ADDENDUM NO. 002

TO THE BID DOCUMENTS

FOR THE

Gateway Annex School

A#03-122398

at

550 Airport Way, Camarillo, CA 93010

Project # 2026-06

PREPARED BY
Mandy Porter
November 13, 2026

NOTICE TO BIDDERS: You are hereby notified of the following changes, clarifications or modifications to the original Contract Documents, Project Manual, Drawings, Specifications and subsequent Addenda. This addendum shall supersede the original contract documents, and any previous addenda wherein it contradicts the same and shall take precedence over anything to the contrary therein. All other conditions remain unchanged. The bidders shall acknowledge receipt of this Addendum in the Bid Form, Specification Section 00 41 13, Bid Form and Proposal.

This Addendum consists of _602_ pages

ITEM	SECTION	DESCRIPTION
1.	Bid Date	There is NO CHANGE in the Bid opening date at this time.
2.	Addendum 1	Was included as an integral part of the original issued bid documents on October 14, 2026. However, the DSA Stamped Addendum #1 is now part of this Addendum #2. Contractor shall Acknowledge Addendum #1 and all other addenda on the bid form.
3.	Architect's Addendum 2 continued	See the following pages for Architect's Addendum 2 items.

Please acknowledge this and all Addenda _on your Bid Form._

PERKINS EASTMAN

BID ADDENDUM

Perkins Eastman
Architects

Date:	November 12, 2026
Project Name:	Gateway Annex School
Project Number:	88910.00.0
DSA Number:	03-122398
Addendum Number:	02
Subject:	Bid Addendum #2
Prepared By:	Perkins Eastman

The items listed in the Description of Changes are intended to assist the Contractor in determining the limit of the changes outlined in the attached Drawings and/or Specifications. The narrative of this Bid Addendum will not be construed to limit the changes and does not relieve the Contractor of reviewing the attached Drawings and/or Specifications. These changes shall become part of the Contract Documents for this Project and shall supersede anything called for previously in the Specifications or shown on the Drawings with which they may be at variance. Documents.

DESCRIPTION OF CHANGES

SPECIFICATIONS	
Reference:	SECTION 09 3000 - TILING
Description:	• Paragraph 2.02.B revised to update tile colors and module.
Reference:	SECTION 09 9900 - COLORS
Description:	• Appendix Finish List revised to update tile colors and materials.
Reference:	11 6833 ATHLETIC EQUIPMENT
Description:	• New specification section added for volleyball equipment.
Reference:	SECTION 25 0000 - BUILDING AUTOMATION SYSTEMS
Description:	• Spec section added in its entirety in response to Bid RFIs 20 & 22.

DRAWINGS	
CIVIL	
Reference:	C-1 - HORIZONTAL CONTROL PLAN
Description:	• Revised pavement hatch for parking lots area based on pavement analysis provided. • Revised dimension for removed sawcut line.

Reference:	C-2 - ENGINEERED SITE PLAN GRADING, DRAINAGE, AND STORM DRAIN
Description:	• Revised pavement section and replacement for parking lots area. • Added core locations to plans and legend.
Reference:	C-3 - ENGINEERED SITE PLAN GRADING, DRAINAGE, AND STORM DRAIN
Description:	• Revised pavement section and replacement for parking lots area. • Added core locations to plans and legend.
Reference:	C-4 - OVERALL UTILITY SITE PLAN WATER AND SEWER
Description:	• Revised pavement hatch for parking lots area based on pavement analysis provided. • Added core locations to plans and legend. • Revised/removed sawcut areas for utility trenching based on pavement section area changes.
ARCHITECTURAL	
Reference:	A011 - SITE DETAILS
Description:	• Clarification dimensions added to Monument Sign Detail, J10/A011.
Reference:	A201 – EXTERIOR ELEVATIONS
Description:	• Monument Sign detail reference added to Exterior Elevation A10/A201. • Elevation A5 has been revised to remove reference to stainless steel guardrail.
Reference:	A301 - ENLARGED RESTROOM FLOOR PLANS & ELEVATIONS
Description:	• Tiles Legend revised.
Reference:	A302 - ENLARGED RESTROOM FLOOR PLANS & ELEVATIONS
Description:	• Tiles Legend revised. • Det. A7/A302 revised to show updated wall accent tile.
Reference:	A601 - FINISH AND FLOOR PATTERN PLANS

Description:	• Finish Floor Plan Legend revised as follows:
	  o Ceramic Tile revised to FT-1 12"x24" Ash Grey PF505 Matte
	  o Quarry Tile revised to FT-2 9"x6" Beige 0Q48 Matte
	• DRAWING NOT ISSUED.

ELECTRICAL	
Reference:	ES101 - ELECTRICAL SITE PLAN - NEW
Description:	• Added note 14 to clarify coordination with SCE. • Added note 15 to add existing SCE easement for reference. • Added note 16 to add existing Verizon lines to be demolished and coordinated to reseed adjacent building. • Added SCE easement reference on plan. • Added existing Verizon lines on plan. • Updated lighting layout to match shifted building shift.

PROJECT INFORMATION	
Reference:	#03-118667 VENTURA COUNTY OFFICE OF EDUCATION TRITON ACADEMY TEMPORARY SCHOOL
Description:	Site Record Drawings from previous Triton School at 550 Airport Way. For REFERENCE ONLY.

Reference:	GENERAL CONDITIONS 00 72 13
Description:	Commercial General Liability for this Project shall be $5 million per occurrence and $10 million aggregate in lieu of the amount stated in the General Conditions 00 72 13, item 13.1.8.
Reference:	ADDENDUM #1
Description:	Addendum #1 was resubmitted to DSA and approved. Replace Addendum #1 in its entirety with the DSA stamped and approved Addendum #1, which shall be used for bidding purposes. See attachment.
Reference:	BID ADDENDUM #2 RFI LOG
Description:	Log of Bid RFIs and responses.
Reference:	GEOTECHNICAL ENGINEERING "SUPPLEMENTAL BORINGS, REPORT #26-8-5, 8/14/26."
Description:	Supplemental Borings report. See attached.
Reference:	COORDINATION WITH TELECOMMUNICATION UTILIY COMPANY
Description:	The contractor shall communicate and obtain clearance from Verizon and coordinate any and all plans and schedules for relocation of the subject lines with Verizon well in advance of any excavation. <u>Contact info for Verizon:</u> Stephanie Ahumada stephanie.ahumada@verizon.com 866-491-5288 Extension 224-0223 Pomona, CA
Reference:	BID LINE ITEMS
Description:	If there are any separate line items, each item needs to be submitted as an attachment to the Bid Form.

END OF BID ADDENDUM #02

<u>Attachments:</u>

- Bid Addendum #2 Specifications
- Bid Addendum #2 Drawings
- Bid Addendum #2 RFI Log
- DSA-Approved & Stamped Addendum #1 (A# 03-122398)
- Site Record Drawings from Previous TRITON School
- Approved Fire Alarm Substitution Request
- Contech CDS Drawings
- Contech CMP Retention Drawings
- Report: “Preliminary DRAINAGE & STORMWATER QUALITY REPORT, November 2026."
- Geotechnical Engineering "Supplemental Borings, Report #26-8-5, 8/14/26."

SECTION 09 3000
TILING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Porcelain Tiles.

B. Ceramic Tiles.

C. Stone Thresholds.

D. Grout and Mortar.

1.2 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealers.

B. Section 09 2116 - Gypsum Board Assemblies.

C. Section 09 2400 - Portland Cement Plastering.

D. Section 10 2800 - Toilet Accessories

1.3 REFERENCES

A. American National Standards Institute:

1. ANSI A108.1 - Glazed Wall Tile, Ceramic Mosaic Tile, Quarry Tile and Paver Tile Installed with Portland Cement Mortar.

2. ANSI A108.3 - Quarry and Paver Tile Installed with Portland Cement Mortar.

3. ANSI A108.10 - Installation of Grout in Tilework.

4. ANSI A118.1 - Dry-Set Portland Cement Mortar.

5. ANSI A118.3 - Chemical Resistant, Water Cleanable, Tile Setting and Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive.

6. ANSI A118.6 - Ceramic Tile Grouts.

7. ANSI A137.1 - Ceramic Tile.

B. ASTM International:

1. ASTM C150 - Standard Specification for Portland Cement.

2. ASTM C1028 - Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynometer Pull Meter Method.

C. TCNA - Tile Council of North America:

D. TCNA - Handbook for Ceramic Tile Installation.

1.4 PERFORMANCE REQUIREMENTS

A. Ceramic Tile Flooring surfaces shall be stable, firm, and slip resistant and shall comply with Section 11B-302.

B. Dynamic coefficient of friction (DCOF): For tile installed on floor surfaces, provide products with the following values as determined by testing identical products per DCOF AcuTest, ASTM A137.1

1. Minimum 0.42 (wet)

C. Static coefficient of friction (SCOF): For tile installed on floor surfaces, provide products with the following values as determined by testing identical products per ASTM C1028.

1. Minimum 0.60 (wet)

1.5 SUBMITTALS

A. Shop Drawings: Submit drawings indicating tile layout, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, and setting details for each room or area to receive tile.

B. Product Data: Submit manufacturer's data describing products. Submit instructions for application of grouts and adhesives.

C. Samples: Submit full size sample tiles for each color and type of tile, showing color range, size and texture.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.6 QUALITY CONTROL

A. Perform Work in accordance with TCNA Handbook and ANSI A108 Series/A118 Series.

B. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.

C. Installer: Company specializing in performing Work of this section with minimum five years documented experience.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

1.8 EXTRA MATERIALS

A. Supply quantity of full-size units equal to minimum of 3 percent of amount installed, for each type, composition, color, pattern, and size.

B. Provide in original unbroken containers plainly marked with type and quantity of contents, and area of installation.

1.9 WARRANTY

A. Manufacturer: Provide manufacturer's lifetime warranty for epoxy mortar and grout setting system.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Tile Manufacturers:

1. Dal-Tile Corp.

2. Or Equal.

B. Setting Materials:

1. Laticrete

2. Custom Building Products

3. Or Equal

2.2 MATERIALS, GENERAL

A. General: Provide tile that complies with ANSI A137.1 for types, compositions and other characteristics indicated. Provide tile in the locations and of the types, colors, and pattern indicated on the Drawings. Tile shall also be provided in accordance with the following:

1. Factory Blending: For tile exhibiting color variations within the ranges selected, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.

2. Factory Applied Temporary Protective Coatings: Protect exposed surfaces of tile against adherence of mortar and grout by precoating with a continuous film of petroleum paraffin wax applied hot. Do not coat unexposed tile surfaces.

2.3 TILE MATERIALS

A. Unpolished Porcelain Floor Tile:

1. Basis of Design Product: DalTile Corp., **Colorbody Porcelain; Uniform Concrete Series, unpolished.** and Arid Flash Square Matte for Kitchen Flooring. 2
2. Composition: Through-color porcelain.
3. Module: 12 by 24 inch nominal. for WT-1, and 12 by 24 For WT-2. 2
4. Thickness: 7/16 inch nominal.
5. Face: plain with square edge.
6. Base: Matching cove base (**6 inch high by 12 inch wide**) and corner shapes in sizes and color coordinated with field and accent tiles.
7. Tile Colors: FT-1: ASH GRAY PF05 MATTE
FT-2: QUARRY TILE BEIGE 0Q48 MATTE 2
8. Grout Color: Refer to Section 09 9900 - Colors
9. Locations:
    a. Restrooms
    b. Alcove at drinking fountain.

B. Glazed Ceramic Wall Tile:

1. Basis of Design Product: DalTile Corp., **Classic, Color Wheel Collection; semi-gloss.**
2. Module: 3 by 6 inch nominal.
3. Thickness: 5/16 inch nominal.
4. Face: plain with cushion edges.
5. Tile Colors - Refer to drawings for tile patterns:
WT-1: DOVE GRAY PF04 MATTE
WT-2: (RANDOM LINEAR MOSAIC ACCENT TILE) DARK GRAY DL27 2
6. Grout Color: Refer to Section 09 9900 - Colors.
7. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

a. Wainscot Cap: **Quarter Round, module size 1”x6” to match field color.**

b. External Corners for Thin-Set Mortar Installations: Surface bullnose, same size as adjoining flat tile.

c. Internal Corners: Field-butted square corners. For cap use angle pieces designed to fit with stretcher shapes.

d. External Corners for Portland Cement Mortar Installations: Bullnose shape with a radius of at least 3/4 inches, unless otherwise noted.

e. Internal Corners: Field-Butted square corners, except for coved base and cap angle pieces designed to member with stretcher shapes.

8. Locations:

a. Restrooms

b. Alcove at drinking fountain.

2.4 SETTING MATERIALS

A. Latex Portland Cement Mortar: Prepackaged, one-part, high performance, latex polymer modified dry-set, thin-set mortar. Meets or exceeds ANSI A118.4.

1. Products:

a. Custom Building Products MegaFlex Fortified Thin-Set Mortar.

b. Laticrete 254 Platinum Multipurpose Thin-Set Mortar.

c. Mapei Ultraflex 3.

d. Or Equal.

B. Latex Modified Crack Isolation Mortar: Prepackaged, one-part, high performance, lightweight latex polymer modified dry-set, thin-set mortar. Meets or exceeds ANSI A118.4.

1. Products:

a. Custom Building Products MegaLite Crack Prevention Mortar.

b. Laticrete 255 MultiMax.

c. Mapei Ultralite Mortar.

d. Or Equal.

C. Mortar Bed:

1. Materials:

a. Cement: Portland cement, ASTM C150 Type I.

b. Aggregate: ASTM C144, clean, graded, and passes a 16-mesh screen.

c. Hydrated Lime: ASTM C206, Type S or ASTM C207, Type S.

d. Water: Clean and potable.

2. Mortar Mix: Comply with ANSI A108.1A Section A-4.1a.2.

3. Mortar Bed Reinforcing Mesh: ASTM A82 and ASTM A185; galvanized welded wire fabric; 16 gauge wire; 2 inch by 2 inch mesh.

2.5 GROUTING MATERIALS

A. Epoxy Grout: 100 percent solids epoxy grout; stainless, non-sagging, water cleanable; conforming to ANSI A118.3.

1. Products:

a. Laticrete Spectralock Pro Premium.

b. Custom Building Products CEGLite Commercial Epoxy Grout.

c. Mapei Kerapoxy IEG.

d. Or Equal.

2.6 SEALANTS

A. Latex siliconized sealant, non-sanded, in conformance with ASTM C920, Type S, Grade NS, Class 25, Uses NT, M and G. Color to match grout color.

1. Products:

a. Custom Building Products PolyBlend Ceramic Tile Caulk.

b. Laticrete Premium Tub and Tile Caulk.

c. Mapei Keracaulk.

d. Color Caulk, Inc. Latex Siliconized Sealant.

e. Or Equal.

2.7 MEMBRANES

A. Crack Isolation Membrane: Trowel applied or self-adhering sheet membrane; load bearing; bonded; conforming to ANSI A118.12.

1. Products:

a. Custom Building Products Fracture Free.

b. Laticrete Blue 92.

c. Mapei Mapelastic 2, Crack Isolation Membrane, flexible thin, 40-mil lightweight, load-bearing, fabric-reinforced “peel-and-stick” crack-isolation membrane.

d. Or Equal.

B. Interior Waterproof Membrane: Trowel applied, liquid, load bearing; bonded; conforming to ANSI A118.10.

1. Products:

a. Custom Building Products Custom 9240 Waterproofing and Crack Prevention Membrane. Self-curing liquid elastomeric membrane with reinforcing fabric.

b. Laticrete 9235 Waterproofing Membrane with Microban. Self-curing liquid elastomeric membrane with reinforcing fabric forming a flexible, seamless waterproof membrane bonded to the substrate. Contains an antimicrobial protection to inhibit growth of mold and mildew.

c. Mapei Mapelastic 400, premixed, flexible, thin, ultra fast-drying waterproofing membrane.

d. Or Equal.

C. Exterior Waterproof Membrane: Liquid-applied elastomeric waterproofing material that cures to form a monolithic membrane; conforming to ANSI A118.10.

1. Products:

a. Custom Building Products RedGard Waterproofing and Crack Prevention Membrane.

b. Laticrete Hydro Ban.

c. Mapei Mapelastic HPG.

d. Or Equal.

2.8 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

B. Granite Thresholds: ASTM C 615, with polished finish.

1. Description: Uniform, in profile shown on drawing, one inch thick minimum by width of door or opening, color to be selected by Architect from manufacture in standard colors.

2.9 ACCESSORIES

A. Expansion Joints: Dilex-EZ 6+9 manufactured by Schlüter-Systems L.P., or equal.

B. Movement Joint Strips

1. Strips shall have profile with integrated rigid, recycled PVC, trapezoid-perforated anchoring legs, connected by a 3/16 inch (5 mm) wide soft CPE movement zone that forms the visible surface.

a. Model: Schluter®-DILEX-BWS by Schluter System or equal.

b. Color: To be selected by Architect from manufacturer's standard.

c. Height: As required.

C. Neutralizers, Primers and Sealers: As recommended by adhesive manufacturer.

2.10 Cleaning, Finishing and Sealing materials: As recommended by tile manufacturer.

A. Grout Sealer: Heavy-duty, Zero VOC, oil and water stain resistant sealer, Protectosil Aqua-Trete SG, by Degussa Corporation, (800) 828-0919, www.protectosil.com.

B. Floor Tile Sealer: Custom Building Products; Product: Aqua Mix - Sealer's Choice™ Gold.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine job site conditions and verify field dimensions. Verify substrate is plumb, level, true to line and square.

B. Substrate surface conditions shall conform to the requirements of ANSI A108 for the type of substrate specified and for workmanship.

C. Maximum surface variation of substrate shall not exceed maximum limits as specified in specific TCA Methods or as follows, whichever is more stringent.

Types	Walls	Floors
Latex Portland Cement Mortar	1/8 inch in 8 feet	1/8 inch in 10 feet

Epoxy	1/8 inch in 8 feet	1/8 inch in 10 feet
Mortar Bed	1/4 inch in 10 feet	1/4 inch in 10 feet

D. Tile work shall not be started until roughing in for mechanical and electrical work has been completed and tested, and built-in items requiring waterproofing membrane has been installed and tested.

E. Begin installation only when unacceptable conditions have been corrected.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thin-set mortar with trowelable leveling and patching compound specifically recommended by tile setting material manufacturer.

B. For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package shown same range of colors as those taken from other packages. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

C. Protection:

1. Comply with closing of spaces to traffic and protection requirements of ANSI A108.1, Article 1.5, Sub-articles A-1.5.1, A-1.5.2 and A-1.5.2.1.

2. Protect adjacent work, surfaces and equipment from effects of tile installation procedures.

D. Tile Layout:

1. General: Comply with ANSI A108.1, Article A-3.3, unless otherwise specified herein.

2. Center fields and patterns on areas so that no tile is less than half size.

3. For heights stated in feet and inches, maintain full courses to nearest attainable height without cutting tile.

4. Locate precisely expansion joints and accessories before tile is installed.

E. Prepare substrate surfaces for mortar installation.

3.3 INSTALLATION

A. General:

1. Install in accordance with TCA Handbook for Ceramic Tile Installation and ANSI A108.

2. Install tiles as per accepted shop drawings. Do not interrupt tile pattern through openings.

3. In areas requiring floor and wall tiles, floor tile installation shall not begin until after wall tiles have been installed.

4. Allow waterproofing membrane to cure before flood testing.

5. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly. Align floor, base and wall joints.

6. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar or excess grout.

7. Provide grout joint spacing in accordance with tile manufacturer's recommendations.

8. Install movement joints as specified in this Section.

9. Sound tile after setting. Replace hollow sounding units.

10. Allow tile to set prior to grouting: Minimum of 48 hours for thin-set methods and 78 hours for mortar bed methods.

B. **Installation Methods – Interior Walls:**

Method	Substrate/Application	Setting Material
TCNA Method W244C, ANSI A108.5, A108.6, and A108.11.	Metal/Wood Studs; Cementitious backer board; thin set application; epoxy grout.	Latex Portland cement mortar.

C. **Installation Methods – Exterior Walls:**

Method	Substrate/Application	Setting Material
TCNA Method W244E, ANSI A108.5, and A108.6	Weather barrier; cementitious backer board, thin set application; epoxy grout.	Latex Portland cement mortar.

D. **Installation Methods – Interior Floors:**

Method	Substrate/Application	Setting Material
TCNA Method F114; ANSI A108.1B.	Concrete slab-on-grade; cement mortar bed (thickset) with cleavage membrane; epoxy grout	Latex Portland cement mortar.

E. **Installation Methods – Exterior Floors:**

Method	Substrate/Application	Setting Material
TCNA Method F101; ANSI A118.3, A118.4, and A118.6.	Concrete slab-on-grade; waterproof membrane; Cement mortar bed (thickset); epoxy grout	Latex Portland cement mortar.

3.4 JOINTS

A. Joint Widths at Floors: Install tile on floors in the joint width recommended by the tile manufacturer.

B. Joint Widths at Walls: Install tile on walls in the joint width recommended by the tile manufacturer.

C. Expansion Joints:

1. Provide expansion joints at locations in the following locations as a minimum requirement:

a. At control joints and expansion joints in substrate material,

b. Where substrate material changes to separate different materials,

c. Over construction joints,

d. Where tile abuts restraining surfaces, such as perimeter walls, curbs, and columns and at intervals of 24 to 36 feet each way in large interior floor areas and 12 to 16 feet in large exterior areas exposed to direct sunlight or moisture.

e. Expansion joints shall extend through setting-beds and fill.

3.5 INSTALLATION - GROUT

A. Epoxy Grout: Install in accordance with manufacturer's printed instructions and ANSI A108.6.

1. Before grouting, ensure all tiles are firmly in place. Clean tile surfaces; remove paper and glue from face of mounted tiles. Remove spacers, strings, ropes, and pegs.

2. Clean open tile joints. Remove excess setting materials present in the open grout joints.

3. Mix grout in accordance with manufacturer's instructions.

4. Apply grout firmly into open joints using a hard rubber float.

5. Remove all excess epoxy grout from the tile surface with a rubber squeegee or rubber trowel before it loses plasticity and begins to set.

6. Immediately perform final clean up in accordance with manufacturer's instructions.

3.6 CLEANING AND PROTECTING

A. Clean as recommended by manufacturer. Do not use materials or methods which may damage finish surface or surrounding construction.

B. Protect installed tile finish surfaces from damage during construction. Provide protective covering as required to ensure installed tile finish will not be damaged by work of other trades.

END OF SECTION

SECTION 09 9900
COLORS

PART 1 GENERAL

1.01 SUMMARY

A. The General Conditions and Division 1 are a part of this Section and the Contract for this Work and apply to this Section as if repeated fully herein. This section is intended to supplement the provisions of the General Conditions, and to supplement criteria established elsewhere in these documents for the basis of acceptance or rejection of requests for substitution.

1.02 COLOR SELECTION PROCESS

A. All colors will be selected by the Architect. Materials and products have been specified partly based upon the availability of colors desired by the architect as being compatible with the overall color palate for the project. A preliminary color palate has been developed based upon the materials and products specified. Although requests for substitution are encouraged in order to generate competition and equal opportunity among suppliers, the basis for acceptance or rejection of a request for substitution may rest with the availability of colors compatible with the palate. Based upon the availability of colors within the items specified or allowed as substitution a final color palate will be developed after completion of the substitution period.

1.03 REMAINING COLORS

A. Material colors not indicated below will be selected upon submittal of manufactures standard colors complying with each applicable specification.

PART 2 PRODUCTS

2.01 NOT APPLICABLE

PART 3 EXECUTION

3.01 NOT APPLICABLE

APPENDIX: FINISH LIST

END OF SECTION

FINISH LIST

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION

Specification Section	Specification Name	Material ID	Manufacturer	Product Name/Series/Model	Color/Finish	Location	Remarks
08 4313	Aluminum Framed Entrances and Storefronts		Arcadia	1	Clear AC1		
08 8000	Glazing	B	3M	Fasara 1	Milky Milky Light Grey SH2MAMML	Storefront SF1	See A701
08 8000	Glazing	C	3M	Fasara	Cross Hairline Milky SH2CHML	Storefront SF1	See A701
09 3000	Ceramic Tile	WT-1 2	Daltile	Portfolio Colorbody Porcelain	Dove Grey PF04 Matte	Restroom Walls	Field
09 3000	Ceramic Tile	WT-2 2	Daltile	Portfolio Colorbody Porcelain	Dark Gray DL27 (Random Linear Mosaic Tile)	Restroom Walls	Accent
09 3000	Ceramic Tile	FT-1 2	Daltile	Portfolio Colorbody Porcelain 2	Ash Grey PF05 Matte	Restroom Floor	See A601
09 3000	Ceramic Tile	FT-2 2	Daltile	Arid Flash Square (Matte)	Beige 0Q48 Matte	Kitchen Floor	See A601
09 6519	Resilient Tile Flooring	VCT-1	Armstrong	Standard Excelon Imperial Texture	Mid Graved Blue 51875	Classroom Floor	See A601
09 6519	Resilient Tile Flooring	VCT-2	Armstrong	Premium Excelon Raffia Stream	Earth 55926	Platform Floor	See A601
09 6519	Resilient Tile Flooring	VCT-ST	Armstrong	Integrated Stair Treads 1	Pebble R4CPB449	Platform Stairs	
09 6519	Resilient Tile Flooring	B-1	Mannington Burkebase	Rubber 4" Cove Base (TP)	323 Blue Bonnet		Base
09 6519	Resilient Tile Flooring	B-2	Mannington Burkebase	Rubber 4" Cove Base (TP)	660 Rocky	Platform	Base

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09 6813	Tile Carpeting	CPT-1	Shaw Industries Group, Inc	Worklife Connect Tile, 59342	Harbouring Desi 40485		See A601
09 9113/ 09 9123	Interior & Exterior Painting	PT-1	Dunn Edwards		Whisper DEW340	Walls	Field
09 9113/ 09 9123	Interior & Exterior Painting	PT-2	Dunn Edwards		Slumber DE5860	Doors, exposed columns & beams	Accent
09 9113	Exterior Painting	PT-3	Dunn Edwards		Lemon Punch DE5398		Accent
09 5100	Acoustical Ceiling	ACT-2	Armstrong	CLEAN ROOM VL 868 or 870	White; smooth vinyl-faced	Kitchen Ceiling	5/8 in.; washable
06 8300	FRP Wall Panels	FRP	Marlite	FRP S100G	White; smooth gloss	Kitchen Walls	0.090 in. nominal
09 3000	Ceramic Tile	CB	Daltile	Arid Flash Square (Matte)	Beige 0Q48 Matte	Kitchen Cove Base	Match T-4 floor tile
09 3000	Ceramic Tile	CB	Daltile	Portfolio Colorbody Porcelain	Ash Grey PF05 Matte	Restroom Cove Base	Match T-3 floor tile
09 3000	Tile Grout	G-1	LATICRETE	9-Frosty	Frosty	Kitchen & Restroom Tile	

1

SECTION 11 6833
ATHLETIC FIELD EQUIPMENT

2

PART 1 GENERAL

1.01 Section Includes

A. Volleyball equipment.

1.02 Related Requirements

A. Section 03 3000 - Cast-in-Place Concrete: Footings for field equipment.

B. Section 09 9113 - Exterior Painting.

C. Section 31 2200 - Grading: Shaping subgrade to specified grade levels.

1.03 Abbreviations

A. NFHS - National Federation of State High School Associations; www.nfhs.com and www.nfhs.org.

1.04 Reference Standards

A. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

B. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

1.05 Submittals

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide athletic field equipment manufacturer's product data indicating materials of construction, compliance with specified standards, installation procedures, and necessary safety limitations.

C. Shop Drawings: Submit detailed scale drawings showing athletic field equipment and perimeter layout.

1. Indicate locations and dimensions of footings and anchorage points.

D. Samples: Submit color chart for each item that color must be selected showing full range of colors and finishes.

E. Maintenance Data: Submit manufacturer's recommended maintenance instructions and list of replaceable parts for each athletic field equipment item, along with supplier's address and phone number.

1.06 Quality Assurance

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience.

1.07 Delivery, Storage, and Handling

A. Deliver, handle, and store equipment on project site in accordance with manufacturer's recommendations.

B. Store materials in a dry, covered area, and elevated above grade.

1.08 Warranty

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 Manufacturers

A. Athletic Field Equipment:

1. ADP Lemco, Inc: www.adplemco.com/#sle.

2. Grand Slam Safety, LLC: www.grandslamsafety.com/#sle.

3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 Athletic Field Equipment - General

A. High School Sports: Provide equipment that complies with NFHS requirements.

B. Mount supporting posts in concrete footings, unless otherwise indicated, refer to Section 03 3000 for additional concrete footing installation requirements.

1. Provide supports as required to mount equipment at proper height above finished grade.

C. Coordinate field grading as required for proper placement and arrangement of equipment, refer to Section 31 2200 for additional information.

2.03 Volleyball Equipment

A. Outdoor Volleyball Uprights: Two, single piece extruded aluminum uprights, 120 inch long with 3-15/16 inch outside diameter and profiled grooves running full length of uprights for attachment of net with two J-hooks on each side to tie off net cord and apply tension.
   1. Mount uprights within 13 inch long metal sleeve having 4 inch inside diameter and top flush with ground, set within concrete footing having 10 inch top diameter and 15 inch bottom diameter and 36 inch deep; provide drainage line from bottom of sleeve out bottom of footing; provide cap to close top of sleeve when not in use.

B. Netting: 32 feet long by 39-3/8 inch wide with encased stretcher bars on each side, squares are knotless woven webbing; top rope is 45 feet long by 1/4 inch diameter no-stretch kevlar; bottom rope is 45 feet long braided tenex; net has white vinyl tapes at top, bottom, and both sides.

C. Upright Safety Pads: Wrap each upright with single piece pad, 72 inch high by 26 inch wide of cross-linked polyethylene foam 1-1/4 inch thick, and covered with nylon-reinforced vinyl; attached to uprights with velcro straps.
   1. Color: As selected by Architect.

D. Net Antenna with Sideline Markers: Provide 3/8 inch diameter fiberglass rods, 71 inch long, with alternating red and white bands mounted in 2-1/2 inch wide white nylon reinforced sideline marker and full-height of net pocket for placement of antenna.

2.04 Materials

A. Extruded Aluminum: ASTM B221 or ASTM B221M, Alloy 6061, 6062, or 6063.
   1. Tensile Strength: 38,000 psi, minimum.
   2. Yield Point: 35,000 psi, minimum.

PART 3 EXECUTION

3.01 Examination

A. Verify that athletic field equipment footings have been installed in proper locations and at proper elevations.

3.02 Preparation

A. Stake location of athletic field equipment elements, including necessary athletic field perimeters, surfacing, access and egress points, hard surfaces, walls, fences, and/or structures.

B. Stake layout of athletic field equipment perimeter in accordance with approved shop drawings before starting any work.
   1. Verify that athletic field perimeters do not overlap hard surfaces, whether currently installed or not.
   2. Verify that athletic fields are free of obstructions.
   3. If conflicts or obstructions are found, notify Architect.
   4. Do not proceed with this work until revised drawings have been provided, showing corrected layout, and that any obstructions have been removed or corrections to layout have been made.

3.03 Installation

A. Install athletic field equipment in accordance with manufacturer's instructions, and rules and regulations of specified athletic association indicated for this work.

B. Install athletic field equipment without sharp points, edges, or protrusions; entanglement hazards or pinch, crush, or shear points.

3.04 Cleaning

A. Clean athletic field equipment of construction materials, dirt, stains, filings, and blemishes due to shipment or installation; clean in accordance with manufacturer's instructions, using cleaning agents as recommended by manufacturer.

B. Clean athletic field area of excess construction materials, debris, and waste.

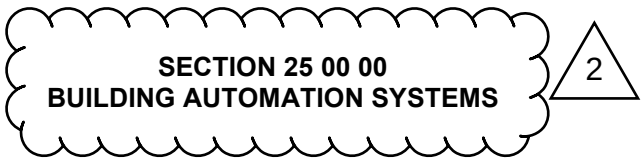
C. Remove excess and waste material and dispose of off-site in accordance with requirements of authorities having jurisdiction.

3.05 Protection

A. Protect installed products until Date of Substantial Completion.

B. Replace damaged products before Date of Substantial Completion.

END OF SECTION



PART 1 – GENERAL

Building automation design must be approved by the Ventura County School District BAS department.

Where an existing BAS system is extended or modified, all equipment, infrastructure, and programming methodology must match existing. Components not 100% compatible with existing systems will not be allowed. Any substitutions must be approved by BAS personnel. Existing wiring, hardware, or programs made obsolete by the execution of a project must be removed, and front-end graphics must be added/edited as needed to reflect changes.

The following section applies where new work is designed:

1.1 Description - Provide a Building Automation System (BAS) incorporating BACNET technology at the controller level and EC-NET (Niagara Framework) version technology at the network device level and as the network management tool. Jace's shall be Distech branded. All new and retrofit construction shall have the Ventura County School Districts's standard Building Automation system. The goal of a single standard is to reduce operational costs and increase efficiency. The BAS shall consist of Direct Digital Control (DDC) controllers, Building Controllers (BC), Graphical User Interface through standard Web browsers, sensors, relays, valves, actuators, and other equipment as may be necessary to provide for a complete and operational control system for the HVAC and other building related systems as described within these specifications.

A. The system installed shall seamlessly connect devices other than HVAC throughout the building regardless of subsystem type, i.e. HVAC, lighting, and security devices should easily coexists on the same network channel without the need for gateways. BACNET components not supplied by the primary manufacturer must meet approval of the Ventura County School District, and shall be integrated to share common software for network communications, time scheduling, alarm handling, and history logging.

B. The documentation contained in this section and other contract documents pertaining to HVAC Controls is schematic in nature. The Integrator shall provide the hardware, design, engineering, and software necessary to implement the functions shown or as implied in the contract documents.

C. System configuration and monitoring shall be performed via the existing Campus BAS interface computer. Modifications to the BAS database are subject to conditions review and acceptance by the District.

D. All Variable Air Volume (VAV) controllers, application specific controllers, free programmable controllers, and all other field installed controllers for the HVAC system shall be provided, installed, configured, and programmed by the approved, authorized Distech Controls Integrator.

E. All system controllers shall utilize a peer-to-peer communications scheme to communicate with each other.

F. Strict adherence to the System Integrator qualifications as detailed in section 1.3 B shall be enforced to maintain the integrity, reliability, performance, and warranty of the overall campus BAS.

1.2 Open Systems Design. - The BAS provided shall maintain open interoperability in the following areas.

A. Communications - The intent of this specification is to provide a peer-to-peer networked, stand- alone, distributed control system with the capability to integrate ANSI/ASHRAE Standard 135- 2001 BACNET, BACNET technology, MODBUS, OPC, and other open and proprietary communication protocols in one open, interoperable system.

B. Network Management - Network management tools shall be based upon Niagara Framework technology as developed by the Tridium Corporation utilizing the Distech EC-NET AX N4 version. All tools and hardware provided shall comply with the current release version of the N4 Niagara Framework platform. The supplied computer (if required as part of this contract) software shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. In addition, adherence to industry standards including ANSI / ASHRAE™ Standard 135-2004, BACNET to assure interoperability between all system components is required.

C. Network Architecture - A hierarchical topology is required to assure reasonable system response times and to manage the flow and sharing of data without unduly burdening the customer's internal Intranet network. Systems employing a "flat" single tiered architecture shall not be acceptable.

D. User Access - The supplied system must incorporate the ability to access all data using standard Web browsers without requiring proprietary operator interface and configuration programs. An Open DataBase Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a supplier- installed server for all database access. Systems requiring proprietary database and user interface programs shall not be acceptable.

E. One (1) laptop computer shall be provided for technician at end of project. Computer shall have latest version of N4 Workbench installed. Contact District personnel to get latest computer requirements.

F. Databases - All controller program graphics and network databases shall be provided in a Niagara Framework N4 format. The database shall be constructed and stored on the District PC and provided on a separate CD upon final acceptance of the project. Construction of the database and programming shall follow the Campus methods and be performed by the Integrator, not a subcontractor or contracted engineering services. The Integrator shall have employees certified in Niagara N4 for a period of no less than 1 year. An updated database shall be provided on a CD at the end of the warranty period.

G. Network Level Devices - All network level devices (devices that provide for communication interface between the BACNET and the Ethernet) shall conform to the current released version N4 of the Niagara Framework (EC-NET).

H. Field Level Controls - The BAS sub LAN shall employ the BACNET protocol for communication between controllers. BACNET protocol implementation shall adhere to the ANSI/ASHRAE Standard 135. Communications between BACNET devices shall be 76.8 kbps over approved twisted shielded pair cabling utilizing Master/Slave Token Passing BACNET protocol. BACNET defines a comprehensive set of object types and application services for communication requirements among all levels of control in a distributed, hierarchical Building Automation System, BACNET is intended to provide a

single, uniform standard for the BAS to provide the required interoperability.

I. Software Tools - All software tools needed for full functional use, including programming of controllers, network management and expansion, and graphical user interface use and development, of the BAS described within these specifications shall be provided to the District or his designated agent. Any licensing required by the manufacturer now and into the future, including changes to the licensee of the software tools and the addition of hardware corresponding to the licenses, to allow for a complete and operational system for both normal day to day operation and servicing shall be provided. Any such changes to the designated license holders shall be made by the manufacturer upon written request by the District or his agent. Any cost associated with the license changes shall be identified within the BAS submittals.

SOFTWARE LICENSE AGREEMENT - The school district shall sign a copy of the manufacturer's standard software and firmware licensing agreement as a condition of this contract. Such license shall grant use of all programs and application software to City/County as defined by the manufacturer's license agreement, but shall protect manufacturer's rights to disclosure of trade secrets contained within such software. The City/County shall be the named license holder of all software associated with any and all incremental work on the project(s). In addition, the City/County shall receive ownership of all job specific configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software code, databases and documentation for all configuration and programming that is generated for a given project and/or configured for use with the BC, BAS Server(s), and any related LAN / WAN / Intranet and Internet connected routers and devices. Any and all required IDs and passwords for access to any component or software program shall be provided to the City/County. The System Integrator shall provide as part of the submittals a copy of the Niagara Compatibility Statement (NiCS) verifying that all aspect of the Niagara Framework maintain an Open System Design. The System as provided shall confirm with the following NiCS

Property	Value
STATION COMPATIBILITY IN	All
STATION COMPATIBILITY OUT	All
TOOL COMPATIBILITY IN	All
TOOL COMPATIBILITY OUT	All

J. Training - The controls contractor shall provide up to one week of Advanced Tridium certification training for 2 persons. Contractor shall provide for all costs for the attendance by the Owner. The class (es) shall be selected by City/County and the training provided shall include transportation to and from the school and lodging at a local hotel for the duration of the training if the training facility is located more than one hour away from City/County facility.

K. Licenses –All Jaces shall only use Distech licenses. There shall be no 3rd party licenses installed for Jaces to be programmed. No 3rd party graphic applications requiring a separate license shall be used. Graphics shall be developed using Niagara tools. All Jaces must be provided with 5 year maintenance agreements with Distech.

1.3 Quality Assurance

A. General - The HVAC Control System shall be furnished, engineered, and installed by an authorized, approved Distech Controls Integrator. All work provided under this section shall be provided by direct employees of the Distech Controls System Integrator.

B. System Integrator Qualifications
The SI must be regularly engaged in the service and installation of BACNET Controls and Niagara Framework based systems as specified herein, The SI shall have a minimum of 1 year experience in the sales, installation, engineering, programming servicing and commissioning of BACNET BAS. The Integrator shall submit a resume of no less than 5 BACNET BAS projects dating back 1 years BACNET.

The system integrator must be an authorized factory direct representative qualified by a Distech Controls System Integrator Agreement and an EC-NET N4 Agreement, and in good standing of the manufacturer of the specified hardware and software components. The Integrator must have a minimum of 18 months experience installing, engineering, and programming Distech Controls hardware and EC-NET AX software.

The SI shall have an office within 150 miles of the Building site that is staffed with a minimum of 2 technicians who have successfully completed the factory authorized training of the specified manufactures hardware and software components and have successfully completed a Niagara N4 Framework approved course thru Distech Controls. SI must provide proof of required training. The SI capabilities shall include engineering and design of control systems, programming, electrical installation of control systems, troubleshooting and service.

The SI shall submit a list of no less than three (3) similar projects, which consist of Distech Controls / EC- NET N4 Building Automation Systems as specified herein installed by the SI. These projects must be on-line and functional such that the City/County’s/User’s representative can observe the system in full operation.

The SI must be a licensed U.L. 508 panel shop, with the capability to manufacture, provide, and install U.L. 508 listed control panel assemblies to meet the existing Campus Standards.

All BAS system programming must by performed by an employee of the SI. Programming performed by outside contract services shall not be accepted. Demonstration of SI programming capabilities may be requested by City/County.

C. Hardware and Software Component Manufacturer Qualifications
The manufacturer of the hardware and software components must be primarily engaged in the manufacture of BACNET based systems as specified herein, and must have been so for a minimum of one (1) year.

The manufacturer of the hardware and software components as well as its subsidiaries must be a member in good standing of the BACNET Association.

The manufacturer of the hardware and software components shall have a technical support group accessible via a toll free number that is staffed with qualified personnel, capable of providing instruction and technical support service for networked control systems.

Acceptable manufacturers of the hardware and software components as specified herein are as follows: Distech Controls - No exceptions.

1.4 Submittals

A. General
Meet all applicable Submittal requirements of Division 1, Division 15, and the following including listed below and in the Submittal check list.
Provide to the Engineer and City/County all information or data necessary to determine compliance with these specifications.

Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures, including specific requirements indicated.

All Drawings and Diagrams shall be machine-drafted using AutoCAD 2000 or later, or Microsoft Visio. At project closeout, provide vellum plots and diskette or CD copy of control drawings and layout drawings to the City/County. In no case shall a proprietary database be used.
Provide system device and LAN conduit routing drawing, using building plans for a background. All controllers, gateways, hubs, devices and communication cabling shall be accurately shown, except that individual sensor I/O wiring and devices need not be shown. Layout drawings shall be the same size as the Engineer's construction documents.

B. Hardware - Include a complete list of materials of equipment to be used, including technical data, performance curves, project specification sheets and installation/ maintenance instructions.

C. Control Panel Design – Provide scaled panel design drawings including panel layout, wiring diagram, bill of materials, and electrical rating. All control panels to be constructed as a U.L. 508 listed assembly. All external wiring shall be connected to terminal strips mounted within the panel. Provide engraved phenolic nameplates identifying controlled equipment mounted on the face of control panels. A complete set of 'as-built' control drawings (relating to the controls within that panel) shall be furnished within each control panel. Place drawings in an adhesive back clear plastic document pouch. Adhere pouch to inside of door. See also section 7.6

D. Control System Diagrams - Provide schematic diagrams for each controlled system. Illustrate the relationship between control system and controlled equipment. Show all control elements. Show all terminations and cable/tube numbers.
Provide equipment interface details using actual equipment termination information. Blank terminals or "field verify" is not acceptable.
Provide individual diagrams for each mechanical system. If two systems are identical, then a single diagram may represent multiple mechanical systems. Notations like "this part here only applies to unit's xxx", etc. are not acceptable.

The control diagrams and sequence of operation shall be together on the same sheet and shall be suitable for posting.

The sequence of operation shall reference a schematic diagram of the controlled system. The sequence of operation shall describe in words the control strategies utilized, worded in such a way to serve as an informative reference to the maintenance and service personnel who will be responsible for unit operation.
Each component and instrument on the control diagrams shall have a unique tag number such as temperature element “TE-1”. The sequence of operation verbiage shall make specific reference to the individual component tag numbers, such as “Controller (C-1) compares the space temperature sensor (TE-1) to set point, and modulates hot water heating coil valve (V-1) as required”. The mechanical system being controlled shall be schematically drawn and show the measurement and control points, such as “TE-1” and “V-1”.

E. Graphic Displays - Include draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.

F. Point List - Provide a point list for each system controller including both inputs and outputs (I/O) point, point number, the controlled device associated with the I/O point and the location of the I/O device. Use naming convention consistent with control diagrams and sequence of operation.

G. Software manuals - Include software manuals that describe programming, testing, system overview. The manuals shall include a detailed description of each software feature including editing and writing control programs, reading or modifying printout and logs, adding, deleting and modifying user password, creating and modifying graphics. Software manuals may be provided on CD ROM in lieu of paper copy. If submitted as a CD ROM, the vendor shall arrange to review the software manuals with the engineer at the engineer’s office.

H. Other Items Requiring Submittals
Point to point and basic function commissioning forms to be used on site for the start, test and check of network components and systems.

List of specific personnel who will be involved in the system installation and commissioning.

Functional performance test documentation and procedures to be used in commissioning control sequences.

I. Operation and Maintenance Manuals shall be submitted indicating the correct procedures and processes to operate and maintain the system. O&M’s shall be delivered either hard copy or on a CD-ROM developed specifically for the project. Contractor shall submit (3) copies of the Operation and Maintenance Manuals.

J. Parts List shall be submitted listing: manufacturer's name, part number, nomenclature, and stock level required for maintenance and repair necessary to ensure continued operation with minimal delay.

K. Submittal Check List - The following Submittal Check list is intended to provide the SI, Consulting Engineer and City/County with a working document upon which to verify compliance with the major portions of the specification that can more easily be verified through printed documentation. It in no way excludes the SI from compliance or for verification of

compliance of any portion of this specification.

Submittal Check List

Section	Description	Rejected	Approved	Comments	Project Acceptance Submittal
1.1D	Verify all primary HVAC controls provided by one approved manufacture				
1.2	Open System Design				
1.2A	BACNET compliance				
1.2B	Niagara Framework Network Management Tool N4 version				
1.2C	Provide for the Niagara supervisor on the City/County server to be upgraded to the latest N4 version				
1.2D	License Jaces for 5 years of maintenance agreement with Distech				
1.2E	Verify that controller program graphics and network database are provided in a Niagara Framework N4 format.				
1.2E	Provide Database on CD				
1.2F	Verify that Network devices are current version of Niagara Framework				
1.2G	Verify all controllers are BACNET certified.				
1.2H	Provide evidence of what Software tools will be provided				
1.2H	Software tools license change cost				
1.2I	Software Licensing NiCS				
1.2J	Training – provide list of training courses and cost				
1.3B1	Provide evidence of_____years in the controls business				
1.3B2	Provide evidence of authorized representative of approved BAS manufacture				
1.3B3	Provide office location, names of 2 technicians and certificate of training certification				
1.3B4	Provide list of 3 projects				
1.4A,B,C	Provide control drawings				
1.4D	Provide graphics in draft form				
1.4E	Provide points list in control panels				
1.4F	Provide software manuals				
1.4G1	Provide Commissioning forms				
1.4G2	Provide a list of personnel for install and commissioning				

1.4G3	Provide Functional performance test documentation				
1.4H	Provide Operational & maintenance manuals				
1.4I	Provide Parts List				
1.5	Provide required training materials				
1.6	Provide Verification of warranty of 12 months				
4.1A	Provide verification that all configuration tools are provided as Niagara Framework N4 Wizards				

1.5 Training - Meet all applicable Training requirements of Division 1, Division 15, and the following.

A. Instruct the operators how to accomplish control of the system. Include basic troubleshooting and override of equipment and controls in the event of system failure.

B. Training Allowance: Provide not less than (_16) hours formal training to the City/County designated operations personnel.

C. Trainers - Persons conducting the training shall be knowledgeable in the workings of the system, and shall be regularly engaged in training exercises, so as to provide effective training. Acceptability of the trainers shall be at the discretion of the City/County.

D. Training Manuals - Include the following in training manuals. Manufacturer's training brochures.

- Operation and maintenance manuals. Completed Field Acceptance Test Procedure. "As-installed" Drawings.
- Manufacturer's Operation Manuals.
- Software interaction sheets to be used in instructing students how to use the control system, on a command-by- command basis.

E. Training Classes - Prior to conducting training, prepare and submit for approval the proposed training literature and topics. Submit this information at least two weeks prior to the first class.

F. Provide approved training manuals to the City/County at least one week prior to the first class.

G. Provide Audio Visual Tutorials both in a CD format and on the manufactures website instructing on the operation of the programming software tools as provided under this specification.

1.6 Warranty

A. The HVAC Control System shall be free from defects in workmanship and material under normal use and service. If within twelve (12) months from the date of substantial completion, the installed equipment is found to be defective in operation, workmanship or materials, the building systems contractor shall replace, repair or adjust the defect at no cost. Service shall be provided within 4 hours upon notice from City/County's designated Representative.

B. The warranty shall extend to material that is supplied and installed by the Contractor. Material supplied but not installed by the Contractor shall be covered per the above to the extent of the product only. Installation labor shall be the responsibility of the trade contractor performing the installation.

C. All corrective software modifications made during warranty service periods shall be updated on all user documentation and on user and manufacturer archived software disks.

PART 2 – NETWORK ARCHITECTURES AND DEVICES

2.1 Networks – All network devices supplied under this section shall communicate over a Local Area Network (LAN). The LAN will be a 100 Megabits/sec Ethernet network supporting BACNET, BACNET, Java HTML5, XML, HTTP, and SOAP for maximum flexibility for integration of building data with enterprise information systems and providing support for multiple Building Controllers (BC), user workstations and, if specified, a local server. The LAN will be provided by others. The SI shall coordinate with the General Contractor for the access to the LAN.

A. Local area network minimum physical and media access requirements: Ethernet; IEEE standard 802.3 Cable; 100 Base-T, UTP-8 wire, category 5e Minimum

B. Network Access - Remote Access - For Local Area Network installations; provide access to the LAN from a remote location, via the Internet. The City/County shall provide a connection to the Internet to enable access via high speed cable modem, asynchronous digital subscriber line (ADSL) modem, ISDN line, T1 Line or via the customer's Intranet to a corporate server providing access to an Internet Service Provider (ISP). The City/County agrees to pay monthly access charges for connection and ISP.

2.2 Network - Field Level Controllers – The communication network between the field level controllers shall be a peer-to-peer network incorporating the BACNET Technologies using Free Topology Transceivers (MS/TP), with specific conformance to the BACNET Physical and Logical Layer guidelines in all unitary, terminal unit and other controlling devices.

A. Strict compliance to the BACNET communications protocol, shall be required for all communication between controllers and network devices to assure interoperability between all devices within the building network.

B. All MS/TP based BACNET networks shall maintain a Bus topology in order to maintain network integrity and improve network diagnostics and maintenance. Star network topologies shall not be accepted.

C. All Network wiring – See Part 7 - Execution

2.3 Network Devices – These various devices can service multiple functions on the network depending on network design, communication medium and needed task. These functions include: management of traffic on the network, reconfiguring and strengthening of signals, the conversion of protocols, global activities such as alarms, trends and scheduling, control logic, and protocol conversion and web page hosting.

A. Building Controller (BC) - The Building Controller (BC) shall provide the interface between the LAN or WAN and the field control devices, and provide global supervisory control functions over the control devices connected to the BC.

- It shall be capable of executing application control programs to provide:

  a) Calendar functions

b) Scheduling

c) Trending

d) Alarm monitoring and routing

e) Time synchronization

f) Integration of BACNET controller data

g) Integration of BACNET MS/TP and BACNET IP controllers as well as their BACNET objects.

h) Network Management functions for all BACNET based devices

- The Building Controller must provide the following hardware features as a minimum:

  a) One Ethernet Port -10 / 100 Mbps

  b) One RS-485 port

  c) One BACNET Interface Port

  d) Battery Backup

  e) Flash memory for long term data backup (If battery backup or flash memory is not supplied, the controller must contain a hard disk with at least 1 gigabyte storage capacity)

  f) The BC must be capable of operation over a temperature range of 0 to 55°C

  g) The BC must be capable of withstanding storage temperatures of between 0 and 70°C and a humidity range of 5 to 95% RH, non- condensing

- The BC shall provide multiple user access to the system and support for ODBC or SQL. A database resident on the BC shall be an ODBC-compliant database or must provide an ODBC data access mechanism to read and write data stored within it.
- The Building Controller will provide all scheduling, alarming, trending, and network management for the all BACNET devices.
- Provide multiple Building Controllers as necessary. The BC shall support a minimum of 64 BACNET devices. In order to maintain peak performance of the network, no more than 64 BACNET devices may be connected to a single BC. In any event no more than 90% of the available resources of the BC (as indicated by the resource meter of the programming tools for the BC) shall be committed. In the event that the available resources are less than 10%, the number of nodes connected to the BC shall be reduced in order to maintain a 10% or greater buffer of resources within the BC.
- The BC shall support standard Web browser access via the Intranet/Internet. It shall support a minimum of 32 simultaneous users.
- Event Alarm Notification and actions - The BC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or

application specific controllers. The BC shall be able to route any alarm condition to any defined user location , local network connection, or wide-area network.

a) Alarm generation shall be selectable for annunciation type and acknowledgement requirements including but limited to:

- To alarm
- Return to normal
- To fault

b) Provide for the creation of a minimum of eight of alarm classes for the purpose of routing types and or classes of alarms, i.e.: security, HVAC, Fire, etc

c) Provide timed (schedule) routing of alarms by class, object, group, or node.

d) Provide alarm generation from binary object “runtime” and /or event counts for equipment maintenance. The user shall be able to reset runtime or event count values with appropriate password control. Control equipment and network failures shall be treated as alarms and annunciated.

e) Alarms shall be annunciated in any of the following manners as defined by the user:

- Screen message text
- Email of the complete alarm message to multiple recipients. Provide the ability to route and email alarms based on:
  - Day of week
  - Time of day
  - Recipient
- Pagers via paging services that initiate a page on receipt of email message
- Graphic with flashing alarm object(s)
- Printed message, routed directly to a dedicated alarm printer

f) The following shall be recorded by the BC for each alarm (at a minimum):

- Time and date
- Location (building, floor, zone, office number, etc.)
- Equipment (air handler #, access way, etc.)

- Acknowledge time, date, and user who issued acknowledgement.
- Number of occurrences since last acknowledgement.

g) Alarm actions may be initiated by user defined programmable objects created for that purpose.

h)

i) Defined users shall be given proper access to acknowledge any alarm, or specific types or classes of alarms defined by the user.

j)

k) A log of all alarms shall be maintained by the BC and/or a server (if configured in the system) and shall be available for review by the user.

l)

m) Provide a “query” feature to allow review of specific alarms by user defined parameters.

n)

o) A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the user.

p) An Error Log to record invalid property changes or commands shall be provided and available for review by the user.

- Data Collection and Storage - The BC shall have the ability to collect data for any property of any object and store this data for future use.

a) The data collection shall be performed by log objects, resident in the BC that shall have, at a minimum, the following configurable properties:

- Designating the log as interval or deviation.
- For interval logs, the object shall be configured for time of day, day of week and the sample collection interval.
- For deviation logs, the object shall be configured for the deviation of a variable to a fixed value. This value, when reached, will initiate logging of the object.
- For all logs, provide the ability to set the maximum number of data stores for the log and to set whether the log will stop collecting when full, or rollover the data on a first-in, first-out basis.
- Each log shall have the ability to have its data cleared on a time-based event or by a

user-defined event or action.

b) All log data shall be stored in a relational database in the BC and the data shall be accessed from a server (if the system is so configured) or a standard Web Browser. All log data, when accessed from a server, shall be capable of being manipulated using standard SQL statements. All log data shall be available to the user in the following data formats:

- HTML
- XML
- Plain Text
- Comma or tab separated values

c) Systems that do not provide log data in HTML and XML formats at a minimum shall not be acceptable.

d) The BC shall have the ability to archive its log data either locally (to itself), or remotely to a server or other BC on the network. Provide the ability to configure the following archiving properties, at a minimum:

- Archive when log has reached it's user-defined capacity of data stores
- Archive on time of day
- Archive on user-defined number of data stores in the log (buffer size)
- Provide ability to clear logs once archived

e) Audit Log - Provide and maintain an Audit Log that tracks all activities performed on the BC. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when

f) the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the BC), to another BC on the network, or to a server. For each log entry, provide the following data:

- Time and date
- User ID
- Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

- Database Backup and Storage - The BC shall have the ability to automatically backup its database. The database shall be backed up based on a user-defined time interval. Copies of the current database and, at the most recently saved database shall be stored in the BC. The age of the most recently saved database is dependent on the user-defined database save interval. The BC database shall be stored, at a minimum, in

XML format to allow for user viewing and editing, if desired. Other formats are acceptable as well, as long as XML format is supported.

B. BACNET to BACNET Routers and Repeaters – A router or repeater may be used on a BACNET segment between controllers and a BC as a means to manage traffic and reconfigure and strengthen a transmission signal. Routers shall be fully programmable and permit a systems integrator to define message traffic, destination, and other network management functions utilizing BACNET. The routers, shall be capable of DIN rail or panel mounting and be equipped with status LED lights for Network traffic and power. A router may not manage more than 32 devices on any single channel so as to allow for future expansion. A repeater or signal booster may only be used to increase this signal strength of the communications. Under no circumstances may it be used in the place of a router.

C. Server Functions and Hardware – A server will not be required for this project. A central server, located at 1400 South Grand, Santa Ana, CA. OC Data Center, shall be provided. The Niagara supervisor must be upgraded to the latest version upon adding any Jace(s) to City/County network.

PART 3 – BUILDING AUTOMATION SYSTEM CONTROLLERS

3.1 Controllers –BACNET/IP Protocol

A. Provide BACNET Controllers that are BACNET Testing Laboratory listed (v12 or later) as specified herein:

- BACNET Building Controller (B-BC)
- BACNET Advanced Application Controller (B-AAC)
- BACNET Application Specific Controller (B-ASC)

B. All BACNET/IP Controllers shall use the following communication specifications and achieve performance as specified herein:

C. All controllers shall be able to communicate peer-to-peer without the need for a Network Control Unit (NCU).

D. Any controller on the Ethernet Data Link/Physical layer shall be able to act as a Master to allow for the exchange and sharing of data variables and messages with any other controller connected on the same communication cabling. Slave controllers are not acceptable.

E. Controllers need to be of the design 650 type. Digital display overrides.

3.2 Performance

A. Each BACNET controller shall have a minimum of 512KB of RAM and 4GB of non-volatile flash memory.

B. Each controller shall have a 32-bit microprocessor operating at 600 MHz and support a BACNET protocol stack in accordance with the ANSI/ASHRAE

3.3 BACNET Controllers shall be provided for Unit Ventilators, Fan Coils, Heat Pumps, Variable Air Volume (VAV) Terminals and other applications as shown on the drawings.

A. The application control program shall be resident within the same enclosure as the input/output circuitry, which translates the sensor signals.

3.4 Control Unit (LCU) and Terminal Control Unit (TCU)

A. Shall be fully programmable and the programming software shall have a library of pre-built, tested, and user re-definable control sequences for a wide range of typical HVAC applications.

B. All control sequences programmed into the LCU and TCU shall be stored in non-volatile memory, which is not dependent upon the presence of a battery, to be retained.

C. LCU and TCU controllers that are not fully programmable and/or cannot retain programming as outlined in .2 are not acceptable.

3.5 BACNET Controllers shall communicate with the Network Control Unit (NCU) via a BACNET/IP connection at a baud rate of not less than 100 Mbps

3.6 BACNET TCU to have a communications port for connecting a matching room temperature and/or humidity sensor and does not utilize any of the I/O points of the Controller.

A. The TCU and all other devices on the BACNET bus shall be accessible from this communications port.

3.7 The Contractor supplying the BACNET Controllers shall provide documentation for each device, with the following information at a minimum:

A. BACNET Device; MAC address, name, type and instance number.

B. BACNET Objects; name, type and instance number

3.8 It is the responsibility of the Contractor to ensure that the proper BACNET objects are provided in each BACNET controller, as required by the Point List located in the POINTS LIST section of this specification.

3.9 Controllers – BACNET Protocol

A. Provide BACNET Controllers that BACNET Testing Laboratory listed (v12 or later) as specified herein:

- BACNET Building Controller (B-BC)
- BACNET Advanced Application Controller (B-AAC)
- BACNET Application Specific Controller (B-ASC)

B. All BACNET Controllers shall use the following communication specifications and achieve performance as specified herein:

- All controllers shall be able to communicate peer-to-peer without the need for a Network Control Unit (NCU).

a) Any controller on the MS/TP Data Link/Physical layer shall be able to act as a Master to allow for the exchange and sharing of data variables and messages with any other controller connected on the same communication cabling. Slave controllers are not acceptable.

3.10 Performance

A. Each B Each controller shall have a 32-bit microprocessor operating at 600 MHz and support a BACNET protocol stack in accordance with the ANSI/ASHRAE Standard 135-2012 and the BACNET Device Profile supported.ACNET MS/TP controller shall have a minimum of 64Kb of RAM and 384Kb of non-volatile flash memory.

B. Each controller shall have a 32-bit microprocessor operating at 68 MHz and support a BACNET protocol stack in accordance with the ANSI/ASHRAE Standard 135-2012 and the BACNET Device Profile supported.

C. Each BACNET controller on the BACNET MS/TP communications trunk shall provide a loading characteristic of minimum 1/8th Load.

D. Manufacturers, who wish to supply LCU and TCU controllers with less than a 32-bit microprocessor and/or a MS/TP loading characteristic of greater than 1/8th Load, may do so as long as they only provide a maximum of 32 controllers on a single bus segment per NCU.

3.11 BACNET Controllers shall be provided for Unit Ventilators, Fan Coils, Heat Pumps, Variable Air Volume (VAV) Terminals and other applications as shown on the drawings.

A. The application control program shall be resident within the same enclosure as the input/output circuitry, which translates the sensor signals.

B. Control Unit (LCU) and Terminal Control Unit (TCU)

C. Shall be fully programmable and the programming software shall have a library of pre-built, tested, and user re-definable control sequences for a wide range of typical HVAC applications.

- All control sequences programmed into the LCU and TCU shall be stored in non-volati volatile memory, which is not dependent upon the presence of a battery, to be retained.
- LCU and TCU controllers that are not fully programmable and/or cannot retain programming as outlined in .2 are not acceptable.

PART 4 – OPERATOR SOFTWARE

4.1 Operating System: See Sections 2.2 and 2.3 for specific OSs.

4.2 The software shall employ browser-like functionality for ease of navigation.

A. It shall include a tree view (similar to Windows Explorer) for quick viewing of, and access to, the hierarchical structure of the database.

B. In addition, menu-pull downs, and toolbars shall employ buttons, commands and navigation to permit the operator to perform tasks with a minimum knowledge of the HVAC Control System and basic computing skills.

C. These shall include, but are not limited to, forward/backward buttons, home button, and a context sensitive locator line (similar to a URL line), that displays the location and the selected object identification.

4.3 Tagging.

A. 1. An alternate Identification mechanism for advanced or simple query of the EMCS system.

4.4 Real-Time Displays.

A. Provide a visual graphical representation of buildings, floor layouts, each piece of mechanical equipment and/or mechanical system that duplicates the represented system, presented as a web page via any industry standard web browser, where applicable.

- Graphics shall include at a minimum the value of each input, each output, each setpoint, alarms and graphical representation of trend logs.
- The graphic shall provide for the ability to command each point, including both timed and permanent overrides.
- Provide for all information represented in the graphics in an associated graphical table with links to the equipment graphics and command-able points.
- Sample graphics shall be provided as part of the submittals for approval by owner.

B. The Operator software, shall at a minimum, support the following graphical features and functions:

- Graphic screens shall be developed using GIF, PNG, JPG or ICO file format. Use of proprietary graphic file formats shall not be acceptable. In addition to, or in lieu of a graphic background, the GUI shall support the use of scanned pictures.
- Graphic screens shall have the capability to contain objects for text, real-time values, animation, colour spectrum objects, logs, graphs, HTML or XML document links, schedule objects, hyperlinks to other URLs, and links to other graphic screens.
- Graphics shall support layering and each graphic object shall be configurable for assignment to one a layer. A minimum of six layers shall be supported.

C. Modifying common application objects, such as schedules, calendars, and set points shall be accomplished in a graphical manner.

- Schedule times will be adjusted using a graphical slider, without requiring any keyboard entry from the operator.
- Holidays shall be set by using a graphical calendar, without

D. Commands to start and stop binary objects shall be done by right-clicking the selected object and selecting the appropriate command from the pop-up menu. No entry of text shall be required.

E. Right-clicking the selected object and using a graphical slider to adjust the value shall make adjustments to analog objects, such as set points. No entry of text shall be required.

4.5 System Configuration.

A. At a minimum, the Operator software shall permit the operator to perform the following tasks, with proper password access:

- Create, delete or modify control strategies.
- Add/delete objects to the system.
- Tune control loops through the adjustment of control loop parameters.
- Enable or disable control strategies.
- Generate hard copy records or control strategies on a printer.
- Select points to be alarm-able and define the alarm state.
- Select points to be trended over a period of time and initiate the recording of values automatically.

4.6 On-Line Help.

A. Provide a context sensitive, on-line help system to assist the operator in operation and editing of the system.

- On-line help shall be available for all applications and shall provide the relevant data for that particular screen.
- Additional help information shall be available through the use of hypertext.
- All system documentation and help files shall be in HTML format.

4.7 Security.

A. Each operator shall be required to log on to that system with a user name and password in order to view, edit add, or delete data.

B. System security shall be selectable for each operator.

C. The system administrator shall have the ability to set passwords and security levels for all other operators.

D. Each operator password shall be able to restrict the operators' access for viewing and/or changing each system application, full screen editor, and object.

E. Each operator shall automatically be logged off of the system if no keyboard or mouse activity is detected.

F. This auto log-off time shall be set per operator password.

G. All system security data shall be stored in an encrypted format.

4.8 System Diagnostics.

A. The system shall automatically monitor the operation of all workstations, printers, modems, network connections, building management panels, and controllers.

B. The failure of any devise shall annunciate to the operator.

- Alarm Console.

a) The system shall be provided with a dedicated alarm window or console.

- This window will notify the operator of an alarm condition, and allow the operator to view details of the alarm and acknowledge the alarm.
- The use of the Alarm Console can be enabled or disabled by the system administrator.
  - When the Alarm Console is enabled, a separate alarm notification window will supersede all other windows on the desktop and shall not be capable of being minimized or closed by the operator.

- This window will notify the operator of new alarms and un-acknowledged alarms.
- Alarm notification windows or banners that can be minimized or closed by the operator shall not be acceptable.

- Operator’s software shall contain an easy-to-operate system; allowing configuration of system-wide controllers, including management and display of the controller programming.

  a) This system shall provide the capability to configure controller binary and analog inputs/outputs.

- The system shall be capable of utilizing third-party Windows-based programs for such things as spreadsheet analysis, graphing, charting, custom report generation, and graphics design packages.

  a) Graphics generation shall be done using standard Windows packages.

  b) No proprietary graphics generation software shall be needed.

- Provide software, which enables the non-programmer operator to easily perform, tasks which are likely to be part of his daily routine.
- The operator's console shall provide facilities for manual entries and visual displays enabling an operator to enter information into the system and obtain displays and logs of system information.

  a) All requests for status, analog, graphic displays, logs, and control shall be selected from the operator's console.

  b) The operator interface shall minimize the use of typewriter style keyboard by implementing a mouse or similar pointing device and "point and click" approach to command selection.

  c) The facility shall be provided to permit the operator to perform the following tasks:

  - Automatic logging of digital alarms and change of status message.
  - Automatic logging of all analog alarms.
  - System changes (alarm limits, set-points, alarm lock- outs, etc.).
  - Display specific points as requested by the operator.
  - Provide reports as requested by the operator and on Scheduled basis where so required.
  - Display graphics as requested by the operator.
  - Display of help information.

- Provide trend logs as required by the
- Provide manual control of digital and analog outputs as required by the operator.
- Direct the hard copy output of information to the device selected by the operator.
- Data displayed on monitor to cyclic update as appropriate.

- Online changes:
  a) Alarm limits.
  b) Setpoints.
  c) Dead-bands
  d) Changes/deletions/additions of points.
  e) Control and change of state changes.
  f) Time of day, day, month, year.
  g) Control loop control description changes for NCU based CDM's.
  h) Control loop tuning changes
  i) Schedule changes
  j) Changes/additions/deletions to system graphics
  k) Changes/additions/deletions to total systems

- It shall be possible for the operator to override automatic analog and digital output commands.
  a) Where the BAS software normally originates these outputs, the provision shall exist for the operator to terminate automatic BAS control of any particular output and to originate a manual analog or digital output command.
  b) The provision shall exist for the operator to return analog or digital output command functions to automatic BAS software control.
  c) It shall be possible for the operator to place any computed system setpoint to a computed basis as and when required.
  d) All above functions shall operate under the password protection system.
- A vocabulary of at least 25 different descriptions using at least six alphanumeric characters to identify engineering units for analog input and output points. Typical description is as follows: %, ˚C, KPA, KW, KWH, L/S, CFM, ˚F, and PSI.

a) The descriptions shall be alterable from the OWS console with the system on-line.

- Upon operator's request, the system shall present the condition of any single point, any system, and area or the whole system on printer or Monitor.
    a) The output device shall be by operator's choice.
    b) Analog values and status displayed on the Monitor shall be updated whenever new values are received.
    c) Points in alarm shall be flagged by blinking, inverse video different colour, bracketed, or by some other means to differentiate them from points not in alarm.

- Error Messages
    a) Inform operator of all errors in data, errors in entry instructions, failure of equipment to respond to requests or commands, or failure of communications between components of BAS.
    b) Error messages to be comprehensive and communicate clearly to operator precise nature of problem.

- Password Protection
    a) Provide security system that prevents unauthorized use unless operator is logged on.
        - Access shall be limited to operator’s terminal functions unless user is logged on, including displays as outlined above.
    b) Each operator’s workstation shall provide security for 100 users minimum.
        - Each user shall have an individual User ID, User Name and Password.
        - Entries are alphanumeric characters only and are case sensitive (except for User ID).
        - User ID shall be 8 characters,
        - User Name shall be a maximum of 29 characters, and Password shall be a maximum of 8 characters long.
        - Each system user shall be allowed individual assignment of only those control functions and menu items to which that user requires access.
        - All passwords, user names, and access assignments shall be adjustable online at the operator’s terminal.
        - Each user shall also have a set security level, which defines access to displays and
        - System shall include 10 separate and

distinct security levels for assignment to users.

- Trend Data

a) System shall periodically gather historically recorded selected samples of object data stored in the field equipment (global controllers, field controllers) and archive the information on the operator's workstation (server) hard disk.

- Archived files shall be appended with new sample data, allowing samples to be accumulated over 3 years.
- Systems that write over archived data shall not be allowed, unless limited file size is specified.
- Samples may be viewed at the operator's terminal in a trend log.
- Logged data shall be stored in spreadsheet format.
- Operator shall be able to scroll through all trend log data.
- System shall automatically open archive files as needed to display archived data when operator scrolls through the data vertically.
- All trend log information shall be displayed in standard engineering units.

b) Software shall be included that is capable of graphing the trend logged object data. Software shall be capable of creating two- axis (x,y) graphs that display up to six object types at the same time in different colours and these Graphs shall show object type value relative to time.

c) Operator shall be able to change trend log setup information.

- This includes the information to be logged as well as the interval at which it is to be logged.
- Minimum interval of 1 minute.
- All input, output, and value object types in the system may be logged.
- All operations shall be password protected.
- Setup and viewing may be accessed directly from any and all graphics object is displayed on.

d) System shall be capable of periodically gathering energy log data stored in the field equipment and archive the information on the operator workstation's

hard disk.

- Archive files shall be appended with the new data, allowing data to be accumulated over several years.
- Systems that write over archived data shall not be allowed unless limited file size is specified.
- System shall automatically open archive files as needed to display archived data when operator scrolls through the data.
- Display all energy log information in standard engineering units.

e) System software shall be provided that is capable of graphing the energy log data. Software shall be capable of creating two- axis (x,y) graph that show recorded data, relative to time.

- All data shall be stored in spreadsheet format for direct use by third-party spreadsheet or other database programs.
- Operation of system shall not be affected by this operation.

f) Operator shall be able to change the energy log setup information.

- Including the meters to be logged, meter pulse value, and the type of energy units to be logged.
- All meters monitored by the system may be logged.
- All operations shall be password protected.

• Graphics

a) The operator’s workstation shall display all data associated with the project.

- The operator’s terminal software shall accept, GIF, PNG, JPG and ICO format graphic files for display purposes.
- Graphic files shall be created using scanned, full colour photographs of system installation, AutoCAD or Visio drawing files of field installation drawings and wiring diagrams from as-built drawings.
- Operator’s workstation shall display all data using 3-D graphic representations of all mechanical equipment.
- Displays can be used as templates to produce other displays

b) System shall be capable of displaying graphic file, text, and dynamic object data together on each display.

- Information shall be labelled with descriptors and shall be shown with the appropriate engineering units.
- All information on any display shall be dynamically updated without any action by the user.
- Terminal shall allow user to change all field-resident BAS functions associated with the project, such as setpoints, weekly schedules, exception schedules, etc. from any screen no matter if that screen shows all text or a complete graphic display.
- This shall be done without any reference to object addresses or other numeric/mnemonic indications.

c) All displays shall be generated and customized in such a manner by the local DDC system supplier that they fit the project as specified.

- Canned displays shall not be acceptable.
- Displays shall use Standard English for labelling and readout.
- Systems requiring factory programming for graphics are specifically prohibited.
- The installing contractor without factory dependency or assistance shall support all graphics and DDC programming locally.

d) Binary objects shall be displayed as ON/OFF/NULL or with customized text.

- Text shall be justified left, right or centre as selected by the user.
- Allow binary objects to be displayed as individual change-of-state bitmap objects on the display screen such that they overlay the system graphic.
- Each binary object displayed in this manner shall be assigned up to three bitmap files for display when the point is ON, OFF or in alarm.
- For binary outputs, toggle the objects commanded status when the bitmap is selected with the system digitizer (mouse). Similarly, allow the terminal operator to toggle the object’s status by selecting (with the mouse) a picture of a switch or light, for example, which then displays a different picture (such as an ON switch or lighted

lamp).

- Additionally, allow binary objects to be displayed as an animated graphic.

e) Animated graphic objects shall be displayed as a sequence of multiple bitmaps to simulate motion.

- For example: when a pump is in the OFF condition, display a stationary picture of the pump. When the operator selects the pump picture with the mouse, the represented objects status is toggled and the picture of the pumps impeller rotates in a time-based animation.
- The operator shall be able to click on an animated graphical object or switch it from the OFF position to ON, or ON to OFF.
- Allow operator to change bitmap file assignment and also create new and original bitmaps online.
- System shall be supplied with a library of standard bitmaps, which may be used unaltered or modified by the operator.
- Systems that do not allow customisation or creation of new bitmap objects by the operator (or with third-party software) shall not be allowed.

f) Analog objects shall be displayed with operator modifiable units.

- Analog input objects may also be displayed as individual bitmap items on the display screen as an overlay to the system graphic.
- Each analog input object may be assigned to a minimum of five bitmap files, each with high/low limits for automatic selection and display of the bitmaps.
- As an example, a graphic representation of a thermometer would rise and fall in response to either the room temperature or its deviation from the controlling setpoint.
- Analog output objects, when selected with the mouse, shall be displayed as a prompted dialog (text only) box.
- Selection for display type shall be individual for each object.
- Analog object values may be changed by selecting either the increase or decrease arrow in the analog object spinner box without using the keypad.

g) Analog objects may also be assigned to an area of a

system graphic, where the colour of the defined area would change based on the analog objects value.

- For example, an area of a floor-plan graphic served by a single control zone would change colour with respect to the temperature of the zone or its deviation from setpoint.
- All editing and area assignment shall be created or modified online using simple icon tools.

h) A customized menu label (push-button) shall be used for display selection.

- Menu items on a display shall allow penetration to lower level displays or additional menus.
- Dynamic point information and menu label push buttons may be mixed on the same display to allow sub- displays to exist for each item.
- Each display may be protected from viewing unless operator has appropriate security level.
- A separate security level may be assigned to each display and system object.

i) A mouse, or other form of digitizer, shall be used to move the pointer arrow to the desired item for selection of new display or to allow the operator to make changes to object data.

j) Separate Displays shall be supplied, specific to the project, to form the following overall presentation style.

- The presentation will contain displays for:
  - Site Overview
  - Specific Building(s)
  - Floor plates within Building(s)
  - Each controlled Zone
  - Each controlled System or Sub-System
- All Displays will be linked in a logical fashion using hyperlink style (single left mouse click on text/display object/dynamic to load linked display if programmed)
  - Clicking on a building in the Site Overview displays the specific building display.

- Clicking on a floor, displays the floor plate display
- Clicking on a zone, displays the specific control system for that zone.
- Clicking on a specific system or sub-system coarse representation at the floor plate display level displays a detailed presentation of the system or sub-system.

k) Entire system shall operate without dependency on the operator's terminal. Provide graphic generation software at each workstation.

- Alarms

a) Operator’s terminal shall provide audible, visual, electronic and printed means of alarm indication.

b) Any alarm may be handled based on its individual or assigned class actions.

- Actions are, but not limited to
  - Displayed on the Alarm console.
    - The system shall be provided with a dedicated alarm window or console.
    - This window will notify the operator of an alarm condition, and allow the operator to view details of the alarm and acknowledge the alarm.
    - The use of the Alarm Console can be enabled or disabled by the system administrator.
    - When the Alarm Console is enabled, a separate alarm notification window will supersede all other windows on the desktop and shall not be capable of being minimized or closed by the operator.
    - This window will notify the operator of new alarms and un-acknowledged alarms.
    - Alarm notification windows or banners that can be minimized or closed by the operator shall not be acceptable.

- Printout of alarms shall be sent to the assigned terminal and port.

▪ Delivery by electronic mail (e-mail).

- Sent via e-mail to one or more recipients.

▪ Printed.

- Printed on local or network printer

c) System shall provide log of alarm messages. Alarm log shall be archived to the hard disk of the system operator's terminal.

o Each entry shall include a description of the event- initiating object generating the alarm, time and date of alarm occurrence, time and date of object state return to normal, and time and date of alarm acknowledgement.

d) Alarm messages shall be in user-definable text English or other specified language) and shall be entered either at the operator's terminal or via remote communication.

• Scheduling

a) Operator's terminal display of weekly schedules shall show all information in easy-to-read 7-day (weekly) format for each schedule.

o This includes all ON/OFF times (to the minute) for each day's events.

b) Exception schedules (non-normal schedules, such as holidays or special events) shall display all dates that are an exception to the weekly schedules.

o These speciality schedules shall be displayed at the operator's terminal in a format similar to the weekly schedules, again allowing easy data entry.

o Exception schedule data is entered by the following methods:

▪ date entries (one day entries)

▪ date-to-date (a range or span of days)

▪ by weekday (for example, a given day of a given week each month)

o User shall be able to scroll easily through

the months for each year as a minimum.

c) At the operator's terminal, the system user shall be able to change all information for a given weekly or exception schedule if logged on with the appropriate security access.

- Archiving

a) Store back-up copies of all controller databases in at least one OWS and the server.

b) Provide continuous supervision of integrity of all controller databases.

c) Data base back up and downloading to occur over LAN without operator intervention.

d) Operator to be able to manually download entire controller database or parts thereof.

- Reports

a) Provide a report facility to generate and format for display, printing, or permanent storage, as selected by the operator, the reports as specified in this section.

  - If display output (Monitor) is requested, it shall be scrollable; scroll bars will be used to allow easy and flexible movement within the report.
  - Output to be sorted by area, system point.

b) Periodic/Automatic Report:

  - Provide the software to automatically generate any report specified; the user will be able to specify the type of report, start time and date, interval between reports (hourly, daily, weekly, monthly) and output device.
  - The software will allow the operator to modify the periodic/automatic reporting profile at any time.

c) As a minimum, the following reports shall be configured on the system:

  - Dynamic Reports: To allow operator to request a display of the dynamic value for the user specified points which shall indicate the status at the time the request was entered and updated at an operator modifiable scan frequency and it shall be possible to select points on the following basis:

- All points in all areas
- Area (all points in area)
- Area system (all points in system)
- Area system point (individual point)
- System (all points by system and point type)
- System point (all points by system and point type)
- Area point (all points by area and point type).

- Summary Report:
  - To permit the display or printing of the dynamic values for the user specified points.
    - Reports to be available on same basis as dynamic reports.
    - Output will be to the user selected output device.
- Trend Reports:
  - To permit the trending of points selected by the operator, including as a minimum digital input and output, analog input and output, set points, and calculated values.
- Historical Data Collection:
  - Provision shall be made to ensure historical data is not lost.

- The ability to off-load historical data to removable media, and to later load data previously backed-up, will be provided.

- Historical data values, for an operator specified time range and for operator specified points, may be output the same as for trend data.

- Critical Alarm Summary:
  - Provide a summary of those points in the critical alarm state and include as a minimum; point acronym, point description, alarm type, limit exceed, current value, alarm type, time and date of occurrence.

- Maintenance Alarm Summary:
  - Provide a summary of those points in maintenance alarm and include as a minimum; point acronym, point description, current value, alarm type, limit exceed, time and date of occurrence.

- Alarm Summary:
  - Provide a summary of all points in alarm and include as a minimum; point acronym, point description, current value, alarm type, limit exceeded, and time and date of occurrence.

- Disable Point Summary:
  - Provide a summary of all points in the disabled state and include as a minimum point acronym and point description.

- Run Time Summary:
  - Provide a summary of the accumulated running time of selected pieces of equipment with point acronym and description, run time to date, alarm limit setting. The run time shall continue to accumulate until reset

individually by means of suitable operator selection.

- Schedule Summary:
  - Provide a summary of all schedules and indicate as a minimum, which days are holidays and, for each section, the day of the week, the schedule times and associated values; for digital schedules value will be on or off; for analog schedules value will be an analog value.
- User Record Summary:
  - Provide a summary of all user records to include as a minimum; user name, password, initials, command access level and point groups assigned.

- LCU / TCU Programming Software

a) The Programming software must be able to be seamlessly launched from within the Niagara Framework as a wizard.

- Connection methods (Tunneling or by building controller– not direct to controller).

b) Provide programming software for the Local Control Unit (LCU) and the Terminal Control Unit (TCU) that allows for the development of the LCU/TCU control logic and point management and Graphical User Interface screens.

- A library of control, application, and graphic objects shall be provided to enable the creation of all applications and user interface screens.
- Access to these functions shall be provided through Graphical User Interface software (GUI).
- Applications are to be created by selecting the desired control objects from the library, dragging or pasting them on the screen, and linking them together using a built in graphical connection tool.
- Completed applications may be stored in the library for future use.
- Graphical User Interface screens shall be created in the same fashion.
- Data for the user displays is obtained by

graphically linking the user display objects to the application objects to provide “real-time” data updates.

- Any real-time data value or object property may be connected to display its current value on a user display.
- Systems requiring separate software tools or processes to create applications and user interface displays shall not be acceptable.
- Programming Methods:
    - Provide the capability to copy objects from the supplied libraries, or from a user-defined library to the user’s application.
    - Objects shall be linked by a graphical linking scheme by dragging a link from one object to another.
    - Object links will support one-to-one, many- to-one, or one-to-many relationships.
    - Linked objects shall maintain their connections to other objects regardless of where they are positioned on the page and shall show link identification for links to objects on other pages for easy identification.
- Object Configuration
    - Each object will be done through the object’s property sheet using fill-in the blank fields, list boxes, and selection buttons.
    - Use of custom programming, scripting language, or a manufacturer-specific procedural language for configuration will not be accepted.
- The software shall provide the ability to view the logic with values being inputted to and outputted from the graphical blocks in real time. (debug mode)
- The system shall support object duplication within a client’s database.
    - An application, once configured, can be copied and

pasted for easy re-use and duplication.

-
- All links, other than to the hardware, shall be maintained during duplication.

- Provides function to compare and calculate from multiple values from networked controllers (NCU, TCU and/or LCU).
- As a minimum, the function shall calculate and compared the values and return the average, sum, highest, lowest, 3 highest, 3 lowest values and multi- state value count.
- Auto-linking of objects to graphics
- [Can include][] Auto-Encapsulate functionality (the automatic ability to group multiple programming objects into a new singular programming object).
- Allow for uploading/downloading to/from multiple controllers

- Utility Software

a) Supply and install software products to allow the owner to access and manipulate the control schematic diagrams, and to access product data sheets in an electronic format.

b) Enter all soft copy submissions; including "Record" drawings as specified herein [Shop Drawings, Product Data and Review Process] in OWS.

PART 5 – NATIVE WEB BROWSER INTERFACE

5.1 The contractor shall provide web-browser delivered graphical visualization software as part of the operator workstation, server, NAC(s), and/or IP-CTRL devices, as indicated on construction documents. The contractor shall configure the graphical visualization software in accordance with project requirements.

5.2 The graphical visualization software shall have two operating modes: Studio & Viewer, as described below. For both Studio & Viewer modes, the graphical user interface shall be delivered to the user by pointing a modern web browser to a project-specific URL and logging into the system. The software shall not require any software plugins to be installed in conjunction with the web browser.

5.3 When delivered to a modern web browser, the software shall implement web development standards, including but not limited to Hypertext Markup Language (HTML) v5, Cascading Style Sheets (CSS) v3, and JavaScript (in compliance with ECMAScript specifications).

5.4 Studio Mode:

A. The graphical visualization software shall allow upload of user-generated

content such as logos or floorplan background images.

B. The graphical visualization software shall allow assembly and configuration of repeatable design elements, such as a table row for a points list, or an informative callout for equipment on a floor plan.

C. The graphical visualization software shall allow for use of dynamic, zoomable, extensible mapping interfaces, such as Google Maps, provided internet connectivity.

D. The graphical visualization software shall support creation and configuration of multiple chart types, including but not limited to line charts, bar charts, area charts, pie charts, including use of multiple foreground and background colors, legend positioning and color gradients.

E. The graphic visualization software shall allow both view and manipulation (subject to user access level) of real-time data present on the host, as well as historical trend data. The scope of data shall depend only on whether the host device is an operator workstation, server, NAC, or IP-CTRL device and has been fully configured to meet project-required sequence of operation.

F. The graphic visualization software shall allow binding of any data and/or data manipulation method to applicable graphical design elements, including but not limited to: text labels, buttons, charts, geographical mapping interfaces, applied against applicable properties including but not limited to: position/size, background image/color, foreground color, foreground font properties, visibility, opacity, animation timing and rotation.

G. The graphic visualization software shall allow manipulation of position/scaling properties of any and all visual elements, with respect to user's screen size, parent and nested visual elements, and/or "User Agent Type" (designating Web Browser vendor and version), such that graphical screens created may be delivered and perform equally well on laptop screens, large displays, and/or mobile devices.

5.5 Viewer Mode:

A. In viewer mode, the graphical visualization software shall deliver content to the user's web browser in a fashion that matches configuration accomplished in Studio Mode.

B. Scope and amount of content delivered in Viewer mode, and access to data manipulation methods shall be determined by which user has authenticated.

5.6 LCD Display – A wall mounted easy to operate User Interface that provides direct read / write access to any point on the network. The LCD Display shall provide the following:

A. The Display shall consist of an alphanumeric LCD display of 16 lines x 16 characters, and a multi-function keyboard. At total of 250 points shall be available for display and or control in groups of 50. Each group shall have a minimum of 13 alpha numeric character descriptor and each point shall have up to a minimum of 16 character alpha numeric descriptor.

B. The display shall have a graphical logo displayed on its default screen. This logo shall be a standard monochrome bitmap of 89x128 pixels that the user can replace. Configuration of the display shall be made available from a wizard contained within the system programming tools

C. The Display User access shall be through a simple to use directional and entry buttons. Full keyboards shall be accepted

D. The LCD Display shall be provided as a surface mount or flush mount as shown on the mechanical drawings.

5.7 LCD Sensor - Where required provide for a LCD based sensor to connect to the VAV and or FCU that operates as a user interface for temperature adjustment, override and display of values along with the ability to perform Air Balance task (for VAV).

5.8 Graphical Interface

A. Graphics shall be accessible from a standard web browser. All graphics shall follow the current City/County format and style. Contractor shall coordinate with City/County staff. On all screens, the entire graphics screen should be visible in full screen

B. mode, i.e. no scroll bar required to view entire screen and should be printable with a white back ground. Graphics shall reside on the N4 Supervisor.

C. All equipment controlled or monitored by the BAS shall be graphically represented.

D. Equipment Views: A maximum of 40 points will be provided in a single status display screen. Points that have been defined as data-writes, either as a digital (on/off) or analog (change value) point type, shall be setup such that an operator, by right-clicking the data object or graphic, shall be able to command a digital value, or modify an analog value.

E. Building Level

- This level should include an overall building plan, illustrating all floors (if possible). The overall floor plans will indicate comfort status displayed via color codes. The intent is to allow the building engineer to quickly see problem areas within the facility.
- Main building screen should indicate major building systems that are in alarm and those elements that have lost connectivity with the server. Every building shall have a graphic screen that lists all of the BAS alarms for that building and the status of each alarm. These alarm graphic screens shall be configured such that when a point is in alarm the text on the graphic for that point shall flash red with the current point value. These alarm screens shall be arranged in a table format with the alarm points clearly labeled as to what they are. The text point identifying the equipment shall also be a link to the graphic page for that equipment.
- Main building screen should provide active links to as-built control drawings, basis of design documentation, and sequence of operations.
- Outside air temperature and relative humidity should be displayed.

F. Floor Plan Level

- Floor plan level graphics should display the comfort status of all rooms on that floor via color codes incorporated into the actual floor layout.
- Comfort status should include actual status of all controlled variables: temperature, humidity, indoor air quality (CO2 level), etc. Active links to change the set points of these variables should be incorporated.
- Zone boundaries should be able to be determined by means of color

coded floor plans at this level

- Web page should identify the building, i.e. “Eng 2nd Floor”, clear at the top of the page, centered, just above the floor plan(s)
- Active links to other floors in the building should be provided
- Layout and location of system components: duct, boxes, etc should be provided with color code according to use (supply, return)
- Identify AHU(s) and central exhaust fan(s) with name and location serving the floor with active link to its graphic.
- Zone Level
- All “%” indicators of valves or dampers should indicate “open” or “closed”
- Should indicate air handler supplying the zone on the page and provide a dynamic link to that page
- Occupancy status and temperature should be graphically represented via a color bar chart
- Entering and Exiting temperatures should be shown at the device
- Indication of air flow through box should be shown graphically
- Actual components of box should be shown graphically
- All points should have process specific, intuitive, names on every graphic screen (not T1, P1, but LAT1, SDSP1, etc. to be used consistently across all graphics and for all projects. (ex. Don’t use ‘discharge air temp’ and ‘leaving air temp’)
- Fan status shall be displayed using a Boolean graphic that displays a spinning fan wheel when the status is ON and a stationary fan wheel when the status is OFF. Pump status graphics shall be displayed in a like manner using a pump impeller in a pump. If a fan or pump has no DI (digital input) to display the status a NS (no status) shall be placed on the
- fan or pump icon on the graphics screen to indicate there is no motion ON/OFF status.
- DO (digital outputs) shall be displayed using a Boolean graphic that displays a green switch ON when the status is ON and a red switch OFF when the status is OFF. These switch graphics shall not be used for anything other than digital outputs.
- Heating and cooling coils shall be displayed using a Boolean graphic that displays a color change when the status is ON and an off-white coil when the status is OFF. Text status shall accompany this color change.
- Energy management dashboards shall be provided and programmed for the facility staff to monitor equipment operation, monitor energy consumption, develop energy baselines, monitor and report on energy reduction projects, and provide energy demand management.
-
- Reports – Basic System Reports shall be set-up that provides a summary of values of the key Points in that System. Contact BAS division for examples.
-
- Reports shall be organized according to the project specific applications. They shall include summaries of key set points, control

status (auto vs. overridden) and actual controlled conditions. For example, reports shall provide, at a glance, a summary of the % terminal demand at all zone terminals.

5.9 Alarms

A. Alarms Each controller shall have a 32-bit microprocessor operating at 600 MHz and support a BACNET protocol stack in accordance with the ANSI/ASHRAE Standard 135-2012 and the BACNET Device Profile supported. shall be routed to the N4 Supervisor BAS server. Alarms are divided into priorities from 1 to 255, 1 being the highest priority. The City/County BAS section shall be consulted about specific alarm class assignment and routing.

B. All fans and pumps, which have both digital input and digital output points, shall be alarmed. The alarm shall be generated whenever the input and output values do not match. The time delay on these alarms shall be 5 minutes for fans and pumps unless there is reason for a shorter delay.

C. All analog temperatures shall have alarm inhibits when the associated equipment is in the off mode.

D. Alarm text messages shall be descriptive and contain the building name and equipment type and number from which the alarm was generated. The alarm message shall also contain the room number where the equipment is located. Messages shall not contain any unnecessary characters.

E. All pumps and fans and other digital outputs deemed necessary by City/County personnel shall have alarms as to notify when outputs are on when scheduled to be off. All pumps and fans and other digital outputs deemed necessary by City/County personnel shall have cycling alarms as to notify when excessive starts occur.

5.10 Trending

A. All of the points which are alarmed shall be trended. Points shall have trending inhibited when the associated equipment is in the off mode

B. Measured analog and binary data shall be trended

5.11 Global Command and Control

C. The control contractor is responsible for making all of the links required to pass the global signals listed in this section and for programming the proper local default/fallback values for those signals.

D. Master time of day schedules shall reside on the BAS server to allow off-site editing of the schedule. Slave schedules shall be located in the NAC acting as defaults, receiving signals from their respective master schedules.

E. Time of day schedules shall be organized according to room use to facilitate holiday scheduling for different types of spaces. Master holiday schedules are located in the BAS server.

F. Spaces that use VAV boxes shall be programmed such that all VAV boxes supplied by a particular AHU can be driven to maximum flow with a single command. Additionally this single command shall be activated if the variable frequency drive (VFD) on the supply fan is placed in “hand” or “bypass”.

G. Hydronic heating systems shall be programmed such that all related heating valves can be overridden open with a single command for balancing purposes.

H. Chilled water systems shall be programmed such that all related cooling valves can be overridden open with a single command for balancing purposes.

I. Control programs shall be configured such that automatic control will still function if equipment such as fans and pumps are put in hand. Control enable signals shall not rely on schedules or start commands, but shall instead rely on equipment status. For example, the discharge air temperature control of an air-handling unit shall be enabled based on supply fan status, not the BAS schedule or start signal to the unit.

J. Return fans shall be interlocked with supply fans so that the return fan will not run in automatic if the supply fan is not running unless a sequence specifically requires it.

K. Maintenance Time Reminders shall not be specified unless the design professionals provide the control contractor with specific time intervals for each piece of equipment that is to have an MTR. These time intervals shall be in accordance with the equipment O&M recommendations.

PART 6 – PERIPHERAL DEVICES

6.1 Temperature Sensors and Transmitters - General Sensor & Transmitter Requirements

A. Provide sensors and transmitters required as outlined in the input/output summary and sequence of operation, and as required to achieve the specified accuracy as specified herein.

- Temperature transmitters shall be equipped with individual zero and span adjustments. The zero and span adjustments shall be non-interactive to permit calibration without iterative operations. Provide a loop test signal to aid in sensor calibration.
- Temperature transmitters shall be sized and constructed to be compatible with the medium to be monitored. Transmitters shall be equipped with a linearization circuit to compensate for non- linearities of the sensor and bridge and provide a true linear output signal.
- Temperature sensors shall be of the resistance type and shall be either platinum 1k ohm or thermistor 10k ohms type II as specficied elsewhere.
- Thermistors are acceptable provided the mathematical relationship of a thermistor with respect to resistance and temperature with the thermistor fitting constraints is contained with the CU operating software and the listed accuracy's can be obtained. Submit proof of the software mathematical equation and thermistor manufacturer fitting constants used in the thermistor mathematical/expressions. Thermistors shall be of the Thermistor (NTC) Type with a minimum of 100 ohm/□F. resistance change versus temperature to insure good resolution and accuracy. Thermistors shall be certified to be stable ±0.24□F. over 5 years and ±0.36□F. accurate and free from drift for 5 years.
- CU operating software shall be equipped with a self-calibrating feature for temperature sensors.
- The following accuracy's are required and include errors associated with the sensor, lead wire and A to D conversion.

Point Type	Accuracy
Outside Air	0.5□F.
Chilled Water	0.5□F.
Room Temperature	1.00□F.
Hot Water/Steam	0.75□F.
Duct Temperature	0.5□F.
Sensors Used in Energy Water (BTU) or Process Calculations	0.1□F.

- Sensors used in BTU or process calculations shall be accurate to ±0.10□F. over the process temperature range. Submit a manufacturer's calibration report indicating that the calibration certification is traceable to the National Bureau of Standards (NBS) Calibration Report Nos. 209527/222173.
- Thermowells: When thermowells are required, the sensor and well shall be supplied as a complete assembly including well head and greenfield fitting.

  Thermowells shall be pressure rated and constructed in accordance with

the system working pressure Thermowells and sensors shall be mounted in a threadolet or 1/2" NPT saddle and allow easy access to the sensor for repair or replacement.

Thermowells shall be constructed of the following materials: Chilled and Hot Water: brass; Steam: 316 stainless steel; Brine (salt solutions): marine grade stainless steel.

- Outside Air Sensors: Outside air sensors shall be designed to withstand the environmental conditions to which they will be exposed. They shall also be provided with a solar shield.

  Sensors exposed to wind velocity pressures shall be shielded by a perforated plate surrounding the sensor element.

  Temperature transmitters shall be of NEMA 3R construction and rated for ambient temperatures.

  Duct Type Sensors: Duct mount sensors shall mount in a hand box through a hole in the duct and be positioned so as to be easily accessible for repair or replacement. A neoprene grommet (sealtite fitting and mounting plate) shall be used on the sensor assembly to prevent air leaks. Duct sensors shall be insertion type and constructed as a complete assembly including lock nut and mounting plate. Duct sensors probe shall be constructed of 304 stainless steel. For outdoor air duct applications, use a weatherproof mounting box with weatherproof cover and gasket. Averaging Duct Type Sensors - For ductwork greater any dimension than 48 inches and/or where air temperature stratification exists, utilize an averaging sensor with multiple sensing points. The averaging sensor shall be a 304 stainless steel tube with holes extending across the duct or plenum to be sampled. A bleed hole outside the duct or plenum causes air to enter the sample tube and exit at the bleed hole, thus bathing the sensor in average air. The averaging sensor shall be installed complete with end cap, compression fittings, gaskets, mounting flange and required accessories. Provide capillary supports at the sides of the duct to support the sensing string.

- Acceptable Manufacturers: Duct/Immersion Sensors – BAPI or Mamac Room Sensors – Distech Controls or BAPI

- Relative Humidity Sensors/Transmitter: The sensor shall be a solid state, resistance type relative humidity sensor of the Bulk Polymer Design. The sensor element shall be washable and shall resist surface contaminations. Humidity transmitter shall be equipped with non-interactive span and zero adjustments, a 2 wire isolated loop powered, 4-20ma, 0-10 vdc linear proportional output. The humidity transmitter shall meet the following overall accuracy including lead loss and A to D conversion. Room Type Sensor ±3% RH Provide a single point humidity calibrator, if required, for field calibration. Transmitters shall be shipped factory pre-calibrated. Acceptable Manufacturers: VERIS

- Differential Pressure Transmitters and Accessories General Air and Water Pressure Transmitter Requirements: Pressure transmitters shall be constructed to withstand 100% pressure over-range without damage and to hold calibrated accuracy when subject to a momentary 40% over-range input. Pressure transmitters shall provide the option to transmit a 0 to 5V dc, 0 to 10V dc, or 4 to 20 mA output signal. Differential pressure transmitters used for flow measurement shall be sized to the flow-sensing device and shall be supplied with shutoff and bleed valves in the high and low sensing pick-up lines (3 valve manifolds). Provide a minimum of a NEMA 1 housing for the transmitter. Locate transmitters in accessible local control panels wherever possible. Low air pressure, differential pressure

transmitters used for room filter monitoring. Shall be equipped with a LED display indicating the transmitter output signal.

Low Air Pressure Applications (0 to 0.5" WC)

a) The pressure transmitter shall be capable of transmitting a linear electronic signal proportional to the differential of the room and reference static pressure input signals with the following minimum performance specifications.

b) Span: Not greater than two times the design space DP.

c) Accuracy: Plus or minus 0.5% of F.S.

d) Dead Band: Less than 0.3% of output.

e) Repeatability: Within 0.2% of output.

f) Linearity: Plus or minus 0.2% of span.

g) Response: Less than one second for full span input.

h) Temperature Stability: Less than 0.01% output shift per degree F. change.

i) The transmitter shall utilize variable capacitance sensor technology and be immune to shock and vibration. Provide a 18 month warranty for each transmitter. Replace all transmitters found to be defective at no cost to the City/County during the warranty period. Acceptable Manufacturers: VERIS

- Flow, Pressure, and Electrical Measuring Apparatus

a) Airflow/Temperature Measurement Devices

- Provide airflow/temperature measurement devices where indicated on the plans.
- Fan inlet measurement devices shall not be substituted for duct or plenum measurement devices indicated on the plans.
- Each measurement device shall consist of one or more sensor probe assemblies and a single microprocessor-based transmitter.
- Each sensor probe assembly will contain one or more independently wired sensor housings. Multiple sensor housings shall be equally weighted and averaged by the transmitter prior to output. Pitot tubes and arrays are not acceptable. Vortex shedding flow meters are not acceptable.
- All Sensor Probe Assemblies
- Each sensor housing shall be manufactured of a U.L. listed engineered thermoplastic.
- Each sensor housing shall utilize two hermetically sealed, bead-in-glass thermistor probes to determine airflow rate and ambient temperature. Devices that use "chip" type thermistors are unacceptable. Devices that do not have 2 thermistors in each sensor housing

are not acceptable.

- Each sensor housing shall be calibrated at a minimum of 16 airflow rates and have an accuracy of +/-2% of reading over the entire operating airflow range. Each sensor assembly shall be calibrated to standards that are traceable to the National Institute of Standards and Technology (NIST).
- Devices whose accuracy is the combined accuracy of the transmitter and sensor probes must demonstrate that the total accuracy meets the performance requirements of this specification throughout the measurement range.
- The operating temperature range for the sensor probe assembly shall be -20° F to 160° F. The operating humidity range for the sensor probe assembly shall be 0-99% RH (non- condensing).
- Each temperature sensor shall be calibrated at a minimum of 3 temperatures and have an accuracy of +/-0.15° F over the entire operating temperature range. Each temperature sensor shall be calibrated to standards that are traceable to the National Institute of Standards and Technology (NIST).
- Each sensor probe assembly shall have an integral, U.L. listed, plenum rated cable and terminal plug for connection to a remotely mounted transmitter.
- Each sensor assembly shall not require matching to the transmitter in the field.
- A single manufacturer shall provide both the airflow/temperature measuring probe(s) and transmitter at a given measurement location.

b) Duct and Plenum Sensor Probe Assemblies

- Sensor housings shall be mounted in an extruded 6063 aluminum tube probe assembly.
- The number of sensor housings provided for each location shall be determined by the manufacturer based on the requirements of the application.
- Probe assembly mounting brackets shall be constructed of 304 stainless steel. Probe assemblies shall be mounted using one of the following options:
- Insertion mounted through the side or top of the duct
- Internally mounted inside the duct or plenum
- Standoff mounted inside the plenum

- The operating airflow range shall be 0 to 5,000 FPM unless otherwise indicated on the plans.

c) Fan Inlet Sensor Probe Assemblies

- Sensor housings shall be mounted on 304 stainless steel blocks.
- Mounting rods shall be field adjustable to fit the fan inlet and constructed of nickel plated steel.
- Mounting feet shall be constructed of 304 stainless steel.
- The operating airflow range shall be 0 to 10,000 FPM unless otherwise indicated on the plans.

d) TransmittersThe transmitter shall operate on 24 VAC. The transmitter shall not require an isolated power source.

- The operating temperature range for the transmitter shall be -20° F to 120° F. The transmitter shall be protected from weather and water.
- The transmitter shall be capable of communicating with the host controls using one of the following interface options:
- Linear analog output signal: Field selectable, fuse protected and isolated, 0-10VDC and 4-20mA (4-wire)
- The measuring device shall be UL listed as an entire assembly.
- Acceptable Manufacturer: Ebtron ONLY - provide per part number on contract drawings.

e) Energy (BTU) Measurement System (Chilled Water, Hot Water, Condenser Water)

- The BTU meter shall provide the following points both at the integral LCD and as outputs to the building control system: Energy Total, Energy Rate, Flow Rate, Supply Temperature and Return Temperature.
- The Energy Measurement System shall consist of an insertion turbine flow meter, two temperature sensors, a BTU meter, temperature thermo-wells, and all required mechanical installation hardware.
- Output signals shall be either serial network (protocol conforming to BACNET®) or via individual analog and pulse outputs.
- Each BTU meter shall be factory programmed for its specific application, and shall be re-programmable using the front panel keypad (no special interface device or computer required).
- A certificate of calibration shall be provided with each system. F Temperature sensors: Temperature sensors shall be loop-powered current based (mA) sensors and shall be bath-calibrated and matched (NIST* traceable) for the specific temperature range for each application. The calculated differential temperature used in the energy calculation shall be accurate to within +0.150F (including the error from individual temperature sensors, sensor matching, input offsets, and calculations).
- Flow Meter (Insertion Turbine):
- Provide an ONICON Model F-1200 Dual

Turbine Flow Meter, complete with all installation hardware necessary to enable insertion and removal of the meter without system shutdown.

- The flow meter shall be hand-insertable up to 400 psi.
- The flow meter shall have two contra-rotating N4ial turbines, with electronic impedance-based sensing and an averaging circuit to reduce measurement errors due to swirl and flow profile distortion.
- Each flow meter shall be individually wet-calibrated against a primary volumetric standard that is accurate to within 0.1% and traceable to NIST*.
- A certificate of calibration shall be provided with each flow meter.
- Accuracy shall be within ± 0.5% of rate at the calibrated velocity, within ± 1% of rate over a 10:1 turndown (3.0 to 30 ft/s) and within ± 2% of rate over a 50:1 turndown (from
- 0.4 to 20 ft/s).
- Output signal shall be a 0-15 V square wave pulse. Bi-directional meters shall be FB-1200 Series and shall include an isolated contact closure output for direction.
- Acceptable Manufacturer: ONICON System-10 BTU Meter ONLY - provide per part number on contract drawings.

- Shielded Static Pressure Sensor
    a) Provide for each zone where required a shielded static pressure sensor suitable for ceiling surface mounting, complete with multiple sensing ports, pressure impulse suppression chamber with minimum volume of 50 cubic inches, airflow shielding, and 3/8" compression takeoff fittings, all contained in a welded stainless steel casing, with polish finish on the exposed surfaces.
    b) These probes shall be capable of sensing the static pressure in the proximity of the sensor to within 1% of the actual pressure value while being subjected to a maximum airflow of 1000 FPM from a radial source.
    c) The shielded static sensing devices shall be used for both reference and space pressure sensing.
    d) Pressure sensors used for outside air pressure reference purposes shall be equipped with a conduit seal for pneumatic tubing and bushings for a weather tight installation.
    e) Acceptable Manufacturer: Veris ONLY
- Static Pressure Traverse Probe - Provide multipoint traverse probes in the duct at each point where static pressure sensing is required.
    a) Each duct static traverse probe shall contain multiple static pressure sensors located along the exterior surface of the cylindrical probe. Pressure sensing points shall not protrude beyond the surface of the probe.
    b) The duct static traverse probe shall be of 304 stainless steel construction and (except for 3/4" dia. probes with lengths of 24" or less) be complete with threaded end support rod, sealing washer and nut, and mounting plate with gasket and static pressure signal fitting. The static traverse probe shall be capable of producing a steady, non-pulsating signal of standard static pressure without need for correction factors, with an instrument accuracy of 21.
    c) Acceptable Manufacturer: Veris ONLY
- Carbon Dioxide Sensor for Demand Controlled Ventilation. Provide a general purpose indoor transmitter/sensor assembly with removable sensor, UL listed. 4-20 mA DC output representing 0-2000 ppm. Minimum (5) year sensor life, with field-replaceable sensor unit. Accuracy +/- 1 percent of reading at 77 degF. Long term drift less than 1 percent of scale per year. For wall-mounted sensors, provide local readout display. Acceptable manufactures: Vaisala GMW/GMD 20, or approved equivalent.
- Venturi Flowmeter – Provide venture flowmeters with the following features:
    a) Pressure drop on venturi type flow meters shall not exceed 25" WC. Each venturi low and high pressure taps shall be equipped with nipples, valves and quick disconnects.
    b) Equip each venturi with a metal identification tag indicating the size, location, GPM and meter reading for

the GPM specified.

c) Provide (1) 6" dial differential pressure meter of the proper range to determine piping system flow rate. The meter shall be the property of the City/County.

d) Venturi meters shall utilize flanged or screwed connections for removal purposes and shall be rated for the system operating pressures.

e) The venturi flow meter shall be factory calibrated to provide a minimum of flow accuracy between actual and factory flow calibration data.

- Current Transformers – Provide current transformers with the following features:

a) The current transformers shall be designed to be installed or removed without dismantling the primary bus or cables. The transformer shall be of a split core design.

b) The core and windings shall be completely encased in a UL approved thermoplastic rated 94VA. No metal parts shall be exposed other than the terminals.

c) Frequency Limits: 50 to 400 Hz. Insulation: 0.6 KV Class, 10 KV BIL. Accuracy: □ 1% at 5.0 to 25.0 VA accuracy class with U.P.F. burden. Provide a disconnect switch for each current transformer.

d) Acceptable Manufacturer: Senva or Veris ONLY

- Current Sensing Switches - Current sensing switch shall be self-powered with solid-state circuitry and a dry contact output. Current sensing switches shall consist of a solid state current sensing circuit, adjustable trip point, solid state switch, SPDT relay and an LED indicating the on or off status. A conductor of the load shall be passed through the window of the device. Current sensors that ouput a variable voltage or amperage shall be sized with the devices normal operating amperage to be in the middle of the current sensors range. It shall accept over current up to twice its trip into range. Acceptable Manufacturer: Senva or Veris or approved equal.
- Relays - Relays other than those associated with digital output cards shall be general purpose, enclosed plug-in cube type with status light. Number of contacts and operational function shall be as required. Relays shall be IDEC RH blade style, 10 amp with LED indicator. Controllers that have triac relays and control air conditioning units shall be isolated from the control circuits with general purpose, enclosed plug-in cube type with status light.
- Solid State Relays (SSR): Input/output isolation shall be greater than lOE9 ohms with a breakdown voltage of 1500V root mean square or greater at 60 Hz. The contact life shall be 10 x 10 E6 operations or greater. The ambient temperature range of SSRs shall be -20 to +140F. Input impedance shall not be less than 500 ohms. Relays shall be rated for the application. Operating and release time shall be for 100 milliseconds or less. Transient suppression shall be provided as an integral part of the relay.
- Contactors: Contactors shall be of the single coil, electrically operated, mechanically held type. Positive locking shall be obtained without the use of hooks, latches, or semipermanent magnets. Contractor shall be double-break-silver-to-silver type protected by arcing contacts. The number of

contacts and rating shall be selected for the application. Operating and release times shall be 100 milliseconds or less. Contactors shall be equipped with coil transient suppression devices.

- Dirty Filter Differential Air Pressure Switch – Provide for a large diaphragm operated, SPDT switch, exposed adjustment, 1% repetitive accuracy. Dwyer 1638 with A-302 static tips, or equivalent
- Differential Water Pressure Switch – Provide a double diaphragm type, brass or stainless wetted parts, min. 200 psi working pressure. Adjustable cut-in and differential, SPDT snap acting switch suitable for
- Electronic Air Damper Actuators

    a) Electronic actuators shall be UL listed under standard 873, CUL, and have a CE certification. Electronic actuators shall be produced in accordance to ISO 9002 quality certification standards in a certified production facility.

    b) Electronic air damper actuators shall be capable of coupling directly to the damper shaft. Standard actuator mounting clamp shall be operated with a single fastener, and shall center the damper shaft in the actuator spline (hollow-shaft), with toothed edges gripping four sides of the shaft. Clamps that do not center the shaft, and as such require concentric motion for operation, are not acceptable. Universal U-shaped bolts, single point, or set screw type fastening techniques are not acceptable. Adaptors form fit to the damper shaft are acceptable. All electronic actuators shall include a manual positioning feature to allow for the full rotation of the actuator, in each direction with or without electrical power applied.

    c) All actuators shall be designed, developed, life cycle tested and manufactured with a high performance, brushless DC motor to offer a constant running time, independent of torque load and offer maximum product reliability and life expectancy. DC motors with brushes are not acceptable.

    d) Actuators shall be fully modulating/proportional and accept both 2…10 VDC and 0…10 VDC control inputs (as well as 4…20 mA using a load resistor) factory set or field selectable, floating/tri-state, two-position/on-off control. Actuators shall have visual position indicators for both standard mount and short-shaft mounting requirements.

    e) All proportional actuators shall include a direct and reverse acting switch, to allow for easy adjustment of control direction of rotation. This switch must be concealed to protect it from damage and to avoid incorrect adjustment. Actuators shall be capable of operating on 24, 110, or 230 VAC, or 24 VDC and Class 2 wiring as needed for the application. Power consumption shall not exceed 20 VA for AC, including 110 VAC actuators.

    f) Optional, add-on auxiliary switches shall be available in NEMA 4 watertight housings. Separate moisture protection covers are not required and will not be

accepted.

g) Actuators shall have an operating temperature range of -22 deg. F to 122 deg. F.

h) Actuators shall be constructed with a high-protection NEMA 4 rated housing to protect the internal electronics and mechanical parts. Separate moisture protection covers are not required and will not be accepted.

i) Actuators shall include a 3 ft. long (minimum) factory installed and pre-wired electrical cable and strain relief with threaded conduit fitting requiring no tools. Actuators requiring removal of the actuator cover for access to the wiring terminals are not acceptable.

j) Actuators shall have internal electronic overload protection to protect the actuator from damage throughout its operating range. End switches to deactivate the actuator at the end of its rotation are not acceptable.

k) For power-failure/safety applications, an internal spring-return mechanism shall be built into the actuator housing. Spring-return actuators shall be capable of both CW and CCW mounting orientation. Electronic energy storage fail-safe systems incorporating high energy capacitors are an acceptable alternative to mechanical spring return mechanisms. These fail-safe systems shall provide sufficient energy to operate the actuator under full torque load. They shall include thermal compensation to the charging system of the Gold Cap capacitors, and incorporate the capacitor in the actuator control electronics to ensure long-term and consistent maintenance of voltage stored via the capacitor. During a loss of power, the electronic fail-safe systems shall mechanically lock the damper via its gear train into the desired fail-safe position.

l) For proportional actuators using a 2…10 VDC control signal, the actuator shall fail open or closed based on receiving a minimum control signal of 1 VDC or less. Upon loss of power, a non spring-return actuator shall maintain the last control position.

m) All proportional, electronic air damper and valve actuators shall be field switch adjustable for 0…10 VDC, 2…10 VDC (or 4…20 mA using a load resistor) control input. Position feedback, running time and the programming of the micro-processor shall be factory set to avoid the introduction of electronic noise or interference with the BAS controller or other equipment. Field programming or changing of the factory set programming of the actuators is not acceptable.

n) All hazardous location shall require explosion-proof direct coupled actuator enclosure NEMA 7 and NEMA 9 construction for field-mounted, direct-mount style actuators. The enclosure shall be aluminum housing with explosion proof rating for Class I, Division 1, Groups C, D and Class II, Division 1, Groups E, F, G.

o) Acceptable Manufacturer: Belimo ONLY

- Electronic Ball Valve Actuators

  a) Electronic actuators shall be UL listed under standard 873, CUL, and have a CE certification.

  b) Electronic valve actuators shall be capable of coupling directly to the valve stem, shaft or ISO mounting pad. Valve body and actuator shall be pre-assembled by the manufacturer to ensure adequate torque to operate and close the valve, and to provide accurate control direction and fail-safe direction assembly according to project specifications.

  c) Control valve actuator shall provide minimum torque required for full valve shutoff position.

  d) All electronic actuators shall include a manual positioning feature to allow for the full rotation of the actuator, in each direction with or without electrical power applied.

  e) All actuators shall be designed, developed, life cycle tested and manufactured with a high performance, brushless DC motor to offer a constant running time, independent of torque load and offer maximum product reliability and life expectancy. DC motors with brushes are not acceptable.

  f) All proportional actuators shall include a direct and reverse acting switch, to allow for easy adjustment of control direction of rotation. This switch must be concealed to protect it from damage and to avoid incorrect adjustment. Actuators shall be capable of operating on 24, 110, or 230 VAC, or 24 VDC and Class 2 wiring as needed for the application. Power consumption shall not exceed 20 VA for AC, including 110 VAC actuators.

  g) Optional, add-on auxiliary switches and potentiometers shall be available in NEMA 4 watertight housings. Separate moisture protection covers are not required and will not be accepted.

  h) Actuators shall have an operating temperature range of -22 deg. F to 122 deg. F.

  i) Where required, actuators shall be constructed with a high-protection NEMA 4 rated housing to protect the internal electronics and mechanical parts. Separate moisture protection covers are not required and will not be accepted.

  j) Actuators shall include a 3 ft. long (minimum) factory installed and pre-wired electrical cable and strain relief with threaded conduit fitting requiring no tools. When required, actuators with 10-ft electrical cable shall be available. When required, actuators with NEMA 1 rated housing with wiring terminals accessible on the cover shall be available. Actuators requiring removal of the actuator cover for access to the wiring terminals are not acceptable.

  k) Actuators shall have internal electronic overload protection to protect the actuator from damage

throughout its operating range. End switches to deactivate the actuator at the end of its rotation are not acceptable.

l) For power-failure/safety applications, an internal spring-return mechanism shall be built into the actuator housing. Spring-return actuators shall be capable of both CW and CCW mounting orientation. Electronic energy storage fail-safe systems incorporating high energy capacitors are an acceptable alternative to mechanical spring return mechanisms. These fail-safe systems shall provide sufficient energy to operate the actuator under full torque load. They shall include thermal compensation to the charging system of the Gold Cap capacitors, and incorporate the capacitor in the actuator control electronics to ensure long-term and consistent maintenance of voltage stored via the capacitor. During a loss of power, the electronic fail-safe systems shall mechanically lock the damper via its gear train into the desired fail-safe position.

m) For proportional actuators using a 2…10 VDC control signal, the actuator shall fail open or closed based on receiving a minimum control signal of 1 VDC or less. Upon loss of power, a non spring-return actuator shall maintain the last control position.

n) All proportional, electronic air damper and valve actuators shall be field switch adjustable for 0…10 VDC, 2…10 VDC (or 4…20 mA using a load resistor) control input. Position feedback, running time and the programming of the micro-processor shall be factory set to avoid the introduction of electronic noise or interference with the BAS controller or other equipment. Field programming or changing of the factory set programming of the actuators is not acceptable. Actuators shall have visual position indicators for both standard mount and short-shaft mounting requirements

o) When required, in hazardous locations explosion-proof direct coupled actuator enclosures in NEMA 7 and NEMA 9 construction for field-mounted, direct-mount style actuators shall be available. The enclosure shall be aluminum housing with explosion proof rating for Class I, Division 1, Groups C, D and Class II, Division 1, Groups E, F, G.

p) Acceptable Manufacturer: Belimo ONLY.

- Electronic Valve Actuators for Butterfly Valves

a) Electronic actuators shall be UL listed under standard 873, CUL, and have a CE certification.

b) Electronic valve actuators shall be capable of coupling directly to the valve stem, shaft or ISO mounting pad. Valve body and actuator shall be pre-assembled by the manufacturer to ensure adequate torque to operate and close the valve, and to provide accurate control direction and fail-safe direction according to project specifications.

c) Control valve actuator shall provide minimum torque required for full valve shutoff

d) All electronic actuators shall include a manual positioning feature to allow for the full rotation of the actuator, in each direction with or without electrical power applied.

e) All actuators shall be designed, developed, life cycle tested and manufactured with a high performance, brushless DC motor to offer a constant running time, independent of torque load and offer maximum product reliability and life expectancy. DC motors with brushes are not acceptable.

f) All proportional actuators shall include a direct and reverse acting switch, to allow for easy adjustment of control direction of rotation. This switch must be concealed to protect it from damage and to avoid incorrect adjustment. Actuators shall be capable of operating on 24, 110, or 230 VAC, or 24 VDC and Class 2 wiring as needed for the application. Power consumption shall not exceed 20 VA for AC, including 110 VAC actuators.

g) Optional, add-on auxiliary switches and potentiometers shall be available in NEMA 4 watertight housings. Separate moisture protection covers are not required and will not be accepted.

h) Actuators shall have an operating temperature range of -22 deg. F to 122 deg. F.

i) Where required, actuators shall be constructed with a high-protection NEMA 4 rated housing to protect the internal electronics and mechanical parts. Separate moisture protection covers are not required and will not be accepted.

j) Actuators shall include a 3 ft. long (minimum) factory installed and pre-wired electrical cable and strain relief with threaded conduit fitting requiring no tools. When required, actuators with 10-ft electrical cable shall be available. When required, actuators with NEMA 1 rated housing with wiring terminals accessible on the cover shall be available. Actuators requiring removal of the actuator cover for access to the wiring terminals are not acceptable.

k) Actuators shall have internal electronic overload protection to protect the actuator from damage throughout its operating range. End switches to deactivate the actuator at the end of its rotation are not acceptable.

l) For power-failure/safety applications, an internal spring-return mechanism shall be built into the actuator housing. Spring-return actuators shall be capable of both CW and CCW mounting orientation. Electronic energy storage fail-safe systems incorporating high energy capacitors are an acceptable alternative to mechanical spring return mechanisms. These fail-safe systems shall provide sufficient energy to operate the

actuator under full torque load. They shall include thermal compensation to the charging system of the Gold Cap capacitors, and incorporate the capacitor in the actuator control electronics to ensure long-term and consistent maintenance of voltage stored via the capacitor. During a loss of power, the electronic fail-safe systems shall mechanically lock the damper via its gear train into the desired fail-safe position.

m) For proportional actuators using a 2…10 VDC control signal, the actuator shall fail open or closed based on receiving a minimum control signal of 1 VDC or less. Upon loss of power, a non spring-return actuator shall maintain the last control position.

n) All proportional, electronic air damper and valve actuators shall be field switch adjustable for 0…10 VDC, 2…10 VDC (or 4…20 mA using a load resistor) control input. Position feedback, running time and the programming of the micro-processor shall be factory set to avoid the introduction of electronic noise or interference with the BAS controller or other equipment. Field programming or changing of the factory set programming of the actuators is not acceptable. Actuators shall have visual position indicators for both standard mount and short-shaft mounting requirements

o) When required, in hazardous locations explosion-proof direct coupled actuator enclosures in NEMA 7 and NEMA 9 construction for field-mounted, direct-mount style actuators shall be available. The enclosure shall be aluminum housing with explosion proof rating for Class I, Division 1, Groups C, D and Class II, Division 1, Groups E, F, G.

p) Acceptable Manufacturer: Belimo ONLY.

- Accessories
  a) Identification tags shall be available for all valves; tags shall be indelibly marked with Cv, model number and location.

Part 7 – EXECUTION

7.1 Examination

A. Verification

- Verify that all systems are ready to receive work.
- The project plans shall be thoroughly examined for control device and equipment locations, and any discrepancies, conflicts, or omissions shall be reported to the Architect/Engineer for resolution before rough-in work is started.
- The contractor shall inspect the site to verify that equipment is installable as show, and any discrepancies, conflicts, or omissions shall be reported to the Architect/Engineer for resolution before rough-in work is started. The Control System Contractor shall examine the drawings and specifications for other parts of the work, and if head room or space conditions appear inadequate or if any discrepancies occur between the plans and his work and the plans for the work of others, he shall report such discrepancies to the Architect/Engineer and shall obtain written instructions for any changes necessary to accommodate his work with the work of others.

B. General Installation Requirements

- Install all control components in accordance with manufacturer's instructions and recommendations.
- If the controls contractor is responsible for providing the damper then provide mixing dampers of parallel blade construction arranged to mix streams. Provide separate minimum outside air damper section adjacent to variable outside air damper.
- Mount control panels adjacent to associated equipment on vibration-free walls or freestanding angle iron supports. One cabinet may accommodate more than one system in same equipment room. Provide nameplates for instruments and controls inside cabinet and nameplates on cabinet face.
- After completion of installation, test and adjust control equipment. Submit data showing setpoints and final adjustments of controls.
- Install equipment, piping, wiring/conduit parallel to building lines (i.e., horizontal, vertical, and parallel to walls) wherever possible.
- Provide sufficient slack and flexible connections to allow for vibration of piping and equipment. Verify integrity of all wiring to ensure continuity and freedom from shorts and grounds.
- All equipment, installation, and wiring shall comply with acceptable industry specifications and standards for performance, reliability, and compatibility and be executed in strict adherence to local codes and standard practices.

C. Graphical User Interface PC Location

- Install Graphical User Interface PC in the location indicated. Do not deliver

the Graphical User Interface PC to the job site until a proper location has been prepared. Location shall be clean and dry, free from construction dust and debris.

- Location shall have a dedicated work surface (table or desk with chair). Work surface shall be provided by City/County or General Contractor for use by this Contractor.
- Location shall have ample storage provisions for documentation and manuals, either shelving or a four drawer upright filing cabinet. Storage provisions shall be provided by City/County or General Contractor for use by this Contractor.
- Location shall have a dedicated locked electrical circuit for use by this Contractor.

D. Ethernet Network Connection

- All devices that require a connection to the LAN or access to an ISP shall be approved by the City/County Information Technology representative prior to installation.
- All ethernet communication connections shall be provided by the Control Contractor or General Contractor. All remote control panels with programmable controllers shall have an ethernet jack with a Cat6 wire connected to closest facopsnet ethernet switch.

E. Electrical System Installation

- Comply with all Division 16 Installation Requirements.
- Provide interlock wiring between supply and exhaust fans, electrical wiring for relays (including power feed) for temperature and pressure indication.
- Provide power wiring, conduit and connections for low temperature thermostats, high temperature thermostats, alarms, flow switches, actuating devices for temperature, humidity, pressure and flow indication, point resets and user disconnect switches for electric heating, appliances controlled by this Section.
- Provide all other wiring required for the complete operation of the specified systems.
- Where required install all wiring raceway systems complying with the requirements of the National Electrical Code. All required conduit shall be installed in EMT.
- Provide interlock wiring between supply and exhaust fans, electrical wiring for relays (including power feed) for temperature and pressure indication.
- Surge Protection and Lighting Protection
- All equipment and all communication media shall be suitably protected from damage associated with electrical surge and lightning strike. Submittal and approval is required for all such devices.
- All input-output hardware and instrumentation located outdoors shall be isolated using approved surge suppression devices.
- All telephone modem connections shall be isolated using approved surge suppression devices.
- All building-to-building communication connections shall be isolated using approved surge suppression devices. All temperature control panels and controllers shall be provided with a control power transformer with circuit breaker protection on both the primary and secondary sides. High and low

voltages shall be separated by an approved barrier

- Provide electrical disconnecting means for servicing, for each control panel, digital controller, router, transformer, power supply, and other devices that are served by 120VAC or higher voltage.
- Enclosures shall be fabricated of 14ga. steel with sub-panels for component mounting and have removable, hinged doors. Enclosures shall be sized to house the controllers, power supplies, transformers, relays, wire duct and miscellaneous equipment required to support the application. Enclosures shall be provided for all controllers that are not located within an OEM provided mechanical equipment or on a VAV box. Control panels shall be fabricated as UL 508 listed assemblies. A complete set of 'as-built' control drawings (relating to the controls within that panel) shall be furnished within each control panel.
- Enclosure power supply shall provide at least one 40VA and one 100VA transformer as required with individual on/off switches and circuit breakers and two 120VAC outlets. Enclosures and power supplies shall be UL listed Class II.
- BACNET Network Communication Requirements
    a) BACNET communication wiring shall be in compliance with manufactures recommendations for BACNET communications. Wire brand shall be Smartwire branded orange jacket or approved equal.
    b) The BAS sub LAN shall employ the BACNET protocol for communication between controllers. BACNET protocol implementation shall adhere to the ANSI/ASHRAE Standard 135. Communications between BACNET devices shall be 76.8 kbps over approved twisted shielded pair cabling utilizing Master/Slave Token Passing BACNET protocol. BACNET defines a comprehensive set of object types and application services for communication requirements among all levels of control in a distributed, hierarchical Building Automation System. BACNET is intended to provide a single, uniform standard for the BAS to provide the required interoperability.
- Input/Output Control Wiring
    a) Platinum 1k ohm and 10k ohms thermistor type II wiring shall be two-wire or four-wire twisted, shielded, minimum number 22 gauge.
    b) Other analog inputs shall be a minimum of number 22 gauge, twisted, shielded. Binary control function wiring shall be a minimum of number 18 gauge.
    c) Analog output control functions shall be a minimum of number 18 gauge, twisted, shielded. Binary input wiring shall be a minimum of number 18 gauge.
- Splices in shielded cables shall consist of terminations and the use of shielded cable couplers, which maintain the integrity of the shielding. Terminations shall be in accessible locations. Cables shall be harnessed with cable ties as specified herein.
- Conduit and Fittings
    a) Conduit for Control Wiring, Control Cable and Transmission Cable: Electrical metallic tubing (EMT)

with compression fittings, cold rolled steel, zinc coated or zinc-coated rigid steel with threaded connections.

b) Outlet Boxes (Dry Location): Sheradized or galvanized drawn steel suited to each application, in general, four inches square or octagon with suitable raised cover.

c) Outlet Boxes (Exposed to Weather): Threaded hub cast aluminum or iron boxes with gasket device plate.

d) Pull and Junction Boxes: Size according to number, size, and position of entering raceway as required by National Electrical Codes. Enclosure type shall be suited to location.

e) Install low voltage power and BACNET and LAN communication trunks in conduit in the following locations regardless of local building code allowances otherwise.

- Mechanical rooms.
- Electrical rooms.
- Vertical risers (exception: fire rated continuous closet like a telephone closet).
- Open Areas where the wiring will be exposed to view or tampering.
- Conceal conduit within finished shafts, ceilings and wall as required. Install exposed conduit parallel with or at right angles to the building walls.

- Where Class 2 wires are in concealed and accessible locations including ceiling return air plenums, approved cables not in raceway may be used provided that:

a) Circuits meet NEC Class 2 (current-limited) requirements. (Low-voltage power circuits shall be sub-fused when required to meet Class 2 current-limit.)

b) All cables shall be UL listed for application, i.e., cables used in ceiling plenums shall be UL listed specifically for that purpose.

- Do not install Class 2 wiring in conduit containing Class 1 wiring. Boxes and panels containing high voltage may not be used for low voltage wiring except for the purpose of interfacing the two (e.g., relays and transformers).
- Where Class 2 wiring is run exposed, wiring to be run parallel along a surface or perpendicular to it, and NEATLY tied at 3m (10 ft.) intervals.
- All wire-to-device connections shall be made at a terminal blocks or terminal strip. All wire- to- wire connections shall be at a terminal block, or with a crimped connector. No wire nuts will be allowed. All wiring within enclosures shall be neatly bundled and anchored to permit access and prevent restriction to devices and terminals.
- Plug or cap all unused conduit openings and stub-ups. Do not use caulking compound.
- Route all conduit to clear beams, plates, footings and structure members. Do not route conduit through column footings or grade beams.

- Set conduits as follows:
    a) Expanding silicone fire stop material sealed watertight where conduit is run between floors and through walls of fireproof shaft.
    b) Oakum and lead, sealed watertight penetration through outside foundation walls. cxxxiv) Cap open ends of conduits until conductors are installed.
- Where conduit is attached to vibrating or rotating equipment, flexible metal conduit with a minimum length of 18 inches and maximum length of 36 inches shall be installed and anchored in such a manner that vibration and equipment noise will not be transmitted to the rigid conduit.
- Where exposed to the elements or in damp or wet locations, waterproof flexible conduit shall be installed. Installation shall be as specified for flexible metal conduit.
- Provide floor, wall, and ceiling plates for all conduits passing through walls, floors or ceilings. Use prime coated cast iron, split-ring type plates, except with polished chrome-plated finish in exposed finished spaces.

F. Temperature Sensors

- Temperature sensor assemblies shall be readily accessible and adaptable to each type of application in such manner as to allow for quick, easy replacement and servicing without special tools or skills.
- Strap-on mountings shall not be permitted.
- Outdoor installations shall be; of weatherproof construction or in appropriate NEMA enclosures. These installations shall be protected from solar radiation and wind effects. Protective shield shall be stainless steel.
- Sensors shall be with enclosure where located in finished space.

- Sensors in ducts shall be mounted in locations to sense the correct temperature of the air only and shall not be located in dead air spaces or positions obstructed by ducts, equipment, and so forth. Locations where installed shall be within the vibration and velocity limit of the sensing element. Ducts shall be securely sealed where elements or connections penetrate ducts to avoid measuring false conditions.
- All sensors measuring temperatures in pipes larger than 2 inches in diameter or in pressure vessels shall be supplied with wells properly fabricated for the service. Wells shall be noncorrosive to the medium being measured and shall have sufficient physical strength to withstand pressures and velocities to which they are subjected. Wells shall be installed in the piping at elbows where piping is smaller than the length of the well to effect proper flow across the entire area of the well.
- All field sensors, transmitters, actuators, switches, etc. shall be field calibrated. The calibration shall be guaranteed for the period of the control system warranty. Any corrections or re- calibration required during the warranty will be performed at no cost to City/County. Calibration methods, means, instruments, and standards shall be in strict accordance with ISO-9000 standards.

B) Controls Valves, Control Dampers and Actuators

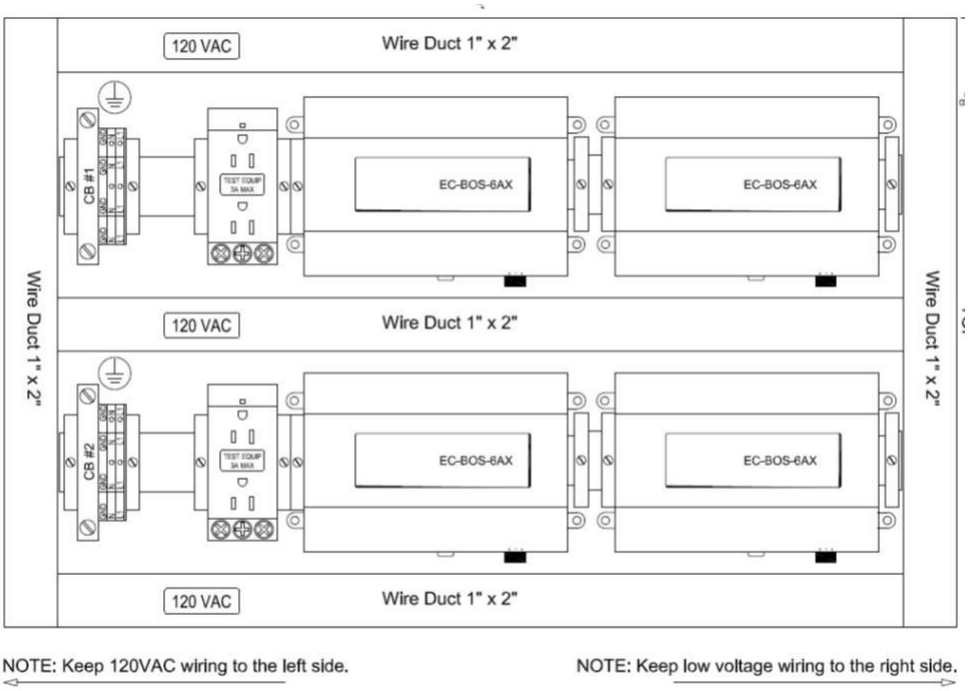
- Control Valves.
  a) Control valves shall be installed by the Div. 15 contractor.
  b) Coordinate with the Div. 15 contractor and verify that each control valve can be serviced, including adjustment and removal of the actuator.
  c) All control valves shall have unions installed at each inlet and outlet to permit removal of the valve for servicing.
  d) Valves shall be installed with stems vertical where possible. Where space conditions require valves to be mounted with stems greater than 45° off vertical the actuator shall be externally supported. In no case will the control valve be mounted with the stem greater than 90° off of vertical.
- Control Dampers.
  a) Control dampers shall be installed by Div. 15 contractor.
  b) Coordinate with the Div. 15 contractor the service access requirements of the control dampers, and verify that each control damper can be serviced, including adjustment and removal of the actuator.
  c) Div. 15 Contractor shall provide necessary blank-off plates required for installation of reduced-size dampers (dampers that are smaller than duct size).
  d) Furnish interconnecting hardware, linkages, etc. for installation of multiple section dampers by Div. 15 Contractor.

G. Access Doors.

- Div. 15 Contractor shall provide access doors or other approved means of access through ducts for service to control equipment. Size will be 24” x 24” minimum.

H. Instrument Enclosures and Control Panels

- Securely mount all control panels and enclosures to wall or structure using bolts, anchors, etc. Mount enclosures and control panels with top at 60 inches above finished floor, unless noted otherwise. Field fabricate enclosure mounting rack from Unistrut or Kindorf, where required. Locate enclosures and control panels to ensure full door swing.
- Seal all conduit entrances into enclosures and control panels, water tight.



- Locate enclosures indoors where possible. Provide drains and block heaters for all panels located outdoors.
- Jace and remote I/O module enclosure: Example below
    a) Nema 1 with keyed door. Enclosure sized to hold one (1) JACE and one NDIO module
    b) Jace enclosure deep enough to house convenience outlet for plugin wall module transformer which is to provide power for the JACE.
    c) I/O module enclosure sized to hold (1) RDIO module
    d) Prewired power terminals
    e) Perforated back panel
    f) IO wired to terminal blocks
    g) Separation of high and low voltage wiring
    h) Wire duct 2" high x 1" wide
    i) Primary power to be protected by a circuit breaker (incoming 120 volt) No wire ties allowed. All wire to be in wire track

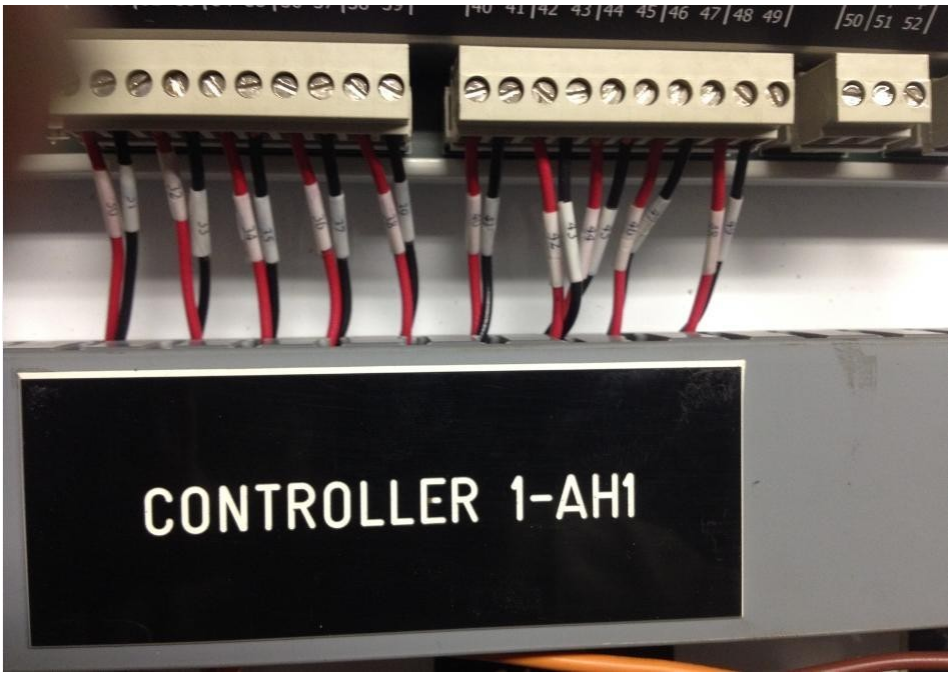
I. Identification of Hardware and Wiring

- All wiring and cabling, including that within factory-fabricated panels shall be labeled at each end within 2" of termination with a cable identifier and other descriptive information. Labels shall be of the wrap around type, heat shrink or nylon and made by a label machine. No flagged labels are allowed. No “sharpie” labeling is allowed. Labels shall match record documents. See example G below
- Permanently label or code each point of field terminal strips to show the instrument or item served.
- Identify control panels with minimum 1 inch letters on nameplates.

- Identify all other control components with permanent labels. Identifiers shall match record documents.
- Affix engraved tags plates on each motor starter controlled through the EMS. Minimum tag size shall be 1 in. X 3 in. Minimum lettering size shall be 3/16 in. high. Tag shall be red with white lettering. Tags shall indicate the following:

C A U T I O N
This equipment is operating under automatic control and may start at any time without warning

- Identify room sensors relating to terminal box or valves with nameplates. clviii)



J. Cleaning

- This contractor shall clean up all debris resulting from his or her activities daily. The contractor shall remove all cartons, containers, crates, etc. under his control as soon as their contents have been removed. Waste shall be collected and placed in a location designated by the Construction Manager or General Contractor.
- At the completion of work in any area, the Contractor shall clean all of his/her work, equipment, etc., making it free from dirt and debris, etc.
- At the completion of work, all equipment furnished under this Section shall be checked for paint damage, and any factory-finished paint that has been damaged shall be repaired to match the adjacent areas. Any metal cabinet or enclosure that has been deformed shall be replaced with new material and repainted to match the adjacent areas.

K. Protection

- The Contractor shall protect all work and material from damage by his/her work or workers, and shall be liable for all damage thus caused.
- The Contractor shall be responsible for his/her work and equipment until finally inspected, tested, and accepted. The Contractor shall protect his/her work against theft or damage, and shall carefully store material and equipment received on-site that is not immediately installed. The Contractor shall close all open ends of work with temporary covers or plugs during storage and construction to prevent entry of foreign objects.

L. Field Quality Control

- All work, materials and equipment shall comply with the rules and regulations of applicable local, state, and federal codes and ordinances as identified in Part 1 of this Section.
- Contractor shall continually monitor the field installation for code compliance and quality of workmanship. All visible piping and/or wiring runs shall be installed parallel to building lines and properly supported.
- Contractor shall arrange for field inspections by local and/or state authorities having jurisdiction over the work.

M. Performance Evaluation/Acceptance Procedure

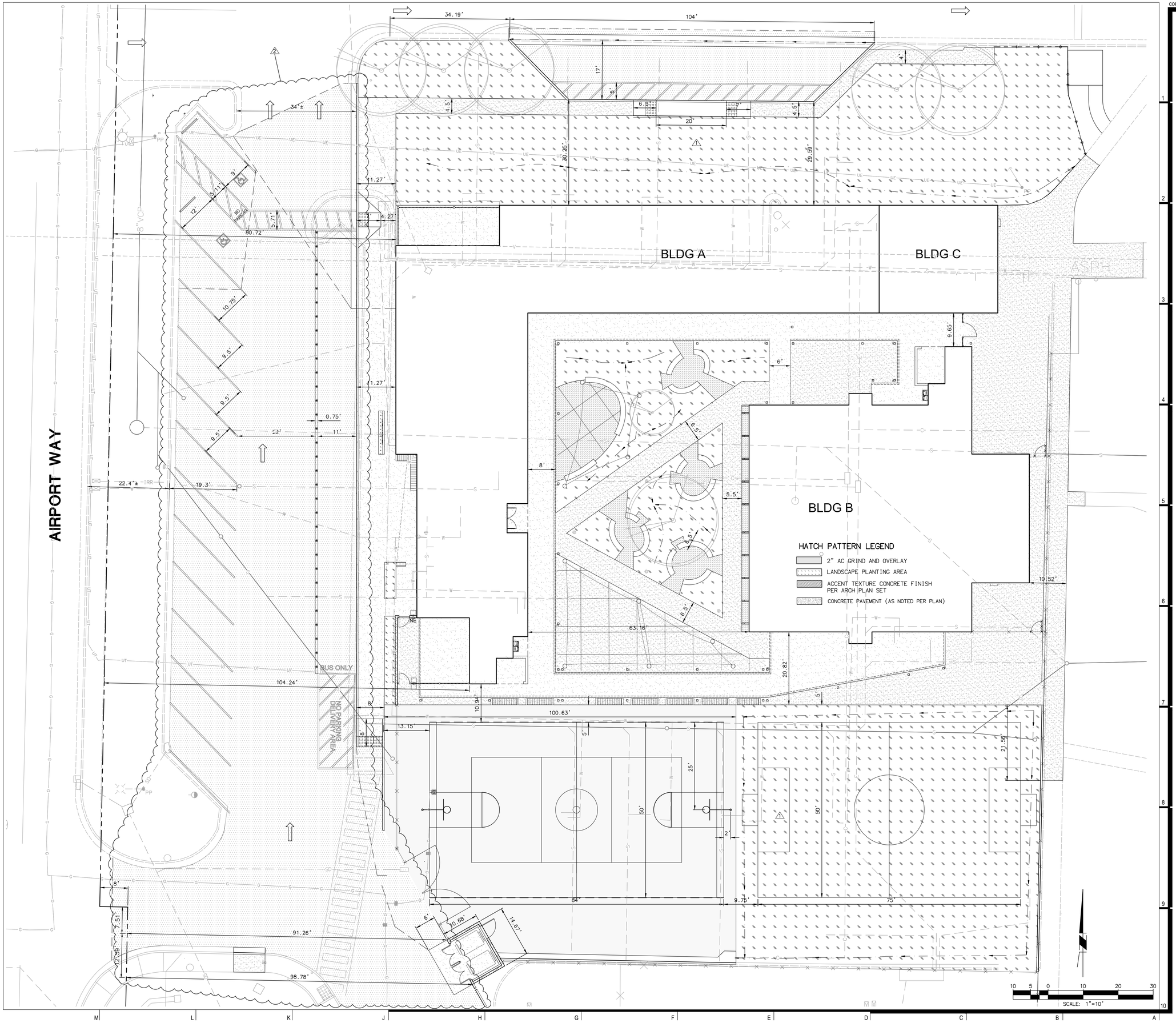
- General. - Acceptance of the control system depends in part upon successful demonstration of control system performance. The SI shall prepare a detailed final functional test and verification plan indicating in a step-by-step logical fashion the procedures by which the control system will be tested. This shall include the following procedures:
    a) Sequence of Operation - Demonstrate all sequences of operation.
    b) Test Documentation - Provide standard formatted documentation for each controlled system and element test. Pre-Testing - The control system installer shall have performed pre-testing of all tests on all components before final testing. If during final testing more than 10 percent of the points or sequences checked are found to be faulty, the Contractor shall halt the test and re-check all parts of the system test.
    c) Testing Plan. Submit test plan for approval not less than 4 weeks prior to tests. Meet with City/County's representative, discuss the test plan, and make necessary revisions. The test plan shall include, as a minimum, for each control system and sub-system the following:
        - System name.
        - List of devices with brief description of functional purpose of each.
        - The expected signal values transmitted by the sensors/transmitters.

- The expected signal values transmitted by the controller to the controlled device or actuator.
- The expected values of the control medium from limit-to-limit.
- A description of the instrumentation required to test the system, including proof of calibration.
- A detailed step-by-step process in conducting test and verification.
- Log sheets on which expected and actual values will be recorded.
- Other criteria for test to indicate that the system is operating in accordance with Contract requirements.

- Testing - Inform the Engineer and City/County of all test dates for attendance, so that the Engineer and/or City/County may attend the test if desired. Perform all tests. Correct all system maladies found in the testing procedure. Retest as required. If City/Count representative does not witness test, provide performance certification.
- Acceptance- The control systems will not be accepted as meeting the requirements of Completion until all tests described in this specification have been performed to the satisfaction of both the Engineer and City/County. Any tests that cannot be performed due to circumstances beyond the control of the Contractor may be exempt from the completion requirements if stated as such in writing by the City/County's representative.

END OF SECTION

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PHONE: 310.546.5711 WWW.DELANENGINEE

SCOTT DELANE DEVRIES
No C 72391
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

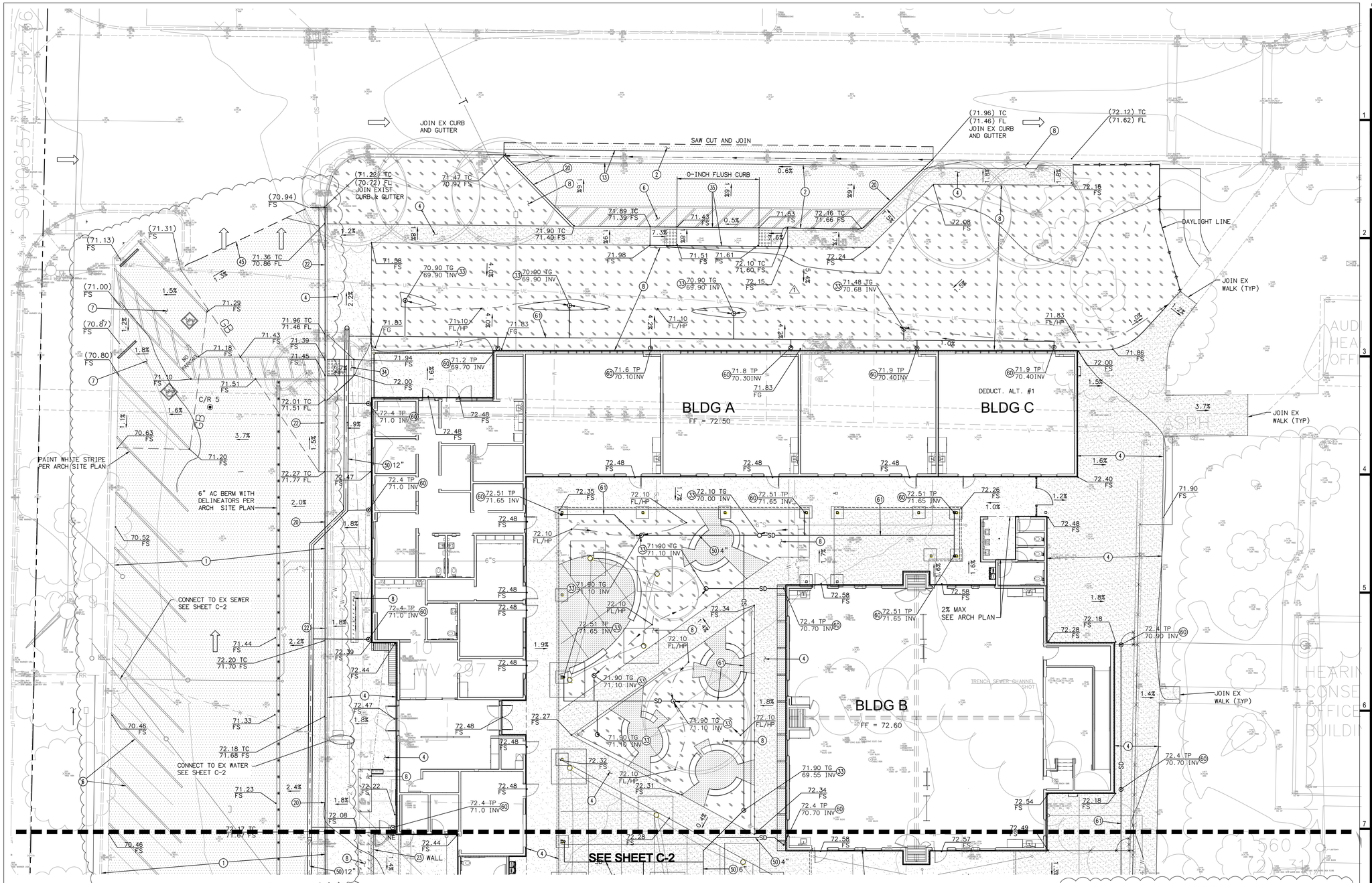
GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	7/01/2022
1	8/28/2026
2	10/29/2026

HORIZONTAL CONTROL PLAN

C-1

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CONSTRUCTION NOTES

1. CONSTRUCT FULL DEPTH HMA - REMOVE EXISTNG PAVEMENT SECTION TO A DEPTH OF 10.5-INCHES AND PLACE 10.5-INCHES OF HMA IN 4-INCH LIFTS.
2. CONSTRUCT 3" AC OVER 7" AGGREGATE BASE, ACTUAL SECTION TO BE DETERMINED BY SOILS ENGINEER BASED ON R-VALUE ANALYSIS
4. CONSTRUCT 4" CONCRETE OVER NATIVE SOIL COMPACTED TO 95%, MINIMUM RELATIVE COMPACTION PER ASTM D1557, PER SPPWC 112-2. SEE ARCH PLAN FOR FINISH, COLOR AND PATTERN ON WALKS AND PATIO AREAS
6. ~~INSTALL PARKING LOT STRIPING PER ARCH SITE PLAN AND DETAILS~~
7. INSTALL ACCESSIBLE PARKING STALL PER CALTRANS RSP A90A,
8. LANDSCAPE, SEE LANDSCAPE ARCHITECTUAL PLANS
13. CONSTRUCT 3' WIDE LONGITUDINAL GUTTER PER SPPWC STD PLATE 122-3
20. CONSTRUCT 6" CONCRETE CURB PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-1.
22. CONSTRUCT 6" CONCRETE CURB AND 18" GUTTER PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-2.
23. HARDSCAPE FEATURE, SEE ARCHITECTURAL PLANS
33. INSTALL 4" ATRIUM GRATE, NDS 75 OR APPROVED EQUAL
34. CONSTRUCT CURB RAMP, CASE A, TYPE 1, PER SPPWC STD PLAN 111-5 AND AS MODIFIED PER PLAN.
35. CONSTRUCT CURB RAMP, CASE B, TYPE 1, PER SPPWC STD PLAN 111-5 AND AS MODIFIED PER PLAN.
45. SAWCUT AND JOIN EXISTNG PAVEMENT
50. CONSTRUCT PVC STORM DRAIN (SDR 35), SIZE PER PLAN
60. CONNECT ROOF DRAIN DOWN SPOUT TO 4" PVC STORM DRAIN PER ROOF DRAIN DETAIL SHEET C-2
61. INSTALL 6" SDR 35 PVC PIPE

HATCH PATTERN LEGEND

- 3" AC OVER 7" AB (BASKETBALL COURT)
- LANDSCAPE PLANTING AREA
- ACCENT TEXTURE CONCRETE FINISH PER ARCH PLAN SET
- CONCRETE PAVEMENT (AS NOTED PER PLAN)
- FULL ASPHALT PAVEMENT SECTION (AS NOTED PER PLAN)
- C/R # — CORE LOG LOCATION AND NUMBER PER PAVEMENT ANALYSIS

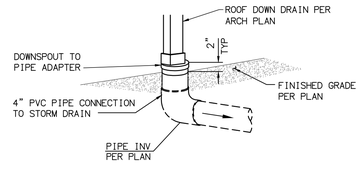
NOTES:

1. SEE SHEET C-2 FOR UTILITY INFORMATION
2. OVER-EXCAVATION SHALL BE COMPLETED BASED ON THE GEOTECHNICAL REPORT DATED 9/3/2021 AND REVISED 5/18/2022, GRADING/DEVELOPMENT OF STRUCTURES. 5' BEYOND BUILDING FOOTPRINT AND 4' BELOW EXISTING GRADE. GEOGRID PLACED PRIOR TO PLACING FILL.

SCALE 1"=10'

10 5 0 10 20 30

SCALE: 1"=10'



ROOF DRAIN CONNECTION DETAIL

NTS

LICENSED ARCHITECT BRIAN PAUL BOSCHETTI NO. C-9824 RENEWAL 08/31/2023 STATE OF CALIFORNIA

DELAN ENGINEERING
400 W. VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.3711 • WWW.DELANENGINEERING

REGISTERED PROFESSIONAL ENGINEER SCOTT DELANE DELAN No C 72391 STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

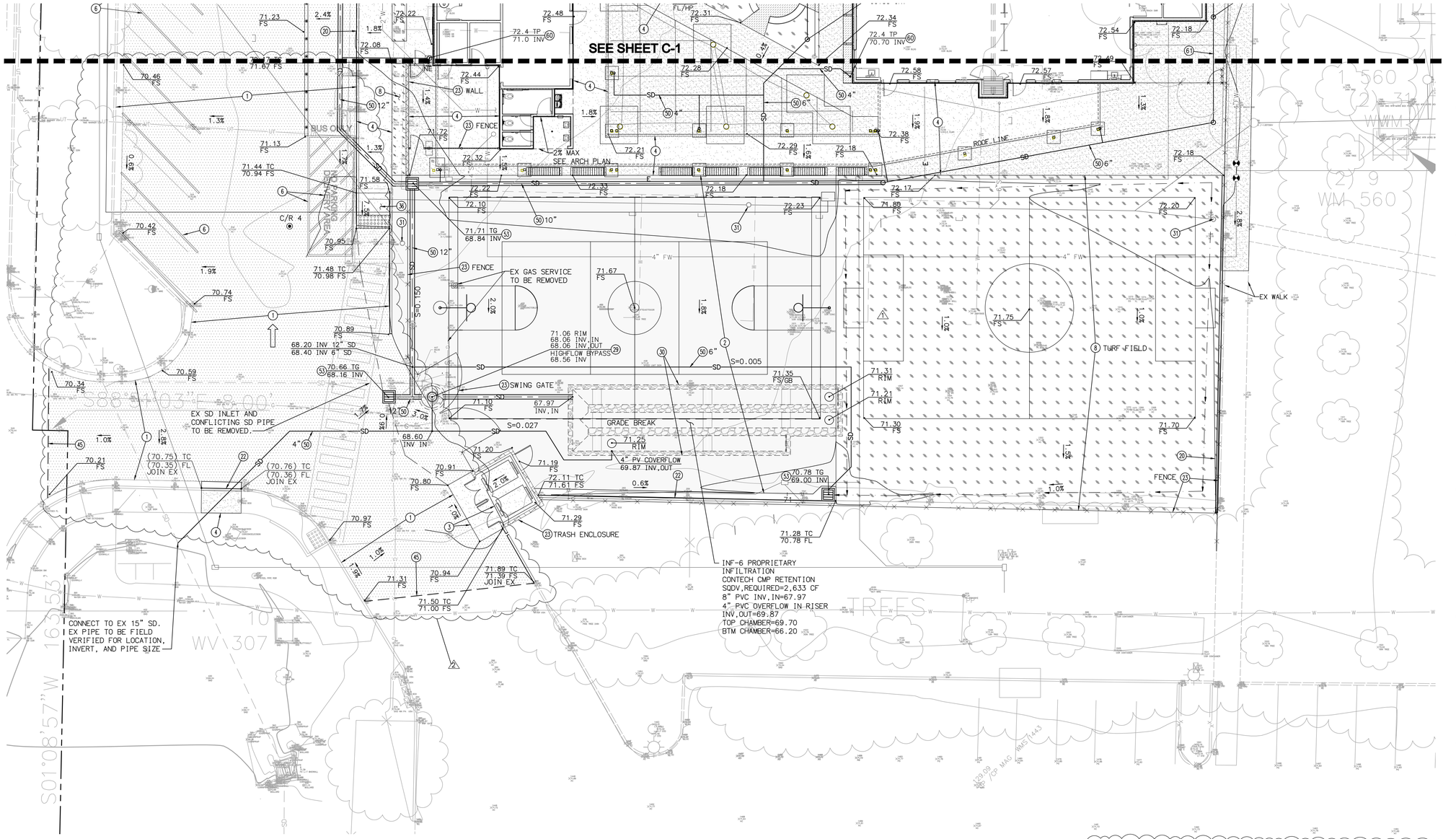
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PM	
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ENGINEERED SITE PLAN
GRADING, DRAINAGE, AND
STORM DRAIN

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

C-2

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CONSTRUCTION NOTES

1. CONSTRUCT FULL DEPTH HMA – REMOVE EXISTNG PAVEMENT SECTION TO A DEPTH OF 10.5-INCHES AND PLACE 10.5-INCHES OF HMA IN 4-INCH LIFTS.
2. CONSTRUCT 3" AC OVER 7" AGGREGATE BASE, ACTUAL SECTION TO BE DETERMINED BY SOILS ENGINEER BASED ON R-VALUE ANALYSIS
3. CONSTRUCT 7" CONCRETE OVER 6" AGGREGATE BASE, ACTUAL SECTION TO BE DETERMINED BY SOILS ENGINEER BASED ON R-VALUE ANALYSIS
4. CONSTRUCT 4" CONCRETE OVER NATIVE SOIL COMPACTED TO 95%, MINIMUM RELATIVE COMPACTION PER ASTM D1557, PER SPPWC 112-2. SEE ARCH PLAN FOR FINISH, COLOR AND PATTERN ON WALKS AND PATIO AREAS
6. INSTALL PARKING LOT STRIPING PER ARCH SITE PLAN AND DETAILS
8. LANDSCAPE, SEE LANDSCAPE ARCHITECTUAL PLANS
20. CONSTRUCT 6" CONCRETE CURB PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-1.
22. CONSTRUCT 6" CONCRETE CURB AND 18" GUTTER PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-2.
23. HARDSCAPE FEATURE, SEE ARCHITECTURAL PLANS
29. INSTALL CONTECH CDS 1515-3, OR APPROVED EQUAL.
30. INSTALL CONTECH CMP PERFORATED SYSTEM, OR APPROVED EQUAL.
31. ADJUST MANHOLE/CLEANOUT LID TO FINISHED SURFACE PER SPPWC STD 205-2
36. CONSTRUCT CURB RAMP, CASE D, TYPE 1, PER SPPWC STD PLAN 111-5 AND AS MODIFIED PER PLAN.
45. SAWCUT AND JOIN EXISTNG PAVEMENT
50. CONSTRUCT PVC STORM DRAIN (SDR 35), SIZE PER PLAN
53. INSTALL 24"X24" DROP INLET W/HEEL PROOF GRATE (DI2424 JENSEN PRECAST) OR APPROVED EQUAL
60. CONNECT ROOF DRAIN DOWN SPOUT TO 4" PVC STORM DRAIN PER ROOF DRAIN DETAIL SHEET C-2
61. INSTALL 6" SDR 35 PVC PIPE

HATCH PATTERN LEGEND

- 3" AC OVER 7" AB (BASKETBALL COURT)
- LANDSCAPE PLANTING AREA
- ACCENT TEXTURE CONCRETE FINISH PER ARCH PLAN SET
- CONCRETE PAVEMENT (AS NOTED PER PLAN)
- FULL ASPHALT PAVEMENT SECTION (AS NOTED PER PLAN)
- C/R # — CORE LOG LOCATION AND NUMBER PER PAVEMENT ANALYSIS

NOTES:

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SCALE 1"=10'

10 5 0 10 20 30

SCALE: 1"=10'

LICENSED ARCHITECT BRIAN PAUL DELANEY NO. C-9824 RENEWAL 08/31/2026 STATE OF CALIFORNIA

DELAN ENGINEERING
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REGISTERED PROFESSIONAL ENGINEER SCOTT DELANE GRUEN No C 72391 CIVIL STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

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ENGINEERED SITE PLAN
GRADING, DRAINAGE, AND
STORM DRAIN

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C-3

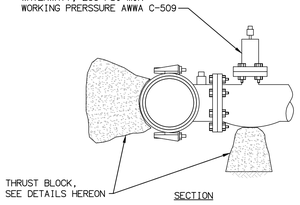
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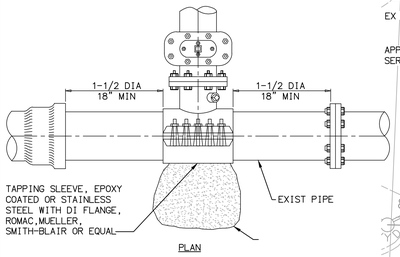
HATCH PATTERN LEGEND

- 3" AC OVER 7" AB (BASKETBALL COURT)
- LANDSCAPE PLANTING AREA
- ACCENT TEXTURE CONCRETE FINISH PER ARCH PLAN SET
- CONCRETE PAVEMENT (AS NOTED PER PLAN)
- FULL ASPHALT PAVEMENT SECTION (AS NOTED PER PLAN)
- C/R # — CORE LOG LOCATION AND NUMBER PER PAVEMENT ANALYSIS

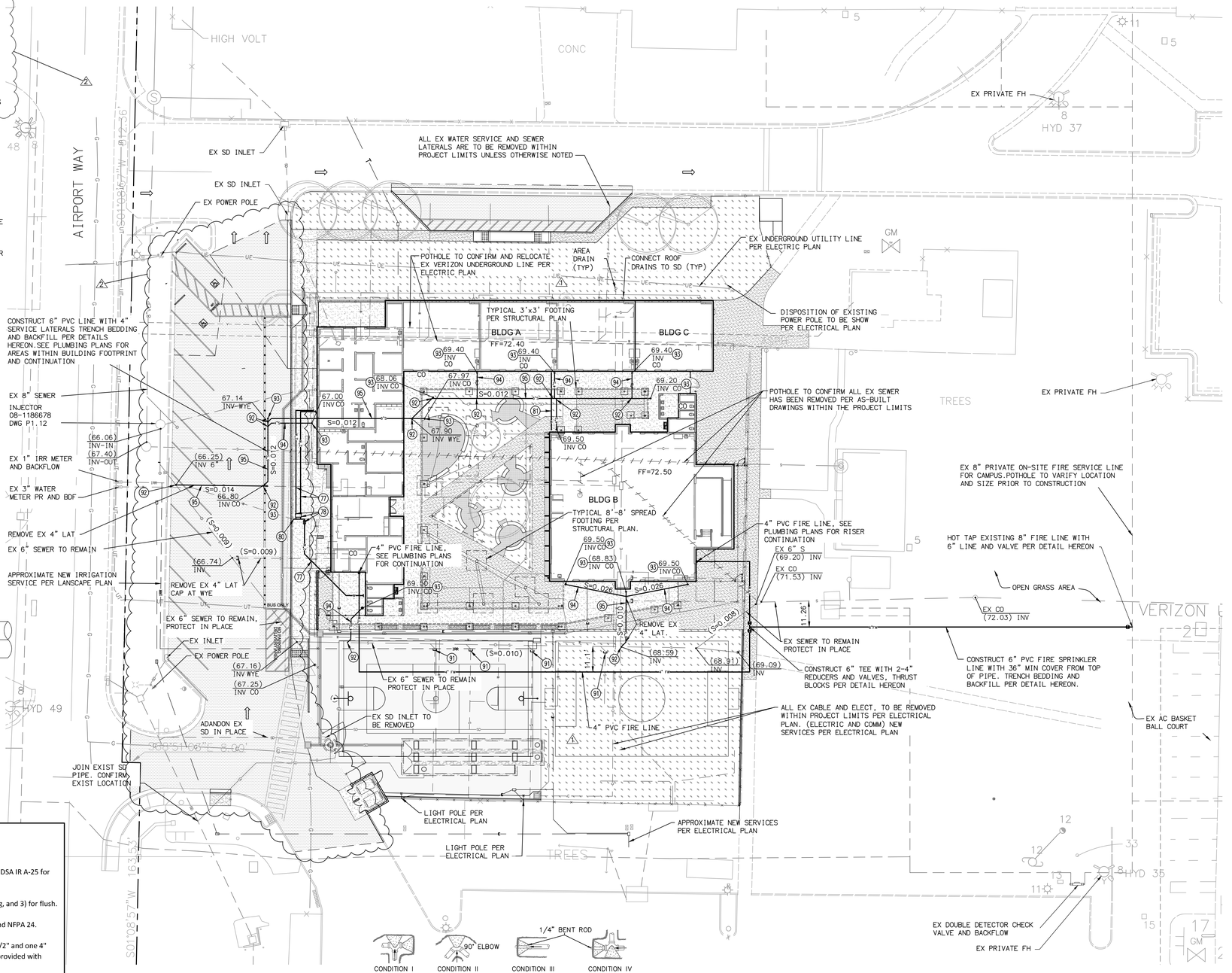
HOT TAPPING NOTES:

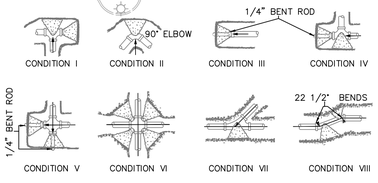
1. PRIOR TO TAPPING THE WATER MAIN, THE TAPPING SLEEVE AND VALVE SHALL BE ATTACHED TO THE WATER MAIN AND PRESSURE TESTED FOR FIVE MINUTES AT 150 PSI
2. NEW LINE AND TAPPING SLEEVE MUST BE AT LEAST ONE SIZE SMALLER THAN EXISTING MAIN
3. TAPPING SLEEVE SHALL BE SEPARATED FROM NEAREST BELL, FLANGE, SERVICE CLAMP, CORP STOP OR OTHER FITTING BY A DISTANCE NO LESS THAN 1-1/2 PIPE DIAMETERS, WITH A MINIMUM OF 18"





HOT TAP DETAIL





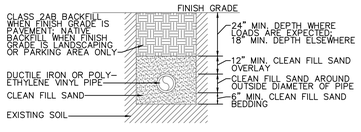
NO SCALE

THRUST BLOCK BEARING AREA IN SQUARE FEET								
PIPE IN.	CONDITION							
	I	II	III	IV	V	VI	VII	VIII
4	2.0	2.9	2.0	2@2.0	2@2.0	4@1.6	2.0	2@1.6
6	4.3	6.0	4.3	2@4.3	2@4.3	4@3.3	4.3	2@3.3
8	7.4	10.5	7.4	2@7.4	2@7.4	4@5.7	7.4	2@5.7
10	12.1	17.1	12.1	2@12.1	2@12.1	4@9.3	12.1	2@9.3
12	17.4	24.3	17.4	2@17.4	2@17.4	4@13.2	17.4	2@13.2
14	20.7	29.3	20.7	2@20.7	2@20.7	4@15.8	20.7	2@15.8
16	26.7	37.8	26.7	2@26.7	2@26.7	4@20.5	26.7	2@20.5

NOTES
1. PIPE FITTINGS SHALL BE WRAPPED WITH A LAYER OF 8-MIL POLYETHYLENE PLASTIC TUBE AND SEALED WITH 8-MIL UG TAPE
2. ALL BURIED BOLTS/JOINT ACCESSORIES SHALL BE COATED WITH ASPHALT OR OTHER CORROSION-RETARDING MATERIAL AFTER INSTALLATION
3. THRUST BLOCK AREAS BASED ON 225 PSI PRESSURE AND 2,000 PSF ALLOWABLE SOIL PRESSURE WITH 2 1/2 FEET OF COVER MINIMUM. ADDITIONAL BEARING AREA REQUIRED FOR SPECIAL CONDITIONS SHALL BE APPROVED BY THE DISTRICT ENGINEER.
4. THRUST BLOCK BEARING FACES SHALL BE PLACED AGAINST UNDISTURBED SOIL, APPROVED COMPACTED BACKFILL OR CLASS 100-E-100 SLURRY.
5. THRUST BLOCKS SHALL BE NO LEANER THAN 1 PART CEMENT 2 1/2 PARTS SAND AND 5 PARTS STONE U.N.O.
6. TO FACILITATE FUTURE REMOVAL OF THRUST BLOCKS AND LINE EXTENSIONS:
   A. INSTALL 1/4" BENT ROD HANDLES.
   B. USE CARDBOARD SEPARATORS BETWEEN BLOCKS, IF NEEDED.

ON-SITE PRIVATE FIRE LINE THRUST BLOCK DETAILS

NOTE:
1. SEE SHEET C-1 FOR STORM DRAIN INFORMATION
2. FOR EXISTING ON-SITE SEWER AND WATER SERVICES, SEE TRITON TEMP SCHOOL AS-BUILT 2018
3. ALL EXISTING INVERT ELEVATIONS ARE BASED ON AS-BUILT RECORD DOCUMENTS. POTHOLE TO CONFIRM DEPTHS



ON-SITE PRIVATE FIRE LINE BEDDING AND BACKFILL DETAIL

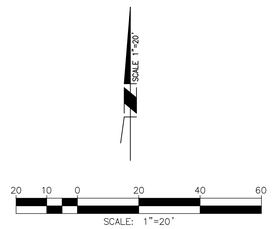
CONSTRUCTION NOTES

77 CONSTRUCT 2" WATER SERVICE, THRUST BLOCKS PER DETAILS HEREON
78 INSTALL 2" WATER VAVLE IN BOX
80 CONNECT TO EX 3" WATER SERVICE WITH 2" SERVICE. REMOVE EX 3" WATER BEYOND NEW CONNECTION
81 WATER SERVICE CONNECTION FROM BLDG A TO BLDG B, SEE PLUMBING PLANS
91 EX 4" SEWER LAT TO BE REMOVED AND CAPPED AT EX WYE
92 INSTALL WYE FITTING
93 INSTALL CLEAN OUT
94 CONSTRUCT 4" SDR-35 SEWER LAT
95 CONSTRUCT 6" SDR-35 SEWER LINE

NOTES:

UNDERGROUND PIPING FOR PRIVATE HYDRANTS & SPRINKLERS

1. Prior to installation, all plans and specifications shall be approved by DSA. Refer to DSA IR A-25 for design, installation and maintenance general requirements.
2. Inspections are required: 1) prior to pouring thrust blocks. 2) for hydrostatic testing, and 3) for flush.
3. Installation, inspection, and testing shall conform to 2016 editions CFC, NFPA 13 and NFPA 24.
4. Private fire hydrants shall be approved wet barrel style with a minimum of one 2 1/2" and one 4" outlet. The 4" outlet shall face the fire department access road. All outlets shall be provided with National Standard Threads NST). NFPA 24, 7.1.1.2.
5. Fire hydrant supply piping shall be a minimum of six inches in diameter. The center of the hose outlet shall be not less than 18" above final grade or, where located in a hose house, 12" above the floor. NFPA 24, 7.1.1 & 7.3.3.
6. Fire hydrants shall be a minimum of 40 feet from all structures. NFPA 24, 7.2.3.
7. A keyed gate valve shall be provided for each hydrant in an accessible location. Valves shall not be located in parking stalls. NFPA 24, 7.1.1.1
8. All piping shall be listed for use in fire protection service and comply with AWWA Standards (Class 150 minimum) Class 200 pipe shall be used where the pressure may exceed 150 psi. NFPA 24, 10.1.1
9. All bolted joints shall be cleaned and thoroughly coated with asphalt or other corrosion retarding material after installation. NFPA 24, 10.4.1.1
10. Backfill shall be well tamped layers to consist of 6" minimum bed of clean fill sand or pea gravel below and 12" above the pipe (total 18" minimum). NFPA 24, 10.9.1.
11. Fittings shall be of an approved type. NFPA 24, 10.2.1.
12. A minimum of 30" of cover, from finish grade to the top of the pipe, shall be provided. When surface loads are expected, a minimum of 36" cover shall be provided. NFPA 24, 10.4.2.2.2 &.3
13. Thrust blocks, or other approved method of thrust restraint, shall be provided wherever pipe changes direction. Back-fill between the joints to prevent movement of the pipe. Provide details and calculations for sizing thrust blocks based on actual soil conditions. NFPA 24, 10.6.
14. A hydrostatic test (200 psi for two hours or 50 psi over maximum static pressure, whichever is greater) shall be performed. NFPA 24, 10.10.2.2.1.



CAUTION:

THE CONTRACTOR SHALL POTHOLE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES PRIOR TO STARTING ANY WET UTILITY CONSTRUCTION. PRIOR TO POTHOLING THE CONTRACTOR SHALL PROVIDE THE ENGINEER TWO WORKING DAYS NOTICE TO SURVEY AND VERIFY THE HORIZONTAL/VERTICAL LOCATION OF ALL EXISTING UTILITY CROSSINGS. CHANGES TO THE PROPOSED WET UTILITY ALIGNMENT COULD BE REQUIRED BASED ON THE ACTUAL UTILITY LOCATIONS.

BRIAN PAUL DELANEY — NO. C-9824 — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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SCOTT DELANE CRAVEN — No C 72391 — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
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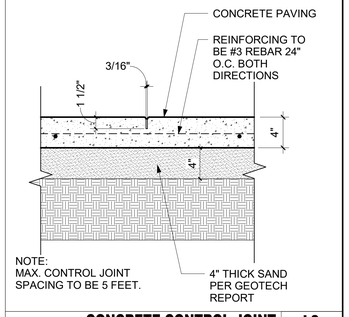
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OVERALL UTILITY SITE PLAN
WATER AND SEWER

PERKINS — EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
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www.perkinseastman.com

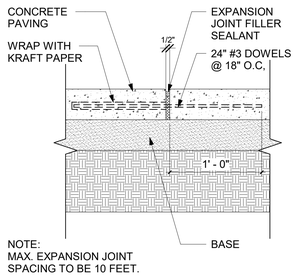
C-4

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CONCRETE CONTROL JOINT — L2

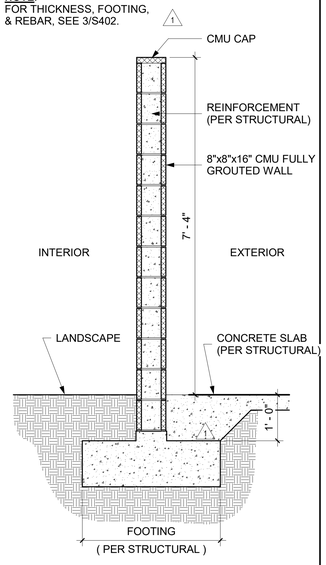
1 1/2" = 1'-0"



CONCRETE EXPANSION JOINT — L4

1 1/2" = 1'-0"

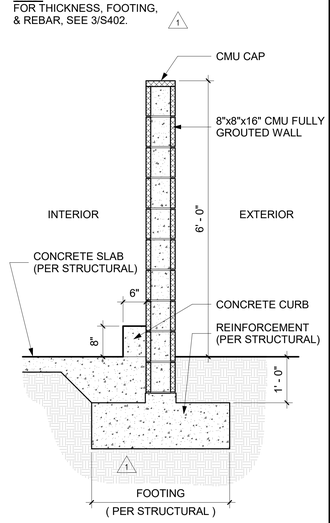
NOTE:
FOR THICKNESS, FOOTING, & REBAR, SEE 3/S402.



CMU SITE WALL — J4

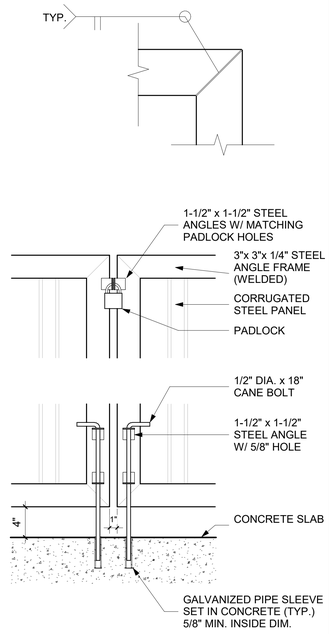
3/4" = 1'-0"

NOTE:
FOR THICKNESS, FOOTING, & REBAR, SEE 3/S402.



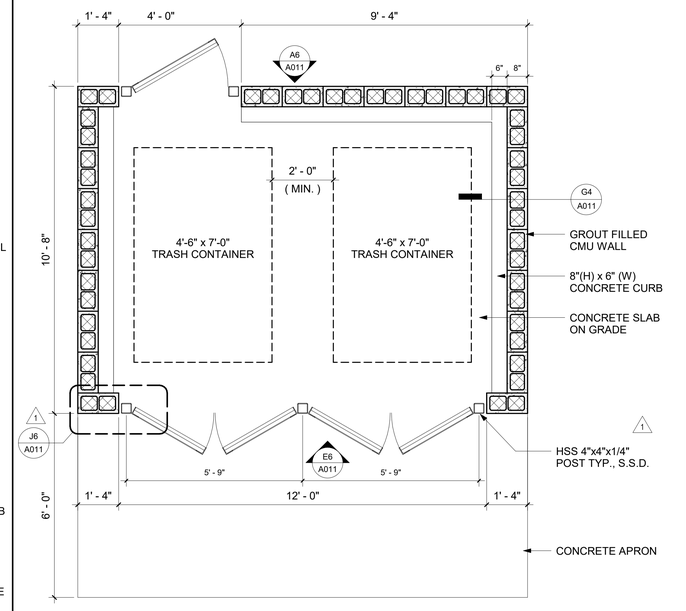
TRASH ENCLOSURE - WALL SECTION — G4

3/4" = 1'-0"



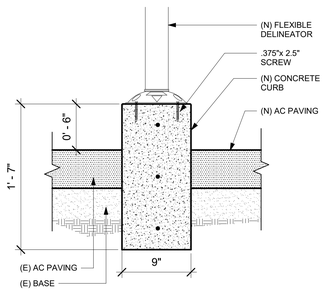
TRASH ENCLOSURE - LATCH & BOLT — E4

1 1/2" = 1'-0"



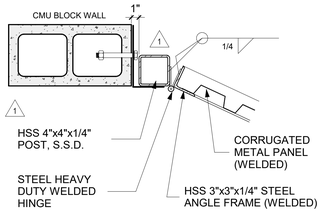
TRASH ENCLOSURE - FLOOR PLAN — A4

1/2" = 1'-0"



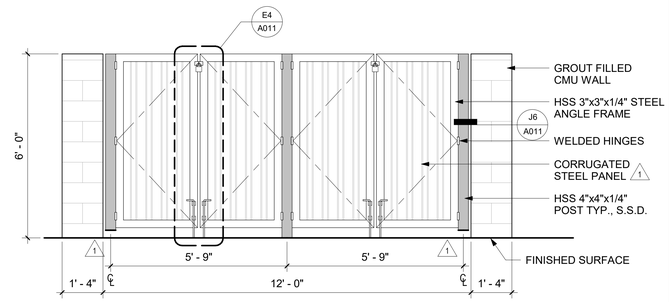
CONC. CURB AT AC PAVING — L6

1 1/2" = 1'-0"



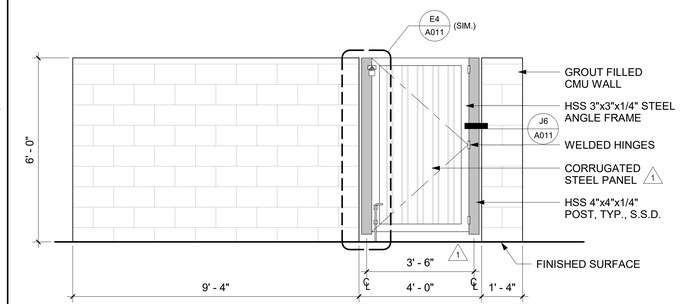
TRASH ENCLOSURE - GATE HINGE — J6

1 1/2" = 1'-0"



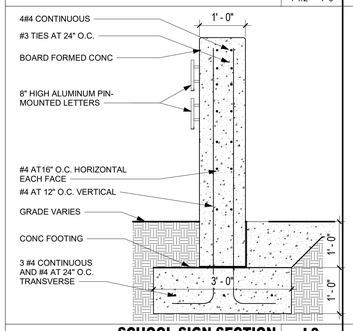
TRASH ENCLOSURE - ELEVATION — E6

1/2" = 1'-0"



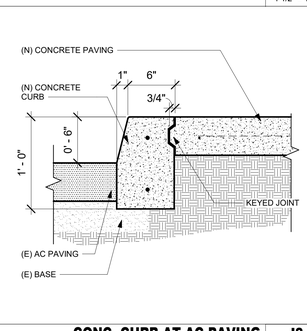
TRASH ENCLOSURE - ELEVATION — A6

1/2" = 1'-0"



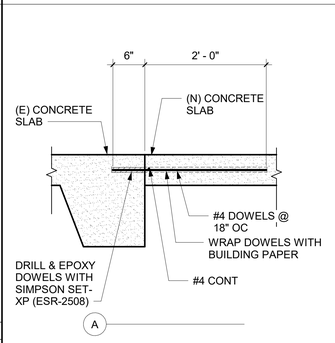
SCHOOL SIGN SECTION — L8

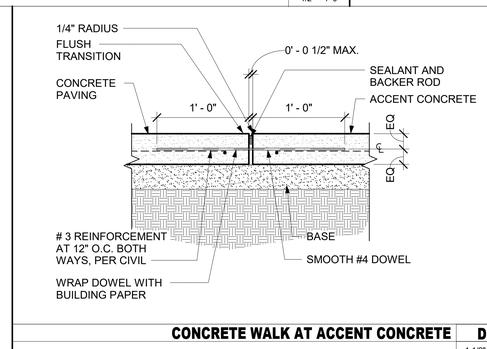
3/4" = 1'-0"



CONC. CURB AT AC PAVING — J8

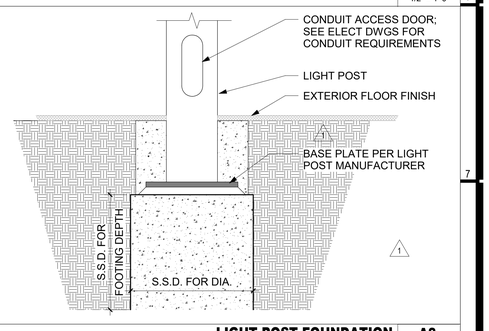
1 1/2" = 1'-0"





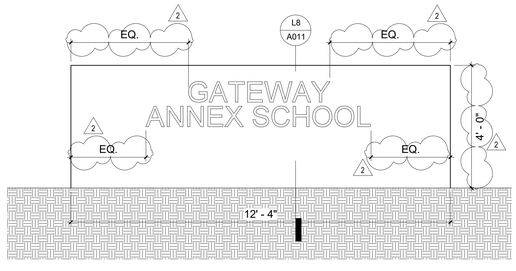
CONCRETE WALK AT ACCENT CONCRETE — D8

1 1/2" = 1'-0"



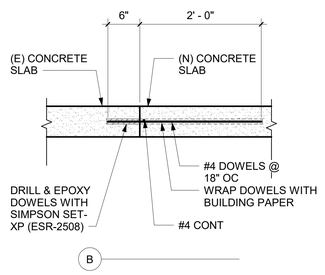
LIGHT POST FOUNDATION — A8

1" = 1'-0"



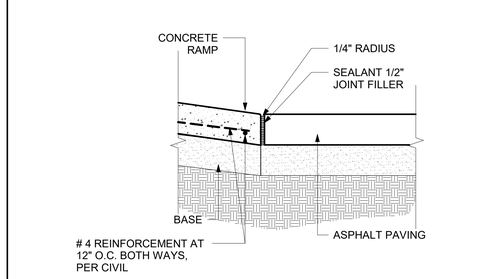
MONUMENT SIGN — J10

1/2" = 1'-0"



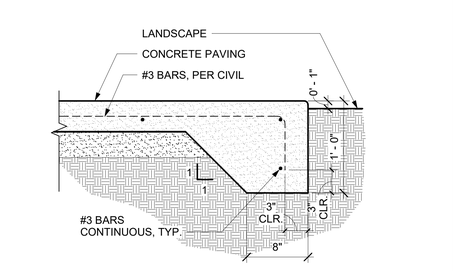
CONCRETE TO (E) CONCRETE — G10

1" = 1'-0"



RAMP TERMINATION AT ASPHALT — D10

1 1/2" = 1'-0"



TYP. CONCRETE PAVING AT LANDSCAPE — A10

1 1/2" = 1'-0"

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

GATEWAY ANNEX SCHOOL

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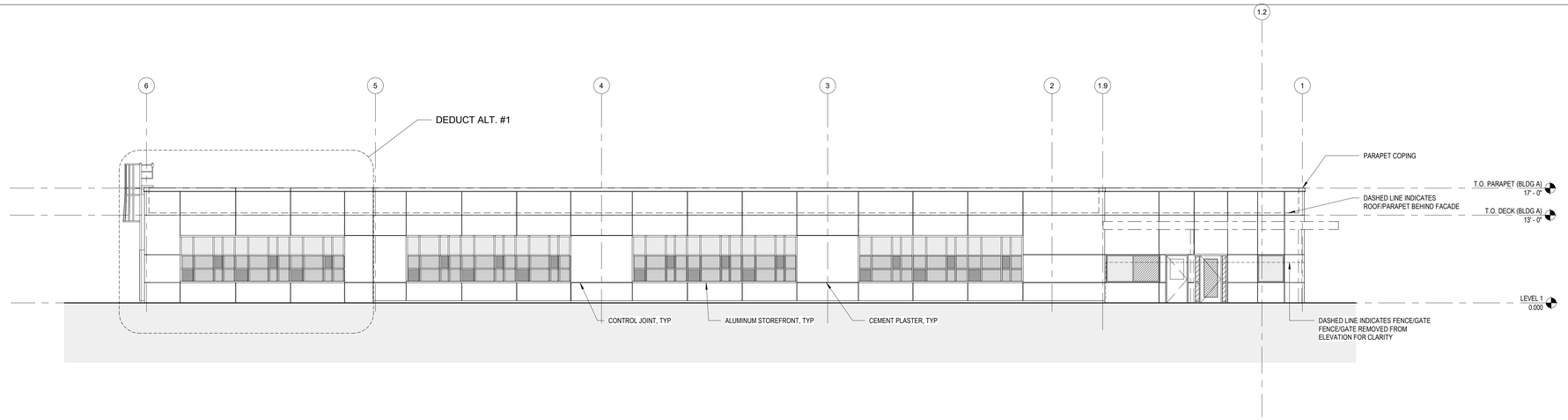
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	08/28/2026
2 ADD 2	11/06/2026

SITE DETAILS

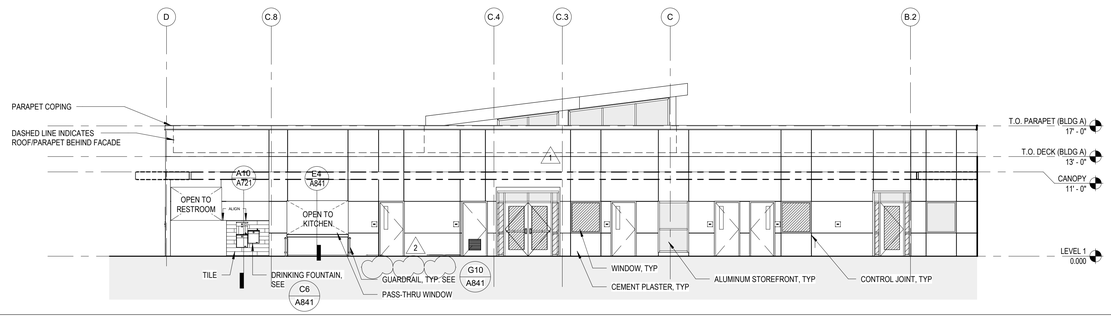
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A011

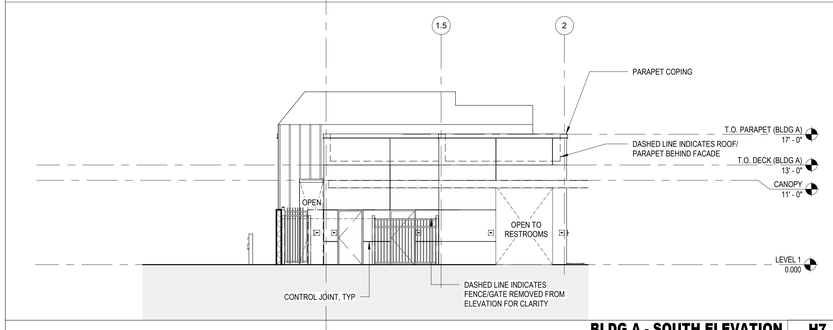
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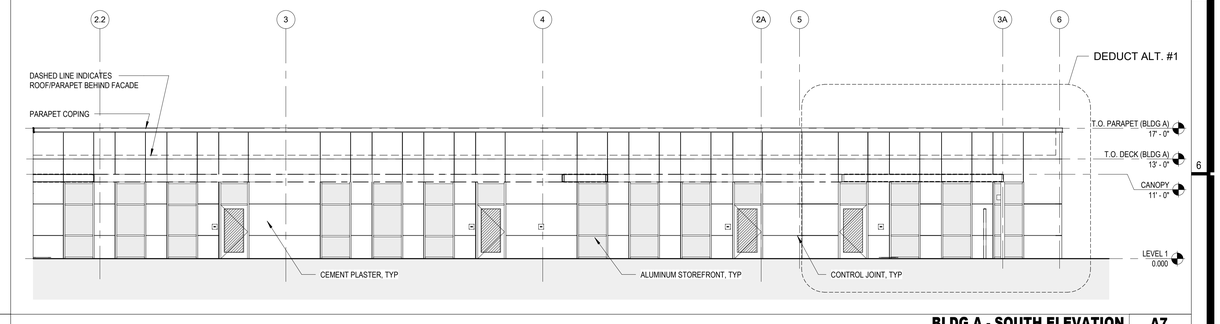
BLDG A - NORTH ELEVATION A3
1/8" = 1'-0"



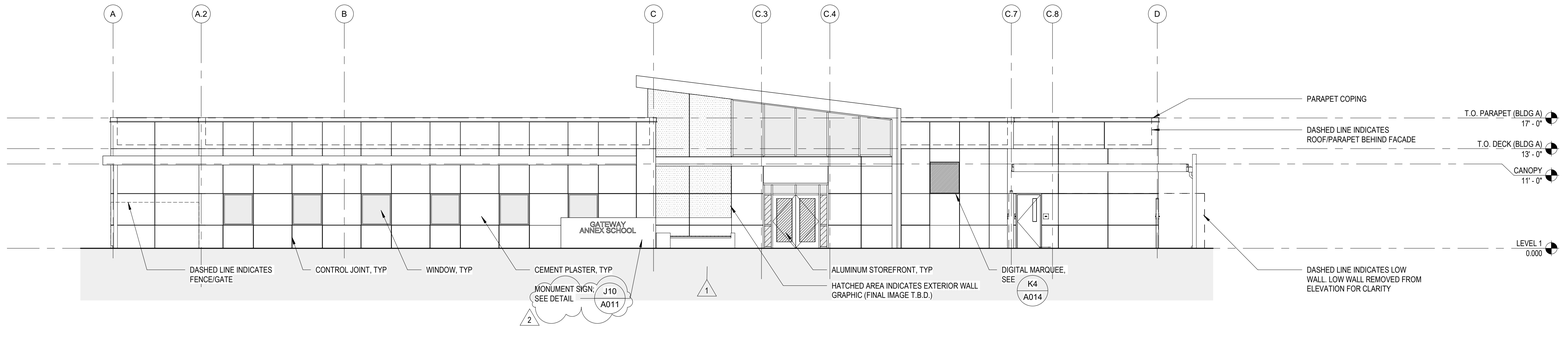
BLDG A - EAST ELEVATION A5
1/8" = 1'-0"



BLDG A - SOUTH ELEVATION H7
1/8" = 1'-0"



BLDG A - SOUTH ELEVATION A7
1/8" = 1'-0"



BLDG A - WEST ELEVATION A10
1/8" = 1'-0"

GLAZING LEGEND

- GLAZING TYPE I
- GLAZING TYPE II
- GLAZING WITH FILM: FASARA - MILKY MILKY LIGHT GREY 2H2MAMML
- GLAZING WITH FILM: FASARA - CROSS HAIRLINE MILKY SH2CHML

LICENSED ARCHITECT — REGI M. MAZAHERI — NO. 27847 — EXP. OCT. 31, 2026 — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

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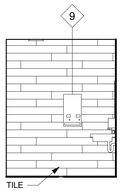
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	08/28/2026
2 ADD 2	11/06/2026

EXTERIOR ELEVATIONS

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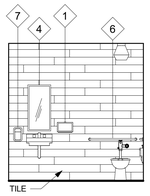
A201

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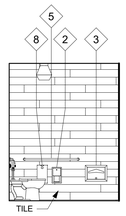
PUBLIC RESTROOM - NORTH L2

1/4" = 1'-0"



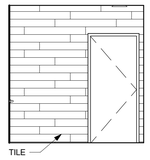
PUBLIC RESTROOM - EAST J2

1/4" = 1'-0"



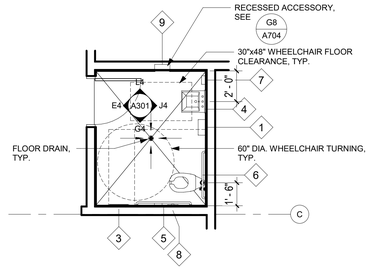
PUBLIC RESTROOM - SOUTH G2

1/4" = 1'-0"



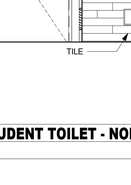
PUBLIC RESTROOM - WEST E2

1/4" = 1'-0"



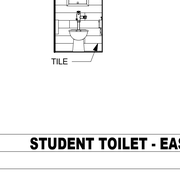
ENLARGED FLOOR PLAN - A119 PUBLIC RESTROOM A2

1/4" = 1'-0"



STAFF RESTROOM - NORTH L4

1/4" = 1'-0"



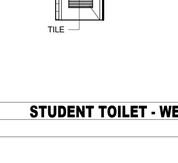
STAFF RESTROOM - EAST J4

1/4" = 1'-0"



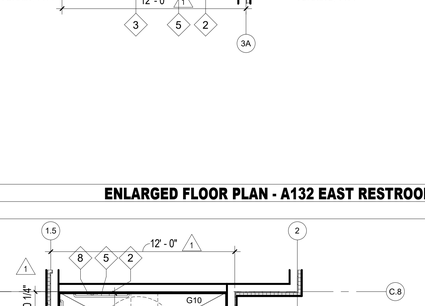
STAFF RESTROOM - SOUTH G4

1/4" = 1'-0"



STAFF RESTROOM - WEST E4

1/4" = 1'-0"



ENLARGED FLOOR PLAN - A122/A123 STAFF RESTROOMS A4

1/4" = 1'-0"

STUDENT RESTROOM - EAST L6

1/4" = 1'-0"

STUDENT RESTROOM - EAST J6

1/4" = 1'-0"

STUDENT RESTROOM - SOUTH G6

1/4" = 1'-0"

STUDENT RESTROOM - WEST E6

1/4" = 1'-0"

ENLARGED FLOOR PLAN - A130 WEST RESTROOMS A10

1/4" = 1'-0"

STUDENT TOILET - NORTH L8

1/4" = 1'-0"

STUDENT TOILET - EAST J8

1/4" = 1'-0"

STUDENT TOILET - SOUTH G8

1/4" = 1'-0"

STUDENT TOILET - WEST E8

1/4" = 1'-0"

ENLARGED FLOOR PLAN - A132 EAST RESTROOMS A8

1/4" = 1'-0"

STUDENT ACCESSIBLE TOILET - NORTH L10

1/4" = 1'-0"

STUDENT ACCESSIBLE TOILET - EAST J10

1/4" = 1'-0"

STUDENT ACCESSIBLE TOILET - SOUTH G10

1/4" = 1'-0"

STUDENT ACCESSIBLE TOILET - WEST E10

1/4" = 1'-0"

ENLARGED FLOOR PLAN - A130 WEST RESTROOMS A10

1/4" = 1'-0"

ACCESSORIES...

