolian deposits (Holocene)** – Vegetated stationary sand dune deposits displaying dune morphology. Well-sorted white to brown windblown sand. Inception of dune sheet occurred at approximately 3.5 to 4.3 ka (Knott and Eley, 2006).
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sp	**Serpentinite**
msw	**Mélange and slope wash** – Areas surrounding resistant blocks interpreted to be mélange matrix largely covered by slope wash.

Approximate Scale: 1’ = 2,000 feet

N

Source: Holland, 2013, Preliminary Geologic Map of the Oceano 7.5 minute Quadrangle
Map Revised April, 2025, added label to Oceano fault, San Luis Range Fault System

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www.earthsystems.com - email: esp@earthsystems.com

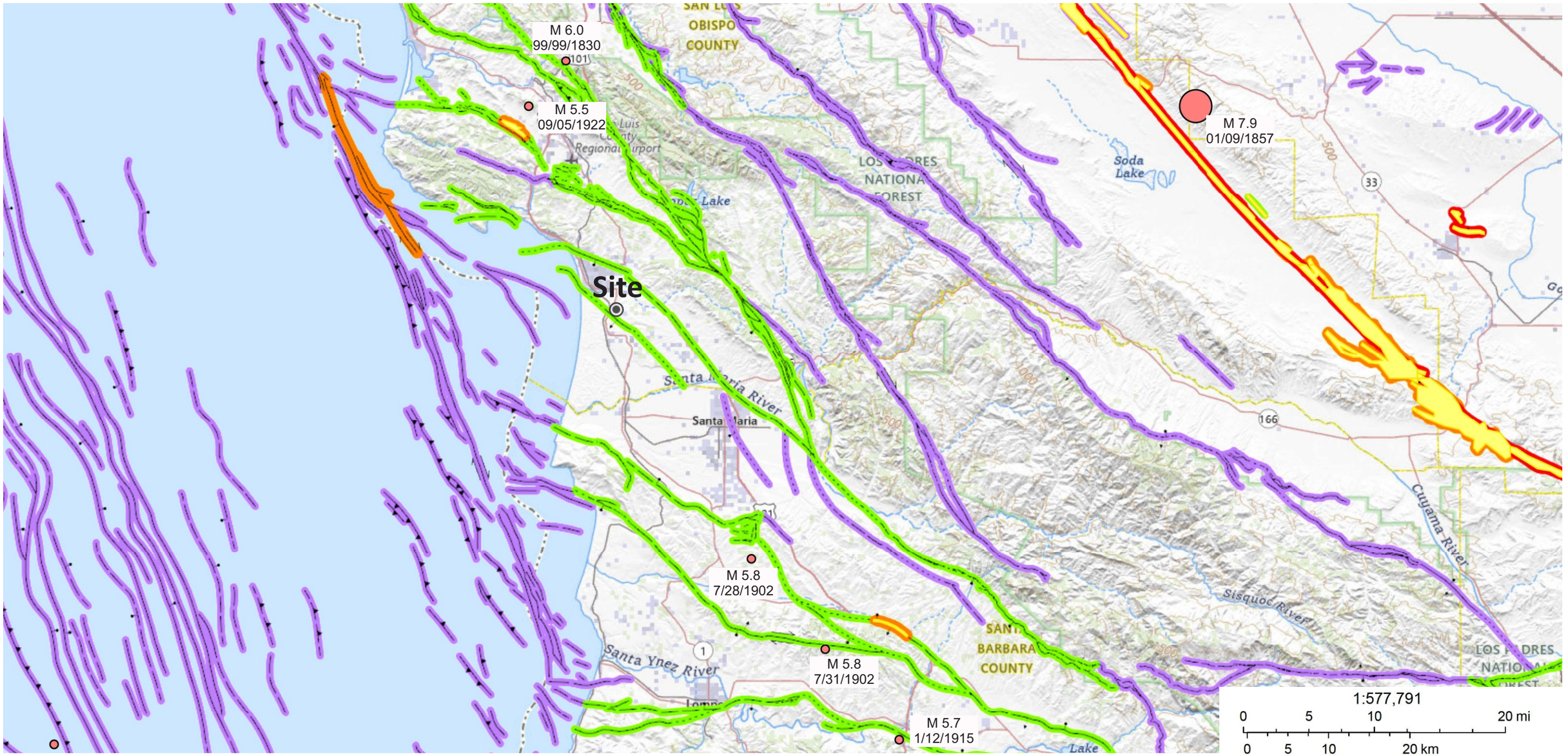
Geologic Map

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

Figure 3

Date
April 2025

Project No.
301024-006



Historic Earthquakes, 1769 to 2015 - California (Magnitude 5.0-plus)