#	DESCRIPTION	MODEL	BASIS OF DESIGN
1	PAPER TOWEL DISPENSER - SURFACE MOUNTED	B-262	BOBRICK
2	TOILET TISSUE DISPENSER - RECESSED	B-4388	BOBRICK
3	TOILET SEAT COVER DISPENSER	B-5221	BOBRICK
4	GLASS MIRROR WITH FRAME - 18" x 36"	B-2908	BOBRICK
5	GRAB BAR 42"	B-6806	BOBRICK
6	GRAB BAR 36"	B-6806	BOBRICK
7	SOAP DISPENSER - SURFACE MOUNTED	B-2111	BOBRICK
8	SANITARY NAPKIN DISPOSAL - SURFACE MOUNTED	B-270	BOBRICK
9	SANITARY NAPKIN VENDOR SEMI-RECESSED	B-2706	BOBRICK
10	HAND-DRYER	B750	BOBRICK

RESTROOM FLOOR PLAN NOTES

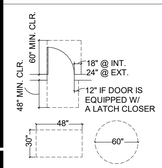
1. GRAB BAR MOUNTING DETAIL SEE A10 A302
2. FOR RECESSED ACCESSORIES SEE A302
3. FOR TYPICAL ACCESSORY MOUNTING HEIGHT SEE F10 A302
4. FOR TYPICAL TILE PATTERN SEE A7 A302

ELEVATION LEGEND

SOAP DISPENSER

PAPER TOWEL DISPENSER

TYP. CLEARANCES



DOOR LANDING CLEARANCE

FLOOR CLEARANCE

TILES

WALL TILE
DALTILE PORTFOLIO
WT-1 DOVE GREY PF04 MATTE (6"X24")
WT-2 DARK GREY DL27 (12"X24" RANDOM LINEAR MOSAIC ACCENT TILE)

FOR TYPICAL TILE PATTERN SEE A7 A302

FLOOR TILE
FT-1 12X24 FLOOR TILE ASH GREY PF05 MATTE

LICENSED ARCHITECT SCOTT M. MAXWELL NO. 32928 EXP. 31.2026 STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

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550 Airport Way, Camarillo, CA 93010

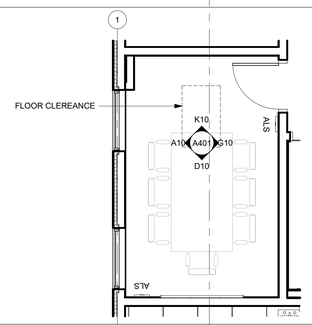
JOB	88910.00
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PM	
DATE	10/23/2026
1 ADD 1	08/28/2026
2 ADD 2	11/06/2026

ENLARGED RESTROOM FLOOR PLANS & ELEVATIONS

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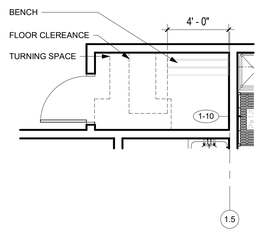
A301

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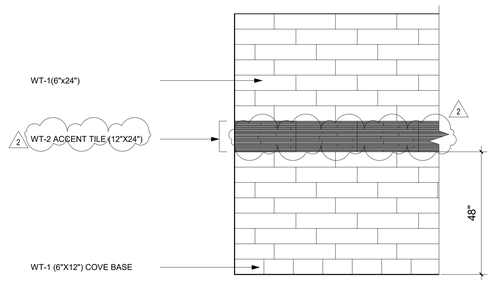


ENLARGED CONFERENCE ROOM FLOOR PLAN C2
1/4" = 1'-0"

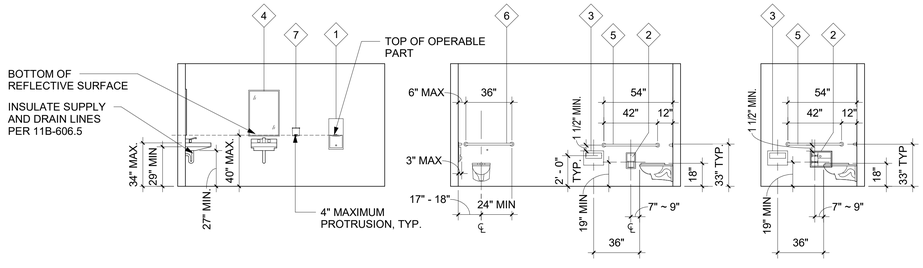
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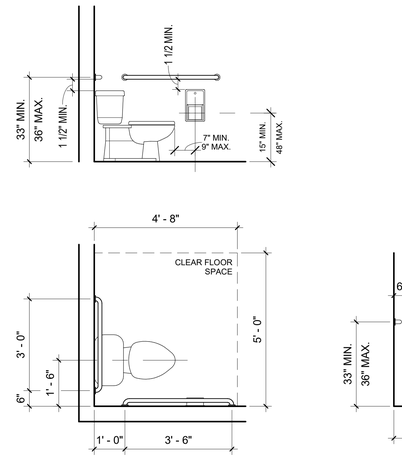
ENLARGED CHANGING ROOM FLOOR PLAN A2
1/4" = 1'-0"



TYPICAL TILE PATTERN LAYOUT A7
1/2" = 1'-0"



ACCESSORY MOUNTING HEIGHTS F10
1/4" = 1'-0"



RESTROOM MOUNTING DIMENSIONS A10
1/2" = 1'-0"

ACCESSORIES...

#	DESCRIPTION	MODEL	BASIS OF DESIGN
1	PAPER TOWEL DISPENSER - SURFACE MOUNTED	B-262	BOBRICK
2	TOILET TISSUE DISPENSER - RECESSED	B-4388	BOBRICK
3	TOILET SEAT COVER DISPENSER	B-5221	BOBRICK
4	GLASS MIRROR WITH FRAME - 18" x 36"	B-2908	BOBRICK
5	GRAB BAR 42"	B-6806	BOBRICK
6	GRAB BAR 36"	B-6806	BOBRICK
7	SOAP DISPENSER - SURFACE MOUNTED	B-2111	BOBRICK
8	SANITARY NAPKIN DISPOSAL - SURFACE MOUNTED	B-270	BOBRICK
9	SANITARY NAPKIN VENDOR SEMI-RECESSED	B-2706	BOBRICK
10	HAND-DRYER	B750	BOBRICK

RESTROOM FLOOR PLAN NOTES

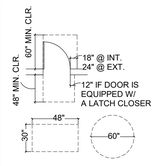
1. GRAB BAR MOUNTING DETAIL SEE A10 / A302
2. FOR RECESSED ACCESSORIES SEE A302
3. FOR TYPICAL ACCESSORY MOUNTING HEIGHT SEE F10 / A302
4. FOR TYPICAL TILE PATTERN SEE A7 / A302

ELEVATION LEGEND

SOAP DISPENSER

PAPER TOWEL DISPENSER

TYP. CLEARANCES



DOOR LANDING CLEARANCE

FLOOR CLEARANCE

TILES

WALL TILE
DALTILE PORTFOLIO
WT-1 DOVE GREY PF04 MATTE (6"X24")
WT-2 DARK GREY DL27 (12"X24" RANDOM LINEAR MOSAIC ACCENT TILE)

FOR TYPICAL TILE PATTERN SEE A7 / A302

FLOOR TILE
FT-1 12X24 FLOOR TILE
ASH GREY PF05 MATTE

2

LICENSED ARCHITECT — BRENT M. MATTAS — NO. 32761 — EXP. OCT. 31, 2026 — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

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SCALE	AS NOTED
PM	
DATE	10/23/2026
2 ADD 2	11/06/2026

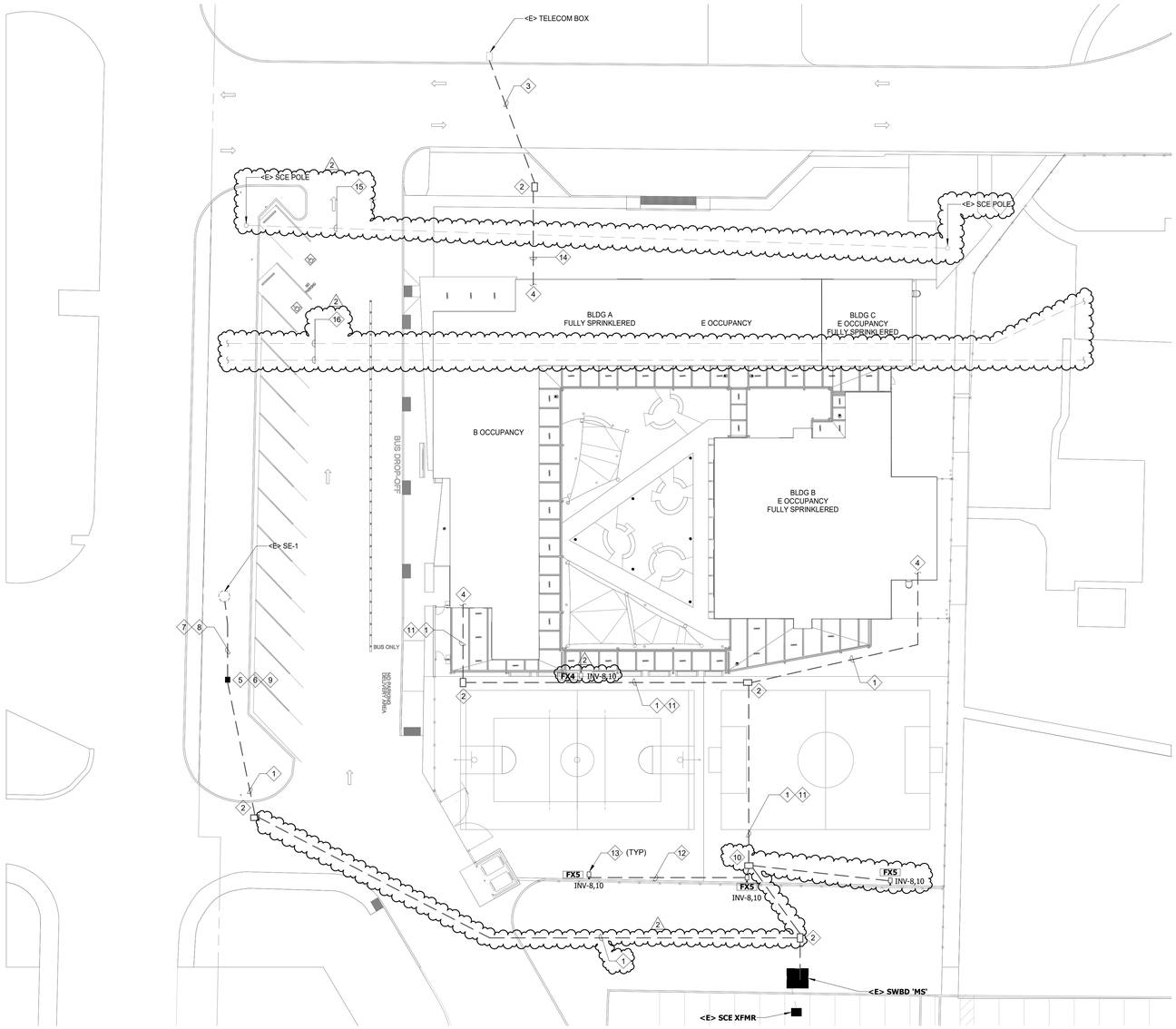
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A302

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3 4 5 6 7 8 9 10

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1 ES101 **ELECTRICAL - SITE PLAN - NEW**
SCALE: 1" = 20'-0"

GENERAL SHEET NOTES

A. COORDINATE ALL TRENCHWORK WITH CIVIL DRAWINGS. DRAWINGS ARE DIAGRAMMATIC ONLY.

B. CONTRACTOR SHALL TRENCH ALL LIGHTING AND POWER CONDUITS WHERE POSSIBLE.

C. CONTRACTOR SHALL PROVIDE A MINIMUM OF 1"C FOR ALL UNDERGROUND LIGHTING AND POWER CONDUITS.

REFERENCE SHEET NOTES

1. PROVIDE UNDERGROUND CONDUIT AND CONDUCTOR FOR DISTRIBUTION PANEL. REFER TO SINGLE LINE DIAGRAM FOR CONDUIT AND CONDUCTOR SIZE.
2. PROVIDE 24"X36" PULLBOX.
3. PROVIDE (2)2" CONDUIT FOR TELECOMMUNICATIONS.
4. REFER TO BUILDING PLANS FOR CONTINUATION.
5. CONTRACTOR SHALL MOUNT RE-LOCATED PANEL P3 ON UNISTRUT. REFER TO DETAIL 10 ON SHEET E502 FOR MOUNTING DETAIL.
6. CONTRACTOR SHALL MOUNT RE-LOCATED ALARM PANEL FOR SEWAGE EJECTOR (SE-1) ON UNIT STRUT.
7. PROVIDE 3/4"C - 3#10 & 1#10 GND TO RE-FEED EXISTING SEWAGE EJECTOR.
8. PROVIDE 1"C ROUTED UNDERGROUND FROM ALARM PANEL TO SEWAGE EJECTOR.
9. PROVIDE UTILITY WIRE CAGE ENCLOSURE BY GUARD SHACK ENCLOSURES OE EQ. ENCLOSURE TO PROVIDE 48" CLEARANCE SPACE IN FRONT FOR ACCESS AND MAINTENANCE.
10. PROVIDE 11"X17" PULLBOX FOR LIGHTING.
11. PROVIDE 1"C FOR LIGHT POLES IN SAME TRENCH AS CONDUIT FOR DISTRIBUTION PANEL.
12. PROVIDE CONDUIT AND CONDUCTOR FOR LIGHTING FIXTURE.
13. PROVIDE 1"C - 2#10 & 1#10 GND FOR LIGHTING FIXTURE FROM PANEL AND CIRCUIT AS SHOWN. 2
14. PROVIDE (2)2" CONDUIT FOR TELECOMMUNICATIONS. COORDINATE EXACT ROUTING WITH SCE ALONG SCE EASEMENT.
15. EXISTING SCE UNDERGROUND LINE AND EASEMENT. COORDINATE ALL ELECTRICAL AND LOW VOLTAGE LINES RAN ALONG EASEMENT WITH SCE AND OTHER REQUIREMENTS WITH ELECTRICAL UTILITY PROVIDER.
16. EXISTING VERIZON LOW VOLTAGE LINES. CONTRACTOR TO COORDINATE WITH EXISTING LOW VOLTAGE UTILITY PROVIDER TO DEMOLISH AND RE-FEED ADJACENT SCHOOL.

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San Jose, California 95112-2218
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National **Strength.**
Local **Action.**

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	05/22/2026
2 ADD 02	11/12/2026

ELECTRICAL SITE PLAN - NEW

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ES101

Gateway Annex School
DSA A#: 03-122398
Project Number: 088910.00.0
Bid Addendum #2 - RFI Log

PERKINS EASTMAN

RFI #	Question	Response
1	*AV specs mention an Extron system in each classroom with parts called out but nothing on the plans and no wiring diagram.* *Is AV included in this project scope? Will plans be made available that include AV symbols and/or updated wiring diagrams?*	Omit EXTRON system from the Bid Documents. The AV system shall be determined and designed and installed independent of this contract. However, Contractor shall provide all empty pathways, conduit and junction boxes per plan.
2	*During the pre-bid review, we noted a lack of clarification regarding the handling of life-safety devices during painting operations. Please confirm whether the fire alarm strobes must be completely removed and reinstalled to ensure full paint coverage, or if they can be taped off and protected in place. To ensure code compliance and accurate pricing, please clarify who bears responsibility for disconnecting, reconnecting, and testing these life-safety components.*	Gateway Annex School is a New Construction project. There are no repairs for grid system or ceiling tiles in the scope. All life-safety devices are new installation.
3	*Regarding Section 00 45 46.09 – Buy American Certification, please clarify whether bidders may base their lump-sum bid pricing on anticipated Buy American waivers that have not been formally approved prior to bid submission.*	MODIFICATIONS TO BIDDING AND CONTRACT DOCUMENTS 1. SECTION 00 45 46.09 – BUY AMERICAN CERTIFICATION •DELETE Section 00 45 46.09 (Buy American Certification) in its entirety from the Project Manual/Specification Package. •DELETE all references to Buy American certification, Buy American waiver requirements, or federal domestic sourcing preferences within the Bidding Documents. CLARIFICATION •Funding Source Clarification: This project is funded entirely through California State School Facility Program (SFP) apportionments and/or local district funds. Federal financial assistance is not utilized for this project; therefore, federal "Buy American" and Build America, Buy America Act (BABA) statutory requirements do not apply. •Bidders are not required to submit a Buy American Certification with their bid packages.
4	*1. Building Identification Sign – Detail A10/A201* *•Is the "GATEWAY ANNEX SCHOOL" sign included in the base bid?* *•Please confirm the required dimensions, materials, finish, mounting details, and whether illumination is required.*	YES. The construction of the Gateway Annex Sign is included. Illumination is not required. Monument Sign detail reference added to Exterior Elevation A10/A201. Refer also to revised Detail J10/A011 for monument sign information.
5	*2. Buy American Requirements – Section 00 45 46.09* *•Please confirm whether the Buy American requirements apply to all iron, steel, and manufactured products, including HVAC, electrical equipment, plumbing fixtures, doors, and hardware.* *•Are there any specific exemptions, waivers, or additional compliance requirements subcontractors should consider when preparing their bids?*	MODIFICATIONS TO BIDDING AND CONTRACT DOCUMENTS 1. SECTION 00 45 46.09 – BUY AMERICAN CERTIFICATION •DELETE Section 00 45 46.09 (Buy American Certification) in its entirety from the Project Manual/Specification Package. •DELETE all references to Buy American certification, Buy American waiver requirements, or federal domestic sourcing preferences within the Bidding Documents. •Bidders are not required to submit a Buy American Certification with their bid packages.
6	*Tech-Time Communications is requesting a substitution request for fire alarm systems manufacture. Please see the attached request.*	Substitution accepted. See attached approved Fire Alarm substitution request.
7	*We are reviewing the insurance requirements for Gateway Annex School, Bid #2026-06, and noticed the following discrepancy in Section 00 72 13:* *•Paragraph 13.1.6 identifies Pollution Liability Insurance as "Not used."* *•Paragraph 13.1.8 lists Pollution Liability coverage limits of $1,000,000 per occurrence and $2,000,000 aggregate.* *Please confirm whether Contractors Pollution Liability Insurance is required for this project.* *If required, please confirm the applicable coverage limits and requirements.*	Pollution Liability Insurance is REQUIRED. Disregard the wording, "Not Used". Contractor shall follow Paragraph 13.1.8 for Pollution Liability coverage limit listed.
8	*After reviewing the addendum, plans, and specifications, several acoustical ceiling subcontractors have noted that the drawings do not show any new ceiling or repair areas. Could VCOE please provide either a percentage or square footage of both the grid system and ceiling tiles to be repaired? Without this information, they have no basis for quantifying this item.* *Please advise. Thank you.*	Gateway Annex School is a New Construction project. There are no repairs for grid system or ceiling tiles in the scope.
9	*Wall Protection – Section 10 2601* *Specification Section 10 2601 specifies stainless steel crash rails; however, we are unable to locate their installation locations on the architectural drawings. Please confirm whether the stainless steel crash rails are required for this project. If required, please identify their locations, quantities, and mounting heights.*	Stainless steel crash rails are not required for this project. DELETE Section 10 2601 Wall Protection in its entirety from the Project Manual/Specification Package.
10	*Window Roller Shades – Section 12 2400* *Specification Section 12 2400 requires manually operated window roller shades and refers to the Reflected Ceiling Plans for locations. However, we are unable to identify the required shade locations on the drawings. Please confirm whether window roller shades are required for this project. If required, please identify the applicable windows and locations.*	Window shades don't apply to this project. Delete Section 12 2400 Window Roller Shades in its entirety from the Project Manual/Specification Package.

11	*Rooftop Duct Supports – Detail 11/M501* *Mechanical Detail 11/M501 shows structural steel supports for rooftop ductwork. However, no corresponding support details or references are shown on the Structural Roof Framing Plan, Sheet S102, at the locations where these supports are required. Please confirm whether the rooftop duct support details should be incorporated into the structural drawings and provide the necessary revisions for coordination.*	The rooftop duct support detail on 11/M-501 is applicable and shows the attachment to the structure below. This detail has been coordinated with the structural engineer as note #4 states that the truss manufacturer will need to include 1,000 lb point loads on the trusses at these support frames. Contractor to coordinate with the truss manufacturer during the submittal process for all of the structural and mechanical requirements.
12	*Barn Door – Sheet A843* *Sheet A843 provides details for the barn door assembly based on the Cannonball Kwik Frame Sliding Door System. However, the drawings do not provide complete specifications for the door panels, finishes, and hardware. Please provide the complete barn door specifications, including panel materials, finishes, and required hardware, to allow subcontractors to accurately price the assembly.*	Basis of Design is the Cannonball Bigg Frame Sliding Door System. The contractor shall provide shop drawings showing the following: - Frame assembly w/ Bigg Frame System door hardware. - Metal Panel both sides of sliding door. - Tackable wall surface on front side, color TBD. - Acous. Insulation in frame cavity.
13	*Playfield Equipment – Section 11 6816* *Specification Section 11 6816 provides requirements for basketball equipment only. However, Sheet A014 also shows a volleyball court and volleyball net post details (A6 and D6). Please confirm whether the contractor is required to furnish and install both basketball and volleyball equipment. If volleyball equipment is required, please provide the applicable specifications, including the posts, net, and accessories.*	Contractor shall furnish both basketball and volleyball equipment. See new specification 11 6833 Athletic Equipment.
14	*Security Systems – Sections 28 1000, 28 1600 and 28 2000* *The electrical drawing legend indicates that intrusion detection devices, including door sensors, motion detectors, keypads, and sounders, require conduit, wiring, and/or junction boxes only. However, Specification Section 28 1600 requires a complete operational intrusion detection system. Additionally, Sections 28 1000 and 28 2000 require complete access control and video surveillance systems, but do not identify specific equipment manufacturers or system configurations. Please clarify whether the intrusion detection devices will be furnished and installed by the Owner or Contractor. Additionally, please provide the required equipment manufacturers, models, and system requirements for Access Control and Video Surveillance to allow subcontractors to accurately price these systems.*	Omit Security Systems from the Bid Documents. The Security Systems system shall be determined and designed and installed independent of this contract. However, Contractor shall provide all empty pathways, conduit and junction boxes per plan. Omit Sections 28 1000, 28 1600 and 28 2000 from Project Manual/Specification Package.
15	*Metal Guards and Handrails – Section 05 5213* *Specification Section 05 5213 describes galvanized steel guards and handrails, while Sheet A201 identifies 1-1/2-inch stainless steel guardrails and references Detail G10/A841. Please clarify the required guardrail material and finish, and confirm the extent and locations of guardrail work under Section 05 5213.*	Guardrails and handrails shall be galvanized steel pipe per Spec 05 5213 & Detail G10/A841. Elevation A5/A201 has been revised to remove the reference to stainless steel guardrail.
16	*Sheet Waterproofing – Section 07 1326* *Specification Section 07 1326 specifies a self-adhering sheet waterproofing membrane system. However, we are unable to identify the corresponding application locations on the architectural or structural drawings. Please confirm whether Section 07 1326 applies to this project. If applicable, please identify the required locations and provide the corresponding details.*	The sheet waterproofing is for two-sided foundation walls. See Structural Foundation Plan fordepths of footings. Spec 07 1326, Paragraph 1.1.A revised to say "Application of rolled, self-adhering waterproofing membrane system to two-sided foundation walls.
17	*Louvers – Section 08 9100* *Specification Section 08 9100 provides requirements for aluminum louvers; however, we are unable to identify the corresponding locations on the architectural or mechanical drawings. Please confirm whether Section 08 9100 applies to this project. If applicable, please identify the required locations, sizes, and quantities.*	Section 08 9100 does not apply to this project. Delete Section 08 9100 LOUVERS in its entirety from the Project Manual/Specification Package.
18	*Expansion Control – Section 07 9500* *Specification Section 07 9500 specifies architectural expansion joint cover systems for building exteriors, including a nominal 10-inch joint width. However, we are unable to identify the corresponding locations or details on the architectural drawings. Please confirm whether Section 07 9500 applies to this project. If applicable, please identify the required locations and provide the corresponding details.*	Section 07 9500 does not apply to this project. Delete Section 07 9500 EXPANSION CONTROL in its entirety from the Project Manual/Specification Package.
19	*Infiltration System – Addendum No. 1, Sheet C-3* *Sheet C-3, issued under Addendum No. 1, identifies an infiltration system. However, it is unclear whether this system is existing or proposed.* *Please confirm whether the infiltration system is existing or is to be furnished and installed as part of this project, if it is please provide product info.*	The infiltration system is proposed (to be installed). Refer to Construction Notes 29 and 30, Sheet C-3. Contech CDS and CMP Drawings attached for reference. See also attached report: "Preliminary DRAINAGE & STORMWATER QUALITY REPORT , November 2026."

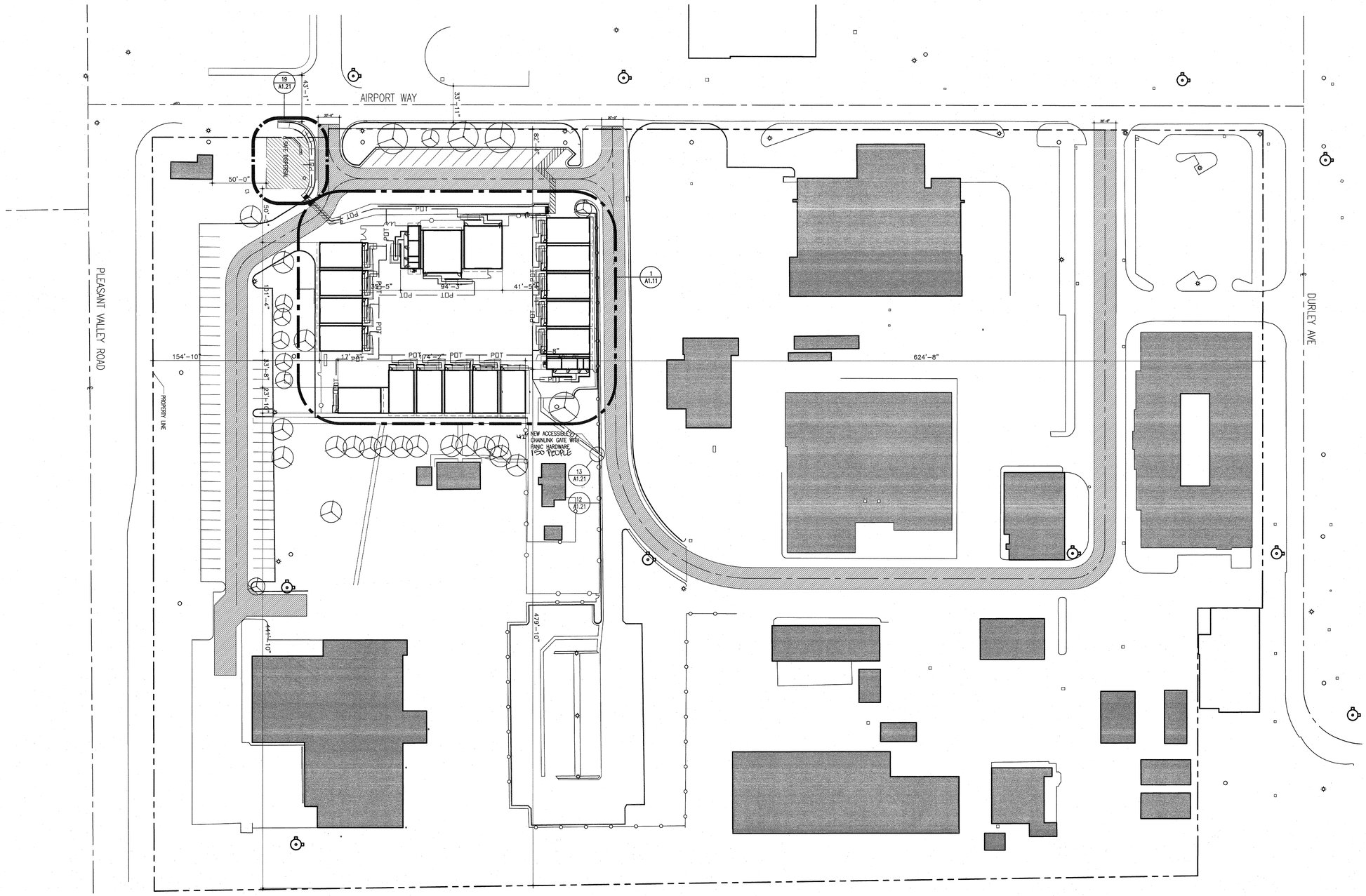
20	*Please clarify the following regarding the Gateway Annex School project:* *1.What is the manufacturer of the existing campus-wide BMS/EMS controls system?* *2.Is there a required or preferred HVAC controls vendor?* *3.Are the new rooftop heat pump units required to integrate with the existing system through BACnet?*	1. The campus uses various BMS manufacturers. 2. The preferred system is Johnson Controls - FX Controller, but district is open to other options that comply with the attached specification section 250000 Building Automation System for JACE based hardware with Tritium interface and Niagra software. The District wants to work with something that has a good long term track record, allows future growth and upgrades, and has user-friendly interface and is easy for the HVAC technicians to learn and maintain. Provide yearly costs for service contract and yearly costs for cloud storage as a separate line item. Provide yearly costs for service contract and yearly costs for cloud storage as a separate line item. 3. Project base bid is to use standard programmable thermostats with BACnet cards in HVAC equipment of a future BMS system integration. Please provide a Add-Alternate BMS system for all equipment in this project. The preferred system is Johnson Controls - FX Controller, but district is open to other options that comply with the attached specification section 250000 Building Automation System for JACE based hardware with Tritium interface and Niagra software. Provide yearly costs for service contract and yearly costs for cloud storage as a separate line item. Contractor pull in fan status, compressor status, and economizer status (if applicable) for all HVAC equipment in this project. Also monitor and alarm for local filter Differential Pressure Sensors (furnish and installed by control contractor) to all Fan Coils and Heat Pumps. Contractor to add current switches to rooftop exhaust fans for monitoring.
21	*Roof Truss Spacing – Sheet S102* *Detail 3/S102, Note 6, indicates roof trusses at 24" O.C. maximum. However, the truss spacing scaled from the Roof Framing Plan on Sheet S102 appears to be approximately 16" O.C. Please confirm the required roof truss spacing for bidding purposes.*	Don't scale from structural drawings. 24" oc is a maximum. Final truss spacing to be determined with efficient truss design in deferred submittal.
22	*Existing HVAC Controls System – BACnet Integration* *Specification Section 23 7514 requires the rooftop heat pump units to be BACnet compatible and integrated into the existing campus-wide central management system. Please identify the manufacturer of the existing HVAC controls system and confirm whether the Owner has a preferred or required controls vendor for system integration.*	Project base bid is to use standard programmable thermostats with BACnet cards in HVAC equipment of a future BMS system integration. Please provide a Add-Alternate BMS system for all HVAC equipment in this project. The preferred system is Johnson Controls - FX Controller, but district is open to other options that comply with the attached specification section 250000 Building Automation System for JACE based hardware with Tritium interface and Niagra software. Provide yearly costs for service contract and yearly costs for cloud storage as a separate line item. Contractor pull in fan status, compressor status, and economizer status (if applicable) for all HVAC equipment in this project. Also monitor and alarm for local filter Differential Pressure Sensors (furnish and installed by control contractor) to all Fan Coils and Heat Pumps. Contractor to add current switches to rooftop exhaust fans for monitoring.

PROJECT DATA BUILDING CODE ANALYSIS - CBC 2016

BUILDING NAME	OCC. GROUP	CONST. TYPE	AUTO. FIRE SPRINKLER	BASIC ALLOWABLE AREA		ALLOWABLE AREA INCREASE	TOTAL ALLOWABLE AREA (S.F.)	EXTERIOR WALLS		BUILDING AREA (S.F.)		
				A_t (SF)	STORIES/ HEIGHT	$I_f = [F / P - 0.25] W / 30$	$A_a = A_t + [NS \times I_f]$	BEARING WALLS TABLE 601	NON-BEARING WALLS TABLE 602	ACTUAL AREA	STORIES / HEIGHT	TOTAL ALLOWED
BUILDING A - WEST GROUPING	E	VB	NO	9,500	1 / 40'	$I_f = (270 / 270 - 0.25) 30 / 30$	9,000 + (9,000 X 0.75)	NON-RATED	NON-RATED	3,360	1 / 15'	15,750
BUILDING B - SOUTH GROUPING	E	VB	NO	9,500	1 / 40'	$I_f = (282 / 282 - 0.25) 30 / 30$	9,000 + (9,000 X 0.75)	NON-RATED	NON-RATED	4,800	1 / 15'	15,750
BUILDING C - EAST GROUPING	E	VB	NO	9,500	1 / 40'	$I_f = (428 / 428 - 0.25) 30 / 30$	9,000 + (9,000 X 0.75)	NON-RATED	NON-RATED	5,760	1 / 15'	15,750
BUILDING D - NORTH GROUPING	E	VB	NO	9,500	1 / 40'	$I_f = (362 / 362 - 0.25) 30 / 30$	9,000 + (9,000 X 0.75)	NON-RATED	NON-RATED	5,280	1 / 15'	15,750

KEYNOTES & LEGEND

- EXISTING BUILDING
- PROPERTY LINE
- EXISTING FIRE HYDRANT



SITE PLAN

SCALE : 1" =40'-0"

1 / A112

N

FLEWELLING & MOODY
architecture planning interiors

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An Employee Owned Corporation

ARCHITECT

LICENSED ARCHITECT — DANIEL F. CANNON — C-21717 — 08/31/2018 — STATE OF CALIFORNIA

CONSULTANT

AGENCY

FILE NO. 56-44
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APPL. 03-118667
ACCEPTED BY DSA
DATE APR 23 2018

PTN. 10561-29

Drawn by MJ

Checked by SS

Revisions

No.	Date	Description

All dimensions must be checked at the job by the contractor who accepts full responsibility for their accuracy under the contract. These plans & the specifications in connection therewith have been prepared for a specific site. Any and all responsibility for their use in whole or in part on any other site is hereby disclaimed by Flewelling & Moody.

VENTURA COUNTY OFFICE OF EDUCATION
TRITON ACADEMY
TEMPORARY SCHOOL

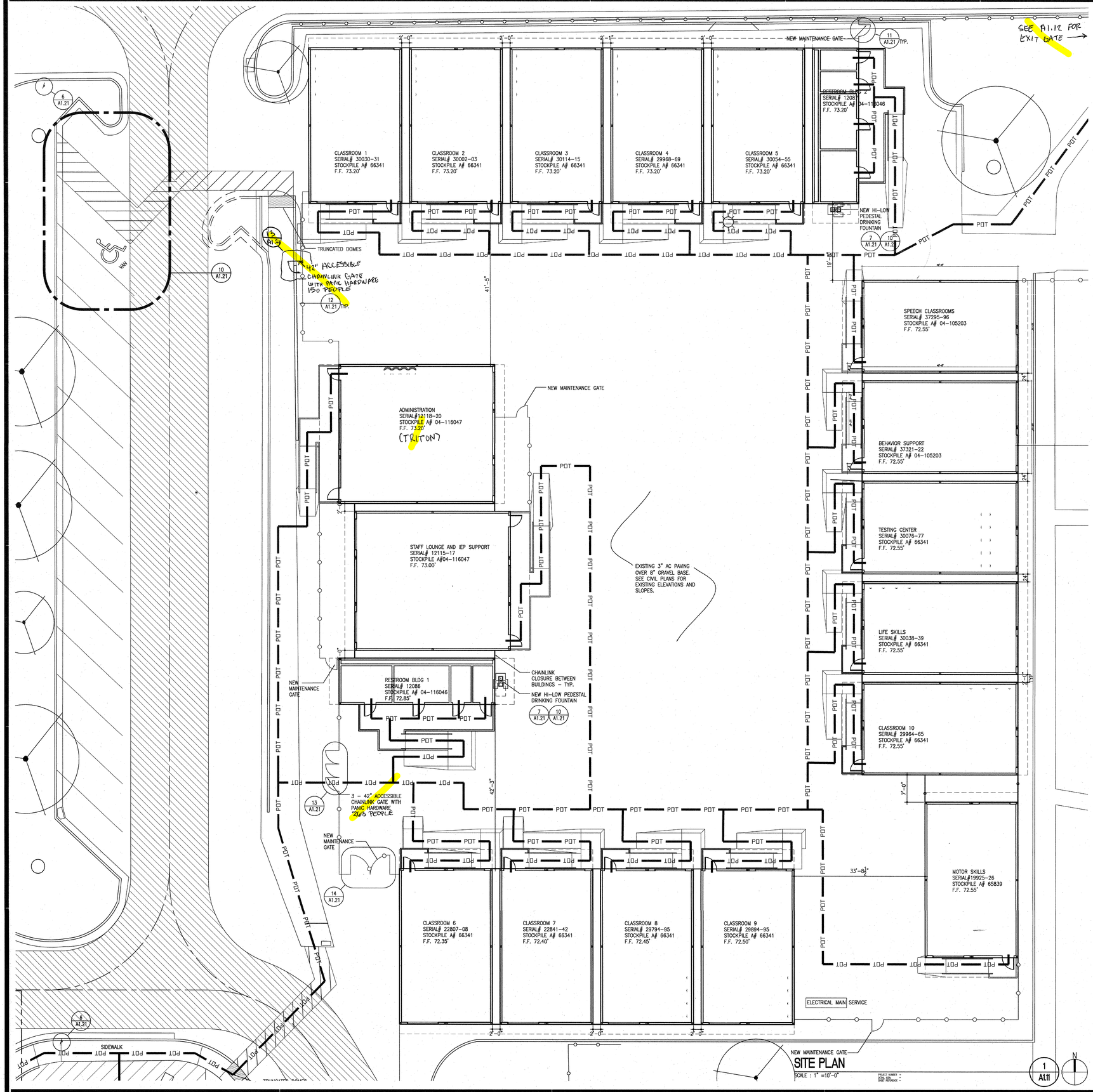
550 AIRPORT WAY
CAMARILLO, CALIFORNIA 93010

OVERALL SITE PLAN

Job No. 2787

Date 01/30/2018

A1.12



ACCESS NOTES

PATH OF TRAVEL (P.O.T.) AS INDICATED IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL AND AT LEAST 48" WIDE. SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH. CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. P.O.T. SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80". CONTRACTOR TO VERIFY THAT ALL BARRIERS IN THE PATH OF TRAVEL HAVE BEEN REMOVED OR WILL BE REMOVED UNDER THIS PROJECT, AND PATH OF TRAVEL COMPLIES WITH 2013 CBC.

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:

THE P.O.T. 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 P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. 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 P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. 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 A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

LEGEND

- (E) F.H. — EXISTING FIRE HYDRANT
- PDT PDT PDT — ACCESSIBLE PATH OF TRAVEL
- NEW LOCATION OF LEASED RELOCATABLE BUILDING
- EXISTING BUILDING – NO WORK
- EXISTING FIRE LANE

GENERAL NOTES

THE FOLLOWING SHALL BE ON THE JOB SITE PRIOR TO INSTALLATION OF THE UNITS SERIAL NUMBER: 30030-31, 30002-03, 30114-15, 29968-69, 30054-55, 30076-77, 30038-39, 29964-65, 29894-95, 29794-95, 22841-42, 22807-08, 19925-26, 37295-96, 37321-22, 12115-17, 12118-20, 12086, 12087.

1. IN PLANT VERIFIED REPORT
2. LABORATORY VERIFIED REPORT
3. WELDING VERIFIED REPORT

THE SITE INSPECTOR SHALL VERIFY THE ABOVE DOCUMENTS ARE APPLICABLE TO EACH UNIT PRIOR TO INSTALLATION OF THE UNITS. NOTIFY THE ARCHITECT AND DSA/SSS FIELD ENGINEER IF ANY DISCREPANCIES OCCUR.

DETERIORATION OR EXISTING NON-COMPLIANT CONSTRUCTION: IF ANY CONDITION IS DISCOVERED WHICH, IF LEFT UNCORRECTED, WOULD MAKE THE BUILDING NON-COMPLIANT WITH THE REQUIREMENTS OF THE EDITION OF THE CBC IN FORCE AT THE TIME OF THE ORIGINAL CONSTRUCTION, THE CONDITION MUST BE CORRECTED IN ACCORDANCE WITH THE CURRENT CODE REQUIREMENTS. A CHANGE ORDER, 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 REPAIR WORK.

ANY ALTERATIONS TO THE BUILDINGS SHALL COMPLY WITH TITLE 24 REQUIREMENTS IN EFFECT AT THE TIME THE PROJECT APPLICATION IS RECEIVED BY DSA. EXISTING ELEMENTS OF THE CONSTRUCTION DIRECTLY AFFECTED BY THE ALTERATIONS MUST ALSO BE BROUGHT INTO COMPLIANCE. SEE SECTION 6 FOR REQUIREMENTS FOR CALGREEN CODE COMPLIANCE.

SITE INSPECTOR TO VERIFY AND WITNESS GROUNDING TESTS.

MODULAR BUILDINGS SHALL HAVE TAGS TO IDENTIFY THE DSA APPLICATION NUMBER AND THE BUILDING SERIAL NUMBER WHEN DELIVERED TO THE SITE. THE PLAN AFFIDAVIT IS ALSO REQUIRED.

ALLOWABLE SOIL BEARING PRESSURE PER SOILS REPORT (1000 PSF).

SOURCE OF POWER HAS BEEN INVESTIGATED AND IS ADEQUATE FOR THE ADDITIONAL LOAD.

SEE SHEETS A2.01, A2.02, A2.03 AND A2.04 FOR BUILDING AND RAMP PLANS.

SEE CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.

UTILITY VERIFICATION

SEE SHEET P1.13 FOR PLUMBING HOOK UP LOCATIONS.
SEE SHEET E1.11 FOR ELECTRICAL HOOK UP LOCATIONS.
SEE SHEET E1.12 FOR LOW VOLTAGE HOOK UP LOCATIONS.
SEE SHEET FA1.11 FOR FIRE ALARM HOOK UP LOCATIONS.

RESPONSIBLE ENGINEER OF RECORD HAS VERIFIED THE LOCATIONS OF THE UTILITIES SHOWN AS EXISTING, ON THE ABOVE LISTED SHEETS, AND THAT THEIR CAPACITY IS ADEQUATE FOR THE ADDITIONAL LOAD. SEE DETAIL 2 ON A1.21

PARKING CALCULATION

PER CBC 2016 11B-208.1 – ACCESSIBLE PARKING REQUIRED, TABLE 11B-208.2 SPACES REQUIRED

WEST LOT:

TOTAL NUMBER OF EXISTING PARKING STALLS: 14
NUMBER OF REQUIRED ACCESSIBLE STALLS: 1 (INCLUDING 1 VAN ACCESSIBLE STALL)
NUMBER OF ACCESSIBLE STALLS PROVIDED: 1 (INCLUDING 1 VAN ACCESSIBLE STALL)

EXIT GATE CALCULATION

EXIT GATE #	PROVIDED DOOR WIDTH	OCC. LOAD	EGRESS PER OCC. REQUIRED	CALCULATIONS
3	42" EA. 240" TOTAL	563	.2	563 X 0.2" = 112.6" < 240"

FLEWELLING & MOODY
architecture planning interiors

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E-Mail: fm-lancaster@flewelling-moody.com

An Employee Owned Corporation

ARCHITECT

LICENSED ARCHITECT — SCOTT E. CAIN — No. 26617 — RENEWAL 08/31/2019 — STATE OF CALIFORNIA

CONSULTANT

AGENCY

FILE NO. 56-44
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APPL. 03-118667
AC FLS SH SS G
DATE APR 23 2018
PTN. 10561-29

Drawn by MJ
Checked by SS

Revisions

No.	Date	Description

All dimensions must be checked at the job by the contractor who accepts full responsibility for their accuracy under the contract. These plans & the specifications in connection therewith have been prepared for a specific site. Any and all responsibility for their use in whole or in part on any other site is hereby disclaimed by Flewelling & Moody.

VENTURA COUNTY OFFICE OF EDUCATION
TRITON ACADEMY
TEMPORARY SCHOOL

550 AIRPORT WAY
CAMARILLO, CALIFORNIA 93010

PARTIAL SITE PLAN

Job No. 2787
Date 01/30/2018

A1.11

PLUMBING GENERAL NOTES

A. BEFORE STARTING ANY WORK, VERIFY THE ADEQUACY, LOCATION, PIPE SIZE, AND AVAILABILITY OF ALL UTILITIES CONCERNED, INCLUDING SEWER INVERT ELEVATIONS,. VERIFY WATER PRESSURE. VERIFY ALL INVERT ELEVATIONS WITH A TRANSIT. RECORD AND SUBMIT ALL DATA FOR APPROVAL.

B. THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES FOR CLEARANCES AND WORK INCLUDED PRIOR TO START OF WORK.

C. CLEANOUTS SHALL BE INSTALLED PER CODE REQUIREMENTS.

D. PENETRATIONS OF RATED ASSEMBLIES SHALL BE FIRE STOPPED. FIRE STOPPING SHALL BE AN APPROVED MATERIAL AS PRESCRIBED IN STATE. FIRE MARSHALL STANDARD 43-1, AND SHALL BE U.L. LISTED.

E. COORDINATE WITH ELECTRICAL SECTION PRIOR TO ORDERING EQUIPMENT FOR AVAILABLE VOLTAGE AT EQUIPMENT LOCATIONS.

F. ALL FIXTURES SHALL BE PROTECTED DURING CONSTRUCTION FROM ANY DAMAGE. REFINISHED FIXTURES WILL NOT BE ACCEPTABLE UNDER ANY CONDITIONS.

G. HANDICAPPED USE PLUMBING FIXTURES SHALL BE MOUNTED AT REQUIRED HEIGHTS AND WITH ALL RELATED ACCESSORIES AS REQUIRED BY THE ADMINISTRATIVE AUTHORITIES.

H. ALL CONDENSATE LINES, HOT WATER AND HOT WATER RETURN LINES SHALL BE INSULATED.

I. ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH "GUIDELINES FOR RESTRAINTS OF MECHANICAL SYSTEMS, PLUMBING PIPING SYSTEMS" PUBLISHED BY SMACNA.

J. ALL DOMESTIC WATER FIXTURES, PIPING VALVES, ETC. FOR HUMAN CONSUMPTION SHALL COMPLY WITH CALIFORNIA HEALTH AND SAFETY CODE 116875

K. THESE PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED TO ESTABLISH LOCATION OF WORK. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS BASED ON EXISTING FIELD CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY FOR THE LOCATIONS, ACTUAL EQUIPMENT TO BE INSTALLED, AND THE MANUFACTURER'S REQUIRED CLEARANCES TO ASSURE PROPER FUNCTIONALITY, CONSTRUCTABILITY, AND CODE COMPLIANCE.

L. ANY EQUIPMENT, DUCTWORK, OR PIPING INSTALLED MORE THAN 1'-0" FROM THE LOCATION SHOWN ON THE DRAWINGS SHALL BE CLEARLY DOCUMENTED IN THE FIELD. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS IN AUTOCAD COMPATIBLE FORMAT THAT CLEARLY SHOW THE LOCATION OF THE PIPING BEFORE THE COMPLETION OF THE PROJECT. ALL EXPENSE RELATING TO VERIFICATION OF THE AS-BUILT DRAWINGS BY THE OWNER OR ITS REPRESENTATIVE(S) DUE TO INACCURATE OR INCOMPLETE RECORD SHALL BE BORNE BY THE CONTRACTOR.

M. POTABLE WATER SYSTEM SHALL BE FLUSHED AND CHLORINATED PER AWWA C51 CODE PRIOR TO USE. RESULTS OF CHLORINATION FOR SHALL BE GIVEN TO OWNER.

N. MODULAR MANUFACTURER MUST TEST ALL PIPING ONCE BUILDINGS ARE SET IN PLACE AND CHLORINATE POTABLE WATER.

COLD WATER CALCULATION

PIPE LOSSES ARE BASED ON COPPER PIPE AND FITTINGS, MAXIMUM COLD WATER DEMAND 115 GPM, 112 FU, 60 PSI. TOTAL DEVELOPED LENGTH WAS MEASURED TO THE MOST REMOTE FIXTURE UNIT (474 TDL)

LOSS THRU 2" METER AT 115 GPM	6.4 PSI
LOSS THRU 3" REDUCED PRESSSURE BACKFLOW PREVENTION DEVICE BY ZURN #375 AT 115 GPM	12 PSI
PRESSURE 3" REDUCING VALVE AT 115 GPM SET AT 80 PSI (ZURN WILKINS MODEL# ZW209 WITH PRESSURE DROP THROUGH THAT VALVE)	1.6 PSI
TOTAL LOSSES	20 PSI
AVAILABLE PRESSURE FOR FRICTION LOSS (85-20)	65 PSI
PRESSURE REQUIRED AT FIXTURE	25 PSI
STATIC LOSS BUILDING HEIGHT: 4' X 0.434	2 PSI
TOTAL LOSSES	27 PSI
AVAILABLE PRESSURE FOR FRICTION LOSS (65-27)	38 PSI
PRESSURE DROP PER 100' (38 X 100') / 650	5.8 PSI

SYSTEM SIZING IS BASED ON 5.8 PSI/100' AND MAXIMUM VELOCITY 5 FEET PER SECOND.

PIPE SIZE	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
COLD WATER FLUSH VALVE	0	0	0	7	25	132	329	666	1668
COLD WATER FLUSH TANK	2	8	20	39	78	254	455	719	1668
HOT WATER (5FT/S MAX.)	2	8	16	28	46	119	245	406	840

PLUMBING LEGEND

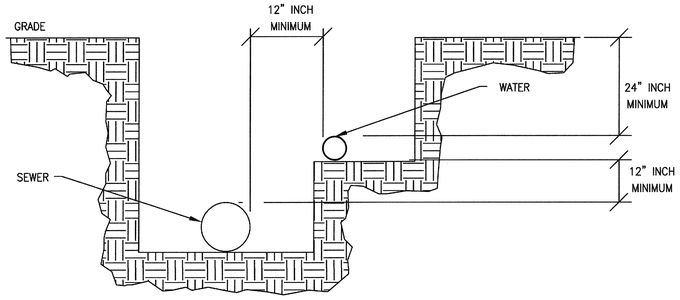
SYMBOL	ABBR.	DESCRIPTION
	W	WASTE PIPING ABOVE GRADE
	W	WASTE PIPING BELOW GRADE
	V	VENT PIPING ABOVE GRADE
V	V	VENT PIPING BELOW GRADE
	CW	DOMESTIC COLD WATER PIPING ABOVE GRADE
	HW	DOMESTIC HOT WATER PIPING ABOVE GRADE
CD	CD	CONDENSATE DRAIN PIPING ABOVE GRADE
PCD	PCD	PUMPED CONDENSATE DRAIN PIPING ABOVE GRADE
TP	TP	TRAP PRIMER PIPING BELOW GRADE
AFS	AFS	AUTOMATIC FIRE SPRINKLER PIPING ABOVE GRADE
AFS	AFS	AUTOMATIC FIRE SPRINKLER PIPING BELOW GRADE
SD	SD	STORM DRAIN PIPING BELOW GRADE
ES	ES	EXISTING WASTE LINE BELOW GRADE
ECW	ECW	EXISTING COLD WATER LINE BELOW GRADE
	-	DROP IN PIPE
	-	RISE IN PIPE
	-	DIRECTION OF FLOW
	HB	HOSE BIBB
	WCO	WALL CLEANOUT
	U	UNION
	BV	BALL VALVE
	POD	POINT OF DISCONNECT
	POC	POINT OF CONNECTION
	FCO	FLOOR CLEANOUT
	AP	ACCESS PANEL
	CFH	CUBIC FOOT PER HOUR
	FU	FIXTURE UNIT
	GPM	GALLONS PER MINUTE
	I.E.	INVERT ELEVATION
	MV	MIXING VALVE ASSEMBLY
	WHA	WATER HAMMER ARRESTOR
	PRV	PRESSURE REDUCING VALVE

PIPE AND FITTING MATERIALS

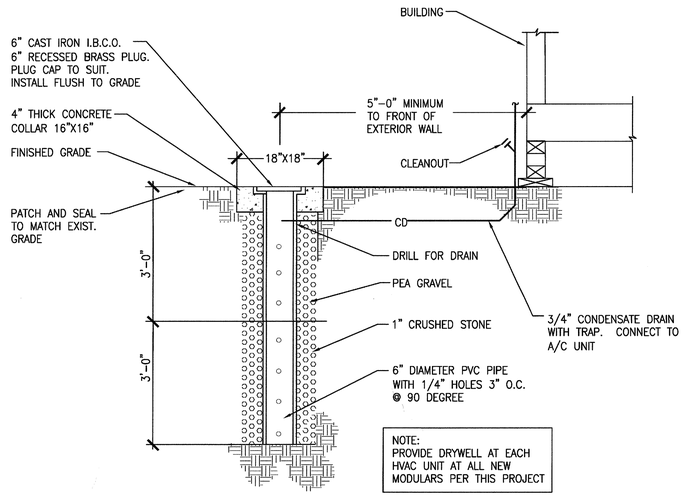
TYPE	MATERIAL	FITTINGS	LOCATION
CW, CD	POLYPROPYLENE BY 'PESTAN NORTH AMERICA'	POLYPROPYLENE PLASTIC FITTINGS WITH JOINED BY HEAT FUSION. ASTM F2389 CSA B137.11 U/G 18 AWG TRACER WIRE	ABOVE AND BELOW GRADE. PAINT FOR UV PROTECTION ABOVE GRADE
WASTE, VENT	ABS ASTM D3965, NSF 14, ASTM F628, D2661	ABS ASTM D3965, NSF 14, ASTM F628, D2661	ABOVE AND BELOW GRADE

PLUMBING SHEET INDEX

P1.01	PLUMBING FRONT SHEET
P1.02	PLUMBING SCHEDULES
P1.10	PLUMBING SITE PLAN (PHASE 1)
P1.11	PLUMBING DEMOLITION SITE PLAN (PHASE 2)
P1.12	PLUMBING SITE PLAN (PHASE 3)
P1.13	PLUMBING SITE PLAN (PHASE 4)
P2.01	ADMIN BUILDING & BEHAVIOR SUPPORT PLUMBING CW AND HW FLOOR PLANS (PHASE 3)
P2.02	ADMIN BUILDING & BEHAVIOR SUPPORT PLUMBING WASTE & VENT FLOOR PLANS (PHASE 3)
P2.03	SPEECH BUILDING, LIBRARY BUILDING & TYPICAL CLASSROOM BUILDING PLUMBING FLOOR PLANS (PHASE 3)
P2.04	MOTOR SKILLS & STAFF LOUNGE PLUMBING CW & HW FLOOR PLANS (PHASE 3)
P2.05	MOTOR SKILLS & STAFF LOUNGE PLUMBING WASTE & VENT FLOOR PLANS (PHASE 3)
P2.06	LIFE SKILLS BUILDING & RESTROOM BUILDINGS PLUMBING FLOOR PLANS (PHASE 3)



2 UTILITY TRENCH DIAGRAM
SCALE: NO SCALE



1 DRYWELL DETAIL
SCALE: NO SCALE

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PLUMBING FRONT SHEET

Job No. 2787

Date 01/30/2018

P1.01

GENERAL NOTES

1. NEW WASTE AND WATER LINES PER PHASE 1 SHOULD BE INSTALLED AFTER OVEREXCAVATION AND RECOMPACTION PER CIVIL DRAWINGS.
2. MAINTAIN 12" CLEAR BETWEEN WATER AND WASTE LINES PER DETAIL 2/P1.01.

KEY NOTES

1. 6" WASTE LINE BELOW GRADE.
2. 6" CLEANOUT.
3. 4" CLEANOUT.
4. 2" CLEANOUT.
5. 2" WASTE LINE BELOW GRADE.
6. 4" WASTE LINE BELOW GRADE.
7. PER THE CLOUDED AREA ON THE PLANS: PROTECT EXISTING 4" WASTE LINE BELOW GRADE. EXISTING 4" WASTE LINE BELOW GRADE SHALL REMAIN OPERATIONAL UNTIL NEW 6" WASTE LINE IS INSTALLED, CONNECTED TO POINTS OF CONNECTION AND OPERATIONAL AT THE COMPLETION OF PHASE 1. DEMOLISH THE CLOUDED PORTION OF THE EXISTING 4" WASTE LINE DURING PHASE 2 ONCE NEW 6" WASTE LINE IS OPERATIONAL.
8. EXISTING 4" CLEANOUT.
9. EXISTING 4" WASTE LINE.
10. INSTALL WASTE CLEANOUT AND CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTIONS.
11. INSTALL CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTION.
12. EXISTING 8" WASTE LINE BELOW GRADE.
13. 1" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
14. CONNECT NEW 6" WASTE LINE TO EXISTING 4" CLEANOUT ONCE THE PHASE 1 PORTION OF THE WASTE LINE HAS BEEN INSTALLED.
15. CONNECT NEW 6" WASTE LINE TO EXISTING 8" CLEANOUT ONCE THE PHASE 1 PORTION OF THE WASTE LINE HAS BEEN INSTALLED.
16. DISCONNECT EXISTING 4" WASTE LINE FROM EXISTING CLEANOUT ONCE NEW 6" WASTE LINE BELOW GRADE IS INSTALLED AND READY TO BE CONNECTED TO THE EXISTING CLEANOUT. EXISTING 4" WASTE LINE IN THE CLOUDED AREA TO BE DEMOLISHED UNDER PHASE 2.
17. 2" CW BELOW GRADE.
18. 2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
19. 1-1/2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
20. INSTALL CLEANOUT IN YARD BOX FOR FUTURE CONNECTION.
21. INSTALL CLEANOUT IN YARD BOX.
22. CONNECT NEW 4" WASTE LINE TO EXISTING 4" WASTE LINE ONCE THE 4" PHASE 1 PORTION OF THE WASTE LINE HAS BEEN INSTALLED.
23. DISCONNECT EXISTING 4" WASTE LINE ONCE NEW 4" WASTE LINE BELOW GRADE IS INSTALLED AND READY TO BE CONNECTED TO THE EXISTING 4" WASTE LINE. EXISTING 4" WASTE LINE IN THE HATCHED AREA TO BE DEMOLISHED UNDER PHASE 2.
24. PER THE HATCHED AREA ON THE PLANS: PROTECT EXISTING 4" WASTE LINE BELOW GRADE. EXISTING 4" WASTE LINE BELOW GRADE SHALL REMAIN OPERATIONAL UNTIL NEW 4" WASTE LINE IS INSTALLED, CONNECTED TO POINTS OF CONNECTION AND OPERATIONAL AT THE COMPLETION OF PHASE 1. DEMOLISH THE HATCHED PORTION OF THE EXISTING 4" WASTE LINE DURING PHASE 2 ONCE NEW 4" WASTE LINE IS OPERATIONAL.

EXISTING 67.40 INVERT ELEVATION PER CIVIL

EXISTING 71.93 INVERT ELEVATION

EXISTING 71.53 INVERT ELEVATION

INVERT ELEVATION = 72.17

72.09 EXISTING INVERT ELEVATION

EXISTING 71.89 EXISTING INVERT ELEVATION

EXISTING ACE OFFICE

EXISTING ACE RESTROOM BUILDING

EXISTING 123 FU

EXISTING 97 FU

72.03 EXISTING INVERT ELEVATION

72.77 EXISTING INVERT ELEVATION

EXISTING ACE CLASSROOM BUILDING

INVERT ELEVATION = 68.58

INVERT ELEVATION = 68.76

INVERT ELEVATION = 69.17

INVERT ELEVATION = 69.58

INVERT ELEVATION = 70.42

INVERT ELEVATION = 71.42

DEMOLISHED ES

ECW

ES

(E)BFP

EXISTING BACKFLOW PREVENTER TO REMAIN (PROTECT IN PLACE)

ECW TO REMAIN (PROTECT IN PLACE)

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PLUMBING SITE PLAN (PHASE 1)

SCALE : 1" =20'-0"

1 / P1.10

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PLUMBING SITE PLAN (PHASE 1)

Job No. 2787

Date 01/30/2018

P1.10

GENERAL NOTES

1. LIMITS OF DEMOLITION PER ARCHITECTURAL PLANS
2. SAWCUT ANY EXISTING HARDSCAPE IN NEAT LINES. REMOVE EXISTING HARDSCAPE AT THE NEAREST CONTROL OR EXPANSION JOINT WHEN APPLICABLE. REMOVE AND DISPOSE OF EXISTING HARDSCAPE IN ACCORDANCE WITH COUNTY OF VENTURA REQUIREMENTS.
3. REFER TO PHASE 1 DRAWINGS FOR PREVIOUS SCOPE INFORMATION.

KEY NOTES

1. EXISTING 4" CLEANOUT.
2. EXISTING 4" WASTE LINE BELOW GRADE.
3. 6" WASTE LINE BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
4. REMOVE EXISTING 2" WATER METER. COORDINATE WITH LOCAL WATER COMPANY HAVING JURISDICTION.
5. EXISTING 1-1/2" CW BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
6. EXISTING CLEANOUT INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
7. EXISTING 1" CW BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
8. EXISTING 4" WASTE LINE BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACED DURING DEMOLITION.
9. REMOVE EXISTING 4" WASTE LINE BELOW GRADE SHOWN HATCHED.
10. REMOVE ALL EXISTING CW PIPING FEEDING EXISTING BUILDING TO BE DEMOLISHED.
11. REMOVE EXISTING CLEANOUT.
12. EXISTING 1" BACKFLOW PREVENTER TO REMAIN.
13. EXISTING 1" WATER METER TO REMAIN.
14. REMOVE EXISTING 2" CW BELOW GRADE SHOWN HATCHED.
15. EXISTING 8" WASTE LINE.
16. EXISTING 2" CW BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.

EXISTING 67.40 INVERT ELEVATION PER CIVIL

INVERT ELEVATION = 72.17

72.09 EXISTING INVERT ELEVATION

EXISTING 71.93 INVERT ELEVATION

INVERT ELEVATION = 68.76

DEMOLISHED ES

EXISTING ACE OFFICE

EXISTING 71.89 EXISTING INVERT ELEVATION

EXISTING 123 FU

EXISTING ACE RESTROOM BUILDING

INVERT ELEVATION = 68.58

EXISTING CUT, CAPPED AND ABANDONED WASTE LINE

INVERT ELEVATION = 70.42

EXISTING 71.53 INVERT ELEVATION

INVERT ELEVATION = 69.17

DEMOLISHED ES

72.03 EXISTING INVERT ELEVATION

EXISTING 97 FU

72.77 EXISTING INVERT ELEVATION

INVERT ELEVATION = 69.58

INVERT ELEVATION = 71.42

EXISTING ACE CLASSROOM BUILDING

(E)BFP

ES

ECW

PLUMBING DEMOLITION SITE PLAN (PHASE 2)

SCALE : 1" =20'-0"

1 / P1.11

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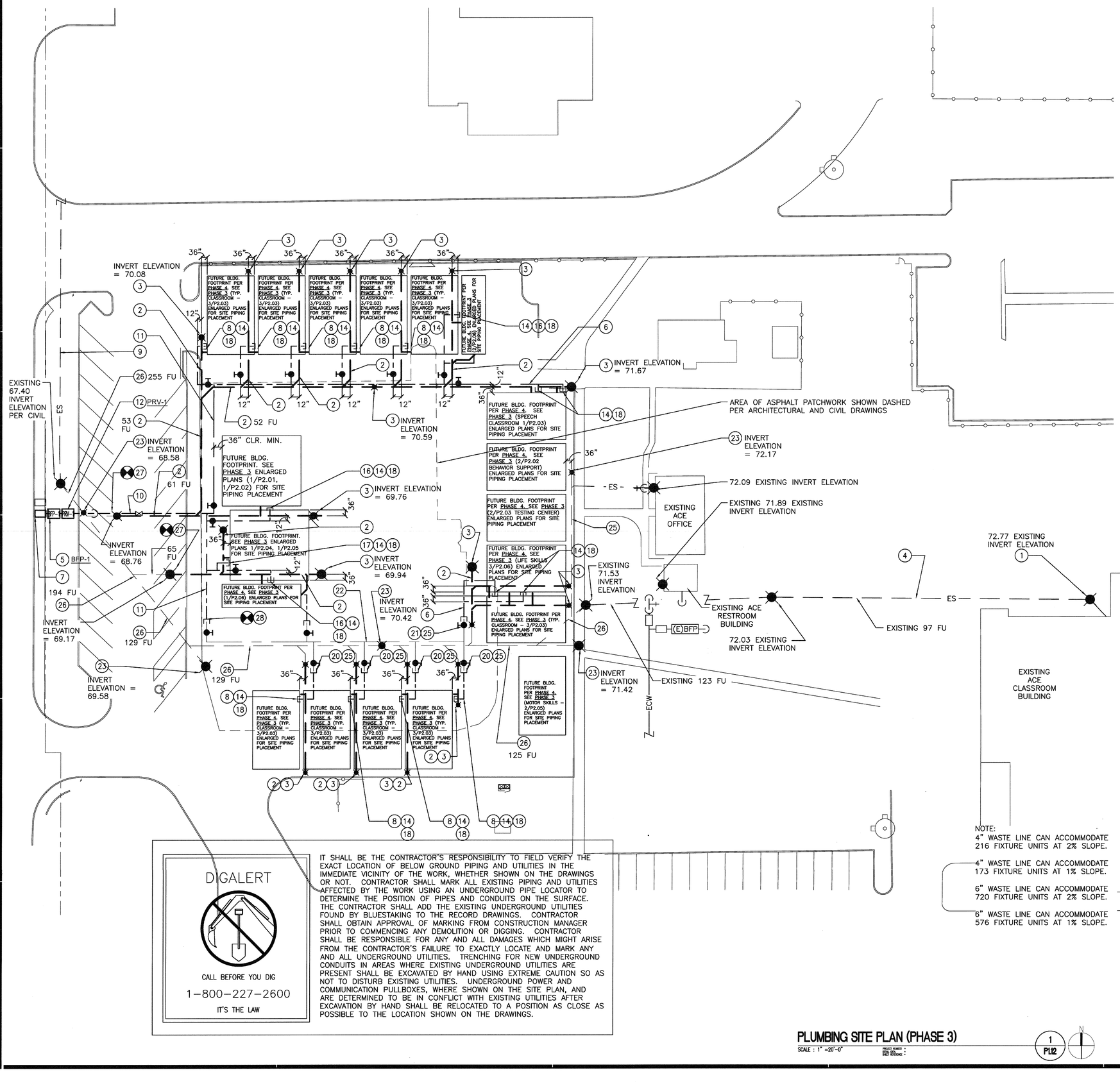
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PLUMBING DEMOLITION SITE PLAN (PHASE 2)

Job No.
2787

Date
01/30/2018

P1.11



GENERAL NOTES

1. WHERE POSSIBLE, CONTRACTOR SHALL NOT RUN WASTE LINES BENEATH ANY NEW MODULAR BUILDINGS.
2. WHERE POSSIBLE, DOMESTIC COLD WATER LINES SHALL SHARE TRENCH WITH WASTE LINES.
3. SEE DETAIL 1/P1.01 FOR DRYWELL DETAIL.
4. SEE 2/P1.01 FOR UTILITY TRENCHING DETAIL REGARDING CLEAR SPACE BETWEEN WASTE AND WATER UTILITIES.
5. PROPOSED UTILITIES SHALL HAVE A SAND BACKFILL AROUND THE PIPE COMPACTED TO 90% RELATIVE COMPACTION. NATIVE MATERIAL CAN BE USED AS BACKFILL ABOVE THE PIPE ZONE AS LONG AS IT COMPLIES WITH THE SOILS REPORT. NO BACKFILL MATERIAL SHALL BE GREATER THAN 3 INCHES IN THE GREATEST DIMENSION. BACKFILL SHALL NOT CONTAIN ROCK POCKETS. ROCKY MATERIAL THAT COMPLIES WITH THE DIMENSIONS SPECIFIED SHALL BE SPREAD THROUGHOUT THE BACKFILL AT THE APPROVAL OF THE ENGINEER.
6. HARDSCAPE REMOVED FOR UTILITY INSTALLATION SHALL BE REPLACED IN KIND.
7. BACKFILL UNDERNEATH PAVEMENT OR HARDSCAPE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
8. REFER TO PHASE 1 AND PHASE 2 DRAWINGS FOR PREVIOUS SCOPE INFORMATION.
9. CONTRACTOR TO VERIFY EXACT LOCATION OF WATER AND WASTE POINTS OF CONNECTION TO RESTROOM MODULAR BUILDINGS BASED ON MANUFACTURER'S DRAWINGS PRIOR TO INSTALLATION.

KEY NOTES

1. EXISTING 4" CLEANOUT.
2. 4" WASTE LINE AT 1% SLOPE.
3. 4" CLEANOUT IN YARD BOX.
4. EXISTING 4" WASTE LINE BELOW GRADE.
5. PROVIDE 3" BACKFLOW PREVENTER BFP–1.
6. 1–1/2" CW BELOW GRADE.
7. 2" WATER METER. COORDINATE WITH LOCAL WATER COMPANY HAVING JURISDICTION.
8. 1" CW BELOW GRADE.
9. EXISTING 8" WASTE LINE BELOW GRADE.
10. 3" CW BELOW GRADE.
11. 2" CW BELOW GRADE.
12. 3" PRESSURE REDUCING VALVE PRV–1.
13. INSTALL WASTE CLEANOUT AND CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTIONS.
14. INSTALL CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTION.
15. 2" CW BELOW GRADE.
16. 2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
17. 1–1/2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
18. INSTALL CLEANOUT IN YARD BOX FOR FUTURE CONNECTION.
19. 2" WASTE LINE BELOW GRADE.
20. EXISTING 1" CW INSTALLED PER PHASE 1 TO REMAIN.
21. EXISTING 1–1/2" CW INSTALLED PER PHASE 1 TO REMAIN.
22. EXISTING 2" CW INSTALLED PER PHASE 1 TO REMAIN.
23. EXISTING CLEANOUT INSTALLED PER PHASE 1 TO REMAIN.
24. EXISTING 2" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
25. EXISTING 4" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
26. EXISTING 6" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
27. CONNECT 4" WASTE LINE TO CLEANOUT INSTALLED PER PHASE 1.
28. CONNECT 2" CW LINE TO 2" CW STUB INSTALLED PER PHASE 1.

NOTE:
4" WASTE LINE CAN ACCOMMODATE 216 FIXTURE UNITS AT 2% SLOPE.
4" WASTE LINE CAN ACCOMMODATE 173 FIXTURE UNITS AT 1% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 720 FIXTURE UNITS AT 2% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 576 FIXTURE UNITS AT 1% SLOPE.

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PLUMBING SITE PLAN (PHASE 3)

SCALE : 1" =20'-0"

1 / P1.12

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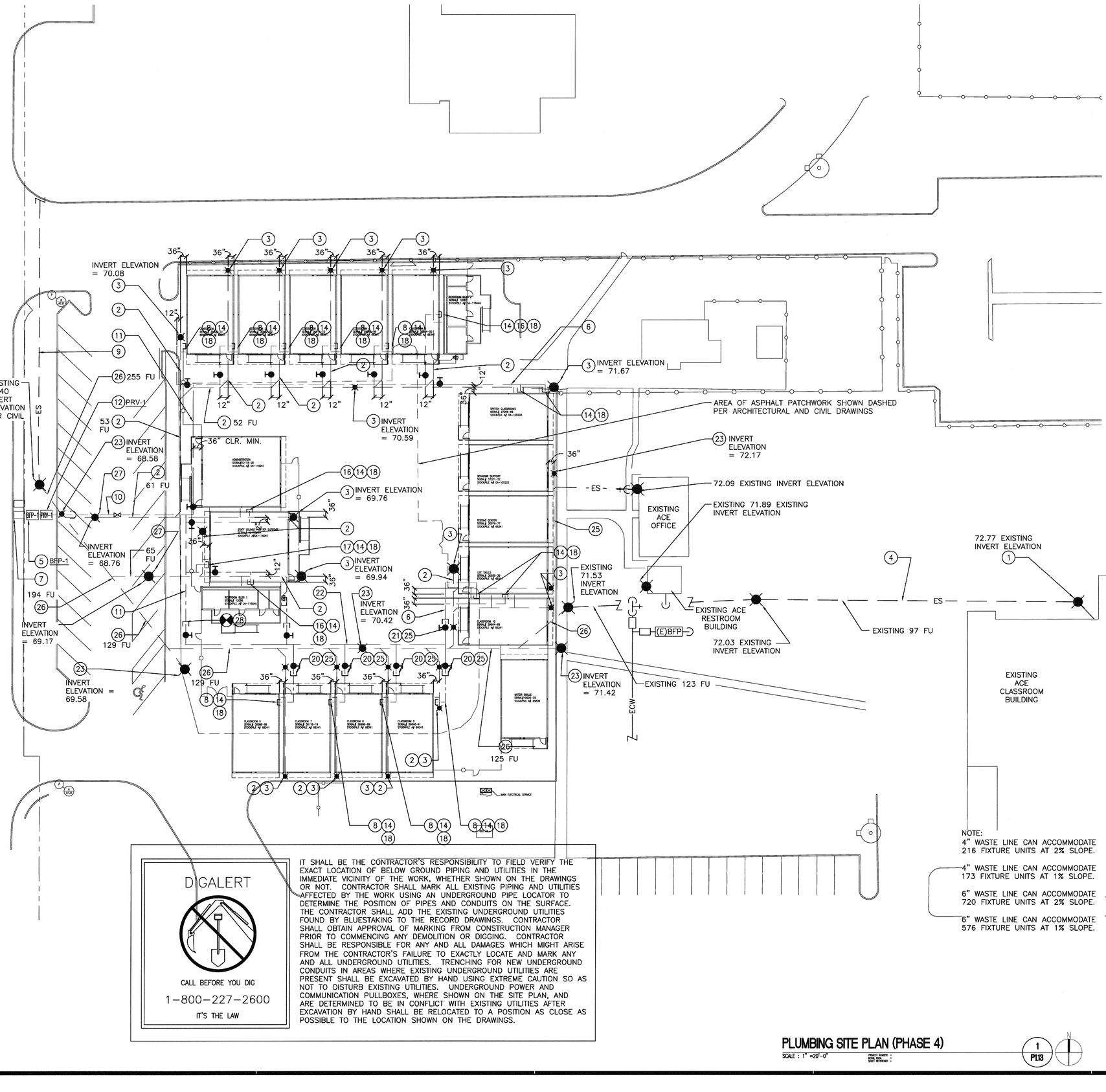
550 AIRPORT WAY
CAMARILLO, CALIFORNIA 93010

PLUMBING SITE PLAN
PHASE 3

Job No.
2787

Date
01/30/2018

P1.12



GENERAL NOTES

1. WHERE POSSIBLE, CONTRACTOR SHALL NOT RUN WASTE LINES BENEATH ANY NEW MODULAR BUILDINGS.
2. WHERE POSSIBLE, DOMESTIC COLD WATER LINES SHALL SHARE TRENCH WITH WASTE LINES.
3. SEE DETAIL 1/P1.01 FOR DRYWELL DETAIL.
4. SEE 2/P1.01 FOR UTILITY TRENCHING DETAIL REGARDING CLEAR SPACE BETWEEN WASTE AND WATER UTILITIES.
5. PROPOSED UTILITIES SHALL HAVE A SAND BACKFILL AROUND THE PIPE COMPACTED TO 90% RELATIVE COMPACTION. NATIVE MATERIAL CAN BE USED AS BACKFILL ABOVE THE PIPE ZONE AS LONG AS IT COMPLIES WITH THE SOILS REPORT. NO BACKFILL MATERIAL SHALL BE GREATER THAN 3 INCHES IN THE GREATEST DIMENSION. BACKFILL SHALL NOT CONTAIN ROCK POCKETS. ROCKY MATERIAL THAT COMPLIES WITH THE DIMENSIONS SPECIFIED SHALL BE SPREAD THROUGHOUT THE BACKFILL AT THE APPROVAL OF THE ENGINEER.
6. HARDSCAPE REMOVED FOR UTILITY INSTALLATION SHALL BE REPLACED IN KIND.
7. BACKFILL UNDERNEATH PAVEMENT OR HARDSCAPE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
8. REFER TO PHASE 1, PHASE 2 AND PHASE 3 DRAWINGS FOR PREVIOUS SCOPE INFORMATION.
9. CONTRACTOR TO VERIFY EXACT LOCATION OF WATER AND WASTE POINTS OF CONNECTION TO MODULAR BUILDINGS BASED ON MANUFACTURER'S DRAWINGS PRIOR TO INSTALLATION.

KEY NOTES

1. EXISTING 4" CLEANOUT.
2. EXISTING 4" WASTE LINE AT 1% SLOPE INSTALLED PER PHASE 3 TO REMAIN.
3. EXISTING 4" CLEANOUT IN YARD BOX INSTALLED PER PHASE 3 TO REMAIN.
4. EXISTING 4" WASTE LINE BELOW GRADE.
5. EXISTING 3" BACKFLOW PREVENTER BFP-1 INSTALLED PER PHASE 3 TO REMAIN.
6. EXISTING 1-1/2" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
7. EXISTING 2" WATER METER INSTALLED PER PHASE 3 TO REMAIN.
8. EXISTING 1" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
9. EXISTING 8" WASTE LINE BELOW GRADE.
10. EXISTING 3" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
11. EXISTING 2" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
12. EXISTING 3" PRESSURE REDUCING VALVE PRV-1 PER PHASE 3 TO REMAIN.
13. EXISTING WASTE CLEANOUT AND CW SHUTOFF VALVE IN YARD BOX PER PHASE 3.
14. EXISTING CW SHUTOFF VALVE IN YARD BOX PER PHASE 3.
15. EXISTING 2" CW BELOW GRADE PER PHASE 3.
16. EXISTING 2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN PER PHASE 3.
17. EXISTING 1-1/2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN PER PHASE 3.
18. EXISTING CLEANOUT IN YARD BOX PER PHASE 3.
19. EXISTING 2" WASTE LINE BELOW GRADE PER PHASE 3.
20. EXISTING 1" CW INSTALLED PER PHASE 1 TO REMAIN.
21. EXISTING 1-1/2" CW INSTALLED PER PHASE 1 TO REMAIN.
22. EXISTING 2" CW INSTALLED PER PHASE 1 TO REMAIN.
23. EXISTING CLEANOUT INSTALLED PER PHASE 1 TO REMAIN.
24. EXISTING 2" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
25. EXISTING 4" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
26. EXISTING 6" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
27. PER PHASE 3: 4" WASTE LINE CONNECTED TO CLEANOUT INSTALLED PER PHASE 1.
28. PER PHASE 3: 2" CW LINE CONNECTED TO 2" CW STUB INSTALLED PER PHASE 1.

NOTE:
4" WASTE LINE CAN ACCOMMODATE 216 FIXTURE UNITS AT 2% SLOPE.
4" WASTE LINE CAN ACCOMMODATE 173 FIXTURE UNITS AT 1% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 720 FIXTURE UNITS AT 2% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 576 FIXTURE UNITS AT 1% SLOPE.

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IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE EXACT LOCATION OF BELOW GROUND PIPING AND UTILITIES IN THE IMMEDIATE VICINITY OF THE WORK, WHETHER SHOWN ON THE DRAWINGS OR NOT. CONTRACTOR SHALL MARK ALL EXISTING PIPING AND UTILITIES AFFECTED BY THE WORK USING AN UNDERGROUND PIPE LOCATOR TO DETERMINE THE POSITION OF PIPES AND CONDUITS ON THE SURFACE. THE CONTRACTOR SHALL ADD THE EXISTING UNDERGROUND UTILITIES FOUND BY BLUESTAKING TO THE RECORD DRAWINGS. CONTRACTOR SHALL OBTAIN APPROVAL OF MARKING FROM CONSTRUCTION MANAGER PRIOR TO COMMENCING ANY DEMOLITION OR DIGGING. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT ARISE FROM THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND MARK ANY AND ALL UNDERGROUND UTILITIES. TRENCHING FOR NEW UNDERGROUND CONDUITS IN AREAS WHERE EXISTING UNDERGROUND UTILITIES ARE PRESENT SHALL BE EXCAVATED BY HAND USING EXTREME CAUTION SO AS NOT TO DISTURB EXISTING UTILITIES. UNDERGROUND POWER AND COMMUNICATION PULLBOXES, WHERE SHOWN ON THE SITE PLAN, AND ARE DETERMINED TO BE IN CONFLICT WITH EXISTING UTILITIES AFTER EXCAVATION BY HAND SHALL BE RELOCATED TO A POSITION AS CLOSE AS POSSIBLE TO THE LOCATION SHOWN ON THE DRAWINGS.

PLUMBING SITE PLAN (PHASE 4)
SCALE : 1" =20'-0"
PROJECT NUMBER -
DATE SPK -
SHEET REFERENCE -
1 / P1.13

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PLUMBING SITE PLAN (PHASE 4)

Job No. 2787
Date 01/30/2018
P1.13

KEY NOTES (CONTINUED)

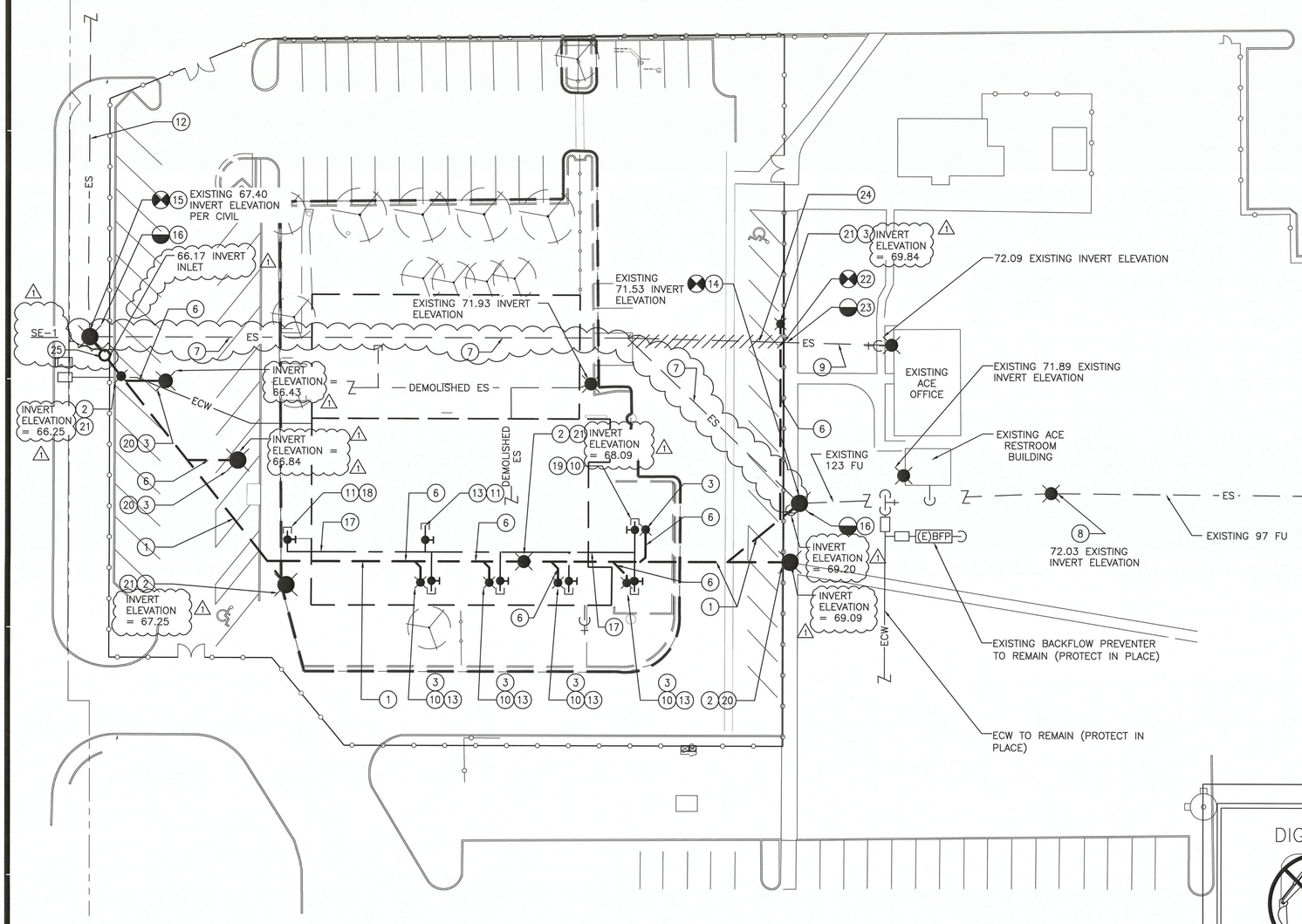
(25) SEWAGE EJECTOR SE-1. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES

1. NEW WASTE AND WATER LINES PER PHASE 1 SHOULD BE INSTALLED AFTER OVEREXCAVATION AND RECOMPACTION PER CIVIL DRAWINGS.
2. MAINTAIN 12" CLEAR BETWEEN WATER AND WASTE LINES PER DETAIL 2/P1.01.

KEY NOTES

(1) 6" WASTE LINE BELOW GRADE.
(2) 6" CLEANOUT.
(3) 4" CLEANOUT.
(4) 2" CLEANOUT.
(5) 2" WASTE LINE BELOW GRADE.
(6) 4" WASTE LINE BELOW GRADE.
(7) PER THE CLOUDED AREA ON THE PLANS: PROTECT EXISTING 4" WASTE LINE BELOW GRADE. EXISTING 4" WASTE LINE BELOW GRADE SHALL REMAIN OPERATIONAL UNTIL NEW 6" WASTE LINE IS INSTALLED, CONNECTED TO POINTS OF CONNECTION AND OPERATIONAL AT THE COMPLETION OF PHASE 1. DEMOLISH THE CLOUDED PORTION OF THE EXISTING 4" WASTE LINE DURING PHASE 2 ONCE NEW 6" WASTE LINE AND SEWAGE EJECTOR SE-1 IS OPERATIONAL.
(8) EXISTING 4" CLEANOUT.
(9) EXISTING 4" WASTE LINE.
(10) INSTALL WASTE CLEANOUT AND CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTIONS.
(11) INSTALL CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTION.
(12) EXISTING 8" WASTE LINE BELOW GRADE.
(13) 1" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
(14) CONNECT NEW 6" WASTE LINE TO EXISTING 4" CLEANOUT ONCE THE PHASE 1 PORTION OF THE WASTE LINE HAS BEEN INSTALLED.
(15) CONNECT NEW 6" WASTE LINE TO EXISTING 8" CLEANOUT ONCE THE PHASE 1 PORTION OF THE WASTE LINE HAS BEEN INSTALLED.
(16) DISCONNECT EXISTING 4" WASTE LINE FROM EXISTING CLEANOUT ONCE NEW 6" WASTE LINE BELOW GRADE IS INSTALLED AND READY TO BE CONNECTED TO THE EXISTING CLEANOUT. EXISTING 4" WASTE LINE IN THE CLOUDED AREA TO BE DEMOLISHED UNDER PHASE 2.
(17) 2" CW BELOW GRADE.
(18) 2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
(19) 1-1/2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
(20) INSTALL CLEANOUT IN YARD BOX FOR FUTURE CONNECTION.
(21) INSTALL CLEANOUT IN YARD BOX.
(22) CONNECT NEW 4" WASTE LINE TO EXISTING 4" WASTE LINE ONCE THE 4" PHASE 1 PORTION OF THE WASTE LINE HAS BEEN INSTALLED.
(23) DISCONNECT EXISTING 4" WASTE LINE ONCE NEW 4" WASTE LINE BELOW GRADE IS INSTALLED AND READY TO BE CONNECTED TO THE EXISTING 4" WASTE LINE. EXISTING 4" WASTE LINE IN THE HATCHED AREA TO BE DEMOLISHED UNDER PHASE 2.
(24) PER THE HATCHED AREA ON THE PLANS: PROTECT EXISTING 4" WASTE LINE BELOW GRADE. EXISTING 4" WASTE LINE BELOW GRADE SHALL REMAIN OPERATIONAL UNTIL NEW 4" WASTE LINE IS INSTALLED, CONNECTED TO POINTS OF CONNECTION AND OPERATIONAL AT THE COMPLETION OF PHASE 1. DEMOLISH THE HATCHED PORTION OF THE EXISTING 4" WASTE LINE DURING PHASE 2 ONCE NEW 4" WASTE LINE IS OPERATIONAL.



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PLUMBING SITE PLAN (PHASE 1)

SCALE : 1" =20'-0"

1 / P1.10

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ARCHITECT
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Job No. 17-220
GLENDALE OFFICE
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VENTURA COUNTY OFFICE OF EDUCATION
TRITON ACADEMY
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550 AIRPORT WAY
CAMARILLO, CALIFORNIA 93010

PLUMBING SITE PLAN (PHASE 1)

Job No. 2787
Date 01/30/2018

P1.10

AS REVISED

GENERAL NOTES

1. LIMITS OF DEMOLITION PER ARCHITECTURAL PLANS
2. SAWCUT ANY EXISTING HARDSCAPE IN NEAT LINES. REMOVE EXISTING HARDSCAPE AT THE NEAREST CONTROL OR EXPANSION JOINT WHEN APPLICABLE. REMOVE AND DISPOSE OF EXISTING HARDSCAPE IN ACCORDANCE WITH COUNTY OF VENTURA REQUIREMENTS.
3. REFER TO PHASE 1 DRAWINGS FOR PREVIOUS SCOPE INFORMATION.

KEY NOTES

1. EXISTING 4" CLEANOUT.
2. EXISTING 4" WASTE LINE BELOW GRADE.
3. 6" WASTE LINE BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
4. REMOVE EXISTING 2" WATER METER. COORDINATE WITH LOCAL WATER COMPANY HAVING JURISDICTION.
5. EXISTING 1-1/2" CW BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
6. EXISTING CLEANOUT INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
7. EXISTING 1" CW BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
8. EXISTING 4" WASTE LINE BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACED DURING DEMOLITION.
9. REMOVE EXISTING 4" WASTE LINE BELOW GRADE SHOWN HATCHED.
10. REMOVE ALL EXISTING CW PIPING FEEDING EXISTING BUILDING TO BE DEMOLISHED.
11. REMOVE EXISTING CLEANOUT.
12. EXISTING 1" BACKFLOW PREVENTER TO REMAIN.
13. EXISTING 1" WATER METER TO REMAIN.
14. REMOVE EXISTING 2" CW BELOW GRADE SHOWN HATCHED.
15. EXISTING 8" WASTE LINE.
16. EXISTING 2" CW BELOW GRADE INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.
17. EXISTING SEWAGE EJECTOR SE-1 INSTALLED PER PHASE 1. PROTECT IN PLACE DURING DEMOLITION.

EXISTING 67.40 INVERT ELEVATION PER CIVIL

SE-1 66.17 INVERT INLET

INVERT ELEVATION = 66.43

INVERT ELEVATION = 66.25

INVERT ELEVATION = 66.84

INVERT ELEVATION = 67.25

INVERT ELEVATION = 69.84

EXISTING 71.93 INVERT ELEVATION

DEMOLISHED ES

EXISTING CUT, CAPPED AND ABANDONED WASTE LINE

DEMOLISHED ES

INVERT ELEVATION = 68.09

EXISTING 71.53 INVERT ELEVATION

INVERT ELEVATION = 69.20

INVERT ELEVATION = 69.09

72.09 EXISTING INVERT ELEVATION

EXISTING ACE OFFICE

EXISTING 71.89 EXISTING INVERT ELEVATION

EXISTING 123 FU

EXISTING ACE RESTROOM BUILDING

(E)BFP

72.03 EXISTING INVERT ELEVATION

EXISTING 97 FU

72.77 EXISTING INVERT ELEVATION

EXISTING ACE CLASSROOM BUILDING

ES

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PLUMBING DEMOLITION SITE PLAN (PHASE 2)

SCALE : 1" =20'-0"

1 P1.11

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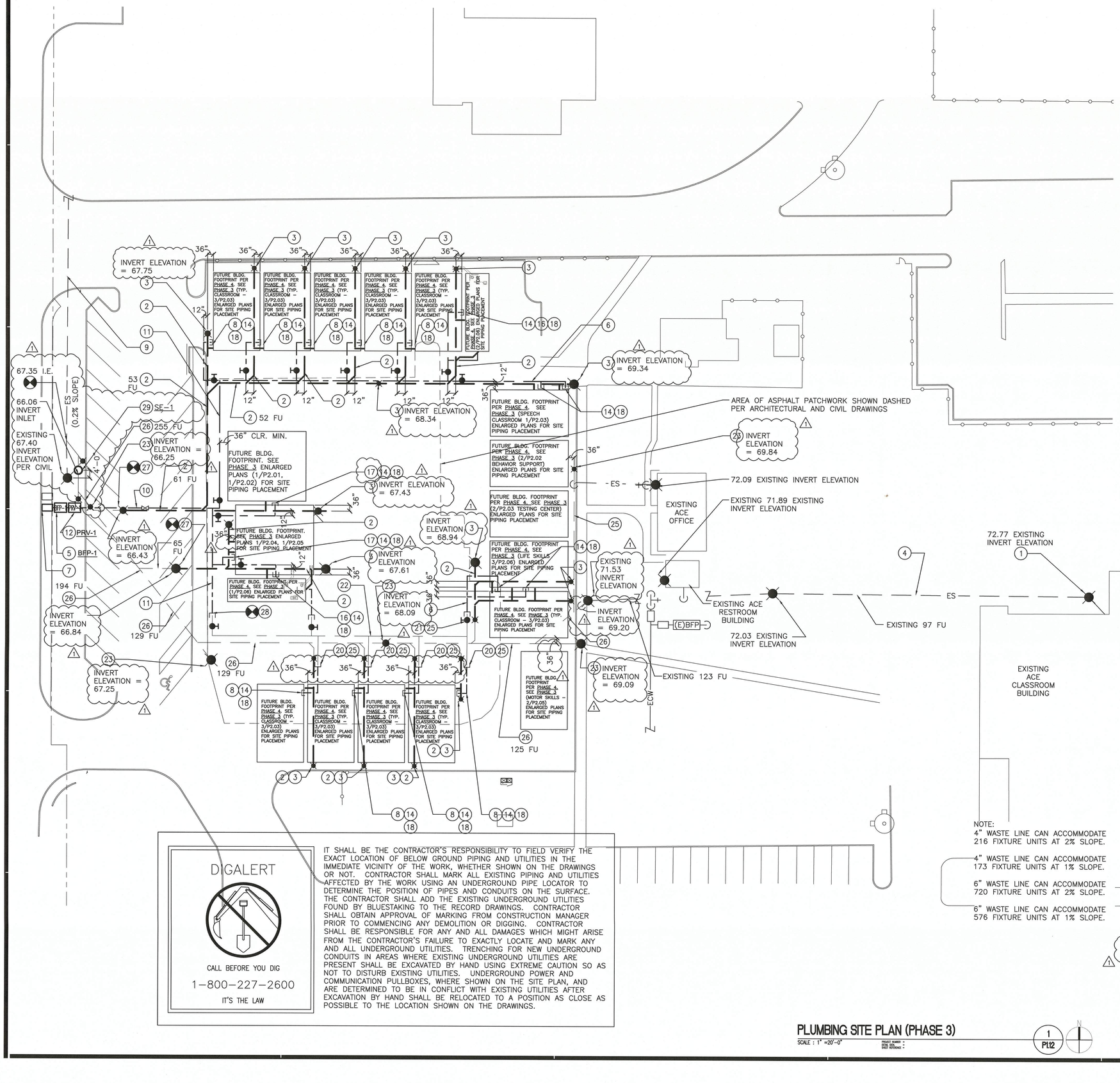
PLUMBING DEMOLITION SITE PLAN (PHASE 2)

Job No. 2787

Date 01/30/2018

P1.11

AS REVISED



GENERAL NOTES

1. WHERE POSSIBLE, CONTRACTOR SHALL NOT RUN WASTE LINES BENEATH ANY NEW MODULAR BUILDINGS.
2. WHERE POSSIBLE, DOMESTIC COLD WATER LINES SHALL SHARE TRENCH WITH WASTE LINES.
3. SEE DETAIL 1/P1.01 FOR DRYWELL DETAIL.
4. SEE 2/P1.01 FOR UTILITY TRENCHING DETAIL REGARDING CLEAR SPACE BETWEEN WASTE AND WATER UTILITIES.
5. PROPOSED UTILITIES SHALL HAVE A SAND BACKFILL AROUND THE PIPE COMPACTED TO 90% RELATIVE COMPACTION. NATIVE MATERIAL CAN BE USED AS BACKFILL ABOVE THE PIPE ZONE AS LONG AS IT COMPLIES WITH THE SOILS REPORT. NO BACKFILL MATERIAL SHALL BE GREATER THAN 3 INCHES IN THE GREATEST DIMENSION. BACKFILL SHALL NOT CONTAIN ROCK POCKETS. ROCKY MATERIAL THAT COMPLIES WITH THE DIMENSIONS SPECIFIED SHALL BE SPREAD THROUGHOUT THE BACKFILL AT THE APPROVAL OF THE ENGINEER.
6. HARDSCAPE REMOVED FOR UTILITY INSTALLATION SHALL BE REPLACED IN KIND.
7. BACKFILL UNDERNEATH PAVEMENT OR HARDSCAPE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
8. REFER TO PHASE 1 AND PHASE 2 DRAWINGS FOR PREVIOUS SCOPE INFORMATION.
9. CONTRACTOR TO VERIFY EXACT LOCATION OF WATER AND WASTE POINTS OF CONNECTION TO RESTROOM MODULAR BUILDINGS BASED ON MANUFACTURER'S DRAWINGS PRIOR TO INSTALLATION.
10. PROVIDE SINGLE BAG SLURRY FOR ALL PIPES LESS THAN 2'-0" BELOW FINISH SURFACE.

KEY NOTES

1. EXISTING 4" CLEANOUT.
2. 4" WASTE LINE AT 1% SLOPE.
3. 4" CLEANOUT IN YARD BOX.
4. EXISTING 4" WASTE LINE BELOW GRADE.
5. PROVIDE 3" BACKFLOW PREVENTER BFP-1.
6. 1-1/2" CW BELOW GRADE.
7. 2" WATER METER. COORDINATE WITH LOCAL WATER COMPANY HAVING JURISDICTION.
8. 1" CW BELOW GRADE.
9. EXISTING 8" WASTE LINE BELOW GRADE.
10. 3" CW BELOW GRADE.
11. 2" CW BELOW GRADE.
12. 3" PRESSURE REDUCING VALVE PRV-1.
13. INSTALL WASTE CLEANOUT AND CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTIONS.
14. INSTALL CW SHUTOFF VALVE IN YARD BOX FOR FUTURE CONNECTION.
15. 2" CW BELOW GRADE.
16. 2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
17. 1-1/2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN.
18. INSTALL CLEANOUT IN YARD BOX FOR FUTURE CONNECTION.
19. 2" WASTE LINE BELOW GRADE.
20. EXISTING 1" CW INSTALLED PER PHASE 1 TO REMAIN.
21. EXISTING 1-1/2" CW INSTALLED PER PHASE 1 TO REMAIN.
22. EXISTING 2" CW INSTALLED PER PHASE 1 TO REMAIN.
23. EXISTING CLEANOUT INSTALLED PER PHASE 1 TO REMAIN.
24. EXISTING 2" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
25. EXISTING 4" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
26. EXISTING 6" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
27. CONNECT 4" WASTE LINE TO CLEANOUT INSTALLED PER PHASE 1.
28. CONNECT 2" CW LINE TO 2" CW STUB INSTALLED PER PHASE 1.
29. SEWAGE EJECTOR SE-1 INSTALLED PER PHASE 1.

NOTE:
4" WASTE LINE CAN ACCOMMODATE 216 FIXTURE UNITS AT 2% SLOPE.
4" WASTE LINE CAN ACCOMMODATE 173 FIXTURE UNITS AT 1% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 720 FIXTURE UNITS AT 2% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 576 FIXTURE UNITS AT 1% SLOPE.

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IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE EXACT LOCATION OF BELOW GROUND PIPING AND UTILITIES IN THE IMMEDIATE VICINITY OF THE WORK, WHETHER SHOWN ON THE DRAWINGS OR NOT. CONTRACTOR SHALL MARK ALL EXISTING PIPING AND UTILITIES AFFECTED BY THE WORK USING AN UNDERGROUND PIPE LOCATOR TO DETERMINE THE POSITION OF PIPES AND CONDUITS ON THE SURFACE. THE CONTRACTOR SHALL ADD THE EXISTING UNDERGROUND UTILITIES FOUND BY BLUESTAKING TO THE RECORD DRAWINGS. CONTRACTOR SHALL OBTAIN APPROVAL OF MARKING FROM CONSTRUCTION MANAGER PRIOR TO COMMENCING ANY DEMOLITION OR DIGGING. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT ARISE FROM THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND MARK ANY AND ALL UNDERGROUND UTILITIES. TRENCHING FOR NEW UNDERGROUND CONDUITS IN AREAS WHERE EXISTING UNDERGROUND UTILITIES ARE PRESENT SHALL BE EXCAVATED BY HAND USING EXTREME CAUTION SO AS NOT TO DISTURB EXISTING UTILITIES. UNDERGROUND POWER AND COMMUNICATION PULLBOXES, WHERE SHOWN ON THE SITE PLAN, AND ARE DETERMINED TO BE IN CONFLICT WITH EXISTING UTILITIES AFTER EXCAVATION BY HAND SHALL BE RELOCATED TO A POSITION AS CLOSE AS POSSIBLE TO THE LOCATION SHOWN ON THE DRAWINGS.

PLUMBING SITE PLAN (PHASE 3)

SCALE : 1" =20'-0"

PROJECT NUMBER
DETAIL REFERENCE
SHEET REFERENCE

1 / P1.12

N

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ARCHITECT

REGISTERED PROFESSIONAL ENGINEER JAMES A. JOHNSON No. 25462 EXP. 09/30/18 CIVIL STATE OF CALIFORNIA

CONSULTANT

BUDLONG & ASSOCIATES, INC
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GLENDALE OFFICE: 550 KENDALL ST., SUITE 200, SAN FRANCISCO, CA 94129, TEL: (415)826-4300

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BY EY FLS SS
DATE JUN 26 2018

AGENCY

FILE NO. 56-44

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PTN. 10561-29

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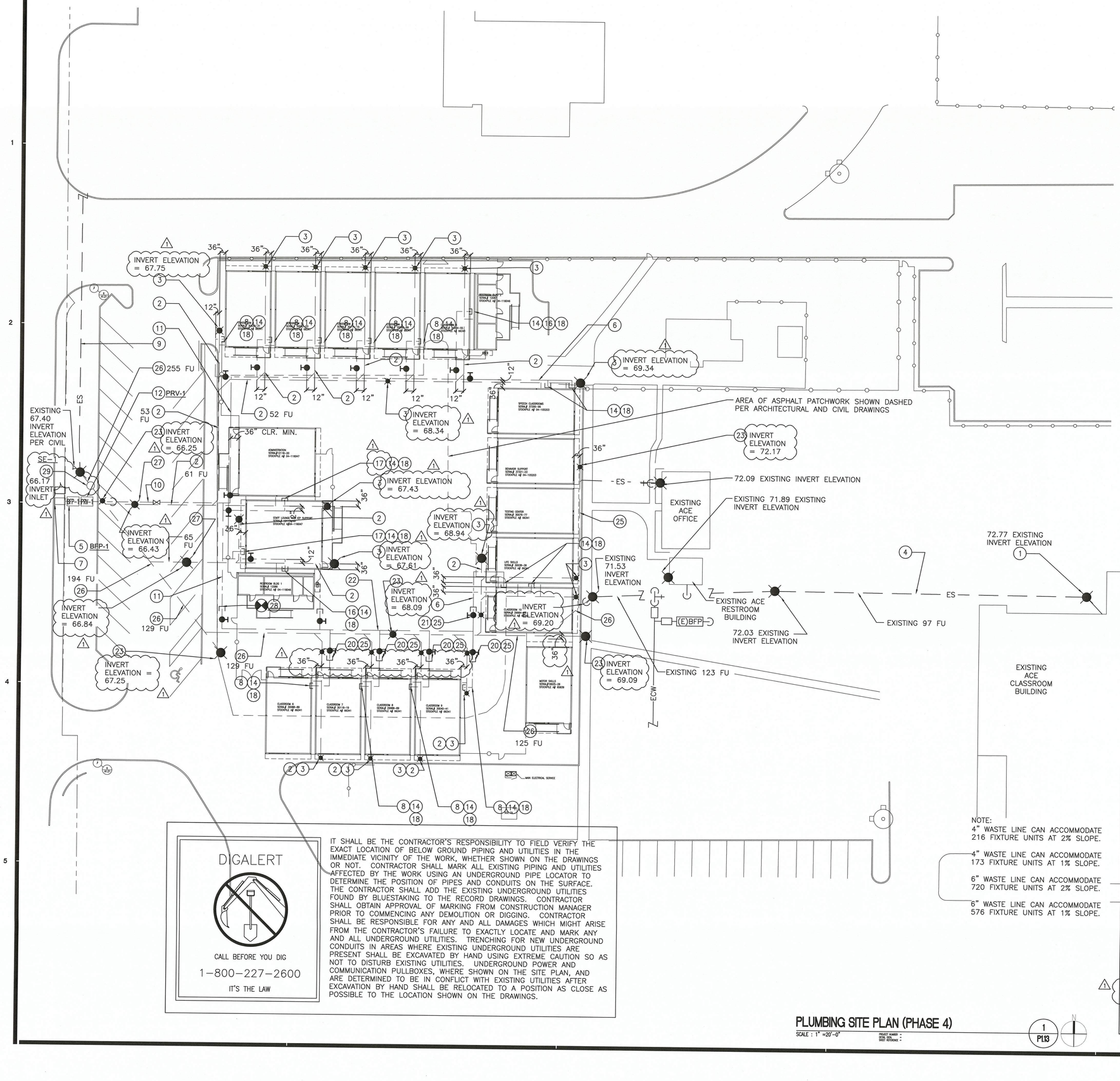
PLUMBING SITE PLAN
PHASE 3

Job No. 2787

Date 01/30/2018

P1.12

AS REVISED



GENERAL NOTES

1. WHERE POSSIBLE, CONTRACTOR SHALL NOT RUN WASTE LINES BENEATH ANY NEW MODULAR BUILDINGS.
2. WHERE POSSIBLE, DOMESTIC COLD WATER LINES SHALL SHARE TRENCH WITH WASTE LINES.
3. SEE DETAIL 1/P1.01 FOR DRYWELL DETAIL.
4. SEE 2/P1.01 FOR UTILITY TRENCHING DETAIL REGARDING CLEAR SPACE BETWEEN WASTE AND WATER UTILITIES.
5. PROPOSED UTILITIES SHALL HAVE A SAND BACKFILL AROUND THE PIPE COMPACTED TO 90% RELATIVE COMPACTION. NATIVE MATERIAL CAN BE USED AS BACKFILL ABOVE THE PIPE ZONE AS LONG AS IT COMPLIES WITH THE SOILS REPORT. NO BACKFILL MATERIAL SHALL BE GREATER THAN 3 INCHES IN THE GREATEST DIMENSION. BACKFILL SHALL NOT CONTAIN ROCK POCKETS. ROCKY MATERIAL THAT COMPLIES WITH THE DIMENSIONS SPECIFIED SHALL BE SPREAD THROUGHOUT THE BACKFILL AT THE APPROVAL OF THE ENGINEER.
6. HARDSCAPE REMOVED FOR UTILITY INSTALLATION SHALL BE REPLACED IN KIND.
7. BACKFILL UNDERNEATH PAVEMENT OR HARDSCAPE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
8. REFER TO PHASE 1, PHASE 2 AND PHASE 3 DRAWINGS FOR PREVIOUS SCOPE INFORMATION.
9. CONTRACTOR TO VERIFY EXACT LOCATION OF WATER AND WASTE POINTS OF CONNECTION TO MODULAR BUILDINGS BASED ON MANUFACTURER'S DRAWINGS PRIOR TO INSTALLATION.

KEY NOTES

1. EXISTING 4" CLEANOUT.
2. EXISTING 4" WASTE LINE AT 1% SLOPE INSTALLED PER PHASE 3 TO REMAIN.
3. EXISTING 4" CLEANOUT IN YARD BOX INSTALLED PER PHASE 3 TO REMAIN.
4. EXISTING 4" WASTE LINE BELOW GRADE.
5. EXISTING 3" BACKFLOW PREVENTER BFP-1 INSTALLED PER PHASE 3 TO REMAIN.
6. EXISTING 1-1/2" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
7. EXISTING 2" WATER METER INSTALLED PER PHASE 3 TO REMAIN.
8. EXISTING 1" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
9. EXISTING 8" WASTE LINE BELOW GRADE.
10. EXISTING 3" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
11. EXISTING 2" CW BELOW GRADE INSTALLED PER PHASE 3 TO REMAIN.
12. EXISTING 3" PRESSURE REDUCING VALVE PRV-1 PER PHASE 3 TO REMAIN.
13. EXISTING WASTE CLEANOUT AND CW SHUTOFF VALVE IN YARD BOX PER PHASE 3.
14. EXISTING CW SHUTOFF VALVE IN YARD BOX PER PHASE 3.
15. EXISTING 2" CW BELOW GRADE PER PHASE 3.
16. EXISTING 2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN PER PHASE 3.
17. EXISTING 1-1/2" CW BELOW GRADE. PROVIDE SOV AND STUB AS INDICATED ON PLAN PER PHASE 3.
18. EXISTING CLEANOUT IN YARD BOX PER PHASE 3.
19. EXISTING 2" WASTE LINE BELOW GRADE PER PHASE 3.
20. EXISTING 1" CW INSTALLED PER PHASE 1 TO REMAIN.
21. EXISTING 1-1/2" CW INSTALLED PER PHASE 1 TO REMAIN.
22. EXISTING 2" CW INSTALLED PER PHASE 1 TO REMAIN.
23. EXISTING CLEANOUT INSTALLED PER PHASE 1 TO REMAIN.
24. EXISTING 2" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
25. EXISTING 4" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
26. EXISTING 6" WASTE LINE INSTALLED PER PHASE 1 TO REMAIN.
27. PER PHASE 3: 4" WASTE LINE CONNECTED TO CLEANOUT INSTALLED PER PHASE 1.
28. PER PHASE 3: 2" CW LINE CONNECTED TO 2" CW STUB INSTALLED PER PHASE 1.
29. SEWAGE EJECTOR SE-1 INSTALLED PER PHASE 1.

NOTE:
4" WASTE LINE CAN ACCOMMODATE 216 FIXTURE UNITS AT 2% SLOPE.
4" WASTE LINE CAN ACCOMMODATE 173 FIXTURE UNITS AT 1% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 720 FIXTURE UNITS AT 2% SLOPE.
6" WASTE LINE CAN ACCOMMODATE 576 FIXTURE UNITS AT 1% SLOPE.

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PLUMBING SITE PLAN (PHASE 4)
SCALE : 1" =20'-0"
PROJECT NUMBER =
SCHL DIST# =
SHEET REFERENCE =
1 / P1.13
N

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ARCHITECT
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CONSULTANT
BUDLONG & ASSOCIATES, INC
ENGINEERING CONSULTANTS
LICENSED No. 17520
GLENDALE OFFICE
CAMARILLO OFFICE

APPROVED
DIV. OF THE STATE ARCHITECT
LOS ANGELES REGIONAL OFFICE
BY [signature]
DATE JUN 28 2018

AGENCY

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No.	Date	Description
1	04-30-18	CCD 1

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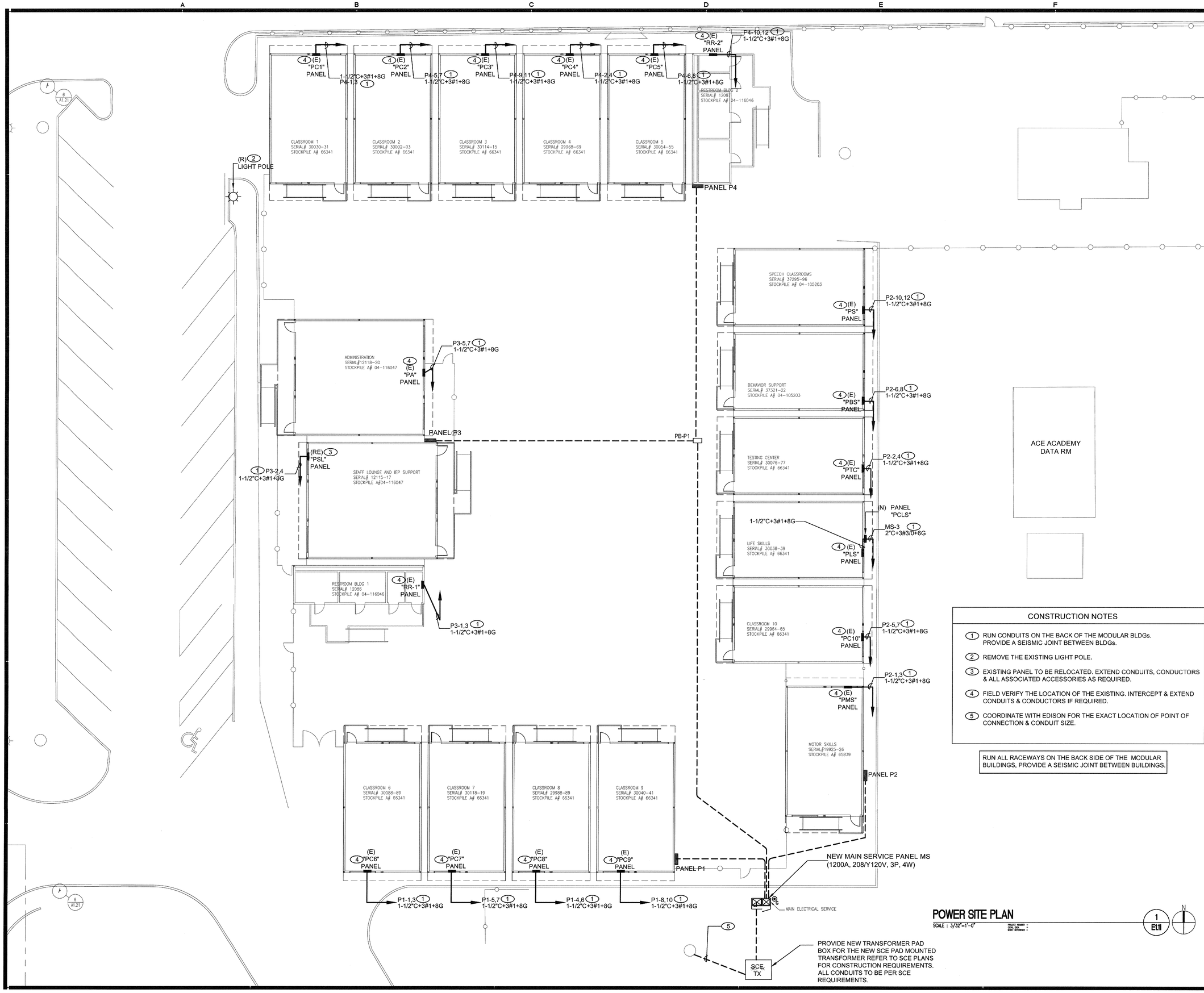
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PLUMBING SITE PLAN (PHASE 4)

Job No. 2787
Date 01/30/2018

P1.13

AS REVISED



CONSTRUCTION NOTES

1. RUN CONDUITS ON THE BACK OF THE MODULAR BLDGs. PROVIDE A SEISMIC JOINT BETWEEN BLDGs.
2. REMOVE THE EXISTING LIGHT POLE.
3. EXISTING PANEL TO BE RELOCATED. EXTEND CONDUITS, CONDUCTORS & ALL ASSOCIATED ACCESSORIES AS REQUIRED.
4. FIELD VERIFY THE LOCATION OF THE EXISTING. INTERCEPT & EXTEND CONDUITS & CONDUCTORS IF REQUIRED.
5. COORDINATE WITH EDISON FOR THE EXACT LOCATION OF POINT OF CONNECTION & CONDUIT SIZE.

RUN ALL RACEWAYS ON THE BACK SIDE OF THE MODULAR BUILDINGS, PROVIDE A SEISMIC JOINT BETWEEN BUILDINGS.

POWER SITE PLAN

SCALE : 3/32"=1'-0"

1 / E1.11

N

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ARCHITECT

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GLENDALE OFFICE 1150 S. OLIVE ST. SUITE 2220 GLENDALE, CA 90015 TEL 213.955.1200

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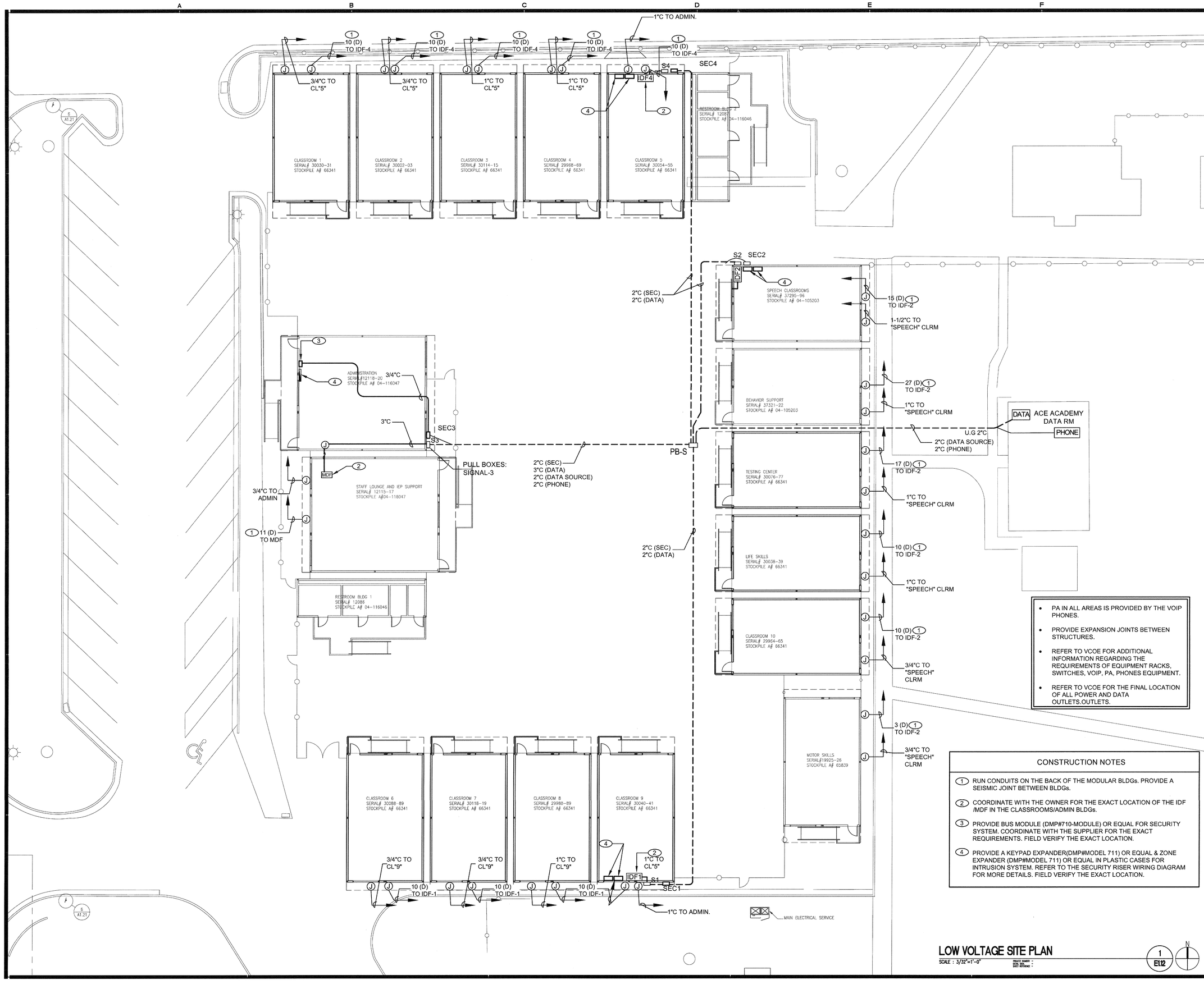
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POWER SITE PLAN

Job No. 2787

Date 01/30/2018

E1.11



- PA IN ALL AREAS IS PROVIDED BY THE VOIP PHONES.
- PROVIDE EXPANSION JOINTS BETWEEN STRUCTURES.
- REFER TO VCOE FOR ADDITIONAL INFORMATION REGARDING THE REQUIREMENTS OF EQUIPMENT RACKS, SWITCHES, VOIP, PA, PHONES EQUIPMENT.
- REFER TO VCOE FOR THE FINAL LOCATION OF ALL POWER AND DATA OUTLETS.OUTLETS.

CONSTRUCTION NOTES

1. RUN CONDUITS ON THE BACK OF THE MODULAR BLDGs. PROVIDE A SEISMIC JOINT BETWEEN BLDGs.
2. COORDINATE WITH THE OWNER FOR THE EXACT LOCATION OF THE IDF /MDF IN THE CLASSROOMS/ADMIN BLDGs.
3. PROVIDE BUS MODULE (DMP#710-MODULE) OR EQUAL FOR SECURITY SYSTEM. COORDINATE WITH THE SUPPLIER FOR THE EXACT REQUIREMENTS. FIELD VERIFY THE EXACT LOCATION.
4. PROVIDE A KEYPAD EXPANDER(DMP#MODEL 711) OR EQUAL & ZONE EXPANDER (DMP#MODEL 711) OR EQUAL IN PLASTIC CASES FOR INTRUSION SYSTEM. REFER TO THE SECURITY RISER WIRING DIAGRAM FOR MORE DETAILS. FIELD VERIFY THE EXACT LOCATION.

LOW VOLTAGE SITE PLAN

SCALE : 3/32"=1'-0"

1 / E1.2

N

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☐ GLENDALE OFFICE 1900 MAIN STREET, SUITE 210 IRVINE, CA 92614 TEL (949) 553-1990

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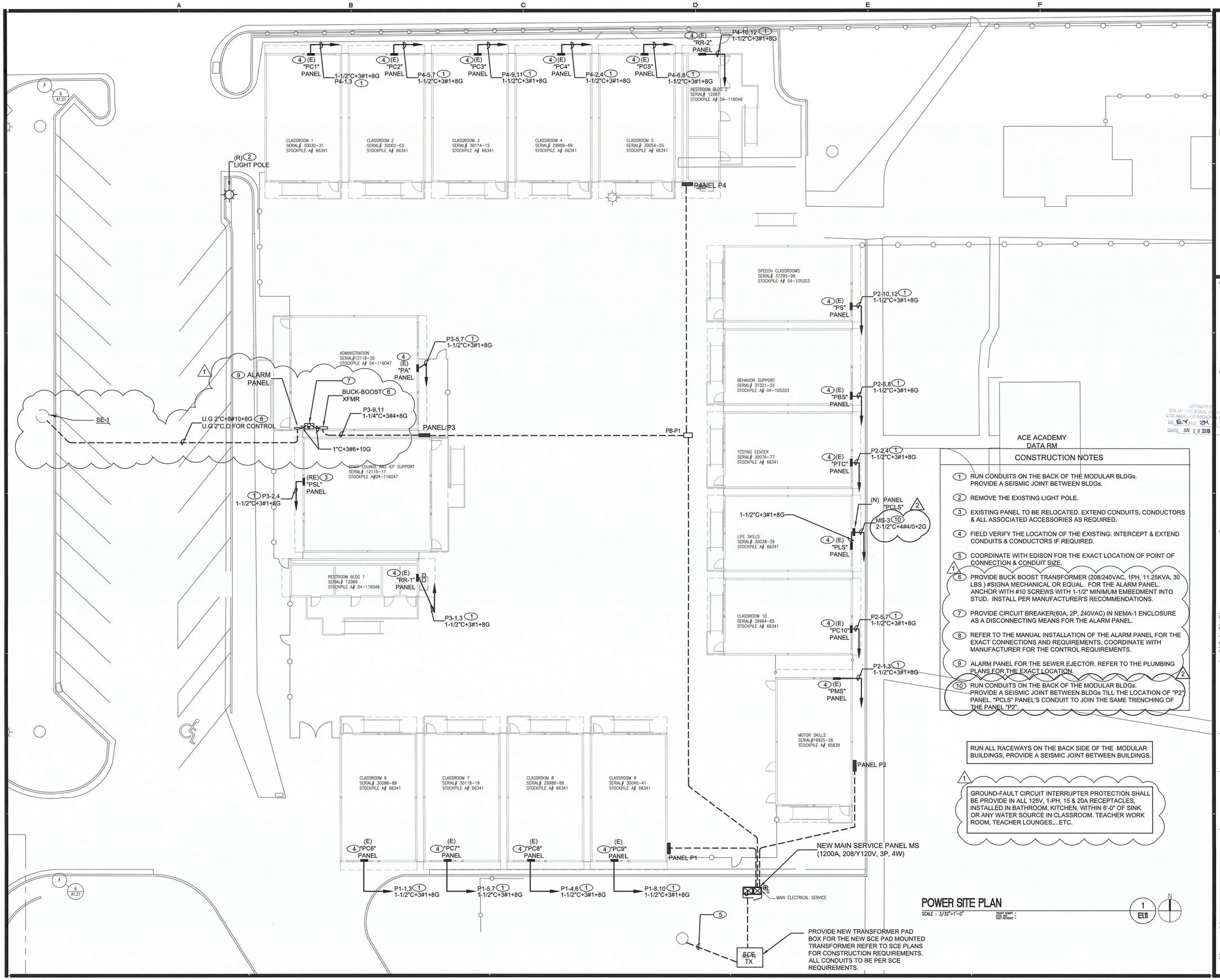
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LOW VOLTAGE SITE PLAN

Job No. 2787

Date 01/30/2018

E1.12



ACE ACADEMY
DATA RM

CONSTRUCTION NOTES

1. RUN CONDUITS ON THE BACK OF THE MODULAR BLDGs. PROVIDE A SEISMIC JOINT BETWEEN BLDGs.
2. REMOVE THE EXISTING LIGHT POLE.
3. EXISTING PANEL TO BE RELOCATED. EXTEND CONDUITS, CONDUCTORS & ALL ASSOCIATED ACCESSORIES AS REQUIRED.
4. FIELD VERIFY THE LOCATION OF THE EXISTING. INTERCEPT & EXTEND CONDUITS & CONDUCTORS IF REQUIRED.
5. COORDINATE WITH EDISON FOR THE EXACT LOCATION OF POINT OF CONNECTION & CONDUIT SIZE.
6. PROVIDE BUCK BOOST TRANSFORMER (208/240VAC, 1PH, 11.25KVA, 30 LBS.) #SIGNA MECHANICAL OR EQUAL. FOR THE ALARM PANEL. ANCHOR WITH #10 SCREWS WITH 1-1/2" MINIMUM EMBEDMENT INTO STUD. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
7. PROVIDE CIRCUIT BREAKER(60A, 2P, 240VAC) IN NEMA-1 ENCLOSURE AS A DISCONNECTING MEANS FOR THE ALARM PANEL.
8. REFER TO THE MANUAL INSTALLATION OF THE ALARM PANEL FOR THE EXACT CONNECTIONS AND REQUIREMENTS. COORDINATE WITH MANUFACTURER FOR THE CONTROL REQUIREMENTS.
9. ALARM PANEL FOR THE SEWER EJECTOR. REFER TO THE PLUMBING PLANS FOR THE EXACT LOCATION.
10. RUN CONDUITS ON THE BACK OF THE MODULAR BLDGs. PROVIDE A SEISMIC JOINT BETWEEN BLDGs TILL THE LOCATION OF "P2" PANEL. "PCLS" PANEL'S CONDUIT TO JOIN THE SAME TRENCHING OF THE PANEL "P2".

RUN ALL RACEWAYS ON THE BACK SIDE OF THE MODULAR BUILDINGS, PROVIDE A SEISMIC JOINT BETWEEN BUILDINGS.

1 GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION SHALL BE PROVIDE IN ALL 125V, 1-PH, 15 & 20A RECEPTACLES, INSTALLED IN BATHROOM, KITCHEN, WITHIN 6'-0" OF SINK OR ANY WATER SOURCE IN CLASSROOM. TEACHER WORK ROOM, TEACHER LOUNGES,...ETC.

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POWER SITE PLAN

SCALE : 3/32"=1'-0"

1 / E1.11

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CAMARILLO OFFICE
444 MOBILE AVE, STE 210
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TEL: (805)987-4021

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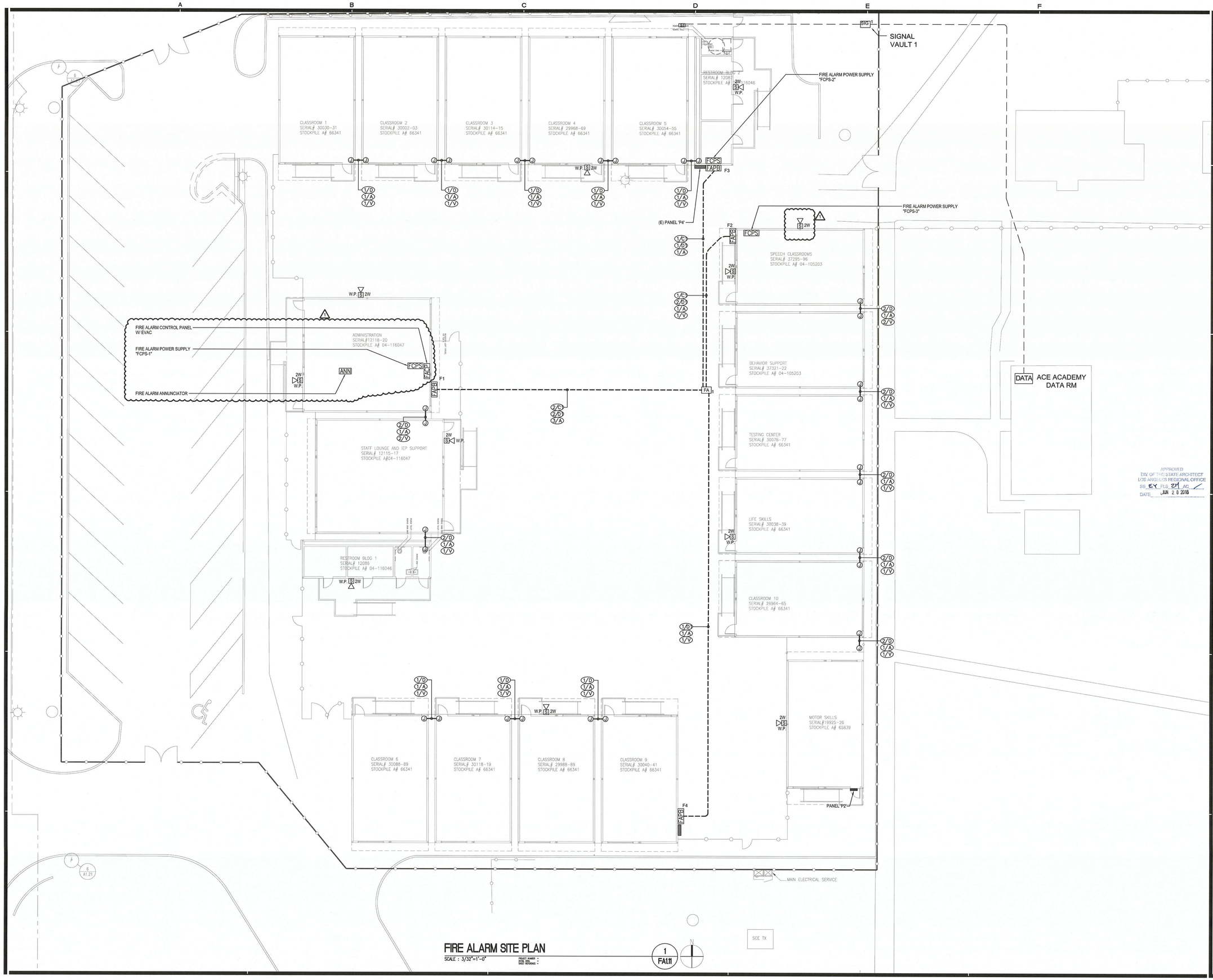
POWER SITE PLAN

Job No.
2787

Date
01/30/2018

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AS REVISED



FIRE ALARM SITE PLAN

SCALE : 3/32"=1'-0"

1 FA1.11

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ARCHITECT
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CONSULTANT
BUDLONG & ASSOCIATES, INC
ENGINEERS, CONSULTANTS
CAMPBELL OFFICE
GLENDALE OFFICE

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550 AIRPORT WAY
CAMARILLO, CALIFORNIA 93010

FIRE ALARM SITE PLAN

Job No. 2787

Date 01/30/2018

FA1.11

TECH-TIME COMMUNICATIONS, INC
FIRE ALARM • INTERCOM • SECURITY

SMALL BUSINESS CERTIFICATION 1000471
DIR REGISTRATION 1000002263
CA SKILLED AND TRAINED COMPLIANT
CA C7/C10 LICENSE 750569 ALARM LICENSE AC01407

SUBMITTAL REVIEW

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTIONS, DIMENSIONS OR DETAIL.

NO EXCEPTION TAKEN	X
MAKE CORRECTIONS NOTED	
AMEND AND RESUBMIT	
REJECTED - SEE REMARKS	
SUBMIT SPECIFIED ITEM	
NOT REVIEWED	

Salas O'Brien

DATE: 11/11/2026 BY: TRC

VENTURA COUNTY OFFICE OF EDUCATION - BID # 2026-06
Gateway Annex School
550 Airport Way, Camarillo, CA 93010
File No. 56-44 A#03-122398

TECH-TIME COMMUNICATIONS, INC. respectfully requests a review for approved equal. Under **Public Contract Code § 3400**, state agencies, political subdivisions, and other public entities **cannot limit bidding to a single manufacturer or brand** unless the specification is followed by "or equal". This ensures competition, prevents favoritism, and allows contractors to offer "equal" materials, products, or services that perform as well in all essential respects.

Substitution requested for the specified Honeywell Notifier N16e with equal by Honeywell Gamewell-FCI GFP-A.

The Notifier N16e and Gamewell-FCI GFP-A/AR sit in the modern mid-tier intelligent addressable segment (roughly 300–1,000 points per panel, expandable/networkable). They emphasize a large 10" color touchscreen, high device density per loop (318), self-test detectors, SWIFT wireless, and Honeywell CLSS cloud connectivity.

Notifier N16e Panel



Gamewell-FCI GFP-A



Comparison:
Both panels belong to Honeywell's modern Elevate/INSPIRE platform family. They share the same core hardware architecture, 10" high-definition color touchscreen interface, power supply design, intelligent sensing algorithms, self-test detector support, CLSS Gateway cloud connectivity, and many peripheral options. Differences are primarily in branding, protocol naming (FlashScan vs. Velociti — the same underlying all-digital high-speed protocol, U.S. Patent 5,539,389), maximum expansion, networking, programming tools, legacy compatibility, and dedicated distribution channels.

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- **N16e**: Scalable single-panel solution for small-to-medium applications, expandable and networkable into larger systems via networking.

- **GFP-A/AR**: Scalable single-panel solution for small-to-medium applications, expandable and networkable into larger systems via networking firmware upgrade. Explicitly maintains backwards compatibility with existing SLC wiring for Velociti and CLIP devices from Gamewell-FCI S3 Series.

Both support Honeywell's patented self-test detectors, magnet-activated AV testing for streamlined inspections, same modern touchscreen experience and CLSS connectivity.

- N16e & GFP: Native CLSS Gateway support (remote programming, diagnostics, testing, central station, mobile apps).

Feature	Notifier N16e	Gamewell-FCI GFP-A/AR
Display	10" HD color touchscreen, customizable buttons, color-coded icon-based events, event filtering	Identical 10" HD color touchscreen, customizable buttons, color-coded icons, event filtering
SLC Loops (base / max)	1 expandable to 3 (SLM-318 cards)	1 expandable to 2 (one additional SLM-318)
Devices per Loop	318 (159 detectors + 159 modules)	318 (159 detectors + 159 modules)
Protocol	FlashScan (CLIP mode via license)	Velociti (CLIP mode via license; supports mixed Velociti/CLIP configurations)
Power Supply	6.0 A; 4 Class A/B NACs + 2 aux outputs (configurable: NAC, power, door holder, UZC)	Identical 6.0 A; 4 Class A/B configurable outputs + 2 aux
NAC Features	System Sensor / Wheelock / Gentex sync; Temp-3 (Fire), Temp-4 (CO), selective silence (and two-stage in some docs)	System Sensor / Wheelock; Same sync options and patterns (Temp-3/4, selective silence)
Battery	Supports up to 26 AH inside enclosure; charger for higher capacities externally	Same (26 AH inside)
History Buffer	10,000 events (3,000 displayed); advanced filters	Identical
Logic / Zones (base)	Evolved over firmware versions; 250 general + 250 logic (earlier lower for "e" persona); expandable to 2,000 each	250 general + 250 logic base; expandable to 2,000
Networking	Full support: High-speed (up to 200 nodes) or standard NOTI-FIRE-NET; Network Display Mode license	Future-ready via firmware upgrade; optional network card
Releasing	Agent (up to 10/50 depending on persona) and Water (up to 10/100) via licenses; FCM-1-REL	Agent (up to 50) and Water (up to 100) via licenses; TC810S1000
Programming	VeriFire Tools (offline); Autoprogram; CLSS remote	CAMWorks+ Tools; Autoprogram; CLSS remote
Physical	~19.12" H × 18.12" W × 5.47" D; ~35 lb shipping	Identical dimensions and weight
Listings	UL 864 10th Ed. (S635), FM, CSFM, FDNY, OSHPD, Seismic (IBC 2024), etc.	UL 864 10th Ed. (S635), FM, CSFM/FDNY in progress (per datasheet), OSHPD, Seismic
CLSS Integration	Full (Gateway for central station, cloud, mobile, remote programming/diagnostics)	Identical

Conclusion:
The N16e and GFP-A/AR are highly comparable sister products on Honeywell's shared modern platform.

TECH-TIME COMMUNICATIONS, INC
FIRE ALARM • INTERCOM • SECURITY

SMALL BUSINESS CERTIFICATION 1000471
DIR REGISTRATION 1000002263
CA SKILLED AND TRAINED COMPLIANT
CA C7/C10 LICENSE 750569 ALARM LICENSE AC01407

VENTURA COUNTY OFFICE OF EDUCATION - BID # 2026-06
Gateway Annex School
550 Airport Way, Camarillo, CA 93010
File No. 56-44 A#03-122398

TECH-TIME COMMUNICATIONS, INC. respectfully requests a review for approved equal.
Under **Public Contract Code § 3400**, state agencies, political subdivisions, and other public entities **cannot limit bidding to a single manufacturer or brand** unless the specification is followed by "or equal". This ensures competition, prevents favoritism, and allows contractors to offer "equal" materials, products, or services that perform as well in all essential respects.

Substitution requested for the specified Honeywell Notifier N16e with equal by Honeywell Gamewell-FCI GFP-AR. Tech-Time Communications prefers all fire alarm panels to be RED in color (Grey/Black available). **THERE ARE NO SYSTEM DESIGN CHANGES, ONLY MANUFACTURE PRODUCTS.**

Specification # 28 3111 Digital, Addressable Fire Alarm

- Specification is performance product based with-out a specified manufacture or specific part number listing.
  - All products in this substitution request meet the specified intent.

Plan Sheet FA001 Fire Alarm General

- FIRE ALARM SYMBOL LEGEND provides the specified products.
  - See comparison chart and product data, CSFM sheets attached.

Comparison Chart

Description	Manufacture "A"	Part Number "A"	Notes	Manufacture "B"	Part Number "B"	Notes
Fire Alarm Control Panel	Notifier	N16E		Gamewell FCI	GFP-AR	Equal
Remote Annunciator	Notifier	RLD		Gamewell FCI	GFP-RLD	Equal
Smoke Detector	Notifier	FSP-951-IV		Gamewell FCI	ASD-PL3	Equal
Pull Station	Notifier	NBG-12		Gamewell FCI	MS-7AF	Equal
Flow Switch	System Sensor	WFDN		System Sensor	WFDN	AS SPECIFIED
Tamper Switch	Notifier	PIBV2		System Sensor	PIBV2	AS SPECIFIED
Speaker/Strobe Ceiling Mount	Notifier	PC2WL(A)	NON VOICE SPECIFIED	System Sensor	SPSCWLED	VOICE PROVIDED
Strobe	Notifier	SWL(A)		System Sensor	SCWLED	AS SPECIFIED
Speaker/Strobe Wall Mount	Notifier	P2WL(A)	NON VOICE SPECIFIED	System Sensor	SPSWLED	VOICE PROVIDED
Control Module	Notifier	FCM-1(A)		Gamewell FCI	AOM-2SF	Equal
Bell	Notifier	SSM24-10		System Sensor	SSM24-10	AS SPECIFIED
Duct Detector	Fire Lite	D355PL(A)		Gamewell FCI	DNR	Equal
Speaker	Notifier	SPWK(A)		System Sensor	SPWKL	VOICE PROVIDED

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SUBSTITUTION EQUIPMENT SUBMITTAL

Required Parts			
TWO	GW-FCI	GFP-AR	Main Board 10" Display w/1 SLC-4 NAC, 318 Devices & 250 zones
ONE	GW-FCI	GFP-RLD	Remote annunciator 5" display
TWO	GW-FCI	ANX2-MR	E3 Addressable Node Expander, multi-ring
ONE	Honeywell	HON-CGW-MBB	CLSS Gateway
ONE	Honeywell	CCM2-AV-HON	ATT-Verizon Module DUAL PATH
ONE	GW-FCI	HPF-PS10	NAC Power Supply 10amp
TWO	GW-FCI	1100-0461	B size,INX Trnspndr 19in box,red
TWO	GW-FCI	ILI-MB-E3	Main Board w/2 SLC-2 NAC
TWO	GW-FCI	PM-9	Power Supply
TWO	GW-FCI	FML-E3	Fiber Mod,MultiMode4RPT
TWO	GW-FCI	INI-VGX	INI-VGX (ADD FML FOR FIBER)
THREE	GW-FCI	1100-0456	AM-50 trnspndr50watt,25vAmp
PER PLAN	GW-FCI	AOM-2SF	Signal Module
PER PLAN	GW-FCI	MS-7AF	Dbl.Action Pull Station
PER PLAN	GW-FCI	ASD-PL3	Photo Smoke Detector
PER PLAN	GW-FCI	B300-6	6 inch detector base
PER PLAN	GW-FCI	DNR	DuctDet - NoRelay,NoHead
PER PLAN	GW-FCI	DST-3	Sample Tube (2-4' ducts)
PER PLAN	SYSTEM SENSOR	SPSCWLED	SpkrStrobe Ceiling White
PER PLAN	SYSTEM SENSOR	SPSWLED	SpkrStrobe Wall White
PER PLAN	SYSTEM SENSOR	SPWKL	Speaker Outdoor Wall White
PER PLAN	SYSTEM SENSOR	WFDN	Flow Switch
PER PLAN	SYSTEM SENSOR	PIBV2	Tamper Switch
PER PLAN	SYSTEM SENSOR	SSM24-10	Bell
FIVE	Ditek	DTK-120HW	Surge Suppressor

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GFP-A/AR

Fire Alarm Control Panel

Gamewell-FCI Elevate™ GFP-A/AR is an intelligent fire alarm control panel designed for small to mid size facilities.



GFP-A/AR Intelligent Fire Alarm Control Panel delivers a modern, intuitive approach to life safety with a high-definition 10-inch touchscreen interface that simplifies interaction for occupants, technicians, and first responders. Built with advanced detection and processing technology, the panel supports Honeywell's patented self-test detectors and magnet-activated AV testing, streamlining inspections and minimizing onsite disruption.

Designed for easy upgrades, the GFP-A/AR maintains compatibility with existing SLC wiring for Velociti® and CLIP devices from Gamewell-FCI S3 Series installations, helping facilities stay compliant while maximizing performance. It operates as a powerful standalone panel today and offers future-ready networking capability through a simple firmware upgrade, ensuring scalability as building protection needs evolve.

The standard GFP-A/AR configuration includes:

- **Enclosure:** Same footprint as legacy S3 panel
- **Signaling Line Module (SLM-318):** Supports up to 318 intelligent addressable devices
- **Power Supply (PMB):** Provides four NACs and two auxiliary outputs

Optional expansion slots allow:

- **One Additional Loop Card (SLM-318):** Expands capacity to two loops per panel (636 devices total).
- **Transmitter Module (TM-8) or Network Card** (for future networking capabilities).

The GFP-A/AR integrates with the Connected Life Safety Services (CLSS) platform through the CLSS Gateway, providing connectivity to central station, cloud, and mobile applications. (See HON-62034.). This cloud-based functionality provides remote programming, testing, and diagnostic monitoring of the system, along with reduced manual data entry and reporting. Use CLSS to access licensable panel features, CAMWorks+ Tool, workstation licenses, and more.

FEATURES AND BENEFITS

- 10" high definition touchscreen display with customizable buttons
- 6.0 A power supply with customizable outputs
  - Two auxiliary outputs configurable for resettable or non-resettable operation (Class B and Class A/B)
  - Four Class A/B power outputs that can be configured as Class A/ B Notification Appliance Circuits (NACs), power circuit, door holder circuit, or Universal Zone Coding circuit (UZC licensable option)
  - NACs support selectable System Sensor, Wheelock, and Gentex strobe synchronization
  - NACs support up to 3 patterns of output to allow dynamic signaling based on system events: Temp-3 (Fire), Temp-4 (CO), selective silence
- Easy expansion of isolated intelligent Signaling Line Circuit (SLC) capacity
  - One expandable to two
- Wireless fire protection using SWIFT® Smart Wireless Integrated Fire Technology
- Up to 159 detectors and 159 modules per SLC; 318 devices per loop/636 per FACP
  - Detectors can be any mix of photo, thermal, or multi-sensor; wireless detectors are available for use with the SWIFT Wireless Gateway (FWSG)
  - Modules include addressable pull stations, normally open contact devices, two-wire smoke detectors, notification, or relay; wireless modules are available for use with the FWSG
- Self-Test detector technology
- Weekly Occupancy Schedules allow changing sensitivity by time of day and day of week
- History Buffer (10,000 events, 3000 displayed)
- Advanced history filters for custom sorting: all events, alarms only, troubles only, supervisory only, other/security events, time/date interval, and point range.
- Alarm Verification selection per point, with automatic counter
- Color coded icon-based event notification
- Event filtering to quickly view event groups
- On site or remote graphical monitoring via LAN or Internet connection with CLSS Horizon (see HON-62125)

Honeywell

Gamewell FCI FIRE CONTROL INSTRUMENTS

- Monitor multiple buildings through one off-campus central station, and report through the CLSS Gateway
- With the CLIP license added to the panel, each loop may be programmed to have all detectors and modules on the SLC to be Velociti® or all detectors and modules on the SLC to be CLIP or all detectors as Velociti® and all modules as CLIP or all detectors as CLIP and modules as Velociti®
- Supports dual telephone line communication to central receiving station using Ademco® Contact ID communication format with optional DS dialer
- Silence Inhibit and Auto Silence timer options
- Field programmable with CAMWorks + Tools
- Optional remote programing through CLSS
- Non-alarm points for lower priority functions
- Up to 2000 powerful Boolean logic equations
- Supplemental EIA-232 printer port
- Internal and external connectors for AIO Bus devices
- External AIO Bus supports Class A (200ft on 16AWG) or Class B (6000ft at 16AWG). The Internal AIO bus also supports Class B (6000ft at 16AWG) wiring. Any mix of ACM-30, RLD, LDM2-32/60, TM-8 may be added to the internal and/or external bus.
- Certified for seismic applications when used with the appropriate seismic mounting kit
- Configurable Local PAS Supports Presignal
- Signal Silence Inhibit and Automatic Signal Silence timer options
- Programmable DRILL participation and Alarm signal ON support

LICENSABLE PANEL FEATURES

- The functionality of the GFP panel can be enhanced through activation of licenses as shown in the Licensing Requirements table below. The GFP-A/R panel will be shipped from the factory with the following capabilities out of Box:
  -- Support for up to 2 loops
  -- Support 1 PMB
  -- 250 General Zones
  -- 250 Logic Zones
  -- 8 Custom Action Buttons
  -- 2 Smoke Control Zones
  -- 20 Smoke Control Appliances
  -- 20 Smoke Control Appliances
  -- 20 FSAE devices
  -- 11 Virtual Points
- For further feature enhancements on the panel, the following optional licenses can be activated:
  -General and Logic Zones: 250 in base, expanded upto 2000
  -Agent Releasing: None in base, Expanded upto 50 Agent releasing zones
  -Water Releasing: None in base, expanded upto 100 Water releasing Zones.
  -UZC (Universal Zone Coding)
  -Custom Action Buttons: 8 in base, expanded upto 32
  -CLIP Mode
- Fire Service Access Elevator (FSAE) Device: Support 20 devices in base, expanded upto 318 per panel.
- Virtual Points: 11 in base, expanded up to 511.
- Smoke Control Zones: 20 in base, expanded up to 250.
- Smoke Control Appliances: 20 in base, expanded up to 250.

SWIFT WIRELESS

- Self-healing mesh wireless protocol
- Each SWIFT Gateway supports up to 49 devices
- Up to 4 wireless gateways can be installed with overlapping network coverage

AGENT AND WATER RELEASING FEATURES

- Releasing using TC810S1000
- Up to 50 agent releasing zones (One time activation license in multiples of 10)
- Up to 100 water releasing zones (One time activation license in multiples of 10)
- Sophisticated cross-zone (4 options)
- Delay timer and Discharge timers (adjustable)
- Abort (five options)

INDUSTRY LEADING DETECTOR DESIGNS

- Addressable detectors available for photo, heat, CO, IR, and combinations
- Color kits available for aesthetic use
- First UL-Listed self-testing detectors available in photo, heat, and photo/heat models
- Single-ended beam smoke detectors
- Wireless detectors for use with SWIFT Wireless Gateway

VELOCITI® INTELLIGENT FEATURES

- Polls up to 318 devices on each loop in less than two seconds
- Activates up to 159 outputs in less than five seconds
- Fully digital, high-precision protocol (U.S. Patent 5,539,389)
- Manual sensitivity adjustment — up to nine levels
- Pre-alarm intelligent sensing — up to nine levels
- Sensitivity levels
  - **Photo:** 0.5 to 2.35%/foot obscuration
  - **High-Sensitivity Photoelectric (VIEW®):** Open Air Protection (0.5% - 2.0%/ft. obscuration), Special Applications (0.02%-0.5%/ ft. obscuration)
  - **Multi-Criteria Detector:** Open Air Protection (2.52-3.89%/ft. obscuration), Special Applications (1.13-2.52%/ft. obscuration)
  - **Acclimate® Plus:** 0.5 to 4.0%/foot obscuration
- Drift compensation (U.S. Patent 5,764,142)
- Multi-detector algorithm involves nearby detectors in alarm decision (U.S. Patent 5,627,515)
- Automatic detector sensitivity testing (NFPA-72 compliant)
- Maintenance alert (two levels)
- Self-optimizing pre-alarm
- Programmable activation of sounder/relay bases during alarm or pre-alarm

VELOCITI® EXCLUSIVE WORLD-LEADING DETECTOR PROTOCOL

At the heart of the GFP-A/AR panel series is a set of detection devices and device protocol — Velociti (U.S. Patent 5,539,389). Velociti is an all-digital protocol that gives superior precision.

This protocol enables quick identification of an active input device, as well as activation of many output devices in a fraction of the time required by competitive protocols. The high speed also gives GFP-A/AR the largest device per loop capacity in the industry – 318 points – yet every input and output device is sampled in less than two seconds. The microprocessor-based Velociti detectors have bi-color LEDs that can be coded to provide diagnostic information.

GAMEWELL-FCI ELEVATE™ INTELLIGENT SENSING

The Gamewell-FCI Elevate™ fire alarm panels uses advanced software algorithms that deliver industry-leading smoke detection performance when paired with Velociti® Series detectors. These sophisticated algorithms analyze multiple data points from every detector reading, enabling highly accurate detection. This level of processing is made possible by the high-speed microcomputer built into the Elevate™ GFP panels.

Drift Compensation and Smoothing. Drift compensation allows the detector to retain its original ability to detect actual smoke, and resist false alarms, even as dirt accumulates. It reduces maintenance requirements by allowing the system to automatically perform the periodic sensitivity measurements required by NFPA 72. Smoothing filters are also provided by software to remove transient noise signals, usually caused by electrical interference.

Maintenance Warnings. When the drift compensation performed for a detector reaches a certain level, the performance of the detector may be compromised, and special warnings are given. There are three warning levels: (1) Low Chamber value; (2) Maintenance Alert, indicative of dust accumulation that is near but below the allowed limit; (3) Maintenance Urgent, indicative of dust accumulation above the allowed limit.

Sensitivity Adjust. Nine sensitivity levels are provided for alarm detection. These levels can be set manually, or can change automatically between day and night. Nine levels of pre-alarm sensitivity can also be selected, based on predetermined levels of alarm. Pre-alarm operation can be latching or self-restoring, and can be used to activate special control functions.

Self-Optimizing Pre-Alarm. Each detector may be set for "Self-Optimizing" pre-alarm. In this special mode, the detector "learns" its normal environment, measuring the peak analog readings over a long period of time, and setting the pre-alarm level just above these normal peaks.

Cooperating Multi-Detector Sensing. A patented feature of GFP-A/AR Intelligent Sensing is the ability of a smoke sensor to consider readings from nearby sensors in making alarm or pre-alarm decisions. Without statistical sacrifice in the ability to resist false alarms, it allows a sensor to increase its sensitivity to actual smoke by a factor of almost two to one.

FIELD PROGRAMMING OPTIONS

Autoprogram is a time saving feature. The FACP "learns" what devices are physically connected and automatically loads them in the program with default values for all parameters. Requiring less than one minute to run, this routine allows the user to have almost immediate fire protection in a new installation, even if only a portion of the detectors are installed.

CAMWorks+ is an offline programming and test utility that can greatly reduce installation programming time, and increase confidence in the site-specific software. It is Windows® based and provides technologically advanced capabilities to aid the installer. The installer may create the entire program for the GFP-A/AR in the comfort of the office, test it, store a backup file, then bring it to the site and download from a laptop into the panel (Version 7.20 or higher).

MAIN SYSTEM COMPONENTS

GFP-A. Intelligent fire alarm panel with one SLC loop, 10" touchscreen display, 4 NACs, and power supply in a Grey enclosure. 26AH batteries can be accommodated inside the enclosure.

GFP-AR. Intelligent fire alarm panel with one SLC loop, 10" touchscreen display, 4 NACs, and power supply in a red enclosure. 26AH batteries can be accommodated inside the enclosure.

DIS-10-RD. Replacement touchscreen.

SLM-318. Signaling Line Module provides a Signaling Line Circuit of 159 addressable points. Add SLM-318 units to expand SLC capability. See 9021-2196.

AUXILIARY POWER SUPPLIES AND BATTERIES

HPF-PS6/10(B/E). PS Series Remote 6A/10A power supply with battery charger.

BAT Series. Sealed lead-acid batteries listed for fire-protective service. (Required.) See CS-2500.

OPTIONAL EQUIPMENT

PRN-7. 80-column printer. See 9021-60901.

VS4095/5. Printer, 40-column, 24 V. Order from Keltron, Inc.

ACM-30. Fully-customizable annunciator. Independently configured buttons with up to 60 points of annunciation. LEDs can be programmed to activate in red, green, yellow, white, amber, blue, cyan or purple. Up to 80 annunciators per FACP. See 9021-2195 for system specifications and mounting hardware.

GFP-RLD. Remote display provides the FACP up to 10 remote, serially connected remote display. See 9021-2193.

LDM2-32. Lamp driver Module for use with remote custom graphics provides 32 LED driver outputs (lamp-driver transistors sink to power common on alarm) and 10 switch inputs (one pre-configured for lamp test input). Connects to the panel via the AIO bus and may be set up as a router or a peripheral. Integral piezo sounds for each new alarm or trouble and is silenced with the Local Acknowledge switch, or may permanently disabled with a dip switch selection. It also offers the option of an external piezo. See 9021-62206.

LDM2-60. Lamp driver Module for use with remote custom graphics provides 60 LED driver outputs and 21 switch inputs (one preconfigured for lamp test input) Connects to the panel via the AIO bus and may be set up as a router or a peripheral. See 9021-62206.

TM-8. Panel module offers 8 programmable Form-C relays (4 low current 2A, 4 higher current 10A) and also provides either a remote

station service with three reverse polarity outputs that communicate alarm, trouble, supervisory messages from the FACP or a municipal box connection that would trip a local energy municipal box. Can be located up to 6000ft from panel on RS485 bus. See 9021-62205.

LDM-CBL24, LDM-CBL48. Ribbon cable sets to provide either a 24"(60.96cm) or 48" (121.96cm) connection between LDM2-32/ LDM2-60 and LEDs or lamps on a custom graphic panel. Includes all cables necessary for one LDM2-32. LDM2-60 will need two cable sets. Cables have connector on one end only (split, strip, and connect other end to graphic annunciator).

COMPATIBLE INTELLIGENT MODULES

ASD-PL3-SELFT. White, low-profile intelligent self-testing photoelectric sensor, Velociti® only.

ASD-PTL3-SELFT. White, same as FSP-951 but includes a built-in 135°F (57°C) fixed-temperature thermal device, Velociti® only.

ATD-L3-SELFT. White, low-profile intelligent self-testing, configurable operation thermal sensor. Panel-programming can set the device to operate as either a 135°F fixed temperature sensor, a rate of rise and 135°F fixed temperature sensor, or a 190°F high temperature sensor. Velociti® only.

MCS-COF3/-IV. Velociti®, Addressable intelligent multi-criteria smoke sensors, photo, carbon monoxide, fixed temperature heat detector, and infra-red (IR).

MCS-COP3. Velociti®, Combined photoelectric and carbon monoxide sensor. .

MCS-CO3. Velociti®, Addressable carbon monoxide sensor.

MCS-PTIR, MCS-PTIR-IV. Addressable intelligent multi-criteria photoelectric, thermal, and IR sensors.
OSI-RI-GW. Addressable intelligent single-ended beam smoke detector.

ASD-PL3 White, low-profile intelligent photoelectric sensor, Velociti® only.

ASD-PL3-IV. Ivory, low-profile intelligent photoelectric sensor.

ASD-PTL3. White, same as ASD-PL3 but includes a built-in 135°F (57°C) fixed-temperature thermal device. Velociti® only.

ASD-PTL3-IV Ivory, same as ASD-PTL3 but includes a built-in 135°F (57°C) fixed-temperature thermal device.

ASD-PL3R. White, low-profile intelligent photoelectric sensor, remote test capable. For use with DNR/DNRW. Velociti® only.

ASD-PL3R-IV. Ivory, low-profile intelligent photoelectric sensor, remote test capable. Velociti® only.

ATD-L3. White, low-profile intelligent 135°F fixed thermal sensor, Velociti® only.

ATD-L3-IV. Ivory, low-profile intelligent 135°F fixed thermal sensor, Velociti® and CLIP.

ATD-L3R. White, low-profile intelligent rate-of-rise thermal sensor, Velociti® only. Must be mounted to one of the bases listed below.

ASD-PL3R-IV. Ivory, low-profile intelligent photoelectric sensor, remote test capable. Velociti® only.

ATD-L3H. White, low-profile intelligent 190°F fixed thermal sensor, Velociti® only. Must be mounted to one of the bases listed below.

ATD-L3H-IV. Ivory, low-profile intelligent 190°F thermal sensor, Velociti® and CLIP. Must be mounted to one of the bases listed below.

ASD-LS3 White, intelligent high-sensitivity photoelectric smoke detector, Velociti® only.

DNR. InnovairFlex low-flow non-relay duct-detector housing.

DNRW. Same as above with NEMA-4 rating, watertight. See 9021-60475.

CK300 Series Color Kits. Snap-on overlay to change color of a detector. For basic detectors: CK300 white; CK-300-IV ivory; CK300-BL for black. For Fire/CO and PTIR detectors, with IR opening: CK300-IR white, CK300-IR-IV ivory, CK300-IR-BL black. For Photo/CO and CO only, with CO opening: CK300-CO-IV ivory. CK300-CO-BL black.

Note: *Not Applicable for Self test detectors.*

INTELLIGENT DETECTOR BASES

B224RB-WH. White, low-profile relay base.

B224RB-IV. Ivory, plug-in System Sensor relay base.

B224BI-WH. White, isolator base for low-profile detectors.

B224BI-IV. Ivory isolator detector base.

B300-6. White, standard flanged low-profile mounting base. (For 10-pack, order B300-6-BP.)

B300-6-IV. Ivory, standard flanged low-profile mounting base.

B501-WHITE. European-style, 4" (10.16 cm) base. (For 10-pack order,B501-WHITE-BP.) UL Listed.

B501-BL. Black, 4" standard European flangeless mounting base. ULListed.

B501-IV. Ivory color, 4" standard European flangeless mounting base. UL Listed.

B200S-WH. White, intelligent programmable sounder base, capable of producing a variety of tone patterns including ANSI Temporal 3. Compatible with synchronization protocol.

B200S-IV. Ivory intelligent, programmable sounder base.

B200SCOA-WH. White intelligent, programmable sounder base in English

B200SCOA-IV. Ivory intelligent, programmable sounder base in English

B200S-LF-WH. White, low-frequency version of B200S.

B200S-LF-IV. Ivory, low-frequency version of B200S.

B200SR-WH. White intelligent programmable sounder base, Temporal 3 or Continuous tone. For retrofit installations replacing B501BH series bases.

B200SR-IV. Ivory intelligent programmable sounder base, Temporal 3 or Continuous tone. For retrofit installations replacing B501BH series bases.

B200SR-LF-WH. White, low-frequency version of B200SR.

B200SR-LF-IV. Ivory, low-frequency version of B200SR.

COMPATIBLE INTELLIGENT MODULES

AMM-4, 4F. Velociti® monitor module. See 9020-0624.

AMM-2I, 2IF,DPID-SS. Velociti® dual monitor module. See 9020-0629.

AMM-4S, 4SF. Velociti® two-wire detector monitor module. See 9020-0630.

AMM-2, 2F. Velociti® miniature monitor module. See 9020-0626.

AOM-TEL,AOM-TELF. Firephone Telephone Module connects a remote firefighter telephone to a centralized telephone console. Reports status to panel. Wiring to jacks and handsets is supervised. See 9020-0628.

AOM-2S, 2SF. Velociti® control module. See 9020-0627.

TC810S1000. Velociti® releasing control module. See 9021-60905.

AOM-2R, 2RF. Velociti® relay module. See 9020-0625.

AMM-2RIF. Velociti® dual monitor/dual relay module. See 9021-60709.

MS-7 Series Pull stations

ISO-X(A). Isolator module.

ISO-6(A). Six fault isolator module. See 9021-60896.

MMO-6S, 6SF. Velociti® six-circuit supervised control module. See 9020-0634

MMI-6S, 6SF. Velociti® six-zone interface module; connects intelligent alarm system to two-wire conventional detection zone. See 9020-0633.

MMO-6R, 6RF. Velociti® six-relay (Form-C) control module. See 9020-0632.

MMI-10, 10F. Velociti® ten-input monitor module. See 9020-0631.

ENCLOSURES, CHASSIS, AND BACKBOXES

GFP-RLD-E3-ADP. Adapter plate to mount the RLD in an E3BB-FLUSH-LCD or E3BB-BA2 enclosure.

GFP-BB-RA. The GFP-BB-RA is a surface-mount enclosure designed for the ACM-30 annunciator. Can be used for new or retrofit applications.

BB-100. Backbox for batteries and power supplies. The BB-100 mounts up to two 100 AH batteries and power supply, if needed. 30" (76.20 cm) wide x 25" (63.50 cm) high x 7.5" (19.05 cm) deep; depth includes door.

SEISKIT-GFP-A. Seismic mounting bracket for seismic certified applications with GFP-A/AR enclosure.

CLSS GATEWAY AND LICENSABLE FEATURES

HON-CGW-MBB. CLSS Gateway, pre-installed in a cabinet. See HON-62034.

Licensable features: Individually purchased and downloaded to a specific panel.

GFP-GZ50. General Zone expansion. Adds 50 general zones to an GFP panel (maximum 2000 zones).

GFP-GZN. General Zone expansion. Adds 250 general zones to an GFPpanel (maximum 2000 zones).

GFP-LGZ50. Logic Zone expansion. Adds 50 logic zones to an GFP panel (maximum 2000 zones).

GFP-LGZ. Logic Zone expansion. Adds 250 logic zones to an GFP panel (maximum 2000 zones).

GFP-AREL. Adds first 10 Agent Releasing Zones (Only 1 Per Panel).

GFP-WREL. Adds first 10 Water Releasing Zones (Only 1 Per Panel).

GFP-ADDAREL. Adds next 10 Agent Releasing Zones (Max 4 Per Panel).

GFP-ADDWREL. Adds next 10 Water Releasing Zones (Max 9 Per Panel).

GFP-UZC. Universal Zone Coding, enables UZC for an GFP panel.

GFP-CAC. Custom Action Button expansion. Adds 8 custom action buttons to an GFP panel (maximum 32 buttons).

GFP-CLIP. Enables CLIP mode on an GFP panel.

GFP-FSAE-10. Fire Services Access Elevator. Adds support for 10 FSAE type code devices.

GFP-FSAE-20. Fire Services Access Elevator. Adds support for 20 FSAE type code devices.

GFP-VP10. Virtual Points. Adds 10 Virtual points per license.

GFP-SCZ1. Smoke Control Zones. Adds 1 smoke control zone.

GFP-SCZ5. Smoke Control Zones. Adds 5 smoke control zones.

GFP-SCZ10. Smoke Control Zones. Adds 10 smoke control zones.

GFP-SCA1. Smoke Control Appliances. Adds 1 smoke control Appliance.

GFP-SCA10. Smoke Control Appliances. Adds 10 smoke control Appliance.

GFP-SCA25. Smoke Control Appliances. Adds 25 smoke control Appliance.

GFP-SCA100. Smoke Control Appliances. Adds 100 smoke control Appliance.

GFP-SCA230. Smoke Control Appliances. Adds 230 smoke control Appliance.

GFP-SCB1. Smoke Control Bundles. Adds 1 SC zone + 10 SC Appliances.

GFP-SCB5. Smoke Control Bundles. Adds 5 SC zone + 50 SC Appliances.

GFP-SCB10. Smoke Control Bundles. Adds 10 SC zone + 100 SC Appliances.

Note: *For other options, refer to the panel's installation manual, the SLC manual, and the Device Compatibility Document.*

COMMUNICATORS

HON-DACT-DS. Darksite Dialer, pre-installed in a cabinet. (See HON-62180.)

32351718-001. NUP Serial (RS232) Cable 10" Kit for GFP

50160636-001. Kit with 30" NUP Cable and GFP Lock and Key Set

MCBL-7. DACT phone cord, 7 ft (2.13 m) long (two required)

CCM2-AV-HON. LTE Dual SIM (Multi-carrier support including Verizon, AT&T and T-Mobile) Cellular Communication Module for US, includes antenna (See HON-62183)

CCM2-ANTKIT-EXT2. Optional Diversity/Secondary Antenna Kit for Dual SIM Cell Module

CCM2-ANTKIT-OUT25. Optional Outdoor antenna kit with 25' cable for Dual SIM Cell Module

CCM2-ANTKIT-OUT50. Optional Outdoor antenna kit with 50' cable for Dual SIM Cell Module

HWF2A-COM. LTE/IP Dialer Capture Alarm Communicator

HWF2V-COM. LTE/IP Dialer Capture Alarm Communicator

HW-TG7LAF02. LTE Dialer Capture Alarm Communicator

HW-TG7LVF02. LTE Dialer Capture Alarm Communicator

SYSTEM CAPACITY

- Intelligent Signaling Line Circuits
- GFP-A.....1 expandable to 2
- GFP-AR..... 1 expandable to 2
- Intelligent detectors.....159 per loop on Velociti Protocol
- Addressable monitor/control modules.....159 per loop on Velociti Protocol
- Remote Displays..... up to 10 GFP-RLDs per GFP

AGENCY LISTINGS AND APPROVALS

The file number(s) below reference the specific listings for the modules in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult Gamewell-FCI for latest listing status.

- **UL Listed:** S635
- **FM Approved**
- **CSFM:** In Progress
- **FDNY:** In Progress
- **OSHPD Approved**

STANDARDS AND CODES

The GFP Series complies with the following UL Standards and must be installed per applicable NFPA 72, International Building Code (IBC) and California Building Code (CBC):

- **UL 864,** 10th edition (Control Units and Accessories for Fire Alarm Systems).
- **UL 2017** (General-Purpose Signaling Devices and Systems)
- Should be installed as per **NFPA 72** National Fire Protection Association

UL Type Service

- **LOCAL** (Automatic, Manual, Waterflow, Sprinkler Supervisory)
- **RELEASING** (Automatic, Manual, Waterflow, Sprinkler Supervisory)
- **AUXILIARY** (Connection to M34 Series Master box) (Requires TM-8
- **REMOTE STATION** (Automatic, Manual, Waterflow, Sprinkler Supervisory, CO) (requires TM-8)
- **PROPRIETARY** (Automatic, Manual, Waterflow, Sprinkler Supervisory, CO) (Requires HON-CGW-MB or HON-DACT-DS)
- **CENTRAL STATION** (Automatic, Manual, Waterflow, Sprinkler Supervisory, CO) (Requires HON-CGW-MB or HON-DACT-DS)
- **EMERGENCY SIGNALING** (Automatic, Manual) (Requires HONCGW-MB or HON-DACT-DS)
- **IBC 2024** (Seismic) CBC 2022 (Seismic)

Note: *Install in accordance with the UL and NFPA standards specified in panel documentation.*

GFP-A/AR TECHNICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

Primary Input Power

- PMB: 120VAC 50/60 Hz 2.5A, 240VAC 50/60 Hz, 1.25A

DC Output

- 24VDC aux output 1: 24VDC, 2.0 A
- 24VDC aux output 2: 24VDC, 2.0 A

Current Draw (Standby/Alarm)

- CPU: 0.116 A (Standby), 0.116 A (Alarm)
- Main Display: 0.153 A (Standby), 0.163 A (Alarm)
- ACM-30: 0.083 A (Standby), 0.093 A (Alarm)
- SLM-318: 0.159 A (Standby), 0.210 A (Alarm)
- TM-8: 0.081 A (Standby), 0.189 A (Alarm)
- LDM2-32: 0.023 A (Standby), 0.050 A (Alarm)
- LDM2-60: 0.023 A (Standby), 0.051 A (Alarm)
- RLD: Back light Set in Range of 1% - 50%
  0.150 A (Standby, Normal Mode)
  0.160 A (Alarm)

  Back light Set in Range of 51% - 100%
  0.200 A (Standby, Normal Mode)
  0.225 A (Alarm)

Battery Charger Range: 7AH-100AH. Use separate cabinet for batteries over 26 AH.

Charging Current: 1A, 2A, 4.25A, and 5.55A

Float Rate: 27.6 V.

PHYSICAL SPECIFICATIONS

GFP Shipping Weight: 35 lb

GFP Backbox dimensions: 19.12" H x 18.12" W x 5.47" D
(48.6 cm h x 46 cm W x 13.9 cm D)

Temperature and humidity ranges: This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93% ± 2% RH (non condensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15 – 27°C/60 – 80°F.

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Country of origin: USA

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203.484.7161
www.gamewell-fci.com

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GFP-RLD

Remote Display

The GFP-RLD is a compact, 5" touchscreen remote annunciator compatible with Gamewell-FCI Elevate™ platform fire alarm control panels, using the AIO Bus for communication.



The GFP-RLD is a touchscreen remote annunciator designed specifically for fire alarm control panels on the Gamewell-FCI Elevate™ Platform.

It provides the control panel with a remote, serially connected display for system status, point information, and event counters. The 5-inch touchscreen presents two events simultaneously and allows scrolling through up to 50 of the highest-priority events in the system. The GFP-RLD also provides operator control through six programmable touch buttons supporting functions such as Acknowledge, Silence, Reset, and Drill.

The Gamewell-FCI FACP supports a maximum of 10 GFP-RLDs, Fire alarm control panels on the Gamewell-FCI Elevate™ Platform support up to 10 GFP-RLD, configured as a router. These take up one of the 10 available router addresses. The “router” annunciators may be a mix of ACM-30 and GFP-RLD units. Each GFP-RLD will occupy one “router” address. The GFP-RLD does not support peripheral annunciators.

FEATURES AND BENEFITS

- Five inch high-definition touchscreen display
- Programmer key switch for user authentication, providing the ability to enable the control inputs for acknowledge, silence, reset, and drill.
- Configurable control buttons that are operational only when key-switch is unlocked
  - Acknowledge
  - Silence
  - Reset
  - Drill
- Six programmable buttons, each with a descriptor/label, status indicator and configurable action (on/off, disable.enable)
- Supervision of remote power supply
- Field programmable using CAMWorks+ Tools and interactive touchscreen controls
- USB C Connection
- Ability to filter events displayed on the GFP-RLD by zone
- Ability to map the GFP-RLD dedicated to a releasing zone where the label, state of the releasing zone and the countdown timer (where applicable) is displayed
- GFP-RLD mounts in a standard 3 gang electrical box
- Positive Alarm Sequence (PAS) Presignal. Participation PAS as programmed in the panel.
- Presignal participation
- Signal Silence Inhibit and Automatic Signal Silence timer options
- Programmable DRILL participation

INSTALLATION

The GFP-RLD mounts in a standard 3 gang electrical box. External connections are the AIO serial communications, 24 VDC power input, and earth ground. Communication between the GFP-RLD and control panels occurs over a power-limited 2-wire AIO serial interface. This communication is supervised by the fire alarm control panel. Each GFP-RLD also requires a power-limited 24 VDC power connection. Loss of power to the GFP-RLD registers as a communication failure at the control panel. The GFP-RLD can also be powered from a power-limited and regulated remote power supply listed for fire-protective signaling use.

Honeywell

Gamewell FCI FIRE CONTROL INSTRUMENTS

GFP-RLD TECHNICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

Primary Input Power (GFP-RLD):

- Back light Set in Range of 1% - 50%
  0.150 A (Standby, Normal Mode)
  0.160 A (Alarm)
- Back light Set in Range of 51% - 100%
  0.200 A (Standby, Normal Mode)
  0.225 A (Alarm)

PHYSICAL

Dimensions: 5.75H x 7.0W x 1.0D in.
(14.6H x 17.8W x 2.54D cm)

Shipping Weight: 2 lbs (0.91 kg)

TEMPERATURE AND HUMIDITY RANGES

This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93% ± 2% RH (noncondensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15 – 27°C/60 –80°F.

AGENCY LISTINGS AND APPROVALS

The file number(s) below reference the specific listings for the modules in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult Gamewell-FCI for latest listing status.

- **UL Listed**
- **FM Approved:** FM23FPUS0095
- **CSFM:** In progress
- **FDNY:** In progress
- **Certified for Seismic applications in accordance with IBC 2024:** VMA-45894-01C
- **OSHPD Approved:** OSP-0072

STANDARDS AND CODES

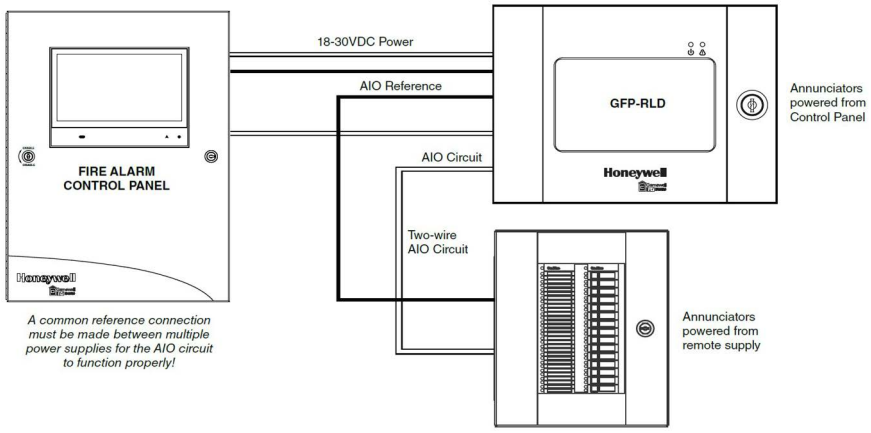
These listings and approvals below apply to the GFP-RLD. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL 864,** 10th edition (Control Units and Accessories for Fire Alarm Systems).
- **UL 2610** (Commercial Premises Security Alarm Units and Systems)
- Should be installed as per **NFPA 72** National Fire Protection Association

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Country of origin: USA



Typical Configuration

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CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7165-1703:0512
CATEGORY:	7165 - FIRE ALARM CONTROL UNIT (COMMERCIAL)
LISTEE:	GAMEWELL-FCI 12 Clintonville Road, Northford, CT, 06472 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Models GFP-A and GFP-AR Fire Alarm Control Units. Models are identical except that GFP-AR has a red door and GFP-A has a black door. Models are suitable for local, releasing, EVAC, auxiliary, remote station (PPU), proprietary (PPU), central station (PPU), emergency signaling, and non-emergency signaling services. Refer to listee's data sheet for additional detailed product description and operational considerations. Compatible System Components: ACM-30, ACM-30W: Annunciator CGW-BB: Communicator Enclosure subassembly GFP-CPU-RB: CPU Main Board (Core-2PCA) DIS-10-RD: 10-inch Touchscreen Display TC810S1000: Releasing Module TM-8: Transmitter Module LDM2-32, LDM2-60: Lamp Driver Module AMM-4F: Monitor Module AOM-2RF: Relay Module HON-DACT-DS: DS Dialer HON-CGW-MBB: Communicator PMBNL: Power Supply board GFP-RLD: Remote Annunciator SLM-318: SLC Single Loop Module
RATING:	Input: 120 VAC, 50/60 Hz. 2.5A; or 240 VAC, 50/60 Hz: 1.25A Output: 24 Vdc

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, electrical rating, and UL label.
APPROVAL:	Listed as fire alarm control units for use with separately listed compatible initiating and indicating devices. This control unit meets the requirements of UL 864, 10th Edition. Refer to listee's Installation Instruction Manual for details.
NOTES:	For Fire Alarm Verification Feature (delay of fire alarm signal), the maximum Retard/Reset/Restart period shall not exceed 30 seconds.

04-15-26 MH

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 06/25/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7300-1637:0504
CATEGORY:	7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES
LISTEE:	Honeywell International Inc. One Fire-Lite Place, Northford, CT, 06472 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Model HON-CGW-MBB Connected Life Safety Services Gateway. The primary function of the product is to provide software services and connection for remote viewing of events. The unit utilizes sole path either Ethernet or Wi-Fi or Cellular communication pathways to connect the host FACP to Honeywell Connected Life Safety Services supplemental program for remote monitoring and data transmission services of FACP events. The product also supports both sole and dual path communication for digital alarm transmission by connecting to the Supervising Station with selectable reporting paths via Ethernet, Wi-Fi, and Cellular interface using the following cellular modules: *CCM-ATT-HON, *CCM-VZ-HON, *CCM2-AV-HON, or *CCM2-GLOBAL. The methods of communications for dual path are: Primary as Ethernet/Wi-Fi and Secondary as Cellular, or Primary as Cellular and Secondary as Ethernet/Wi-fi. Intended for indoor use and dry locations. Refer to listee's printed data sheet for additional detailed product description and operational considerations.
RATING:	18-30 VDC
INSTALLATION:	In accordance with listee's printed installation instructions, NFPA 70, NFPA 72, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, electrical rating, and ETL label.
APPROVAL:	Listed as a control unit accessory for use with listee's separately listed compatible commercial and residential fire alarm control units. For a list of compatible control panels, refer to Intertek ATM for Report No. 104270338NYM-001. Model complies with the applicable requirements in UL 864, 10th Edition. Refer to listee's Installation Instruction Manual for details.
NOTES:	

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BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

05-22-25 MH

*Revised

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 06/21/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

PS SERIES

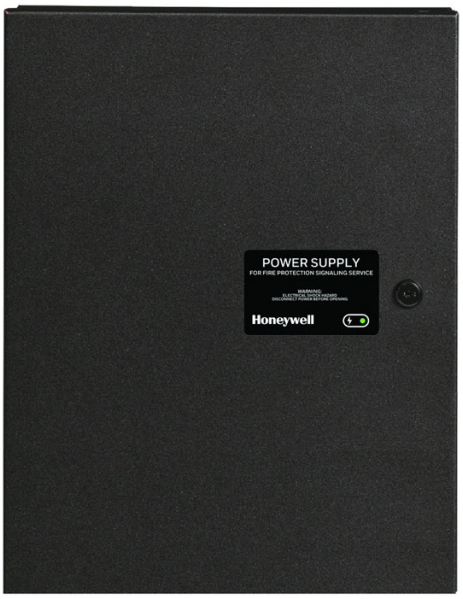
6 Amp and 10 Amp, 24 Volt Power Supplies

The PS Series are independently configurable power supplies, allowing you to pair any input with any output, and feature LED diagnostics for troubleshooting.

The PS Series is a remote power supply line from Gamewell-FCI. The HPF-PS6 is a 6 amp and the HPF-PS10 is a 10 amp, remote power supply with battery charger that may be connected to any 12 or 24 volt fire alarm control panel (FACP) or used as a standalone power supply. The PS Series provides 24 VDC power for NACs (notification appliance circuits) configured as either Class B or Class A (requires the ZNAC-PS option card) with multiple sync protocol options. The PS Series also provides auxiliary power, constant or resettable, suited for detectors, annunciators, door holders, and other fire alarm system peripherals. The PS Series cabinet can hold two 7 AH or 18 AH batteries and can charge up to 33 AH batteries in a separate cabinet.



HPF-PS6/10



HPF-PS6/10B

FEATURES AND BENEFITS

- Up to five (6 amp model) or seven (10 amp model) independently-configurable, power-limited output circuits for:
  –Class B and/or Class A NACs
  –Class B and/or Class A resettable or non-resettable 24V auxiliary power
  –door holder power
- Converts from Class B to Class A wiring without losing any outputs using the ZNAC-PS converter card (sold separately)
- Optimal for powering four-wire smoke detectors, annunciators, and other system peripherals requiring regulated power
- Optional addressable control, monitor, and relay modules and power-supervision relay (EOLR-1)
- Configurable for ANSI® Temporal 3 or Temporal 4 coded output
- UL-Listed NAC synchronization using System Sensor®, Wheelock®, Gentex®, or AMSECO® appliances
- Synchronization can be triggered from FACP NAC/remote sync outputs, cascaded power supply, or a control module, single or multi, which may be housed within the power supply cabinet
- Ability to cascade up to four power supplies
- Two (6 amp model) or three (10 amp model) fully-isolated input/control circuits which can be programmed to any output
- Two Form C normally-closed trouble relays for AC Trouble and General Trouble
- 6 or 10 amp full load output, respectively, with 3 A maximum/circuit
- Individual NAC power and trouble LEDs for diagnostic efficiency
- Trouble history mode for diagnostic support
- Wide range end-of-line supervision value (normal: 2-27K ohms)
- Selectable earth fault detection (enable or disable)
- AC trouble report delay timer
- Completely configurable via onboard DIP switches, no extra software required
- Self-contained in compact, locking cabinet constructed of heavy gauge steel with a corrosion-resistant powder coat chip and scratch-resistant finish
- Cabinet designed with ten double knockouts and a removable door for ease of installation and wiring
- Includes integral battery charger capable of charging up to 33 AH batteries
- Cabinet can house two 7 AH or 18 AH batteries
- Battery charger may be disabled via DIP switch for applications requiring larger batteries and external battery charger
- Removable terminal blocks accommodate up to 12 AWG (3.1mm^2) wire
- Works with any UL 864 FACP which utilizes an industry-standard reverse-polarity notification circuit
- HPF-PS6/10 include the - Honeywell Power Products lock set (PN: 17059) and key (PN: 17051)

Honeywell

Gamewell FCI FIRE CONTROL INSTRUMENTS

ORDERING INFORMATION

HPF-PS6: 6.0 A, 120 VAC remote charger power supply in a lockable, metal enclosure, red

HPF-PS6B: 6.0 A, 120 VAC remote charger power supply in a lockable, metal enclosure, black

HPF-PS10: 10.0 A, 120 VAC remote charger power supply in a lockable, metal enclosure, red

HPF-PS10B: 10.0 A, 120 VAC remote charger power supply in a lockable, metal enclosure, black

ZNAC-PS: Optional Class A converter card, sold separately

AOM-2SF: Addressable Control Module for one Class B or Class A zone of supervised, polarized Notification Appliances. Notification Appliance Circuit option requires external 24 VDC to power notification appliances.

AOM-2RF: Addressable relay module containing two isolated sets of Form-C contacts, which operate as a DPDT switch

AMM-4F: Addressable Monitor Module for one zone of normally open dry-contact initiating devices. Includes plastic cover plate and end-of-line resistor. Module may be configured for either a Class B or Class A

AMM-2IF: Dual Monitor Module. Same as AMM-4F except it provides two inputs for Class B wiring only

AMM-2RIF: Provides two monitored inputs and two Form-C relays. Functions in Class B wiring only

MMO-6SF: Six-circuit supervised control module

MMO-6RF: Six Form-C relay control module

EOLR-1: 12/24 VDC end-of-line relay for monitoring four-wire smoke detector power

BAT-1270-BP: Battery, 12 volt, 7.0 AH, 5-pack (two required)

BAT-12180-BP: Battery, 12 volt, 18AH, 2-pack

BAT-12330: Battery, 12 volt, 33AH

SEISKIT-MULTI-1: Seismic kit for the PS Series. Includes bracket and hardware for two 7AH or two 18AH batteries.

17070: Alternate Honeywell Gamewell-FCI lock set, PK-625, 3/8" cam

HPS SERIES TECHNICAL SPECIFICATIONS

PRIMARY (AC) POWER

HPF-PS6(B): 120 VAC, 50/60 Hz, 5.0A maximum

HPF-PS10(B): 120VAC, 50/60 Hz, 6.2 A maximum

Wire Size: #12-14 AWG with 600 V insulation

COMMAND INPUT CIRCUIT

Trigger Input Voltage: 9 to 32 VDC

Trigger Current: 2.0 mA (16 - 32 V); Per Input: 1.0 mA (9 - 16 V)

RELAY CIRCUITS

Trouble Contact Rating: 4 A at 24 VDC

OUTPUT CIRCUITS

- 24 VDC filtered
- HPF-PS6B: TB8-TB9 – 1A Regulated, 3A special applications; TB10-TB12 – 0.3A Regulated, 3A special applications
- HPF-PS10B: TB8-TB11 – 1.5A Regulated, 3A special applications; TB12-TB14 – 0.3A Regulated, 3A special applications
- 6.0 A (HPF-PS6B) or 10.0 (HPF-PS10B) maximum total continuous current for all outputs

SECONDARY POWER (BATTERY) CHARGING CIRCUIT

- Supports lead-acid batteries only
- Float-charge voltage: 27.6 VDC
- Maximum current charge: 1.5 A
- Maximum battery capacity: 18 AH (inside cabinet)
- Maximum battery charging capacity: 33 AH (external cabinet)

PHYSICAL

Dimensions: 20.0"H x 14.5"W x 3.5"D (cm: 50.8H x 36.83W x 8.9D)

Weight: with two 7Ah batteries is 24 pounds (10.9 kg), with two 18 AH batteries is 39 pounds (17.7 kg)

STANDARDS AND CODES

The HPF-PS complies with the following standards:

NFPA 72: National Fire Alarm Code

UL 864: Standard for Control Units for Fire Alarm Systems (NAC expander mode)

UL 1481: Power Supplies for Fire Alarm Systems

AGENCY LISTINGS AND APPROVALS

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

UL Listed: S24562

CSFM: 7315-1637:0505

FDNY Approved

FM Approved

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Country of origin: USA

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OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7315-1637:0505
PARENT LISTING No.:	7315-0028:0513
CATEGORY:	7315 - POWER UNITS
LISTEE:	Honeywell International Inc. One Fire-Lite Place, Northford, CT, 06472 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Models HPF-PS6, HPF-PS6B, HPF-PS6E, HPF-PS10, HPF-PS10B, and HPF-PS10E Power Supply Expander. Model ZNAC-PS Class A Converter Module. Model Variations:All HPF-PS6 Models: Maximum 6A Capacity; 5 Class B NAC's; 2 Command Inputs; Trouble and AC Loss Relays All HPF-PS10 Models: Maximum 10A Capacity; 7 Class B NAC's; 3 Command Inputs; Trouble and AC Loss Relays With Suffix "E": Nominal 240V, 50/60 Hz AC Input Without Suffix "E": Nominal 120V, 50/60 Hz AC Input Models HPF-PS6 and HPF-PS10: Red Enclosure Models HPF-PS6B, HPF-PS6E, HPF-PS10B, and HPF-PS10E: Black Enclosure Model ZNAC-PS: Optional Class A Conversion Module Refer to listee's printed data sheet for detailed product description and operational considerations.
RATING:	Models HPF-PS6 and HPF-PS6B: 120V AC, 50/60 Hz, 5.0A Maximum Model HPF-PS6E: 240V AC, 50/60 Hz, 2.7A Maximum Models HPF-PS10 and HPF-PS10B: 120V AC, 50/60 Hz, 6.2A Maximum Model HPF-PS10E: 240V AC, 50/60 Hz, 3.5A Maximum Model ZNAC-PS: 24V DC

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BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, electrical rating, and UL label.
APPROVAL:	Listed as a power supply extender when used with separately listed compatible fire alarm control units. Refer to listee's Installation Instruction Manual for details.
NOTES:	

10-08-20 VWW

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test resultsand/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria.Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 07/01/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang** , Program Coordinator
Fire Engineering & Investigations Division

ASD-PL3 SERIES

Addressable Photoelectric Smoke Detectors

The Gamewell-FCI® ASD-PL3 Series feature a modern design and expanded color options support a variety of contemporary aesthetic demands. In addition, each detector is constructed for exceptional installation and maintenance efficiency.





The ASD-PL3 Series intelligent plug-in smoke detectors are designed for both performance and aesthetics, and are direct replacements for the ASD-PL2 Velociti 2 Series detectors. A new modern, sleek, contemporary design and enhanced optical sensing chamber is engineered to sense smoke produced by a wide range of combustion sources in accordance with more stringent code standards. The ASD-PL3 Series detector sensitivity can be programmed in the control panel software. Sensitivity is continuously monitored and reported to the panel. Point ID capability allows each detector's address to be set with rotary, decimal address switches, providing exact detector location for selective maintenance when chamber contamination reaches an unacceptable level. Dual electronic thermistors add 135°F (57°C) fixed temperature thermal sensing on the ASD-PTL3. The ASD-PL3R is a remote test capable detector for use with DNR Series duct detector housings.

For legacy installations, service detectors are available in the classic ivory color that will operate in both Velociti and CLIP protocol for backwards compatibility. Ivory models are designated by the -IV suffix that appears after the detector model.

Note: The E3 Series® and S3 Series panels support both the Velociti and CLIP protocols, and the GWF-7075 panel supports only the Velociti protocol. To obtain a complete list of panels that are listed to Velociti Series 3 detectors, refer to the Compatibility Addendum for Gamewell-FCI Manuals, P/N: 9000-0427-L8.

FEATURES AND BENEFITS

- Designed to meet UL 268 7th Edition
- Sleek and stylish contemporary design
- Stable communication technique with noise immunity
- Addressable by device
- Compatible with Velociti and CLIP protocol systems
- Rotary, decimal addressing (Refer to the Gamewell-FCI panel manuals for device capacity)
- Two-wire SLC connection
- LEDs blink every time the unit is polled
- 360°-field viewing angle of the visual alarm indicators (two bi-color LEDs); LEDs blink green in Normal condition and turn on steady red in Alarm
- Integral communications and built-in device-type identification
- Remote test feature from the panel
- Built-in functional test switch activated by external magnet
- Walk test with address display (an address of 121 will blink the detector LED 12-(pause)-1)
- Low standby current
- Built-in tamper-resistant feature
- Designed for direct-surface or electrical-box mounting
- Sealed against back pressure
- Plugs into separate base for ease of installation and maintenance
- Expanded color options
- SEMS screws for wiring of the separate base
- Optional remote, single-gang LED accessory
- Optional sounder, relay, and isolator bases

Honeywell

Gamewell FCI FIRE CONTROL INSTRUMENTS

INSTALLATION

The ASD-PL3 Series plug-in intelligent thermal detectors use a separate base to simplify installation, service, and maintenance. Installation instructions are shipped with each detector.

Mount base (all base types) on an electrical backbox which is at least 1.5" (3.81 cm) deep. For a chart of compatible junction boxes, see 9021-60540.

Note: Because of the inherent supervision provided by the SLC loop, end-of-line resistors are not required. Wiring "T-taps" or branches are permitted for Class "B" wiring.

Note: When using relay or sounder bases, consult the M500X installation sheet I56-3629 for device limitations between isolator modules and isolator bases.

OPERATION

Each ASD-PL3 Series detector uses one of the panel's addresses (total limit is panel dependent) on the Signaling Line Circuit (SLC). It responds to regular polls from the control panel and reports its type and the status. If it receives a test command from the panel (or a local magnet test), it stimulates its electronics and reports an alarm. It blinks its LEDs when polled and turns the LEDs on when commanded by the panel. The ASD-PL3 Series offers features and performance that represent the latest in smoke detector technology.

PRODUCT LINE INFORMATION

Note: "-IV" suffix indicates Velociti and CLIP device, Ivory color.

ASD-PL3: White, low-profile photoelectric sensor, Velociti only

ASD-PL3-IV: Ivory, low-profile intelligent photoelectric sensor, Velociti and CLIP

ASD-PTL3: White, same as ASD-PL3 but includes a built-in 135°F (57°C) fixed-temperature thermal device, Velociti only

ASD-PTL3-IV: Ivory, same as ASD-PL3-IV but includes a built-in 135°F (57°C) fixed-temperature thermal device, Velociti and CLIP

ASD-PL3R: White, low-profile intelligent photoelectric sensor, remote test capable, for use with DNR/DNRW, Velociti only

ASD-PL3R-IV: Ivory, low-profile intelligent photoelectric sensor, remote test capable, for use with DNR/DNRW, Velociti and CLIP

B300-6: White, standard flanged low-profile mounting base

B300-6-BP: Bulk pack of B300-6, package contains 10

B300-6-IV: Ivory, standard flanged low-profile mounting base

B501-WHITE: White, standard European flangeless mounting base

B501-BL: Black, standard European flangeless mounting base

B501-IV: Ivory, standard European flangeless mounting base

B501-WHITE-BP: Bulk pack of B501-WHITE, contains 10

B200S-WH: White, Intelligent, programmable sounder base

B200S-IV: Ivory, Intelligent, programmable sounder base

B200SR-WH: White, Intelligent sounder base for retrofit applications

B200SR-IV: Ivory, Intelligent sounder base for retrofit applications

B200S-LF-WH: White, Low Frequency Intelligent, programmable sounder base

B200S-LF-IV: Ivory, Low Frequency Intelligent, programmable sounder base

B200SR-LF-WH: White, Low Frequency Intelligent sounder base for retrofit applications

B200SR-LF-IV: Ivory, Low Frequency Intelligent sounder base for retrofit applications

B224RB-WH: White, plug-in System Sensor® relay base

B224RB-IV: Ivory, plug-in System Sensor relay base

B224BI-WH: White, plug-in System Sensor isolator detector base

B224BI-IV: Ivory, plug-in System Sensor isolator detector base

ACCESSORIES

TR300: White, replacement flange for B210LP or B300-6 bases

TR300-IV: Ivory, replacement flange for B210LP or B300-6 bases

RA100Z(A): Remote 3 – 32 VDC LED annunciator, mounts to a U.S. single-gang electrical box, for use with B501 and B300-6 bases only

M02-04-00: Test magnet

M02-09-00: Test magnet with telescoping handle

CK300: White, detector color kit, pack of 10

CK300-IV: Ivory, detector color kit, pack of 10

CK300-BL: Black, detector color kit, pack of 10

ASD-PL3 SERIES TECHNICAL SPECIFICATIONS

PHYSICAL/ENVIRONMENTAL

Sensitivity:

- -UL Applications: 0.5% to 4.0% per foot obscuration.
- -ULC Applications: 0.5% to 3.5% per foot obscuration

Size: 2.0" (51mm) high; base determines diameter

- **-B300-6:** 6.1" (15.6 cm) diameter
- **-B501:** 4" (10.2 cm) diameter

For a complete list of detector bases, see 9021-60540.

Shipping weight: 3.4 oz. (95 g)

Operating temperature range:

- ASD-PL3 Series: 32°F to 122°F (0°C to 50°C)
- ASD-PTL3 Series: 32°F to 100°F(0°C to 38°C)
- ASD-PL3R Series installed in a DNR/DNRW: -4°F to 158°F (-20°C to 70°C)

UL/ULC Listed Velocity Range: 0-4000 ft/min. (1219.2 m/min.), suitable for installation in ducts

Relative humidity: 10% – 93% non-condensing

Thermal ratings: fixed-temperature set point 135°F (57°C), rate-of-rise detection 15°F (8.3°C) per minute, high temperature heat 190°F (88°C)

ELECTRICAL SPECIFICATIONS

Voltage range: 15 - 32 volts DC peak

Standby current (max. avg.): 200µA @ 24 VDC (one communication every 5 seconds with LED enabled)

Max current: 4.5 mA @ 24 VDC ("ON")

DETECTOR SPACING AND APPLICATIONS

Gamewell-FCI recommends spacing detectors in compliance with NFPA 72. In low airflow applications with smooth ceiling, space detectors 30 feet (9.1m). For specific information regarding detector spacing, placement, and special applications refer to NFPA 72. A *System Smoke Detector Application Guide*, document SPAG91, available at www.systemsensor.com.

AGENCY LISTINGS AND APPROVALS

These listings and approvals apply to the modules specified in this document.In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. *Consult factory for latest listing status.*

- **UL Listed:** S1195
- **FM Approved**
- **CSFM:** 7272-1703:0501

Gamewell-FCI®, E3 Series®, Velociti®, and System Sensor® are registered trademarks of Honeywell International, Inc.

This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice.

Country of origin: Mexico

Honeywell Gamewell-FCI
12 Clintonville Road
Northford, CT 06472-1610
203.484.7161
www.gamewell-fci.com

9021-60967 | C | 05/20
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FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7272-1703:0501
PARENT LISTING No.:	7272-0028:0503
CATEGORY:	7272 - SMOKE DETECTOR-SYSTEM TYPE-PHOTOELECTRIC
LISTEE:	GAMEWELL-FCI 12 Clintonville Road, Northford, CT, 06472 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Models ASD-PL3, ASD-PL3R, and ASD-PTL3 analog addressable, photoelectric smoke detectors for open area and duct installations. Model ASD-PTL3 has a complementary heat detector. All models are similarl except for population/depopulation of components on the Printed Wiring Board for the intended features. All above models may be followed by two digit Suffix indicating the color of the detector enclosure: no suffix for white, -IV for ivory, -BL for black. Refer to listee's Installation and Maintenance Instruction for additional detailed product description and operational considerations
RATING:	24 VDC.
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, electrical rating, and UL label.
APPROVAL:	Listed as photoelectric smoke detectors. Detectors are for use with separately listed System Sensor base Models *B501, *B210LP (CSFM Listing 7300-1653:0109), B200S and B200SR (CSFM Listing 7300-1653:0213), B200S-LF and B200SR-LF (CSFM Listing 7300-1653:0238), B300-6 and B300-6-IS bases (CSFM Listing 7300-1653:0109), *B224BI and *B224RB (CSFM Listing 7300-1653:0126), System Sensor duct detector housings Models DNR and DNRW (CSFM listing 3240-1653:0209) and separately listed compatible fire alarm control units. Refer to manufacturer's Installation Manual for details. *All models comply with the applicable requirements in ANSI/UL 268, Smoke Detectors for Fire Alarm Systems, 7th Edition, January 11, 2016.
NOTES:	

*Revision
12/17/19 DCC

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Date Issued: 07/01/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang** , Program Coordinator
Fire Engineering & Investigations Division

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7300-1653:0109
CATEGORY:	7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES
LISTEE:	System Sensor, Unincorporated Div of Honeywell Int'l Inc. 3825 Ohio Ave, St. Charles, IL, 60174 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Models B401, B401B, B401R, B401BR, B401BR-750, B401R-750, B402B, B404B, B404BT, B406B, B501, B501B, 14506587-002, B501BH, B501BHT, B401BH, B110LP, B110RLP, B110RLP750, B112LP, B114LP, B114LPBT, B116LP, B210LP, B501-BL, B501-IV, *B501-WHITE, B300-6, B300-6-IV, B300-6-IS detector bases. Refer to listee's data sheet for detailed product description and operational considerations.
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, *model number, *electrical rating and UL label.
APPROVAL:	Listed as detector bases for use with separately listed compatible detectors. *Refer to Manufacturers Installation Instruction Manual for details.
NOTES:	Formerly 7300-1209:128

*Rev 04-03-18 gt

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 06/20/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

Honeywell | Addressable Devices

MS-7 Series

Manual Fire Alarm Pull Stations

General

The Gamewell-FCI, MS-7 Series manual fire alarm pull stations are available in a wide variety of configurations. The pull stations comply with the Americans with Disabilities Act (ADA) 5-lb. maximum pull force requirement. Operating instructions and Braille text are engraved in the handle. All pull stations include a key lock/reset which is keyed alike with the Gamewell-FCI fire alarm control panels and other manual fire alarm pull stations.



MS-7 Series

MS-7AF Velociti Addressable Station

The MS-7AF Velociti® Series addressable station is a double action pull station designed for installation in the signaling line circuit of Gamewell-FCI analog addressable control panels. Activation of the pull station causes its assigned address to register at the fire alarm control panel. The door contains an LED which flashes green in normal condition and lights steady red when the station has been activated.* The station features screw terminals.

MS-7ASF Velociti Addressable Station

The MS-7ASF Velociti® Series addressable pull station is a single action station designed for installation in the signaling line circuit of Gamewell-FCI analog addressable control panels. Activation of the station causes its assigned address to register at the control panel. The door contains an LED which flashes green in normal condition and lights steady red when the pull station is activated.* The station features screw terminals.

The Velociti® Series pull stations use a communication protocol that substantially increases the speed of communication between the sensors and certain Gamewell-FCI analog addressable fire alarm controls. These devices operate in a grouped fashion. If one of the devices in the group has a status change, the panel's microprocessor stops the group poll and focuses on the single device. The net effect offers a response speed up to five times greater than earlier designs.

MS-7 Double Action Station

The MS-7 double action pull station is used with conventional fire alarm control panels. It features a set of single pole contacts and screw terminals for connection to an initiating circuit.

FEATURES & BENEFITS

- Addressable stations compatible with all Gamewell-FCI analog addressable fire alarm controls
- Conventional stations suitable for use with any UL® Listed control panel
- The pull stations (MS-7LOB) are Listed for outdoor applications
- Complies with ADA pull force requirements
- Offers surface or semi-flush mounting
- Shock and vibration resistant
- Both single and double action pull stations available
- Includes a tumbler lock for test and reset keyed alike with analog addressable fire alarm controls

*Only the red LED is operative in panels that do not operate in Velociti mode

MS-7S Single Action Station

The MS-7S single action pull station is used with conventional fire alarm control panels. It features a set of single pole contacts and wire leads for connection to an initiating circuit.

MS-7SP Double Action Station

The MS-7SP is a double action pull station similar to the MS-7 station, with the additional feature of including both English and Spanish instructions molded into the unit.

MS-7LR Dual-action Agent Release Station

The MS-7LR is designed for use with the Gamewell-FCI fire alarm control panels with releasing capabilities and Flex Series releasing systems. It features a set of single pole contacts and screw terminals used to connect to an initiating circuit.

MS-7LRA Agent Release Station with Abort

The MS-7LRA is designed for use with the Gamewell-FCI fire alarm control panels with releasing capabilities and Flex Series releasing systems where system abort capabilities are required. It consists of the following:

- An MS-7LR mounted on a plate with an abort switch
- LED indicators that signal system normal and system activated status

MS-7LOB Double Action Station (Listed for Outdoor Applications)

The MS-7LOB station must be mounted on a Model SB-I/O backbox. In retrofit applications, the pull station is UL Listed for use with the WP-10 backbox. It is intended for use with conventional control panels and has a set of single pole contacts and screw terminals.

Mounting

The MS-7 interior pull stations may be surface mounted or semi-flush mounted on a standard double-gang, or 4-inch (10.2 cm) square electrical box. An optional trim ring (BG12TR) may also be used for semi-flush mounting.

NYC-Plate

The NYC-Plate provides the backplate for the manual pull station. (See Figure 1).



Figure 1 NYC-Plate

Ordering Information

MS-7: Double action station

MS-7AF:** Velociti addressable double action station

MS-7ASF:** Velociti addressable single action station

MS-7S: Single action station, wire leads

MS-7SP: Double action station, English and Spanish instructions

MS-7LR: Agent release station, dual-action

MS-7LRA: Agent release station with abort switch, LED indicators, dual- action

MS-7LOB: Double action station, outdoor use (Includes SB-I/O - Indoor/outdoor use backbox)

SB-I/O: Indoor/outdoor use backbackbox

SB-10: Surface backbox

BG12TR: Trim ring for semi-flush mount, plastic

NY-PLATE: NYC backplate for manual pull station

**For use with the Gamewell-FCI analog addressable control panels only.

MS-7 Series Technical Specifications

SYSTEMS

Material: Lexan®
Contact Ratings: 0.25 amps. @ 30 VAC/VDC (resistive)
Dimensions: 5 5/8" H x 4 1/4" W x 1 1/4" D
(14 x 10.1 x 3.2 cm)
Operating Temperature:
(MS-7AF, MS-7ASF): 32° to 120° F (0° to 49° C)
(MS-7LOB): -30° to 150° F (-35° to 66° C)
Relative Humidity :
(MS-7AF, MS-7ASF): 10 to 93% (non-condensing)
(MS-7LOB): 85% ± 5% @ 86° ± 3.6° (30° ± 2° C)
Alarm Current: .0030 amp. 0.007 for LED
Supervisory Current:
(MS-7AF, MS-7ASF): .00030 amps.

TEMPERATURE AND HUMIDITY RANGES

This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93% ± 2% RH (noncondensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15 – 27°C/60 – 80°F.

STANDARDS

The MS-7 Series is designed to comply with the following standard:
UL Standard: UL 864 9th Edition

AGENCY LISTINGS AND APPROVALS

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.
UL: S2465
FM: 3023594
MEA FDNY: 67-02-E Vol. VII
CSFM:
7160-1703:0119
7160-1703:0170
7160-1703:0109
ISO 9001 Certification

For a complete listing of all compliance approvals and certifications, please visit: http://www.gamewell-fci.com/en-US/documentation/Pages/Listings.aspx

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For more information
Learn more about Gamewell-FCI's MS-7 Series and other products available by visiting www.Gamewell-FCI.com

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www.honeywell.com

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LISTING SERVICE

LISTING No.:	7150-1703:0119
PARENT LISTING No.:	7150-0028:0199
CATEGORY:	7150 - FIRE ALARM PULL BOXES
LISTEE:	GAMEWELL-FCI 12 Clintonville Road, Northford, CT, 06472 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Model MS-7AF dual action fire alarm pull box. Refer to listee's data sheet for detailed product description and operational considerations.
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, rating, and UL label.
APPROVAL:	Listed as fire alarm pull boxes for use with separately listed compatible fire alarm control units. Refer to listee's Installation Instruction Manual for details. * These manual pull boxes meet the requirements of UL Standard 38, 1999 Edition and California amendments.
NOTES:	Formerly: 7150-0694:261

*Updated 09-08-2009 fm

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Date Issued: 07/03/2026

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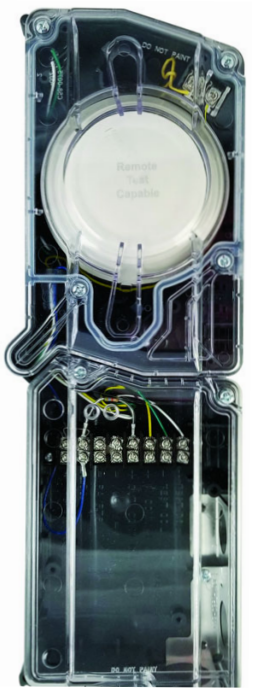
LISTING SERVICE

Authorized By: **Michael Huang** , Program Coordinator
Fire Engineering & Investigations Division

DNR AND DNRW

Intelligent Photoelectric Duct Smoke Detectors

The DNR and DNRW use photoelectric technology to detect smoke and combustion particles present in air moving through an HVAC air handling system.



The Gamewell-FCI DNR intelligent non-relay photoelectric duct smoke detector and DNRW watertight non-relay photoelectric duct smoke detector feature a pivoting housing that fits both square and rectangular footprints capable of mounting to a round or rectangular duct.

The DNRW duct smoke detector, with its NEMA-4 rating, is listed as a watertight, UV resistant enclosure providing protection against falling dirt, rain, and windblown dust, splashing and hose directed water, allowing operators to use the detector in the most extreme environments.

These units sense smoke in the most challenging conditions, operating in airflow speeds of 100 to 4,000 feet per minute (0.5 – 20.32 m/s), temperatures of -4°F – 158°F (-20°C – 70°C), and a humidity range of 0 – 95 percent (non-condensing.)

An improved cover design isolates the sensor head, which allows for ease of maintenance. A cover tamper feature indicates a trouble signal for a removed or improperly installed sensor cover. The housing provides a 3/4-inch conduit knockout and ample space to facilitate easy wiring and mounting of a relay module.

The Gamewell-FCI DNR duct smoke detectors can be customized to meet local codes and specifications without additional wiring and are compatible with all previous models, including remote test accessories.

ACCESSORIES

Gamewell-FCI provides system flexibility with a variety of accessories, including two remote test stations and different means of visible and audible system annunciation. As with our duct smoke detectors, all duct smoke detectors accessories are UL listed.

FEATURES AND BENEFITS

- Photoelectric, integrated low-flow technology
- Air velocity rating from 100 ft/min – 4,000 ft/min (0.5 m/s – 20.32 m/s)
- Versatile mounting options: square or rectangular configuration
- Broad ranges for operating temperature (-4°F – 158°F, -20°C – 70°C) and humidity (0% – 95% non-condensing)
- Patented sampling tube installs from front or back of the detector with no tools required
- Cover tamper signal
- Increased wiring space with a newly added 3/4” conduit knockout
- Available space within housing to accommodate mounting of a relay module
- Easily accessible code wheels on sensor head (sold separately)
- Clear cover for convenient visual inspection
- Remote testing capability
- Requires com line power only
- Accommodates an addressable relay module, sold separately, for applications requiring a Form-C relay

Honeywell

Gamewell FCI FIRE CONTROL INSTRUMENTS

DNR AND DNRW TECHNICAL SPECIFICATIONS

Size: (Rectangle) 14.38 in (37 cm) Length; 5 in (12.7 cm) Width, 2.5 in (6.6 cm) Depth

Size: (Square) 7.75 in (19.7 cm) Length; 9 in (22.9 cm) Width; 2.5 in (6.35 cm) Depth

Weight: 1.6 lb (0.73 kg)

Operating Temperature Range: -4°F – 158°F (-20°C – 70°C)

Storage Temperature Range: -22°F – 158°F (-30°C – 70°C)

Operating Humidity Range: 0% – 95% relative humidity (non-condensing)

Air Duct Velocity: 100 – 4,000 ft/min (0.5 – 20.32 m/s)

Accessory Current Loads at 24 VDC: RA100Z and RTS151(KEY)

- Standby: 0mA
- Alarm: 12mA max

AGENCY LISTINGS AND APPROVALS

Consult product manual for lists of compatible UL-Listed devices. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL:** S911
- **CSFM:** 3240-1653:0209
- **FM approved**

PRODUCT LINE INFO

DNR: Intelligent non-relay photoelectric low flow smoke detector housing. Requires photoelectric smoke detector (sold separately).

DNRW: Watertight intelligent non-relay photoelectric low flow duct smoke detector housing. Requires photoelectric smoke detector (sold separately). NEMA-4 rated.

ASD-PL3R-IV: Remote test capable addressable low-profile photoelectric smoke detector; ivory; supports CLIP and Velociti® protocols

ASD-PL3R: Remote test capable addressable low-profile photoelectric smoke detector; white; supports Velociti protocol only

ASD-PL3-IV: Addressable low-profile photoelectric smoke detector; ivory; supports CLIP and Velociti protocols

ASD-PL3: Addressable low-profile photoelectric smoke detector; white; supports Velociti protocol only

DCOIL: Remote test coil. Required for older DNR(W) duct detector housing

DUCTCOV: Retrofit DNR cover for manufactured prior to April 2014

DUCTCOVW: Retrofit DNRW cover for manufactured prior to April 2014

DST1: Metal sampling tube duct width up to 1 ft (0.3m)

DST1.5: Metal sampling tube duct widths up to 1 ft – 2 ft (0.3 – 0.6 m)

DST3: Metal sampling tube duct widths up to 2 ft – 4 ft (0.6 – 1.2 m)

DST5: Metal sampling tube duct widths up to 4 ft – 8 ft (1.2 – 2.4 m)

DST10: Metal sampling tube duct widths up to 8 ft – 12 ft (2.4 – 3.7 m)

DH400OE-1: Weatherproof enclosure

ETX: Metal exhaust tube duct, width 1 ft (0.3 m)

M02-04-00: Test magnet

P48-21-00: End cap for metal sampling tubes

RA100Z: Remote annunciator alarm LED

RTS151: Remote test station

RTS151KEY: Remote test station with key lock

IMPORTANT NOTES

- DNR(W) duct detector housings with a date code of 0013 or higher do not require a DCOIL or auxiliary 24 VDC for remote test applications when used with a remote test capable detector.
- DNR(W) duct detector housings with a date code of 0012 or earlier require a DCOIL and auxiliary 24 VDC power for remote test applications.

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This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice.

Country of origin: Mexico

Honeywell Gamewell-FCI
12 Clintonville Road
Northford, CT 06472-1610
203.484.7161
www.gamewell-fci.com

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CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	3240-1653:0209
CATEGORY:	3240 - DUCT SMOKE DETECTOR HOUSING/BASE
LISTEE:	System Sensor, Unincorporated Div of Honeywell Int'l Inc. 3825 Ohio Ave, St. Charles, IL, 60174 Contact: Brant,Lisa (203) 484-6105 (203) 484-7309 Email: lisa.brant@honeywell.com
DESIGN:	Models DNR, DNRW, DNRHS and DNRECL* analog photoelectric duct smoke detector housings. The units consist of a duct detector housing, exhaust tubes, and separately listed compatible detector head. Model DNRW is a Type 4(NEMA4) watertight enclosure. Refer to listee's data sheet for additional detailed product description and operational considerations.
RATING:	24 VDC
INSTALLATION:	In accordance with listee's printed installation instruction, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, rating, air velocity and UL label.
APPROVAL:	Listed as conventional photoelectric duct smoke detector housing for use with separately listed fire alarm control units. Refer to listee's Installation Instruction Manual for details.
NOTES:	

01-02-18 gt

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 05/02/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

VELOCITI® SERIES AOM-2SF

Addressable Output Relay Supervised Control Module

The AOM-2SF is an addressable output, supervised, control module used with the Gamewell-FCI panels.



AOM-2SF

GENERAL

The Gamewell-FCI Velociti® Series addressable output supervised control module (AOM-2SF) allows a Gamewell-FCI analog addressable fire alarm control panel to switch an external power supply, such as a DC supply or audio amplifier (up to 80 V_{RMS}) to notification appliances. The AOM-2SF notification appliance circuit can be wired either Class A or Class B. It also supervises the wiring to the connected loads and reports their status to the panel as NORMAL, OPEN or SHORT CIRCUIT. The module contains a panel controlled LED.

The Velociti® Series use a communication protocol that substantially increases the speed of communication between the SLC devices and certain Gamewell-FCI analog addressable fire alarm control panels. These devices operate in a grouped fashion. If one of the devices in the group has a status change, the panel's microprocessor stops the group poll and concentrates on the single device. The net result is a superior response speed up to five times greater than the earlier designs.

The AOM-2SF module is designed for installation in the signaling line circuit of any Gamewell-FCI analog addressable fire alarm control panel. The signaling line circuits of Gamewell-FCI analog addressable fire alarm control panels are designed to accommodate up to 159 modules per circuit. The AOM-2SF is designed to mount in a 4" (10.16 cm) square junction box 2 1/8" (5.5 cm) deep.

Table 1 lists the relay contact ratings.

Current Rating	Maximum Voltage	Load Description	Application
3A	30 VDC	Resistive	Non-Coded
2A	30 VDC	Resistive	Coded
0.9A	110 VDC	Resistive	Non-Coded
0.5A	125 VAC	Resistive	Non-Coded
0.5A	30 VDC	Inductive (L/R=5ms)	Coded
1A	30 VDC	Inductive (L/R=2ms)	Coded
0.5A	125 VAC	Inductive (PF=.35)	Non-Coded
0.7A	75 VAC	Inductive	Non-Coded

Table 1: Relay Contact Ratings

Ordering Information

AOM-2SF: Addressable output supervised control module

FEATURES AND BENEFITS

- Listed under UL® 864, 10 Edition Standard
- Complies with UL 2572, 2nd Edition Standard for Mass Notification
- Designed as a compact size to allow easy installation
- Includes Class A or Class B notification appliance circuit
- Accommodates audio amplifiers up to 80 V_{RMS}
- FM Listed as suitable for a releasing device service
- Includes a bi-color LED that flashes green whenever the module is addressed, and lights steady red upon activation*

*Note 1: Only the red LED is operative in panels that do not operate in Velociti® mode
*Note 2: The bi-color LED functionality is not available on the GWF-7075 panel.

Honeywell

Gamewell FCI

VELOCITI® SERIES AOM-2SF TECHNICAL SPECIFICATIONS

SYSTEM

Supervisory Current: 0.00375 amps
Alarm Current: .0065 amps
Operating Temperature: 32° to 120° F (0° to 49° C)
Relative Humidity: 10 to 93% relative humidity (non-condensing)
Dimensions: 4 1/2" H x 4" W x 1 1/4" D (11.4 H x 10.2 W x 3.2 D cm)

TEMPERATURE AND HUMIDITY RANGES

This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93% ± 2% RH (noncondensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15 – 27°C/60 – 80°F.

STANDARDS

The Velociti Series AOM-2SF are designed to comply with the following standard:
UL Standards: UL 864, 10th Edition
UL 2572, 2nd Edition

AGENCY LISTINGS AND APPROVALS

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.
UL: S1949
UL 864, 10th Edition
UL 2572, 2nd Edition
FM: 3023594
MEA FDNY: 227-03-E Vol. IV
CSFM: 7300-1703:0102
ISO 9001 Certification

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UL® is a registered trademark of Underwriter's Laboratories Inc.

This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice.

Country of origin: Mexico

Honeywell Gamewell-FCI
12 Clintonville Road
Northford, CT 06472-1610
203.484.7161
www.gamewell-fci.com

9020-0627 | J | 06/20
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CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7300-1703:0102
PARENT LISTING No.:	7300-1653:0103
CATEGORY:	7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES
LISTEE:	GAMEWELL-FCI 12 Clintonville Road, Northford, CT, 06472 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Models AMM-4, *AMM-4F, AMM-2 and *AMM-2F monitor modules and Models AOM, AOM-2, AOM-2R, *AOM-2RF, AOM-2S and *AOM-2SF control modules. Refer to listee's data sheet for detailed product description and operational considerations.
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model designation, electrical rating and UL label.
APPROVAL:	Listed as accessories for use with separately listed compatible control units. System Sensor Model SMB500 surface mount box (CSFM Listing No. 7300-1653:103) may be used as an enclosure for these modules
NOTES:	FORMERLY: 7300-0694:178

12-4-07

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test resultsand/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria.Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 07/01/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang** , Program Coordinator
Fire Engineering & Investigations Division

L-Series Speakers and L-Series with LED Speaker Strobes



System Sensor L-Series and L-Series with LED audible visible notification products are rich with features guaranteed to cut installation times and maximize profits with lower current draw and modern aesthetics.

Features

- LED technology provides lower current draw
- Digital Volt Meter (DVM) diagnostic test points for Speaker Strobes
- Common aesthetics across the L-Series platform
- Tamper-resistant construction
- Field-selectable candela settings on wall units: 15, 30, 75, 95, 110, 135, and 185
- Field-selectable candela settings on ceiling units: 15, 30, 75, 95, 115, 150, and 177
- Rotary switches for candela, speaker voltage (25 and 70.7 Vrms) and power settings (¼, ½, 1, and 2 watts)
- Mounting plate provides plug-in design for easier installation and shorting springs to check wiring continuity
- Electrically compatible with legacy SpectrAlert, SpectrAlert Advance and L-series devices at 16-33 VDC
- Synchronization through use of UL approved power supplies that support System Sensor Sync protocol or System Sensor MDL Sync Module
- Speakers and Speaker strobes listed for wall or ceiling use
- No extension ring required
- Speakers offer high fidelity and high volume sound output
- 520 Hz capable with compatible Fire alarm control panel (FACP)

Agency Listings

SIGNALING c UL us LISTED	UL LISTED	SIGNALING c UL us LISTED	FM APPROVED	
Speaker-Strobes: S4048	Speakers: S4048	Speakers: S4048	3057383 3057493	7125-1653:0533 7135-1653:0532 7320-1653:0505

The System Sensor L-Series and L-Series with LED platform offers the most versatile and easy-to-use line of speakers and speaker strobes in the industry with lower current draw and modern aesthetics. LED lighting technology offers significantly lower current draw compared to older Xenon bulbs across a full candela range. This improves design flexibility for notification appliance circuits (NACs) while also reducing power supply requirements allowing for simpler and lower cost installations.

Flexible design options meet virtually any application requirement: wall or ceiling mount, red or white color choices, bezel kits for alternate markings and languages, and LED color lenses for distinctive visual signaling. In addition, installers can easily adapt devices using field selectable candela, using rotary switches.

The L-Series and L-Series with LED line is developed to simplify installation. All devices feature plug-in designs with minimal intrusion into the back box, making installations fast and foolproof while virtually eliminating costly and time-consuming ground faults. The universal mounting plate includes an onboard shorting spring, so installers can test wiring continuity before the device is installed.

The low harmonic distortion of the speaker offers high fidelity sound output while offering high volume sound output for use in high ambient noise applications.

In addition, the System Sensor L-Series with LED notification appliances offer a new diagnostic test point feature that allows you to measure device voltage with a digital voltage meter (DVM) without removing the appliance from the wall or ceiling. The DVM test points are discreetly located on the face of the notification appliance which enable faster troubleshooting and end of line (EOL) voltage checks while greatly reducing the risk of misplacing or damaging appliances during troubleshooting.

Product Specifications

Physical / Electrical Specifications	
Standard Operating Temperature	32°F to 120°F (0°C to 49°C)
Humidity Range	10 to 93% non-condensing
Power	¼, ½, 1, 2 Watts
Frequency Range	400 to 4000 Hz
Maximum Supervisory Voltage (Speakers)	50 VDC
Maximum Supervisory Voltage (Strobe)	33 VDC
Strobe Flash Rate	1 Flash Per Second
Nominal Voltages, Speakers	25 Volts or 70.7 Volts (nominal)
Nominal Voltage, Strobe	Regulated 24 VDC
Operating Voltage Range, Strobe	16 to 33 VDC
Input Terminal Wire Gauge	12 to 18 AWG

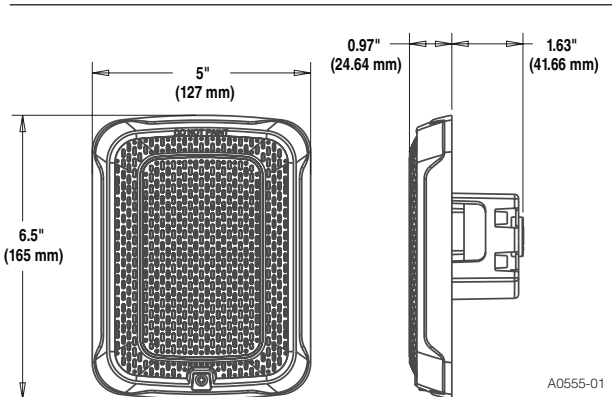
Dimensions	
Wall Speaker Strobes (including lens)	6.5"L x 5.00" W x 2.3" D (165.1mm L x 127mm W x 58.4mm D)
Wall Speaker Strobes (including lens) with SBBSPRL/WL Surface Mount Back Box	6.62" L x 5.12" W x 4.55" D (168.1mm L x 130mm W x 115.5mm D)
Ceiling Speaker Strobes (including lens)	6.8" diameter x 2.33" D (172.7mm x 59.2mm)
Ceiling Speaker Strobes (including lens) with SBBCRL/WL Surface Mount Back Box	6.9" diameter x 4.83" D (176mm x 122.7mm)
Wall SPL Speakers	6.5"L x 5.00" W x 0.97" D (165.1mm L x 127mm W x 23mm D)
Wall Speakers with SBBSPRL/WL Surface Mount Back Box	6.62" L x 5.12" W x 3.2" W (168.1mm x 130mm x 81.2mm)
Ceiling SPC Speakers	6.8" diameter x 1.0" D (173mm x 25mm)
Ceiling Speakers with SBBCRL/WL Surface Mount Back Box	6.9" diameter x 3.5" D (176mm x 89mm)
NOTE: SBBSPRL/WL Surface Mount Back Box intended for speaker strobes and speakers.	

Minimum Speaker Strobe Sound Output				
	¼ W	**½ W**	**1 W**	**2 W**
UL Reverberant (dBA @10 ft)	76	79	82	83
UL Anechoic (dBA @10 ft)	76	79	82	83
Minimum Speaker Only Sound Output				
	¼ W	**½ W**	**1 W**	**2 W**
UL Reverberant (dBA @10 ft)	79	82	85	88
UL Anechoic (dBA @10 ft)	79	82	85	88

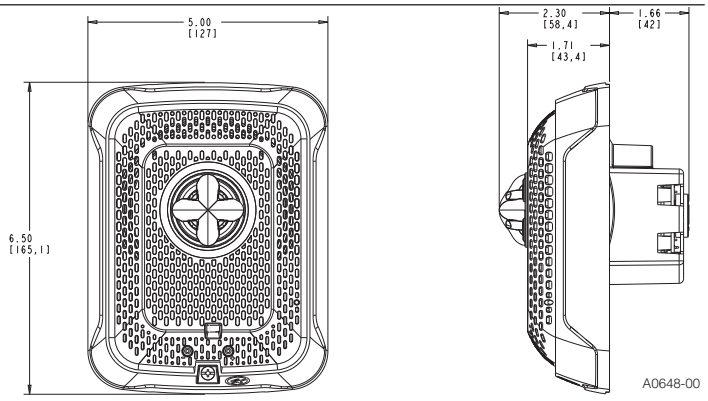
UL / ULC Maximum Strobe Current Draw (mA)

UL/ULC Max Strobe Current Draw (mA RMS)	
Candela Rating	**16 to 33 Volts DC**
15	18
30	22
75	70
95	75
110	85
115	90
135	105
150	110
177	115
185	120
FCP*	(future)
*FCP Fire Control Panel, future use	

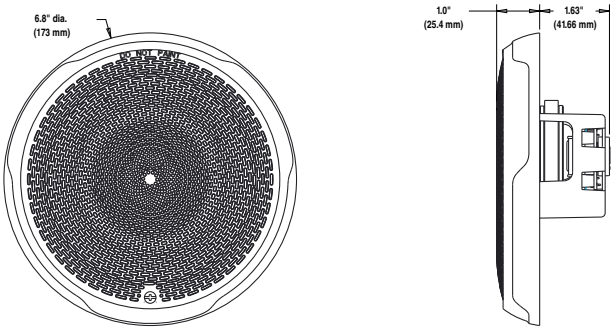
L-Series Dimensions



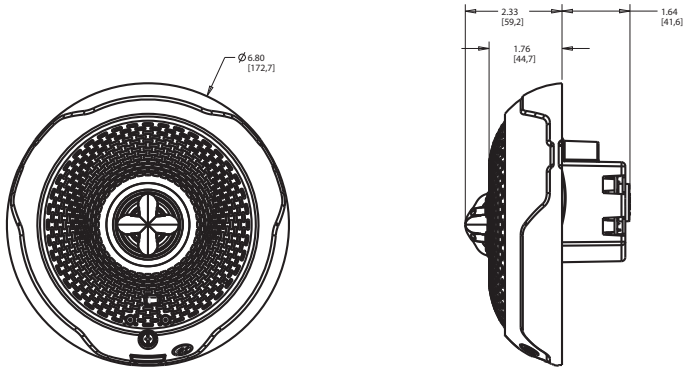
Wall-Mount Speaker



Wall-Mount Speaker Strobe

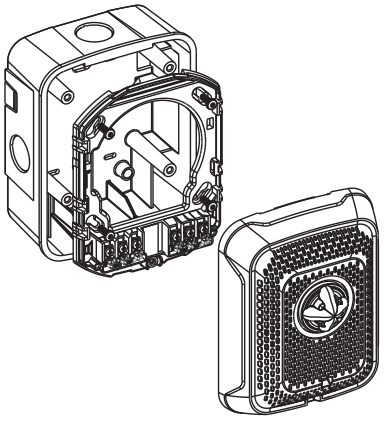


Ceiling-Mount Speaker

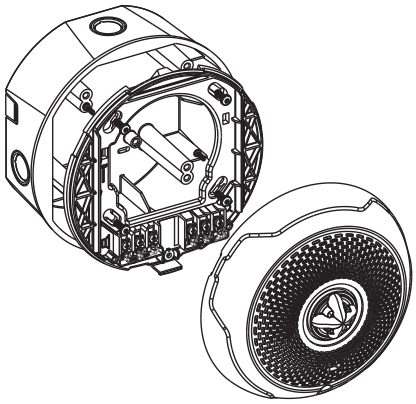


Ceiling-Mount Speaker Strobe

L-Series with LED: Surface Mount Back Box



Wall-Mount Speaker Strobe with
SBBSPSRL/SBBSPWL Surface Mount Back Box



Ceiling-Mount Speaker Strobe with
SBBCRL/SBCWL Surface Mount Back Box

L-Series with LED: Ordering Information

Model	Description
L-Series with LED Speaker Strobes	
SPSCRLED	2-WIRE, SPEAKER STROBE LED RED CEILING
SPSCRLED-B	2-WIRE, SPEAKER STROBE LED RED CEILING BILINGUAL
SPSCRLED-BT	2-WIRE, SPEAKER STROBE LED RED CEILING BILINGUAL WITH TRIM
SPSCWLED	2-WIRE, SPEAKER STROBE LED WHITE CEILING
SPSCWLED-B	2-WIRE, SPEAKER STROBE LED WHITE CEILING BILINGUAL
SPSCWLED-BT	2-WIRE, SPEAKER STROBE LED WHITE CEILING BILINGUAL WITH TRIM
SPSCWLED-T	2-WIRE, SPEAKER STROBE LED WHITE CEILING WITH TRIM
SPSCWLED-TP	2-WIRE, SPEAKER STROBE LED WHITE CEILING PLAIN WITH TRIM
SPSCWLED-CLR-ALERT	2-WIRE, SPEAKER STROBE LED WHITE CEILING ALERT CLEAR LENS
SPSCWLED-P	2-WIRE, SPEAKER STROBE LED WHITE CEILING PLAIN
SPSCWLED-SP	2-WIRE, SPEAKER STROBE LED WHITE CEILING FUEGO
SPSRLED	2-WIRE, SPEAKER STROBE LED RED WALL
SPSRLED-B	2-WIRE, SPEAKER STROBE LED RED WALL BILINGUAL
SPSRLED-P	2-WIRE, SPEAKER STROBE LED RED WALL PLAIN
SPSRLED-SP	2-WIRE, SPEAKER STROBE LED RED WALL FUEGO
SPSWLED	2-WIRE, SPEAKER STROBE LED WHITE WALL
SPSWLED-B	2-WIRE, SPEAKER STROBE LED WHITE WALL BILINGUAL
SPSWLED-ALERT	2-WIRE, SPEAKER STROBE LED WHITE WALL ALERT AMBER LENS
SPSWLED-CLR-ALERT	2-WIRE, SPEAKER STROBE LED WHITE WALL ALERT CLEAR LENS
SPSWLED-P	2-WIRE, SPEAKER STROBE LED WHITE WALL PLAIN
L-Series Speaker	**Description**
SPCRL	2-WIRE, SPEAKER RED CEILING
SPCWL	2-WIRE, SPEAKER WHITE CEILING
SPRL	2-WIRE, SPEAKER RED WALL
SPWL	2-WIRE, SPEAKER WHITE WALL
Accessories	**Description**
SBBSPRL	BACK BOX, WALL, SPEAKER, RED
SBBSPWL	BACK BOX, WALL, SPEAKER, WHITE
SBBCRL	BACK BOX, CEILING, SPEAKER, RED
SBBCWL	BACK BOX, CEILING, SPEAKER, WHITE
TR-2	TRIM RING, WALL, RED
TR-2W	TRIM RING, WALL, WHITE
TRC-2	TRIM RING, CEILING, RED
TRC-2W	TRIM RING, CEILING, WHITE
LED Lenses	**Description**
LENS-A3	Lens LED Amber Wall/Ceiling
LENS-B3	Lens LED Blue Wall/Ceiling
LENS-G3	Lens LED Green Wall/Ceiling
LENS-R3	Lens LED Red Wall/Ceiling
Bezels	**Description**
BZSPR	WALL RED BEZEL KIT
BZSPW	WALL WHITE BEZEL KIT
BZSPRC	CEILING RED BEZEL KIT
BZSPWC	CEILING WHITE BEZEL KIT

Notes for Bezels:

†Each bezel pack ships in a package of 5.

Add one of the following extensions for print/language options: -F (FIRE), -AL (ALERT), -EV (EVAC), -AG (AGENT), -P (Plain), -FR (FEU), -PG (FOGO), -SP (FUEGO), -SPE (FUEGO/FIRE)

Bezels for use only with Speaker Strobes

3825 Ohio Avenue • St. Charles, IL 60174 USA
Phone: 800-SENSOR2 • Fax: 630-377-6495
www.systemsensor.com

3333 Unity Drive, Mississauga, ON L5L 3S6 Canada
Phone: 800-SENSOR2 • Fax: 905-812-0771
www.systemsensor.ca

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AVDS-62174:A • 08/29/2024

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7135-1653:0532
CATEGORY:	7135 - AUDIBLE DEVICES
LISTEE:	System Sensor, Unincorporated Div of Honeywell Int'l Inc. 3825 Ohio Ave, St. Charles, IL, 60174 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Models SPSRLED, SPSWLED, SPSRLED-B, SPSWLED-B, SPSRLED-BT, SPSWLED-BT, SPSRLED-P, SPSWLED-P, SPSRLED-SP, SPSWLED-ALERT, SPSWLED-CLR-ALERT, SPSCRLED, SPSCWLED, SPSCRLED-B, SPSCWLED-B, SPSCRLED-BT, SPSCWLED-BT, SPSCWLED-T, SPSCWLED-TP, SPSCWLED-CLR-ALERT, SPSCWLED-P, SPSCWLED-SP Ceiling or Wall Speaker Strobes. The speaker strobes have 7 field selectable candela settings. The strobe portion is designed to be used in 24VDC systems. The speaker is designed to be used at either 25 or 70.7 volts, and operate at any one of four input power levels. Models may be mounted on the wall or ceiling as indicated and are intended for indoor dry use only. Language designators: "-B" are bilingual (English/French). "-P" are plain versions (no wording). "-SP" are marked "FUEGO". "-ALERT" are marked "ALERT" and use an amber lens. "-CLR-ALERT" are marked "ALERT" and use an clear lens. "-T" are sold with trim. Refer to listee's data sheet for additional detailed products description and operational considerations.
RATING:	Speaker - 25 V or 70.7 V RMS Strobes - Regulated 16-33 VDC (24 VDC nominal) Speaker Power Settings: ¼, ½, 1, 2 Watts Candela Ratings (cd): Wall Speaker Strobes: 15, 30, 75, 95, 110, 135, 185 Ceiling Speaker Strobes: 15, 30, 75, 95, 115, 150, 177
INSTALLATION:	In accordance with listee’s printed installation instructions, NFPA 72, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee’s Name, Model Number, Rating, and UL Label.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

APPROVAL:	Listed as speaker strobes for use with separately listed compatible fire alarm control units. Refer to listee's Installation Instruction Manual for details. Model complies with the applicable requirements in UL 1480, 7th Edition, UL 1638, 6th Edition, and UL 1971, 3rd Edition.
NOTES:	

4-26-24 MH

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Date Issued: 06/25/2026

Listing Expires: 06/30/2027

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

L-Series Outdoor Speakers and L-Series with LED Outdoor Speaker Strobes



System Sensor L-Series and L-Series with LED audible visible notification products are rich with features guaranteed to cut installation times and maximize profits with lower current draw and modern aesthetics.

Features

- LED technology provides lower current draw
- Weatherproof per NEMA 4X, IP56 as a standalone device
- Rated from -40°F to 151°F
- Electrically compatible with legacy SpectrAlert, SpectrAlert Advance and L-series devices at 16-33 VDC
- Field-selectable candela settings on wall units: 15, 30, 75, 95, 110, 135, and 185
- Field-selectable candela settings on ceiling units: 15, 30, 75, 95, 115, 150, and 177
- Rotary switches for candela, speaker voltage (25 and 70.7 Vrms) and power settings (¼, ½, 1, and 2 watts)
- Mounting plates with wirenuts are provided to make the connection between the field wiring and the mounting plates
- Synchronization through use of UL approved power supplies that support System Sensor Sync protocol or System Sensor MDL Sync Module
- Tamper-resistant construction
- Speakers and Speaker strobes listed for wall or ceiling use
- Speakers offer high fidelity and high volume sound output

Agency Listings

SIGNALING c UL us LISTED — Speaker-Strobes: S4048

SIGNALING c UL us LISTED — Speakers: S4048

FM APPROVED — 3057383, 3057493

7125-1653:0538, 7125-1653:0539

The System Sensor L-Series Outdoor Speakers and L-Series with LED Outdoor Speaker Strobes offer the most versatile and easy-to-use line of weatherproof speakers and speaker strobes that can meet virtually any application requirement, including indoor, outdoor, wet, dry, and washdown environment applications in temperatures from –40°F to 151°F. The speakers provide a broad frequency response range, low harmonic distortion offering a high-fidelity sound output while offering a high-volume sound output for use in high ambient noise applications.

The L-Series Outdoor and L-Series with LED Outdoor appliances are NEMA 4X and IP56 rated without having to seal the back box. Additional caulk or sealant are not required on the back box for a faster, cleaner installation. The L-Series platform offers a modern aesthetic across the indoor and outdoor platform and design variations across applications: wall or ceiling mount, red or white color choices, LED colored lenses for distinctive visual signaling. In addition, installers can easily adjust appliances through rotary switches for candela, speaker voltage and power settings.

LED technology offers significantly lower current draw compared to older Xenon bulbs across a full candela range. This improves design flexibility for notification appliance circuits (NACs) while also reducing power supply requirements allowing for simpler and lower cost installations. UL listed waterproof wirenuts are provided to make the connection between the field wiring and the mounting plates.

The outdoor devices ship with plastic back boxes that accommodate in-and-out wiring for daisy chaining devices. Knock-outs located on the back eliminate the need to drill holes for screw-in mounting.

Note: When replacing SpectrAlert Advance products, the backbox must be updated to the L-Series with LED backbox.

Product Specifications

Physical / Electrical Specifications	
Standard Operating Temperature	-40 °F to 151 °F (-40 °C to 66 °C))
Humidity Range	0 to 95 ±5%
Power	¼, ½, 1, 2 Watts
Frequency Range	400 to 4000 Hz
Maximum Supervisory Voltage (Speakers)	50 VDC
Maximum Supervisory Voltage (Strobe)	33 VDC
Strobe Flash Rate	1 Flash Per Second
Nominal Voltages, Speakers	25 Volts or 70.7 Volts (nominal)
Nominal Voltage, Strobe	Regulated 24 VDC
Operating Voltage Range, Strobe	16 to 33 VDC
Input Terminal Wire Gauge	12 to 18 AWG

Dimensions	
Wall Speaker Strobes (including lens)	6.69" L x 5.16" W x 2.47" D (170mm L x 131mm W x 63mm D)
Wall Speaker Strobes (including lens) with SBBSPRL/WL Surface Mount Back Box	6.69" L x 5.16" W x 4.72" D (170mm L x 131mm W x 120mm D)
Ceiling Speaker Strobes (including lens)	6.97" diameter x 2.23" D (177mm x 57mm)
Ceiling Speaker Strobes (including lens) with SBBCRL/WL Surface Mount Back Box	6.97" diameter x 4.73" D (177mm x 127mm)
Wall Speakers	6.69" L x 5.16" W x 1.72" D (170mm L x 131mm W x 44mm D)
Wall Speakers with SBBSPRL/WL Surface Mount Back Box	6.69" L x 5.16" W x 3.97" D (1700mm L x 131mm W x 101mm D)
Ceiling Speakers	6.97" diameter x 1.2" D (177mm x 31mm)
Ceiling Speakers with SBBCRL/WL Surface Mount Back Box	6.97" L diameter x 3.97" D (177mm x 101mm)
NOTE: SBBSPRL/WL Surface Mount Back Box intended for speaker strobes and speakers.	

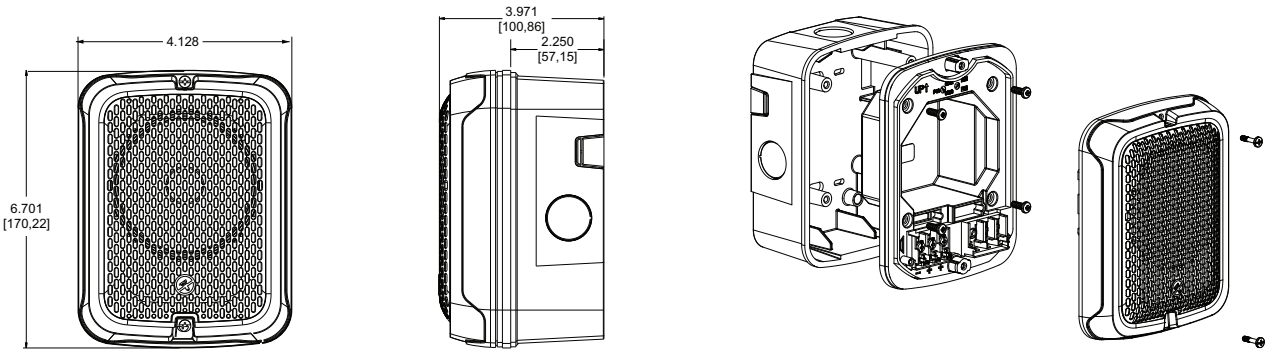
Minimum Speaker Strobe Sound Output				
	¼ W	**½ W**	**1 W**	**2 W**
UL Reverberant (dBA @10 ft)	77	81	83	85
UL Anechoic (dBA @10 ft)	77	81	83	85

Minimum Speaker Only Sound Output				
	¼ W	**½ W**	**1 W**	**2 W**
UL Reverberant (dBA @10 ft)	77	81	83	85
UL Anechoic (dBA @10 ft)	77	81	83	85

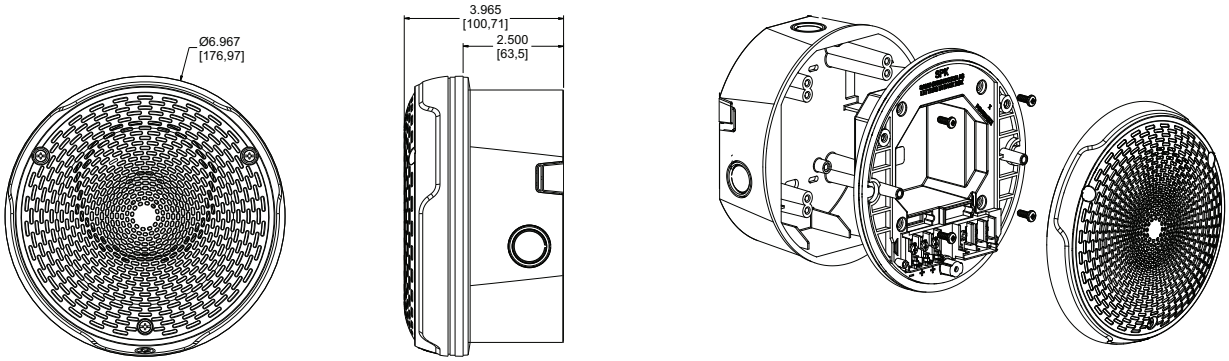
UL / ULC Current Draw

UL/ULC Maxmimum Strobe Current Draw (mA)			
	Candela Rating	**16–33 Volts**	
		Wall	**Ceiling**
Candela Range	15	18	18
	30	22	22
	75	70	70
	95	75	75
	110	85	—
	115	—	90
	135	105	—
	150	—	110
	177	—	115
	185	120	—

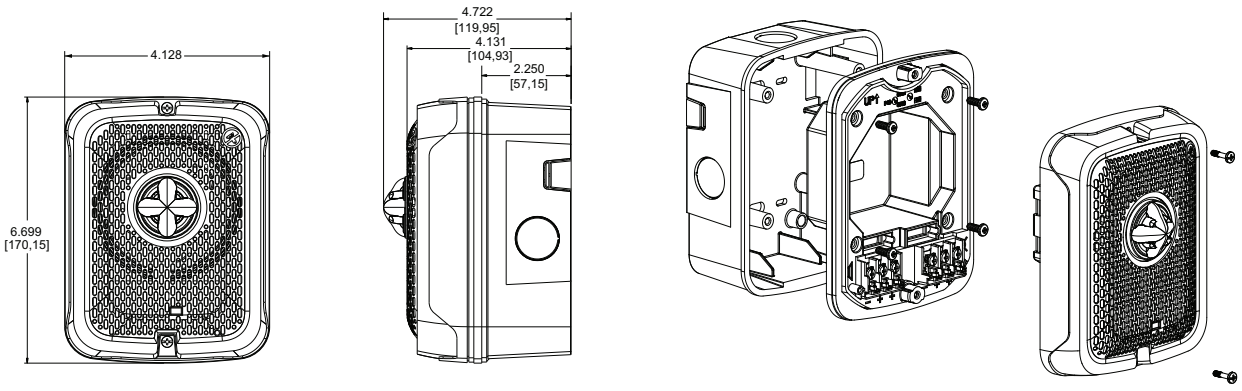
L-Series Dimensions



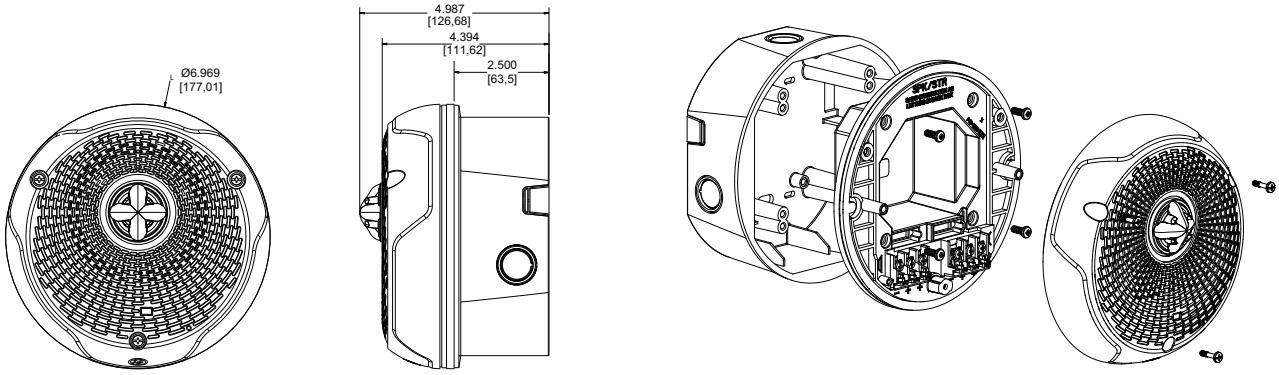
Outdoor Wall Speaker with Surface Mount Back Box (SBBSPRL/SBBSPWL)



Outdoor Ceiling Speaker with Surface Mount Back Box (SBBCRL/SBBCWL)



Outdoor Wall Speaker Strobes with Surface Mount Back Box (SBBSPRL/SBBSPWL)



Outdoor Ceiling Speaker Strobes with Surface Mount Back Box (SBBCRL/SBBCWL)

L-Series with LED: Ordering Information

Model	Description
L-Series with LED Outdoor Speaker Strobes	
SPSRKLED	Outdoor Speaker Strobe, Wall, Red
SPSRKLED-P	Outdoor Speaker Strobe, Wall, Red, Plain
SPSRKLED-B	Outdoor Speaker Strobe, Wall, Red, Bilingual
SPSWKLED	Outdoor Speaker Strobe, Wall, White
SPSWKLED-P	Outdoor Speaker Strobe, Wall, White, Plain
SPSWKLED-B	Outdoor Speaker Strobe, Wall, White, Bilingual
SPSWKLED-CLR-ALERT	Outdoor Speaker Strobe, Wall, White, Alert, Clear lens
SPSCWKLED	Outdoor Speaker Strobe, Ceiling, White
SPSCWKLED-P	Outdoor Speaker Strobe, Ceiling, White, Plain
SPSCWKLED-B	Outdoor Speaker Strobe, Ceiling, White, Bilingual
SPSCWKLED-CLR-ALRT	Outdoor Speaker Strobe, Ceiling, White, Alert, Clear lens
L-Series Outdoor Speakers	
SPRKL	Outdoor Speaker, Wall, Red, Plain
SPWKL	Outdoor Speaker, Wall, White, Plain
SPCWKL	Outdoor Speaker, Ceiling, White, Plain
Accessories	
SBBSPRL	Back Box, Wall, Speaker, Red
SBBSPWL	Back Box, Wall, Speaker, White
SBBCRL	Back Box, Ceiling, Speaker, Red
SBBCWL	Back Box, Ceiling, Speaker, White
LED Lenses	
LENS-A3	Lens LED Amber Wall/Ceiling
LENS-B3	Lens LED Blue Wall/Ceiling
LENS-G3	Lens LED Green Wall/Ceiling
LENS-R3	Lens LED Red Wall/Ceiling

Notes for L-Series with LED Outdoor Speaker Strobes:

- All -P models have a plain housing (no “FIRE” marking on cover.)
- All -ALERT models have “ALERT” marking on cover.
- All -B models have “FIRE/FEU” marking on cover.

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Phone: 800-SENSOR2 • Fax: 630-377-6495
www.systemsensor.com

3333 Unity Drive, Mississauga, ON L5L 3S6 Canada
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www.systemsensor.ca

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AVDS-62185-00 • 03/17/2025

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7135-1653:0538
CATEGORY:	7135 - AUDIBLE DEVICES
LISTEE:	System Sensor, Unincorporated Div of Honeywell Int'l Inc. 3825 Ohio Ave, St. Charles, IL, 60174 Contact: Brant, Lisa 2034846105 Email: lisa.brant@honeywell.com
DESIGN:	Models SPSRKLED, SPSRKLED-P, SPSRKLED-B, SPSWKLED, SPSWKLED-P, SPSWKLED-B, SPSWKLED-CLR-ALERT, SPSCWKLED, SPSCWKLED-P, SPSCWKLED-B, SPSCWKLED-CLR-ALERT Ceiling or Wall Speaker/Strobes. Models SPRKL, SPWKL, and SPCWKL Ceiling or Wall Speakers. All models may be mounted on the wall or ceiling as indicated and are intended for outdoor, wet use, Type 4X and IP56, with an operating temperature range of -40°C to 66°C (-40°F to 151°F). The Strobes have 7 field selectable candela settings. The strobe portion is designed to be used in 24VDC systems. The speaker portion is designed to be used at either 25 or 70.7 volts and operate at any one of four input power levels. Language designators: "-B" are bilingual (English/French). "-P" are plain versions (no wording). "-CLR-ALERT" are marked "ALERT" and uses a clear lens. Ceiling Surface Mounted Back Boxes: SBBCRL, SBBCWL Wall Surface Mounted Back Boxes: SBBSPRL, SBBSPWL Refer to listee's data sheet for additional detailed products description and operational considerations.
RATING:	Speakers - 25 V, or 70.7 Vrms Speaker Power Settings: ¼, ½, 1, 2 Watts Speaker Audibility Rating: 77-85 dBA @ 10 ft Strobes - Regulated 16-33 VDC (24 VDC nominal) Strobe Candela Ratings (cd): Wall Speaker/Strobes: 15, 30, 75, 95, 110, 135, 185 Ceiling Speaker/Strobes: 15, 30, 75, 95, 115, 150, 177
INSTALLATION:	In accordance with listee's printed installation instructions, NFPA 72, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.

Listing Expires: 06/30/2027

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

MARKING:	Listee's Name, Model Number, Rating, and UL Label.
APPROVAL:	Listed as outdoor speaker/strobes and speakers for use with separately listed compatible fire alarm control units. Refer to listee's Installation Instruction Manual for details. All models comply with the applicable requirements in UL 1480, 7th Edition. Speaker/Strobe models also comply with the applicable requirements in UL 1638, 6th Edition, and UL 1971, 3rd Edition.
NOTES:	

03-14-25 MH

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 06/25/2026

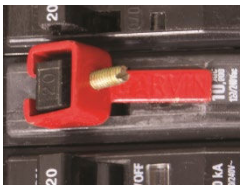
Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

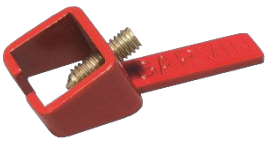
Listing Expires: 06/30/2027

DTK-120HWLOK

Parallel Connected Surge Protective Device







DITEK's DTK-120HWLOK surge protective device is designed and manufactured to meet the standards of the life safety industry. This compact, parallel-mount SPD is widely used to protect fire alarm panels and other dedicated branch circuit loads. Its small footprint enables installation in a variety of locations. The DTK-120HWLOK includes an NFPA 72 2022 10.6.5.4 compatible lockout kit to prevent accidental disconnect of the fire alarm system.

Product Features

- Approved for 20A circuit breakers
- NEMA 4X weatherproof enclosure allows for use in harsh environments
- Diagnostic LED provides positive indication of system power and SPD function
- Lockout kit prevents accidental disconnect of fire alarm system

Applications

- Fire Alarm Control Panels
- Equipment Panels
- Dedicated Branch Panels

Accessories

- DIN Rail Mounting Kit, p/n DTK-DRK

Technical Specifications	
Voltage Configuration:	120VAC Single Φ (2W + G)
MCOV:	150V
Protection Modes:	L-G, L-N, N-G
Voltage Protection Rating:	700V L-G, L-N 1500V N-G
Surge Current Rating:	50,000A
SCCR:	100,000A
Nominal Discharge Current Rating (I_n):	10kA

Mechanical Specifications	
Connection Method:	¾" NPT Male 18-inch 12 AWG Leads
Housing:	NEMA 4X Polycarbonate
Operating Temperature:	-31°F - 176°F (-35°C - 80°C)
Maximum Humidity:	95% non-condensing
Dimensions:	3.5" L x 1.89" W x 3.4" H (88.9 mm x 48.3 mm x 86.4 mm)
Weight:	0.55 lb (.025 kg)

Quality Standards & Approvals	
Certifications:	UL1449 5th Edition CSA C22.2 No. 269.1-17
SPD Type:	Type 1
Warranty:	10 Year Limited Warranty

Every precaution has been taken to ensure that this literature is accurate and complete. DITEK Corporation assumes no responsibility and disclaims all liability for damages resulting from the use of this information or for any errors or omissions.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	4945-2105:0102
CATEGORY:	4945 - CIRCUIT PROTECTORS/SURGE PROTECTIVE DEVICES
LISTEE:	DITEK Corporation 1720 Starkey Road, Largo, FL, 33771 Contact: Molinari, Michael 8007532345 Email: michael.molinari@ditekcorp.com
DESIGN:	Models DTK-120HW and DTK-120/240HW Surge protective devices. Refer to listee's data sheet for additional detailed product description and operational considerations.
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, rating, and UL label.
APPROVAL:	Listed as a surge protective device. For indoor use only.
NOTES:	*FORMERLY: 7300-2105:0102

05-10-24 MH

*Revised

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 06/26/2026

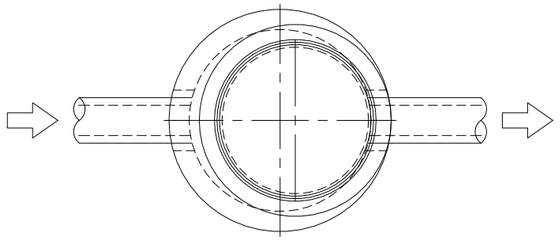
Listing Expires: 06/30/2027

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

PROJECT SUMMARY

DESIGN PARAMETERS

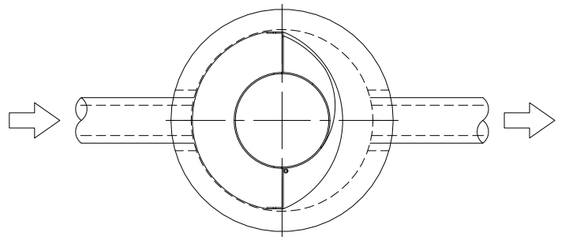
- TREATMENT METHOD = CDS
- MODEL = CDS1515-3



PLAN VIEW

(INTERNALS NOT SHOWN)

SCALE: 1"=30'

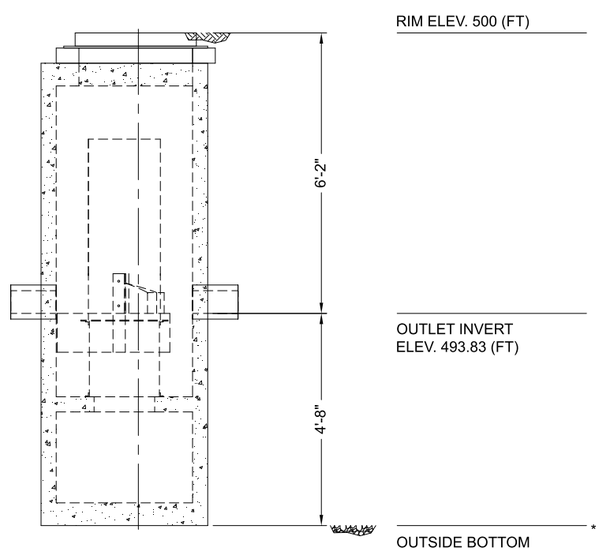


SECTION FOR PIPE ORIENTATION

(TOP SLAB NOT SHOWN)

SCALE: 1"=30'

MATERIAL LIST		
COUNT	DESCRIPTION	INSTALLED BY
1	CDS1515-3 CYLINDER INSERT, STD	CONTECH
1	SEALANT FOR JOINTS	CONTRACTOR
1	30"Ø 4" FRAME & COVER, EJ#41600484, OR EQUIV.	CONTRACTOR



ELEVATION VIEW

SCALE: 1"=40'

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

* OUTSIDE TOP AND BOTTOM OF SYSTEM MAY DIFFER DEPENDING ON MANUFACTURING LOCATION.

CONTECH
DYOHDS
DRAWING

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MARK	DATE	REVISION DESCRIPTION	BY

CDS CDS1515-3

GATEWAY COMMUNITY SCHOOL

PRE-TREATMENT

CAMARILLO,CA

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com

CDS®

THE DESIGN OF THIS PRODUCT MAY BE COVERED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 7,425,262; 8,277,652; 8,287,728; 8,557,103; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

DATE: 05/19/2026

DESIGNED:	DRAWN:
DYO	DYO
CHECKED:	APPROVED:
DYO	DYO
PROJECT No.:	SEQUENCE No.:
94869	628172

SHEET: 1 OF 1

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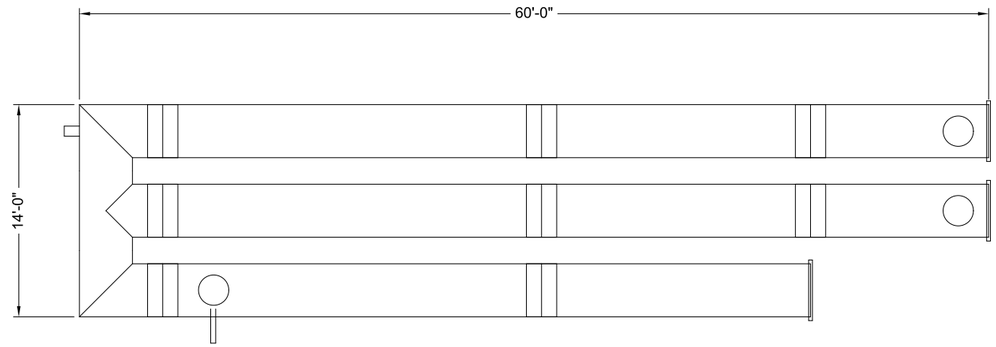
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 172 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 2,650 CF
- PIPE STORAGE VOLUME = 1,652 CF
- BACKFILL STORAGE VOLUME = 728 CF
- TOTAL STORAGE PROVIDED = 2,380 CF
- STONE VOID = 40%

PIPE DETAILS
- DIAMETER = 42"
- CORRUGATION = 2 2/3x1/2
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 21"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 0"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2⅔" x ½" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY

SCALE: 1" = 10'

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DATE	REVISION DESCRIPTION	BY

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www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

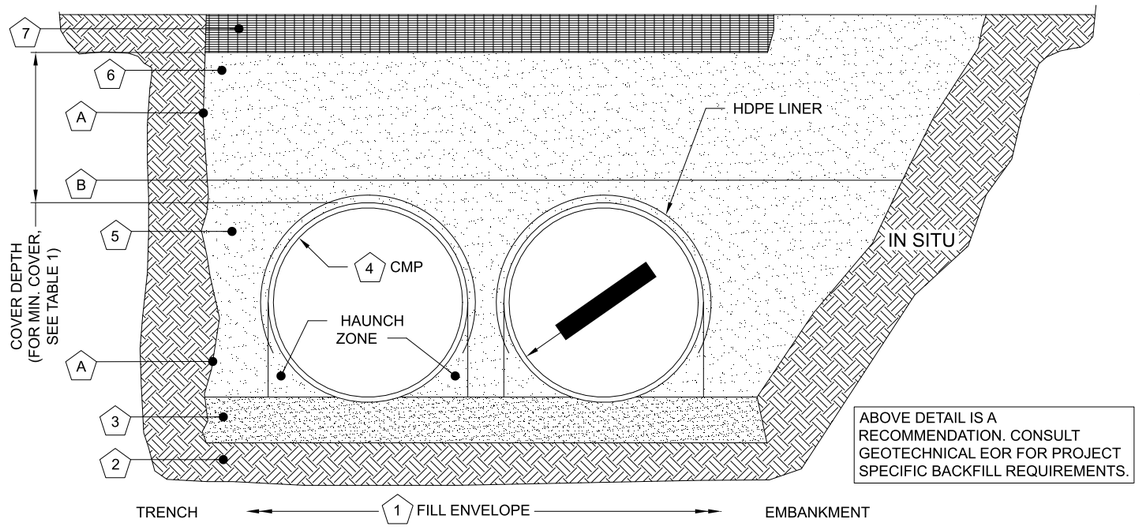
DYO651459 Gateway Community
CMP Retention
Camarillo, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
111608	651459	9/14/2026
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

TABLE 1:

DIAMETER, D	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
>48"-96"	12"	3" x 1", 5" x 1"
>96"	D/8	3" x 1", 5" x 1"

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.



ABOVE DETAIL IS A RECOMMENDATION. CONSULT GEOTECHNICAL EOR FOR PROJECT SPECIFIC BACKFILL REQUIREMENTS.

MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

INSTALLATION NOTES

1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. AN HDPE MEMBRANE LINER WILL BE PLACED ON THE CROWN OF EACH PIPE TO PROVIDE AN IMPERMEABLE BARRIER AGAINST ENVIRONMENTAL CHANGES THAT MAY ADVERSELY AFFECT THE SYSTEM OVER TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL TECHNICAL DETAILS.

TABLE 2: PERFORATED STANDARD

CMP RETENTION STANDARD BACKFILL SPECIFICATIONS

	MATERIAL LOCATION	MATERIAL SPECIFICATION	DESCRIPTION	
1	FILL ENVELOPE WIDTH	PER ENGINEER OF RECORD	MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.5D + 12"	MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.0D PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0"
2	FOUNDATION	**AASHTO 26.5.2** - PER ENGINEER OF RECORD	PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.	
3	BEDDING	**AASHTO M 43: 3, 357, 4, 467, 5, 56, 57**	ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE OPEN GRADED GRANULAR BEDDING CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.3.8.1	
4	CORRUGATED METAL PIPE			
5	BACKFILL	FREE-DRAINING, ANGULAR, NATURALLY OCCURRING WASHED-STONE PER **AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** OR APPROVED EQUAL *	HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WHERE CONVENTIONAL COMPACTION TESTING IS NOT PRACTICAL, THE MATERIAL SHALL BE MECHANICALLY COMPACTED UNTIL NO FURTHER YIELDING OF MATERIAL IS OBSERVED UNDER THE COMPACTOR. **IN AREAS WITH HIGH WATER TABLE FLUCTUATIONS THAT INTERACT WITH THE PIPE ZONE, CONSIDER INSTALLING A GEOTEXTILE SEPARATION LAYER TO PREVENT SOIL MIGRATION.	
6	COVER MATERIAL	UP TO MIN. COVER - **AASHTO M 145: A-1, A-2, A-3** ABOVE MIN. COVER - PER ENGINEER OF RECORD	COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROADBASE MATERIAL WITHIN MIN COVER LIMITS	
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)	PER ENGINEER OF RECORD	FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.	
A	OPTIONAL SIDE GEOTEXTILE	NONE	GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION.	
B	GEOTEXTILE BETWEEN LAYERS	NONE	IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.	

NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.

* APPROVED REGIONAL EQUIVALENTS FOR SECTION 5 INCLUDE CA-7, MIDOT 6AA, 6A, OR 5G, PROVIDED THEY MEET THE PARTICLE SIZES INDICATED.

MANUFACTURER RECOMMENDED BACKFILL

NOT TO SCALE

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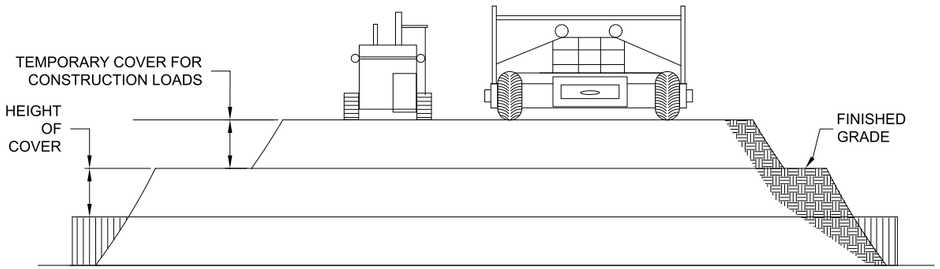
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CONTECH CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO651459 Gateway Community
CMP Retention
Camarillo, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
111608	651459	9/14/2026
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

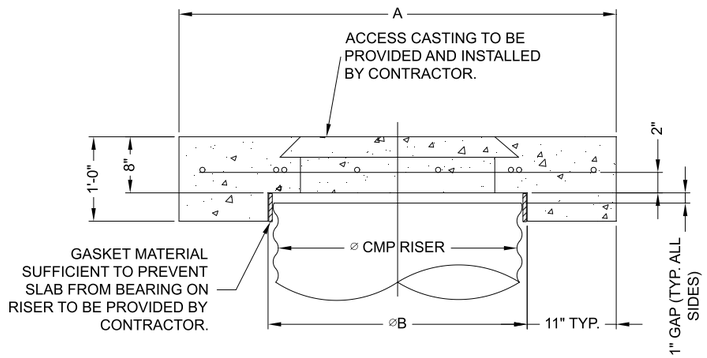
ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

REQUIREMENTS INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

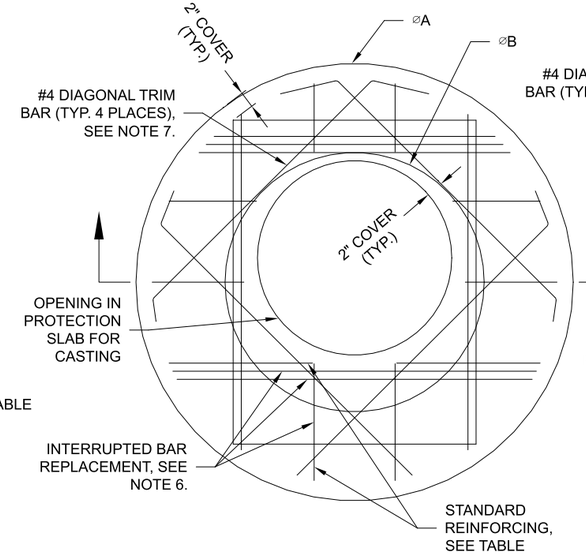
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



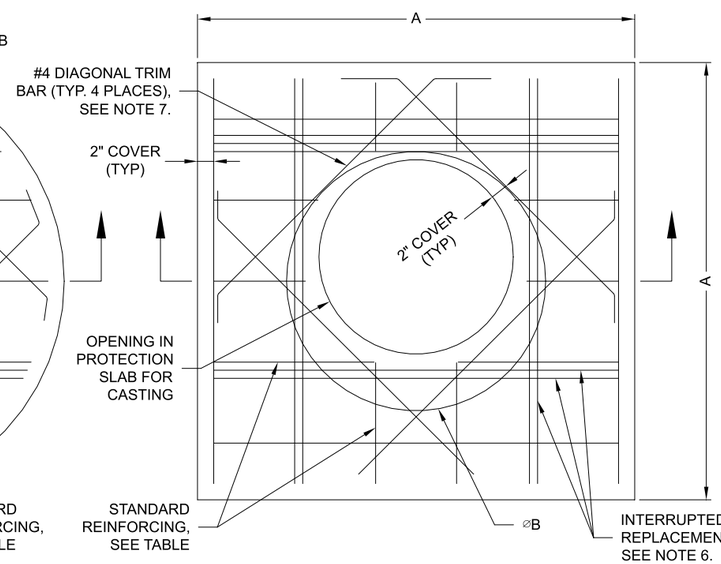
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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CONTECH CMP DETENTION SYSTEMS
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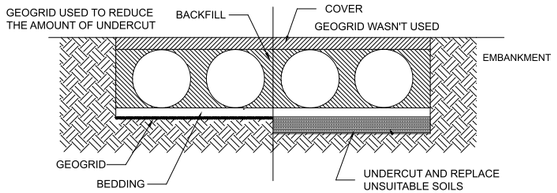
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

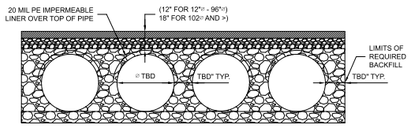
IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

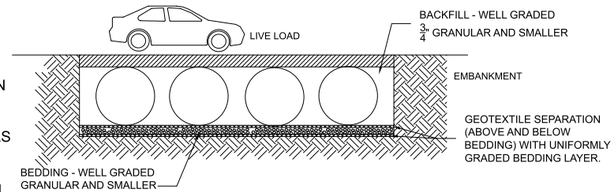
THE RESISTIVITY OF A PROJECT SITE MAY CHANGE OVER TIME DUE TO THE USE OF VARIOUS SALTING, DE-ICING, AND AGRICULTURAL AGENTS APPLIED ON OR NEAR THE AREA. TO MITIGATE THE POTENTIAL IMPACT OF THESE AGENTS, AN HDPE MEMBRANE LINER WILL BE INSTALLED ON THE CROWN OF EACH PIPE, CREATING AN IMPERMEABLE BARRIER. THIS MEASURE IS DESIGNED TO PROTECT THE SYSTEM FROM ENVIRONMENTAL CHANGES THAT COULD LEAD TO PREMATURE CORROSION AND REDUCE THE OVERALL SERVICE LIFE.



IN-SITU TRENCH WALL

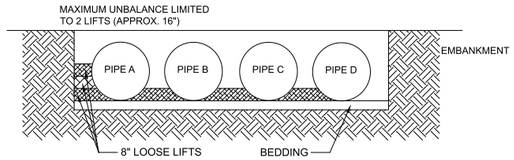
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



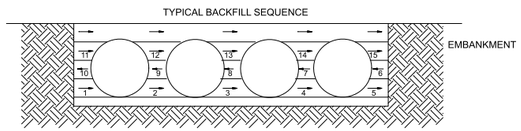
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

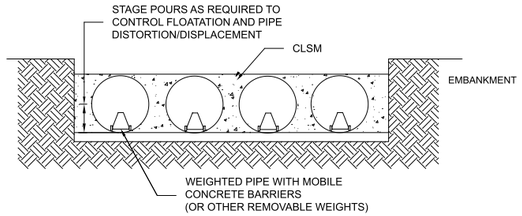


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

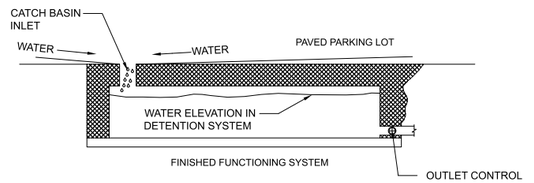


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC ("Contech"). Neither this drawing, nor any part thereof, may be used, reproduced or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and Contech expressly disclaims any liability or responsibility for such use.

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DATE	REVISION DESCRIPTION	BY

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CONTECH CMP DETENTION SYSTEMS

CONTECH **DYODS** DRAWING

DYO651459 Gateway Community
CMP Retention
Camarillo, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
111608	651459	9/14/2026
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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Preliminary DRAINAGE &
STORMWATER QUALITY REPORT

FOR

Gateway Community School
Building Addition
Ventura County Office of Education

550 Airport Way
Camarillo, CA 93010

Prepared for:

PERKINS-EASTMAN
3194 Airport Loop Drive
Costa Mesa, CA 92626
Contact: Diego Matzkin, AIA Principal
Tel. 714.427.0277

Prepared by:

DELANE ENGINEERING

400 W. Ventura Blvd. Suite 265
Camarillo, CA 93012

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JN 01-10334

November 2026

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Appendix C – Hydraulic Calculations
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PURPOSE OF REPORT

The purpose of this report is to outline the existing drainage conditions of the site and present a description and analysis of the proposed drainage conditions and drainage impacts, along with the proposed stormwater quality measures.

Project Location

The project site is located on 550 Airport Way, Camarillo, CA 93010. The project site, Gateway Community School, sits withing APN 230-0-030-135 a 16.18 Acre developed parcel consisting of existing paved surface and school facilities. Within the 16-acre parcel, the project site sits with a drainage sub-area that is 2 Acres in size. The project itself will only disturb 1.31 Acres.

The existing surrounding developments comprise of Airport, Schools, commercial use, community park and agricultural land uses. Anticipated future developments within the project's watershed will comprise of similar commercial projects. Presently, the site drains towards the southwest towards an existing onsite storm drains that outlet into the Pleasant Valley Road Drain. The project is flat with a total relief across the project is approximately 4 feet, ranging from elevation 69 to 73. The site is located within the Ventura County Revolon Slough Rainfall Zone (REV2) and consists of a majority of Soil Type 3. It is 150-ft northwest of Pleasant Valley Road Drain.

Location Map



Project Description

This project consists of construction a Gateway Community School South Annex consisting of an 8-classroom building and two shade shelters at 550 Airport Way. The 8-classroom building will be a 20,000 square foot single story building. Ancillary improvements include three-point fabric shade shelters, may include new auto parking area, and will include a stormwater quality treatment system.

DRAINAGE

The objective of this report is to present hydrologic analysis of proposed project meets Ventura Countywide Stormwater Quality Management Program requirements. The County of Ventura requires all redevelopment within the county to incorporate stormwater quality control measures into the proposed improvement plans as part of the County Storm Water Municipal Separate Storm Sewer Systems (MS4), NPDES Permit No. CAS004002, Order 2010-0108. The proposed storm water facilities have been designed to comply with the Ventura County Technical Guidance Manual.

Redevelopment projects in category 10 above (existing single-family dwelling and accessory structure projects) are exempt unless the project creates, adds, or replaces 10,000 square feet of impervious surface area. Additionally:

Projects where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to the post development stormwater quality control requirements of Board Order 00-108, shall mitigate the entire redevelopment project area.

Therefore, the project must comply with the design and implementation of post-construction storm water management control measures as contained in subpart 4.E.11 or Order R4-2010-0108.

METHODOLOGY

The hydrologic analysis was based on research that included review of available approved off-site storm drain plans, aerial and field-surveyed topography, and geotechnical investigations and studies of neighboring sites. The existing and proposed drainage conditions of the project site were modeled using Ventura County's VCRat v2.64 program and peak flows of the 10-, 25-, 50-, and 100-year design storm events were generated.

Hydraulic analysis of proposed drainage facilities was also performed to meet District, City and County drainage requirements and to incorporate positive stormwater quality design principles that serve the site surroundings.

The report shall provide analysis showing how the project meets the following list of design requirements:

a. Design inlets, conveyances, and conduits for a 10-year storm event.
b. Stormwater Control BMPs shall be designed per the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, 2025.
c. Structures shall be protected from a 100-year flood event.
d. Meet the Land Development requirements contained in Part 4, Section E of the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) Municipal Separate Storm Sewer System (MS4) permit (Order R4-2010-0108)

HYDROLOGIC ANALYSIS

The hydrologic analysis was research that included on-site investigations, review of available existing and proposed grading plans, and reports. Data from existing sources were compared to existing conditions by review of aerial and field topographical survey. Design criteria shall follow the County of Ventura design standards.

Watershed subarea boundaries were defined based on existing drainage patterns and proposed drainage system layouts. The tributary area of each subarea was calculated to the nearest hundredth of an acre. Points of flow concentration based on drainage patterns and site characteristics such as soil number, rainfall zone, and land use were identified using Ventura County PWA GIS Mapping Application.

The design storms studied herein include the 10-, 25-, 50-, and 100-year events. Existing and Developed condition peak flow rates were calculated using the Ventura County Watershed Protection District Design Hydrology Manual, updated July 2017 and County of Ventura VCRat v2.64.

Time of concentration, Tc, calculations were determined for each storm for Existing and Developed conditions using the Ventura County Tc Calculator within VCRat v2.64. Hydrographs were then derived for the Developed Condition from the respective VCRat analyses and used for detention routing and design.

Pre-Developed Conditions

The Project is an existing school facility, is square in nature. It is bounded by existing roads and 3 sides; Airport Way on the west, Pleasant Valley Road on the south and Horizon Circle on the north. The site is a developed lot with existing parking, and structures, approximately **95%** impervious area. The area of the subject improvements generally drains from north to south towards Pleasant Valley Road. The Pleasant Valley Drain, and unlined trapezoidal channel that runs along the roadway captures run-off from the site and conveys it towards the Revolon Slough and ultimately the Pacific Ocean.

Table 1:1 below summarizes project site peak flow runoff under existing conditions. Refer to **Appendix A** for an Existing Hydrologic Condition exhibit and **Appendix B** hydrologic for calculations.

Table 1.1 Summarizes the Pre-developed Condition Peak Flows

Area	Q10	Q25	Q50	Q100
1.31	2.29	2.89	4.10	4.58

Post-Developed Conditions

Like existing conditions, the Project has drainage in the North to South direction. Peak flow rates were calculated using County of Ventura VCRat v2.6. Impervious percentages were calculated to be **75%,** which is less than the pre-developed conditions.

The offsite areas to the north that pass through the site were excluded in this study. It is the intent that the project shall pass the existing drainage from the offsite area around the site. Ultimately the drainage is part of the same Revolon Slough - Calleguas Creek Watershed and will end up in the Pleasant Valley Drain to the south of the site. The project is modeled as 1 sub areas for hydraulic and stormwater quality treatment.

Tables 1.2. Refer to **Appendix A** for a Developed Hydrologic Condition exhibit and **Appendix B** for hydrologic calculations.

Table 1:2 Post-Developed Conditions

Area	Q10	Q25	Q50	Q100
1.31	1.92	2.43	3.68	4.11

HYDRAULIC CALCULATIONS

Drainage within each sub-area is conveyed by curb & gutters or drainage swales and captured by grated inlets. Each inlet has been sized to capture the 10-yr storm event flows for their respective sub-areas.

Pipes have been sized using Hydraflow Express Extension for AutoCAD Civil 3D by Autodesk Inc., which uses manning's equations to calculate the normal depth of flow given design flow rates. Inlets have also been sized using Hydraflow Express, which uses the Hydraulic Engineering Circular No. 22 (HEC-22) analytical procedures for inlet capture and bypass. Results are summarized with supporting calculations in **Appendix C.**

100-Year Overflow

A 100-year overflow path shall be maintained along the West and South property line where the Water Surface Elevation shall be such that it is at least 1 ft below the proposed structure Finish Floor Elevation. This overflow path is consistent with existing drainage conditions.

The project can be found on FEMA Map Number 06111C0929F, Effective Date January 7, 2015, Shaded Zone X. Zone X is defined as areas subject to 1% chance of flood (100-year flood with depth less than 1 foot). Zone X is defined as areas subject to 0.2% Annual Chance Flood Hazard.



Detention Requirements

Review of Existing and Proposed Condition Peak flows reveals that detention is not required. The post-developed project will result in less impervious % as pre-developed conditions.

STORMWATER/ NPDES Requirements

Best Management Practice (BMP) devices for this project have been designed per the Ventura County Technical Guidance Manual (TGM), January 2025. The TGM provides methods for determining the Stormwater Quality Design Volume (SQDV) and Stormwater Quality Design Flow (SQDF).

Provision VIII F.1.d. of the 2021 MS4 Permit requires all Priority Development Projects to meet Structural BMP Performance Requirements in the following order of preference:

i. Onsite infiltration, bioretention and/or rainfall harvesting and use
ii. Onside biofiltration, offsite groundwater replenishment, and/or offsite retrofit
iii. Onsite flow-based treatment.

Per the MS4 Permit, Priority Development Projects are required to retain the Stom Water Quality Design Volume (SQDV) onsite. The BMP will treat the runoff generated from the 0.75" of rainfall or the 85th percentile runoff event, whichever is greater. The 85th percentile runoff even is greater.

Using Equation C-2, per the TGM the SQDV for the drainage management area is **2,635 cf.** INF-6 proprietary infiltration is the method of water quality treatment. Contech's CMP underground systems will be used for treatment of the SQDV for post-construction stormwater treatment. See **Appendix E** for sizing Calculations.

Using Equation C-3, per the TGM the SQDF used for pretreatment is **0.3 in/hr**. The provided stormwater quality pretreatment method is a Hydrodynamic Separation Device (PT-1) Prior to entering the underground system, drainage is routed through a Contech CDS unit, model 1515-3 by Contech, prior to entering the underground detention system. Appendix E for details and stormwater calculations.

Groundwater and Infiltration

Per the geotechnical report titled "Geotechnical Engineering Report Gateway Community School New South Annex and Existing Campus Modernization Camarillo, California," revised May 18, 2022, Earth Systems Pacific, "The historical high groundwater depth 10 feet." The site was analyzed using the Historic high groundwater.

Site specific testing was conducted, September 7, 2020, to evaluate subsurface infiltration characteristics. Boring IT-1, tested at a depth of approximately 3 feet below grade, exhibited an infiltration rate of 0.73 inches per hour, while boring IT-2, tested at approximately 6 feet below grade, exhibited an infiltration rate of 0.74 inches per hour.

CONCLUSIONS

In conclusion, the proposed design and analysis presented shows that the project will meet the County of Ventura drainage requirements and NPDES standards. These requirements are met by the proprietary infiltration, INF-6, which are designed for water quality. The project proposes less impervious area than the pre-developed condition, thus not requiring detention. The storm drain system has been sized for the 10-year storm event and to protect all structures from the 100-year storm. Ultimately the drainage is part of the same Conejo Creek – Calleguas Creek Watershed.

Review of FEMA Firm Maps shows that the project is in an area designated as Zone X. Zone X is subject to flooding (0.2% annual chance of flood) with depth not exceeding 12 inches. Grading plans show that the proposed building finish floors are more than 2 feet above existing grade.

The proposed project improvements will provide adequate storm water collection and treatment control measures, in compliance with the County of Ventura and 2021 MS4 Permit requirements. The proposed project shall meet Post Construction Stormwater Management Plan requirements by providing pretreatment with Hydrodynamic Separators, and primary treatment through infiltration.

The grading and drainage infrastructure shown on the Improvement plans shall provide for adequate drainage from the site. Drainage from the project site will be kept separate from the adjacent properties and will be controlled in a manner which will allow the development to occur as intended without conflicting with any applicable State, County, or City of Ventura regulations and without adversely affecting adjacent properties and/or the project itself.

REFERENCES

- *Ventura County Watershed Protection District Hydrology Manual dated December 2017.*
- *Ventura County Watershed Protection District Technical Guidance Manual (TGM) dated January 2025.*
- *2021 MS4 Permit*
- *Ventura County PWA GIS*
- *FEMA, National Flood Insurance Rate Maps*

APPENDIX

APPENDIX A



LEGEND

- FLOW DIRECTION
- FLOWPATH
- LIMITS OF DISTURBED
- SUB-AREA DESIGNATION (X)
- Q100 (CFS) (XX.X | XX.X)
- AREA (AC)

SCALE 1"=40'

area	Q10	Q25	Q50	Q100
1.31	2.29	2.89	4.10	4.58

GATEWAY COMMUNITY SCHOOL

PREPARED BY
DELANE ENGINEERING
2812 SANTA MONICA BLVD, SUITE 206
SANTA MONICA, CA 90404
PHONE: 310.566.5711-WWW.DELANEENGINEERING.COM

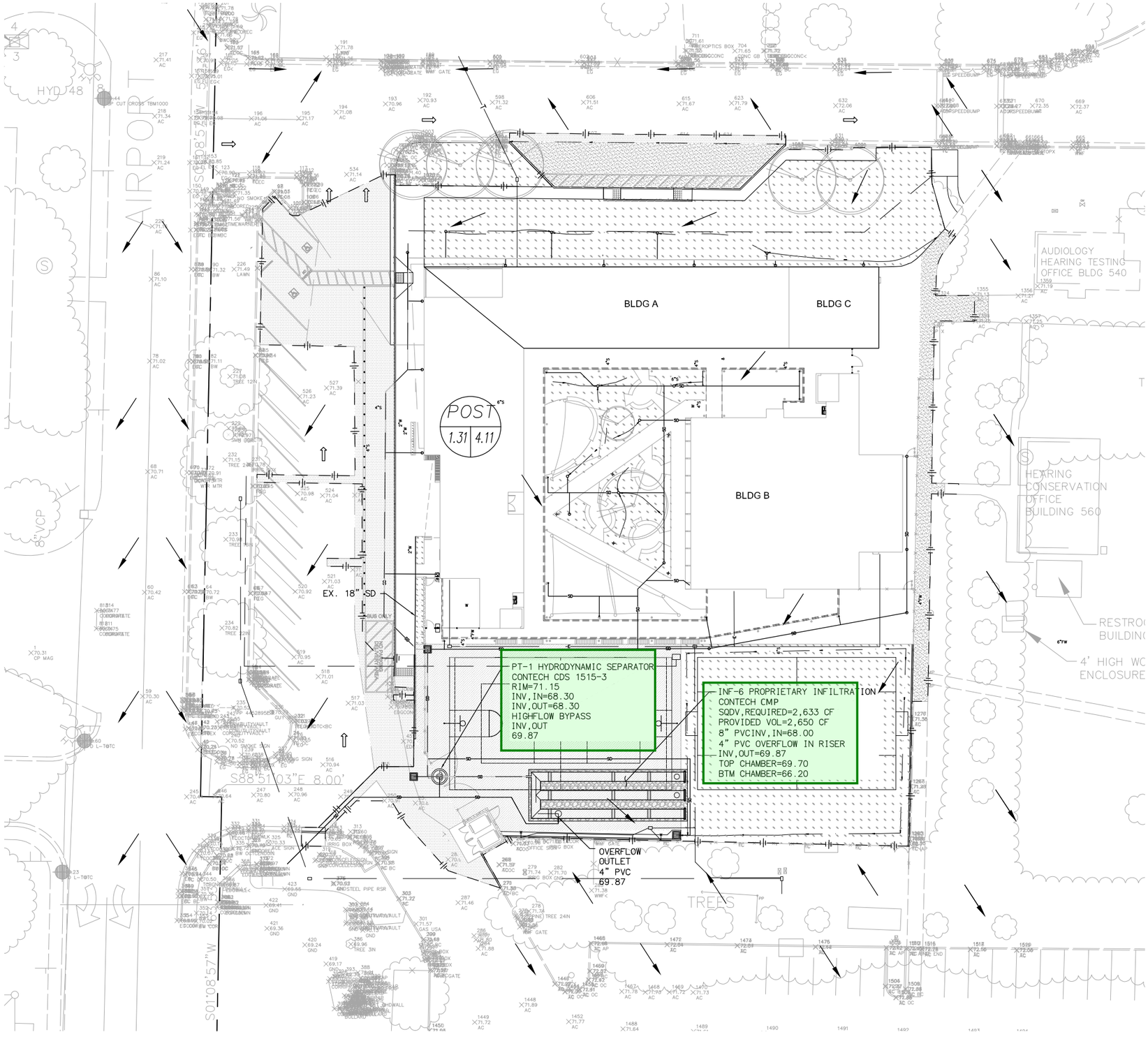
PRE-DEVELOPED HYDROLOGIC CONDITION

DRN BY:	DES BY: SU	CK'D BY: SU
PROJ. NUMBER 01-10334		

SCOTT D. UHLES R.C.E. 72391 DATE:

SAVE DATE: 9/14/26 NSABAY

PLOT DATE: 9/14/26 3:23 PM FILE NAME: H:\HROOT\PDATA\0110334\CAD\EXHIBITS\HYDRO\334-HYDRO-EX.DWG



LEGEND

- FLOW DIRECTION
- FLOWPATH
- LIMITS OF DISTURBED
- SUB-AREA DESIGNATION
- Q100 (CFS)
- AREA (AC)

SCALE 1"=40'

Area	Q10	Q25	Q50	Q100
1.31	1.92	2.43	3.68	4.11

GATEWAY COMMUNITY SCHOOL

PREPARED BY
DELANE ENGINEERING
2812 SANTA MONICA BLVD, SUITE 206
SANTA MONICA, CA 90404
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POST-DEVELOPED HYDROLOGIC CONDITION

DRN BY:	DES BY: SU	CK'D BY: SU
PROJ. NUMBER 01-10334		

PLOT DATE: 9/14/26 3:43 PM FILE NAME: H:\HROOT\PDATA\0110334\CAD\EXHIBITS\HYDRO\334-HYDRO-PR.DWG

SAVE DATE: 9/14/26 NSABAY

APPENDIX B

Project Data for: Perkins Eastman
550 Airport Way
Camarillo, CA 93012

Job Number 01-10334

Runoff Summary

Project Area	**1.31**	**ac**

Table 1 - Pre-Developed Peak Flow

PRE/ALLOWABLE	Area (acres)	Q10(cfs)	Q25(cfs)	Q50(cfs)	Q100(cfs)
	1.31	**2.29**	**2.89**	**4.11**	**4.59**
		q10 (cfs/acre)	q25 (cfs/acre)	q50 (cfs/acre)	q100 (cfs/acre)
unit	1.00	1.75	2.20	3.13	3.50

Table 2 - Post-Developed Condition (unmitigated)

POST	Area (acres)	Q10(cfs)	Q25(cfs)	Q50(cfs)	Q100(cfs)
	1.31	**1.92**	**2.43**	**3.68**	**4.11**
		q10 (cfs/acre)	q25 (cfs/acre)	q50 (cfs/acre)	q100 (cfs/acre)
unit	1.00	1.46	1.85	2.80	3.13

VENTURA COUNTY WATERSHED PROTECTION DISTRICT
TIME OF CONCENTRATION
TC Program Version: 2.64.0.37
Project: 01-10334
Date: 12:00:00 AM
Engineer: NS
Consultant: DELANE

S U M M A R Y O F C O M P U T A T I O N S

Watershed Name: PRE DEVELOPED

Name	Zone	Storm	Soil	Area (acres)	TC (min)
A	K	10	3.00	1.3 / 1	8.813 / 9
A	K	25	3.00	1.3 / 1	8.324 / 8
A	K	50	3.00	1.3 / 1	5.248 / 5
A	K	100	3.00	1.3 / 1	5.199 / 5

Watershed Name: PRE DEVELOPED

Sub-Area Name: A
Computing Tc for all rainfall frequencies for sub-area A...

Tc for frequency = 10.00: 8.813 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 8.813 min. = 9 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 10
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 95
SUB AREA OUTPUT

Intensity (in/hr): 2.680
C Total: 0.940
Sum Q Segments (cfs): 3.30
Q Total (cfs): 3.30
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 528.78
Time of Concentration (min): 8.813

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 6.6667
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 69.5
Contributing Area (acres): 0.37
Percent of Sub-Area (%): 28.2
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0216
Effective Slope: 0.0216
Q for Flow Path (cfs): 0.93
Avg Velocity (ft/s): 0.50
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 2.1464
Flow Type: Natural Channel
Length (ft): 250
Top Elevation (ft): 69.5
Bottom Elevation (ft): 68.05
Contributing Area (acres): 0.94
Percent of Sub-Area (%): 71.8
Overland Type: Valley
Map Slope: 0.0058
Effective Slope: 0.0058
Q for Flow Path (cfs): 2.37
Q Top (cfs): 0.93
Q Bottom (cfs): 3.30
Velocity Top (ft/s): 1.13
Velocity Bottom (ft/s): 1.46
Avg Velocity (ft/s): 1.29
Wave Velocity (ft/s): 1.94

Tc for frequency = 25.00: 8.324 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 8.324 min. = 8 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 25
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 95
SUB AREA OUTPUT

Intensity (in/hr): 3.191
C Total: 0.942
Sum Q Segments (cfs): 3.94
Q Total (cfs): 3.94
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 499.42
Time of Concentration (min): 8.324

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 6.2551
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 69.5
Contributing Area (acres): 0.37
Percent of Sub-Area (%): 28.2
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0216
Effective Slope: 0.0216
Q for Flow Path (cfs): 1.11
Avg Velocity (ft/s): 0.53
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 2.0686
Flow Type: Natural Channel
Length (ft): 250
Top Elevation (ft): 69.5
Bottom Elevation (ft): 68.05
Contributing Area (acres): 0.94
Percent of Sub-Area (%): 71.8
Overland Type: Valley
Map Slope: 0.0058
Effective Slope: 0.0058
Q for Flow Path (cfs): 2.83
Q Top (cfs): 1.11
Q Bottom (cfs): 3.94
Velocity Top (ft/s): 1.17
Velocity Bottom (ft/s): 1.52
Avg Velocity (ft/s): 1.34
Wave Velocity (ft/s): 2.01

Tc for frequency = 50.00: 5.248 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 5.248 min. = 5 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 50
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 95
SUB AREA OUTPUT

Intensity (in/hr): 4.548
C Total: 0.944
Sum Q Segments (cfs): 5.62
Q Total (cfs): 5.62
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 314.85
Time of Concentration (min): 5.248

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 3.3333
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 69.5
Contributing Area (acres): 0.37
Percent of Sub-Area (%): 28.2
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0216
Effective Slope: 0.0216
Q for Flow Path (cfs): 1.59
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 1.9142
Flow Type: Natural Channel
Length (ft): 250
Top Elevation (ft): 69.5
Bottom Elevation (ft): 68.05
Contributing Area (acres): 0.94
Percent of Sub-Area (%): 71.8
Overland Type: Valley
Map Slope: 0.0058
Effective Slope: 0.0058
Q for Flow Path (cfs): 4.04
Q Top (cfs): 1.59
Q Bottom (cfs): 5.62
Velocity Top (ft/s): 1.25
Velocity Bottom (ft/s): 1.65
Avg Velocity (ft/s): 1.45
Wave Velocity (ft/s): 2.18

Tc for frequency = 100.00: 5.199 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 5.199 min. = 5 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 100
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 95
SUB AREA OUTPUT

Intensity (in/hr): 5.100
C Total: 0.945
Sum Q Segments (cfs): 6.31
Q Total (cfs): 6.31
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 311.92
Time of Concentration (min): 5.199

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 3.3333
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 69.5
Contributing Area (acres): 0.37
Percent of Sub-Area (%): 28.2
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0216
Effective Slope: 0.0216
Q for Flow Path (cfs): 1.78
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 1.8654
Flow Type: Natural Channel
Length (ft): 250
Top Elevation (ft): 69.5
Bottom Elevation (ft): 68.05
Contributing Area (acres): 0.94
Percent of Sub-Area (%): 71.8
Overland Type: Valley
Map Slope: 0.0058
Effective Slope: 0.0058
Q for Flow Path (cfs): 4.53
Q Top (cfs): 1.78
Q Bottom (cfs): 6.31
Velocity Top (ft/s): 1.28
Velocity Bottom (ft/s): 1.70
Avg Velocity (ft/s): 1.49
Wave Velocity (ft/s): 2.23

VENTURA COUNTY WATERSHED PROTECTION DISTRICT
TIME OF CONCENTRATION
TC Program Version: 2.64.0.37
Project: 01-10334
Date: 12:00:00 AM
Engineer: NS
Consultant: DELANE

S U M M A R Y O F C O M P U T A T I O N S

Watershed Name: POST DEVELOPED

Name	Zone	Storm	Soil	Area (acres)	TC (min)
A	K	10	3.00	1.3 / 1	10.030 / 10
A	K	25	3.00	1.3 / 1	9.463 / 9
A	K	50	3.00	1.3 / 1	5.284 / 5
A	K	100	3.00	1.3 / 1	5.269 / 5

Watershed Name: POST DEVELOPED

Sub-Area Name: A
Computing Tc for all rainfall frequencies for sub-area A...

Tc for frequency = 10.00: 10.030 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 10.030 min. = 10 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 10
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 80
SUB AREA OUTPUT

Intensity (in/hr): 2.524
C Total: 0.909
Sum Q Segments (cfs): 3.01
Q Total (cfs): 3.01
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 601.78
Time of Concentration (min): 10.030

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 6.6667
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 72.5
Contributing Area (acres): 0.23
Percent of Sub-Area (%): 17.6
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0066
Effective Slope: 0.0066
Q for Flow Path (cfs): 0.53
Avg Velocity (ft/s): 0.50
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 0.6964
Flow Type: Natural Channel
Length (ft): 100
Top Elevation (ft): 72.5
Bottom Elevation (ft): 71.4
Contributing Area (acres): 0.6
Percent of Sub-Area (%): 45.8
Overland Type: Valley
Map Slope: 0.0110
Effective Slope: 0.0110
Q for Flow Path (cfs): 1.38
Q Top (cfs): 0.53
Q Bottom (cfs): 1.91
Velocity Top (ft/s): 1.40
Velocity Bottom (ft/s): 1.79
Avg Velocity (ft/s): 1.60
Wave Velocity (ft/s): 2.39
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 2.6667
Flow Type: Overland
Length (ft): 80
Top Elevation (ft): 71.4
Bottom Elevation (ft): 68.04
Contributing Area (acres): 0.48
Percent of Sub-Area (%): 36.6
Overland Type: Valley
Development Type: Commercial

Map Slope: 0.0420
Effective Slope: 0.0420
Q for Flow Path (cfs): 1.10
Avg Velocity (ft/s): 0.50
Passed Scour Check: N/A

Tc for frequency = 25.00: 9.463 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 9.463 min. = 9 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 25
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 80
SUB AREA OUTPUT

Intensity (in/hr): 2.987
C Total: 0.915
Sum Q Segments (cfs): 3.58
Q Total (cfs): 3.58
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 567.79
Time of Concentration (min): 9.463

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 6.4983
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 72.5
Contributing Area (acres): 0.23
Percent of Sub-Area (%): 17.6
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0066
Effective Slope: 0.0066
Q for Flow Path (cfs): 0.63
Avg Velocity (ft/s): 0.51
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 0.6733
Flow Type: Natural Channel
Length (ft): 100
Top Elevation (ft): 72.5
Bottom Elevation (ft): 71.4
Contributing Area (acres): 0.6
Percent of Sub-Area (%): 45.8
Overland Type: Valley
Map Slope: 0.0110
Effective Slope: 0.0110
Q for Flow Path (cfs): 1.64
Q Top (cfs): 0.63
Q Bottom (cfs): 2.27
Velocity Top (ft/s): 1.45
Velocity Bottom (ft/s): 1.85
Avg Velocity (ft/s): 1.65
Wave Velocity (ft/s): 2.48
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 2.2916
Flow Type: Overland
Length (ft): 80
Top Elevation (ft): 71.4
Bottom Elevation (ft): 68.04
Contributing Area (acres): 0.48
Percent of Sub-Area (%): 36.6
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0420
Effective Slope: 0.0420
Q for Flow Path (cfs): 1.31
Avg Velocity (ft/s): 0.58
Passed Scour Check: N/A

Tc for frequency = 50.00: 5.284 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 5.284 min. = 5 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 50
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 80
SUB AREA OUTPUT

Intensity (in/hr): 4.548
C Total: 0.926
Sum Q Segments (cfs): 5.52
Q Total (cfs): 5.52
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 317.02
Time of Concentration (min): 5.284

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 3.3333
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 72.5
Contributing Area (acres): 0.23
Percent of Sub-Area (%): 17.6
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0066
Effective Slope: 0.0066
Q for Flow Path (cfs): 0.97
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 0.6171
Flow Type: Natural Channel
Length (ft): 100
Top Elevation (ft): 72.5
Bottom Elevation (ft): 71.4
Contributing Area (acres): 0.6
Percent of Sub-Area (%): 45.8
Overland Type: Valley
Map Slope: 0.0110
Effective Slope: 0.0110
Q for Flow Path (cfs): 2.53
Q Top (cfs): 0.97
Q Bottom (cfs): 3.49
Velocity Top (ft/s): 1.56
Velocity Bottom (ft/s): 2.04
Avg Velocity (ft/s): 1.80
Wave Velocity (ft/s): 2.70
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 1.3333
Flow Type: Overland
Length (ft): 80
Top Elevation (ft): 71.4
Bottom Elevation (ft): 68.04
Contributing Area (acres): 0.48
Percent of Sub-Area (%): 36.6
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0420
Effective Slope: 0.0420
Q for Flow Path (cfs): 2.02
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A

Tc for frequency = 100.00: 5.269 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 5.269 min. = 5 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 1.31
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 100
Development Type: Commercial
Soil Type: 3.00
Percent Impervious: 80
SUB AREA OUTPUT

Intensity (in/hr): 5.100
C Total: 0.928
Sum Q Segments (cfs): 6.20
Q Total (cfs): 6.20
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 316.12
Time of Concentration (min): 5.269

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 0
FLOW PATH TRAVEL TIME (min): 3.3333
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 73.82
Bottom Elevation (ft): 72.5
Contributing Area (acres): 0.23
Percent of Sub-Area (%): 17.6
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0066
Effective Slope: 0.0066
Q for Flow Path (cfs): 1.09
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 1
FLOW PATH TRAVEL TIME (min): 0.6021
Flow Type: Natural Channel
Length (ft): 100
Top Elevation (ft): 72.5
Bottom Elevation (ft): 71.4
Contributing Area (acres): 0.6
Percent of Sub-Area (%): 45.8
Overland Type: Valley
Map Slope: 0.0110
Effective Slope: 0.0110
Q for Flow Path (cfs): 2.84
Q Top (cfs): 1.09
Q Bottom (cfs): 3.93
Velocity Top (ft/s): 1.60
Velocity Bottom (ft/s): 2.09
Avg Velocity (ft/s): 1.85
Wave Velocity (ft/s): 2.77
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 1.3333
Flow Type: Overland
Length (ft): 80
Top Elevation (ft): 71.4
Bottom Elevation (ft): 68.04
Contributing Area (acres): 0.48
Percent of Sub-Area (%): 36.6
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0420
Effective Slope: 0.0420
Q for Flow Path (cfs): 2.27
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A

1153 2.29

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: 01-10334

Model Results

NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	SUBAREA DATA AND RESULTS AREA (AC)	FLOW (CFS)	ACCUMULATED DATA AREA (AC)	FLOW (CFS)	TIME (MIN)	ROUTING AFTER ACCUMULATION CHANNEL LENGTH	SLOPE	SIZE	H:V	N VALUES	VEL	DEPTH	TYPE

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|-----------------------------------------|----------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --     --
       2A :  PROJECT AREA
       2A   030   A10     9   95     13     23       13      23   1153    -------
----  -------    ---     ----    -----  -----    --     --

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     22.87         VOLUME
(acre-ft):      3.53      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

*********************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      23   1153    -------
----  -------    ---     ----    -----  -----    --     --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       2   1153    -------
----  -------    ---     ----    -----  -----    --     --
       4A   ---   ---     --   --     ---     ---       13       2   1153    -------
----  -------    ---     ----    -----  -----    --     --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-------------------------------------------------------------------------------
-------------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-------------------------------------------------------------------------------
-------------------------------------------------------------
-------------------------------------------------------------------------------
-------------------------------------------------------

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     22.87         VOLUME
(acre-ft):      3.53      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	0.85	0.85
200	0.85	0.85	300	0.85	0.85
400	0.85	0.85	500	0.86	0.86
600	0.99	0.99	700	1.42	1.42
800	1.42	1.42	900	1.87	1.87
1000	2.68	2.68	1050	3.49	3.49
1100	4.56	4.56	1110	6.42	6.42
1120	7.59	7.59	1130	7.66	7.66
1131	7.67	7.67	1132	7.69	7.69
1133	7.71	7.71	1134	7.80	7.80
1135	7.82	7.82	1136	7.84	7.84
1137	7.85	7.85	1138	7.95	7.95
1139	7.96	7.96	1140	7.96	7.96
1141	8.13	8.13	1142	8.29	8.29
1143	8.37	8.37	1144	8.45	8.45
1145	9.09	9.09	1146	9.66	9.66
1147	10.23	10.23	1148	10.79	10.79
1149	13.29	13.29	1150	15.71	15.71
1151	18.04	18.04	1152	20.45	20.45
1153	22.87	22.87	1154	22.79	22.79
1155	22.38	22.38	1156	21.74	21.74

1157	21.26	21.26	1158	18.77	18.77
1159	16.19	16.19	1160	13.61	13.61
1161	11.03	11.03	1162	8.53	8.53
1163	7.88	7.88	1164	7.72	7.72
1165	7.40	7.40	1166	6.92	6.92
1167	6.59	6.59	1168	6.27	6.27
1169	5.95	5.95	1170	5.63	5.63
1171	5.32	5.32	1172	5.01	5.01
1173	4.69	4.69	1174	4.69	4.69
1175	4.69	4.69	1176	4.69	4.69
1177	4.54	4.54	1178	4.46	4.46
1179	4.38	4.38	1180	4.22	4.22
1181	4.15	4.15	1182	3.99	3.99
1183	3.83	3.83	1184	3.75	3.75
1185	3.68	3.68	1186	3.68	3.68
1187	3.68	3.68	1188	3.60	3.60
1189	3.52	3.52	1190	3.44	3.44
1191	3.36	3.36	1192	3.21	3.21
1193	3.13	3.13	1194	2.97	2.97

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	2.89	2.89	1196	2.82	2.82
1197	2.66	2.66	1198	2.66	2.66
1199	2.66	2.66	1200	2.66	2.66
1201	2.74	2.74	1202	2.66	2.66
1203	2.66	2.66	1204	2.66	2.66
1205	2.66	2.66	1206	2.74	2.74
1207	2.74	2.74	1208	2.66	2.66
1209	2.66	2.66	1210	2.66	2.66
1211	2.74	2.74	1212	2.74	2.74
1213	2.66	2.66	1214	2.66	2.66
1215	2.66	2.66	1216	2.66	2.66
1217	2.74	2.74	1218	2.66	2.66
1219	2.66	2.66	1220	2.66	2.66
1221	2.66	2.66	1222	2.74	2.74
1223	2.66	2.66	1224	2.66	2.66
1225	2.50	2.50	1226	2.35	2.35
1227	2.27	2.27	1228	2.11	2.11
1229	1.96	1.96	1230	1.80	1.80
1231	1.64	1.64	1232	1.56	1.56
1233	1.41	1.41	1234	1.41	1.41
1235	1.41	1.41	1236	1.41	1.41
1237	1.41	1.41	1238	1.41	1.41
1239	1.41	1.41	1240	1.49	1.49
1241	1.49	1.49	1242	1.49	1.49
1243	1.49	1.49	1244	1.49	1.49

1245	1.49	1.49	1246	1.49	1.49
1247	1.49	1.49	1248	1.49	1.49
1249	1.41	1.41	1250	1.41	1.41
1251	1.41	1.41	1252	1.41	1.41
1253	1.41	1.41	1254	1.41	1.41
1255	1.41	1.41	1256	1.41	1.41
1257	1.41	1.41	1258	1.41	1.41
1259	1.41	1.41	1260	1.41	1.41
1261	1.41	1.41	1262	1.41	1.41
1263	1.41	1.41	1264	1.41	1.41
1265	1.41	1.41	1266	1.41	1.41
1267	1.41	1.41	1268	1.41	1.41
1269	1.41	1.41	1270	1.41	1.41
1271	1.41	1.41	1272	1.41	1.41
1273	1.41	1.41	1274	1.41	1.41
1275	1.41	1.41	1276	1.41	1.41
1277	1.41	1.41	1278	1.41	1.41
1279	1.41	1.41	1280	1.41	1.41
1281	1.41	1.41	1282	1.41	1.41
1283	1.41	1.41	1284	1.41	1.41
1285	1.41	1.41	1286	1.41	1.41
1287	1.41	1.41	1288	1.41	1.41
1289	1.41	1.41	1290	1.41	1.41
1291	1.49	1.49	1292	1.49	1.49
1293	1.49	1.49	1294	1.49	1.49

1295	1.49	1.49	1296	1.49	1.49
1297	1.41	1.41	1298	1.33	1.33
1299	1.25	1.25	1300	1.10	1.10
1310	0.92	0.92	1320	0.84	0.84
1330	0.84	0.84	1340	0.84	0.84
1350	0.84	0.84	1360	0.84	0.84
1370	0.84	0.84	1380	0.84	0.84
1390	0.84	0.84	1400	0.92	0.92
1420	0.84	0.84	1440	0.84	0.84
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 2 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 0.36 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.09	200	0.09	300	0.09	400	0.09

```
      500       0.09   600       0.10   700       0.14   800       0.14   900
0.19
     1000       0.27  1050       0.35  1100       0.46  1110       0.64  1120
0.76
     1130       0.77  1131       0.77  1132       0.77  1133       0.77  1134
0.78
     1135       0.78  1136       0.78  1137       0.79  1138       0.79  1139
0.80
     1140       0.80  1141       0.81  1142       0.83  1143       0.84  1144
0.84
     1145       0.91  1146       0.97  1147       1.02  1148       1.08  1149
1.33
     1150       1.57  1151       1.80  1152       2.05  1153       2.29  1154
2.28
     1155       2.24  1156       2.17  1157       2.13  1158       1.88  1159
1.62
     1160       1.36  1161       1.10  1162       0.85  1163       0.79  1164
0.77
     1165       0.74  1166       0.69  1167       0.66  1168       0.63  1169
0.59
     1170       0.56  1171       0.53  1172       0.50  1173       0.47  1174
0.47
     1175       0.47  1176       0.47  1177       0.45  1178       0.45  1179
0.44
     1180       0.42  1181       0.41  1182       0.40  1183       0.38  1184
0.38
     1185       0.37  1186       0.37  1187       0.37  1188       0.36  1189
0.35
     1190       0.34  1191       0.34  1192       0.32  1193       0.31  1194
0.30
     1195       0.29  1196       0.28  1197       0.27  1198       0.27  1199
0.27
     1200       0.27  1201       0.27  1202       0.27  1203       0.27  1204
0.27
     1205       0.27  1206       0.27  1207       0.27  1208       0.27  1209
0.27
     1210       0.27  1211       0.27  1212       0.27  1213       0.27  1214
0.27
     1215       0.27  1216       0.27  1217       0.27  1218       0.27  1219
0.27
     1220       0.27  1221       0.27  1222       0.27  1223       0.27  1224
0.27
     1225       0.25  1226       0.23  1227       0.23  1228       0.21  1229
0.20
     1230       0.18  1231       0.16  1232       0.16  1233       0.14  1234
0.14
     1235       0.14  1236       0.14  1237       0.14  1238       0.14  1239
0.14
     1240       0.15  1241       0.15  1242       0.15  1243       0.15  1244
0.15
```

1245	0.15	1246	0.15	1247	0.15	1248	0.15	1249	0.14
1250	0.14	1251	0.14	1252	0.14	1253	0.14	1254	0.14
1255	0.14	1256	0.14	1257	0.14	1258	0.14	1259	0.14
1260	0.14	1261	0.14	1262	0.14	1263	0.14	1264	0.14
1265	0.14	1266	0.14	1267	0.14	1268	0.14	1269	0.14
1270	0.14	1271	0.14	1272	0.14	1273	0.14	1274	0.14
1275	0.14	1276	0.14	1277	0.14	1278	0.14	1279	0.14
1280	0.14	1281	0.14	1282	0.14	1283	0.14	1284	0.14
1285	0.14	1286	0.14	1287	0.14	1288	0.14	1289	0.14
1290	0.14	1291	0.15	1292	0.15	1293	0.15	1294	0.15
1295	0.15	1296	0.15	1297	0.14	1298	0.13	1299	0.13
1300	0.11	1310	0.09	1320	0.08	1330	0.08	1340	0.08
1350	0.08	1360	0.08	1370	0.08	1380	0.08	1390	0.08
1400	0.09	1420	0.08	1440	0.08	1460	0.00	1500	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3B

TOTAL AREA TO HYDROGRAPH: 0 acres
HYDROGRAPH PEAK: 0 cfs
TIME OF PEAK: 0 minutes
HYDROGRAPH VOLUME: 0.00 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00


                              Ventura County Watershed Protection District
                         Modified Rational Method Hydrology Program (VCRat v2.64)

                                          Job:      1  Project: 01-10334
Page:     6
                                               Hydrograph Printouts

-------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    4A
-------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:      13    acres
            HYDROGRAPH PEAK:                2    cfs
            TIME OF PEAK:                1153    minutes
```

HYDROGRAPH VOLUME: 0.36 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.09	200	0.09	300	0.09	400	0.09
500	0.09	600	0.10	700	0.14	800	0.14	900	0.19
1000	0.27	1050	0.35	1100	0.46	1110	0.64	1120	0.76
1130	0.77	1131	0.77	1132	0.77	1133	0.77	1134	0.78
1135	0.78	1136	0.78	1137	0.79	1138	0.79	1139	0.80
1140	0.80	1141	0.81	1142	0.83	1143	0.84	1144	0.84
1145	0.91	1146	0.97	1147	1.02	1148	1.08	1149	1.33
1150	1.57	1151	1.80	1152	2.05	1153	2.29	1154	2.28
1155	2.24	1156	2.17	1157	2.13	1158	1.88	1159	1.62
1160	1.36	1161	1.10	1162	0.85	1163	0.79	1164	0.77
1165	0.74	1166	0.69	1167	0.66	1168	0.63	1169	0.59
1170	0.56	1171	0.53	1172	0.50	1173	0.47	1174	0.47
1175	0.47	1176	0.47	1177	0.45	1178	0.45	1179	0.44
1180	0.42	1181	0.41	1182	0.40	1183	0.38	1184	0.38
1185	0.37	1186	0.37	1187	0.37	1188	0.36	1189	0.35
1190	0.34	1191	0.34	1192	0.32	1193	0.31	1194	0.30
1195	0.29	1196	0.28	1197	0.27	1198	0.27	1199	0.27
1200	0.27	1201	0.27	1202	0.27	1203	0.27	1204	0.27
1205	0.27	1206	0.27	1207	0.27	1208	0.27	1209	0.27
1210	0.27	1211	0.27	1212	0.27	1213	0.27	1214	0.27
1215	0.27	1216	0.27	1217	0.27	1218	0.27	1219	0.27

```
     1220       0.27  1221       0.27  1222       0.27  1223       0.27  1224
0.27
     1225       0.25  1226       0.23  1227       0.23  1228       0.21  1229
0.20
     1230       0.18  1231       0.16  1232       0.16  1233       0.14  1234
0.14
     1235       0.14  1236       0.14  1237       0.14  1238       0.14  1239
0.14
     1240       0.15  1241       0.15  1242       0.15  1243       0.15  1244
0.15
     1245       0.15  1246       0.15  1247       0.15  1248       0.15  1249
0.14
     1250       0.14  1251       0.14  1252       0.14  1253       0.14  1254
0.14
     1255       0.14  1256       0.14  1257       0.14  1258       0.14  1259
0.14
     1260       0.14  1261       0.14  1262       0.14  1263       0.14  1264
0.14
     1265       0.14  1266       0.14  1267       0.14  1268       0.14  1269
0.14
     1270       0.14  1271       0.14  1272       0.14  1273       0.14  1274
0.14
     1275       0.14  1276       0.14  1277       0.14  1278       0.14  1279
0.14
     1280       0.14  1281       0.14  1282       0.14  1283       0.14  1284
0.14
     1285       0.14  1286       0.14  1287       0.14  1288       0.14  1289
0.14
     1290       0.14  1291       0.15  1292       0.15  1293       0.15  1294
0.15
     1295       0.15  1296       0.15  1297       0.14  1298       0.13  1299
0.13
     1300       0.11  1310       0.09  1320       0.08  1330       0.08  1340
0.08
     1350       0.08  1360       0.08  1370       0.08  1380       0.08  1390
0.08
     1400       0.09  1420       0.08  1440       0.08  1460       0.00  1500
0.00
```


VCRat Model Input

Model Lines

```
-------------------------------------------------------------------------------
-----------------
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030095001309A97                                1
110
111           1.00000
110
006     1  003AB010         A97                      00000102 1
006     1  003B 010      099A97                               1 B
006     1  004A 010      099A97                               1  2
999
```

1153 2.89

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: 01-10334

Model Results

SUBAREA DATA AND RESULTS							ACCUMULATED DATA			ROUTING AFTER ACCUMULATION			
NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	AREA (AC)	FLOW (CFS)	AREA (AC)	FLOW (CFS)	TIME (MIN)	CHANNEL LENGTH	SLOPE	SIZE	H:V N VALUES	VEL DEPTH	TYPE

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|-----------------------------------------|---------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --      --
       2A :  PROJECT AREA
       2A   030   A25     8   95     13     29       13      29   1153   -------
----  -------    ---     ----    -----  -----    --      --

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     28.91         VOLUME
(acre-ft):      4.27      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

*********************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      29   1153    -------
----  -------    ---     ----    -----  -----    --      --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       3   1153    -------
----  -------    ---     ----    -----  -----    --      --
       4A   ---   ---     --   --     ---     ---       13       3   1153    -------
----  -------    ---     ----    -----  -----    --      --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-------------------------------------------------------------------------------
-------------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-------------------------------------------------------------------------------
-------------------------------------------------------
-------------------------------------------------------------------------------
-------------------------------------------------------

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     28.91         VOLUME
(acre-ft):      4.27      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	1.05	1.05
200	1.06	1.06	300	1.05	1.05
400	1.06	1.06	500	1.05	1.05
600	1.22	1.22	700	1.73	1.73
800	1.72	1.72	900	2.27	2.27
1000	3.22	3.22	1050	4.18	4.18
1100	5.45	5.45	1110	7.73	7.73
1120	9.04	9.04	1130	9.26	9.26
1131	9.26	9.26	1132	9.26	9.26
1133	9.35	9.35	1134	9.35	9.35
1135	9.44	9.44	1136	9.44	9.44
1137	9.53	9.53	1138	9.53	9.53
1139	9.62	9.62	1140	9.62	9.62
1141	9.71	9.71	1142	9.98	9.98
1143	10.07	10.07	1144	10.26	10.26
1145	10.98	10.98	1146	11.80	11.80
1147	12.62	12.62	1148	13.43	13.43
1149	16.69	16.69	1150	19.77	19.77
1151	23.03	23.03	1152	26.29	26.29
1153	28.91	28.91	1154	28.91	28.91
1155	28.19	28.19	1156	27.46	27.46

1157	24.02	24.02	1158	20.77	20.77
1159	17.24	17.24	1160	13.79	13.79
1161	10.35	10.35	1162	9.53	9.53
1163	9.26	9.26	1164	9.17	9.17
1165	8.71	8.71	1166	8.17	8.17
1167	7.80	7.80	1168	7.35	7.35
1169	6.90	6.90	1170	6.44	6.44
1171	6.08	6.08	1172	5.63	5.63
1173	5.63	5.63	1174	5.63	5.63
1175	5.63	5.63	1176	5.63	5.63
1177	5.46	5.46	1178	5.28	5.28
1179	5.10	5.10	1180	5.02	5.02
1181	4.84	4.84	1182	4.66	4.66
1183	4.49	4.49	1184	4.31	4.31
1185	4.40	4.40	1186	4.40	4.40
1187	4.40	4.40	1188	4.31	4.31
1189	4.22	4.22	1190	4.05	4.05
1191	3.96	3.96	1192	3.78	3.78
1193	3.61	3.61	1194	3.52	3.52

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	3.34	3.34	1196	3.26	3.26
1197	3.17	3.17	1198	3.26	3.26
1199	3.17	3.17	1200	3.26	3.26
1201	3.26	3.26	1202	3.17	3.17
1203	3.26	3.26	1204	3.17	3.17
1205	3.26	3.26	1206	3.26	3.26
1207	3.26	3.26	1208	3.26	3.26
1209	3.17	3.17	1210	3.26	3.26
1211	3.17	3.17	1212	3.26	3.26
1213	3.26	3.26	1214	3.17	3.17
1215	3.26	3.26	1216	3.17	3.17
1217	3.26	3.26	1218	3.17	3.17
1219	3.26	3.26	1220	3.26	3.26
1221	3.17	3.17	1222	3.26	3.26
1223	3.17	3.17	1224	3.26	3.26
1225	2.99	2.99	1226	2.90	2.90
1227	2.64	2.64	1228	2.46	2.46
1229	2.29	2.29	1230	2.11	2.11
1231	1.94	1.94	1232	1.67	1.67
1233	1.76	1.76	1234	1.67	1.67
1235	1.76	1.76	1236	1.67	1.67
1237	1.76	1.76	1238	1.67	1.67
1239	1.76	1.76	1240	1.76	1.76
1241	1.76	1.76	1242	1.76	1.76
1243	1.76	1.76	1244	1.76	1.76

1245	1.67	1.67	1246	1.76	1.76
1247	1.67	1.67	1248	1.76	1.76
1249	1.67	1.67	1250	1.76	1.76
1251	1.67	1.67	1252	1.76	1.76
1253	1.76	1.76	1254	1.76	1.76
1255	1.76	1.76	1256	1.67	1.67
1257	1.76	1.76	1258	1.67	1.67
1259	1.76	1.76	1260	1.67	1.67
1261	1.76	1.76	1262	1.67	1.67
1263	1.76	1.76	1264	1.76	1.76
1265	1.76	1.76	1266	1.76	1.76
1267	1.76	1.76	1268	1.76	1.76
1269	1.67	1.67	1270	1.76	1.76
1271	1.67	1.67	1272	1.76	1.76
1273	1.67	1.67	1274	1.76	1.76
1275	1.67	1.67	1276	1.76	1.76
1277	1.76	1.76	1278	1.76	1.76
1279	1.76	1.76	1280	1.67	1.67
1281	1.76	1.76	1282	1.67	1.67
1283	1.76	1.76	1284	1.67	1.67
1285	1.76	1.76	1286	1.67	1.67
1287	1.76	1.76	1288	1.76	1.76
1289	1.76	1.76	1290	1.76	1.76
1291	1.76	1.76	1292	1.76	1.76
1293	1.67	1.67	1294	1.76	1.76

1295	1.67	1.67	1296	1.76	1.76
1297	1.58	1.58	1298	1.58	1.58
1299	1.41	1.41	1300	1.41	1.41
1310	1.06	1.06	1320	1.06	1.06
1330	1.06	1.06	1340	1.06	1.06
1350	0.99	0.99	1360	1.06	1.06
1370	1.06	1.06	1380	1.06	1.06
1390	1.06	1.06	1400	1.06	1.06
1420	1.06	1.06	1440	1.06	1.06
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 3 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 0.43 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.10	200	0.11	300	0.10	400	0.11

```
      500       0.10   600       0.12   700       0.17   800       0.17   900
0.23
     1000       0.32  1050       0.42  1100       0.54  1110       0.77  1120
0.90
     1130       0.93  1131       0.93  1132       0.93  1133       0.93  1134
0.93
     1135       0.94  1136       0.94  1137       0.95  1138       0.95  1139
0.96
     1140       0.96  1141       0.97  1142       1.00  1143       1.01  1144
1.03
     1145       1.10  1146       1.18  1147       1.26  1148       1.34  1149
1.67
     1150       1.98  1151       2.30  1152       2.63  1153       2.89  1154
2.89
     1155       2.82  1156       2.75  1157       2.40  1158       2.08  1159
1.72
     1160       1.38  1161       1.03  1162       0.95  1163       0.93  1164
0.92
     1165       0.87  1166       0.82  1167       0.78  1168       0.73  1169
0.69
     1170       0.64  1171       0.61  1172       0.56  1173       0.56  1174
0.56
     1175       0.56  1176       0.56  1177       0.55  1178       0.53  1179
0.51
     1180       0.50  1181       0.48  1182       0.47  1183       0.45  1184
0.43
     1185       0.44  1186       0.44  1187       0.44  1188       0.43  1189
0.42
     1190       0.40  1191       0.40  1192       0.38  1193       0.36  1194
0.35
     1195       0.33  1196       0.33  1197       0.32  1198       0.33  1199
0.32
     1200       0.33  1201       0.33  1202       0.32  1203       0.33  1204
0.32
     1205       0.33  1206       0.33  1207       0.33  1208       0.33  1209
0.32
     1210       0.33  1211       0.32  1212       0.33  1213       0.33  1214
0.32
     1215       0.33  1216       0.32  1217       0.33  1218       0.32  1219
0.33
     1220       0.33  1221       0.32  1222       0.33  1223       0.32  1224
0.33
     1225       0.30  1226       0.29  1227       0.26  1228       0.25  1229
0.23
     1230       0.21  1231       0.19  1232       0.17  1233       0.18  1234
0.17
     1235       0.18  1236       0.17  1237       0.18  1238       0.17  1239
0.18
     1240       0.18  1241       0.18  1242       0.18  1243       0.18  1244
0.18
```

1245	0.17	1246	0.18	1247	0.17	1248	0.18	1249	0.17
1250	0.18	1251	0.17	1252	0.18	1253	0.18	1254	0.18
1255	0.18	1256	0.17	1257	0.18	1258	0.17	1259	0.18
1260	0.17	1261	0.18	1262	0.17	1263	0.18	1264	0.18
1265	0.18	1266	0.18	1267	0.18	1268	0.18	1269	0.17
1270	0.18	1271	0.17	1272	0.18	1273	0.17	1274	0.18
1275	0.17	1276	0.18	1277	0.18	1278	0.18	1279	0.18
1280	0.17	1281	0.18	1282	0.17	1283	0.18	1284	0.17
1285	0.18	1286	0.17	1287	0.18	1288	0.18	1289	0.18
1290	0.18	1291	0.18	1292	0.18	1293	0.17	1294	0.18
1295	0.17	1296	0.18	1297	0.16	1298	0.16	1299	0.14
1300	0.14	1310	0.11	1320	0.11	1330	0.11	1340	0.11
1350	0.10	1360	0.11	1370	0.11	1380	0.11	1390	0.11
1400	0.11	1420	0.11	1440	0.11	1460	0.00	1500	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3B

TOTAL AREA TO HYDROGRAPH: 0 acres
HYDROGRAPH PEAK: 0 cfs
TIME OF PEAK: 0 minutes
HYDROGRAPH VOLUME: 0.00 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00
```


Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 4A

TOTAL AREA TO HYDROGRAPH:	13	acres
HYDROGRAPH PEAK:	3	cfs
TIME OF PEAK:	1153	minutes

HYDROGRAPH VOLUME: 0.43 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.10	200	0.11	300	0.10	400	0.11
500	0.10	600	0.12	700	0.17	800	0.17	900	0.23
1000	0.32	1050	0.42	1100	0.54	1110	0.77	1120	0.90
1130	0.93	1131	0.93	1132	0.93	1133	0.93	1134	0.93
1135	0.94	1136	0.94	1137	0.95	1138	0.95	1139	0.96
1140	0.96	1141	0.97	1142	1.00	1143	1.01	1144	1.03
1145	1.10	1146	1.18	1147	1.26	1148	1.34	1149	1.67
1150	1.98	1151	2.30	1152	2.63	1153	2.89	1154	2.89
1155	2.82	1156	2.75	1157	2.40	1158	2.08	1159	1.72
1160	1.38	1161	1.03	1162	0.95	1163	0.93	1164	0.92
1165	0.87	1166	0.82	1167	0.78	1168	0.73	1169	0.69
1170	0.64	1171	0.61	1172	0.56	1173	0.56	1174	0.56
1175	0.56	1176	0.56	1177	0.55	1178	0.53	1179	0.51
1180	0.50	1181	0.48	1182	0.47	1183	0.45	1184	0.43
1185	0.44	1186	0.44	1187	0.44	1188	0.43	1189	0.42
1190	0.40	1191	0.40	1192	0.38	1193	0.36	1194	0.35
1195	0.33	1196	0.33	1197	0.32	1198	0.33	1199	0.32
1200	0.33	1201	0.33	1202	0.32	1203	0.33	1204	0.32
1205	0.33	1206	0.33	1207	0.33	1208	0.33	1209	0.32
1210	0.33	1211	0.32	1212	0.33	1213	0.33	1214	0.32
1215	0.33	1216	0.32	1217	0.33	1218	0.32	1219	0.33

1220	0.33	1221	0.32	1222	0.33	1223	0.32	1224	0.33
1225	0.30	1226	0.29	1227	0.26	1228	0.25	1229	0.23
1230	0.21	1231	0.19	1232	0.17	1233	0.18	1234	0.17
1235	0.18	1236	0.17	1237	0.18	1238	0.17	1239	0.18
1240	0.18	1241	0.18	1242	0.18	1243	0.18	1244	0.18
1245	0.17	1246	0.18	1247	0.17	1248	0.18	1249	0.17
1250	0.18	1251	0.17	1252	0.18	1253	0.18	1254	0.18
1255	0.18	1256	0.17	1257	0.18	1258	0.17	1259	0.18
1260	0.17	1261	0.18	1262	0.17	1263	0.18	1264	0.18
1265	0.18	1266	0.18	1267	0.18	1268	0.18	1269	0.17
1270	0.18	1271	0.17	1272	0.18	1273	0.17	1274	0.18
1275	0.17	1276	0.18	1277	0.18	1278	0.18	1279	0.18
1280	0.17	1281	0.18	1282	0.17	1283	0.18	1284	0.17
1285	0.18	1286	0.17	1287	0.18	1288	0.18	1289	0.18
1290	0.18	1291	0.18	1292	0.18	1293	0.17	1294	0.18
1295	0.17	1296	0.18	1297	0.16	1298	0.16	1299	0.14
1300	0.14	1310	0.11	1320	0.11	1330	0.11	1340	0.11
1350	0.10	1360	0.11	1370	0.11	1380	0.11	1390	0.11
1400	0.11	1420	0.11	1440	0.11	1460	0.00	1500	0.00

VCRat Model Input

Model Lines

```
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030095001308A97                               1
110
111           1.00000
110
006     1  003AB010         A97                      00000102 1
006     1  003B 010      099A97                               1 B
006     1  004A 010      099A97                               1  2
999
```

1153 4.11

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: 01-10334

Model Results

SUBAREA DATA AND RESULTS							ACCUMULATED DATA			ROUTING AFTER ACCUMULATION			
NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	AREA (AC)	FLOW (CFS)	AREA (AC)	FLOW (CFS)	TIME (MIN)	CHANNEL LENGTH	SLOPE	SIZE H:V	N VALUES VEL	DEPTH TYPE

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|-----------------------------------------|---------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --     --
       2A :  PROJECT AREA
       2A   030   A50     5   95     13     41       13      41   1153    -------
----  -------    ---     ----    -----  -----    --     --

********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     41.15         VOLUME
(acre-ft):      4.81      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

********************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      41   1153    -------
----  -------    ---     ----    -----  -----    --     --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       4   1153    -------
----  -------    ---     ----    -----  -----    --     --
       4A   ---   ---     --   --     ---     ---       13       4   1153    -------
----  -------    ---     ----    -----  -----    --     --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-------------------------------------------------------------------------------
-------------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-------------------------------------------------------------------------------
-------------------------------------------------------
-------------------------------------------------------------------------------
-------------------------------------------------------

********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     41.15         VOLUME
(acre-ft):      4.81      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	1.20	1.20
200	1.21	1.21	300	1.20	1.20
400	1.20	1.20	500	1.20	1.20
600	1.39	1.39	700	1.96	1.96
800	1.96	1.96	900	2.56	2.56
1000	3.61	3.61	1050	4.70	4.70
1100	6.09	6.09	1110	8.68	8.68
1120	10.20	10.20	1130	10.35	10.35
1131	10.42	10.42	1132	10.49	10.49
1133	10.56	10.56	1134	10.64	10.64
1135	10.86	10.86	1136	10.86	10.86
1137	10.86	10.86	1138	10.86	10.86
1139	10.86	10.86	1140	10.71	10.71
1141	11.00	11.00	1142	11.44	11.44
1143	11.73	11.73	1144	12.02	12.02
1145	13.47	13.47	1146	14.63	14.63
1147	15.50	15.50	1148	16.66	16.66
1149	22.45	22.45	1150	27.08	27.08
1151	31.72	31.72	1152	36.51	36.51
1153	41.15	41.15	1154	36.51	36.51
1155	30.71	30.71	1156	24.62	24.62

1157	18.54	18.54	1158	12.60	12.60
1159	11.00	11.00	1160	10.56	10.56
1161	10.56	10.56	1162	10.42	10.42
1163	10.13	10.13	1164	10.27	10.27
1165	9.40	9.40	1166	8.53	8.53
1167	7.80	7.80	1168	7.08	7.08
1169	6.21	6.21	1170	6.35	6.35
1171	6.35	6.35	1172	6.35	6.35
1173	6.35	6.35	1174	6.21	6.21
1175	6.21	6.21	1176	6.21	6.21
1177	5.92	5.92	1178	5.63	5.63
1179	5.49	5.49	1180	5.21	5.21
1181	4.93	4.93	1182	4.93	4.93
1183	4.93	4.93	1184	4.93	4.93
1185	4.93	4.93	1186	4.93	4.93
1187	4.93	4.93	1188	4.93	4.93
1189	4.65	4.65	1190	4.36	4.36
1191	4.08	4.08	1192	3.80	3.80
1193	3.52	3.52	1194	3.52	3.52

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	3.66	3.66	1196	3.66	3.66
1197	3.66	3.66	1198	3.66	3.66
1199	3.66	3.66	1200	3.52	3.52
1201	3.52	3.52	1202	3.66	3.66
1203	3.66	3.66	1204	3.66	3.66
1205	3.66	3.66	1206	3.66	3.66
1207	3.52	3.52	1208	3.52	3.52
1209	3.66	3.66	1210	3.66	3.66
1211	3.66	3.66	1212	3.66	3.66
1213	3.66	3.66	1214	3.52	3.52
1215	3.52	3.52	1216	3.52	3.52
1217	3.66	3.66	1218	3.66	3.66
1219	3.66	3.66	1220	3.66	3.66
1221	3.66	3.66	1222	3.52	3.52
1223	3.52	3.52	1224	3.66	3.66
1225	3.24	3.24	1226	2.96	2.96
1227	2.68	2.68	1228	2.39	2.39
1229	1.97	1.97	1230	1.97	1.97
1231	1.97	1.97	1232	1.97	1.97
1233	1.97	1.97	1234	1.83	1.83
1235	1.97	1.97	1236	1.97	1.97
1237	1.97	1.97	1238	1.97	1.97
1239	1.97	1.97	1240	1.97	1.97
1241	1.97	1.97	1242	1.97	1.97
1243	1.97	1.97	1244	1.97	1.97

1245	1.97	1.97	1246	1.97	1.97
1247	1.97	1.97	1248	1.97	1.97
1249	1.97	1.97	1250	1.97	1.97
1251	1.97	1.97	1252	1.97	1.97
1253	1.83	1.83	1254	1.97	1.97
1255	1.97	1.97	1256	1.97	1.97
1257	1.97	1.97	1258	1.97	1.97
1259	1.97	1.97	1260	1.97	1.97
1261	1.97	1.97	1262	1.97	1.97
1263	1.97	1.97	1264	1.97	1.97
1265	1.97	1.97	1266	1.97	1.97
1267	1.97	1.97	1268	1.97	1.97
1269	1.97	1.97	1270	1.97	1.97
1271	1.97	1.97	1272	1.83	1.83
1273	1.97	1.97	1274	1.97	1.97
1275	1.97	1.97	1276	1.97	1.97
1277	1.97	1.97	1278	1.97	1.97
1279	1.97	1.97	1280	1.97	1.97
1281	1.97	1.97	1282	1.97	1.97
1283	1.97	1.97	1284	1.97	1.97
1285	1.97	1.97	1286	1.97	1.97
1287	1.97	1.97	1288	1.97	1.97
1289	1.97	1.97	1290	1.97	1.97
1291	1.83	1.83	1292	1.97	1.97
1293	1.97	1.97	1294	1.97	1.97

1295	1.97	1.97	1296	1.97	1.97
1297	1.83	1.83	1298	1.69	1.69
1299	1.55	1.55	1300	1.27	1.27
1310	1.20	1.20	1320	1.27	1.27
1330	1.20	1.20	1340	1.20	1.20
1350	1.20	1.20	1360	1.20	1.20
1370	1.20	1.20	1380	1.20	1.20
1390	1.20	1.20	1400	1.27	1.27
1420	1.20	1.20	1440	1.20	1.20
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 4 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 0.48 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.12	200	0.12	300	0.12	400	0.12

```
      500       0.12   600       0.14   700       0.20   800       0.20   900
0.26
     1000       0.36  1050       0.47  1100       0.61  1110       0.87  1120
1.02
     1130       1.03  1131       1.04  1132       1.05  1133       1.06  1134
1.06
     1135       1.09  1136       1.09  1137       1.09  1138       1.09  1139
1.09
     1140       1.07  1141       1.10  1142       1.14  1143       1.17  1144
1.20
     1145       1.35  1146       1.46  1147       1.55  1148       1.67  1149
2.24
     1150       2.71  1151       3.17  1152       3.65  1153       4.11  1154
3.65
     1155       3.07  1156       2.46  1157       1.85  1158       1.26  1159
1.10
     1160       1.06  1161       1.06  1162       1.04  1163       1.01  1164
1.03
     1165       0.94  1166       0.85  1167       0.78  1168       0.71  1169
0.62
     1170       0.64  1171       0.64  1172       0.64  1173       0.64  1174
0.62
     1175       0.62  1176       0.62  1177       0.59  1178       0.56  1179
0.55
     1180       0.52  1181       0.49  1182       0.49  1183       0.49  1184
0.49
     1185       0.49  1186       0.49  1187       0.49  1188       0.49  1189
0.46
     1190       0.44  1191       0.41  1192       0.38  1193       0.35  1194
0.35
     1195       0.37  1196       0.37  1197       0.37  1198       0.37  1199
0.37
     1200       0.35  1201       0.35  1202       0.37  1203       0.37  1204
0.37
     1205       0.37  1206       0.37  1207       0.35  1208       0.35  1209
0.37
     1210       0.37  1211       0.37  1212       0.37  1213       0.37  1214
0.35
     1215       0.35  1216       0.35  1217       0.37  1218       0.37  1219
0.37
     1220       0.37  1221       0.37  1222       0.35  1223       0.35  1224
0.37
     1225       0.32  1226       0.30  1227       0.27  1228       0.24  1229
0.20
     1230       0.20  1231       0.20  1232       0.20  1233       0.20  1234
0.18
     1235       0.20  1236       0.20  1237       0.20  1238       0.20  1239
0.20
     1240       0.20  1241       0.20  1242       0.20  1243       0.20  1244
0.20
```

1245	0.20	1246	0.20	1247	0.20	1248	0.20	1249	0.20
1250	0.20	1251	0.20	1252	0.20	1253	0.18	1254	0.20
1255	0.20	1256	0.20	1257	0.20	1258	0.20	1259	0.20
1260	0.20	1261	0.20	1262	0.20	1263	0.20	1264	0.20
1265	0.20	1266	0.20	1267	0.20	1268	0.20	1269	0.20
1270	0.20	1271	0.20	1272	0.18	1273	0.20	1274	0.20
1275	0.20	1276	0.20	1277	0.20	1278	0.20	1279	0.20
1280	0.20	1281	0.20	1282	0.20	1283	0.20	1284	0.20
1285	0.20	1286	0.20	1287	0.20	1288	0.20	1289	0.20
1290	0.20	1291	0.18	1292	0.20	1293	0.20	1294	0.20
1295	0.20	1296	0.20	1297	0.18	1298	0.17	1299	0.15
1300	0.13	1310	0.12	1320	0.13	1330	0.12	1340	0.12
1350	0.12	1360	0.12	1370	0.12	1380	0.12	1390	0.12
1400	0.13	1420	0.12	1440	0.12	1460	0.00	1500	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3B

TOTAL AREA TO HYDROGRAPH: 0 acres
HYDROGRAPH PEAK: 0 cfs
TIME OF PEAK: 0 minutes
HYDROGRAPH VOLUME: 0.00 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00


                              Ventura County Watershed Protection District
                         Modified Rational Method Hydrology Program (VCRat v2.64)

                                              Job:      1  Project: 01-10334
Page:     6
                                                   Hydrograph Printouts

-------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    4A
-------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:      13    acres
            HYDROGRAPH PEAK:                4    cfs
            TIME OF PEAK:                1153    minutes
```

HYDROGRAPH VOLUME: 0.48 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.12	200	0.12	300	0.12	400	0.12
500	0.12	600	0.14	700	0.20	800	0.20	900	0.26
1000	0.36	1050	0.47	1100	0.61	1110	0.87	1120	1.02
1130	1.03	1131	1.04	1132	1.05	1133	1.06	1134	1.06
1135	1.09	1136	1.09	1137	1.09	1138	1.09	1139	1.09
1140	1.07	1141	1.10	1142	1.14	1143	1.17	1144	1.20
1145	1.35	1146	1.46	1147	1.55	1148	1.67	1149	2.24
1150	2.71	1151	3.17	1152	3.65	1153	4.11	1154	3.65
1155	3.07	1156	2.46	1157	1.85	1158	1.26	1159	1.10
1160	1.06	1161	1.06	1162	1.04	1163	1.01	1164	1.03
1165	0.94	1166	0.85	1167	0.78	1168	0.71	1169	0.62
1170	0.64	1171	0.64	1172	0.64	1173	0.64	1174	0.62
1175	0.62	1176	0.62	1177	0.59	1178	0.56	1179	0.55
1180	0.52	1181	0.49	1182	0.49	1183	0.49	1184	0.49
1185	0.49	1186	0.49	1187	0.49	1188	0.49	1189	0.46
1190	0.44	1191	0.41	1192	0.38	1193	0.35	1194	0.35
1195	0.37	1196	0.37	1197	0.37	1198	0.37	1199	0.37
1200	0.35	1201	0.35	1202	0.37	1203	0.37	1204	0.37
1205	0.37	1206	0.37	1207	0.35	1208	0.35	1209	0.37
1210	0.37	1211	0.37	1212	0.37	1213	0.37	1214	0.35
1215	0.35	1216	0.35	1217	0.37	1218	0.37	1219	0.37

1220	0.37	1221	0.37	1222	0.35	1223	0.35	1224	0.37
1225	0.32	1226	0.30	1227	0.27	1228	0.24	1229	0.20
1230	0.20	1231	0.20	1232	0.20	1233	0.20	1234	0.18
1235	0.20	1236	0.20	1237	0.20	1238	0.20	1239	0.20
1240	0.20	1241	0.20	1242	0.20	1243	0.20	1244	0.20
1245	0.20	1246	0.20	1247	0.20	1248	0.20	1249	0.20
1250	0.20	1251	0.20	1252	0.20	1253	0.18	1254	0.20
1255	0.20	1256	0.20	1257	0.20	1258	0.20	1259	0.20
1260	0.20	1261	0.20	1262	0.20	1263	0.20	1264	0.20
1265	0.20	1266	0.20	1267	0.20	1268	0.20	1269	0.20
1270	0.20	1271	0.20	1272	0.18	1273	0.20	1274	0.20
1275	0.20	1276	0.20	1277	0.20	1278	0.20	1279	0.20
1280	0.20	1281	0.20	1282	0.20	1283	0.20	1284	0.20
1285	0.20	1286	0.20	1287	0.20	1288	0.20	1289	0.20
1290	0.20	1291	0.18	1292	0.20	1293	0.20	1294	0.20
1295	0.20	1296	0.20	1297	0.18	1298	0.17	1299	0.15
1300	0.13	1310	0.12	1320	0.13	1330	0.12	1340	0.12
1350	0.12	1360	0.12	1370	0.12	1380	0.12	1390	0.12
1400	0.13	1420	0.12	1440	0.12	1460	0.00	1500	0.00

VCRat Model Input

Model Lines

```
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030095001305A97                                1
110
111           1.00000
110
006     1  003AB010         A97                      00000102 1
006     1  003B 010      099A97                               1 B
006     1  004A 010      099A97                               1  2
999
```

1153 4.59

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: 01-10334

Model Results

NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	AREA (AC)	FLOW (CFS)	AREA (AC)	FLOW (CFS)	TIME (MIN)	CHANNEL LENGTH	SLOPE	SIZE	H:V	N VALUES	VEL	DEPTH	TYPE
SUBAREA DATA AND RESULTS							ACCUMULATED DATA			ROUTING AFTER ACCUMULATION							

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|-----------------------------------------|----------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --      --
       2A :  PROJECT AREA
       2A   030   A100    5   95     13     46       13      46   1153    -------
----  -------    ---     ----    -----  -----    --      --

*****************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     45.93         VOLUME
(acre-ft):      5.39      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

*****************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      46   1153    -------
----  -------    ---     ----    -----  -----    --      --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       5   1153    -------
----  -------    ---     ----    -----  -----    --      --
       4A   ---   ---     --   --     ---     ---       13       5   1153    -------
----  -------    ---     ----    -----  -----    --      --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-----------------------------------------------------------------------------
-----------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-----------------------------------------------------------------------------
-----------------------------------------------------
-----------------------------------------------------------------------------
-----------------------------------------------------

*****************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     45.93         VOLUME
(acre-ft):      5.39      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****
****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	1.37	1.37
200	1.37	1.37	300	1.37	1.37
400	1.37	1.37	500	1.36	1.36
600	1.57	1.57	700	2.20	2.20
800	2.20	2.20	900	2.86	2.86
1000	4.03	4.03	1050	5.22	5.22
1100	6.79	6.79	1110	9.62	9.62
1120	11.44	11.44	1130	11.51	11.51
1131	11.64	11.64	1132	11.77	11.77
1133	11.76	11.76	1134	11.89	11.89
1135	12.02	12.02	1136	12.02	12.02
1137	12.02	12.02	1138	12.02	12.02
1139	12.02	12.02	1140	12.02	12.02
1141	12.31	12.31	1142	12.60	12.60
1143	13.18	13.18	1144	13.47	13.47
1145	14.92	14.92	1146	16.22	16.22
1147	17.38	17.38	1148	18.40	18.40
1149	24.91	24.91	1150	30.27	30.27
1151	35.35	35.35	1152	40.71	40.71
1153	45.93	45.93	1154	40.71	40.71
1155	34.19	34.19	1156	27.52	27.52

1157	20.71	20.71	1158	13.90	13.90
1159	12.16	12.16	1160	11.73	11.73
1161	11.58	11.58	1162	11.44	11.44
1163	11.44	11.44	1164	11.44	11.44
1165	10.56	10.56	1166	9.69	9.69
1167	8.82	8.82	1168	7.95	7.95
1169	6.93	6.93	1170	6.93	6.93
1171	6.93	6.93	1172	6.93	6.93
1173	6.93	6.93	1174	7.08	7.08
1175	7.08	7.08	1176	6.93	6.93
1177	6.64	6.64	1178	6.35	6.35
1179	6.06	6.06	1180	5.63	5.63
1181	5.49	5.49	1182	5.49	5.49
1183	5.49	5.49	1184	5.35	5.35
1185	5.49	5.49	1186	5.49	5.49
1187	5.35	5.35	1188	5.35	5.35
1189	5.21	5.21	1190	4.93	4.93
1191	4.51	4.51	1192	4.36	4.36
1193	4.08	4.08	1194	4.08	4.08

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	3.94	3.94	1196	4.08	4.08
1197	4.08	4.08	1198	3.94	3.94
1199	3.94	3.94	1200	4.08	4.08
1201	4.08	4.08	1202	3.94	3.94
1203	4.08	4.08	1204	4.08	4.08
1205	4.08	4.08	1206	3.94	3.94
1207	4.08	4.08	1208	4.08	4.08
1209	3.94	3.94	1210	3.94	3.94
1211	4.08	4.08	1212	4.08	4.08
1213	3.94	3.94	1214	4.08	4.08
1215	4.08	4.08	1216	4.08	4.08
1217	3.94	3.94	1218	4.08	4.08
1219	4.08	4.08	1220	3.94	3.94
1221	3.94	3.94	1222	4.08	4.08
1223	4.08	4.08	1224	3.94	3.94
1225	3.80	3.80	1226	3.38	3.38
1227	2.96	2.96	1228	2.53	2.53
1229	2.25	2.25	1230	2.11	2.11
1231	2.11	2.11	1232	2.11	2.11
1233	2.25	2.25	1234	2.25	2.25
1235	2.25	2.25	1236	2.25	2.25
1237	2.25	2.25	1238	2.11	2.11
1239	2.11	2.11	1240	2.11	2.11
1241	2.25	2.25	1242	2.25	2.25
1243	2.25	2.25	1244	2.25	2.25

1245	2.25	2.25	1246	2.11	2.11
1247	2.11	2.11	1248	2.25	2.25
1249	2.25	2.25	1250	2.25	2.25
1251	2.25	2.25	1252	2.25	2.25
1253	2.11	2.11	1254	2.11	2.11
1255	2.11	2.11	1256	2.25	2.25
1257	2.25	2.25	1258	2.25	2.25
1259	2.25	2.25	1260	2.25	2.25
1261	2.11	2.11	1262	2.11	2.11
1263	2.11	2.11	1264	2.25	2.25
1265	2.25	2.25	1266	2.25	2.25
1267	2.25	2.25	1268	2.25	2.25
1269	2.11	2.11	1270	2.11	2.11
1271	2.25	2.25	1272	2.25	2.25
1273	2.25	2.25	1274	2.25	2.25
1275	2.25	2.25	1276	2.11	2.11
1277	2.11	2.11	1278	2.11	2.11
1279	2.25	2.25	1280	2.25	2.25
1281	2.25	2.25	1282	2.25	2.25
1283	2.25	2.25	1284	2.11	2.11
1285	2.11	2.11	1286	2.11	2.11
1287	2.25	2.25	1288	2.25	2.25
1289	2.25	2.25	1290	2.25	2.25
1291	2.25	2.25	1292	2.11	2.11
1293	2.11	2.11	1294	2.25	2.25

1295	2.25	2.25	1296	2.25	2.25
1297	2.11	2.11	1298	1.97	1.97
1299	1.69	1.69	1300	1.55	1.55
1310	1.34	1.34	1320	1.34	1.34
1330	1.41	1.41	1340	1.34	1.34
1350	1.34	1.34	1360	1.41	1.41
1370	1.34	1.34	1380	1.41	1.41
1390	1.34	1.34	1400	1.34	1.34
1420	1.37	1.37	1440	1.37	1.37
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 5 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 0.54 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.14	200	0.14	300	0.14	400	0.14

```
      500       0.14   600       0.16   700       0.22   800       0.22   900
0.29
     1000       0.40  1050       0.52  1100       0.68  1110       0.96  1120
1.14
     1130       1.15  1131       1.16  1132       1.18  1133       1.18  1134
1.19
     1135       1.20  1136       1.20  1137       1.20  1138       1.20  1139
1.20
     1140       1.20  1141       1.23  1142       1.26  1143       1.32  1144
1.35
     1145       1.49  1146       1.62  1147       1.74  1148       1.84  1149
2.49
     1150       3.03  1151       3.53  1152       4.07  1153       4.59  1154
4.07
     1155       3.42  1156       2.75  1157       2.07  1158       1.39  1159
1.22
     1160       1.17  1161       1.16  1162       1.14  1163       1.14  1164
1.14
     1165       1.06  1166       0.97  1167       0.88  1168       0.79  1169
0.69
     1170       0.69  1171       0.69  1172       0.69  1173       0.69  1174
0.71
     1175       0.71  1176       0.69  1177       0.66  1178       0.64  1179
0.61
     1180       0.56  1181       0.55  1182       0.55  1183       0.55  1184
0.54
     1185       0.55  1186       0.55  1187       0.54  1188       0.54  1189
0.52
     1190       0.49  1191       0.45  1192       0.44  1193       0.41  1194
0.41
     1195       0.39  1196       0.41  1197       0.41  1198       0.39  1199
0.39
     1200       0.41  1201       0.41  1202       0.39  1203       0.41  1204
0.41
     1205       0.41  1206       0.39  1207       0.41  1208       0.41  1209
0.39
     1210       0.39  1211       0.41  1212       0.41  1213       0.39  1214
0.41
     1215       0.41  1216       0.41  1217       0.39  1218       0.41  1219
0.41
     1220       0.39  1221       0.39  1222       0.41  1223       0.41  1224
0.39
     1225       0.38  1226       0.34  1227       0.30  1228       0.25  1229
0.23
     1230       0.21  1231       0.21  1232       0.21  1233       0.23  1234
0.23
     1235       0.23  1236       0.23  1237       0.23  1238       0.21  1239
0.21
     1240       0.21  1241       0.23  1242       0.23  1243       0.23  1244
0.23
```

1245	0.23	1246	0.21	1247	0.21	1248	0.23	1249	0.23
1250	0.23	1251	0.23	1252	0.23	1253	0.21	1254	0.21
1255	0.21	1256	0.23	1257	0.23	1258	0.23	1259	0.23
1260	0.23	1261	0.21	1262	0.21	1263	0.21	1264	0.23
1265	0.23	1266	0.23	1267	0.23	1268	0.23	1269	0.21
1270	0.21	1271	0.23	1272	0.23	1273	0.23	1274	0.23
1275	0.23	1276	0.21	1277	0.21	1278	0.21	1279	0.23
1280	0.23	1281	0.23	1282	0.23	1283	0.23	1284	0.21
1285	0.21	1286	0.21	1287	0.23	1288	0.23	1289	0.23
1290	0.23	1291	0.23	1292	0.21	1293	0.21	1294	0.23
1295	0.23	1296	0.23	1297	0.21	1298	0.20	1299	0.17
1300	0.15	1310	0.13	1320	0.13	1330	0.14	1340	0.13
1350	0.13	1360	0.14	1370	0.13	1380	0.14	1390	0.13
1400	0.13	1420	0.14	1440	0.14	1460	0.00	1500	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3B

TOTAL AREA TO HYDROGRAPH: 0 acres
HYDROGRAPH PEAK: 0 cfs
TIME OF PEAK: 0 minutes
HYDROGRAPH VOLUME: 0.00 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00


                              Ventura County Watershed Protection District
                         Modified Rational Method Hydrology Program (VCRat v2.64)

                                          Job:      1  Project: 01-10334
Page:     6
                                               Hydrograph Printouts

-------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    4A
-------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:      13    acres
            HYDROGRAPH PEAK:                5    cfs
            TIME OF PEAK:                1153    minutes
```

HYDROGRAPH VOLUME: 0.54 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.14	200	0.14	300	0.14	400	0.14
500	0.14	600	0.16	700	0.22	800	0.22	900	0.29
1000	0.40	1050	0.52	1100	0.68	1110	0.96	1120	1.14
1130	1.15	1131	1.16	1132	1.18	1133	1.18	1134	1.19
1135	1.20	1136	1.20	1137	1.20	1138	1.20	1139	1.20
1140	1.20	1141	1.23	1142	1.26	1143	1.32	1144	1.35
1145	1.49	1146	1.62	1147	1.74	1148	1.84	1149	2.49
1150	3.03	1151	3.53	1152	4.07	1153	4.59	1154	4.07
1155	3.42	1156	2.75	1157	2.07	1158	1.39	1159	1.22
1160	1.17	1161	1.16	1162	1.14	1163	1.14	1164	1.14
1165	1.06	1166	0.97	1167	0.88	1168	0.79	1169	0.69
1170	0.69	1171	0.69	1172	0.69	1173	0.69	1174	0.71
1175	0.71	1176	0.69	1177	0.66	1178	0.64	1179	0.61
1180	0.56	1181	0.55	1182	0.55	1183	0.55	1184	0.54
1185	0.55	1186	0.55	1187	0.54	1188	0.54	1189	0.52
1190	0.49	1191	0.45	1192	0.44	1193	0.41	1194	0.41
1195	0.39	1196	0.41	1197	0.41	1198	0.39	1199	0.39
1200	0.41	1201	0.41	1202	0.39	1203	0.41	1204	0.41
1205	0.41	1206	0.39	1207	0.41	1208	0.41	1209	0.39
1210	0.39	1211	0.41	1212	0.41	1213	0.39	1214	0.41
1215	0.41	1216	0.41	1217	0.39	1218	0.41	1219	0.41

```
     1220       0.39  1221       0.39  1222       0.41  1223       0.41  1224
0.39
     1225       0.38  1226       0.34  1227       0.30  1228       0.25  1229
0.23
     1230       0.21  1231       0.21  1232       0.21  1233       0.23  1234
0.23
     1235       0.23  1236       0.23  1237       0.23  1238       0.21  1239
0.21
     1240       0.21  1241       0.23  1242       0.23  1243       0.23  1244
0.23
     1245       0.23  1246       0.21  1247       0.21  1248       0.23  1249
0.23
     1250       0.23  1251       0.23  1252       0.23  1253       0.21  1254
0.21
     1255       0.21  1256       0.23  1257       0.23  1258       0.23  1259
0.23
     1260       0.23  1261       0.21  1262       0.21  1263       0.21  1264
0.23
     1265       0.23  1266       0.23  1267       0.23  1268       0.23  1269
0.21
     1270       0.21  1271       0.23  1272       0.23  1273       0.23  1274
0.23
     1275       0.23  1276       0.21  1277       0.21  1278       0.21  1279
0.23
     1280       0.23  1281       0.23  1282       0.23  1283       0.23  1284
0.21
     1285       0.21  1286       0.21  1287       0.23  1288       0.23  1289
0.23
     1290       0.23  1291       0.23  1292       0.21  1293       0.21  1294
0.23
     1295       0.23  1296       0.23  1297       0.21  1298       0.20  1299
0.17
     1300       0.15  1310       0.13  1320       0.13  1330       0.14  1340
0.13
     1350       0.13  1360       0.14  1370       0.13  1380       0.14  1390
0.13
     1400       0.13  1420       0.14  1440       0.14  1460       0.00  1500
0.00
```


VCRat Model Input

Model Lines

```
-------------------------------------------------------------------------------
-----------------
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030095001305A97                               1
110
111           1.00000
110
006     1  003AB010         A97                      00000102 1
006     1  003B 010      099A97                               1 B
006     1  004A 010      099A97                               1  2
999
```

```
 1.10
      1150       1.31  1151       1.50  1152       1.69  1153       1.88  1154
1.92
      1155       1.88  1156       1.84  1157       1.79  1158       1.75  1159
```

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: 01-10334

Model Results

NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	AREA (AC)	FLOW (CFS)	AREA (AC)	FLOW (CFS)	TIME (MIN)	CHANNEL LENGTH	SLOPE	SIZE	H:V	N VALUES	VEL	DEPTH	TYPE

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|-----------------------------------------|----------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --      --
       2A :  PROJECT AREA
       2A   030   A10    10   75     13     19       13      19   1154    -------
----  -------    ---     ----    -----  -----    --      --

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     19.24         VOLUME
(acre-ft):      2.84      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

*********************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      19   1154    -------
----  -------    ---     ----    -----  -----    --      --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       2   1154    -------
----  -------    ---     ----    -----  -----    --      --
       4A   ---   ---     --   --     ---     ---       13       2   1154    -------
----  -------    ---     ----    -----  -----    --      --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-------------------------------------------------------------------------------
-------------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-------------------------------------------------------------------------------
-------------------------------------------------------
-------------------------------------------------------------------------------
-------------------------------------------------------

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     19.24         VOLUME
(acre-ft):      2.84      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****
****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	0.67	0.67
200	0.67	0.67	300	0.67	0.67
400	0.67	0.67	500	0.68	0.68
600	0.78	0.78	700	1.12	1.12
800	1.12	1.12	900	1.48	1.48
1000	2.12	2.12	1050	2.76	2.76
1100	3.60	3.60	1110	5.15	5.15
1120	6.21	6.21	1130	6.28	6.28
1131	6.29	6.29	1132	6.31	6.31
1133	6.32	6.32	1134	6.40	6.40
1135	6.41	6.41	1136	6.43	6.43
1137	6.44	6.44	1138	6.52	6.52
1139	6.53	6.53	1140	6.55	6.55
1141	6.68	6.68	1142	6.81	6.81
1143	6.95	6.95	1144	6.95	6.95
1145	7.48	7.48	1146	7.95	7.95
1147	8.49	8.49	1148	8.89	8.89
1149	10.95	10.95	1150	13.07	13.07
1151	14.98	14.98	1152	16.95	16.95
1153	18.85	18.85	1154	19.24	19.24
1155	18.85	18.85	1156	18.39	18.39

1157	17.93	17.93	1158	17.47	17.47
1159	15.44	15.44	1160	13.27	13.27
1161	11.22	11.22	1162	9.09	9.09
1163	6.95	6.95	1164	6.48	6.48
1165	6.08	6.08	1166	5.75	5.75
1167	5.41	5.41	1168	5.15	5.15
1169	4.81	4.81	1170	4.62	4.62
1171	4.39	4.39	1172	4.12	4.12
1173	3.95	3.95	1174	3.73	3.73
1175	3.67	3.67	1176	3.73	3.73
1177	3.61	3.61	1178	3.50	3.50
1179	3.50	3.50	1180	3.39	3.39
1181	3.28	3.28	1182	3.23	3.23
1183	3.11	3.11	1184	3.00	3.00
1185	3.00	3.00	1186	2.89	2.89
1187	2.89	2.89	1188	2.89	2.89
1189	2.78	2.78	1190	2.73	2.73
1191	2.67	2.67	1192	2.56	2.56
1193	2.50	2.50	1194	2.45	2.45

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	2.34	2.34	1196	2.28	2.28
1197	2.17	2.17	1198	2.11	2.11
1199	2.11	2.11	1200	2.11	2.11
1201	2.11	2.11	1202	2.11	2.11
1203	2.11	2.11	1204	2.11	2.11
1205	2.11	2.11	1206	2.11	2.11
1207	2.17	2.17	1208	2.11	2.11
1209	2.11	2.11	1210	2.11	2.11
1211	2.11	2.11	1212	2.17	2.17
1213	2.11	2.11	1214	2.11	2.11
1215	2.11	2.11	1216	2.11	2.11
1217	2.11	2.11	1218	2.11	2.11
1219	2.11	2.11	1220	2.11	2.11
1221	2.11	2.11	1222	2.11	2.11
1223	2.11	2.11	1224	2.11	2.11
1225	2.00	2.00	1226	1.89	1.89
1227	1.78	1.78	1228	1.72	1.72
1229	1.61	1.61	1230	1.50	1.50
1231	1.39	1.39	1232	1.28	1.28
1233	1.22	1.22	1234	1.11	1.11
1235	1.11	1.11	1236	1.11	1.11
1237	1.11	1.11	1238	1.11	1.11
1239	1.11	1.11	1240	1.17	1.17
1241	1.17	1.17	1242	1.17	1.17
1243	1.17	1.17	1244	1.17	1.17

1245	1.17	1.17	1246	1.17	1.17
1247	1.17	1.17	1248	1.17	1.17
1249	1.17	1.17	1250	1.11	1.11
1251	1.11	1.11	1252	1.11	1.11
1253	1.11	1.11	1254	1.11	1.11
1255	1.11	1.11	1256	1.11	1.11
1257	1.11	1.11	1258	1.11	1.11
1259	1.11	1.11	1260	1.11	1.11
1261	1.11	1.11	1262	1.11	1.11
1263	1.11	1.11	1264	1.11	1.11
1265	1.11	1.11	1266	1.11	1.11
1267	1.11	1.11	1268	1.11	1.11
1269	1.11	1.11	1270	1.11	1.11
1271	1.11	1.11	1272	1.11	1.11
1273	1.11	1.11	1274	1.11	1.11
1275	1.11	1.11	1276	1.11	1.11
1277	1.11	1.11	1278	1.11	1.11
1279	1.11	1.11	1280	1.11	1.11
1281	1.11	1.11	1282	1.11	1.11
1283	1.11	1.11	1284	1.11	1.11
1285	1.11	1.11	1286	1.11	1.11
1287	1.11	1.11	1288	1.11	1.11
1289	1.11	1.11	1290	1.11	1.11
1291	1.17	1.17	1292	1.17	1.17
1293	1.17	1.17	1294	1.17	1.17

1295	1.17	1.17	1296	1.17	1.17
1297	1.11	1.11	1298	1.06	1.06
1299	1.00	1.00	1300	0.95	0.95
1310	0.72	0.72	1320	0.67	0.67
1330	0.67	0.67	1340	0.67	0.67
1350	0.67	0.67	1360	0.67	0.67
1370	0.67	0.67	1380	0.67	0.67
1390	0.67	0.67	1400	0.72	0.72
1420	0.67	0.67	1440	0.67	0.67
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 2 cfs
TIME OF PEAK: 1154 minutes
HYDROGRAPH VOLUME: 0.29 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.07	200	0.07	300	0.07	400	0.07

```
      500       0.07   600       0.08   700       0.11   800       0.11   900
0.15
     1000       0.21  1050       0.28  1100       0.36  1110       0.51  1120
0.62
     1130       0.63  1131       0.63  1132       0.63  1133       0.63  1134
0.64
     1135       0.64  1136       0.64  1137       0.64  1138       0.65  1139
0.65
     1140       0.65  1141       0.67  1142       0.68  1143       0.69  1144
0.69
     1145       0.75  1146       0.80  1147       0.85  1148       0.89  1149
1.10
     1150       1.31  1151       1.50  1152       1.69  1153       1.88  1154
1.92
     1155       1.88  1156       1.84  1157       1.79  1158       1.75  1159
1.54
     1160       1.33  1161       1.12  1162       0.91  1163       0.69  1164
0.65
     1165       0.61  1166       0.57  1167       0.54  1168       0.51  1169
0.48
     1170       0.46  1171       0.44  1172       0.41  1173       0.39  1174
0.37
     1175       0.37  1176       0.37  1177       0.36  1178       0.35  1179
0.35
     1180       0.34  1181       0.33  1182       0.32  1183       0.31  1184
0.30
     1185       0.30  1186       0.29  1187       0.29  1188       0.29  1189
0.28
     1190       0.27  1191       0.27  1192       0.26  1193       0.25  1194
0.24
     1195       0.23  1196       0.23  1197       0.22  1198       0.21  1199
0.21
     1200       0.21  1201       0.21  1202       0.21  1203       0.21  1204
0.21
     1205       0.21  1206       0.21  1207       0.22  1208       0.21  1209
0.21
     1210       0.21  1211       0.21  1212       0.22  1213       0.21  1214
0.21
     1215       0.21  1216       0.21  1217       0.21  1218       0.21  1219
0.21
     1220       0.21  1221       0.21  1222       0.21  1223       0.21  1224
0.21
     1225       0.20  1226       0.19  1227       0.18  1228       0.17  1229
0.16
     1230       0.15  1231       0.14  1232       0.13  1233       0.12  1234
0.11
     1235       0.11  1236       0.11  1237       0.11  1238       0.11  1239
0.11
     1240       0.12  1241       0.12  1242       0.12  1243       0.12  1244
0.12
```

1245	0.12	1246	0.12	1247	0.12	1248	0.12	1249	0.12
1250	0.11	1251	0.11	1252	0.11	1253	0.11	1254	0.11
1255	0.11	1256	0.11	1257	0.11	1258	0.11	1259	0.11
1260	0.11	1261	0.11	1262	0.11	1263	0.11	1264	0.11
1265	0.11	1266	0.11	1267	0.11	1268	0.11	1269	0.11
1270	0.11	1271	0.11	1272	0.11	1273	0.11	1274	0.11
1275	0.11	1276	0.11	1277	0.11	1278	0.11	1279	0.11
1280	0.11	1281	0.11	1282	0.11	1283	0.11	1284	0.11
1285	0.11	1286	0.11	1287	0.11	1288	0.11	1289	0.11
1290	0.11	1291	0.12	1292	0.12	1293	0.12	1294	0.12
1295	0.12	1296	0.12	1297	0.11	1298	0.11	1299	0.10
1300	0.09	1310	0.07	1320	0.07	1330	0.07	1340	0.07
1350	0.07	1360	0.07	1370	0.07	1380	0.07	1390	0.07
1400	0.07	1420	0.07	1440	0.07	1460	0.00	1500	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3B

TOTAL AREA TO HYDROGRAPH: 0 acres
HYDROGRAPH PEAK: 0 cfs
TIME OF PEAK: 0 minutes
HYDROGRAPH VOLUME: 0.00 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00


                              Ventura County Watershed Protection District
                         Modified Rational Method Hydrology Program (VCRat v2.64)

                                          Job:      1  Project: 01-10334
Page:     6
                                               Hydrograph Printouts

-------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    4A
-------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:      13    acres
            HYDROGRAPH PEAK:                2    cfs
            TIME OF PEAK:                1154    minutes
```

HYDROGRAPH VOLUME: 0.29 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.07	200	0.07	300	0.07	400	0.07
500	0.07	600	0.08	700	0.11	800	0.11	900	0.15
1000	0.21	1050	0.28	1100	0.36	1110	0.51	1120	0.62
1130	0.63	1131	0.63	1132	0.63	1133	0.63	1134	0.64
1135	0.64	1136	0.64	1137	0.64	1138	0.65	1139	0.65
1140	0.65	1141	0.67	1142	0.68	1143	0.69	1144	0.69
1145	0.75	1146	0.80	1147	0.85	1148	0.89	1149	1.10
1150	1.31	1151	1.50	1152	1.69	1153	1.88	1154	1.92
1155	1.88	1156	1.84	1157	1.79	1158	1.75	1159	1.54
1160	1.33	1161	1.12	1162	0.91	1163	0.69	1164	0.65
1165	0.61	1166	0.57	1167	0.54	1168	0.51	1169	0.48
1170	0.46	1171	0.44	1172	0.41	1173	0.39	1174	0.37
1175	0.37	1176	0.37	1177	0.36	1178	0.35	1179	0.35
1180	0.34	1181	0.33	1182	0.32	1183	0.31	1184	0.30
1185	0.30	1186	0.29	1187	0.29	1188	0.29	1189	0.28
1190	0.27	1191	0.27	1192	0.26	1193	0.25	1194	0.24
1195	0.23	1196	0.23	1197	0.22	1198	0.21	1199	0.21
1200	0.21	1201	0.21	1202	0.21	1203	0.21	1204	0.21
1205	0.21	1206	0.21	1207	0.22	1208	0.21	1209	0.21
1210	0.21	1211	0.21	1212	0.22	1213	0.21	1214	0.21
1215	0.21	1216	0.21	1217	0.21	1218	0.21	1219	0.21

```
     1220       0.21  1221       0.21  1222       0.21  1223       0.21  1224
0.21
     1225       0.20  1226       0.19  1227       0.18  1228       0.17  1229
0.16
     1230       0.15  1231       0.14  1232       0.13  1233       0.12  1234
0.11
     1235       0.11  1236       0.11  1237       0.11  1238       0.11  1239
0.11
     1240       0.12  1241       0.12  1242       0.12  1243       0.12  1244
0.12
     1245       0.12  1246       0.12  1247       0.12  1248       0.12  1249
0.12
     1250       0.11  1251       0.11  1252       0.11  1253       0.11  1254
0.11
     1255       0.11  1256       0.11  1257       0.11  1258       0.11  1259
0.11
     1260       0.11  1261       0.11  1262       0.11  1263       0.11  1264
0.11
     1265       0.11  1266       0.11  1267       0.11  1268       0.11  1269
0.11
     1270       0.11  1271       0.11  1272       0.11  1273       0.11  1274
0.11
     1275       0.11  1276       0.11  1277       0.11  1278       0.11  1279
0.11
     1280       0.11  1281       0.11  1282       0.11  1283       0.11  1284
0.11
     1285       0.11  1286       0.11  1287       0.11  1288       0.11  1289
0.11
     1290       0.11  1291       0.12  1292       0.12  1293       0.12  1294
0.12
     1295       0.12  1296       0.12  1297       0.11  1298       0.11  1299
0.10
     1300       0.09  1310       0.07  1320       0.07  1330       0.07  1340
0.07
     1350       0.07  1360       0.07  1370       0.07  1380       0.07  1390
0.07
     1400       0.07  1420       0.07  1440       0.07  1460       0.00  1500
0.00
```


VCRat Model Input

Model Lines

```
-------------------------------------------------------------------------------
-----------------
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030075001310A97                               1
110
111           1.00000
110
006     1  003AB010         A97                     00000102 1
006     1  003B 010      099A97                              1 B
006     1  004A 010      099A97                              1  2
999
```

1149 0.92 1148 0.90 1147 1.08 1146 1.12 1149 1.39
1150 1.65 1151 1.91 1152 2.17 1153 2.43 1154 2.43
1155 2.38 1156 2.31 1157 2.25 1158 1.98 1159

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Model Results

SUBAREA DATA AND RESULTS							ACCUMULATED DATA			ROUTING AFTER ACCUMULATION				
NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	AREA (AC)	FLOW (CFS)	AREA (AC)	FLOW (CFS)	TIME (MIN)	CHANNEL LENGTH	SLOPE	SIZE	H:V	N VALUES	VEL	DEPTH	TYPE

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|-----------------------------------------|---------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --     --
       2A :  PROJECT AREA
       2A   030   A25     9   75     13     24       13      24   1154    -------
----  -------    ---     ----    -----  -----    --     --

********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     24.31         VOLUME
(acre-ft):      3.44      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

********************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      24   1154    -------
----  -------    ---     ----    -----  -----    --     --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       2   1154    -------
----  -------    ---     ----    -----  -----    --     --
       4A   ---   ---     --   --     ---     ---       13       2   1154    -------
----  -------    ---     ----    -----  -----    --     --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-------------------------------------------------------------------------------
-------------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-------------------------------------------------------------------------------
-------------------------------------------------------
-------------------------------------------------------------------------------
-------------------------------------------------------

********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     24.31         VOLUME
(acre-ft):      3.44      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	0.83	0.83
200	0.83	0.83	300	0.83	0.83
400	0.83	0.83	500	0.83	0.83
600	0.96	0.96	700	1.37	1.37
800	1.36	1.36	900	1.79	1.79
1000	2.55	2.55	1050	3.30	3.30
1100	4.30	4.30	1110	6.35	6.35
1120	7.55	7.55	1130	7.75	7.75
1131	7.75	7.75	1132	7.75	7.75
1133	7.82	7.82	1134	7.82	7.82
1135	7.90	7.90	1136	7.90	7.90
1137	7.97	7.97	1138	7.97	7.97
1139	8.05	8.05	1140	8.05	8.05
1141	8.20	8.20	1142	8.34	8.34
1143	8.49	8.49	1144	8.57	8.57
1145	9.24	9.24	1146	9.83	9.83
1147	10.57	10.57	1148	11.16	11.16
1149	13.95	13.95	1150	16.51	16.51
1151	19.05	19.05	1152	21.68	21.68
1153	24.31	24.31	1154	24.31	24.31
1155	23.80	23.80	1156	23.14	23.14

1157	22.48	22.48	1158	19.78	19.78
1159	17.02	17.02	1160	14.24	14.24
1161	11.45	11.45	1162	8.64	8.64
1163	7.90	7.90	1164	7.75	7.75
1165	7.30	7.30	1166	6.93	6.93
1167	6.49	6.49	1168	6.19	6.19
1169	5.82	5.82	1170	5.45	5.45
1171	5.08	5.08	1172	4.78	4.78
1173	4.45	4.45	1174	4.45	4.45
1175	4.45	4.45	1176	4.45	4.45
1177	4.33	4.33	1178	4.20	4.20
1179	4.08	4.08	1180	4.02	4.02
1181	3.89	3.89	1182	3.77	3.77
1183	3.65	3.65	1184	3.52	3.52
1185	3.46	3.46	1186	3.46	3.46
1187	3.46	3.46	1188	3.46	3.46
1189	3.34	3.34	1190	3.21	3.21
1191	3.15	3.15	1192	3.03	3.03
1193	2.97	2.97	1194	2.84	2.84

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	2.72	2.72	1196	2.66	2.66
1197	2.53	2.53	1198	2.53	2.53
1199	2.53	2.53	1200	2.53	2.53
1201	2.60	2.60	1202	2.53	2.53
1203	2.53	2.53	1204	2.53	2.53
1205	2.53	2.53	1206	2.60	2.60
1207	2.53	2.53	1208	2.60	2.60
1209	2.53	2.53	1210	2.53	2.53
1211	2.53	2.53	1212	2.53	2.53
1213	2.60	2.60	1214	2.53	2.53
1215	2.53	2.53	1216	2.53	2.53
1217	2.53	2.53	1218	2.53	2.53
1219	2.53	2.53	1220	2.60	2.60
1221	2.53	2.53	1222	2.53	2.53
1223	2.53	2.53	1224	2.53	2.53
1225	2.41	2.41	1226	2.29	2.29
1227	2.16	2.16	1228	2.04	2.04
1229	1.85	1.85	1230	1.79	1.79
1231	1.61	1.61	1232	1.48	1.48
1233	1.36	1.36	1234	1.36	1.36
1235	1.36	1.36	1236	1.36	1.36
1237	1.36	1.36	1238	1.36	1.36
1239	1.36	1.36	1240	1.36	1.36
1241	1.42	1.42	1242	1.36	1.36
1243	1.42	1.42	1244	1.36	1.36

1245	1.36	1.36	1246	1.36	1.36
1247	1.36	1.36	1248	1.36	1.36
1249	1.36	1.36	1250	1.36	1.36
1251	1.36	1.36	1252	1.36	1.36
1253	1.36	1.36	1254	1.42	1.42
1255	1.36	1.36	1256	1.36	1.36
1257	1.36	1.36	1258	1.36	1.36
1259	1.36	1.36	1260	1.36	1.36
1261	1.36	1.36	1262	1.36	1.36
1263	1.36	1.36	1264	1.36	1.36
1265	1.42	1.42	1266	1.36	1.36
1267	1.42	1.42	1268	1.36	1.36
1269	1.36	1.36	1270	1.36	1.36
1271	1.36	1.36	1272	1.36	1.36
1273	1.36	1.36	1274	1.36	1.36
1275	1.36	1.36	1276	1.36	1.36
1277	1.36	1.36	1278	1.42	1.42
1279	1.36	1.36	1280	1.36	1.36
1281	1.36	1.36	1282	1.36	1.36
1283	1.36	1.36	1284	1.36	1.36
1285	1.36	1.36	1286	1.36	1.36
1287	1.36	1.36	1288	1.36	1.36
1289	1.42	1.42	1290	1.36	1.36
1291	1.42	1.42	1292	1.36	1.36
1293	1.36	1.36	1294	1.36	1.36

1295	1.36	1.36	1296	1.36	1.36
1297	1.30	1.30	1298	1.24	1.24
1299	1.17	1.17	1300	1.11	1.11
1310	0.83	0.83	1320	0.83	0.83
1330	0.83	0.83	1340	0.83	0.83
1350	0.78	0.78	1360	0.83	0.83
1370	0.83	0.83	1380	0.83	0.83
1390	0.83	0.83	1400	0.83	0.83
1420	0.83	0.83	1440	0.83	0.83
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 2 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 0.34 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.08	200	0.08	300	0.08	400	0.08

```
      500       0.08   600       0.10   700       0.14   800       0.14   900
0.18
     1000       0.25  1050       0.33  1100       0.43  1110       0.63  1120
0.75
     1130       0.77  1131       0.77  1132       0.77  1133       0.78  1134
0.78
     1135       0.79  1136       0.79  1137       0.80  1138       0.80  1139
0.80
     1140       0.80  1141       0.82  1142       0.83  1143       0.85  1144
0.86
     1145       0.92  1146       0.98  1147       1.06  1148       1.12  1149
1.39
     1150       1.65  1151       1.91  1152       2.17  1153       2.43  1154
2.43
     1155       2.38  1156       2.31  1157       2.25  1158       1.98  1159
1.70
     1160       1.42  1161       1.15  1162       0.86  1163       0.79  1164
0.77
     1165       0.73  1166       0.69  1167       0.65  1168       0.62  1169
0.58
     1170       0.55  1171       0.51  1172       0.48  1173       0.44  1174
0.44
     1175       0.44  1176       0.44  1177       0.43  1178       0.42  1179
0.41
     1180       0.40  1181       0.39  1182       0.38  1183       0.36  1184
0.35
     1185       0.35  1186       0.35  1187       0.35  1188       0.35  1189
0.33
     1190       0.32  1191       0.32  1192       0.30  1193       0.30  1194
0.28
     1195       0.27  1196       0.27  1197       0.25  1198       0.25  1199
0.25
     1200       0.25  1201       0.26  1202       0.25  1203       0.25  1204
0.25
     1205       0.25  1206       0.26  1207       0.25  1208       0.26  1209
0.25
     1210       0.25  1211       0.25  1212       0.25  1213       0.26  1214
0.25
     1215       0.25  1216       0.25  1217       0.25  1218       0.25  1219
0.25
     1220       0.26  1221       0.25  1222       0.25  1223       0.25  1224
0.25
     1225       0.24  1226       0.23  1227       0.22  1228       0.20  1229
0.19
     1230       0.18  1231       0.16  1232       0.15  1233       0.14  1234
0.14
     1235       0.14  1236       0.14  1237       0.14  1238       0.14  1239
0.14
     1240       0.14  1241       0.14  1242       0.14  1243       0.14  1244
0.14
```

1245	0.14	1246	0.14	1247	0.14	1248	0.14	1249	0.14
1250	0.14	1251	0.14	1252	0.14	1253	0.14	1254	0.14
1255	0.14	1256	0.14	1257	0.14	1258	0.14	1259	0.14
1260	0.14	1261	0.14	1262	0.14	1263	0.14	1264	0.14
1265	0.14	1266	0.14	1267	0.14	1268	0.14	1269	0.14
1270	0.14	1271	0.14	1272	0.14	1273	0.14	1274	0.14
1275	0.14	1276	0.14	1277	0.14	1278	0.14	1279	0.14
1280	0.14	1281	0.14	1282	0.14	1283	0.14	1284	0.14
1285	0.14	1286	0.14	1287	0.14	1288	0.14	1289	0.14
1290	0.14	1291	0.14	1292	0.14	1293	0.14	1294	0.14
1295	0.14	1296	0.14	1297	0.13	1298	0.12	1299	0.12
1300	0.11	1310	0.08	1320	0.08	1330	0.08	1340	0.08
1350	0.08	1360	0.08	1370	0.08	1380	0.08	1390	0.08
1400	0.08	1420	0.08	1440	0.08	1460	0.00	1500	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3B

TOTAL AREA TO HYDROGRAPH: 0 acres
HYDROGRAPH PEAK: 0 cfs
TIME OF PEAK: 0 minutes
HYDROGRAPH VOLUME: 0.00 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00


                              Ventura County Watershed Protection District
                         Modified Rational Method Hydrology Program (VCRat v2.64)

                                              Job:      1  Project: 01-10334
Page:     6
                                                   Hydrograph Printouts

-------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    4A
-------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:      13    acres
            HYDROGRAPH PEAK:                2    cfs
            TIME OF PEAK:                1153    minutes
```

HYDROGRAPH VOLUME: 0.34 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.08	200	0.08	300	0.08	400	0.08
500	0.08	600	0.10	700	0.14	800	0.14	900	0.18
1000	0.25	1050	0.33	1100	0.43	1110	0.63	1120	0.75
1130	0.77	1131	0.77	1132	0.77	1133	0.78	1134	0.78
1135	0.79	1136	0.79	1137	0.80	1138	0.80	1139	0.80
1140	0.80	1141	0.82	1142	0.83	1143	0.85	1144	0.86
1145	0.92	1146	0.98	1147	1.06	1148	1.12	1149	1.39
1150	1.65	1151	1.91	1152	2.17	1153	2.43	1154	2.43
1155	2.38	1156	2.31	1157	2.25	1158	1.98	1159	1.70
1160	1.42	1161	1.15	1162	0.86	1163	0.79	1164	0.77
1165	0.73	1166	0.69	1167	0.65	1168	0.62	1169	0.58
1170	0.55	1171	0.51	1172	0.48	1173	0.44	1174	0.44
1175	0.44	1176	0.44	1177	0.43	1178	0.42	1179	0.41
1180	0.40	1181	0.39	1182	0.38	1183	0.36	1184	0.35
1185	0.35	1186	0.35	1187	0.35	1188	0.35	1189	0.33
1190	0.32	1191	0.32	1192	0.30	1193	0.30	1194	0.28
1195	0.27	1196	0.27	1197	0.25	1198	0.25	1199	0.25
1200	0.25	1201	0.26	1202	0.25	1203	0.25	1204	0.25
1205	0.25	1206	0.26	1207	0.25	1208	0.26	1209	0.25
1210	0.25	1211	0.25	1212	0.25	1213	0.26	1214	0.25
1215	0.25	1216	0.25	1217	0.25	1218	0.25	1219	0.25

```
     1220       0.26  1221       0.25  1222       0.25  1223       0.25  1224
0.25
     1225       0.24  1226       0.23  1227       0.22  1228       0.20  1229
0.19
     1230       0.18  1231       0.16  1232       0.15  1233       0.14  1234
0.14
     1235       0.14  1236       0.14  1237       0.14  1238       0.14  1239
0.14
     1240       0.14  1241       0.14  1242       0.14  1243       0.14  1244
0.14
     1245       0.14  1246       0.14  1247       0.14  1248       0.14  1249
0.14
     1250       0.14  1251       0.14  1252       0.14  1253       0.14  1254
0.14
     1255       0.14  1256       0.14  1257       0.14  1258       0.14  1259
0.14
     1260       0.14  1261       0.14  1262       0.14  1263       0.14  1264
0.14
     1265       0.14  1266       0.14  1267       0.14  1268       0.14  1269
0.14
     1270       0.14  1271       0.14  1272       0.14  1273       0.14  1274
0.14
     1275       0.14  1276       0.14  1277       0.14  1278       0.14  1279
0.14
     1280       0.14  1281       0.14  1282       0.14  1283       0.14  1284
0.14
     1285       0.14  1286       0.14  1287       0.14  1288       0.14  1289
0.14
     1290       0.14  1291       0.14  1292       0.14  1293       0.14  1294
0.14
     1295       0.14  1296       0.14  1297       0.13  1298       0.12  1299
0.12
     1300       0.11  1310       0.08  1320       0.08  1330       0.08  1340
0.08
     1350       0.08  1360       0.08  1370       0.08  1380       0.08  1390
0.08
     1400       0.08  1420       0.08  1440       0.08  1460       0.00  1500
0.00
```


VCRat Model Input

Model Lines

```
-------------------------------------------------------------------------------
-----------------
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030075001309A97                                1
110
111           1.00000
110
006     1  003AB010         A97                      00000102 1
006     1  003B 010      099A97                               1 B
006     1  004A 010      099A97                               1  2
999
```

26 1153 3.68

32 1158 1.08

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: 01-10334

Model Results

NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	SUBAREA DATA AND RESULTS AREA (AC)	FLOW (CFS)	ACCUMULATED DATA AREA (AC)	FLOW (CFS)	TIME (MIN)	CHANNEL ROUTING AFTER ACCUMULATION LENGTH	SLOPE	SIZE	H:V	N VALUES	VEL	DEPTH	TYPE

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|----------------------------------------|---------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --     --
       2A :  PROJECT AREA
       2A   030   A50     5   75     13     37       13      37   1153    -------
----  -------    ---     ----    -----  -----    --     --

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     36.79         VOLUME
(acre-ft):      3.88      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

*********************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      37   1153    -------
----  -------    ---     ----    -----  -----    --     --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       4   1153    -------
----  -------    ---     ----    -----  -----    --     --
       4A   ---   ---     --   --     ---     ---       13       4   1153    -------
----  -------    ---     ----    -----  -----    --     --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-------------------------------------------------------------------------------
-------------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-------------------------------------------------------------------------------
-------------------------------------------------------------
-------------------------------------------------------------------------------
-------------------------------------------------------

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     36.79         VOLUME
(acre-ft):      3.88      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****
****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	0.95	0.95
200	0.96	0.96	300	0.95	0.95
400	0.95	0.95	500	0.95	0.95
600	1.10	1.10	700	1.55	1.55
800	1.55	1.55	900	2.02	2.02
1000	2.85	2.85	1050	3.71	3.71
1100	4.84	4.84	1110	7.21	7.21
1120	8.62	8.62	1130	8.75	8.75
1131	8.82	8.82	1132	8.89	8.89
1133	8.96	8.96	1134	9.02	9.02
1135	9.22	9.22	1136	9.22	9.22
1137	9.22	9.22	1138	9.22	9.22
1139	9.22	9.22	1140	9.09	9.09
1141	9.36	9.36	1142	9.76	9.76
1143	10.03	10.03	1144	10.29	10.29
1145	11.62	11.62	1146	12.67	12.67
1147	13.46	13.46	1148	14.52	14.52
1149	19.77	19.77	1150	23.97	23.97
1151	28.19	28.19	1152	32.55	32.55
1153	36.79	36.79	1154	32.55	32.55
1155	27.27	27.27	1156	21.73	21.73