- Richter magnitude <6.0
- Richter magnitude 6.0-6.4
- Richter magnitude 6.4-7.0
- Richter magnitude 7.0+

Source: California Geological Survey, Map Sheet 48

Fault Classification (Regional)

- Historic
- Late Quaternary
- Alquist-Priolo Special Studies Zone
- Holocene
- Quaternary

Source: California Geological Survey, Fau't Activity Map of California (2010)

California Geological Survey, C.W. Jennings, W.A. Bryant, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS

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HISTORICAL SEISMICITY MAP

Mesa Middle School
2555 South Halcyon Road
Arroyo Grande, California

Figure 4

Date
April 2025

Project No.
301024-006

APPENDIX E

Site Specific Ground Motion Analysis – Tables E-1 through E-4

Table E-1 Fault Parameters

Fault Section Name	Distance (miles)	Distance (km)	Upper Seis. Depth (km)	Lower Seis. Depth (km)	Avg Dip Angle (deg.)	Avg Dip Direction (deg.)	Avg Rake (deg.)	Trace Length (km)	Fault Type	**Mean Mag**	Mean Return Interval (years)	Slip Rate (mm/yr)
San Luis Range - Oceano 2011 CFM, FM3.1	0.5	0.7	0.0	12.0	45	na	na	21	B'	**6.6**		
San Luis Range (So Margin) FM3.2	2.3	3.8	0.0	12.0	45	37	90	115	B	**7.1**		0.2
San Luis Range 2011 CFM, FM3.1	2.5	3.9	0.0	12.0	52	na	na	79	B'	**7.2**		
San Luis Range - Pecho FM3.1, 3.2	6.5	10.5	0.0	12.0	90	na	na	26	B'	**6.6**		
Los Osos 2011 CFM FM3.1, 3.2	6.6	10.7	0.0	12.0	45	208	90	58	B	**6.9**		0.5
Oceanic-West Huasna FM3.1, 3.2	7.7	12.4	0.0	7.0	58	49	na	122	B'	**7.1**		
Shoreline FM3.1, 3.2	9.8	15.8	0.0	12.0	90	na	na	23	B'	**6.5**		
San Luis Bay 2011 CFM FM3.2	9.9	16.0	0.0	10.0	90	na	na	16	B'	**6.3**		
Casmalia 2011 CFM	10.0	16.1	0.0	12.0	75	na	na	48	B'	**6.9**		
Lions Head 2011 CFM FM3.1, 3.2	14.3	23.0	0.0	12.0	75	29	90	65	B	**6.7**		0.02
Hosgri FM3.1, 3.2	14.3	23.0	0.0	6.8	80	59	180	171	B	**7.3**		2.5
East Huasna 2011 CFM FM3.1, 3.2	15.4	24.8	0.0	15.0	90	na	na	74	B'	**7.2**		
Rinconada 2011 CFM FM3.1, 3.2	16.4	26.4	0.0	8.5	82	233	180	123	B	**7.5**		1
South Cuyama FM3.1, 3.2	17.8	28.7	0.0	13.9	33	210	na	83	B'	**7.5**		
Hosgri (Extension) FM3.1, 3.2	17.9	28.8	0.0	7.5	80	79	na	29	B'	**6.4**		
La Panza FM3.1, 3.2	22.6	36.4	0.0	13.9	51	45	na	72	B'	**7.3**		