1157	16.23	16.23	1158	10.82	10.82
1159	9.36	9.36	1160	8.96	8.96
1161	8.96	8.96	1162	8.82	8.82
1163	8.55	8.55	1164	8.69	8.69
1165	7.88	7.88	1166	7.08	7.08
1167	6.41	6.41	1168	5.75	5.75
1169	4.95	4.95	1170	5.08	5.08
1171	5.08	5.08	1172	5.08	5.08
1173	5.08	5.08	1174	4.95	4.95
1175	4.95	4.95	1176	4.95	4.95
1177	4.68	4.68	1178	4.45	4.45
1179	4.34	4.34	1180	4.12	4.12
1181	3.89	3.89	1182	3.89	3.89
1183	3.89	3.89	1184	3.89	3.89
1185	3.89	3.89	1186	3.89	3.89
1187	3.89	3.89	1188	3.89	3.89
1189	3.67	3.67	1190	3.45	3.45
1191	3.23	3.23	1192	3.00	3.00
1193	2.78	2.78	1194	2.78	2.78

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	2.89	2.89	1196	2.89	2.89
1197	2.89	2.89	1198	2.89	2.89
1199	2.89	2.89	1200	2.78	2.78
1201	2.78	2.78	1202	2.89	2.89
1203	2.89	2.89	1204	2.89	2.89
1205	2.89	2.89	1206	2.89	2.89
1207	2.78	2.78	1208	2.78	2.78
1209	2.89	2.89	1210	2.89	2.89
1211	2.89	2.89	1212	2.89	2.89
1213	2.89	2.89	1214	2.78	2.78
1215	2.78	2.78	1216	2.78	2.78
1217	2.89	2.89	1218	2.89	2.89
1219	2.89	2.89	1220	2.89	2.89
1221	2.89	2.89	1222	2.78	2.78
1223	2.78	2.78	1224	2.89	2.89
1225	2.56	2.56	1226	2.34	2.34
1227	2.11	2.11	1228	1.89	1.89
1229	1.56	1.56	1230	1.56	1.56
1231	1.56	1.56	1232	1.56	1.56
1233	1.56	1.56	1234	1.45	1.45
1235	1.56	1.56	1236	1.56	1.56
1237	1.56	1.56	1238	1.56	1.56
1239	1.56	1.56	1240	1.56	1.56
1241	1.56	1.56	1242	1.56	1.56
1243	1.56	1.56	1244	1.56	1.56

1245	1.56	1.56	1246	1.56	1.56
1247	1.56	1.56	1248	1.56	1.56
1249	1.56	1.56	1250	1.56	1.56
1251	1.56	1.56	1252	1.56	1.56
1253	1.45	1.45	1254	1.56	1.56
1255	1.56	1.56	1256	1.56	1.56
1257	1.56	1.56	1258	1.56	1.56
1259	1.56	1.56	1260	1.56	1.56
1261	1.56	1.56	1262	1.56	1.56
1263	1.56	1.56	1264	1.56	1.56
1265	1.56	1.56	1266	1.56	1.56
1267	1.56	1.56	1268	1.56	1.56
1269	1.56	1.56	1270	1.56	1.56
1271	1.56	1.56	1272	1.45	1.45
1273	1.56	1.56	1274	1.56	1.56
1275	1.56	1.56	1276	1.56	1.56
1277	1.56	1.56	1278	1.56	1.56
1279	1.56	1.56	1280	1.56	1.56
1281	1.56	1.56	1282	1.56	1.56
1283	1.56	1.56	1284	1.56	1.56
1285	1.56	1.56	1286	1.56	1.56
1287	1.56	1.56	1288	1.56	1.56
1289	1.56	1.56	1290	1.56	1.56
1291	1.45	1.45	1292	1.56	1.56
1293	1.56	1.56	1294	1.56	1.56

1295	1.56	1.56	1296	1.56	1.56
1297	1.45	1.45	1298	1.33	1.33
1299	1.22	1.22	1300	1.00	1.00
1310	0.95	0.95	1320	1.00	1.00
1330	0.95	0.95	1340	0.95	0.95
1350	0.95	0.95	1360	0.95	0.95
1370	0.95	0.95	1380	0.95	0.95
1390	0.95	0.95	1400	1.00	1.00
1420	0.95	0.95	1440	0.95	0.95
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 4 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 0.39 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.10	200	0.10	300	0.10	400	0.10

```
      500       0.10   600       0.11   700       0.16   800       0.16   900
0.20
     1000       0.29  1050       0.37  1100       0.48  1110       0.72  1120
0.86
     1130       0.88  1131       0.88  1132       0.89  1133       0.90  1134
0.90
     1135       0.92  1136       0.92  1137       0.92  1138       0.92  1139
0.92
     1140       0.91  1141       0.94  1142       0.98  1143       1.00  1144
1.03
     1145       1.16  1146       1.27  1147       1.35  1148       1.45  1149
1.98
     1150       2.40  1151       2.82  1152       3.26  1153       3.68  1154
3.26
     1155       2.73  1156       2.17  1157       1.62  1158       1.08  1159
0.94
     1160       0.90  1161       0.90  1162       0.88  1163       0.86  1164
0.87
     1165       0.79  1166       0.71  1167       0.64  1168       0.57  1169
0.49
     1170       0.51  1171       0.51  1172       0.51  1173       0.51  1174
0.49
     1175       0.49  1176       0.49  1177       0.47  1178       0.44  1179
0.43
     1180       0.41  1181       0.39  1182       0.39  1183       0.39  1184
0.39
     1185       0.39  1186       0.39  1187       0.39  1188       0.39  1189
0.37
     1190       0.34  1191       0.32  1192       0.30  1193       0.28  1194
0.28
     1195       0.29  1196       0.29  1197       0.29  1198       0.29  1199
0.29
     1200       0.28  1201       0.28  1202       0.29  1203       0.29  1204
0.29
     1205       0.29  1206       0.29  1207       0.28  1208       0.28  1209
0.29
     1210       0.29  1211       0.29  1212       0.29  1213       0.29  1214
0.28
     1215       0.28  1216       0.28  1217       0.29  1218       0.29  1219
0.29
     1220       0.29  1221       0.29  1222       0.28  1223       0.28  1224
0.29
     1225       0.26  1226       0.23  1227       0.21  1228       0.19  1229
0.16
     1230       0.16  1231       0.16  1232       0.16  1233       0.16  1234
0.14
     1235       0.16  1236       0.16  1237       0.16  1238       0.16  1239
0.16
     1240       0.16  1241       0.16  1242       0.16  1243       0.16  1244
0.16
```

1245	0.16	1246	0.16	1247	0.16	1248	0.16	1249	0.16
1250	0.16	1251	0.16	1252	0.16	1253	0.14	1254	0.16
1255	0.16	1256	0.16	1257	0.16	1258	0.16	1259	0.16
1260	0.16	1261	0.16	1262	0.16	1263	0.16	1264	0.16
1265	0.16	1266	0.16	1267	0.16	1268	0.16	1269	0.16
1270	0.16	1271	0.16	1272	0.14	1273	0.16	1274	0.16
1275	0.16	1276	0.16	1277	0.16	1278	0.16	1279	0.16
1280	0.16	1281	0.16	1282	0.16	1283	0.16	1284	0.16
1285	0.16	1286	0.16	1287	0.16	1288	0.16	1289	0.16
1290	0.16	1291	0.14	1292	0.16	1293	0.16	1294	0.16
1295	0.16	1296	0.16	1297	0.14	1298	0.13	1299	0.12
1300	0.10	1310	0.09	1320	0.10	1330	0.09	1340	0.09
1350	0.09	1360	0.09	1370	0.09	1380	0.09	1390	0.09
1400	0.10	1420	0.09	1440	0.09	1460	0.00	1500	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3B

TOTAL AREA TO HYDROGRAPH: 0 acres
HYDROGRAPH PEAK: 0 cfs
TIME OF PEAK: 0 minutes
HYDROGRAPH VOLUME: 0.00 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00


                              Ventura County Watershed Protection District
                         Modified Rational Method Hydrology Program (VCRat v2.64)

                                          Job:      1  Project: 01-10334
Page:     6
                                               Hydrograph Printouts

-------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    4A
-------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:      13    acres
            HYDROGRAPH PEAK:                4    cfs
            TIME OF PEAK:                1153    minutes
```

HYDROGRAPH VOLUME: 0.39 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.10	200	0.10	300	0.10	400	0.10
500	0.10	600	0.11	700	0.16	800	0.16	900	0.20
1000	0.29	1050	0.37	1100	0.48	1110	0.72	1120	0.86
1130	0.88	1131	0.88	1132	0.89	1133	0.90	1134	0.90
1135	0.92	1136	0.92	1137	0.92	1138	0.92	1139	0.92
1140	0.91	1141	0.94	1142	0.98	1143	1.00	1144	1.03
1145	1.16	1146	1.27	1147	1.35	1148	1.45	1149	1.98
1150	2.40	1151	2.82	1152	3.26	1153	3.68	1154	3.26
1155	2.73	1156	2.17	1157	1.62	1158	1.08	1159	0.94
1160	0.90	1161	0.90	1162	0.88	1163	0.86	1164	0.87
1165	0.79	1166	0.71	1167	0.64	1168	0.57	1169	0.49
1170	0.51	1171	0.51	1172	0.51	1173	0.51	1174	0.49
1175	0.49	1176	0.49	1177	0.47	1178	0.44	1179	0.43
1180	0.41	1181	0.39	1182	0.39	1183	0.39	1184	0.39
1185	0.39	1186	0.39	1187	0.39	1188	0.39	1189	0.37
1190	0.34	1191	0.32	1192	0.30	1193	0.28	1194	0.28
1195	0.29	1196	0.29	1197	0.29	1198	0.29	1199	0.29
1200	0.28	1201	0.28	1202	0.29	1203	0.29	1204	0.29
1205	0.29	1206	0.29	1207	0.28	1208	0.28	1209	0.29
1210	0.29	1211	0.29	1212	0.29	1213	0.29	1214	0.28
1215	0.28	1216	0.28	1217	0.29	1218	0.29	1219	0.29

```
     1220       0.29  1221       0.29  1222       0.28  1223       0.28  1224
0.29
     1225       0.26  1226       0.23  1227       0.21  1228       0.19  1229
0.16
     1230       0.16  1231       0.16  1232       0.16  1233       0.16  1234
0.14
     1235       0.16  1236       0.16  1237       0.16  1238       0.16  1239
0.16
     1240       0.16  1241       0.16  1242       0.16  1243       0.16  1244
0.16
     1245       0.16  1246       0.16  1247       0.16  1248       0.16  1249
0.16
     1250       0.16  1251       0.16  1252       0.16  1253       0.14  1254
0.16
     1255       0.16  1256       0.16  1257       0.16  1258       0.16  1259
0.16
     1260       0.16  1261       0.16  1262       0.16  1263       0.16  1264
0.16
     1265       0.16  1266       0.16  1267       0.16  1268       0.16  1269
0.16
     1270       0.16  1271       0.16  1272       0.14  1273       0.16  1274
0.16
     1275       0.16  1276       0.16  1277       0.16  1278       0.16  1279
0.16
     1280       0.16  1281       0.16  1282       0.16  1283       0.16  1284
0.16
     1285       0.16  1286       0.16  1287       0.16  1288       0.16  1289
0.16
     1290       0.16  1291       0.14  1292       0.16  1293       0.16  1294
0.16
     1295       0.16  1296       0.16  1297       0.14  1298       0.13  1299
0.12
     1300       0.10  1310       0.09  1320       0.10  1330       0.09  1340
0.09
     1350       0.09  1360       0.09  1370       0.09  1380       0.09  1390
0.09
     1400       0.10  1420       0.09  1440       0.09  1460       0.00  1500
0.00
```


VCRat Model Input

```
Model Lines
-------------------------------------------------------------------------------
-----------------
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030075001305A97                                1
110
111           1.00000
110
006     1  003AB010         A97                      00000102 1
006     1  003B 010      099A97                               1 B
006     1  004A 010      099A97                               1  2
999
```

52 1148 1.61

64 1153 4.11

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: 01-10334

Project Description

Project: Gateway Community School
VCRat is used to generate a Hydrograph for an area equal to 10X that of the project site
This hydrograph shall be exported to Hydroflow Hydrographs for Basin Routing
Area =1.31 ACRES x10 13.1 rounded to 13

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV3: Revolon Slough - Calleguas Creek
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: 01-10334

Model Results

| SUBAREA DATA AND RESULTS | ACCUMULATED DATA | ROUTING AFTER ACCUMULATION |

| NODE ID | SOIL TYPE | RAIN ZONE | TC (MIN) | % IMP | AREA (AC) | FLOW (CFS) | AREA (AC) | FLOW (CFS) | TIME (MIN) | CHANNEL TYPE | LENGTH | SLOPE | SIZE | H:V | N VALUES | VEL | DEPTH |

```
(FT)   (FT/FT)    (FT)    (Z)     CHNL   SIDES  (FT/S)  (FT) |

|-----------------------------------------|---------------------|--------------
-------------------------------------------------------|
       1A   ---   ---     --   --     ---     ---        0       0   ----    -------
----  -------    ---     ----    -----  -----    --      --
       2A :  PROJECT AREA
       2A   030   A100    5   75     13     41       13      41    1153    -------
----  -------    ---     ----    -----  -----    --      --

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     41.15         VOLUME
(acre-ft):      4.36      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
            *      NO HYDROGRAPH FATTENING
                   *

*********************************************************************************
********
       2A   ---   ---     --   --     ---     ---       13      41   1153    -------
----  -------    ---     ----    -----  -----    --      --
       3AB:  Reduced 10X to Site Area
       3AB:  Clearing Lateral Bank:  B
       3AB:  Control/Diversion:  10% to channel A
       3AB  ---   ---     --   --     ---     ---       13       4   1153    -------
----  -------    ---     ----    -----  -----    --      --
       4A   ---   ---     --   --     ---     ---       13       4   1153    -------
----  -------    ---     ----    -----  -----    --      --


                                          Issue/Warning Messages
      TYPE      ERR NO   PROCEDURE    LOCATION   MESSAGE


-------------------------------------------------------------------------------
-------------------------------------------------------
       NO ISSUES OR WARNINGS DETECTED
-------------------------------------------------------------------------------
-------------------------------------------------------------
-------------------------------------------------------------------------------
-------------------------------------------------------

*********************************************************************************
********
            *      INCOMING HYDROGRAPH  PEAK (cfs):     41.15         VOLUME
(acre-ft):      4.36      *
            *      NO HYDROGRAPH ADJUSTMENT
                   *
```

```
*      NO HYDROGRAPH FATTENING
      *
```

****
****

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)
0	0.00	0.00	100	1.08	1.08
200	1.08	1.08	300	1.08	1.08
400	1.08	1.08	500	1.07	1.07
600	1.24	1.24	700	1.74	1.74
800	1.74	1.74	900	2.26	2.26
1000	3.18	3.18	1050	4.13	4.13
1100	5.48	5.48	1110	8.08	8.08
1120	9.76	9.76	1130	9.83	9.83
1131	9.95	9.95	1132	10.07	10.07
1133	10.05	10.05	1134	10.17	10.17
1135	10.29	10.29	1136	10.29	10.29
1137	10.29	10.29	1138	10.29	10.29
1139	10.29	10.29	1140	10.29	10.29
1141	10.56	10.56	1142	10.82	10.82
1143	11.35	11.35	1144	11.62	11.62
1145	12.94	12.94	1146	14.12	14.12
1147	15.18	15.18	1148	16.10	16.10
1149	22.00	22.00	1150	26.87	26.87
1151	31.49	31.49	1152	36.39	36.39
1153	41.15	41.15	1154	36.39	36.39
1155	30.44	30.44	1156	24.37	24.37

1157	18.19	18.19	1158	12.01	12.01
1159	10.43	10.43	1160	10.03	10.03
1161	9.89	9.89	1162	9.76	9.76
1163	9.76	9.76	1164	9.76	9.76
1165	8.96	8.96	1166	8.15	8.15
1167	7.35	7.35	1168	6.55	6.55
1169	5.61	5.61	1170	5.61	5.61
1171	5.61	5.61	1172	5.61	5.61
1173	5.61	5.61	1174	5.75	5.75
1175	5.75	5.75	1176	5.61	5.61
1177	5.35	5.35	1178	5.08	5.08
1179	4.81	4.81	1180	4.45	4.45
1181	4.34	4.34	1182	4.34	4.34
1183	4.34	4.34	1184	4.23	4.23
1185	4.34	4.34	1186	4.34	4.34
1187	4.23	4.23	1188	4.23	4.23
1189	4.12	4.12	1190	3.89	3.89
1191	3.56	3.56	1192	3.45	3.45
1193	3.23	3.23	1194	3.23	3.23

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)	TIME (min)	PRE-ADJ (cfs)	POST-ADJ (cfs)

1195	3.11	3.11	1196	3.23	3.23
1197	3.23	3.23	1198	3.11	3.11
1199	3.11	3.11	1200	3.23	3.23
1201	3.23	3.23	1202	3.11	3.11
1203	3.23	3.23	1204	3.23	3.23
1205	3.23	3.23	1206	3.11	3.11
1207	3.23	3.23	1208	3.23	3.23
1209	3.11	3.11	1210	3.11	3.11
1211	3.23	3.23	1212	3.23	3.23
1213	3.11	3.11	1214	3.23	3.23
1215	3.23	3.23	1216	3.23	3.23
1217	3.11	3.11	1218	3.23	3.23
1219	3.23	3.23	1220	3.11	3.11
1221	3.11	3.11	1222	3.23	3.23
1223	3.23	3.23	1224	3.11	3.11
1225	3.00	3.00	1226	2.67	2.67
1227	2.34	2.34	1228	2.00	2.00
1229	1.78	1.78	1230	1.67	1.67
1231	1.67	1.67	1232	1.67	1.67
1233	1.78	1.78	1234	1.78	1.78
1235	1.78	1.78	1236	1.78	1.78
1237	1.78	1.78	1238	1.67	1.67
1239	1.67	1.67	1240	1.67	1.67
1241	1.78	1.78	1242	1.78	1.78
1243	1.78	1.78	1244	1.78	1.78

1245	1.78	1.78	1246	1.67	1.67
1247	1.67	1.67	1248	1.78	1.78
1249	1.78	1.78	1250	1.78	1.78
1251	1.78	1.78	1252	1.78	1.78
1253	1.67	1.67	1254	1.67	1.67
1255	1.67	1.67	1256	1.78	1.78
1257	1.78	1.78	1258	1.78	1.78
1259	1.78	1.78	1260	1.78	1.78
1261	1.67	1.67	1262	1.67	1.67
1263	1.67	1.67	1264	1.78	1.78
1265	1.78	1.78	1266	1.78	1.78
1267	1.78	1.78	1268	1.78	1.78
1269	1.67	1.67	1270	1.67	1.67
1271	1.78	1.78	1272	1.78	1.78
1273	1.78	1.78	1274	1.78	1.78
1275	1.78	1.78	1276	1.67	1.67
1277	1.67	1.67	1278	1.67	1.67
1279	1.78	1.78	1280	1.78	1.78
1281	1.78	1.78	1282	1.78	1.78
1283	1.78	1.78	1284	1.67	1.67
1285	1.67	1.67	1286	1.67	1.67
1287	1.78	1.78	1288	1.78	1.78
1289	1.78	1.78	1290	1.78	1.78
1291	1.78	1.78	1292	1.67	1.67
1293	1.67	1.67	1294	1.78	1.78

1295	1.78	1.78	1296	1.78	1.78
1297	1.67	1.67	1298	1.56	1.56
1299	1.33	1.33	1300	1.22	1.22
1310	1.06	1.06	1320	1.06	1.06
1330	1.11	1.11	1340	1.06	1.06
1350	1.06	1.06	1360	1.11	1.11
1370	1.06	1.06	1380	1.11	1.11
1390	1.06	1.06	1400	1.06	1.06
1420	1.08	1.08	1440	1.08	1.08
1460	0.00	0.00	1500	0.00	0.00

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 3A

DESCRIPTION: Reduced 10X to Site Area
3AB: Clearing Lateral Bank: B
TOTAL AREA TO HYDROGRAPH: 13 acres
HYDROGRAPH PEAK: 4 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 0.44 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.11	200	0.11	300	0.11	400	0.11

```
      500       0.11   600       0.12   700       0.17   800       0.17   900
0.23
     1000       0.32  1050       0.41  1100       0.55  1110       0.81  1120
0.98
     1130       0.98  1131       0.99  1132       1.01  1133       1.01  1134
1.02
     1135       1.03  1136       1.03  1137       1.03  1138       1.03  1139
1.03
     1140       1.03  1141       1.06  1142       1.08  1143       1.14  1144
1.16
     1145       1.29  1146       1.41  1147       1.52  1148       1.61  1149
2.20
     1150       2.69  1151       3.15  1152       3.64  1153       4.11  1154
3.64
     1155       3.04  1156       2.44  1157       1.82  1158       1.20  1159
1.04
     1160       1.00  1161       0.99  1162       0.98  1163       0.98  1164
0.98
     1165       0.90  1166       0.82  1167       0.73  1168       0.65  1169
0.56
     1170       0.56  1171       0.56  1172       0.56  1173       0.56  1174
0.57
     1175       0.57  1176       0.56  1177       0.53  1178       0.51  1179
0.48
     1180       0.44  1181       0.43  1182       0.43  1183       0.43  1184
0.42
     1185       0.43  1186       0.43  1187       0.42  1188       0.42  1189
0.41
     1190       0.39  1191       0.36  1192       0.34  1193       0.32  1194
0.32
     1195       0.31  1196       0.32  1197       0.32  1198       0.31  1199
0.31
     1200       0.32  1201       0.32  1202       0.31  1203       0.32  1204
0.32
     1205       0.32  1206       0.31  1207       0.32  1208       0.32  1209
0.31
     1210       0.31  1211       0.32  1212       0.32  1213       0.31  1214
0.32
     1215       0.32  1216       0.32  1217       0.31  1218       0.32  1219
0.32
     1220       0.31  1221       0.31  1222       0.32  1223       0.32  1224
0.31
     1225       0.30  1226       0.27  1227       0.23  1228       0.20  1229
0.18
     1230       0.17  1231       0.17  1232       0.17  1233       0.18  1234
0.18
     1235       0.18  1236       0.18  1237       0.18  1238       0.17  1239
0.17
     1240       0.17  1241       0.18  1242       0.18  1243       0.18  1244
0.18
```

```
     1245       0.18  1246       0.17  1247       0.17  1248       0.18  1249
0.18
     1250       0.18  1251       0.18  1252       0.18  1253       0.17  1254
0.17
     1255       0.17  1256       0.18  1257       0.18  1258       0.18  1259
0.18
     1260       0.18  1261       0.17  1262       0.17  1263       0.17  1264
0.18
     1265       0.18  1266       0.18  1267       0.18  1268       0.18  1269
0.17
     1270       0.17  1271       0.18  1272       0.18  1273       0.18  1274
0.18
     1275       0.18  1276       0.17  1277       0.17  1278       0.17  1279
0.18
     1280       0.18  1281       0.18  1282       0.18  1283       0.18  1284
0.17
     1285       0.17  1286       0.17  1287       0.18  1288       0.18  1289
0.18
     1290       0.18  1291       0.18  1292       0.17  1293       0.17  1294
0.18
     1295       0.18  1296       0.18  1297       0.17  1298       0.16  1299
0.13
     1300       0.12  1310       0.11  1320       0.11  1330       0.11  1340
0.11
     1350       0.11  1360       0.11  1370       0.11  1380       0.11  1390
0.11
     1400       0.11  1420       0.11  1440       0.11  1460       0.00  1500
0.00


                              Ventura County Watershed Protection District
                         Modified Rational Method Hydrology Program (VCRat v2.64)

                                         Job:      1  Project: 01-10334
Page:     5
                                              Hydrograph Printouts

--------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    3B
--------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:       0    acres
            HYDROGRAPH PEAK:                0    cfs
            TIME OF PEAK:                   0    minutes
            HYDROGRAPH VOLUME:              0.00 acre-ft

     TIME      FLOW    TIME      FLOW    TIME      FLOW    TIME      FLOW    TIME
FLOW
     (min)     (cfs)   (min)     (cfs)   (min)     (cfs)   (min)     (cfs)   (min)
```

(cfs)

0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.00	1137	0.00	1138	0.00	1139	0.00
1140	0.00	1141	0.00	1142	0.00	1143	0.00	1144	0.00
1145	0.00	1146	0.00	1147	0.00	1148	0.00	1149	0.00
1150	0.00	1151	0.00	1152	0.00	1153	0.00	1154	0.00
1155	0.00	1156	0.00	1157	0.00	1158	0.00	1159	0.00
1160	0.00	1161	0.00	1162	0.00	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	

```
0.00
     1235       0.00  1236       0.00  1237       0.00  1238       0.00  1239
0.00
     1240       0.00  1241       0.00  1242       0.00  1243       0.00  1244
0.00
     1245       0.00  1246       0.00  1247       0.00  1248       0.00  1249
0.00
     1250       0.00  1251       0.00  1252       0.00  1253       0.00  1254
0.00
     1255       0.00  1256       0.00  1257       0.00  1258       0.00  1259
0.00
     1260       0.00  1261       0.00  1262       0.00  1263       0.00  1264
0.00
     1265       0.00  1266       0.00  1267       0.00  1268       0.00  1269
0.00
     1270       0.00  1271       0.00  1272       0.00  1273       0.00  1274
0.00
     1275       0.00  1276       0.00  1277       0.00  1278       0.00  1279
0.00
     1280       0.00  1281       0.00  1282       0.00  1283       0.00  1284
0.00
     1285       0.00  1286       0.00  1287       0.00  1288       0.00  1289
0.00
     1290       0.00  1291       0.00  1292       0.00  1293       0.00  1294
0.00
     1295       0.00  1296       0.00  1297       0.00  1298       0.00  1299
0.00
     1300       0.00  1310       0.00  1320       0.00  1330       0.00  1340
0.00
     1350       0.00  1360       0.00  1370       0.00  1380       0.00  1390
0.00
     1400       0.00  1420       0.00  1440       0.00  1460       0.00  1500
0.00
```


Hydrograph Printouts

```
-------------------------------------------------------------------------------
-----------------
            HYDROGRAPH PRINTOUT AT:    4A
-------------------------------------------------------------------------------
-----------------
            TOTAL AREA TO HYDROGRAPH:      13    acres
            HYDROGRAPH PEAK:                4    cfs
            TIME OF PEAK:                1153    minutes
```

HYDROGRAPH VOLUME: 0.44 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.11	200	0.11	300	0.11	400	0.11
500	0.11	600	0.12	700	0.17	800	0.17	900	0.23
1000	0.32	1050	0.41	1100	0.55	1110	0.81	1120	0.98
1130	0.98	1131	0.99	1132	1.01	1133	1.01	1134	1.02
1135	1.03	1136	1.03	1137	1.03	1138	1.03	1139	1.03
1140	1.03	1141	1.06	1142	1.08	1143	1.14	1144	1.16
1145	1.29	1146	1.41	1147	1.52	1148	1.61	1149	2.20
1150	2.69	1151	3.15	1152	3.64	1153	4.11	1154	3.64
1155	3.04	1156	2.44	1157	1.82	1158	1.20	1159	1.04
1160	1.00	1161	0.99	1162	0.98	1163	0.98	1164	0.98
1165	0.90	1166	0.82	1167	0.73	1168	0.65	1169	0.56
1170	0.56	1171	0.56	1172	0.56	1173	0.56	1174	0.57
1175	0.57	1176	0.56	1177	0.53	1178	0.51	1179	0.48
1180	0.44	1181	0.43	1182	0.43	1183	0.43	1184	0.42
1185	0.43	1186	0.43	1187	0.42	1188	0.42	1189	0.41
1190	0.39	1191	0.36	1192	0.34	1193	0.32	1194	0.32
1195	0.31	1196	0.32	1197	0.32	1198	0.31	1199	0.31
1200	0.32	1201	0.32	1202	0.31	1203	0.32	1204	0.32
1205	0.32	1206	0.31	1207	0.32	1208	0.32	1209	0.31
1210	0.31	1211	0.32	1212	0.32	1213	0.31	1214	0.32
1215	0.32	1216	0.32	1217	0.31	1218	0.32	1219	0.32

```
     1220       0.31  1221       0.31  1222       0.32  1223       0.32  1224
0.31
     1225       0.30  1226       0.27  1227       0.23  1228       0.20  1229
0.18
     1230       0.17  1231       0.17  1232       0.17  1233       0.18  1234
0.18
     1235       0.18  1236       0.18  1237       0.18  1238       0.17  1239
0.17
     1240       0.17  1241       0.18  1242       0.18  1243       0.18  1244
0.18
     1245       0.18  1246       0.17  1247       0.17  1248       0.18  1249
0.18
     1250       0.18  1251       0.18  1252       0.18  1253       0.17  1254
0.17
     1255       0.17  1256       0.18  1257       0.18  1258       0.18  1259
0.18
     1260       0.18  1261       0.17  1262       0.17  1263       0.17  1264
0.18
     1265       0.18  1266       0.18  1267       0.18  1268       0.18  1269
0.17
     1270       0.17  1271       0.18  1272       0.18  1273       0.18  1274
0.18
     1275       0.18  1276       0.17  1277       0.17  1278       0.17  1279
0.18
     1280       0.18  1281       0.18  1282       0.18  1283       0.18  1284
0.17
     1285       0.17  1286       0.17  1287       0.18  1288       0.18  1289
0.18
     1290       0.18  1291       0.18  1292       0.17  1293       0.17  1294
0.18
     1295       0.18  1296       0.18  1297       0.17  1298       0.16  1299
0.13
     1300       0.12  1310       0.11  1320       0.11  1330       0.11  1340
0.11
     1350       0.11  1360       0.11  1370       0.11  1380       0.11  1390
0.11
     1400       0.11  1420       0.11  1440       0.11  1460       0.00  1500
0.00
```


VCRat Model Input

Model Lines

```
-------------------------------------------------------------------------------
-----------------
005     1  001A Header place holder
```