Los Alamos 2011 CFM FM3.1, 3.2	26.0	41.9	0.0	12.0	30	na	na	27	B'	**6.9**		
Santa Ynez River FM3.1, 3.2	29.5	47.4	0.0	12.0	70	na	na	73	B'	**7.1**		
San Juan FM3.1, 3.2	30.2	48.7	0.0	13.0	90	243	180	82	B	**7.1**		1
Morales (West) FM3.1, 3.2	37.9	60.9	0.0	8.6	32	49	na	28	B'	**6.8**		
Santa Ynez (West) FM3.1, 3.2	39.3	63.3	0.0	9.2	70	182	0	80	B	**6.9**		2
Los Alamos extension FM3.1, 3.2	41.1	66.2	0.0	12.0	30	na	na	22	B'	**6.8**		
San Andreas (Cholame) rev FM3.1, 3.2	41.7	67.0	0.0	12.0	90	51	180	63	A	**6.8**	89	3.5
San Andreas (Carrizo) rev FM3.1, 3.2	43.6	70.2	0.0	15.1	90	224	180	59	A	**6.8**	89	3.5
San Andreas (Parkfield) FM3.1, 3.2	49.3	79.3	0.0	10.2	90	50	180	36	A	**6.4**	13	20
Red Mountain FM3.1, 3.2	50.9	81.8	0.0	14.1	56	2	90	101	B	**7.4**		2
Ozena FM3.1, 3.2	51.3	82.5	0.0	13.9	33	na	na	41	B'	**7.2**		
Morales (East) FM3.1, 3.2	51.8	83.3	0.0	8.6	32	14	na	18	B'	**6.6**		
Mission Ridge-Arroyo Parida-Santa Ana FM3.1, 3	59.1	95.2	0.0	7.6	70	176	90	69	B	**6.8**		0.4
North Channel FM3.2	59.9	96.4	1.1	4.5	26	10	90	51	B	**6.7**		1
Lost Hills FM3.1, 3.2	60.1	96.7	4.2	12.0	29	233	na	33	B'	**6.8**		
Pitas Point (Upper) FM3.2	60.4	97.2	1.4	10.0	42	15	90	35	B	**6.8**		1
Big Pine (West) FM3.1, 3.2	61.1	98.3	0.0	11.0	50	2	na	18	B'	**6.5**		
Pitas Point (Lower, West), FM 3.1	62.7	100.9	1.5	8.8	13	3	90	35	B	**7.2**		2.5
Oak Ridge (Offshore), west extension FM3.2	63.1	101.6	0.0	3.1	67	195	na	28	B'	**6.1**		
Channel Islands Western Deep Ramp FM3.1, 3.2	63.5	102.1	4.8	12.5	21	204	90	62	B'	**7.3**		
San Andreas (Creeping Section) FM3.1, 3.2	64.0	103.0	0.0	12.0	90	227	180	121	A	**6.8**	89	9
Santa Ynez (East) FM3.1, 3.2	66.8	107.5	0.0	13.3	70	172	0	68	B	**7.2**		2
San Andreas (Big Bend) FM3.1, 3.2	67.3	108.3	0.0	15.1	90	198	180	50	A	**6.8**	89	3.5
Pine Mtn FM3.1, 3.2	71.3	114.8	0.0	16.3	45	5	na	62	B'	**7.3**		

Reference: USGS OFR 2013-1165 (CGS SP 228) Based on Site Coordinates of 35.076 Latitude, -120.5822 Longitude

Mean Magnitude for Type A Faults based on 0.1 weight for unsegmented section, 0.9 weight for segmented model (weighted by probability of each scenario with section listed as given on Table 3 of Appendix G in OFR 2008-1437). Mean magnitude is average of Ellworths-B and Hanks & Bakun moment area relationship.