```
005     1  002A Header place holder
005     1  003ABHeader place holder
005     1  003B Split Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                                  G1
006     1  002A 030075001305A97                                1
110
111           1.00000
110
006     1  003AB010         A97                      00000102 1
006     1  003B 010      099A97                               1 B
006     1  004A 010      099A97                               1  2
999
```

APPENDIX C

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Manual	4.110	1	1153	19,063	------	------	------	POST 100
2	Diversion1	0.110	1	50	3,003	1	------	------	SQDF
3	Diversion2	4.110	1	1153	16,060	1	------	------	High Flow Bypass
5	Reservoir	0.000	1	n/a	0	2	69.49	2,314	42in. perf pipe w dive

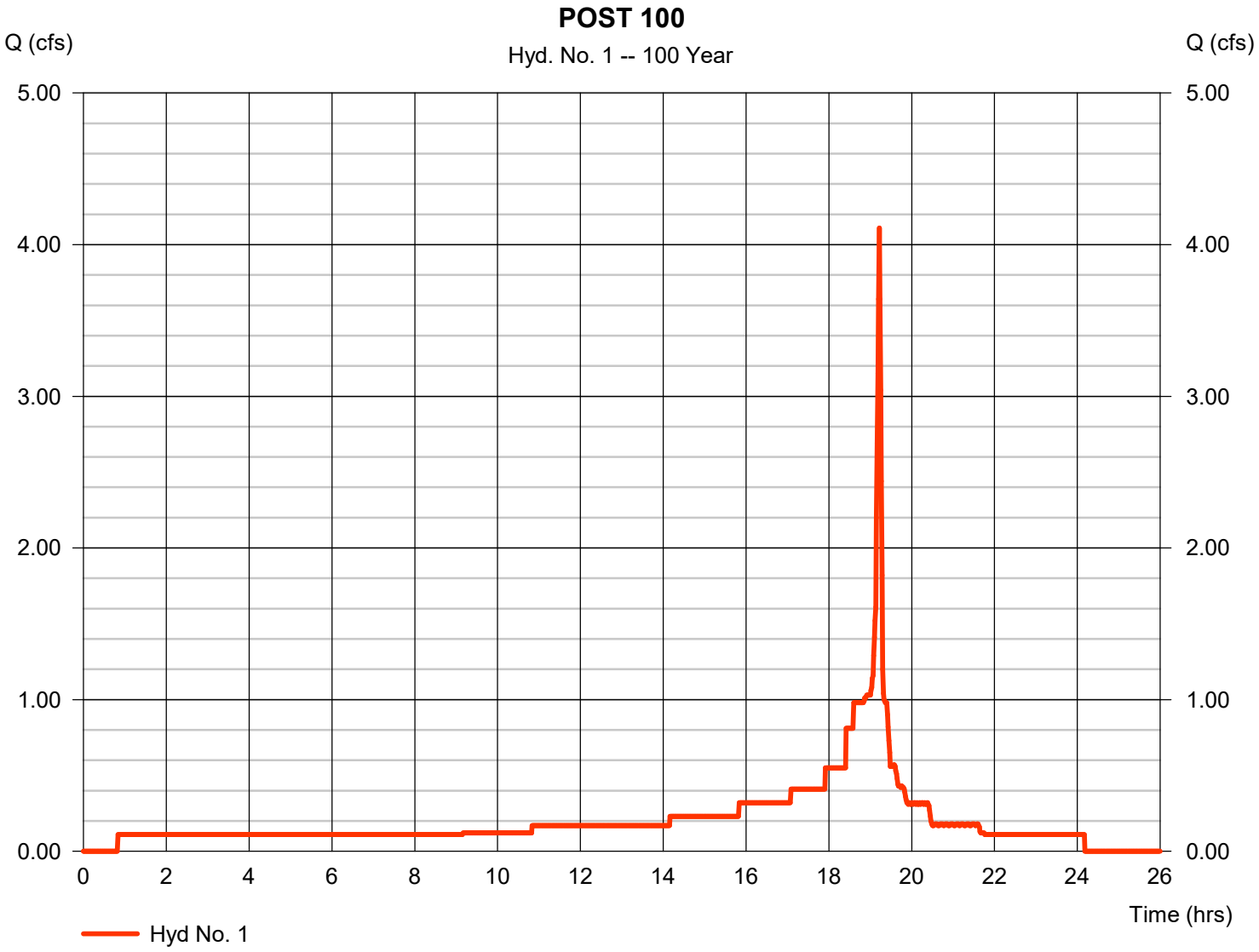
SQDV=2,635 cf

Hydrograph Report

Hyd. No. 1

POST 100

Hydrograph type	= Manual	Peak discharge	= 4.110 cfs
Storm frequency	= 100 yrs	Time to peak	= 19.22 hrs
Time interval	= 1 min	Hyd. volume	= 19,063 cuft

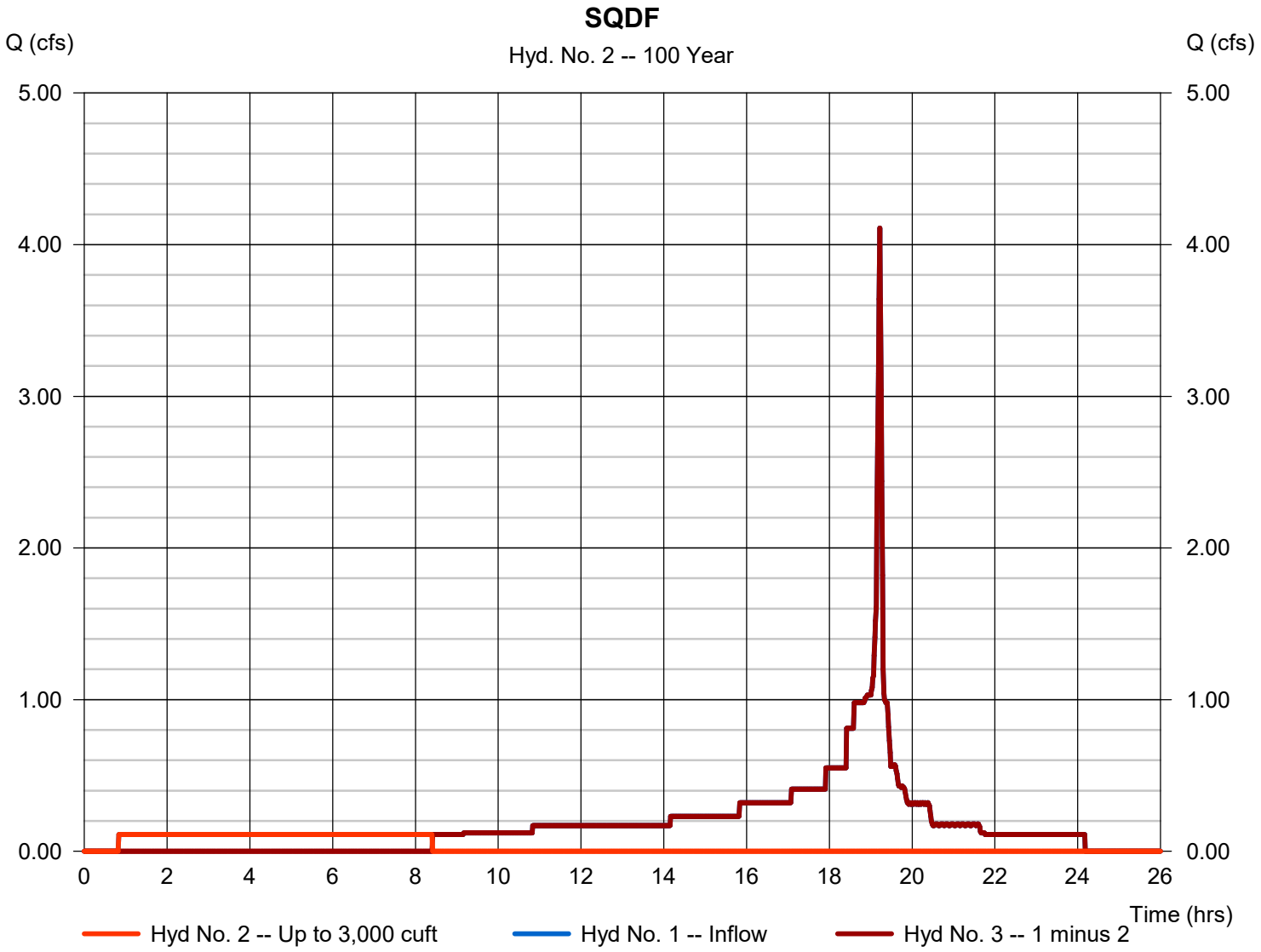


Hydrograph Report

Hyd. No. 2

SQDF

Hydrograph type	= Diversion1	Peak discharge	= 0.110 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.83 hrs
Time interval	= 1 min	Hyd. volume	= 3,003 cuft
Inflow hydrograph	= 1 - POST 100	2nd diverted hyd.	= 3
Diversion method	= First Flush Volume	Volume Up To	= 3,000 cuft

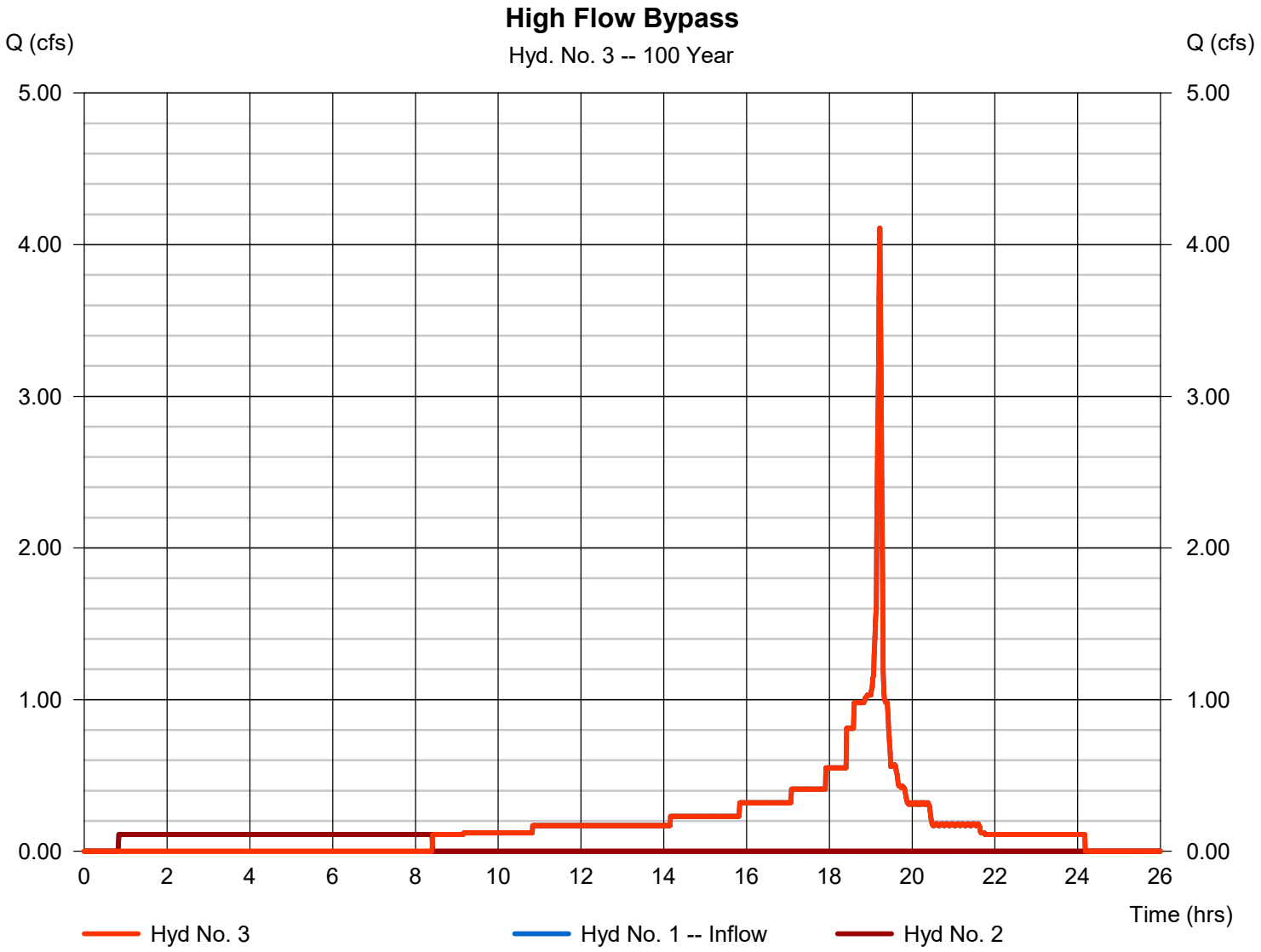


Hydrograph Report

Hyd. No. 3

High Flow Bypass

Hydrograph type	= Diversion2	Peak discharge	= 4.110 cfs
Storm frequency	= 100 yrs	Time to peak	= 19.22 hrs
Time interval	= 1 min	Hyd. volume	= 16,060 cuft
Inflow hydrograph	= 1 - POST 100	2nd diverted hyd.	= 2
Diversion method	= First Flush Volume	Volume Up To	= 3,000 cuft



Hydrograph Report

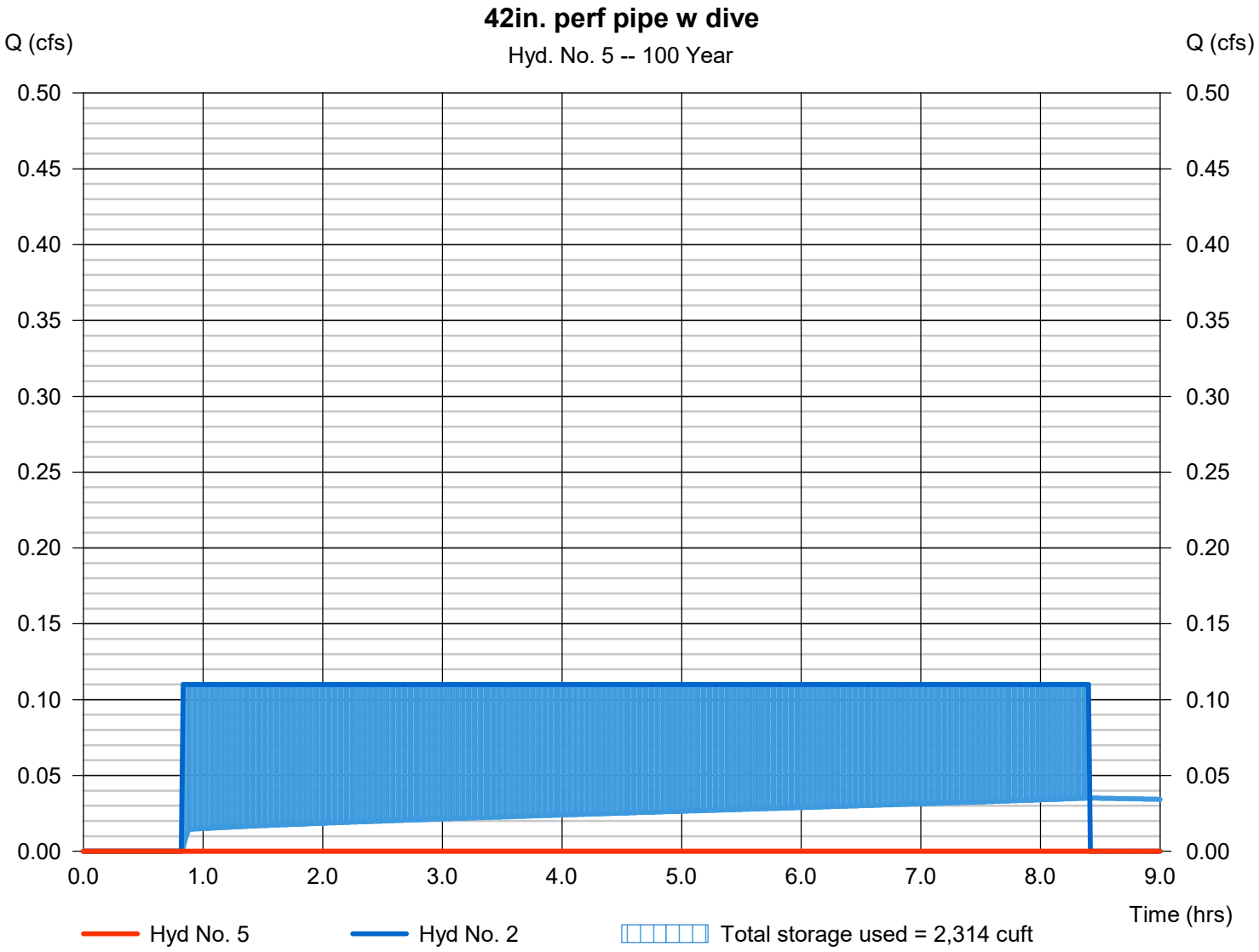
Hyd. No. 5

42in. perf pipe w dive

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	n/a
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	2 - SQDF	Max. Elevation	=	69.49 ft
Reservoir name	=	42in. Perf Pipe w diversion	Max. Storage	=	2,314 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

CDS WEIR SET TO 69.49'



Pond No. 2 - 42in. Perf Pipe w diversion

Pond Data

UG Chambers -Invert elev. = 66.20 ft, Rise x Span = 3.50 x 3.50 ft, Barrel Len = 58.00 ft, No. Barrels = 3, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 66.20 ft, Width = 4.50 ft, Height = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	66.20	n/a	0	0
0.35	66.55	n/a	187	187
0.70	66.90	n/a	232	419
1.05	67.25	n/a	254	673
1.40	67.60	n/a	267	940
1.75	67.95	n/a	274	1,214
2.10	68.30	n/a	274	1,487
2.45	68.65	n/a	267	1,754
2.80	69.00	n/a	254	2,009
3.15	69.35	n/a	232	2,240
3.50	69.70	n/a	187	2,427

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	0.00	0.00	0.00
Span (in)	= 4.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 69.87	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.730 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	66.20	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.04	19	66.24	0.00	---	---	---	---	---	---	---	0.014	---	0.014
0.07	37	66.27	0.00	---	---	---	---	---	---	---	0.015	---	0.015
0.11	56	66.31	0.00	---	---	---	---	---	---	---	0.015	---	0.015
0.14	75	66.34	0.00	---	---	---	---	---	---	---	0.015	---	0.015
0.17	94	66.38	0.00	---	---	---	---	---	---	---	0.015	---	0.015
0.21	112	66.41	0.00	---	---	---	---	---	---	---	0.016	---	0.016
0.24	131	66.45	0.00	---	---	---	---	---	---	---	0.016	---	0.016
0.28	150	66.48	0.00	---	---	---	---	---	---	---	0.016	---	0.016
0.31	168	66.52	0.00	---	---	---	---	---	---	---	0.016	---	0.016
0.35	187	66.55	0.00	---	---	---	---	---	---	---	0.016	---	0.016
0.38	210	66.58	0.00	---	---	---	---	---	---	---	0.017	---	0.017
0.42	233	66.62	0.00	---	---	---	---	---	---	---	0.017	---	0.017
0.45	257	66.66	0.00	---	---	---	---	---	---	---	0.017	---	0.017
0.49	280	66.69	0.00	---	---	---	---	---	---	---	0.017	---	0.017
0.52	303	66.73	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.56	326	66.76	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.60	349	66.80	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.63	372	66.83	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.67	395	66.87	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.70	419	66.90	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.74	444	66.93	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.77	469	66.97	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.80	495	67.01	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.84	520	67.04	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.87	546	67.08	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.91	571	67.11	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.94	597	67.15	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.98	622	67.18	0.00	---	---	---	---	---	---	---	0.020	---	0.020
1.01	647	67.22	0.00	---	---	---	---	---	---	---	0.021	---	0.021
1.05	673	67.25	0.00	---	---	---	---	---	---	---	0.021	---	0.021
1.08	700	67.29	0.00	---	---	---	---	---	---	---	0.021	---	0.021

Continues on next page...

42in. Perf Pipe w diversion

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.12	726	67.32	0.00	---	---	---	---	---	---	---	0.021	---	0.021
1.15	753	67.36	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.19	780	67.39	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.22	807	67.43	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.26	833	67.46	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.29	860	67.50	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.33	887	67.53	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.36	913	67.57	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.40	940	67.60	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.43	967	67.64	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.47	995	67.67	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.50	1,022	67.71	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.54	1,050	67.74	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.57	1,077	67.78	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.61	1,104	67.81	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.64	1,132	67.85	0.00	---	---	---	---	---	---	---	0.025	---	0.025
1.68	1,159	67.88	0.00	---	---	---	---	---	---	---	0.025	---	0.025
1.71	1,186	67.92	0.00	---	---	---	---	---	---	---	0.025	---	0.025
1.75	1,214	67.95	0.00	---	---	---	---	---	---	---	0.025	---	0.025
1.78	1,241	67.99	0.00	---	---	---	---	---	---	---	0.026	---	0.026
1.82	1,268	68.02	0.00	---	---	---	---	---	---	---	0.026	---	0.026
1.85	1,296	68.06	0.00	---	---	---	---	---	---	---	0.026	---	0.026
1.89	1,323	68.09	0.00	---	---	---	---	---	---	---	0.026	---	0.026
1.92	1,350	68.13	0.00	---	---	---	---	---	---	---	0.026	---	0.026
1.96	1,378	68.16	0.00	---	---	---	---	---	---	---	0.027	---	0.027
1.99	1,405	68.20	0.00	---	---	---	---	---	---	---	0.027	---	0.027
2.03	1,432	68.23	0.00	---	---	---	---	---	---	---	0.027	---	0.027
2.06	1,460	68.27	0.00	---	---	---	---	---	---	---	0.027	---	0.027
2.10	1,487	68.30	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.13	1,514	68.33	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.17	1,541	68.37	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.21	1,567	68.41	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.24	1,594	68.44	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.28	1,621	68.48	0.00	---	---	---	---	---	---	---	0.029	---	0.029
2.31	1,647	68.51	0.00	---	---	---	---	---	---	---	0.029	---	0.029
2.35	1,674	68.55	0.00	---	---	---	---	---	---	---	0.029	---	0.029
2.38	1,701	68.58	0.00	---	---	---	---	---	---	---	0.029	---	0.029
2.42	1,728	68.62	0.00	---	---	---	---	---	---	---	0.030	---	0.030
2.45	1,754	68.65	0.00	---	---	---	---	---	---	---	0.030	---	0.030
2.48	1,780	68.68	0.00	---	---	---	---	---	---	---	0.030	---	0.030
2.52	1,805	68.72	0.00	---	---	---	---	---	---	---	0.030	---	0.030
2.56	1,831	68.76	0.00	---	---	---	---	---	---	---	0.030	---	0.030
2.59	1,856	68.79	0.00	---	---	---	---	---	---	---	0.031	---	0.031
2.63	1,881	68.83	0.00	---	---	---	---	---	---	---	0.031	---	0.031
2.66	1,907	68.86	0.00	---	---	---	---	---	---	---	0.031	---	0.031
2.70	1,932	68.90	0.00	---	---	---	---	---	---	---	0.031	---	0.031
2.73	1,958	68.93	0.00	---	---	---	---	---	---	---	0.032	---	0.032
2.77	1,983	68.97	0.00	---	---	---	---	---	---	---	0.032	---	0.032
2.80	2,009	69.00	0.00	---	---	---	---	---	---	---	0.032	---	0.032
2.83	2,032	69.04	0.00	---	---	---	---	---	---	---	0.032	---	0.032
2.87	2,055	69.07	0.00	---	---	---	---	---	---	---	0.032	---	0.032
2.90	2,078	69.11	0.00	---	---	---	---	---	---	---	0.033	---	0.033
2.94	2,101	69.14	0.00	---	---	---	---	---	---	---	0.033	---	0.033
2.98	2,124	69.18	0.00	---	---	---	---	---	---	---	0.033	---	0.033
3.01	2,147	69.21	0.00	---	---	---	---	---	---	---	0.033	---	0.033
3.05	2,171	69.25	0.00	---	---	---	---	---	---	---	0.034	---	0.034
3.08	2,194	69.28	0.00	---	---	---	---	---	---	---	0.034	---	0.034
3.12	2,217	69.32	0.00	---	---	---	---	---	---	---	0.034	---	0.034
3.15	2,240	69.35	0.00	---	---	---	---	---	---	---	0.034	---	0.034
3.18	2,259	69.39	0.00	---	---	---	---	---	---	---	0.034	---	0.034
3.22	2,277	69.42	0.00	---	---	---	---	---	---	---	0.035	---	0.035
3.25	2,296	69.46	0.00	---	---	---	---	---	---	---	0.035	---	0.035
3.29	2,315	69.49	0.00	---	---	---	---	---	---	---	0.035	---	0.035
3.33	2,334	69.53	0.00	---	---	---	---	---	---	---	0.035	---	0.035
3.36	2,352	69.56	0.00	---	---	---	---	---	---	---	0.036	---	0.036
3.40	2,371	69.60	0.00	---	---	---	---	---	---	---	0.036	---	0.036
3.43	2,390	69.63	0.00	---	---	---	---	---	---	---	0.036	---	0.036
3.47	2,408	69.67	0.00	---	---	---	---	---	---	---	0.036	---	0.036
3.50	2,427	69.70	0.00	---	---	---	---	---	---	---	0.036	---	0.036

TOTAL STORAGE USED 2,314 cf

...End

APPENDIX D

National Flood Hazard Layer FIRMette

FEMA

119°4'52"W 34°12'38"N



119°4'14"W 34°12'8"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/19/2026 at 5:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX E

Designer:	DEI
Project Proponent:	
Date:	9/14/2026
Project:	Perkins Eastman
Location:	550 Airport Way

INF-6: PROPRIETARY INFILTRATION

Pretreatment:

Outflow Collection:

Step 1: Determine Water Quality Design Volume

1-1	Enter Project area (acres)	**$A_{project}$**	1.31	ac
1-2	Enter Project impervious fraction, *IMP* (e.g. 60% = 0.60)	**Imp**	0.75	
1-3	Determine pervious runoff coefficient using Table E-1, Cp	**C_p**	0.1	
1-4	Calculate runoff coefficient	**C**	0.74	
1-5	Enter design rainfall depth of the storm (in), Pi	**Pi**	0.75	in
1-6	Calculate rainfall depth (ft) P=Pi/12	**P**	0.0625	ft
1-7	Calculate water quality design volume (ft3) SQDV=43560*C*P*Aproject	**SQDV**	2,635.05	cf

Project Information

Name Perkins Eastman **JN** 01-10334

Address 550 Airport Way
Camarillo, CA 93012

INF-7

Proprietary Biofiltration BMP-1	
BioClean Modular Wetlands	
SQDF = C* Iwq*A*1.5	
Cp	0.1
imp	75%
C=(0.95*imp)+Cp(1-imp)=	*0.73758*
I=	0.2
A=	1.31
SQDF (cfs)=	**0.290364**

Table 2-3: Ventura Soil Type Pervious Runoff Coefficients

Ventura Soil Type (Soil Number)	C_P value
1	0.15
2	0.10
3	0.10
4	0.05
5	0.05
6	0
7	0

Table 2-1: Flow-Based Biofiltration BMP Design Intensity for 150% Sizing

Time of Concentration, minutes	Design Intensity for 150% Sizing, in/hr
30	0.24
20	0.25
15	0.28
10	0.31
5	0.35

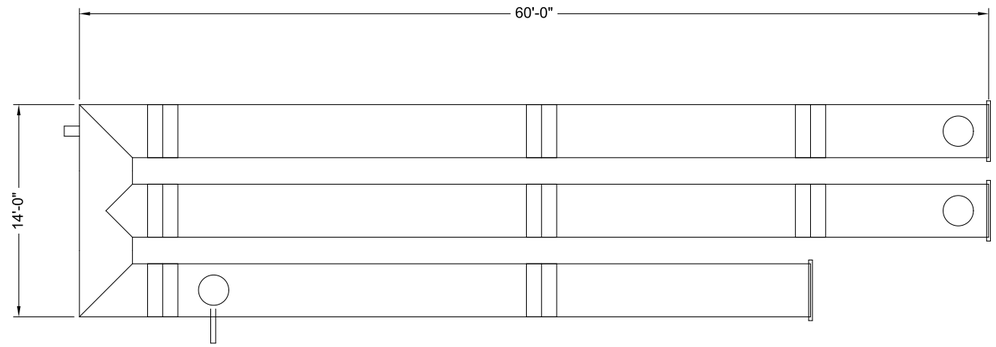
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 172 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 2,650 CF
- PIPE STORAGE VOLUME = 1,652 CF
- BACKFILL STORAGE VOLUME = 728 CF
- TOTAL STORAGE PROVIDED = 2,380 CF
- STONE VOID = 40%

PIPE DETAILS
- DIAMETER = 42"
- CORRUGATION = 2 2/3x1/2
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 21"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 0"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2⅔" x ½" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY

SCALE: 1" = 10'

C:\EXPORTS\TEMPLATES\CMP_V.DWG 10/18/2019 10:02 AM

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DATE	REVISION DESCRIPTION	BY

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www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

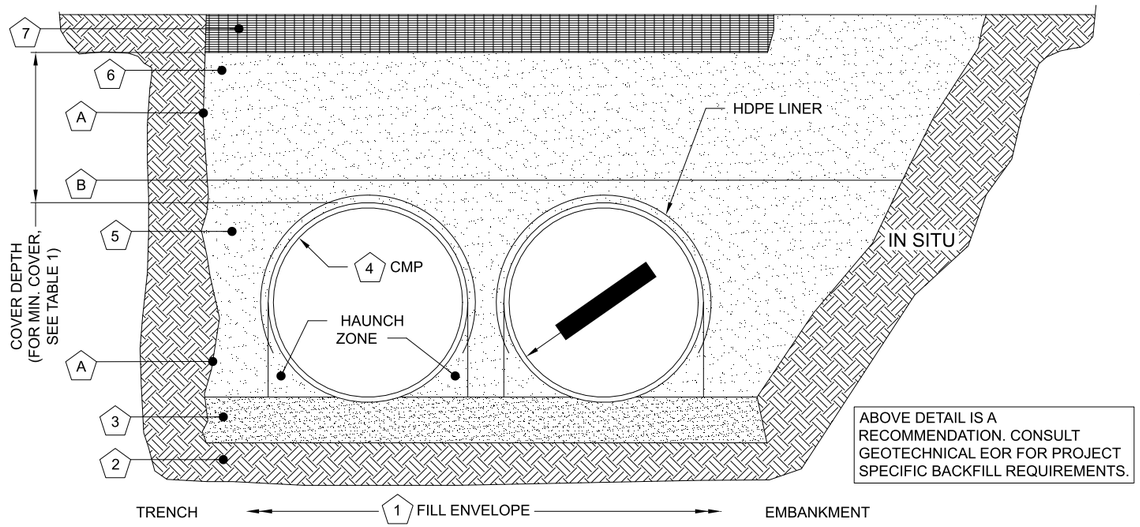
DYO651459 Gateway Community
CMP Retention
Camarillo, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
111608	651459	9/14/2026
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

TABLE 1:

DIAMETER, D	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
>48"-96"	12"	3" x 1", 5" x 1"
>96"	D/8	3" x 1", 5" x 1"

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.



ABOVE DETAIL IS A RECOMMENDATION. CONSULT GEOTECHNICAL EOR FOR PROJECT SPECIFIC BACKFILL REQUIREMENTS.

MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

INSTALLATION NOTES

1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. AN HDPE MEMBRANE LINER WILL BE PLACED ON THE CROWN OF EACH PIPE TO PROVIDE AN IMPERMEABLE BARRIER AGAINST ENVIRONMENTAL CHANGES THAT MAY ADVERSELY AFFECT THE SYSTEM OVER TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL TECHNICAL DETAILS.

TABLE 2: PERFORATED STANDARD

CMP RETENTION STANDARD BACKFILL SPECIFICATIONS

	MATERIAL LOCATION	MATERIAL SPECIFICATION	DESCRIPTION	
1	FILL ENVELOPE WIDTH	PER ENGINEER OF RECORD	MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.5D + 12"	MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.0D PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0"
2	FOUNDATION	**AASHTO 26.5.2** - PER ENGINEER OF RECORD	PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.	
3	BEDDING	**AASHTO M 43: 3, 357, 4, 467, 5, 56, 57**	ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE OPEN GRADED GRANULAR BEDDING CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.3.8.1	
4	CORRUGATED METAL PIPE			
5	BACKFILL	FREE-DRAINING, ANGULAR, NATURALLY OCCURRING WASHED-STONE PER **AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** OR APPROVED EQUAL *	HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WHERE CONVENTIONAL COMPACTION TESTING IS NOT PRACTICAL, THE MATERIAL SHALL BE MECHANICALLY COMPACTED UNTIL NO FURTHER YIELDING OF MATERIAL IS OBSERVED UNDER THE COMPACTOR. **IN AREAS WITH HIGH WATER TABLE FLUCTUATIONS THAT INTERACT WITH THE PIPE ZONE, CONSIDER INSTALLING A GEOTEXTILE SEPARATION LAYER TO PREVENT SOIL MIGRATION.	
6	COVER MATERIAL	UP TO MIN. COVER - **AASHTO M 145: A-1, A-2, A-3** ABOVE MIN. COVER - PER ENGINEER OF RECORD	COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROADBASE MATERIAL WITHIN MIN COVER LIMITS	
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)	PER ENGINEER OF RECORD	FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.	
A	OPTIONAL SIDE GEOTEXTILE	NONE	GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION.	
B	GEOTEXTILE BETWEEN LAYERS	NONE	IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.	

NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.

* APPROVED REGIONAL EQUIVALENTS FOR SECTION 5 INCLUDE CA-7, MIDOT 6AA, 6A, OR 5G, PROVIDED THEY MEET THE PARTICLE SIZES INDICATED.

MANUFACTURER RECOMMENDED BACKFILL

NOT TO SCALE

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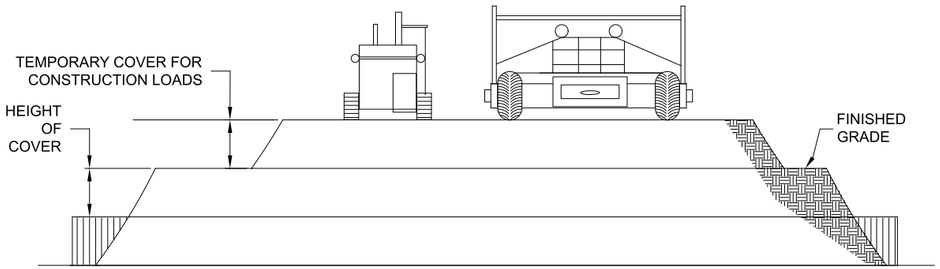
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CONTECH CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO651459 Gateway Community
CMP Retention
Camarillo, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
111608	651459	9/14/2026
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

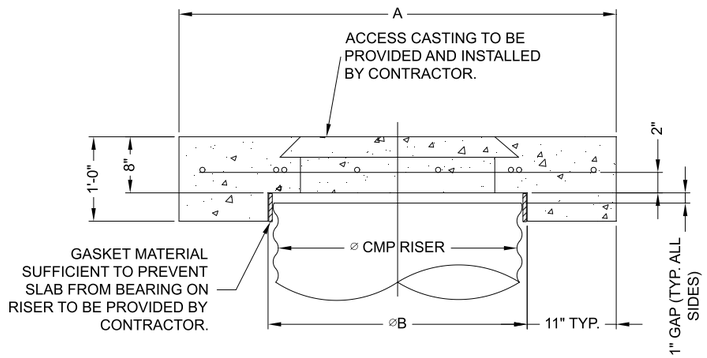
ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

REQUIREMENTS INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

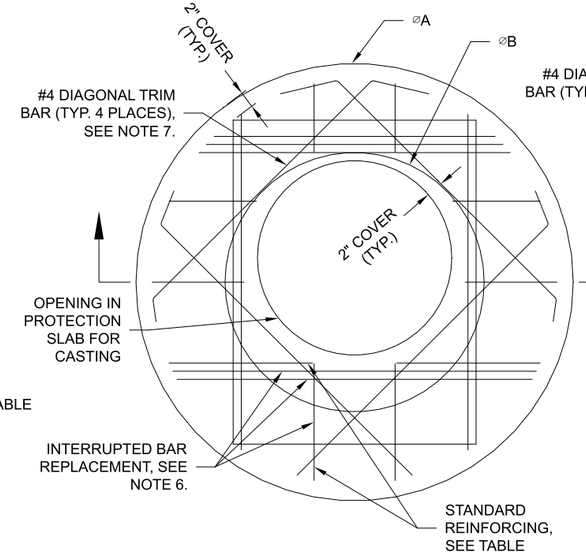
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



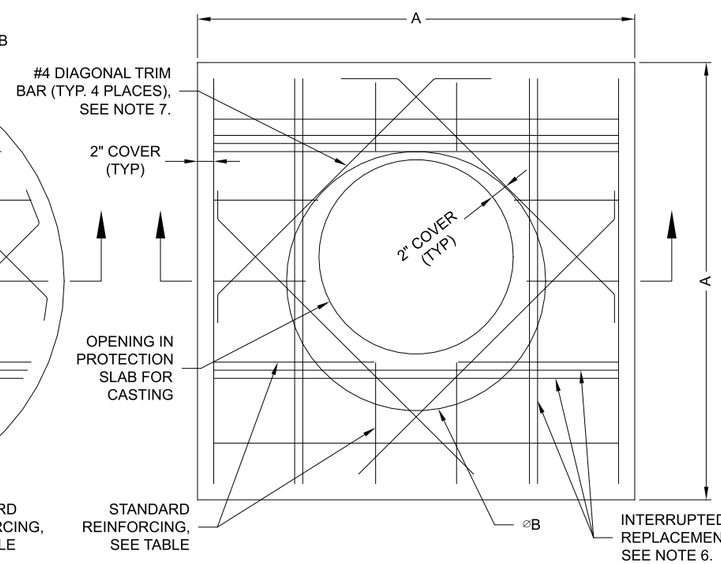
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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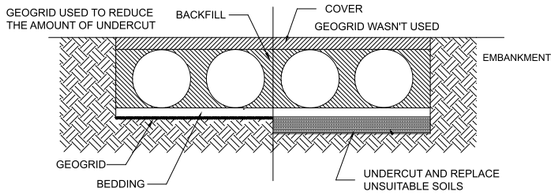
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

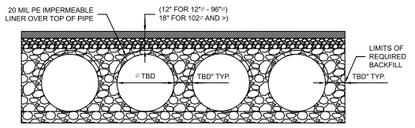
IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

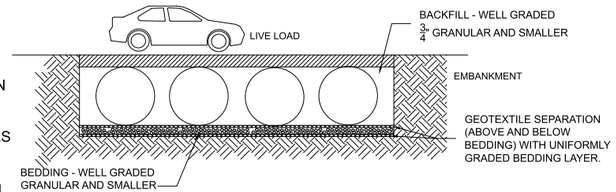
THE RESISTIVITY OF A PROJECT SITE MAY CHANGE OVER TIME DUE TO THE USE OF VARIOUS SALTING, DE-ICING, AND AGRICULTURAL AGENTS APPLIED ON OR NEAR THE AREA. TO MITIGATE THE POTENTIAL IMPACT OF THESE AGENTS, AN HDPE MEMBRANE LINER WILL BE INSTALLED ON THE CROWN OF EACH PIPE, CREATING AN IMPERMEABLE BARRIER. THIS MEASURE IS DESIGNED TO PROTECT THE SYSTEM FROM ENVIRONMENTAL CHANGES THAT COULD LEAD TO PREMATURE CORROSION AND REDUCE THE OVERALL SERVICE LIFE.



IN-SITU TRENCH WALL

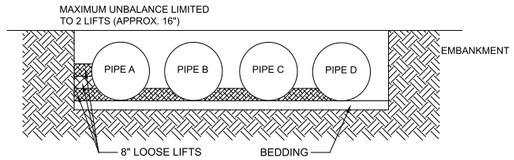
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



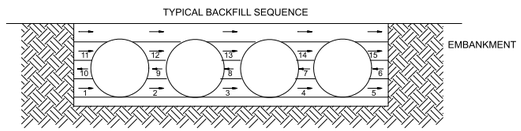
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

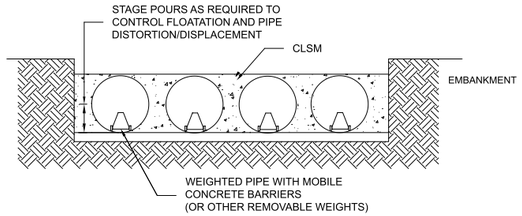


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

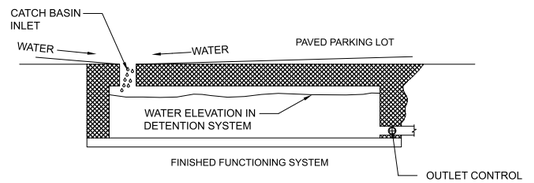


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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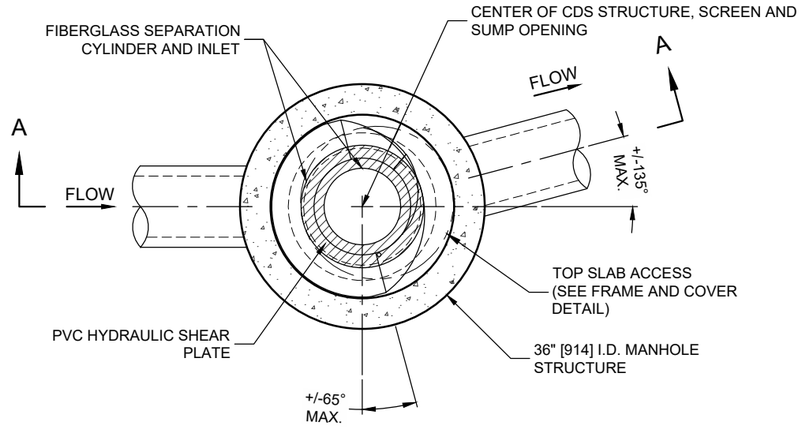
CONTECH CMP DETENTION SYSTEMS

CONTECH **DYODS** DRAWING

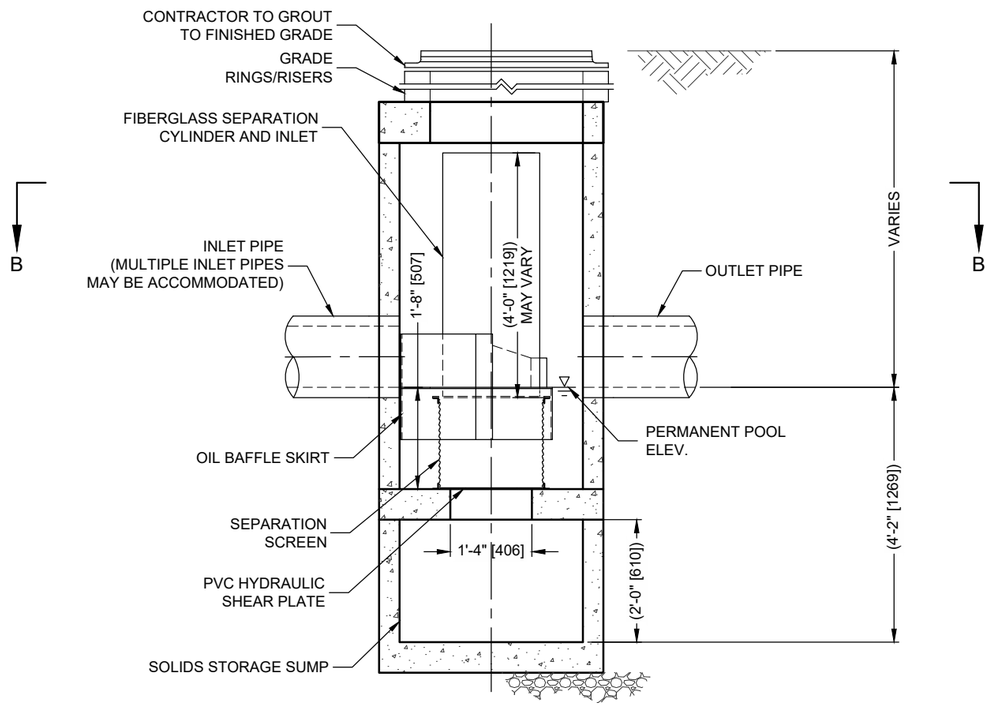
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PLAN VIEW B-B
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ELEVATION A-A
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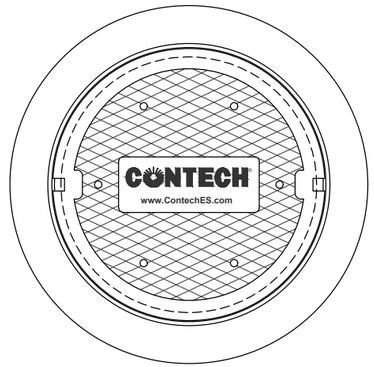
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CDS1515-3-C DESIGN NOTES

CDS1515-3-C RATED TREATMENT CAPACITY IS 0.50 CFS [14.16 L/s], OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED MAXIMUM HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CDS1515-3-C STANDARD CONFIGURATION IS SHOWN.

FOR NJDEP PROJECTS, PLEASE CONTACT YOUR LOCAL CONTECH REPRESENTATIVE FOR APPROVED CONFIGURATIONS.



FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO..
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS1515-3-C
ONLINE CDS
STANDARD DETAIL

I:\COMMON\CAD\TREATMENT\22 CDS\40 STANDARD DRAWINGS\ONLINE (CDS-C)\PDF WITH TREATMENT FLOWS\DWG\CDS1515-3-C-DTL.DWG 5/7/2021 8:18 AM

APPENDIX F

Earth Systems
1731 Walter Street, Suite A | Ventura, CA 93003 | Ph: 805.642.6727 | www.earthsystems.com

September 7, 2020

Project No.: 300852-003
Report No.: 21-9-38

Ventura County Office of Education
Attention: David Fateh
5189 Verdugo Way
Camarillo, California 93012

Project: Gateway Community School 8-Room Classroom Building
550 Airport Way
Camarillo, California
Subject: Soil Infiltration Testing Report
Reference: Earth Systems Pacific, 2021, Engineering Geology and Geotechnical Engineering Report for Gateway Community School 8-Room Classroom Building, Project No. 300852-003, Report No. 21-9-24, September 3.

Earth Systems Pacific (Earth Systems) understands that stormwater may be infiltrated at the Gateway Community School 8-Room Classroom Building project.. To assist in the design of an infiltration system, we have performed two infiltration tests at the project site to determine infiltration rates.

On March 2, 2021, two 4-inch diameter borings (IT-1 through IT-2) were hand augered to depths of 3 and 6 feet below the existing ground surface to observe the soil profile and set up for borehole infiltration tests. Logs of the borings are attached. The borings were advanced in a landscaped area between the south edge of the project site and a parking lot for the adjacent ACE School. Neither of the borings encountered groundwater. However, groundwater was been encountered as shallow as 8.7 feet below the ground surface during other site exploration (Earth Systems Pacific, 2021).

Slotted 2-inch diameter PVC casing was installed in each hole for infiltration testing. The annuli between the casings and holes were filled with pea gravel.

The holes were presaturated on the day they were drilled by adding about 30 inches of water and allowing the water to percolate away overnight.

Twenty-four inches of water was added to the bottom of each hole to start a test, and the drop in the water surface was monitored by taking periodic measurements. Readings were taken at 30-minute intervals, and after each of these intervals, water was added to return the depth to 24 inches. The tests were run for 4 hours. Test results are attached and indicate that steady infiltration rates were obtained.

After the tests were completed, casing was removed, and the holes were backfilled with on-site soils.

It should be noted that the rate the water surface drops in a borehole is a percolation rate, which is related to, but is not an infiltration rate. An infiltration rate is a measure of how fast water enters a soil. Percolation rate ignores the wetted soil surface area into which the water is infiltrating and does not account for the volume of water infiltrated. An infiltration rate considers both factors. Hence, percolation rates (in unit length per unit time) are an overestimation of infiltration rates (also in unit length per unit time). Earth Systems uses the Porchet equation to account for the wetted surface area and volume of water infiltrated to estimate an infiltration rate. Forms of the equation can be found in the Riverside County - Low Impact Development BMP Design Handbook (2001), the South Orange County Version, Technical Guidance Documents Appendices (2017), or in a paper by J.W. Van Hoorn, "Determining Hydraulic Conductivity with the Inversed Auger Hole and Infiltrometer Methods." The Porchet equation in its most simple form is the volume of water infiltrated divided by the product of the change in time and the wetted surface area.

According to the referenced guidelines, applying the Porchet equation to percolation rates to convert them to infiltration rates can be done with the following formula:

$$\text{Infiltration Rate (inches /hr.)} = \frac{\Delta H * r * 60}{\Delta t * (r + 2H_{avg})}$$

where: ΔH = Change in water level (inches)
Δt = Change in time (minutes)
r = Radius of test hole (inches)
H_{avg} = Average height of water in test hole (inches)

The above equation does not account for the gravel pack in the annulus between the borehole wall and the slotted pipe fitted in the test hole. Ignoring the gravel pack inflates the amount of water infiltrated and, hence, yields an unconservative infiltration rate. A method to account for the volume occupied by the gravel (and the slotted pipe) and adjust the infiltration rate accordingly is presented in Caltrans Test 750. Earth Systems makes this additional adjustment to our test data. The equation is:

$$\text{Correction Factor} = n * [\, 1 - (O/D)^2] + (I/D)^2$$

Where: n = Pea gravel porosity
O = Outside diameter of slotted pipe (inches)
D = Test hole diameter (inches)
I = Inside diameter of slotted pipe (inches)

Earth Systems has determined an average porosity for the pea gravel used in our testing. The other values are simple measurements.

Infiltration Rate (in./hr.) X 0.000706 = Infiltration Rate (cm./sec.)

Based on the infiltration testing results, the measured test infiltration rates for the depths tested and boring locations are summarized in the following table:

Boring	Boring Depth (feet)	Infiltration Rate (inch/hour)	Infiltration Rate (cm/s)
IT-1	3	0.73	0.00052
IT-2	6	0.74	0.00052

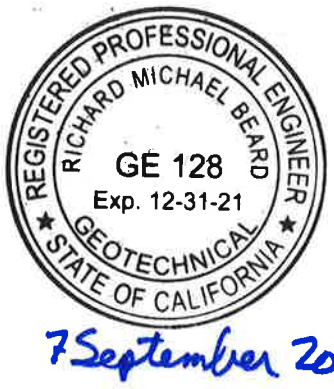
There are many factors that influence the infiltration rate. Clear water was used in our tests, whereas deleterious material will likely be contained in the storm water. Variations in soil conditions within the limits of the proposed infiltration system will likely affect infiltration characteristics. The designer who utilizes the infiltration results should consider these factors, as well as apply a factor-of-safety to the infiltration rate to account for future disposal bed siltation.

We have appreciated the opportunity to be of service to you on this project. Please call if you have any questions, or if we can be of further service.

Respectfully submitted,

EARTH SYSTEMS PACIFIC

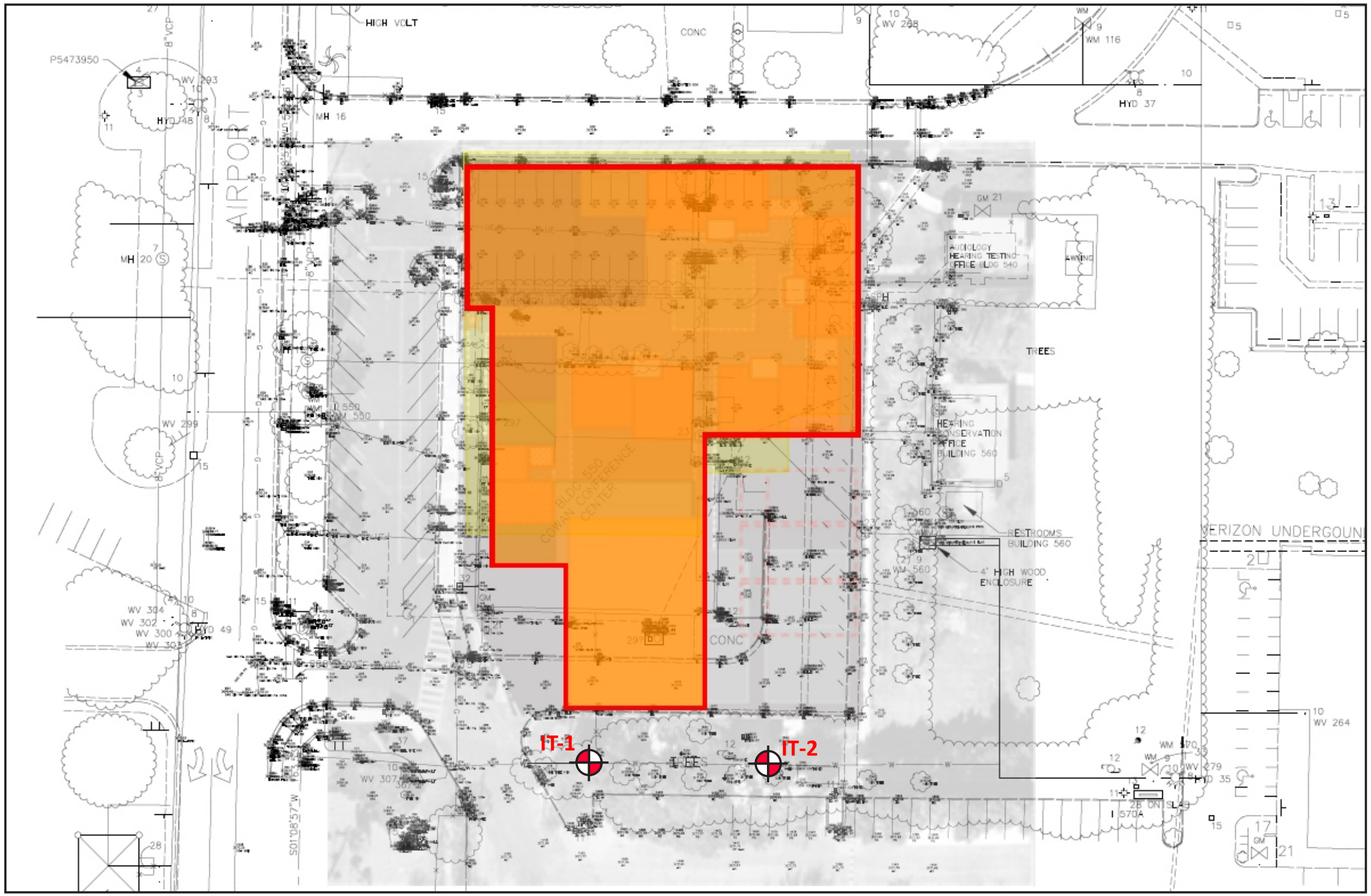
Richard M. Beard
Geotechnical Engineer



7 September 2021

Attach: Site Plan with Boring/Infiltration Test Locations
Boring Logs (2)
Infiltration Test Data (2)

Copies: 1 - Ventura County Office of Education (David Fateh, email)
1 - Project File



IT-1 : Approximate boring locations.

Approximate Scale: 1" = 60’

0 60’ 120’

N

INFILTRATION TEST LOCATION PLAN

Gateway Community School 8-Room Classroom Building
Camarillo, California

Earth Systems

September 2021	300852-003

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-1
PROJECT NAME: Gateway Classroom Infiltration
PROJECT NUMBER: 300852-003
BORING LOCATION: Per Plan

DRILLING DATE: September 2, 2021
DRILL RIG:
DRILLING METHOD: Hand Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: Hand/Grab	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SC			**ARTIFICIAL FILL:** Dark Gray Clayey Sand, roots, medium dense, dry
						ML			**ALLUVIUM:** Gray Brown Clayey Silt, stiff, damp
5									**Total Depth: 3.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-2
PROJECT NAME: Gateway Classroom Infiltration
PROJECT NUMBER: 300852-003
BORING LOCATION: Per Plan

DRILLING DATE: September 2, 2021
DRILL RIG:
DRILLING METHOD: Hand Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: Hand/Grab	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SC			**ARTIFICIAL FILL:** Dark Gray Clayey Sand, roots, medium dense, dry
						CL			**ALLUVIUM:** Gray Brown Silty Clay, medium stiff to stiff, damp to moist
5						ML			**ALLUVIUM:** Dark Brown Clayey Silt, some fine Sand, medium stiff, moist
									Total Depth: 6.0 feet
									No Groundwater Encountered
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Gateway Classroom Infiltration
Project Number	300852-003
Test Hole No.	IT-1
Tester	A. Luna
Pre-Soak Date	9/2/21
Test Date	9/3/21

Test Hole Radius, r (inches)	2
Total Depth of Test Hole, D_T (feet)	3.0
Inside Diameter of Pipe, I (inches)	2.00
Outside Diameter of Pipe, O (inches)	2.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.51
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	1.00	2.15	24.00	10.20	13.80	27.60	1.52	0.79
2	30.00	1.00	2.13	24.00	10.44	13.56	27.12	1.49	0.77
3	30.00	1.00	2.10	24.00	10.80	13.20	26.40	1.43	0.74
4	30.00	1.00	2.12	24.00	10.56	13.44	26.88	1.47	0.76
5	30.00	1.00	2.10	24.00	10.80	13.20	26.40	1.43	0.74
6	30.00	1.00	2.09	24.00	10.92	13.08	26.16	1.42	0.73
7	30.00	1.00	2.10	24.00	10.80	13.20	26.40	1.43	0.74
8	30.00	1.00	2.10	24.00	10.80	13.20	26.40	1.43	0.74
9									
10									
11									
12									
13									
14									
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18									
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Gateway Classroom Infiltration
Project Number	300852-003
Test Hole No.	IT-2
Tester	A. Luna
Pre-Soak Date	9/2/21
Test Date	9/3/21

Test Hole Radius, r (inches)	2
Total Depth of Test Hole, D_T (feet)	6.0
Inside Diameter of Pipe, I (inches)	2.00
Outside Diameter of Pipe, O (inches)	2.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.51
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	4.00	5.51	24.00	5.88	18.12	36.24	2.27	1.17
2	30.00	4.00	5.47	24.00	6.36	17.64	35.28	2.18	1.12
3	30.00	4.00	5.39	24.00	7.32	16.68	33.36	2.00	1.03
4	30.00	4.00	5.31	24.00	8.28	15.72	31.44	1.83	0.94
5	30.00	4.00	5.23	24.00	9.24	14.76	29.52	1.68	0.86
6	30.00	4.00	5.17	24.00	9.96	14.04	28.08	1.56	0.80
7	30.00	4.00	5.14	24.00	10.32	13.68	27.36	1.51	0.78
8	30.00	4.00	5.10	24.00	10.80	13.20	26.40	1.43	0.74
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Earth Systems
1731 Walter Street, Suite A | Ventura, CA 93003 | Ph: 805.642.6727 | www.earthsystems.com

August 14, 2026

Project No.: 300852-004
Report No.: 26-8-50

Attention: Mandy Danesteh-Porter
5189 Verdugo Way
Camarillo, California 93012

Project: Gateway Community School South Annex
550 Airport Way
Camarillo, California
CGS Application No. 03-CGS5482

Subject: Supplemental Borings

Reference:
1. Earth Systems Pacific, 2021, Engineering Geology and Geotechnical Engineering Report, Gateway Community School New South Annex and Existing Campus Modernization, Project No. 300852-003, Report No. 21-9-24, September 3, Revised May 18, 2022.
2. Earth Systems Pacific, 20212, Supplemental Grading Recommendations, 20,000 Square-Foot Classroom Building, Camarillo, California, Project No. 300852-003, Report No. 22-3-68, March 30.
3. Earth Systems Pacific, 20212, Response to Review, Gateway Community School New South Annex and Existing Campus Modernization, Camarillo, California, Project No. 300852-003, Report No. 22-11-10, November 7.

Earth Systems Pacific (Earth Systems) prepared the referenced reports for the Gateway Community School 8-Room Classroom Building project. Subsequently, the single building was changed to three buildings (A, B, and C), although Buildings A and C are contiguous. Contiguous Building A-C will have a footprint of 8,266 square feet and Building B will have a footprint of 4,994 square feet. According to Section 1803AA.3.1 of the 2025 California Building Code, there must be one boring per each 5,000 square feet of building area, and not less than two borings per building. With the no proposed building sizes and layout, only one point of subsurface exploration is within each building footprint.

To remedy this short coming, one additional boring has been made within the proposed footprint of contiguous Building A-C and one additional boring has been made with the proposed footprint of Building B. After breaking through the surface of asphalt concrete and aggregate base, the borings were hand augered to depths of 5 and 10 feet. In the boring logs in the referenced report groundwater was encountered at a depth of about 8 feet. The logs of these borings and a site plan showing the location of all the project borings relative to the now proposed building footprints are attached to this report.

The soils logged in the new borings are in good agreement with the logging of soils in previous borings at the project site, and no changes in the geotechnical cross sections provided in the reference report are required.

Based on this finding, no changes in the geotechnical recommendations for the project are being made.

We have appreciated the opportunity to be of service to you on this project. Please call if you have any questions, or if we can be of further service.

Respectfully submitted,

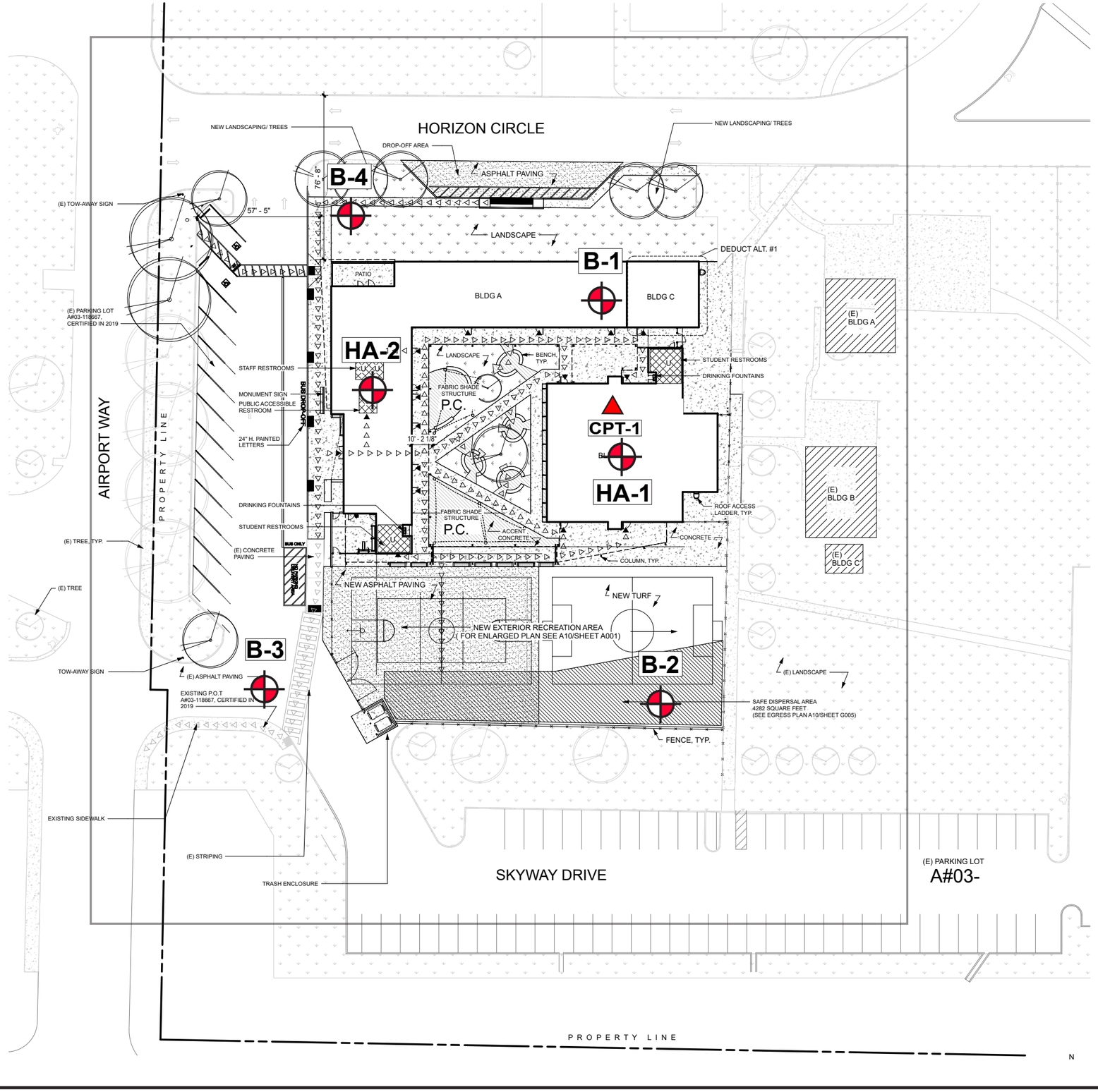
EARTH SYSTEMS PACIFIC

Richard M. Beard
Geotechnical Engineer



Attach: Site Plan with Boring/CPT Test Locations
Boring Logs (2)

Copies: 1 - Ventura County Office of Education (Mandy Danesteh-Porter, email)
1 - Project File



HA-2

: Approximate Hand Auger Boring Location

B-4

: Approximate Boring Location

CPT-1

: Approximate Cone Penetrometer Test (CPT) Location

Approximate Scale: 1" = 50'

0 50' 100'

N

SITE PLAN

Gateway Community School South Annex
Camarillo, California

Earth Systems

August 2026	300852-004

Earth Systems
5917 Olivas Park Drive Ste F, Ventura, CA 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: HA-1
PROJECT NAME: Gateway School So. Annex Supplemental
PROJECT NUMBER: 300852-004
BORING LOCATION: Per Plan

DRILLING DATE: August 12, 2026
DRILL RIG:
DRILLING METHOD: Hand Auger
LOGGED BY: V. Wallace

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0	X					CL /ML			**Asphalt: 3.5", Base Material: 8.0"** **ARTIFICIAL FILL:** Very dark brown clay mottled with yellowish brown sandy silt, few clay; stiff; moist
	X					CL			**ARTIFICIAL FILL:** Pale olive brown sandy clay; medium stiff; moist
5			■			SC			**ALLUVIUM:** Pale olive brown clayey sand, few silt; moist, medium dense
									ALLUVIUM: Pale olive brown silty clay; soft; very moist
						SC			**ALLUVIUM:** Pale olive brown clayey sand; medium dense; very moist to wet
10									**Total Depth: 8 Feet** **Groundwater Encountered: 7.5 Feet**
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
5917 Olivas Park Drive Ste F, Ventura, CA 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: HA-2
PROJECT NAME: Gateway School So. Annex Supplemental
PROJECT NUMBER: 300852-004
BORING LOCATION: Per Plan

DRILLING DATE: August 12, 2026
DRILL RIG:
DRILLING METHOD: Hand Auger
LOGGED BY: V. Wallace

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0									**Asphalt: 4.0", Base Material: 8.0"**
						CL			**ARTIFICIAL FILL:** Dark brown clay, few sand, few gravel; stiff; moist
						CL			**ALLUVIUM:** Pale brown clay, trace sand; stiff; moist
5									**Total Depth: 5 Feet**
									No Groundwater Encountered
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

DSA **140**

APPLICATION FOR SUBMITTAL OF POST-APPROVAL DOCUMENT

This application is for submittal of documents, after the initial approval of the project (post-approval documents), that require Division of the State Architect (DSA) review and approval.This form shall be completed by the Design Professional in General Responsible Charge of the project, in accordance with California Code of Regulations, Title 24, Part 1, Sections 4-317, 4-323 and 4-338 and in compliance with DSA IR A-6: Construction Change Document Submittal and Approval Process.

1. SUBMITTAL TYPE (Is this a resubmittal? Yes■ No ■)

Deferred Submittal ☐	Addendum Number: 01	Revision Number:	CCD Number:

2. PROJECT INFORMATION

School District/Owner: Ventura County Office of Education	DSA File Number: 56-44	Increment Number:
Project Name/School: Gateway Annex School	DSA Application Number: 03-122398	

3. APPLICANT INFORMATION

Date Submitted: 10/23/26	Attached Pages? No ☐ Yes ☒ Number of attached pages? 261		
Firm Name: Perkins Eastman	Contact Name: Shahrzad Shirvani		
Work Email: s.shirvani@perkinseastman.com	Work Phone: (510) 269-3552		
Firm Address: 3333 Michelson Dr, Suite 400	City: Irvine	State: CA	Zip Code: 92612

4. REASON FOR SUBMITTAL (Check applicable boxes)

☒ For revision or addendum prior to construction.

☐ For a project currently under construction.

☐ For a project that has a form *DSA 301-N: Notification of Requirement for Certification* or *DSA 301-P: Posted Notification of Requirement for Certification* issued.

☐ To obtain DSA approval of an existing uncertified building or buildings.

5. DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

Name of the Design Professional In General Responsible Charge: Diego Matzkin

Professional License Number: C-27962 | Discipline: Architecture

Statement: The attached post-approval documents have been examined by me for design intent and coordinated with the design documents. They are found to be in general conformance with the design and appear to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications. They are acceptable for incorporation into the construction of the project. This Statement 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.

Signature: _____

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

6. CONFIRMATION, DESCRIPTION AND LISTING OF DOCUMENTS

For addenda, revisions, or CCDs: CHECK THIS BOX ☒ to confirm that *all* post-approval documents have been stamped and signed by the Responsible Design Professional listed on form *DSA 1: Application for Approval of Plans and Specifications* for this project. (For *Deferred Submittals*, refer to *IR A-18: Use of Construction Documents Prepared by Other Professionals,* and *IR A-19: Design Professional's Signature and Seal (Stamp) on Construction Documents*, when applicable, for signature and seal requirements.)

Provide a brief description of construction scope for this post-approval document (attach additional sheets if needed):

The buildings have been moved 21' South to avoid existing easements conditions, resulting on landscape and playground changes, the buildings design has not been impacted by this change. Site Plans have been revised. Exit Path and Safe Dispersal Area revised. Door hardware specifications updated per district request. Revised Mechanical Units to address current equipment availability.See attached narrativ

List of DSA-approved drawings affected by this post-approval document:

See attached list of drawings and specifications affected.

DSA USE ONLY

SSS KK Date 10/30/26 ☒Approved ☐Disapproved ☐Not Required

Comments: _____

FLS FC Date 10/05/2026 ☒Approved ☐Disapproved ☐Not Required

Comments: _____

ACS K.R. Date 11/2/26 ☒Approved ☐Disapproved ☐Not Required

Comments: _____

Returned	DSA STAMP
Date:	APPROVED DIV. OF THE STATE ARCHITECT APP: 03-122398 INC: REVIEWED FOR SS ☑ FLS ☑ ACS ☑ DATE: 11/02/2026
By:	

COPYRIGHT © 2020 PERKINS EASTMAN ARCHITECTS, DPC.

Example of Statement of General Conformance and Signature Block per IR A-18

Statement of General Conformance

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS, INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

(Application No. 03-122398 File No. 19-C6)

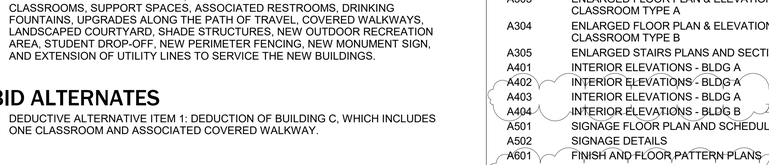
[X] The drawings or sheets listed on the cover or index sheet
[X] This drawing, page of specifications/calculations

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 Sections 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 4-316 (b))*

I certify that: [X] All drawings or sheets listed on the cover or index sheet [ ] This drawing or page	
[X] is/are in general conformance and [X] have been coordinated	[ ] is/are in general conformance and [ ] have been coordinated
Signature: Diego Matzkin — Date: 10/19/2026	Signature — Date
Architect or Engineer designated to be in general responsible charge: Diego Matzkin	Architect or Engineer delegated responsibility for this portion of the work.
Print Name: Diego Matzkin	Print Name
License Number: C-27962 — Expiration Date: 10/31/2027	License Number — Expiration Date



VENTURA COUNTY OFFICE OF EDUCATION

GATEWAY ANNEX SCHOOL

550 Airport Way, Camarillo, CA 93010

CONSTRUCTION DOCUMENTS

10/23/2026

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT — DIEGO M. MATZKIN — NO. C-27962 — EXP. OCT. 31, 2026 — STATE OF CALIFORNIA

DIRECTORY

OWNER
VENTURA COUNTY OFFICE OF EDUCATION
5100 ADOLFO RD,
CAMARILLO, CA 93012
TEL: (805) 383-1900
CONTACT: DAVID FATEH, DIRECTOR, FACILITIES

ARCHITECT
PERKINS EASTMAN ARCHITECTS, DPC.
3194-D AIRPORT LOOP DRIVE
COSTA MESA, CA 92626
TEL: (714) 427-0277
CONTACT: BRIAN DOUGHERTY

CIVIL ENGINEER
DELANE ENGINEERING, INC.
400 W VENTURA BLVD., SUITE 265
CAMARILLO, CA 93010
TEL: (805) 330-9730

LANDSCAPE ARCHITECT
JORDAN, GILBERT & BRIAN LANDSCAPE ARCHITECTS INC.
459 N. VENTURA AVE.
VENTURA, CA 93001
TEL: (805) 642-3641

STRUCTURAL ENGINEER
PETER SARKIS S.E.
17981 SKYPARK CIRCLE, SUITE O
IRVINE, CA 92614
TEL: (949) 748-7170

MECHANICAL, ELECTRICAL, PLUMBING, & FIRE PREVENTION ENGINEER
SALAS O'BRIEN
8825 RESEARCH DRIVE
IRVINE, CA 92618
TEL: (949) 753-1553

FOOD SERVICES
RICCA DESIGN STUDIOS
5613 DTC PKWY SUITE 100
GREENWOOD VILLAGE, CO 80111
TEL: (303) 518-5381

GEOTECHNICAL ENGINEER
EARTH SYSTEMS PACIFIC
1731-A WALTER STREET
VENTURA, CA 93003
TEL: (805) 642-6727

PROJECT DATA

SCOPE OF WORK
CONSTRUCTION OF BUILDINGS A, B AND C WHICH INCLUDES A TOTAL OF 8 CLASSROOMS, SUPPORT SPACES, ASSOCIATED RESTROOMS, DRINKING FOUNTAINS, UPGRADES ALONG THE PATH OF TRAVEL, COVERED WALKWAYS, LANDSCAPED COURTYARD, SHADE STRUCTURES, NEW OUTDOOR RECREATION AREA, STUDENT DROP-OFF, NEW PERIMETER FENCING, NEW MONUMENT SIGN, AND EXTENSION OF UTILITY LINES TO SERVICE THE NEW BUILDINGS.

BID ALTERNATES
DEDUCTIVE ALTERNATIVE ITEM 1: DEDUCTION OF BUILDING C, WHICH INCLUDES ONE CLASSROOM AND ASSOCIATED COVERED WALKWAY.

DEFERRED APPROVAL

DESCRIPTION OF DEFERRED ITEMS
WOOD TRUSSES WITH METAL STRAPPING

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GENERAL
G001 COVER SHEET
G002 ABBREVIATIONS, SYMBOLS, & GENERAL NOTES
G003 SITE PLAN - CODE ANALYSIS
G004 SITE PLAN - LOCAL FIRE AUTHORITY
G005 FLOOR PLAN - EGRESS ANALYSIS

CIVIL
C-1 ENGINEERED SITE PLAN
C-2 OVERALL UTILITY SITE PLAN
C-3 HORIZONTAL CONTROL PLAN
C-4 OVERALL UTILITY SITE PLAN WATER AND SEWER

LANDSCAPE
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L2 IRRIGATION LEGEND AND NOTES
L3 PLANTING PLAN
L4 PLANTING LEGEND AND NOTES
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A001 SITE PLAN
A002 ENLARGED SITE PLAN
A011 SITE DETAILS
A012 CHAIN-LINK FENCE AND GATE DETAILS
A013 ORNAMENTAL METAL FENCING & GATE DETAILS
A014 MISCELLANEOUS SITE DETAILS
A015 PARKING DETAILS
A016 SHADE STRUCTURES ENLARGED PLANS
A101 OVERALL FLOOR PLAN
A102 ENLARGED FLOOR PLAN - BLDG A
A103 ENLARGED FLOOR PLANS - BLDGS A, B, & C
A121 REFLECTED CEILING PLAN
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A201 EXTERIOR ELEVATIONS
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A221 BUILDING SECTIONS
A231 EXTERIOR WALL SECTIONS
A232 EXTERIOR WALL SECTIONS
A301 ENLARGED RESTROOM FLOOR PLANS & ELEVATIONS
A302 ENLARGED RESTROOM FLOOR PLANS & ELEVATIONS
A303 ENLARGED FLOOR PLAN & ELEVATIONS - CLASSROOM TYPE A
A304 ENLARGED FLOOR PLAN & ELEVATIONS - CLASSROOM TYPE B
A305 ENLARGED STAIRS PLANS AND SECTIONS
A401 INTERIOR ELEVATIONS - BLDG A
A402 INTERIOR ELEVATIONS - BLDG A
A403 INTERIOR ELEVATIONS - BLDG A
A404 INTERIOR ELEVATIONS - BLDG B
A501 SIGNAGE FLOOR PLAN AND SCHEDULE
A502 SIGNAGE DETAILS
A601 FINISH AND FLOOR PATTERN PLANS
A602 INTERIOR FINISH SCHEDULE
A701 SCHEDULES
A702 TYPICAL ASSEMBLIES - EXTERIOR WALLS
A704 INTERIOR WALL SCHEDULE AND DETAILS
A721 EXTERIOR WALL DETAILS
A731 DOOR AND WINDOW DETAILS
A732 DOOR AND WINDOW DETAILS
A734 TUBULAR SKYLIGHT DETAILS
A771 STAIR AND RAMP DETAILS
A801 CASEWORK DETAILS
A802 RECEPTION DESK DETAILS
A821 TYP. LAY-IN CEILING DETAILS
A822 TYP. LAY-IN CEILING DETAILS
A823 TYP. LAY-IN CEILING DETAILS
A824 TYP. GYPSUM BOARD CEILING DETAILS
A825 TYP. LAY-IN CEILING DETAILS
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A841 MISCELLANEOUS DETAILS
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S002 GENERAL NOTES & ABBREVIATIONS
S101 FOUNDATION PLAN
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PLUMBING
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E003 ELECTRICAL TITLE 24
E004 ELECTRICAL TITLE 24
ES101 ELECTRICAL SITE PLAN - NEW
ESP101 ELECTRICAL SITE PLAN - EM PHOTOMETRIC

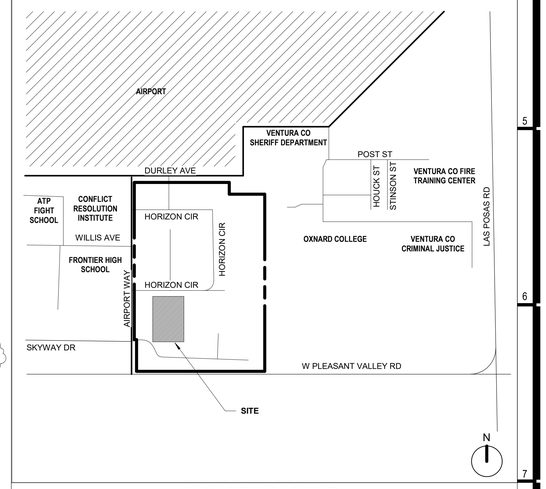
ELECTRICAL
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E121 ELECTRICAL 1ST FLOOR PLAN - AUXILIARY
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E132 ELECTRICAL 1ST FLOOR LIGHTING PLAN - EM PHOTOMETRICS
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FA202 FOUR SQUARE BUILDING FIRE ALARM PLAN
FA301 FIRE ALARM RISER DIAGRAMS AND CALCS
FA302 FIRE ALARM RISER DIAGRAMS AND CALCS
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FP202 NEW BUILDING HEAD LAYOUT
FP203 FOUR SQUARE BUILDING PLAN
FP301 FIRE PROTECTION SECTIONS
FP401 FIRE PROTECTION DETAILS
FP402 FIRE PROTECTION SEISMIC DETAILS

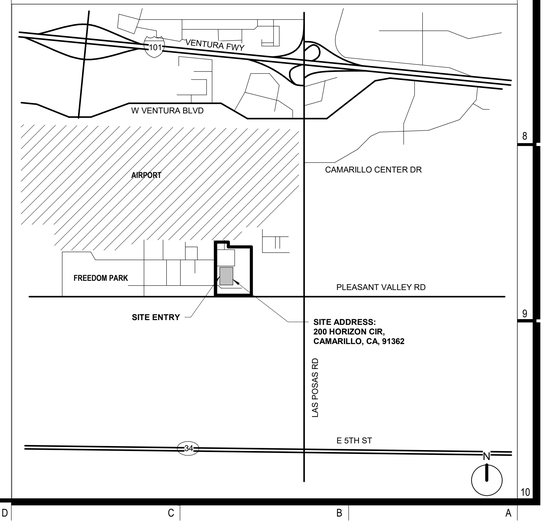
FOOD SERVICE
QF000-1 Index Sheet
QF100-1 Foodservice Key Plan
QF400-1 Foodservice Equipment Plan
QF400-2 Foodservice Utility Schedule
QF400-3 Foodservice Building Conditions & Ventilation Plan
QF400-4 Foodservice Plumbing Plan
QF400-5 Foodservice Electrical Plan
QF500-1 Foodservice Elevations
QF501-1 Foodservice Details & Sections

SHADE SHELTER_FOUR POINT SAILS_PC 04-119455
P.C. T-1.0 P.C. TITLE SHEET
P.C. T-2.0 DSA 103 SAMPLE FORM
P.C. T-2.1 DSA 103 SAMPLE FORM
15.1-1000 PRODUCT INFORMATION
15.2-2000 REACTIONS

VICINITY MAP



LOCATION MAP



GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

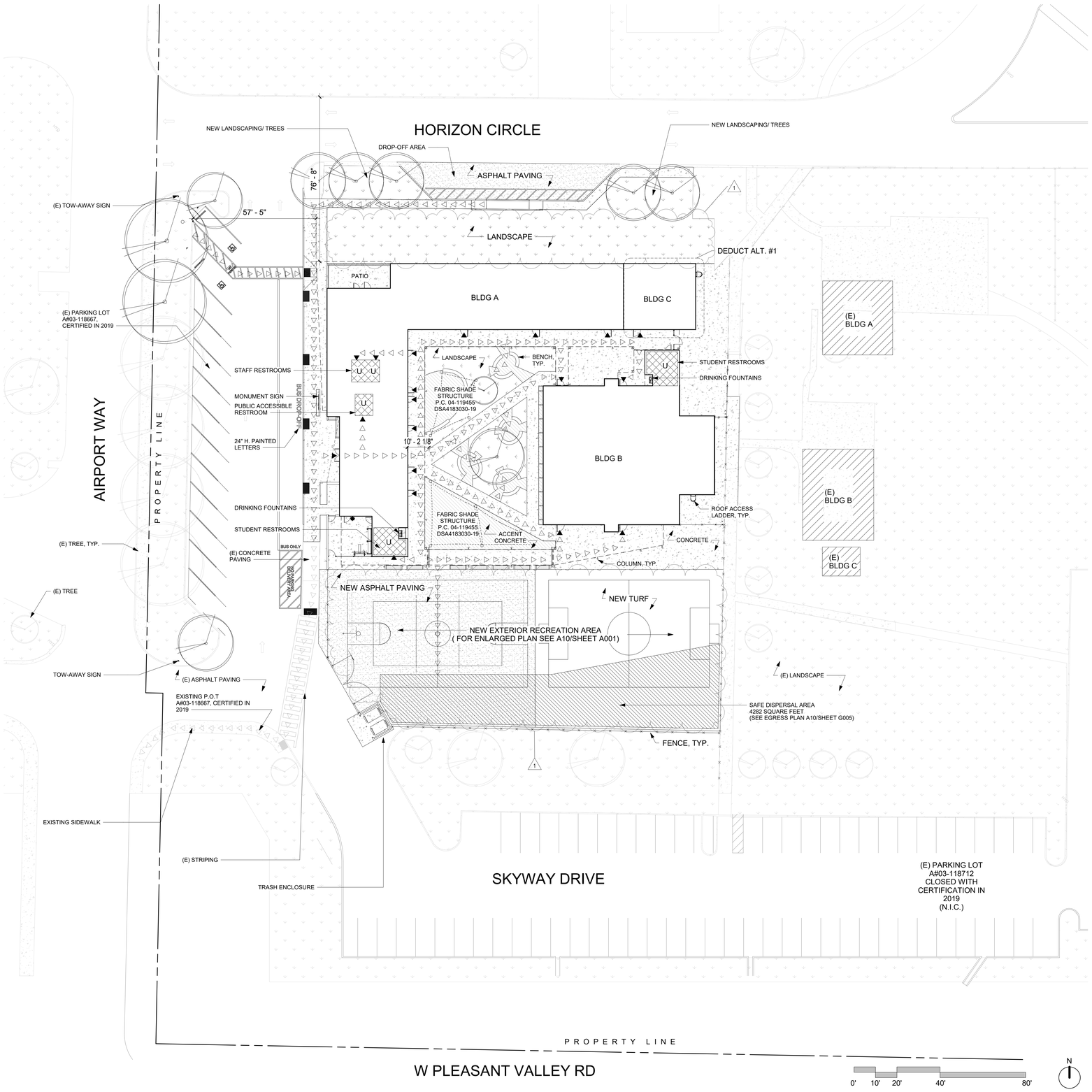
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SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

COVER SHEET

PERKINS — EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

G001

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CODE ANALYSIS:

ANNEX SCHOOL: BUILDING A, B, AND C

CONSTRUCTION TYPE:	VB
ALLOWABLE NUMBER OF STORIES:	1
PROVIDED:	1
ALLOWABLE BUILDING HEIGHT	
SPRINKLER:	40 FT
ACTUAL BUILDING HEIGHT:	23 FT
AUTOMATIC SPRINKLER SYSTEM:	
BUILDINGS A, B AND C:	YES
MIN. ROOF CLASS ASSEMBLY: (PER CBC TABLE 1505.1)	TYPE B
ROOF CLASS PROVIDED:	TYPE A
OCCUPANCY:	A
AREA BLDG A:	7,196 SF
AREA BLDB B:	4,994 SF
AREA BLDG C:	1,070 SF
SHADE SHELTERS:	1,050 SF
TOTAL AREA:	14,310 SF
ALLOWABLE AREA PER FLOOR: (CBC TABLE 506.2.4)	24,000 SF

FIRE RATING REQUIREMENTS: (PER CBC TABLE 601)

PRIMARY STRUCTURAL FRAME:	0
NON BEARING WALLS:	0
FLOOR CONSTRUCTION:	0
ROOF CONSTRUCTION:	0

PLUMBING COUNTS:	MEN	WOMEN	ALL-GENDER
TOTAL OCCUPANTS:	90	90	-
WATER CLOSET REQ.:	3	4	
PROVIDED:	-	-	9*
URINALS REQ.:	2*	0	
PROVIDED:	-	-	0
SINKS REQ.:	4	4	
PROVIDED:	-	-	8
D.F. REQ.:			3
PROVIDED:			4

*URINALS ARE PROVIDED BY WATER CLOSETS IN ALL-GENDER RESTROOMS

PARKING COUNT: (CBC TABLE 11B-208.2)

TOTAL RE-STRIPED PARKING STALLS:	13
REQ. ACCESSIBLE STALLS:	1/25
PROVIDED:	1
REQ. VAN ACCESSIBLE STALLS:	1
PROVIDED:	1
TOTAL ACCESSIBLE STALLS PROVIDED:	2

SITE LEGEND

- NEW BUILDING
- EXISTING BUILDING
- SITE CONCRETE
- SITE CONCRETE, ACCENT COLOR
- EXISTING ASPHALT
- EXISTING GRASS
- AREA OF WORK
- ACCESSIBLE RESTROOM
  - M: MEN
  - W: WOMEN
  - B: BOYS
  - G: GIRLS
  - U: UNISEX
- (E) ACCESSIBLE PATH OF TRAVEL, A#03-118667
- ACCESSIBLE PATH OF TRAVEL
- ACCESSIBLE ENTRANCE

- ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLAN IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAX SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAX, AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM. AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT

- THE PATH OF TRAVEL (POT) IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT 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 IN 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 A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

SITE NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G002

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
SCOTT M. WATKINS
NO. 32744
EXPIRES 08.31.2027
STATE OF CALIFORNIA

GATEWAY AREA SKYWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
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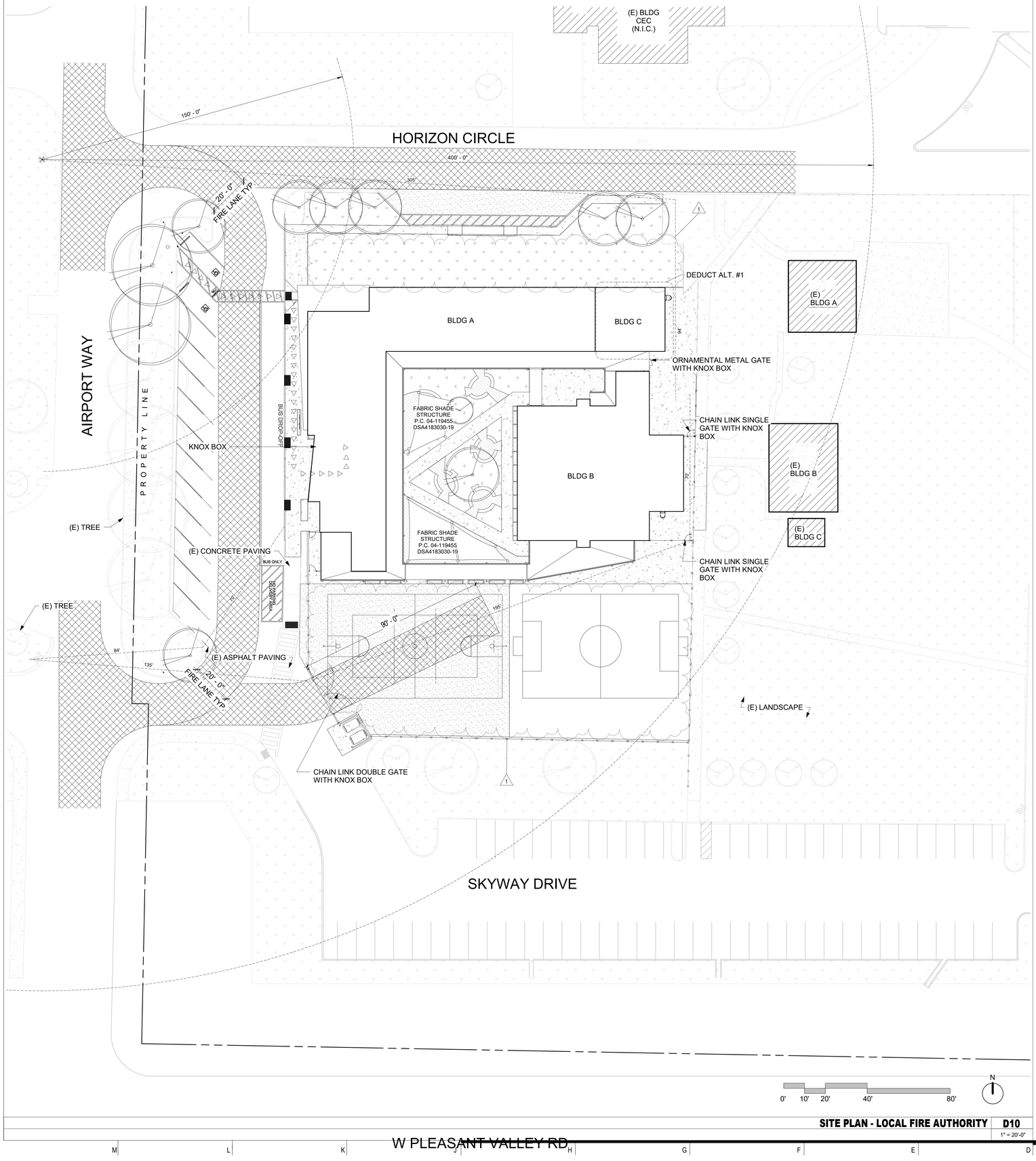
SITE PLAN - CODE ANALYSIS

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

G003

SITE PLAN - CODE ANALYSIS C10
1" = 20'-0"

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SITE PLAN - LOCAL FIRE AUTHORITY D10

1" = 20'-0"

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:	Ventura County Office of Education
Project Name/School:	Gateway Annex School
Project Address:	550 Airport Way, Camarillo, CA 93010

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.)*	Yes ☐		No ☑
	Refer to the following website for FHSZ locations: http://egis.fire.ca.gov/FHSZ/	Moderate ☐	High ☐	Very High ☐
	Wildland Interface Area (WIFA) *(If any designations are checked, project design must meet the requirements of CBC Chapter 7A.)*			WIFA ☐

DSA 810

FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

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: _____ Title: _____

Signature: _____ Date: _____

LOCAL FIRE AUTHORITY (LFA) INFORMATION	
LFA Agency Name:	Ventura County Fire Department
LFA Review Official:	Brandon Sube
Title: Fire Inspector II	Work Phone: (805) 914-7436
Work Email:	Brandon.Sube@ventura.org

LFA Reviewer's Signature: Brandon Sube Digitally signed by Brandon Sube Date: 2023.01.04 08:59:33 -08'00' Date: 01/04/23

SITE LEGEND

- NEW BUILDING
- EXISTING BUILDING
- FIRE ACCESS LANE
- HYD FIRE HYDRANT

SITE NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G002

FIRE AUTHORITY NOTES

1. VEGETATION AND OTHER OBSTRUCTIONS OVERHANGING A FIRE ACCESS ROADWAY SHALL BE MAINTAINED TO A CLEAR HEIGHT OF 13'-6".
2. KNOX KEY SWITCHES, KNOX LOCKS, OR FRANGIBLE PADLOCKS/CHAINS SHALL BE PROVIDED FOR ALL GATES AND BARRIERS IN THE PATH OF VEHICLE OR FIREFIGHTER ACCESS.
3. THE CAMPUS IS IDENTIFIED WITH 6" HIGH ADDRESS NUMBERS EASILY VISIBLE FROM THE PUBLIC ROAD FRONTING THE PROPERTY. INDIVIDUAL STRUCTURES ARE IDENTIFIED WITH 6" HIGH ADDRESS NUMBERS OR LETTERS EASILY VISIBLE FROM THE PUBLIC WAY OR FIRE ACCESS ROADWAY.
4. ALL-WEATHER ACCESS ROADWAYS AND FIRE HYDRANTS SHALL BE IN PLACE AND OPERATIONAL BEFORE BRINGING COMBUSTIBLE BUILDING MATERIALS OR PORTABLE UNITS ON-SITE.
5. PIVS, DDCS, FDCS SHALL BE UNOBSTRUCTED AND VISIBLE FROM THE FIRE LANE OR PUBLIC ROAD. THEY SHALL BE PAINTED OSHA SAFETY RED.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
REED M. MAYAN
NO. 32768
EXP. OCT. 31, 2026
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

SITE PLAN - LOCAL FIRE AUTHORITY

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

G004

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FLOOR PLAN - EGRESS ANALYSIS A10 — 1/8" = 1'-0"

CODE ANALYSIS LEGEND

EXIT PATH

EXIT ACCESS

EXIT PATH X = NUMBER OF OCCUPANTS

OCCUPANT LOAD:

ROOM NAME
ROOM #
GSF / ___ OLF =
___ OCC.

EXISTING OCCUPANT LOAD:
(A# 04-118580)

ROOM NAME
ROOM #
GSF / ___ OLF =
___ OCC.

MEANS OF EGRESS:
1. EGRESS WIDTH: CBC SECTION 1005.1
2. MIN. WIDTH 32" (PER SECTION 1010.1.1)

NUMBER OF EXITS REQUIRED: CBC TABLE 1006.3.1.**EXIT DOOR WIDTH:** (CBC SECTION 1005.1)

EXIT ACCESS TYPICAL CLASSROOM

1 EXITS
TOTAL OCCUPANTS: 49 OCC.
49 OCC x 0.2" = 9.8"
MIN WIDTH REQUIRED = 32"
PROVIDED WIDTH = 42"
THEREFORE OK

SAFE DISPERSAL AREA
(PER CBC TABLE 1004.1.2)

TOTAL OCCUPANCY: 494 OCC or 846 OCC

853 OCC x 5 SF = 4265 SF

SIGNAGE LEGEND

ID	IDENTIFICATION SIGNAGE
E	EXIT SIGNAGE SIM
ER	EXIT ROUTE SIGNAGE
OCC	OCCUPANCY LOAD SIGNAGE
U	ALL GENDER RESTROOM SIGNAGE
FR	FIRE RISER SIGNAGE
ALS	ASSISTIVE LISTENING SIGNAGE

SIGNAGE NOTES

1. FINISH: CHARACTERS, SYMBOLS, PICTOGRAMS AND THEIR BACKGROUNDS SHALL HAVE A NON-GLARE FINISH.
2. FOR MOUNTING HEIGHTS REFER TO DETAIL A2 / A502
3. FOR BRAILLE SEE DETAIL E2 / A502
4. SIGNAGE CORNERS TO BE 1/2" RADIUS
5. RAISED LETTERS MAY NOT BE SURFACE APPLIED AND MUST BE INTEGRAL.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT — BRIGHT M. MAYER — NO. 32766 — EXPIRES OCT. 31, 2027 — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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FLOOR PLAN - EGRESS ANALYSIS

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

G005

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AIRPORT WAY

BLDG A

BLDG C

BLDG B

ASPH

BUS ONLY

NO PARKING DELIVERY AREA

NO PARKING

HATCH PATTERN LEGEND

- 2" AC GRIND AND OVERLAY
- LANDSCAPE PLANTING AREA
- ACCENT TEXTURE CONCRETE FINISH PER ARCH PLAN SET
- CONCRETE PAVEMENT (AS NOTED PER PLAN)

SCALE: 1"=10'

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT — REED M. MATZEN — NO. [illegible] — EXP OCT 31, 2027 — STATE OF CALIFORNIA

DELANE ENGINEERING
400 E. VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711–WWW.DELANEENGINEERING.COM

REGISTERED PROFESSIONAL ENGINEER — SCOTT DELANE SPECIALTY — No. C 72391 — CIVIL — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

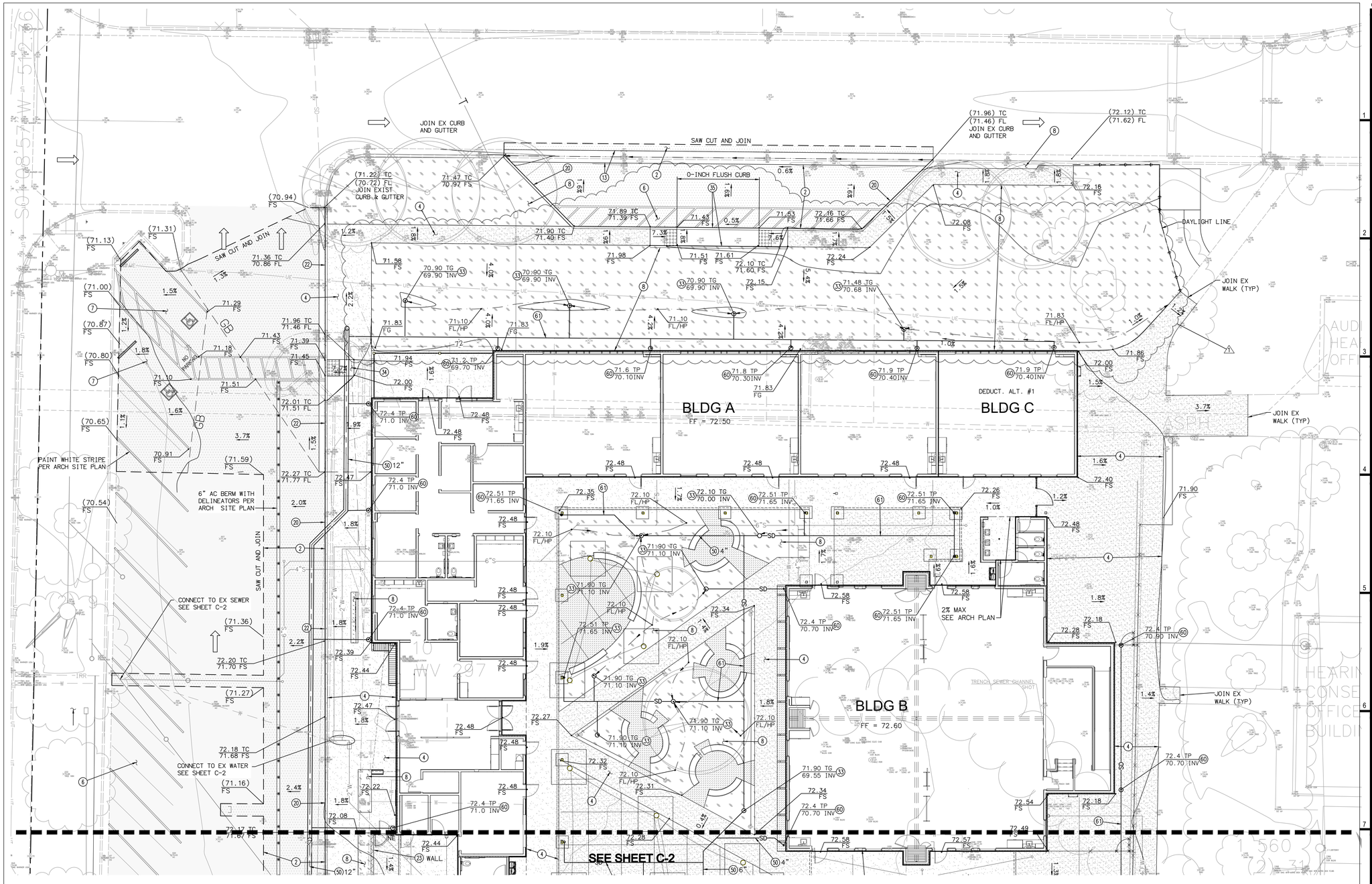
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1	10/23/2026

HORIZONTAL CONTROL PLAN

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

C-1

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HATCH PATTERN LEGEND

- 2" AC GRIND AND OVERLAY
- LANDSCAPE PLANTING AREA
- ACCENT TEXTURE CONCRETE FINISH PER ARCH PLAN SET
- CONCRETE PAVEMENT (AS NOTED PER PLAN)
- FULL ASPHALT PAVEMENT SECTION (AS NOTED PER PLAN)

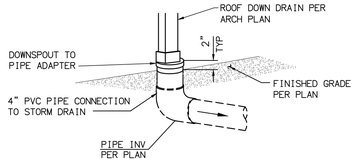
SCALE 1"=10'

10 5 0 10 20 30

SCALE: 1"=10'

NOTES:

1. SEE SHEET C-2 FOR UTILITY INFORMATION
2. OVER-EXCAVATION SHALL BE COMPLETED BASED ON THE GEOTECHNICAL REPORT DATED 9/3/2021 AND REVISED 5/18/2022, GRADING/DEVELOPMENT OF STRUCTURES, 5' BEYOND BUILDING FOOTPRINT AND 4' BELOW EXISTING GRADE. GEOGRID PLACED PRIOR TO PLACING FILL.



ROOF DRAIN CONNECTION DETAIL

NTS

CONSTRUCTION NOTES

(2) CONSTRUCT 3" AC OVER 6" AGGREGATE BASE, ACTUAL SECTION TO BE DETERMINED BY SOILS ENGINEER BASED ON R-VALUE ANALYSIS
(4) CONSTRUCT 4" CONCRETE OVER NATIVE SOIL COMPACTED TO 95%, MINIMUM RELATIVE COMPACTION PER ASTM D1557, PER SPPWC 112-2. SEE ARCH PLAN FOR FINISH, COLOR AND PATTERN ON WALKS AND PATIO AREAS
(6) INSTALL PARKING LOT STRIPING PER ARCH SITE PLAN AND DETAILS
(7) INSTALL ACCESSIBLE PARKING STALL PER CALTRANS RSP A90A,
(8) LANDSCAPE, SEE LANDSCAPE ARCHITECTUAL PLANS
(13) CONSTRUCT 3' WIDE LONGITUDINAL GUTTER PER SPPWC STD PLATE 122-3
(20) CONSTRUCT 6" CONCRETE CURB PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-1.
(22) CONSTRUCT 6" CONCRETE CURB AND 18" GUTTER PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-2.
(23) HARDSCAPE FEATURE, SEE ARCHITECTURAL PLANS
(33) INSTALL 4" ATRIUM GRATE, NDS 75 OR APPROVED EQUAL
(34) CONSTRUCT CURB RAMP, CASE A, TYPE 1, PER SPPWC STD PLAN 111-5 AND AS MODIFIED PER PLAN.
(35) CONSTRUCT CURB RAMP, CASE B, TYPE 1, PER SPPWC STD PLAN 111-5 AND AS MODIFIED PER PLAN.
(50) CONSTRUCT PVC STORM DRAIN (SDR 35), SIZE PER PLAN
(60) CONNECT ROOF DRAIN DOWN SPOUT TO 4" PVC STORM DRAIN PER ROOF DRAIN DETAIL SHEET C-2
(61) INSTALL 6" SDR 35 PVC PIPE

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

DELANE ENGINEERING
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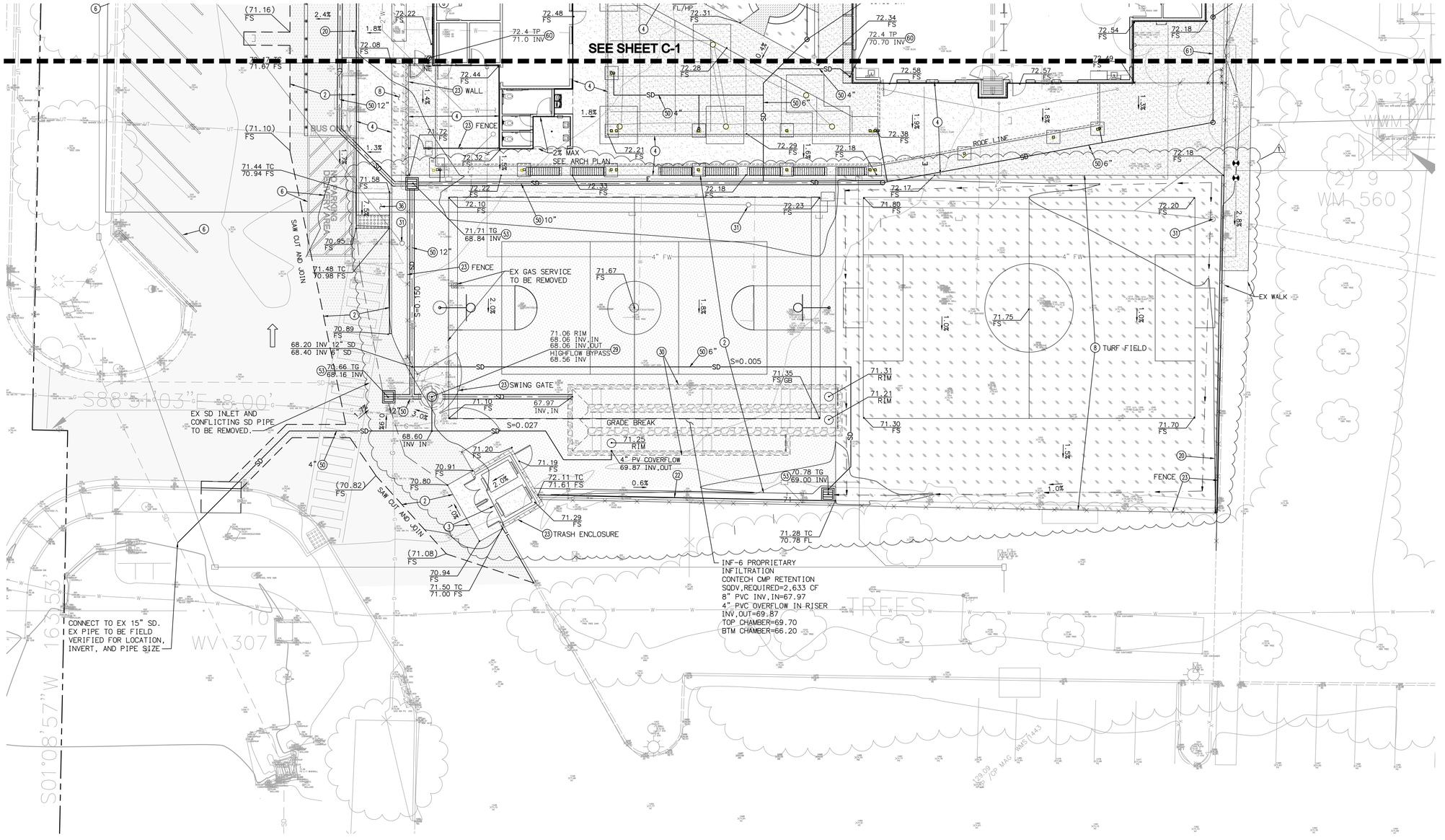
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ENGINEERED SITE PLAN
GRADING, DRAINAGE, AND
STORM DRAIN

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
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www.perkinseastman.com

C-2

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CONSTRUCTION NOTES

(2) CONSTRUCT 3" AC OVER 6" AGGREGATE BASE, ACTUAL SECTION TO BE DETERMINED BY SOILS ENGINEER BASED ON R-VALUE ANALYSIS
(3) CONSTRUCT 7" CONCRETE OVER 6" AGGREGATE BASE, ACTUAL SECTION TO BE DETERMINED BY SOILS ENGINEER BASED ON R-VALUE ANALYSIS
(4) CONSTRUCT 4" CONCRETE OVER NATIVE SOIL COMPACTED TO 95%, MINIMUM RELATIVE COMPACTION PER ASTM D1557, PER SPPWC 112-2. SEE ARCH PLAN FOR FINISH, COLOR AND PATTERN ON WALKS AND PATIO AREAS
(6) INSTALL PARKING LOT STRIPING PER ARCH SITE PLAN AND DETAILS
(8) LANDSCAPE, SEE LANDSCAPE ARCHITECTUAL PLANS
(20) CONSTRUCT 6" CONCRETE CURB PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-1.
(22) CONSTRUCT 6" CONCRETE CURB AND 18" GUTTER PER CITY OF CAMARILLO STD PLATE E-4.1 (REV D), TYPE A-2.
(23) HARDSCAPE FEATURE, SEE ARCHITECTURAL PLANS
(28) INSTALL CONTECH CDS 1515-3, OR APPROVED EQUAL.
(30) INSTALL CONTECH CMP PERFORATED SYSTEM, OR APPROVED EQUAL.
(31) ADJUST MANHOLE/CLEANOUT LID TO FINISHED SURFACE PER SPPWC STD 205-2
(36) CONSTRUCT CURB RAMP, CASE D, TYPE 1, PER SPPWC STD PLAN 111-5 AND AS MODIFIED PER PLAN.
(50) CONSTRUCT PVC STORM DRAIN (SDR 35), SIZE PER PLAN
(53) INSTALL 24"X24" DROP INLET W/HEEL PROOF GRATE (DI2424 JENSEN PRECAST) OR APPROVED EQUAL
(60) CONNECT ROOF DRAIN DOWN SPOUT TO 4" PVC STORM DRAIN PER ROOF DRAIN DETAIL SHEET C-2
(61) INSTALL 6" SDR 35 PVC PIPE

HATCH PATTERN LEGEND

- 2" AC GRIND AND OVERLAY
- LANDSCAPE PLANTING AREA
- ACCENT TEXTURE CONCRETE FINISH PER ARCH PLAN SET
- CONCRETE PAVEMENT (AS NOTED PER PLAN)
- FULL ASPHALT PAVEMENT SECTION (AS NOTED PER PLAN)

NOTES:

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LICENSED ARCHITECT
SCOTT M. MATZEN
NO.
EXPIRES OCT 31, 2027
STATE OF CALIFORNIA

DELANE ENGINEERING
400 W. VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-WWW.DELANEENGINEERING.COM

REGISTERED PROFESSIONAL ENGINEER
SCOTT DELANE, SPECIAL INSPECTOR
No. C 72391
CIVIL
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
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ENGINEERED SITE PLAN
GRADING, DRAINAGE, AND
STORM DRAIN

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C-3

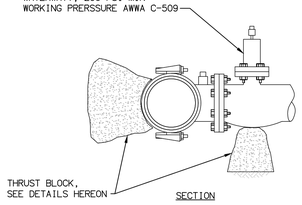
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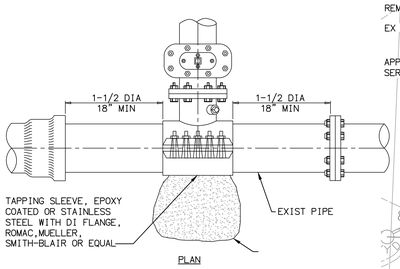
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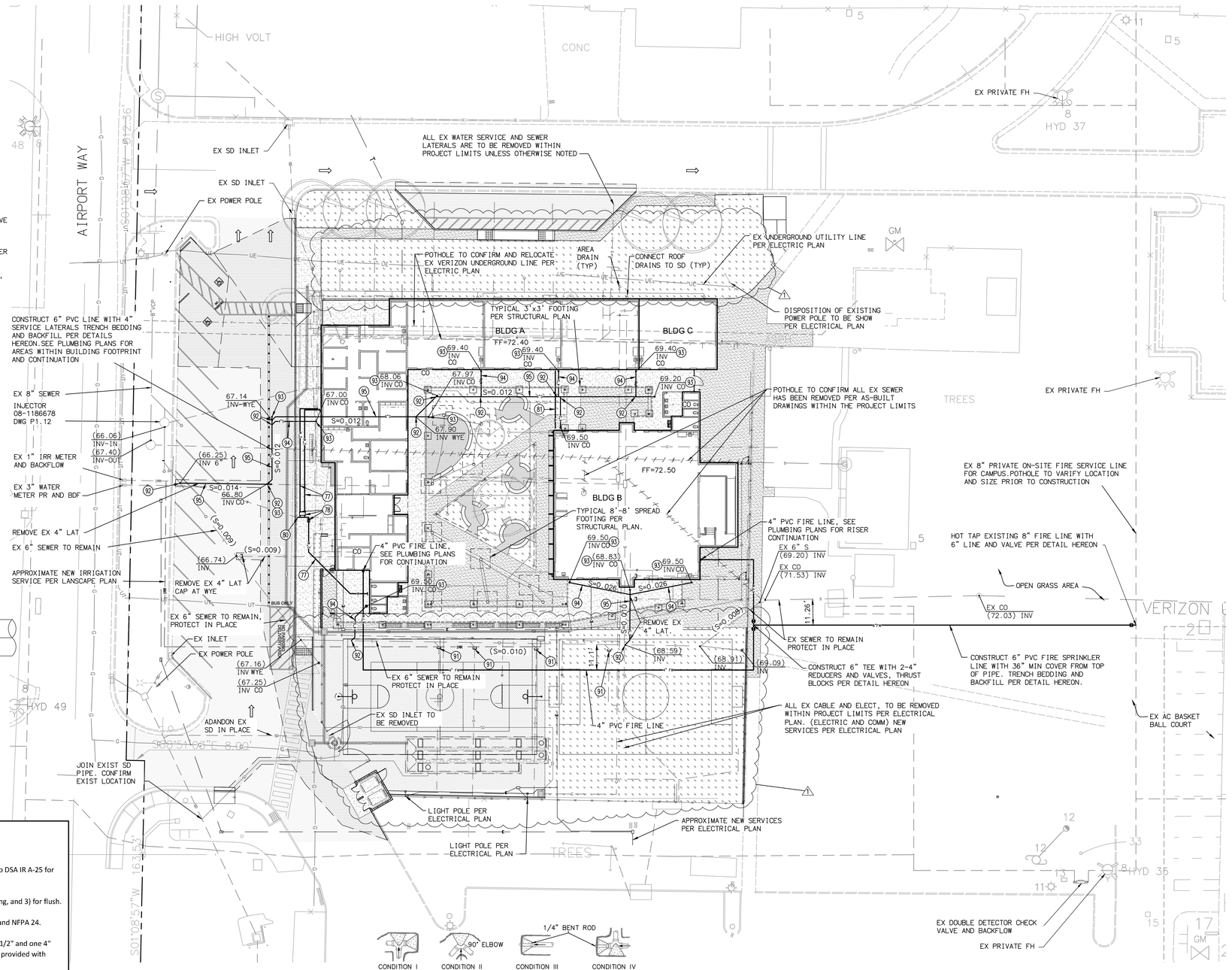
HOT TAPPING NOTES:

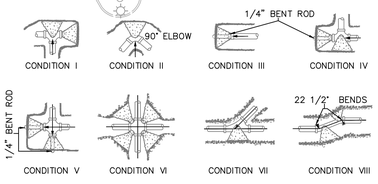
1. PRIOR TO TAPPING THE WATER MAIN, THE TAPPING SLEEVE AND VALVE SHALL BE ATTACHED TO THE WATER MAIN AND PRESSURE TESTED FOR FIVE MINUTES AT 150 PSI
2. NEW LINE AND TAPPING SLEEVE MUST BE AT LEAST ONE SIZE SMALLER THAN EXISTING MAIN
3. TAPPING SLEEVE SHALL BE SEPARATED FROM NEAREST BELL, FLANGE, SERVICE CLAMP, CORP STOP OR OTHER FITTING BY A DISTANCE NO LESS THAN 1-1/2 PIPE DIAMETERS, WITH A MINIMUM OF 18"





HOT TAP DETAIL



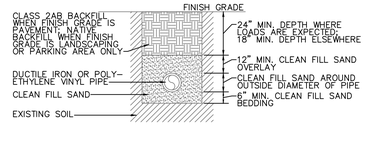


NO SCALE

THRUST BLOCK BEARING AREA IN SQUARE FEET								
PIPE IN.	CONDITION							
	I	II	III	IV	V	VI	VII	VIII
4	2.0	2.9	2.0	2@2.0	2@2.0	4@1.6	2.0	2@1.6
6	4.3	6.0	4.3	2@4.3	2@4.3	4@3.5	4.3	2@3.5
8	7.4	10.5	7.4	2@7.4	2@7.4	4@6.2	7.4	2@6.2
10	12.1	17.1	12.1	2@12.1	2@12.1	4@9.3	12.1	2@9.3
12	17.2	24.5	17.2	2@17.2	2@17.2	4@13.2	17.2	2@13.2
14	20.7	29.3	20.7	2@20.7	2@20.7	4@15.8	20.7	2@15.8
16	26.7	37.8	26.7	2@26.7	2@26.7	4@20.5	26.7	2@20.5

NOTES
1. PIPE FITTINGS SHALL BE WRAPPED WITH A LAYER OF 8-MIL POLYETHYLENE PLASTIC TUBE AND SEALED WITH 8-MIL UG TAPE
2. ALL BURIED BOLTS/JOINT ACCESSORIES SHALL BE COATED WITH ASPHALT OR OTHER CORROSION-RETARDING MATERIAL AFTER INSTALLATION
3. THRUST BLOCK AREAS BASED ON 225 PSI PRESSURE AND 2,000 PSF ALLOWABLE SOIL PRESSURE WITH 2 1/2 FEET OF COVER MINIMUM. ADDITIONAL BEARING AREA REQUIRED FOR SPECIAL CONDITIONS SHALL BE APPROVED BY THE DISTRICT ENGINEER.
4. THRUST BLOCK BEARING FACES SHALL BE PLACED AGAINST UNDISTURBED SOIL, APPROVED COMPACTED BACKFILL OR CLASS 100-E-100 SLURRY.
5. THRUST BLOCKS SHALL BE NO LEANER THAN 1 PART CEMENT 2 1/2 PARTS SAND AND 5 PARTS STONE U.N.O.
6. TO FACILITATE FUTURE REMOVAL OF THRUST BLOCKS AND LINE EXTENSIONS:
   A. INSTALL 1/4" BENT ROD HANDLES.
   B. USE CARDBOARD SEPARATORS BETWEEN BLOCKS, IF NEEDED.

ON-SITE PRIVATE FIRE LINE THRUST BLOCK DETAILS



ON-SITE PRIVATE FIRE LINE BEDDING AND BACKFILL DETAIL

NOTE:
1. SEE SHEET C-1 FOR STORM DRAIN INFORMATION
2. FOR EXISTING ON-SITE SEWER AND WATER SERVICES, SEE TRITON TEMP SCHOOL AS-BUILT 2018
3. ALL EXISTING INVERT ELEVATIONS ARE BASED ON AS-BUILT RECORD DOCUMENTS. POTHOLE TO CONFIRM DEPTHS

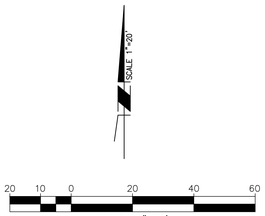
CONSTRUCTION NOTES

(77) CONSTRUCT 2" WATER SERVICE, THRUST BLOCKS PER DETAILS HEREON
(78) INSTALL 2" WATER VAVLE IN BOX
(80) CONNECT TO EX 3" WATER SERVICE WITH 2" SERVICE. REMOVE EX 3" WATER BEYOND NEW CONNECTION
(81) WATER SERVICE CONNECTION FROM BLDG A TO BLDG B, SEE PLUMBING PLANS
(91) EX 4" SEWER LAT TO BE REMOVED AND CAPPED AT EX WYE
(92) INSTALL WYE FITTING
(93) INSTALL CLEAN OUT
(94) CONSTRUCT 4" SDR-35 SEWER LAT
(95) CONSTRUCT 6" SDR-35 SEWER LINE

NOTES:

UNDERGROUND PIPING FOR PRIVATE HYDRANTS & SPRINKLERS

1. Prior to installation, all plans and specifications shall be approved by DSA. Refer to DSA IR A-25 for design, installation and maintenance general requirements.
2. Inspections are required: 1) prior to pouring thrust blocks. 2) for hydrostatic testing, and 3) for flush.
3. Installation, inspection, and testing shall conform to 2016 editions CFC, NFPA 13 and NFPA 24.
4. Private fire hydrants shall be approved wet barrel style with a minimum of one 2 1/2" and one 4" outlet. The 4" outlet shall face the fire department access road. All outlets shall be provided with National Standard Threads NST). NFPA 24, 7.1.1.2.
5. Fire hydrant supply piping shall be a minimum of six inches in diameter. The center of the hose outlet shall be not less than 18" above final grade or, where located in a hose house, 12" above the floor. NFPA 24, 7.1.1 & 7.3.3.
6. Fire hydrants shall be a minimum of 40 feet from all structures. NFPA 24, 7.2.3.
7. A keyed gate valve shall be provided for each hydrant in an accessible location. Valves shall not be located in parking stalls. NFPA 24, 7.1.1.1
8. All piping shall be listed for use in fire protection service and comply with AWWA Standards (Class 150 minimum) Class 200 pipe shall be used where the pressure may exceed 150 psi. NFPA 24, 10.1.1
9. All bolted joints shall be cleaned and thoroughly coated with asphalt or other corrosion retarding material after installation. NFPA 24, 10.4.1.1
10. Backfill shall be well tamped layers to consist of 6" minimum bed of clean fill sand or pea gravel below and 12" above the pipe (total 18" minimum). NFPA 24, 10.9.1.
11. Fittings shall be of an approved type. NFPA 24, 10.2.1.
12. A minimum of 30" of cover, from finish grade to the top of the pipe, shall be provided. When surface loads are expected, a minimum of 36" cover shall be provided. NFPA 24, 10.4.2.2.2 &.3
13. Thrust blocks, or other approved method of thrust restraint, shall be provided wherever pipe changes direction. Back-fill between the joints to prevent movement of the pipe. Provide details and calculations for sizing thrust blocks based on actual soil conditions. NFPA 24, 10.6.
14. A hydrostatic test (200 psi for two hours or 50 psi over maximum static pressure, whichever is greater) shall be performed. NFPA 24, 10.10.2.2.1.



CAUTION:

THE CONTRACTOR SHALL POTHOLE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES PRIOR TO STARTING ANY WET UTILITY CONSTRUCTION. PRIOR TO POTHOLING THE CONTRACTOR SHALL PROVIDE THE ENGINEER TWO WORKING DAYS NOTICE TO SURVEY AND VERIFY THE HORIZONTAL/VERTICAL LOCATION OF ALL EXISTING UTILITY CROSSINGS. CHANGES TO THE PROPOSED WET UTILITY ALIGNMENT COULD BE REQUIRED BASED ON THE ACTUAL UTILITY LOCATIONS.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT — ROBERT M. MATZEN — NO. — EXP OCT 31, 2027 — STATE OF CALIFORNIA

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400 E. VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-WWW.DELANEENGINEERING.COM

REGISTERED PROFESSIONAL ENGINEER — ROBERT DELANE — NO. C 72391 — CIVIL — STATE OF CALIFORNIA

GATEWAY AN
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

OVERALL UTILITY SITE PLAN
WATER AND SEWER

JOB	88910.00
SCALE	AS NOTED
PM	
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1	10/23/2026

PERKINS EASTMAN
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HORIZON CIRCLE

CONTRACTOR TO POT HOLE AND CONFIRM EXACT LOCATION OF BURIED S.C.E. BURIED CONDUIT. SURVEY AND CONFIRM S.C.E. EASEMENT PRIOR TO BEGINNING ANY LANDSCAPE WORK.

CONTRACTOR SHALL REPAIR OR REPLACE (E) GRASS SPRINKLER SYSTEM COMPONENTS DAMAGED OR DESTROYED BY NEW CONSTRUCTION WORK. (TYPICAL)

(E) SCE ELECTRICAL POWER POLE. PROTECT IN PLACE.

SOUTHERN CALIFORNIA EDISON COMPANY ITEM #13

(E) TURF P.I.P.

(E) BURIED SCE ELECTRICAL POWER CONDUIT TO BE PROTECTED IN PLACE

DECOMPOSED GRANITE PATH 6' WIDE

A-7 8 1" TREE

A-2 5.4 540 1" DRIP

A-1 14.2 1,420 1" DRIP

A-6 14 1" TREE

(E) TREE P.I.P.

BLDG. C

BLDG. A

BLDG. B

FABRIC SHADE STRUCTURE

A-5 7.8 1" DRIP 780'

8.0 A-8 1" TREE

ADD EXTRA DRIPLINE TUBING (2) ROWS, OVER 24" BOX TREE ROOT BALL.

B WIRELESS RAIN SHUT OFF DEVICE

A AUTO CONTROLLER 'A' INTERIOR WALL MOUNT

A-4 6.6 660' 1"

MV-A 1" 1/2

IRRIGATION P.O.C.

A-13 (E) 1" 1/2" TURF

A-14 (E) 1" 1/2" TURF

POTABLE WATER SUPPLY. PROTECT IN PLACE.

2" SCH. 40 PVC IRRIGATION WIRE CONDUIT

BFD

VC

W

BUS DROP-OFF

AIRPORT WAY

A-3 1.8 DRIP 180' 1"

BUS ONLY

NO PARKING DELIVERY AREA

CONTRACTOR SHALL REPAIR OR REPLACE (E) GRASS SPRINKLER SYSTEM COMPONENTS DAMAGED OR DESTROYED BY NEW CONSTRUCTION WORK. (TYPICAL)

A-9 12.0 1" LAWN

A-10 12.0 1" LAWN

A-11 12 1" LAWN

A-12 12.0 1" LAWN

GRAPHIC SCALE

0 5 10 20 40

SCALE: 1"=10'

NOTE:
SEE SHEET L2 FOR IRRIGATION LEGENDS, NOTES AND MWELO COMPLIANCE INFORMATION.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
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JORDAN & BAIN
LANDSCAPE ARCHITECTS, INC.
459 NORTH VENTURA AVE., VENTURA CA 93001
(805) 642-3641 FAX (805) 653-7874
Jordan, Gilbert & Bain Landscape Architects, Inc. © 2018

REGISTERED LANDSCAPE ARCHITECT
JEFF GILBERT BAIN
SIGNATURE
04-28
RENEWAL DATE
08-25-26
DATE
STATE OF CALIFORNIA

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IRRIGATION PLAN

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L1

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PROJECT NOTES

1. FIELD VERIFY EXISTING STATIC WATER PRESSURE AND NOTIFY THE LANDSCAPE ARCHITECT PRIOR TO BEGINNING ANY WORK.
2. CONTACT UNDERGROUND SERVICE ALERT AT 1–800–227–2600 TO IDENTIFY AND LOCATE ALL ON–SITE UTILITIES PRIOR TO BEGINNING WORK. THE LANDSCAPE SUB CONTRACTOR SHALL COORDINATE WITH THE PROJECT SUPERINTENDENT AND REVIEW THE EXISTING SITE PRIOR TO BEGINNING WORK TO AVOID CONFLICTS WITH EXISTING UTILITIES AND PROPOSED NEW CONSTRUCTION.
3. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY TRENCH SETTLING OR IRRIGATION HEAD SETTLING. ALL TRENCHES WILL BE BACK FILLED WITH CLEAN SOIL, COMPACTED AND REPLANTED WITH APPROVED SHRUB OR GROUND COVER TO MATCH EXISTING PLANTING. ALL HEADS THAT SETTLE WILL BE RAISED TO 1/2" ABOVE FINISH GRADE. PROVIDE ADDITIONAL SOIL AS NECESSARY AND HAND TAMP AROUND HEAD TO PREVENT FUTURE SETTLING. PROVIDE NEW SEED OR PLANT MATERIAL AS NEEDED TO COMPLETE REPAIR.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SLEEVING INSTALLED UNDER ALL PAVED SURFACES. PROVIDE SEPARATE INDIVIDUAL SLEEVES FOR MAINLINE, LATERALS, AND REMOTE CONTROL VALVE WIRES. LATERAL SLEEVING SHALL BE SIZED (3) PIPE SIZES LARGER THAN THE LATERAL PIPE TO BE SLEEVED.
5. THE IRRIGATION SYSTEM IS SHOWN DIAGRAMMATICALLY. INSTALL ALL IRRIGATION EQUIPMENT WITHIN LANDSCAPE PLANTERS WHENEVER POSSIBLE.
6. THE CONTRACTOR WILL BRAND INTO THE REMOTE CONTROL VALVE BOX LIDS THE NEW VALVE STATION NUMBER AND RELATED NEW AUTO CONTROLLER LETTER. PROVIDE CHRISTY STANDARD SIZE I.D. TAGS CONNECTED TO EACH VALVE SOLENOID WITH NEW STATION NUMBER AND RELATED NEW AUTO CONTROLLER LETTER.
7. THE CONTRACTOR SHALL INSTALL ALL IRRIGATION REMOTE CONTROL VALVES, GATE VALVES, AND QUICK COUPLING VALVES A MINIMUM DISTANCE OF 10'–0" FROM ALL TREE TRUNK LOCATIONS ILLUSTRATED ON PLANTING PLAN. CONFIRM LAYOUT OF PROPOSED TREE LOCATIONS PRIOR TO INSTALLING ANY VALVE.
8. UTILITIES MAY HAVE BEEN OMITTED ON THE IRRIGATION SHEETS. REVIEW CIVIL ENGINEER'S DRAWINGS AND EXERCISE CARE IN EXCAVATION WHILE PROTECTING EXISTING UTILITIES IN PLACE.
9. ALL REMOTE CONTROL VALVE AND MASTER VALVE WIRES USED FOR THIS PROJECT SHALL BE DIRECT BURY 14–GAUGE IRRIGATION WIRE INSTALLED 24" BELOW GRADE OR IN SLEEVES AS PER IRRIGATION PLAN. ACTIVE COMMON SHALL BE WHITE IN COLOR. SPARE COMMON WIRE SHALL BE WHITE IN COLOR WITH A RED STRIPE. MASTER VALVE COMMON WIRE SHALL BE YELLOW AND MASTER VALVE CONTROL WIRE SHALL BE BLUE. ALL REMOTE CONTROL VALVE CONTROL WIRES SHALL BE ORANGE IN COLOR.
10. PULL A CONTINUOUS 14–GAUGE SPARE COMMON WIRE, WHITE IN COLOR WITH A RED STRIPE, FROM AUTO CONTROLLER TO ALL REMOTE CONTROL VALVES AND WIRE SPLICE BOXES INSTALLED ON THIS PROJECT. LOOP THE WIRE INTO EACH VALVE BOX FOR EASY ACCESS. PULL A CONTINUOUS SOLID RED COLORED 14–GAUGE IRRIGATION WIRE FROM AUTO CONTROLLER TO ALL REMOTE CONTROL VALVE BOXES AND WIRE PULL BOXES ON THIS PROJECT. LOOP RED WIRE INTO EACH VALVE BOX FOR EASY ACCESS. BOTH WIRES SHALL BE TUCKED TO THE SIDE OF THE VALVE BOX SO AS NOT TO INTERFERE WITH THE MAINTENANCE OF THE REMOTE CONTROL VALVE WITHIN THE BOX.

IRRIGATION CALCULATIONS

DESCRIPTION	RCV A–12 12.0 GPM
AVAILABLE STATIC WATER PRESSURE @ P.O.C.	75.0 PSI
LOSS AT 1" WATER METER	1.2 PSI
LOSS THROUGH 1.5" COPPER SERVICE LINE	0.2 PSI
LOSS AT BACKFLOW DEVICE (1.5")	12.5 PSI
PRESSURE REGULATOR SET @ 55 PSI	55.0 PSI
LOSS THROUGH 1" MASTER VALVE/1" FLOW SENSOR	2.0 PSI
LOSS THROUGH 350 LINEAR FEET OF 1.5" MAINLINE	2.7 PSI
LOSS AT RCV	2.4 PSI
LOSS RCV TO LAST HEAD (LATERALS)	3.2 PSI
LOSS THROUGH PVC FITTINGS	1.2 PSI
LOSS DUE TO ELEVATION CHANGE	0.0 PSI
TOTAL PRESSURE LOSS FROM PRESSURE REGULATOR	11.5 PSI
AVAILABLE OPERATING PRESSURE	43.5 PSI

NOTE:
IRRIGATION CALCULATIONS ARE BASED ON A MINIMUM STATIC WATER PRESSURE AVAILABLE ON SITE OF 75.0 PSI. CONTRACTOR TO VERIFY AVAILABLE STATIC WATER PRESSURE ON SITE AND NOTIFY LANDSCAPE ARCHITECT OF RESULTS PRIOR TO BEGINNING ANY WORK.

MAXIMUM APPLIED WATER ALLOWANCE

MAWA = (ETo x 0.60 x Land. Area x 0.62) + (special use)
ETo = reference evapotranspiration of Camarillo of 48.2 (inches per year)
0.60 = evapotranspiration adjustment factor (standard number public schools)
Land. Area. = total square feet of landscape area for the site
0.62 = conversion factor (to gallons per square foot)
Special Use Area. = total sq. feet of landscape area identified as "special use"

MAWA = (48.2 x 0.60 x 14,315 x 0.62) + (48.2 x 1.0 x 6,480 x .62)
MAWA = 256,674 G.P.Y. + 193,648 G.P.Y. = 450,322 G.P.Y

ESTIMATED APPLIED WATER USE FORMULA

EAWU = (ETo) x (.62) (PF x Land. Area) / IE

ETo = reference evapotranspiration of Camarillo of 46.1 (inches per year)
0.62 = conversion factor (to gallons per square foot)
PF = plant factor from WUCOLS
LA = landscaped area covered by sprinkler valve (sq. ft.)
IE = irrigation efficiency (0.75 rotary nozzles, 0.81 bubblers)
IE = irrigation efficiency – Special Use (1.0)

LOW WATER USE – SHRUB PLANTERS – DRIP IRRIGATION

EAWU = (48.2) x (.62) (.3 x 6,788) / .81 = 75,131 GPY

MEDIUM WATER USE – TREES – BUBBLERS

EAWU = (48.2) x (.62) (.5 x 425) / .81 = 7,840 GPY

SPECIAL USE – TURF RECREATION AREA – OVER HEAD ROTORS

EAWU = (48.2) x (.62) (.7 x 6,480) / .75 = 180,738 GPY

DECOMPOSED GRANITE PATHWAY

EAWU = (48.2) x (.62) (.0 x 1,047) / 0 = 0 GPY

TOTAL EAWU = 263,709 GPY (% OF MAWA)

IRRIGATION WATER USE SUMMARY

TOTAL EAWU = 263,709 GALLONS PER YEAR
TOTAL MAWA = 450,322 GALLONS PER YEAR

TOTAL VOLUME OF WATER UNDER MAWA = 186,613 GALLONS PER YEAR
TOTAL % OF WATER UNDER MAWA = 58.6%

MWELO COMPLIANCE STATEMENT

THE LANDSCAPE DESIGN ILLUSTRATED ON THESES PLANS COMPLIES WITH THE MANDATORY ELEMENTS OF THE STATE OF CALIFORNIA "STATE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE" STANDARDS.

John M. Bain — 3193 — 8–28–26
LANDSCAPE ARCHITECT — LICENSE NUMBER — DATE

REMOTE CONTROL VALVE KEY

X — A–14 12.0 — 1" LAWN
- A–14: AUTO CONTROLLER/ STATION NUMBER
- 12.0: GALLONS PER MINUTE
- 1": VALVE SIZE
- LAWN: DESCRIPTION OF AREA IRRIGATED
- X: REMOTE CONTROL VALVE
- PROJECT KEY NOTE IF APPLICABLE

SEASONAL IRRIGATION APPLICATION SCHEDULE

HYDROZONE DESCRIPTION	WINTER		SPRING		SUMMER		FALL	
	MINUTES	DAYS ON	MINUTES	DAYS ON	MINUTES	DAYS ON	MINUTES	DAYS ON
LOW WATER SHRUBS – DRIP	10	2	20	3	30	3	20	3
MEDIUM WATER TREES – BUBBLERS	5	2	5	3	10	3	5	3
HIGH WATER TURF – ROTORS	20	2	20	3	30	3	20	3

ESTIMATED APPLIED WATER USE

VALVE NUMBER/ HYDROZONE	EXPOSURE TO SUN/ DESCRIPTION OF SPRINKLER	AVERAGE IRRIGATION EFFICIENCY	CAMARILLO ETo	PLANT WATER USE TYPE	PLANT FACTOR	LANDSCAPE AREA IN SQUARE FEET	ESTIMATED APPLIED WATER USE IN GALLONS PER YEAR
1, 2, 3, 4, 5	DRIPLINE – SHRUBS	.81	46.1	LOW	.3	6,788	71,857
6, 7, 8	BUBBLERS – TREES	.81	46.1	MED	.5	144	2,541
9, 10, 11, 12	ROTORS – SPECIAL USE TURF	.75	46.1	HIGH	.7	6,480	180,738
					TOTALS	13,412	255,136

IRRIGATION LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL / REMARKS	DETAIL / SHEET NO.
	SLEEVING	PACIFIC PLASTICS	SCH. 40 PVC – 3 PIPE SIZES LARGER THAN THE PIPE TO BE SLEEVED – 24" BELOW GRADE	1,2,3 / L5
	(E) COPPER PIPE	UNKNOWN	TYPE 'K' COPPER – 1 1/2" SIZE – SOLDER WELD – FROM WATER METER TO BACKFLOW ASSEMBLY – P.I.P.	N.A.
	FLOW SENSING CABLE	RAIN MASTER	EV–CAB–SEN – INSTALLED IN A 1" SCH. 40 PVC ELECTRICAL CONDUIT – 24" BELOW FINISH GRADE	1 / L5 11 / L6
	MAINLINE	PACIFIC PLASTICS	SIZE PER PLAN – SCH. 40 PVC – SOLVENT WELD – 24" BELOW GRADE	1,2,3,4 / L5
	SUB–SURFACE DRIPLINE	NETAFIM	TLCV6–12–XX – 'TECHLINE CV SERIES' DRIPLINE TUBING – 0.6 GPH EMITTERS @ 12" O.C. – INSTALL TUBING 4" BELOW FINISH GRADE – TECHLINE TUBING ROWS SPACED 18" APART FROM EACH OTHER IN GRID PATTERN OR WHEN A SHRUB HEDGE ROW IS PLANTED – INSTALL (2) ROWS OF TUBING WITH SHRUB ROOT BALLS CENTERED IN BETWEEN TUBING.	1,2,3,4, / L6
	LATERAL	PACIFIC PLASTICS	SCH. 40 PVC – 3/4" SIZE UNLESS OTHERWISE NOTED ON PLAN – SOLVENT WELD – 12" BELOW GRADE	1,2,3 / L5
NO SYMBOL	FLEXIBLE PVC HOSE	GPH IRRIGATION	MODEL GPVCSSAR050IRR – 3/8" PVC FLEXIBLE IRRIGATION HOSE – INSTALL AS PER DETAILS	10 / L5
W	DOMESTIC WATER METER	UNKNOWN	PROTECT IN PLACE	N.A.
V	IRRIGATION ONLY WATER METER	UNKNOWN	1" SIZE – PROTECT IN PLACE	N.A.
	NORMALLY CLOSED MASTER VALVE	SUPERIOR	3200 SERIES – 1-1/2" SIZE – INSTALL IN A RECTANGULAR VALVE BOX	10 / L6
F	FLOW SENSOR	C.S.T.	MODEL FSI–T15–001 – SCH. 40 PVC BODY – SOLVENT WELD – INSTALL IN RECTANGULAR VALVE BOX	11 / L6
	AUTOMATIC FERTILIZER DISPENSER	EZ–FLO	MODEL EZ–005–FX INSTALLED IN A CARSON JUMBO VALVE BOX MODEL 1730–18 (32"L X 18"H X 19"W) INSTALL ALL REQUIRED EZ–FLO FITTINGS. MODEL CBV–200, ON TO THE MAINLINE AS PER MANUF. SPECS.	15 / L5
A	AUTO CONTROLLER	TORO	EGP116–PLAST–RM–ISVC–5Y – 16 STATION AUTO CONTROLLER IN A FACTORY PLASTIC WALL MOUNT ENCLOSURE. INSTALL WIRELESS RAIN SHUT OFF DEVICE PER MANUFACTURER'S SPECIFICATIONS. INSTALL DEVICE AT ELEVATION ABOVE AUTO CONTROLLER ON BUILDING WALL HIGH ENOUGH TO AVOID VANDALISM.	5 / L6
R	RAIN SHUT OFF DEVICE	TORO	WIRELESS MODEL RS1000 – MOUNT ON BUILDING EXTERIOR WALL AT ELEVATION TO AVOID VANDALISM	N.A.
	REMOTE CONTROL VALVE	RAIN BIRD	PESB SERIES – SIZES NOTED – IN A RECTANGULAR VALVE BOX	7 / L5
	DRIP RCV ASSEMBLY	RAIN BIRD	XCZ–100–PRB–COM – 1" SIZE – IN A JUMBO VALVE BOX	8 / L5
	QUICK COUPLER	RAIN BIRD	44–RC – 1" SIZE – IN 10" ROUND VALVE BOX	6 / L5
	SCH. 80 PVC BALL VALVE	COLONIAL / LASCO	VXX101N–SC SERIES – LINE SIZE – INSTALLED IN A RECTANGULAR VALVE BOX	5 / L5
	(E) REDUCED PRES. BACKFLOW	WILKINS	975XLSE W/ PRESSURE REGULATOR – 1-1/2" SIZE – INSTALLED IN SECURITY ENCLOSURE – PROTECT IN PLACE	N.A.
	DRIP SYSTEM FLUSH VALVE	SPEARS/KBI/EQUAL	3/4" SCH. 80 PVC ECONOMY BALL VALVE, SOCKET INLET & OUTLET, IN VALVE BOX WITH 3'–0" OF FLEXIBLE PVC HOSE	12 / L5
	DRIP AIR RELIEF VALVE	NETAFIM	MODEL TLAVRV – INSTALLED ON BURIED TUBING GRID @ HIGH POINT – IN A ROUND VALVE BOX WITH GRAVEL SUMP	16 / L5
	DRIP SYSTEM INDICATOR	TORO	570Z–12P–PRXCOM–O–T–50 – ACTIVATE X–FLOW WATER SHUT OFF DEVICE IN RISER TO PREVENT WATER FLOW TO NOZ.	11 / L5
P	WIRE PULL / SPLICE BOX	CARSON	1419–12 – FORM A 3'–0" LONG WIRE LOOP WITH VALVE BOX CAVITY	9 / L5

Q	T	H	F				PSI	RAD	Q GPM	T GPM	H GPM	F GPM	
					ROOT WATERING SYSTEM	RAIN BIRD	RWS–B–C–1404 / RWS–S0CK / RWSGRATE	30	1				1.00	14 / L5
					POP UP TURF ROTOR	RAIN BIRD	5004+PCSAM–5000MPR–25Q,25T,25H	40	25	1.00	1.38	1.98		13 / L5
					POP UP TURF ROTOR	RAIN BIRD	5004+FCSAM–5000MPR–25F	40	25				3.82	13 / L5
					TREE FLOOD BUBBLER	GPH IRRIGATION (1.0 GPM BUBBLER)	MODEL GPCBCV10 BUBBLER EQUIPPED WITH BUILT IN CHECK VALVE, BLACK IN COLOR. INSTALL (2) BUBBLERS PER EACH TREE AND EXISTING TREES USING IRRIGATION SIZE (3/8" IPS) FLEXIBLE PVC HOSE, G.P.H. MODEL GPVCSSAR050IRR (BLACK IN COLOR) WITH (2) SOLVENT WELD G.P.H. MODEL G436073B BLACK PVC MALE ADAPTERS. CUT LENGTH OF FLEXIBLE PVC TUBING STARTING FROM RIGID PVC LATERAL SUPPLY TO LENGTH NEEDED TO INSTALL EMITTER WITHIN PLANT BASIN IN THE FIELD. USE I.P.S. PIPE PRIMER MODEL 'P–70' AND I.P.S. SOLVENT CEMENT MODEL '795' FOR ALL FLEXIBLE PVC TUBING WELDS TO BLACK COLORED G.P.H. MALE ADAPTERS. SECURE TUBING TO SLOPE / FINISH GRADE SURFACE WITH 6" LONG GALV. STEEL STAPLES INSTALLED 3'–0" O.C.	30	1				1.00	10 / L5
NO SYMBOL					POP UP SPRAY HEAD	RAIN BIRD	1804SAM–PRS W/ HE–VAN SERIES ADJUSTABLE SERIES NOZZLE – USE TO REPLACE ANY (E) POP UP HEAD DAMAGED DUE TO NEW CONSTRUCTION WORK.							11 / L5

PROJECT KEY NOTES

SYMBOL — DESCRIPTION

(A) WALL MOUNTED 16–STATION AUTO CONTROLLER:
CONTRACTOR SHALL INSTALL A 16–STATION WALL MOUNTED AUTO CONTROLLER ON THE INSIDE WALL OF A CUSTODIAL CLOSET WITHIN THE BUILDING. EXACT LOCATION ON THE WALL SHALL BE DETERMINED IN THE FIELD BY THE DISTRICT REPRESENTATIVE. INSTALL 120 VOLT, 60 HERTZ, 2 AMP, ELECTRICAL POWER SUPPLY TO AUTO CONTROLLER LOCATION. AUTO CONTROLLER POWER SUPPLY SHALL BE GROUNDED BY ELECTRICIAN TO SATISFY MANUFACTURER'S SPECIFICATIONS. ALL ELECTRICAL WORK MUST BE PERFORMED BY A LICENSED ELECTRICIAN AND AS PER CALIFORNIA BUILDING CODE. INSTALL A CONTINUOUS 2" ELECTRICAL CONDUIT WITH SWEEP ELBOWS AS NEEDED STARTING FROM THE BASE OF THE WALL MOUNTED AUTO CONTROLLER TO THE (E) LANDSCAPE PLANTER LOCATED ON THE WEST SIDE OF THE ASPHALT PARKING LOT. INSTALL A WIRE PULL BOX OVER THE 2" PVC WIRE CONDUIT AND SWEEP ELBOW FOR MAINTENANCE PURPOSES. THE 2" CONDUIT, WHEN INSTALLED BELOW GRADE, SHALL BE SCH. 40 PVC ELECTRICAL CONDUIT INSTALLED 24" BELOW FINISH GRADE. ALL WALL MOUNTED CONDUIT WITHIN THE CUSTODIAL CLOSET INCLUDING JUNCTION BOXES SHALL BE EMT OR APPROVED METAL. THE CONTINUOUS 2" ELECTRICAL CONDUIT WILL PROVIDE ACCESS FOR ALL 14–GAUGE IRRIGATION WIRES AS WELL AS THE FLOW SENSING CABLE FROM THE AUTO CONTROLLER TO THE LANDSCAPE PLANTER. THE IRRIGATION WIRES WILL BE DIRECT BURIED TO ALL REMOTE CONTROL VALVES ONCE OUT OF THE 2" SCH. 40 PVC ELECTRICAL SWEEP ELBOW AND CONDUIT SEGMENT. INSTALL A 1" SCH. 40 PVC ELECTRICAL SWEEP ELBOWS INTO AND OUT OF ALL VALVE BOXES AND A CONTINUOUS 1" SCH. 40 PVC ELECTRICAL CONDUIT FROM THE WIRE PULL BOX TO THE FLOW SENSOR VALVE BOX LOCATION. CONNECT THE FLOW SENSOR TO THE FLOW SENSING CABLE USING 3M MODEL DBR–Y6 WATER PROOF WIRE SPLICES. CALIBRATE FLOW SENSOR TO AUTO CONTROLLER AS PER MANUFACTURER'S SPECIFICATIONS.

(B) WIRELESS RAIN SENSOR FOR AUTO CONTROLLER 'A':
MOUNT WIRELESS RAIN SHUT OFF DEVICE ON EXTERIOR BUILDING WALL WITHIN OPERATING RANGE OF WIRELESS RAIN SENSOR RECEIVER. POSITION RAIN SENSOR AT AN ELEVATION ON THE BUILDING WALL THAT IS SAFE FROM VANDALISM AS WELL AS FREE OF ANY BUILDING OVERHANG TO ALLOW THE DEVICE TO BE IN DIRECT CONTACT TO RAINFALL. PROVIDE ALL REQUIRED BATTERIES AND ANCHORS TO SECURE RAIN SHUT OFF DEVICE INTO BUILDING WALL AND POSITION WITHIN RAIN SENSOR RECEIVER OPERATING RANGE AS PER TORO SPECIFICATIONS.

(C) IRRIGATION POINT OF CONNECTION:
FIELD VERIFY THE EXACT LOCATION OF THE (E) 1" IRRIGATION ONLY WATER METER AND THE 1–1/2" WILKINS 975XL REDUCED PRESSURE BACKFLOW ASSEMBLY COMPLETE WITH A 1–1/2" WILKINS 500 SERIES BRASS PRESSURE REGULATING VALVE SET AT 60.0 PSI. THE IRRIGATION BACKFLOW ASSEMBLY IS WITHIN AN (E) SECURITY ENCLOSURE AND IS POSITIONED NEXT TO THE (E) DOMESTIC SUPPLY REDUCED PRESSURE BACKFLOW ASSEMBLY. PROTECT BOTH REDUCED PRESSURE BACKFLOW ASSEMBLIES AND SECURITY ENCLOSURE IN PLACE. CUT AND REMOVE THE REMNANT (E) PVC IRRIGATION MAINLINE PIPING FROM THE OUTLET OF THE (E) 1–1/2" REDUCED PRESSURE BACKFLOW ASSEMBLY TO ALLOW FOR THE INSTALLATION OF THE NEW IRRIGATION MAINLINE PIPING AND COMPONENTS. INSTALL A 3'–0" LONG SEGMENT OF 1–1/2" SCH. 40 PVC IRRIGATION MAINLINE FROM THE DOWNSTREAM SIDE OF THE 1–1/2" BACKFLOW ASSEMBLY. INSTALL A 1–1/2" BRASS NORMALLY CLOSED MASTER VALVE IN A SEPARATE RECTANGULAR VALVE BOX. INSTALL A NEW 1–1/2" PVC CREATIVE SENSOR TECHNOLOGY FLOW SENSOR DOWNSTREAM OF MASTER VALVES IN A SEPARATE VALVE BOX. CUT 1–1/2" PVC MAINLINE PIPE SEGMENT LENGTHS INTO AND OUT OF THE FLOW SENSOR AS PER MANUFACTURERS' SPECIFICATIONS. ON DOWNSTREAM SIDE OF COMPLETE FLOW SENSOR ASSEMBLY, ENLARGE IRRIGATION MAINLINE TO 2" CLASS 315 PVC. TRENCH AND INSTALL 2" CLASS 315 PVC AS PER IRRIGATION PLAN. INSTALL A LIQUID FERTILIZER DISPENSER IN A MANIFOLD, COMPLETE WITH (3) SCH. 80 PVC BALL VALVES, TO ISOLATE LIQUID FERTILIZER DISPENSER FROM IRRIGATION MAINLINE SOURCE WHEN NOT IN USE. TRENCH AND INSTALL REMAINDER OF NEW 2" AND 1–1/2" PVC IRRIGATION MAINLINE AS PER IRRIGATION PLAN.

(D) 1–1/2" NORMALLY CLOSED MASTER VALVE & 1–1/2" PVC SOLVENT WELD FLOW SENSOR
INSTALL 1–1/2" NORMALLY CLOSED MASTER VALVE IN A SEPARATE RECTANGULAR VALVE BOX ON NEW 1–1/2" SCH. 40 PVC IRRIGATION MAINLINE DOWNSTREAM OF (E) 1–1/2" REDUCED PRESSURE BACKFLOW ASSEMBLY. MASTER VALVE SHALL BE WIRED TO NEW AUTO CONTROLLER USING (1) YELLOW AND (1) BLUE COLORED 14–GAUGE DIRECT BURY IRRIGATION WIRES. INSTALL A 1–1/2" CREATIVE SENSOR TECHNOLOGY PVC FLOW SENSOR DOWN STREAM OF 1–1/2" MASTER VALVE WITH MEASURED PIPE SEGMENTS INTO AND OUT OF FLOW SENSOR AS PER MANUFACTURERS' SPECIFICATIONS. TRENCH AND INSTALL A 1" SCH. 40 PVC ELECTRICAL CONDUIT FROM WIRE PULL BOX TO FLOW SENSOR VALVE BOX. INSTALL 1" SCH. 40 PVC ELECTRICAL SWEEP ELBOWS INTO AND OUT OF ALL VALVE BOXES. INSTALL RAINMASTER MODEL EV–CAB–SEN FROM AUTO CONTROLLER THROUGH 2" CONDUIT TO WIRE PULL BOX THEN THROUGH 1" PVC WIRE CONDUIT TO FLOW SENSOR IN ONE CONTINUOUS WIRE PULL WITHOUT SPLICES. CONNECT 14–GAUGE SHIELDED WIRES, (1) BLACK AND (1) RED, TO APPROPRIATE TERMINALS ON AUTO CONTROLLER. CONNECT RED AND BLACK WIRES WITHIN SHIELDED CABLE TO FLOW SENSOR USING 3M MODEL DBR–Y6 WATER PROOF WIRE SPLICES OR APPROVED EQUAL AS PER TORO SPECIFICATIONS. CALIBRATE FLOW SENSOR TO AUTO CONTROLLER AS PER TORO SPECIFICATIONS PRIOR TO FINAL IRRIGATION COVERAGE TEST WITH LANDSCAPE ARCHITECT.

(E) EZ–FLO AUTOMATIC FERTILIZER DISPENSER:
INSTALL EZ–FLO FERTILIZER DISPENSER ON TO PVC MAINLINE AS PER MANUFACTURER'S SPECIFICATIONS AND DETAILS. THE PVC TANK SHALL BE INSTALLED BELOW GRADE AND COVERED WITH A JUMBO VALVE BOX, CARSON MODEL 1730–18 (MINIMUM DIMENSIONS OF 30"L X 18"H X 19"W). INSTALL (3) SCH 80 PVC BALL VALVES ON MAINLINE IN SEPARATE VALVE BOXES WITH MAINLINE SEGMENTS ARRAINGED TO CREATE A SUB–MAINLINE OR BY–PASS TO ISOLATE LIQUID FERTILIZER DISPENSER FROM PRIMARY MAINLINE DISCHARGE WHEN TANK IS NOT IN USE. THE EXACT LOCATION OF THE LIQUID FERTILIZER TANK SHALL BE SPOTTED IN THE FIELD BY THE OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT. TANK MUST BE POSITIONED UPSTREAM OF THE CLOSEST REMOTE CONTROL VALVE LOCATION ON IRRIGATION MAINLINE.

(F) FLOW SENSING CABLE IN A 1" SCH. 40 PVC ELECTRICAL CONDUIT:
INSTALL TORO FLOW SENSING CABLE, MODEL 'EV–CAB–SEN', IN A 1" SCH. 40 PVC ELECTRICAL CONDUIT INSTALLED 24" BELOW FINISH GRADE. INSTALL CABLE PULL BOXES, CARSON MODEL 1419–12 AT ALL CHANGES OF CABLE DIRECTION. PROVIDE 1" SWEEP ELBOWS INTO AND OUT OF ALL CABLE PULL BOXES AND INTO FLOW SENSOR VALVE BOX. CONNECT CABLE TO AUTO CONTROLLER AS PER MANUFACTURER'S SPECIFICATIONS. SPLICE CABLE TO FLOW SENSOR LEAD WIRES WITH 3M WATER RESISTANT WIRE CONNECTORS, MODEL DBR–6Y OR APPROVED EQUAL.

(G) FIELD VERIFY THE EXACT LOCATION OF THE (E) REMOTE CONTROL VALVES OPERATING THE (E) LAWN SPRINKLER SYSTEM – REMOVE (E) RCV'S AND REPLACE WITH NEW RCV'S:
FIELD VERIFY THE EXACT LOCATION OF THE (E) REMOTE CONTROL VALVES OPERATING THE (E) POP UP LAWN SPRINKLER SYSTEM THAT IS TO BE PROTECTED IN PLACE. THESE VALVES WILL BE ABANDONED ONCE THE NEW IRRIGATION MAINLINE IS INSTALLED. INSTALL (2) NEW 1–1/2" REMOTE CONTROL VALVES ON NEW IRRIGATION MAINLINE AT THE SAME OR CLOSE TO THE SAME LOCATION AS THE TWO (E) REMOTE CONTROL VALVES. EXCAVATE AND REMOVE THE OLD REMOTE CONTROL VALVES AND VALVE BOXES AND DISPOSE OF THE OLD EQUIPMENT OFF SITE. INSTALL (2) NEW 1–1/2" REMOTE CONTROL VALVES ONTO NEW IRRIGATION MAINLINE. TRENCH AND INSTALL 2" SCH. 40 PVC LATERAL PIPING FROM OUTLET OF NEW 1–1/2" REMOTE CONTROL VALVES AND RECONNECT TO SEVERED LATERAL SUPPLY LINE TO RESUPPLY THE (E) TURF IRRIGATION SYSTEM WITH WATER. REPAIR ANY DAMAGE TO THE (E) POP UP SPRAY HEADS OR PVC LATERALS DAMAGED IN THE TURF PLANTER AS A RESULT TO NEW CONSTRUCTION.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

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REGISTERED LANDSCAPE ARCHITECT — JOHN MACGILLIVRAY BAIN — SIGNATURE — 04–28 RENEWAL DATE — DATE — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB		88910.00
SCALE		AS NOTED
PM		
DATE		10/23/2026
1	ADD 1	10/23/2026

IRRIGATION LEGEND AND NOTES

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L2

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HORIZON CIRCLE

AIRPORT WAY

BUS DROP-OFF

BUS ONLY

PARKING LOT

BLDG. A

BLDG. B

BLDG. C

CONTRACTOR TO POT HOLE AND CONFIRM EXACT LOCATION OF BURIED S.C.E. BURIED CONDUIT. SURVEY AND CONFIRM S.C.E. EASEMENT PRIOR TO BEGINNING ANY LANDSCAPE WORK.

1–24" BOX LAGERSTROEMIA 'TUSCARORA' (STANDARD)

2–24" BOX LAGERSTROEMIA 'TUSCARORA' (MULTI TRUNK)

(E) LANDCAPE TO BE REMOVED AND REPLACED W/ NEW PLANTING, AS SHOWN

3–24" BOX KOELREUTERA PANICULATA (STANDARD TRUNK)

2–24" BOX LAGERSTROEMIA 'TUSCARORA' MULTI–TRUNK

(E) TURF P.I.P.

14 L6 BEND–A–BOARD HEADER

(E) TREE TO REMAIN

NOTE:
REPAIR ANY DAMAGE TO (E) TURF AS A RESULT OF NEW CONSTRUCTION WORK. OVER SEED TURF DAMAGED BY TRENCHING OPERATIONS WITH HYDROSEED MIX. SEE IRRIGATION PLAN, SHEET L1, FOR APPROXIMATE AREAS DISTURBED DUE TO NEW IRRIGATION TRENCHING WORK. (TYPICAL)

13 L6 HEADER

13 L6 DECOMPOSED GRANITE PATH

13 L6 HEADER

NOTE:
REPAIR ANY DAMAGE TO (E) TURF AS A RESULT OF NEW CONSTRUCTION WORK. OVER SEED TURF DAMAGED BY TRENCHING OPERATIONS WITH HYDROSEED MIX. SEE IRRIGATION PLAN, SHEET L1, FOR APPROXIMATE AREAS DISTURBED DUE TO NEW IRRIGATION TRENCHING WORK. (TYPICAL)

2–24" BOX FICUS RUBIGINOSA

FABRIC SHADE STRUCTURE

24" BOX CHILOPSIS LINEARIS 'BURGUNDY' MULTI–TRUNK

1–24" BOX PARKINSONIA A. 'DESERT MUSEUM'

24" BOX CERCIS C. 'FOREST PANSY'

24" BOX CERCIS C. 'FOREST PANSY'

FABRIC SHADE STRUCTURE

12 L6 HYDROSEED TURF FINISH GRADE

HYDROSEED TUR

NEW ATHLETIC EXERCISE FIELD. HYDRO–SEED TURF. SEE SPECIFICATIONS FOR SOIL PREP AND HYDRO–SEED MIX INFORMATION.

(E) TREES TO REMAIN (TYP.)

(E) TREE CANOPY

(E) KIKUYU TURF (PROTECT IN PLACE)

NOTE:
REPAIR ANY DAMAGE TO (E) TURF AS A RESULT OF NEW CONSTRUCTION WORK. OVER SEED TURF DAMAGED BY TRENCHING OPERATIONS WITH HYDROSEED MIX. SEE IRRIGATION PLAN, SHEET L1, FOR APPROXIMATE AREAS DISTURBED DUE TO NEW IRRIGATION TRENCHING WORK. (TYPICAL)

1–24" BOX LAGERSTROEMIA 'TUSCARORA' (STANDARD)

(E) LANDCAPE (PROTECT IN PLACE)

NOTE:
SEE SHEET L4 FOR LEGEND

GRAPHIC SCALE

0 5 10 20 40

SCALE: 1"=10'

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

JORDAN & BAIN
LANDSCAPE ARCHITECTS, INC.
459 NORTH VENTURA AVE., VENTURA CA 93001
(805) 642–3641 FAX (805) 653–7874

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REGISTERED LANDSCAPE ARCHITECT
JEFF JAMES BAIN
SIGNATURE
04-28
RENEWAL DATE
10-25-26
DATE
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

PLANTING PLAN

PERKINS — EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

L3

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TREE LEGEND

	BOTANICAL NAME COMMON NAME	WUCOLS	SIZE	QUANTITY
	CERCIS CANADENSIS 'FOREST PANSY' STANDARD TRUNK FOREST PANSY REDBUD	LOW	24" BOX	4
	FICUS RUBIGINOSA STANDARD TRUNK RUSTYLEAF FIG	MED	24" BOX	2
	KOELREUTERIA PANICULATA STANDARD TRUNK GOLDENRAIN TREE	MED	24" BOX	3
	LAGERSTROEMIA 'TUSCARORA' (DARK PINK FLOWER) CRAPE MYRTLE (5) MULTI-TRUNK SPECIMENS (2) STANDARD TRUCK SPECIMENS	LOW	24" BOX	6
	PARKINSONIA ACULEATA 'DESERT MUSEUM' STANDARD TRUNK DESERT MUSEUM PALO VERDE	VERY LOW	24" BOX	1
	CHILOPSIS LINEARIS 'BURGUNDY' MULTI-TRUNK DESERT WILLOW	VERY LOW	24" BOX	1

SHRUB LEGEND

	BOTANICAL NAME COMMON NAME	WUCOLS	SIZE	QUANTITY
	ACACIA COGNATA 'COUSIN ITT' COUSIN ITT ACACIA	LOW	5 GAL	15
C	COTONEASTER DAMMERI 'CORAL BEAUTY' CORAL BEAUTY COTONEASTER	LOW	5 GAL	72
	HEMEROCALLIS 'BITSY' BITSY DAYLILY	MED	5 GAL	33
	LANTANA CAMERA 'CHERRY BANDANA' CHERRY BANDANA LANTANA	LOW	5 GAL	38
	LANTANA MONTEVIDENSIS PURPLE TRAILING LANTANA	LOW	5 GAL	174
	LOROPETALUM CHINENSE 'RASPBERRY' PLUM DELIGHT LOROPETALUM	LOW	5 GAL	5
	NANDINA DOMESTICA 'GULF STREAM' GULF STREAM BAMBOO	LOW	5 GAL	67
	PENNISETUM ALOPCUROIDES 'LITTLE BUNNY' MINIATURE FOUNTAIN GRASS	LOW	5 GAL	47
	TRADESCANTIA PALLIDE 'PURPLE HEART' PURPLE SPIDERWORT	LOW	1 GAL	22

	DECOMPOSED GRANITE (TAN COLOR) – 3" LAYER OVER WEED BARRIER	N/A	S.F.	
	HYDROSEED TURF	HIGH	S.F.	
	EXISTING KIKUYU TURF – TO REMAIN	HIGH	S.F.	
	EXISTING PLANTER – TO REMAIN	MEDIUM	S.F.	
	TREE ROOT BARRIER – 24" DEEP SEE DETAIL #7 – SHEET L6	N/A	L.F.	

NOTE:
ALL SHRUB PLANTING AREAS WITHIN LIMIT OF WORK SHALL RECEIVE RONSTAR PRE-EMERGENT HERBICIDE APPLIED OVER EXPOSED SOIL, THEN COVERED WITH MIRAFI WEED FABRIC MODEL 'M-SCAPE-E' SECURED TO SOIL WITH 6" METAL SOIL STAPLES SPACED 5'-0" O.C. OVERLAP SEEMS OF WEED FABRIC BY 4" AND STAPLE ALONG SEEM WITH SOIL STAPLES @ 3'-0" O.C. COVER WEED FABRIC WITH A 3" THICK LAYER OF AGROMIN MODEL 'ES-2' WOOD MULCH. KEEP MULCH AWAY FROM TREE AND SHRUB CROWNS.

GRAPHIC SCALE
0 5 10 20 40
SCALE: 1"=10'

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JOE JAMES BAIN, JR.
SIGNATURE
04-28
RENEWAL DATE
10-21-26
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550 Airport Way, Camarillo, CA 93010

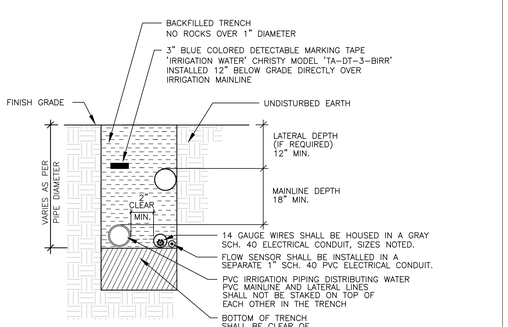
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

PLANTING LEGEND AND NOTES

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

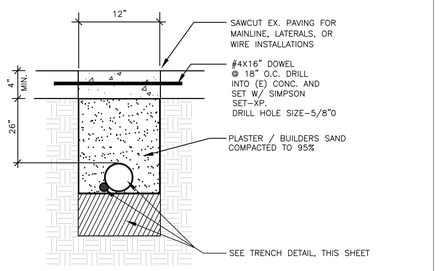
L4

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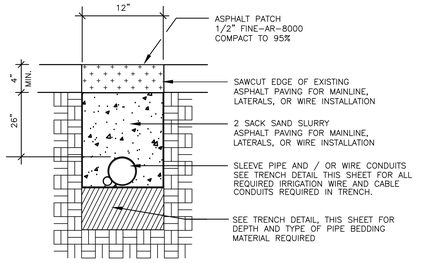
NOT TO SCALE

1 IRRIGATION PIPING TRENCH SECTION



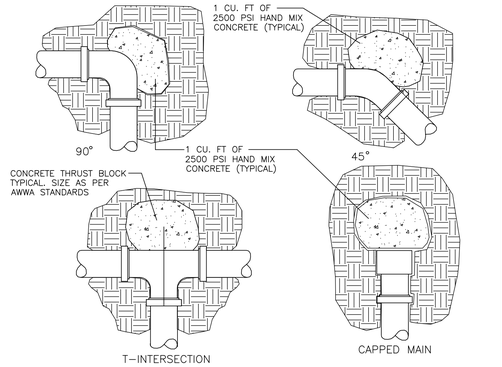
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2 IRRIGATION TRENCH SECTION WITH CONCRETE CUT



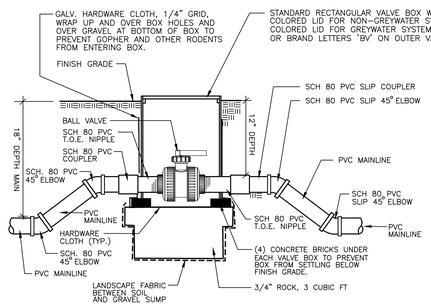
NOT TO SCALE

3 TRENCH SECTION WITH ASPHALT CUT



NOT TO SCALE

4 CONCRETE THRUST BLOCK FOR IRRIGATION MAINLINE

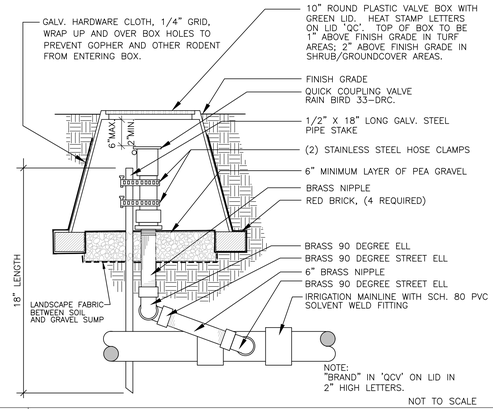


NOTES:

1. BOX TO BE INSTALLED AS TO ALLOW FOR PROPER OPERATION OF BALL VALVE. INSTALL AT RIGHT ANGLE TO HARDSCAPE EDGE. INSTALL VALVE BODY IN BOX POSITIONED TO ALLOW LEVER TO CLOSE VALVE WITHOUT CONFLICT WITH SIDE OF VALVE BOX.
2. INSTALL VALVE BOX EXTENSIONS AS REQUIRED TO ACHIEVE PROPER VALVE INSTALLATION AT MAIN LINE DEPTH.
3. HARDWARE CLOTH: GALVANIZED WELDED STEEL, MESH SHAPE SQUARE 1/4" x 1/4" IN SIZE, GAUGE 23 (MINIMUM THICKNESS SIZE).

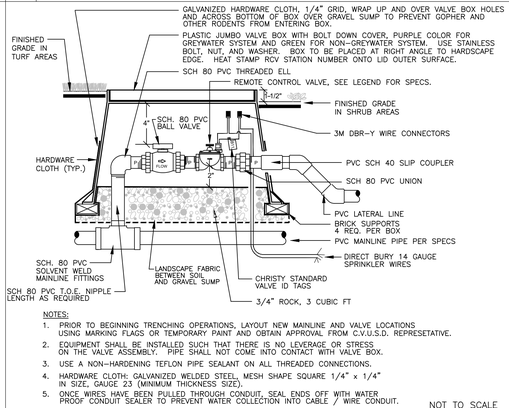
NOT TO SCALE

5 SCH. 80 PVC BALL VALVE ON IRRIGATION MAINLINE



NOT TO SCALE

6 QUICK COUPLER

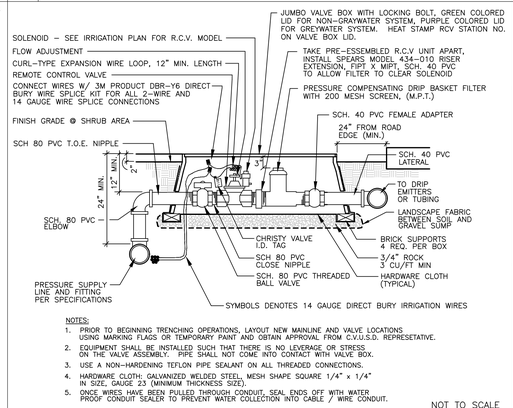


NOTES:

1. PRIOR TO BEGINNING TRENCHING OPERATIONS, LAYOUT NEW MAINLINE AND VALVE LOCATIONS USING MARKING FLAGS OR TEMPORARY PAINT AND OBTAIN APPROVAL FROM C.V.U.S.D. REPRESENTATIVE.
2. EQUIPMENT SHALL BE INSTALLED SUCH THAT THERE IS NO LEVERAGE OR STRESS ON THE VALVE ASSEMBLY. PIPE SHALL NOT COME INTO CONTACT WITH VALVE BOX.
3. USE A NON-HARDENING TEFLON PIPE SEALANT ON ALL THREADED CONNECTIONS.
4. HARDWARE CLOTH: GALVANIZED WELDED STEEL, MESH SHAPE SQUARE 1/4" x 1/4" IN SIZE, GAUGE 23 (MINIMUM THICKNESS SIZE).
5. ONCE WIRES HAVE BEEN PULLED THROUGH CONDUIT, SEAL ENDS OFF WITH WATER PROOF CONDUIT SEALER TO PREVENT WATER COLLECTION INTO CABLE / WIRE CONDUIT.

NOT TO SCALE

7 REMOTE CONTROL VALVE ASSEMBLY

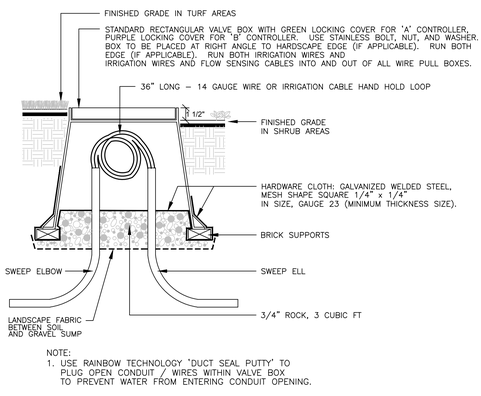


NOTES:

1. PRIOR TO BEGINNING TRENCHING OPERATIONS, LAYOUT NEW MAINLINE AND VALVE LOCATIONS USING MARKING FLAGS OR TEMPORARY PAINT AND OBTAIN APPROVAL FROM C.V.U.S.D. REPRESENTATIVE.
2. EQUIPMENT SHALL BE INSTALLED SUCH THAT THERE IS NO LEVERAGE OR STRESS ON THE VALVE ASSEMBLY. PIPE SHALL NOT COME INTO CONTACT WITH VALVE BOX.
3. USE A NON-HARDENING TEFLON PIPE SEALANT ON ALL THREADED CONNECTIONS.
4. HARDWARE CLOTH: GALVANIZED WELDED STEEL, MESH SHAPE SQUARE 1/4" x 1/4" IN SIZE, GAUGE 23 (MINIMUM THICKNESS SIZE).
5. ONCE WIRES HAVE BEEN PULLED THROUGH CONDUIT, SEAL ENDS OFF WITH WATER PROOF CONDUIT SEALER TO PREVENT WATER COLLECTION INTO CABLE / WIRE CONDUIT.

NOT TO SCALE

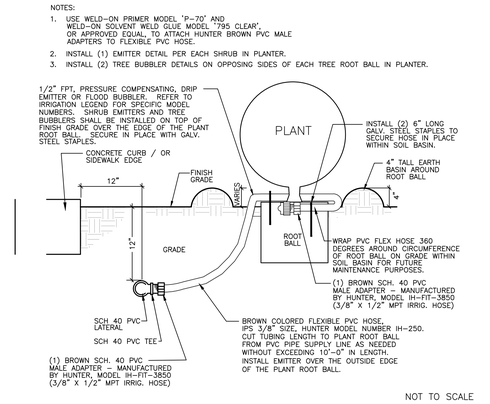
8 DRIP REMOTE CONTROL VALVE ASSEMBLY



NOTE:

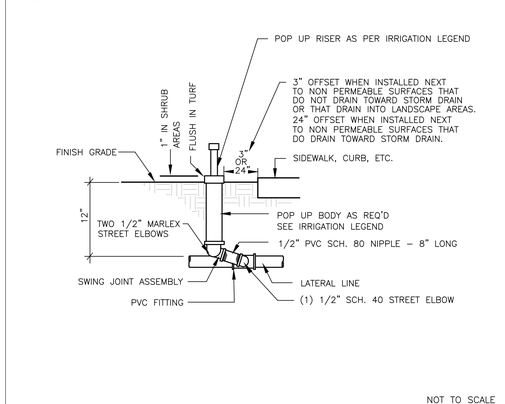
1. USE RAINBOW TECHNOLOGY 'DUCT SEAL PUTTY' TO PLUG OPEN CONDUIT / WIRES WITHIN VALVE BOX TO PREVENT WATER FROM ENTERING CONDUIT OPENING.

9 WIRE SPLICE BOX OR WIRE PULL BOX



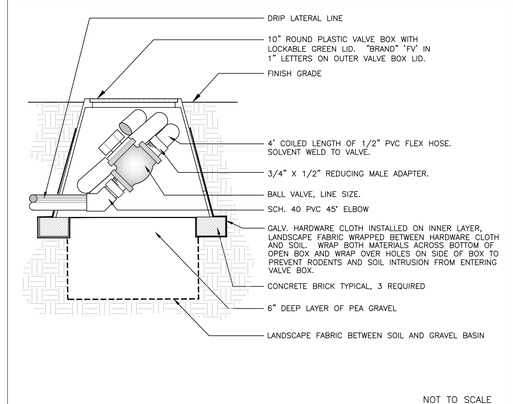
NOT TO SCALE

10 TREE FLOOD BUBBLER ON PVC FLEX HOSE



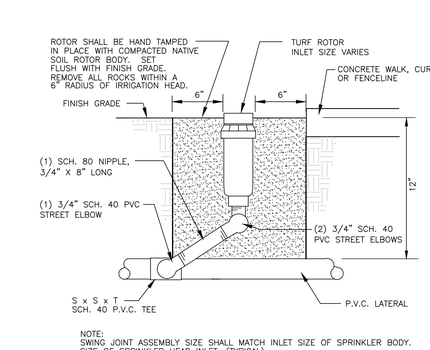
NOT TO SCALE

11 POP UP SPRAY HEAD OR DRIP SYSTEM INDICATOR



NOT TO SCALE

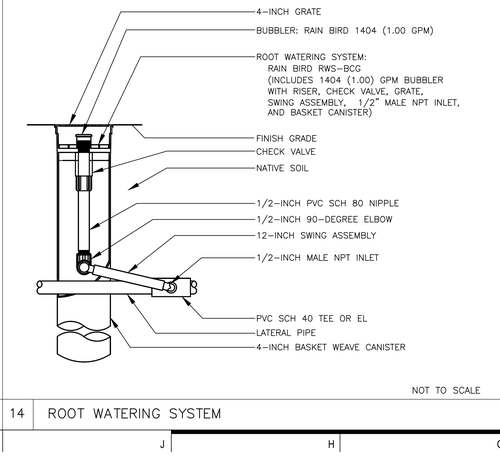
12 DRIP SYSTEM FLUSH VALVE



NOTE:
SWING JOINT ASSEMBLY SIZE SHALL MATCH INLET SIZE OF SPRINKLER BODY. SIZE OF SPRINKLER HEAD INLET. (TYPICAL)

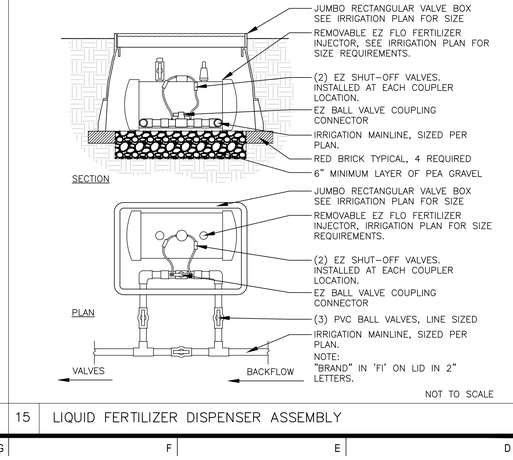
NOT TO SCALE

13 i-20 POP UP TURF ROTORS - 3/4" INLET



NOT TO SCALE

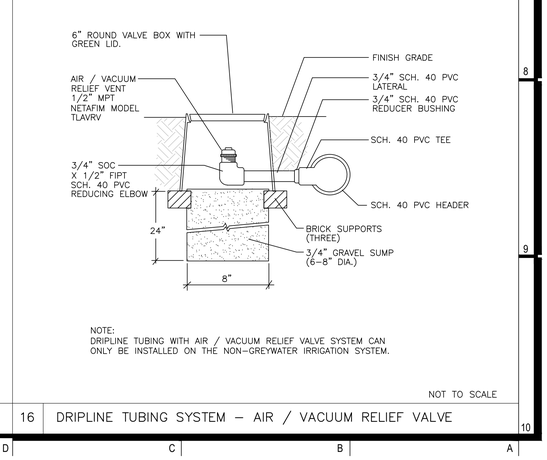
14 ROOT WATERING SYSTEM



NOTE:
"BRAND" IN 'FI' ON LID IN 2" LETTERS.

NOT TO SCALE

15 LIQUID FERTILIZER DISPENSER ASSEMBLY



NOTE:
DRIPLINE TUBING WITH AIR / VACUUM RELIEF VALVE SYSTEM CAN ONLY BE INSTALLED ON THE NON-GREYWATER IRRIGATION SYSTEM.

NOT TO SCALE

16 DRIPLINE TUBING SYSTEM - AIR / VACUUM RELIEF VALVE

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REGISTERED LANDSCAPE ARCHITECT
JAMES BAIN JR.
No. 2498
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RENEWAL DATE
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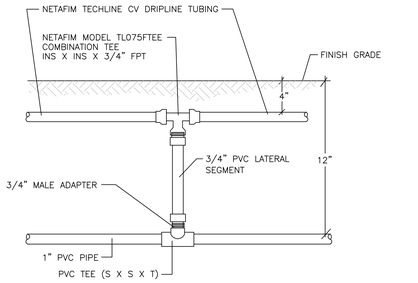
JOB	88910.00
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IRRIGATION / PLANTING DETAILS

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3194 D Airport Loop Drive
Costa Mesa, CA 92626
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L5

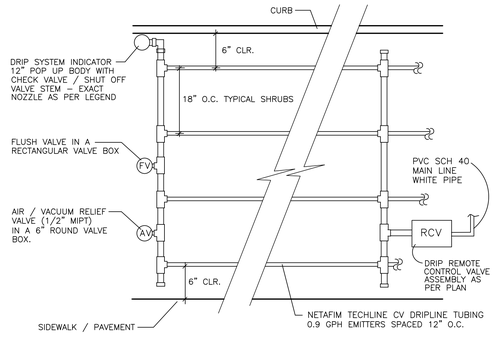
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NOTE:
DRIPLINE TUBING SYSTEM CAN ONLY BE INSTALLED ON THE NON-GREYWATER IRRIGATION SYSTEM ONLY.

NOT TO SCALE

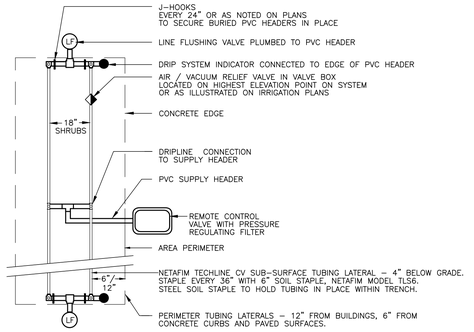
1 DRIPLINE CONNECTION SECTION (PVC SUPPLY TO TUBING)



NOTE:
DRIPLINE TUBING SYSTEM CAN ONLY BE INSTALLED ON THE NON-GREYWATER IRRIGATION SYSTEM ONLY.

NOT TO SCALE

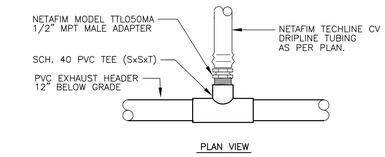
2 DRIPLINE TUBING SCHEMATIC DRAWING



SCHEMATIC LAYOUT

NOTES:
1. FOR DRIPLINE TUBING OFFSET SPACING, REFER TO THE IRRIGATION LEGEND AND DETAILS.
2. DRIPLINE TUBING SYSTEM CAN ONLY BE INSTALLED ON THE NON-GREYWATER IRRIGATION SYSTEM.

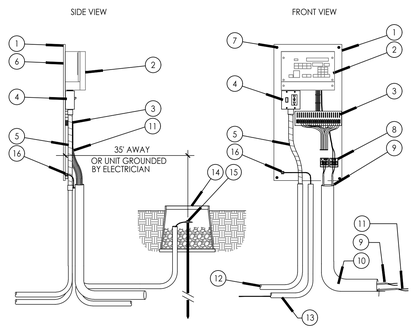
3 TYPICAL SUB-SURFACE TUBING PLUMBED WITH CENTER FEED



PLAN VIEW

NOTE:
DRIPLINE TUBING SYSTEM CAN ONLY BE INSTALLED ON THE NON-GREYWATER IRRIGATION SYSTEM.

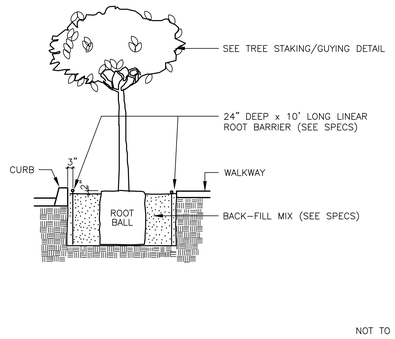
4 DRIPLINE TUBING CONNECTION TO PVC EXHAUST HEADER



1. ALUMINUM BACKBOARD, 16"W x 32" H.
2. ALUMINUM BACKBOARD IF REQUIRED.
3. TERMINAL STRIP FOR VALVE WIRES.
4. POWER SWITCH / GFCI RECEPTACLE.
5. ELECTRICAL FLEX CONDUIT FOR POWER.
6. WATERPROOF FACTORY ENCLOSURE
7. FOUR BOLT HOLES LINE UP WITH BOLTS ON THE STRONG BOX - 18" WIDE ENCLOSURES.
8. FLOW SENSOR TERMINAL BOARD.
9. FLOW SENSOR CABLE - SHARE 2" CONDUIT TO OUT OF BLDG. THEN SEPARATE 1" CONDUIT TO FLOW SENSOR.
10. 2" CONDUIT AND SWEEP ELL FOR 14-GAUGE WIRES, AND FLOW SENSING CABLE ACCESS THROUGH BLDG.
11. 14-GAUGE WIRES
12. 1" CONDUIT AND SWEEP ELL FOR 110 VAC POWER LINE.
13. 1" CONDUIT FOR #6 GROUND WIRE TO GROUND ROD
14. 10" ROUND VALVE BOX AROUND GROUND ROD. FILL WITH 3/4" CRUSHED ROCK.
15. 5/8" X 8' GROUND ROD WITH #6 GROUND WIRE AND CLAMP. LOCATE 35' FROM ENCLOSURE.
16. #6 GROUND WIRE SECURED TO BACKBOARD GROUNDING TERMINAL. PROVIDE AND INSTALL A SEPARATE 1" SCH. 40 PVC ELECTRICAL CONDUIT FOR #6 GROUND WIRE TO GROUND ROD LOCATION.

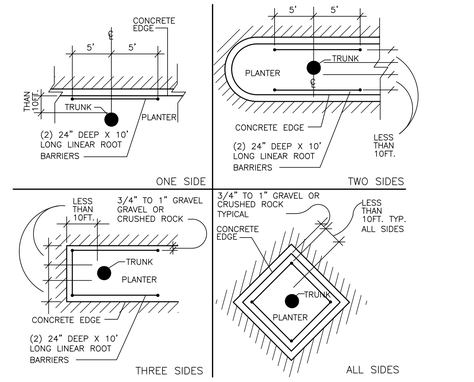
NOT TO SCALE

5 AUTO CONTROLLER - INTERIOR WALL MOUNT



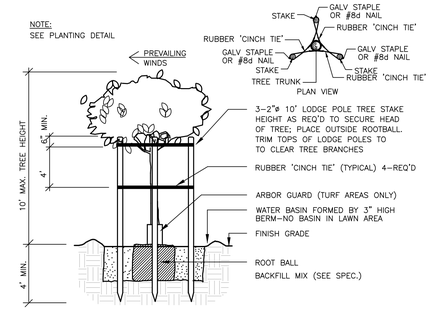
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6 TREE ROOT BARRIER SECTION N.T.S.



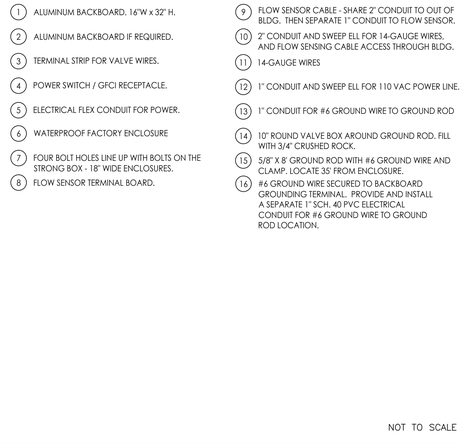
NOT TO SCALE

7 TREE ROOT BARRIER - PLAN VIEW



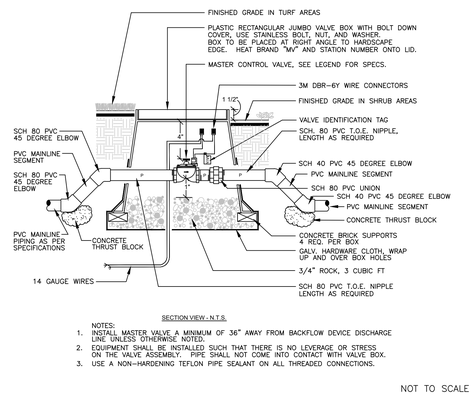
NOT TO SCALE

8 24" BOX TREE STAKING



NOT TO SCALE

9 24" BOX TREE PLANTING DETAIL

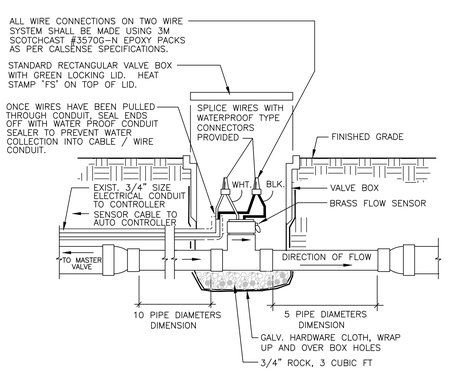


SECTION VIEW - N.T.S.

NOTES:
1. INSTALL MASTER VALVE A MINIMUM OF 36" AWAY FROM BACKFLOW DEVICE DISCHARGE LINE UNLESS OTHERWISE NOTED.
2. EQUIPMENT SHALL BE INSTALLED SUCH THAT THERE IS NO LEVERAGE OR STRESS ON THE VALVE ASSEMBLY. PIPE SHALL NOT COME INTO CONTACT WITH VALVE BOX.
3. USE A NON-HARDENING TEFLON PIPE SEALANT ON ALL THREADED CONNECTIONS.

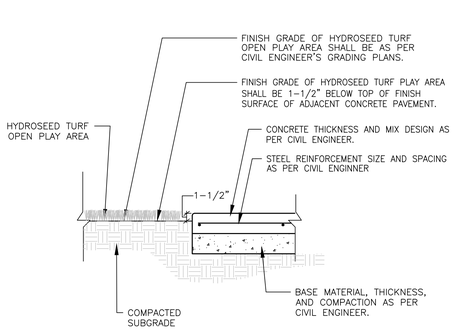
NOT TO SCALE

10 NORMALLY CLOSED MASTER VALVE



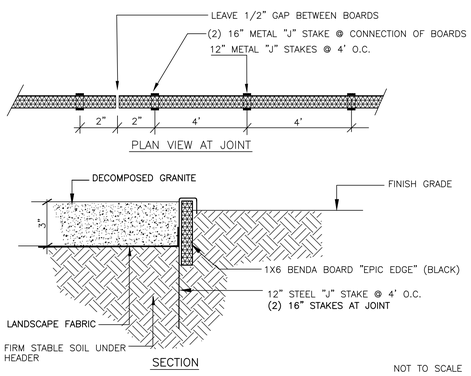
NOT TO SCALE

11 FLOW SENSOR ON PVC MAINLINE



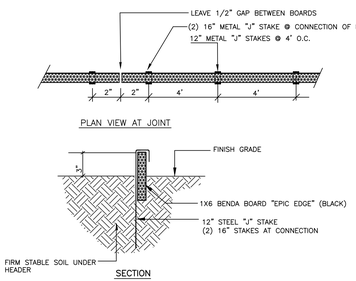
NOT TO SCALE

12 OPEN TURF PLAY AREA ADJACENT TO PAVEMENT



NOT TO SCALE

13 DECOMPOSED GRANITE PAVING



NOT TO SCALE

14 BEND-A-BOARD HEADER BETWEEN PLANTER AND TURF

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

JORDAN & BAIN
LANDSCAPE ARCHITECTS, INC.
459 NORTH VENTURA AVE., VENTURA CA 93001
(805) 642-3641 FAX (805) 653-7874
Jordan, Gilbert & Bain Landscape Architects, Inc. © 2018

REGISTERED LANDSCAPE ARCHITECT
JOY CHARLES BAIN GILBERT
SIGNATURE
04-28
RENEWAL DATE
10-26-26
DATE
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

LANDSCAPE DETAILS

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
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L6

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HORIZON CIRCLE

(E) POWER POLE

(E) AC PAVING

(E) AC PAVING DRIVE

(N) AC PAVING (1,435 S.F.)

(E) UNDERGROUND ELECTRICAL LINE (ASSUMING THIS IS AN SCE LINE)

SCE EASEMENT

(E) TURF

(E) TREE

(E) POWER POLI

STAFF PATIO

BLDG. LINE (TYP.)

BLDG C

FABRIC SHADE STRUCTURE
P.C. 04-119455
DSA4183030-19

SHADE SAIL PER ARCHITECT

ROOF OVERHANG PER ARCHITECT

BLDG A

DASHED LINES INDICATE COVEI WALKWAY OVERHEAD

96"X60" MIN. BUS BOARDING CLEARANCE

BUS

BUS ONLY

BUS LOADING AREA

NO PARKING BUS LOADING AREA

AIRPORT WAY

PROPERTY LINE

(E) AC PAVING (11,512 S.F.)

BFD

FABRIC SHADE STRUCTURE
P.C. 04-119455
DSA4183030-19

WORKOUT AREA

BLDG B

DASHED LINES INDICATE SHADE STRUCTURE OVERHEAD

(N) VOLLEYBALL COURT

(N) VOLLEYBALL COURT

(N) BASKETBALL COURT

(N) BASKETBALL COURT

(N) 4V4 SOCCER FIELD

(N) LAWN AT SOCCER FIELD

(N) ASPHALT PAVING

SCE EASEMENT QUITCLAIMED

(E) CONC. WALK

(E) TURF

(E) POWER POLE

SW

E

P/A

UT

NOTE:
SEE SHEET L8 FOR LEGEND

GRAPHIC SCALE
0 5 10 20 40
SCALE: 1"=10'

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
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DATE: 11/02/2026

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REGISTERED LANDSCAPE ARCHITECT
JEFF JAMES BAIN GILBERT
SIGNATURE
06-28
RENEWAL DATE
10-31-26
DATE
STATE OF CALIFORNIA

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LANDSCAPE SHADING PLAN

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TREE LEGEND				
	BOTANICAL NAME COMMON NAME	WUCOLS	SIZE	QUANTITY
	CERCIS CANADENSIS 'FOREST PANSY' FOREST PANSY REDBUD	LOW	24" BOX	4
	FICUS RUBIGINOSA RUSTYLEAF FIG	MED	24" BOX	2
	KOELREUTERIA PANICULATA GOLDENRAIN TREE	MED	24" BOX	1
	LAGERSTROEMIA 'TUSCARORA' (DARK PINK FLOWER) CRAPE MYRTLE (5) MULTI-TRUNK SPECIMENS (2) STANDARD TRUCK SPECIMENS	LOW	24" BOX	7

CONCRETE PAVING THAT IS NOT UNDER ARCHITECTURE OVERHANG OR SHADE SAIL (9,089 S.F.)
(6,196 S.F.)

NEW AC PAVING (1,435 S.F.)
(6,838 S.F.)

(EX) AC PAVING AT PARKING (11,667 S.F.)
(11,512 S.F.)

SHADE PROVIDED BY ARCHITECTURE ROOF OVERHANG (3,860 S.F.)
(4,370 S.F.)

TREE SHADE – AT (EX) PARKING LOT

TREE SHADE – AT NEW CONCRETE PAVING

TREE SHADE – AT NEW PLANTING AREA

SHADE SAIL – AT NEW CONCRETE PAVING

SHADE TREES [DSA-AA] – CALGREEN CODE 5.106.12

PARKING LOT SHADE CALCULATIONS

TOTAL (E) PARKING AREA (ASPHALT) = 11,512sf
(E) SHADE = 1,621 sf = 14%
(N) SHADE ADDED = 988 SQ FT
TOTAL SHADE = 2,609 = 22%

PAVING AREA SHADE CALCULATIONS

TOTAL NEW PAVING (CONCRETE) = 9,089 sf

SHADE COVERAGE (TREE CANOPY) = 1,868 sf
SHADE COVERAGE (SHADE SAIL) = 973 sf
SHADE COVERAGE (ROOF OVERHANG) = 4,371 sf
(See Architecture Plans

TOTAL SHADE= 7,212 sf

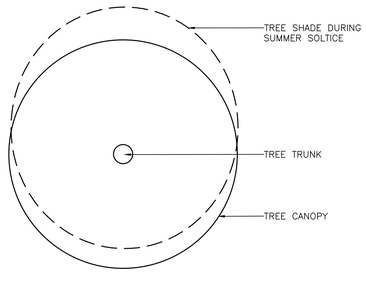
20.5% SHADE COVERAGE (TREE CANOPY ONLY)
20% REQUIRED **(SHADE MET)**

LANDSCAPE AREA SHADE CALCULATIONS

TOTAL NEW LANDSCAPING AREA = 7,578 sf
SHADE = 4,633 sf.

79% SHADE COVERAGE
20% REQUIRED **(SHADE MET)**

EXISTING TREE LEGEND			
	BOTANICAL NAME COMMON NAME	WUCOLS	QUANTITY
	FICUS RUBIGINOSA RUSTYLEAF FIG	MED	4



GRAPHIC SCALE
0 10 40
5 20
SCALE: 1"=10'

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DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
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DATE: 11/02/2026

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JEFF JAMES BAIN
SIGNATURE
04-28
RENEWAL DATE
10-25-26
DATE
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LANDSCAPE SHADING PLAN
LEGEND AND NOTES

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L8

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HORIZON CIR

AIRPORT WAY

SKYWAY DR

(E) CURB

(E) CHAINLINK FENCE

(E) CHAINLINK FENCE TO REMAIN

(E) CHAINLINK FENCE GATE

(E) LANDSCAPE

PARKING LOT

(E) ASPHALT PAVING

(E) TREE

(E) CONCRETE PAVING

CONTRACTOR TO GRIND DOWN (E) CONCRETE TO 2% CROSS SLOPE

(E) STRIPING (TO REMAIN)

DASHED LINE INDICATES EXTEND OF DEMO ASPHALT

HATCHED AREA INDICATES LOCATION OF (N) TRASH ENCLOSURE. SEE A4 A011

ALIGN

(E) CONCRETE WALKWAY

(E) TREE, TYP.

0' 10' 20' 40' 80'

N

DEMOLITION SITE PLAN A10

3/32" = 1'-0"

DEMOLITION NOTES

1. ITEMS ARE EXISTING UNLESS NOTED OTHERWISE
2. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAS BEEN APPROVED BY DSA.

DEMOLITION KEYNOTES

x	
1	REMOVE AND DISPOSE ASPHALT
2	REMOVE AND DISPOSE CHAINLINK FENCE AND GATES
3	REMOVE AND DISPOSE CONCRETE PAVING
4	REMOVE AND DISPOSE CONCRETE CURB
5	REMOVE AND DISPOSE PLANTER
6	REMOVE AND DISPOSE TRUNCATED DOMES
7	REMOVE AND DISPOSE PANEL
8	REMOVE AND DISPOSE ACC PARKING SIGN
9	REMOVE STRIPING
10	REMOVE AND DISPOSE LANDSCAPE

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
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DATE: 11/02/2026

LICENSED ARCHITECT
DAVID M. MAYER
NO. 32944
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

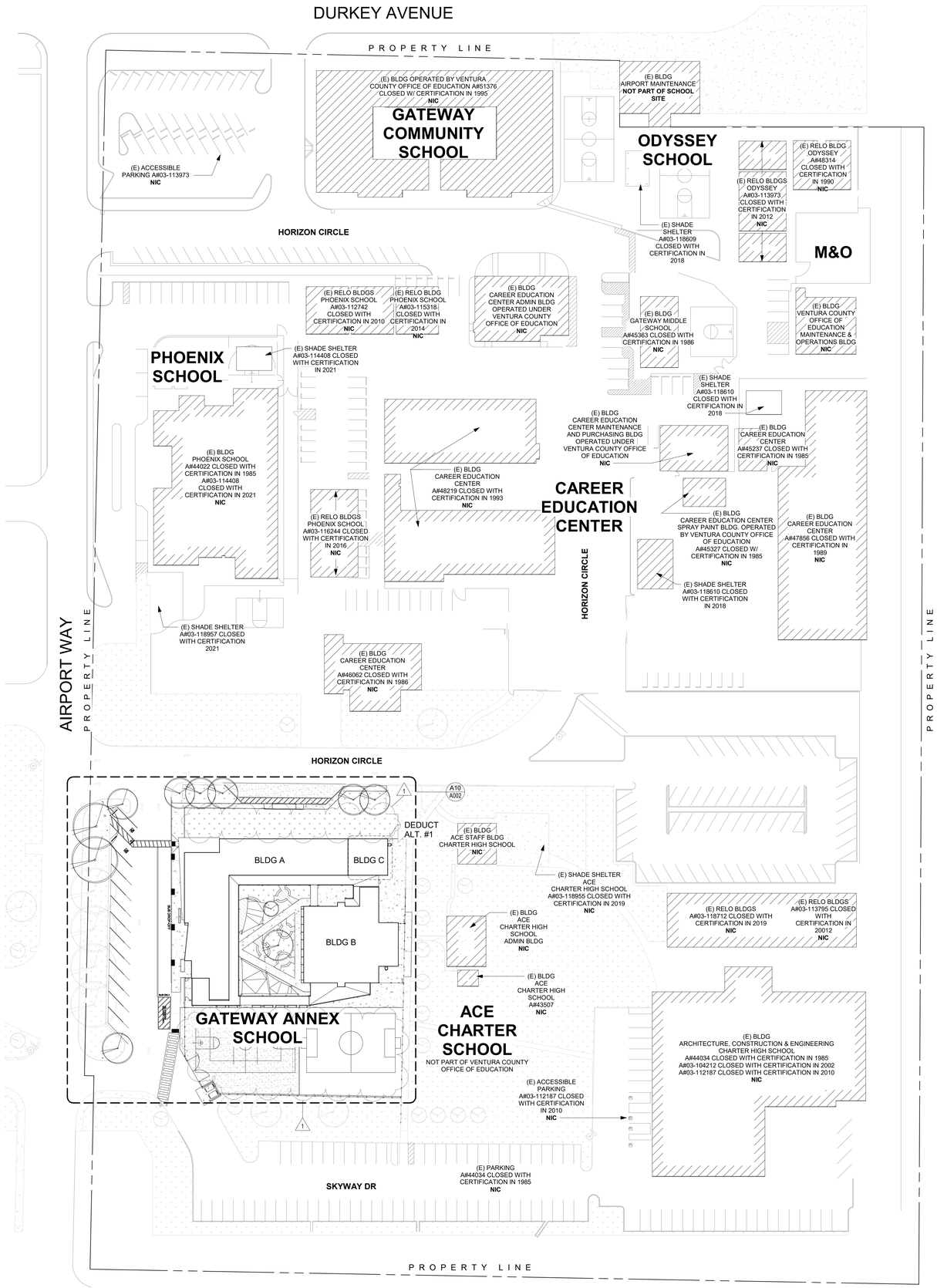
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DATE	10/23/2026
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DEMOLITION SITE PLAN

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AD001

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SITE LEGEND

- NEW BUILDING
- EXISTING BUILDING
- SITE CONCRETE
- SITE CONCRETE, ACCENT COLOR
- GRASS
- EXISTING ASPHALT
- EXISTING GRASS
- EXISTING CONCRETE
- EXISTING CHAIN LINK FENCE
- NEW CHAIN LINK FENCE
- EXTERIOR LIGHT FIXTURE
- AREA OF WORK

SITE NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G002
2. VENTURA COUNTY OFFICE OF EDUCATION OWNS AND OPERATES SEVERAL SCHOOLS ON THEIR PARCEL. EACH SCHOOL HAS A SEPARATE CAMPUS & PRINCIPAL AND IS NOT PART OF THIS PROJECT.
3. THE SOUTHEAST PORTION OF THE SITE IS LEASED AND OPERATED BY ACE CHARTER SCHOOL AND IS NOT PART OF THIS PROJECT.

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APP: 03-122398 INC:
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DATE: 11/02/2026

LICENSED ARCHITECT
SCOTT M. MAXWELL
NO. 32760
EXPIRES 08.31.2027
STATE OF CALIFORNIA

SITE PLAN 1" = 40'-0" A10

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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PM	
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SITE PLAN

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A001

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HORIZON CIRCLE

C10 A015

(E) TOW-AWAY SIGN

ORNAMENTAL METAL FENCE

J10 A015

E8 A015

NO PARKING

47' - 6"

13' - 3"

EXTENT OF (N) CONCRETE PAVING

1

A10 A011

DEDUCT ALT. #1

(N) ASPHALT TO EXTEND UP TO (E) LANDSCAPING

STAFF PATIO

BLDG C

21' - 0"

11' - 0"

62' - 3"

(N) LANDSCAPE

(N) MONUMENT SIGN

AIRPORT WAY

PROPERTY LINE

BLDG A

11' - 3"

L6 A011

A011 J10

BUS STOP

126' - 7"

4' - 0" TYP.

25' - 0" TYP.

(N) CONCRETE PAVING (SEE CIVIL DRAWINGS)

(N) BENCH

(N) KNOX BOX

9' - 6" TYP.

(N) 6" HIGH RED-PAINTED CURB W/ FLEXIBLE DELINEATORS

3' - 0"

3' - 3"

36"x60" MIN. TRUNCATED DOMES @ BUS BOARDING CLEARANCE, TYP.

10' - 5"

J8 A011

A10 A011

GATE 6

A2 A014

5' - 0"

(N) CMU SITE WALL

(N) ASPHALT TO EXTEND UP TO (E) CONCRETE PAVING

(E) CONCRETE PAVING

STRIPING

4" WIDE WHITE STRIPING, TYP.

L10

A013

A013

A3

WORKOUT AREA

(N) LANDSCAPING

25' - 3 1/2"

BUS ONLY

NO PARKING DELIVERY AREA

27' - 3"

GATE 7

J4 A011

A4 A015

TOW-AWAY SIGN, SEE J6 A015

(E) STRIPING

(E) ASPHALT

GATE 5

GATE 4

A4 A011

GATE 2

GATE 3

CHAIN LINK DOUBLE GATE WITH KNOX BOX

(N) TRASH ENCLOSURE AND (N) CONCRETE APRON

VEGETATION (SEE LANDSCAPING DRAWINGS)

D.S.

FABRIC SHADE STRUCTURE P.C. 04-119455 DSA4183030-19

BOLLARD LIGHT, TYP.

BLDG B

DASHED LINES INDICATE COVERED WALKWAY OVERHEAD

DASHED LINES INDICATE SHADE STRUCTURE OVERHEAD

CONCRETE PAVING

FABRIC SHADE STRUCTURE P.C. 04-119455 DSA4183030-19

A013 A10

GATE 1

PH

ORNAMENTAL METAL GATE WITH KNOX BOX

CONCRETE

(N) ASPHALT TO EXTEND UP TO (E) CONCRETE WALKWAY

GATE 10

CHAIN LINK SINGLE GATE WITH KNOX BOX

CONCRETE

GATE 9

CHAIN LINK SINGLE GATE WITH KNOX BOX

COLUMN, TYP.

2' - 0" 2' - 0" 2' - 0" 2' - 0"

9' - 3"

ORNAMENTAL METAL FENCE G10 A013

8' - 0" TYP.

EQ EQ

K10 A014

CONCRETE BENCH, TYP.

5' - 0"

10' - 0"

2' - 0" 10' - 0"

10' - 0" 2' - 0"

(N) VOLLEYBALL COURT

(N) BASKETBALL COURT

(N) 4V4 SOCCER FIELD

(E) CONCRETE WALKWAY

3' - 5 55' - 3 11/16"

(N) ASPHALT PAVING

(N) TURF

(E) LANDSCAPING

CHAIN LINK FENCE, TYP.

N

SITE LEGEND

- NEW BUILDING
- EXISTING BUILDING
- SITE CONCRETE
- SITE CONCRETE, ACCENT COLOR
- GRASS
- EXISTING ASPHALT
- EXISTING GRASS
- EXISTING CONCRETE
- EXISTING CHAIN LINK FENCE
- NEW CHAIN LINK FENCE
- EXTERIOR LIGHT FIXTURE
- AREA OF WORK

SITE NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G002
2. VENTURA COUNTY OFFICE OF EDUCATION OWNS AND OPERATES SEVERAL SCHOOLS ON THEIR PARCEL. EACH SCHOOL HAS A SEPARATE CAMPUS & PRINCIPAL AND IS NOT PART OF THIS PROJECT.
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LICENSED ARCHITECT
REGD. M. MAYAN
NO. 32761
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

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ENLARGED SITE PLAN

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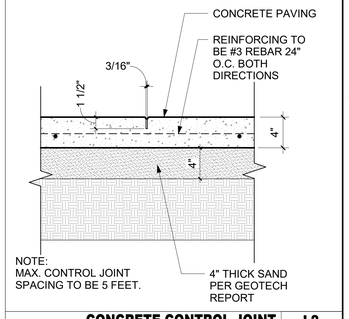
A002

ENLARGED SITE PLAN A10
3/32" = 1'-0"

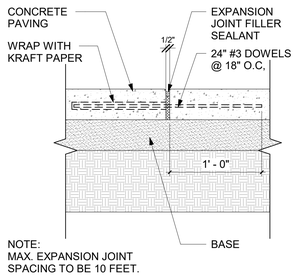
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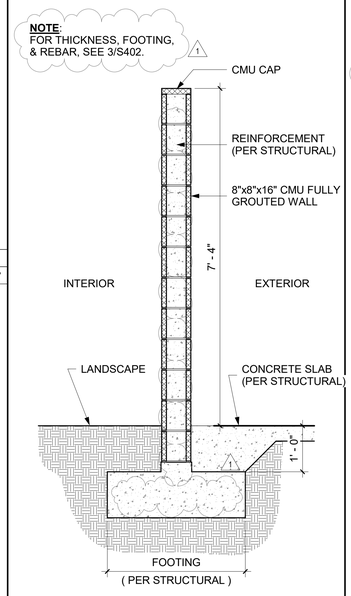
LICENSED ARCHITECT
SCOTT M. MATZEN
NO. 32943
EXP. OCT. 31, 2026
STATE OF CALIFORNIA



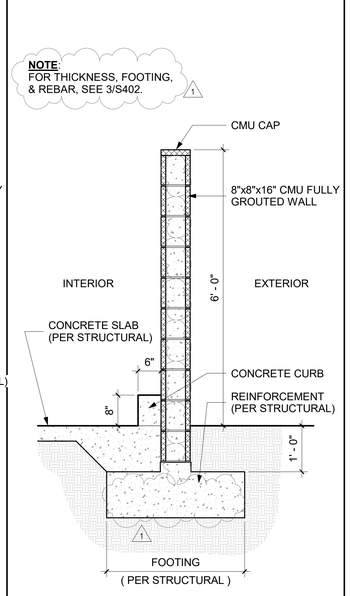
CONCRETE CONTROL JOINT L2
1 1/2" = 1'-0"



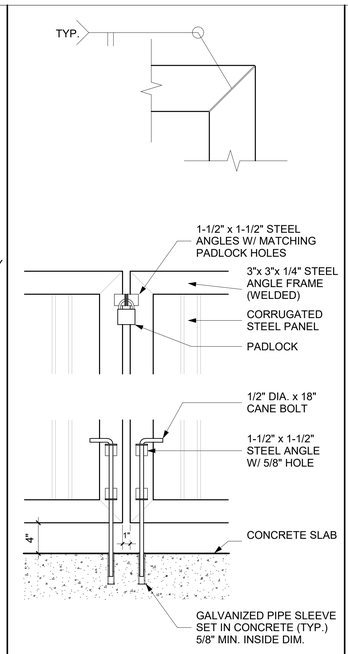
CONCRETE EXPANSION JOINT L4
1 1/2" = 1'-0"



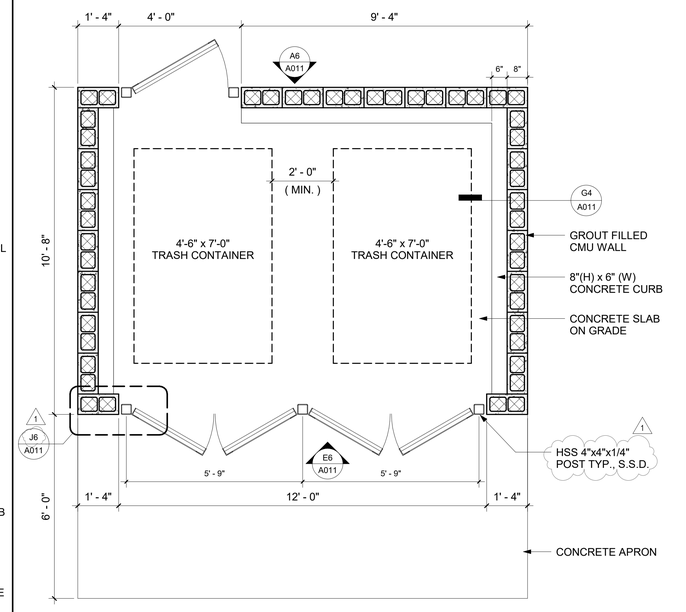
CMU SITE WALL J4
3/4" = 1'-0"



TRASH ENCLOSURE - WALL SECTION G4
3/4" = 1'-0"



TRASH ENCLOSURE - LATCH & BOLT E4
1 1/2" = 1'-0"



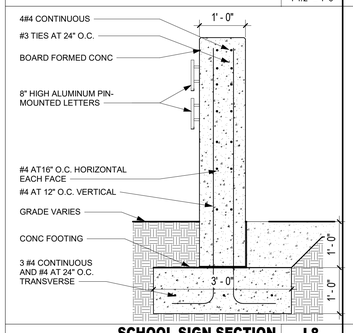
TRASH ENCLOSURE - FLOOR PLAN A4
1/2" = 1'-0"

CONC. CURB AT AC PAVING L6
1 1/2" = 1'-0"

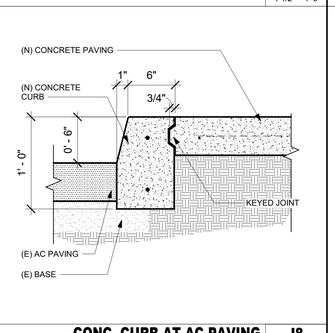
TRASH ENCLOSURE - GATE HINGE J6
1 1/2" = 1'-0"

TRASH ENCLOSURE - ELEVATION E6
1/2" = 1'-0"

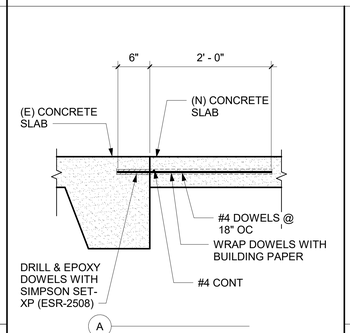
TRASH ENCLOSURE - ELEVATION A6
1/2" = 1'-0"

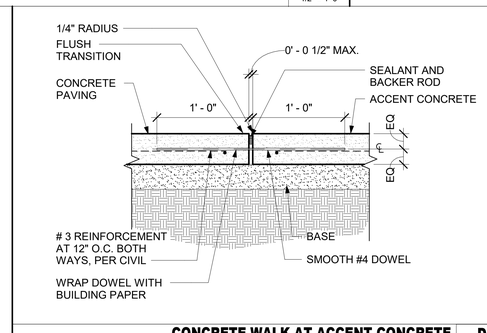


SCHOOL SIGN SECTION L8
3/4" = 1'-0"

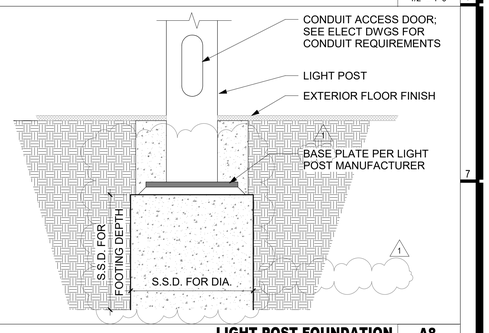


CONC. CURB AT AC PAVING J8
1 1/2" = 1'-0"





CONCRETE WALK AT ACCENT CONCRETE D8
1 1/2" = 1'-0"



LIGHT POST FOUNDATION A8
1" = 1'-0"

MONUMENT SIGN J10
1/2" = 1'-0"

CONCRETE T0 (E) CONCRETE G10
1" = 1'-0"

RAMP TERMINATION AT ASPHALT D10
1 1/2" = 1'-0"

TYP. CONCRETE PAVING AT LANDSCAPE A10
1 1/2" = 1'-0"

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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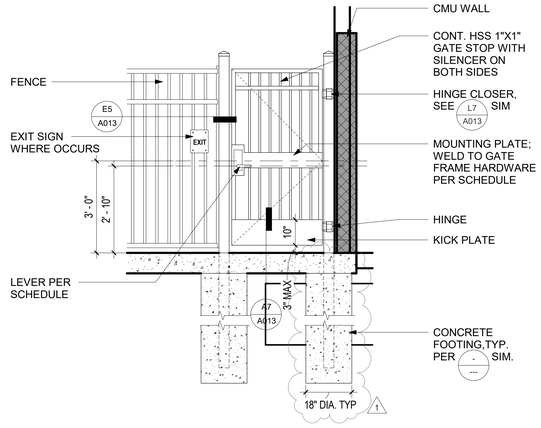
SITE DETAILS

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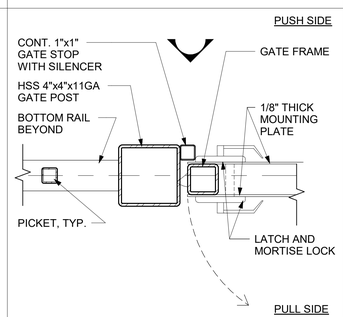
A011

M L K J H G F E D C B A
1 2 3 4 5 6 7 8 9 10

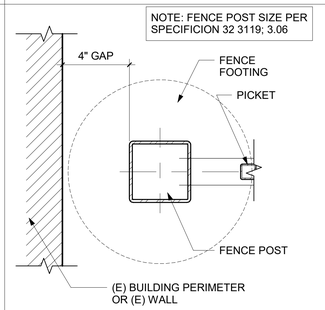
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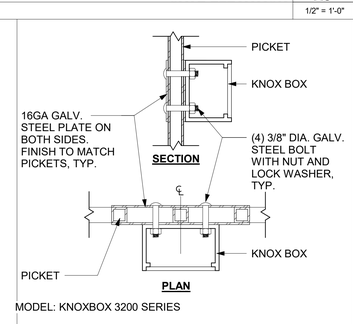
GATE ELEVATION A3 — 1/2" = 1'-0"



ORNAMENTAL GATE WITH LEVER AND LOCK E5 — 3" = 1'-0"

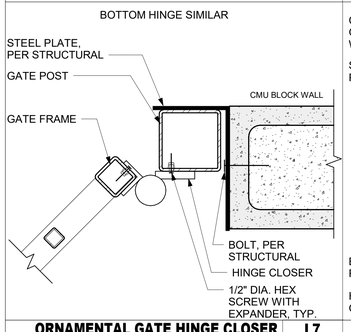


ORNAMENTAL FENCE POST AT BUILDING C5 — 3" = 1'-0"

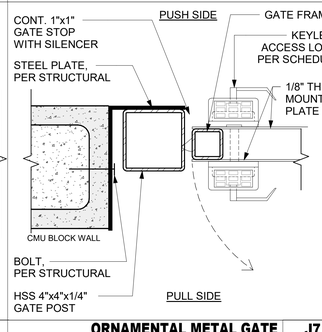


MODEL: KNOXBOX 3200 SERIES

ORNAMENTAL METAL FENCE KNOX BOX A5 — 3" = 1'-0"

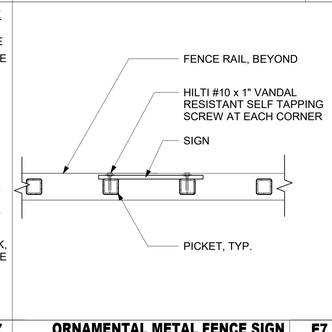


ORNAMENTAL GATE HINGE CLOSER L7 — 3" = 1'-0"

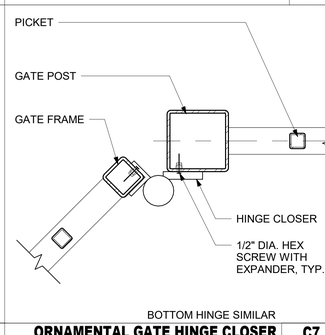


ORNAMENTAL METAL GATE J7 — 3" = 1'-0"

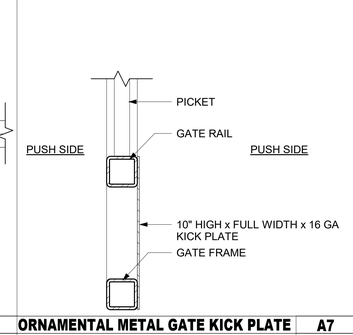
ORNAMENTAL GATE W/ PANIC HARDWARE G7 — 3" = 1'-0"



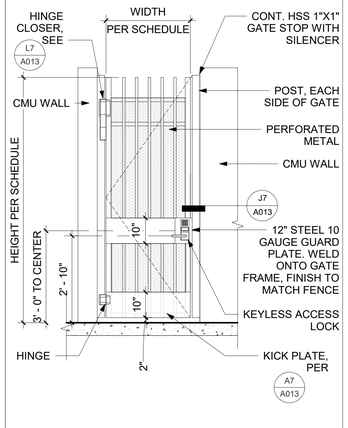
ORNAMENTAL METAL FENCE SIGN MOUNTING E7 — 3" = 1'-0"



ORNAMENTAL GATE HINGE CLOSER C7 — 3" = 1'-0"

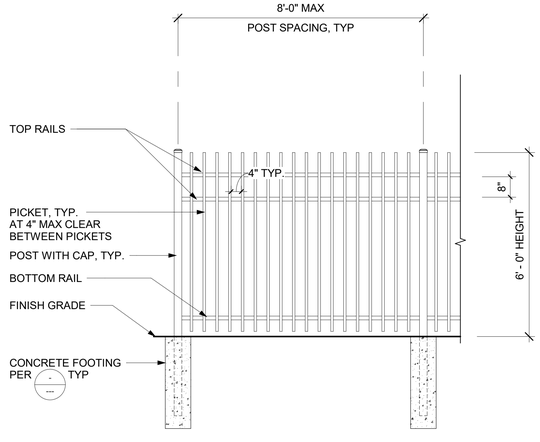


ORNAMENTAL METAL GATE KICK PLATE A7 — 3" = 1'-0"



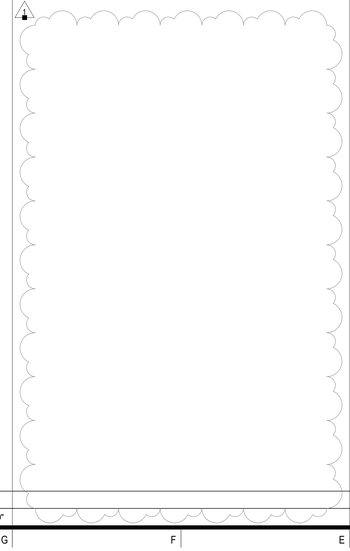
NOTE: GATE OPENING FORCE IS 5 POUNDS MAXIMUM

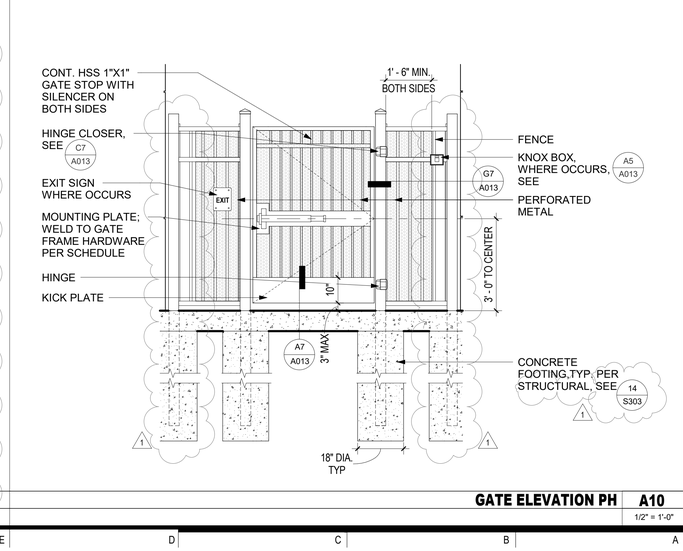
ORNAMENTAL METAL SINGLE GATE L10 — 1/2" = 1'-0"



NOTE: PICKETS AND POSTS SHALL BE SPACED EQUALLY

TYP. ORNAMENTAL METAL FENCE ELEVATION G10 — 1/2" = 1'-0"





GATE ELEVATION PH A10 — 1/2" = 1'-0"

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LICENSED ARCHITECT — BRENT M. MATTAS — NO. 32748 — RENEWAL OCT. 31, 2027 — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

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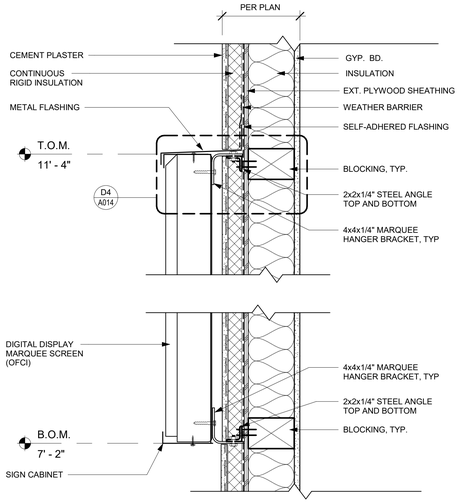
JOB	88910.00
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ORNAMENTAL METAL FENCING & GATE DETAILS

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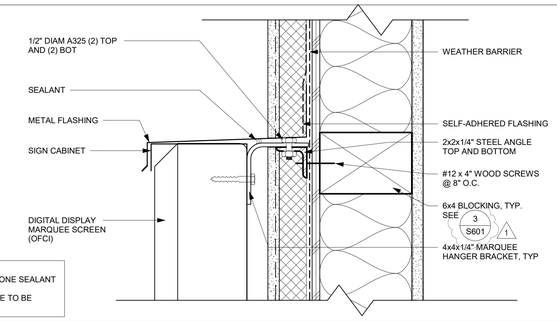
A013

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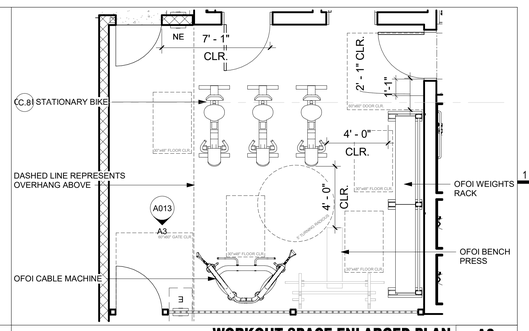
NOTE:-
- FASTENERS AND EXPOSED STEEL TO BE GALVANIZED.
- CONTRACTOR TO PROVIDE POWER AND DATA CONNECTIONS AT EXTERIOR DISPLAY LOCATION
- DIGITAL MARQUEE TO BE 200LBS MAX.

MARQUEE SECTION K4 — 1 1/2" = 1'-0"

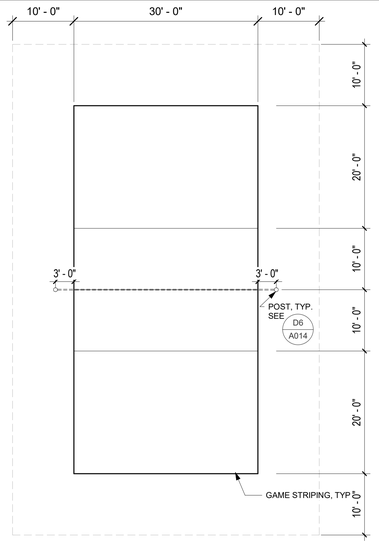


NOTE:
1. USE CLEAR SILICONE SEALANT AS NEEDED.
2. DIGITAL MARQUEE TO BE 200LBS MAX.

MARQUEE MOUNTING DETAIL D4 — 3" = 1'-0"

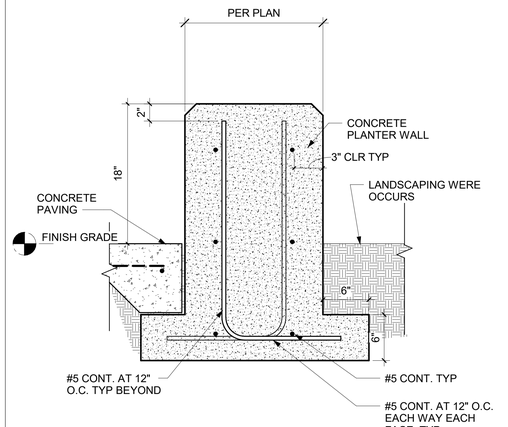


WORKOUT SPACE ENLARGED PLAN A2 — 1/4" = 1'-0"

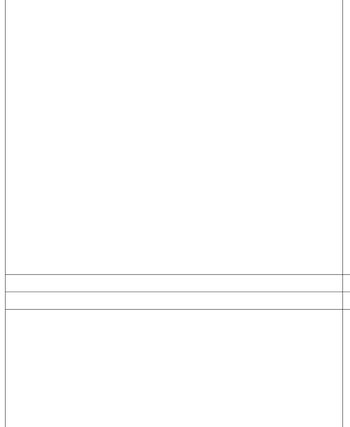


NOTES:
1. DIMENSIONS SHOWN ARE TYPICAL - COURT IS SYMETRICAL.
2. FOR VOLLEYBALL NET AND POST, SEE D6 A014

VOLLEYBALL COURT A6 — 1" = 10'-0"

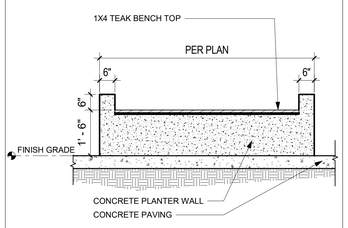


CONCRETE BENCH K7 — 1 1/2" = 1'-0"

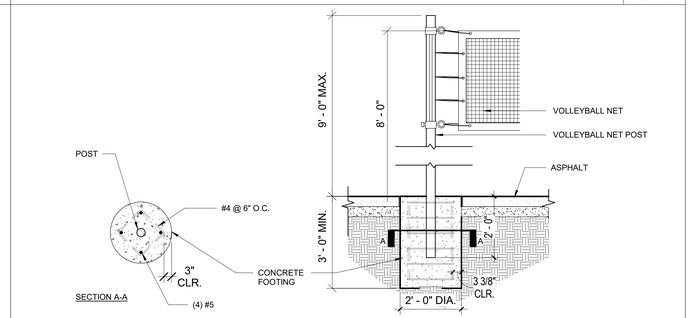


CONCRETE BENCH PLAN H8 — 1/2" = 1'-0"

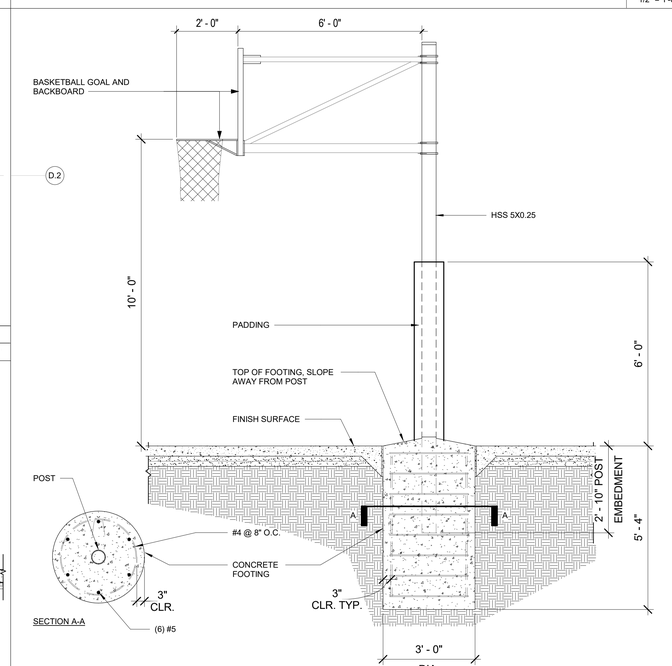
CONCRETE BENCH WITH WOOD TOP K10 — 1 1/2" = 1'-0"



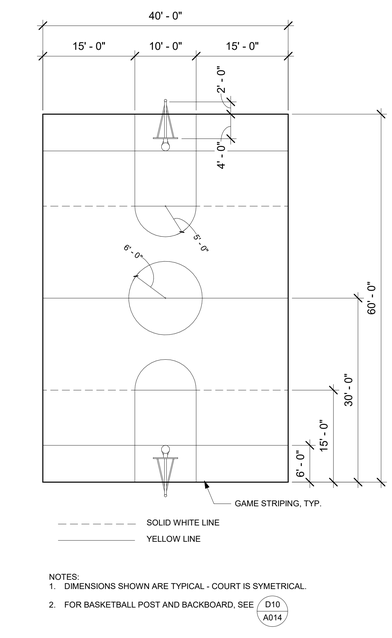
CONCRETE BENCH WITH WOOD TOP H10 — 1/2" = 1'-0"



VOLLEYBALL NET POST D6 — 1/2" = 1'-0"



BASKETBALL POST AND GOAL D10 — 1/2" = 1'-0"



NOTES:
1. DIMENSIONS SHOWN ARE TYPICAL - COURT IS SYMETRICAL.
2. FOR BASKETBALL POST AND BACKBOARD, SEE D10 A014

BASKETBALL COURT A10 — 1" = 10'-0"

MARKINGS NOTES

1. GAME STRIPING TO BE 2" WIDE PAINTED STRIPES
2. STRIPING TO BE WHITE UNLESS NOTED OTHERWISE

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APP: 03-122398 INC:
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LICENSED ARCHITECT — BRENT M. MATTAS — NO. — EXP. OCT. 31, 2026 — STATE OF CALIFORNIA

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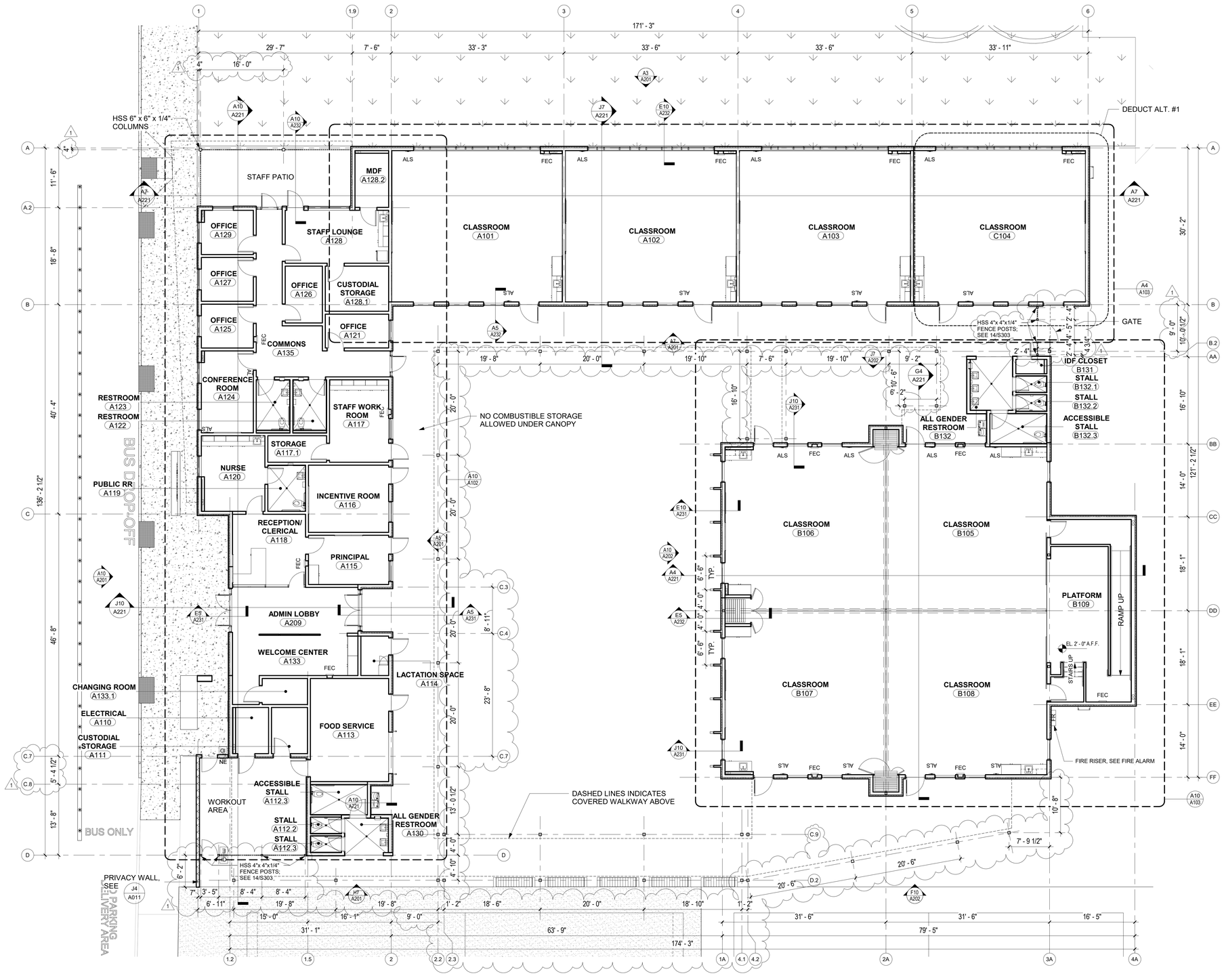
MISCELLANEOUS SITE DETAILS

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A014

M L K J H G F E D C B A
1 2 3 4 5 6 7 8 9 10

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FLOOR PLAN LEGEND

- XXX — INTERIOR PARTITION TYPE
- EWX.X — EXTERIOR WALL ASSEMBLY
- 100 / 1 — Room # / Door # — DOOR NUMBER
- SF X — STOREFRONT TYPE
- X — WINDOW TYPE
- NEW NON-RATED WALL
- 1 HR RATED FIRE BARRIER WALL
- NEW DOOR
- FEC — FIRE EXTINGUISHER CABINET
- ALS — ASSISTIVE LISTENING SIGNAGE

FLOOR PLAN NOTES

1. ITEMS ARE NEW UNLESS NOTED OTHERWISE.
2. GRID LINE IS TO FACE OF STUD U.N.O.
3. DIMENSIONS ARE MEASURED TO FACE OF STUD AND GRID LINES, UNLESS NOTED OTHERWISE.
4. FOR CLASSROOM TYPE A, SEE ENLARGED PLAN. (A10 / A303)
5. FOR CLASSROOM TYPE B, SEE ENLARGED PLAN. (A10 / A304)
6. SEE STOREFRONT WINDOW SCHEDULE AND ENLARGED FLOOR PLANS FOR STOREFRONT WINDOW SIZES.
7. ALL CLASSROOM DOORS SHALL BE LOCKABLE FROM THE INSIDE, SEE SECTION 08 7100 IN SPECS.
8. ALL FURNITURE OF/OI.
9. ALL DOOR OPENINGS ARE TO BE 6 INCHES MINIMUM FROM ADJACENT WALL U.N.O.

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LICENSED ARCHITECT — BRETT M. MATZEN — NO. 32948 — EXPIRES OCT. 31, 2027 — STATE OF CALIFORNIA

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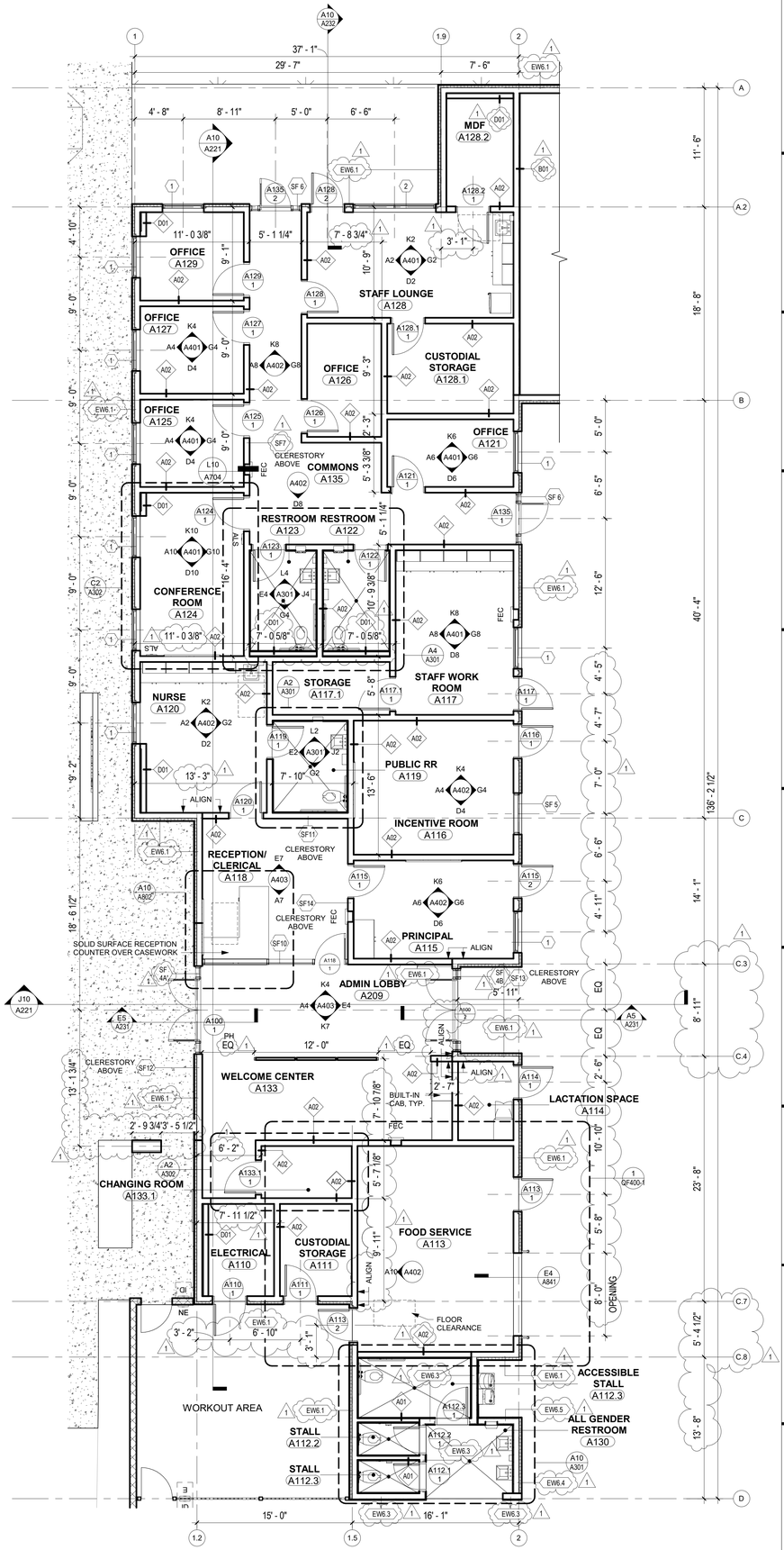
OVERALL FLOOR PLAN

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A101

OVERALL FLOOR PLAN A10 — 1/8" = 1'-0"

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FLOOR PLAN LEGEND

- XXX — INTERIOR PARTITION TYPE
- EWX.X — EXTERIOR WALL ASSEMBLY
- 100 / 1 — Room # / Door # — DOOR NUMBER
- SF X — STOREFRONT TYPE
- X — WINDOW TYPE
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6. SEE STOREFRONT WINDOW SCHEDULE AND ENLARGED FLOOR PLANS FOR STOREFRONT WINDOW SIZES.
7. ALL CLASSROOM DOORS SHALL BE LOCKABLE FROM THE INSIDE, SEE SECTION 08 7100 IN SPECS.
8. ALL FURNITURE OF/OI.
9. ALL DOOR OPENINGS ARE TO BE 6 INCHES MINIMUM FROM ADJACENT WALL U.N.O.

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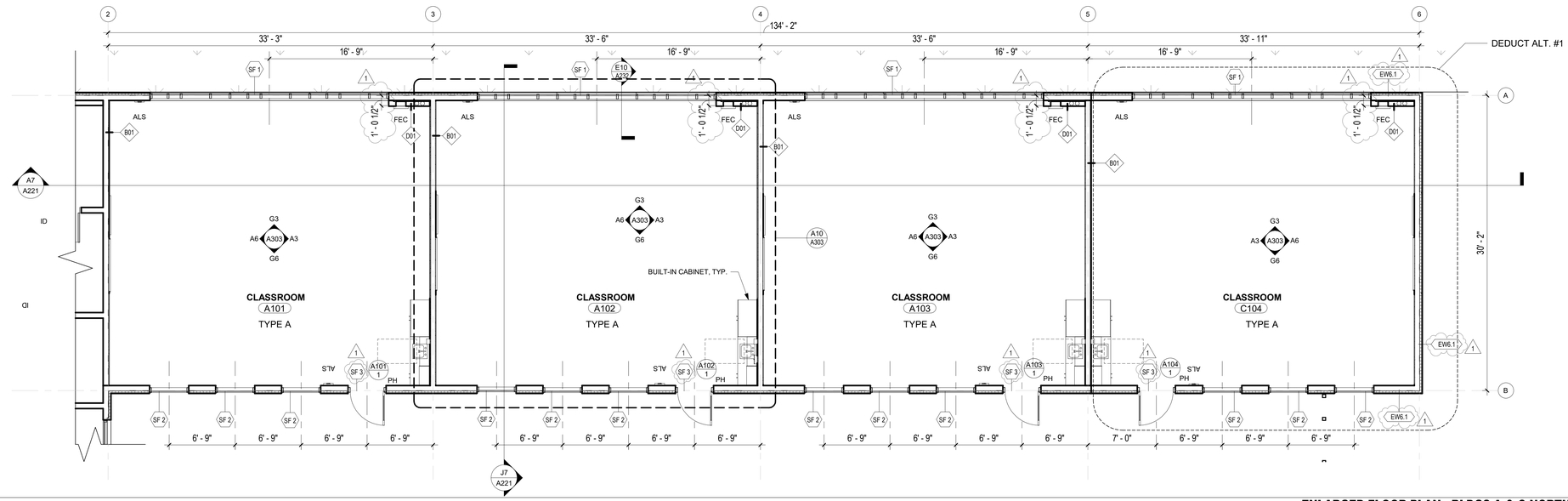
ENLARGED FLOOR PLAN - BLDG A

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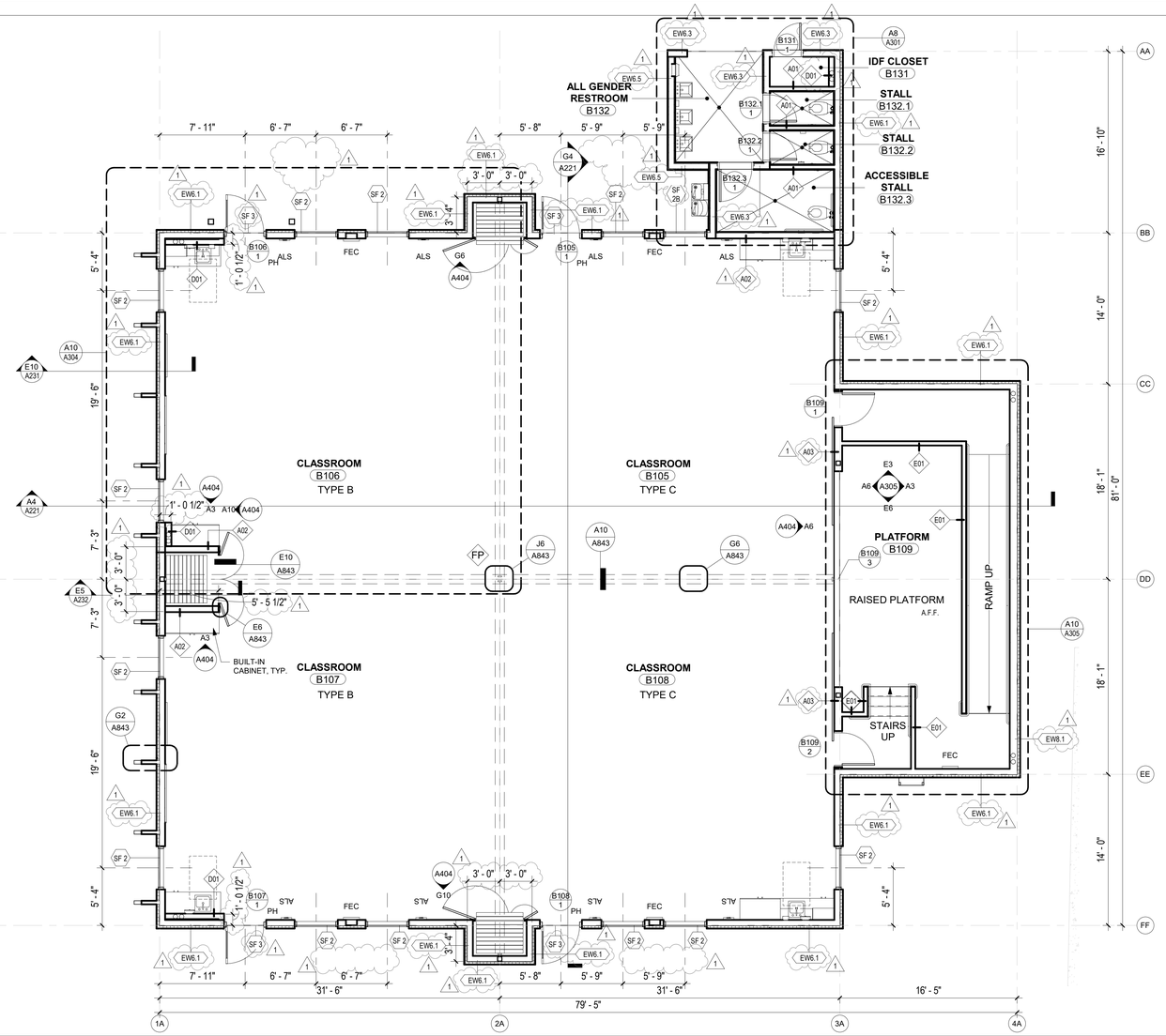
ENLARGED FLOOR PLAN - BLDG A WEST — A10 — 3/16" = 1'-0"

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ENLARGED FLOOR PLAN - BLDGS A & C NORTH — A4

3/16" = 1'-0"



ENLARGED FLOOR PLAN - BLDG B — A10

3/16" = 1'-0"

FLOOR PLAN LEGEND

- XXX — INTERIOR PARTITION TYPE
- EWX.X — EXTERIOR WALL ASSEMBLY
- 100 / 1 — Room # / Door # — DOOR NUMBER
- SF X — STOREFRONT TYPE
- X — WINDOW TYPE
- NEW NON-RATED WALL
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- NEW DOOR
- FEC — FIRE EXTINGUISHER CABINET
- ALS — ASSISTIVE LISTENING SIGNAGE

FLOOR PLAN NOTES

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2. GRID LINE IS TO FACE OF STUD U.N.O.
3. DIMENSIONS ARE MEASURED TO FACE OF STUD AND GRID LINES, UNLESS NOTED OTHERWISE.
4. FOR CLASSROOM TYPE A, SEE ENLARGED PLAN. (A10 / A303)
5. FOR CLASSROOM TYPE B, SEE ENLARGED PLAN. (A10 / A304)
6. SEE STOREFRONT WINDOW SCHEDULE AND ENLARGED FLOOR PLANS FOR STOREFRONT WINDOW SIZES.
7. ALL CLASSROOM DOORS SHALL BE LOCKABLE FROM THE INSIDE, SEE SECTION 08 7100 IN SPECS.
8. ALL FURNITURE OF/OI.
9. ALL DOOR OPENINGS ARE TO BE 6 INCHES MINIMUM FROM ADJACENT WALL U.N.O.

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LICENSED ARCHITECT — ROBERT M. MATHY — NO. 32762 — EXPIRES OCT. 31, 2027 — STATE OF CALIFORNIA

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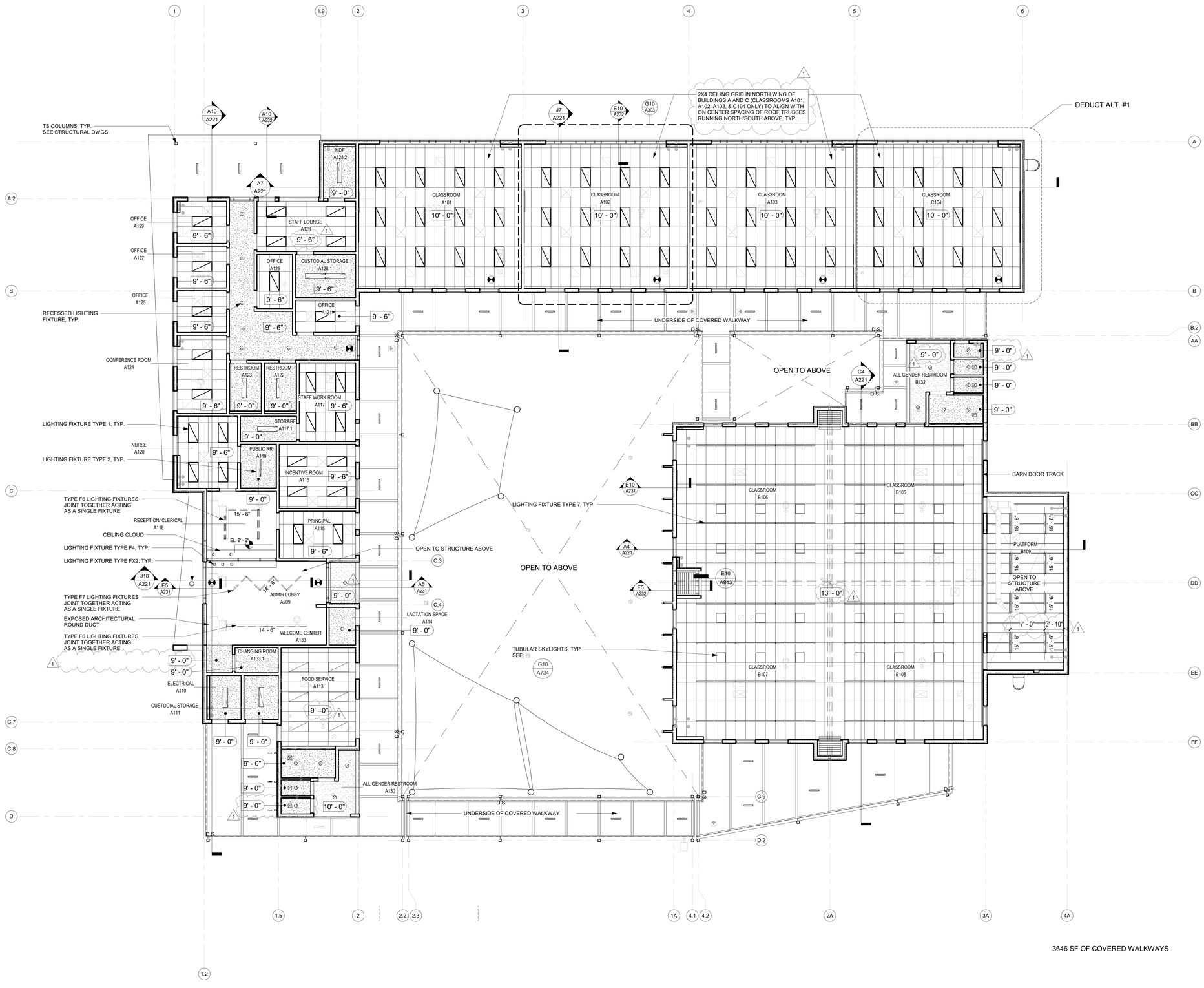
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ENLARGED FLOOR PLANS - BLDGS A, B, & C

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DS-RP-LEVEL 1 | **A10** | 1/8" = 1'-0"

CEILING PLAN LEGEND

- ACOUSTICAL TILE CEILING — A10 / A821
- PLASTER FINISH CEILING — E10 / A824
- GYPSUM BOARD CEILING — J10 / A824
- CEILING DIFFUSER/REGISTER - SEE MECH
- LIGHT FIXTURES, SEE ELECT
- 9' - 0" — HEIGHT OF THE BASE OF THE PENDANT FIXTURE A.F.F.
- TYPICAL LIGHTING FIXTURE SPACING, U.N.O.
- ACCESS PANEL
- PENDANT LIGHT

CEILING NOTES

1. FOR TYPICAL CEILING DETAILS, SEE SHEETS A821-A826.
2. HEIGHTS INDICATED ARE TO THE UNDERSIDE OF THE FINISH CEILING OR SOFFIT FROM THE FINISH FLOOR OF BUILDINGS.
3. PROVIDE ACCESS PANELS AT GYPSUM BOARD CEILINGS WHERE REQUIRED FOR PLUMBING, MECHANICAL, AND SPRINKLER ACCESS OR AS REQUIRED BY CODE.
4. PROVIDE ACCESS PANELS AT EACH SPRINKLER HEAD IN ATTIC/ CONCEALED SPACES.
5. LIGHT FIXTURES AND AIR DIFFUSERS/ REGISTERS ARE SHOWN FOR LOCATIONS ONLY. SEE ELECTRICAL AND MECHANICAL PLANS FOR ACTUAL TYPES AND SIZES.
6. SEE ELECTRICAL PLANS FOR EXIT SIGN LOCATIONS.
7. PROVIDE MOLD AND WATER RESISTANT GYPSUM BOARD AT RESTROOMS.
8. PROVIDE SWAY BRACING WHERE FIXTURES ARE SUSPENDED OVER 1'-0" AND WHERE ITEMS CANNOT SWING FREELY IN A 45 DEGRESS ARC.
9. LIGHT FIXTURES ARE TO BE CENTERED IN THE ROOM UNLESS NOTED OTHERWISE.
10. PAINT ALL EXPOSED CONDUITS AND PIPES.

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APP: 03-122398 INC:
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LICENSED ARCHITECT
GREGORY M. MARZEC
NO. 32744
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

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VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

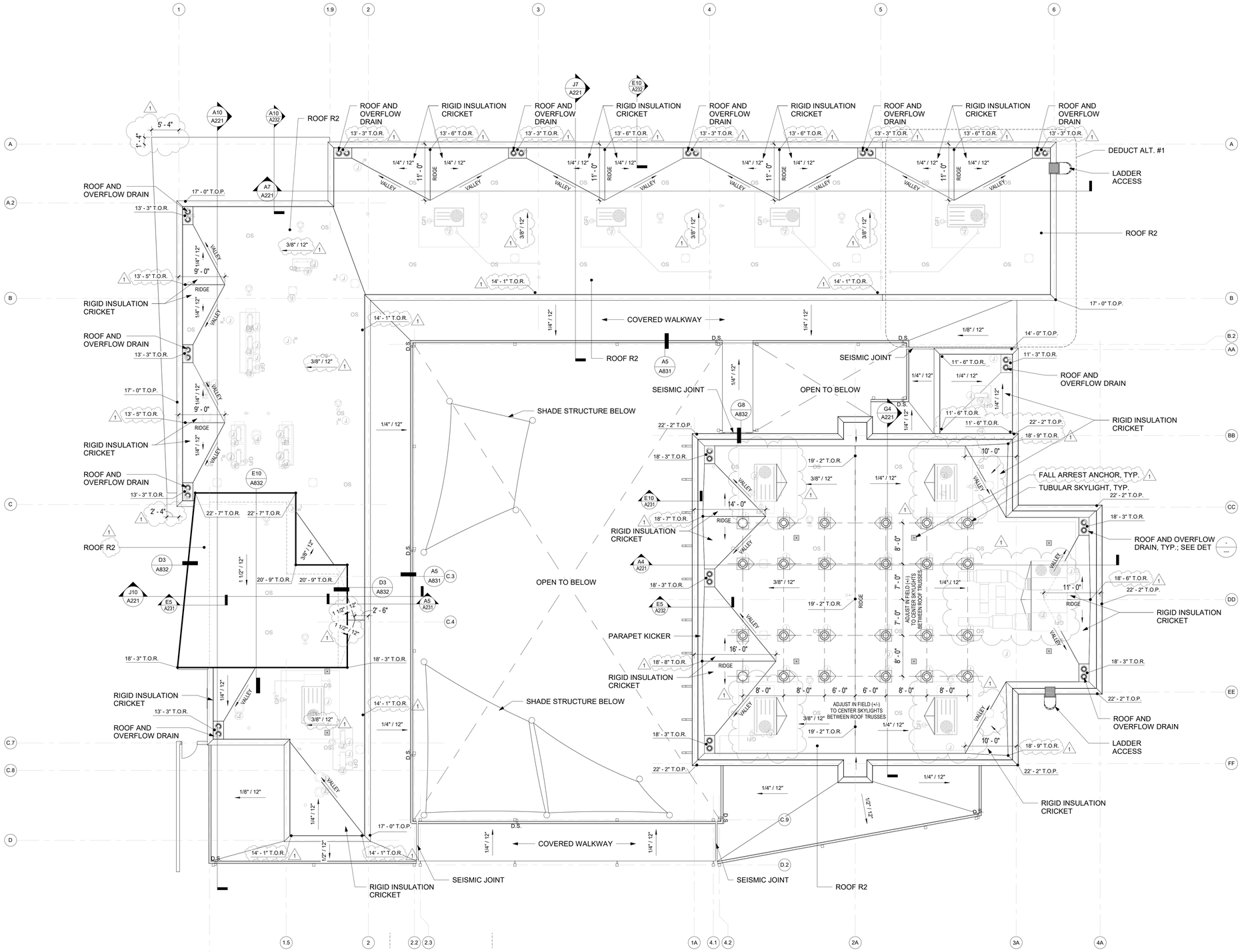
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REFLECTED CEILING PLAN

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ROOF LEGEND

SINGLE-PLY PVC ROOF

ROOF ASSEMBLY TYPES

ROOF XX

R2, -SINGLE-PLY PVC ROOFING
-MIN 1/2" PRE-PRIMED COVER BOARD
-2" RIGID INSULATION
-WEATHER BARRIER
-19/32" PLYWOOD SHEATHING

GENERAL ROOF NOTES

TUBULAR SKYLIGHT ANSI CCRR-0131

FALL ARREST ANCHORAGE CONNECTOR; SEE A3 A3832

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LICENSED ARCHITECT
DAVID M. MAYER
NO. 32761
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

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550 Airport Way, Camarillo, CA 93010

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DATE	10/23/2026
1 ADD 1	10/23/2026

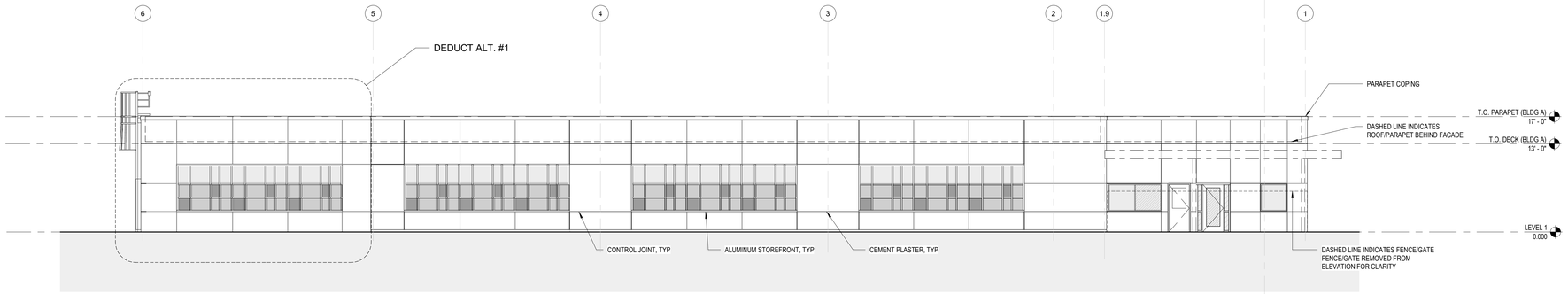
ROOF PLAN

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Costa Mesa, CA 92626
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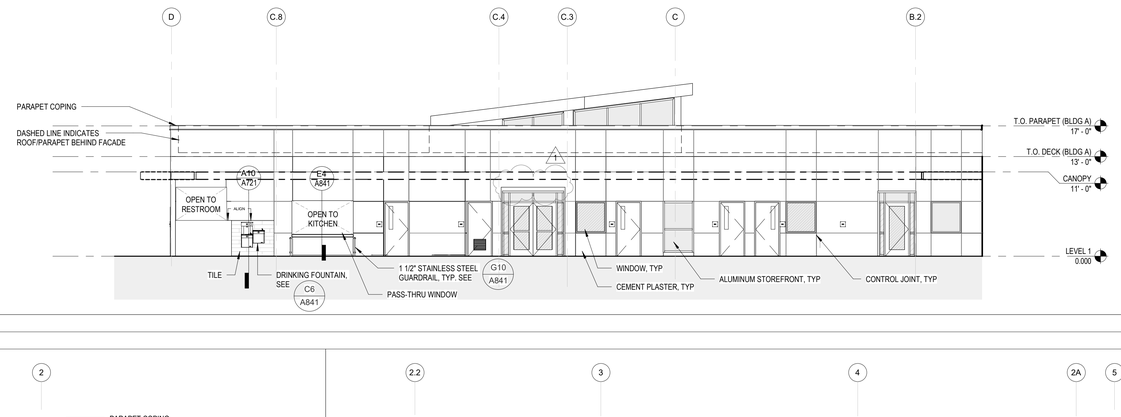
A131

ROOF PLAN A10
1/8" = 1'-0"

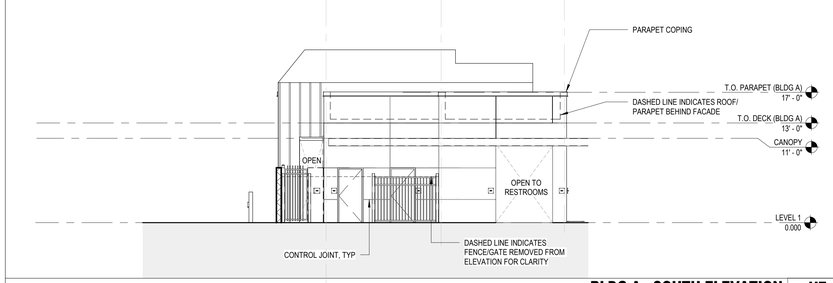
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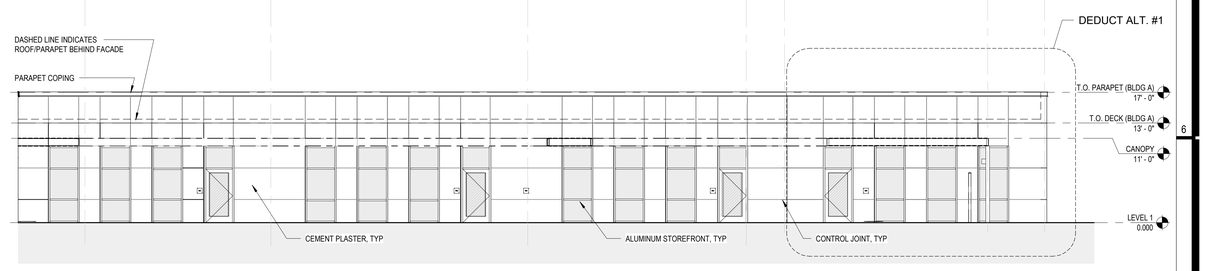
BLDG A - NORTH ELEVATION A3
1/8" = 1'-0"



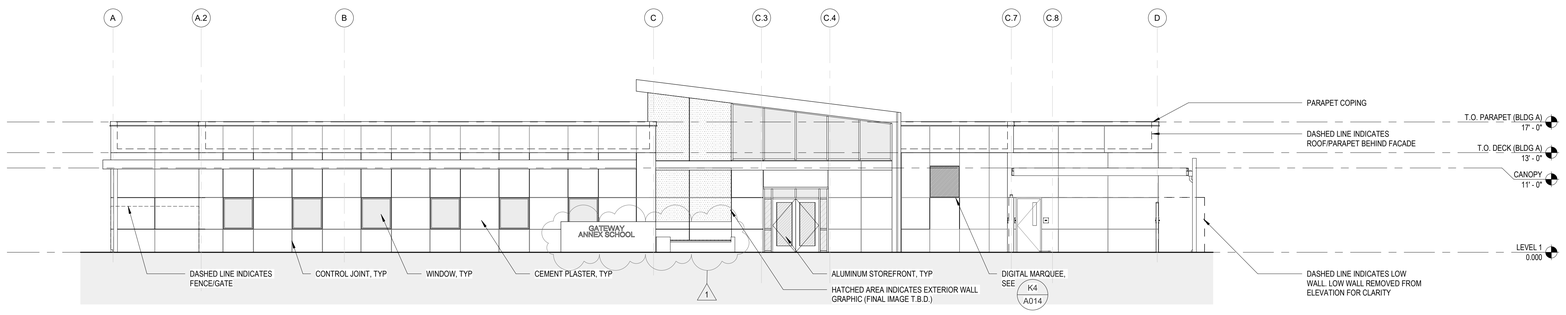
BLDG A - EAST ELEVATION A5
1/8" = 1'-0"



BLDG A - SOUTH ELEVATION H7
1/8" = 1'-0"



BLDG A - SOUTH ELEVATION A7
1/8" = 1'-0"



BLDG A - WEST ELEVATION A10
1/8" = 1'-0"

GLAZING LEGEND

- GLAZING TYPE I
- GLAZING TYPE II
- GLAZING WITH FILM: FASARA - MILKY MILKY LIGHT GREY 2H2MAMML
- GLAZING WITH FILM: FASARA - CROSS HAIRLINE MILKY SH2CHML

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
REGD. M. MAYAN
NO. 32744
EXPIRES OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

EXTERIOR ELEVATIONS

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A201

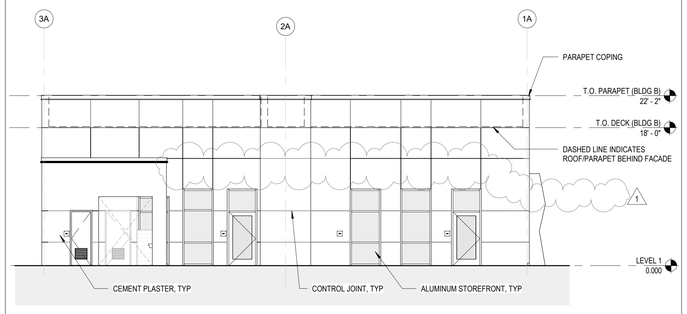
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GLAZING LEGEND

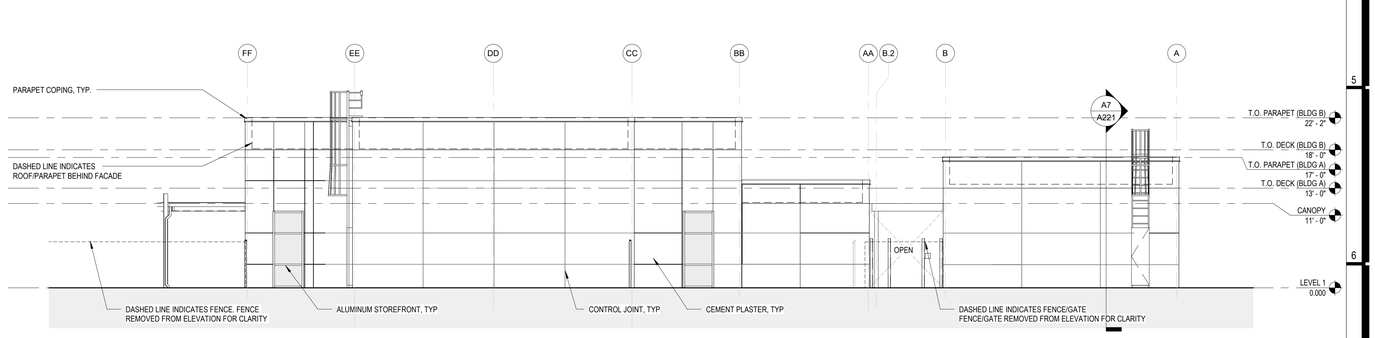
- GLAZING TYPE I
- GLAZING TYPE II
- GLAZING WITH FILM: FASARA - MILKY MILKY LIGHT GREY 2H2MAMML
- GLAZING WITH FILM: FASARA - CROSS HAIRLINE MILKY SH2CHML

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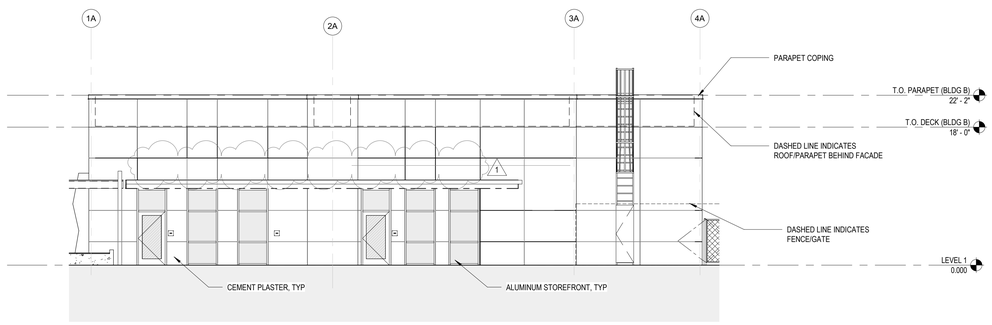
LICENSED ARCHITECT
GREGORY M. MARTIN
NO. 27041
EXP. OCT. 31, 2027
STATE OF CALIFORNIA



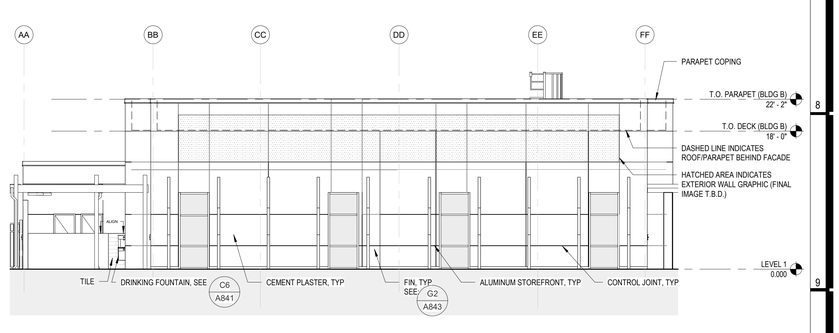
BLDG B - NORTH ELEVATION J7
1/8" = 1'-0"



BLDGS A & B - EAST ELEVATION A7
1/8" = 1'-0"



BLDG B - SOUTH ELEVATION1 F10
1/8" = 1'-0"



BLDG B - WEST ELEVATION A10
1/8" = 1'-0"

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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1 ADD 1	10/23/2026

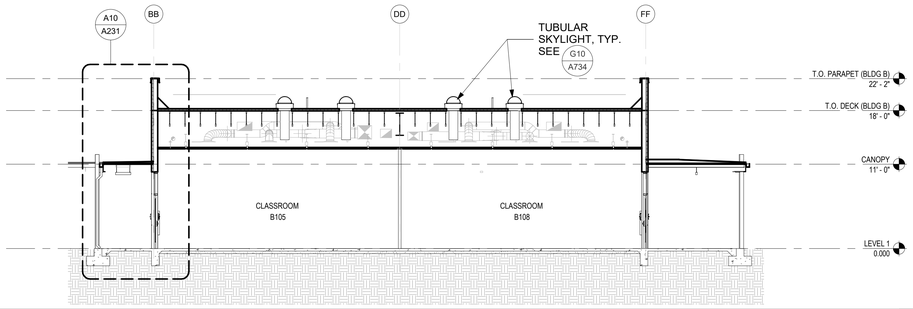
EXTERIOR ELEVATIONS

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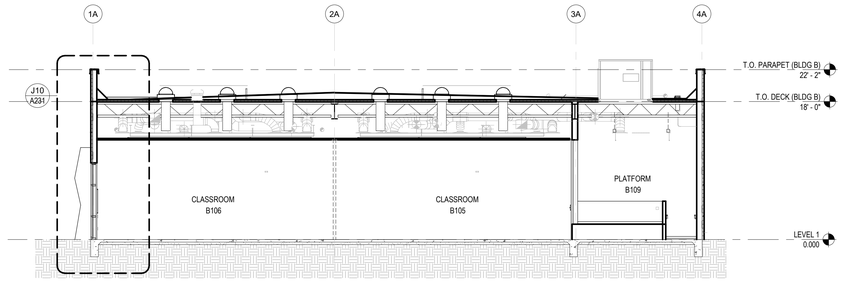
A202

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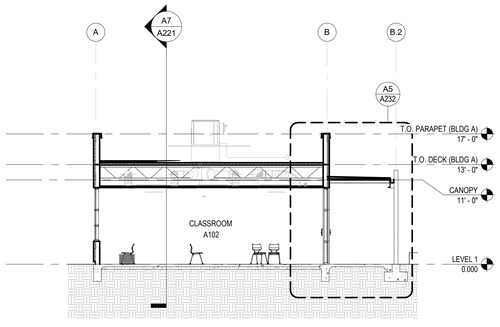
APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
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DATE: 11/02/2026



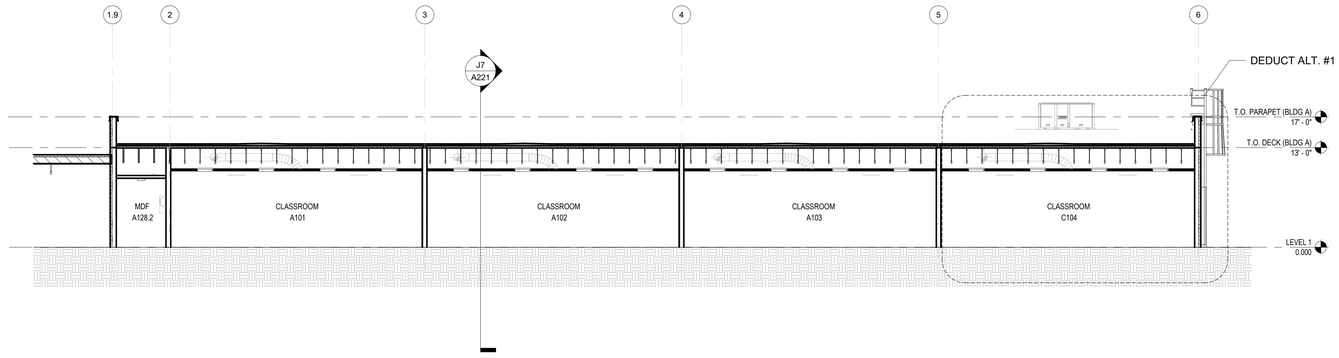
NS SECTION 4-CLASSROOM G4
1/8" = 1'-0"



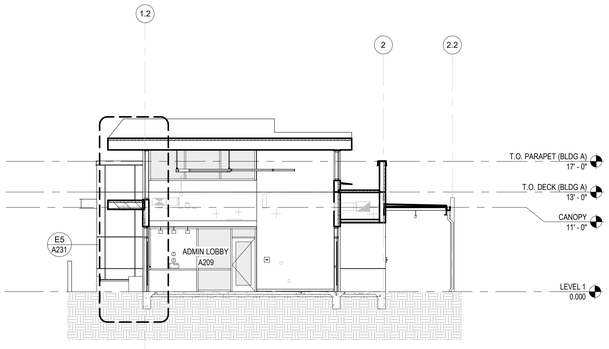
EW SECTION 4-CLASSROOM A4
1/8" = 1'-0"



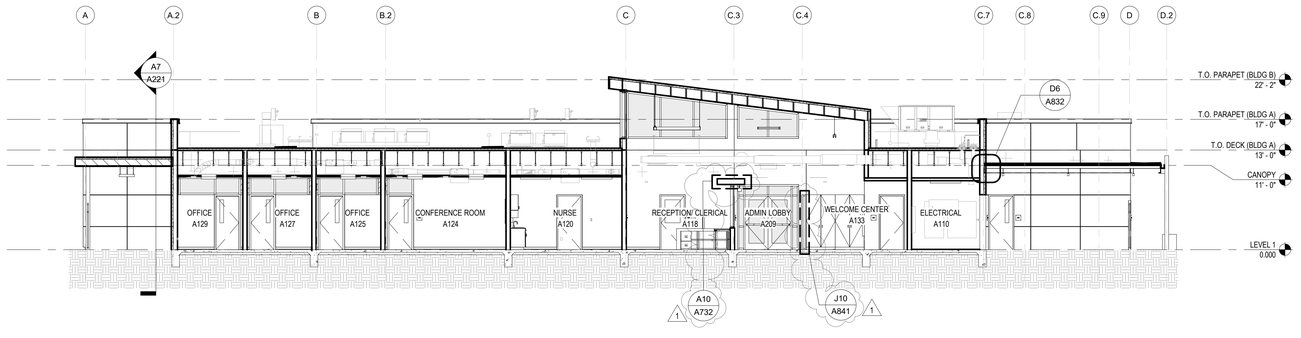
NS SECTION NORTH CLASSROOM J7
1/8" = 1'-0"



EW SECTION NORTH CLASSROOM A7
1/8" = 1'-0"



EW SECTION COURTYARD J10
1/8" = 1'-0"



NS SECTION ADMIN BUILDING A10
1/8" = 1'-0"

M L K J H G F E D C B A

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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DATE	10/23/2026
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BUILDING SECTIONS

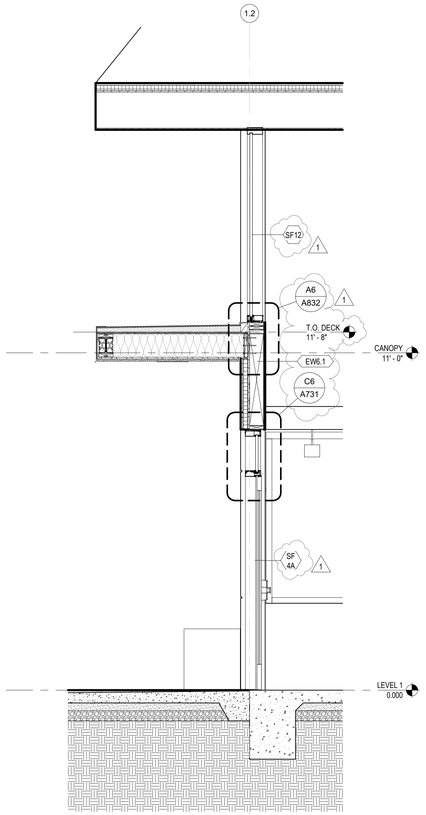
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A221

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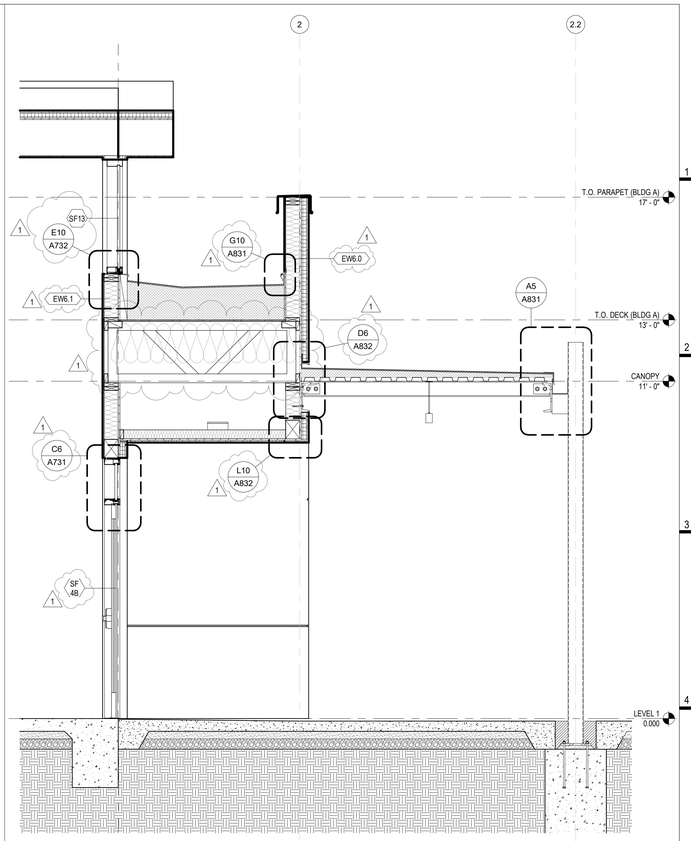
APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
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DATE: 11/02/2026

LICENSED ARCHITECT
SCOTT M. MAYFIELD
NO. 37941
EXP. OCT. 31, 2027
STATE OF CALIFORNIA



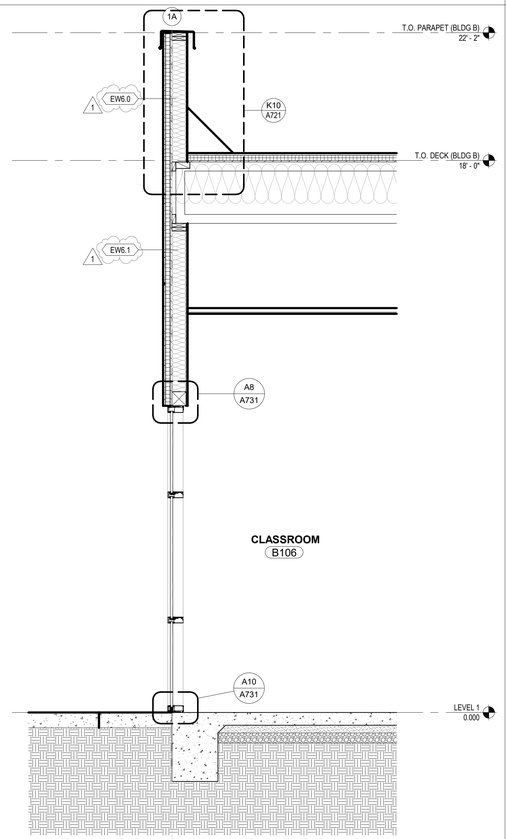
WALL SECTION - FRONT ENTRANCE E5

1/2" = 1'-0"



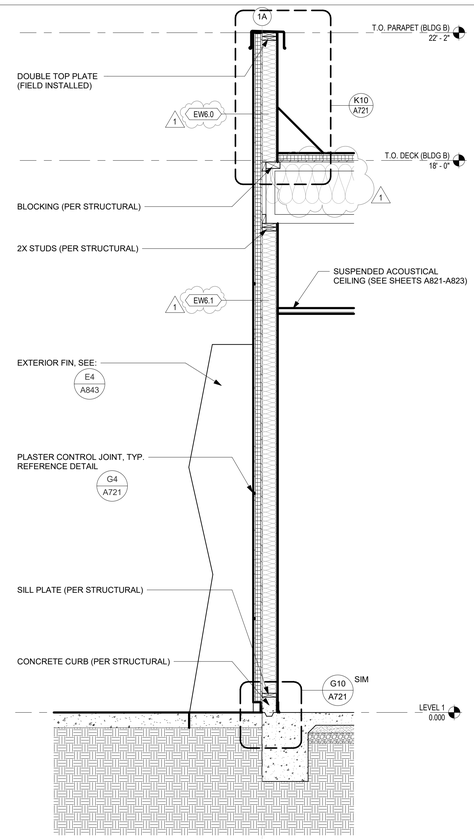
WALL SECTION - COURTYARD A5

1/2" = 1'-0"



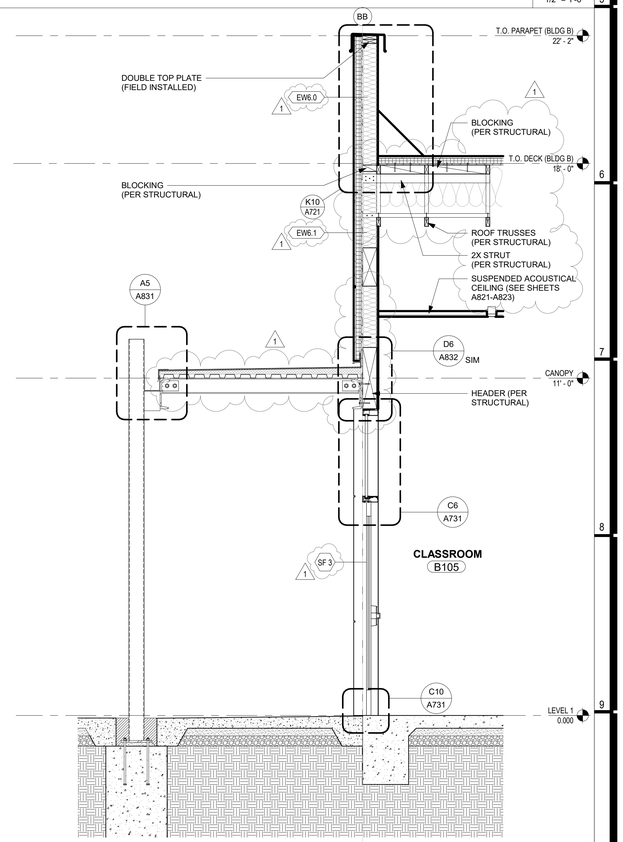
WALL SECTION - STOREFRONT J10

1/2" = 1'-0"



WALL SECTION - FINS E10

1/2" = 1'-0"



WALL SECTION - BUILDING B A10

1/2" = 1'-0"

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

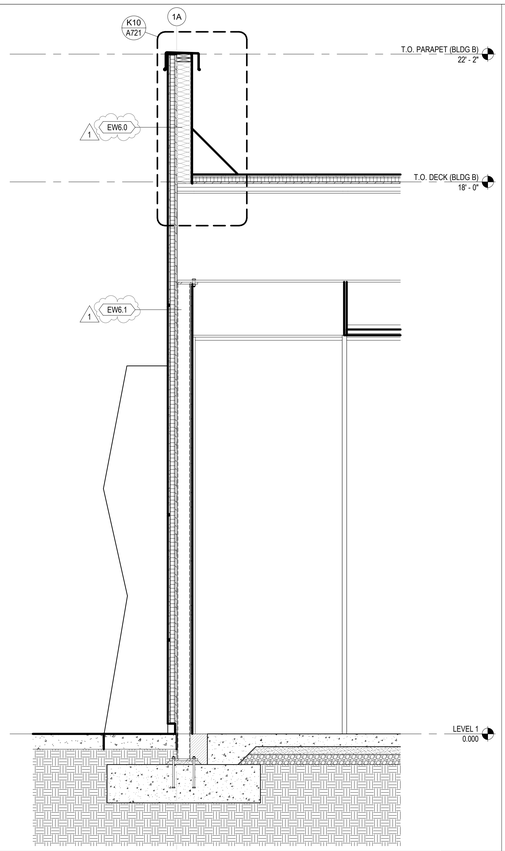
JOB	88910.00
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DATE	10/23/2026
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EXTERIOR WALL SECTIONS

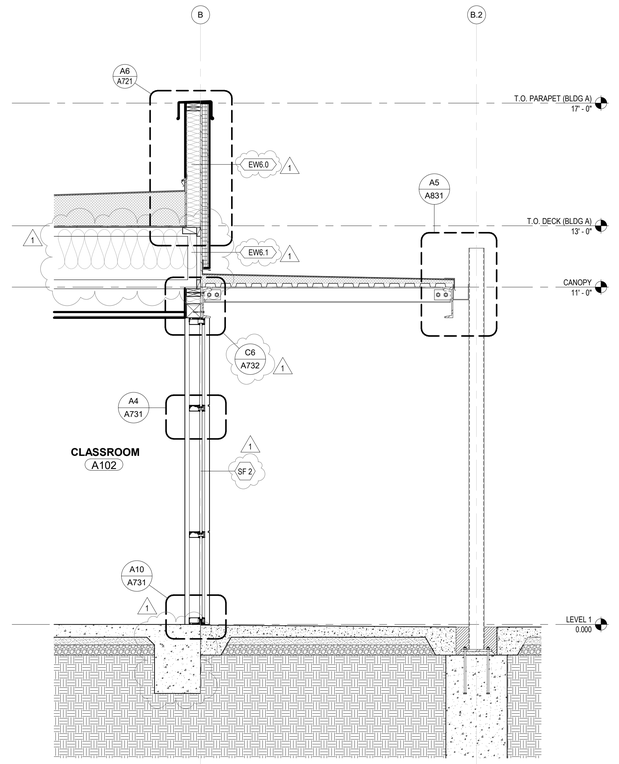
PERKINS EASTMAN
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A231

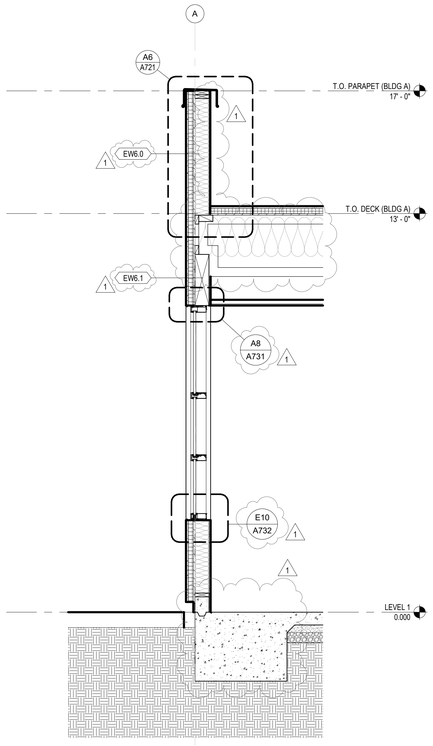
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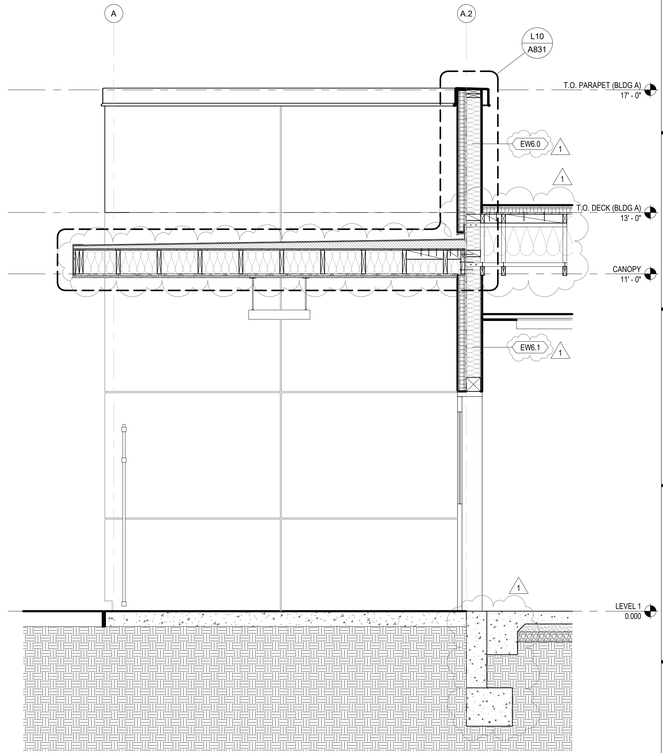
WALL SECTION - PARTITION POCKET E5
1/2" = 1'-0"



WALL SECTION - CANOPY A5
1/2" = 1'-0"



WALL SECTION - NORTH CLASSROOMS E10
1/2" = 1'-0"



WALL SECTION - STAFF PATIO A10
1/2" = 1'-0"

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APP: 03-122398 INC:
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DATE: 11/02/2026

LICENSED ARCHITECT
ROBERT M. MAYER
NO. 37947
OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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EXTERIOR WALL SECTIONS

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A232

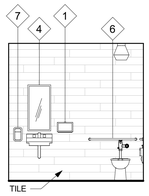
M L K J H G F E D C B A
1 2 3 4 5 6 7 8 9 10

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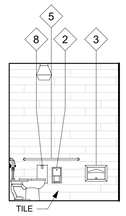
PUBLIC RESTROOM - NORTH L2

1/4" = 1'-0"



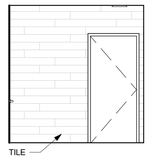
PUBLIC RESTROOM - EAST J2

1/4" = 1'-0"



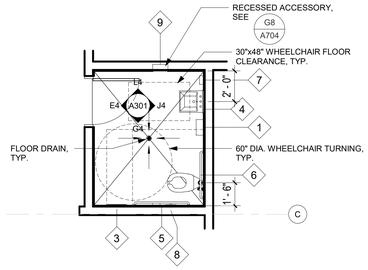
PUBLIC RESTROOM - SOUTH G2

1/4" = 1'-0"



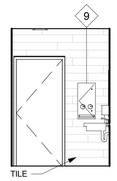
PUBLIC RESTROOM - WEST E2

1/4" = 1'-0"



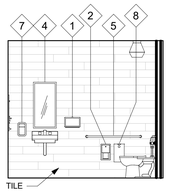
ENLARGED FLOOR PLAN - A119 PUBLIC RESTROOM A2

1/4" = 1'-0"



STAFF RESTROOM - NORTH L4

1/4" = 1'-0"



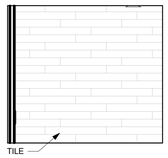
STAFF RESTROOM - EAST J4

1/4" = 1'-0"



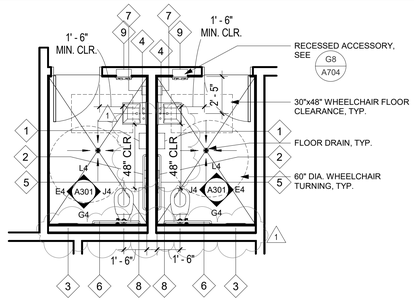
STAFF RESTROOM - SOUTH G4

1/4" = 1'-0"



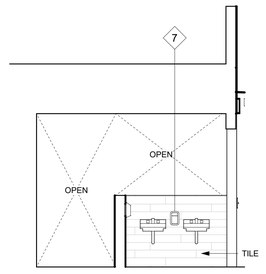
STAFF RESTROOM - WEST E4

1/4" = 1'-0"



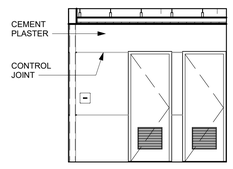
ENLARGED FLOOR PLAN - A122/A123 STAFF RESTROOMS A4

1/4" = 1'-0"



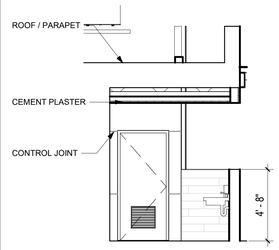
STUDENT RESTROOM - EAST L6

1/4" = 1'-0"



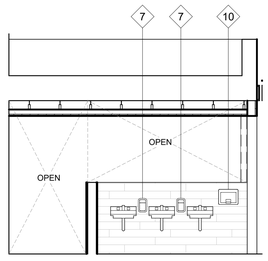
STUDENT RESTROOM - EAST J6

1/4" = 1'-0"



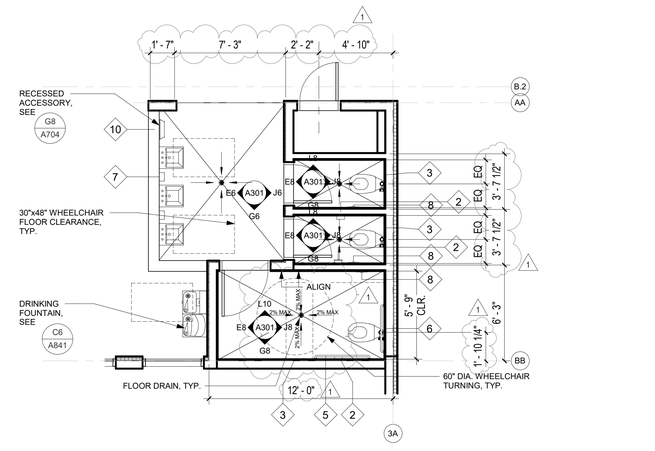
STUDENT RESTROOM - SOUTH G6

1/4" = 1'-0"



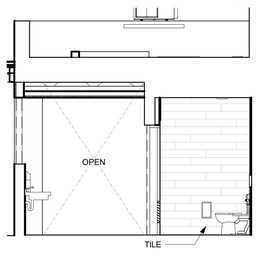
STUDENT RESTROOM - WEST E6

1/4" = 1'-0"



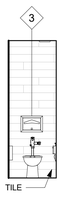
ENLARGED FLOOR PLAN - A132 EAST RESTROOMS A8

1/4" = 1'-0"



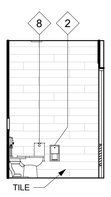
STUDENT TOILET - NORTH L8

1/4" = 1'-0"



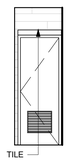
STUDENT TOILET - EAST J8

1/4" = 1'-0"



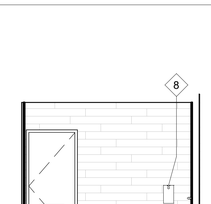
STUDENT TOILET - SOUTH G8

1/4" = 1'-0"



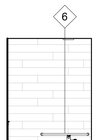
STUDENT TOILET - WEST E8

1/4" = 1'-0"



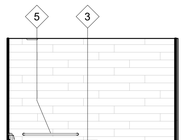
STUDENT ACCESSIBLE TOILET - NORTH L10

1/4" = 1'-0"



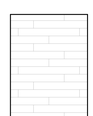
STUDENT ACCESSIBLE TOILET - EAST J10

1/4" = 1'-0"



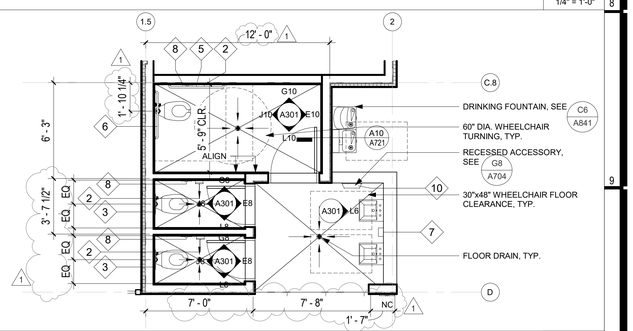
STUDENT ACCESSIBLE TOILET - SOUTH G10

1/4" = 1'-0"



STUDENT ACCESSIBLE TOILET - WEST E10

1/4" = 1'-0"



ENLARGED FLOOR PLAN - A130 WEST RESTROOMS A10

1/4" = 1'-0"

M L K J H G F E D C B A

ACCESSORIES...

#	DESCRIPTION	MODEL	BASIS OF DESIGN
1	PAPER TOWEL DISPENSER - SURFACE MOUNTED	B-262	BOBRICK
2	TOILET TISSUE DISPENSER - RECESSED	B-4388	BOBRICK
3	TOILET SEAT COVER DISPENSER	B-5221	BOBRICK
4	GLASS MIRROR WITH FRAME - 18" x 36"	B-2908	BOBRICK
5	GRAB BAR 42"	B-6806	BOBRICK
6	GRAB BAR 36"	B-6806	BOBRICK
7	SOAP DISPENSER - SURFACE MOUNTED	B-2111	BOBRICK
8	SANITARY NAPKIN DISPOSAL - SURFACE MOUNTED	B-270	BOBRICK
9	SANITARY NAPKIN VENDOR SEMI-RECESSED	B-2706	BOBRICK
10	HAND-DRYER	B750	BOBRICK

RESTROOM FLOOR PLAN NOTES

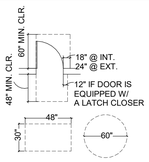
1. GRAB BAR MOUNTING DETAIL SEE A10 A302
2. FOR RECESSED ACCESSORIES SEE A302
3. FOR TYPICAL ACCESSORY MOUNTING HEIGHT SEE F10 A302
4. FOR TYPICAL TILE PATTERN SEE A7 A302

ELEVATION LEGEND

SOAP DISPENSER

PAPER TOWEL DISPENSER

TYP. CLEARANCES



DOOR LANDING CLEARANCE

FLOOR CLEARANCE

TILES

DALTILE PORTFOLIO
TL-1 DOVE GREY PF04 MATTE
TL-2 ASH GREY PF05 MATTE
TL-3 SKYLINE BLEND PF12

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
BRENT M. MAXEY
NO. 32966
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

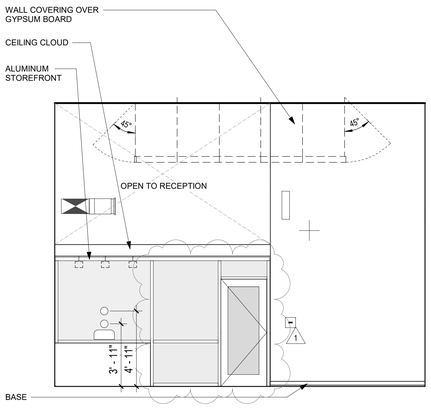
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

ENLARGED RESTROOM FLOOR PLANS & ELEVATIONS

PERKINS — EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

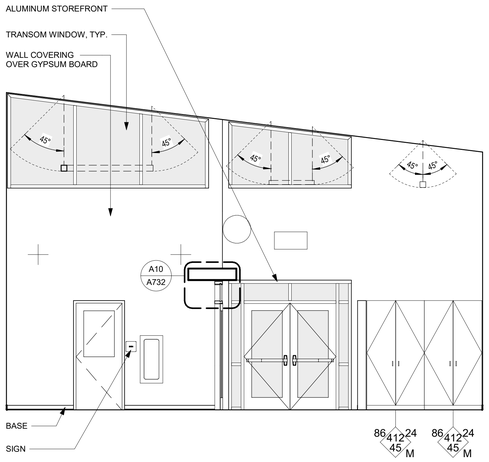
A301

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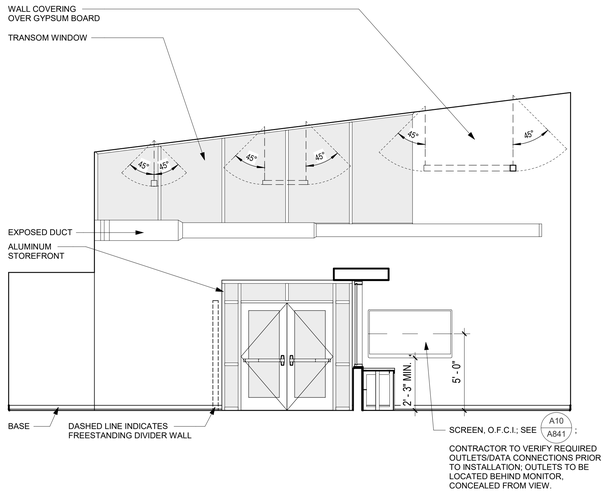
NORTH - ENTRANCE K4

1/4" = 1'-0"



EAST - ENTRANCE E4

1/4" = 1'-0"



WEST - ENTRANCE A4

1/4" = 1'-0"

SOUTH - ENTRANCE K7

1/4" = 1'-0"

NORTH - RECEPTION E7

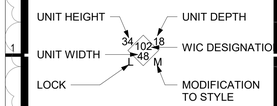
1/4" = 1'-0"

SOUTH - RECEPTION A7

1/4" = 1'-0"

INT. ELEVATION LEGEND

CASEWORK TAG:



CASEWORK NOTES:

1. PROVIDE LOCKS FOR CABINET DRAWNERS AND DOORS, TYP.
2. REFER TO MANUAL OF MILLWORK BY WOODWORK INSTITUTE OF CALIFORNIA FOR WIC DESIGNATION.
3. FOR CASEWORK SEE A801

ELEVATION LEGEND

SOAP DISPENSER

PAPER TOWEL DISPENSER

ACCESSORIES...

#	DESCRIPTION	MODEL	BASIS OF DESIGN
1	PAPER TOWEL DISPENSER - SURFACE MOUNTED	B-262	BOBRICK
2	TOILET TISSUE DISPENSER - RECESSED	B-4388	BOBRICK
3	TOILET SEAT COVER DISPENSER	B-5221	BOBRICK
4	GLASS MIRROR WITH FRAME - 18" x 36"	B-2908	BOBRICK
5	GRAB BAR 42"	B-6806	BOBRICK
6	GRAB BAR 36"	B-6806	BOBRICK
7	SOAP DISPENSER - SURFACE MOUNTED	B-2111	BOBRICK
8	SANITARY NAPKIN DISPOSAL - SURFACE MOUNTED	B-270	BOBRICK
9	SANITARY NAPKIN VENDOR SEMI-RECESSED	B-2706	BOBRICK
10	HAND-DRYER	B750	BOBRICK

INT. ELEV. NOTES

1. FOR LIGHT FIXTURE BRACE WIRE ATTACHMENT, SEE DETAIL G6, SHEET A841.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
BRETT M. MATZEK
NO. C-32741
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

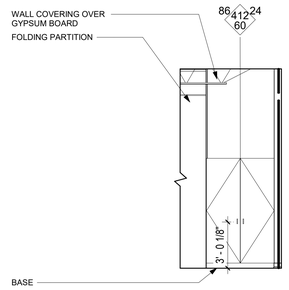
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

INTERIOR ELEVATIONS - BLDG A

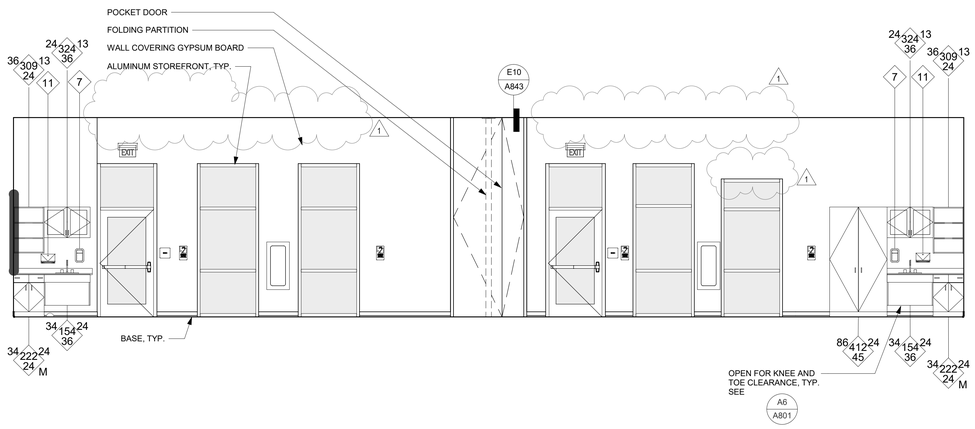
PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

A403

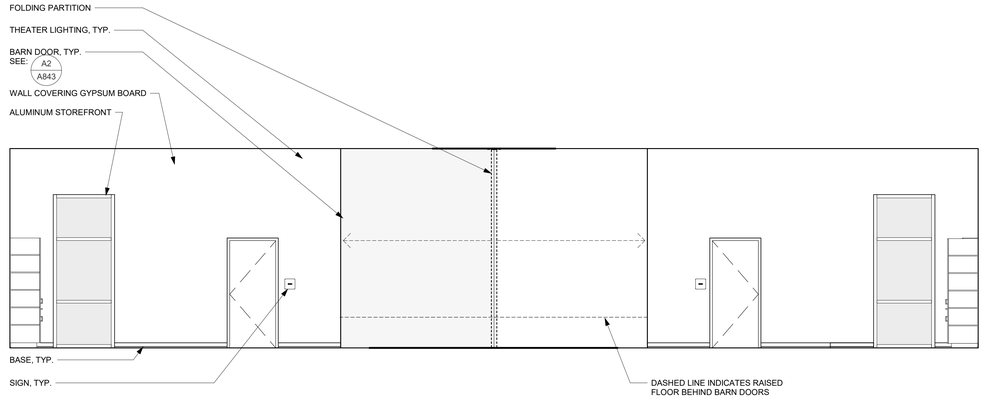
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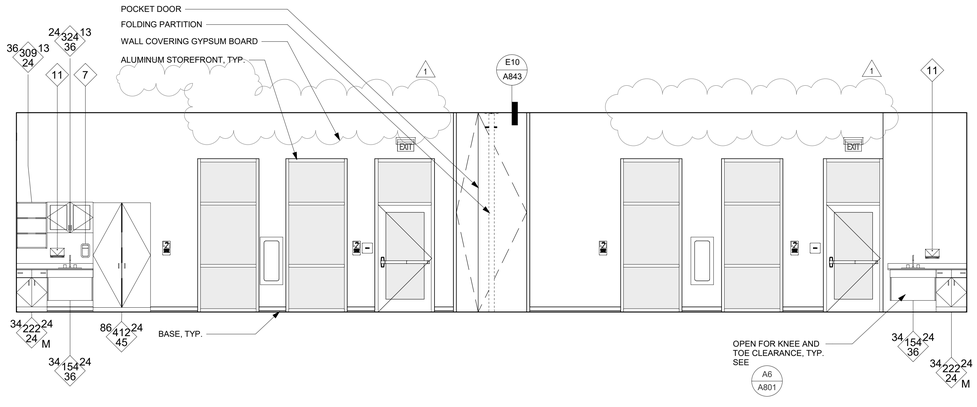
CLASSROOM TYPE B - SOUTH | A3
1/4" = 1'-0"



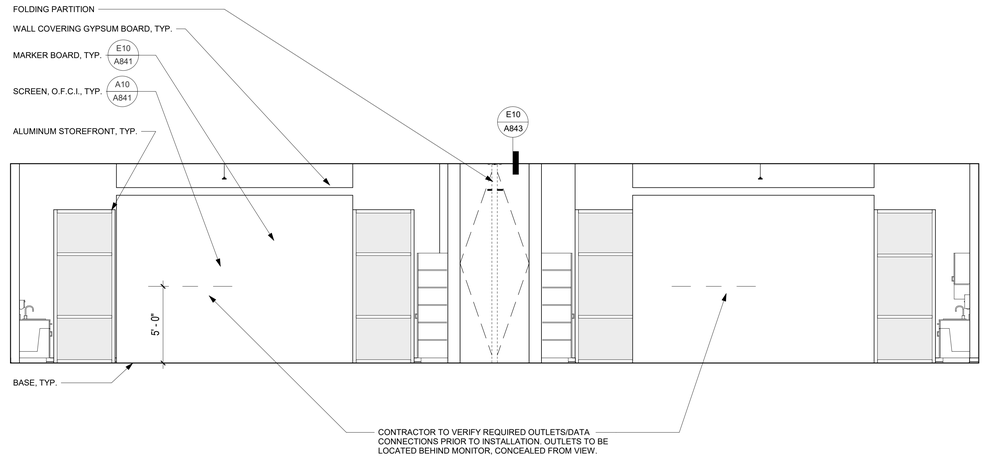
BUILDING B - NORTH | G6
1/4" = 1'-0"



BUILDING B - EAST | A6
1/4" = 1'-0"



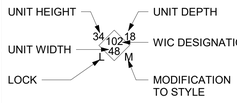
BUILDING B - SOUTH | G10
1/4" = 1'-0"



BUILDING B - WEST | A10
1/4" = 1'-0"

INT. ELEVATION LEGEND

CASEWORK TAG:



CASEWORK NOTES:

1. PROVIDE LOCKS FOR CABINET DRAWNERS AND DOORS, TYP.
2. REFER TO MANUAL OF MILLWORK BY WOODWORK INSTITUTE OF CALIFORNIA FOR WIC DESIGNATION.
3. FOR CASEWORK SEE A801

ELEVATION LEGEND

SOAP DISPENSER

PAPER TOWEL DISPENSER

ACCESSORIES...

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9	SANITARY NAPKIN VENDOR SEMI-RECESSED	B-2706	BOBRICK
10	HAND-DRYER	B750	BOBRICK

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
ROBERT M. MATTEI
NO. C-27941
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

INTERIOR ELEVATIONS - BLDG B

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

A404

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1 2 3 4 5 6 7 8 9 10

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FINISH SCHEDULE

ROOM #	ROOM NAME	FLOORING FIELD	FLOORING BASE	WALL FINISH NORTH	WALL FINISH SOUTH	WALL FINISH EAST	WALL FINISH WEST	CEILING	REMARKS
A101	CLASSROOM	VCT-1	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A102	CLASSROOM	VCT-1	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A103	CLASSROOM	VCT-1	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A110	ELECTRICAL	SC	RB	PT-1	PT-1	PT-1	PT-1	GWB	
A111	CUSTODIAL STORAGE	SC	RB	PT-1	PT-1	PT-1	PT-1	GWB	
A112.2	STALL	SC	CB	TILE	TILE	TILE	TILE	GWB	
A112.3	ACCESSIBLE STALL	SC	CB	TILE	TILE	TILE	TILE	GWB	
A112.3	STALL	SC	CB	TILE	TILE	TILE	TILE	GWB	
A113	FOOD SERVICE	QT	CB	FRP	FRP	FRP	FRP	ACT-2	
A114	LACTATION SPACE	VCT	RB	PT-1	PT-1	PT-1	PT-1	PLASTER	
A115	PRINCIPAL	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A116	INCENTIVE ROOM	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A117	STAFF WORK ROOM	VCT	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A117.1	STORAGE	VCT	RB	PT-1	PT-1	PT-1	PT-1	PLASTER	
A118	RECEPTION/ CLERICAL	CP	RB	PT-1	PT-1	PT-1	PT-1	PG	
A119	PUBLIC RR	FT	CB	TILE	TILE	TILE	TILE	PLASTER	
A120	NURSE	VCT	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A121	OFFICE	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A122	RESTROOM	FT	CB	TILE	TILE	TILE	TILE	PLASTER	
A123	RESTROOM	FT	CB	TILE	TILE	TILE	TILE	PLASTER	
A124	CONFERENCE ROOM	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A125	OFFICE	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A126	OFFICE	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A127	OFFICE	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A128	STAFF LOUNGE	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A128.1	CUSTODIAL STORAGE	VCT	RB	PT-1	PT-1	PT-1	PT-1	GWB	
A128.2	MDF	SC	RB	PT-1	PT-1	PT-1	PT-1	GWB	
A129	OFFICE	CP	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
A130	ALL GENDER RESTROOM	SC	RB	PT-1	TILE	PT-1	PT-1	PLASTER	
A133	WELCOME CENTER	VCT-1	RB	KALWALL	PT-1	PT-1	PT-1	PG	
A133.1	CHANGING ROOM	VCT-1	RB	PT-1	PT-1	PT-1	PT-1	PLASTER	
A135	COMMONS	VCT-1	RB	PT-1	PT-1	PT-1	PT-1	PLASTER	
A209	ADMIN LOBBY	VCT-1	RB	PT-1	KALWALL	PT-1	PT-1	PG	
B105	CLASSROOM	VCT-1	RB	PT-1	FOLDING PARTITION	PT-1	FOLDING PARTITION	ACT-1	
B106	CLASSROOM	VCT-1	RB	PT-1	FOLDING PARTITION	FOLDING PARTITION	PT-1	ACT-1	
B107	CLASSROOM	VCT-1	RB	FOLDING PARTITION	PT-1	FOLDING PARTITION	PT-1	ACT-1	
B108	CLASSROOM	VCT-1	RB	FOLDING PARTITION	PT-1	PT-1	FOLDING PARTITION	ACT-1	
B109	PLATFORM	VCT-1	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
B131	IDF CLOSET	SC	RB	PT-1	PT-1	PT-1	PT-1	GWB	
B132	ALL GENDER RESTROOM	SC	RB	PT-1	PT-1	PT-1	TILE	PLASTER	
B132.1	STALL	SC	CB	TILE	TILE	TILE	TILE	GWB	
B132.2	STALL	SC	CB	TILE	TILE	TILE	TILE	GWB	
B132.3	ACCESSIBLE STALL	SC	CB	TILE	TILE	TILE	TILE	GWB	
C104	CLASSROOM	VCT-1	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	

Grand total: 44

FINISH LEGEND

CB	COVED BASE TILE
CP	CARPET
FT	FLOOR TILE
WT	WALL TILE
SC	SEALED CONCRETE
PG	PAINT GLOSS
PSG	PAINT SEMI-GLOSS
RB	RESILIENT BASE
VCT	VINYL COMPISITION TILE
FRP	FIBERGLASS REINFORCED PLASTIC
QT	QUARRY TILE
ACT-1	ACOUSTIC CEILING TILE
ACT-2	ACOUSTIC CEILING TILE

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
ROBERT M. MATHIS
NO. 32760
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GENERAL NOTES

1. PROVIDE CORNERGUARDS AS SHOWN ON INTERIOR ELEVATIONS.
2. 8'-0" AFF. IMPACT RESISTANT GYPSUM BOARD SHALL BE PROVIDED FULL HEIGHT AT ROOF ACCESS LADDER AREAS AND LUMBER/PROJECT STORAGE.
3. PAINT EXPOSED STEEL, ALL VISIBLE SIDES, IN ROOMS WHERE OCCURS.