Site Coordinates: 35.0760 N 120.5822 W

Table E-2
Historical Earthquakes in Vicinity of Project Site, M >= 5.0

Day	Year	Epicenter Latitude (Degrees)	Epicenter Longitude (Degrees)	Distance from Site (mi)	Magnitude M_W
9/5	1922	35.30	120.70	16.8	**5.5**
99/99	1830	35.35	120.65	19.3	**6.0**
7/28	1902	34.80	120.40	21.7	**5.8**
7/31	1902	34.70	120.30	30.5	**5.8**
11/4	*1927	34.60	120.90	37.5	**7.1**
1/12	*1915	34.60	120.20	39.4	**5.7**
4/27	1908	35.60	120.20	42.1	**5.5**
12/7	1906	35.50	121.20	45.5	**5.7**
5/30	1877	35.70	120.30	45.9	**5.5**
3/10	1922	35.75	120.25	50.2	**6.3**
8/18	1922	35.75	120.25	50.2	**5.7**
6/8	1934	35.79	120.29	52.0	**6.0**
2/1	1853	35.70	121.10	52.0	**5.5**
12/22	2003	35.70	121.10	52.0	**6.6**
9/28	2004	35.82	120.37	52.7	**6.0**
6/28	1966	35.81	120.27	53.6	**6.0**
1/1	1821	34.55	119.85	55.2	**6.3**
11/5	1969	34.65	121.50	59.7	**5.5**
9/29	2004	35.95	120.50	60.5	**5.1**
11/16	1956	35.95	120.47	60.7	**5.0**
11/22	1952	35.76	121.27	61.1	**6.2**
4/7	1885	35.00	119.50	61.4	**5.5**
2/14	1987	35.96	120.70	61.4	**5.2**
9/13	1975	36.00	120.55	63.8	**5.1**
3/3	1901	36.00	120.50	64.0	**6.4**
12/28	1939	35.97	120.92	64.6	**5.2**

From full earthquake catalog in USGS OFR 2008-1437h as updated with current events through 2023 (ANSS 2024). For events with an asterisk, alternate solutions are given in the OFR. Ordered By Closest Event. Maximum 40 Closest Events

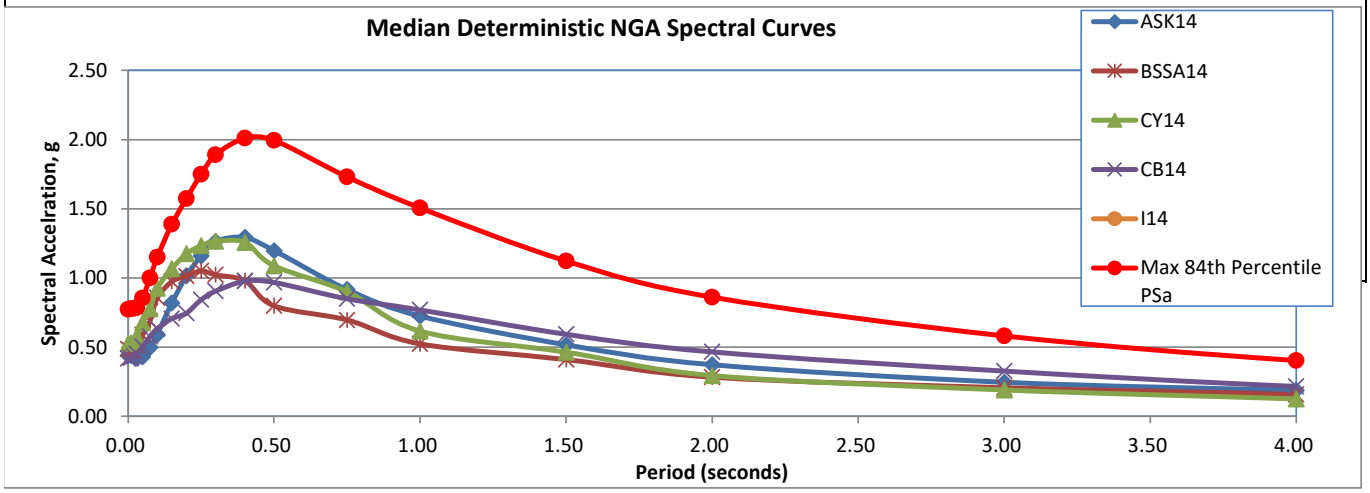
35.076 -120.5822 Lat/Long

Table E-3 - Deterministic Spectral Response Values
Deterministic NGA Response Spectra for Largest Median Earthquake Ground Motion

Average of NGA: Abrahamson - Silva - Kamai (2014), Boore - Stewart - Seyhan - Atkinson (2013), Campbell-Bozorgnia (2013), Chiou - Youngs (2014), and Idriss (2013)

Mean Spectra Response from Attentuation Relationships

Input Variables	ASK14		BSSA14	CB14	CY14	I14	Average			
	Period (sec)	Median PSa (g)	Median PSa (g)	Median PSa (g)	Median PSa (g)	Median PSa (g)	Period (sec)	Mean PSa (g)	Max 84th Percentile PSa (g)	Max Rotated Determ. PSa
	Weight:	**0.25**	**0.25**	**0.25**	**0.25**	**0.00**				
M 7.49	**0.00**	0.44	0.48	0.42	0.53	-	**0.00**	0.466	0.772	**0.850**
	0.01	0.44	0.49	0.42	0.53	-	**0.01**	0.469	0.777	**0.855**
R_{RUP} 3.80	**0.02**	0.44	0.47	0.43	0.53	-	**0.02**	0.469	0.780	**0.858**
	0.03	0.42	0.47	0.45	0.54	-	**0.03**	0.470	0.785	**0.863**
R_{JB} 3.80	**0.05**	0.43	0.51	0.50	0.58	-	**0.05**	0.505	0.853	**0.939**
	0.075	0.50	0.59	0.58	0.68	-	**0.075**	0.584	1.000	**1.100**
V_{S30} 270	**0.10**	0.59	0.69	0.63	0.78	-	**0.10**	0.673	1.151	**1.266**
	0.15	0.82	0.86	0.71	0.93	-	**0.15**	0.827	1.388	**1.527**
F_{RV} 0	**0.20**	1.02	0.97	0.75	1.07	-	**0.20**	0.951	1.573	**1.730**
	0.25	1.16	1.01	0.84	1.18	-	**0.25**	1.048	1.749	**2.006**
F_{NM} 0	**0.30**	1.26	1.05	0.90	1.23	-	**0.30**	1.113	1.890	**2.187**
	0.40	1.29	1.02	0.98	1.27	-	**0.40**	1.139	2.010	**2.367**
W 17.00	**0.50**	1.20	0.98	0.97	1.26	-	**0.50**	1.100	1.994	**2.389**
	0.75	0.92	0.80	0.85	1.09	-	**0.75**	0.913	1.731	**2.163**
Z_{TOR} 0.00	**1.00**	0.72	0.70	0.77	0.90	-	**1.00**	0.772	1.507	**1.959**
	1.50	0.52	0.52	0.59	0.62	-	**1.50**	0.562	1.122	**1.487**
Z_{BOT} 12.00	**2.00**	0.37	0.41	0.46	0.46	-	**2.00**	0.428	0.860	**1.161**
	3.00	0.25	0.28	0.33	0.29	-	**3.00**	0.287	0.581	**0.814**
dip 45	**4.00**	0.19	0.21	0.22	0.19	-	**4.00**	0.200	0.403	**0.584**
	5.00	0.15	0.16	0.15	0.13	-	**5.00**	0.145	0.291	**0.437**
	7.50	0.08	0.08	0.06	0.05	-	**7.50**	0.070	0.140	**0.209**
	10.00	0.05	0.05	0.04	0.03	-	**10.00**	0.041	0.079	**0.118**



35.076 -120.5822 Lat/Long

Table E-4 - Site Specific Spectral Response Values
Probabilistic and Deterministic Response Spectra for MCE compared to Code Spectra for 5% Viscous Damping Ratio