4. WHERE EXPOSED CEILINGS ARE SCHEDULED TO BE PAINTED, INCLUDE FRAMING, DECK, STRUCTURAL STEEL, CONDUIT, DUCTWORK, AND PIPING. ARCHITECT TO CHOOSE UP TO THREE (3) COLORS FOR EXPOSED CEILINGS.
5. WHERE ROOM FINISH SCHEDULE INDICATES TILE, USE CEMENTITIOUS BACKER BOARD SUBSTRATE IN LIEU OF GYPSUM BOARD.
6. EXTEND FINISHES BEHIND CASEWORK AND OTHER HIDDEN SURFACES.
7. ROOM FINISHES SHALL MEET CALIFORNIA BUILDING CODE CHAPTER 8 INTERIOR FINISHES TESTED IN ACCORDANCE WITH NFPA 286 AND CLASSIFIED IN ACCORDANCE WITH ASTM E84 OR UL 723.

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

INTERIOR FINISH SCHEDULE

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

A602

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WINDOW SCHEDULE

TYPE	SIZE WIDTH	SIZE HEIGHT	FRAME MATERIAL	LABEL	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	REMARKS
1	4' - 0"	4' - 2"	AL		L6/A731	L4/A731	L8/A731	
2	8' - 0"	4' - 2"	AL		L6/A731	L4/A731	L8/A731	

EXTERIOR WALL SCHEDULE

TYPE	WIDTH	FRAMING WIDTH	FIRE RATING	COMMENTS
EW6.0	9 1/2"	5 1/2"	NONE	
EW6.1	9 5/8"	5 1/2"	NONE	
EW6.2	7 1/2"	5 1/2"	NONE	
EW6.3	7 5/8"	5 1/2"	NONE	
EW6.4	10 1/2"	5 1/2"	NONE	
EW6.5	8 1/2"	5 1/2"	NONE	

EXTERIOR WALL SCHEDULE

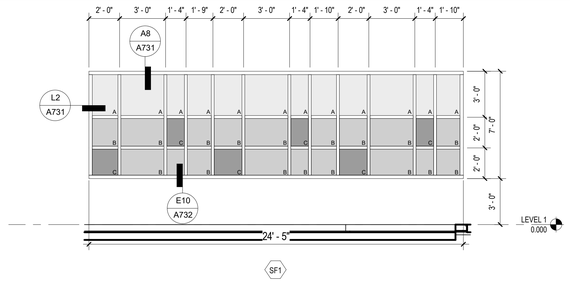
TYPE	WIDTH	FRAMING WIDTH	FIRE RATING	COMMENTS
EW8.0	11 1/2"	5 1/2"	NONE	
EW8.1	11 5/8"	7 1/2"	NONE	

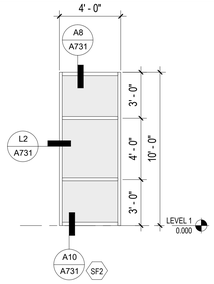
GATE SCHEDULE

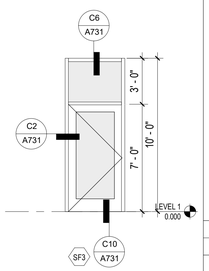
GATE	DOOR #	Hardware Set	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR MATERIAL	DOOR FINISH	DOOR PH	FRAME DETAILS (A011, A012) GATE	HINGE	LATCH	COMMENTS
GATE	1	SET 1A	4' - 0"	6' - 0"			PH	A10/A013	C7/A013	G7/A013	KNOX BOX
GATE	2	see E4/A011	5' - 5"	6' - 6"				E6/A011	J6/A011	E4/A011	
GATE	3	see E4/A011	5' - 5"	6' - 6"				E6/A011	J6/A011	E4/A011	
GATE	4	see E4/A011	4' - 0"	6' - 0"				A6/A011	J6/A011	E4/A011	
GATE	5	see A4/A012, G4/A012	20' - 0"	6' - 0"				A10/A012	G2/A012	G4/A012	KNOX BOX, PADLOCK OFCI
GATE	6	SET 1B	3' - 0"	7' - 0" 1				L10/A013	L7/A013	J7/A013	
GATE	7	SET 1C	3' - 0"	6' - 0"				A3/A013	L7/A013	E5/A013	
GATE	9	see A4/A012	3' - 0"	6' - 0"				A7/A012	G2/A012	G4/A012	KNOX BOX, PADLOCK OFCI
GATE	10	see A4/A012	3' - 0"	6' - 0"				A7/A012	G2/A012	G4/A012	KNOX BOX, PADLOCK OFCI

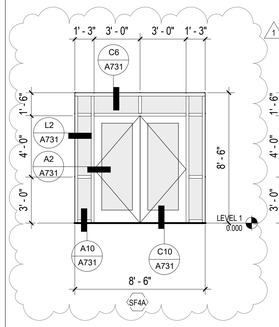
DOOR SCHEDULE

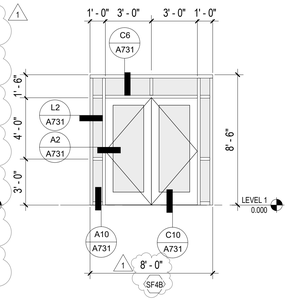
ROOM #	DOOR #	Hardware Set	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	DOOR RATING LABEL	DOOR PH	FRAME MATERIAL	FRAME FINISH	DETAILS (A731) HEAD	DETAILS (A731) JAMB	DETAILS (A731) THRESHOLD	COMMENTS
A100	1	A582R.1	6' - 0"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	A2/A731	C10/A731	STOREFRONT
A100	2	A585R.1	6' - 0"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	A2/A731	C10/A731	STOREFRONT
A101	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
A102	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
A103	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
A104	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
A110	1	453.1	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A111	1	455.1	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A112.1	1	405	2' - 6"	7' - 0"	C	HM	P-1			HM	P-1	L10/A731	J10/A731	G8/A731	
A112.2	1	405	2' - 6"	7' - 0"	C	HM	P-1			HM	P-1	L10/A731	J10/A731	G8/A731	
A112.3	1	405	3' - 0"	7' - 0"	C	HM	P-1			HM	P-1	L10/A731	J10/A731	G8/A731	
A113	1	442.2	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A113	2	442.2	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A114	1	443.1	3' - 0"	7' - 0"	C	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A115	1	030	3' - 0"	7' - 0"	G	HM	P-1			HM	P-1	L10/A731	J10/A731	G6/A731	
A115	2	442.1	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A116	1	443.1	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A117	1	443.1	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A117.1	1	040	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	L10/A731	J10/A731	G2/A731	
A118	1	A032.7	3' - 0"	7' - 0"	F	AL	A-1			AL	A-1	C6/A731	A2/A731	C10/A731	STOREFRONT
A119	1	020	3' - 0"	7' - 0"	A	HM				HM	P-1	L10/A731	J10/A731	G10/A731	
A120	1	030	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A121	1	030	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A122	1	020	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	L10/A731	J10/A731	G10/A731	
A123	1	020	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	L10/A731	J10/A731	G10/A731	
A124	1	012	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A125	1	030	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A126	1	030	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A127	1	030	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A128	1	030	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A128	2	443.1	3' - 0"	7' - 0"	G	HM	P-1			HM	P-1	E8/A731	C2/A731	E10/A731	
A128.1	1	040	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A128.2	1	040	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A129	1	030	3' - 0"	7' - 0"	B	HM	P-1			HM	P-1	L10/A731	J10/A731	G4/A731	
A133.1	1	020	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	L10/A731	J10/A731	G2/A731	
A135	1	A482.1	3' - 0"	7' - 0"	F	AL	A-1			AL	A-1	C6/A731	A2/A731	C10/A731	STOREFRONT
A135	2	A482.1	3' - 0"	7' - 0"	F	AL	A-1			AL	A-1	C6/A731	A2/A731	C10/A731	STOREFRONT
B105	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
B106	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
B107	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
B108	1	A482.5	3' - 6"	7' - 0"	F	AL	A-1		PH	AL	A-1	C6/A731	C2/A731	C10/A731	STOREFRONT
B109	1	044	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	L10/A731	J10/A731	G2/A731	
B109	2	044	3' - 0"	7' - 0"	A	HM	P-1			HM	P-1	L10/A731	J10/A731	G2/A731	
B109	3	-	20' - 0"	13' - 0" 1			P-1			P-1		A4/A843	-	A4/A843	BARN DOOR
B131	1	405	2' - 6"	7' - 0"	C	HM	P-1			HM	P-1	L10/A731	J10/A731	G8/A731	
B132.1	1	405	2' - 6"	7' - 0"	C	HM	P-1			HM	P-1	L10/A731	J10/A731	G8/A731	
B132.2	1	405	2' - 6"	7' - 0"	C	HM	P-1			HM	P-1	L10/A731	J10/A731	G8/A731	
B132.3	1	405	3' - 0"	7' - 0"	C	HM	P-1			HM	P-1	L10/A731	J10/A731	G8/A731	

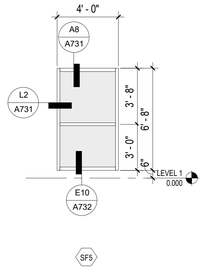


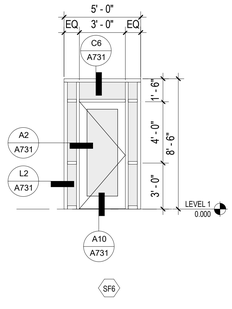


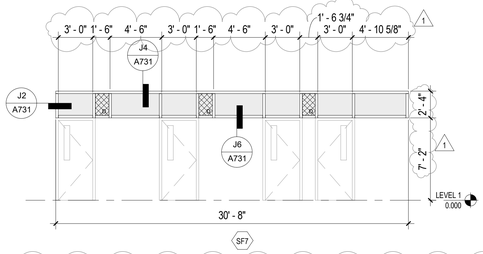


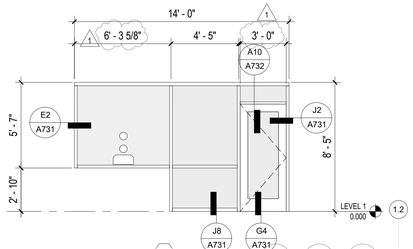


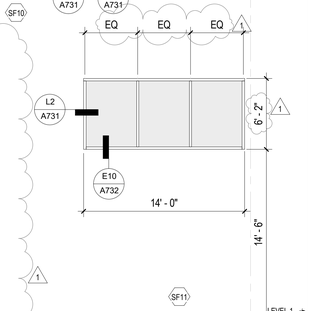


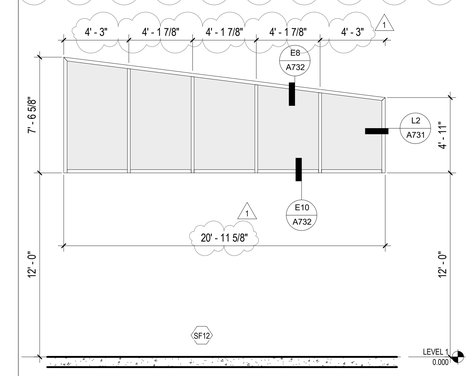


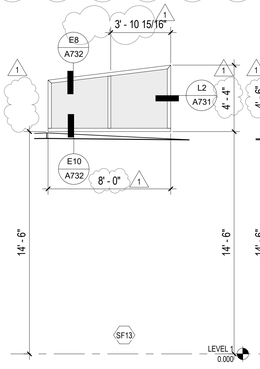


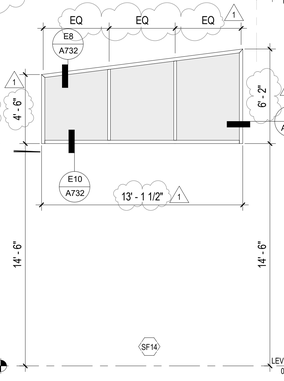


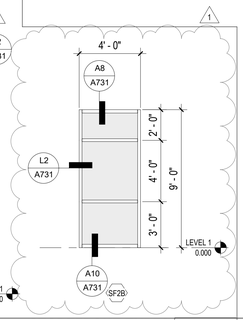


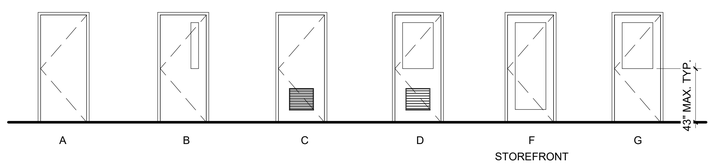


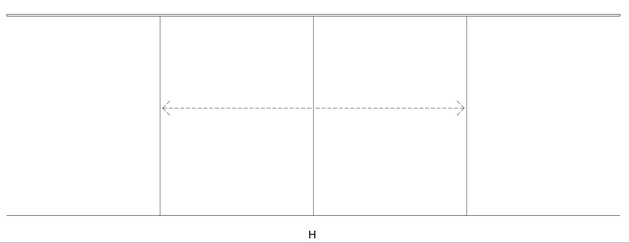












DOOR SCHEDULE NOTES

GENERAL NOTES:

1. PROVIDE FIRE RESISTIVE GLAZING WHERE FIRE RATING IS REQUIRED. ALL FIRE RATED GLASS WILL HAVE MAX. AREA OF 100 SQUARE INCHES.
2. MAXIMUM EFFORT TO OPERATE EXTERIOR DOORS IS 5 LBS.
3. ADJUST OPENING FORCE OF THE DOOR TO 5 LB.
4. DOOR LOCATIONS & CLEARANCES - SEE: A8/A521 SYMBOL G002
5. DOOR FINISH TO BE SEMI-GLOSS
6. OPERATBLE FLOOR HARDWARE PARTS SHALL BE POSITIONED AT MINIMUM OF 34" AND MAXIMUM OF 44" ABOVE THE FINISH FLOOR OR GROUND

DOOR SCHEDULE LEGEND

MATERIAL

HM	HOLLOW METAL
AL	ALUMINUM
SS	STAINLESS STEEL
MTL	METAL
CL	CHAINLINK
SCW	SOLID CORE WOOD
FR	FIRE RESIST. GLAZING
T	TEMPERED GLAZING

FINISH

P-1	PAINT (SEMI-GLOSS)
PC-1	POWER-COATED
A-1	CLEAR AC-2

STOREFRONT LEGEND

A	NO FILM
B	FASARA - MILKY MILKY LIGHT GREY 2H2MAMML
C	FASARA - CROSS HAIRLINE MILKY SH2CHML

STOREFRONT WINDOW NOTES

1. DIMENSION FOR STOREFRONT WINDOWS ARE MEASURED FROM EDGE OF ROUGH OPENING TO CENTER OF MUSSION, TYP.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
ROBERT M. MATHEY
No. C-29,201
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

SCHEDULES

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

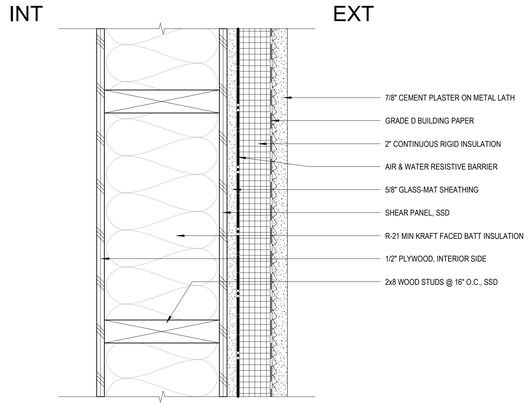
A701

STOREFRONT TYPES G10 1/4" = 1'-0"

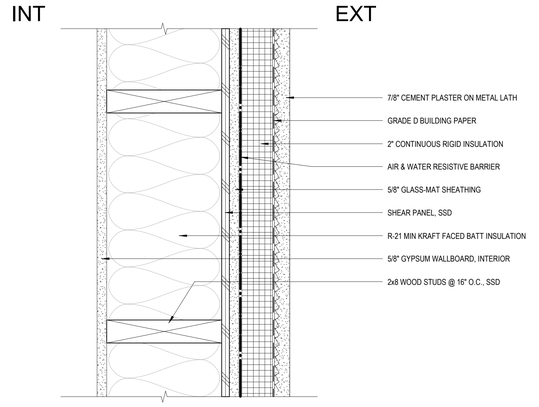
DOOR SCHEDULE 1/4" = 1'-0"

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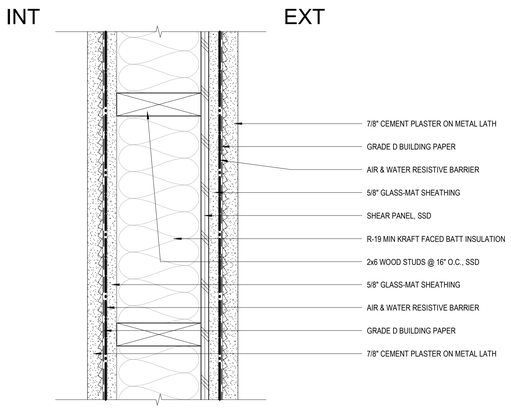
EW8.0: CEMENT PLASTER ASSEMBLY AT PARAPET



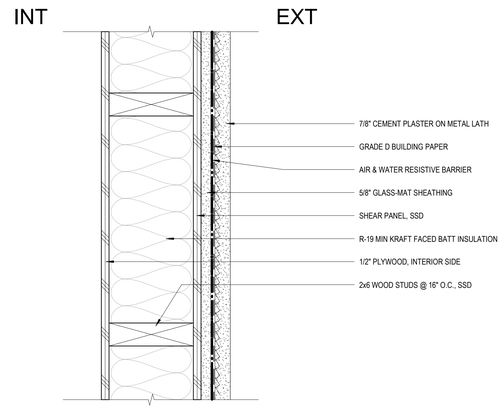
EW8.1: CEMENT PLASTER ASSEMBLY



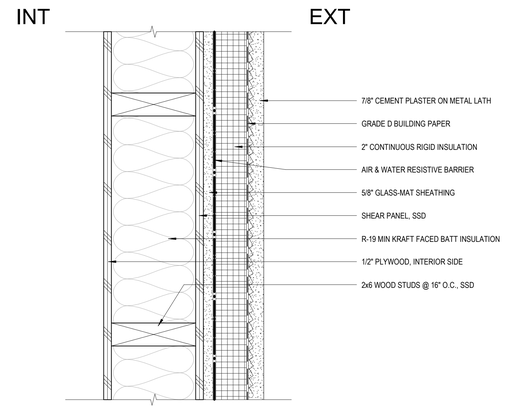
EW6.5: CEMENT PLASTER ASSEMBLY (BOTH SIDES)
(NO RIGID INS.)



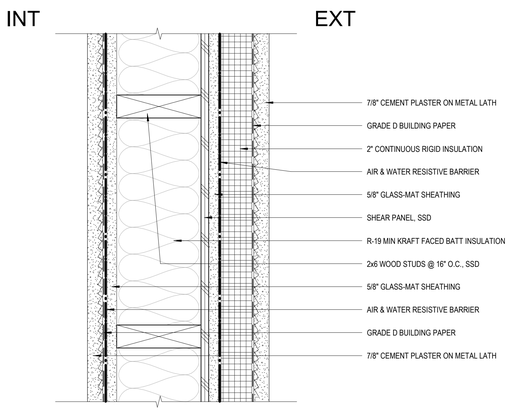
EW6.2: CEMENT PLASTER ASSEMBLY AT PARAPET
(NO RIGID INS.)



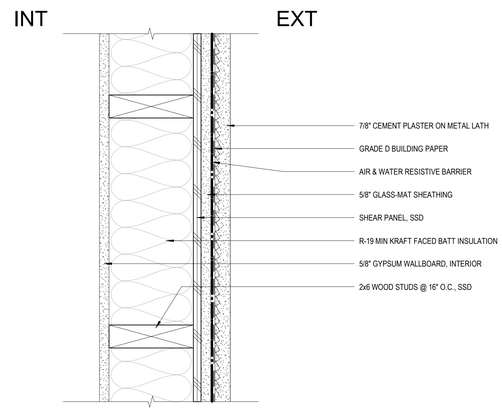
EW6.0: CEMENT PLASTER ASSEMBLY AT PARAPET



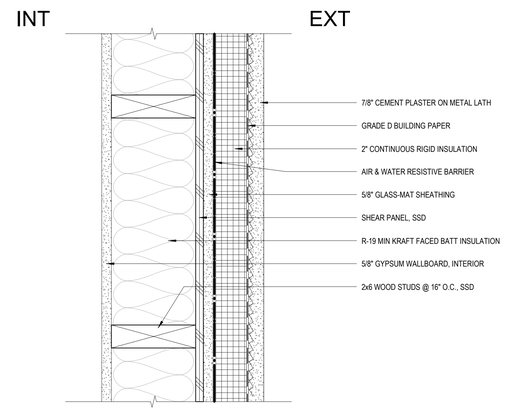
EW6.4: CEMENT PLASTER ASSEMBLY (BOTH SIDES)



EW6.3: CEMENT PLASTER ASSEMBLY
(NO RIGID INS.)



EW6.1: CEMENT PLASTER ASSEMBLY



APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
ROBERT M. MAYER
NO. 32763
EXPIRES OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

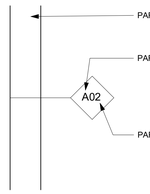
TYPICAL ASSEMBLIES - EXTERIOR WALLS

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www.perkinseastman.com

A702

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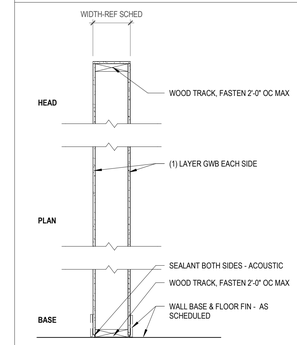
PARTITION TYPE SYMBOL



PARTITION TYPE NOTES

1. REFER TO FLOOR PLANS FOR INTERIOR PARTITION TYPE LOCATIONS.
2. ALL PARTITIONS ARE DIMENSIONED TO THE OF FACE OF STUD EXCEPT FOR EXISTING WALLS WHICH ARE DIMENSIONED TO FINISH FACE.
3. IN ALL TOILET ROOMS PROVIDE, MOISTURE AND MOLD RESISTANT GYP. BD. ON ALL WALLS AND CEILINGS.
4. IN ALL ROOMS OTHER THAN TOILET ROOMS WHICH CONTAIN SINKS OR OTHER PLUMBING FIXTURES PROVIDE MOISTURE RESISTANT GYP. BD. ON THE WET WALL AND RETURN 4'-0" ON THE SIDE WALLS.
5. AT VERTICAL SURFACES THAT ARE SCHEDULED TO RECEIVE TILE FINISHES, PROVIDE ONE LAYER OF CEMENTITIOUS BACKER BOARD IN PLACE OF THE OUTSIDE LAYER OF GYPSUM BOARD ON THE SCHEDULED PARTITION. ON RATED WALLS AND OTHER VERTICAL SURFACES THAT ARE SCHEDULED TO RECEIVE TILE FINISHES, PROVIDE ONE LAYER OF CEMENTITIOUS BACKER BOARD IN ADDITION TO THE OUTSIDE LAYER OF GYPSUM BOARD ON THE SCHEDULED PARTITION TO MAINTAIN RATED WALL CONSTRUCTION.
6. ALL GYPSUM BOARD SHALL BE 5/8" THICK, UNO. ABUSE RESISTANT GYPSUM BOARD ON EXPOSED FACE OF WALLS, TYPICAL. AT FIRE RATED ASSEMBLIES, PROVIDE TYPE 'X' GYP. BD. MINIMUM, OR AS REQUIRED BY FIRE RATED ASSEMBLY. GYPSUM CEILINGS ANS SOFFITS PROVIDE 5/8" THICK, UNO.
7. FOR FIRE RATED ASSEMBLIES, OBTAIN AND FULLY CONFORM TO DESIGN REQUIREMENTS OF UNDERWRITERS LABORATORIES, INC(UL) FOR EACH PARTITION ASSEMBLY, UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED OR DESIGNATED BY A DETAIL OR NOTE, AS ALLOWED BY UL DESIGN.
8. FIRE-RESISTANCE-RATED & STC-RATED PARTITIONS SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF THE TESTED ASSEMBLY UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED OR DESIGNATED BY DETAIL OR NOTE.
9. STC-RATED PARTITION CONSTRUCTION SHALL HAVE ALL PENETRATIONS AND INTERSECTIONS SEALED AIR TIGHT WITH ACOUSTICAL SEALANT.
10. SEPARATE METALLIC OUTLETS OR SWITCH BOXES LOCATED ON OPPOSITE SIDES OF WALLS OR PARTITIONS BY A MINIMUM HORIZONTAL DISTANCE OF 24 INCHES (U.L, INC.).
11. REFER TO SPECIFICATIONS FOR SPACING CRITERIA AND METAL STUD GAUGES, UNO.
12. REFER TO FINISH SCHEDULE AND REFLECTED CEILING PLANS FOR THE CEILING TYPE AND HEIGHT. COORDINATE HEIGHTS OF GYP. BD. WITH CEILING HEIGHTS AND WITH PARTITION DETAILS INDICATED.
13. REFER TO FINISH SCHEDULE, FURNITURE PLANS, INTERIOR ELEVATIONS, INTERIOR DETAILS AND ARCHITECTURAL CASEWORK DETAILS FOR WALL FINISHES AND WALL MOUNTED ACCESSORIES TO COORDINATE BLOCKING REQUIREMENTS. PROVIDE ADEQUATE BACKUP AND BLOCKING FOR ALL WALL OR CEILING MOUNTED EQUIPMENT, ARCHITECTURAL WOODWORK, CASEWORK, LIGHTING, OR OTHER MISCELLANEOUS ITEMS & EQUIPMENT MEP & FP TO ASSURE A PROPER INSTALLATION. ALL BLOCKING TO BE NON COMBUSTIBLE IF THE CONSTRUCTION TYPE IS NONE COMBUSTIBLE.
14. ALL DOOR OPENINGS ARE TO BE 6 INCHES MINIMUM FROM ADJACENT WALL U.N.O.
15. REFER TO LIFE SAFETY PLANS AND THE PROJECT CODE ANALYSIS SUMMARY FOR FURTHER WALL, FLOOR/CEILING ASSEMBLY RATING REQUIREMENTS.
16. MAINTAIN CONTINUOUS SMOKE/ FIRE RATED PARTITION AT INTERSECTIONS OF RATED WALLS AND NON-RATED WALLS. WRAP GYPSUM BOARD AT JAMBS AND HEAD OF NON-RATED DOORWAYS AND OPENINGS IN RATED WALLS AS REQUIRED TO MAINTAIN WALL RATING.
17. ALL PARTITION THICKNESSES SHOWN ARE ACTUAL DIMENSIONS. FINISHED FACES OF PARTITIONS TO RUN FLUSH, CONTINUOUS AND SMOOTH, U.N.O.
18. ALL GYP. BD. WALL AND CEILING CONTROL JOINTS SHALL BE PROVIDED PER THE PROJECT SPECIFICATIONS. COORDINATE ALL LOCATIONS WITH THE ARCHITECT PRIOR TO INSTALLATION.
19. ALL GYP. BD. WALL AND CEILING CONTROL JOINTS AT RATED CONDITIONS SHALL BE INSTALLED PER GYPSUM ASSOCIATION GUIDELINES (GA-234-08). UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED OR DESIGNATED BY DETAIL OR NOTE. COORDINATE ALL LOCATIONS WITH THE ARCHITECT PRIOR TO INSTALLATION.
20. REFER TO STRUCTURAL DRAWINGS FOR SPECIFICATIONS & REINFORCEMENT REQUIREMENTS OF MASONRY PARTITIONS.
21. REFER TO WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION.
22. **IN ALL ELECTRICAL ROOMS, INSTALL FRT PLYWOOD FLOOR TO CEILING ON ALL WALLS IN ADDITION TO WALL TYPE REQUIREMENTS. COORDINATE WITH ELECTRICAL CONTRACTOR.**
23. **IN ALL LOW VOLTAGE & TELE/DATA ROOMS, INSTALL FRT PLYWOOD FLOOR TO CEILING ON ALL WALLS IN ADDITION TO WALL TYPE REQUIREMENTS. COORDINATE WITH LOW VOLTAGE CONTRACTOR.**
24. **ALL OUTSIDE GYPSUM BOARD VERTICAL CORNERS IN CORRIDORS ARE TO RECEIVE 1 1/2" X 1 1/2" STAINLESS STEEL CORNER GUARDS 18 GA 48" TALL.**

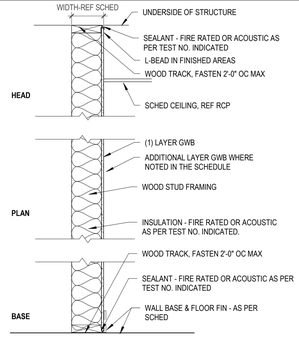
TYPE E - PARTIAL HT. - 1 LAYER GWB EACH SIDE



TYPE	WIDTH	FRAMING WIDTH	FIRE TEST	FIRE RATING	STC RATING	SOUND INSUL	COMMENTS
E01	4 3/4"	3 1/2"		NONE			
E02	6 3/4"	5 1/2"		NONE			

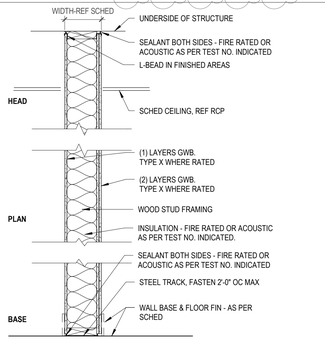
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TYPE D - FULL HT. - GWB 1 SIDE



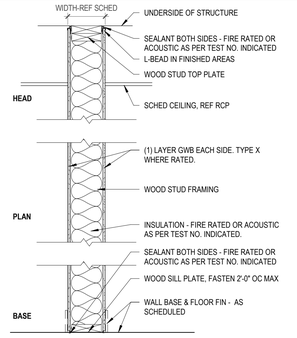
TYPE	WIDTH	FRAMING WIDTH	FIRE TEST	FIRE RATING	STC RATING	SOUND INSUL	COMMENTS
D01	6 1/8"	5 1/2"		NONE			

TYPE B - FULL HT. - 2 LAYERS GWB ONE SIDE; 1 LAYER GWB OTHER SIDE



TYPE	WIDTH	FRAMING WIDTH	FIRE TEST	FIRE RATING	STC RATING	SOUND INSUL	COMMENTS
B01	7 3/8"	5 1/2"	0	NONE	35		

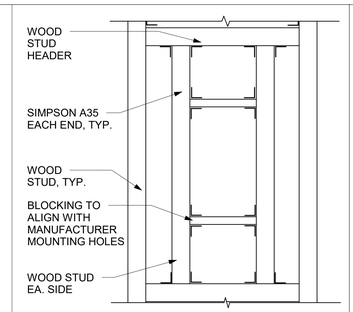
TYPE A - FULL HT. - 1 LAYER GWB EACH SIDE



TYPE	WIDTH	FRAMING WIDTH	FIRE TEST	FIRE RATING	STC RATING	SOUND INSUL	COMMENTS
A01	4 3/4"	3 1/2"		NONE			
A02	6 3/4"	5 1/2"	0	NONE	40		
A03	8 3/4"	7 1/2"		NONE			

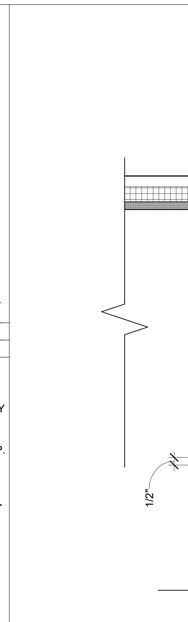
PARTITION TYPES **A4**

N.T.S.



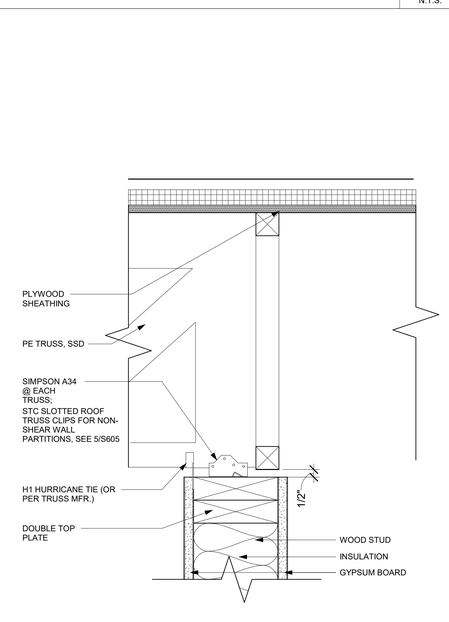
RECESSED ACCESSORY FRAMING **G6**

1" = 1'-0"



WALL HEAD PARALLEL TO TRUSS **D8**

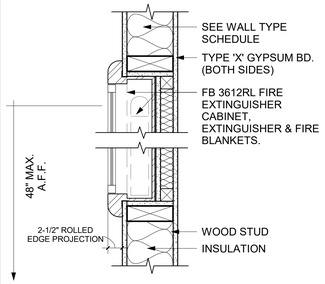
3" = 1'-0"



WALL HEAD PERPENDICULAR TO TRUSS **A8**

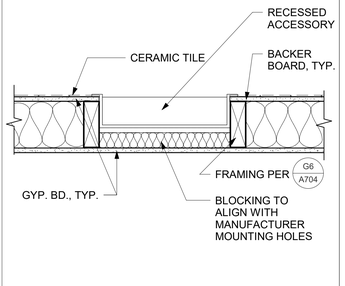
3" = 1'-0"

NO GYP. BD. REQ'D BEHIND CABINET AT NON-RATED WALL ASSEMBLY



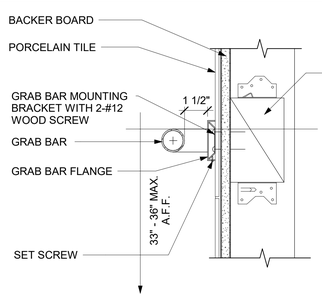
SEMI-RECESSED F.E.C. **L10**

1 1/2" = 1'-0"



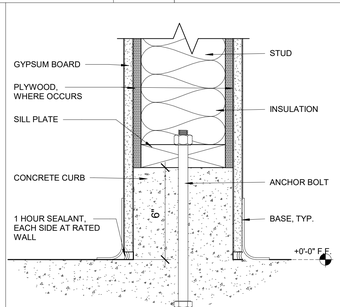
RECESSED ACCESSORY **G8**

1 1/2" = 1'-0"



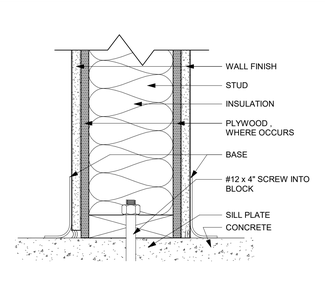
GRAB BAR MOUNTING WS WALL **H10**

3" = 1'-0"



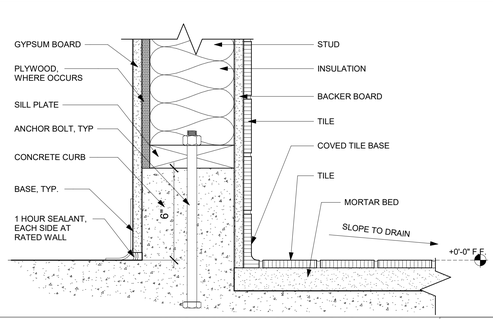
WALL BASE AT CONCRETE CURB **F10**

3" = 1'-0"



TYP. NON BEARING WALL BASE **D10**

3" = 1'-0"



TYPICAL WALL BASE AT CONCRETE CURB **A10**

3" = 1'-0"

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

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DATE: 11/02/2026

LICENSED ARCHITECT
REGD. M. MAYER
NO. 32788
EXPIRES OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

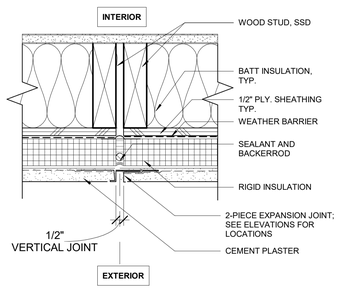
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INTERIOR WALL SCHEDULE AND DETAILS

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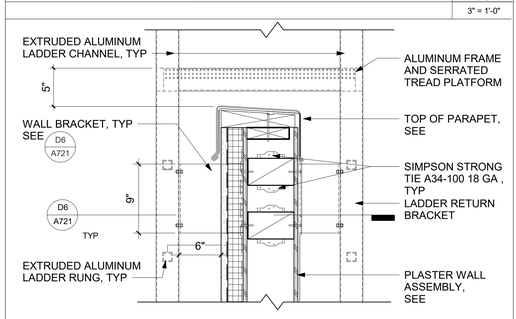
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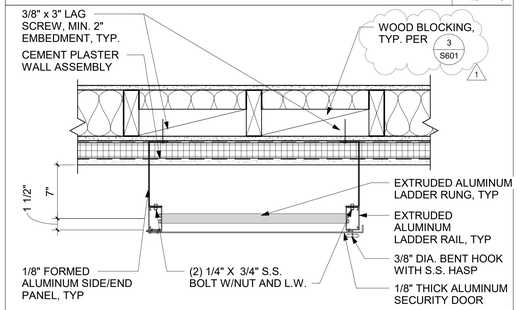
TYPICAL PLASTER EXPANSION JOINT — G6

3" = 1'-0"



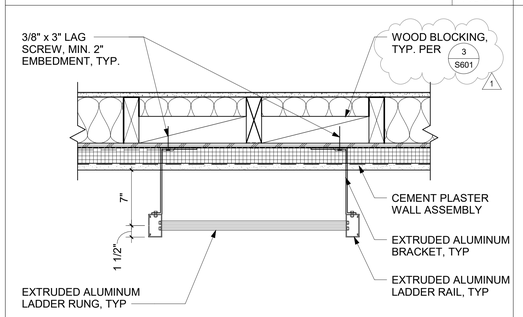
ROOF ACCESS LADDER - PLATFORM OVER PARAPET — D2

1 1/2" = 1'-0"



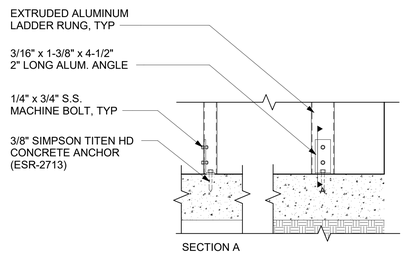
ROOF ACCESS LADDER - SECURITY DOOR — D4

1 1/2" = 1'-0"



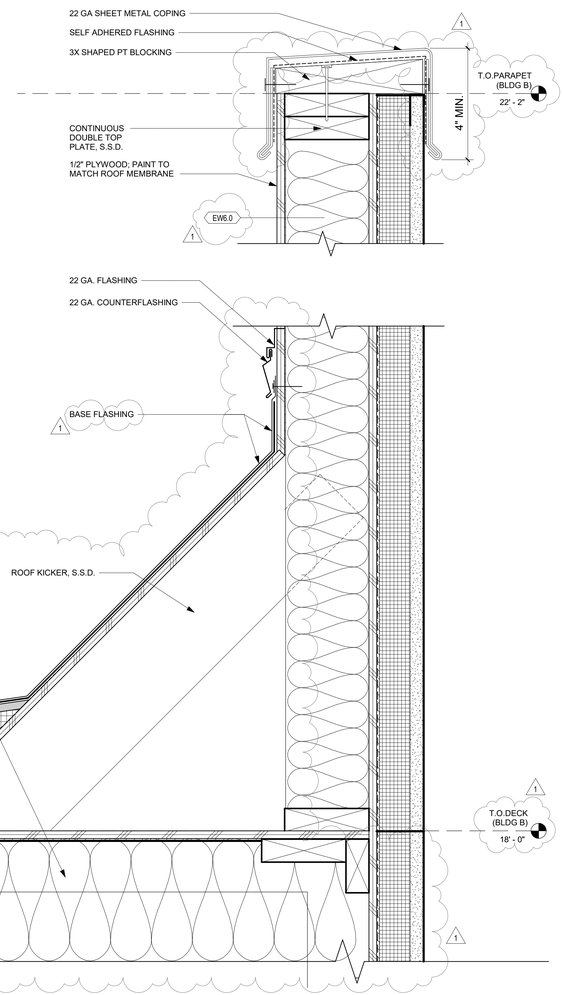
ROOF ACCESS LADDER - WALL BRACKET — D6

1 1/2" = 1'-0"



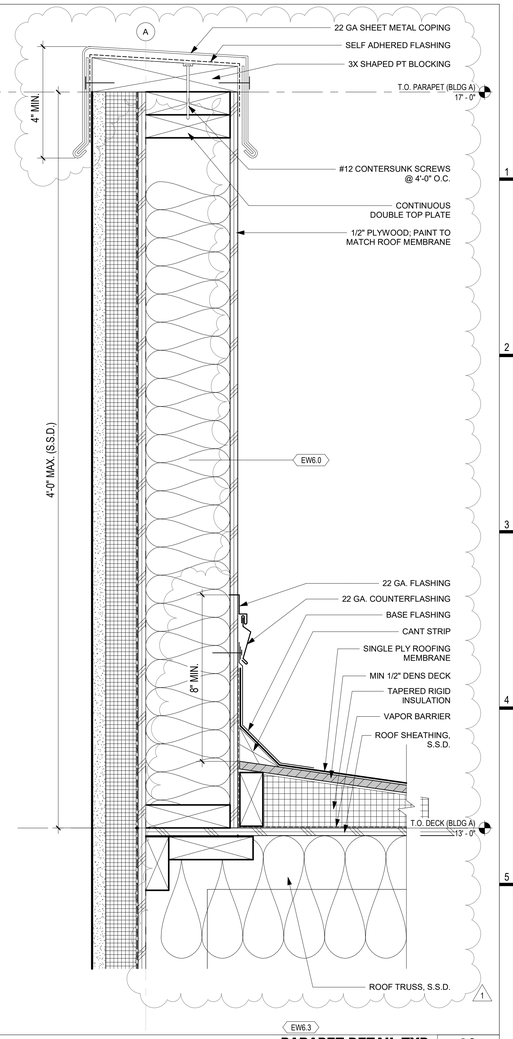
ROOF ACCESS LADDER - FLOOR BRACKET — D8

1 1/2" = 1'-0"



PARAPET DETAIL WITH KICKER, TYP. — K10

3" = 1'-0"

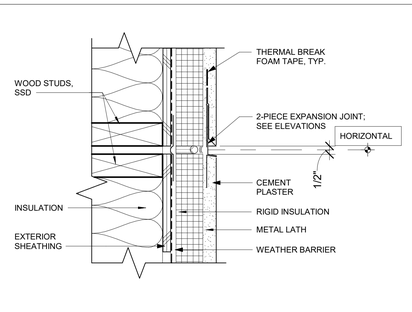


PARAPET DETAIL TYP. — A6

3" = 1'-0"

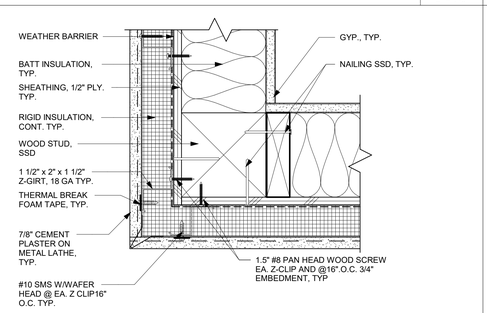
ROOF ACCESS LADDER - WALL BRACKET — D6

1 1/2" = 1'-0"



TYPICAL PLASTER EXPANSION JOINT — G8

3" = 1'-0"



EXT. CEMENT PLASTER CORNER DETAIL — G2

INSULATED CEMENT PLASTER WALL ASSEMBLY - PWA 106

3" = 1'-0"

EXT. PLASTER WALL AT WALL BASE — G10

3" = 1'-0"

TYPICAL PLASTER CONTROL JOINT — G4

3" = 1'-0"

DRINKING FOUNTAIN — A10

1 1/2" = 1'-0"

GENERAL NOTES EXTERIOR FINISHES

1. FOR MOUNTING BRACKET, FASTENER AND SPACING WITH ICC ESR#, & WEATHER BARRIER DETAIL, REFER TO K8 A501 K10 A501
2. CONTINUOUS INSULATION SHALL BE 2" THICK, TYP. ON WALLS.
3. PROVIDE CONC. CURB AT ALL EXTERIOR PERIMETER WALLS, RESTROOM, AND JANITOR ROOM, TYP.
4. EXTERIOR WALL METAL STUD SIZE PER STRUCT - S101A - S101B - S701 - S721
5. [BOD HARDIEPLANK SMOOTH LAP SIDING] THICKNESS OF THE WALL CEMENT SIDING IS 5/16", TYP - ICC ESR-1844
6. FOR PLASTER: 18GA Z-FURRING, FASTENER AND SPACING & WEATHER BARRIER DETAIL, REFER TO G2 A501

   INSTALL PLASTER WALL ASSEMBLY PWA 106 W/ ASTM-106 & ASTM C-926.

BUILDING SECTION NOTES

GENERAL NOTES:

1. THICKNESS OF CONTINUOUS RIGID INSULATION: 2" = R13 (XPS 1"=R6.5)
2. THICKNESS OF BATT INSULATION AT WALL: R19
3. ROOF ASSEMBLY SEE - A531
4. PENDANT LIGHT FIXTURE SWAY BRACING, SEE - A543
5. LOCATION OF IMPACT RESISTANT GYP. BOARD, REFER TO INTERIOR ELEVATIONS.

BUILDING SECTION LEGEND

1 HR RATED WALL - REFER TO FLOOR PLAN

EXTERIOR WALL ASSEMBLY SCHEDULE

1. TYPE A: FIBER CEMENT SIDING O/ WEATHER BARRIER #2, O/ 2" RIGID INSULATION, O/ WEATHER BARRIER #1 O/ EXTERIOR SHEATHING. A2 - A4 - A6 - A8 -
2. TYPE C: CEMENT PLASTER O/ WEATHER BARRIER #3 O/ EXTERIOR SHEATHING O/ RIGID INSULATION O/ WEATHER BARRIER #1 O/ EXTERIOR SHEATHING G2 - G4 - G8 - G10 -

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LICENSED ARCHITECT — SCOTT M. MAYFIELD — No. 32767 — EXPIRES OCT. 31, 2027 — STATE OF CALIFORNIA

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EXTERIOR WALL DETAILS

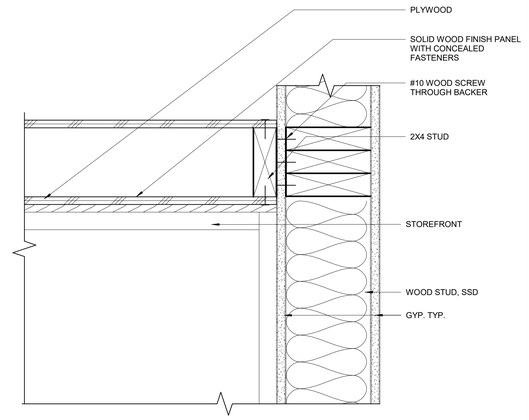
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A721

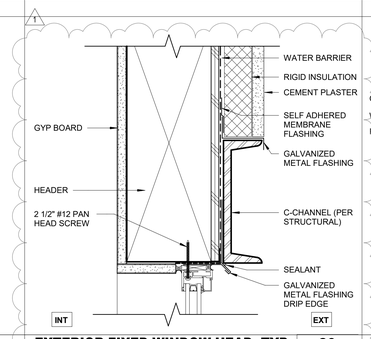
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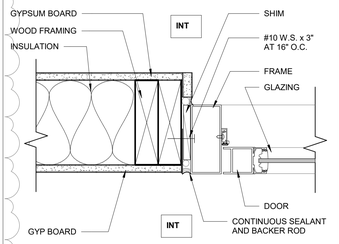
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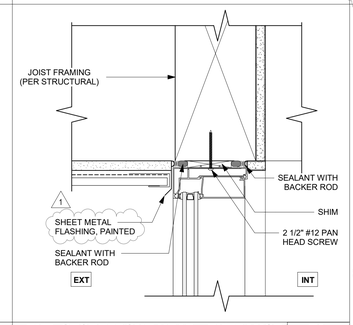
RECEPTION DESK CLOUD A4
3" = 1'-0"



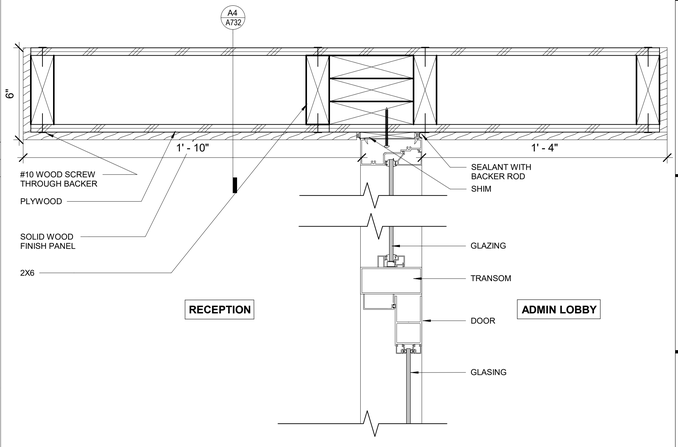
EXTERIOR FIXED WINDOW HEAD, TYP. C6
3" = 1'-0"

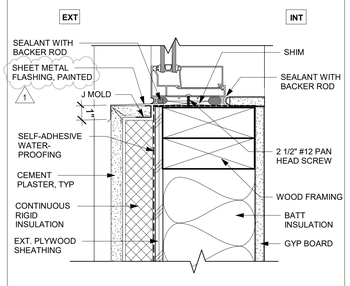


INT. STOREFRONT DOOR AT JAMB A6
3" = 1'-0"



EXT. STOREFRONT HEAD - ENTRANCE E8
3" = 1'-0"





EXTERIOR STOREFRONT SILL E10
3" = 1'-0"

RECEPTOPN DESK STOREFRONT HEAD - TRANSOM INTERIOR A10
3" = 1'-0"

LICENSED ARCHITECT
SCOTT M. MAYFIELD
NO. C-32744
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DOOR AND WINDOW DETAILS

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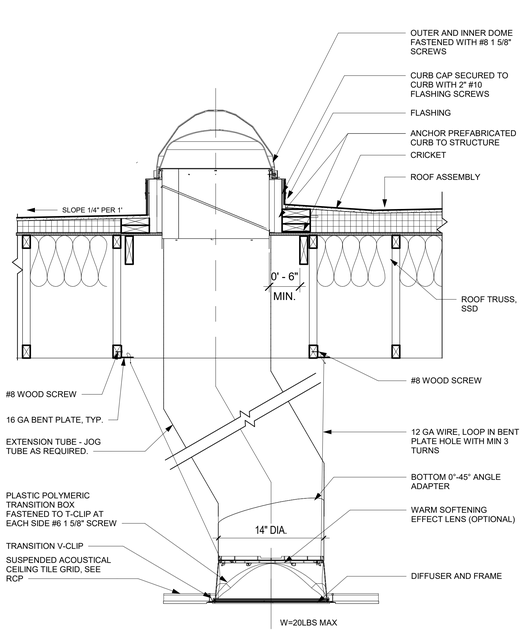
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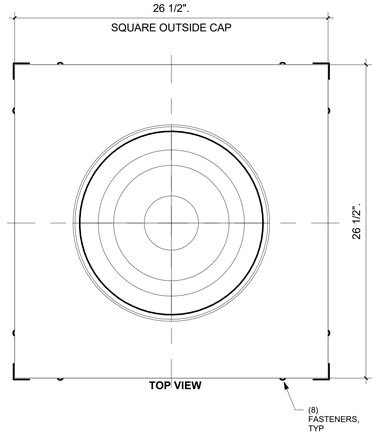
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LICENSED ARCHITECT
DAVID M. MAYER
NO. 27941
EXP. OCT. 31, 2027
STATE OF CALIFORNIA





NOTES:
1. ALL TUBE JOINTS AND SEAMS TAPED WITH 2" FOIL TAPE.
2. 6" MIN. CLEARANCE SHOULD BE MAINTAINED FROM ALL SOLATUBE COMPONENTS AND PLENUM COMPONENTS.
3. ESR-2253.

TUBULAR SKYLIGHT JOGGED AT CURB CAP HARD CEILING G10
AT PVC ROOF 1" = 1'-0"

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TUBULAR SKYLIGHT DETAILS

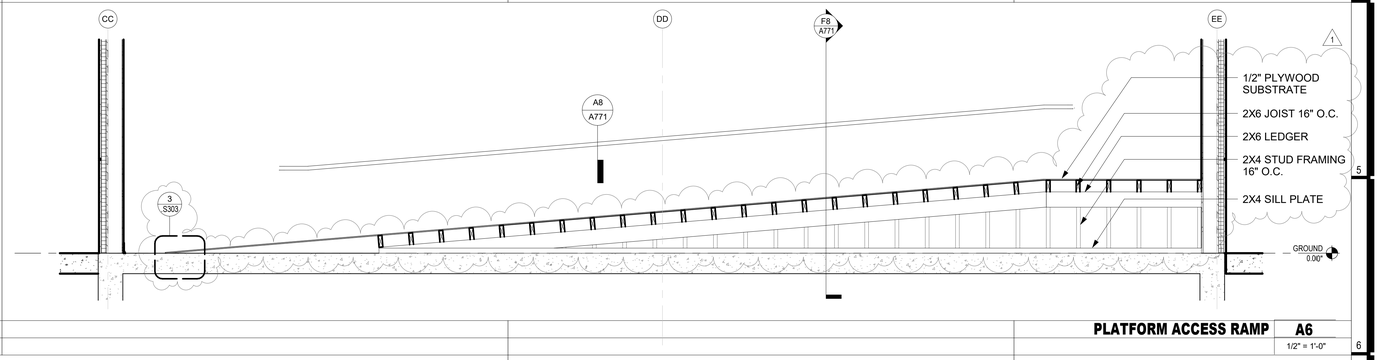
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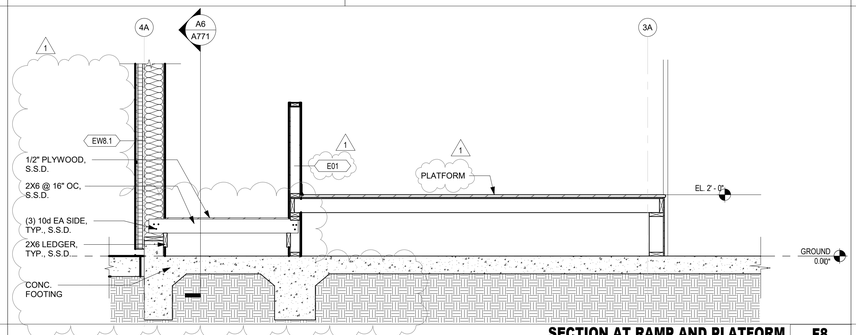
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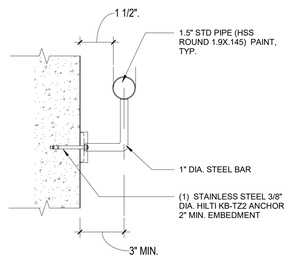
LICENSED ARCHITECT
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NO. 27421
OCT. 31, 2026
STATE OF CALIFORNIA



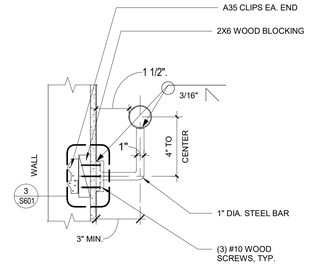
PLATFORM ACCESS RAMP A6 — 1/2" = 1'-0"



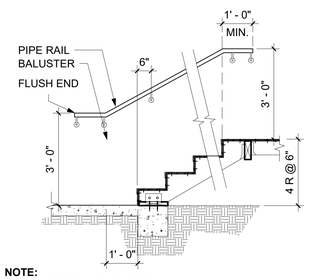
SECTION AT RAMP AND PLATFORM F8 — 1/2" = 1'-0"



TYP. HANDRAIL EXTENSION AT RAMP C8 — 1 1/2" = 1'-0"

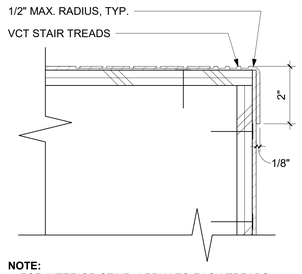


TYP. HANDRAIL EXTENSION AT RAMP A8 — 1 1/2" = 1'-0"



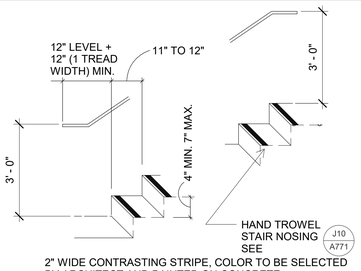
NOTE:
1. SEE 13/S622 AND 14/S622

STAIR AT PLATFORM L10 — 1/2" = 1'-0"



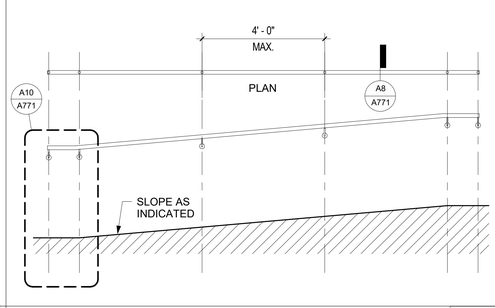
NOTE:
1. FOR INTERIOR STAIR: APPLY TO EACH TREADS EXCEPT FOR TOP AND BOTTOM.
2. SEE 13/S622 AND 14/S622

STAIR NOSING J10 — 6" = 1'-0"

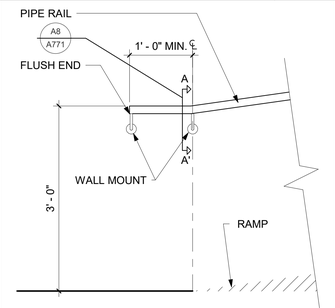


2" WIDE CONTRASTING STRIPE, COLOR TO BE SELECTED BY ARCHITECT AND PAINTED ON CONCRETE
BALUSTER TO BE SPACED EVENLY AND TO BE PLACED CENTER OF STAIR THREAD

STAIR STRIPING & HANDRAILS F10 — 1/2" = 1'-0"



TYP. HANDRAIL AT RAMP C10 — 1/2" = 1'-0"



TYP. HANDRAIL EXTENSION AT RAMP A10 — 1" = 1'-0"

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

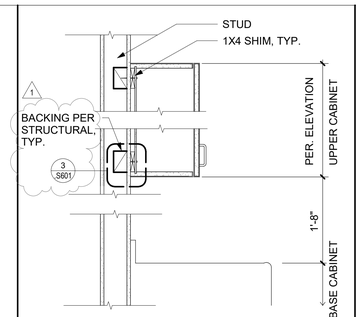
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

STAIR AND RAMP DETAILS

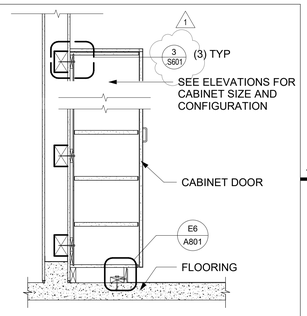
PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
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A771

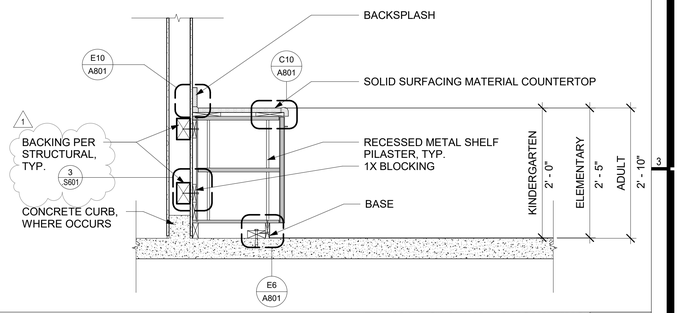
COPYRIGHT © 2020 PERKINS EASTMAN ARCHITECTS, DPC.



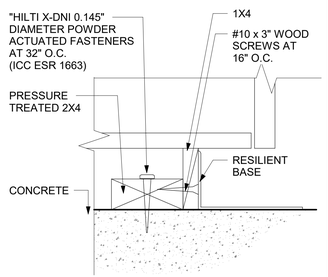
TYPICAL CASEWORK MOUNTING **C2**
UPPER CABINET 3/4" = 1'-0"



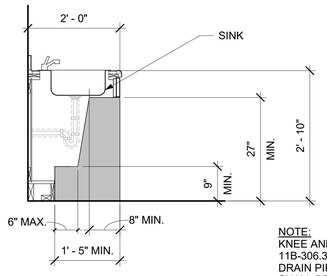
TYPICAL CASEWORK MOUNTING **A2**
TALL CABINET 3/4" = 1'-0"



TYPICAL CASEWORK MOUNTING **A4**
3/4" = 1'-0"

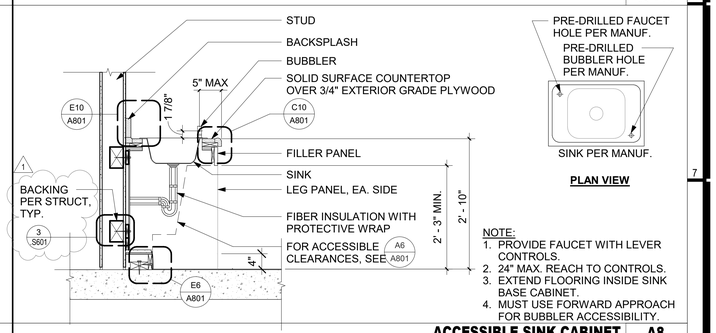


CABINET FLOOR ANCHOR - FRONT **E6**
3" = 1'-0"



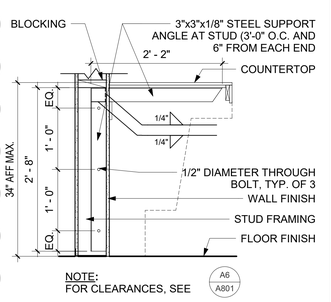
NOTE:
KNEE AND TOE SPACE PER C.B.C. SECTION 11B-306.2 TO 11B-306.3.4 AND FIGURE 11B-306.3. WATER SUPPLY AND DRAIN PIPES UNDER SINKS SHALL BE INSULATED. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER SINKS.

ACCESSIBLE KNEE AND TOE SPACE **A6**
3/4" = 1'-0"



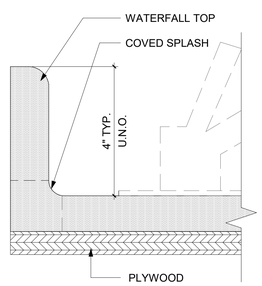
NOTE:
1. PROVIDE FAUCET WITH LEVER CONTROLS.
2. 24" MAX. REACH TO CONTROLS.
3. EXTEND FLOORING INSIDE SINK BASE CABINET.
4. MUST USE FORWARD APPROACH FOR BUBBLER ACCESSIBILITY.

ACCESSIBLE SINK CABINET **A8**
3/4" = 1'-0"

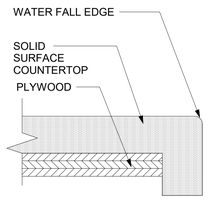


NOTE:
FOR CLEARANCES, SEE A6 A801

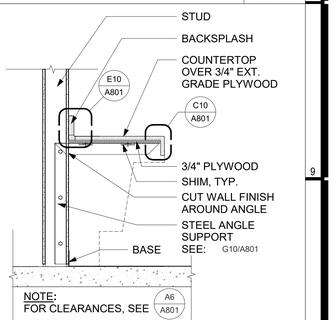
COUNTERTOP SUPPORT **G10**
1" = 1'-0"



BACKSPLASH **E10**
6" = 1'-0"



SOLID SURFACE COUNTERTOP EDGE **C10**
6" = 1'-0"



NOTE:
FOR CLEARANCES, SEE A6 A801

TYPICAL COUNTERTOP MOUNTING **A10**
3/4" = 1'-0"

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
ROBERT M. MATHEY
NO. C-29,000
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

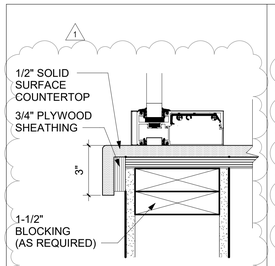
JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

CASEWORK DETAILS

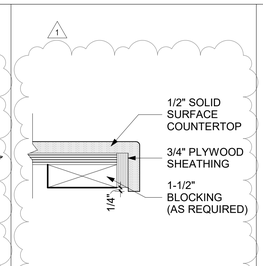
PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
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A801

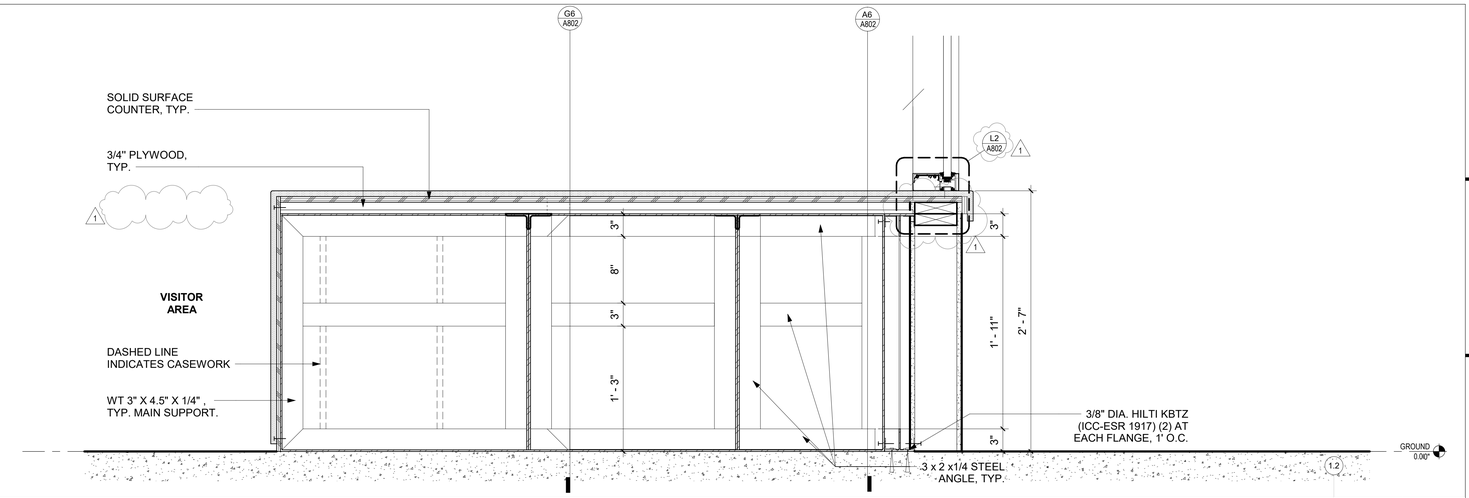
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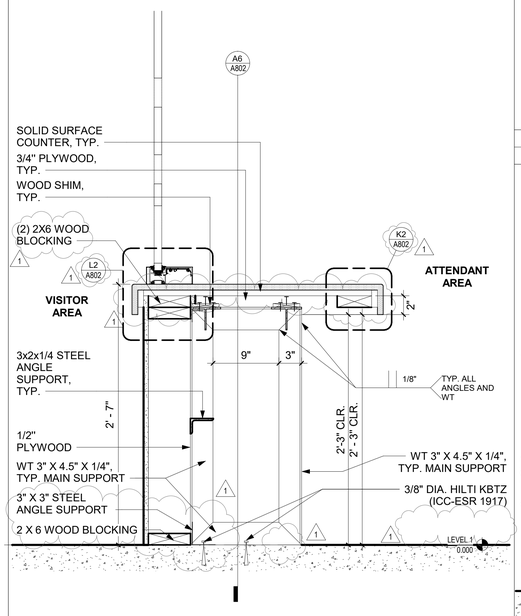
RECEPTION DESK CORNER-2 L2
3" = 1'-0"



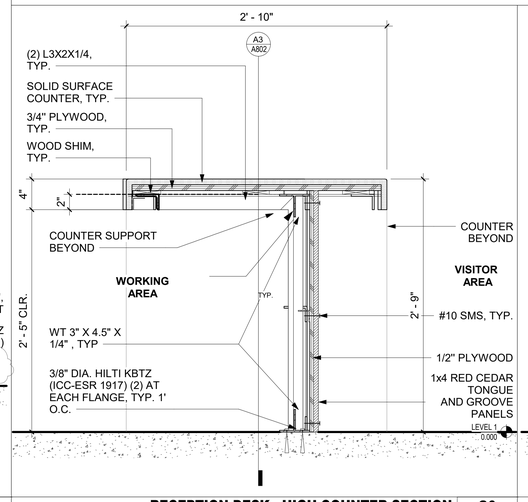
RECEPTION DESK CORNER K2
3" = 1'-0"



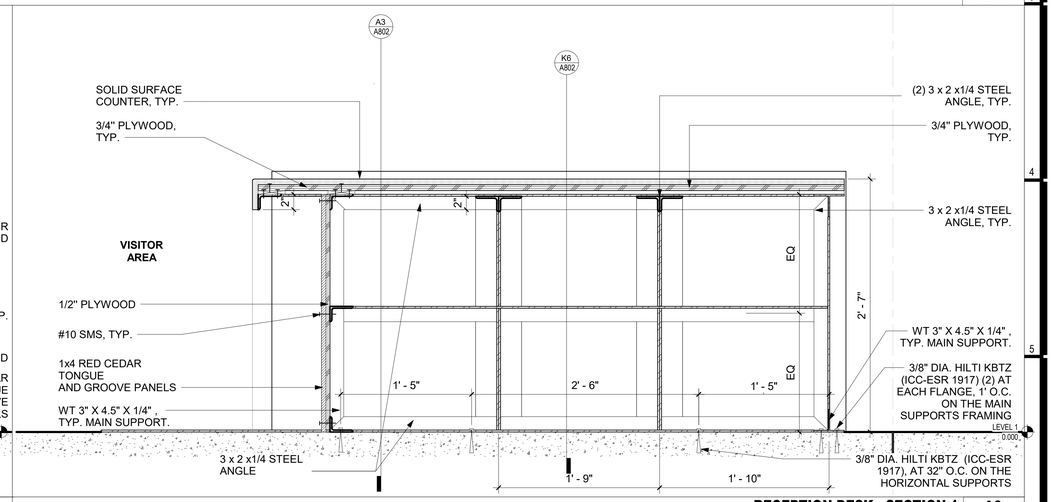
RECEPTIONIST DESK - SECTION 2 A3
1 1/2" = 1'-0"



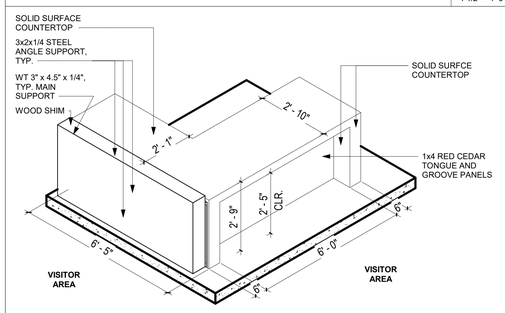
RECEPTION DESK - COUNTER K6
1 1/2" = 1'-0"



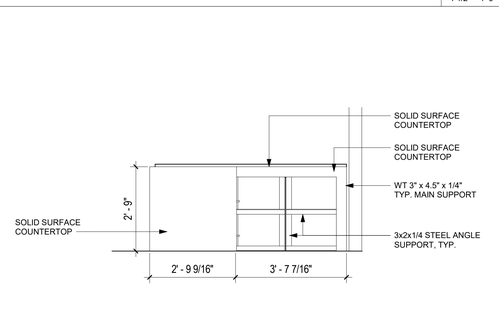
RECEPTION DESK - HIGH COUNTER SECTION G6
1 1/2" = 1'-0"



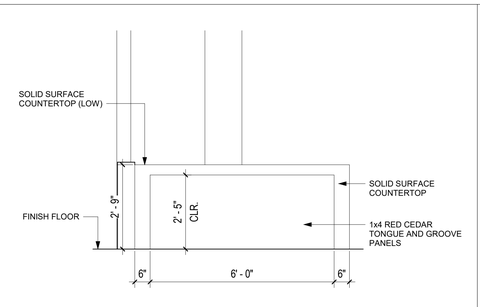
RECEPTION DESK - SECTION 1 A6
1 1/2" = 1'-0"



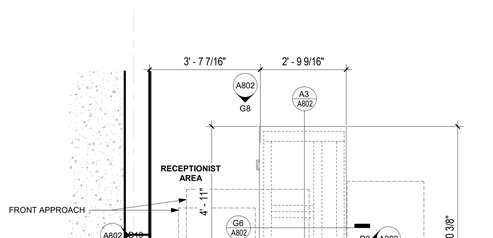
3D - 1. RECEPTION DESK K8



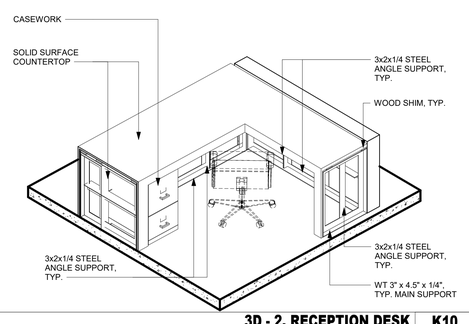
RECEPTIONIST DESK - NORTH G8
1/2" = 1'-0"



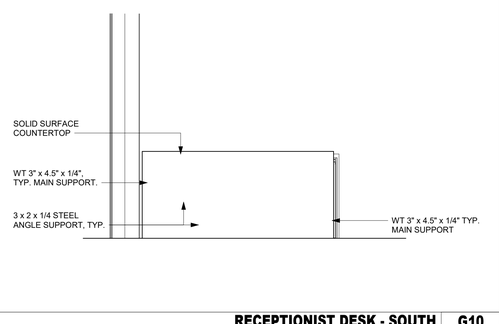
RECEPTIONIST DESK - EAST D8
1/2" = 1'-0"



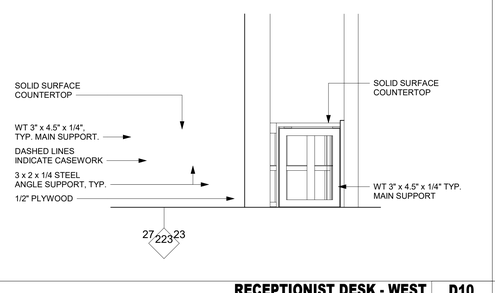
ENLARGED FLOOR PLAN - RECEPTIONIST DESK A10
1/2" = 1'-0"



3D - 2. RECEPTION DESK K10



RECEPTIONIST DESK - SOUTH G10
1/2" = 1'-0"



RECEPTIONIST DESK - WEST D10
1/2" = 1'-0"

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
GREGORY M. MARKEL
NO. 32763
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

RECEPTION DESK DETAILS

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

A802

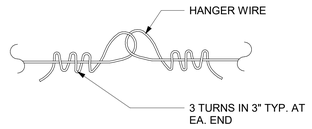
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IR 25-2
SUSPENDED LAY-IN PANEL CEILING: 2019 CBC

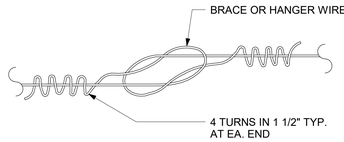
COMPRESSION STRUT CHANNEL SECTION	MAXIMUM LENGTH
250S125-33	5' - 10"
250S137-33	6' - 10"
362S137-33	8' - 0"
250S137-43	8' - 10"
400S137-43	10' - 10"

Detail Title :	REV: 09/21/2015	Detail No.
COMPRESSION STRUT TABLE	REV: 03/10/2017	3.21
	REV: 03/2022	

COMPRESSION STRUT TABLE K4
N.T.S.



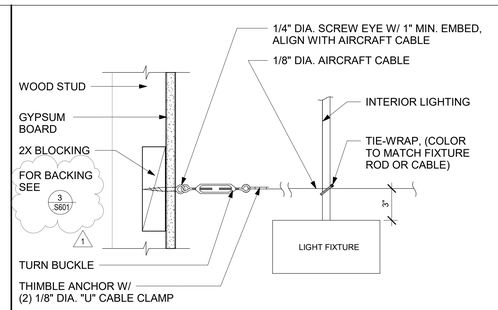
HANGER WIRE ONLY



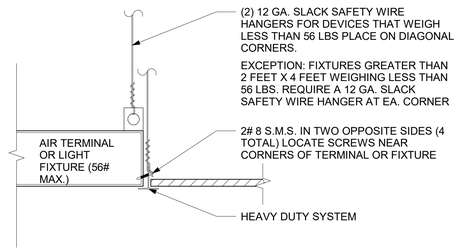
HANGER OR BRACE WIRE

NOTES
1. WIRE SPLICES ARE SHOWN LOOSELY TIED FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE DRAWN TIGHT TO COMPLETE INSTALLATION WHEN CONSTRUCTED.

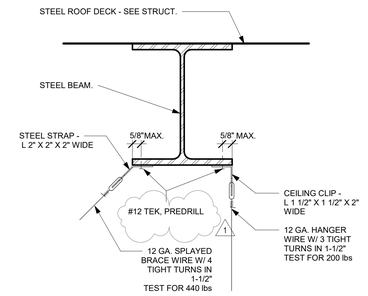
CEILING WIRE SPLICES D4
3" = 1'-0"



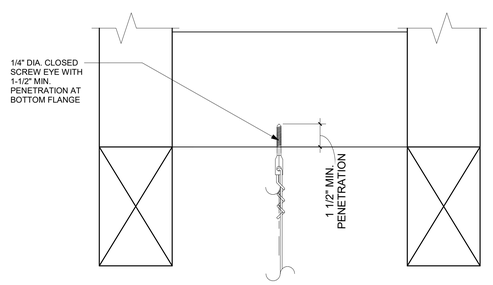
BRACING CABLE ATTACHMENT AT WOOD STUD A2
3" = 1'-0"



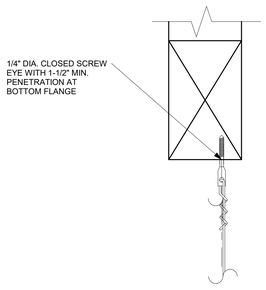
SUSPENDED ACOUSTICAL CEILING - LIGHT FIXTURES A4
1 1/2" = 1'-0"



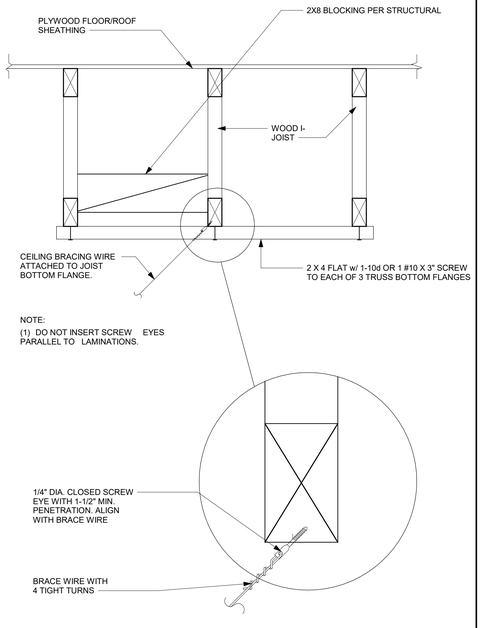
HANGER & SPLAY WIRE @ STL. BEAM D6
3" = 1'-0"



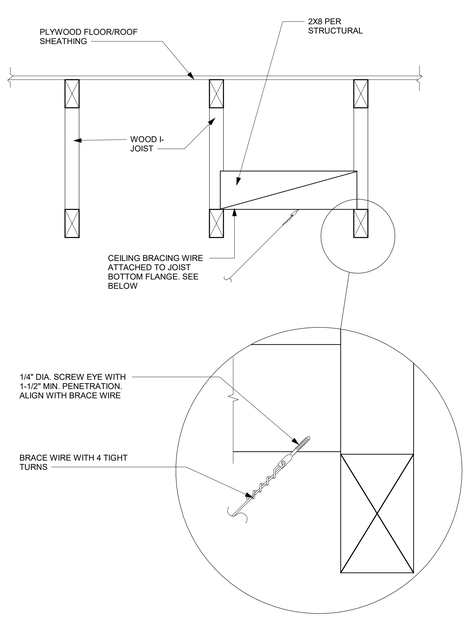
HANGER WIRE CONNECTION BETWEEN WOOD CHORD TRUSS K8
3" = 1'-0"



HANGER WIRE CONNECTION TO WOOD CHORD TRUSS K10
3" = 1'-0"

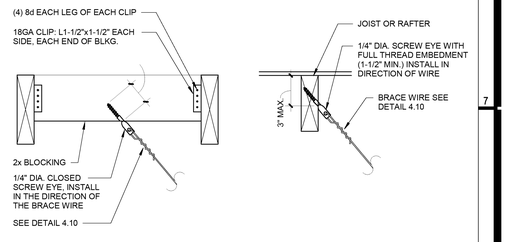


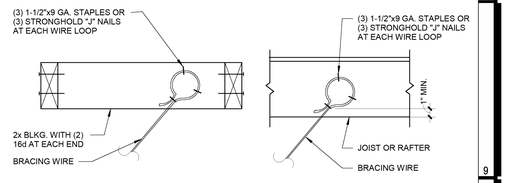
BRACE WIRE CONNECTION TO WOOD CHORD TRUSS G10
1" = 1'-0"



BRACE WIRE CONNECTION BETWEEN WOOD CHORD TRUSS D10
1" = 1'-0"

IR 25-2
SUSPENDED LAY-IN PANEL CEILING: 2019 CBC





Detail Title :	REV: 09/21/2015	Detail No.
BRACE WIRE CONNECTION TO SAWN TIMBER	REV: 03/2022	4.35

BRACE WIRE CONNECTION TO SAWN TIMBER A10
3" = 1'-0"

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
BRENT M. MAXEY
NO. 32768
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

TYP. LAY-IN CEILING DETAILS

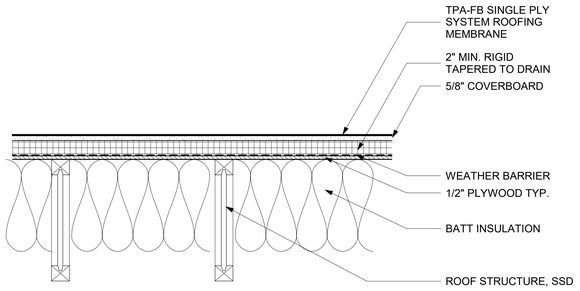
PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
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A823

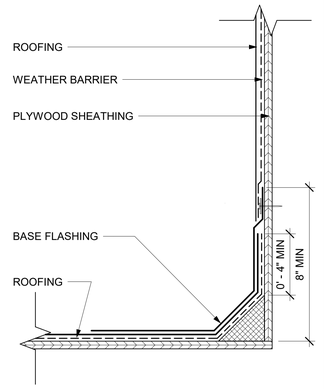
M L K J H G F E D C B A
1 2 3 4 5 6 7 8 9 10

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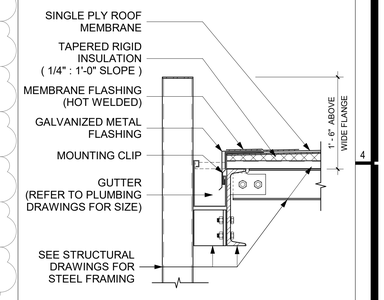
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DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
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DATE: 11/02/2026



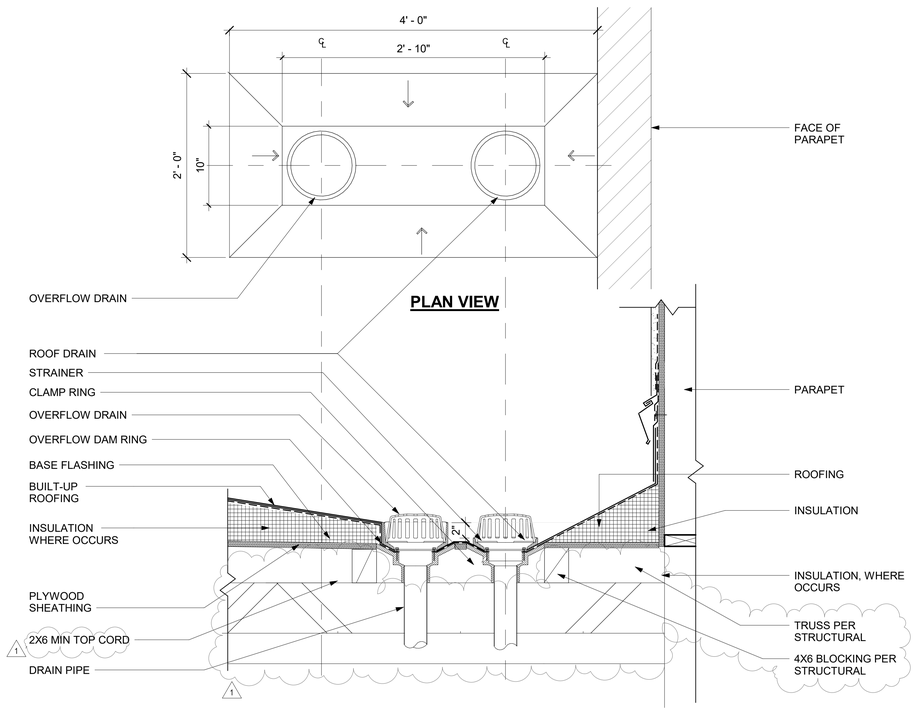
TYPICAL ROOF G3
1 1/2" = 1'-0"



ROOF TO PARAPET A3
3" = 1'-0"

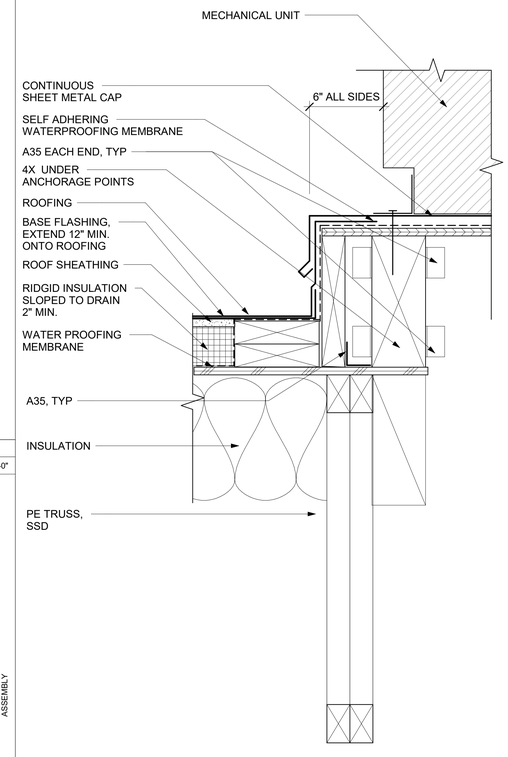


COVERED WALKWAY EDGE AND GUTTER A5
1" = 1'-0"

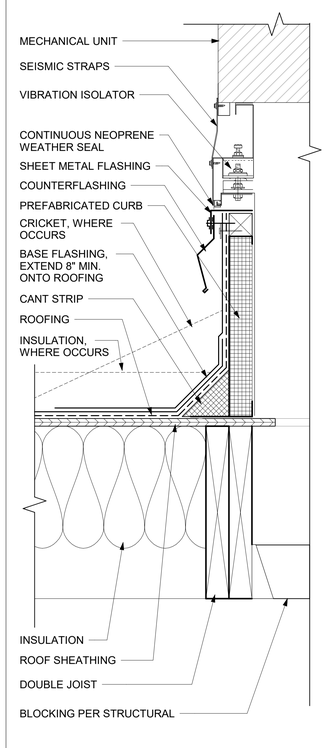


NOTES:
1. FOR ROOF DRAIN & OVERFLOW DRAIN SIZES, REFER TO PLUMBING DRAWINGS.
2. OVERFLOW DRAINS SHALL BE EQUAL SIZE AND DIAMETER AS ROOF DRAINS AND SHALL BE INSTALLED WITH INLET FLOWLINE 2" ABOVE THE LOW POINT OF ROOF.

DOUBLE UNIT ROOF DRAIN G8
1 1/2" = 1'-0"

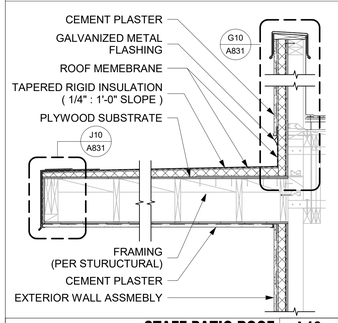


MECHANICAL EQUIPMENT PLATFORM C10
3" = 1'-0"

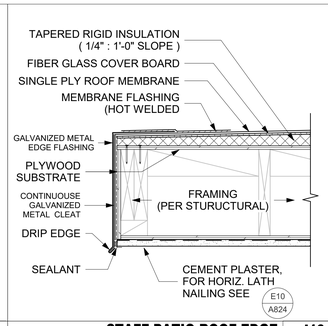


AT 2X ROOF JOIST

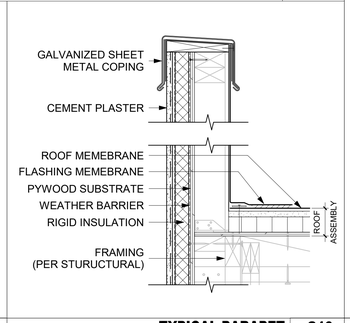
MECHANICAL EQUIPMENT CURB A10
WITH VIBRATION ISOLATOR 3" = 1'-0"



STAFF PATIO ROOF L10
3/4" = 1'-0"



STAFF PATIO ROOF EDGE J10
1 1/2" = 1'-0"



TYPICAL PARAPET G10
1 1/2" = 1'-0"

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

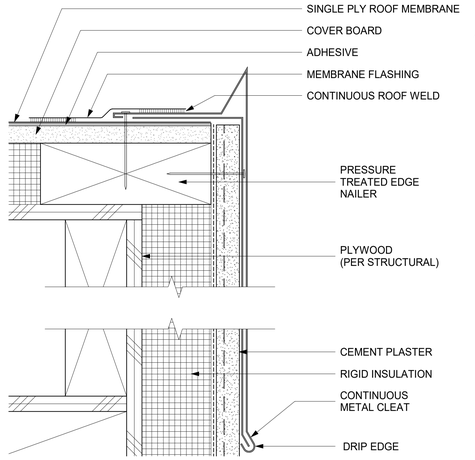
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SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

ROOF DETAILS

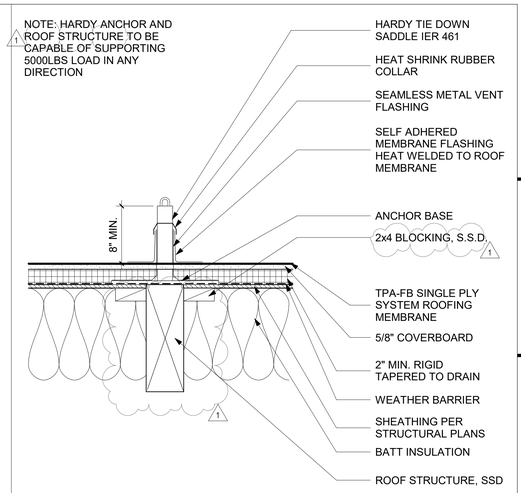
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3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

A831

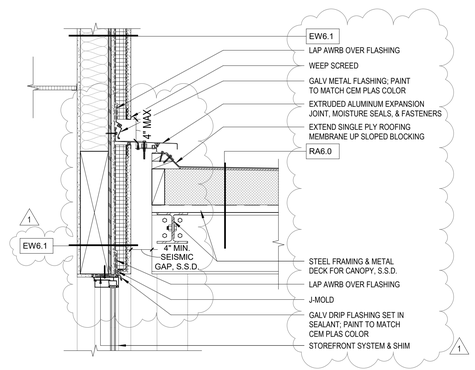
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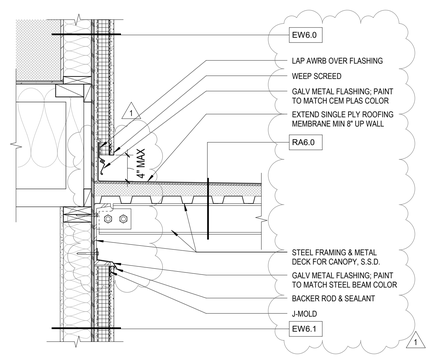
RAKE EDGE D3 — 6" = 1'-0"



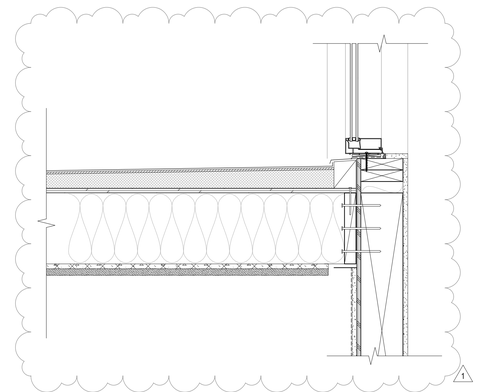
ROOF ANCHORAGE A3 — 1 1/2" = 1'-0"



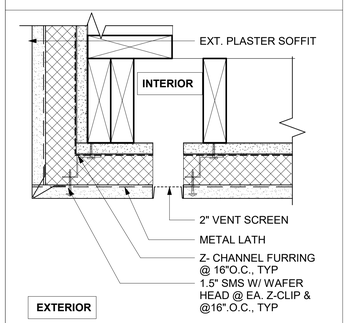
COVERED WALKWAY SEISMIC GAP @ EXT WALL G8 — 1" = 1'-0"



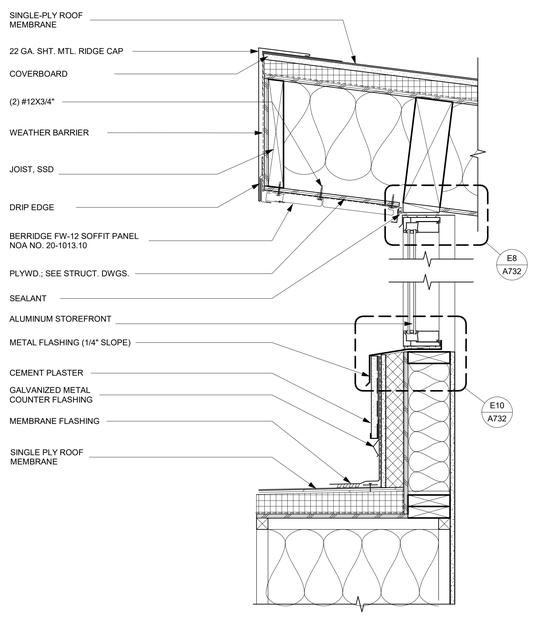
COVERED WALKWAY @ EXT WALL D6 — 1" = 1'-0"

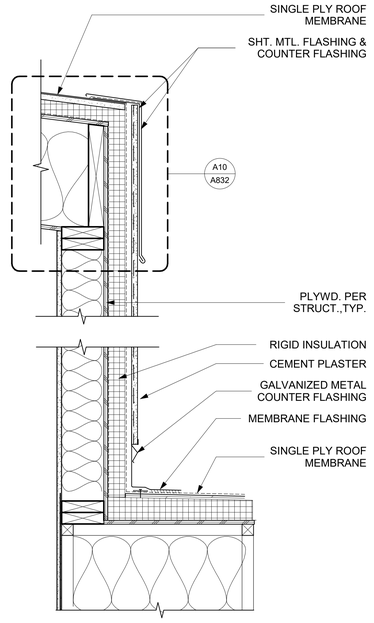


WINDOW SILL AT ENTRY ROOF A6 — 1 1/2" = 1'-0"

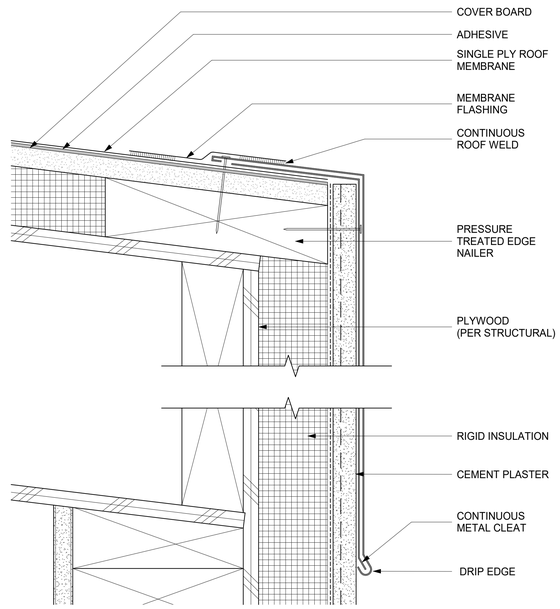


TYP. EXT. PLASTER SOFFIT & VENT L10 — 3" = 1'-0"





SLOPED ROOF E10 — 1 1/2" = 1'-0"



DRIP EDGE A10 — 6" = 1'-0"

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT — EDWARD M. MAZZEI — NO. C-31... — EXP. OCT. 31, 2027 — STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 1	10/23/2026

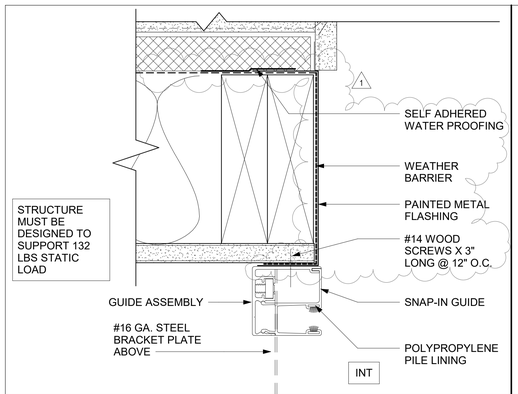
ROOF DETAILS

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3194 D Airport Loop Drive
Costa Mesa, CA 92626
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www.perkinseastman.com

A832

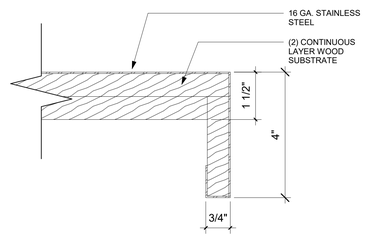
M L K J H G F E D C B A
1 2 3 4 5 6 7 8 9 10

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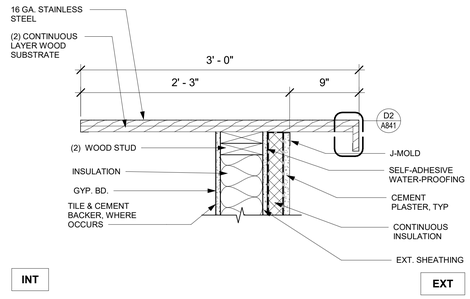
OVERHEAD DOOR CONCESSION STAND_WALL FASTENER (GUIDE) K2

6" = 1'-0"



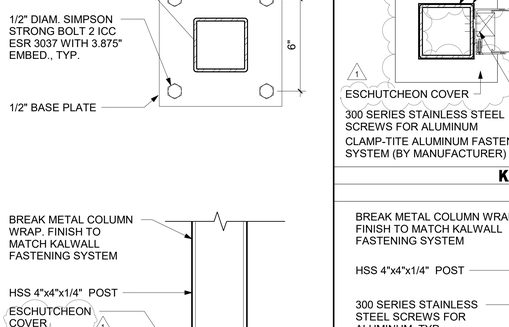
COUNTERTOP EDGE D2

6" = 1'-0"



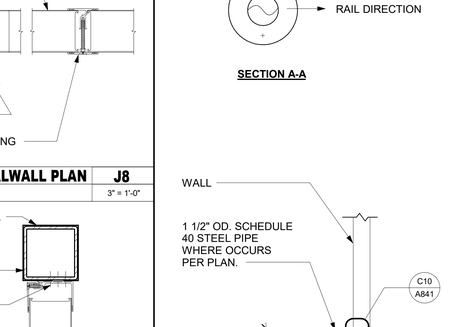
CONCESSION STAND COUNTERTOP A2

1 1/2" = 1'-0"



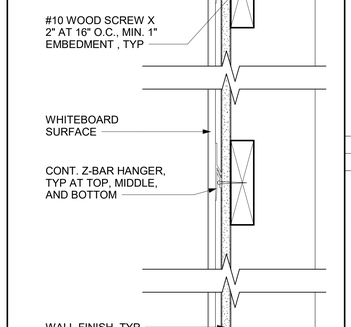
OVERHEAD DOOR CONCESSION STAND_HEAD K4

3" = 1'-0"



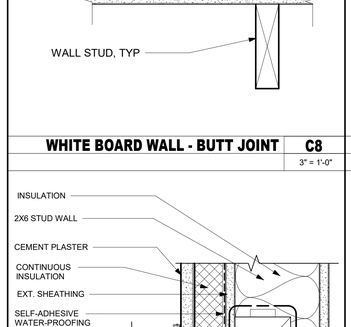
OVERHEAD DOOR CONCESSION STAND ELEVATION G4

1/2" = 1'-0"



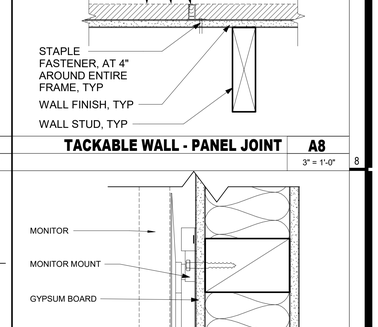
OVERHEAD DOOR CONCESSION STAND SECTION E4

1/2" = 1'-0"



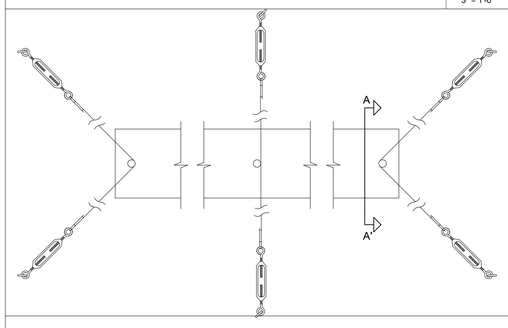
SEMI-RECESSED FIRE EXTINGUISHER C4

3" = 1'-0"



TACKABLE WALL A6

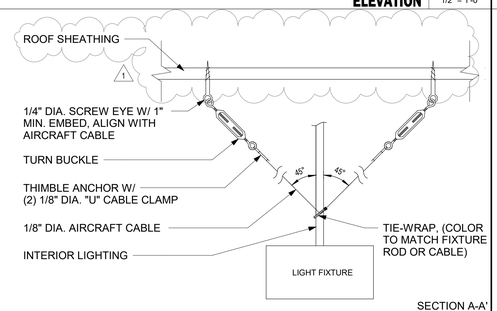
MARKER WALL SIMILAR 6" = 1'-0"

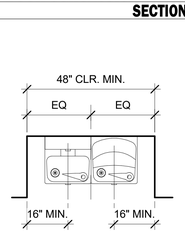


SECTION A-A'

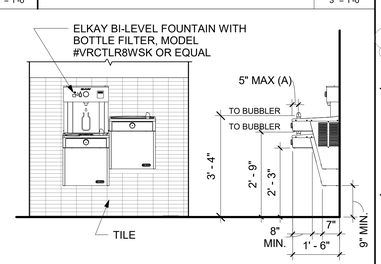
BRACING CABLE ATTACHMENT G6

3" = 1'-0"

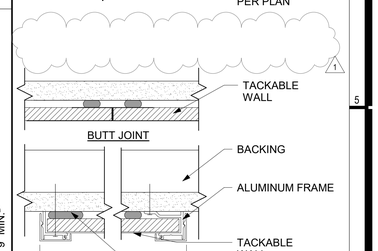




PLAN



FRONT ELEVATION



SIDE ELEVATION

DRINKING FOUNTAIN C6

1/2" = 1'-0"

TACKABLE WALL A6

MARKER WALL SIMILAR 6" = 1'-0"

NOTE: CONTRACTOR TO PROVIDE SEPARATION OF DISSIMILAR MATERIALS.

STEEL POST ATTACHMENT TO SLAB L10

3" = 1'-0"

KALWALL PLAN J8

3" = 1'-0"

NOTE: CONTRACTOR TO PROVIDE SEPARATION OF DISSIMILAR MATERIALS.

KALWALL SECTION J10

3" = 1'-0"

SECTION A-A

GUARD RAILS G10

3/4" = 1'-0"

WHITEBOARD WALL - MOUNTING E10

3" = 1'-0"

WHITE BOARD WALL - BUTT JOINT C8

3" = 1'-0"

TACKABLE WALL - PANEL JOINT A8

3" = 1'-0"

PIPE GUARDRAIL MOUNTING C10

3" = 1'-0"

TYP. MONITOR BRACKET A10

3" = 1'-0"

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
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DATE: 11/02/2026

LICENSED ARCHITECT
DAVID M. MAZANTI
NO. C-29010
EXPIRES 31-10
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

MISCELLANEOUS DETAILS

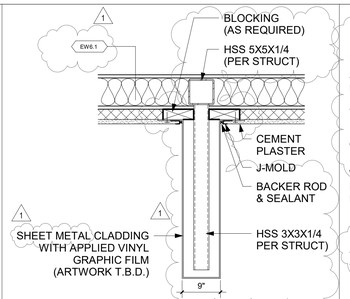
JOB	88910.00
SCALE	AS NOTED
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DATE	10/23/2026
1 ADD 1	10/23/2026

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3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

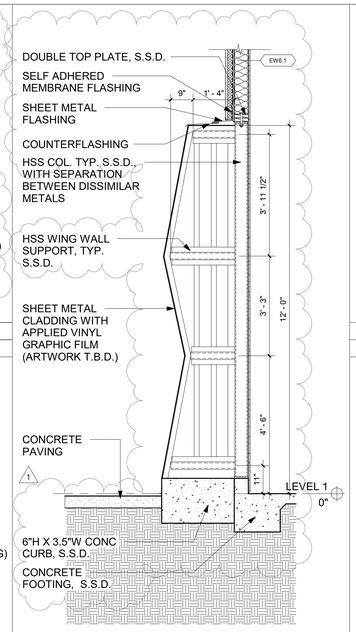
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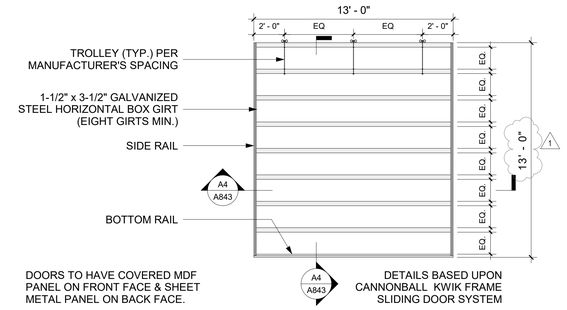
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1 2 3 4 5 6 7 8 9 10

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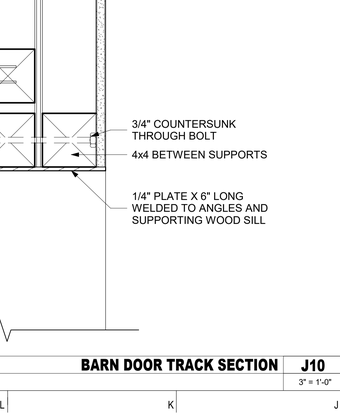


EXTERIOR FIN - PLAN VIEW G2
1" = 1'-0"

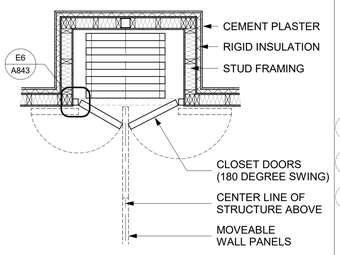




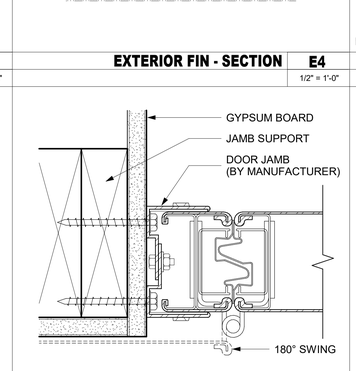
BARN DOOR FRAMING A2
1/4" = 1'-0"



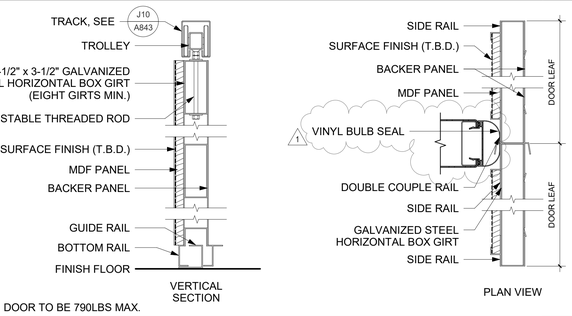
MODERNFOLD INTERSECTION J6
6" = 1'-0"



MODERFOLD CLOSET G4
3/8" = 1'-0"



MODERFOLD DOOR JAMB E6
6" = 1'-0"



NOTE: BARN DOOR TO BE 790LBS MAX.

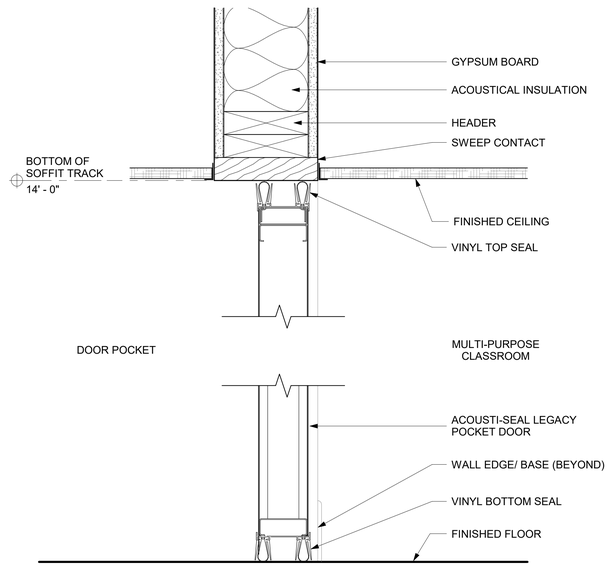
BARN DOORS - SECTION / PLAN VIEW A4
3" = 1'-0"

MODERFOLD SOSS HINGE G6
6" = 1'-0"

MODERNFOLD TRACK HEAD A10
3" = 1'-0"

NOTE: SEE 15/S602 FOR
STRUCTURAL CONNECTION

BARN DOOR TRACK SECTION J10
3" = 1'-0"



NOTE:
1. FOR LOCATION, SEE A404
2. POCKET DOOR JAMBS SHALL BE CONTINOUS CHANNELS ANCHORED TO A FIXED WALL. WELDED HINGE ANCHOR PLATS SHALL SUPPORT POCKET DOOR HINGES AND PERMIT A FULL 180-DEGREE SWING.

MODERNFOLD POCKET DOOR HEADER SECTION E10
3" = 1'-0"

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
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DATE: 11/02/2026

LICENSED ARCHITECT
SCOTT M. MAXWELL
NO. 32744
EXPIRES 08/31/2027
STATE OF CALIFORNIA

GATEWAY ANNEX SCHOOL
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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SCALE	AS NOTED
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DATE	10/23/2026
1 ADD 1	10/23/2026

FOLDING PARTITION DETAILS

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

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Plot Date: 10-19-2026 15:44:21

Project #: 2026-056 R24

STRUCTURAL COMPOSITE LUMBER (SCL)

1. STRUCTURAL COMPOSITE LUMBER (SCL) SHALL HAVE A CURRENT PRODUCT EVALUATION REPORT FROM THE INTERNATIONAL CODE COUNCIL (ICC) EVALUATION SERVICES, CBC SECTION 2303.1.9 AND ASTM D5456. FOR DRY SERVICE CONDITIONS WHERE MOISTURE CONTENT IN SERVICE IS LESS THAN 16%
   STRUCTURAL COMPOSITE LUMBER GRADES SHALL BE AS FOLLOWS:

BOISE CASCADE:	VERSA-LAM (ESR 1040, LARR 24998)
TRUS JOIST:	2.0E PARALLAM (ESR 1387, LARR 25202)
	1.9 E MICROLLAM (ESR 1387, LARR 25202)
	1.55E TIMBERSTRAND (ESR 1387, LARR 25202)
ROSEBURG:	RIGIDLAM (ESR 1210, LARR 25680)
LOUISIANA PACIFIC:	SOLIDSTART LVL & LSL (ESR 2403, LARR 25783)

2. WHERE DOUBLE JOISTS ARE INDICATED ON PLANS, MANUFACTURER OR CONTRACTOR SHALL CONNECT THE JOISTS PER MANUFACTURER'S RECOMMENDATIONS.
3. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR STOCKING THE JOISTS ON SITE DURING CONSTRUCTION. JOISTS SHALL NOT BE IN CONTACT WITH THE GROUND.
4. SCL MAY BE NOTCHED OR DRILLED ONLY WHERE SPECIFICALLY SHOWN ON THE DESIGN DOCUMENTS OR WHERE SPECIFICALLY APPROVED BY THE SEOR AND BY THE PLAN CHECK AGENCY. WHERE APPROVED, NOTCHING/DRILLING SHALL BE IN ACCORDANCE WITH 2012 NDS SECTION 8.4.1.
5. THE MEMBER PROPERTIES SHALL BE AS FOLLOW:

MICROLLAM LVL 1.9E WS	TIMBER STRAND LSL 1.55E	PARALLAM PSL 2.0E DF	PARALLAM PSL 2.2E DF
JOIST/BEAM ORIENTATION			
E (ksi) 1,900	1,550	2,000	2,200
Emin (ksi) 996	788	1,017	1,118
Fb (psi) 2,600	2,325	2,900	2,900
Fv (psi) 285	525	290	290
Fc-perp (psi) 750	900	750	750
FACE/PLANK ORIENTATION			
Fb (psi) 3,075	2,615	2,800	2,800
Fv (psi) 190	150	210	210
Fc-perp (psi) 480	375	475	475
AXIALFt (psi) 1,555	1,600	2,025	2,025
Fc (psi) 2,510	2,170	2,900	2,900

6. SUBSTITUTIONS OF ALTERNATE PRODUCTS WILL BE CONSIDERED ONLY IF THE FOLLOWING CONDITIONS ARE MET:
   - ALTERNATE PRODUCT AND MANUFACTURER SHALL HAVE AN ICC OR IAPMO APPROVAL.
   - DESIGN MUST MEET THE CONDITIONS ABOVE.
   - ANALYSIS, DRAWINGS AND DETAILS SHALL BE SIGNED AND STAMPED BY A CALIFORNIA CIVIL ENGINEER AND BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD (SEOR) FOR REVIEW, THEN TO THE PLAN CHECKING AGENCY FOR APPROVAL.
   - ALL COSTS INVOLVED FOR REDESIGN, REVIEW BY THE SEOR AND APPROVAL BY THE A PLANCHECKING AGENCY SHALL BE PAID FOR BY THE CONTRACTOR.
   - ALL COSTS INVOLVED FOR ANY NECESSARY MODIFICATIONS TO THE EXISTING APPROVED DRAWINGS BECAUSE OF THE SUBSTITUTION SHALL BE PAID FOR BY THE CONTRACTOR, INCLUDING ENGINEERING COSTS TO THE SEOR AND REVIEW COSTS TO THE DSA.
   - SUBSTITUTION SHALL BE SUBMITTED WITH ENOUGH TIME FOR REVIEW AND APPROVAL AS DESCRIBED ABOVE WITHOUT ANY NEGATIVE IMPACT ON THE CONSTRUCTION SCHEDULE. REVIEW TIME BY THE SEOR IS (10) BUSINESS DAYS FOR EACH SUBMITTAL. APPROVAL TIME BY THE PLAN CHECKING AGENCY VARIES AND SHALL BE VERIFIED BY THE CONTRACTOR.

GLUED LAMINATED TIMBER (GLULAM, GLB)

1. THE MANUFACTURE OF STRUCTURAL GLUED LAMINATED TIMBER SHALL BE IN CONFORMANCE WITH THE CURRENT EDITION OF "TIMBER CONSTRUCTION STANDARDS" BY THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION.
2. ALL GLUED LAMINATED MEMBERS SHALL BE DOUGLAS FIR AND WESTERN LARCH COMBINATION 24F-V8 WITH WATERPROOF RESORCINOL OR PHENOL RESORCINOL GLUE CONFORMING TO ASTM D2559. ALLOWABLE STRESS REQUIREMENTS ARE AS FOLLOWS:

Fb	=	2400 PSI	TENSION IN TENSION ZONE
	=	2400 PSI	TENSION IN COMPRESSION ZONE
Fct	=	1650 PSI	TENSION FACE
	=	650 PSI	COMPRESSION FACE
Fv	=	265 PSI	
E	=	1.8x10 PSI	

3. MEMBERS LEFT EXPOSED TO WEATHER SHALL BE ALASKA YELLOW CEDAR 26F-V3 AC/ AC COMBINATION. FINISH OF THE MEMBERS SHALL BE INDUSTRIAL APPEARANCE GRADE IN CONFORMANCE WITH THE STANDARD APPEARANCE GRADES OF THE A.I.T.C.
4. THE MANUFACTURER SHALL SUBMIT COMPLETE SHOP DRAWINGS TO THE ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO ANY FABRICATION.
5. PROVIDE CAMBERS AS NOTED ON THE DRAWINGS.
6. TEMPERATURE OF GLUE-LAMINATED TIMBER IS NOT TO EXCEED 150°F IN SERVICE.
7. GLUED LAMINATED MEMBERS SHOWN ON THESE PLANS ARE FOR DRY CONDITIONS OF USE. (MOISTURE CONTENT LESS THAN 16%)
8. ALL GLULAM MEMBERS SHALL BE CONTINUOUSLY INSPECTED DURING FABRICATION BY SPECIAL INSPECTOR. TO FACILITATE THE INSPECTION REPORTS. EACH MEMBER SHALL BE STAMPED WITH AN IDENTIFYING MARK.
9. GLB CONNECTIONS SHALL BE SIMPSON 'GLT, GLS' UNO.

NAILING NOTES:

1. ALL NAILS TO BE COMMON UNLESS OTHERWISE SPECIFIED.
2. USE ONLY STAINLESS STEEL OR HOT DIP GALVANIZED (PER ASTM A 153 CLASS D) NAILS FOR TREATED WOOD CONNECTIONS.
3. ALL NAILS TO BE TRUESPEC HEAD ID FASTENERS AS MANUFACTURED BY TREE ISLAND STEEL (ICC ESR 1768, LARR 25895).
4. ALL SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER OF RECORD ALONG WITH A CURRENT ESR FOR APPROVAL.

TYPE 'D'	LENGTH (IN)	DIAMETER
8 COOLER	2 3/8	0.113
10 FRAMING LITE	3	0.120
16 FRAMING LITE	3 1/4	0.120
8 COMMON	2 1/2	0.131
10 FRAMING	3	0.131
16 SHORT	3 1/4	0.131
16 BOX	3 1/4	0.135
10 PLYWOOD	2 1/8	0.148
10 PLYWOOD	2 1/4	0.148
10 PLYWOOD	2 3/8	0.148
10 COMMON	3	0.148
16 SINKER	3 1/4	0.148
16 COMMON	3 1/2	0.162

TYPE 'HARDWARE'	LENGTH (IN)	DIAMETER
N8 HARDWARE	1 1/2	0.131
N10 HARDWARE	1 1/2	0.148
HARDWARE	2 1/2	0.131
HARDWARE	2 1/2	0.148
N16 HARDWARE	2 1/2	0.162

ENGINEERED WOOD PRODUCT (EWP) NOTES:

1. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF DESIGN CALCULATIONS AND LAYOUT DRAWINGS PREPARED BY THE MANUFACTURER FOR REVIEW AND APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER INSTALLATION PER DETAILED INSTALLATION SUGGESTIONS AND GUIDELINES OF THE MANUFACTURER.
3. CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER PRIOR TO ENCLOSING THE TRUSSES TO PROVIDE OPPORTUNITY FOR OBSERVATION OF THE INSTALLATION.
4. MANUFACTURER SHALL INSPECT ALL PRODUCTS SPECIFIED TO BE FREE FROM MANUFACTURING ERROR OR DEFECTS IN WORKMANSHIP AND MATERIALS.
5. TEMPORARY CONSTRUCTION LOADS WHICH CAUSE STRESSES BEYOND THE PRODUCT'S DESIGN LIMITS ARE NOT PERMITTED.
6. JOIST, TRUSSES AND BEAMS SHALL BE ERECTED AND INSTALLED PER THE CALIFORNIA CODE OF REGULATIONS, TITLE 8, SECTION 1709.
   A. NO BUILDING, STRUCTURE, OR PART THEREOF, OR ANY TEMPORARY SUPPORT OR SCAFFOLDING IN CONNECTION THEREWITH SHALL BE LOADED IN EXCESS OF ITS DESIGNED CAPACITY.
   B. BRACING:
      a. TRUSSES AND BEAMS SHALL BE BRACED LATERALLY AND PROGRESSIVELY DURING CONSTRUCTION TO PREVENT BUCKLING OR OVERTURNING.
      b. THE FIRST MEMBER SHALL BE PLUMBED, CONNECTED, BRACED AND/OR GUYED AGAINST SHIFTING BEFORE SUCCEEDING MEMBERS ARE ERECTED AND SECURED TO IT. THE TOTAL SYSTEM SHALL BE ADEQUATELY BRACED AND STABILIZED TO THE FOUNDATION, TO SUITABLE ANCHORS BURIED IN THE GROUND, OR BY OTHER EQUIVALENT METHOD(S).
      d. BEAMS, TRUSSES AND OTHER MATERIAL BEING LIFTED AND PLACED BY CRANES OR OTHER HOISTING APPARATUS SHALL NOT BE RELEASED FROM THE CRANE OR HOISTING APPARATUS UNTIL THE PERSON DETACHING THE LOAD HAS VERIFIED THAT THE LOAD HAS BEEN SECURED OR SUPPORTED TO PREVENT INADVERTENT MOVEMENT.
   C. WOOD FLOOR CONSTRUCTION:
      a. IN THE ERECTION OF A BUILDING HAVING DOUBLE WOOD FLOOR CONSTRUCTION, THE ROUGH FLOORING SHALL BE COMPLETED AS THE BUILDING PROGRESSES, INCLUDING THE TIER BELOW THE ONE ON WHICH FLOOR JOISTS ARE BEING INSTALLED
      b. FOR SINGLE WOOD FLOOR OR OTHER FLOORING SYSTEMS, THE FLOOR IMMEDIATELY BELOW THE STORY WHERE THE FLOOR JOISTS ARE BEING INSTALLED SHALL BE KEPT PLANKED OR DECKED OVER.
   D. ERECTION GUIDE FOR TRUSSES AND BEAMS OVER 25 FEET LONG:
      a. THE EMPLOYER SHALL PROVIDE AN ERECTION PLAN AND PROCEDURE PREPARED BY A CIVIL ENGINEER CURRENTLY REGISTERED IN CALIFORNIA WHICH SHALL BE FOLLOWED AND KEPT AVAILABLE ON THE JOB SITE FOR INSPECTION BY THE DIVISION.

      NOTE:
      AUTHORITY CITED: SECTION 142.3, LABOR CODE. REFERENCE: SECTION 142.3, LABOR CODE.
7. ALL ENGINEERED WOOD PRODUCTS SHALL BE PROTECTED FROM THE WEATHER DURING CONSTRUCTION. WOOD PWJ SHALL BE STORED IN A VERTICAL ORIENTATION.
8. WOOD PWJ FLANGES MAY NOT BE NOTCHED OR CUT. ALL HOLES IN ENGINEERED WOOD PRODUCTS ARE ONLY AS DETAILED BY THE MANUFACTURER OR APPROVED BY THE STRUCTURAL ENGINEER.
9. MINIMUM BEARING LENGTHS SHALL BE SPECIFIED PER THE DESIGN CALCULATIONS. BEARING CROSS THE FULL WIDTH OF THE BEAM OR JOIST IS REQUIRED.

WOOD

1. ALL STRUCTURAL LUMBER SHALL BE DOUGLAS FIR-LARCH, VISUALLY GRADED OR MACHINE GRADED UNDER THE STANDARD GRADING RULES, NO. 17 OF THE WEST COAST LUMBER INSPECTION BUREAU, AND SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 23 OF THE CBC. ALL FRAMING SHALL BE LESS THAN 19% MOISTURE CONTENT AT TIME OF INSTALLATION AS WELL AS BEFORE ENCLOSURE. ALL FRAMING MEMBERS SHALL BE AS FOLLOWS:

SIZE AND APPLICATION	GRADE
2x TOP PLATES & SILLS	STANDARD OR NO. 2
2x4 STUDS (UP TO 9'-0")	STUD
2x4 STUDS (OVER 9'-0")	NO. 2, UNO
2x6 STUDS (UP TO 10'-0")	STUD
2x6 STUDS (OVER 10'-0")	NO. 2, UNO
6x AND LARGER BEAMS AND POST	NO. 1, UNO
JOIST AND ALL OTHER 2" TO 4" SAWN LUMBER	NO. 1 & BETTER, UNO

2. ALL WOOD BEARING ON CONCRETE OR MASONRY IN DIRECT CONTACT WITH EARTH SHALL BE PRESSURE TREATED DOUGLAS FIR IN ACCORDANCE WITH CBC 2303.1.9 AND 2304.12. ALL CUTS, HOLES & NOTCHES BE TREATED WITH A PRESERVATIVE PROVIDED BY THE STRUCTURAL ENGINEER.
3. FASTENERS FOR PRESSURE-PRESERVATIVE TREATED WOOD SHALL BE HOT-DIPPED ZINC COATED GALVANIZED, STAINLESS STEEL, SILICON BRONZE OR COPPER PER CBC 2304.10.5. (EXCEPTION: PLAIN CARBON STEEL FASTENERS INCLUDING NUTS AND WASHERS IN SBX/DOT AND ZINC BORATE PRESERVATIVE-TREATED WOOD IN AN INTERIOR, DRY ENVIRONMENT SHALL BE PERMITTED.)
4. ALL STRUCTURAL SHEATHING SHALL BE DOUGLAS FIR STANDARD GRADE STRUCTURAL 1 (4-PLY MIN) WITH EXTERIOR GLUE CONFORMING TO THE LATEST EDITION OF PS 1 AND PS 2 EXCEPT WHERE SHALL BEAR LEGIBLE APA STAMPS. NO INDIVIDUAL SHEETS SHALL BE LESS THAN 2 FEET IN WIDTH. FULL SHEETS (4'-0"X8'-0") SHALL BE USED WHEREVER POSSIBLE.
5. ALL FLOOR AND ROOF SHEATHING SHALL BE LAID FACE GRAIN PERPENDICULAR TO FRAMING UNO. ALL SHEATHING SHALL BE APPROVED BY THE BUILDING INSPECTOR BEFORE COVERING.
6. UNLESS NOTED OTHERWISE, ALL WOOD SILL PLATE UNDER BEARING, EXTERIOR, OR SHEAR WALLS IN CONTACT WITH CONCRETE OR MASONRY SHALL BE BOLTED TO CONCRETE OR MASONRY WITH 5/8" Ø HEADED ANCHOR BOLTS W / 7" MIN EMBEDMENT INTO MASONRY AT 4'-0" O.C. UNO, & AT 4" MIN AND 12" MAX FROM EACH END OF THE PLATES, A MINIMUM OF TWO ANCHOR BOLTS SHALL BE PLACED IN ANY ONE PIECE OF SILL PLATE.
7. ALL BOLT HEADS AND NUTS WITHIN SHEAR AGAINST THE FACE OF WOOD MEMBERS SHALL BE PROVIDED WITH 2"x2"x3/16" STEEL PLATE WASHERS UNO. ALL ANCHOR BOLTS FOR SHEAR WALLS SHALL BE PROVIDED WITH A 3"x3"x0.229" MIN STEEL PLATE WASHER UNO ON SHEAR WALL SCHEDULE.
8. ALL NAILS FOR CONNECTING WOOD MEMBERS SHALL BE COMMON NAILS. MINIMUM NAILING REQUIREMENTS OUTLINED IN TABLE 2304.10.1 SHALL BE FOLLOWED UNLESS NOTED OTHERWISE.
9. RETIGHTEN BOLTS BEFORE CLOSING-IN.
10. USE OF MACHINE NAILING IS SUBJECT TO A SATISFACTORY JOBSITE DEMONSTRATION FOR EACH PROJECT AND THE APPROVAL BY THE ARCHITECT OR STRUCTURAL ENGINEER AND THE JURISDICTION. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING WILL NOT BE APPROVED IN 5/16" SHEATHING. IF NAIL HEADS PENETRATE THE OUTER PLY MORE THAN WOULD BE NORMAL FOR A HAND HAMMER AS DETERMINED BY THE STRUCTURAL ENGINEER ARE NOT MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY.
11. ALL WOOD HARDWARE CONNECTORS SHALL BE SIMPSON STRONG-TIE UNLESS NOTED OTHERWISE.
12. PROVIDE FULL DEPTH BLOCKING AT 4'-0" OC BETWEEN ADJACENT JOISTS UNDER ALL PERPENDICULAR PARTITIONS. PROVIDE DOUBLE JOIST UNDER ALL PARALLEL PARTITIONS UNLESS NOTED OTHERWISE.
13. UNLESS SPECIFICALLY SHOWN ON THESE PLANS, NO STRUCTURAL MEMBER SHALL BE CUT, DRILLED, NOR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE SEOR.
14. ROOF SHEATHING SHALL BE INSPECTED PRIOR TO PLACING INSULATION AND ROOFING.
15. SOLID BLOCKING (2x MIN) SHALL BE PLACED BETWEEN JOISTS OR RAFTERS AT ALL SUPPORTS & @ 8'-0" OC MAX.
16. ALL ANCHOR RODS SHALL CONFORM TO ASTM F1554 GR 36. ALL BOLTS SHALL CONFORM TO ASTM A307 UNO.
17. HOLES FOR BOLTS SHALL BE BORED 1/32" TO 1/16" LARGER THAN NOMINAL BOLT DIAMETER. (THIS INCLUDES HOLES FOR ANCHOR RODS IN SILL PLATE).
18. JOIST CONNECTORS SHALL BE SIMPSON 'LUS' UNLESS NOTED OTHERWISE.
19. ALL POSTS CONNECTION AT TOP AND BOTTOM SHALL BE SIMPSON 'CC' UNO.
20. ALL POST CONNECTIONS LOCATED DIRECTLY ON CONCRETE SHALL BE SIMPSON 'CB' UNLESS NOTED OTHERWISE.
21. FILL ALL NAIL HOLES OF WOOD CONNECTION HARDWARE (STRAPS, HANGERS, ETC.)
22. ALL NON-SHEAR WALLS SHALL HAVE BRACING PROVIDED BY ONE OF THE METHODS REQUIRED BY CODE SECTION 2308.9.3.
23. ALL LAG SCREWS AND WOOD SCREWS SHALL CONFORM TO ANSI/ASME B18.2.1 FOR LAG SCREWS & ANSI/ASME B18.6.1 FOR WOOD SCREWS
24. SECURE ALL EMBEDDED HARDWARE PRIOR TO FOUNDATION INSPECTION.
25. EACH SHEET OF SHEATHING SHALL BE IDENTIFIED WITH THE GRADE TRADE MARK OF AN APPROVED TESTING AND GRADING AGENCY. THE SHEATHING SHALL MEET THE REQUIREMENTS OF PRODUCT STANDARD (DOC) PS1 AND PS2 OR APA PRP-108. INSTALL SHEATHING PANELS IN A DIRECTION AS SHOWN ON PLANS. PANELS WITH DIMENSION LESS THAN 24 INCHES IN ANY DIRECTION SHALL NOT BE USED UNLESS ALL EDGES ARE BLOCKED WITH MIN 2x FRAMING MEMBERS. PANELS INSTALLED AT LOCATIONS PERMANENTLY EXPOSED TO WEATHER SHALL BE GRADED WITH EXTERIOR EXPOSURE. THE LOWER GRADED VEENER IS INSTALLED FACING THE FRAMING.

ROOF SHEATHING	
THICKNESS & GRADE	19/32" C-D
EXPOSURE	EXPOSURE 1
PANEL INDEX	40/20
NAILING	10d @ 6" OC BN & EN; 10d @ 12" OC FN
BLOCKING	NONE
FLOOR SHEATHING T&G	
THICKNESS & GRADE	23/32" C-D
EXPOSURE	EXPOSURE 1
PANEL INDEX	48/24
NAILING	10d @ 6" OC BN & EN; 10d @ 12" OC FN
BLOCKING	NONE
EXTERIOR DECK SHEATHING T&G	
THICKNESS & GRADE	23/32" A-C
EXPOSURE	EXTERIOR EXPOSURE
PANEL INDEX	48/24
NAILING	10d @ 6" OC BN & EN; 10d @ 12" OC FN
BLOCKING	NONE
SHEAR PANEL	
THICKNESS	1/2" STRUCT 1 PER SHEAR WALL SCHEDULE
EXPOSURE	EXPOSURE 1
PANEL INDEX	16/0
NAILING	PER SHEAR WALL SCHEDULE
BLOCKING	BLOCKED, UNO

26. LAG SCREWS: ANSI/ASME STANDARD CUT B18.2.1-2012 2012 NDS FOR LAG SCREW DIMENSIONS. PRE-DRILL ALL HOLES. HOLE AT SHANK PORTION TO MATCH DIAMETER OF SHANK. HOLES AT THREADED PORTION TO BE 60 TO 70 PERCENT OF SHANK DIAMETER AND EQUAL TO LENGTH OF THREADED PORTION UNO. USE SOAP AND LUBRICANTS TO FACILITATE INSTALLATION. DRIVING WITH HAMMER IS NOT PERMITTED. EXPOSED STEEL SHALL BE HOT-DIPPED GALVANIZED.
27. LATERAL SUPPORT FOR BEAMS, RAFTERS AND JOISTS: CBC SECTION 2308.8.2 (JOISTS SHALL BE SUPPORTED LATERALLY AT THE ENDS AND AT EACH SUPPORT BY SOLID BLOCKING EXCEPT WHERE THE ENDS OF JOISTS ARE NAILED TO A HEADER, AND OR RIM JOIST OR TO AN ADJOINING STUD OR BY OTHER APPROVED MEANS. SOLID BLOCKING SHALL NOT BE LESS THAN 2 INCHES (51 mm) IN THICKNESS AND THE FULL DEPTH OF JOIST.)
28. BEAMS OR DRAG STRUTS: LAMINATED OR DOUBLE JOIST SHALL BE SPIKED TOGETHER WITH 16d NAILS AT 9" OC STAGGERED. IF USING 3 OR MORE JOIST TOGETHER, CONNECT WITH 1/2"Ø MACHINE BOLTS @ 24" OC STAGGERED.

REINFORCING STEEL (FOR CONCRETE & MASONRY)

1. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 19A OF THE CODE, ASTM A615, GRADE 60 UNO.
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 FABRIC SHALL CONFORM TO ASTM A-185. WWF SHALL BE SUPPORTED ON APPROVED CHAIRS.
4. REINFORCING BAR 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.
5. ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION IS MADE.
6. WHERE WELDING OF REINFORCING IS APPROVED BY THE STRUCTURAL ENGINEER IT SHALL BE DONE BY AWS CERTIFIED WELDERS USING E90XX OR APPROVED ELECTRODES. WELDING PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF STRUCTURAL WELDING CODE-REINFORCING STEEL", AWS-D1.4, LATEST REVISION. REINFORCING BARS TO BE WELDED SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-706.
7. BARS IN SLABS SHALL BE SECURELY SUPPORTED ON WELL-CURED CONCRETE BLOCKS OR APPROVED METAL CHAIRS, PRIOR TO PLACING CONCRETE.
8. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE "A.C.I. 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 STRUCTURAL ENGINEER 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.
10. MILL TEST REPORTS FOR GRADE 60 BARS SHALL BE SUBMITTED PRIOR TO PLACEMENT OF CONCRETE.
11. PROVIDE INSPECTION OF CONCRETE PER SPECIAL INSPECTION NOTES SECTION. 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. ALL GRADE 60 REINFORCING STEEL SHALL BE CLEARLY MARKED TO DIFFERENTIATE THEM FROM GRADE 40 REINFORCING STEEL IF CONCURRENTLY ON SITE.
13. CONCRETE PROTECTION FOR REINFORCEMENT
    - CAST-IN-PLACE CONCRETE (NON-PRESTRESSED). THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:

	MIN COVER
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTh	3"
B. CONCRETE EXPOSED TO EARTH OR WEATHER:	
NO 6 BAR THRU NO 18 BAR	2"
NO 5 BAR, W31 OR D31 WIRE & SMALLER	1 1/2"
C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS, WALLS, JOISTS:	
NO 14 BAR AND NO 18 BAR	1 1/2"
NO 11 BAR AND SMALLER	3/4"
BEAMS AND COLUMNS:	
PRIMARY REINFORCEMENT, TIES, STIRRUPS, AND SPIRALS	1 1/2"

14. CONTRACTOR SHALL PROVIDE FOR AN ALLOWANCE OF 5 TONS OR 3%, WHICHEVER IS GREATER, OF REINFORCING STEEL TO BE FABRICATED AND/OR PLACED DURING THE PROGRESS OF WORK AS MAY BE DIRECTED BY THE ARCHITECT (STRUCTURAL ENGINEER). THE UNUSED PORTION SHALL BE CREDITED TO THE OWNER AT THE COMPLETION OF CONCRETE WORK.
15. LENTON MECHANICAL COUPLERS MAY BE USED IN PLACE OF LAP SPLICES. MIN CLEAR COVER TO THE COUPLERS MUST BE MAINTAINED PER NOTE 13. REFER TO IAPMO ER-0129 FOR CONDITIONS OF USE. SPECIAL INSPECTIONS, & REQUIREMENTS FOR PREPARING REBAR ENDS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED BY AN APPROVED AND LICENSED FABRICATOR IN ACCORDANCE WITH THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (LATEST EDITION), AND WITH CHAPTER 22A OF THE CODE.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE ASTM DESIGNATION AS INDICATED BELOW (UNO):

WF AND WT SHAPES	A992
PIPE COLUMNS	A53, GRADE B
HSS SECTIONS	A500, GRADE B
BOLTS	A325
BOLTS IN CONCRETE/MASONRY	A307
ANGLES, CHANNELS, PLATES	A36
ANCHOR RODS	F1554, GRADE 36 UNO

3. THE STRUCTURAL STEEL FABRICATOR SHALL FURNISH SHOP DRAWINGS TO THE ARCHITECT OF ALL STEEL FOR ARCHITECTS AND STRUCTURAL ENGINEERS REVIEW AND APPROVAL BEFORE 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, OR MASONRY, SPRAY ON FIREPROOFING, OR ARE ENCASED BY BUILDING FINISH, SHALL BE LEFT UNPAINTED.
6. ALL WELDING IS TO BE DONE BY CERTIFIED WELDERS APPROVED USING E70XX ELECTRODES (UNO). ALL WELDS SHALL BE IN CONFORMITY WITH THE PROJECT SPECIFICATIONS AND THE CODE FOR WELDING IN BUILDING CONSTRUCTION (AWS D1.1 LATEST REVISION) OF THE AMERICAN WELDING SOCIETY. SEE SPECIAL INSPECTIONS SECTION FOR WELDING INSPECTION REQUIREMENTS.
7. WELD LENGTHS CALLED FOR ON PLANS ARE THE NET EFFECTIVE LENGTH REQUIRED. WHERE FILLET WELD SYMBOL IS GIVEN WITHOUT INDICATION OF SIZE, USE MINIMUM SIZE WELDS AS SPECIFIED IN AISC MANUAL OF STEEL CONSTRUCTION 15TH EDITION, TABLE J2.4.
8. ALL EXPOSED STRUCTURAL STEEL AND MISCELLANEOUS METAL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
9. ALL GROOVE WELDS SHALL BE FULL PENETRATION UNLESS NOTED OTHERWISE
10. WHERE FINISH IS ATTACHED TO STRUCTURAL STEEL PROVIDE 1/2"DIA. BOLT HOLES @ 48" OC @ W, C, L, MEMBERS AND 1/2"Ø. WELDED STUDS @ 48" OC @ TUBE & PIPE MEMBERS FOR ATTACHMENT OF NAILERS, SEE ARCHITECTURAL DRAWINGS FOR FINISHES SEISMIC LOAD RESISTING SYSTEM (SLRS) IS DEFINED AS THE ASSEMBLY OF STRUCTURAL ELEMENTS IN THE BUILDING THAT RESISTS SEISMIC LOADS, INCLUDING COLUMNS, BEAMS, GIRDERS, STRUCTS, COLLECTORS, CHORDS AND BRACES, AND THE CONNECTIONS BETWEEN THESE ELEMENTS SPECIFICALLY DESIGN TO RESIST SEISMIC FORCES, AS DESIGNATED ON THE DRAWINGS.
11. WELD MATERIALS USED IN SLRS WELD CONNECTIONS SHALL CONFORM TO THE FOLLOWING TOUGHNESS REQUIREMENTS:
    A. WELD CONNECTIONS SHALL BE MADE WITH A FILLER METAL THAT CAN PRODUCE WELDS THAT HAVE A MINIMUM CHARPHY V-NOTCH TOUGHNESS OF 20 FT-LB AT 0 DEGREES F AS DETERMINED BY THE APPROPIATE AWS CLASSIFICATION TEST METHOD.
    B. WELDED CONNECTIONS DESIGNATED AS 'DEMAND CRITICAL' SHALL BE MADE WITH A FILLER METAL CAPABLE OF PROVIDING A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 20 FT-LB AT 20 DEGRESS F AS DETERMINED BY THE APPROPIATE AWS CLASSIFICATION TEST METHOD, AND 40 FT-LB AT 70 DEGRESS F AS DETERMINED BY APPENDIX X OF ANSI/AISC 341.

STEEL DECK

1. ROOF AND FLOOR DECKS SHALL BE AS NOTED ON THE DRAWINGS. PROPERTIES ARE AS FOLLOWS:

DECK SIZE AND GAUGE	I (in4)	S (in3)
1 1/2" x 22 GA DECK	0.183	0.209
1 1/2" x 20 GA DECK	0.233	0.271
1 1/2" x 18 GA DECK	0.338	0.395
1 1/2" x 16 GA DECK	0.440	0.502
2" x 22 GA DECK	0.340	0.283
2" x 20 GA DECK	0.423	0.361
2" x 18 GA DECK	0.555	0.510
2" x 16 GA DECK	0.694	0.639
3" x 22 GA DECK	0.718	0.418
3" x 20 GA DECK	0.896	0.534
3" x 18 GA DECK	1.203	0.767
3" x 16 GA DECK	1.509	0.960

2. DECK SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND SHALL INDICATE HEADED STUD LAYOUT.
3. THE AMERICAN IRON AND STEEL INSTITUTE "SPECIFICATIONS FOR THE DESIGN OF LIGHT GAUGE STEEL STRUCTURAL MEMBERS" SHALL GOVERN THE DESIGN OF ALL DECK UNITS, STEEL DECK AND ALL OF ITS CLOSURES AND FLASHINGS SHALL CONFORM TO ASTM A653, GRADE 38, Fy 38,000 PSI MIN.
4. ACCEPTABLE STEEL DECK MANUFACTURERS ARE AS FOLLOWS:
   VERCO MANUFACTURING, INC. (IAPMO #0217, LARR #23789)
   H.H. ROBERTSON COMPANY (ICBO #2739, LARR #23597)
   ASC PACIFIC (ICBO # 2757, LARR #23783, 23784 AND 23803)
5. UNITS SHALL BE CONTINUOUS OVER THREE OR MORE SPANS, EXCEPT WHERE THE FRAMING DOES NOT PERMIT. SHORING MAY BE REQUIRED AT NON-CONTINUOUS SPANS. DECK SHOP DRAWINGS SHALL INDICATE WHERE SHORING WILL BE REQUIRED. DECK SHALL BEAR 2" MINIMUM AT ALL SUPPORTS.
6. ALL WELDING OF STEEL DECK SHALL BE DONE BY CERTIFIED LIGHT GAUGE WELDERS IN ACCORDANCE WITH AWS "SPECIFICATIONS FOR WELDING SHEET STEEL IN STRUCTURES", AWS D1.3-(LATEST ED

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ABBREVIATIONS

#	POUND; NUMBER
&	AND
<	LESS THAN
>	GREATER THAN
@	AT
°	DEGREES
±	PLUS OR MINUS
Ø	DIAMETER
≤	LESS THAN OR EQUAL TO
≥	GREATER THAN OR EQUAL TO
A	AREA
AB	ANCHOR BOLT
ABV	ABOVE
ACI	AMERICAN CONCRETE INSTITUTE
ADA	AMERICANS WITH DISIBILITIES ACT
ADD'L	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJACENT/ ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ALUM	ALUMINUM
ANCH	ANCHOR
APPROX	APPROXIMATE/APPROXIMATELY
APPVD	APPROVED
AR	ANCHOR ROD
ARCH	ARCHITECTURAL; ARCHITECT
B / BOT / BOTT	BOTTOM
BAL	BALANCE
BC	BOTTOM CHORD
BD	BOARD
BEL	BELOW
BLD / BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BN	BOUNDARY NAIL
BOF	BOTTOM OF FOOTING
BOS	BOTTOM OF STEEL
BP	BASE PLATE
BRB	BUCKLING-RESTRAINED BRACE
BRBF	BUCKLING-RESTRAINED BRACED FRAME
BRDG	BRIDGING
BRG	BEARING
BS	BOTH SIDES
BSMT	BASEMENT
BTW	BETWEEN
BYND	BEYOND
C	CAMBER
CANT	CANTILEVER
CBC	CALIFORNIA BUILDING CODE
CBF	CONCENTRICALLY BRACED FRAME
CC	CENTER-TO-CENTER
CCR	CALIFORNIA CODE OF REGULATIONS
CF	CUBIC FEET
CG	CENTER OF GRAVITY
CHKD	CHECKERED
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR; CLEARANCE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUE; CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE; COORDINATES
CP	COMPLETE PENETRATION
CTR	CENTER
CTRL JT	CONTROL JOINT
CVN	CHARPY V-NOTCH
CY	CUBIC YARD
d	PENNY(NAIL OR db)
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DBLR	DOUBLER
DEG	DEGREE
DEGF	DEGREE FAHRENHEIT
DEPR	DEPRESS; DEPRESSED; DEPRESSION
DEPT	DEPARTMENT
DET	DETAIL
DF	DOUGLAS FIR
DIA / ø	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIM	DIMENSION
DIR	DIRECTION
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
DO	DITTO
DP	DEEP
DWG	DRAWING
DWL	DOWEL
(E) / EXIST	EXISTING
E	EAST
EA	EACH
EBF	ECCENTRICALLY BRACED FRAME
EF	EACH FACE
EFF	EFFECTIVE
EJ / EXP	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMB	EMBED; EMBEDMENT
EN	EDGE NAIL
ENGR	ENGINEER
EOP	EDGE OF PANEL
EOR	ENGINEER OF RECORD
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE
ETC	ET CETERA
EW	EACH WAY
EXC	EXCAVATE
EXP	EXPANSION
EXT	EXTERIOR
F	FAHRENHEIT
F'c	CONCRETE COMPRESSIVE STRENGTH
F'm	MASONRY COMPRESSIVE STRENGTH
FAB	FABRICATE; FABRICATION; FABRICATOR
FB	FLAT BAR
Fb	ALLOWABLE BENDING STRESS
FCAW	FLUX CORED ARC WELDING
FD	FLOOR DRAIN
FDN / FOUND	FOUNDATION
FF	FINISH FLOOR; FAR FACE
FIN	FINISH
FJ	FLOOR JOIST
FLG	FLANGE
FLR	FLOOR
FN	FIELD NAILING
FO	FACE OF
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FP	FIREPROOF; FULL PENETRATION
FRMG	FRAMING
FS	FULL SIZE; FAR SIDE
FT	FEET/FOOT
FTG	FOOTING
FUTURE	FUTURE
Fy	YIELD STRENGTH
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERAL
GLB	GLUED-LAMINATED BEAM
GMAW	GAS METAL ARC WELDING
GR	GRADE
GRTG	GRATING
GYP BD	GYPSUM BOARD
HD	HOLDOWN
HDR	HEADER
HDWR	HARDWARE
HGR	HANGER
HK	HOOK
HORIZ	HORIZONTAL
HR	HARD ROCK; HANDRAIL
HS	HEADED STUD
HSB	HIGH STRENGTH BOLT
HSS	HOLLOW STRUCTURAL STEEL
HT	HEIGHT
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HWS	HEADED WELD STUD
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IFC	INTERNATIONAL FIRE CODE
IMC	INTERNATIONAL MECHANICAL CODE
INFO	INFORMATION
INSP	INSPECTION / INSPECTOR
INSUL	INSULATION
INT	INTERIOR
IPC	INTERNATIONAL PLUMBING CODE
JNT	JOINT
JST	JOIST
K	KIPS
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
L	ANGLE
LAM	LAMINATE
LB	LAG BOLT
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG / LONGIT	LONGITUDINAL
LP	LOWPOINT
LSL	LAMINATED STRAND LUMBER
LVL	LAMINATED VENEER LUMBER
LWC	LIGHTWEIGHT CONCRETE
M/E/P	MECHANICAL/ ELECTRICAL/ PLUMBING OR PROCESS
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MDF	MEDIUM DENSITY FIBERBOARD
MECH	MECHANICAL
MEZZ	MEZZANINE
MF	MOMENT FRAME
MFD	MANUFACTURED
MFG	MANUFACTURING
MFR	MANUFACTURER
MGR	MANAGER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MK	MARK
MOV	MOVEABLE
MT	MAGNETIC PARTICLE TESTING
MTL	METAL
MULTI	MULTIPLE
(N)	NEW
N	NORTH
NAT	NATURAL
NDT	NON-DESTRUCTIVE TESTING
NF	NEAR FACE
NIC	NOT IN CONTRACT
NIP	NOT IN PERMIT
NLG	NAILING
NO. / #	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NTE	NOT TO EXCEED
NTS	NOT TO SCALE
NWD	NORMAL WEIGHT CONCRETE
o/	OVER
O/A	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
OWJ	OPEN WEB JOIST
PAR	PARALLEL
PC	PRECAST; PIECE; PILE CAP
PCF	POUNDS PER CUBIC FOOT
PCI	POUNDS PER CUBIC INCH
PE	PROFFESSIONAL ENGINEER
PJ	POUR JOINT; PANEL JOINT
PL	PLATE; PROPERTY LINE
PLB	PARALLAM BEAM
PLMB	PLUMBING
PLY / PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PS	PRESTRESS; PRESTRESSED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PT	PRESSURE TREATED / PORCELAIN TILE
PVMT	PAVEMENT
PWJ	PLYWOOD WEB JOIST
RAD	RADIUS
RAFT	RAFTER
RBS	REDUCED BEAM SECTION
RD	ROOF DRAIN; ROAD
REF	REFERENCE
REG	REGULAR
REINF	REINFORCING; REINFORCE
REMOV	REMOVE; REMOVEABLE
REQ	REQUIRED
RET	RETAINING
REV	REVISION
RF	ROOF
RJ	ROOF JOIST
RM	ROOM
RO	ROUGH OPENING
RR	ROOF RAFTER
S	SOUTH
SAD	SEE ARCHITECTURAL DRAWINGS
SAW	SUBMERGED ARC WELDING
SCHED	SCHEDULE
SCL	STRUCTURAL COMPOSITE LUMBER
SCL	
SF	SQUARE FEET
SFRS	SEISMIC FORCE RESISTING SYSTEM
SHTG / SHTG	SHEATHING
SIM	SIMILAR
SLRS	SEISMIC LOAD RESISTIVE SYSTEM
SLV	SLEEVE
SMS	SHEET METAL SCREW
SOG	SLAB ON GRADE
SPA/SPC	SPACES
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SS	SELECT STRUCTURAL; STAINLESS STEEL
SSH	SHORT SLOTTED HOLES
STAGG	STAGGER; STAGGERED
STD	STANDARD
STIFF	STIFFENER
STIRR	STIRRUP
STL	STEEL
STRUCT	STRUCTURAL
SW	SHEAR WALL
SYM	SYMMETRICAL
T	TOP
T&B	TOP AND BOTTOM
T&G	TONGUE & GROOVE
T/	TOP OF
TB	TIE BEAM
TEMP	TEMPERATURE / TEMPORARY
THK / THKN	THICK / THICKNESS
THRU	THROUGH
TL	TOTAL LOAD
TN	TOE NAIL
TOB	TOP OF BEAM
TOC	TOP OF CURB; TOP OF CONCRETE; TOP CHORD
TOF	TOP OF FOOTING
TOL	TOP OF LEDGER
TOS	TOP OF STEEL
TOSH	TOP OF SHEAR WALL
TOSL	TOP OF SLAB
TOW	TOP OF WALL
TRANS / TRANSV	TRANSVERSE
TS	TUBE STEEL
TSG	TAPERED STEEL GIRDER
TYP	TYPICAL
UL	UNDERWRITER'S LABORATORY, INC
UNO / UON	UNLESS NOTED OTHERWISE
UT	ULTRASONIC TEST
VERT	VERTICAL
VFY	VERIFY
VIF	VERIFY IN FIELD
W	WEST
w/	WITH
W/C	WATER/CEMENT
W/O	WITHOUT
WD	WOOD
WF	WIDE FLANGE
WP	WATERPROOF; WORK POINT
WPS	WELD PROCEDURE SPECIFICATIONS
WS	WATER STOP / WELDED STUD
WT / WHT	WEIGHT
WWF	WELDED WIRE FABRIC

EPOXY ANCHORS & REBAR IN HARDENED CONCRETE

1. EPOXY ANCHOR SYSTEMS:
   A. CONCRETE: SIMPSON SET-XP (ICC ESR-2508) USE ONLY ADHESIVE ANCHOR SYSTEMS THAT HAVE BEEN PRE-QUALIFIED IN ACCORDANCE WITH THE PROVISIONS OF ICC-ES AC308, APPROVED FOR USE IN CRACKED CONCRETE. ANCHOR SYSTEMS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE ICC-ES EVALUATION SERVICES REPORT FOR THE SPECIFIC ANCHOR, OR AS REQUIRED BY THE MANUFACTURER.
2. REINFORCEMENT BARS SHALL BE ASTM A615 GRADE 60 STEEL, THREADED RODS SHALL BE ASTM F1554 GR 36 (PLAIN) OR ASTM A193 GR B8 (STAINLESS).
3. REMOVE GREASE OIL, RUST AND ANY OTHER LAITANCE FROM RODS AND DOWELS PRIOR TO INSTALLATION.
4. THE SPECIAL INSPECTOR SHALL BE ON THE JOBSITE CONTINUOUSLY DURING ANCHOR INSTALLATIONS, UNLESS OTHERWISE NOTED IN ICC-ES ESR, TO VERIFY ANCHOR TYPE, ANCHOR DIMENSIONS, CONCRETE TYPE, CONCRETE COMPRESSIVE STRENGTH, HOLE DIMENSIONS, ANCHOR SPACING, EDGE DISTANCES, SLAB THICKNESS, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE.
5. THE TENSION TESTING OF THE CHEMICAL ANCHORS SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO THE ENFORCEMENT AGENCY. IF ANY ANCHORS FAIL THE TENSION-TESTING REQUIREMENTS, THE ADDITIONAL TESTING REQUIREMENTS SHALL BE ACCEPTABLE TO THE ENFORCEMENT AGENCY.
6. TEST QUANTITY OF ANCHORS AS NOTED BELOW:

APPLICATION	QUANTITY
STRUCTURAL	100% OF BOLTS
NON-STRUCTURAL	50% OF BOLTS

7. ANCHORS TO BE TESTED SHALL BE SELECTED AT RANDOM BY THE SPECIAL INSPECTOR.
8. ALL TESTING SHALL BE PERFORMED A MINIMUM OF 24 HOURS AFTER INSTALLATION OF THE SUBJECT ANCHORS.
9. WHERE ADHESIVE ANCHOR SYSTEMS ARE USED TO INSTALL REINFORCING DOWEL BARS IN HARDENED CONCRETE, ONLY 25% OF THE DOWELS NEED BE TESTED IF THE FOLLOWING CONDITIONS ARE MET:
   A. THE DOWELS ARE USED EXCLUSIVELY TO TRANSMIT SHEAR FORCES ACROSS JOINTS BETWEEN EXISTING AND NEW CONCRETE.
   B. THE NUMBER OF DOWELS IN ANY ONE MEMBER EQUALS OR EXCEEDS 12.
   C. THE DOWELS ARE UNIFORMLY DISTRIBUTED ACROSS SEISMIC FORCE RESISTING MEMBERS (SUCH AS SHEAR WALLS, COLLECTORS AND DIAPHRAGMS)
10. TESTING OF SHEAR DOWELS ACROSS COLD JOINTS IN SLAB ON GRADE WHERE THE SLAB IS NOT PART OF THE LATERAL FORCE-RESISTING SYSTEM IS NOT REQUIRED.
11. REPLACE ANCHORS AND DOWELS THAT FAIL DURING TESTING AND RETEST. IF MORE THAN 10% OF THE TESTED DOWELS AND ANCHORS FAIL TO ACHIEVE THE SPECIFIED TEST LOAD, TEST 100% OF THE DOWELS AND ANCHORS IN THE LAST 2 DAYS OF ANCHOR INSTALLATION.
12. A HYDRAULIC CYLINDER SHALL BE USED TO APPLY THE TENSION TEST LOAD TO THE ANCHOR WITH THE CYLINDER SUPPORTED ON A LOADING PLATE HAVING A HOLE DIAMETER EQUAL TO 1.5 TO 2.0 TIMES THE ANCHOR HOLE DIAMETER (CONFINED CONFIGURATION) UNLESS OTHERWISE APPROVED BY ENFORCEMENT AGENCY.
13. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
   A. HYDRAULIC RAM METHOD: THE ANCHOR SHALL HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD.
14. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE, INSTALLED BY THE SAME TRADE, NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME THE INITIAL TEST FREQUENCY.
15. ALL HOLES FOR POST-INSTALLED ANCHORS SHALL BE DRILLED, CLEANED AND PREPARED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS OR THE APPLICABLE ICC-ESR. ALL DEBRIS SHALL BE REMOVED BY IN-HOLE BRUSHING COMBINED WITH VACUUM OR OIL-FREE COMPRESSED AIR. JETTING HOLES WITH WATER IS NOT PERMITTED. WHERE AN ANCHOR DOES NOT SET PROPERLY, OR FAILS A TENSION TEST, OR REINFORCEMENT IS ENCOUNTERED DURING DRILLING, THE DRILLED HOLE MAY NOT BE REUSED. ABANDONED HOLES SHALL BE FILLED WITH NON- SHRINK GROUT. THE MINIMUM SPACING BETWEEN AND ABANDONED HOLE AND A DRILLED HOLE USED FOR A POST-INSTALLED ANCHOR SHALL NOT BE LESS THAN 1 1/2 ANCHOR DIAMETERS UNLESS OTHERWISE APPROVED BY THE ENFORCEMENT AGENCY. IF THE ANCHOR OR DOWEL MAY NOT BE SHIFTED AS NOTED ABOVE, THE ENGINEER OR RECORD WILL DETERMINE A NEW LOCATION.
16. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED WITH ADHESIVE ANCHORS.
17. ADHESIVE ANCHORS TO BE INSTALLED OVERHEAD ANY DEPTH, OR HORIZONTALLY MORE THAN 8" DEEP. SHALL USE SIMPSON 'PISTON PLUG DELIVERY SYSTEM'. REFER TO ICC ESR-2538 FOR INSTALLATION SEQUENCE & PISTON PLUG SELECTION.
18. REQUIRED TEST LOADS SHALL BE DETERMINED AS SUMMARIZED IN THE TABLE BELOW:

TENSION LOADS (POUNDS)
SIMPSON SET-XP (ICC-ES ESR-2508)
CRACKED CONCRETE, SEISMIC (ASD) CONDITION B

NOMINAL BAR SIZE DIA (IN)	EMBEDMENT DEPTH, HEF (IN)	NORMAL - WEIGHT CONCRETE f'c = 3000 PSI (MIN.)
#4	2 3/4	3456
#4	6	7540
#5	5	7854
#5	7 1/2	11781
#6	9	16965

ADHESIVE THREADED ROD & REBAR (CONCRETE & MASONRY)

1. ADHESIVE ANCHOR SYSTEMS IN CONCRETE:
   A. SIMPSON SET-XP (ESR-2508).
   B. SIMPSON'S SET-3G (ESR-4057).
   C. HILTI HIT-RE 500 V3 (ESR-3814).
   D. USE ONLY ADHESIVE ANCHOR SYSTEMS THAT HAVE BEEN PRE-QUALIFIED IN ACCORDANCE WITH THE PROVISIONS OF ICC-ES AC308, APPROVED FOR USE IN CRACKED CONCRETE.ANCHOR SYSTEMS SHALL BE INSTALLED PER THE REQUIREMENTS OF THEICC-ES EVALUATION SERVICES REPORT FOR THE SPECIFIC ANCHOR, OR AS REQUIRED BY THE MANUFACTURER.
   E. INSTALLING PERSONEL FOR UPWARDLY INCLINED OR VERTICAL OVERHEAD INSTALLATIONS SHALL POSSESS SPECIAL ACI CERTIFIACTION FOR THAT TYPE OF INSTALLATION.
2. ADHESIVE ANCHOR SYSTEMS IN MASONRY:
   A. SIMPSON 'SET-XP' (IAPMO ER-265)
   B. SIMPSON 'SET-XP' (ICC ESR-1797)
   C. USE ONLY ADHESIVE ANCHOR SYSTEMS THAT HAVE BEEN PRE-QUALIFIED IN ACCORDANCE WITH THE PROVISIONS OF ICC-ES AC58 (CMU) OR AC60 (URM). INSTALL PER THE EVALUATION REPORT & AS REQUIRED BY MANUFACTURER.
3. REINFORCEMENT BARS SHALL BE ASTM A615 GRADE 60 STEEL OR ASTM 706, THREADED RODS SHALL BE ASTM F1554 GR 36 (PLAIN) OR ASTM A193 GR B8 (STAINLESS).
4. REMOVE GREASE OIL, RUST AND ANY OTHER LAITANCE FROM RODS AND DOWELS PRIOR TO INSTALLATION.
5. THE SPECIAL INSPECTOR SHALL BE ON THE JOBSITE CONTINUOUSLY DURING ANCHOR INSTALLATIONS, UNLESS OTHERWISE NOTED IN ICC-ES ESR, TO VERIFY ANCHOR TYPE, ANCHOR DIMENSIONS, CONCRETE TYPE, CONCRETE COMPRESSIVE STRENGTH, HOLE DIMENSIONS, ANCHOR SPACING, EDGE DISTANCES, SLAB THICKNESS, ANCHOR EMBEDMENT, AND ADHESIVE TYPE.
6. THE TENSION TESTING OF ADHESIVE ANCHORS SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO THE ENFORCEMENT AGENCY. IF ANY ANCHORS FAIL THE TENSION-TESTING REQUIREMENTS, THE ADDITIONAL TESTING REQUIREMENTS SHALL BE ACCEPTABLE TO THE ENFORCEMENT AGENCY.
7. TEST QUANTITY OF ANCHORS AS NOTED BELOW:

APPLICATION	QUANTITY
STRUCTURAL	100% OF ANCHORS
NON-STRUCTURAL	50% OF ANCHORS

8. ANCHORS TO BE TESTED SHALL BE SELECTED AT RANDOM BY THE SPECIAL INSPECTOR.
9. ALL TESTING SHALL BE PERFORMED A MINIMUM OF 24 HOURS AFTER INSTALLATION OF THE SUBJECT ANCHORS.
10. WHERE ADHESIVE ANCHOR SYSTEMS ARE USED TO INSTALL REINFORCING DOWEL BARS IN HARDENED CONCRETE, ONLY 25% OF THE DOWELS NEED BE TESTED IF THE FOLLOWING CONDITIONS ARE MET:
   A. THE DOWELS ARE USED EXCLUSIVELY TO TRANSMIT SHEAR FORCES ACROSS JOINTS BETWEEN EXISTING AND NEW CONCRETE.
   B. THE NUMBER OF DOWELS IN ANY ONE MEMBER EQUALS OR EXCEEDS 12.
   C. THE DOWELS ARE UNIFORMLY DISTRIBUTED ACROSS SEISMIC FORCE RESISTING MEMBERS (SUCH AS SHEAR WALLS, COLLECTORS AND DIAPHRAGMS)
11. TESTING OF SHEAR DOWELS ACROSS COLD JOINTS IN SLAB ON GRADE WHERE THE SLAB IS NOT PART OF THE LATERAL FORCE-RESISTING SYSTEM IS NOT REQUIRED.
12. REPLACE ANCHORS AND DOWELS THAT FAIL DURING TESTING AND RETEST. IF MORE THAN 10% OF THE TESTED DOWELS AND ANCHORS FAIL TO ACHIEVE THE SPECIFIED TEST LOAD, TEST 100% OF THE DOWELS AND ANCHORS IN THE LAST 2 DAYS OF ANCHOR INSTALLATION.
13. A HYDRAULIC CYLINDER SHALL BE USED TO APPLY THE TENSION TEST LOAD TO THE ANCHOR WITH THE CYLINDER SUPPORTED ON A LOADING PLATE HAVING A HOLE DIAMETER EQUAL TO 1.5 TO 2.0 TIMES THE ANCHOR HOLE DIAMETER (CONFINED CONFIGURATION) UNLESS OTHERWISE APPROVED BY ENFORCEMENT AGENCY.
14. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
   A. HYDRAULIC RAM METHOD: THE ANCHOR SHALL HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD.
15. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE, INSTALLED BY THE SAME TRADE, NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME THE INITIAL TEST FREQUENCY.
16. ALL HOLES FOR POST-INSTALLED ANCHORS SHALL BE DRILLED, CLEANED AND PREPARED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS OR THE APPLICABLE ICC-ESR. ALL DEBRIS SHALL BE REMOVED BY IN-HOLE BRUSHING COMBINED WITH VACUUM OR OIL-FREE COMPRESSED AIR. JETTING HOLES WITH WATER IS NOT PERMITTED. WHERE AN ANCHOR DOES NOT SET PROPERLY, OR FAILS A TENSION TEST, OR REINFORCEMENT IS ENCOUNTERED DURING DRILLING, THE DRILLED HOLE MAY NOT BE REUSED. ABANDONED HOLES SHALL BE FILLED WITH NON-SHRINK GROUT. THE MINIMUM SPACING BETWEEN AND ABANDONED HOLE AND A DRILLED HOLE USED FOR A POST-INSTALLED ANCHOR SHALL NOT BE LESS THAN 1 1/2 ANCHOR DIAMETERS UNLESS OTHERWISE APPROVED BY THE ENFORCEMENT AGENCY. IF THE ANCHOR OR DOWEL MAY NOT BE SHIFTED AS NOTED ABOVE, THE ENGINEER OR RECORD WILL DETERMINE A NEW LOCATION.
17. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED WITH ADHESIVE ANCHORS.
18. ADHESIVE ANCHORS TO BE INSTALLED OVERHEAD ANY DEPTH, OR HORIZONTALLY MORE THAN 8" DEEP, SHALL USE SIMPSON 'PISTON PLUG DELIVERY SYSTEM'. REFER TO (ESR-2538) FOR INSTALLATION SEQUENCE & PISTON PLUG SELECTION.
19. REQUIRED TEST LOADS SHALL BE DETERMINED AS 1.25 TIMES THE MAXIMUM DESIGN STRENGTH OF ANCHOR AS DETERMIND BY ACI 318 CH17.

MECHANICAL ANCHORS IN CONCRETE

1. MECHANICAL ANCHOR SYSTEMS:
   A. SIMPSON STRONG-BOLT 2 (ESR-3037).
   B. HILTI 'KB-TZ' (ESR-1917).
   C. SIMPSON TITEN HD (-ESR-2713).
      ONLY MECHANICAL ANCHOR SYSTEMS THAT HAVE BEEN PRE-QUALIFIED IN ACCORDANCE WITH THE PROVISIONS OF ICC-ES AC193, AND APPROVED FOR USE IN CRACKED CONCRETE. ANCHOR SYSTEMS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE ICC-ES EVALUATION SERVICES REPORT FOR THE SPECIFIC ANCHOR, OR AS REQUIRED BY THE MANUFACTURER.
   D. HILTI "KWIK HUS-EZ"(ESR-3027).
   E. USE ONLY MECHANICAL ANCHOR SYSTEMS THAT HAVE BEEN PRE-QUALIFIED IN ACCORDANCE WITH THE PROVISIONS OF ICC-ES AC193, AND APPROVED FOR USE IN CRACKED CONCRETE. ANCHOR SYSTEMS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE ICC-ES EVALUATION SERVICES REPORT FOR THE SPECIFIC ANCHOR, OR AS REQUIRED BY THE MANUFACTURER.
   F. ANCHOR DIAMETER REFERS TO THE ANCHOR SIZE AND NOT THE DIAMETER OF THE HOLE. REFER TO THE MANUFACTURER'S INSTRUCTIONS FOR REQUIRED DIAMETER OF DRILLED HOLE.
   G. HILTI 'KB3' (ESR-1385)
2. WHERE THE MANUFACTURER'S INSTALLATION INSTRUCTIONS OR APPLICABLE ICC-ESR CALL FOR THE APPLICATION OF AN INSTALLATION TORQUE, THE SPECIFIED TORQUE SHALL BE APPLIED WITH A CALIBRATED TORQUE WRENCH. FOLLOWING ATTAINMENT OF10% OF THE SPECIFIED TORQUE, 100% OF THE SPECIFIED TORQUE SHALL BE REACHED WITHIN 7 OR FEWER COMPLETE TURNS OF NUT. THE SPECIFIED INSTALLATION TORQUE SHALL NOT BE EXCEEDED.
3. USE OF ZINC-COATED CARBON STEEL ANCHORS IS LIMITED TO DRY, INTERIOR LOCATIONS, UNLESS OTHERWISE NOTED. PROVIDE STAINLESS STEL OR HOT-DIP GALVANIZED ANCHORS FOR APPLICATIONS EXPOSED TO EXTERIOR WEATHER CONDITIONS.
4. WHERE MECHANICAL ANCHORS ARE USED IN A STANDOFF CONFIGURATION (I.E., WHERE THE ATTACHMENT IS PREPARED FROM THE CONCRETE IN WHICH THE ANCHOR IS INSTALLED), A NUT AND WASHER SHALL BE PROVIDED AT THE CONCRETE SURFACE TO FACILITATE SETTING OF THE ANCHOR AND TO TRANSMIT AXIAL COMPRESSION LOADS INTO CONCRETE.
5. THE SPECIAL INSPECTOR SHALL BE ON THE JOBSITE CONTINUOUSLY DURING ANCHOR INSTALLATIONS, UNLESS OTHERWISE NOTED IN ICC-ES ESR, TO VERIFY ANCHOR TYPE, ANCHOR DIMENSIONS, CONCRETE TYPE, CONCRETE COMPRESSIVE STRENGTH, HOLE DIMENSIONS, ANCHOR SPACINGS, EDGE DISTANCES, SLAB THICKNESS, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE.
6. THE TENSION TESTING OF THE MECHANICAL ANCHORS SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO THE ENFORCEMENT AGENCY. IF ANY ANCHORS FAIL THE TENSION-TESTING REQUIREMENTS, THE ADDITIONAL TESTING REQUIREMENTS SHALL BE ACCEPTABLE TO THE ENFORCEMENT AGENCY.
7. TEST QUANTITY OF ANCHORS AS NOTED BELOW:

APPLICATION	QUANTITY
STRUCTURAL	100% OF BOLTS (10% FOR SILL PLATES)
NON-STRUCTURAL	50% OF BOLTS

8. ANCHORS TO BE TESTED SHALL BE SELECTED AT RANDOM BY THE INSPECTOR.
9. ALL TESTING SHALL BE PERFORMED A MINIMUM OF 24 HOURS AFTER INSTALLATION.
10. UNDERCUT ANCHORS THAT ALLOW VISUAL CONFIRMATION OF FULL SET NEED NOT TO BE TESTED, UNLESS OTHERWISE NOTED BY ENFORCEMENT AGENCY OR ENGINEER OF RECORD.
11. WHERE THE DESIGN TENSION ON ANCHORS IS LESS THAN 100 POUNDS AND THOSE ANCHORS ARE CLEARLY IDENTIFIED ON THE CONTRACT DOCUMENTS, ONLY 10 PERCENT OF THOSE ANCHORS NEED BE TESTED, UNLESS OTHERWISE NOTED BY ENFORCEMENT AGENCY OR ENGINEER OF RECORD.
12. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
   A. HYDRAULIC RAM METHOD: THE ANCHOR SHALL HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR MECHANICAL ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENTS IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE.
   B. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN ONE-HALF (1/2) TURN OF THE NUT.
   C. USE OF CALIBRATED SPRING LOADED DEVICES.
13. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE, INSTALLED BY THE SAME TRADE, NOT PREVIOUSLY TESTED UNTIL TWENTY (20 CONSECUTIVE ANCHOR PASS, THEN RESUME THE INITIAL TEST FREQUENCY.
14. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. MAINTAIN A MINIMUM CLEARANCE OF ONE INCH BETWEEN THE REINFORCEMENT AND DRILLED-IN ANCHOR.
15. IF REBAR IS ENCOUNTERED DURING THE DRILLING, THE CONTRACTOR SHALL IMMEDIATELY TERMINATE DRILLING AND CONTACT THE ENGINEER OF RECORD. THE ENGINEER OF RECORD WILL AUTHORIZE USING ONE OF THE FOLLOWING PROCEDURES:
   A. IF THE ANCHOR MAY BE SHIFTED, FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT THE MINIMUM SPACING BETWEEN AN ABANDONED HOLE AND A DRILLED HOLE USED FOR A POST INSTALLED ANCHOR SHALL NOT BE LESS THAN 1-1/2 ANCHOR DIAMETERS UNLESS OTHERWISE APPROVED BY THE ENFORCEMENT AGENCY.
   B. IF THE ANCHOR LOCATION MAY NOT BE SHIFTED, CORE AN OVERSIZE HOLE AT THE DIRECTION OF THE ENGINEER OF RECORD AND GROUT AN APPROVED ANCHOR PLACE.
16. IF THE CONCRETE CRACKS DURING THE INSTALLATION OF THE ANCHOR, THE ANCHOR SHALL BE REMOVED OR ABANDONED.
17. MAXIMUM INSTALLATION TOREQUE SHALL BE PER MFR'S CODE E

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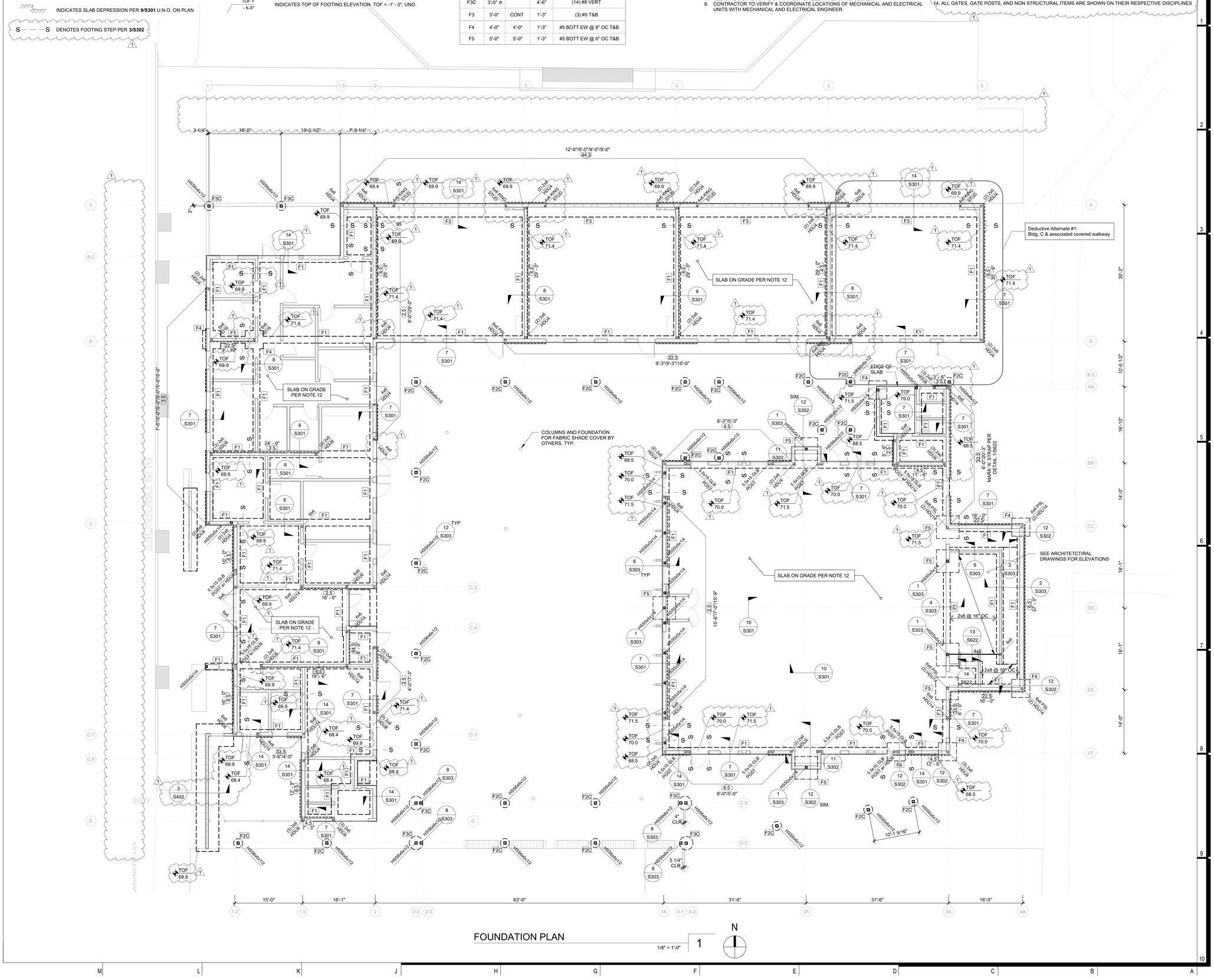
FOUNDATION LEGEND:

- 2.5 / 4' - 0" — INDICATES MINIMUM SHEAR PANEL LENGTH
- 4/4 — INDICATES WOOD POST
- INDICATES SLAB DEPRESSION PER **9/S301** U.N.O. ON PLAN
- S — — S — DENOTES FOOTING STEP PER **3/S302**
- 4'/3'/12" / 2.5 — INDICATES MINIMUM INDIVIDUAL SHEAR PANEL LENGTHS AROUND OPENINGS.
- INDICATES SHEAR PANEL AROUND OPENING PER DET **1/S622**
- TOS = 0'-0" — INDICATES TOP OF SLAB ELEVATION FROM 0'-0"
- TOF = - X-X" — INDICATES TOP OF FOOTING ELEVATION. TOF = -1' - 0", UNO.

PAD FOOTING SCHEDULE - SEE DETAIL 12/S302 AND 1/S303				
SYMBOL	WIDTH	LENGTH	DEPTH	REINFORCEMENT
F1	1'-6"	CONT	1'-3"	(2) #5 T&B
F2C	2'-0" ⌀		4'-6"	(8) #7 VERT
F3C	3'-0" ⌀		4'-6"	(14) #8 VERT
F3	3'-0"	CONT	1'-3"	(3) #5 T&B
F4	4'-0"	4'-0"	1'-3"	#5 BOTT EW @ 8" OC T&B
F5	5'-0"	5'-0"	1'-3"	#5 BOTT EW @ 6" OC T&B

FOUNDATION NOTES:

1. FOR GENERAL NOTES AND ABBREVIATIONS SEE SHEETS **S001** & **S002**.
2. FOR TYPICAL CONCRETE DETAILS SEE **S300** SERIES SHEETS.
3. FOR TYPICAL STEEL DETAILS SEE **S500** SERIES SHEETS.
4. FOR TYPICAL WOOD DETAILS SEE **S600** SERIES SHEETS.
5. REFER TO ARCHITECTURAL DRAWINGS FOR CURBS, RAMPS, DRAINS, EXTERIOR SLABS, PITS, SWALES, TRENCHES, OPENINGS, DIMENSIONS, TOP OF SHEATHING & TOP OF PARAPET ELEVATIONS NOT SHOWN ON PLANS, ETC.
6. VERIFY ALL DIMENSIONS, ELEVATIONS, FINISH SURFACES, SLOPES, DRAINS DEPRESSIONS, CURBS ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO START OF CONSTRUCTION.
7. SEE CIVIL & LANDSCAPE DRAWINGS FOR ELEVATIONS AND SLOPES.
8. CONTRACTOR TO VERIFY & COORDINATE LOCATIONS OF MECHANICAL AND ELECTRICAL UNITS WITH MECHANICAL AND ELECTRICAL ENGINEER.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ANY DISCREPANCY PRIOR TO POUR. NOTIFY THE ENGINEER FOR CORRECTIVE MEASURES.
10. ALL HOLDOWNS, ANCHOR BOLTS, STRAPS, POST BASES & REINFORCMENT MUST BE TIED IN PLACE PRIOR TO THE FOUNDATION INSPECTION & PLACEMENT OF CONCRETE.
11. DEPRESSED AREAS FOR TILE FLOORING SHALL HAVE ROUGHENED SURFACE TO ALLOW FOR BONDING OF MORTAR. REFER TO ARCHITECTURAL FOR LOCATIONS.
12. 5" THICK SLAB-ON-GRADE WITH #4 @ 18" OC EW AT MID-DEPTH OF SLAB. PROVIDE 15 MIL HDPE VAPOR BARRIER CENTERED IN 4" OF SAND PER GEOTECHNICAL REPORT. SEE DETAIL 3/S301.
13. ALL WALLS TO BE FRAMED WITH 2x6 STUDS, NO 2 OR BETTER.
14. ALL GATES, GATE POSTS, AND NON STRUCTURAL ITEMS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINES



FOUNDATION PLAN — 1/8" = 1'-0" — 1

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REGISTERED PROFESSIONAL ENGINEER — PETER [illegible] — No. 5[illegible] — Exp. 6/30/27 — STRUCTURAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — RICCARDO M. MAZZETTI — NO. [illegible] — EXPIRES OCT 31, 2027 — STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

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550 Airport Way, Camarillo, CA 93010

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FOUNDATION PLAN

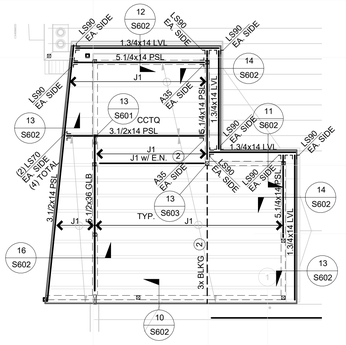
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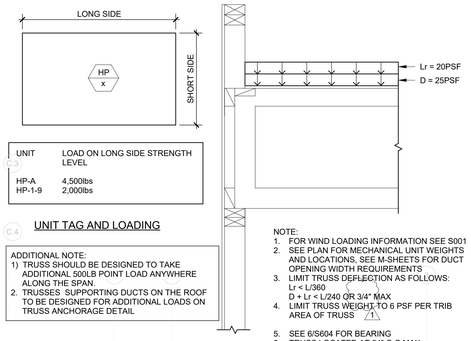
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Project #: 2026-056 R24



UPPER ROOF FRAMING PLAN

1/8" = 1'-0" 2



UNIT	LOAD ON LONG SIDE STRENGTH LEVEL
HP-A	4,500lbs
HP-1-9	2,000lbs

UNIT TAG AND LOADING

ADDITIONAL NOTE:
1) TRUSS SHOULD BE DESIGNED TO TAKE ADDITIONAL 500LB POINT LOAD ANYWHERE ALONG THE SPAN.
2. TRUSSES SUPPORTING DUCTS ON THE ROOF TO BE DESIGNED FOR ADDITIONAL LOADS ON TRUSS ANCHORAGE DETAIL

NOTE:
1. FOR WIND LOADING INFORMATION SEE S001
2. SEE PLAN FOR MECHANICAL UNIT WEIGHTS AND LOCATIONS, SEE M-SHEETS FOR DUCT OPENING WIDTH REQUIREMENTS
3. LIMIT TRUSS DEFLECTION AS FOLLOWS: Lr < L/360, D + Lr < L/240 OR 3/4" MAX
4. LIMIT TRUSS WEIGHT TO 6 PSF PER TRIB AREA OF TRUSS 1
5. SEE 6/S604 FOR BEARING
6. TRUSS LOCATED AT 24" O.C MAX

TRUSS LOADING

SCALE: NTS 3

FRAMING NOTES:

1. FOR GENERAL NOTES AND ABBREVIATIONS SEE SHEETS **S001** & **S002**
2. FOR TYPICAL STEEL DETAILS SEE **S500** SERIES SHEETS
3. FOR TYPICAL WOOD DETAILS SEE **S600** SERIES SHEETS
4. REFER TO ARCHITECTURAL DRAWINGS FOR CURBS, RAMPS, DRAINS, EXTERIOR SLABS, PITS, SWALES, TRENCHES, OPENINGS, DIMENSIONS, TOP OF SHEATHING & TOP OF PARAPET ELEVATIONS NOT SHOWN ON PLANS, ETC.
5. VERIFY ALL DIMENSIONS, ELEVATIONS, FINISH SURFACES, SLOPES, DRAINS DEPRESSIONS, CURBS ETC. WITH ARCHITECTURAL DRAWINGS PRIOR TO START OF CONSTRUCTION.
6. CONTRACTOR TO VERIFY & COORDINATE LOCATIONS OF MECHANICAL UNITS WITH MECHANICAL ENGINEER.
7. TYPICAL ROOF SHEATHING: 19/32 PLYWOOD SEE NOTES ON **S001**, UNBLOCKED 32/16 w/ 8d @6" OC BN, EN, & 12" OC FN PER DET **11/S622** (TYP. UNO)
8. PSL = PARALAM BEAM BY WEYERHAEUSER WITH E=2.0.10 6 PSI OR E=2.2.10 6 PSI AS SHOWN
9. LVL = LAMINATED VENEER LUMBER. PARALLEL STRAND LUMBER w/ 2.0E MAY BE USED IN LIEU OF LVL.
10. PROVIDE 1.5" GA 20 METAL DECK (8'-0" MAX SPAN) IN THE SPAN DIRECTION SHOWN. 2-SPAN OR 3-SPAN CONDITION REQUIRED
11. P.E. (PRE-ENGINEERED) GIRDER TRUSS DESIGNED FOR THE FOLLOWING POINT LOAD AT THE END OF THE CANTILEVERED BOTTOM CHORD. SEE DETAILS S/S604 AND 10/S604 FOR MORE INFO.
    D = 0.32 KIPS
    Lr = 0.37 KIPS
12. ATTACH STRAP TO WALL TOP PLATE PER 3/S622. FIELD WELD STRAP TO TOP C-CHANNEL RIM BEAM WITH 4" MIN. FULL STRENGTH WELD
13. PROVIDE CMST12 STRAP (2-STRAPS WHERE INDICATED) CONNECTING P.E. ROOF TRUSS TOP CHORDS BETWEEN STEEL BEAMS w/ (43) 10d NAILS EA TRUSS. STRAP MAY BE APPLIED TO TOP OF TRUSS OVER SHEATHING, OR TO SIDE OF TRUSS TOP CHORD (THRU STEEL BEAM NAILER).
14. PROVIDE 2-CMST12 STRAPS, ONE EA SIDE OF WALL, CONNECTED TO SIDE OF WALL DOUBLE TOP PLATE w/ (43) 10d NAILS EA. STRAP AND WELD END OF STRAP TO SIDE OF STEEL COLUMN WITH FULL STRENGTH WELD.
15. DEFERRED SUBMITTAL FOR ROOF TRUSSES INCLUDING UPLIFT CONNECTION TO THE STRUCTURE, ALL TRUSS-TO-TRUSS CONNECTIONS, AND ALL OTHER REQUIRED HARDWARE. SEE **3/S102** FOR TRUSS DESIGN INFORMATION.
16. WHERE TRUSS MANUFACTURER SEEMS PARAPET BRACING IS NEEDED, SEE **16/S603** FOR BRACING AND LOADING.

FRAMING LEGEND

- HDR — HEADER PER DETAILS 1 & 2/S601 ALIGN BOTTOM OF HEADER AT TOP OPENING
- 6x — FLUSH BEAM DEPTH OF BEAM MATCHES JOIST DEPTH. AT PERPENDICULAR WALL, PROVIDE POST TO MATCH BEAM WIDTH & WALL DEPTH, SEE DETAIL 3/S602
- 6x DROP — DROP BEAM, ALIGN TOP BEAM W/ BOTTOM OF JOISTS. AT PERPENDICULAR WALL, PROVIDE TRIMMER TO MATCH BEAM WIDTH & WALL DEPTH.
- J# - ROOF JOISTS SEE JOIST SCHEDULE
- P.E. (PRE-ENGINEER) TRUSSES SEE DETAIL 3/S102 FOR LOADING
- 4x HDU — INDICATES WOOD POST PER PLAN & HOLD DOWN PER SCHEDULE AND **4/S621**
- INDICATES BLOCKED DIAPHRAGM AT ALL PANELS EDGES w/ 3x BLOCKING & 10d @ 3" OC
- TPS-X — INDICATES TOP PLATE SPLICE. IF NOT SHOWN TPS-1 SHALL BE APPLIED AT ALL TOP PLATE SPLICES, SEE **4/S612**
- INDICATES BEAM BRACE @ 4 FT OC FIRST AND LAST AT 2FT FROM SUPPORT. LOCATION ON PLANS IS ONLY SHOWN FOR REFERENCE. NOT ALL BRACES SHOWN. SEE **11/S603** AND **12/S603**
- BLOCKING PER **4/S613**
- FALL ARREST PER **1** AND **4/S613** SEE **A131** FOR LOCATION

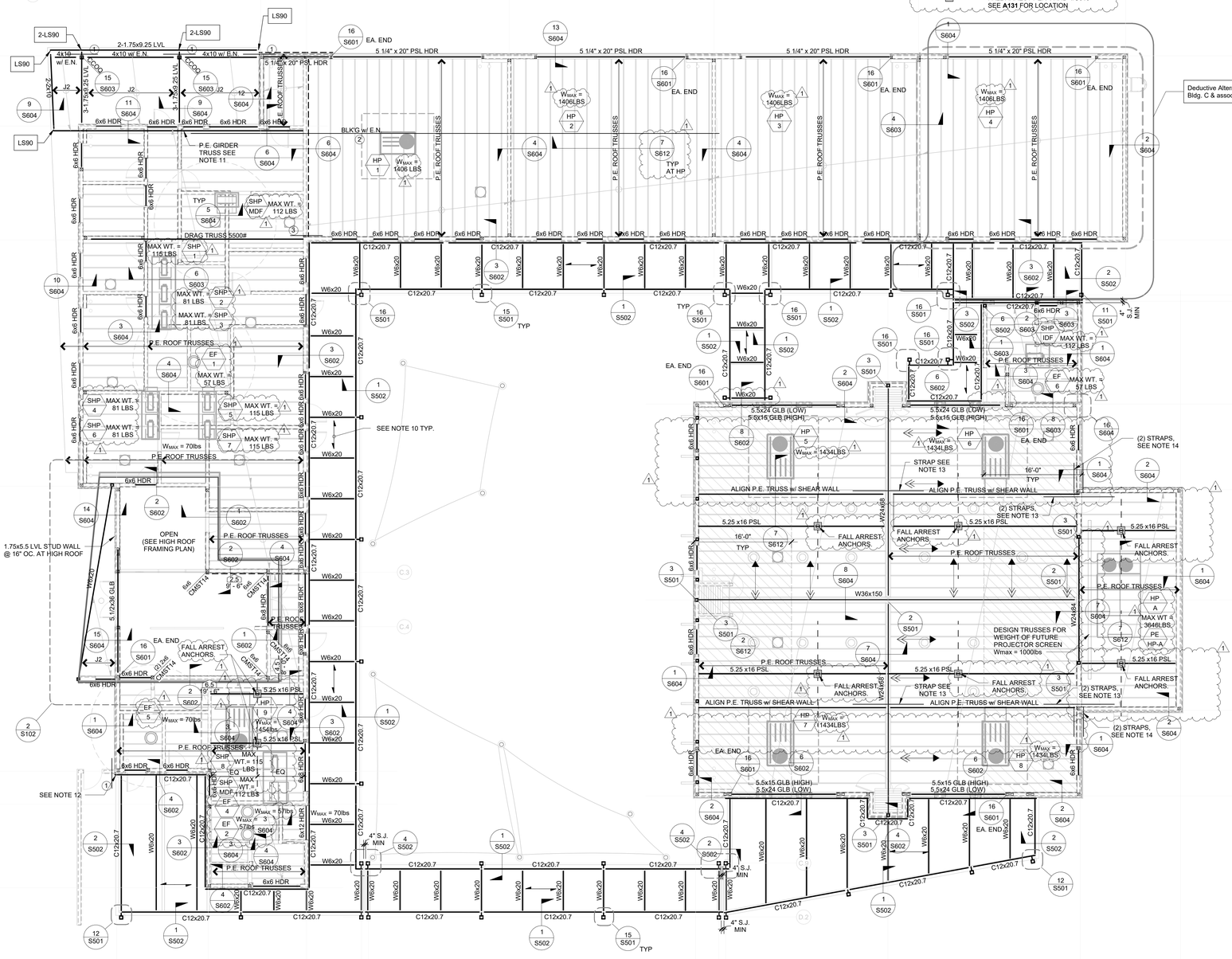
CONSTRUCTION NOTE KEY

1. INDICATES SIMPSON MSTI60 STRAP, SEE DET 3/S622
2. INDICATES SIMPSON (2) CMST12 STRAP (LENGTH AS SHOWN), SEE DET 3/S622
3. INDICATES SIMPSON MSTC66 STRAP, SEE DET 3/S622

JOIST SCHEDULE

MARK	SIZE	SPACING	MAX LENGTH
J2	2x10	16" OC	16'-0"
J1	1.3/4" x 14" LVL	24" OC	24'-0"

NOTES:
1. EFFECTIVE JOIST SPACING SHALL BE MAINTAINED OVER THREE BAYS WHERE 24" MAX SPREAD BAY IS REQ'D.



Deductive Alternate #1:
Bldg. C & associated covered walkway

ROOF FRAMING PLAN

1/8" = 1'-0" 1

N

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LICENSED ARCHITECT RICO M. MAYAO No. 31767 Exp. OCT 31, 2027 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
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GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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ROOF FRAMING PLAN

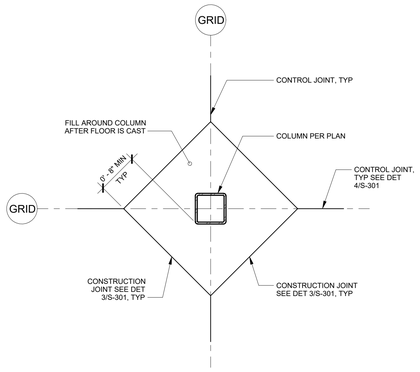
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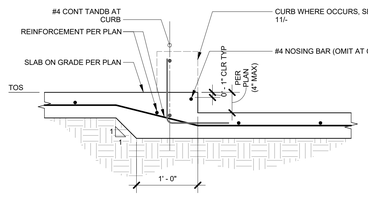
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LATE POUR AT COLUMN PAD

SCALE: NTS 13



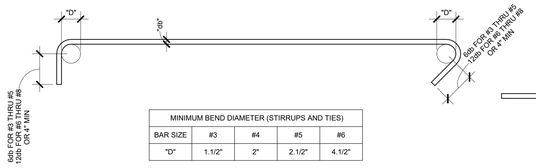
DEPRESSION IN SLAB ON GRADE (4" MAX)

SCALE: NTS 9

CONCRETE CLASS 'B' TENSION SPLICE	f'c (PSI)	CLASS "B" TENSION LAP SPLICE LENGTH								
		BAR SIZE GR 60	#3	#4	#5	#6	#7	#8	#9	#10	#11
		BAR DIAMETER db (IN)	0.375	0.500	0.625	0.750	0.875	1.000	1.128	1.270	1.410
	4500	TOP BAR	2'-0"	2'-8"	3'-4"	4'-1"	5'-11"	6'-9"	7'-7"	8'-6"	9'-5"
		BOTTOM BAR	1'-7"	2'-1"	2'-7"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"

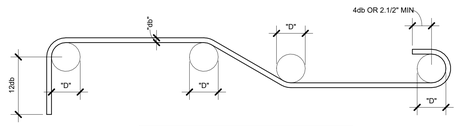
NOTES:

1. ALL REINFORCING MUST MEET ONE OF THE FOLLOWING CONDITIONS:
   - A. CASE I: THE CLEAR SPACING OF THE BARS BEING DEVELOPED OR SPLICED IS NOT LESS THAN ONE BAR DIAMETER (db) CLEAR COVER NOT LESS THAN ONE BAR DIAMETER (db) AND STIRRUPS OR TIES THROUGHOUT THE SPLICE LENGTH.
   - B. OR CASE II: THE CLEAR SPACING OF THE BARS BEING SPLICED IS NOT LESS THAN TWO BAR DIAMETERS (2db) AND THE CLEAR COVER IS NOT LESS THAN ONE BAR DIAMETER (db).
   - C. FOR ALL OTHER CASES MULTIPLY THE SPLICES SHOWN BY 1.5.
2. THE ABOVE VALUES ARE FOR NORMAL WEIGHT CONCRETE. THE ABOVE VALUES SHALL BE MULTIPLIED BY 1.3 FOR LIGHTWEIGHT CONCRETE.
3. THE ABOVE VALUES ARE FOR UNCOATED REINFORCEMENT.
4. TOP BARS ARE HORIZONTAL REINFORCEMENT WITH MORE THAN 12" OF NEW CONCRETE PLACED BELOW THE BAR.
5. BOTTOM BARS ARE ALL VERTICAL BARS AND HORIZONTAL REINFORCEMENT WITH LESS THAN 12" OF NEW CONCRETE PLACED BELOW THE BAR.



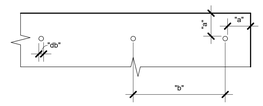
MINIMUM BEND DIAMETER (STIRRUPS AND TIES)					
BAR SIZE	#3	#4	#5	#6
"D"	1.1/2"	2"	2.1/2"	4.1/2"

STANDARD HOOK DETAIL FOR STIRRUPS AND TIES



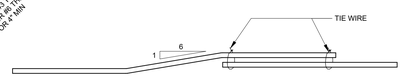
MINIMUM BEND DIAMETER (PRINCIPAL REINFORCEMENT)				
BAR SIZE	#3 THRU #8	#9 THRU #11	#14 AND #18
"D"	6db	8db	10db

STANDARD HOOK DETAIL FOR PRINCIPAL REINFORCEMENT



WHERE: "a" IS THE CLEAR COVER
"b" IS THE CENTER TO CENTER SPACING
"db" IS THE BAR DIAMETER

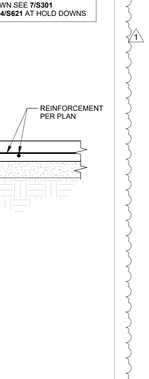
SPLICE LENGTHS FOR BARS PLACED SHALL MEET THE FOLLOWING (SEE NOTE 1):	
CASE I	CASE II
a<db: ANY b	a>db: b>3db
a>db: b<3db	-



OFFSET AND SPLICES

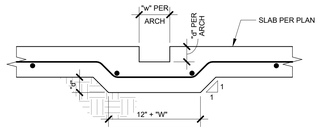
TYPICAL NWC (CLASS B) LAP SPLICE SCHEDULE

SCALE: NTS 2



SLAB AT STEPPED FOOTING

SCALE: NTS 14

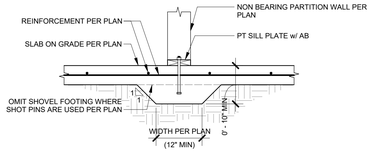


TRACK RECESS

SCALE: NTS 10

NOTE:
ALL SILLS SHALL BE 2x PT HEM FIR. SILL BOLTS SHALL BE NOT LESS THAN 5/8" DIA x 7" @ 4'-0" OC. LOCATE BOLTS 9" FROM THE END OF ANY PLATE. USE (2) BOLTS MINIMUM IN EVERY PLATE.

ALTERNATE:
IN LIEU OF BOLTS SHOWN, USE 0.145" DIA x 3" LONG POWDER DRIVEN PINS WITH 1-3/8" DIA WASHERS @ 32" OC. POWDER DRIVEN PINS MUST PENETRATE CONCRETE 1-1/2" MIN. USE LOW VELOCITY "HILTI" OR EQUAL. POWDER DRIVEN PINS NOT PERMITTED WHEN PARTITIONS REST ON CURBS.



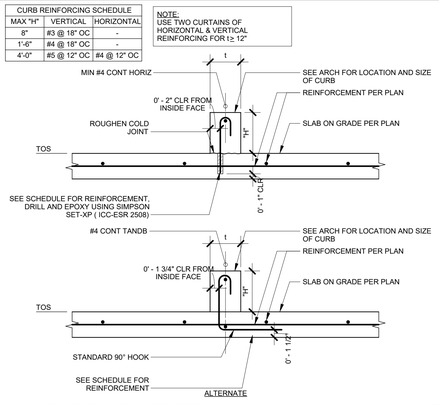
TYPICAL

NON-BEARING FOOTING AT PARTITION WALL

SCALE: NTS 15

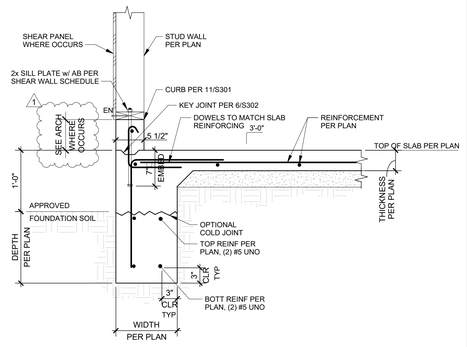
CURB REINFORCING SCHEDULE		
MAX "H"	VERTICAL	HORIZONTAL
8"	#3 @ 18" OC	-
1'-6"	#4 @ 18" OC	-
4'-0"	#5 @ 12" OC	#4 @ 12" OC

NOTE:
USE TWO CURTAINS OF HORIZONTAL & VERTICAL REINFORCING FOR $\geq$ 12"



TYPICAL CURB DETAIL

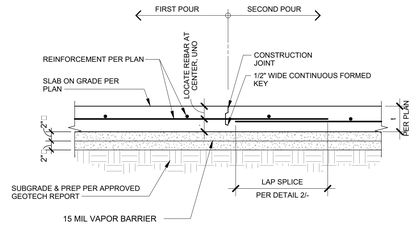
SCALE: NTS 11



EDGE OF SLAB DETAIL

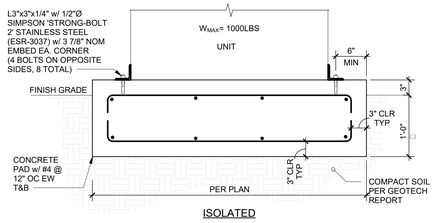
SCALE: NTS 7

NOTE:
CONTRACTOR TO VERIFY VAPOR BARRIER IS NOT PUNCTURED.



TYPICAL INTERIOR SLAB ON GRADE

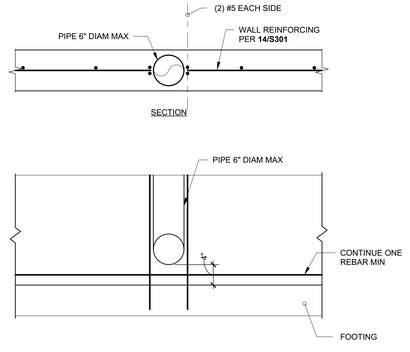
SCALE: NTS 3



ISOLATED

MECH CONC PAD TO SLAB ON GRADE

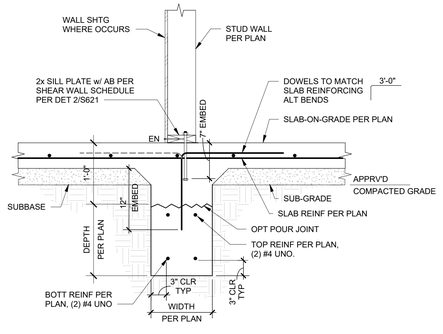
SCALE: NTS 16



PIPE IN WALL DETAIL

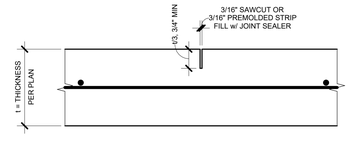
SCALE: NTS 12

NOTE: PROVIDE CURB PER 11/S301 AS NEEDED



INTERIOR STUD WALL FOOTING

SCALE: NTS 8



NOTES:

1. CONTROL JOINTS TO BE LOCATED AT COLUMN CENTER LINES AND AT 15'-0" OC MAX OR EVERY 400 SQUARE FEET, UNO.
2. IF SAW-CUT CONTROL JOINT TO BE USED, SAW-CUT NO LATER THAN 12 HOURS AFTER CONCRETE FINISHING.

INTERIOR CONTROL JOINTS

SCALE: NTS 4

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REGISTERED PROFESSIONAL ENGINEER PETER No. 5824 Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT FRANCO M. MAZZOTTI NO. C-32662 EXP. 08/31/2027 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
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TYPICAL CONCRETE SLAB ON GRADE DETAILS

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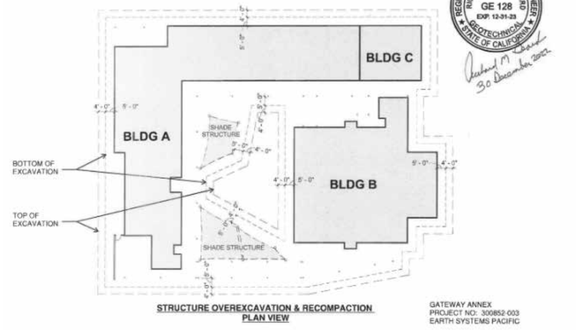
S301

M L K J H G F E D C B A
1 2 3 4 5 6 7 8 9 10

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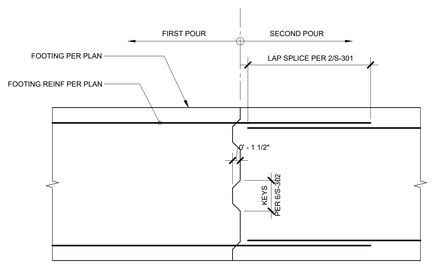
STRUCTURE OVEREXCAVATION & RECOMPACTION
PLAN VIEW

GATEWAY ANNEX
PROJECT NO: 300852-003
EARTH SYSTEMS PACIFIC

10

NOTE:

AT CONTINUOUS FOOTING UNDER WALLS LOCATE JOINT AT 1/3 THE DISTANCE FROM THE ENDS AND AT LEAST 2' FROM EDGE OF OPENINGS.

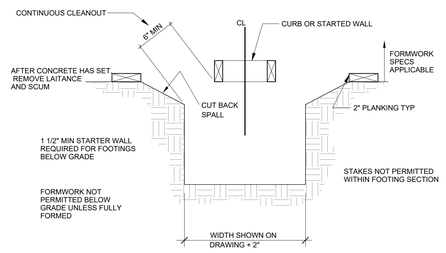


JOINT IN FOOTING

SCALE: NTS 5

NOTE:

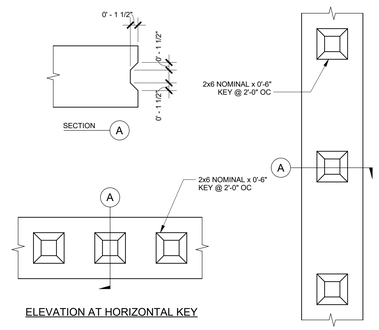
FOUNDATION CONCRETE MAY BE PLACED DIRECTLY INTO NEAT EXCAVATIONS PROVIDED THE FOUNDATION TRENCH WALLS ARE STABLE AS DETERMINED By THE ARCHITECT (STRUCTURAL ENGINEER), SUBJECT TO THE APPROVAL OF THE OFFICE OF THE STATE ARCHITECT. IN SUCH CASE, THE MINIMUM FORWORK SHOWN ON THE DRAWINGS IS MANDATORY TO INSURE CLEAN EXCAVATIONS IMMEDIATELY PRIOR TO AND DURING THE PLACING OF CONCRETE.



STARTED WALL - REQUIRED FOR ALL MASONRY AND CONCRETE WALLS

MANDATORY MINIMUM FORMWORK

SCALE: NTS 1



ELEVATION AT HORIZONTAL KEY

ELEVATION AT VERTICAL KEY

KEY JOINT

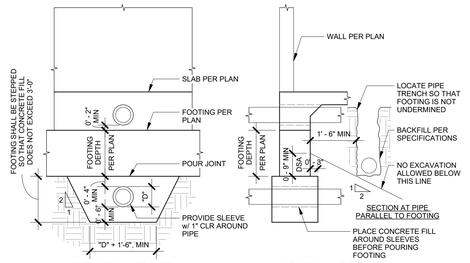
SCALE: NTS 6

NOTES:

1. WHEN SEVERAL PIPES ARE EMBEDDED, MAINTAIN 2 DIAMETERS OR 6" MIN HORIZONTAL DISTANCE BETWEEN PIPES (OUT TO OUT).

2. CONDUITS NEED TO BE SLEEVED PER THIS DETAIL. IT IS ACCEPTABLE TO GROUP CONDUITS OF THE SAME TRADE IN THE SAME SLEEVE.

3. NO PIPES SHALL PASS THRU FOOTING UNO, STEP FOOTING AS REQUIRED.



ELEVATION AT PIPE PERPENDICULAR TO FOOTING

SECTION AT PIPE PERPENDICULAR TO FOOTING

PIPE FOOTING INTERFACE

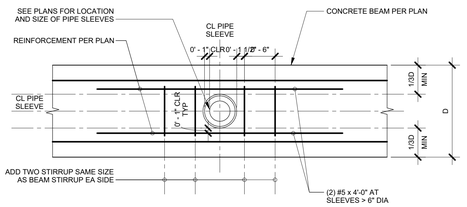
SCALE: NTS 2

NOTES:

1. PENETRATIONS THROUGH BEAMS ARE PERMITTED ONLY WITH THE REVIEW OF THE STRUCTURAL ENGINEER.

2. DETAIL FOR ELEVATED BEAM, SIMILAR FOR GRADE BEAM.

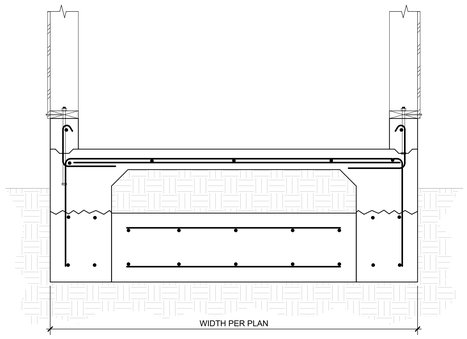
3. SCHEDULE 40 PIPE SLEEVE. SLEEVE DIA = D/3 MAX.



PIPE SLEEVE THROUGH FOUNDATION

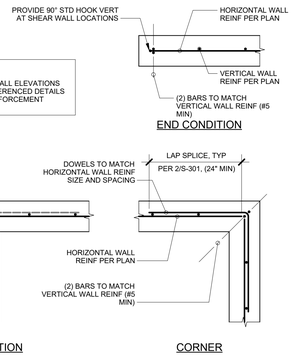
SCALE: NTS 15

FOR INFO NOT SHOWN SEE 7/S301 AND 12/S302



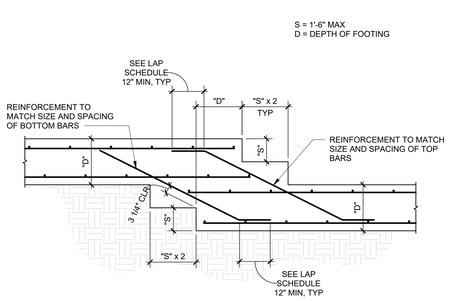
WALL FOOTING DETAIL

SCALE: NTS 11



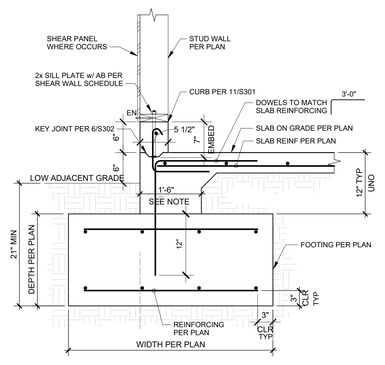
WALL OR CURB INTERSECTION DETAIL
(SINGLE LAYER OF REINFORCING)

SCALE: NTS 7



TYP STEPPED FOOTING

1/2" = 1'-0" 3

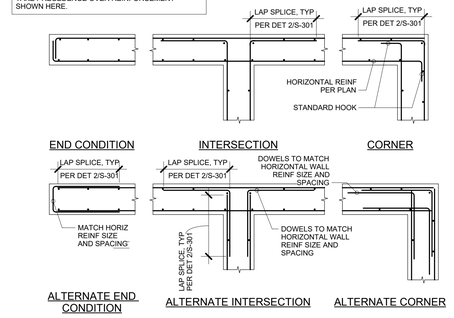


EXTERIOR STUD WALL FOOTING

SCALE: NTS 12

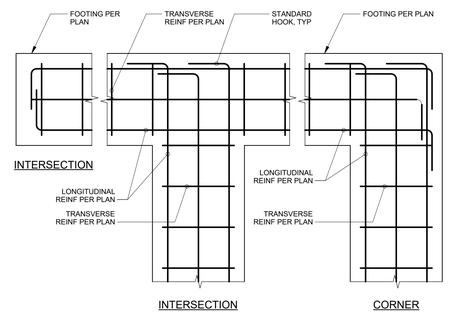
NOTE:

REINFORCEMENT SHOWN ON WALL ELEVATIONS AND OTHER SPECIFICALLY REFERENCED DETAILS TAKE PRECEDENCE OVER REINFORCEMENT SHOWN HERE.



WALL OR CURB INTERSECTION DETAIL
(DOUBLE LAYER OF REINFORCING)

SCALE: NTS 8



FOUNDATION INTERSECTION DETAIL

SCALE: NTS 4

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

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LICENSED ARCHITECT FRANCO M. MAZZOTTA NO. 34015 EXPIRES 08-31-2027 STATE OF CALIFORNIA

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GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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TYPICAL CONCRETE FOOTING DETAILS

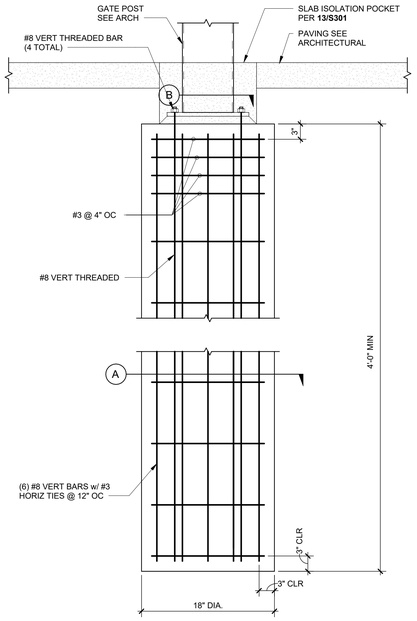
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S302

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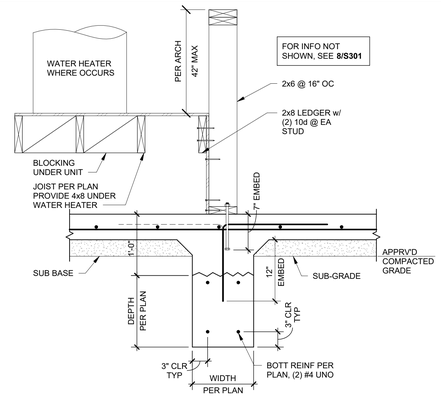
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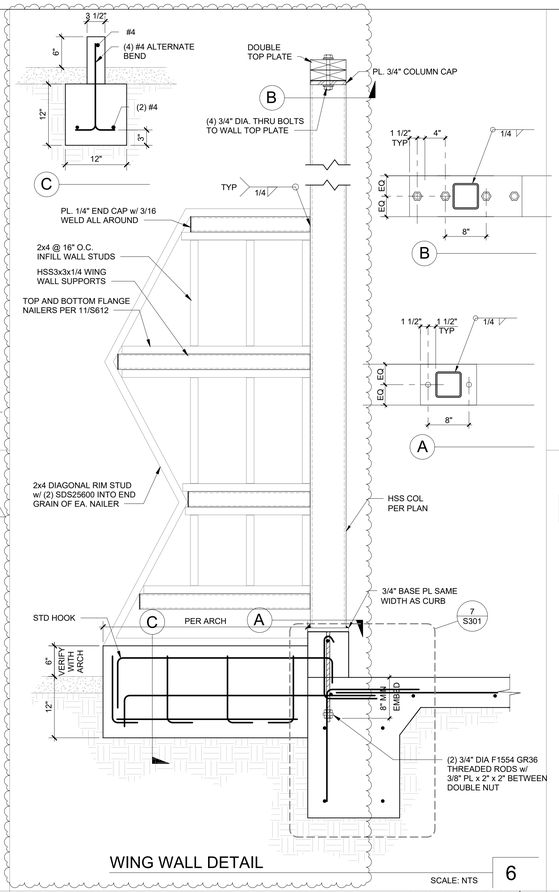
GATE POST FOOTING

SCALE: NTS 14



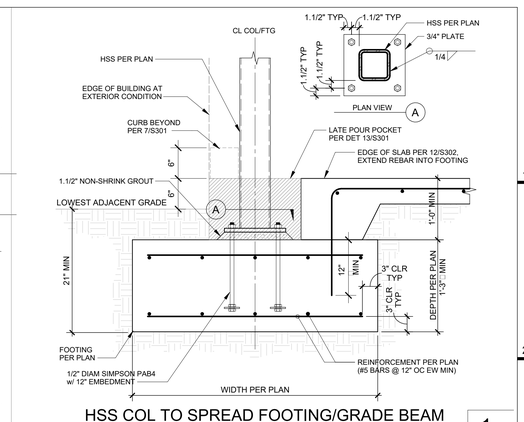
PLATFORM TO WALL DETAIL

SCALE: NTS 9



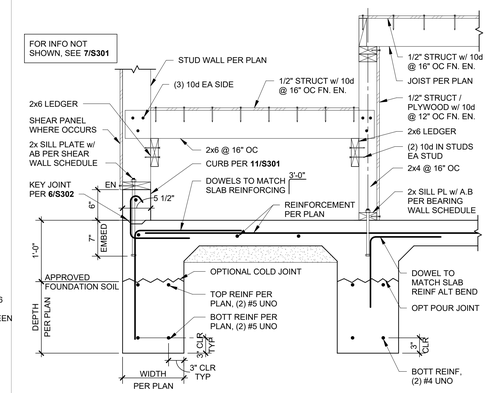
WING WALL DETAIL

SCALE: NTS 6



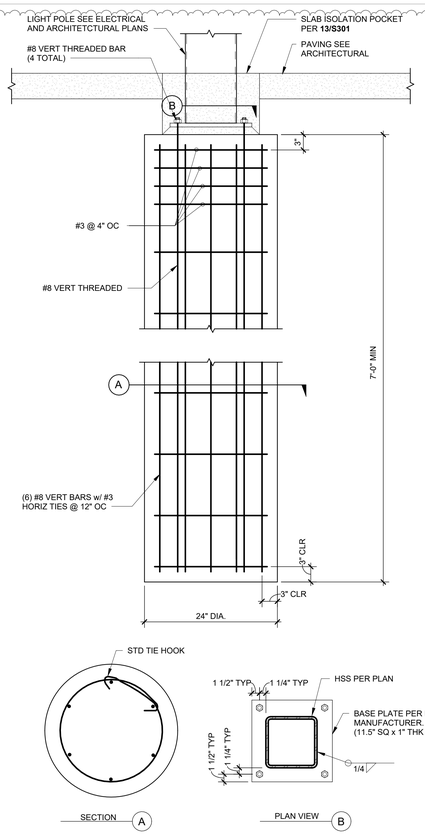
HSS COL TO SPREAD FOOTING/GRADE BEAM

SCALE: NTS 1



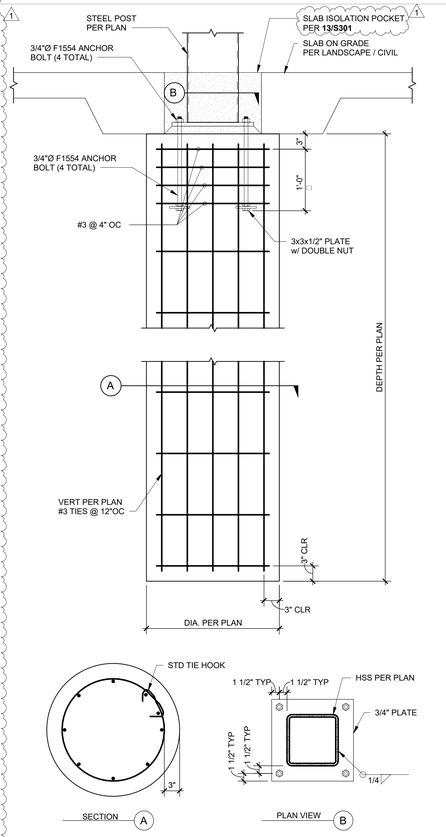
PLATFORM FRAMING

SCALE: NTS 2



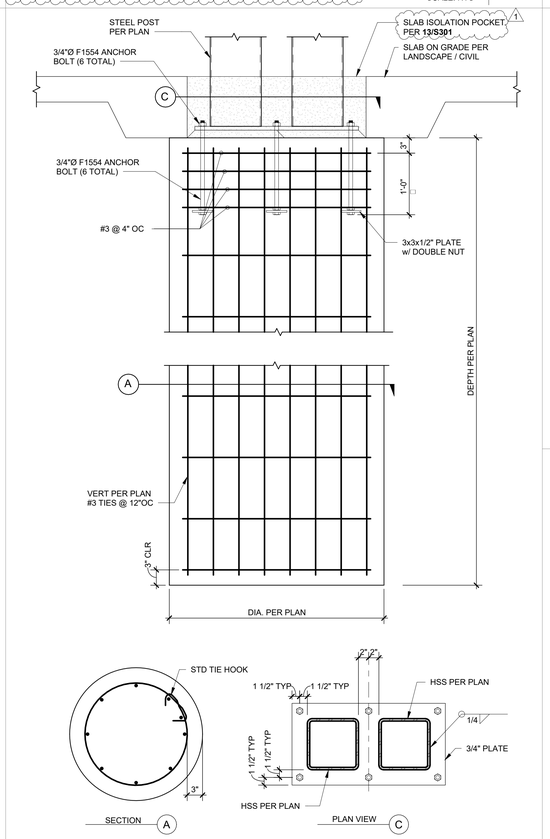
LIGHT POLE FOOTING

SCALE: NTS 16



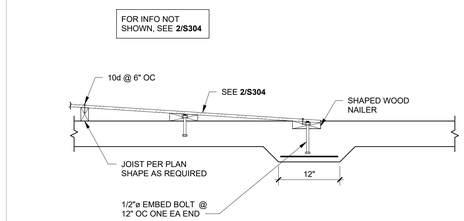
POLE FOOTING

SCALE: NTS 12



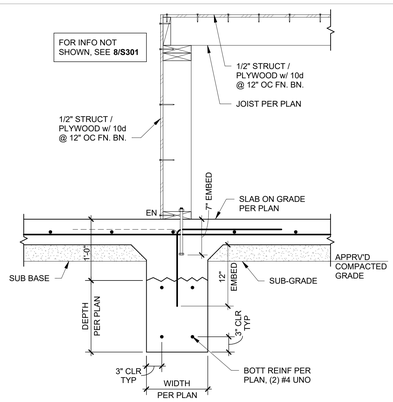
POLE FOOTING

SCALE: NTS 8



DETAIL

SCALE: NTS 3



PLATFORM DETAIL

SCALE: NTS 4

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REGISTERED PROFESSIONAL ENGINEER PETER No. 5[illegible] Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT RICARDO M. MATA NO. [illegible] EXP. OCT 31, 2027 STATE OF CALIFORNIA

APPROVED
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APP: 03-122398 INC:
REVIEWED FOR
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DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
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PM	
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CONCRETE FOOTING DETAILS

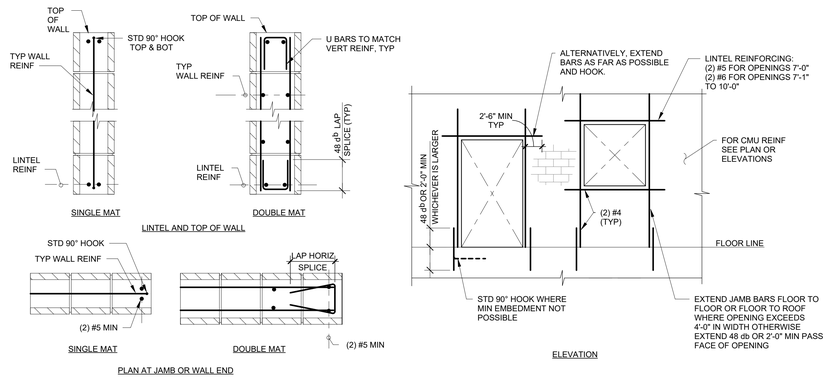
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Project #: 2026-056 R24



MINIMUM REINFORCING AT CMU WALL OPENINGS

SCALE: NTS

9

NOTE:
LAP SPLICE SHALL NOT BE UTILIZED FOR #8 OR LARGER REINF
USE LENTON REBAR SPLICES FOR #8 AND LARGER REINF
(ICC ER-3967). REBAR SPLICES SHALL BE STAGGERED 1'-0"

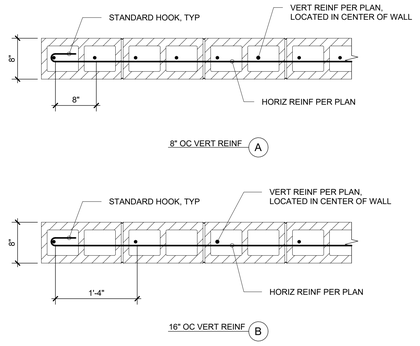
PART NO.	BAR SIZE
EL 25 A2	#8
EL 28 A2	#9

BAR SIZE	#3	#4	#5	#6	#7
LAP LENGTH	16"	26"	40"	74"	100"

STRENGTH DESIGN MASONRY LAP SPLICE

1" = 1'-0"

5



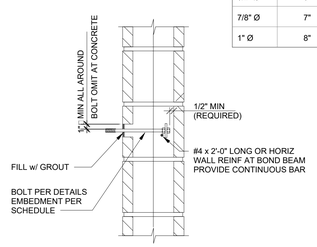
6" or 8" CMU REINFORCING LAYOUT

1" = 1'-0"

1

NOTE:
1. SIM @ CONCRETE
2. BOLTS SHALL CONFORM TO ACI 530 REQUIREMENTS

BOLT SIZE	EMBEDMENT	MIN WALL THICKNESS
1/2" Ø	4"	6"
5/8" Ø	5"	8"
3/4" Ø	6"	10"
7/8" Ø	7"	10'
1" Ø	8"	12"

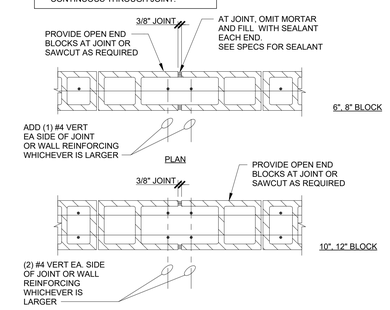


TYPICAL ANCHOR BOLT IN CMU

1" = 1'-0"

6

NOTES:
1. PROVIDE JOINTS AT INTERVALS NOT TO EXCEED 30 FEET EXCEPT AS NOTED.
2. HORIZONTAL REINFORCING IS CONTINUOUS THROUGH JOINT.

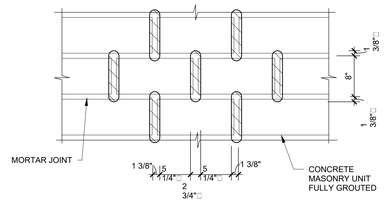


CONTROL JOINT AT CMU WALL

1" = 1'-0"

2

NOTE:
ANCHOR INSTALLATION IS RESTRICTED TO NON-SHADED AREAS.

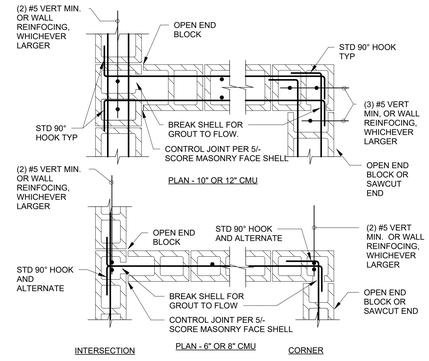


ACCEPTABLE LOCATIONS FOR POST INSTALLED ANCHORS

ANCHOR LOCATIONS IN GROUT-FILLED MASONRY WALL

1" = 1'-0"

7

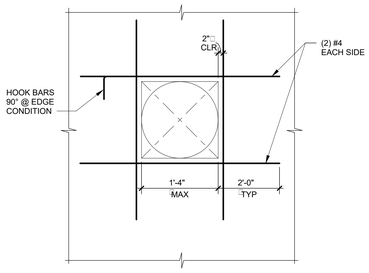


CMU WALL INTERSECTION DETAIL

1" = 1'-0"

3

NOTES:
1. SEE WALL ELEVATIONS OR PLANS FOR REINFORCEMENT AT OPENINGS OVER 16"x16".
2. CLUSTERS OF SMALL HOLES WITH OVERALL MEASUREMENT EXCEEDING 1'-0" SHOULD BE REINFORCED AS ONE OPENING.
3. CLUSTERS OF SMALL HOLES WITH OVERALL MEASUREMENT EXCEEDING 1'-0" SHOULD BE REINFORCED AS ONE OPENING.



CMU WALL OPENING

1" = 1'-0"

4

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REGISTERED PROFESSIONAL ENGINEER PETER No. 5614 Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT RICHARD M. MAYKEL NO. C-29662 EXP. OCT. 31, 2027 STATE OF CALIFORNIA

APPROVED
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GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

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PM	
DATE	10/23/2026
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TYPICAL MASONRY DETAILS

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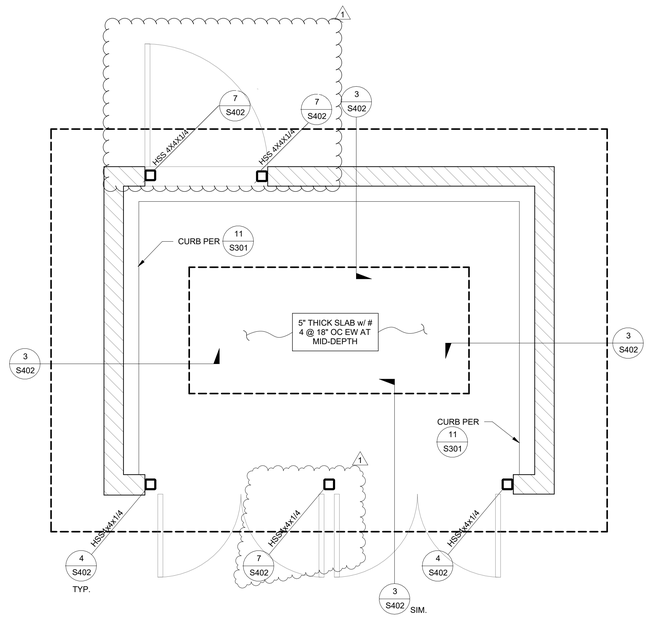
S401

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

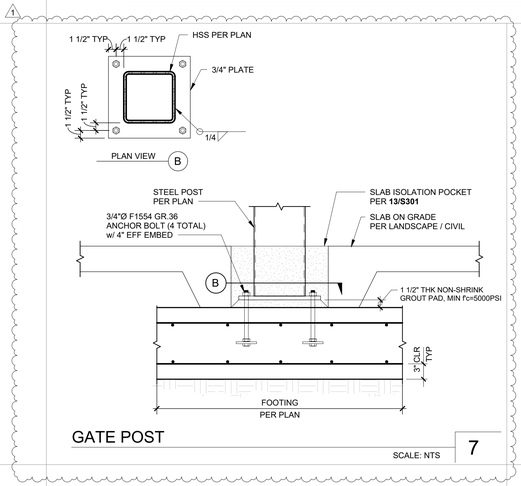
Plot Date: 10-19-2026 15:44:37
Project #: 2026-056 R24

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TRASH ENCLOSURE FOUNDATION PLAN

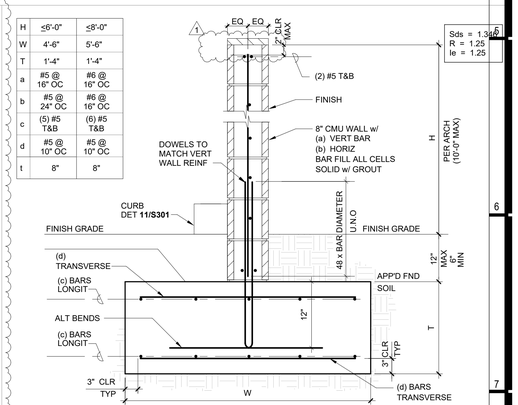
1/2" = 1'-0" 2



GATE POST

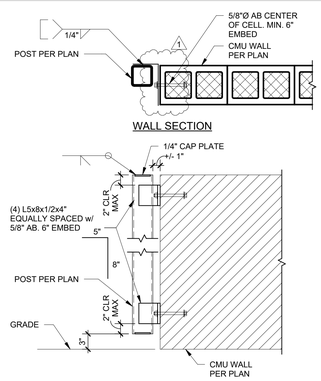
SCALE: NTS 7

	≤6'-0"	≤8'-0"
H		
W	4'-6"	5'-6"
T	1'-4"	1'-4"
a	#5 @ 16" OC	#6 @ 16" OC
b	#5 @ 24" OC	#6 @ 16" OC
c	(5) #5 T&B	(6) #5 T&B
d	#5 @ 10" OC	#5 @ 10" OC
t	8"	8"



TYP CATILEVERED CMU WALL

SCALE: NTS 3



COLUMN TO CMU WALL

SCALE: NTS 4

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REGISTERED PROFESSIONAL ENGINEER PETER SAKAI No. 5436 Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT EDWARD M. MAZZEI NO. C-31797 EXPIRES 31-JUL-2027 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
SCALE	AS NOTED
PM	10/23/2026
DATE	10/23/2026
1 ADDENDUM 1	2026-

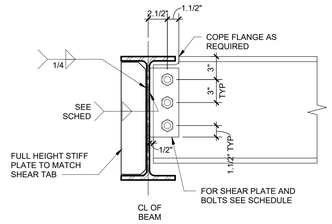
TRASH ENCLOSURE

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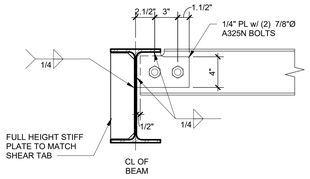
S402

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Project #: 2026-056 R24



BEAM TO BEAM (D)

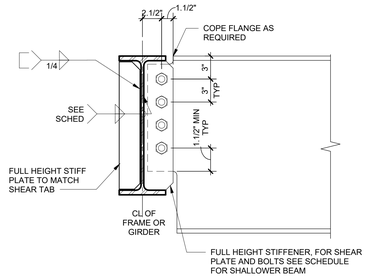


W6x OR C6x CONNECTION (E)

STANDARD BOLTED CONNECTION SCHEDULE				
BEAM SIZE	NO. & SIZE OF BOLTS REQUIRED	SHEAR TAB	WELD SIZE	CONNECTION CAPACITY A325-SC
W12 C12	(3) 7/8"Ø	1/4"	1/4"	18.1K
W21	(5) 7/8"Ø	5/16"	1/4"	39.9K
W24	(6) 7/8"Ø	3/8"	5/16"	50.9K
W36	(9) 7/8"Ø	7/16"	3/8"	83.3K

NOTES:

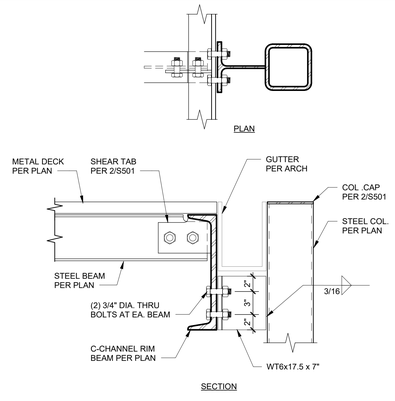
1. ALL BOLTS TO BE ASTM A325-SC FULLY PRETENSIONED AND INSPECTED PER AISC.
2. CONNECTION PLATES TO HAVE AISC STANDARD ROUND HOLES UNLESS NOTED OTHERWISE.
3. ALL CONNECTION PLATE MATERIAL TO BE A36.
4. [X] SHOWN ON PLANS INDICATES NUMBER OF BOLTS REQUIRED. IF NOT SHOWN THEN USE THE NUMBER OF BOLTS SHOWN IN THE TABLE ABOVE.



DEEPER BEAM TO SHALLOWER BEAM (B)

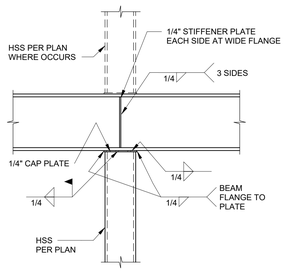
TYPICAL BOLTED BEAM CONNECTION DETAILS

1 1/2" = 1'-0" 2



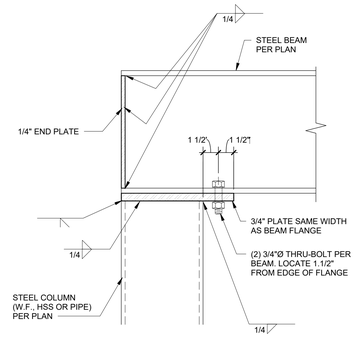
CANOPY BEAM TO COL CONNECTION

SCALE: NTS 15



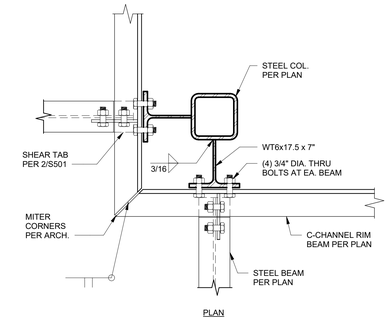
CONTINUOUS BEAM OVER COLUMN

SCALE: NTS 11



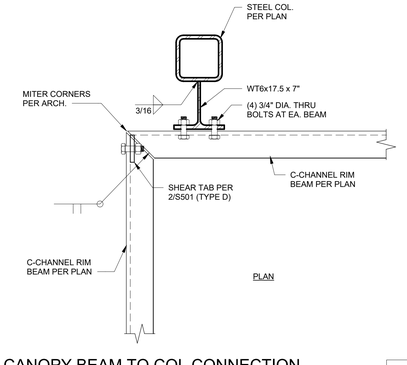
WF BM w/ WD BM TO STEEL COL

SCALE: NTS 3



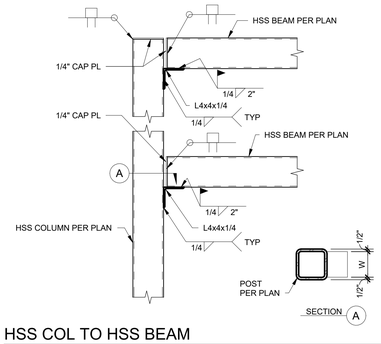
CANOPY BEAM TO COL CONNECTION

SCALE: NTS 16



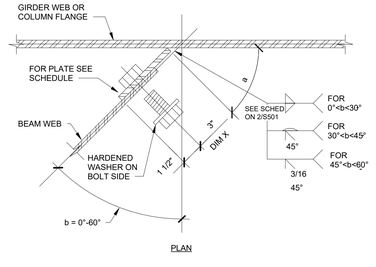
CANOPY BEAM TO COL CONNECTION

SCALE: NTS 12



HSS COL TO HSS BEAM

SCALE: NTS 8



SKEWED BEAM CONNECTION

SCALE: NTS 4

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REGISTERED PROFESSIONAL ENGINEER PETER S. KAY No. 5624 Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT FRANCO M. MAZZETTI NO. C-26040 EXP. OCT. 31, 2027 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
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DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

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PM	
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TYPICAL STEEL FRAMING DETAILS

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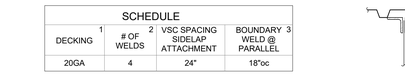
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Project #: 2026-056 R24

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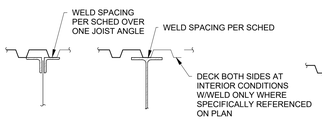
SCHEDULE			
1 DECKING	2 # OF WELDS	VSC SPACING SIDELAP ATTACHMENT	BOUNDARY 3 WELD @ PARALLEL
20GA	4	24"	18"oc



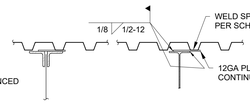
WELD PATTERN TO SUPPORTS

NOTES:

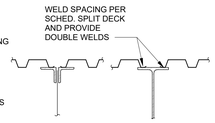
1. ROOF METAL DECK SHALL BE 1 1/2" VERCO PLB-36 WITH THE PUNCH-LOK SIDELAP SYSTEM, GAUGE AS SHOWN ON SCHED AND SHALL COMPLY WITH ICBO REPORT #2078P. IF SUBSTITUTE METAL DECK IS USED, IT SHALL HAVE ICBO APPROVED ALLOWABLE SHEAR VALUES EQUAL OR GREATER THAN THOSE SHOWN IN SCHED AND SHALL HAVE EQUIVALENT FIRE RESISTIVE PROPERTIES.
2. METAL DECK SHALL BE WELDED TO SUPPORTS BY 1/2"Ø EFFECTIVE PUDDLE WELDS AT FLUTES AS SHOWN ABOVE.
3. WHERE METAL DECK RUNS PARALLEL TO THE DIAPHRAGM PERIMETER, PLACE 1/2"Ø EFFECTIVE PUDDLE WELDS AT SPACING SHOWN IN SCHEDULE.
4. END OF DECK UNITS SHALL BE LAPPED 2" MINIMUM.
5. SEE DETAILS "A" TO "F" FOR DETAILS AT SUPPORTS.



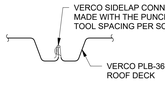
DECK PARALLEL D



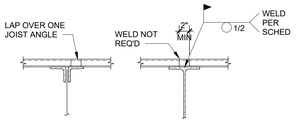
DECK PARALLEL
(WHERE DECK RIB MISSES BEAM) E



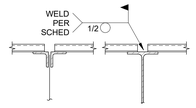
DECK PARALLEL
(TWO WELDS. USE ONLY WHERE SPECIFICALLY REFERENCED ON PLAN) F



VERCO PUNCKLOK SYSTEM SIDELAP A



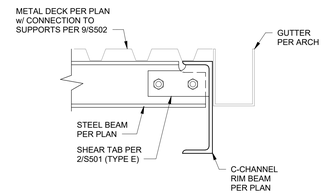
INTERIOR END LAP B



INTERIOR SKEWED JOINT
(USE ONLY WHERE DECK CANNOT LAP) C

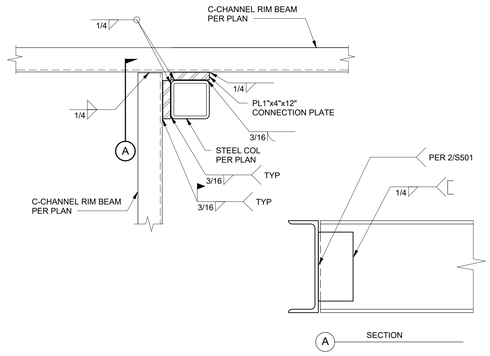
ROOF METAL DECK

SCALE: NTS 9



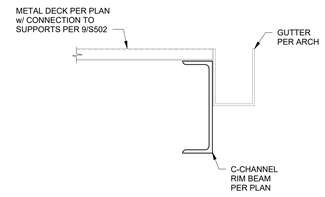
METAL DECK FRAMING DETAIL

SCALE: NTS 1



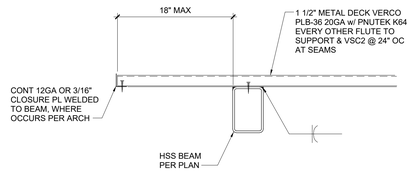
BEAM TO COLUMN CONNECTION

SCALE: NTS 6



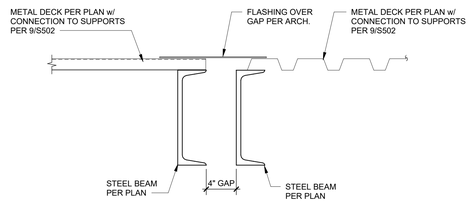
METAL DECK FRAMING DETAIL

SCALE: NTS 2



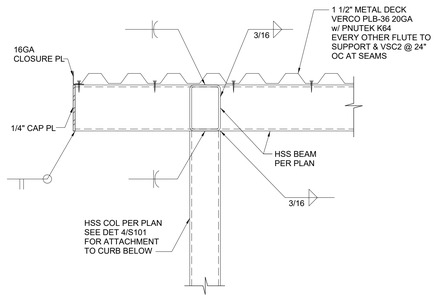
TRASH ENCLOSURE DECK PERP

SCALE: NTS 7



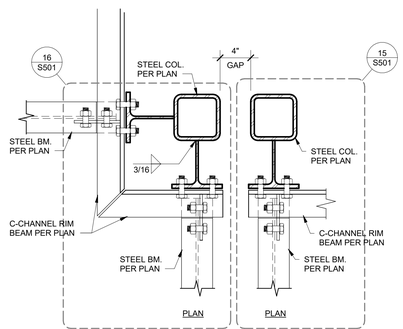
S502/03_METAL DECK SEISMICK JOINT

SCALE: NTS 3



TRASH ENCLOSURE DECK PARALLEL

SCALE: NTS 8



METAL DECK SEISMIC JOINT

SCALE: NTS 4

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REGISTERED PROFESSIONAL ENGINEER PETER S. KAT No. 5614 Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT DAVID M. MAYER NO. 32662 EXPIRATION DATE: OCT 31, 2027 STATE OF CALIFORNIA

APPROVED
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APP: 03-122398 INC:
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DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

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TYPICAL STEEL DECK DETAILS

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S502

M L K J H G F E D C B A

1 2 3 4 5 6 7 8 9 10

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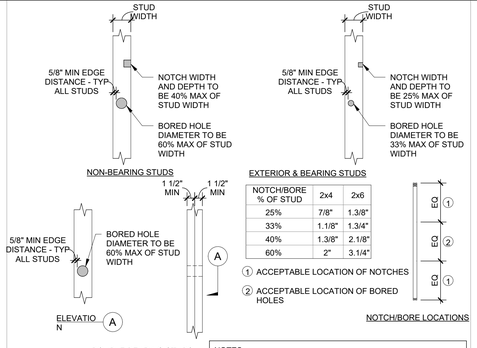
Project #: 2026-056 R24

CONNECTION	MINIMUM NAILING
JOIST/TRUSS TO SILL OR GIRDER, TOE NAIL	(3) 8d OR (3) 3"x0.131"
BRIDGING TO JOIST, TOE NAIL EACH END	(2) 8d
SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL (OR PER SHEAR WALL SCHEDULE)	16d @ 16" OC OR 3"x0.131" @ 8" OC
TOP PLATE TO STUD, END NAIL	(2) 16d OC OR (3) 3"x0.131"
STUD TO SOLE PLATE, TOE NAIL OR STUD TO SOLE PLATE, END NAIL	(4) 8d OR (2) 16d
DOUBLE STUDS, FACE NAIL	16d @ 24" OC
DOUBLE TOP PLATES, FACE NAIL DOUBLE TOP PLATES, LAP SPLICE	16d @ 16" OC OR 3"x0.131" @ 12" OC SEE DETAILS
BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE, TOE NAIL	(3) 8d OR (3) 3"x0.131"
RIM JOIST TO TOP PLATE, TOE NAIL	8d @ 6" OC OR 3"x0.131" @ 6" OC
TOP PLATES, LAPS AND INTERSECTIONS, FACE NAIL	(3) 16d OR (3) 3"x0.131"
CONTINUOUS HEADER, TWO PIECES, ALONG EDGE	16d @ 16" OC
CEILING JOISTS TO PLATE, TOE NAIL	(3) 8d OR (5) 3"x0.131"
CONTINUOUS HEADER TO STUD, TOE NAIL	(4) 8d
CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	(3) 16d OR (4) 3"x0.131"
CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	(3) 16d OR (4) 3"x0.131"
RAFTER/TRUSS TO PLATE, TOE NAIL	(3) 8d OR (3) 3"x0.131"
1" DIAGONAL BRACE TO EACH STUD AND PLATE, FACE NAIL	(2) 8d OR (2) 3"x0.131"
BUILT-UP CORNER STUDS	16d @ 24" OC OR 3"x0.131" @ 16" OC

NOTE:
SEE CBC TABLE 2304.10.1 FOR INFORMATION NOT SHOWN.

TYPICAL NAILING SCHEDULE

1" = 1'-0" — 13



NOTCH/BORE % OF STUD	2x4	2x6
25%	7/8"	1.3/8"
33%	1.1/8"	1.3/4"
40%	1.3/8"	2.1/8"
60%	2"	3.1/4"

① ACCEPTABLE LOCATION OF NOTCHES

② ACCEPTABLE LOCATION OF BORED HOLES

NOTES:
1. NOTCHING AND BORING NOT TO OCCUR IN SAME STUD.
2. DO NOT OVERCUT NOTCHES OR BORED HOLES.
3. NO MORE THAN 2 SUCCESSIVE DOUBLE STUDS MAY HAVE 60% 60 MAX BORED HOLES.

TYPICAL STUD NOTCH/BORE

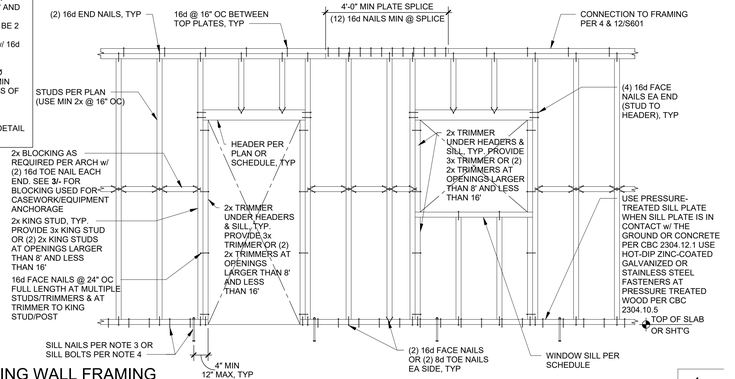
1" = 1'-0" — 9

NOTE:
1. HEADERS, KING STUDS, AND OTHER REFERENCES ON PLAN GOVERN OVER THIS TYPICAL DETAIL.
2. INSTALL 1x6 DIAGONAL LET-IN BRACE AT 25'-0" AND AT EACH END IN ALL WALLS NOT SHEATHED, MAXIMUM SLOPE OF DIAGONAL BRACE SHALL BE 2 VERTICAL TO 1 HORIZONTAL.
3. NAIL SILL PLATE TO WOOD FRAMED FLOORS w/ 16d @ 8" OC TO JOIST OR BLOCKING BELOW SHEATHING. SEE DETAIL **3/S621**.
4. BOLT SILL PLATE TO CONCRETE SLAB w/ 5/8" Ø HEADED ANCHOR RODS @ 48" OC MAX, w/ 7" MIN EMBED INTO SLAB (NOT INCLUDING THICKNESS OF CURB WHERE OCCURS).
5. REFER TO DETAIL **2/S601** FOR BEARING AND EXTERIOR WALLS. FOR MINIMUM NAILING REQUIREMENTS, SEE CBC TABLE 2304.10.1 & DETAIL **13/S601**.

HEADER & SILL SCHEDULE

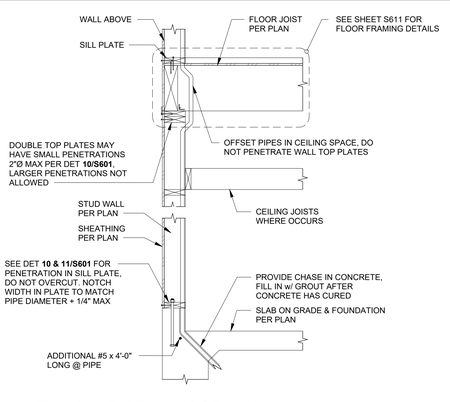
(SEE NOTE 1)

OPENING WIDTH	HEADER 4x FRAMING	HEADER 6x FRAMING	WINDOWS SILL WHERE OCCURS
UP TO 4'-0"	4x4	6x4 FLAT	2x
4'-1" TO 6'-0"	4x6	6x6	(2) 2x
6'-1" TO 8'-0"	4x8	6x8	(2) 2x
8'-1" TO 10'-0"	4x10	6x10	(3) 2x
10'-1" & UP	SEE PLANS		



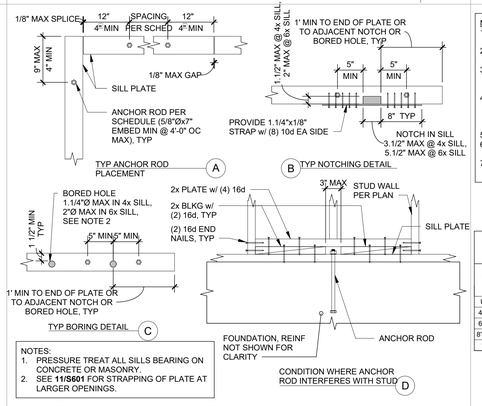
TYPICAL NON-BEARING WALL FRAMING

SCALE: NTS — 1



TYPICAL PIPE IN WOOD WALL

3/4" = 1'-0" — 14



NOTES:
1. PRESSURE TREAT ALL SILLS BEARING ON CONCRETE OR MASONRY.
2. SEE **11/S601** FOR STRAPPING OF PLATE AT LARGER OPENINGS.

TYPICAL SILL PLATE DETAILS

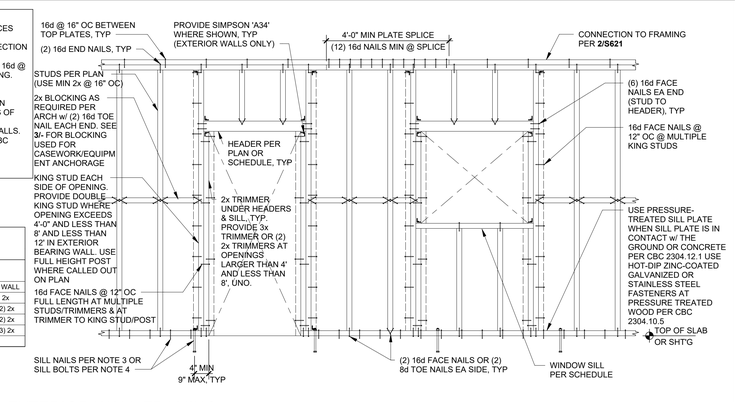
1" = 1'-0" — 10

NOTE:
1. HEADERS, KING STUDS, AND OTHER REFERENCES ON PLAN GOVERN OVER THIS TYPICAL DETAIL.
2. REFER TO **7/S601** FOR TYPICAL HEADER CONNECTION FOR OPENINGS GREATER THAN 8' WIDE.
3. NAIL SILL PLATE TO WOOD FRAMED FLOORS w/ 16d @ 8" OC TO JOIST OR BLOCKING BELOW SHEATHING. SEE DETAIL **3/S621**.
4. BOLT SILL PLATE TO CONCRETE SLAB w/ 5/8" Ø HEADED ANCHOR RODS @ 48" OC MAX, w/ 7" MIN EMBED INTO SLAB (NOT INCLUDING THICKNESS OF CURB WHERE OCCURS).
5. REFER TO DETAIL **1/S601** FOR NON-BEARING WALLS.
6. FOR MINIMUM NAILING REQUIREMENTS, SEE CBC TABLE 2304.10.1 & DETAIL **13/S601**.
7. REFER TO DETAIL **2/S621** FOR SHEAR WALLS.

HEADER & SILL SCHEDULE

(SEE NOTE 1)

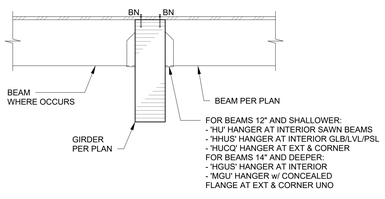
OPENING WIDTH	HDR @ EXT BEARING WALL (MAX GRAVITY LOAD = 0.45 k/f)		SILL	
	4x WALL	6x WALL	4x WALL	6x WALL
UP TO 4'-0"	4x8	6x8	(2) 2x	2x
4'-1" TO 6'-0"	4x8	6x8	(3) 2x	(2) 2x
6'-1" TO 8'-0"	4x10	6x10	4x6	(2) 2x
8'-1" TO 10'-0"	4x14	6x12	4x8	(3) 2x
10'-1" & UP	SEE PLANS			



TYPICAL BEARING & EXTERIOR WALL FRAMING

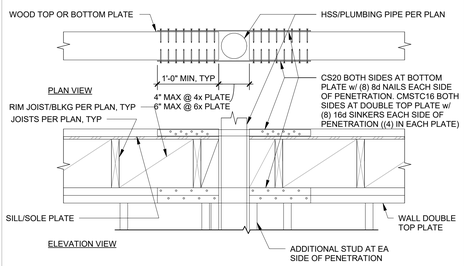
SCALE: NTS — 2

NOTES:
1. SEE DET **10/S601** FOR SMALL BORINGS IN SILL PLATE.
2. THIS DETAIL CAN BE USED FOR ALL OPENINGS IN TOP AND BOTTOM PLATES OF WALLS THAT ARE NOT PART OF THE LATERAL RESISTING SYSTEM AS DEFINED IN NOTE 3. SEE NOTE 4 FOR EXCEPTION.
3. FOR THE PURPOSE OF THIS DETAIL, THE LATERAL SYSTEM SHALL BE DEFINED AS ANY SHEAR WALL OR DRAG LINE (ANY WALL LOCATED IN THE SAME GRIDLINE AS A SHEAR WALL OR DRAG LINE).
4. EXCEPTION: THIS DETAIL CAN BE USED AT SHEAR WALL SILL & SOLE PLATES, AND WHERE SPECIFICALLY CALLED OUT ON PLANS.



TYPICAL BEAM TO BEAM

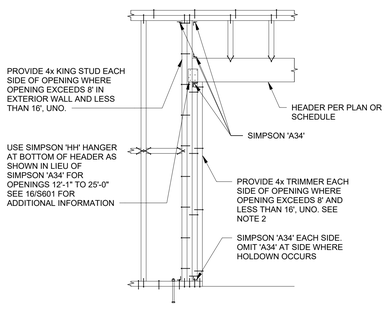
1" = 1'-0" — 15



TYPICAL LARGE PENETRATION IN WALL TOP OR BOTTOM PLATE

1" = 1'-0" — 11

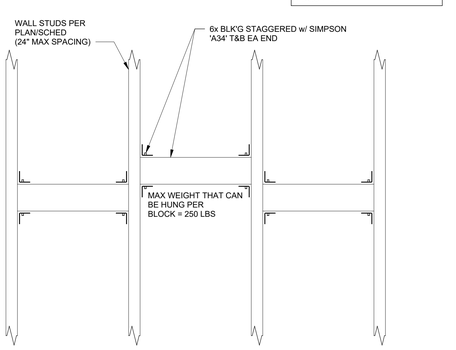
NOTE:
1. THIS DETAIL SHOWS THE HARDWARE TO BE USED FOR EXTERIOR WALLS WITH OPENINGS WIDER THAN 8'-0", SEE **2/S601** FOR SMALLER OPENINGS.
2. TRIMMERS CAN BE OMITTED AT EXTERIOR NON-BEARING WALLS WHERE SIMPSON HH HANGER IS USED.
3. SEE **2/S601** FOR STRUCTURAL INFORMATION NOT SHOWN HERE.



TYPICAL HEADER 8'-1" TO 12'-0" WIDE

1/2" = 1'-0" — 7

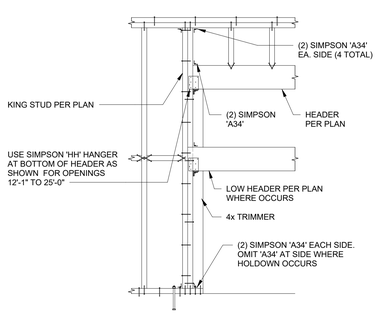
MAX LOAD PER VERTICAL STUD IS 250 LBS , SPREAD LOADS ADQUATELY



TYPICAL BACKING

1 1/2" = 1'-0" — 3

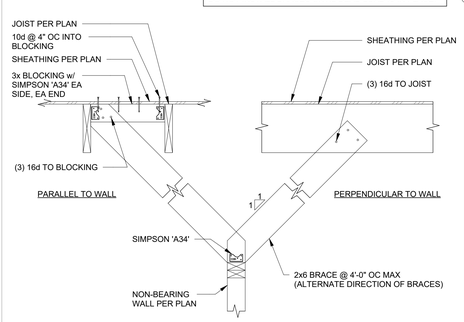
NOTE:
1. THIS DETAIL SHOWS THE HARDWARE TO BE USED FOR EXTERIOR WALLS WITH OPENINGS WIDER THAN 12'-0"
2. SEE **2/S601** FOR STRUCTURAL INFORMATION NOT SHOWN HERE.



TYPICAL HEADER 12'-0" TO 25'-0" WIDE

SCALE: NTS — 16

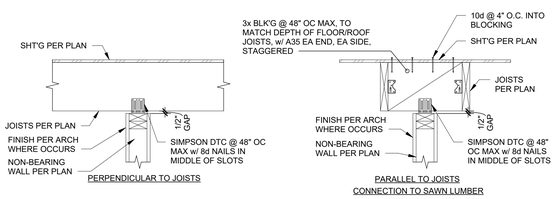
NOTE:
DO NOT INSTALL BRACES UNTIL DEAD LOAD IS IN PLACE.



TYPICAL NON-BEARING WALL BRACING

1" = 1'-0" — 12

SEE 5/S604 AT TRUSSES 1



TYPICAL NON BEARING WALL TOP PLATE CONNECTION TO FRAMING

SCALE: NTS — 4

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DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADDENDUM 1	10/23/2026

TYPICAL WOOD CONNECTION DETAILS

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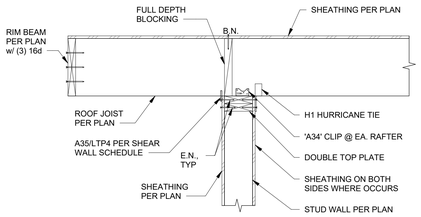
S601

M L K J H G F E D C B A
1 2 3 4 5 6 7 8 9 10

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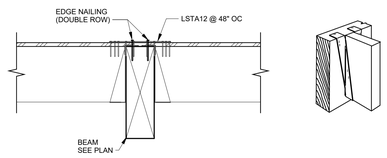
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EDGE OF ROOF DETAIL

SCALE: NTS 13

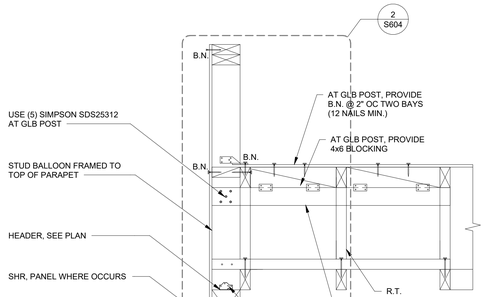
NOTE:
COUNTERSINK NUT FOR STUD BOLTS JUST ENOUGH SO TOP OF NUT IS FLUSH WITH BOTTOM OF SHEATHING +/-1/16".



HANGER SCHEDULE		
MEMBER	HANGER TYPE	REMARKS
2x	SIMPSON "LB" HANGER	U.N.O. ON PLAN
3x, 4x, 6x, PSL	SIMPSON "HUTF" HANGER	U.N.O. ON PLAN
3x, 4x, 6x, PSL	SIMPSON "B" HANGER	FOR NAILER/STEEL MEMBER CONN. (U.N.O.) AND CONNECTION TO OWJ

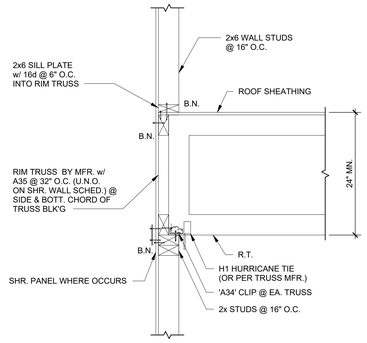
TYPICAL WOOD JOIST/HANGER SCHEDULE

SCALE: NTS 9



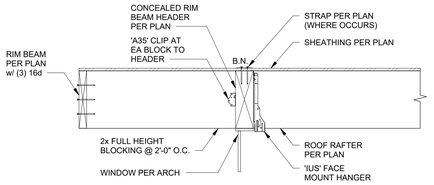
ROOF TRUSS PARALLEL W/ COVERED WALKWAY

SCALE: NTS 6



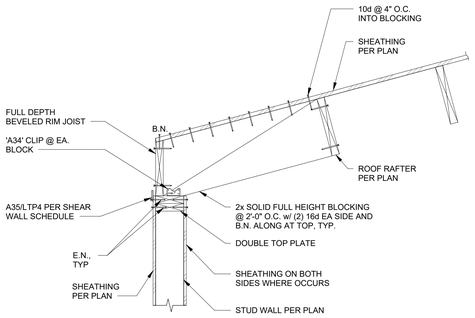
ROOF TRUSS PERP TO UPPER WALL

SCALE: NTS 1



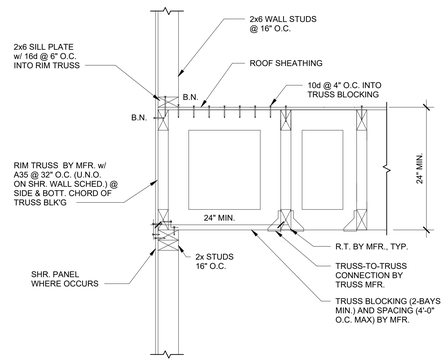
EDGE OF ROOF DETAIL

SCALE: NTS 14



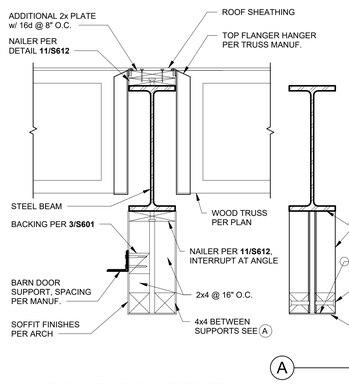
EDGE OF ROOF DETAIL

SCALE: NTS 10



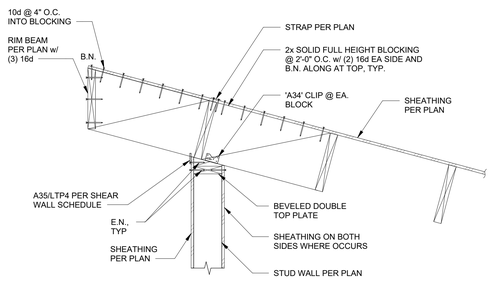
ROOF TRUSS PARALLEL TO UPPER WALL

SCALE: NTS 2



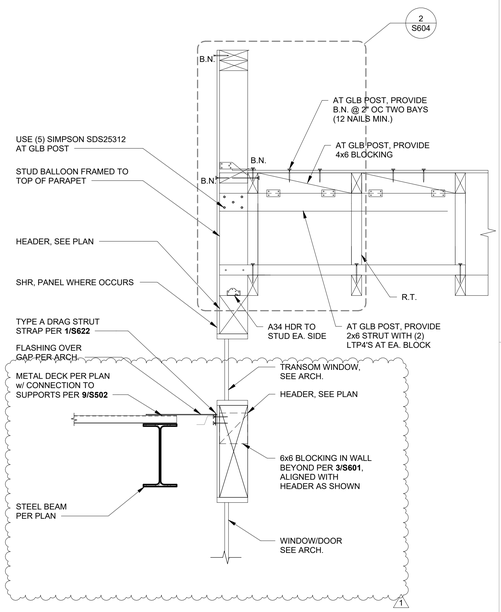
BARN DOOR SUPPORT

SCALE: NTS 15



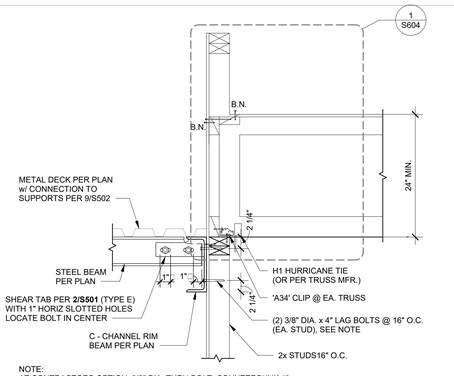
EDGE OF ROOF DETAIL

SCALE: NTS 11



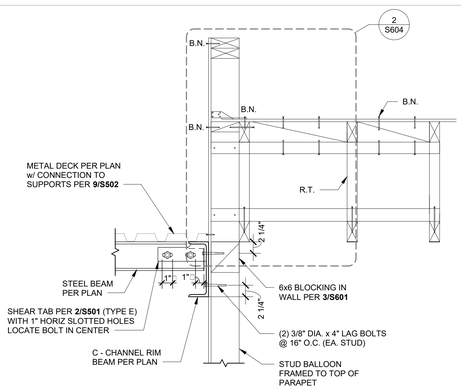
ROOF TRUSS PARALLEL w/ COVERED WALKWAY

SCALE: NTS 8



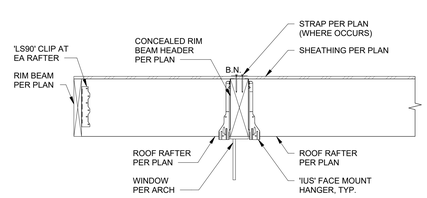
ROOF TRUSS PERP w/ COVERED WALKWAY

SCALE: NTS 3



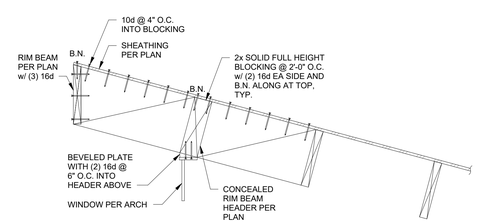
ROOF TRUSS PARALLEL W/ COVERED WALKWAY

SCALE: NTS 4



EDGE OF ROOF DETAIL

SCALE: NTS 16



EDGE OF ROOF DETAIL

SCALE: NTS 12

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TYPICAL WOOD DETAILS

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3194 D Airport Loop Drive
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S602

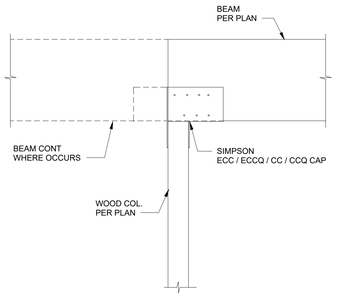
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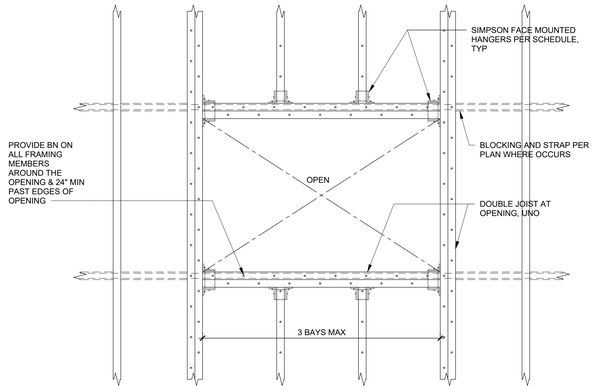
Project #: 2026-056 R24



TYPICAL COLUMN CAP

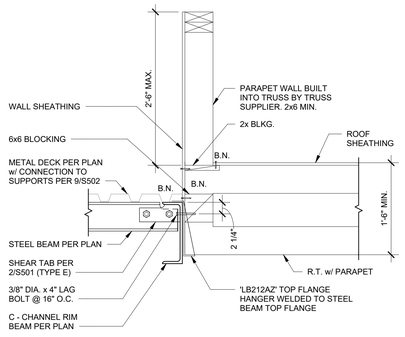
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OPNINGS TO BE LOCATED MIN 4FT FROM SHEAR WALL IN ANY DIRECTION



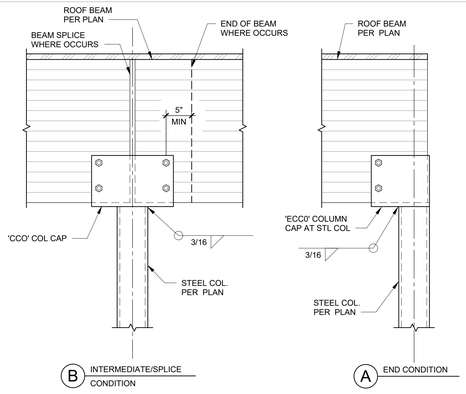
TYPICAL FLOOR/ROOF OPENING DETAIL

SCALE: NTS 5



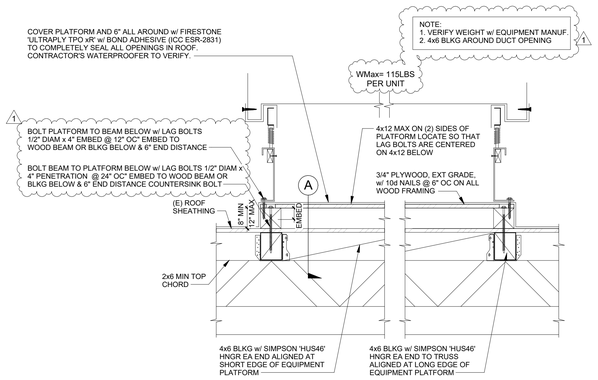
LOWER ROOF TRUSS DETAIL

SCALE: NTS 1



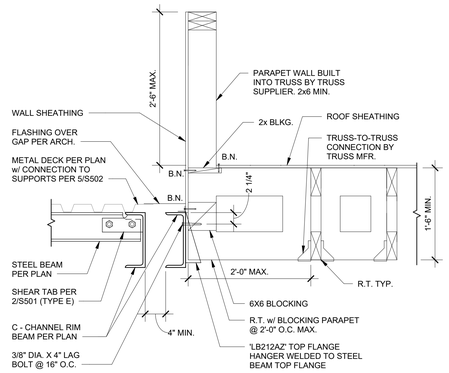
WOOD BEAM TO STEEL COLUMN CONNECTION

SCALE: NTS 15



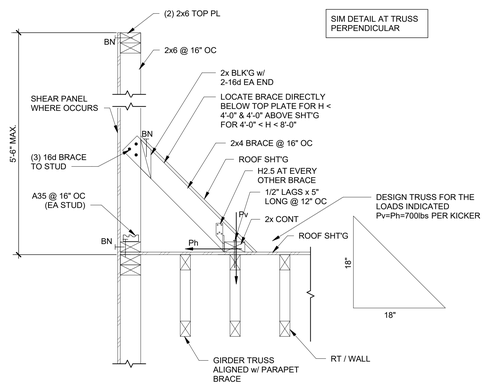
MECHANICAL UNIT PLATFORM

SCALE: NTS 6



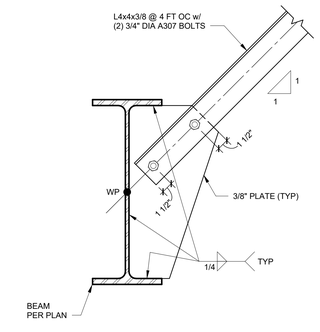
LOWER ROOF TRUSS DETAIL

SCALE: NTS 2



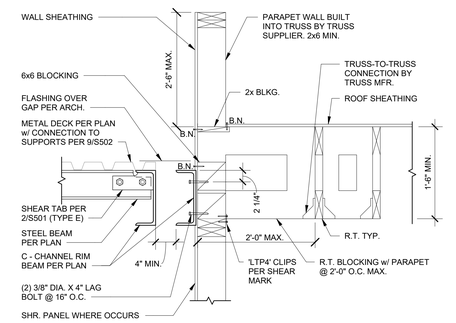
PARAPET KICKER

SCALE: NTS 16



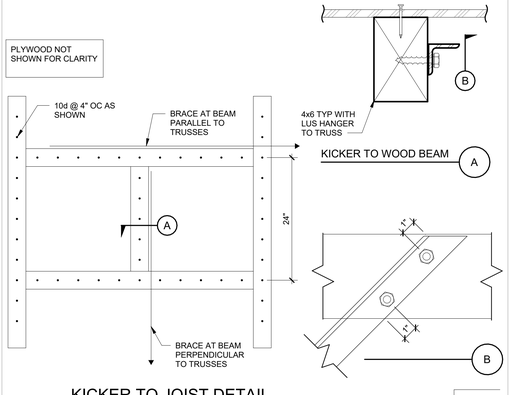
BEAM BRACE

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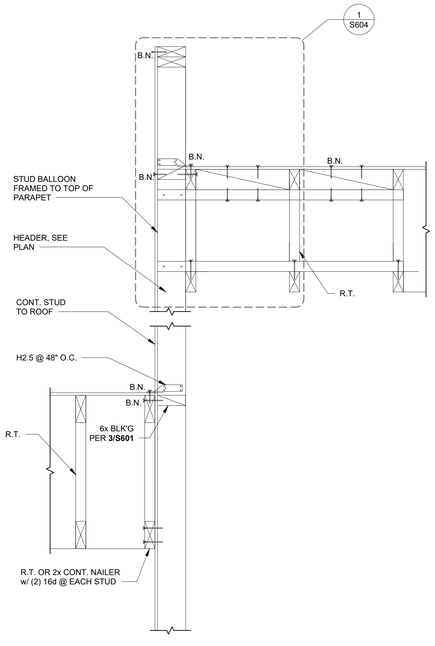
LOWER ROOF TRUSS DETAIL

SCALE: NTS 3



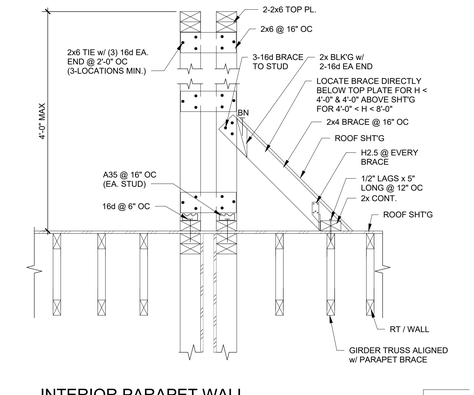
KICKER TO JOIST DETAIL

SCALE: NTS 12



LOWER ROOF TRUSS DETAIL

SCALE: NTS 8



INTERIOR PARAPET WALL

SCALE: NTS 4

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LICENSED ARCHITECT PETER M. MAZAREI NO. C-33634 EXP. 10/31/2027 STATE OF CALIFORNIA

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TYPICAL WOOD DETAILS

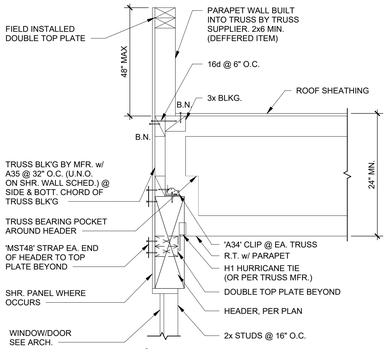
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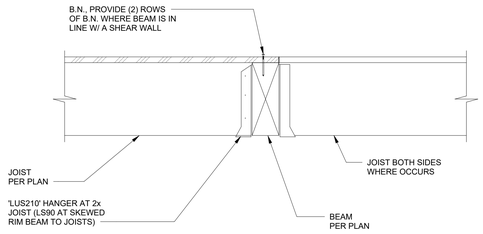
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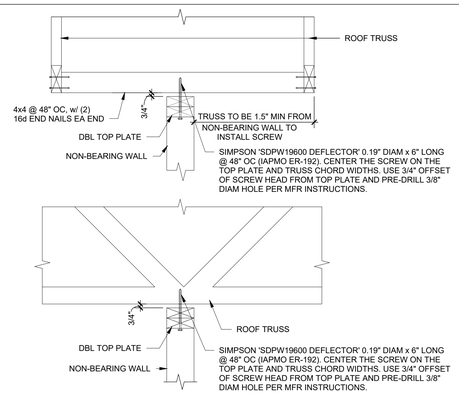
ROOF TRUSS PERP TO EXT HEADER

SCALE: NTS 13



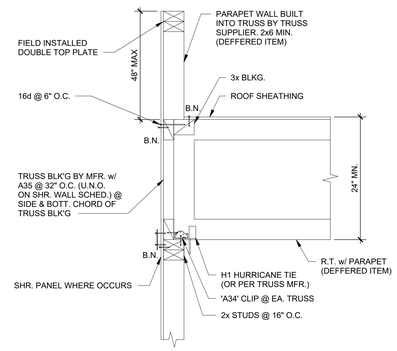
TYPICAL WOOD JOIST AT FLUSH WOOD BEAM

SCALE: NTS 9



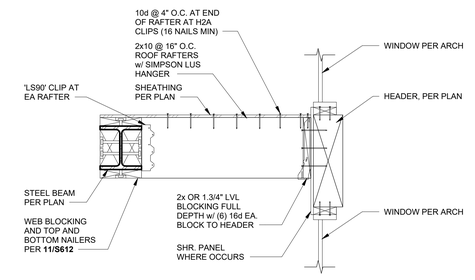
TRUSS TO NON-STRUCTURAL WALL

SCALE: NTS 5



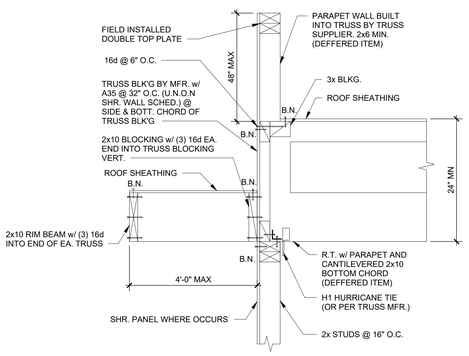
ROOF TRUSS PERP TO EXT WALL

SCALE: NTS 1



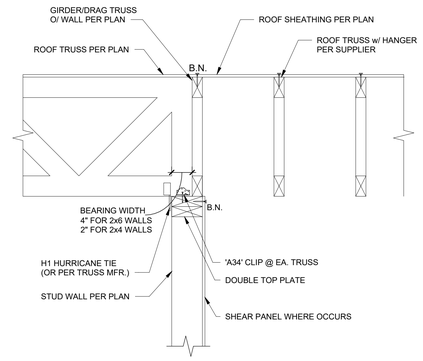
LOW EYEBROWN TO WALL

SCALE: NTS 14



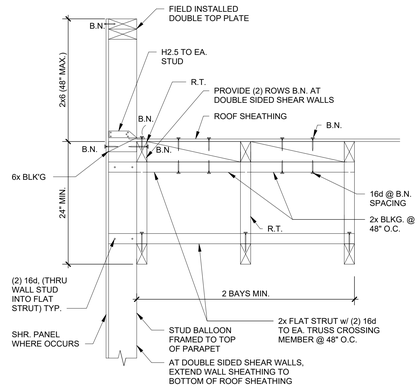
ROOF TRUSS PERP TO EXT WALL w/ EYEBROW

SCALE: NTS 10



ROOF TRUSS PERP TO INT WALL

SCALE: NTS 6

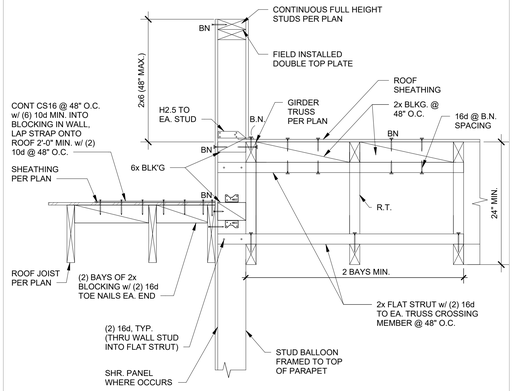


ROOF TRUSS PARALLEL TO EXT WALL

SCALE: NTS 2

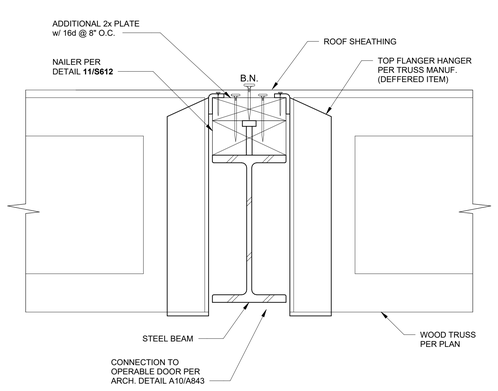
LOWER EYEBROWN TO HEADER

SCALE: NTS 15



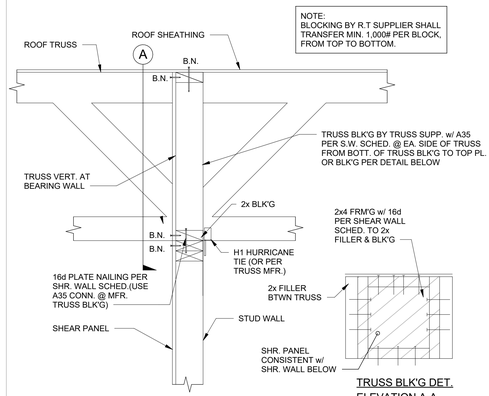
ROOF TRUSS PARALLEL TO EXT WALL

SCALE: NTS 11



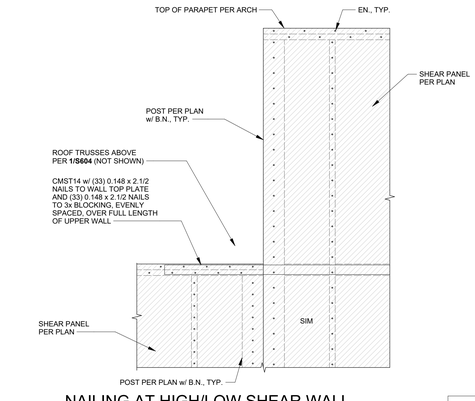
TYPICAL WOOD TRUSS TO STEEL BEAM

SCALE: NTS 7



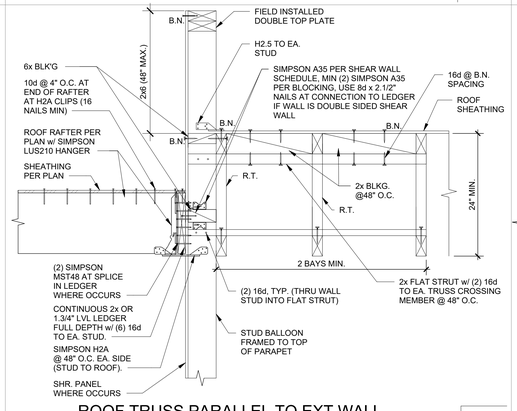
TRUSS BLOCKING

SCALE: NTS 3



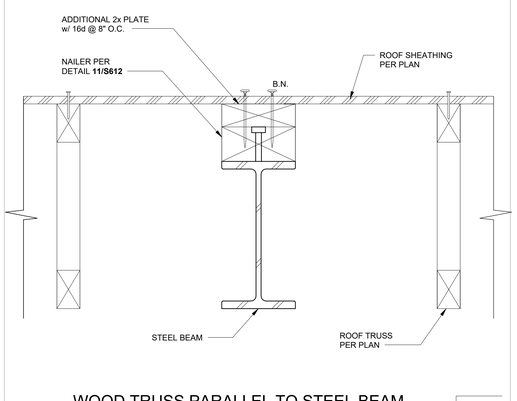
NAILING AT HIGH/LOW SHEAR WALL

SCALE: NTS 16



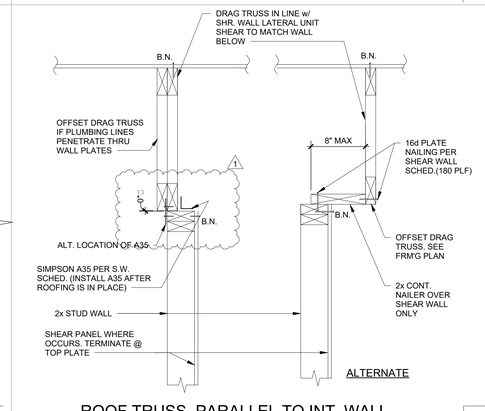
ROOF TRUSS PARALLEL TO EXT WALL

SCALE: NTS 12



WOOD TRUSS PARALLEL TO STEEL BEAM

SCALE: NTS 8



ROOF TRUSS PARALLEL TO INT WALL

SCALE: NTS 4

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REGISTERED PROFESSIONAL ENGINEER PETER No. 5634 Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT FRANCISCO M. MAZARIO NO. C-32662 EXP. 10/31/2027 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADDENDUM 1	10/23/2026

WOOD DETAILS

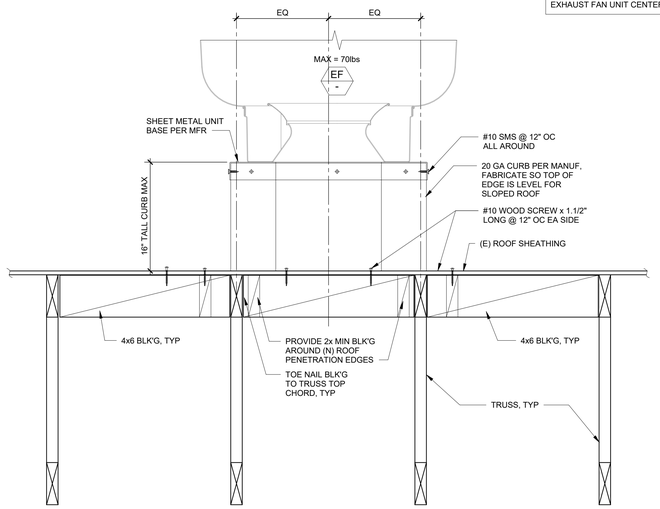
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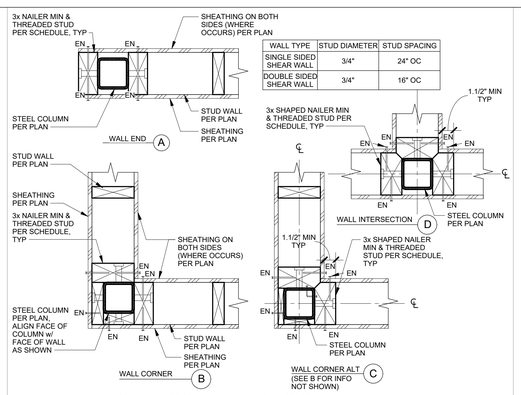
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NOTE:
CONTRACTOR TO VERIFY LOCATION OF (E) ROOF TRUSSES, AND TO PLACE EXHAUST FAN UNIT CENTERED IN BAY



DUCT OPENING & EF SUPPORT

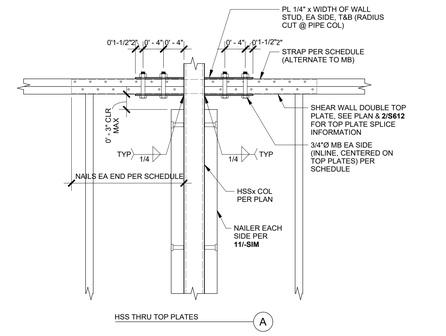
SCALE: NTS 10

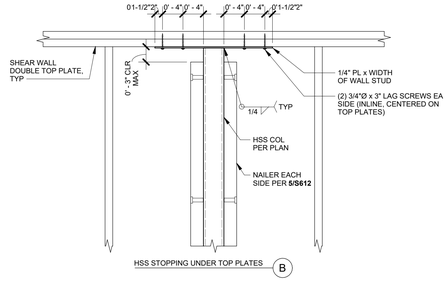


WALL TYPE	STUD DIAMETER	STUD SPACING
SINGLE SIDED SHEAR WALL	3/4"	24" OC
DOUBLE SIDED SHEAR WALL	3/4"	16" OC

TYPICAL WOOD NAILER TO STEEL COLUMN AT SHEAR WALLS

SCALE: NTS 5



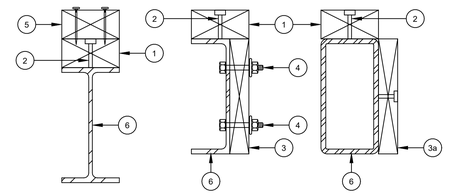


TOP PLATE SPLICE	# OF MB EACH SIDE	STRAP (ALT TO MB) SEE NOTE 1
TPS-1	2	CMSTC16x4' (ONE SIDE OF WALL)
TPS-2	2	CMST14x6' (ONE SIDE OF WALL) w/ (33) 10dx2-1/2" NAILS EACH END
TPS-3	3	CMST12x7'-6" (ONE SIDE OF WALL) w/ (43) 10dx2-1/2" NAILS EACH END
TPS-4	4	CMST12x6' (BOTH SIDES OF WALL) w/ (32) 10dx2-1/2" NAILS EACH END (@ 6" WALLS ONLY)

NOTES:
1. IF STRAP IS USED AND INSTALLED OVER SHEATHING, USE 10d COMMON x 3" LONG NAILS.
2. SEE 11/S-601 FOR REINFORCING OF BOTTOM PLATE AT PENETRATION.

TYPICAL HSS COLUMN IN SHEAR WALL

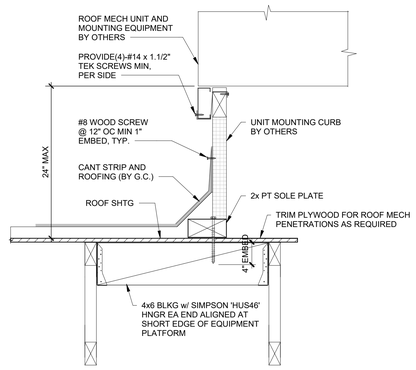
SCALE: NTS 2



1. 2x CONTINUOUS FULL WIDTH WOOD NAILER ON TOP OF BEAM
2. 1/2" NELSON STUD @ 24" OC MAX w/ STANDARD CUT-WASHER. USE 5/8"Ø. STUD @ 12" O.C. BELOW SHEAR WALLS & @ MOMENT FRAMES, UNO ON FRAMING PLAN. (INSTALL 5/8" Ø. STUD @ 9" OC @ DBL-SIDED SHEAR WALLS.)
3. 2x SIDE NAILER
3a. OPTIONAL SIDE NAILER
4. TWO ROWS OF 3/4" Ø THRU-BOLT @ 24" OC MAX STAGG.
5. OPTIONAL NAILER
6. STEEL BEAM PER PLAN

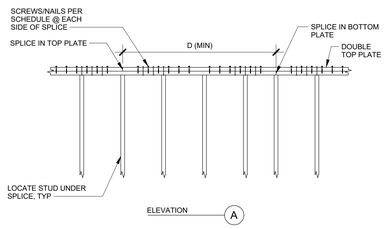
TYPICAL WOOD NAILER AT STEEL BEAM

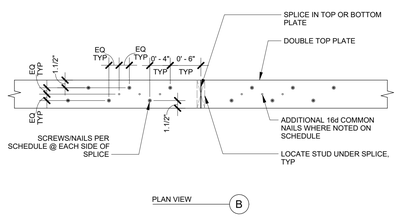
SCALE: NTS 11



MECHANICAL CURB SECTION DETAIL

SCALE: NTS 7





TOP PLATE SPLICE	FASTENERS	CAPACITY OF TOP PLATE	D (MIN)	NOTES
TPS-1	(5) 16d COMMON	2058#	4'-0"	TYPICAL UNO
TPS-2	(6) SIMPSON SDWH19300DB & (3) 16d COMMON	5472#	5'-0"	-
TPS-3	(8) SIMPSON SDWH19300DB & (3) 16d COMMON	7240#	6'-0"	-
TPS-4	(12) SIMPSON SDWH19300DB & (3) 16d COMMON	10944#	9'-0"	REQUIRES USE OF MIN (2) DF-#1 2x6 PLATES OR (2) DF-#2 3x6 PLATES

NOTES:
1. SEE IAPMO - 0192 FOR SIMPSON SDWH19300DB.
2. TOP PLATE SPLICE SHOULD BE MINIMUM "D" AWAY FROM THE ENDS OF TOP PLATES.
3. NO PENETRATION PER 11/S-601 ALLOWED IN SHEAR WALLS OR SHEAR WALL LINES.

TYPICAL TOP PLATE

SCALE: NTS 4

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LICENSED ARCHITECT RICARDO M. MAYPA No. [illegible] Exp. 10/31/27 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
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DATE	10/23/2026
1 ADDENDUM 1	10/23/2026

WOOD DETAILS

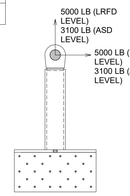
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S612

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MFG Part #	Product Description	Fastening Requirements		Weight
		Type & Size	Total Per Tie Back	
HTB-S18	18" Hardy Saddle Tie Back	SDS Screw - 1/4" x 2 1/2"	40	70#

NOTES:
- USE 1/4"x3" SDS SCREWS ON FILLER SIDE WHEN USING A 5-1/4" EWP BEAM.
- CAP MOUNT (SCM) CAP GOES BELOW PEDESTAL DECKS-SKIRT FITS OUTSIDE THE SLEEVE AREA.
- SFM NEEDS TO BE SEALED OVER FINSIH SURFACE. TEST BEFORE SEALING.
- 3" ADJUSTS FROM 3 1/2" O 6 1/2" FROM TOP OF BEAM.
- 6" ADJUSTS FROM 6 1/2" TO 9 1/2" FROM TOP OF BEAM.



IAPMO UES ER 461, SECTION 3.2.2
3.2.2 ALLOWABLE STRESS DESIGN (ASD): IN COMPLIANCE WITH SECTION 4.6.5 OF ASCE 7-16, THE ASD LEVEL STRENGTH FOR THE HARDY ROOF TIE-BACK DEVICES IS 3,100 POUNDS (13.8 KN) MAXIMUM IN THE HORIZONTAL AND VERTICAL DIRECTIONS. WHEN PLACED ON AND FASTENED TO THE STRUCTURAL SUPPORTS, THE DEVICE SHALL BE DESIGNED TO DEVELOP THE 3,100 POUNDS (13.8 KN) ASD STRENGTH. FASTENING TO WOOD BASED ON CD = 1.5 IN ACCORDANCE
WITH THE ANSI/AWC NDS. DESIGN SHALL COMPLY WITH IBC CHAPTER 23 AND ANSI/AWC NDS.

HTB-S INSTALLATION INSTRUCTIONS

1. BEST TO INSTALL HTB-S TIE BACKS WHILE BEAMS ARE ON THE GROUND PRIOR RAISING INTO POSITION.
2. SUPPORT BEAMS AND TRUSSES FOR THE HTB-S ARE TO BE DESIGNED BY THE EOR.
3. 5/16" HOLES PROVIDED ON SADDLE TO ALLOW ATTACHMENT OF STRUCTURAL MEMBERS. USE 1/4"x2 1/2" SDS SCREWS. USE ALL PROVIDED HOLES. USE 1/4"x3" SDS SCREWS ON FILLER SIDE WHEN USING A 5-1/4" EWP BEAM.
4. PER CALIFORNIA CODE OF REGULATIONS TITLE 8 SECTION 3291, "DEVICES SHOULD BE SPACED AT APPROXIMATELY 12-FOOT INTERVALS; HOWEVER, THE SPACING SHALL DEPEND PRIMARILY ON THE AVAILABILITY OF ROOF STRUCTURAL MEMBERS OF SUFFICIENT STRENGTH TO SAFELY CARRY APPLIED LOADS." PLACE SUPPORT BEAMS ON STANDARD TRUSS OR JOIST LAYOUT

RECOMMENDATIONS

1. DESIGN OF STRUCTURAL MEMBERS PER EOR (5-1/4" MINIMUM) TO THE TRUSS TO ALLOW FOR FULL TRANSFER OF FORCES TO THE TRUSSES IS RECOMMENDED TO BE OF ENGINEERED WOOD TO MINIMIZE SPLITTING.

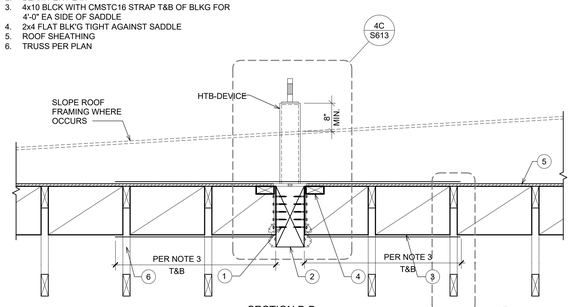
ANY QUESTIONS REGARDING INSTALLATION

CALL: GARY HARDY 1 (805) 404-5196 ANCHOR TESTING SHALL BE CONDUCTED BY QUALIFIED PERSONNEL UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER IN ACCORDANCE WITH THE CALIFORNIA CODE OF REGULATIONS, TITLE 8, SECTION 3296.

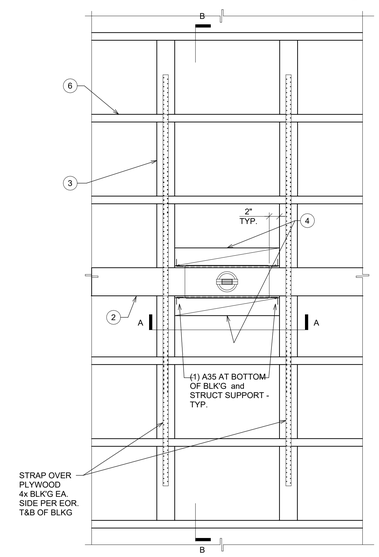
FALL PROTECTION

SCALE: NTS 1

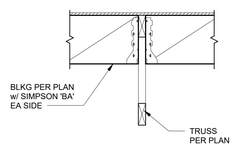
KEYNOTES LEGEND
1. SDS 1/4"x2-1/2" PER SCHEDULE.
2. BEAM PER PLAN
3. 4x10 BLCK WITH CMSTC16 STRAP T&B OF BLKG FOR 4'-0" EA SIDE OF SADDLE
4. 2x4 FLAT BLK'G TIGHT AGAINST SADDLE
5. ROOF SHEATHING
6. TRUSS PER PLAN



SECTION B-B

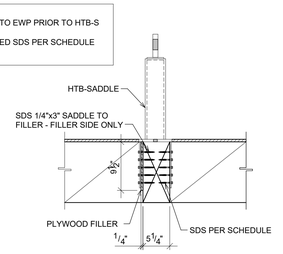


PLAN VIEW

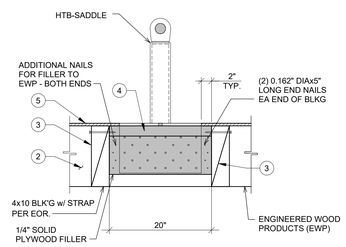


BLOCKING TO TRUSS
SECTION D-D

NOTE:
1. SOLID PLYWOOD FILLER TO BE NAILED TO EWP PRIOR TO HTB-S SADDLE INSTALLATION.
2. USE SDS 3x1/4 IN LIEU OF RECOMMENDED SDS PER SCHEDULE ON FILLER SIDE ONLY



SECTION C-C



SECTION A-A
HTB ASSEMBLY

HTB-SADDLE WITH EWP 5 1/4" WITH FILLER

SCALE: NTS 4

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Tel: (949) 748-7170

REGISTERED PROFESSIONAL ENGINEER PETER [illegible] No. 5[illegible] Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT DIEGO M. MAZARIO No. [illegible] Exp. OCT 31, 2027 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
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1 ADDENDUM 1	10/23/2026

WOOD DETAILS

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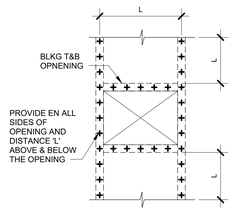
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Project #: 2026-056 R24

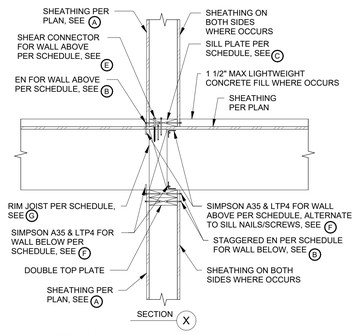
NOTE:
PENETRATIONS THROUGH SHEAR WALLS ARE PERMITTED ONLY w/ THE REVIEW OF THE STRUCTURAL ENGINEER NOT ALLOWED AT FIRST BAY OF SHTG MAX ONE PENETRATION ALLOWED PER SHEAR WALL PANEL



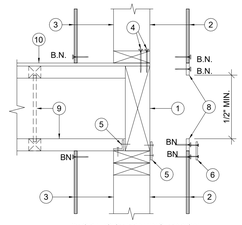
A OPENING WIDTH LESS THAN OR EQUAL TO STUD SPACING

TYPICAL 16" MAX OPENING IN SHEAR WALL

SCALE: NTS 14



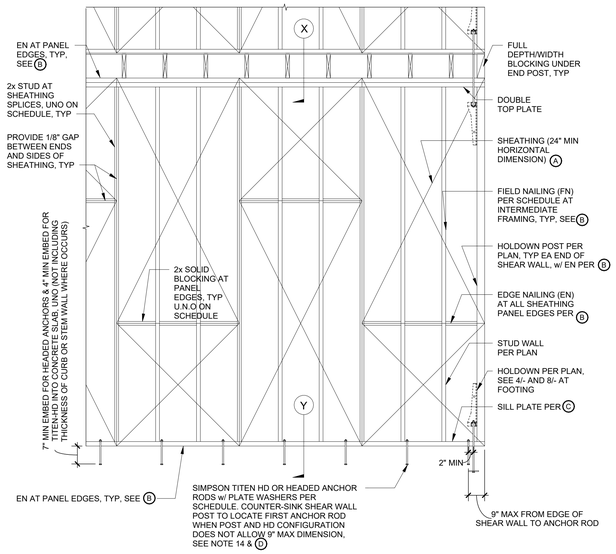
NOTE:
1. SIMILAR AT EXTERIOR WALLS.



2x OR I-JOIST FRAMING, TYPICAL EXTERIOR WALL (MARK 2.5 & STRONGER) & ALL SHEAR WALLS w/ OPENINGS

KEY NOTES

1. SHEAR TRANSFER CONTINUOUS RIM, SEE SHEAR WALL SCHED. FOR MINIMUM WIDTH.
2. WALL SHTG ON ONE SIDE OF WALL.
3. WALL SHTG ON SECOND SIDE OF WALL WHERE OCCURS.
4. SHEAR CONNECTOR NAILING, STAGGER AS REQ'D. PROVIDE MINIMUM 3/8" EDGE DISTANCE.
5. LOCATION OF SHEAR CONNECTOR HARDWARE SPACING PER SCHED.
6. SOME SHEAR CONNECTOR HARDWARE MAY BE APPLIED OVER SHEATHING WITH LONGER NAIL. SEE SCHED.
7. SHEAR TRANSFER RIM OR BLOCKING, SEE SHEAR WALL SCHED. FOR MINIMUM WIDTH.
8. EXTERIOR FACE OF WALL SHTG MAY BE EXTENDED 2" MINIMUM TO RIM IN ORDER TO LIMIT SHEAR CONNECTIONS FOR SINGLE SIDED SHEAR WALL. (REDUCE 50% SHEAR TRANSFER NAILING FOR DOUBLE-SIDED SHEAR WALL.)
9. FRAMING PERPENDICULAR OR PARALLEL TO SHEAR WALL.
10. ROOF / FLOOR SHTG DIAPHRAGM NAILING NOT SHOWN FOR CLARITY



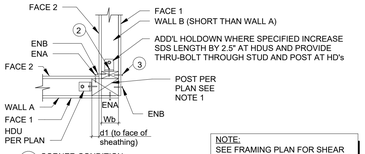
	SHEAR WALL ASSEMBLY				ANCHORAGE D	SHEAR CONNECTOR		RIM/BLOCKING BELOW G		CAPACITY	NOTES
MARK	SHEATHING A	SIDE(S)	NAILING B 1.5" MIN PENETRATION INTO FRAMING/BLOCKING	SILL PLATE C	HEADED ANCHOR ROD OR SIMPSON TITEN-HD	NAILS/SCREWS E	A35/LTP4 F	CONV	PWJ	ASD SEISMIC (PLF)	1, 2
NOTES:	3, 4, 6	-	7, 8, 9, 10	8, 17, 18, 19	8, 14, 15, 16	7, 8, 11, 12, 13	20, 21	11, 12, 13, 22, 24	11, 12, 13, 23, 24	-	-
NONE	NO SHEATHING	-	-	2x	1/2"Ø @ 48" OC	16d @ 8" OC OR SIMPSON SDWS22500DB @ 16" OC	@ 32" OC	2x	1.3/4"x	-	-
6.5	1/2" STRUCT 1	1	10d @ 6" EN & @ 12" FN	2x	5/8"Ø @ 32" OC	16d @ 6" OC OR SIMPSON SDWS22500DB @ 14" OC	@ 16" OC	2x	1.3/4"x	340	-
4.5	1/2" STRUCT 1	1	10d @ 4" EN & @ 12" FN	3x	5/8"Ø @ 24" OC	16d @ 4" OC OR SIMPSON SDWS22500DB @ 8" OC	@ 10" OC	3x	1.3/4"x	510	5
3.5	1/2" STRUCT 1	1	10d @ 3" EN & @ 12" FN	3x	5/8"Ø @ 16" OC	(2) ROWS OF 16d @ 6" OC OR SIMPSON SDWS22500DB @ 6" OC	@ 8" OC	3x	1.3/4"x	665	5
2.5	1/2" STRUCT 1	1	10d @ 2" EN & @ 12" FN	3x	5/8"Ø @ 12" OC	(2) ROWS OF 16d @ 4" OC OR (2) ROWS OF SIMPSON SDWS22500DB @ 10" OC	@ 6" OC	3x	3.1/2"x	870	5
44.5	1/2" STRUCT 1	2	10d @ 4" EN & @ 12" FN	3x	5/8"Ø @ 16" OC	(2) ROWS OF SIMPSON SDWS22600DB @ 8" OC	(2) @ 10" OC	3x	3.1/2"x	1020	5, 6
33.5	1/2" STRUCT 1	2	10d @ 3" EN & @ 12" FN	3x	3/4"Ø @ 16" OC	(2) ROWS OF SIMPSON SDWS22600DB @ 6" OC	(2) @ 8" OC	3x	3.1/2"x	1330	5, 6
22.5	1/2" STRUCT 1	2	10d @ 2" EN & @ 12" FN	3x	3/4"Ø @ 12" OC	-	(2) @ 6" OC	3x	3.1/2"x	1740	5, 6

NOTES:
1. SEE WOOD GENERAL NOTES ON S-001 AND PLAN NOTES FOR MORE INFORMATION.
2. SEE PLAN FOR LOCATION OF SHEATHED WALLS. LENGTHS INDICATED ON PLANS ARE MINIMUM LENGTHS.
3. SHEATHING SHALL BE PLYWOOD OR OSB SIDING, WITH PLYWOOD INDEX OF 32/16 MINIMUM FOR 1/2" SHEATHING & 16/0 MIN FOR 3/8" SHEATHING.
4. PANELS SHALL NOT BE LESS THAN 8'x4', EXCEPT AT BOUNDARIES AND CHANGES IN FRAMING. ALL EDGES OF ALL PANELS SHALL BE SUPPORTED BY AND FASTENED TO FRAMING MEMBERS OR BLOCKING.
5. USE 3x STUDS AND BLOCKING AT ADJOINING SHEATHING EDGES, STAGGER NAILS.
6. WHERE SHEATHING IS APPLIED ON BOTH FACES OF SHEAR WALL, OFFSET PANEL JOINTS TO FALL ON DIFFERENT FRAMING MEMBERS. ALTERNATIVELY, USE 3x MINIMUM STUD AND BLOCKING AT ADJOINING PANEL EDGES AND STAGGER NAILS AT ALL PANEL EDGES.
7. USE COMMON NAILS ONLY, BOX NAILS ARE NOT PERMITTED, UNO.
8. ALL FASTENERS AND CONNECTORS INSTALLED INTO OR AGAINST PRESSURE TREATED WOOD SHALL BE HOT DIP GALVANIZED PER CBC 2304.9.5.
9. SHEATHING NAILING SHALL BE STAGGERED WHEN NAILS ARE SPACED 4" OC OR LESS.
10. MINIMUM EDGE DISTANCE FOR NAILS SHALL BE 3/8" FROM PANEL EDGES.
11. MINIMUM EDGE DISTANCE FOR NAILS INTO WOOD MEMBER SHALL BE 3/4". MINIMUM SPACING BETWEEN STAGGERED ROWS SHALL BE 3/4".
12. MINIMUM EDGE DISTANCE OF SIMPSON SDWS INTO WOOD MEMBER SHALL BE 1.7/16". MINIMUM SPACING BETWEEN STAGGERED ROWS SHALL BE 5/8".
13. PROVIDE SCREW PENETRATION PER THIS SCHEDULE UNLESS A LONGER PENETRATION IS SHOWN. PRE-DRILL HOLES FOR SIMPSON SDWS FOR ENTIRE SCREW LENGTH WITH A DIAMETER EQUAL TO 50% OF THE SHANK DIAMETER WHEN SPACING IS 6" OC OR LESS, OR WHEN (2) ROWS OF SCREWS ARE SPECIFIED.

CONT:
14. ANCHOR RODS SHALL HAVE A STEEL PLATE WASHER UNDER EACH NUT NOT LESS THAN 14"x3"x3" IN SIZE. THE HOLE IN THE PLATE WASHER SHALL BE PERMITTED TO BE DIAGONALLY SLOTTED WITH A WIDTH OF UP TO 3/16" LARGER THAN THE BOLT DIAMETER AND A SLOT LENGTH NOT TO EXCEED 1.3/4", PROVIDED A STANDARD CUT WASHER IS PLACED BETWEEN THE PLATE WASHER AND THE NUT. THE PLATE WASHER SHALL EXTEND TO WITHIN 1/2" OF THE EDGE OF THE SILL PLATE ON THE SIDE(S) WITH SHEATHING. THIS MAY REQUIRE A PLATE WASHER GREATER THAN 3" WIDE. SEE SECTION Y.
15. 15. TITEN HD ANCHOR SHALL HAVE 4" MINIMUM EMBED AND BE INSTALLED PER ICC ESR-2713.
16. INTERIOR, NON-SHEAR WALLS MAY USE 0.145"/3x2.875" SHOT PINS @ 24" OC IN LIEU OF BOLTS.
17. USE 3x SILL PLATE WHEN SILL PLATE IS IN CONTACT WITH CONCRETE.
18. IT IS ACCEPTABLE TO REPLACE THE 2x SILL PLATE PER SCHEDULE WITH A 3x OR (2) 2x SILL PLATE, PROVIDED THE SILL ATTACHMENT IS MADE WITH 40d BOX NAILS INSTEAD OF 16d NAILS, OR SDWS22600DB INSTEAD OF SDWS22500DB.
19. IT IS ACCEPTABLE TO USE (2) 2x SILL PLATES INSTEAD OF THE 3x SILL PLATE PER SCHEDULE, UNLESS THE SILL PLATE IS IN CONTACT WITH CONCRETE.
20. INSTALL HALF OF REQUIRED A35/LTP4 ON EACH SIDE OF RIM/BLOCKING PER SECTION X.
21. ORIENT LTP4 WITH THE LONG SIDE PARALLEL TO THE TOP PLATE. WHEN A35 OR LTP4 ARE APPLIED THRU THE SHEATHING, USE 8d COMMON NAILS (2 1/2" LONG). STAGGER A35/LTP4 WHEN THEY ARE INSTALLED ON BOTH SIDES OF THE RIM JOIST.
22. WHEN CONVENTIONAL FRAMING IS USED (SAWN LUMBER), USE 2x OR 3x SAWN LUMBER FOR RIM JOIST PER SCHEDULE.
23. WHEN FLOOR FRAMING CONSISTS OF ENGINEERED WOOD PRODUCT (PWJ, LSL, ,) USE LSL OR PSL RIM JOIST PER SCHEDULE. EXCEPTION: SAWN LUMBER CAN BE USED FOR RIM JOISTS AT ROOF LEVEL.
24. USE CONVENTIONAL 4x OR LSL/LVL 3 1/2" RIM/BLOCKING OVER PERFORATED SHEAR WALL AROUND OPENING.

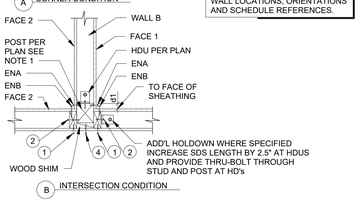
TYPICAL SHEAR WALL SCHEDULE

SCALE: NTS 3

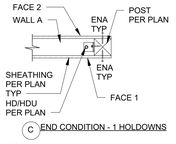


A CORNER CONDITION

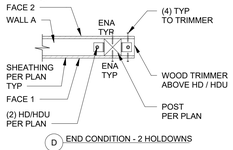
NOTE:
SEE FRAMING PLAN FOR SHEAR WALL LOCATIONS, ORIENTATIONS AND SCHEDULE REFERENCES.



B INTERSECTION CONDITION



C END CONDITION - 1 HOLDOWNS



D END CONDITION - 2 HOLDOWNS

LEGEND

ENA = EDGE NAILING AS SCHEDULE FOR WALL A, WHERE OCCURS
ENB = EDGE NAILING AS SCHEDULE FOR WALL B, WHERE OCCURS
10d @ 6" OC EA STUD. OMIT IF THERE IS NO WALL A, FACE 1, TYP

IF WALL DOES NOT HAVE SHEATHING ON FACE 2, USE 2x STUD w/10d NAILS @ 6" OC STAGGERED
IF ENA IS 3" OR MORE, USE 2x STUD WITH 16d NAILS AT SPACING TO MATCH ENA IF ENA IS 2" OR LESS, USE 3x STUD WITH (2) STAGGERED ROWS OF SIMPSON SDWS OR SDWH SCREWS @ 8" OC (4" OC AVERAGE SPACING)

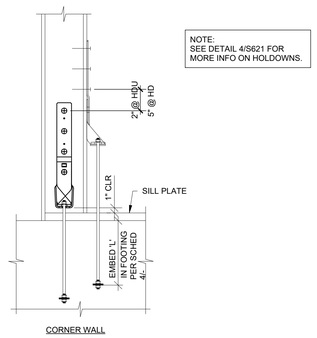
NOTES
1. (3) 10d @ 6" OC (4) 10d @ 12" OC
2. SEE ELEVATION ON 4/- FOR INFORMATION NOT SHOWN.

MIN SIZE OF POST SHALL BE AS SHOWN ON PLANS / SCHEDULE. ENLARGE SIZE AS REQUIRED TO ACHIEVE THE FILLOWING:
d1 = 1-1/2" MIN IF ENB SPACING IS 3" OR MORE
d1 = 2-1/2" MIN IF ENB SPACING IS 2" OR LESS

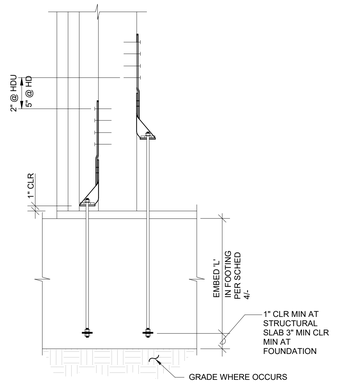
TYP SHEAR WALL STUD WALL FRAMING AT INTERSECTIONS (PLAN VIEW)

SCALE: NTS 16

NOTE:
SEE DETAIL 4/S621 FOR MORE INFO ON HOLDOWNS.



CORNER WALL ELEVATION

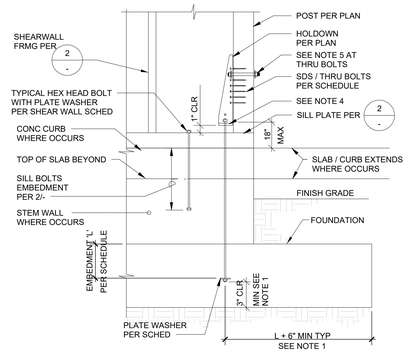


END OF WALL ELEVATION

TYP DOUBLE HD CONFIGURATION WOOD POST

SCALE: NTS 8

NOTE:
1. PROVIDE 3" CLR COVER TO ALL RODS, REBAR AND STEEL PLATE. INCREASE FOOTING DEPTH AS REQUIRED TO PROVIDE COVER SHOWN.
2. USE HEAVY HEX ANCHOR NUT PROVIDE BY SIMPSON AT HDU11 AND HDU14
3. EMBEDMENT LENGTH SHOWN IS INTO THE FOOTING, AND DOES NOT INCLUDE THICKNESS OF CONCRETE SLABS, STEM WALLS OR CURBS
4. PROVIDE STANDARD CUT WASHER BETWEEN THE ANCHOR BOLT NUT AND THE HOLDOWN AT HD19 PER IAPMO ER-143.
5. MACHINE BOLTS SHALL BE A307, 45/ksi BOLTS PER SECTION 3.2.3.1 OF IAPMO ER-143. PROVIDE STANDARD CUT WASHER BETWEEN THE POST AND THE NUTS OF THE THRU BOLT AT HD19 PER 1APMO143.
6. POST SIZE NOTED IS MINIMUM POST SIZE. USE BIGGER POST WHERE SHOWN ON PLAN / DETAILS.
7. SEE 8 AT POST WITH MULTIPLE HOLDOWNS



BASE PLATES AND BOLTS SCHEDULE							
SIMPSON HOLDOWN (ICC-ESR-2330) IAPMO ER-143)	F1554 ANCHOR ROD			ATTACHMENT TO POST			
	SIZE	PL WASHER	EMBED 'L' SEE NOTE 3	SIZE	QUANTITY	MIN POST SIZE SEE NOTE 6	NOTES
HDU2 - SDS2.5	5/8"Ø	4x4x3/8	6"	SDS1/4x2.1/2	6	4x4 / 4x6	1
HDU4 - SDS2.5	5/8"Ø	4x4x3/8	7"	SDS1/4x2.1/2	10	4x4 / 4x6	1
HDU5 - SDS2.5	5/8"Ø	4x4x3/8	7"	SDS1/4x2.1/2	14	4x4 / 4x6	1
HDU8 - SDS2.5	7/8"Ø	4x4x3/8	10 1/2"	SDS1/4x2.1/2	20	4x4 / 6x6	1
HDU11 - SDS2.5	1"Ø	4x4x1/2	13"	SDS1/4x2.1/2	30	4x6 / 6x6	1,2
HDU14 - SDS2.5	1"Ø	4x4x1/2	15"	SDS1/4x2.1/2	36	4x8 / 6x6	1,2
HD19	1 1/4"Ø	4x4x1/2	18"	1"Ø BOLTS	5	4x8 / 6x6	1,4,5

TYPICAL HOLDOWN SCHEDULE

SCALE: NTS 4

PETRA STRUCTURAL ENGINEERS
17981 Sky Park Circle
Suite O
Irvine, CA 92614
Tel: (949) 748-7170

REGISTERED PROFESSIONAL ENGINEER PETER No. 5621 Exp. 6/30/27 STRUCTURAL STATE OF CALIFORNIA

LICENSED ARCHITECT RICO M. MAYPA NO. C-36277 EXP. 10/31/2027 STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	2026-056 R24
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADDENDUM 1	10/23/2026

TYPICAL SHEAR WALL DETAILS

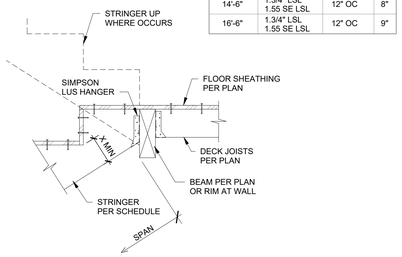
PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
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www.perkinseastman.com

S621

Plot Date: 10-19-2026 15:44:51
Project #: 2026-056 R24

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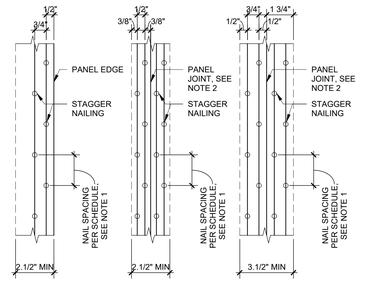
STAIR STRINGER SCHEDULE			
MAX SPAN	STRINGER	SPACING	X
10'-0"	1.3/4" LSL 1.55 SE LSL	16" OC	6"
11'-0"	1.3/4" LSL 1.55 SE LSL	12" OC	6"
12'-6"	1.3/4" LSL 1.55 SE LSL	12" OC	7"
14'-6"	1.3/4" LSL 1.55 SE LSL	12" OC	8"
16'-6"	1.3/4" LSL 1.55 SE LSL	12" OC	9"



WOOD STAIR LANDING

SCALE: NTS

13



NOTES:
1. WHEN THE DIAPHRAGM NAILING SPACING IS 3" OR LESS, STAGGER NAILS IN A ROW AS SHOWN AND PROVIDE MIN 3" NOMINAL FRAMING AT ADJOINING PANEL EDGES PER CBC 2306.2.1(1).
2. SPACE PANEL END AND EDGE JOINT 1/8". REDUCE SPACING BETWEEN LINES OF NAILS AS NECESSARY TO MAINTAIN MINIMUM 3/8" FASTENER EDGE MARGINS, MINIMUM SPACING BETWEEN LINES IS 3/8".

TYPICAL SHEATHING DIAPHRAGM NAILING

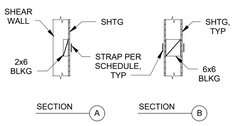
DETAIL WHERE NAILING SPACING IS 3" OR LESS

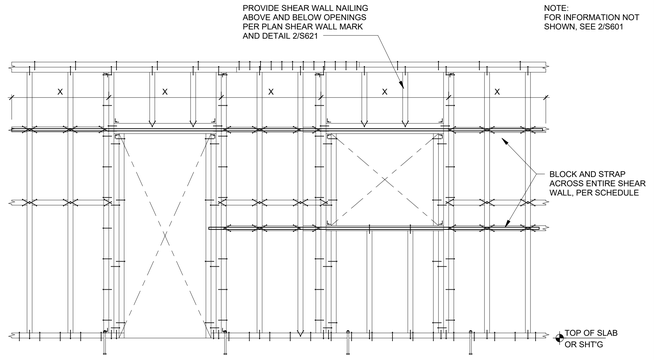
3" = 1'-0"

9

MARK	STRAP	SEE SECTION:	# OF NAILS OVER LENGTH 'X'
A	CMST14	A	(76) 10d
B	CMST12	A	(76) 10d
C	(2) CMST12	B	(112) 10d PER STRAP

EVENLY DISTRIBUTE # OF NAILS OVER LENGTH 'X'

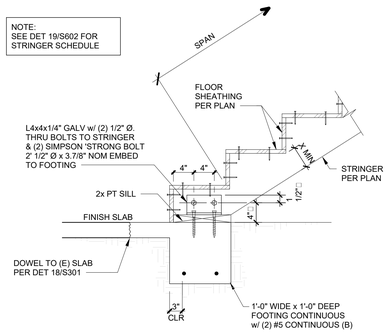




FORCE TRANSFER AROUND OPENING SHEAR WALL

SCALE: NTS

1

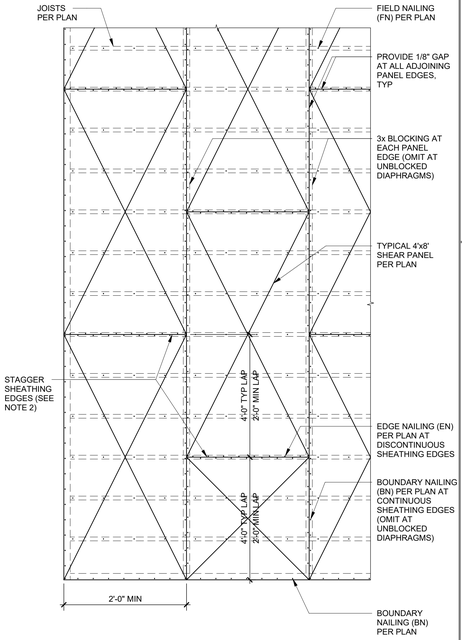


STAIR BASE CONNECTION

SCALE: NTS

14

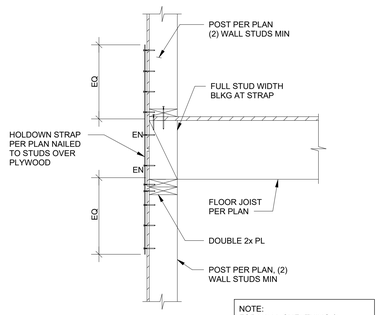
NOTES:
1. PROVIDE NAIL SIZE & SPACING AS NOTED ON PLANS.
2. ALL SHEATHING END JOINTS SHALL BE STAGGERED 2'-0" MIN AS INDICATED.
3. FACE GRAIN & LONG DIMENSION OF SHEATHING SHALL BE LAID PERPENDICULAR TO JOISTS.
4. PROVIDE 3/8" MIN EDGE DISTANCE FOR SHEATHING EDGE NAILING.
5. PROVIDE FRAMING OR BLOCKING UNDER ALL PANEL EDGES AT BLOCKED DIAPHRAGM.
6. USE BOUNDARY NAILING AT SHEAR WALLS, FRAMES & DRAG BEAMS.
7. NAIL AND GLUE FLOOR SHEATHING TO FRAMING MEMBERS.



TYPICAL SHEATHING NAILING

SCALE: NTS

11



NOTE:
FOR WALL SHEATHING &
NAILING SEE PLAN & SCHEDULE

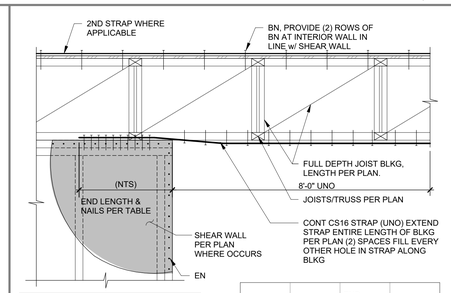
HD STRAP BETWEEN FLOORS

SCALE: NTS

2

STRAP HD SCHEDULE					
STRAP TYPE	END LENGTH 'L1'	NAILS REQ'D WITHIN END LENGTH 'L1'	CAPACITY (KIPS)	LA CITY	EQUIVALENT HOLD DOWN @ FOUNDATION
CS14	16"	(30) 10d	2.49	1.87	HDU2
CD16	12"	(11) 10d	1.705	1.27	HDU2
(2) CS18	10"	(20) 10d	2.74	2.05	HDU2
(2) CS16	12"	(22) 10d	3.41	2.56	HDU4
CMST16	23"	(33) 16d SINKERS	4.59	3.44	HDU5
CMST14	30"	(38) 16d	6.49	4.86	HDU8
CMST12	39"	(50) 16d	9.22	6.92	HDU11

NOTES:
1 BASED ON LARR #25713 & ICC ESR #2105
2 HOLD DOWN IS REQ'D AT FOUNDATION AT EACH FLOOR TO FLOOR STRAP / POST. SEE EQUIVALENT HD IN TABLE FOR HD'S TO FOUNDATION.
3 INSTALL STRAP OVER SHEATHING. SHEATHING EDGE NAILING REQ'D IN ADDITION TO STRAP NAILING.



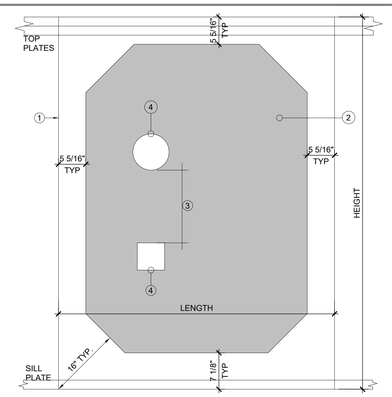
ENGINEER NOTE:
1. VERIFY CONNECTION BASED ON LOAD DEMAND
MSTI60 = 5070#
(2) CMST12 = 19430#
MSTC66 = 5850#
2. VALUES ARE FOR DOUGLAS FIR.
3. VALUES HAVE TO BE REDUCED FOR SEISMIC VALUES IN CERTAIN JURISDICTION

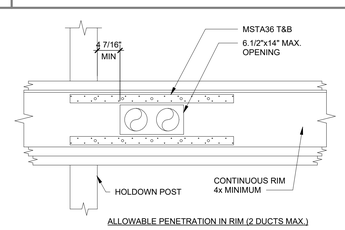
MARK	STRAP	END LENGTH	# OF NAILS
1	MSTI60	24"	(24) 10d
2	(2) CMST12	44"	(43) 10d
3	MSTC66	29"	(38) 10d

TYP DRAG STRAP AT END OF SHEAR WALL

1" = 1'-0"

3





ALLOWABLE PENETRATION IN RIM (2 DUCTS MAX.)

SEE DETAIL 14/S621
FOR ADDED REINF @ 3
DUCT PENTRATIONS

1. STRUCTURAL SHEATHING PANEL PER PLAN.
2. HOLES TO OCCUR ONLY IN CROSS-HATCHED REGION OF THE SHEATHING.
3. PROVIDE MINIMUM 16" IN ALL DIRECTIONS BETWEEN TWO SUCCESSIVE OPENINGS.
4. MAXIMUM SIZE OF ANY INDIVIDUAL OPENING IS 6" HIGH BY 6" LONG FOR SQUARE OPENNINGS AND 8" DIAMETER FOR CIRCULAR OPENINGS. HOLES ARE MEASURED FROM EDGE OF CUT TO EDGE OF CUT. DO NOT OVERCUT.

NOTE:
THE TOTAL COMBINED LENGTH OF ALL OPENINGS MUST BE LESS THAN 10% OF THE LENGTH OF THE SHEATHING SHOWN ON THE STRUCTURAL PLAN.
THE TOTAL COMBINED HEIGHT OF ALL OPENINGS MUST BE LESS THAN 10% OF THE HEIGHT OF SHEATHING (PLATE HEIGHT) SHOWN ON THE STRUCTURAL PLAN.

ALLOWABLE HOLES IN SHEAR PANEL & RIM

SCALE: NTS

8

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REGISTERED PROFESSIONAL ENGINEER
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No. 5[illegible]
Exp. 6/30/27
STRUCTURAL
STATE OF CALIFORNIA

LICENSED ARCHITECT
DIEGO M. MAZARIO
No. [illegible]
EXPIRES 31-JAN-2027
STATE OF CALIFORNIA

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

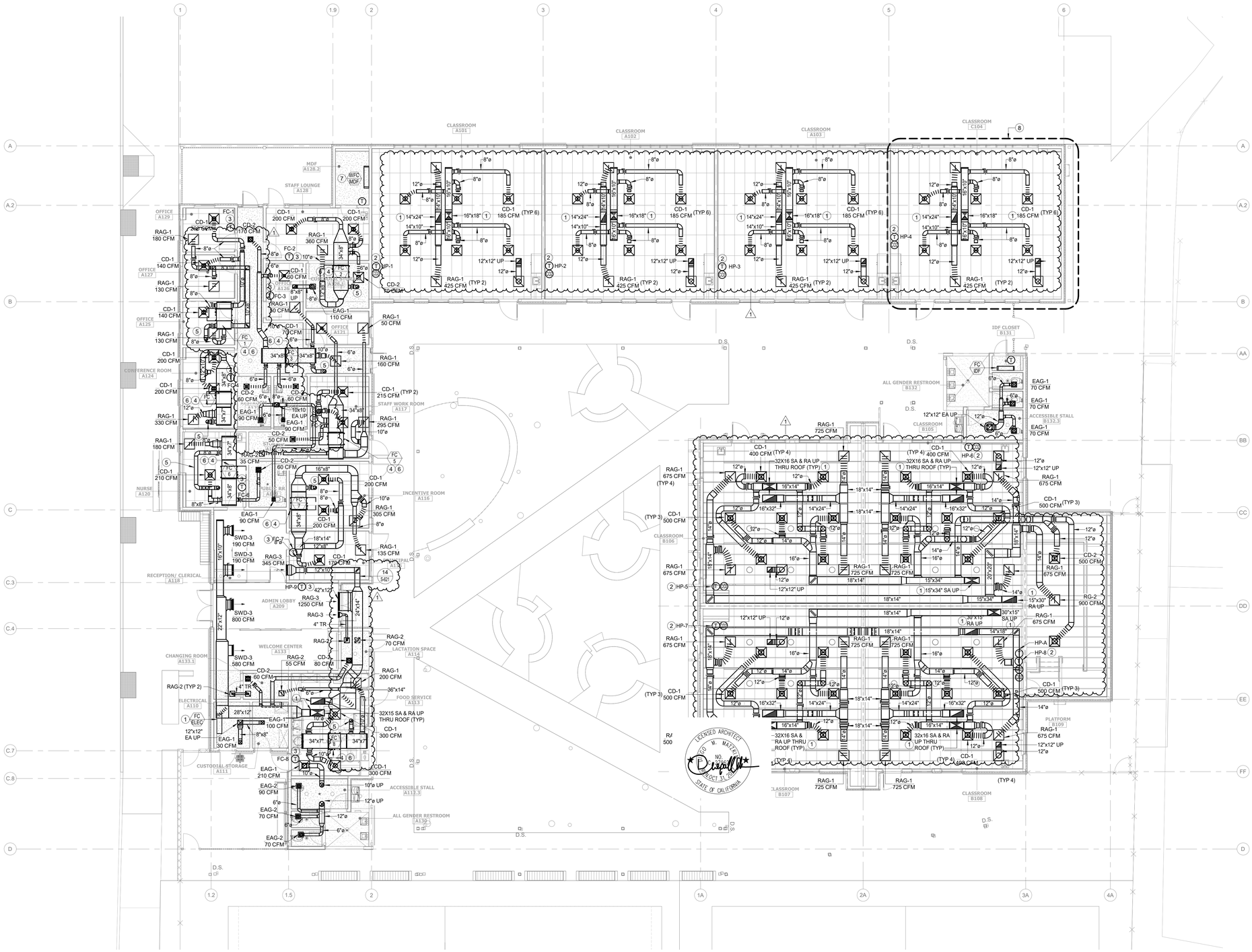
JOB	2026-056 R24
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADDENDUM 1	10/23/2026

TYP WOOD DIAPHRAGM, SHEAR & DRAG CONNECTION DETAILS

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S622

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1 M101 **MECHANICAL - FIRST FLOOR PLAN - DUCT**
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. RECTANGULAR DUCT IS ALLOWED TO CHANGE TO ROUND DUCT AS LONG AS THE ASPECT RATIO OF THE DUCTWORK IS KEPT.

B. CONTRACTOR SHALL ADHERE TO THE DUCT CONSTRUCTION GUIDELINES AS IDENTIFIED UNDER 2019 CMC 602.3 DUCTS, PLENUMS, OR FITTINGS OF METAL SHALL COMPLY WITH SMACNA HVAC CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.

C. ADJUST IN FIELD LOCATION OF DUCT PENETRATIONS BETWEEN ROOF TRUSSES.

REFERENCE SHEET NOTES

1. SA & RA UP TO ROOF WITH LAYOUT PER PLAN. INSTALL WITH 1" ACOUSTIC LINED DUCT ON RECTANGULAR DUCT.
2. F&I PROGRAMMABLE THERMOSTAT WITH CO2 SENSOR FOR DEMAND CONTROL VENTILATION (CLASSROOMS ONLY) ON WALL AND CONNECT TO CORRESPONDING A/C PER PLAN AND DETAIL 5/M-501.
3. F&I PROGRAMMABLE THERMOSTAT ON WALL AND CONNECT TO CORESPONDING A/C PER PLAN AND DETAIL 5/M-501.
4. F&I SUSPENDED FAN COIL INSTALLED WITH FILTER BOX PER DETAIL 2/M-501. INSTALL W/ 1" ACOUSTICALLY LINED SA & RA PLENUM BO. INSTALL REFRIGERANT LINES ABOVE CEILING ROUTED TO OUTDOOR HEAT PUMP PER DETAIL 9/M-501 AND MANUFACTURER'S REQUIREMENTS. TYP. INSTALL W/ SECONDARY DRAIN PAN WITH PIPE TERMINATION TO CORRIDOR WITH ESCUTCHEON PLATE.
5. 8" BRANCH W/ MANUAL BALANCING DAMPER DIA UP TO ROOF FOR OA.
6. F&I DUCT DETECTOR ON SA DUCT AND INTERLOCK WITH EQUIPMENT AND FA SYSTEM FOR SHUTDOWN UPON DETECTION OF SMOKE. SEE FIRE ALARM (FA) DRAWINGS.
7. F&I WALL MOUNTED FAN COILS FOR TELECOM ROOMS PER DETAIL 5/M502.
8. CONTRACTOR SHALL BID THIS PORTION OF THE BUILDING AS DEDUCT ALT #1.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
DAVID M. MAZZEI
NO. C-29067
OCT 31, 2026
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 01	10/23/2026

MECHANICAL FIRST FLOOR PLAN - DUCT

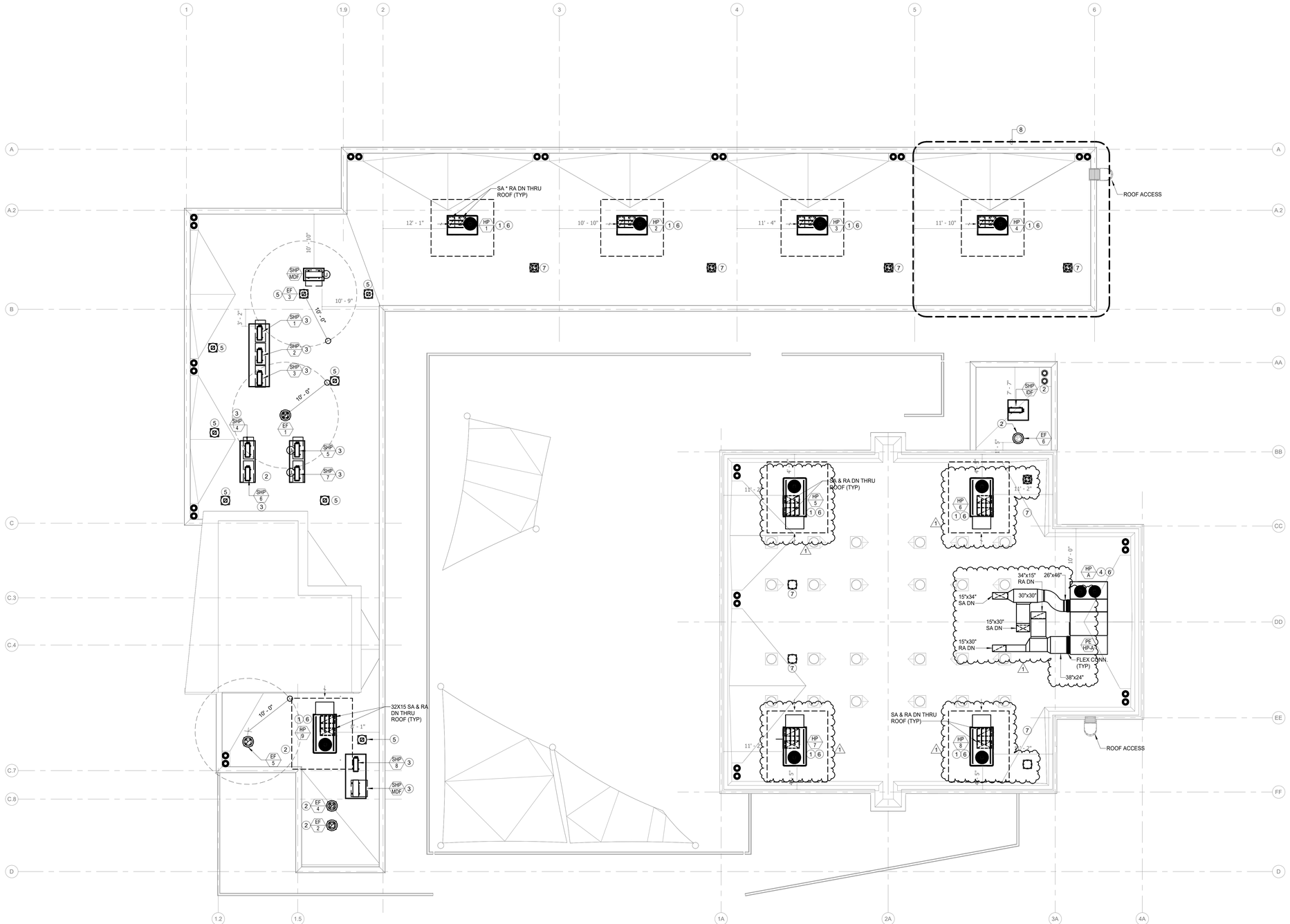
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1 M141 **MECHANICAL - ROOF PLAN**
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. RECTANGULAR DUCT IS ALLOWED TO CHANGE TO ROUND DUCT AS LONG AS THE ASPECT RATIO OF THE DUCTWORK IS KEPT.

B. CONTRACTOR SHALL ADHERE TO THE DUCT CONSTRUCTION GUIDELINES AS IDENTIFIED UNDER 2019 CMC 602.3 DUCTS, PLENUMS, OR FITTINGS OF METAL SHALL COMPLY WITH SMACNA HVAC CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.

REFERENCE SHEET NOTES

1. F&I HEAT PUMPS WITH SPRING ISOLATOR CURB PER DETAIL 3/M502 & 4/M502. SA AND RA DUCT WITH CONFIGURATION WITH FLEX CONNECTIONS. INSTALL WITH ECONOMIZER WITH BAROMETRIC RELIEF.
2. F&I DOWNBLAST EXHAUST FAN WITH CURB, BACKDRAFT DAMPER, AND BIRD SCREEN.
3. F&I SPLIT DX OUTDOOR HEAT PUMP ON HOUSEKEEPING PAD WITH SHEET METAL CAP PER DETAIL 6/M-501. CONNECT REFRIGERANT LINES FROM INDOOR FAN COIL. REFRIGERANT LINES ROUTED THROUGH FLOORS OR WALLS SHALL BE FIRE CAULKED PER DETAIL 9/M-501 AND 10/M-501.
4. F&I HEAT PUMP WITH SPRING ISOLATOR CURB PER 2/M502 AND STRUCTURAL DRAWINGS. SA AND RA WITH HORIZONTAL DOUBLE WALLED DUCT CONFIGURATION WITH FLEX CONNECTIONS & SHEET METAL COVER. INSTALL WITH ECONOMIZER W/ POWER EXHAUST. INSTALL DUCT SUPPORT FOR ROOFTOP DUCT PER 11/M501.
5. F&I INTAKE VENT W/ BACKDRAFT & BIRD SCREEN FOR OA INTAKE FOR FAN COILS. GREENHECK GRSI (SIZE 8"). FRAME OPENING PER DETAIL 10/S612
6. F&I DUCT DETECTOR ON SA DUCT AND INTERLOCK WITH EQUIPMENT AND FA SYSTEM FOR SHUTDOWN UPON DETECTION OF SMOKE. SEE FIRE ALARM (FA) DRAWINGS.
7. F&I RELIEF VENT W/ BACKDRAFT DAMPER & BIRD SCREEN. GREENHECK GRSR (SIZE 12"). FRAME ROOF OPENING PER DETAIL 10/S612.
8. CONTRACTOR SHALL BID THIS PORTION OF THE BUILDING AS DEDUCT ALT #1.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAZENKO
No. 34760
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
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MECHANICAL ROOF PLAN

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SPLIT HEAT PUMP (SHP) UNIT SCHEDULE

MARK	DESCRIPTION	MAKE	MODEL # (1)	NOM. TONS	COMP. QTY	CONDENSER FAN (QTY)	D/X COOLING		HEATING		ELECTRICAL			REFRIG. TYPE	ENERGY EFFICIENCY RATIO (SEER/EER)	REFRIG. LINE SIZES (SUCT./LIQ.)	MAX. OPER. WT. (LBS)	STRUCT. ANCHOR DETAIL	NOTES
							TOTAL (MBH)	OUTSIDE AIR (DEG F)	TOTAL (MBH)	OUTSIDE AIR (DEG F)	VOLTAGE/ PHASE/HZ	MCA	MOP						
SHP-1	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZ-AA18NL	1.5	1	1	18,000	95	23,500	47	208-230V/ 1/60	25	42	R-454B	17.2/ 12.7	1/2" / 1/4"	115	6/S-603	1, 2, 3, 4, 5, 6
SHP-2	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZAA12NL	1.0	1	1	12,000	95	15,000	47	208-230V/ 1/60	14	23	R-454B	19.7/ 12.5	3/8" / 1/4"	81	6/S-603	1, 2, 3, 4, 5, 6
SHP-3	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZ-AA09NL	0.75	1	1	9,000	95	13,000	47	208-230V/ 1/60	13	22	R-454B	18.8/ 13.2	3/8" / 1/4"	81	6/S-603	1, 2, 3, 4, 5, 6
SHP-4	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZAA12NL	1.0	1	1	12,000	95	15,000	47	208-230V/ 1/60	14	23	R-454B	19.7/ 12.5	3/8" / 1/4"	81	6/S-603	1, 2, 3, 4, 5, 6
SHP-5	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZ-AA15NL	1.25	1	1	15,000	95	18,000	47	208-230V/ 1/60	17	29	R-454B	18.8/ 12.2	1/2" / 1/4"	115	6/S-603	1, 2, 3, 4, 5, 6
SHP-6	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZ-AA09NL	0.75	1	1	9,000	95	13,000	47	208-230V/ 1/60	13	22	R-454B	18.8/ 13.2	3/8" / 1/4"	81	6/S-603	1, 2, 3, 4, 5, 6
SHP-7	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZ-AA15NL	1.25	1	1	15,000	95	18,000	47	208-230V/ 1/60	17	29	R-454B	18.8/ 12.2	1/2" / 1/4"	115	6/S-603	1, 2, 3, 4, 5, 6
SHP-8	OUTDOOR HEAT PUMP UNIT	TRANE-MITSUBISHI	SUZ-AA18NL	1.5	1	1	18,000	95	23,500	47	208-230V/ 1/60	25	42	R-454B	17.2/ 12.7	1/2" / 1/4"	115	6/S-603	1, 2, 3, 4, 5, 6
SHP-MDF	WALL MOUNTED UNIT	TRANE-MITSUBISHI	PUZ-AK18NL	1.5	1	1	18,000	95	19,000	47	208-230V/ 1/60	16	27	R-454B	19.5/ 11.0	1/2" / 1/4"	112	6/S-603	1, 2, 3, 4, 5, 6
SHP-IDF	WALL MOUNTED UNIT	TRANE-MITSUBISHI	PUZ-AK12NL	1.0	1	1	12,000	95	14,000	47	208-230V/ 1/60	16	27	R-454B	21.1/ 14.8	1/2" / 1/4"	112	6/S-603	1, 2, 3, 4, 5, 6

NOTES:
1) FACTORY START-UP
2) OUTDOOR CONDENSER UNIT RATED AT 95 DEGREE F
3) PRE-ENGINEERED ISOLATOR CURB.
4) FIELD INSTALLED SEISMIC RATED SPRING ISOLATORS OR SPRING ISOLATOR CURB.
5) BACNET CONTROL CARD
6) SINGLE OUTDOOR HEAT PUMP CONNECTED TO SINGLE FAN COIL.

FAN COIL (FC) UNIT SCHEDULE

MARK	DESCRIPTION	SERVICE AREA	MAKE	MODEL # (1)	NOM. TONS	SUPPLY CFM	OUTSIDE AIR (CFM)	D/X COOLING			HEATING	ELECTRICAL		REFRIG. TYPE	REFRIG. LINE SIZES (SUCT./LIQ.)	MAX. OPER WT. (LBS)	STRUCT. ANCHOR DETAIL	NOTES
								TOTAL (BTU/HR)	SENS. (BTU/HR)	ENT AIR TEMP (DEG F)	TOTAL (BTU/HR)	VOLTAGE/ PH /HZ	MCA					
FC-1	INDOOR FAN COIL	OFFICES A125, A127, A129	MITSUBISHI	PEAD-AA18	1.50	480	40	18,000	13,500	80.0/67.0	23,500	208/1/60	2.25	R-454B	1/2" / 1/4"	60	2/M-501	1, 2, 3, 5, 7, 8, 10
FC-2	INDOOR FAN COIL	STAFF LOUNGE A128, CUSTODIAL STOR A128.1	MITSUBISHI	PEADAA12	1.00	470	110	12,000	10,800	80.0/67.0	15,000	208/1/60	2.50	R-454B	3/8" / 1/4"	58	2/M-501	1, 2, 3, 5, 6, 8, 10
FC-3	INDOOR FAN COIL	NORTH CORRIDOR	MITSUBISHI	PEAD-AA09	0.75	350	60	9,000	8,100	80.0/67.0	1,300	208/1/60	1.45	R-454B	3/8" / 1/4"	58	2/M-501	1, 2, 3, 5, 7, 8, 10
FC-4	INDOOR FAN COIL	CONFERENCE RM A124	MITSUBISHI	PEADAA12	1.00	400	70	12,000	10,800	80.0/67.0	15,000	208/1/60	2.50	R-454B	3/8" / 1/4"	58	2/M-501	1, 2, 3, 5, 6, 8, 10
FC-5	INDOOR FAN COIL	STAFF'S WORK RM A117, STORAGE A117.1	MITSUBISHI	PEAD-AA15	1.25	550	170	15,000	13,500	80.0/67.0	20,900	208/1/60	2.25	R-454B	1/2" / 1/4"	60	2/M-501	1, 2, 3, 5, 6, 8, 10
FC-6	INDOOR FAN COIL	NURSE A120, PUBLIC RR A119	MITSUBISHI	PEAD-AA09	0.75	290	30	9,000	8,100	80.0/67.0	1,300	208/1/60	1.45	R-454B	3/8" / 1/4"	58	2/M-501	1, 2, 3, 5, 7, 8, 10
FC-7	INDOOR FAN COIL	PRINCIPAL'S OFFICE A115. INCENTIVE RM A116	MITSUBISHI	PEAD-AA15	1.25	570	130	15,000	13,500	80.0/67.0	20,900	208/1/60	2.25	R-454B	1/2" / 1/4"	60	2/M-501	1, 2, 3, 5, 7, 8, 10
FC-8	INDOOR FAN COIL	FOOD SERVICE A113	MITSUBISHI	PEAD-AA18	1.50	600	210	18,000	13,500	80.0/67.0	23,500	208/1/60	2.25	R-454B	1/2" / 1/4"	60	2/M-501	1, 2, 3, 5, 7, 8, 10
FC-MDF	WALL MOUNTED FAN COIL	MDF ROOM	MITSUBISHI	PKA-AL18NL	1.5	400	0	18,000	12,240	80.0/67.0	23,600	208/1/60	1.00	R-454B	1/2" / 1/4"	28	5/M-502 & 3/S-601	3, 4, 5, 7, 8, 9, 11
FC-IDF	WALL MOUNTED FAN COIL	IDF ROOM	MITSUBISHI	PKA-AL12NL	1.0	400	0	12,000	9,720	80.0/67.0	18,000	208/1/60	1.00	R-454B	1/2" / 1/4"	28	5/M-502 & 3/S-601	3, 4, 5, 7, 8, 9, 11

NOTES:
1) FIELD INSTALLED FILTER BOX W/ MERV 13 FILTERS (2" THICK) FILTERS.
2) SUSPENDED FROM STRUCTURAL SUPPORTS WITH SEISMIC RATED SPRING ISOLATORS.
3) BUILT-IN UNIT CONDENSATE PUMP
4) WALL MOUNTED WITH BRACKET
5) CONNECTED TO INDIVIDUAL SINGLE OUTDOOR UNIT (HP/CU)
6) PROGRAMMABLE THERMOSTAT WITH OCCUPANCY SENSOR
7) PROGRAMMABLE THERMOSTAT
8) POWERED THRU OUTDOOR UNIT
9) NO VENTILATION SINCE UNOCCUPIED TELECOM/ELECTRICAL ROOM
10) VENTILATION PROVIDED BY SEPARATE AIR INTAKE CONNECTED TO RETURN WITH MANUAL BALANCING DAMPER.
11) F&I WALL MOUNTED FAN COILS FOR MDF/IDF ROOMS.

EXHAUST FAN (EF) SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	CFM	STATIC PRESS (IN.)	OPERATING POWER (HP)	MOTOR POWER (HP)	FAN RPM	MOTOR (V/PH/HZ)	EQUIP. WT. (LBS)	WT. W/ CURB & ACCESS. (LBS)	STRUCT. ANCHOR DETAIL	REMARKS
EF-1	ADMIN INTERIOR RESTROOMS A122 & 123, PUBLIC RR A119, STORAGE A117.1	GREENHECK	G-095-VG	300	0.60	0.08	0.17	1475	115-1-60	33	57	10/S612	DIRECT DRIVE DOWNBLAST FAN POSITION. VARI-GREEN EC MOTOR WITH DIAL OR 0-10VDC INPUT. DIAL FOR BALANCING. GRAVITY OPERATED BACK DRAFT DAMPER AND CURB. FAN TO BE TIED TO TIMER CLOCK LOCATED IN STORAGE
EF-2	ADMIN EXTERIOR RESTROOMS A112 & ALL GENDER RR A130	GREENHECK	G-095-VG	300	0.60	0.08	0.17	1475	115-1-60	33	57	10/S612	DIRECT DRIVE DOWNBLAST FAN POSITION. VARI-GREEN EC MOTOR WITH DIAL OR 0-10VDC INPUT. DIAL FOR BALANCING. GRAVITY OPERATED BACK DRAFT DAMPER AND CURB. FAN TO BE TIED TO TIMER CLOCK LOCATED IN STORAGE
EF-3	CUSTODIAL STORAGE A128.1	GREENHECK	G-097-VG	110	0.50	0.08	0.25	1137	115-1-60	42	69	10/S612	DIRECT DRIVE DOWNBLAST FAN POSITION. VARI-GREEN EC MOTOR WITH DIAL OR 0-10VDC INPUT. DIAL FOR BALANCING. GRAVITY OPERATED BACK DRAFT DAMPER AND CURB. FAN TO BE TIED TO TIMER CLOCK LOCATED IN CUSTODIAL STOR.
EF-4	FOOD SERVICE A113	GREENHECK	G-095-VG	210	0.60	0.04	0.17	1050	115-1-60	33	57	10/S612	DIRECT DRIVE DOWNBLAST FAN POSITION. VARI-GREEN EC MOTOR WITH DIAL OR 0-10VDC INPUT. DIAL FOR BALANCING. GRAVITY OPERATED BACK DRAFT DAMPER AND CURB. FAN TO BE TIED TO TIMER CLOCK LOCATED IN JAN CLOSET.
EF-5	JAN. CLOSET/ ELECTRICAL ROOM	GREENHECK	G-097-VG	130	0.50	0.08	0.25	1137	115-1-60	42	69	10/S612	DIRECT DRIVE DOWNBLAST FAN POSITION. VARI-GREEN EC MOTOR WITH DIAL OR 0-10VDC INPUT. DIAL FOR BALANCING. GRAVITY OPERATED BACK DRAFT DAMPER AND CURB. FAN TO BE TIED TO TIMER CLOCK LOCATED IN ELECTRICAL RM.
EF-6	ACCESSIBLE RR B132 & ALL GENDER RR B132	GREENHECK	G-095-VG	300	0.60	0.08	0.17	1475	115-1-60	33	57	10/S612	DIRECT DRIVE DOWNBLAST FAN POSITION. VARI-GREEN EC MOTOR WITH DIAL OR 0-10VDC INPUT. DIAL FOR BALANCING. GRAVITY OPERATED BACK DRAFT DAMPER AND CURB. FAN TO BE TIED TO TIMER CLOCK LOCATED IN STORAGE

APPROVED
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LICENSED ARCHITECT
EDWARD M. MAXEY
No. 30788
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

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PACKAGED ROOFTOP HEAT PUMP (HP) UNIT SCHEDULE

MARK	DESCRIPTION	SERVICE AREA	MAKE	1 MODEL #	NOM. TONS	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	SUPPLY FAN ESP (IN)	SUPPLY FAN (BHP)	SUPPLY FAN MOTOR SIZE (HP)	COMP. QTY	CONDENSER FAN (QTY)	D/X COOLING				HEATING		ELECTRICAL			REFRIG. TYPE	FILTERS (MERV)	ENERGY EFFICIENCY RATIO (SEER/EER)	MAX. OPER. EQUIP. WT (LBS)	CURB WT (LBS)	ECONO-MIZER & POWER EXH (LBS)	TOTAL WT (LBS)	STRUCT. ANCHOR DETAIL	NOTES
													TOTAL (MBH)	SENSIBLE CAPACITY (MBH)	ENT AIR TEMP (DB/WB)	OUTSIDE AIR (DEG F)	SENSIBLE (MBH)	OUTSIDE AIR (DEG F)	VOLTAGE/ PHASE/HZ	MCA	MOP								
HP-1	PACKAGED HEAT PUMP UNIT	CLASSROOM A101	TRANE	WHK036A3	3	1,100	350 DCV: 150	1.0	0.48	3.0	1	1	36.1	27.5	80 / 67	95	34	47	208-230V/ 3/60	23	30	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	901	505	0	1,406	3/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-2	PACKAGED HEAT PUMP UNIT	CLASSROOM A102	TRANE	WHK036A3	3	1,100	350 DCV: 150	1.0	0.48	3.0	1	1	36.1	27.5	80 / 67	95	34	47	208-230V/ 3/60	23	30	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	901	505	0	1,406	3/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-3	PACKAGED HEAT PUMP UNIT	CLASSROOM A103	TRANE	WHK036A3	3	1,100	350 DCV: 150	1.0	0.48	3.0	1	1	36.1	27.5	80 / 67	95	34	47	208-230V/ 3/60	23	30	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	901	505	0	1,406	3/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-4	PACKAGED HEAT PUMP UNIT	CLASSROOM C104	TRANE	WHK036A3	3	1,100	350 DCV: 150	1.0	0.48	3.0	1	1	36.1	27.5	80 / 67	95	34	47	208-230V/ 3/60	23	30	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	901	505	0	1,406	3/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9, 10
HP-5	PACKAGED HEAT PUMP UNIT	CLASSROOM B106	TRANE	WHK048A3	4	1,600	375 DCV: 150	1.0	0.62	3.0	1	1	49.9	38.6	80 / 67	95	45	47	208-230V/ 3/60	28	40	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	929	505	0	1,434	4/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-6	PACKAGED HEAT PUMP UNIT	CLASSROOM B105	TRANE	WHK048A3	4	1,600	375 DCV: 150	1.0	0.62	3.0	1	1	49.9	38.6	80 / 67	95	45	47	208-230V/ 3/60	28	40	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	929	505	0	1,434	4/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-7	PACKAGED HEAT PUMP UNIT	CLASSROOM B107	TRANE	WHK048A3	4	1,600	375 DCV: 150	1.0	0.62	3.0	1	1	49.9	38.6	80 / 67	95	45	47	208-230V/ 3/60	28	40	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	929	505	0	1,434	4/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-8	PACKAGED HEAT PUMP UNIT	CLASSROOM B108	TRANE	WHK048A3	4	1,600	375 DCV: 150	1.0	0.62	3.0	1	1	49.9	38.6	80 / 67	95	45	47	208-230V/ 3/60	28	40	R-454B	13 (2" DEEP)	16.8 (SEER)/13.5	929	505	0	1,434	4/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-9	PACKAGED HEAT PUMP UNIT	ADMIN LOBBY 209 / WELCOME CTR A133	TRANE	WHK060A3	5	1,900	180	1.0	0.74	3.0	1	1	60.6	46.9	80 / 67	95	56	47	208-230V/ 3/60	31	45	R-454B	13 (2" DEEP)	16.4 (SEER)/13.5	949	505	0	1,454	4/M502 & 7/S612	1, 2, 3, 4, 5, 6, 7, 9
HP-A	PACKAGED HEAT PUMP UNIT	ASSEMBLY SPACE / PLATFORM B109	TRANE	WSK240A3	20	7,000	1830 DCV : 660	1.5	4.22	5	2	2	240.2	179.3	80 / 67	95	228	47	208-230V /3/60	108	150	R-454B	13 (2" DEEP)	12.50 (IEER)/9.5	2,183	727	736	3,646	2/M502 & 7/S612	1, 2, 3, 4, 5, 6, 8, 9

NOTES:
1) FACTORY START-UP
2) FAULT DIAGNOSTIC SOFTWARE AND PROGRAMMING
3) PRE-ENGINEERED SEISMIC ISOLATOR CURB.(14" HEIGHT) FIELD INSTALLED.
4) SINGLE ZONE VAV UNIT WITH SUPPLY FAN MODULATION.
5) BACNET CONTROL CARD
6) PROGRAMMABLE THERMOSTAT WITH OCCUPANCY SENSOR
7) FIELD INSTALLED ECONOMIZER WITH 100% BAROMETRIC RELIEFF. DEMAND CONTROL VENTILATION CAPABILITY WITH CO2 SENSOR
8) FIELD INSTALLED ECONOMIZER WITH MODULATING POWER EXHAUST. DEMAND CONTROL VENTILATION CAPABILITY WITH CO2 SENSOR
9) INSTALL WITH DUCT DETECTOR ON SA DUCT AND INTERLOCK WITH HVAC UNIT FOR SHUTDOWN OF EQUIPMENT. SEE FIRE ALARM DRAWINGS.
10) EQUIPMENT AND ALL ASSOCIATED DUCTWORK SHALL BE DEDUCT ALTERNATE DURING BIDDING

ECONOMIZER AND POWER EXHAUST (PE) SCHEDULE

MARK	EQUIPMENT SERVED	MAKE	MODEL	HORSE - POWER (HP)	DISCHARGE CFM	ESP (IN. WG)	VOLT/PH/ HERTZ	FLA (AMPS)	MCA	MOCP (AMPS)	OPER. WEIGHT (LBS)	NOTES
PE-HP-A	HP-A	CANFAB	6114-MPE	3	6,500	0.5	208/3/60	9.2	11.5	20.7	736	1, 2, 3, 4

NOTES:
1) INTEGRATE WITH HVAC EQUIPMENT AND TEST TO ENSURE POWER EXHAUST OPERATES DURING ECONOMIZER MODE.
2) MODULATING POWER EXHAUST WITH VARIABLE SPEED DRIVE WITH PRESSURE TEST TUBE IN RETURN AIR DUCT.
3) DRY BULB SENSORS.
4) EQUIPMENT IS ATTACHED TO ROOFTOP EQUIPMENT AND DOES NOT REQUIRE STRUCTURAL SUPPORTS.

DIFFUSER/GRILLE SCHEDULE

TERMINAL MARK	NECK SIZE	SIZE (IN)	AIR FLOW PATTERN	CFM RANGE	MANUF.	MODEL	CONSTRUCTION TYPE	NOTES:
CD-1	8" DUCT DIA	8X8	4-WAY	75-140	KRUEGER	6500	STEEL	1, 2, 6
	10" DUCT DIA	8X8	4-WAY	140-250	KRUEGER	6500	STEEL	1, 2, 6
	12" DUCT DIA	10X10	4-WAY	251-425	KRUEGER	6500	STEEL	1, 2, 6
	14" DUCT DIA	12X12	4-WAY	426-625	KRUEGER	6500	STEEL	1, 2, 6
	16" DUCT DIA	14X14	4-WAY	626-900	KRUEGER	6500	STEEL	1, 2, 6
CD-2	6" DUCT DIA	6" DIA	4-WAY	50-110	KRUEGER	1240	STEEL	1, 5
	8" DUCT DIA	8" DIA	4-WAY	111-280	KRUEGER	1240	STEEL	1, 5
	10" DUCT DIA	10" DIA	4-WAY	281-500	KRUEGER	1240	STEEL	1, 5
	12" DUCT DIA	12" DIA	4-WAY	501-725	KRUEGER	1240	STEEL	1, 5
	14" DUCT DIA	14" DIA	4-WAY	726-1050	KRUEGER	1240	STEEL	1, 5
SWD-1	VARIOUS	12X6	2-WAY	170-250	KRUEGER	880	STEEL	4
	VARIOUS	24X10	2-WAY	400-725	KRUEGER	880	STEEL	4
RAG-1/EAG-1	6" DUCT DIA	6" DIA	1-WAY	75-140	KRUEGER	6690	STEEL	1, 2, 6, 8
	8" DUCT DIA	8" DIA	1-WAY	140-250	KRUEGER	6690	STEEL	1, 2, 6, 8
	10" DUCT DIA	10" DIA	1-WAY	251-425	KRUEGER	6690	STEEL	1, 2, 6, 8
	12" DUCT DIA	12" DIA	1-WAY	426-625	KRUEGER	6690	STEEL	1, 2, 6, 8
	14" DUCT DIA	14" DIA	1-WAY	626-900	KRUEGER	6690	STEEL	1, 2, 6, 8
	16" DUCT DIA	16" DIA	1-WAY	901-1300	KRUEGER	6690	STEEL	1, 2, 6, 8
RAG-2/EAG-2	DUCT SIZE	8X8	1-WAY	0-150	KRUEGER	S80-30	STEEL	1, 3, 4, 5
	DUCT SIZE	16X16	1-WAY	151-750	KRUEGER	S80-30	STEEL	1, 3, 4, 5
	DUCT SIZE	18X18	1-WAY	751-950	KRUEGER	S80-30	STEEL	1, 3, 4, 5
	DUCT SIZE	20X20	1-WAY	951-1250	KRUEGER	S80-30	STEEL	1, 3, 4, 5
	DUCT SIZE	30X30	1-WAY	1251-2500	KRUEGER	S80-30	STEEL	1, 3, 4, 5
RAG-3/EAG-3	VARIOUS	18X10	1-WAY	300-500	KRUEGER	S80-0	STEEL	1, 3, 5
	VARIOUS	24X12	1-WAY	501-900	KRUEGER	S80-0	STEEL	1, 3, 5
	VARIOUS	42X12	1-WAY	901-1300	KRUEGER	S80-0	STEEL	1, 3, 5

NOTES:
1) PROVIDE ALL NECESSARY TRANSITIONS FOR DIFFUSERS AND GRILLES. COORDINATE WITH SITE AND ARCHITECTURAL PLANS
2) PERFORATED FACE
3) BLADES PARALLEL TO LONG DIMENSION
4) DUCT SUPPORTED/MOUNTED
5) WALL/CEILING SURFACE MOUNTED
6) LAY-IN CEILING WITH BORDER
7) INSTALL WITH SOUND BOOT (ELBOW WITH MIN 6 FEET OF ROUND/RECTANGULAR DUCTWORK)
8) ALL OPEN OFFICE/AREAS SHALL HAVE 14" DIAMETER NECK FOR RETURN GRILLES. ALL OTHER ENCLOSED OFFICES SHALL MATCH THE SUPPLY SIZE.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAZENKO
NO. C-30280
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION

VENTURA COUNTY OFFICE OF EDUCATION
550 AIRPORT WAY, CAMARILLO, CA 93010

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SCALE	AS NOTED
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DATE	10/23/2026
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MECHANICAL SCHEDULES

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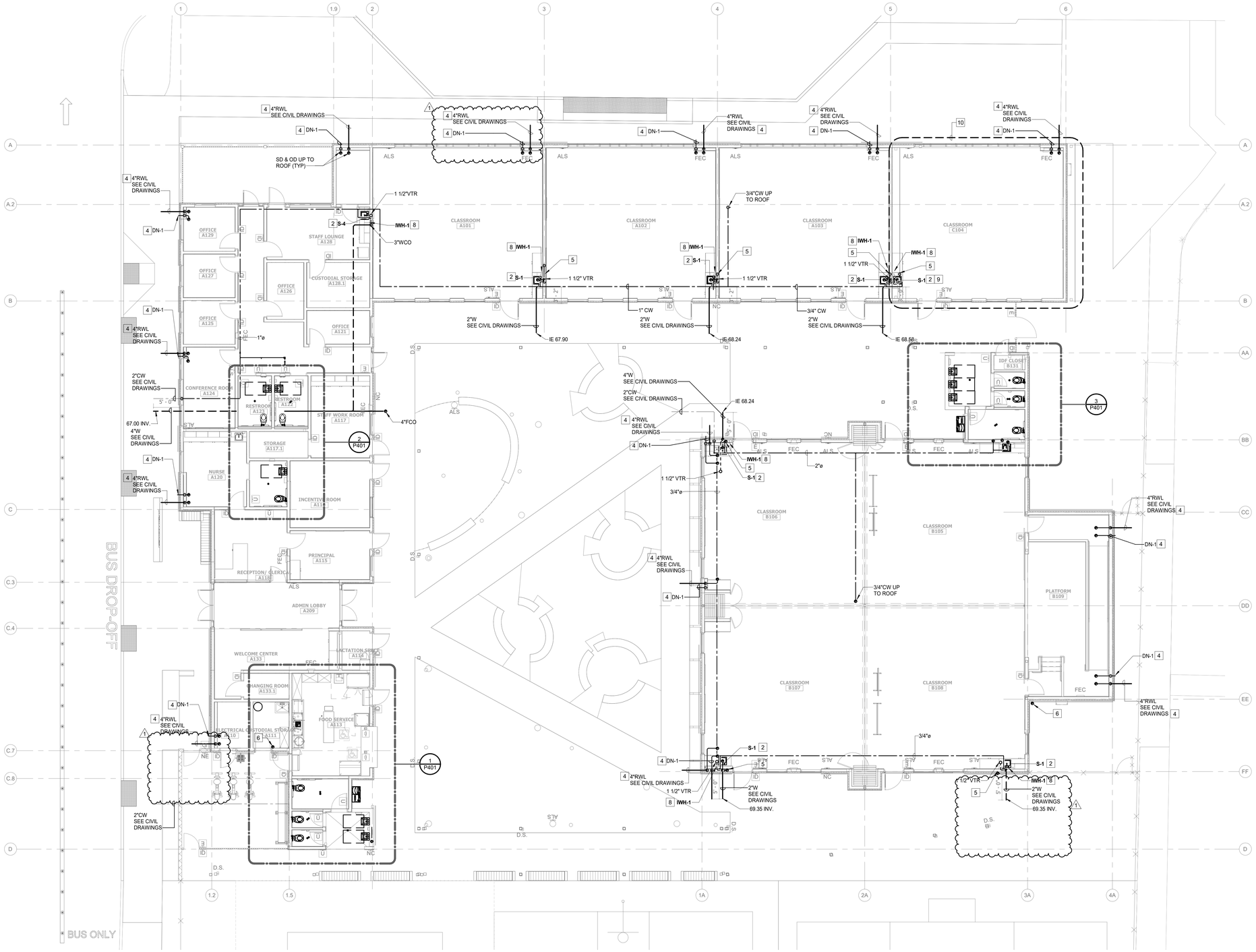
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1 P101 **PLUMBING - FIRST FLOOR PLAN**
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. XXX

REFERENCE SHEET NOTES

1. F&I WALL MOUNTED LAVATORY (LAV-1).
2. F&I DROP IN SINK.
3. NOT USED
4. 4"SD/OD UP TO ROOF. 4" SD DOWN W/ CONNECTION TO SD PER CIVIL & 4" OD TERMINATE AT DAYLIGHT TO 12" ABOVE FINISH GRADE.
5. CONDENSATE DRAIN DOWN FROM ROOF TO LAVATORY TAILPIECE.
6. FIRE WATER PIPE (6" DIAMETER) AND BUILDING ENTRY PER DETAIL 13/P-5.1. CONTRACTOR TO COORDINATE WITH CIVIL DRAWINGS AND FIRE PROTECTION DRAWINGS FOR EXACT SIZING AND INSTALLATION REQUIREMENTS.
7. MAIN CW SOV IN LOCKABLE ACCESS PANEL (AP-2).
8. F&I ELECTRIC INSTANT WATER HEATER BELOW LAVATORY/SINK WITH MIXING VALVE. SEE DETAIL 3/P-501.
9. DEDUCT ALTERNATE FOR ALL PLUMBING REQUIRED IN CLASSROOM C104.
10. CONTRACTOR SHALL BID THIS PORTION OF THE BUILDING AS DEDUCT ALT #1.

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APP: 03-122398 INC:
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LICENSED ARCHITECT
TED M. MATSUI
No. C-30166
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

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PLUMBING 1ST FLOOR PLAN

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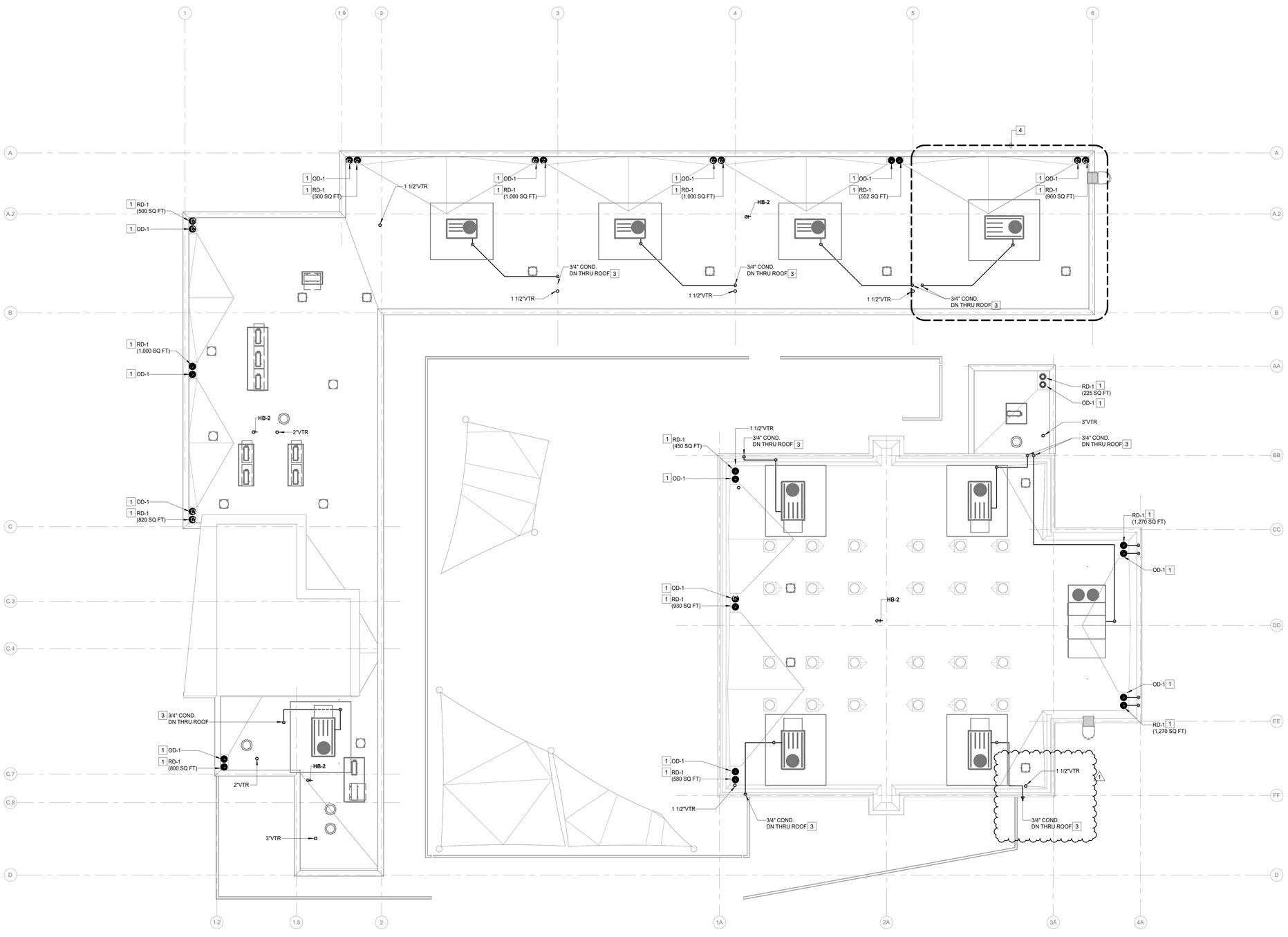
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VERTICAL RWL SIZING CALCULTION		
RECOMMENDED SIZE (IN. DIA.)	MAXIMUM FLOW (GPM)	MAX ROOF AREA (SF) PER 2019 CPC TABLE 1103.1
3"	42	4,400
4"	79	9,200

NOTES:
1. CALCULATIONS ARE BASED THE 60 MINUTE STORM DURATION AND 100 YEAR RETURN PERIOD FOR CAMARILLO, CA.
   RAINFALL = 1.5 IN/HR
   FLOW = 0.016 GPM/SF
2. MAX ROOF AREA, FOR GUTTER SIZING, BASED ON AN 8" GUTTER WITH 1/8" PER LINEAR FOOT SLOPE. VALUES TAKEN FROM TABLE 1103.1.
3. FOR MAX ROOF AREA AND RWL SIZE, USING 2 IN/HR OF RAINFALL AS INPUT TO TABLE.
4. PER CPC TABLE 1103.1, FOR VERTICAL RAINWATER SIZING, MAXIMUM FLOW FOR 3" DIA. RWL IS 92 GPM AND 4" DIA. RWL IS 192 GPM



1 P141 **PLUMBING ROOF PLAN**
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. XXX

REFERENCE SHEET NOTES

1. F&I ROOF DRAIN, OVERFLOW DRAIN PER DETAIL 4/P501.
2. HOSE BIBB W/ CW PIPE DOWN THRU ROOF WITH WATERPROOFING.
3. CONDENSATE DRAIN W/ P-TRAP FOR HVAC UNITS PER DETAIL 6/P501. SLOPE PIPE ON ROOF AND ROUTE THROUGH ROOF DOWN TO 1ST FLOOR LAVATORY TAILPIECE PER DETAIL 12/P501 OR JANITOR'S SINK FOR INDIRECT WASTE W/ 1" AIR GAP (TYP).
4. CONTRACTOR SHALL BID THIS PORTION OF THE BUILDING AS DEDUCT ALT #1.

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NO. 34288
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PLUMBING ROOF PLAN

P141

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GENERAL SHEET NOTES

A. ALL SANITARY SEWER PIPING SHALL BE SLOPED 1/4" PER LINEAR FOOT.

B. REFER TO PLUMBING SCHEDULE FOR PIPE CONNECTION SIZES OF INDIVIDUAL FIXTURES.

C. REFERE TO ARCHITECURAL FIXTRES FOR ADA FIXTURES ADN MOUNTING HEIGHTS.

D. CONTRACTOR SHALL PROVIDE TRAP PRIMER FOR ALL FLOOR DRAINS. SEE DETAIL 5/P501.

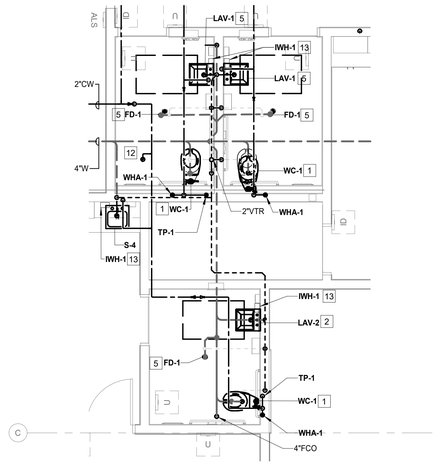
E. WATER HAMMER ARRESTORS SHALL BE INSTALLED WHERE QUICK-CLOSING VALVES ARE UTILIZED. WATER HAMMER ARRESTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

REFERENCE SHEET NOTES

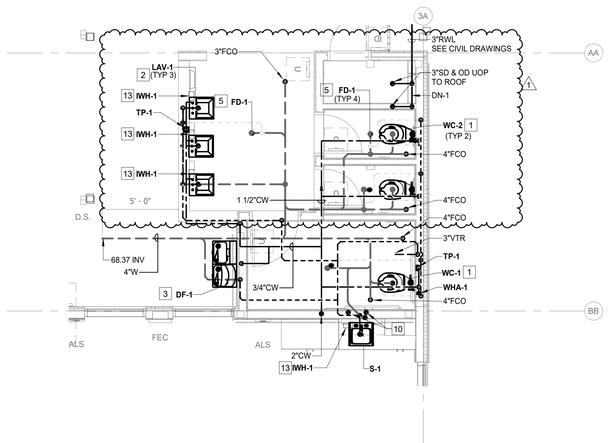
1. F&I FLOOR MOUNTED WATER CLOSET (WC) PER PLANS AND SCHEDULES.
2. F&I WALL MOUNTED LAVATORY PER PLANS AND SCHEDULES.
3. F&I "HI-LO" ADA DRINKING FOUNTAIN.
4. F&I EXPOSED HOSE BIBB WITH INTEGRAL VACUUM BREAKER.
5. F&I FLOOR DRAIN WITH TRAP PRIMER. SEE DETAIL 5/P501
6. F&I ELECTRIC TANK TYPE WATER HEATER WITH STAND. INSTALL WITH SECONDARY PAN AND T&P VALVE WITH DISCHARGE TO INDIRECT WASTE. INSTALL WITH CIRCULATION PUMP. INSTALL PER DETAIL 9/P501 & 10/P501.
7. FLOOR SINK FOR UNDER THREE COMPARTMENT SINK (SEE FOOD SERVICE -QF DRAWINGS) WITH TRAP PRIMER CONNECTION.
8. MOP SINK (SEE FOOD SERVICE -QF DRAWINGS).
9. KITCHEN SINK (SEE FOOD SERVICE -QF DRAWINGS).
10. CONDENSATE DRAIN DOWN FROM ROOF TO LAVATORY TAILPIECE OR JANITOR'S SINK FOR INDIRECT WASTE W/ 1" AIR GAP (TYP).
11. MAIN CW SOV IN LOCKABLE ACCESS PANEL (AP-2).
12. 3/4"CW UP TO HOSE BIBB AT ROOF.
13. F&I ELECTRIC INSTANT WATER HEATER BELOW LAVATORY/SINK WITH MIXING VALVE. SEE DETAIL 3/P-501.

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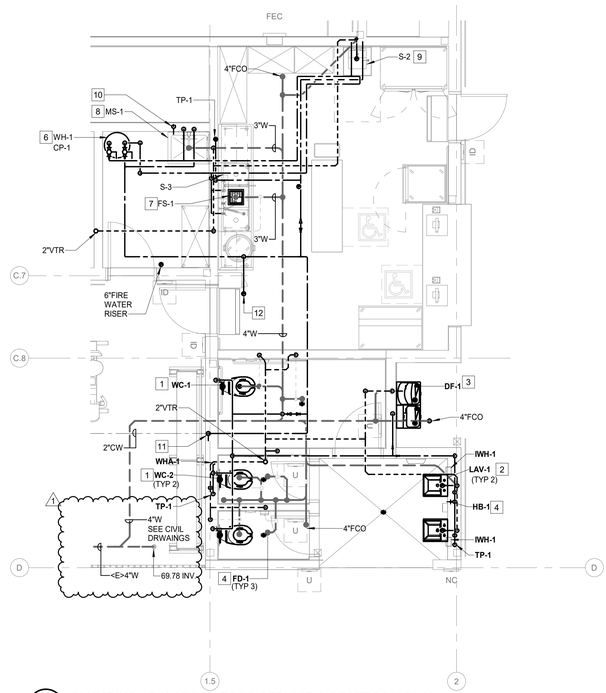
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STATE OF CALIFORNIA



2 P401 **PLUMBING - ENLARGED RESTROOM A122 & A123 PLAN**
SCALE: 1/4" = 1'-0"



3 P401 **PLUMBING - ENLARGED RESTROOM PLAN**
SCALE: 1/4" = 1'-0"



1 P401 **PLUMBING - ENLARGED FOOD SERVICE & RESTROOM PLAN**
SCALE: 1/4" = 1'-0"

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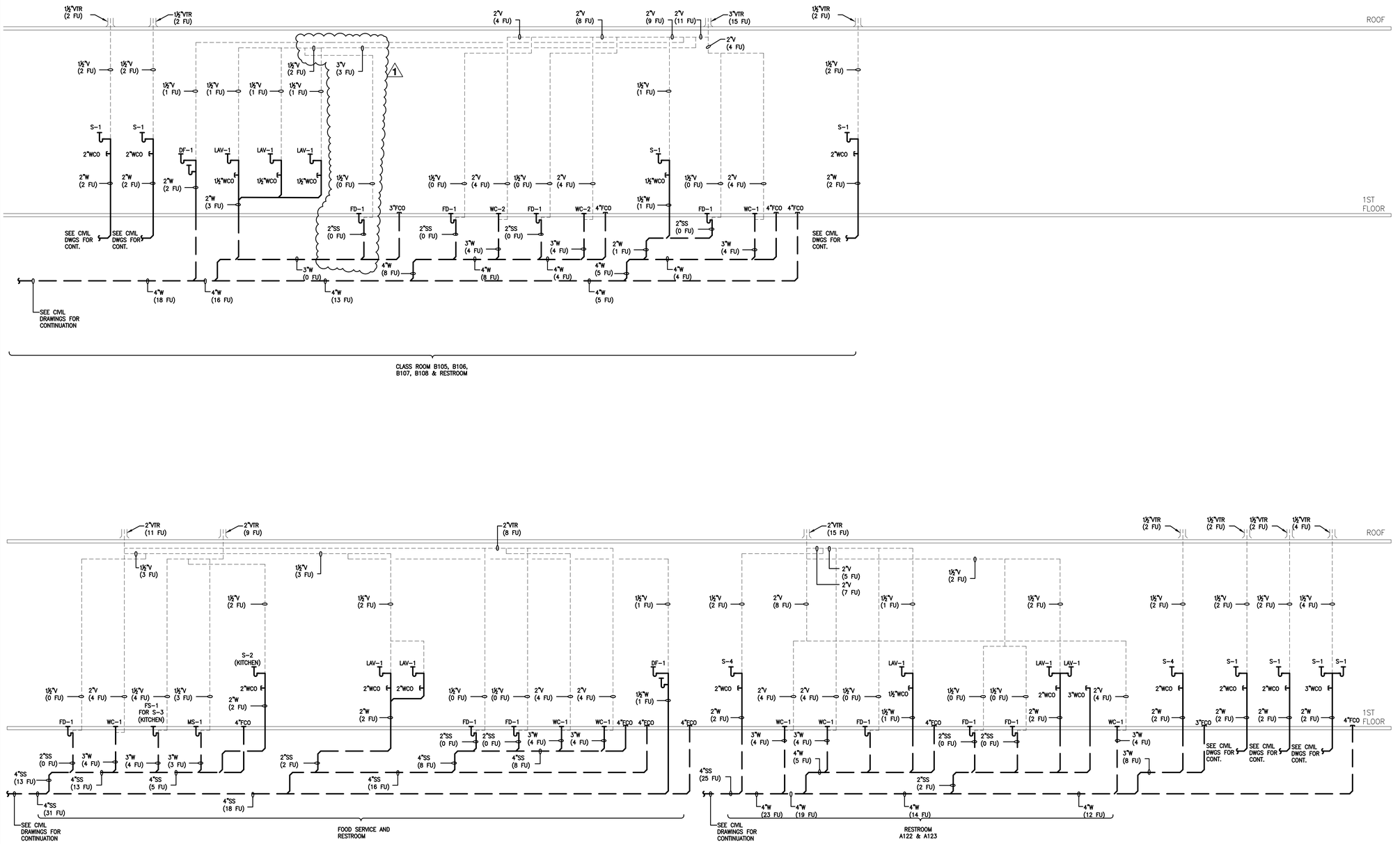
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PLUMBING ENLARGED PLANS

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1 SEWER AND VENT SYSTEM
SCALE: N.T.S.

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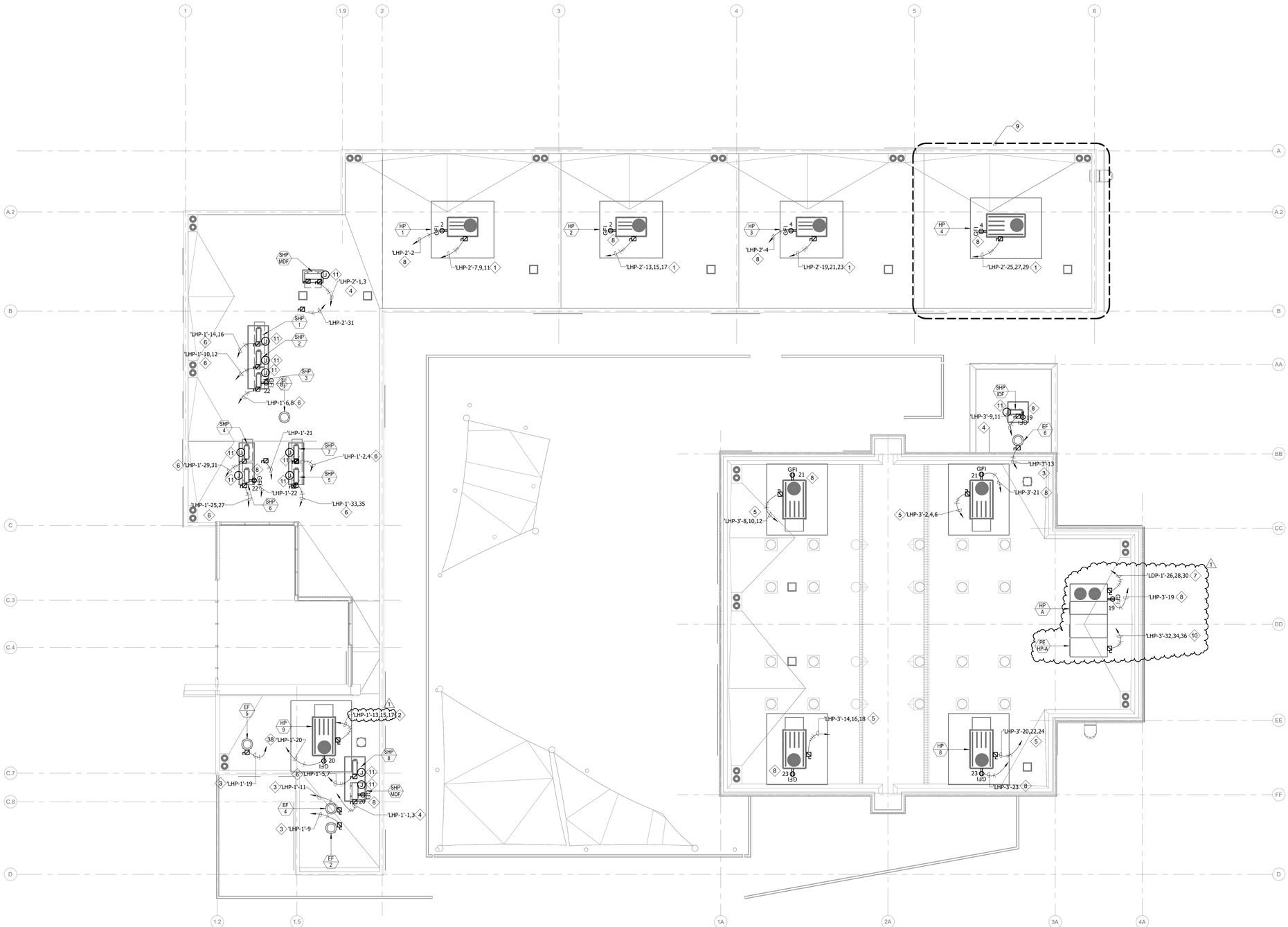
PLUMBING
RISER DIAGRAM

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1 E141 **ELECTRICAL - ROOF PLAN**
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR ADDITIONAL REQUIREMENTS.

B. CONDUITS ON ROOF SHALL BE MOUNTED ON DURABLOCKS.

REFERENCE SHEET NOTES

1. PROVIDE 208V, 3PH, 30A FUSED DISCONNECT WITH 30A FUSE MOUNTED ON FREE-STANDING UNI-STRUT. PROVIDE 1"C - 3#10 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
2. PROVIDE 208V, 3PH, 60A FUSED DISCONNECT WITH 45A FUSE MOUNTED ON FREE-STANDING UNI-STRUT. PROVIDE 1"C - 3#6 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
3. PROVIDE MOTOR RATED TOGGLE SWITCH MOUNTED ADJACENT TO MECHANICAL EQUIPMENT. PROVIDE 3/4"C - 2#10 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
4. PROVIDE 208V, 3PH, 30A FUSED DISCONNECT WITH 25A FUSE MOUNTED ON FREE-STANDING UNI-STRUT. PROVIDE 1"C - 2#10 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
5. PROVIDE 208V, 3PH, 60A FUSED DISCONNECT WITH 40A FUSE MOUNTED ON FREE-STANDING UNI-STRUT. PROVIDE 1"C - 3#6 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
6. PROVIDE 208V, 3PH, 30A FUSED DISCONNECT WITH 15A FUSE MOUNTED ON FREE-STANDING UNI-STRUT. PROVIDE 1"C - 2#10 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
7. PROVIDE 208V, 3PH, 200A FUSED DISCONNECT WITH 150A FUSE MOUNTED ON FREE-STANDING UNI-STRUT. PROVIDE 2"C - 3#1/0 & 1#6 GND FROM PANEL AND CIRCUIT SHOWN.
8. PROVIDE PEDESTAL MOUNTED RECEPTACLE WITH WHILE IN USE, WEATHER PROOF COVER. PROVIDE 1"C - 2#10 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
9. CONTRACTOR SHALL BID THIS PORTION OF THE BUILDING AS DEDUCT ALT #1.
10. PROVIDE 208V, 3PH, 30A FUSED DISCONNECT WITH 20A FUSE MOUNTED ON FREE-STANDING UNI-STRUT. PROVIDE 1"C - 3#10 & 1#10 GND FROM PANEL AND CIRCUIT SHOWN.
11. PROVIDE JUNCTION BOX FOR INDOOR UNIT. PROVIDE 3/4"C FROM OUTDOOR UNIT TO ASSOCIATED INDOOR UNIT. REFER TO MANUFACTURER FOR COMPLETE INSTALLATION. REFER TO MECHANICAL PLANS FOR ADDITIONAL INFORMATION.

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DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAZENKO
NO. C-30284
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

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550 Airport Way, Camarillo, CA 93010

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ELECTRICAL ROOF PLAN - AUXILIARY

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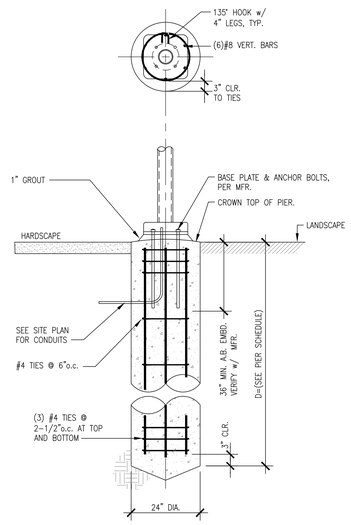
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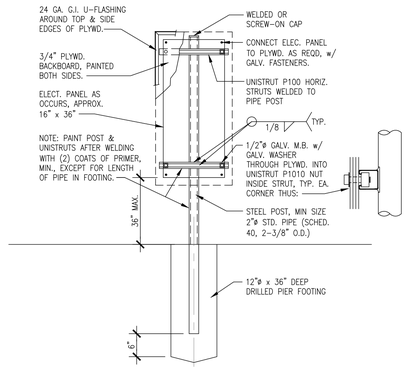
AREA LIGHT PIER DEPTH SCHEDULE				
		FOOTING/PIER DEPTH		
POLE HEIGHT	FOOTING DIAMETER	LANDSCAPE	CONC. WALK	FIXTURE WEIGHT
15'	24"	7'-0"	6'-0"	LESS THAN 40 LBS



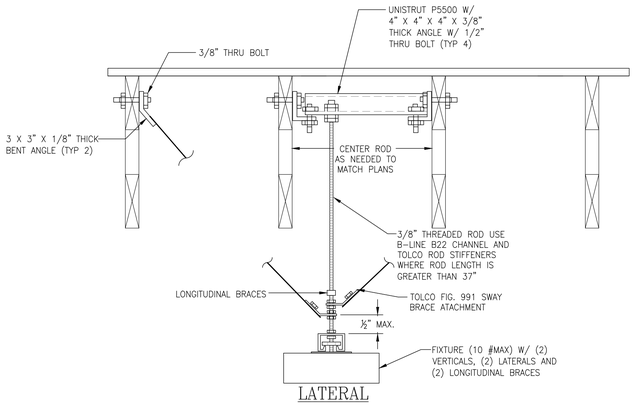
NOTES:

1. NEW MATERIALS SHALL BE AS FOLLOWS:
   - CONCRETE: NORMAL WEIGHT CONCRETE, 28-DAY COMPR. STRENGTH CONCRETE OF 3,000 PSI MIN. MAX SLUMP OF 4".
   - CONCRETE REINFORCING: DEFORMED BAR, ASTM A615, GRADE 40 FOR #4 & SMALLER, GRADE 60 FOR #5 & LARGER
2. SPECIAL INSPECTIONS:
   PROVIDE CONTINUOUS INSPECTION FOR THE FOLLOWING: CONCRETE: EXCAVATION, FINAL PLACEMENT OF REBAR, TAKING OF TEST SPECIMENS.
3. TESTING:
   * CONCRETE: CAST (4) CYLINDERS, TEST AT 7, 14 & 28 DAYS (HOLD EXTRA FOR 60 DAYS). TEST SLUMP.

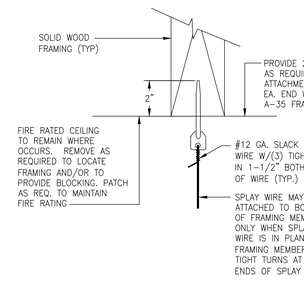
11 AREA LIGHT BASE
SCALE: N.T.S.



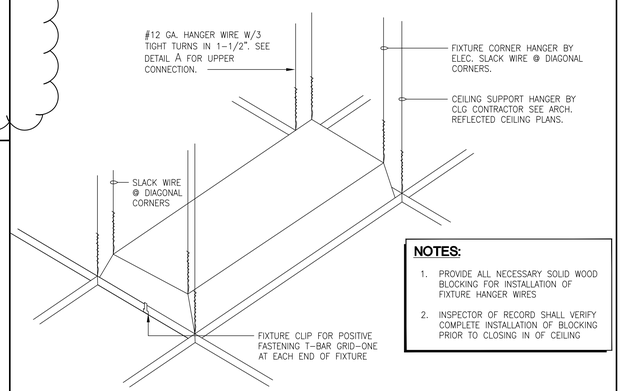
10 EXTERIOR PANEL MOUNTING
SCALE: N.T.S.



5 PENDANT MOUNT - OPEN CEILING
SCALE: N.T.S.



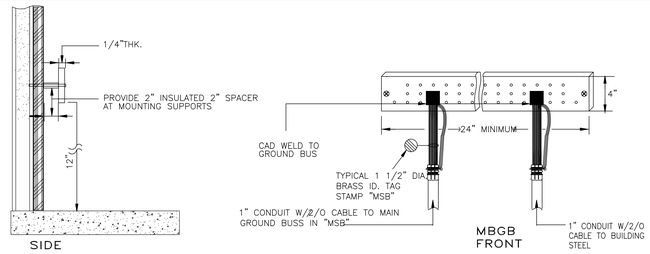
WOOD CEILING



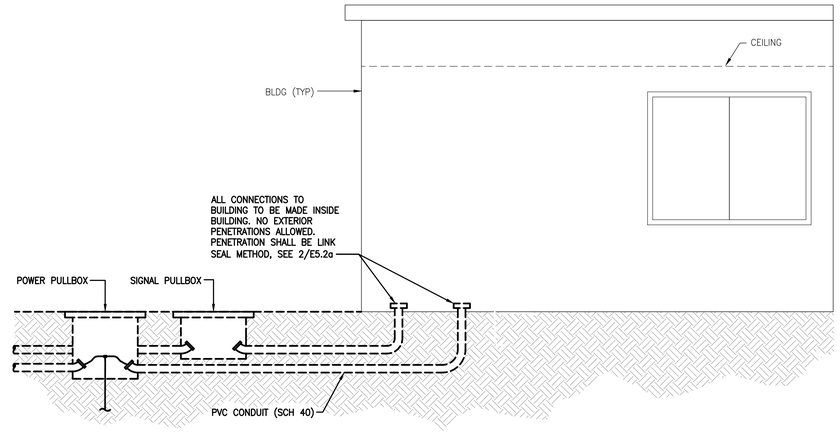
NOTES:

1. PROVIDE ALL NECESSARY SOLID WOOD BLOCKING FOR INSTALLATION OF FIXTURE HANGER WIRES
2. INSPECTOR OF RECORD SHALL VERIFY COMPLETE INSTALLATION OF BLOCKING PRIOR TO CLOSING IN OF CEILING

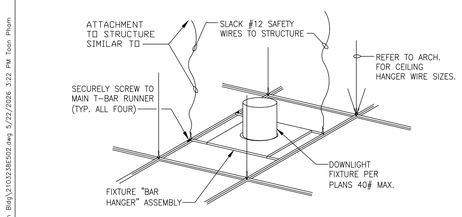
7 RECESSED TROFFER - GRID
SCALE: N.T.S.



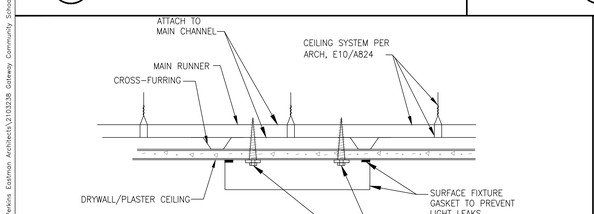
4 BUILDING GROUND BUS
SCALE: N.T.S.



3 BUILDING INTERIOR CONDUIT DIAGRAM
SCALE: N.T.S.



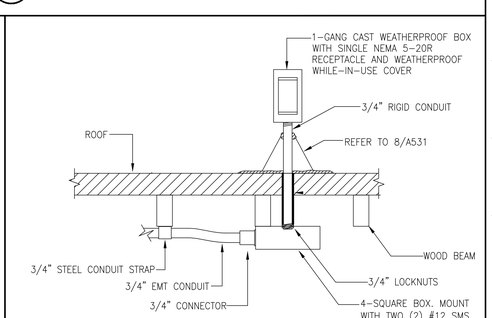
9 RECESSED DOWNLIGHT - GRID
SCALE: N.T.S.



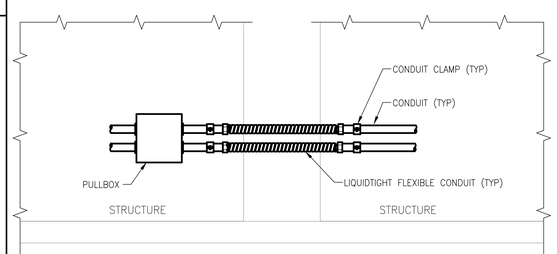
NOTES:

1. COORDINATE ALL CEILING LOCATIONS WITH CEILING CONTRACTOR & REFLECTED CEILING PLAN.
2. ADD CHANNELS WHERE MAINS ARE ARE NOT AVAILABLE.

8 SURFACE MOUNTED FIXTURE
SCALE: N.T.S.

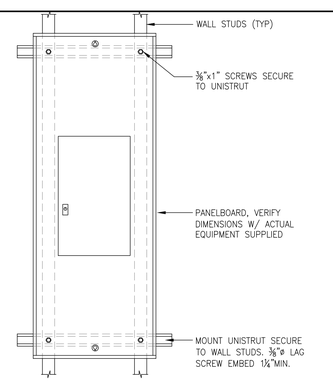


6 PEDESTAL ROOF REDCEPTACLE
SCALE: N.T.S.



NOTE:
1. TRANSITION FOR CEILING OR WALL MOUNTED INSTANCES.
2. ALL EXPOSED EQUIPMENT TO BE PAINTED TO MATCH SURROUNDING SURFACES.
3. PROVIDE TRANSITION AT ALL SEISMIC JOINTS.

2 SEISMIC JOINT TRANSITION
SCALE: N.T.S.



1 PANELBOARD MOUNTING ON STUDS
SCALE: N.T.S.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAXEY
NO. 18288
EXPIRES OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 AIRPORT WAY, CAMARILLO, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
ADD 01	10/23/2026

ELECTRICAL DETAILS

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3194 D Airport Loop Drive
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T. +1 714 427 0277
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E502

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LIGHT FIXTURE SCHEDULE

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	MOUNTING	LAMP TYPE	VOLTS	WATTS	REMARKS
EX	LITHONIA LIGHTING	EDGX-X-G	EXIT SIGN	CEILING (RECESSED/ SURFACE)	LED	MVOLT	3	
F1	LITHONIA LIGHTING	2BLT4-40L-ADP-EZ1-LP835-N100	2'X4' TROFFER FIXTURE	GRID	LED	MVOLT	38	
F1E	LITHONIA LIGHTING	2BLT4-40L-ADP-EZ1-E10WLCP-LP835-N100	SAME AS F1 EXCEPT EMERGENCY	GRID	LED	MVOLT	38	
F2	RAYON LIGHTING	RFL6-11L-35-011-6RLXX-6TLXX	6" CYLINDER FIXTURE	HARD-LID	LED	MVOLT	12.5	
F2E	RAYON LIGHTING	RFL6-11L-35-011-6RLXX-6TLXX	SAME AS F2 EXCEPT EMERGENCY	HARD-LID	LED	MVOLT	12.5	
F3	COOPER LIGHTING	LD6C159035D010MXX	6" DECORATIVE CYLINDER FIXTURE	HARD-LID	LED	MVOLT	15.5	
F4	COOPER LIGHTING	LDSQ6D159035D010SQWXX	6" DECORATIVE SQUARE FIXTURE	HARD-LID	LED	MVOLT	15.5	
F5	LITHONIA LIGHTING	STL4-40L-EZ1-LP835-N100	1'X4' STRIP FIXTURE	SURFACE	LED	MVOLT	34.9	
F6	FOCAL POINT	FSM4LS-FL-375LF-35K-1C-UNV-L11-C48XX-XX-8'	4" LINEAR PENDANT FIXTURE	PENDANT	LED	MVOLT	26	
F7	FOCAL POINT	FSM2LS-FL-375LF-35K-1C-UNV-L11-C48XX-XX-6'	2" LINEAR PENDANT FIXTURE	PENDANT	LED	MVOLT	21	
F8	COOPER LIGHTING	S122DR-S375D835-XXX-8FO-UDD-W-W	8' LINEAR RECESSED FIXTURE	GRID SLOT	LED	MVOLT	3.8 W/FT	1
F8E	COOPER LIGHTING	S122DR-S375D835-XXX-8FO-1B2-UDD-W-W	SAME AS F8 EXCEPT EMERGENCY	GRID SLOT	LED	MVOLT	3.8 W/FT	
F9	FOCAL POINT	FSM4BS-XXXX-375DN-625UP-35K-1C-L11-C48XX-XX-XX-4'	4' LINEAR PENDANT FIXTURE	PENDANT	LED	MVOLT	31	
FX1	LITHONIA LIGHTING	CLX-L24-2500LM-SEF-FDL-WD-MVOLT-GZ1-35K-80CRI	2' SURFACE MOUNT EXTERIOR FIXTURE	CANOPY	LED	MVOLT	19.9	
FX2	COOPER LIGHTING	LD8B15D010-ER8B10208035-8LBMXXX	10" RECESSED EXTERIOR FIXTURE	HARD-LID	LED	MVOLT	15.5	1
FX3	LITHONIA LIGHTING	DSXB-LED-16C-350-30K-SYM-MVOLT-PE-H36-XX	BOLLARD	GROUND	LED	MVOLT	20	
FX4	COOPER LIGHTING	GAN-SA4A-830-U-T4FT-ADJA-WM-XX-MS/DIM-L20	FLOOD LIGHT	WALL MOUNT	LED	MVOLT	129	
FX5	COOPER LIGHTING	FIXTURE: GAN-SA4A-830-U-T4FT-ADJA-XX-MS/DIM-L20 POLE: SSS-6-X-15-S-XX-XX-1-X	FLOOD LIGHT WITH POLE	POLE	LED	MVOLT	129	

INTERIOR LIGHTING FIXTURE NOTES

1. ALL FIXTURE DRIVERS SHALL BE U.L. APPROVED AND CERTIFIED PER C.E.C 2-111.
2. VERIFY CATALOG NUMBER PRIOR TO BIDDING OR PURCHASING.
3. ALL LED FIXTURE SHALL BE 3500 K UNLESS OTHERWISE NOTED.
4. SOME FIXTURES REQUIRE TO BE DIMMABLE. FIXTURE'S DIMMING BALLAST SHALL BE COMPATIBLE WITH DIMMER. SEE PLANS FOR LOCATIONS AND FIXTURES.
5. LUMINAIRE CATALOG NUMBERS USED TO ILLUSTRATE LUMINAIRE TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING. COORDINATE LUMINAIRE INSTALLATION WITH REFLECTED CEILING DRAWINGS. PROVIDE APPROPRIATE MOUNTING FRAME/KIT PER CEILING PLAN AND/OR FINISH.

FEEDER SCHEDULE

3-PHASE FEEDER SCHEDULE

FEEDER DESIGNATION ⟨XX⟩	No. OF SETS	PHASE CONDUCTOR (PER SET)	'N' NEUTRAL CONDUCTOR (PER SET)	'G' GROUND CONDUCTOR (PER SET)	'SG' SYSTEM BONDING JUMPER (PER SET)	CONDUIT SIZE FOR 3-PHASE & GROUND (G OR GEC) (PER SET)	CONDUIT SIZE FOR 3-PHASE & NEUTRAL & GROUND (G OR GEC) (PER SET)
20	1	(3) #10	#10	#10	#8	3/4"C	3/4"C
30	1	(3) #10	#10	#10	#8	3/4"C	3/4"C
40	1	(3) #8	#8	#10	#8	3/4"C	3/4"C
50	1	(3) #6	#6	#10	#8	1"C	1"C
60	1	(3) #4	#4	#10	#8	1-1/4"C	1-1/4"C
70	1	(3) #4	#4	#8	#8	1-1/4"C	1-1/4"C
80	1	(3) #2	#2	#8	#8	1-1/2"C	1-1/2"C
90	1	(3) #2	#2	#8	#8	1-1/2"C	1-1/2"C
100	1	(3) #1	#1	#8	#6	1-1/2"C	2"C
125	1	(3) #1	#1	#6	#6	1-1/2"C	2"C
150	1	(3) #1/0	#1/0	#6	#6	1-1/2"C	2"C
175	1	(3) #2/0	#2/0	#6	#4	2"C	2"C
200	1	(3) #3/0	#3/0	#6	#4	2"C	2-1/2"C
225	1	(3) #4/0	#4/0	#4	#2	2-1/2"C	2-1/2"C
250	1	(3) #250 Kcmil	#250 Kcmil	#4	#2	2-1/2"C	3"C
300	1	(3) #350 Kcmil	#350 Kcmil	#4	#2	3"C	3"C
350	1	(3) #500 Kcmil	#500 Kcmil	#3	#1/0	4"C	4"C
400	1	(3) #600 Kcmil	#600 Kcmil	#3	#1/0	4"C	4"C
450	2	(3) #4/0	#4/0	#2	#1/0	2-1/2"C	2-1/2"C
500	2	(3) #250 Kcmil	#250 Kcmil	#2	#1/0	2-1/2"C	3"C
600	2	(3) #350 Kcmil	#350 Kcmil	#1	#2/0	3"C	3"C
700	2	(3) #500 Kcmil	#500 Kcmil	#1/0	#2/0	4"C	4"C
800	3	(3) #300 Kcmil	#300 Kcmil	#1/0	#2/0	3"C	3"C
1000	3	(3) #400 Kcmil	#400 Kcmil	#2/0	#3/0	3"C	3-1/2"C
1200	4	(3) #350 Kcmil	#350 Kcmil	#3/0	#3/0	3"C	3"C
1600	5	(3) #400 Kcmil	#400 Kcmil	#4/0	#3/0	3"C	3-1/2"C
2000	5	(3) #600 Kcmil	#600 Kcmil	#250 Kcmil	#3/0	4"C	4"C
2500	6	(3) #600 Kcmil	#600 Kcmil	#350 Kcmil	#3/0	4"C	4"C
3000	8	(3) #600 Kcmil	#600 Kcmil	#400 Kcmil	#3/0	4"C	4"C
4000	10	(3) #600 Kcmil	#600 Kcmil	#500 Kcmil	#3/0	4"C	4"C

EXAMPLES:

A. 300G = INDICATES (1) SET OF [3"C. – (3)#350 Kcmil + #4 GROUND CONDUCTOR].
B. 300SG = INDICATES (1) SET OF [3"C. – (3)#350 Kcmil + #2 GROUND CONDUCTOR].
C. 300NG = INDICATES (1) SET OF [3"C. – (3)#350 Kcmil + (1)#350 Kcmil NEUTRAL + #4 GROUND CONDUCTOR].
D. 300NSG = INDICATES (1) SET OF [3"C. – (3)#350 Kcmil + (1)#350 Kcmil NEUTRAL + #2 GROUND CONDUCTOR].
E. 600NG = INDICATES (2) SET OF [3"C. – (3)#350 Kcmil + (1)#350 Kcmil NEUTRAL + #1 GROUND CONDUCTOR].

NOTES:

1. ALL CONDUCTORS SHALL BE COPPER, THHN-2 or THWN-2.
2. NOT ALL FEEDERS ON THIS SCHEDULE ARE NECESSARILY USED ON THIS PROJECT.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAYENTZ
NO. 34760
EXPIRES OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 AIRPORT WAY, CAMARILLO, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
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REGISTERED PROFESSIONAL ENGINEER
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3194 D Airport Loop Drive
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ELECTRICAL SCHEDULES

E601

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PANEL ID: LHP-1

VOLTAGE: 208Y/120 | SERVICE EQUIP: | MOUNTING: Surface
SOURCE: LDP-1 | AMPS: 225 A | MAIN: 225 A | TYPE:
LOCATION: ELECTRICAL 207 | PANEL AIC: 10KAIC

LOAD	NOT E	POLE	BKR	CKT	A	B	C	CKT	BKR	POLE	NOT E	LOAD
SHP-MDF		2	20	1	850	850		2	20	2		SHP-7
				3			850	4				
SHP-8		2	20	5			850	6	20	2		SHP-3
				7	850	850		8				
EF-2		1	20	9			700	10	20	2		SHP-2
EF-4		1	20	11			700	12				
HP-9		3	45	13	2976	850		14	20	2		SHP-1
				15		2976	850	16				
EF-ELEC		1	20	17	700	360		18	20	1		DRINKING FAOUNTAIN
				19			2976	20	20	1		ROOF RECEPTACLE
EF-1		1	20	21		700	360	22	20	1		ROOF RECEPTACLE
SPARE		1	20	23			0	24	20	2		INSTANT WATER HEATER
SHP-6		2	20	25	850	250		26				
				27		850	3120	28	20	2		INSTANT WATER HEATER
SHP-4		2	20	29			850	30				
				31	850	3120		32	20	2		INSTANT WATER HEATER
SHP-5		2	20	33		850	3120	34				
				35			850	36	20	2		INSTANT WATER HEATER
SPARE		1	20	37	0	3120		38				
SPARE		1	20	39		0	0	40	20	1		SPARE
SPARE		1	20	41			0	42	20	1		SPARE
					16476 VA	16076 VA	14776 VA					
					139 A	136 A	123 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	37320 VA	100.00%	37320 VA	
Mechanical	9968 VA	100.00%	9968 VA	CONNECTED LOAD 47328 VA
Receptacle	1080 VA	100.00%	1080 VA	DEMAND LOAD 49560 VA
				AVG. CONNECTED CURRENT 131 A
				AVG. DEMAND CURRENT 138 A

NOTES:

Branch Panel: LDP-1

Location: ELECTRICAL 207 | Volts: 208Y/120 | A.I.C. Rating: 42KAIC
Supply From: | Phases: 3 | Mains Type: LSIG
Mounting: FREE STANDING | Wires: 4 | Mains Rating: 1200 A
Enclosure: TYPE 1 | MCB Rating: 1200 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1				2027...	2440...					2
3	LTP-1	100 A	3			2027...	1792...	3	100 A	LLP-3	4
5							2027...	1898...			6
7				6574...	2741...						8
9	LPP-1	100 A	3			7034...	2752...	3	225 A	LHP-3	10
11							4380...	2763...			12
13				4160...	8116...						14
15	LPP-2	100 A	3			7040...	5040...	3	100 A	LPP-3	16
17							4240...	4320...			18
19				2647...	1045...						20
21	LLP-1	100 A	3			1408...	773 VA	3	100 A	LLP-2	22
23							1062...	200 VA			24
25				1647...	1036...						26
27	LHP-1	225 A	3			1607...	1036...	3	150 A	HP-A	28
29							1477...	1036...			30
31				2620...	--						32
33	LHP-2	225 A	3			2570...	--	3	--	SPACE	34
35							2131...	--			36
37				3770...	--						38
39	LPP-4	20 A	3			2970...	--	3	--	SPACE	40
41							2160...	--			42
				Total Load:	111117 VA	107713 VA	94337 VA				
				Total Amps:	943 A	915 A	786 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	3844 VA	100.00%	3844 VA	
Power	154064 VA	100.00%	154064 VA	Total Conn. Load: 313166 VA
Lighting	973 VA	125.00%	1217 VA	Total Est. Demand: 319271 VA
Mechanical	102288 VA	125.00%	120046 VA	Total Conn. Current: 869 A
Receptacle	46540 VA	60.74%	28270 VA	Total Est. Demand Current: 886 A
Lighting - Dwelling Unit	5442 VA	70.83%	3855 VA	

Notes:

PANEL ID: LLP-1

VOLTAGE: 208Y/120 | SERVICE EQUIP: | MOUNTING: Surface
SOURCE: LDP-1 | AMPS: 100 A | MAIN: 100 A | TYPE:
LOCATION: ELECTRICAL 207 | PANEL AIC: 10KAIC

LOAD	NOT E	POLE	BKR	CKT	A	B	C	CKT	BKR	POLE	NOT E	LOAD
LIGHTING - DWELLING UNIT		1	20	1	824	200		2	20	1		EXTERIOR ENTRY/COURTYARD
LIGHTING - DWELLING UNIT FOOD SERVICE...		1	20	3			143	4	20	1		SOUTH EXTERIOR LIGHTING
LIGHTING - DWELLING UNIT		1	20	5				6	20	1		WEST EXTERIOR LIGHTING
LIGHTING - DWELLING UNIT PRINCIPAL 211		1	20	7	456	123		8	20	1		NORTH EXTERIOR LIGHTING
LIGHTING STORAGE 208		1	20	9			86	10	20	1		EXTERIOR BOLLARD LIGHTING
SPARE		1	20	11				12	20	1		RECEPTACLE ELECTRICAL 207
SPARE		1	20	13	0	0		14	20	1		SPARE
SPARE		1	20	15			0	16	20	1		SPARE
SPARE		1	20	17				18	20	1		SPARE
SPARE		1	20	19	0	0		20	20	1		SPARE
SPARE		1	20	21			0	22	20	1		SPARE
SPARE		1	20	23				24	20	1		SPARE
SPARE		1	20	25	0	0		26	20	1		SPARE
SPARE		1	20	27			0	28	20	1		SPARE
SPARE		1	20	29				30	20	1		SPARE
SPARE		1	20	31	0	0		32	20	1		SPARE
SPARE		1	20	33			0	34	20	1		SPARE
SPARE		1	20	35				36	20	1		SPARE
INVERTER		3	30	37	1049	0		38	20	1		SPARE
				39			1006	40	20	1		SPARE
				41				42	20	1		SPARE
					2647 VA	1408 VA	1062 VA					
					23 A	12 A	9 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	1232 VA	100.00%	1232 VA	
Lighting	808 VA	125.00%	1009 VA	CONNECTED LOAD 5115 VA
Receptacle	180 VA	100.00%	180 VA	DEMAND LOAD 5317 VA
Lighting - Dwelling Unit	2946 VA	100.00%	2946 VA	AVG. CONNECTED CURRENT 14 A
				AVG. DEMAND CURRENT 15 A

NOTES:
WH

PANEL ID: LHP-3

VOLTAGE: 208Y/120 | SERVICE EQUIP: | MOUNTING: Surface
SOURCE: LDP-1 | AMPS: 400 A | MAIN: 400 A | TYPE:
LOCATION | PANEL AIC: 10KAIC

LOAD	NOT E	POLE	BKR	CKT	A	B	C	CKT	BKR	POLE	NOT E	LOAD
				1	1500	2688		2				
WH-3		3	20	3		1500	2688	4	40	3		HP-6
				5			1500	6				
CP-1		1	20	7	100	2688		8				
SHP-IDF		2	20	9		915	2688	10	40	3		HP-5
				11			915	12				
EF-3		1	20	13	700	2688		14				
SPARE		1	20	15		0	2688	16	40	3		HP-7
SPARE		1	20	17			0	18				
ROOF RECEPTACLE		1	20	19	360	2688		20				
ROOF RECEPTACLE		1	20	21		360	2688	22	40	3		HP-8
ROOF RECEPTACLE		1	20	23			360	24				
SPARE		1	20	25	0	0		26				
SPARE		1	20	27		0	0	28	40	3		SPARE
SPARE		1	20	29			0	30				
SPARE		1	20	31	0	1271		32				
SPARE		1	20	33		0	1271	34	20	3		HP-A POWER EXHAUST
SPARE		1	20	35			0	36				
SPARE		1	20	37	0	12730		38				
SPARE		1	20	39		0	12730	40	150	3		LHP-4
SPARE		1	20	41			0	42				
					27413 VA	27528 VA	27638 VA					
					228 A	230 A	230 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	45070 VA	100.00%	45070 VA	
Mechanical	33120 VA	125.00%	41400 VA	CONNECTED LOAD 82580 VA
Receptacle	1440 VA	100.00%	1440 VA	DEMAND LOAD 91598 VA
				AVG. CONNECTED CURRENT 229 A
				AVG. DEMAND CURRENT 254 A

NOTES:

PANEL ID: LHP-2

VOLTAGE: 208Y/120 | SERVICE EQUIP: | MOUNTING: Surface
SOURCE: LDP-1 | AMPS: 225 A | MAIN: 225 A | TYPE:
LOCATION: CUSTODIAL STORAG... | PANEL AIC: 10KAIC

LOAD	NOT E	POLE	BKR	CKT	A	B	C	CKT	BKR	POLE	NOT E	LOAD
SHP-MDF		2	20	1	915	360		2	20	1		ROOF RECEPTACLE
				3			915	4	20	1		ROOF RECEPTACLE
SPARE		1	20	5			0	6	20	1		SPARE
				7	2208	3120		8	20	2		INSTANT WATER HEATER
HP-1		3	30	9			2208	10				
				11			2208	12	20	2		INSTANT WATER HEATER
				13	2208	3120		14				
HP-2		3	30	15			2208	16	20	2		INSTANT WATER HEATER
				17			2208	18				
				19	2208	3120		20	20	2		INSTANT WATER HEATER
HP-3		3	30	21			2208	22				
				23			2208	24	20	2		INSTANT WATER HEATER
				25	2208	3120		26				
HP-4		3	30	27			2208	28	20	2		INSTANT WATER HEATER
				29			2208	30				
EF-6		1	20	31	500	3120		32	20	2		INSTANT WATER HEATER
SPARE		1	20	33		0	3120	34	20	2		
SPARE		1	20	35			0	36	20	1		SPARE
SPARE		1	20	37	0	0		38	20	1		SPARE
SPARE		1	20	39		0	0	40	20	1		SPARE
SPARE		1	20	41			0	42	20	1		SPARE
					26207 VA	25707 VA	21312 VA					
					224 A	220 A	178 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	46910 VA	100.00%	46910 VA	
Mechanical	26400 VA	125.00%	33120 VA	CONNECTED LOAD 73226 VA
Receptacle	720 VA	100.00%	720 VA	DEMAND LOAD 79850 VA
				AVG. CONNECTED CURRENT 203 A
				AVG. DEMAND CURRENT 222 A

NOTES:

PANEL ID: LPP-1

VOLTAGE: 208Y/120 | SERVICE EQUIP: | MOUNTING: Surface
SOURCE: LDP-1 | AMPS: 100 A | MAIN: 100 A | TYPE:
LOCATION: ELECTRICAL 207 | PANEL AIC: 10KAIC

LOAD	NOT E	POLE	BKR	CKT	A	B	C	CKT	BKR	POLE	NOT E	LOAD
POWERED EXTERIOR SIGN		2	20	1	1664	250		2				
				3			1664	4	20	2		POWER
RECEPTACLE MDF ROOM 206		1	20	5				6	20	1		ELEC RM REC
CONV REC CHNG RM 133/WEL CEN 133		1	20	7	720	1500		8				
TV WEL CEN 133/PRINCPL 115		1	20	9			1500	10	20	3		WH-2
RECEP DESK REC 118		1	20	11				12				
CNTL REC 118/115		1	20	13	540	100		14	20	1		CP-1
CNTL CONV REC 118/115		1	20	15		540	500	16	20	1		FA PANEL
PRINCPL DESK 115		1	20	17				18	20	1		SPARE
RECEPTACLE RESTROOM 223		1	20	19	720	0		20	20	1		SPARE
RECEPTACLE NURSE 220		1	20	21		720	0	22	20	1		SPARE
RECEPTACLE NURSE 220		1	20	23				24	20	1		SPARE
RECEPTACLE INCENTIVE ROOM 212		1	20	25	360	0		26	20	1		SPARE
RECEPTACLE INCENTIVE ROOM 212		1	20	27		360	0	28	20	1		SPARE
RECEPTACLE STAFF'S LOUNGE 221		1	20	29			720	30	20	1		SPARE
RECEPTACLE STAFF'S LOUNGE 221		1	20	31	720	0		32	20	1		SPARE
SPARE		1	20	33		0	0	34	20	1		SPARE
SPARE		1	20	35			0	36	20	1		SPARE
SPARE		1	20	37	0	0		38	20	1		SPARE
SPARE		1	20	39		0	0	40	20	1		SPARE
SPARE		1	20	41			0	42	20	1		SPARE
					6574 VA	7034 VA	4380 VA					
					58 A	61 A	37 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	8928 VA	100.00%	8928 VA	
Receptacle	9060 VA	100.00%	9060 VA	CONNECTED LOAD 17988 VA
				DEMAND LOAD 17988 VA
				AVG. CONNECTED CURRENT 50 A
				AVG. DEMAND CURRENT 50 A

NOTES:

PANEL ID: LLP-3

VOLTAGE: 208Y/120 | SERVICE EQUIP: | MOUNTING: Surface
SOURCE: LDP-1 | AMPS: 100 A | MAIN: 100 A | TYPE:
LOCATION | PANEL AIC:

LOAD	NOT E	POLE	BKR	CKT	A	B	C	CKT	BKR	POLE	NOT E	LOAD
CLASSROOM LTG		1	20	1	620	600		2	20	1		SKYLIGHT
CLASSROOM LTG		1	20	3			620	4	20	1		SKYLIGHT
CLASSROOM LTG		1	20	5				6	20	1		SKYLIGHT
CLASSROOM LTG		1	20	7	620	600		8	20	1		SKYLIGHT
CLASSROOM LTG		1	20	9			72	10	20	1		SKYLIGHT
CLASSROOM LTG		1	20	11				12	20	1		SPARE
SPARE		1	20	13	0	0		14	20	1		SPARE
SPARE		1	20	15			0	16	20	1		SPARE
SPARE		1	20	17				18	20	1		SPARE
SPARE		1	20	19	0	0		20	20	1		SPARE
SPARE		1	20	21			0	22	20	1		SPARE
SPARE		1	20	23				24	20	1		SPARE
SPARE		1	20	25	0	0		26	20	1		SPARE
SPARE		1	20	27		0	0	28	20	1		SPARE
SPARE		1	20	29			0	30	20	1		SPARE
					2440 VA	1792 VA	1898 VA					
					20 A	15 A	16 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	2552 VA	100.00%	2552 VA	
Power	2900 VA	100.00%	2900 VA	CONNECTED LOAD 6121 VA
Lighting - Dwelling Unit	700 VA	100.00%	700 VA	DEMAND LOAD 6121 VA
				AVG. CONNECTED CURRENT 17 A
				AVG. DEMAND CURRENT 17 A

NOTES:

PANEL ID: LLP-2

VOLTAGE: 208Y/120 | SERVICE EQUIP: | MOUNTING: Surface
SOURCE: LDP-1 | AMPS: 100 A | MAIN: 100 A | TYPE:
LOCATION: CUSTODIAL STORAG... | PANEL AIC: 10KAIC

LOAD	NOT E	POLE	BKR	CKT	A	B	C	CKT	BKR	POLE	NOT E	LOAD
LIGHTING - DWELLING UNIT STAFF WORK...		1	20	1	380	608		2	20	1		LIGHTING - DWELLING UNIT CLASSROOM 1 81
LIGHTING		1	20	3			172	4	20	1		LIGHTING - DWELLING UNIT CLASSROOM 3 83
LIGHTING - DWELLING UNIT		1	20	5				6	20	1		SPARE
OTHER		1	20	7	60	0		8	20	1		SPARE
SPARE		1	20	9			0	10	20	1		SPARE
SPARE		1	20	11				12	20	1		SPARE
SPARE		1	20	13	0	0		14	20	1		SPARE
SPARE		1	20	15			0	16	20	1		SPARE
SPARE		1	20	17				18	20	1		SPARE
SPARE		1	20	19	0	0		20	20	1		SPARE
SPARE		1	20	21			0	22	20	1		SPARE
SPARE		1	20	23				24	20	1		SPARE
SPARE		1	20	25	0	0		26	20	1		SPARE
SPARE		1	20	27		0	0	28	20	1		SPARE
SPARE		1	20	29			0	30	20	1		SPARE
					1045 VA	773 VA	200 VA					
					9 A	7 A	2 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	60 VA	100.00%	60 VA	
Lighting	172 VA	125.00%	215 VA	CONNECTED LOAD 2017 VA
Lighting - Dwelling Unit	1796 VA	100.00%	1796 VA	DEMAND LOAD 2059 VA
				AVG. CONNECTED CURRENT 6 A
				AVG. DEMAND CURRENT 6 A

NOTES:

GENERAL SHEET NOTES

A. CONTRACTOR SHALL PROVIDE EITHER HANDLE TIES OR MULTI-POLE CIRCUIT BREAKERS FOR MULTI-WIRE BRANCH CIRCUITS WHERE THE BRANCH CIRCUITS ORIGINATES AS A SIMULTANEOUS DISCONNECTING MEANS AS REQUIRED PER CALIFORNIA ELECTRICAL CODE. CONTRACTOR SHALL REFLECT THESE CHANGES IN SUBMITALL TO BE APPROVED BY ENGINEER OF RECORD.

REFERENCE SHEET NOTES

1. PROVIDE RED CIRCUIT BREAKER AND RED LOCKABLE DEVICE FOR FIRE ALARM CIRUITS. MARK CIRCUIT BREAKER WITH 'FIRE ALARM' AS REQUIRED BY CODE.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAZENGO
NO. C-30288
EXPIRES: OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

ELECTRICAL SCHEDULES

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 01	10/23/2026

SALAS O'BRIEN
|expect a difference|
305 South 11th Street
San Jose, California 95112-2218
877.725.2755 | 877.925.1477 (f)
WWW.SALASOBRIEN.COM
National Strength.
Local Action.

REGISTERED PROFESSIONAL ENGINEER
JEFFERY GOOD
No. E18084
ELECTRICAL
STATE OF CALIFORNIA

PERKINS EASTMAN
3194 D Airport Loop Drive
Costa Mesa, CA 92626
T. +1 714 427 0277
www.perkinseastman.com

E602

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GENERAL SHEET NOTES

A. CONTRACTOR TO COORDINATE ALL SHUTDOWNS OF UTILITIES AND SYSTEMS WITH OWNER FOR TIMING AND DURATION.

B. REFER TO SHEET E001 FOR DEMOLITION NOTES AND MORE GENERAL NOTES.

⟨1⟩ REFERENCE SHEET NOTES

1. PROVIDE SWITCHBOARD WITH VOLTAGE AND RATING AS SHOWN. REFER TO ENLARGED FLOOR PLAN FOR LOCATION.
2. PROVIDE LSIG CIRCUIT BREAKER. CIRCUIT BREAKER SHALL COORDINATE WITH UPSTREAM DEVICES.
3. PROVIDE 100% RATED CIRCUIT BREAKER WITH RATING SHOWN.

1 SINGLE LINE DIAGRAM
SCALE: N.T.S.

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAYENTZ
NO. 31760
EXP. OCT. 31, 2027
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - NEW CLASSROOM BUILDING ADDITION
VENTURA COUNTY OFFICE OF EDUCATION
550 AIRPORT WAY, CAMARILLO, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD 01	10/23/2026

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Local Action.

REGISTERED PROFESSIONAL ENGINEER
JEFFERY GOETZ
No. E16084
ELECTRICAL
STATE OF CALIFORNIA

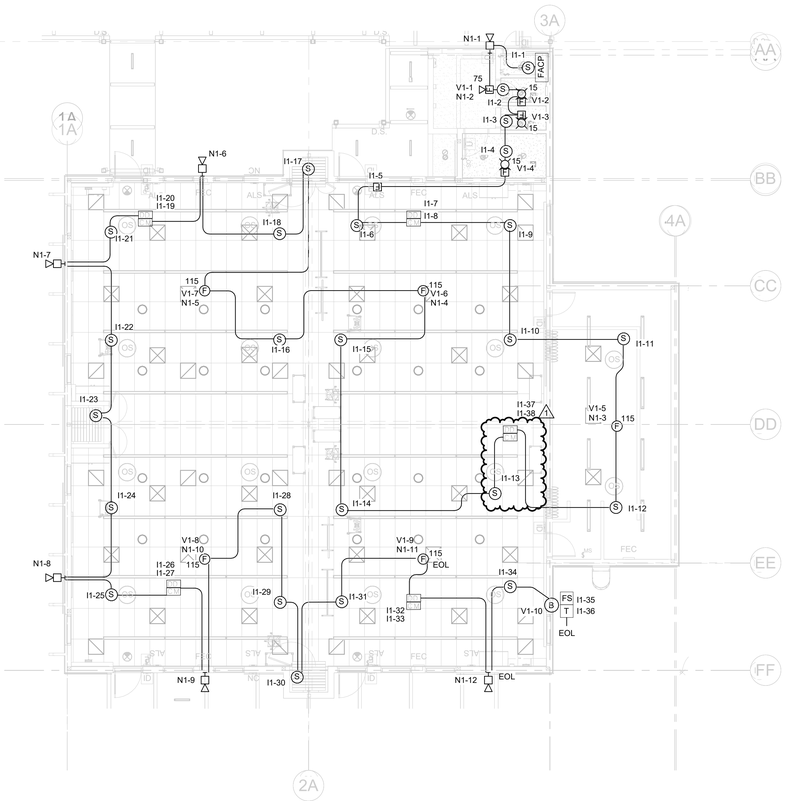
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ELECTRICAL
SINGLE LINE DIAGRAM

E701

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1 FA202 FOUR SQUARE FIRE ALARM PLAN
1/8" = 1'-0"

WALL LEGEND

NEW NON-RATED WALL

1 HR RATED FIRE BARRIER WALL

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAZEY
NO.
EXPIRES OCT. 31, 2027
STATE OF CALIFORNIA

LICENSED PROFESSIONAL ENGINEER
THOMAS ROBERT CAMPBELL
FP 2004
FIRE PROTECTION
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - SOUTH ANNEX

VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD01	10/23/2026

FOUR SQUARE BUILDING FIRE ALARM PLAN

PERKINS EASTMAN
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FA202

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FIRE-LITE ALARMS by Honeywell

MS-9600LS Battery Calculation

Secondary Power Source Requirements

Device Type	Standby Current (amps) Qty		Current Draw		Total	Secondary Alarm Current (amps) Qty		Current Draw		Total
Main Circuit Board	1	x	0.103000	=	0.10300	1	x	0.253000	=	0.25300
DACT-UD2	0	x	0.017000	=		0	x	0.029000	=	
SLC-2LS Expander Module	0	x	0.019000	=		0	x	0.026000	=	
4XTMF	0	x	0.005000	=		0	x	0.011000	=	
IPDACT-2	0	x	0.093000	=		0	x	0.136000	=	
IPDACT-2UD	0	x	0.098000	=		0	x	0.155000	=	
ANN-BUS Devices										
ANN-80(-W)	1	x	0.015000	=	0.015000	1	x	0.040000	=	0.040000
ANN-LED	0	x	0.028000	=		0	x	0.068000	=	
ANN-RLED	0	x	0.028000	=		0	x	0.068000	=	
ANN-RLY	0	x	0.015000	=		0	x	0.075000	=	
ANN-I/O	0	x	0.035000	=		0	x	0.200000	=	
ANN-S/PG	0	x	0.045000	=		0	x	0.045000	=	
ACS Annunciators										
ACM-8RF	0	x	0.030000	=		0	x	0.158000	=	
ACM-16ATF	0	x	0.040000	=		0	x	0.056000	=	
ACM-32AF	0	x	0.040000	=		0	x	0.056000	=	
AEM-16ATF	0	x	0.002000	=		0	x	0.018000	=	
AEM-32AF	0	x	0.002000	=		0	x	0.018000	=	
AFM-16ATF	0	x	0.040000	=		0	x	0.056000	=	
AFM-32AF	0	x	0.040000	=		0	x	0.056000	=	
AFM-16AF	0	x	0.025000	=		0	x	0.065000	=	
LDM-32F	0	x	0.040000	=		0	x	0.056000	=	
LDM-E32F	0	x	0.002000	=		0	x	0.018000	=	
LCD-80F	0	x	0.025000	=		0	x	0.064000	=	
Resettable Power										
4-wire Detector Heads	0	x	0.000000	=		0	x	0.000000	=	
Addressable Devices										
BEAM355	0	x	0.002000	=						
BEAM355S	0	x	0.002000	=						
BEAM1224	0	x	0.017000	=						
CP355	0	x	0.000300	=						
SD355	0	x	0.000300	=						
SD355T	24	x	0.000300	=	0.007200					
AD355	0	x	0.000300	=						
H355	0	x	0.000300	=						
H355R	0	x	0.000300	=						
H355HT	0	x	0.000300	=						
D350P	0	x	0.000300	=						
D350RP	0	x	0.000300	=						
D350PL	0	x	0.000300	=						
D350RPL	0	x	0.000300	=						
D355PL	5	x	0.000300	=	0.001500					
MMF-300	2	x	0.000400	=	0.000800					
MMF-300-10	0	x	0.003500	=						
MDF-300	0	x	0.000750	=						
MMF-301	0	x	0.000375	=						
MMF-302	0	x	0.000270	=						
MMF-302-8	0	x	0.002000	=						
BG-12LX	1	x	0.000300	=	0.000300					
CMF-300	0	x	0.000390	=						
CMF-300-6	0	x	0.002250	=						
CRF-300	5	x	0.000270	=	0.001350					
CRF-300-6	0	x	0.001450	=						
CDRM-300	0	x	0.001300	=						
I300	0	x	0.000400	=						
ISO-6	0	x	0.002700	=						
B501BH-2	0	x	0.001000	=						
B501BHT-2	0	x	0.001000	=						
B224RB	0	x	0.000500	=						
B224BI	0	x	0.000450	=						
W-GATE	0	x	0.024000	=						
			Maximum alarm draw for Addressable devices (SLC 1)		0.40000					
			Maximum alarm draw for Addressable devices (SLC 2)		0.00000					
EOLR-1	0	x	0.020000	=		0	x	0.020000	=	
Auxiliary Power										
CMF-300 (Aux. Power)	0	x	0.001700	=		0	x	0.007000	=	
CMF-300-6 (Aux. Power)	0	x	0.008000	=		0	x	0.020000	=	
MMF-302 (Aux. Power)	0	x	0.012000	=		0	x	0.090000	=	
MMF-302-6 (Aux. Power)	0	x	0.050000	=		0	x	0.270000	=	
B200SR (Aux. Power)	0	x	0.000500	=		0	x	0.035000	=	
B200SR-LF (Aux. Power)	0	x	0.001000	=		0	x	0.125000	=	
SWIFT Wireless										
W-GATE	0	x	0.040000	=		0	x	0.040000	=	
W-DIS-D	0	x	0.030000	=		0	x	0.030000	=	
Miscellaneous Devices										
AM50	1	x	0.086000	=	0.086000	1	x	2.206000	=	2.206000
	0	x	0.000000	=		0	x	0.000000	=	
	0	x	0.000000	=		0	x	0.000000	=	
	0	x	0.000000	=		0	x	0.000000	=	
	0	x	0.000000	=		0	x	0.000000	=	
Output Circuits										
NAC/Output #1			0.000000	=				1.026000	=	1.026000
NAC/Output #2			0.000000	=				0.000000	=	
NAC/Output #3			0.000000	=				0.000000	=	
NAC/Output #4			0.000000	=				0.000000	=	
Current Draw from TB3 (non-alarm)			0.000000	=				0.000000	=	
Sum each column for totals	**Total Standby Current**		**0.21515**			**Total Alarm Current**				**3.92500**

FIRE-LITE ALARMS by Honeywell

MS-9600LS Battery Calculation

Calculation in Total Sheet

		Required Standby Time in Hours			
			24 Hours		
Standby Load Current (Amps)	**0.21515 Amps**	x	24	=	5.164 AH
		Required Alarm Time in Hours			
			5 Minutes		
Alarm Load Current (Amps)	**3.92500 Amps**	x	0.084	=	0.330 AH
			Standby and Alarm Load Subtotal	=	5.493 AH
			Derating Factor	=	x 1.2
			Total Ampere Hours Required	=	**6.59 AH**

Recommended Batteries: BAT-12120 - 12AH Batteries

Battery Check

The batteries can be charged by the MS-9600LS Charger.
The batteries can be housed in the MS-9600LS Cabinet.

Current Draw Check

NAC#1 current is within the limitations of the circuit.
NAC#2 current is within the limitations of the circuit.
NAC#3 current is within the limitations of the circuit.
NAC#4 current is within the limitations of the circuit.
The standby current is within the limitations of the panel.
The alarm current is within output limitations of the panel.

1

FIRE-LITE ALARMS by Honeywell

MS-9600LS Circuit Detail

NAC 1

Device	Qty	Non-Alarm Draw		Total	Qty	Alarm Draw		Total
Ceiling Speaker/Strobe	5	x 0.000000	=	0.000000	5	x 0.158000	=	0.790000
Speaker/Strobe	1	x 0.000000	=	0.000000	1	x 0.107000	=	0.107000
Strobe	3	x 0.000000	=	0.000000	3	x 0.043000	=	0.129000
		x 0.000000	=		0	x 0.000000	=	
	0	x 0.000000	=		0	x 0.000000	=	
	0	x 0.000000	=		0	x 0.000000	=	
	0	x 0.000000	=		0	x 0.000000	=	
	0	x 0.000000	=		0	x 0.000000	=	
	0	x 0.000000	=		0	x 0.000000	=	
	0	x 0.000000	=		0	x 0.000000	=	
	Total Standby Load			**0.000000**	**Total Alarm Load**			**1.026000**

VOLTAGE LINE LOSS CALCULATIONS

JOB: GATEWAY FOURSQUARE
DATE: 6-23-2022
VOLTAGE LINE LOSS FORMULA:
(A) X (F) X (C) / (D)/ (E) = % LINE LOSS

(A)AMPS

15cd SPEAKER/STROBE (SPSCR)	0.043
75cd SPEAKER/STROBE (SPSCR)	0.107
115cd SPEAKER/STROBE (SPSCR)	0.129
15cd STROBE (SCR)	0.043

OTHER DATA

(B) WIRE GAUGE	12
(C) WIRE RESISTANCE	21.6
(D) CIRCULAR MILLS	6530.000
(E) VOLTS (DC)	24.000
(F) LINE WIRE FOOTAGE	(PER CIRCUIT)

POWER SUPPLY FCPS1	15cd SPEAKER/ STROBE	75cd SPEAKER/ STROBE	115cd SPEAKER/ STROBE	15cd STROBE	TOTAL AMPS	LINE WIRE FOOTAGE	VOLTAGE LOSS	% LINE LOSS
CIRCUIT 1, N1	0	1	5	3	0.88	500	1.46	6.07%
TOTAL	0	1	5	3	0.88			

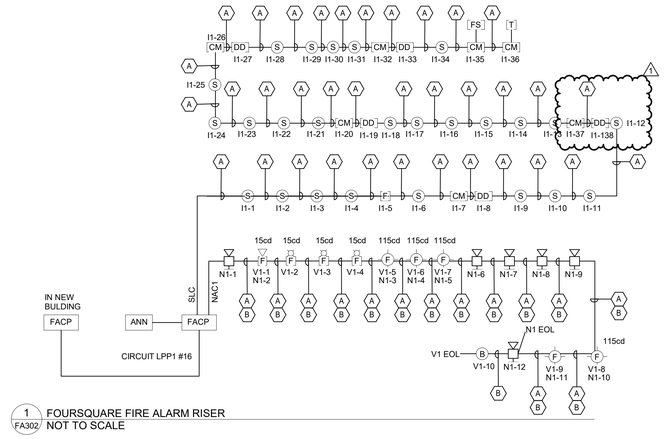
Project Name	GATEWAY COMMUNITY FOURSQUARE
Panel	FCPS1
Circuit Number	V1
Area Covered	FOURSQUARE
Nominal Speaker Voltage (25 or 70)	25
Minimum Device Voltage (Calculated see notes)	20
Total Circuit Current in amps	0.600
Total Circuit Power	7.000
Distance from source to 1st device	25
Wire Gauge for balance of circuit	16

End of Line Method CIRCUIT IS WITHIN LIMITS		
Totals		Voltage
Current	Distance	Drop
0.600	500	2.934
End of Line Voltage		22.07
Percent Drop		11.74%

Standard Wire Resistance in Ohms per 1000 feet.
18=7.77 16=4.89 14=3.07 12=1.98 10=1.24

18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors

Enter Power Units 2W = 2	24W = 1	TOTAL POWER	TOTAL WIRE LENGTH	Calculated TOTAL CURRENT	At Device	Voltage Drop from source	Percent Drop
Device 1		15.000	500	0.600	22.07	2.934	11.74%
Totals		7.000	500		End of Line Voltag		**22.07**



1 FA302 FOURSQUARE FIRE ALARM RISER
NOT TO SCALE

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

LICENSED ARCHITECT
EDWARD M. MAZEY
No. C-29,407
RENEWAL 01.31.2027
STATE OF CALIFORNIA

LICENSED PROFESSIONAL ENGINEER
LINDSAY ROBERT CAMPBELL
FP 2004
FIRE PROTECTION
STATE OF CALIFORNIA

GATEWAY COMMUNITY SCHOOL - SOUTH ANNEX
VENTURA COUNTY OFFICE OF EDUCATION
550 Airport Way, Camarillo, CA 93010

JOB	88910.00
SCALE	AS NOTED
PM	
DATE	10/23/2026
1 ADD01	10/23/2026

FIRE ALARM RISER DIAGRAMS AND CALCS

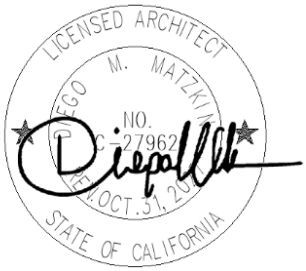
PERKINS EASTMAN
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T. +1 714 427 0277
www.perkinseastman.com

FA302

Signature Sheet
Gateway Annex School
Ventura County Office of Education

Architect
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Irvine, CA 92612

By: Diego Matzkin
No. C27961 Expires: October 31, 2027



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Salas O'Brien
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Tel: (949) 753-1553

By James Zwingman
No. M35588 Expires: September 30,2027



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By Jeffry Gosal
No. E18084 Expires: June 30, 2027



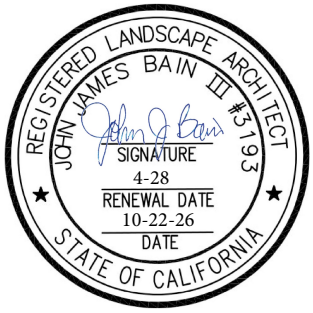
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By: Timothy R. Campbell
No. FP2004 Expires:



Landscape Architect
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By John James Bain
No. 3193 Expires:



APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-122398 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/02/2026

SECTION 06 8316
FIBERGLASS REINFORCED PANELS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Fiberglass reinforced plastic panels and accessories.
B. Related Requirements:
   1. Section 09 2116 - Gypsum Board Assemblies.

1.02 PROJECT REQUIREMENTS

A. Fiberglass reinforced plastic panels and accessories for kitchen and food preparation areas as indicated on the Drawings.

1.03 SUBMITTALS

A. Product data.
B. Samples: Submit 8 inch by 10 inch sample of each type, color, and accessories to be installed.
C. Certificate of Compliance: Submit certificate from manufacturer the installed wall surfacing meets Specification requirements.

1.04 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:
   1. Class A Interior Finish Material as defined by the National Fire Protection Association Life Safety Code 101.
   2. Underwriters Laboratories, Inc. listed, in accordance with ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
   3. USDA/FSIS Requirements.
   4. FMRC (Factory Material Research Center) approved.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's cartons properly labeled and identified.
B. Store materials flat in a clean, dry storage area where temperature shall be maintained above 50 degrees F. Do not store rolls on end.

1.06 PROJECT CONDITIONS

A. Installation environment shall be stable and controlled.
B. Room temperature shall be controlled to 75 degrees F plus or minus 5 degrees, during and after installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Panels: Crane Composites, Fire-X Glasbord FM with Surfaseal, , Marlite FRP Panel P-100 Class A, Panolam Industries International Inc., or equal.
   1. Panels: Class 1 (A) Interior Finish. Thickness to be .09 inch, embossed, color as selected by Architect.
   2. Class A Flame Spread: Less than 25, with Smoke Developed less than 450, per ASTM E84.
   3. Barcol Hardness scratch resistance: 39 as per ASTM D2583, Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
   4. IZOD Impact per ASTM D256: 11.

B. Stainless steel trim or extruded PVC with integral color profiles. Provide inside corner and outside corners, panel division and edge trim.
C. Adhesive and Sealants: VOC compliant, as recommended by manufacturer.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine backup surfaces to determine corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
B. Do not begin installation until backup surfaces are in satisfactory condition.

3.02 APPLICATION

A. Perform cutting with carbide tipped saw blades or drill bits, or cut with snips.
B. Install panels with manufacturer's recommended gap for panel field and corner joints.
C. Fastener holes in the panels shall be predrilled 1/8 inch oversize.
D. For trowel type and application of adhesive, follow adhesive manufacturer's recommendations.
E. Utilizing products acceptable to manufacturer, install the system in accordance with panel manufacturer's printed instructions.

END OF SECTION

SECTION 08 7100
DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Door hardware.

2. Storefront and entrance door hardware.

B. Related Divisions:

1. Division 06 – door hardware installation

2. Division 07 – sealant at exterior thresholds

3. Division 08 – metal doors and frames, interior aluminum frames, wood doors, integrated security systems, specialty doors, storefront and glazed curtainwall systems.

4. Division 10 – operable partitions

5. Division 21 – fire and life safety systems

6. Division 28 – security access systems

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.

2. Cabinets, including open wall shelving and locks.

3. Signs, except where scheduled.

4. Toilet accessories, including grab bars.

5. Installation.

6. Rough hardware.

7. Conduit, junction boxes & wiring.

8. Folding partitions, except cylinders where detailed.

9. Sliding aluminum doors, except cylinders where detailed.

10. Access doors and panels, except cylinders where detailed.

11. Corner Guards.

12. Welded steel gates and supports.

1.02 REFERENCES:

A. Use date of standard in effect as of Bid date.

1. American National Standards Institute

a. ANSI 156.18 – Materials and Finishes.

2. BHMA – Builders Hardware Manufacturers Association

3. 2014 California Building Code

a. Chapter 11B – Accessibility To Public Buildings, Public Accommodations, Commercial Buildings and Public Housing

4. DHI – Door and Hardware Institute

5. NFPA – National Fire Protection Association

a. NFPA 80 2019 Edition – Standard for Fire Doors and Other Opening Protectives.

b. NFPA 105 – Smoke and Draft Control Door Assemblies

c. NFPA 252 – Fire Tests of Door Assemblies

6. UL – Underwriters Laboratories

a. UL10C – Positive Pressure Fire Tests of Door Assemblies.

b. UL 305 – Panic Hardware

7. WHI – Warnock Hersey Incorporated State of California Building Code

8. Local applicable codes

9. SDI – Steel Door Institute

10. WI – Woodwork Institute

11. AWI – Architectural Woodwork Institute

12. NAAMM – National Association of Architectural Metal Manufacturers

B. Abbreviations

1. Manufacturers: see table at 2.1.A of this section

2. Finishes: see 2.7 of this section.

1.03 SUBMITTALS & SUBSTITUTIONS

A. SUBMITTALS: Submit six copies of schedule per D. Only submittals printed one sided will be accepted and reviewed. 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 Finish codes per ANSI A156.18.

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.

11. Point-to-point wiring diagrams.

12. Manufacturer's technical data and installation instructions for electronic hardware.

B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.

C. 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.

D. 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.

E. Substitutions per Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.

F. Items listed with no substitute manufacturers have been requested by Owner to meet existing standard.

G. 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.

1.04 QUALITY ASSURANCE:

A. Qualifications:

1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course of work for project hardware consultation to Owner, Architect and Contractor.

a. Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.

B. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

D. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.

E. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions and code requirements.

1.05 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. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.06 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. Locations for conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.

6. Coordinate: flush top rails of doors at outswinging exteriors, and throughout where adhesive-mounted seals occur.

7. 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.

1.07 WARRANTY:

A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties.

B. Include factory order numbers with close-out documents warranty information:

C. Minimum warranties:

1. Access Locks: Two years

2. Extra Heavy Duty Cylindrical Lock: Limited Lifetime

3. Exit Devices: Three years mechanical

4. Closers: Thirty years mechanical

5. Hinges: One year

6. Other Hardware Two years

1.08 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.

2. With installer, access control contractor and electrical contractor present, test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.

3. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.

1.09 REGULATORY REQUIREMENTS:

A. Locate latching hardware between 34 inches to 44 inches above the finished floor, per 2019 California Building Code, Section 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. 2019 California Building Code Section 11B-309.4.

2. Force required to activate the operable parts: 5.0 pounds maximum, per 2019 California Building Code Section 11B-309.4.

3. Provide locks that allow doors to classrooms and any room with an occupancy of five or more persons to be locked from the inside per CBC 1010.1.11. The locks shall conform to the specification and requirements found in CBC Section 1010.1.9

4. 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.

C. Door closing speed shall be as follows: CBC 11B-404.2.8

1. Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum

D. Smooth surfaces at bottom 10 inches of push sides of doors, facilitating push-open with wheelchair footrests, per 2019 California Building Code 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.

E. 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 30 inches and below 80 inches, and the hardware projects no more than 4 inches. 2019 California Building Code 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 2019 California Building Code 11B-307.4.

F. Thresholds: floor or landing no more than 0.50 inches below the top of the threshold of the doorway, per 2019 California Building Code Section 11B-404.2.5. Vertical rise no more than 0.25 inches, change in level between 0.25

1. inches and 0.50 inches: beveled to slope no greater than 1:2 (50 percent slope). 2019 California Building Code Section 11B-303.2 & ~.3.

G. Floor stops: Do not locate in path of travel. Locate no more than 4 inches from walls, per DSA Policy #99-08 (Access).

H. Pairs of doors with independently-activated hardware both leafs: limit swing of right-hand or right-hand-reverse leaf to 90 degrees to protect persons reading wall-mounted tactile signage, per 2019 California Building Code Section 11B-703.4.2.1

I. Door and door hardware encroachment: when door is swung fully-open into means-of-egress path, the door may not encroach/project more than 7 inches into the required exit width, with the exception of door release hardware such as lockset levers or panic hardware. These hardware items must be located no less than 34-inches and no more than 48-inches above the floor/ground. 2019 California Building Code, Section 1005.7.1.

1. In I-2 occupancies, latch release hardware is not permitted to project in the required exit width, regardless of its mounting height, per 2019 California Building Code, Section 1005.7.1 at Exception 1.

J. Hardware (including panic hardware) shall not be provided with "night latch" (NL) function for any accessible doors or gates unless the following conditions are met per DSA interpretation 10-08 DSA/AC (external), revised 4/28/09. Such conditions must be clearly demonstrated and indicated in the specifications:

K. Such hardware has dogging feature

L. It is dogged during the time the facility is open

M. Such dogging operation is performed only by employees as their job function (non-public use)

PART 2 PRODUCTS

2.01 MANUFACTURERS:

A. Listed acceptable alternate manufacturers: these will be considered; submit for review products with equivalent function and features of scheduled products.

ITEM:	MANUFACTURER:	ACCEPTABLE ALTERNATE:
Hinges	(IVE) Ives	Hager
Pivots	(IVE) Ives	Rixson
Access Locks Key System	(ALM) Alarm Lock (FAL) Falcon A2 SFIC	Owner standard Owner standard
Mechanical Locks	(MAR) Marks USA	Owner standard
Exit Devices	(VON) Von Duprin	Owner standard
Closers	(LCN) LCN	Owner standard
Silencers	(IVE) Ives	Rockwood, Trimco
Security Pulls	(TRI) Trimco	Owner standard
Kickplates	(IVE) Ives	Rockwood, Trimco
Stops & Holders	(TRI) Trimco	Owner standard
Thresholds	(ZER)Zero	Pemko
Seals & Bottoms	(ZER)Zero	Pemko

2.02 HINGING METHODS:

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. Doors 7’10” use 4 hinges and add 1 hinge for every foot thereafter

C. 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.

D. 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: stainless steel hinges with non-removable (NRP) pins and security studs.

2. Stainless steel material exteriors and at doors subject to corrosive atmospheric conditions.

E. Pivots: high-strength forged bronze or stainless steel, tilt-on precision bearing and bearing pin.

1. Bottom and intermediate pivots: adjustability of minus 0.063 inch, plus 0.125 inch.

2.03 LOCKSETS, LATCHSETS, DEADBOLTS:

A. Mortise 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. Deadbolts: stainless steel 1-inch throw.

9. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.

10. Scheduled Lock Series and Design: Schlage L series, Design to be 06L

11. Certifications:

a. ANSI A156.13, 1994, Grade 1 Operational,

b. ANSI/ASTM F476-84 Grade 31 UL Listed.

12. Accessibility: Require not more than 5 lb to retract the latchbolt, or both, per CBC 2019 11B-404.2.7 and 11B-309.4.

B. Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.

1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.

2. Locking Spindle: stainless steel, integrated spring and spindle design.

3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.

4. Latchbolt: solid steel.

5. Backset: 2.75 inches typically, more or less as needed to accommodate frame, door or other hardware.

6. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2.00 inches clearance from lever mid-point to door face.

7. Strikes: 16 gage curved steel, bronze or brass with 1.00 inch deep box construction, lips of sufficient length to clear trim and protect clothing.

8. Lock Series and Design: Schlage ND series, Design to be Rhodes (RHO)

9. Certifications:

   a. ANSI A156.2, 1994, Series 4000, Grade 1.

   b. UL listed for A label and lesser class single doors up to 4 feet x 8 feet.

10. Accessibility: Require not more than 5 lb to retract the latchbolt or deadbolt, or both, per CBC 2019 11B-404.2.7 and 11B-309.4

2.04 EXIT DEVICES / PANIC HARDWARE

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. Lever design to match locksets

9. Accessibility: Require not more than 5 lb to retract the latchbolt, per CBC 2019 11B-404.2.7 and 11B-309.4.

   a. Mechanical method: where touchpad directly retracts the latchbolt with 5 lb or less of force.

B. Specific features:

1. Non-Fire Rated Devices: cylinder dogging.

2. Lever Trim: breakaway type, forged brass or bronze escutcheon min. 0.130 inch thickness, compression spring drive, match lockset lever design.

2.05 CLOSERS

A. Surface Closers: 4040-XP

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 2019 California Building Code 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.

    a. 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

        1) high-energy operator.

7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.

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 Fahrenheit to -30 degrees Fahrenheit, 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.

2.06 OTHER HARDWARE

A. Automatic Flush Bolts: Low operating force design.

B. Overhead Stops: Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

C. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

D. 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.

2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.

E. Thresholds: As scheduled and per details. Comply with CBC 2019 11B-404.2.5. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

1. Saddle thresholds: 0.125 inches minimum thickness.

2. 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".

3. Fire-rated openings, 90-minutes or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA

a. 253. Use threshold unit as scheduled. If none scheduled, include a 0.25in high 5in wide saddle in the bid, and request direction from Architect.

4. Fire-rated openings, 3-hour duration: Thresholds, where scheduled, to extend full jamb depth.

5. Acoustic openings: Set units in full bed of Division-7-compliant, leave no air space between threshold and substrate.

6. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

7. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

F. Through-bolts: Do not use. Coordinate with wood doors; ensure provision of proper blocking to support wood screws for mounting panic hardware and door closers. Coordinate with metal doors and frames; ensure provision of proper reinforcement to support machine screws for mounting panic hardware and door closers.

1. Exception: surface-mounted overhead stops, holders, and friction stays.

G. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Leave no unfilled/uncovered pre-punched silencer holes. Intent: door bears against silencers, seals make minimal contact with minimal compression – only enough to effect a seal. Provide where seals are not used

2.07 FINISH:

A. Generally: BHMA 626 Satin Chromium Areas using BHMA 626: furnish push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise scheduled.

B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

2.08 KEYING REQUIREMENTS:

A. Key System: All keying will be done by the Owner

B. Keys and cores: Construction cores and keys will be provided by the Owner and installed by the Contractor (OFCI)

C. Permanent Cores: All will be supplied and installed by Owner

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 PREPARATION:

A. Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation. Installation denotes acceptance of wall/frame condition.

B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.

1. Notify Architect of code conflicts before ordering material.

2. Locate latching hardware between 34 inches to 44 inches above the finished floor, per California Building Code, Section 1008.1.9.2 and 1133B.2.5.2.

3. Locate panic hardware between 36 inches to 44 inches above the finished floor.

4. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

C. 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 per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.

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. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.

3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.

4. Replace fasteners damaged by power-driven tools.

B. Locate floor stops no more that 4 inches from walls and not within paths of travel. See paragraph 2.2 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.

C. Core concrete for exterior door stop anchors. Set anchors in approved non-shrink grout.

D. Locate overhead stops for minimum 90 degrees at rest and for maximum allowable degree of swing.

E. Drill pilot holes for fasteners in wood doors and/or frames.

F. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

3.04 ADJUSTING

A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

1. Hardware damaged by improper installation or adjustment methods: repair or replace to Owner's satisfaction.

2. Adjust doors to fully latch with no more than 1 pound of pressure.

a. Door closer valves: turn valves clockwise until at bottom – do not force. Turn valves back out one and one-half turns and begin adjustment process from that point. Do not force valves beyond three full turns counterclockwise.

3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.

4. Adjust door closers per 1.9 this section.

B. Inspection of fire door assemblies and means-of-egress panic-hardware doors: Per 2019 NFPA-80 5.2.1: hire an independent third-party inspection service to prepare a report listing these doors, and include a statement that there are zero deficiencies with the fire-rated assemblies and the openings with panic hardware. Certification, Testing and Quality Control shall be in accordance with Division 01 45 23 Testing and Inspection services. All doors hardware and installation will be inspected by a third party selected by the architect/owner

1. Div 01 45 23:

2. Per 2019 NFPA-80 5.2.1: Use a third party inspector not associated with the construction, supply or installation of this project to develop a field survey of the doors and hardware. Survey is to be done by a member certified as a FDAI (Fire Door Assembly Inspector), Certified AHC (Architectural Hardware Consultant) or a certified testing laboratory: UL or Intertek. Certified Inspectors may be found at DHI.org, Intertek, or CAFDI.org.

C. Fire-rated doors:

1. Wood doors: adjust to 0.125 inches clearance at heads, jambs, and meeting stiles.

2. Steel doors: adjust to 0.063 inches minimum to 0.188 inches maximum clearance at heads, jambs, and meeting stiles.

3. Adjust wood and steel doors to 0.75 inches maximum clearance (undercut) above threshold or finish floor material under door.

D. Final inspection: Installer to provide letter to Owner that upon completion installer has visited the Project and has accomplished the following:

1. Has re-adjusted hardware.

2. Has evaluated maintenance procedures and recommend changes or additions, and instructed Owner's personnel.

3. Has identified items that have deteriorated or failed.

4. Has submitted written report identifying problems.

3.05 DEMONSTRATION:

A. Demonstrate mechanical hardware and electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.06 PROTECTION/CLEANING:

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

B. Clean adjacent wall, frame and door surfaces soiled from installation / reinstallation process.

3.07 SCHEDULE OF FINISH HARDWARE

A. See door schedule in drawings for hardware set assignments.

HW SET: 012

3	EA	HINGE	3CB1HW 5 X 4.5	652	IVE
1	EA	OFFICE	195RB/26D	626	MAR
1	EA	CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	DOME STOP	W1211	626	TRI

HW SET:020

3	EA	HINGE	3CB1HW 5 X 4.5	652	IVE
1	EA	PRIVACY	195L/26D	626	MAR
1	EA	PRIVACY	PDLN4100IC/26D (A133.1-1)	626	ALM
1	EA	DOME STOP	W1211	626	TRI
3	EA	SILENCER	SR64	GRY	IVE

HW SET:030

3	EA	HINGE	3CB1HW 5 X 4.5	626	IVE
1	EA	OFFICE LOCK	195RB/26D	626	MAR
1	EA	ACCESS LOCK	PDL6200IC/26D (A115-1, A120-1, A128-1)	626	ALM
1	EA	DOME STOP	W1211 626	626	TRI
3	EA	SILENCER	SR64	GRY	IVE

HW SET:040

3	EA	HINGE	3CB1HW 5 X 4.5	626	IVE
1	EA	STOREROOM LOCK	195RF/26D	626	MAR
1	EA	ACCESS LOCK	PDL6200IC/26D (A128.1-1, A128.2-1)	626	ALM
1	EA	DOME STOP	W1211	626	TRI
3	EA	SILENCER	SR64	GRY	IVE

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HW SET:044

3	EA	HINGE	3CB1HW 5 X 4.5	652	IVE
1	EA	ACCESS LOCK	PDL6200IC/26D	626	ALM
1	EA	CLOSER	4040XP H	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	DOME STOP	W1211	626	TRI
3	EA	SILENCER	SR64	GRY	IVE

HW SET:405

3	EA	HINGE	3CB1HW 5 X 4.5	630	IVE
1	EA	ACCESS LOCK	PDLN4500DB/26D	626	ALM
1	EA	MORTISE CYL HSG	R2183/26D-2 FOR ACCESS LOCK	626	MAR
1	EA	DOME STOP	W1211	626	TRI
1	EA	PERIMETER SEALS	328AA HEAD AND JAMBS	AL	ZER
1	EA	DOOR SWEEP	339AA	CM	ZER
1	EA	THRESHOLD	AS DETAILED	AL	ZER

HW SET: 442.1

3	EA	HINGE	3CB1HW 5 X 4.5 NRP SEC STUD		IVE
1	EA	ACCESS LOCK	PDL6600CR/26D		ALM
1	EA	MORTISE CYL HSG	R2183/26D-1 FOR ACCESS LOCK		MAR
1	EA	CLOSER	4040XP-EDA		LCN
1	EA	KICKPLATE	8400 10” X 2” LDW		IVE

HW SET: 442.2

3	EA	HINGE	3CB1HW 5 X 4.5 NRP SEC STUD	630	IVE
1	EA	ACCESS LOCK	PDL6600CR/26D	626	ALM
1	EA	MORTISE CYL HSG	R2183/26D-1 FOR ACCESS LOCK	626	MAR
1	EA	CLOSER	4040XP EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	FLOOR STOP	1265 (2 1/4" HIGH STRIKE)	626	TRI
1	SET	PERIMETER SEALS	328AA HEAD AND JAMBS	AL	ZER
1	EA	DOOR SWEEP	339AA	CL	ZER
1	EA	THRESHOLD	AS DETAILED	AL	ZER

HW SET: 443.1

3	EA	HINGE	3CB1HW 5 X 4.5 NRP SEC STUD	630	IVE
1	EA	ACCESS LOCK	PDL6600CR/26D (A116-1, A128-2)	626	ALM
1	EA	MORTISE CYL HSG	R2183/26D-1 (A116-1, A128-2)	626	MAR
1	EA	PRIVACY LOCK	PDLN4500DB/26D (A114-1)	626	ALM
1	EA	MORTISE CYL HSG	R2183/26D-2 (A114-1)	626	MAR
1	EA	CLOSER	4040XP S-CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	PERIMETER SEALS	328AA HEAD AND JAMBS	AL	ZER
1	EA	DOOR SWEEP	339AA	CL	ZER

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1	EA	THRESHOLD	AS DETAILED	AL	ZER

HW SET: 453.1

3	EA	HINGE	3CB1HW 5 X 4.5 NRP SEC STUD	630	IVE
1	EA	ACCESS LOCK	PDL6600CR/26D	626	ALM
1	EA	MORTISE CYL HSG	R2183/26D-1 FOR ACCESS LOCK	626	MAR
1	EA	CLOSER	4040XP S-CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	PERIMETER SEALS	328AA HEAD AND JAMBS	AL	ZER
1	EA	DOOR SWEEP	339AA	CL	ZER
1	EA	THRESHOLD	AS DETAILED	AL	ZER

HW SET: 455.1

3	EA	HINGE	3CB1HW 5 X 4.5	630	IVE
1	EA	ACCESS LOCK	PDL6600CR/26D	626	ALM
1	EA	MORTISE CYL HSG	R2183/26D-1 FOR ACCESS LOCK	626	MAR
1	EA	CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	DOME STOP	W1211	626	TRI
1	SET	PERIMETER SEALS	328AA HEAD AND JAMBS	AL	ZER
1	EA	DOOR SWEEP	339AA	CL	ZER
1	EA	THRESHOLD	AS DETAILED	AL	ZER

HW SET: A032.7

1	EA	PIVOT SET	7215	626	IVE
2	EA	INTERMEDIATE PIVOT	7215 INT	626	IVE
1	EA	ACCESS LOCK	PDL6200IC/26D	626	ALM
1	EA	CLOSER	4040XP	689	LCN
1	EA	MOUNTING PLATE	4040-18	689	LCN
1	EA	DOME STOP	W1211	626	TRI

DOORS MUST BE WIDE STILE TO MOUNT LOCK SEALS AND SWEEPS BY DOOR MANUFACTURER

HW SET: A482.1

1	EA	PIVOT SET	7215	626	IVE
1	EA	INTERMEDIATE PIVOT	7215 INT	626	IVE
1	EA	EXIT DEVICE	CDSI-AX-98-NL/OP-PA	626	VON
1	EA	RIM CYL HSG	R662/26D FOR ACCESS LOCK	626	MAR
1	EA	MORTISE CYL HSG	R2183/26D-1 FOR DOGGING	626	MAR
1	EA	ACCESS LOCK	ETPDNS1G26DV99	626	ALM
1	EA	CYL ADAPTER	ET-BIC/26D FOR ACCESS LOCK 4040XP EDA	626	ALM
1	EA	KIT CLOSER		689	LCN
1	EA	MOUNTING PLATE	4040-18	689	LCN
1	EA	FLOOR STOP	1265 (2 1/4" HIGH STRIKE)	626	TRI
1	EA	THRESHOLD	AS DETAILED	AL	ZER

SEALS AND SWEEPS BY DOOR MANUFACTURER

DOORS MUST BE WIDE STILE TO MOUNT PANIC HARDWARE

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HW SET: A482.5

1	EA	PIVOT SET	7215	626	IVE
1	EA	INTERMEDIATE PIVOT	7215 INT	626	IVE
1	EA	EXIT DEVICE	CDSI-AX-98-NL/OP-PA	626	VON
1	EA	RIM CYL HSG	R662/26D FOR ACCESS LOCK	626	MAR
1	EA	MORTISE CYL HSG	R2183/26D-1 FOR DOGGING	626	MAR
1	EA	ACCESS LOCK CYL	ETPDNS1G26DV99	626	ALM
1	EA	ADAPTER KIT	ET-BIC/26D FOR ACCESS LOCK	626	ALM
1	EA	CLOSER	4040XP EDA	689	LCN
1	EA	MOUNTING PLATE	4040-18	689	LCN
1	EA	FLOOR STOP	1265 (2 1/4" HIGH STRIKE)	626	TRI
1	EA	THRESHOLD	AS DETAILED	AL	ZER

SEALS AND SWEEPS BY DOOR MANUFACTURER

DOORS MUST BE WIDE STILE TO MOUNT PANIC HARDWARE

HW SET: A582R.1

2	EA	PIVOT SET	7215	626	IVE
2	EA	INTERMEDIATE PIVOT	7215 INT	626	IVE
1	EA	MULLION	KR4954	689	VON
2	EA	EXIT DEVICE	CDSI-AX-98-EO-PA	626	VON
1	EA	ACCESS LOCK	ETPDNS1G26DV99	626	ALM
1	EA	CYL APAPTER KIT	ET-BIC/26D FOR ACCESS LOCK	626	ALM
1	EA	RIM CYL HSG	R662/26D FOR ACCESS LOCK	626	MAR
2	EA	MORTISE CYL HSG	R2183/26D-1 FOR DOGGING	626	MAR
1	EA	OFFSET DOOR PULL	8190-0 10" CTC	630	IVE
2	EA	CLOSER	4040XP EDA	689	LCN
2	EA	MOUNTING PLATE	4040-18	689	LCN
2	EA	FLOOR STOP	1265 (2 1/4" HIGH STRIKE)	626	TRI
1	EA	THRESHOLD	AS DETAILED	AL	ZER

SEALS AND SWEEPS BY DOOR MANUFACTURER

DOORS MUST BE WIDE STILE TO MOUNT PANIC HARDWARE

HW SET: A585R.1

2	EA	PIVOT SET	7215	626	IVE
2	EA	INTERMEDIATE PIVOT	7215 INT	626	IVE
1	EA	MULLION	KR4954	689	VON
2	EA	EXIT DEVICE	CDSI-AX-98-EO-PA	626	VON
1	EA	ACCESS LOCK	ETPDNSG26DV99	626	ALM
1	EA	CYL ADAPTER KIT	ET-BIC/26D FOR ACCESS LOCK	626	ALM
1	EA	RIM CYL HSG	R662/26D FOR ACCESS LOCK	626	MAR
3	EA	IC MORT CYL	R2183/26D-1 FOR DOG & MULLION	626	MAR
1	EA	OFFSET DOOR PULL	8190-0 10" CTOC	630	IVE

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2	EA	CLOSER	4040XP EDA	689	LCN
2	EA	MOUNTING PLATE	4040-18	689	LCN
2	EA	DOME STOP	W1211	626	TRI
1	EA	THRESHOLD	AS DETAILED	AL	ZER

SEALS AND SWEEPS BY DOOR MANUFACTURER

DOORS MUST BE WIDE STILE TO MOUNT PANIC HARDWARE

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END OF SECTION3

SECTION 09 5113
ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Acoustical Tile Ceiling including metal suspension system.
B. Acoustical Units (ACT)

1.02 RELATED REQUIREMENTS:

A. Section 09 2900 - Gypsum Board.
B. Division 23 - HVAC.
C. Division 26 - Electrical.

1.03 REFERENCE STANDARDS

A. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
B. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
C. ASTM E84 - Standard Method for Surface Burning Characteristics of Building Materials.
D. ASTM E580 - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
E. 2015 International Building Code - Section 1613, 1704, 1705, & 1706.
F. 2013 California Building Code, chapters 8, 16, 16A and 25.
G. ASCE/SEI American Society of Civil Engineers 7-10: Minimum Design Loads for Buildings and Other Structures.
H. CISCA Ceilings & Interior Systems Construction Association.
    1. Ceiling Systems Handbook
    2. Seismic Construction Handbook
I. International Code Council ICC-ES Evaluation Report ESR-1222 issued December 2016.

1.04 SUBMITTALS

A. Product Data: Provide data on suspension system components and ceiling tiles.
B. Shop Drawings: Indicate grid layout and related dimensioning.
C. Maintenance Materials: Furnish ten extra ceiling tiles for Owner's use in maintenance projects.
D. Product Test Reports: Provide test reports for each acoustical ceiling panel, performed by NVLAP certified testing agency.
E. Evaluation Reports: For each ceiling suspension system, submit ICC-ES 1222 report showing compliance.

1.05 QUALITY ASSURANCE

A. Ceiling systems shall consist of lay-in acoustical ceiling panels by a single manufacturer and suspension systems by a single manufacturer for the entire project.
B. Qualifications of Installer: Minimum five years of experience in installing acoustical ceiling systems of the types specified.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the Project site in original sealed packages.
B. Storage: Store materials in building area where they will be installed, in original package. Keep clean and free from damage due to water or deteriorating elements.
C. Handle in a manner to prevent damage during storage and installation.

1.07 PROJECT CONDITIONS

A. Installation of acoustical ceiling system shall not begin until the building is enclosed, permanent heating and cooling is in operation, and residual moisture from concrete work has dissipated. Building areas to receive ceilings shall be free of construction dust and debris.
B. Environmental Requirements: Maintain temperature in space at 55 degrees F or above for 24 hours before, during, and after installation of materials.

C. Scheduling:
1. Before concealing Work of other sections, verify required tests and inspections have been completed.
2. Coordinate with related Work of other sections. Coordinate location and symmetrical placement of air distribution devices, electrical devices, and penetrations with related Work section.

1.08 WARRANTY

A. Manufacturer shall provide a 10 year material warranty.
B. Installer shall provide a two year installation warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Armstrong World Industries. Basis of Design
B. USG Corporation.
C. CertainTeed Ceilings Corp.

2.02 SEISMIC PERFORMANCE REQUIREMENTS

A. Seismic Performance: Suspended grids and ceiling panels shall be installed in accordance to ASTM C636, ASTM E580 (including approved alternate methods).
B. Ceiling design shall comply with ASCE/SEI American Society of Civil Engineers 7-10: Minimum Design Loads for Buildings and Other Structures

2.03 METAL SUSPENSION SYSTEM FOR ACOUSTICAL CEILING PANEL

A. Narrow Face, Capped, Double Web, Cold Rolled Steel Suspension System: Main and Cross Tees as defined by ASTM C635, commercial quality pretreated and painted hot-dipped galvanized cold-rolled steel, exposed surfaces prefinished in manufacturer's standard corrosion resistant enamel paint finish:
1. Basis of Design: Subject to compliance with project requirements, the design is based on the following: USG Interiors, LLC, “USG DONN® Brand DX/DXL™ 15/16" Acoustical Suspension System”.
2. Structural Classification: heavy duty.
3. Tee Profile: Narrow Face 15/16” (22 mm) wide.
4. Tee Height: 1 1/2” (38 mm).
5. Grid Module: 2’ X 4’.
6. Fire Rating: Class A.
7. Color: standard flat white 050
8. Seismic Criteria:
a. Reference Seismic standards per ASTM E580 and CISCA guidelines.
b. Seismic Design Category as defined by the IBC (International Building Code): D-F.

B. Accessories.
1. Wall molding: Inside Corner: Field-mitered joints at wall molding. Prefabricated corner cap; formed to 90° angle; hemmed edge; size and finish to match wall molding. Outside Corner: Prefabricated corner cap; formed to 90° angle; hemmed edge; size and finish to match wall molding.
a. Angle shape; 2 in. mounting flange by 1 in. vertical flange; hemmed edges; exposed surface pre-finished to match suspension system components. Available Product: M20SM.
2. Shadow Molding: Formed steel section; exposed surfaces prefinished to match suspension system components.
a. 9/16” thick exposed flange; 3/8” x 3/8” reveal; 7/8” vertical flange; Available Product: MS174.
b. 1 1/4” exposed flange; 9/32” x 3/4” reveal; 7/8” vertical flange; Available Product: MS274.
3. Seismic Attachment Clip: Used to attach tees ends to perimeter angle for seismic design C D E F categories.
a. Available products: ACM7.
4. Molding Attachment Clip: 2 in. thick x 1/2 in. thick x 1-5/8 in.; for Fineline Suspension System. Used to attach cross tees and main tees to walls/ wall molding.
a. Molding Attachment Clip: 9/16 in. thick for SQ panels or FL panels, Available products: MAC2
5. Stabilizer bars:

a. Panels with a length equal to or greater than 60” shall require stabilizer bars at the midpoint to secure suspension grid to the ceiling panel. Reference USG ceiling literature for more information.

6. Seismic Separation joint accessories: Tee sleeves to accommodate movement: Snap fit sleeve, prefinished to match suspension system components.
   a. For 15/16” DX/DXL Suspension System; Available products: TFS-1.
7. Four way Seismic Separation joint clip: Connects 4 way intersection: Snap fit sleeve with optional screw/fixing holes.
   a. Available products: DH4.
8. Compression Posts for bracing of ceiling applications:
   a. Available products: Adjustable 18” to 30” [VSA 18/30], Adjustable 30” to 48” [VSA 30/48], Adjustable 48” to 84” [VSA 48/84], Adjustable 84” to 102” [VSA 84/102], Adjustable 102” to 120” [VSA 102/120], Adjustable 120” to 144” [VSA 102/144].

C. Suspension System Attachment devices.
1. Hanger Wire: Galvanized carbon steel; soft temper; pre-stretched; yield stress load at least three times the design load but not less than 12-gauge.
   a. Spacing and gauge per IBC, UL and CISCA design.
   b. Supplied and installed by ceilings subcontractor.

2.04 ACOUSTICAL CEILING PANELS

A. Acoustical ceiling panels shall be class A in accordance to ASTM E1264.

B. Acoustical panels shall meet the following surface-burning characteristics when tested in accordance to ASTM E84 for Class A materials:
1. Maximum Flame Spread: 25.
2. Maximum Smoke Developed: 50.

C. Mold and Mildew Resistance: Panels and faces shall be treated with a biocide paint additive or an antimicrobial solution to inhibit mold and mildew.

D. Acoustical Panels - 24 inch by 48 inch
1. Panel Name: USG Item #562, Fissured pattern ceiling tile.
2. Panel Size: 2-foot by 4-foot.
3. Panel Thickness: 5/8 inch.
4. Edge Detail: Square Lay-in.
5. Light Reflectance: 0.90, complying with ASTM E1477.
6. CAC: 35, UL Classified, complying with ASTM E1414.
7. NRC: Minimum 0.75, UL Classified, complying with ASTM C423.
8. Color: White.

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E. Acoustical Panels – Clean Room VL, 24 Inch by 48 Inch
1. Panel Name: USG Clean Room VL, Imperial White, Square Lay-In Ceiling Panel.
2. Panel Size: 2-foot by 4-foot.
3. Panel Thickness: 5/8 inch.
4. Edge Detail: Square Lay-In.
5. Material: Wet-formed mineral fiber with vinyl-faced membrane.
6. Surface Finish: Vinyl-faced membrane.
7. Light Reflectance: 0.80, complying with ASTM E1477.
8. CAC: 40.
9. Fire Classification: Class A, complying with ASTM E1264.
10. Flame Spread Index: 25 or less, complying with ASTM E84.
11. Smoke Developed Index: 50 or less, complying with ASTM E84.
12. Mold and Mildew Resistance: BioBlock performance to resist mold and mildew growth on panel surface.
13. Surface Characteristics: Washable, scrubbable, water-repellent, impact-resistant, and soil-resistant. Color: White.

Suspension System: Compatible with USG 15/16-inch Prelude, Prelude Plus XL, or Clean Room suspension systems.

PART 3 - EXECUTION

3.01 PREPARATION

A. Furnish layouts for inserts, clips or other supports and struts required to be installed by the Work of other trades that depend on the suspended ceiling system for support.

B. Coordinate related Work to ensure completion prior to installation of clips or fasteners.

3.02 INSTALLATION OF SUSPENSION SYSTEMS

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

C. Hang suspension system independent fo walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest afected hangers and related carrying channels to span the extra distance.

E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

G. Do not eccentrically load system or induce rotation of runners.

H. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junction with other interruptions.

1. Use longest practical lengths.
2. Overlap and rivet corners.

3.03 INSTALLATION OF ACOUSTICAL PANELS

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 units after above ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp and dents.

F. Cutting Acoustical Units:

1. Cut to fit irregular grid and perimeter edge trim.
2. Make field cut edges of same profile as factory edges.
3. Where round obstructions occur, provide preformed closures to match perimeter molding.
4. Install hold-down clips on each panel to retain panels tight to grid system.

3.04 CLEANING

A. General: After installation of acoustical material has been completed, clean surfaces of the material, removing any dirt or discolorations. Replace panels as required.

B. Acoustical Panels: Minor abraded spots and cut edges shall be touched up with the same paint as was used for factory applied finish of the lay-in panels.

C. Remove and replace work that can not be successfully cleaned and repaired to eliminate evidence of damage.

3.05 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose off of the Project site.

END OF SECTION

SECTION 09 9900
COLORS

PART 1 GENERAL

1.01 SUMMARY

A. The General Conditions and Division 1 are a part of this Section and the Contract for this Work and apply to this Section as if repeated fully herein. This section is intended to supplement the provisions of the General Conditions, and to supplement criteria established elsewhere in these documents for the basis of acceptance or rejection of requests for substitution.

1.02 COLOR SELECTION PROCESS

A. All colors will be selected by the Architect. Materials and products have been specified partly based upon the availability of colors desired by the architect as being compatible with the overall color palate for the project. A preliminary color palate has been developed based upon the materials and products specified. Although requests for substitution are encouraged in order to generate competition and equal opportunity among suppliers, the basis for acceptance or rejection of a request for substitution may rest with the availability of colors compatible with the palate. Based upon the availability of colors within the items specified or allowed as substitution a final color palate will be developed after completion of the substitution period.

1.03 REMAINING COLORS

A. Material colors not indicated below will be selected upon submittal of manufactures standard colors complying with each applicable specification.

PART 2 PRODUCTS

2.01 NOT APPLICABLE

PART 3 EXECUTION

3.01 NOT APPLICABLE

APPENDIX: FINISH LIST

END OF SECTION

FINISH LIST

GATEWAY ANNEX SCHOOL

VENTURA COUNTY OFFICE OF EDUCATION

Specification Section	Specification Name	Material ID	Manufacturer	Product Name/Series/Model	Color/Finish	Location	Remarks
08 4313	Aluminum Framed Entrances and Storefronts		Arcadia	1	Clear AC1		
08 8000	Glazing	B	3M	Fasara	Milky Milky Light Grey SH2MAMML	Storefront SF1	See A701
08 8000	Glazing	C	3M	Fasara	Cross Hairline Milky SH2CHML	Storefront SF1	See A701
09 3000	Ceramic Tile	T-1	Daltile	Portfolio Colorbody Porcelain	Dove Grey PF04 Matte	Restroom Walls	Field
09 3000	Ceramic Tile	T-2	Daltile	Portfolio Colorbody Porcelain	Skyline Blend PF12	Restroom Walls	Accent
09 3000	Ceramic Tile	FT	Daltile	Portfolio Colorbody Porcelain	Ash Grey PF05 Matte	Restroom Floor	See A601
09 3000	Ceramic Tile	QT	Daltile	Arid Flash Square (Matte)	Beige 0Q48 Matte	Kitchen Floor	See A601
09 6519	Resilient Tile Flooring	VCT-1	Armstrong	Standard Excelon Imperial Texture	Mid Graved Blue 51875	Classroom Floor	See A601
09 6519	Resilient Tile Flooring	VCT-2	Armstrong	Premium Excelon Raffia Stream	Earth 55926	Platform Floor	See A601
09 6519	Resilient Tile Flooring	VCT-ST	Armstrong	Integrated Stair Treads	Pebble R4CPB449	Platform Stairs	
09 6519	Resilient Tile Flooring	B-1	Mannington Burkebase	Rubber 4” Cove Base (TP)	323 Blue Bonnet		Base
09 6519	Resilient Tile Flooring	B-2	Mannington Burkebase	Rubber 4” Cove Base (TP)	660 Rocky	Platform	Base

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09 6813	Tile Carpeting	CPT-1	Shaw Industries Group, Inc	Worklife Connect Tile, 59342	Harbouring Desi 40485		See A601
09 9113/ 09 9123	Interior & Exterior Painting	PT-1	Dunn Edwards		Whisper DEW340	Walls	Field
09 9113/ 09 9123	Interior & Exterior Painting	PT-2	Dunn Edwards		Slumber DE5860	Doors, exposed columns & beams	Accent
09 9113	Exterior Painting	PT-3	Dunn Edwards		Lemon Punch DE5398		Accent
09 5100	Acoustical Ceiling	ACT-2	Armstrong	CLEAN ROOM VL 868 or 870	White; smooth vinyl-faced	Kitchen Ceiling	5/8 in.; washable
06 8300	FRP Wall Panels	FRP	Marlite	FRP S100G	White; smooth gloss	Kitchen Walls	0.090 in. nominal
09 3000	Ceramic Tile	CB	Daltile	Arid Flash Square (Matte)	Beige 0Q48 Matte	Kitchen Cove Base	Match T-4 floor tile
09 3000	Ceramic Tile	CB	Daltile	Portfolio Colorbody Porcelain	Ash Grey PF05 Matte	Restroom Cove Base	Match T-3 floor tile
09 3000	Tile Grout	G-1	LATICRETE	9-Frosty	Frosty	Kitchen & Restroom Tile	

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SECTION 11 40 00

FOODSERVICE EQUIPMENT

PART 1 – GENERAL

1.1 SECTION INCLUDES:

A. Foodservice equipment.

1.2 SCOPE OF WORK:

A. Furnish all labor, materials, and services necessary for the procurement and installation of the equipment included in this section.

B. Supervise and provide required instructions for work to be performed by other contractors in connection with requirements for all equipment included this section.

C. Specifications and drawings have been prepared to form the basis for coordination with the other trades on this Project, procurement, erection, start-up, and adjustment of all equipment in this section. Plans and specifications are to be considered as mutually explanatory and work required by one, but not by the other, is to be performed as though required by both. Items required by one, but not by the other are to be provided as though required by both. Work to be accomplished as called for in specifications and shown on drawings, so that all items of equipment are completely functional for purpose for which they were designed. When/if there is any discrepancy between drawings and specifications, bidders should seek clarification of any discrepancies from the Consultant prior to bidding.

D. Should the drawings disagree between themselves or the specifications with the drawings, the better quality more stringent, and/or greater quantity of the work or materials to be completed without additional costs to the Owner.

E. Secure and pay fees for all permits and licenses as required by all authorities having jurisdiction. Give all notices and comply with all laws, ordinances, rules, regulations, and contract requirements bearing on the work.

1.3 RELATED DIVISIONS / SECTIONS:

A. Refer to General Conditions, Supplementary Conditions, and applicable provisions of Division 1 for additional instructions.

B. Refer to Interior Design Divisions for applicable provisions and sections regarding décor finishes, applications, details, and special instructions relating to items specified in this Section. Applicable to Projects with items specified in this Section, with décor finishes and/or construction.

C. Refer to Mechanical/Plumbing Divisions for applicable provisions and sections regarding mechanical services, including, but not limited to exhaust ductwork and fans, floor sinks and floor drains, water gas and steam rough-ins, grease traps, steam traps, drain traps, potable water backflow prevention atmospheric vents, and RPZ valves, valves, pipes and pipe fittings, ductwork, and other materials necessary to complete final connections to individual items as specified in this Section. Not work of this Section. Also includes:

1. Piping and insulation for fryer oil systems.

2. Piping for remote pulping systems.

3. All exhaust hood or ventilator duct work and fans upstream from the connection position.

D. Refer to Electrical Divisions for applicable provisions and sections regarding electrical services, including, but not limited to, rough-ins, standard voltage and low-voltage wiring, conduit, drop-cords, ceiling-mounted cord reel assemblies, disconnects and other materials necessary to complete final connections to individual items as specified in this Section. Not work of this Section. Also includes:

1. Installation of light fixtures furnished loose at cold storage rooms.

2. Connection of cold storage room temperature alarm system to the building security system.

3. Connection of hood fire suppression system to the building security system.

E. Work included in other Divisions - Provision of all walls, floor, and/or ceiling/roof openings, and sealing thereof, as necessary for installation of items included in this section. Not work of this Section. Also includes:

1. Slab depressions reinforced concrete wearing bed and interior finished floor with coved base at prefabricated cold storage assemblies.
2. Concrete or masonry platforms with finished top and coved base at perimeter, for raised setting of foodservice equipment: Divisions 03/09.
3. Slab depressions to receive stainless-steel drain trench liner/grate assemblies provided under this Section.
4. Wall backing to support all wall-mounted equipment.
5. Conduit and piping sleeves for soda, beer/liquor, refrigeration, CO2 and drain lines through building ceilings and floors.

F. Work included in other Divisions - Disconnection of existing equipment to be relocated and/or reused; and removal of existing equipment which will not be reused, as determined, and designated by the Architect in other Divisions. Not work of this Section. (Applicable to Projects with existing equipment.)

1.4 DEFINITIONS:

A. Furnish - Supply and deliver to Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.

B. Install (set in place) - Operations at Project Site including actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, finishing, curing, protecting, cleaning and similar operations, ready for final utility connections by other Divisions as appropriate.

C. Provide - Furnish and install complete, ready for intended use, including any necessary initial training.

D. Contractor - Refers to the Kitchen Equipment (Sub) Contractor in this Section. References to any other Contractor or Division will be specific, such as General Contractor, Plumbing (Sub) Contractor / Division, Electrical (Sub) Contractor / Division, Architect designated, etc.

1.5 LAWS, ORDINANCES, REGULATIONS AND STANDARDS:

A. Comply with the following in their current published form:

1. Air Conditioning and Refrigeration Institute (A.R.I): applicable regulations and references of the latest edition of standards for remote refrigeration system(s), components, and installation.
2. American Gas Association (A.G.A.): standards for gas heated equipment and provide equipment with the A.G.A. seal. Automatic safety pilots to be provided on all equipment, where available. (Canadian Gas Association or alternate testing lab's seals accepted if acceptable to local code jurisdictions.)
3. American National Standards Institute (A.N.S.I.): Z21-Series for gas-burning equipment. Provide labels indicating name of testing agency.
4. American National Standards Institute (A.N.S.I.): B57.1 for compressed gas cylinder connections, and with applicable standards of the Compressed Gas Association for compressed gas piping.
5. American National Standards Institute (A.N.S.I.): A40.4 and A40.6 for water connection air gaps and vacuum breakers.
6. American Society of Heating, Refrigeration and Air Conditioning Engineers (A.S.H.R.A.E.): applicable regulations and references of the latest edition of standards for exhaust system planning including A.S.H.R.A.E. 90.1 Section 5,6,7, and remote refrigeration system(s), components, and installation.
7. American Society of Mechanical Engineers (A.S.M.E.): Boiler Code requirements for steam generating and steam heated equipment and provide A.S.M.E. inspection stamp and registration with National Board.
8. American Society for Testing and Materials (A.S.T.M.): C1036 for flat glass.
9. American Society for Testing and Materials (A.S.T.M.): C1048 for heat-treated flat glass - Kind HS, Kind FT coated and uncoated glass.
10. American Society for Testing and Materials (A.S.T.M.): F232-03 for pre-rinse spray units, and in compliance with Energy Policy Act of 2005 (EPAct).

11. American Welding Society (A.W.S.): D1.1 structural welding code.
12. Energy Policy Act of 2005 (EPAct 2005): water savings pre-rinse spray valves.
13. National Electric Code (N.E.C.): N.F.P.A. Volume 5 for electrical wiring and devices included with foodservice equipment, A.N.S.I. C2 and C73, and applicable N.E.M.A. and N.E.C.A. standards.
14. National Electrical Manufacturers Association (N.E.M.A.): LD3 for high-pressure decorative laminates.
15. National Fire Protection Association (N.F.P.A.): applicable sections for exhaust hoods, ventilators, duct and fan materials, hoods fire suppression systems, wheel placement systems, construction, and installation; in addition to local codes and standards.
16. National Sanitation Foundation (NSF): latest Standards and Revisions, and as accredited by ANSI, IAS, NELAC, ISO, OSHA, and SCC. Provide NSF Seal of Approval on all standard manufactured items included in this Project and listed in any NSF Certified Food Equipment Products Category, and on all items of custom fabricated work included in this Project. (UL Sanitation approval and seal accepted if acceptable to local code jurisdictions.)
17. Sheet Metal and Air Conditioning Contractor's National Association (S.M.A.C.N.A.): latest edition of guidelines for seismic restraint of kitchen equipment, as applicable to project location. All seismic requirements shall be shown on all submittals. Submit requested information to the agencies and authorities having jurisdiction.
18. Underwriters Laboratories (U.L.): as applicable for electrical components and assemblies. Provide either U.L. labeled products or, where no labeling service is available, “recognized markings” to indicate listing in the U.L. “Recognized Component Index”. (Canadian Standards Association or alternate testing lab's seals accepted if acceptable to local code jurisdictions.)
19. UL 300 Standard: for wet chemical fire suppression systems for exhaust hoods/ventilators.
20. American with Disabilities Act (ADA): as applicable to this Project.
21. Refrigeration Service Engineers Society (R.S.E.S.): applicable regulations and references of the latest edition of standards for remote refrigeration system(s), components, and installation.
22. All refrigerants used for any purpose is to comply with the 1995 and 2010 requirements of the Montreal Protocol Agreement, and subsequent revisions and amendments. No CFC or HCFC refrigerants will be permitted on this Project.
23. All refrigeration components installation, repairs, and/or associated work on any refrigeration system, is to be performed by a Certified Refrigeration Mechanic thoroughly familiar with this type of commercial foodservice installation. ETL and other national and international recognized Testing and Listing Agency labels and certifications are acceptable in lieu of Listing Agencies indicated in these documents, if acceptable to the local code jurisdictions.
24. All applicable local codes, standards, and regulations.
25. All special local codes, standard, and regulations such as (examples only) California Energy Commissions Regulations, Dade County requirements for walk-in cooler(s) and/or freezer(s).
26. For detention facilities projects (as applicable): applicable Correctional Standards. Verify the level of security and construction required with the Architect and provide all items in compliance.

B. The Contract Documents shall prevail whenever they require larger sizes or higher standards than are required by regulations.

C. The above regulations shall govern whenever the Contract Documents require something that is deemed to violate the above regulations.

D. No extra charge will be paid by Owner for furnishing items required by the regulations, but not specified and/or shown on the drawings.

E. Rulings and interpretations of the enforcing agencies shall be considered part of the regulations.

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1.6 CONTRACTOR'S QUALIFICATIONS:

A. In addition to requirements of Related Sections 1.3.A:

1. Five (5) years minimum continuous operation under the same company name and ownership.

2. Financial stability and ability to complete this Project.

3. Comparable size and scope projects completed in the last five (5) years.

4. Contractor to provide letter that states they are able-to purchase, distribute, and install all items specified.

B. Any sub-contractor or fabricator employed by Contractor:

1. Is to comply with the same qualifications.

2. Their name, address, and a brief-summary of their experience and qualifications is to be submitted with the bid proposal.

3. Fabrication sub-contractor shall be NSF, NEC, and UL-approved at a minimum for fabrication of all items detailed within this specification and attending drawing set. Moreover, fabrication shop shall have the means and expertise to fully engineer and fabricate any-and-all counters, tables, natural and man-made stone counter tops, food shields, etc. all in one manufacturing facility where specified as part of this document set.

1.7 BIDDING AND SUBSTITUTIONS:

A. The Bidder shall provide pricing on primary manufacturer and model specified. These Contract Documents were designed and engineered using the primary manufacturer and model and are intended to be the Basis of Bid. Provide itemized prices for each item, along with cited accessories with separate total prices for delivery and installation. Any-and-all city, state, occupational and government taxes which are applicable to this project, shall be included and added as a separate charge. All figures shall be included in a grand total package bid proposal. Bids shall be valid for thirty (30) days after bid deadline date and shall indicate same. Failure to comply with the above may be cause for rejection of the bid.

B. Unless otherwise noted, substitutions may be submitted for consideration, but must be itemized at the end of the bid proposal.

C. Substitutions must be approved in writing by the Architect and/or Owner, prior to utilization in this Contract. A copy of the approval must be included with any submittals by Contractor.

D. Contractor shall provide all design/engineering services required to make-adjustments in space, systems, utilities, etc. and pay all additional costs of utilities, construction or professional services that may be incurred due to the acceptance of any substitution.

E. Application for Substitution of Specified Foodservice Equipment. This form shall be submitted in support of each suggestion of request to substitute an alternate manufacturer and/or model of equipment that is not included in the Division 11 40 00 (Foodservice Equipment) specifications.

APPLICATION FOR SUBSTITUTION OF SPECIFIED FOODSERVICE EQUIPMENT

The decision to accept an unnamed alternate will be based exclusively on the information provided hereon and the Owner's or their designee's research and verifications of claims, which shall include sharing the information with manufacturer(s) of the originally specified equipment. Accordingly, any proprietary information regarding the proposed substitution should be so identified and submitted as an addendum to this form.

By submitting this application, the Contractor guarantees the information is correct and accepts total responsibility for all additional costs that may directly or indirectly result from acceptance of the proposed substitution. It is the interest of the Contractor to declare in this form all benefits that they may accrue to the Owner. Include the proposed manufacturer's data sheets, drawings and any other supporting information.

The original specifications describe the minimum standards of the equipment – proposed substitutions that do not meet or exceed this minimum standard or otherwise benefit the Owner will not be considered except in the case of an originally specified item that is no longer available. The Owner or their designee will be the sole authority regarding identifying specific features, capacities, etc. that are operationally critical. Acceptance of a proposed substitution does not relieve the Contractor of responsibility for all direct or indirect costs associated with the substitution.

1. Date Submitted: _____

2. Item Number:_____ Description:_____ Quantity:_____

3. Specified Manufacturer:_____ Specified Model Number:_____

4. Proposed Manufacturer:_____ Proposed Model Number:_____

5. Does the proposed equipment incorporate all features and options expressed or implied by the specifications, including features and option that are provided as standard by the specified item?

   ☐ Yes ☐ No – describe (attach additional sheets as required):_____
   _____

6. Compare Utilities (attach additional sheets as required):

   Specified: HW_____ CW_____ Gas (BTU) _____ Steam (BHP) _____ Electrical_____

   Exhaust (cfm) _____ Duct size_____ Supply (cfm) _____ Duct size_____

   Proposed: HW_____ CW_____ Gas (BTU) _____ Steam (BHP) _____ Electrical_____

   Exhaust (cfm) _____ Duct Size_____ Supply (cfm) _____ Duct Size_____

7. Compare Dimension:

   Specified: Left to Right_____ Front to Rear_____ Height_____

   Proposed: Left to Right_____ Front to Rear_____ Height_____

8. Does the proposed substitution require changes to the work to be provided by other trades?

   ☐ No ☐ Yes – describe (attach additional sheets as required):_____

   _____

9. Does the proposed substitution require changes or create any issues regarding adjacent or associated equipment (for instance: door swing interference; service access; air circulation)?

☐ No ☐ Yes – describe (attach additional sheets as required):_____

_____

What benefits will the Owner realize as a result-of this substitution (for instance: capital expense; energy savings, flexibility)? Provide specific information.

☐ There are no benefits to the Owner.

☐ The following will benefit the Owner – (attach additional sheets as required):_____

_____

_____

10. Are there any other considerations that should be evaluated? _____

_____

_____

11. Signature of Contractor's Representative: _____

1.8 APPROVED SUBSTITUTIONS AND/OR LISTED ALTERNATES:

A. Substitutions approved as noted in Article 1.7, and/or any Listed Alternate manufacturers included in the Itemized Specifications Article 3.12, or added by Addendum, may be utilized, in lieu of the primary specified manufacturer with the following conditions:

1. These Contract Documents are designed and engineered using the primary specified manufacturer and model and are intended to be the Basis of Design and Bid. Contractor assumes complete responsibility for any deviations required due to utilization of a substitution/alternate manufacturer or model; including, but not limited to, fitting alternates into available space, providing directions for required changes, and assuming any associated cost for utility, building, architectural, or engineering changes.

2. Contractor is responsible for supplying the model, which is as close as possible to the primary specified model in regard-to general function, features, options, sizes, accessories, utility requirements, finish, operation, internal system engineering and listing approvals. if it is determined by the owner or their appointed representative at any time during the construction and installation process, and prior to the final acceptance of the Project, that the substitution/alternate model submitted is not equivalent to the primary specified model, the Contractor will assume all associated cost and implications required to replace the model submitted, with the correct model.

3. The bid proposal is to clearly state any proposed substitutions/alternates, that are being offered for review by including the manufacturer and model number. Along with a current data sheet for each substitution/alternate, with any-and-all deviations between the primary specified manufacturer and the substitution/alternate manufacturer clearly defined. Technical brochures from manufacturers may not be acceptable as adequate information required for comparison. Complex alternates such as utility distribution systems, exhaust hoods, ventilators, refrigeration systems, etc., shall include a shop drawing specific to this Project.

4. Inclusion of an alternate manufacturer in Itemized Specifications Article 3.12 is not intended to indicate that there is an equal alternate unit to match every primary specified unit. It is the responsibility of the Contractor to ensure that the alternate unit submitted matches or exceeds the primary specified unit; and meets the conditions as stated above.

5. Manufacturers not approved as substitutions or included as a Listed Alternates will not be permitted.

1.9 DISCREPANCIES:

A. Where discrepancies are discovered between the drawings and the specifications, regarding quality or quantity, the higher quality or the greater quantity is to be included in the Bid Proposal.

B. Contractor to notify the Architect, in writing, of any discrepancies discovered; and await written clarification prior to proceeding with the items or areas in question.

C. Contractor is responsible for verifying and coordinating all items provided in this Section, with the drawings, specifications, manufacturer's requirements, submittals, actual site conditions, adjacent items, and associated (Sub-) Contractors; to assure that there are no discrepancies or conflicts. This is to include, but not be limited to, quantities, dimensions, clearances required, direction of operation, door swings, utilities, fabrication details and methods, installation requirements, etc.

1.10 SUBMITTALS:

A. Provide one (1) digital set (PDF) of all Submittals for review by the Design Team. After review process this set will be returned for any updating necessary and subsequent distribution.

B. Substitutions must be approved in writing by the Architect and/or Owner prior to utilization in this contract. A copy of the approval must be included with any submittals.

C. Contractor to review all submittals for compliance with the Contract Documents, prior to submitting to the Design Team for review and is responsible for the accuracy of the information within their submittals.

D. Contractor's use of any Design Team's digital contract drawings for basis of producing their submittal drawings, is limited to the following conditions, and understanding:

1. Contractor shall perform a thorough project review of all foodservice and allied discipline (MEPS) documents within the Contract Document set and provide independent engineering for all equipment to be provided.

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Contractor shall assume complete liability and responsibility for accuracy, and for conformance and verification with the latest Architectural and Engineering drawings, actual field conditions and equipment to be provided as part of contract.

2. The copy and simple re-use of the foodservice consultant's equipment plans, connection plans, building conditions plans, manufacturer's drawings, elevations/sections are prohibited.

3. Contractor further assumes responsibility for coordination of their submittals with those of other allied Contractors and Sub-Contractors, such as electrical, plumbing, and mechanical contractors as required.

4. Submittals shall contain Contractor's notes, symbols, details, title block and information.

E. Equipment Plan and Rough-In Drawings:

1. Submit 1/4" (1:50) scale drawings in pdf format. These drawings are to include complete information on the work included in this Contract, with references to equipment as provided by others; and are to provide sufficient information for associated trades, contractors, and/or sub-contractors to complete their division of work associated with foodservice equipment included in this Contract. Include any additional information pertinent to the installation of this equipment.

2. Special Conditions Drawings, dimensioned, sizing and locating the following conditions:

   a. Slab depressions, cores, sleeves, or block-outs (cold storage assemblies drain trenches, piping, etc.).

   b. Concrete or masonry platforms.

   c. Pipe sleeves or roof jacks.

   d. Wall-openings or block-outs for pass-through equipment, recessed control panels, in-wall fire-protection system components, etc.

   e. Blocking grounds or anchor plates required in walls for equipment support/attachment.

   f. Above-ceiling hanger assemblies for support of exhaust hoods, utensil-racks, etc.

   g. Access panels in walls or ceiling for service of equipment.

   h. Ceiling pockets or recesses for unusually high equipment.

   i. In-wall carriers for wall-hung or cantilevered equipment.

   j. Ventilation for exhaust hoods, condensate hoods, ice machines, compressors, compressor racks and all other equipment requiring heat removal.

   k. Support systems such as beverage conduit and refrigeration line-run sleeves.

   l. Any other additional information pertinent to the installation of this equipment.

3. Electrical Rough-in Drawings field-coordinated and dimensioned providing the following information, but not limited to:

   a. Electrical utility schedule.

   b. Locations of rough-ins.

   c. Locations of control panels.

   d. Inter-wiring of walk-in freezer compressors to compressor rack control panel for defrost cycle.

   e. Inter-wiring of controls panels to equipment.

4. Plumbing Rough-In Drawings field-coordinated and dimensioned providing the following information, but not limited to:

   a. Plumbing utility schedule.

   b. Locations of rough-ins.

   c. Interconnection water filters assemblies to ice machine, beverage equipment, combi-ovens, steamers,

etc.

5. Field-coordinated, dimensioned refrigeration line-run drawings providing the following information, but not limited to:

   a. Sleeve locations & sizes for walls, floors, ceilings.

   b. Detailed and field-coordinated route of refrigeration line-runs from remote refrigeration system to unit served.

   c. Location and inter-wiring detail required for any temperature monitoring and/or control system specified.

6. Drawings to also include equipment plan(s) with detailed equipment list, similar-to Foodservice Equipment Plans included in the Contract Drawings. Item numbers are to be the same as shown in the Contract Documents and are to include Spare Numbers and associated items provided by others.

7. In the event rough-ins have been accomplished before award of this contract, Contractor is to examine the existing facility and identify adjustment needs related to their equipment to suit building conditions and utilities, where possible. Contractor to seek approval for the same prior to further construction. If not possible, state so in a letter, with reasons and an alternate method and pricing for their equipment, to the Architect and Foodservice Consultant.

F. Shop Drawings:

1. Submit shop drawings for items of custom fabrication included in this contract in pdf format. Shop drawings are to be submitted at 3/4" (1:20) and/or 1-1/2" (1:10) scale and are to show dimensions, materials, finishes, details of construction, installation and relation of adjoining work requiring cutting or close fitting as well as any specified fabrication shop fit-out work such as electrical load circuit breaker panels, inter-wiring or interpiping. Shop drawings are to also indicate reinforcements, anchorage and related work required for the complete installation of fixtures. Fabricator's shop drawings shall be prepared as a coordinated single submittal, separate-from, and not part of a single collated foodservice submittal.

2. Submit shop drawings for any equipment requiring field assembly, including but not limited to, Suite-style cooking assemblies, pulper/extractor assemblies, remote refrigeration systems, walk-in coolers and/or freezers, exhaust hoods/ventilators, fire suppression system, utility distribution systems, pot/utility/cart/tray/ware washing assemblies/machines, conveyors, floor troughs, seismic anchoring details (as required) and fresh oil supply/waste oil recovery systems in pdf format. Manufacturer's shop drawings shall be separated per system submitted in single form, and not part of a collated foodservice submittal.

3. When applicable, prepare and submit section, elevation, axonometric drawings in PDF format for all food shields within counters in a coordinated single submittal. Food shields to be compliant with current NSF code requirements and ergonomic reach requirements. Contractor to provide physical mock-up of same for Owner/Operator review and sign-off prior to fabrication.

4. Before proceeding with the fabrication or manufacture of any item, Contractor is responsible for verifying and coordinating all dimensions and details with site dimensions, conditions, and adjacent equipment.

5. The Contractor to clearly identify on drawings any-and-all differences between the Bid and/or Contract Documents and what is being provided. If any structural, electrical, plumbing, gas or steam requirements are different than what the Bid and/or Contract Documents show the Contractor will notify and record on the drawings identifying what is different and discuss same with General Contractor, Owner and Foodservice Consultant prior to commencing work.

G. Product Data Submittal Manuals:

1. Submit product data brochure(s) with a cover sheet complete with detailed information on every item included in this section in pdf format. Detailed information is to include, but not be limited to, item number, description, quantity, model numbers, options and accessories provided, N.E.M.A. plug and receptacle configuration for applicable items, exact utility requirements, manufacturer's cut-sheets, reference to specific shop drawings, etc. Distribute one additional copy of installation and start-up instructions to the Installer. Every cover sheet and associated detailed submittal is to provide sufficient and complete information for the Design Team to verify that the Contractor understands the Contract requirements and is providing each item in compliance with the Contract Documents. Cover sheets to also include associated items as listed on the Equipment Plan but provided by others; and are to be noted as "Not in Section 11 40 00 Contract Division".

2. Reproduction of any part of the Contract Specifications will not be acceptable as part or total of Contractor's Product Date Submittal Manuals. These Manuals are to be produced and assembled entirely by the Contractor, in numerical order according to Item numbers.

3. The cover sheet shall clearly identify all differences between the bid documents and what is being provided. If any electrical, plumbing, gas or steam requirements are different than what the bid documents show the Contractor will make a note on the coversheet identifying what is different and why. If a model has been discontinued, the Contractor will make a note on the cover sheet and offer a replacement model.

4. The cover sheet shall clearly identify all differences between the Bid/Contract Documents and what is being provided. If any electrical, plumbing, gas or steam requirements are different than what the bid documents show the Contractor will make a note on the coversheet identifying what is different and why. If a model has been discontinued, the Contractor will make a note on the cover sheet and offer a replacement model.

H. The Design Team's review of submittal drawings, shop details, product data brochures, and operation and maintenance manuals are for general conformance with the design concept and Contract Documents. Review markings or comments are not to be construed as relieving Contractor from compliance with the Contract Documents, or departures there from. Contractor remains responsible for details and accuracy, confirming and correlating all quantities and dimensions, selecting fabrication processes, techniques of assembly, and performing their work in a safe, satisfactory, code-compliant and professional manner.

I. Commencement of purchasing or fabrication by the Contractor, of any item(s) included in this Contract, prior to receipt of reviewed Submittals from the Design Team, shall be at the Contractor's own risk; unless specifically instructed to do so in writing by the Owner, including the specific item numbers requested.

J. Contractor shall verify requirements and equipment sizes, critical clearances, or other characteristics necessary to represent Owner/ Purveyor items completely on the shop drawing submittals even though they may be listed as "NIC/Not in Contract" in the Equipment Schedule/Item Specification sections of this document.

1.11 OPERATION AND MAINTENANCE DATA MANUALS:

A. Two (2) bound sets of manuals are to be furnished for items of standard manufacturer on/or before the date of the first event to occur of the following: demo/start-up, start-up for intended use by the Owner/Operator, completion of installation of kitchen equipment contract package, or final acceptance of installation by Owner. Manuals are to be in alphabetical order according to manufacturer. Manufacturer's info is to include Tech Services telephone number, email, and web site address, where available.