Natural Period T (seconds)	GeoMean Probab. 2% in 50 year MCE Spectrum (1) 2475-year (ASCE 21.2.1)	Rotated Probab. 2% in 50 year MCEr Spectrum (2) 2475-year (ASCE 21.2.1.1)	Rotated 84th Percentile Determ. MCE Spectrum (3) (ASCE 21.2.2)	Determ. Lower Limit MCE Spectrum (4) (3) * 1.00=Scaling (ASCE 21.2.2)	Determ. MCE Spectrum (5) Max (3),(4) (ASCE 21.2.2)	Site Specific MCE_R, Ground Response (SaM) (6) Min (2),(5) (ASCE 21.2.3)	Site Specific MCE Spectrum Comparator (6b) Max (6),1.5*(8) (ASCE 21.2.3)	2022 CBC MCE Spectrum (7)	Site Specific Design Spectrum (Sa) (8) (ASCE 21.3)	2022 CBC Design Spectrum (9) 2/3*(7)
0.00	0.497	0.493	0.850	0.850	0.850	0.493	0.493	0.441	0.329	0.294
0.05	0.681	0.677	0.939	0.939	0.939	0.677	0.677	0.638	0.451	0.426
0.10	0.866	0.860	1.266	1.266	1.266	0.860	0.860	0.836	0.573	0.557
0.15	1.061	1.054	1.527	1.527	1.527	1.054	1.054	1.034	0.702	0.689
0.20	1.199	1.191	1.730	1.730	1.730	1.191	1.191	1.101	0.794	0.734
0.30	1.330	1.390	2.187	2.187	2.187	1.390	1.390	1.101	0.927	0.734
0.40	1.296	1.380	2.367	2.367	2.367	1.380	1.380	1.101	0.920	0.734
0.50	1.270	1.376	2.389	2.389	2.389	1.376	1.376	1.101	0.917	0.734
0.75	0.996	1.127	2.163	2.163	2.163	1.127	1.127	1.101	0.751	0.734
1.00	0.802	0.946	1.959	1.959	1.959	0.946	0.946	0.920	0.630	0.613
1.50	0.594	0.713	1.487	1.487	1.487	0.713	0.713	0.613	0.476	0.409
2.00	0.446	0.546	1.161	1.161	1.161	0.546	0.546	0.460	0.364	0.307
3.00	0.284	0.361	0.814	0.814	0.814	0.361	0.361	0.307	0.241	0.204
4.00	0.212	0.279	0.584	0.584	0.584	0.279	0.279	0.230	0.186	0.153
5.00	0.162	0.221	0.437	0.437	0.437	0.221	0.221	0.184	0.147	0.123
8.00	0.094	0.128	0.246	0.246	0.246	0.128	0.128	0.115	0.085	0.077
10.00	0.066	0.090	0.118	0.118	0.118	0.090	0.090	0.074	0.060	0.049
			0.065							

C_{RS}:	0.903	
C_{R1}:	0.907	
Site Specific To:	0.178	$= 0.2*S_{D1}/S_{DS}$
Site Specific Ts:	0.891	$= S_{D1}/S_{DS}$

The value of Fa used in Column (3) is defined within ASCE 21.2.2 Supplement 1. This Fa value only applies within Column (3).

Site Coefficients	
F_{PGA}	1.16
F_a	1.10
F_v	2.50

Probabilistic spectrum from 2018 USGS Ground Motion Mapping Program adjusted for site conditions and scaled to represent maximum response in a horizontal plane, in accordance with ASCE 7-16 Section 21.2

Mapped MCE Acceleration Values		
PGA	0.440	g
S_S	1.002	g
S_1	0.368	g

Risk Coefficients have been applied to Column (2); If Method 1 was utilized the Risk Coefficients, CRS and CR1 are presented above, if Method 2 was utilized the Risk Coefficients were obtained from the USGS Risk Targeted Ground Motion Calculator (https://earthquake.usgs.gov/designmaps/rtgm).

Seismic Site Class	**D**
Risk Category	**II**

Reference: ASCE 7-16, Chapters 21.2, 21.3, 21.4, 21.5, 11.4, and 11.8

Calculation Utilized ASCE7-16, Section 21.2.1.1 - Method 1

Site-Specific Design Acceleration Values		
PGA_M	**0.497**	**g**
S_{DS}	**0.834**	**g**
S_{D1}	**0.743**	**g**

Short-Period Seismic Design Category:	1-Second Period Seismic Design Category:
D	D

Vertical Coefficient (C_V)
1.30

Deterministic Fault Parameters			
San Luis Range (So Margin) FN		R_{JB} (km)	3.8
Magnitude	7.49	R_{RUP} (km)	3.8
Distance (km)	0.7	Z_{TOR} (km)	0.0
Width (km)	17	Z_{BOT} (km)	12.0
Dip (Deg.)	45	V_{S30} (m/s)	270

Site-Specific MCE_R, 5% damped, Spectral Response Acceleration Parameter		
S_{MS}	**1.251**	**g**
S_{M1}	**1.115**	**g**

1 g = 980.6 cm/sec^2 =32.2 ft/sec^2

PSV (ft/sec) = $32.2(S_a)T/(2p)$

Key: Probab. = Probabilistic, Determ. = Deterministic, MCE = Maximum Considered Earthquake