B. Provide a complete list of all equipment, with make, model and serial numbers. Provide list of local service agencies for included manufacturers, complete with addresses, email addresses and telephone numbers. Also provide email and web site addresses, where available.

C. Provide electronic/digital media for maintenance, training, operation, etc. where available from the manufacturer.

D. Manual shall also include a leak testing report for each-and-every remote refrigerated system included under this Foodservice Equipment Section, as required in article 2.7.A.6 Refrigeration Equipment of this Section.

1.12 AS - BUILT/ RECORD DOCUMENTS:

A. Maintain one record set of Foodservice Equipment Plans with any related corrections, revisions, additions, deletions, changes, etc. noted during construction and installation. Provide an "as-built" set on a computer disk or electronically in PDF format.

B. Provide one (1) final set of Product Data Submittal Manual with any related corrections, revisions, additions, deletions, changes, etc. noted during construction and installation as a specifications' record set electronically in PDF format.

C. These documents are to be provided at the same time as the O & M Data Manuals. Submit the O & M Data Manuals electronically in PDF format.

1.13 SCHEDULE:

A. Time is of the essence and acceptance constitutes assurance that the Contractor can and will obtain materials, equipment, and manpower, to permit installation of the items included in this Section, on schedule. Contractor is to coordinate their work with the progress schedule, as prepared and updated periodically by the General Contractor or Construction Manager.

B. Anticipated delays, not within the control of the Contractor, are to be noted in a written notification to the Architect, immediately upon the Contractor's realization that delays are imminent.

C. Failure of manufacturers to meet promised delivery dates will not grant relief to the Contractor for failure to meet schedules; unless the Contractor can establish, in writing, that orders were received by the manufacturer, with reasonable lead times.

D. Extra charges resulting from special handling or air shipment in-order-to meet the schedule will be paid by the Contractor if insufficient time was allowed in placing factory orders.

1.14 WARRANTY:

A. Unless otherwise noted in Related Divisions / Sections 1.3.A, items furnished are to be fully guaranteed against defects in workmanship, materials, and functionality for one full year from the date of the first event to occur of the following: date of issue of Certificate of Occupancy (or the equivalent), start-up for intended use by the Owner/Operator, completion of installation of kitchen equipment contract package, or final acceptance of installation by Owner. Should a Temporary Certificate of Occupancy be issued for partial completion of work, the items furnished within that designated area are to be under warranty from the date of issue of that Certificate. Contractor or their service agent will make necessary repairs and replacements without charge to the Owner, and within a reasonable time.

B. Additional Refrigeration Warranty: in addition to the one-year warranty requirements as stated above, provide start-up and parts and labor for the first year, plus additional four-year extended warranty on compressors. Extended warranty is for provision of replacement compressor, determined to be defective by a certified refrigeration mechanic. However, verification of defective compressor, installation of replacement compressor, recharging and repairs of system will be the responsibility of the Owner. This includes all items with built-in or remote refrigeration system.

C. Periodic routine maintenance, servicing, adjustments, cleaning, etc., as required by the manufacturers included in this Project, are the responsibility of the Owner.

D. Any-and-all parts or requirements for manufacturer’s warranties to be in effect, whether, or not noted in the itemized specifications, are to be provided or complied with by the Contractor. This is to include, but not be limited to, particular-parts, accessories, or installation; installation supervision, start-up, and/or follow-up inspections required by factory trained, Certified, and/or authorized personnel. Factory training, Certification, and/or authorization is to be in effect at the time of bidding, installation, start-up, and warranty period of this Project.

E. Unless otherwise noted in Related Divisions manufacturer’s warranties which comply with the requirements of this Warranty Article 1.14, are to be provided in lieu of Contractor’s own warranties, where available. Copies of the written warranties are to be included in the O & M Manuals.

PART 2 – PRODUCTS

2.1 EQUIPMENT:

A. Refer to schedule on Foodservice Drawings and Section 3.12 Itemized Specifications for equipment included in this Section.

2.2 MATERIALS:

A. Metals:

1. Stainless-Steel: AISI Type 201 or 302/304, hardest workable temper, and No.4 directional polish. Unless otherwise noted or specified, or required by the manufacturer, 201 may be used wherever 302/304 is listed.

2. Galvanized Steel Sheet: ASTM A526, except ASTM A527 for extensive forming; ASTM A525, G90 zinc coating, chemical treatment.

a. Where painted finish is indicated, provide mill phosphatized treatment in lieu of chemical treatment.

3. Steel Sheet: ASTM A569 hot-rolled carbon steel.

4. Galvanized Steel Pipe: ASTM A53 or ASTM A120, welded or seamless, schedule 40, galvanized.

5. Steel-Structural Members: Hot rolled or cold formed, carbon steel unless stainless-steel is indicated.

a. Galvanized Finish (G.I.): ASTM A123 hot-dipped zinc coating, applied after fabrication.

6. Aluminum: ASTM B209/B221 sheet, plate, and extrusions (as indicated); alloy, temper, and finish as determined by manufacturer/fabricator, except 0.40-mil natural anodized finish on exposed work unless another finish is indicated.

B. Plastic Laminate: NEMA LD3, Type 2, 0.050" (1.27 mm) thick, except Type 3, 0.042" (1.07 mm) for post- forming smooth (non-textured). Color and texture as selected by Architect/ Interior Designer.

1. Comply with NSF Standard No. 35.

2. Veneered with approved waterproof and heat proof cement. Rubber base adhesives are not acceptable.

3. Applied directly over close grained plywood, such as solid Mahogany or solid Birch, of selected, smooth, sanded stock to ensure a smooth ripple-free laminated surface; or commercial grade furniture particle board, Cortron or equal.

4. Exposed faces and edges are to be faced with 1/16” (1.6 mm) thick material. Corresponding backs are to be covered with approved backing and balancing sheet material.

C. Millwork: No unfinished millwork, plywood/particle board or wood framing (including backs, undersides, and all surfaces concealed from view) will be permitted. All unfinished surfaces or openings cut through finished surfaces are to be sealed to be water resistant; with excess plastic laminate material, Cortron (Melamine) material, backing materials, sealers, primers, finish paint, etc., to blend with specified finish materials.

D. Hardwood Work Surfaces: Laminated edge grained hard maple (Acer saccharum), NHLA First Grade with knots, holes and other blemishes culled out, kiln dried at 8 percent or less moisture, waterproof glue, machined, sanded, and finished with NSF approved oil-sealer.

E. Not Used

F. Note Used

G. Insulation:

1. For low temperature applications, such as ice bins, cold pans, or fabricated under counter freezers, use urethane, rigid board foam or foamed-in-place; not less than 2” (50 mm) thick, except that vertical surfaces of cold pans and ice bins may be 1” (25 mm) thick. Insulation to be bonded at joints, to prevent condensation on exterior.

2. For refrigerated applications such as fabricated under counter refrigerators, use urethane rigid board foam or foamed-in-place, or Styrofoam rigid board foam 2” (50 mm) thick, bonded at joints. No fiberglass insulation will be permitted.

3. For heated type applications, such as plate warmers, use block type rock wool, minimum 1” (25 mm) thick; or Marinite I as noted in #4 below.

4. At counters with tops subject to direct or indirect heat from heating or cooking-equipment, provide heat-resistant, food-safe caulking, three (3) layers of Nomex insulation held-in-place with aluminum tape. Provide a 1/8” (3 mm) minimum space between the heat source and the insulation. Coordinate drop-in equipment flange support and provide a 16-gauge stainless-steel 90-degree angle collar.

5. All insulation is to be fully encased or enclosed in 16-gauge (1.6 mm) stainless-steel.

H. Joint Materials:

1. Sealants: waterproof and mildew resistant silicone sealant, with Shore A hardness of 30, except 45 if subject to traffic, and minimum service temperature range of -60º to +400º F. Sealant to be NSF Standard #51 Listed, and FDA and USDA Approved for use in food zones. Surfaces, cleaning, and sealants installation to comply with applicable requirements of FDA, USDA, and NSF Standards, and accepted foodservice installation practices.

2. Backer Rod: For 3/8” (9.5 mm) or larger joints, to be polyurethane rod stock, larger than joint width.

3. Gaskets: Solid or hollow (but not cellular) neoprene or polyvinyl chloride; light grey, minimum of 40 Shore A hardness, self-adhesive or prepared for either adhesive application or mechanical anchorage.

I. Paint and Coatings:

1. Provide the types of painting and coating materials which, after drying or curing, are suitable for use in conjunction with foodservice, and which are durable, non-toxic, non-dusting, non-flaking, mildew resistant, and comply with NSF Standards and governing regulations for foodservice.
2. Galvanize Repair Paint: MIL-P-21035.
3. Sound Deadener: NSF-listed sound deadening material such as latex sound deadener, for internal surfaces of metal work, and underside of metal counters and tables between work top and underbracing. Verify sound deadening requirements or restrictions with local health authorities.
4. Pretreatment: SSPC-PT2 or PT3, of FS TT-C490.
5. Primer Coating for Metal: FS TT-P-86, type suitable for baking, where indicated.
6. Enamel for Metal: Synthetic type, FA TT-P-491, type suitable for baking, where indicated.

2.3 FABRICATED PRODUCTS:

A. Hardware (also refer to article 2.4 Fabrication of Metal Work in general, and paragraphs O. Doors 1-3 and P. Drawer Assemblies 1-6 specifically, for additional requirements):

1. General: Manufacturer's standard, but not less than ANSI 156.9 Type 2 (Institutional), satin finish stainless-steel or dull chrome finish on brass, bronze, or steel.
2. Hinged Door Hardware: Stainless-steel hinged doors to be mounted with heavy duty NSF-approved hinges with Component Hardware Group, Model No. P62-1010 pulls, or equal; or full length pulls as per individual itemized specifications and shown on Standard Detail FSD1-24. Catches to be heavy-duty magnetic type, except as otherwise indicated. Millwork cabinet hinged doors to be mounted with Blum 95º CLIP top thick door all metal hinges, nickel plated, with 3-dimensional adjustment, or equal, or as per individual itemized specifications.
3. Drawer Hardware: Slides to be 200 pounds (90 kilograms) minimum capacity per pair, 201 or 300 series stainless-steel, full extension, side-mounting, self-closing type, with stainless-steel ball-bearings, and positive stops; Component Hardware Group Series S52, or equal. Pulls to be Component Hardware Group, Model No. P62-1012, or equal; or full length pulls as per individual itemized specifications and shown on Standard Detail FSD1-24.
4. Sliding Door Hardware: Sliding doors to be mounted on large, quiet ball bearing rollers in 14-gauge (2 mm) stainless-steel overhead tracks and be removable without the use of tools. Bottom of cabinet to have stainless-steel guide-pins and not channel tracks for doors.
5. All hardware to be identified with manufacturer's name and number, so that broken or worn parts may be replaced.

B. Casters:

1. Type and size as recommended by caster manufacturer, NSF- approved for the type and weight of equipment supported; normally 5” (127 mm) diameter heavy-duty, ball-bearing, solid or disc wheel with non-marking grease proof rubber, neoprene or polyurethane tire, unless otherwise specified. Minimum width of tread to be 1-3/16” (30 mm). Minimum capacity per caster to be 250-pound (113.4kg), unless otherwise noted in itemized specifications.
2. Solid material wheels to be provided with stainless-steel rotating wheel guard.
3. Wheel and swivel bearings shall be sealed and show a polished plated finish per NSF.
4. Unless otherwise indicated, equip each item with two (2) swivel type casters and two (2) fixed casters, with foot brakes on two (2) casters.
5. Unless item is equipped with another form of all-around protective bumper, provide circular rotating bumper above each caster, 5” (127 mm) diameter tire of light grey synthetic rubber (hollow or closed-cell) on cadmium-plated disc.

C. Plumbing Fittings, Trim and Accessories:

1. General: Where exposed or semi-exposed, provide bright chrome plated brass or polished stainless-steel

units. Provide copper or brass where not exposed.

2. Vacuum Breakers: Provide with foodservice equipment as listed in the itemized specifications.

3. Water Outlets: At sinks and at other locations where water is supplied (by manual, automatic or remote control), furnish commercial quality faucets, valves, dispensers, or fill devices, of the type and size indicated, and as required to operate as indicated.

4. Waste Fittings: Except as otherwise indicated, furnish 2" (50 mm) remote-lever ball valve type waste valve, and 3-1/2" (89 mm) flat strainer.

5. Also refer to article 2.4.K for additional information.

D. Electrical Materials:

1. General: Provide standard materials, devices and components as recommended by the manufacturer or fabricator, selected, and installed in accordance with N.E.M.A. standards and recommendations; and as required for safe and efficient use and operation of the foodservice equipment, without sanitation concerns.

2. Components to bear the U.L. label or be approved by the prevailing authority.

3. Custom fabricated refrigerated/freezer units to be provided with vapor tight light receptacles, shatterproof lamps, and automatic switches. Wiring to be concealed.

4. Where light fixtures are specified or detailed as part of counters, cases, or fixtures; light fixtures with lamps to be furnished and installed. Warm white lamps to be provided, unless otherwise specified. If fluorescent light fixtures are specified, ballasts and tubes to be provided. Shields to be provided for all light fixtures.

5. Convenience and Power Receptacles: Make cutouts and install appropriate boxes or receptacles in fabricated fixtures, complete with wiring, conduit, receptacle, and stainless-steel cover plate. Receptacles and plugs to conform to N.E.M.A. standards. Electrical receptacles and devices to be first quality "Specification Grade". GFCI receptacles to be furnished as per the National Electrical Code.

6. Plugs and Cords: Where cords and plugs are provided, they are to comply with National Electrical Manufacturer's Association (N.E.M.A.) requirements. Indicate N.E.M.A. configuration for each applicable item.

7. Power Characteristics: Refer to Electrical Divisions specifications for project power characteristics. Also, refer to individual equipment requirements, for loads and ratings.

8. All electrical components (J-boxes, conduit, receptacles, switches, cover plates, light fixtures, panels, etc.) built into or on any equipment provided by Contractor, other than standard buy-out factory manufactured equipment, are to be vapor or water-tight type. Provide buy-out equipment with vapor or water-tight electrical components wherever available.

2.4 FABRICATION OF METALWORK:

A. General Fabrication Requirements:

1. Remove burrs from sheared edges of metalwork, ease the corners and smooth to eliminate cutting hazard. Bend sheets of metal, at not less than the minimum radius required to avoid grain separation in the metal. Maintain flat, smooth surfaces, without damage to finish.

2. Reinforce metal at locations of hardware, anchorages, and accessory attachments wherever metal is less than 14-gauge (2 mm) or requires mortised application. Conceal reinforcements to the greatest extent possible. Weld in place, on concealed faces.

3. Exposed screws or bolt heads, rivets and butt joints made by riveting straps under seams and then filled with solder, will not be accepted. Where fasteners are permitted, provide Phillips-head, flat or oval head machine screws. Cap threads with acorn nuts and lock washers, unless fully concealed in inaccessible construction; and provide nuts and lockwashers unless metal for tapping is at least 12-gauge (2.5 mm). Match fastener head finish with finish of metal fastened.

4. Where components of fabricated metal work are indicated to be galvanized and involve welding or machining of metal heavier than 16-gauge (1.6 mm), complete the fabrication and provide hot-dip galvanizing of each component, after fabrication, to the greatest extent possible (depending upon available dip-tank sizes). Comply with ASTM A123.

5. Welding and Soldering:

    a. Materials 18-gauge (1.3 mm), or heavier, to be welded.

    b. Seams and joints to be shop welded or soldered as the nature of the material may require.

    c. Welds to be ground smooth and polished to match original finish.

    d. Where galvanizing has been burned off, the weld is to be cleaned and touched up with high grade aluminum paint.

6. Provide removable panels for access to mechanical and electrical service connections, which are concealed behind or within foodservice equipment, but only where access is not possible and not indicated through other work.

7. Where ends of fixtures, splashbacks, shelves, etc., are open, fill by forming the metal or welding sections, if necessary, to close entire opening flush to walls or adjoining fixtures.

8. Rolled edges are to be as detailed, with corners bullnosed, ground and polished.

9. Equipment to have 1/2" (12.7 mm) or larger radius coves in horizontal and vertical corners, and intersections, per NSF standards.

B. Metal and Gauges:

1. Except as otherwise indicated, fabricate exposed metalwork of stainless-steel; and fabricate the following components from the gauge of metal indicated, and other components from not less than 20-gauge (1 mm) metal:

    a. Table and counter tops: 14-gauge (2 mm)

    b. Sinks and drainboards: 14-gauge (2 mm)

    c. Shelves:16-gauge (1.6 mm)

    d. Front drawer and door panels:18-gauge (1.3 mm) (double pan type)

    e. Single pan doors and drawer fronts:16-gauge (1.6 mm)

    f. Enclosed base cabinets:18-gauge (1.3 mm)

    g. Enclosed wall cabinets: 16-gauge (1.3 mm)

    h. Exhaust hoods and ventilators:18-gauge (1.3 mm)

    i. Pan-type insets and trays:16-gauge (1.6 mm)

    j. Removable covers and panels:18-gauge (1.3 mm)

    k. Skirts and enclosure panels:18-gauge (1.3 mm)

    l. Closure/trim strips over 4" (102 mm) wide: 18-gauge (1.3 mm)

    m. Hardware reinforcement:12-gauge (2.5 mm)

    n. Gusset plates:10-gauge (3.4 mm)

    o. Removable toe kicks:14-gauge (3.4 mm)

    p. Wall flashing: 20-gauge (.95 mm)

C. Work-Surface Fabrication:

1. Fabricate metal work surfaces by forming and welding, to provide seamless construction using welding rods matching sheet metal, grinding, and polishing. Where necessary for disassembly, provide waterproof gasketed draw-type joints with concealed bolting.

2. Reinforce work surfaces 30" (762 mm) on center both ways, with galvanized or stainless-steel concealed structural members. Reinforce edges, which are not self-reinforced, by formed edges.

D. Metal Top Construction:

1. Metal tops to be one-piece welded construction, including field joints. Secure to a full perimeter galvanized steel channel frame cross-braced not farther than 30" (762 mm) on center. Fasten top with stud bolts or tack welds. If hat sections are used in lieu of channels, close ends.

2. Properly designed draw fastening, trim strip, or commercial joint material to suit requirement is to be used, only if specified.

E. Structural Framing:

1. Except as otherwise indicated, provide framing of minimum 1" (25 mm) pipe-size round pipe or tube members, with mitered and welded joints and gusset plates, ground smooth. Provide 14-gauge (2 mm) stainless-steel tube for exposed framing, and galvanized steel pipe for concealed framing.

2. Where indicated, flange rear and end edges up to form splashes integrally with top, with vertical and horizontal corners coved of not less than 1/4" (6 mm) radius, die formed. Turn back splashes 1" (25 mm) to wall across top and ends with rounded edge on break, unless otherwise specified.

3. For die-crimped edges, use inverted "V" 1/2" (13 mm) deep inside and 2" (50 mm) deep on outside, unless otherwise shown. For straight down flanges, make 1-3/4" (45 mm) deep on outside. For bullnose edges, roll down 1-3/4" (45 mm).

4. Edges: die-formed, integral with top. For rounded corners, form to 1" (25 mm) radius, weld, and polish to original finish.

F. Field Joints: For any field joint required because of size of fixture; butt-joint, reinforce on underside with angles of same material, bolt together with non-corrosive bolts and nuts, field-weld, grind, and polish to a seam not visible to the naked eye.

G. Pipe Bases: Construct pipe bases of 1-5/8" (41 mm) diameter 18-gauge (1.3 mm) stainless-steel tubing. Fit legs with polished stainless-steel sanitary adjustable bullet feet to provide for not less than 2" (50 mm) of vertical adjustment without exposing threads. Space legs to provide ample support for tops, precluding any possibility of buckling or sagging and in no case more than 6' -0" (1829 mm) centers.

H. Legs and Cross rails

1. Equipment legs and cross rails to be 1-5/8" (41 mm), 16-gauge (1.6 mm) stainless-steel tubing.

2. Welds at cross rails to be continuous and ground smooth. Tack welds will not be acceptable.

3. Bottom of legs to be hugged inward and fitted with a stainless-steel bullet-type foot with not less than 2" (50 mm) vertical adjustment without exposing threads.

4. Free standing legs or legs on island tables/counters with electrical/plumbing connections to be anchored to floor with bolt-down type flanged feet with stainless-steel fasteners.

5. Components:

a. Steel Gusset: Stainless-steel exterior to fit 1-5/8" (41 mm) tubing, with Allen screw for fastening and adjustment. Not less than 3" (76 mm) diameter at top and 3-3/4" (95mm) long. Outer shell 16-gauge (1.6 mm) stainless-steel, reinforced with 12-gauge (2.5 mm) mild steel insert welded interior shell, or approved equal.

b. Stainless-Steel Low Counter Legs: Stainless-steel exterior 5-3/4" (146 mm) minimum, 7" (178 mm) maximum length with stainless-steel 3-1/2" (89 mm) square plate with four countersunk holes, welded to top for fastening.

c. Stainless-Steel Adjustable Foot: Stainless-steel 1-1/2" (37 mm) diameter tapered at bottom to 1" (25 mm) diameter, fitted with threaded cold rolled rod for minimum 1-1/2" (37 mm) diameter x 3/4" (19 mm) threaded bushing plug welded to legs, or approved equal. Push-in foot not acceptable.

6. Legs to be fastened to equipment with gussets, as follows:

a. Sinks: Reinforced with bushings and set screw.

b. Metal Top Tables and Dish Tables: Welded to galvanized steel channels, 14-gauge (2 mm) or heavier,

anchored to top with screws through slotted holes.

c. Wood Top Tables: Welded to stainless-steel channels, 14-gauge (2 mm) or heavier, anchored to top with screws through slotted holes.

I. Shelves:

1. Construct solid shelves under pipe base tables of 16-gauge (1.6 mm) stainless-steel, with 1-1/2" (37 mm) turned down and under edges on exposed sides, and 2" (50 mm) turn up against walls or equipment. Fully weld to pipe legs.

2. In fixtures with enclosed bases, turn up shelves on back and sides with 1/4" (6 mm) (minimum) radius and feather slightly to ensure a tight fit to enclosure panels.

J. Sinks:

1. Construct sinks of 14-gauge (2 mm) stainless-steel with No.4 finish inside and outside.

2. Form back, bottom and front of one piece, with ends and partitions welded into place. Partitions: double thickness, 2" (51 mm) minimum space between walls. Multiple compartments to be continuous on the exterior, without applied facing strips or panels.

3. Cove interior vertical and horizontal corners of each tub not less than 1/4" (6 mm) radius, die formed. Outer ends of drainboards to have roll rim risers not less than 3" (76 mm) high.

4. Drill faucet holes in splashes 2-1/2" (63.5 mm) below top edge. Verify center spacing with faucet specified. Grind and polish.

5. Sink insets to be deep drawn of 16-gauge (1.6 mm), or heavier, polished stainless-steel. Weld into sink drainboards with 1-1/2" (37 mm) x 1-1/2" (37 mm) x 14-gauge (2 mm) stainless-steel angle brackets; securely welded to sinks and galvanized cross angles spot welded to underside of drainboards to form an integral part of the installation.

6. The bottom of each compartment is to be creased such as to ensure complete drainage to waste opening. Slope bottom of sink bowls toward drain outlet.

K. Drains and Wastes and Faucets:

1. Furnish and install Fisher model 28940, or equal, ball valve type rotary drain assembly with flat strainer and connected overflow assembly, with chrome finish, in die-drawn inset type sinks and Bain Marie sinks.

2. Other custom fabricated sinks to be furnished with Fisher model 28932, or equal, ball valve-type rotary drain assembly, with flat strainer and chrome finish. Waste connection to have 2" (50 mm) external thread size, with 1-1/2" (37 mm) internal thread size.

3. Rotary Handle: Of sufficient length to extend to front edge of sink. No riveting, screws or soldering permitted to fit drains to sinks, with all parts of drains easily removable for servicing and replacement.

4. All faucets furnished with equipment included in this Section to be lead-free and comply with NSF Standard #61, Section #9; such as manufactured by Fisher, Chicago, or T&S.

5. Faucets and pre-rinse spray assemblies furnished with equipment included in this Section, are to have a maximum GPM flow rate in compliance with the Energy Policy Act of 2005 (EPAct) and later updates; or local requirements, whichever is lower. EPAct / local requirements are to be applicable to all faucets and pre-rinses; except for pre-rinse type assemblies used at glass icing / fill stations, fill hose / faucet assemblies at high water usage cooking equipment such as kettles, tilt fry pans, etc., and fill faucets at high volume / usage sinks, such as pot wash, mop sink and preparation sinks, etc. are to have flow rates of approximately 5 gpm flow minimum.

6. All flex hose type faucet assemblies, such as pre-rinses, kettle fill hoses, etc., to have an inline pressure type back-flow preventer in the hose assembly, as required by local codes.

7. All equipment provided by this Contractor, which discharges liquid waste exceeding 140° F (60° C), is to be provided with a cold-water drain tempering assembly per local codes.

L. Workmanship:

1. Best quality in the trade. Field-verify dimensions before fabricating; conform all items to dimensions of building; neatly fit around pipes, offsets, and other obstructions.

2. Fabricate only in accordance with approved shop drawings, showing pipes, obstructions to be built around, and location of utilities and services.

M. Casework:

1. Enclosure: except as otherwise indicated, provide each unit of casework (base, wall, overhead and free-standing) with a complete-enclosure metal cabinet, including fronts, backs, tops, bottoms, and sides.

2. Bases to be made of 18-gauge (1.3 mm) stainless-steel sheets reinforced by forming the metal and the inclusion of hat-channels.

3. Ends, partitions and shelves to be stainless-steel.

4. Unexposed backs and structural members may be galvanized, unless otherwise noted.

5. Vertical ends and partitions to be single wall, with a 2" (50 mm) face.

6. Sides and through partitions are flush with bottom rail, welded at intersections.

7. Shelves: Provide adjustable standards for positioning and support of shelves in casework; except bottom shelf of cabinet mounted on legs or as specified. Turn back of shelf units up 2" (50 mm) and hem. Turn other edges down to form open channel. Reinforce shelf units and pilasters to support 40 pounds per square foot (195 kgs/sq meter) loading, plus 100 percent impact loading.

8. Bottom front rail of bases set on masonry platform to be continuously closed and sealed to platform.

9. Provide removable access hatchways to all concealed floor sinks under casework directly over floor sinks. Sink locations to conform to local Health Department code requirements.

N. Doors:

1. Metal doors to be double-cased stainless-steel. Outer pans to be 18-gauge (1.3 mm) stainless-steel with corners welded, ground smooth and polished. Inner pan to be 20-gauge (1 mm) stainless-steel fitted tightly into outer pan with a sound deadening material such as Celotex or Styrofoam used as a core. The two pans to be tack welded together and joints solder filled. Doors to finish approximately 3/4" (19 mm) thick and be fitted with flush recessed type stainless-steel door pulls; or full-length continuous pulls as per individual itemized specifications and shown on applicable Standard Detail sheet.

2. Wood doors to be fabricated as detailed.

3. Hinged doors to be mounted on heavy-duty NSF-approved hinges, or as noted on plans or specifications.

4. Drawer Assemblies:

5. Assemblies to consist of removable drawer body mounted in a ball bearing slide assembly with fully enclosed housing.

6. Slide assembly consists of one pair of 200-pound (90 kilograms) capacity stainless-steel roller bearing full extension slides, with side and back enclosure panels, front spacer angle, two drawer carrier angles, secured to slides and stainless-steel front.

7. Drawers intended for tools and general non-food products storage are to have 20" x 20" x 6" deep (508 mm x 508 mm x 152 mm), 18-gauge (1.3 mm) minimum stainless-steel drawer pans.

8. Drawers intended to hold food products are to have 12" x 20" x 6" deep (305 mm x 508 mm x 152 mm) stainless-steel food pans.

9. All drawer pans to be easily removable without tools or disassembly of any drawer assembly components.

10. Drawer fronts are double-cased, 3/4" (19 mm) thick, with 18-gauge (1.3 mm) stainless-steel welded and polished front pan. Steel back pan shall be tightly fitted, and tack welded. Sound-deaden with rigid insulation material.

11. Provide drawers with replaceable soft neoprene bumpers or for refrigerated drawers - a full perimeter

replaceable refrigerator gasket.

O. Closed Base: Where casework is indicated to be located on a raised-floor base, prepare casework for support without legs, and for anchorage and sealant application, as required for a completely enclosed and concealed base.

P. Support from Floor: Equip floor supported mobile units with casters, and equip items indicated as roll-out units, with manufacturer's standard one-directional rollers. Otherwise, and except for closed-base units, provide pipe or tube legs, with adjustable bullet-design feet for floor supported items of fabricated metalwork. Provide 2" (50 mm) vertical adjustment of feet (concealed threading).

Q. Shop Painting:

1. Clean and prepare metal surfaces to be painted; remove rust and dirt. Apply treatment to zinc coated surfaces, which have not been mill phosphatized. Coat welded and abraded areas of zinc coated surfaces, with galvanize repair paint.

2. Apply 1.5 mil (dry film thickness) metal primer coating, followed by 2, 1.0 mil (dry film thickness) metal enamel finish coatings.

3. Bake primer and finish coatings in accordance with paint manufacturer's instructions for a baked enamel finish.

R. Sound Deadening:

1. Sound-deaden underside of metal tops, drainboards, undershelves, cabinet interior shelves, etc., above the underbracing/reinforcing/framing only.

2.5 ACHITECTURAL MILLWORK EQUIPMENT:

A. The following general requirements shall govern the construction of millwork-built fixtures, except where otherwise noted. Work shall be performed by skilled mechanics of the trade and shall be of the highest quality throughout, in such a manner as to fulfill the intent of the Contract Documents. Perform architectural woodwork in accordance with "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI). Fabricator shall have a demonstrated ability in fabricating woodwork items similar in type and quality to those required for this project.

1. All fixtures shall be made by one manufacturer and assembled in single and complete units as the dimensions will permit shipment to and installation of at the building. Large pieces requiring sectional construction shall have their parts accurately fitted and aligned with all others, and provided with ample screws, glue and bolt blocks, tongues, grooves and splines, dowels, mortises and tenons, screws bolts or suitable means of concealed fastening, as required to render the work substantial, rigid, and permanently secured in proper position to each related section.

2. Sufficient additional material shall be allowed to permit accurate scribing to walls, floor and related work, and due allowance made whenever possible for such shrinkage as may develop after installation. Single and sectional units shall be provided with adequate cleating, blocking, crating and other forms of protection as required precluding damage during shipping and handling.

3. Framing and blocking members shall be assembled with bolted and screwed connections and should be secured to the structural backing with cinch, expansion screws or toggle bolts, as required; spaced and installed to insure ample strength and rigidity. Rails and stiles shall be mortised and tenoned, work neatly mitered and membered, all butt joints made flush and smooth, and all permanent joints made up with water resistant glue. All fixtures shall be assembled without face screws or nails, except where it may be necessary to attach items. All face screws or nails which are necessary shall be counter sunk and plastic wood or wood plugs used to cover head, and the plug neatly touched up. The heads of all screws used in any assembly shall be counter sunk below the surface.

4. The core material shall be marine-grade, 7 ply-substrate or MEDEX exterior resin medium density fiberboard substrate; conform to ANSI A208.2.3.3.4. All substrate materials shall be LEED certified and meet the LEED requirements for the project.

5. Back sheet shall be NEMA LD .020" (0.5 mm) thick, Type V, Grade 91 plastic laminate; apply on all surfaces not covered with plastic laminate; coordinate color with exposed surface color; comply with NSF Standard 35.

B. Construction / Joints:

1. Follow AWI Premium Grade Standards; factory assembled parts and prefinished; flush type fronts and overlapping ends; ¾" (19 mm) core material base cabinet, end and dividers with corner joints between framed members fully lock-jointed, glued and screwed; dado and glue cabinet backs into sides and bottom; scribe countertop and backsplashes; secure countertops to base cabinet from underside; fully cure surfaces prior to installation. Mortise and tenon, spline, dowel and/or pin lock and glue work to avoid use of nails wherever practical. Make butt joints with an approved device for prevention of separation of members. Blind nail and conceal.

C. Plastic Laminate:

1. Plastic laminate shall be bonded to all exposed surfaces with Urac 185 adhesive or equal, to minimum ¾" (19 mm) fir-faced, close grain marine-grade plywood applied under high pressure. In accordance with AWI 1600A-G-1, use horizontal grade on all exposed surfaces, vertical grad on semi- exposed surfaces and sealed paint on all concealed surfaces. Reject plastic laminate or plastic backing shall be used to prevent warping, unless otherwise specified. All edges shall be carefully sanded to smooth finish, removing burns, nicks, and cur marks. Plastic laminate joints shall be finished without wavy and unsightly joints. Joints need not be mitered except as specified. Hand sand edges to a slight chamfer.

2. Top sheet shall be placed on and over finished edge. Ease exposed edge to overlap sheet. Use largest sheet possible in order- to minimize seams.

3. Coved backsplashes shall be a minimum of ¼" (6 mm). End splashes may have a square intersection with tabletops unless specified otherwise.

4. Plastic laminated shelves shall be laminated with horizontal grade laminate on the side and vertical grade at all edges.

D. Doors, Hinged:

1. Hinged doors shall be fabricated of ¾" (19 mm) thick marine-grade plywood with hardwood full perimeter edge with plastic laminate on face and self-edging on exposed sides unless indicated otherwise in drawings and details. Door hinges, pulls and catches shall be supplied and detailed. Provide Grass 1200, 176 degree opening concealed casework hinges or equal by Blum or Amerock. Door catches shall be Component Hardware Model M22-2420 for non-magnetic and Model M30-2400, heavy duty, self- aligning for magnetic.

2. Utilize EPCO Model MC 4023.5 or as specified in the Item Specifications.

3. Door locks shall be Component Hardware Model P30 Series; stainless-steel faced; master keyed as specified.

E. Doors, Sliding:

1. Sliding doors shall be fabricated of solid core marine-grade plywood with hardwood edges and constructed similar- to hinged doors. Doors shall be mounted on E-Z Glides track. Doors shall be removable without the use of tools. Rubber stops shall be provided concealed in end stile or mullion.

F. Access Panels: Access panels shall be fabricated of ¾" (19 mm) nominal thick hardwood and shall be fabricated as a door. Each access panel shall be provided with 2 (two) magnetic catches at top and 2 (two) 3/16" (5 mm) positioning pins at bottom.

G. Drawers:

1. Drawers shall have dovetail construction, well glued and blocked. Fronts shall be not less than ¾" (19 mm) thick hardwood. Sides and back shall be ½" (13 mm) thick fabricated of Birch, Maple, or Sycamore except where extension slides are used, in which the side shall be ⅝" (10 mm) thick. Bottom shall be milled into fronts and sides.

2. Drawers shall be provided with suitable stops. Provide pulls as detailed or specified. The inside surfaces of all drawers shall receive one coat of penetrating primer and one coat of glass lacquer.

H. Painted Finishes:

1. Painted finishes shall have exposed surfaces free from defects and blemishes that would show after being finished, regardless of grade specified. All surfaces specified to receive paint or enamel finish shall receive one cross coat of lacquer type undercoat. The undercoat shall be of appreciably different color from that of the finish coat, and of proper ground color with relation to the finish coat. After the undercoat has been thoroughly dried, surfaces shall be sanded smooth, and two coats of enamel shall be applied. Back painting shall be provided for all cabinet and woodwork prior to installation.

I. Interior & Wall Shelves:

1. Interior shelves shall be adjustable with flush routed-in shelf standards. Wall shelves to be fabricated as specified and as per “Standard Detail”.

J. Fire Retarding:

1. Where required by code, all required materials are to be treated with fire retardant chemicals to achieve the required flame spreading performance rating. Retardant chemicals must be a type approved by local authorities.

2.6 Not Used

2.7 REFRIGERATION EQUIPMENT:

A. General:

1. Furnish either single or multiple compressor units, as specified or recommended by the manufacturer for the sizes and variations between connected evaporator loads as indicated.

2. Furnish units of the capacities indicated, arranged to respond to multiple- evaporator thermostats and defrosting timers. Include coils, receivers, compressors, motors, and motor starters, mounting bases, vibration isolation units, fans, dryers, valves, piping, insulation, gauges, winter control equipment and complete automatic control system.

3. Refrigerant: Pre-charge units with type or types recommended by manufacturer for services indicated, with quick-disconnect type connections only where specified, ready to receive refrigerant piping runs to evaporators and (where remote) to condensers. All refrigerant and associated components to comply with the requirements of the Montreal Protocol Agreement. No CFC or HCFC refrigerants or associated components will be permitted on this Project. HFC refrigerants and components are to be used. Contractor is responsible for coordinating these requirements with manufacturers.

4. Foodservice equipment items included in this Section, with remote refrigerated systems, are to include interconnecting refrigeration lines, sizing, and insulation between components, as per manufacturer’s installation instructions, and as determined by this Contractor’s Certified Refrigeration Sub-Contractor; and only after a thorough examination of actual site conditions and obstacles which might affect the routing. Routing should be as direct and short as possible and practical. Refer to additional requirements listed in this Section 11 40 00, 1.5 Laws, Ordinances and Standards.

5. The minimum outdoor operating ambient temperature for design of units is -10 degrees Fahrenheit (-23 Centigrade), or lower as applicable for extreme low local conditions. The maximum indoor design temperature for operation of compressor units is 95 degrees Fahrenheit (35 Centigrade). The maximum outdoor ambient design temperature is to be determined by Contractor with prevailing conditions at mounting location of compressor, such as sun exposure, limited ventilation, high fences/walls, roof color and materials, local climatic extremes, etc.; but in no case is it to be less than 100 degrees Fahrenheit (37.8 Centigrade).

6. All refrigeration systems with remote condensing units and jobsite installed interconnecting refrigeration lines shall be tested to verify that there are no leaks. Leak testing shall be equal to or better than a professionally recognized 48-hour minimum, pressure holding test. If any leaks are detected, they shall be repaired, and

another leak test preformed; until there are zero leaks detected. A written report of the type test preformed, and a step-by-step record of the procedure and readings shall be submitted to Contractor for inclusion in the Operations and Maintenance Data Manuals.

B. Components:

1. Coils for fabricated refrigerators to have vinyl plastic coatings, stainless-steel housings; and be installed in such a manner as to be replaceable.

2. Provide guards for all refrigeration/freezer fans, with maximum 1/2" (13 mm) mesh.

3. Not Used

4. Fabricated refrigerated compartments to be fitted with flush dial thermometers, with chrome plated bezels. Thermometers to be adjustable and shall be calibrated after installation. Thermometers to have an accuracy of + 2 degrees Fahrenheit (1 degree Centigrade).

5. Hardware:

a. Refrigerator hardware for fabricated refrigerator compartments to be heavy-duty components.

b. Self-closing hinges.

c. Latches to be magnetic edge mount type, unless specified or detailed otherwise.

6. Doors and drawers for walk-in coolers/freezers, and reach-in refrigerated compartments, both fabricated and standard, to be fitted with cylinder locking type latches, and provided with master keys.

7. Provide and install shut-off valves and service port for each compressor, manifold, or header, and refrigerated fixture for multiplex and parallel installations to enable service personnel to service one (1) fixture while other fixture(s) connected to the same compressor can continue to operate. Isolation valves for individual fixtures based upon the sizes of the individual pieces.

8. Drawers for refrigerated fabricated compartments shall be complete with heated surround at closing perimeter.

C. Cold Pans: Ice pans, refrigerated pans and cabinets to be provided with breaker strips, where adjoining top or cabinet face materials, to prevent transfer of cold.

D. All mechanically cooled custom fabricated or standard buy-out refrigerators with openings in the top for cooling pans, and/or all built-in or drop-in mechanically cooled cold pans are to comply with and be listed by NSF Standard #7. Contractor is to verify that the specified unit complies with this requirement.

E. Ventilation of Refrigerated Equipment:

1. Adequate ventilation to be provided for custom fabricated equipment with integral refrigeration condensing units, both built-in and drop-in. If flow-through ventilation cannot be provided, provide flow direction partitions and an additional squirrel fan(s) capable of cooling the condensing unit.

2. If, in the opinion of the Contractor, additional room ventilation is required to ensure correct operating temperatures of standard buy-out, custom fabricated, or remote refrigeration condensing units, or compressor rack assemblies, they are to so state in a letter to the Architect, for evaluation and decision.

2.8 Not Used

2.9 MISCELLANEOUS MATERIALS AND FABRICATION:

A. Nameplates: Whenever possible, locate nameplates and labels on manufactured items, in accessible position, but not within customer's normal view. Do not apply name plates or labels on custom fabricated work, except as required for compliance with governing regulations, insurance requirements, or operator performance.

B. Manufactured Equipment Items: Furnish items as scheduled or herein specified. Verify dimensions, spaces, rough-in and service requirements, and electrical characteristics, before ordering. Provide trim, accessories and miscellaneous items for complete installation.

C. Insert Pans:

1. General: Cut-outs, openings, drawers, or equipment specified or detailed to hold stainless-steel insert pans to be provided with a full complement of pans as follows:

    a. One (1) stainless-steel, 20-gauge (1 mm) minimum, solid insert pan – in us pan size or gastronorm configuration as specified for each space, sized per plans, details, or specifications.

    b. Where pan sizes are not indicated in plans, details, or specifications, provide one full-size pan for each opening.

    c. Provide maximum depth pan to suit application and space.

2. Provide 18-gauge (1.3 mm) NSF- approved removable stainless-steel adapter bars where applicable.

3. All cut-outs and openings, or equipment specified or detailed to hold stainless-steel insert pans, shall be provided with a hinged stainless-steel removable night cover.

D. Tray Slides: Before fabrication of counters with tray slides, verify:

1. Size and shape of tray with Owner/Operator prior to fabrication. Edge of tray should not overhang outer support/slider by more than 2" (50 mm). If edge of tray exceeds this dimension, notify Architect, in writing, for evaluation and adjustment, if necessary.

2. Configuration of corners, turns, and shape of tray slides for proper support and safe guidance of trays.

3. Tray slide to be capable of supporting 200 pounds per linear foot (298 kgs/meter), live load.

E. Self-leveling dispensers: Verify type, make dimensions and weight of ware with Owner/Operator; and submit to the dispenser manufacturer, for proper sizing and calibration of dispensers.

F. Carbon dioxide (CO^2) equipment: Where equipment requires connection with compressed CO^2 cylinder for operation, provide 2-cylinder manifold and control system (integral with equipment) with proper connectors for Department of Transportation (DOT) approved type cylinders, complete with cylinder safety devices, and supports. Applicable to projects with CO2 equipment included in Contractor's specified equipment.

G. Reasonable quietness of operation of equipment is a requirement, and Contractor will be required to replace or repair any equipment producing out-of-the-ordinary intolerable noise. This also includes providing and installing bumpers and gaskets for doors and drawers on fabricated and standard manufactured items and sound insulation where feasible.

H. Gas pressure regulator: All gas fired equipment included with this Section is to be provided with a gas pressure regulating valve with a built-in vent limiting device sized per WC pressure rating of this project. Contractor is responsible for coordinating this requirement with their manufacturers and suppliers.

PART 3 – EXECUTION

3.2 SUPERVISION:

A. A competent supervisor, representing the Contractor, is to be present at-all times during progress of the Contractor's work.

B. Contractor is responsible for coordinating with all applicable Design Team members, Key Ownership Stakeholders Assigned, General Contractor, other Contractors and/or Sub-Contractors and Trades involved in this Project and associated with any items or work provided under this Section; as required for the successful provision, installation, completion, and functioning of these items and/or work, and the Project in general. This is to include, but not be limited to, exchange of shop drawings, details, and manufacturer's information, supplying templates or actual components to be installed in or on items provided by other Sections, for coordination; and coordinating with and between their own internal staff, sub-contractors, trades, manufacturers, fabricators, and installers, for compliance with the Contract Documents.

C. Contractor responsible for obtaining any documents referenced in this Section and on any associated drawings, which contain information relative to the performance of this Contract; and disseminating and coordinating the pertinent information contained in them, with the appropriate sub-contractors, manufacturers, fabricators, and/or installers.

D. Contractor is to take every precaution against injuries to persons or damage to property.

E. Contractor is to store his apparatus, materials, supplies and equipment in an orderly fashion at the site of the work so it will not unduly interfere with the progress of his work or the work of any other contractors.

3.3 SITE EXAMINATION:

A. Verify site conditions under the provisions of the General Conditions, Supplementary Conditions, and applicable provisions of Division 1 Sections. Notify the Architect, in writing, of unsatisfactory conditions for proper installation of foodservice equipment.

B. Verify wall, column, door, window, and ceiling locations and dimensions. Fabrication and installation should not proceed until dimensions and conditions have been verified and coordinated with fabrication details.

C. Verify that wall reinforcement or backing has been provided and is correct for wall supported equipment. Coordinate placement dimensions with wall construction Section.

D. Verify that ventilation ducts are of the correct characteristics, and in the required locations.

E. Verify that utilities are available, of the correct characteristics, and in the required locations.

3.4 DELIVERY AND INSTALLATION:

A. Delivery:

1. The equipment shall be delivered and installed on schedule. Coordinate all work with the General Contractor and other divisions as required.

2. Deliver materials (except bulk materials) in manufacturer's containers, fully identified with manufacturer's name, trade name, type, class, grade, size, color, item number, area, etc.

3. Contractor is responsible for receiving and warehousing equipment and fixtures, until ready for installation. Store materials, equipment, and fixtures in sealed containers, where possible. Store off the ground and under cover, protected from damage.

4. Contractor to verify and coordinate conditions at the building site, particularly door and/or wall openings, and passages, to assure access for all equipment. Pieces too bulky for existing facilities are to be hoisted or otherwise handled with apparatus as required.

5. Extra charges resulting from special handling or shipment to be paid by the Kitchen Equipment Contractor if insufficient time was allowed in placing factory orders to ensure normal shipment.

B. The work to be accomplished so as not to delay the project construction schedule, interfere, or conflict with the work being performed by other contractors. Work to be coordinated and integrated to prevent conflict of work necessitating changes to work already completed. Sequence installation and erection to ensure correct mechanical and electrical utility connections are achieved.

C. Verify all field dimensions before fabrication.

D. Install items in accordance with manufacturer's instructions.

E. Set each item of non-mobile and non-portable equipment securely in place, leveled and adjusted to correct height. Anchor to supporting substrate where indicated, and where required for sustained operation and use without shifting or dislocation. Conceal anchorages wherever possible. Adjust counter tops and other work surfaces to a level tolerance of 1/16" (1.6 mm) (maximum offset, and plus or minus on dimension, and maximum variation in 24" (610 mm) run from level or indicated slope). Provide anchors, supports, bracing, clips, attachments, etc., as required to comply with the local seismic restraint requirements. The Guidelines for Seismic Restraint of Kitchen Equipment, as prepared for the Sheet Metal Industry Fund of Los Angeles and endorsed by S.M.A.C.N.A., is to be followed.

F. Complete field assembly joints in the work (joints which cannot be completed in the shop) by welding, bolting-and-gasketing, or similar methods as indicated and specified. Grind welds smooth and restore finish. Set or trim flush, except for "T" gaskets as indicated. Field joints shall not be visible to the untrained eye.

G. Provide closure plates and strips where required, with joints coordinated with units of equipment.

H. Provide sealants and gaskets all around equipment to wall, ceiling, floors, masonry pads, and adjoining units not portable and with enclosed bodies to make joints airtight, waterproof, vermin-proof, and sanitary for cleaning purposes. Space between all equipment to wall, ceiling, floors, masonry pads, and adjoining units not portable and

with enclosed bodies to be completely sealed against entrance of food particles or vermin by means of trim strips, welding, soldering or mastic. Mastic to be General Electric Silicone Construction Sealant Series SE1200 or equal in appropriate color.

I. Joints up to 3/8" (9.5 mm) wide, to be stuffed with backer rod, to shape sealant bead properly, at 1/4" (6 mm) depth.

J. At internal corner joints, apply sealant or gaskets to form a sanitary cove, of not less than 3/8" (9.5 mm) radius.

K. Shape exposed surfaces of sealant slightly concave, with edges flush with faces of materials at joint.

L. Provide sealant filled or gasketed joints up to 3/8" (9.5 mm) joint width. Wider than 3/8" (9.5 mm), provide matching metal closure strips, with sealant application each side of strips. Anchor gaskets mechanically, or with adhesives to prevent displacement.

M. Treat enclosed spaces, inaccessible after equipment installation, by covering horizontal surfaces with powdered borax at a rate of 4 ounces per square foot (1.2 kg/m2).

N. Insulate to prevent electrolysis between dissimilar metals.

O. Cut and drill components for service receptacles, fixtures, piping, conduit, fittings, etc. as required. Grind and polish penetrations to safe tolerance. Work to include welded sleeves, collars, ferrules, or escutcheons.

P. Verify and coordinate the mounting heights of all wall shelves and equipment, with equipment located below them, for proper clearances.

Q. Walk-In Refrigerator/Freezers:

1. The cold storage rooms shall be delivered and installed on schedule by factory supervised and approved installers. Coordinate the work with the General Contractor and other trades as necessary.

2. Provide the necessary job site coordination with the various trades to ensure job site conditions will meet the requirements of the cold storage rooms.

3. During curing and cleaning of the wearing floors inside the cold storage rooms, the cold storage room doors shall be left open, and the rooms well ventilated to prevent damage to the interior. "Keep Out" signs to be posted at each open door.

4. After the installation of the cold storage rooms and prior to the installation of the wearing floor has cured, the cold storage room doors are to be closed and locked.

R. Coordinate with the Plumbing and Electrical Divisions and provide penetrations in foodservice equipment for plumbing and electrical service to and through the fixtures, as required. This includes welded sleeves, collars, ferrules, or escutcheons. These services are to be located so that they do not interfere with intended use and/or servicing of the fixture.

S. All equipment provided by this Section, that requires light bulb(s), are to be provided with heavy-duty, energy efficient, extra long-life bulbs with a minimum life expectancy of 5000 hours, and as required by the local Jurisdictions. All light bulbs in and/or above foodservice equipment and/or areas are to be coated or provided with shields in compliance with local health codes.

T. All equipment provided by this Section, shall include any-and-all parts, components, options, accessories, etc. necessary to provide a completely functional item for its intended use under normal conditions; and if appropriate, after the final utility connections are completed by other Divisions. This shall generally apply to equipment such as soda systems, beer systems, and remote refrigeration systems, any type of remote system or equipment, or ice machines; but shall also apply to any equipment provided by this Section.

3.5 Not Used

3.6 PROTECTION OF WORK:

A. Use all means reasonable to protect the materials of this Section against theft and damage before, during, and after installation; and to protect the associated work and materials of the other trades.

B. Fabricated fixtures: cardboard, fiberboard or plywood taped to tops and exposed body panels/components.

C. Manufactured Equipment: cardboard, fiberboard or plywood taped as required by equipment shape and installation-access requirements.

D. Prohibited use of equipment includes tool and materials storage, workbench, scaffolding and stacking of construction materials.

E. Damaged Equipment: immediately document and submit to Owner with Contractor's recommendation of action for repair or replacement and its impact on the Project Schedule and Contract Amount.

F. Pre-fabricated walk-in coolers/freezers are not to be used as general storage; and should be locked before leaving the site daily. Damage and theft resulting from failure to secure units will be repaired or replaced at Contractor's expense.

3.7 ADJUSTING:

A. Equipment to be tested for leaks, poor connections, inadequate or faulty performance.

1. Thermostatically controlled equipment and equipment with automatic features shall be operated for 14 days to prove controls are functioning as intended. Walk-in refrigerators and freezers shall be turned on and ran for a minimum of fourteen days.

B. Refrigeration equipment to run a minimum of three days duration before acceptance.

C. Lubricate and adjust drawer slides, hinges, casters.

D. Adjust pressure regulating valves, timed-delay relays, thermostatic controls, temperature sensors, exhaust hood grilles, etc.

E. Clean or replace faucet aerators, line strainers.

F. Repair, adjust or replace equipment, which is found to be defective in its operation, including units which are below capacity or operating with excessive noise or vibration.

3.8 CLEANING, RESTORING AND REPAIRING:

A. After completion of installation, and completion of other major work in foodservice areas, remove protective coverings and clean foodservice equipment, internally and externally. Repair all damage as a result-of this installation.

B. Restore exposed and semi-exposed finishes removing abrasions and other damages; polish exposed metal surfaces and touch-up painted surfaces. Replace work, which cannot be successfully restored.

C. Polish glass, plastic, hardware and accessories, fixtures, and fittings.

D. Wash and clean equipment and leave in a condition ready for the Owner to sanitize and use.

3.9 TESTING:

A. Delay the start-up of equipment until service lines have been tested, balanced, and adjusted for pressure, voltage, and similar considerations; and until water and steam lines have been cleaned and treated for sanitation.

B. Not Used

C. Not Used

3.10 START-UP AND INSTRUCTIONS:

A. Make-arrangements for demonstration of foodservice equipment operation and maintenance, in advance with the Owner/Operator.

B. Demonstrate foodservice equipment, to familiarize the Owner and the Operator on operation and maintenance procedures, including periodic preventative maintenance measures required. Include an explanation of service requirements and simple on-site service procedures, as well as information concerning the name, address, and telephone number of qualified local source of service. The individual(s) performing the demonstration are to be knowledgeable of operating and service aspects of the equipment.

C. Provide a written report of the demonstration, to the Owner, outlining the equipment demonstrated and malfunctions or deficiencies noted. Identify individuals present at demonstration.

D. Final Cleaning: After testing and start-up, clean the foodservice equipment, and leave in a condition ready for the Owner to sanitize and use.

E. All keys for all locks provided with equipment provided under this Section, are to be gathered up, individually tagged with the equipment they belong to, put into a single box, and handed over to the Owner's authorized representative. A list of the keys and their associated equipment Item numbers is to be provided with the O&M Manuals, along with a copy of the list, signed by the Owner's representative, acknowledging receipt of the keys.

3.11 CLEAR AWAY

A. Throughout the progress of their work, Contractor is to keep the working area free from debris and remove rubbish from premises resulting from work being done by them. At the completion of their work, Contractor is to leave the premises in a clean and finished condition.

3.12 EXISTING EQUIPMENT TO BE USED AFTER COMPLETION OF CONSTRUCTION: (Applicable only to projects with existing equipment to be used after completion of construction.)

A. Within ten working days of award of contract Contractor is responsible for identifying and recording by means of a spreadsheet with accompanying digital photography and heat-resistant tagging of all existing to remain or to be replaced in previous location or relocated equipment that will be used after completion of construction utilizing item numbers from received contract documents. If such equipment has been removed and relocated, contractor is still responsible for this identification and logging process. Contractor shall verify and coordinate specific equipment with these plans and specifications and verify same with the Owner, Architect and Foodservice Design Consultant. This includes items existing to remain or to be relocated, or to be removed, stored or refurbished and set back in place and used after completion of construction - and the associated work necessary - at the time of the signing of the Contract for the Foodservice Equipment section - and does not include any items added, changed, or damaged (by other than the Contractor) after the signing; except to the extent of work that would have been included with the original existing items. Contractor shall then remove such equipment to the agreed-upon storage location previously assigned and verified by the GC and Owner. Existing equipment to be re-placed in previous location or re-located and used after completion of construction shall be identified in both storage during construction location and intended final placement location on heat-resistant tag secured to unit by Contractor. Contractor shall also define critical clearances and utilities within this time frame including the testing of actual electrical, plumbing, mechanical values of any equipment without service or factory-applied serial numbered plates. When equipment is removed and re-located or placed back in original location, contractor is responsible for ensuring manufacturer-recommended clearances to walls and adjacent equipment, structural support needs, pour paths, correct MEP rough-in connection values and any applicable fire suppression and exhaust system protection.

B. Remove from existing locations, clean, and renovate/refurbish as noted below, store and re-install existing equipment to be used after completion of construction, in the new locations as shown on plans ready for utility connections, as appropriate. Existing equipment to be used after completion of construction, with utility connections, to be removed after disconnection as noted in paragraph J, below.

C. Perform work in cooperation with Owner, so that normal functioning of services is minimally interrupted. Coordinate all removal and replacement scheduling with the Construction Scheduling Manager (or similar responsible party), to ensure adequate time to complete the necessary work. If adequate time to properly relocate and reset the existing items and complete all cleaning and repair will not be available, due to continuing use of the existing items, or the allotted construction time; contact the Owner and obtain a written agreement as to what work is to be deleted or delayed, such as cleaning, repainting, or repairs.

D. All surface dirt, grease, oil, food residues, ingredients, extraneous matter, and other soiling materials is to be removed in order-to obtain minimum acceptable sanitation and foodservice standards. Thorough final rinsing of all cleaning agents to be at a minimum temperature of 180 degrees Fahrenheit (82.2 Centigrade) where possible without damage to equipment or controls. Otherwise, use USDA approved cleaning agents and/or cleaning agents, which are acceptable for use with commercial foodservice equipment. This includes all exterior surfaces of the existing equipment to be reused, and interior work surfaces such as inside oven compartments, fryer vats, ware washers, etc.

E. All painted items with major paint blemishes to be sanded, primed, and repainted to match the original color and type paint. Primer and paint to be of a type approved for use with commercial foodservice equipment. All controls, lights, view windows, non-painted parts, etc. to be protected as recommended by the Manufacturer. Minor paint blemishes can be touched-up in a professional manner. This work is to be included in the Bid Submittal, as a separate line cost, at the end of the Bid Submittal.

F. Replace and/or repair minor broken parts to produce a cleanable and functional item. Repairs and/or parts are for minor required items such as control knobs, handles, pilot lamps, belts, oil changes, minor adjustments, and

recalibrations, etc. This does not include addition or replacement of any wearing components such as cutters, blades, etc.; or any accessory components such as mixer beaters, hooks, whips, etc., except for presently existing accessory components which are broken and non-functional, or as noted in the itemized specifications.

G. Where required by local code authorities, provide additional parts and/or modifications to comply with code requirements in place at the time of this project.

H. Where required, remove existing equipment to be used after completion of construction from the premises for repairs, alterations, and cleaning.

I. Refer to schedule on the Foodservice Drawings and to the Itemized Specifications at the end of this section for existing equipment to be used after completion of construction.

J. Disconnection of existing equipment to be relocated and/or existing equipment to be used in its found place after completion of construction and disconnection and removal/disposal of existing equipment that will not be used after completion of construction, is work as designated by the Architect, and not included in this Section. (See page 11 40 00-2, 1.3.F.)

K. Cost estimates for any repairs and/or parts more than the minor items stated above, or repairs requiring significant disassembling of the item, should be submitted to the Owner for consideration and approval as an addition to the Contract. In general, this would be considered as any repairs and/or parts amounting to an estimate up to 10% of the cost of a comparable new item. Any item, which would require repairs and/or parts amounting to an estimate up to 25% or more, should include an alternate cost for supplying a comparable new item as a consideration by the Owner, and an addition to the Contract. Estimates are for each existing equipment to be used after completion of construction only that require repairs and/or parts, and only to the extent that work is required; and should not be considered as a lump-sum estimate on all existing equipment to be used after completion of construction combined, or as an allowance for adding accessories or options.

3.13 ITEMIZED SPECIFICATIONS:

A. Refer to the following pages for specific-information on each item included in this Section.

(Remainder of page left blank intentionally.)

ITEM #A1 DRY STORAGE SHELVING

Quantity: Three (3) Assemblies
Manufacturer: Metro
Model: MaxQ

Fabricate/Furnish and set in place per plans, details and the following:

1. Metro length, width and configuration per plan and verified room dimensions.
2. MetroMax (Q) open grid mat shelving.
3. 74" High with four tiers.
4. Each section shall be free-standing with four legs.
5. Provide seismic flanged feet, quantity four (4).

ITEM #A2 HAND SINK

Quantity: One (1)
Manufacturer: Eagle Group
Model: HSAP-14-ADA-FW

Fabricate/Furnish and set in place per plans, details and the following:

1. Hand Sink, wall mount, 14" wide x 16" front-to-back x 5" deep bowl, 16/304 stainless steel construction, splash mount gooseneck faucet with wrist handles & mixer valve, marine edge on front & sides, 1/2" NPS water inlet, chrome-plated P-trap, wrist handles, soap dispenser, basket drain, skirt assembly & paper towel dispenser, physically challenged, NSF.

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2. Left & right side splashes.

ITEM #A3 REACH-IN REFRIGERATOR

Quantity: One (1)
Manufacturer: Traulsen
Model: G20000

Fabricate/Furnish and set in place per plans, details and the following:

1. Dealer's Choice Refrigerator, Reach-in, two-section, 45.89 cu. ft., self-contained refrigeration, (4) half-height solid doors (hinged left/right), (3) epoxy coated shelves per section (factory installed), stainless steel front, anodized aluminum sides & interior, microprocessor control with LED display, LED interior lights, 6" high casters, non-flammable R-450A refrigerant, cETLus, NSF.
2. NEMA 5-15P, standard.
3. Casters, 4-5/8" high, set of 4, in lieu of standard casters.

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ITEM #A4 AIR CURTAIN

Quantity: Two (2)
Manufacturer: Mars Air Systems
Model: NH236-1UA-TS

Fabricate/Furnish and set in place per plans, details and the following:

1. High Velocity Series 2 Air Curtain, for 36" wide door, unheated, galvanized steel cabinet, titanium silver powder coat finish, ETL.
2. Mechanical switches.
3. Door Limit Switch, indoor, plunger/roller type, remote mounted, NEMA 2.
4. Disconnect switches, remote mounted by others.
5. Disconnect Switch, fused, NEMA 3R (remote mounted by others).

ITEM #A5 STAINLESS STEEL WALL GUARD

Quantity: Three (3)
Manufacturer: Fabricated
Model: Stainless Steel

Furnish and set in place per manufacturer's standard specifications.

1. Stainless Steel Wall Guard per FSD1-59. These standard details are to be utilized as basic minimum guidelines only. Refer to these written specifications and any fabrication details included in the contract drawings for precise and complete fabrication instructions.
2. Refer to QF500 and QF501 sheet series for further information.

ITEM #A6 MOBILE HEATED CABINET

Quantity: One (1)
Manufacturer: Cres Cor
Model: H137SUA12D

Fabricate/Furnish and set in place per plans, details and the following:

1. Cabinet, Mobile Heated, insulated, top-mount heater assembly, recessed push/pull handles, magnetic latch, (12) sets chrome plated wire universal angle slides for 12" x 20" thru 18" x 26" pans on 4-1/2" centers, adjustable 1-1/2" centers, reversible dutch doors, (4) heavy duty 5" swivel casters (2) braked, anti-microbial latches, stainless steel construction, NSF, cCSAus, ENERGY STAR®.
2. 10 ft power cord, NEMA 5-15P, standard.
3. Right-hand door swing (top & bottom doors), standard.
4. Cord Wrap for insulated cabinet, standard, quantity one (1).
5. Corner Bumpers, add 2" to OA dimensions, non-marking, gray.
6. Menu Card Holder, quantity one (1).

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ITEM #A7 WORK TABLE

Quantity: One (1)
Manufacturer: Eagle Group
Model: T2484STE

Fabricate/Furnish and set in place per plans, details and the following:

1. Spec-Master® Series Work Table, 84"W x 24"D, 14/300 series stainless steel top, rolled edges on front & back, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF.
2. Undershelf, sized per floor plan.
3. Special height legs for 34" high top.
4. Flanged Feet, stainless steel, each.

ITEM #A8 DROP CORD, QTY TWO (2), BY EC

ITEM #A9 SPARE NO.

ITEM #A10 CHEMICAL DISPENSING SYSTEM, QTY ONE (1), BY PURVEYOR

ITEM #A11 SHELVING, WALL MOUNTED

Quantity: One (1)
Manufacturer: Eagle Group
Model: WS1224-14/3

Furnish and set in place per manufacturer's standard specifications.

1. Shelf, wall-mounted, 24"W x 12"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, includes stainless steel mounting brackets stud welded to shelf, 14/304 stainless steel construction, NSF.

ITEM #A12 THREE (3) COMPARTMENT SINK

Quantity: One (1)
Manufacturer: Eagle Group
Model: FFN2754-3-24-14/3

Fabricate/Furnish and set in place per plans, details and the following:

1. Spec-Master® Flush Front Sink, three compartment, 105-1/4"W x 30-1/2"D x 44-5/8"H overall size, 18"W x 27" front-to-back x 14" deep bowls, 24" drainboards on left & right, 10"H backsplash, (2) sets of splash mount faucet holes with 8" centers, includes (3) 3-1/2" basket drains, 14/304 stainless steel construction, stainless steel legs, front crossrails, & adjustable bullet feet, NSF.
2. Turn down back of splash per table with Z clip.
3. Enclosed backsplash per linear foot.
4. Stainless steel undershelf under drainboards, up to 24" with short legs.
5. Stainless steel apron, to cover sink bowls, 2 or 3 compartment.
6. Twist Handle Drain, 1-1/2 or 2" NPS connection.
7. Twist bracket, per drain.
8. Provide seismic flanged feet, stainless steel, each.

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#A12.1 PRE-RINSE ASSEMBLY W/ ADD ON FAUCET

Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-12-CR-B

Fabricate/Furnish and set in place per plans, details and the following:

1. EasyInstall Pre-Rinse Unit, spring action gooseneck, 8" wall mount, spray valve (B-0107), 12" add-on faucet, wall bracket, quarter-turn Cerama cartridges, low lead.
2. Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "Ell" 1/2" NPT female x male.

ITEM #A12.2 POT FILLER

Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0292

Furnish and set in place per manufacturer's standard specifications.

1. Big-Flo Pot & Kettle Sink Faucet, wall mount, 8" centers, 3/4" IPS model LL street EL inlets with locknuts, 24" double-jointed swing nozzle, 175°F four arm handles, 1-1/4" dia. holes required in backsplash.

ITEM #A13 TRASH RECEPTACLE, 20 GALLON, QTY ONE (1), BY OWNER

ITEM #A14 SHELVING, WALL MOUNTED

Quantity: One (1)
Manufacturer: Eagle Group
Model: WS1224-14/3

Furnish and set in place per manufacturer's standard specifications.

1. Shelf, wall-mounted, 24"W x 12"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, includes stainless steel mounting brackets stud welded to shelf, 14/304 stainless steel construction, NSF.

ITEM #A15 LOCKER, QUADRUPLE, QTY ONE (1), BY ARCH/ ID

ITEM #A16 POS SYSTEM, QTY TWO (2), BY OWNER

ITEM #A17 STAINLESS STEEL SERVING COUNTER

Quantity: One (1)
Manufacturer: Fabricated
Model: Stainless Steel

Fabricate/Furnish and set in place per plans, details and the following:

1. Work counter, see plans for width, length, height, and configuration.
2. Similar to standard details; FSD5-1, FSD1-7, FSD1-10, and FSD1-23. These standard details are to be utilized as basic minimum guidelines only. Refer to these written specifications and any fabrication details included in the contract drawings for precise and complete fabrication instructions.
3. Straight turn-down edge profile similar to detail FSD1-1A.
4. Backsplash at wall and adjacent equipment, similar to FSD1-5A.
5. Leg base in lieu of cabinet base. Provide undershelf as shown on plans, similar to FSD1-8.
6. Extend countertop out thru window, as shown on plans.
7. Refer to QF500 and QF501 sheet series for further information.

ITEM #A18 MILK COOLER

Quantity: One (1)
Manufacturer: Beverage Air
Model: SMF49HC-1-W

Fabricate/Furnish and set in place per plans, details and the following:

1. School Milk Cooler, forced air, 49"W x 33-5/8"D x 47"H, 19.66 cu. ft., single access, exterior digital thermometer, (12) 13" x 13" x 11" or (8) 19" x 13" x 11" case capacity, self-latching doors/lids with safety bumpers, cylinder lock, wire floor racks, floor drain, electronic control, auto defrost, galvanized steel interior with stainless steel floor, white exterior, R290 Hydrocarbon refrigerant, cULus, UL EPH Classified, UL-Sanitation, Made in USA.
2. Self-Contained refrigeration.
3. Cord with NEMA 5-15P.
4. Corner bumpers, each (field installation required).
5. 6" Heavy duty casters, (2) with brakes, standard.

ITEM #A19 SPARE NO.

ITEM #A20 SPARE NO.

ITEM #A21 MOP SINK

Quantity: One (1)
Manufacturer: Advance Tabco
Model: 9-OP-28

Furnish and set in place per manufacturer's standard specifications.

1. Mop Sink, floor mounted, 33"W x 25"D x 10"H (overall), 28"W x 20" front-to-back x 6" deep (bowl size), free flow drain with 2" IPS outlet, stainless steel construction, NSF.

ITEM #A22 SERVICE FAUCET

Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0655-BSTP

Furnish and set in place per manufacturer's standard specifications.

1. Service Sink Faucet, 8" centers-adjustable from 7-3/4" to 8-1/4", 5-1/8" clearance wall to center line of faucet, 11-5/8" from wall to center of outlet, polished chrome-plated finish, with built in screwdriver stops.

ITEM #A23 MOP HOLDER

Quantity: One (1)
Manufacturer: Advance Tabco
Model: K-242

Furnish and set in place per manufacturer's standard specifications.

1. Mop Hanger, 23", accommodates (3).

ITEM #A24 WALL FLASHING

Quantity: One (1)
Manufacturer: Fabricated
Model: Stainless Steel

Fabricate/Furnish and set in place per plans, details and the following:

1. Similar to standard detail FSD1-39. This standard detail is to be utilized as a basic minimum guideline only. Refer to these written specifications and any fabrication details included in the contract drawings for precise and complete fabrication instructions.
2. Cover wall behind the mop sink from the finished floor to the bottom of the ceiling grid, the length of the equipment.
3. Cover adjacent wall at end(s) of floor sink from the finished floor to the bottom of the ceiling grid, the depth of the sink.
4. Refer to QF500 and QF501 sheet series for further information.

ITEM #A25 DETERGENT SHELVING

Quantity: One (1)
Manufacturer: Metro
Model: MaxQ

Fabricate/Furnish and set in place per plans, details and the following:

1. Metro length, width and configuration per plan and verified room dimensions.
2. MetroMax (Q) open grid mat shelving.
3. 74" High with four tiers.
4. Each section to have two (2) #5MPpolyurethane swivel casters and two (2) #5MPB polyurethane casters with brakes.

ITEM #A26 TRASH RECEPTACLE, 7 GALLON, QTY ONE (1), BY OWNER

END OF SECTION

SECTION 21 1300
FIRE SUPRESSION SPRINKLER SYSTEM

PART 1 GENERAL

1.01 REFERENCES

A. AMERICAN IRON AND STEEL INSTITUTE (AISI)

1. AISC/AISI 121 (2007) Standard Definitions for Use in the Design of Steel Structures

B. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

1. ASME A112.18.1 (2018) Plumbing Supply Fittings

2. ASME B1.20.1 (2013) Pipe Threads, General Purpose (Inch)

3. ASME/ANSI B16.1 (2020) Gray Iron Pipe Flanges and Flanged Fittings Classes 25, 125, and 250

4. ASME/ANSI B16.3 (2016) Malleable Iron Threaded Fittings, Classes 150 and 300

5. ASME/ANSI B16.4 (2016) Standard for Gray Iron Threaded Fittings; Classes 125 and 250

C. AMERICAN WATER WORKS ASSOCIATION (AWWA)

1. AWWA C111/A21.11 (2017) Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

2. AWWA C151/A21.51 (2017) Ductile-Iron Pipe, Centrifugally Cast

3. AWWA C900 (2016) Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings, 4-inch Through 60-inch

D. ASTM INTERNATIONAL (ASTM)

1. ASTM A47/A47M (1999) Standard Specification for Ferritic Malleable Iron Castings

2. ASTM A53/A53M (2020) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc- Coated, Welded and Seamless

3. ASTM A135/A135M (2009; R2014) Standard Specification for Electric-Resistance-Welded Steel Pipe

4. ASTM A234/A234M (2019) Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

5. ASTM A536 (1984) Standard Specification for Ductile Iron Castings

6. ASTM D1784 (2020) Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

E. FM GLOBAL (FM)

1. FM APP GUIDE (updated on-line) Approval Guide http://www.approvalguide.com/

F. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

1. NFPA 13 (2016) Standard for the Installation of Sprinkler Systems

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2. NFPA 14 (2016) Standard for the Installation of Standpipes and Hose Systems

3. NFPA 24 (2016) Standard for the Installation of Private Fire Service Mains and Their Appurtenances

4. NFPA 1963 (2019) Standard for Fire Hose Connections

G. UNDERWRITERS LABORATORIES (UL)

1.02 ADMINISTRATIVE REQUIREMENTS

A. Conduct a survey of the work area. Commencement of work constitutes acceptance of existing conditions.

B. Convene one week before starting work of this section for preinstallation meeting.

1.03 SUBMITTALS

A. Submit the following in accordance with DIVISION 01 – GENERAL REQUIREMENTS.

1. Shop Drawings

a. Shop drawings prepared in accordance with NFPA 13, including hydraulic calculations that are approved by the Authority Having Jurisdiction. Drawings shall have the approval of a Professional Engineer registered in the state in which the project is located. Drawings to consist of the following, refer to NFPA 13 “Plans and Calculations” for a comprehensive list of items to be included:

1) Piping plan view and/or Reflected Ceiling Plan (RCP) drawing(s) indicating relationship of all other trades and approved sprinkler head locations.

2) Details and sections to clearly identify design intent.

3) Plans shall include: Seismic zones of influence, hydraulic remote areas, elevations of pipe, attachment locations and type, zones and associated coverage areas, volume of dry system(s) (if applicable), locations of seismic separation and expansion joints, hose cabinet locations, drain locations.

2. Product Data

a. Provide data on piping, valves, sprinklers, hangers/supports, hose cabinets, notification devices, specialties and accessories. Product data shall include manufacturers catalog information with performance ratings, rough-in details, finish, weights, and installation requirements.

1) Each product shall be referred to on submittals, drawings, and other documentation, by the identification or model number as specifically published in the appropriate agency listing or approval.

3. Design Data

a. Provide detailed hydraulic calculations that clearly demonstrate that the water supply will meet the demand of the sprinkler system and hose streams. Calculations shall accompany design drawings and shall be based on a water flow test conducted at the site within six (6) months of the submittal of plans for approval. Flow test information and associated nodes shall be documented on shop drawings and include a site plan.

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b. Provide complete seismic calculations that clearly reflect seismic restraint with supporting site specific force factor and attachment details used, relative to an associated zone of influence.

4. Test Reports

a. Contractor's Material & Test Certificate Reports in accordance with NFPA for above ground piping, underground piping, pressure, system operation, air, valve and drain tests.

1.04 QUALITY ASSURANCE

A. Fire protection system materials and components shall be Underwriter's Laboratories listed and labeled, or Factory Mutual approved.

B. Company specializing in performing the work of this section shall have a minimum of five years experience and approved by manufacturer.

C. Manufacturing Company shall be one specializing in manufacturing the products specified with a minimum three years documented experience.

1.05 COORDINATION

A. The Contractor shall coordinate and reflect routing and location of equipment, devices, and materials with other disciplines, where not already indicated, on the design documents. Indicate required space for routine maintenance and inspection, including location and sizes of access doors.

PART 2 PRODUCTS

2.01 SYSTEM DESCRIPTION

A. All fire protection system materials and equipment shall be Underwriters Laboratories (UL) listed or the Factory Mutual (FM) approved for its intended use.

2.02 EQUIPMENT

A. Aboveground Piping Materials

1. BCS - Black Carbon Steel

a. All piping 2-inch and smaller: Schedule 40, black-carbon steel conforming to ASTM A53, or ASTM A135, threaded or roll grooved ends. All 1-inch pipe shall have threaded ends.

b. All Piping 2-1/2-inch through 8 inch: Schedule 10, black carbon steel conforming to ASTM A53 or ASTM A135, roll grooved ends.

2. GCS - Galvanized Carbon Steel

a. All piping 1/2- inch through 8-inch: Schedule 40 seamless or electric resistant welded galvanized steel conforming to ASTM A53/A53M, Type E (electric-resistance welded) or Type S (seamless). Type F (furnace butt welded continuous welded) is acceptable for sizes less than 2 inches.

B. Fittings and Couplings

1. Cast-Iron Threaded Fittings:

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a. ASME/ANSI B16.4, Class 125, standard pattern, for threaded joints. Threads shall conform to ANSI B1.20.1.

2. Malleable-Iron Threaded Fittings:

a. ASME/ANSI B16.3, Class 150, standard pattern, for threaded joints. Threads shall conform to ANSI B1.2.1.

3. Steel Fittings:

a. ASTM A234/A234M, seamless or welded, for welded joints.

4. Grooved Mechanical Fittings:

a. Grade 65-45-12 ductile iron; ASTM A47 Grade 32510 malleable iron; or ASTM A53, Type F or Types E or S, Grade B fabricated steel fittings with grooves or shoulders designed to accept grooved end couplings.

5. Grooved Mechanical Couplings:

a. consist of ductile or malleable iron housing, a synthetic rubber gasket of a central cavity pressure-responsive deign; with nuts, bolts, locking in, locking toggle, or lugs to secure roll-grooved pipe and fittings. Grooved mechanical couplings including gaskets used on dry-pipe systems shall be listed for dry-pipe service.

6. Cast-Iron Flanges:

a. ASME/ANSI B16.1, Class 125, raised ground face, bolt holes spot faced.

7. Unions:

a. Malleable iron, Class 150 hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces, female threaded ends. Threads shall conform to ASME B1.20.1.

8. Dielectric Unions:

a. Threaded, solder, or grooved-end connections as required to suit application' constructed to isolate dissimilar metals, prevent galvanic action, and prevent corrosion.

C. Pipe Hangers and Supports

1. Shall be UL listed and shall meet requirements of NFPA 13 for type, dimension and location.

2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.

3. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.

4. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.

5. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.

6. Vertical Support: Steel riser clamp.

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7. Hanger Rods: Use only circular solid cross section rod hangers to connect building structure attachments to pipe-support devices. Use pipe, straps, or bars of equivalent strength for hangers.

D. Fire Department Connections

1. Ensure hose connections have National Firehose standard-thread form and rocker lugs in accordance with NFPA 1963. Ensure hose-connection sizes and threads are compatible with the equipment used by the fire department serving the facility.

2. Wall Siamese

3. Provide cast brass or bronze flush-mounted escutcheon-plate units, with two 2-1/2-inch, fire- department, swivel, female inlets; double-clapper valves; rocker-lug caps and chains; and cast-in function-identifying lettering. Provide a unit and plate with an architect approved polished surface finish and in accordance with ASME A112.18.1.

4. Sidewalk Siamese

a. Provide cast brass or bronze flush-mounted escutcheon-plate units, with two 2-1/2-inch, fire-department, swivel, female inlets; double-clapper valves; rocker-lug caps and chains; and cast-in function-identifying lettering. Provide a unit and plate with an architect approved polished surface finish and in accordance with ASME A112.18.1. Mount unit on a Schedule 40 ASTM A53/A53M galvanized carbon-steel pipe

5. Roof Manifold

a. Provide a cast brass or bronze, horizontal unit, with two 2-1/2-inch, 175-pound rated hose valves fitted with rocker-lug caps and chains. Finish is rough body with polished trim.

E. Alarm Devices

1. General: Types and sizes shall mate and match piping and equipment connections.

a. Water Flow Indicators (Wet-pipe Systems): vane type waterflow detector, rated to 250 psi; designed for horizontal or vertical installation; have 2-SPDT circuit switches to provide isolated alarm and auxiliary contacts, 7 ampere 125 volts AC and 0.25 ampere 24 Volts DC; completed with factory-set, field-adjustable retard element to prevent false signals, and tamperproof cover.

2. Water Flow Indicators (Dry-pipe): pressure type waterflow detector, rated to 250 psi; designed for vertical installation; have 2-SPDT circuit switches to provide isolated alarm and auxiliary contacts, 7 ampere 125 volts AC and 0.25 ampere 24 Volts DC; complete with factory-set, field-adjustable retard element to prevent false signals, and tamperproof cover.

3. Electric Alarm Bell: UL listed 10” electric operated factory painted alarm bell with weatherproof bell kit and bell guard. Bell shall have minimum 90 decibel rating. Provided engraved plate under Bell lettered “Building Standpipe and Sprinkler System.”

4. Supervisory Switches: SPST, normally closed contacts, designed to signal valve in other than full open position and tamperproof cover.

2.03 Automatic Sprinklers

A. Sprinklers: type and style as indicated or required by application. Sprinkler operating temperatures to comply with NFPA 13. Sprinklers in light hazard areas shall be quick response type.

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B. Sprinkler Finishes: Provide sprinklers with the following finishes:

1. All sprinklers are to be glass bulb type unless otherwise approved by Owner or Architect.

2. Finished areas: Upright, pendent and sidewall type, with finish with matching escutcheons as indicated on drawings or approved by Owner or Architect.

3. Unfinished areas and areas not exposed to view: Upright, pendent and sidewall type, rough bronze finish. Sprinklers shall be was-coated where installed exposed to acids, chemicals, or other corrosive fumes.

4. Corrosive environments: Lead -coated, corrosion-resistant heads in all areas exposed to acids, chemicals, fumes, or environments.

C. Sprinkler Cabinet and Wrench: Provide a finished steel cabinet, suitable for wall mounting, with hinged cover and space for the appropriate quantity of spare sprinklers plus sprinkler wrench. Provide a separate cabinet for each style sprinkler on the project.

D. Head Protection

1. Protect heads with paper or plastic bags during painting operations. Remove protection immediately upon finishing painting operations.

2. Provide head guards wherever mechanical damage could occur. Guard finish is red enamel.

E. Aboveground Valves

1. Ensure gate, globe, and check valves (all sizes) are FM approved or UL listed.

2. Ensure ball valves, 2 inches and under, are FM approved, rated 300 psi, with provisions to wire or lock handle in place where critical alarm function may be isolated.

3. Ensure butterfly valves, 6-inches and larger are FM approved, rated 175 psi, cast-iron bodied wafer type, with elastomer liners and seals.

F. Paints and Coatings

1. Paints and coatings must comply with:

a. The California Department of Public Health (CDPH) Standard Method v1.1-2010 general testing and emissions evaluation requirements.

b. All paints/coatings wet-applied on site must meet the applicable VOC limits of the California Air Resources Board (2007), Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011.

G. Adhesives, Sealants, and Sealant Primers

1. Adhesives, sealants, and sealant primers must comply with:

a. The California Department of Public Health (CDPH) Standard Method v1.1-2010 general testing and emissions evaluation requirements.

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b. All adhesives, sealants, and sealant primers wet-applied on site must meet the applicable chemical content requirements of SCAQMD Rule 1168, July 1, 2005, Adhesive and Sealant Applications, as analyzed by methods specified in Rule 1168.

PART 3 EXECUTION

3.01 Preparation

A. Painting

1. If manufacturer's standard-finish equipment surfaces are damaged during construction, bring to as- new condition by touchup or repainting to the satisfaction of the Contracting Officer, or replaced with new undamaged equipment at no additional cost to the Owner.

3.02 Installation

A. Ensure installation of system materials and equipment is in accordance with the recommendations and provisions of NFPA 13. Perform work in the presence of the Contracting Officer.

B. Perform all installation work by licensed fire protection sprinkler contractors, licensed for such work in the state where the work is to be performed.

3.03 Underground Piping Installation

A. The fire protection water main shall be laid, and joints anchored, in accordance with NFPA 24. Minimum depth of cover shall be 3-feet. The supply line shall terminate inside the building with a flanged piece, the bottom of which shall be set not less than 6-inches above the finished floor. A blind flange shall be installed temporarily on top of the flanged piece to prevent the entrance of foreign matter into the supply line.

B. Thrust Blocks

1. Construct 3,000-psi cured-strength thrust blocks to absorb hydraulic thrust at caps, plugs, and at system change-of-direction fittings. Place concrete against undisturbed soil, with an area sufficient to provide load transmittal.

3.04 Aboveground Piping Installation

A. Locations and Arrangements: Coordinate installation of horizontal piping with other components. Allow sufficient space above removable ceiling panels to allow for panel removal.

B. Install system such that all piping is rigidly secured and supported. Cutting of structural members for passage of sprinkler pipes or hangers will not be permitted. Route all sprinkler piping and provide all offsets, bends and elbows around all mechanical, electrical, and structural members as required. In areas with ceilings, piping shall be routed concealed, above ceiling. In areas without ceilings, piping shall extend as high as possible.

C. Deviations from approved “Working Plans” for sprinkler piping require written approval of the Authority Having Jurisdiction. Written approval shall be on file with the Engineer prior to deviating from the approved “Working Plans.”

D. Install sprinkler piping to provide for system drainage in accordance with NFPA 13.

E. Use approved fittings to make all changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

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F. Hangers and Supports: Comply with the requirements of NFPA 13. Hanger support spacing and locations for piping joined with grooved mechanical couples shall be in accordance with the grooved mechanical coupling manufacturer's written instructions, for rigid systems. Provide protection from damage where subject to earthquake if required by the applicable building code, designed in accordance with NFPA 13.

G. Make connections between underground and aboveground piping using an approved transition piece strapped or fastened to prevent separation.

H. Install mechanical sleeve seal at pipe penetrations in basement and foundation walls.

I. Install test connections sized and located in accordance with NFPA 13 complete with shutoff valve. Test connections may also serve as drain pipes.

J. Install pressure gauge on the riser or feed main at or near each test connection. Provide gauge with a connection not less than ¼ inch and having a soft metal seated globe valve arranged for draining pipe between gauge and valve. Install gauges to permit removal, and where they will not be subject to freezing.

K. Install automatic air vent at high point of system(s) in accordance with NFPA 13.

L. Sleeves

1. Provide sleeves where piping passes through roofs, masonry or concrete walls, or floors.

M. Continuously weld or braze sleeves to the deck when passing through steel decks.

1. Install sleeves that are continuous when extending through floors, roofs, or load-bearing walls, and sleeves through fire barriers. Fabricate sleeves from Schedule 40 steel pipe with welded anchor lugs. Form other sleeves by molded linear polyethylene liners or similar materials that are removable. Ensure diameter of sleeves is large enough to accommodate pipe, insulation, and jacketing without touching the sleeve, and additionally provides a minimum 3/8-inch clearance. Install sleeve to accommodate mechanical and thermal motion of pipe and to preclude transmission of vibration to walls and generation of noise.

2. Pack solid the space between a pipe and the inside of a pipe sleeve or a construction surface penetration or wherever the piping passes through firewalls, equipment-room walls, floors, and ceilings connected to occupied spaces, and other locations where sleeves or construction-surface penetrations occur between occupied spaces. Use a mineral fiber. Where sleeves or construction- surface penetrations occur between conditioned and unconditioned spaces, fill the space between a pipe, bare or insulated, and the inside of a pipe sleeve or construction-surface penetration with an elastomer caulk to a depth of 1/2 inch. Ensure surfaces are oil- and grease-free before caulking.

3. Caulk exterior wall sleeves watertight with lead and oakum or mechanically expandable chloroprene inserts with mastic-sealed components.

N. Escutcheons

1. Install escutcheons at penetrations of piping into finished areas. Where finished areas are separated by partitions through which piping passes, provide escutcheons on both sides of the partition. Where suspended ceilings are installed, attach plates at the underside only of such ceilings. Use chrome plated escutcheons in occupied spaces and conceal openings in building construction. Ensure escutcheons are firmly attached.

3.05 Field Quality Control

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A. System Testing

1. Prior to acceptance of the work, test completed systems in the presence of the Contracting Officer. Upon approval, provide certificates of testing.

2. Conduct a hydrostatic test, unless otherwise specified. Use only potable water for testing.

3. Perform air tests, valve-operating tests, and drainage tests for dry-pipe systems.

4. Prepare and maintain test records of piping-system tests. Ensure records show personnel responsibilities, dates, test-gage identification numbers, ambient and test-water temperatures, pressure ranges, rates of pressure drops, and leakage rates. Each test acceptance requires the signature of the Contracting Officer.

B. Test Gauges

1. Acceptable test gages have 4-1/2-inch dials or larger with accuracy of plus or minus 1/2 of 1 percent of full-scale range and dial graduations and pointer width compatible with readability to within one-half of the accuracy extremes.

C. Pneumatic Testing

1. Perform pneumatic Pressure Tests when freezing conditions may occur and upon prior approval by the Contracting Officer. Use oil-free compressed air used for testing.

D. Test and Acceptable Criteria

1. Perform above ground systems pressure tests at 200 psi and maintain the applied pressure without further addition of test media for not less than 2 hours. No pressure drop is allowed.

3.06 Adjusting and Cleaning

A. At the completion of the work, clean all parts of the installation. Clean equipment, pipes, valves, and fittings of grease, metal cuttings, and sludge that may have accumulated from the installation and testing of the system. Adjust automatic control devices for proper operation.

3.07 Protection

A. Flushing

1. Before overhead sprinkler piping can be connected to the underground piping, verification of an approved hydrostatic test and flush must be furnished.

END OF SECTION

SECTION 21 1313
WET-PIPE SPRINKLER SYSTEMS

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK:

A. Extent of the work is indicated on the Drawings and Schedules and by the requirements of this Section.

B. The construction requirements herein shall include appurtenant structures and buildings to which the system is to be installed.

1.02 DESIGN CRITERIA:

A. Provide a hydraulically designed, complete automatic sprinkler system with the following hazard types: Restrooms, hallways, classrooms - Light Hazard. Lab classrooms, Mechanical – Ordinary Hazard Group I.

B. Wet systems serving Light Hazard area systems shall be hydraulically calculated to a design density of 0.1 gpm/sf over the most remote 1,500 sf. Wet systems serving Ordinary Hazard Group I areas shall be hydraulically calculated to a design density of 0.15 gpm/sf over the most remote 1,500sf.

C. Gridded sprinkler systems may be used on wet pipe systems where they are practical.

D. All areas of the building, except as noted, shall be completely sprinklered including the following areas:

1. Electrical Rooms that are not enclosed within two-hour walls

2. Elevator Shafts

3. Telephone Rooms

4. Stairwells (at top level and below lowest level)

1.03 QUALITY ASSURANCE:

A. All materials and equipment shall comply with requirements as specified in this section of these specifications.

B. All materials and equipment furnished and installed under this section of these specifications shall be new and in first class condition.

C. All materials and equipment furnished and/or installed by Contractor found to be in non-compliance with these specifications shall be removed and replaced with materials complying with this section of these specifications at Contractor's expense.

D. Codes and regulations referred to are minimum standards. Where the requirements of these specifications or drawings exceed those of the codes and regulations, the drawings and specifications shall govern.

E. Manufacturing firms shall be regularly engaged in the manufacture of fire protection products, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.

F. Installation Firms shall have at least five (5) years of successful installation experience on projects with fire protection work similar to that required for the project.

1.04 SUPPLEMENTAL STANDARDS:

A. Provide fire protection products which are Factory Mutual Approved or UL Listed.

B. Comply with local Fire Department regulations for sizes, hose threads and arrangement of connections for fire department equipment to fire department valves, and fire department connections.

1.05 DESCRIPTION AND REQUIREMENTS:

A. The work under this section of the specifications includes labor, materials, supervision and testing of the automatic sprinkler and associated systems.

B. The automatic sprinkler and associated systems shall be complete with all component equipment and material items, and installed and tested in full conformity with the requirements of all applicable codes, National Fire Protection Associations Standards, authorities having jurisdiction and the Owner's insurance company.

C. Provide chrome metal wall plates and/or escutcheons on all exposed piping which penetrates walls, floors, etc. Plastic wall plates are not acceptable.

D. The installed layout of the sprinkler system shall be coordinated to avoid interference with the structural, electrical, mechanical, and plumbing work in the building.

E. Sprinklers shall be located as required to provide coverage as required by applicable standards and the Contract Documents.

F. Sprinklers shall be located to avoid interference with lights, diffusers, grilles, or other ceiling mounted equipment. Sprinklers located in ceiling tile shall not be closer than 12 inches to "T" bars and centered. The sprinkler layout shall conform to the typical pattern.

G. Provide vane-type electric flow switch on each riser. Also provide tamper switches on all control valves to be interfaced with fire control panel. Wiring shall be by characteristics of each switch necessary for compatibility with the fire alarm control panel.

H. Locate all inspector tests and drain lines in mechanical room and “back-of-house” type spaces. Main drains and auxiliary drains are to be extended through the nearest exterior wall.

I. Provide backflow prevention. Backflow preventer OS&Y valves shall be equipped with tamper switches.

J. All piping in exposed structure areas shall be installed above the bottom chord of the bar joists.

1.06 APPROVALS:

A. Contractor shall submit for approval to the Architect, the Owner's insurance company and local authorities having jurisdiction, shop drawings, including site plans and details of installation, product submittal data and copies of all material and test certificates.

B. Installing Contractor shall anticipate a minimum of 30 days turn-around for reviewing sprinkler shop drawings by Architect-Engineer and Owner's insurance company. Installing Contractor shall submit shop drawings for review on a timely schedule so as not to impact construction schedule.

C. Floor plans on all shop drawings shall be prepared at a scale of 1/8"=1' unless local jurisdictional authority requires drawings be prepared at larger scales, in which case local requirements shall be met. Details and part plans may be at larger scales as appropriate. Prepare shop drawings on sheets 30" by 42". Except as indicated herein, drawings shall be in accordance with the requirements for working drawings as outlined in NFPA 13.

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D. Plans submitted for approval to Architect shall be in the form of one reproducible set in rolled form, not folded. All other plan submittals to Owner's insurance company and local authorities shall be standard blueline prints in quantities as required by those persons.

E. All submittals (except for insurance submittal) for shop drawing review must be submitted directly to Architect. No submittals shall be made direct to Engineers. Submittals shall be made in one submission only; no partial submittals will be accepted. Partial submittals will be held until all components are received and may delay shop drawing review.

1.07 SUBMITTALS:

A. The following information is required for sprinkler plan submission:

1. Physical Characteristics (Cross Section Through Building)

a. Storage height.

b. Roof height.

2. Sprinkler Design

a. Densities.

b. Areas of operation. (Include key plan on each drawing.)

3. Water Supply

a. Static pressure, residual pressure, and flow.

b. Date of flow test.

c. Location of flow test hydrants shown on site plan.

d. Elevation referenced to finished floor level.

e. Source of water.

f. On-site verification water flow test as referenced under "Flow Tests".

4. Manufacturer's Data

a. Pipe, fittings, and mechanical couplings.

b. Alarm valves.

c. All control, globe, and check valves.

d. Water motor alarm and gongs.

e. Sprinklers.

f. Pipe hangers and supports.

g. Water flow and tamper switches.

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h. Fire department connection

i. Chrome metal wall plates and escutcheons.

j. Underground pipe, valves, fittings and hydrants.

k. Hose stations.

l. Backflow preventer with pressure loss curves.

5. A machine copy of the hydraulic calculation nameplate properly filled out for each system shall be submitted to the Architect-Engineer along with the manufacturer's submittal data and shop drawings referenced above.

B. Site Plan Drawing

1. Installing Contractor is to submit with interior sprinkler shop drawings a complete site plan drawing prepared by the sprinkler contractor showing location of all underground fire mains, size and type of pipe and hydraulic calculation reference points. This requirement is necessary even though the actual installation of the final underground piping layout may not be in the Contractor's scope of work.

2. Indicate location and type of all fire hydrants.

3. Detail construction of all meter pits, etc., required by code or local authorities.

4. Show results of water flow test.

5. Indicate elevation at all hydrant reference points.

6. Show location of flow test hydrants and source of water.

7. Scale of site plan shall be as required to fit site on sheet; preferably the same scale of civil engineering drawings provided for this project where they are provided.

C. Hydraulic calculations shall be submitted with drawings and manufacturer's data sheets. Calculations shall include all documentation as required by NFPA 13 current edition, including cover sheet.

1.08 RECORD “AS BUILT” DRAWINGS:

A. Provide as-built drawings to the Contractor to be turned over to the Owner at the completion of the project.

1.09 FLOW TESTS:

A. Flow test data may be provided as part of the contract documents and may be used as a preliminary indicator of available water supply only. Flow test data may also be available from the local water supplier and should also be considered only as preliminary.

B. Each contractor submitting a bid on this project shall verify flow test information in the vicinity of the project by his own water flow test at the indicated hydrants. No requests for change orders will be accepted because successful contractor did not verify water supply information obtained from local authorities or did not run his own test prior to submitting his bid.

C. All flow test data shall be subject to the "10% rule" as defined in this paragraph. Before any calculations or supply curve plotting, reduce the reported static and residual pressures by 10%. Make no reduction to the flow rate reported.

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D. Provide a reserve supply of sprinklers as required by NFPA 13 current edition. The sprinklers and tools shall be contained in a metal carrying case.

1.10 DELIVERY, STORAGE AND HANDLING:

A. Deliver materials to job site in new and in first class condition.

B. Store materials and equipment utilizing suitable means so as to protect from weather, construction work traffic and contamination. Where materials and equipment are stored outdoors, Contractor shall cover in a suitable manner to prevent contamination from water, dirt, mud and/or debris. Materials and equipment shall not be laid on grade for storage.

C. Materials and equipment found to be contaminated with water, dirt, mud and/or other debris shall be cleaned and restored to new condition to the satisfaction of the Architect. Contaminated materials and equipment shall not be used until inspected. Materials and equipment determined to be unsuitable for use by the Architect shall not be used and shall be removed from the job site at the Contractor's expense.

PART 2 - PRODUCTS

2.01 MATERIALS AND PRODUCTS:

A. Provide piping materials and factory fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Provide sizes and types of materials to match piping and equipment connections; provide fittings of materials which match piping materials used in fire protection systems.

2.02 PIPE:

A. Above Ground Piping

1. All piping shall be new, designed for 175 PSI working pressure conforming to ASTM specifications and approved for fire sprinkler specifications.

2. All pipe shall be black steel unless galvanized is indicated for particular pipe sections on the drawings.

3. Schedule 40 piping may be used for piping 2" and smaller and may be joined by threading, roll grooving, or welding.

4. Schedule 10 piping may be used in all sizes and may be joined by roll grooving or welding only.

B. Fittings

1. Screwed fittings shall be standard approved, Class 250, cast iron or Class 150 malleable iron.

2. Flanged fittings shall be approved, short body, Class 250, black cast iron. Gaskets shall be full face, 1/8" minimum thickness red rubber.

3. All welded fittings shall be of the approved type and all welding according to NFPA requirements. No field welding will be permitted.

4. Mechanical couplings shall be approved for grooved end connections equivalent to Victaulic Style 75. All grooved couplings and fittings used throughout this project shall be from the same manufacturer. Grooved couplings and fittings shall be Grinnell Gruvlok, Gustin Bacon, or Victaulic.

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5. Slip on fittings shall not be used. "Victaulic Fit" and "Victaulic Pressfit" and similar products are forbidden on this basis.

6. All inspector tests, drains and drum drips shall be Schedule 40 threaded.

7. Strap on tees or outlets may not be used. "Victaulic Snap-Let" or similar products and "Victaulic Style 921" or similar products are forbidden on this basis.

8. "Victaulic Style 920" mechanical tee or cross or similar products may be used.

C. Underground Piping

1. Underground pipe shall be PVC, C 900, Class 150 or Class 200. Fittings shall be Class 250 and installed in strict accordance with NFPA 24. All bends shall be rodded and thrust blocked.

2. Pipe passing under building grade beams shall have a 6" minimum clearance to prevent possible damage from building settlement.

3. All underground piping shall be flushed in accordance with NFPA #24.

2.03 JOINTS:

A. Threaded joints shall be made up with piping compound or teflon tape applied to the male threads only.

B. Welded joints shall be done by qualified welders per the requirements of Division 23.

C. Flanged joints shall be made up with rubber gaskets and assembled with machine bolts with hexagon heads made of open hearth steel.

D. Soldered joints shall be made using suitable flux and solder as specified.

2.04 BASIC HANGERS AND SUPPORTS:

A. Refer to Division 23, Pipe Hangers, Supports, and Anchor, Section 23 05 29.

B. Supports shall comply with provisions of NFPA 13 except where superseded by these herein and Section 23 05 29.

2.05 VALVES:

A. Valves as indicated shall be provided by Milwaukee, Nibco, Victaulic, Grinnell or Mueller.

B. All valves shall be designed and manufactured with back seating features to allow them to be repacked under pressure when in the fully opened position.

C. Provide valves of one manufacturer wherever practical to achieve maximum possible uniformity and facilitate maintenance.

D. All valves must be listed for use in sprinklers systems in the latest edition of Factory Mutual Approval Guide and U.L. listed.

1. Gate valves 2" and smaller shall be of Class 250, with body and bonnet, cast bronze composition, threaded ends, OS&Y, solid disc.

2. Gate valves 2-1/2" and larger shall be rated 250 psi WWP, iron body, bronze mounted, with body and bonnet, Class B cast iron, OS&Y, flanged or threaded end.

3. Ball valves 2" and smaller shall be constructed of commercial brass rod, with Teflon seats, blowout proof stem.

4. Butterfly valves 4" through 12" may be substituted for gate valves, where appropriate. Valves shall be rated for 250 PSIG working pressures. Valve bodies may be ductile iron or aluminum bronze and wafer or lug style.

5. Check valves 2-1/2" - 12" shall be rated 250 PSI WWP, iron body, bronze mounted, OS&Y flanged end.

6. Pressure ratings of valves shall be as required to meet the pressure conditions to which they are likely to be exposed or the ratings listed above, whichever is greater.

2.06 WATERFLOW INDICATOR:

A. Waterflow indicator shall be vane type with adjustable retard and two sets of single pole, double throw contacts for A.C. or D.C. operation.

2.07 O.S. & Y. VALVE SUPERVISORY SWITCH:

A. Valve supervisory switch for O.S. & Y. gate valves shall be provided with tamperproof cover and two sets of single pole, double throw contacts for A.C. or D.C. operation, bracket and J-bolts. Unit shall be U.L. Listed and F.M. Approved.

2.08 SPRINKLERS:

A. 1/2" brass pendent sprinkler, ordinary temperature, with concealing bracket and cover assembly. Cover shall be factory painted in a color selected by the Architect to match finish of ceiling in which it is installed, for use in all gypsum board ceilings.

B. 1/2" chrome pendent sprinkler, ordinary temperature, with chrome plated, semi-recessed escutcheon, for use in all lay-in tile ceilings.

C. 1/2" brass upright sprinkler, ordinary temperature, for use in areas without ceilings.

D. 1/2" sidewall sprinklers in Guestrooms

E. 1/2" brass upright sprinkler, intermediate temperature, for use in areas above high ceiling space and electrical rooms.

F. Acceptable sprinkler manufacturers are: Viking, Tyco, and Victaulic.

2.09 FIRE DEPARTMENT CONNECTIONS:

A. Fire department connection shall be two-way 4" x 2½" wall mounted type with drop clappers. Unit shall be complete with inlets with caps, chains and cast brass body. All exposed surfaces shall be polished chrome plate. Fire department connection shall be labeled with the name of the fire protection system served. The connection to the fire department shall be provided with an automatic ball drip with discharge drain line. The exact location shall be coordinated with the Fire Marshal prior to submission of the sprinkler shop drawings. Any adjustments in pipe routing shall to the Fire Dept. connection shall be included in the contractor's scope of work at no additional cost to the Owner.

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PART 3 - EXECUTION

3.01 GENERAL:

A. Contractor shall not fabricate and/or install fire sprinkler systems until Architect/Engineer has reviewed shop drawings / submittals for compliance with engineer design concept.

B. Any fire sprinkler systems fabricated and/or installed prior to the Architect/Engineer's review found to be in non-compliance shall be removed or corrected as per instructions from Architect/Engineer at Contractor's expense.

3.02 PROCEDURE:

A. Valves in horizontal piping shall be installed with stems at or above the pipe centerline.

B. Automatic air vents shall be installed with gate valves.

C. Provide gate, globe and check valves throughout systems where shown and where necessary to properly regulate and control the systems. Valves shall be the full size of the lines and shall be designed for low pressure drop. Gate and globe valves shall have provision for repacking when open and under pressure.

3.03 SPRINKLERS:

A. Provide basket type guards over all upright sprinklers.

B. Sprinklers shall be provided above and below all ductwork or other obstructions greater than 4'-0" in width.

C. Sprinklers shall be centered in 2 x 2 ceiling tiles and at least 12" from each of 2 x 4 ceiling tiles.

D. Provide shields on all sprinklers located near electric panels to limit the sprinkler discharge on the panels.

E. Install sprinklers so that heads are located no closer than 1'-0" to lights, diffusers, or other obstructions.

F. Where sprinklers are exposed to exterior sprinklers must be wax coated to protect exposed surfaces from corrosion.

3.04 INSTALLATION:

A. The fire protection system shall include all signs, test connections, and drains required by NFPA 13.

B. Comply with requirements of NFPA 13 for installation of fire protection piping materials. Install piping products where indicated, in accordance with manufacturer's written instructions.

C. Coordinate with other work, including plumbing piping, as necessary to interface components of fire protection piping properly with other work.

D. Fire mains, crossmains, and branch piping shall not be installed inside or above the ceiling of Electrical Equipment Rooms, Telephone Rooms, Elevator Equipment Rooms, or other rooms of similar usage. Only sprinkler branch piping which serves sprinklers located inside such rooms shall be permitted to be installed within room.

E. Automatic sprinklers protecting elevator shafts shall have a supervised control valve located in an accessible location outside of the room, so that sprinkler heads in these areas may be shut down separately.

F. All valves in direct flow of water to sprinklers, standpipes or exterior connections shall be provided with valve position supervisory switches.

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G. Waterflow indicators shall be mounted horizontally or vertically on top of pipe. Adjust retard to provide maximum of 30 second delay. Schedule 40 pipe must be provided for waterflow indicator.

H. O.S. & Y. valve stem shall be carefully filed to accommodate stem of valve switch.

3.05 DRAINS:

A. All trapped sprinkler piping shall be provided with drain valves and shall be routed to and discharged over the nearest suitable floor drain, hub drain or service sink. Drain valve shall be located at the point of discharge.

B. All drains and inspector's test connections located on exterior walls shall be painted to match exterior and penetration shall be sealed and provided with chrome plated escutcheon secured to wall.

3.06 ANCHORAGES:

A. General: Provide concrete thrust block anchorages for underground tees, plugs, caps, and bends in accordance with NFPA 24. Provide rods and clamps on fittings located underground inside building as shown on drawings.

B. After installation, apply a full coat of asphalt or other acceptable corrosion retarding material to surfaces of rods and clamps.

3.07 IDENTIFICATION:

A. Install signs on all inspector's test connections, auxiliary drains, drain valves, etc., in accordance with NFPA 13.

B. Access panels provided for valves concealed above ceilings or inside partitions must be provided with permanently attached signs identifying control valve or drain.

3.08 ADJUST AND CLEAN:

A. Sprinkler Piping Flushing: Prior to connecting sprinkler risers for flushing, flush water feed mains, lead in connections and control portions of sprinkler piping. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system as required to remove foreign substances, under pressure as specified by NFPA 13, current edition. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinklers.

3.09 TESTING:

A. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically, for a period of 2 hours, as follows:

1. 150 psi or less, test pressure 200 psi

2. 151 psi or more, test pressure 50 psi above normal operating pressure

B. Check system for leakage at joints. Measure hydrostatic pressure at low point of each system or zone being tested. No drop in pressure is permitted.

3.10 PAINTING:

A. Painting of properly prepared sprinkler piping and equipment shall be by the Contractor.

B. The Contractor is to remove all labels, stickers, fabrication identification tags, excess pipe dope and teflon tape from sprinkler piping before system is painted.

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C. The Contractor is to install protective plastic bags on all sprinkler heads in areas where roof deck and/or structural system is to be painted.

D. The Contractor will remove all plastic bags after the final painting is complete.

E. The Contractor shall furnish a signed statement on his letterhead and place it in the operating instruction and maintenance manuals that he has verified that all plastic bags have been removed.

F. Any sprinkler head not protected from painting and subsequently receiving paint coating shall be replaced. Cleaning of sprinkler heads to remove paint is not acceptable.

3.11 WARRANTY:

A. Provide a written warranty in accordance with the general conditions.

B. This warranty shall further provide that in the event of the failure of any system or its component equipment items or the improper functioning thereof, during the period of the warranty, the contractor shall have available and "on call" competent service personnel for the restoration of all systems and equipment for complete operation. Should the nature of the failure be such as to present an emergency in the opinion of the Owner, such personnel shall be promptly available regardless of the hour of the day or the day of the week. Should the failure be such as to fall under the warranty, the cost of the service shall be borne by the contractor -otherwise, the Owner will pay therefore at the prevailing rate for such services.

C. If service personnel of the installing contractor are not promptly available "on call," the Owner may employ such personnel as are available to him, at the expense of the installing contractor.

D. Inspection and Tests

1. All inspections, examinations and tests required by NFPA, local authority having jurisdiction, and Owner's insurance company shall be arranged as necessary to obtain complete and final acceptance of the sprinkler system. The Contractor shall deliver certificates of all inspections and tests to Architect.

2. At job conclusion the entire system shall be flushed out and left clean in every respect.

3. After systems have been installed, tested and accepted, contractor is to provide three (3) copies of operating instructions and maintenance manuals complete with a copy of approved shop drawings, copy of NFPA-25, spare parts lists and phone numbers of emergency repair personnel to Architect. A copy of hydraulic calculation nameplate as installed on each riser shall be included in O & M manuals.

4. Provide three (3) copies of underground material and test certificate.

3.12 QUARTERLY INSPECTIONS:

A. Installing Sprinkler Contractor is to provide a minimum of four (4) on-site sprinkler system inspections during the one (1) year warranty period.

1. Inspections to consist of all items outlined in NFPA-25 such as lubricating valve stem of valves, replacement of F.D.C. (fire department connection) break-off caps if missing, etc.

2. After each quarterly inspection, copies of inspection reports outlining results and listing any problems observed shall be forwarded to the Owner, Owner's insurance company, and Architect and Engineer of Record.

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END OF SECTION

SECTION 22 0010
BASIC PLUMBING REQUIRMENTS

PART 1. GENERAL

1.01 SECTION INCLUDES

A. Basic Plumbing Requirements specifically applicable to Division 22 Sections, in addition to Division 01 - General Requirements.

B. DESCRIPTION

C. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as required to complete the work of this section, except as otherwise herein specifically excluded.

D. REFERENCES

E. Section 23 08 01 - Commissioning of Building Systems

F. WORK INCLUDED

G. The complete Plumbing systems (including Fire Protection systems), including but not limited to these major items.

1. Coordinate work of this Section with related trades.
2. Verify applicable dimensions at the jobsite.
3. Furnishing and installation of miscellaneous hangers, supports, sleeves, inserts, anchors and other auxiliary equipment for systems under this Division.
4. Soil waste and vent system inside and outside the building including connections to fixtures, equipment, sewer connections, clean-outs.
5. Water piping systems inside and outside the building, including connections to fixtures, equipment, water meters and vaults; pressure regulating stations, backflow preventers.
6. Interruptible and non-interruptible fuel gas systems inside and outside the building, including connections and earthquake valves.
7. Plumbing fixtures, carriers, fittings, trim, hose bibs, wall hydrants, and accessories.
8. Installation and connection of Owner furnished equipment.
9. Natural gas piping system including connections to equipment and site.
10. Water heating systems, including water heating equipment, circulating pumps, connections.
11. Shop drawings.
12. Equipment identification.
13. Equipment and systems adjustments and balancing.
14. Air, water and gas systems testing, adjusting and balancing.

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15. Written operating and maintenance instructions.

16. Record drawings.

17. Guarantee

1.02 WORK SPECIFIED ELSEWHERE

A. Concrete, Architectural Sheet Metal, Door and Exterior Wall Louvers, Painting and Electrical.

1.03 SITE INSPECTION

A. Contractor shall familiarize himself with the conditions at the site. No allowance will be made subsequently for any error through negligence in observing the site conditions. Contractor shall observe and make cost allowance for any mechanical and/or electrical items that must be relocated to accommodate the installation or servicing of any item covered under this contract.

B. ORDINANCES, REGULATIONS AND CODES

C. References to Technical Societies, Trade Organizations, Governmental Agencies is made in Division 15 inch accordance with the following abbreviations.

1. AFI - Air Filter Institute

2. AMCA - Air Moving & Conditioning Association

3. ARI - Air Conditioning & Refrigeration Institute

4. ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers

5. ASME - American Society of Mechanical Engineers

6. ASTM - American Society of Testing Materials

7. AWSC - American Welding Society Code

8. ANSI - American National Standards Institute

9. CBC - California Building Code

10. CCR - California Code of Regulations

11. CEC - California Electrical Code

12. CFC - California Fire Codes

13. CMC - California Mechanical Code

14. CPC - California Plumbing Code

15. FIA - Factory Insurance Association

16. NAFM - National Association of Fan Manufacturers

17. NEMA - National Electrical Manufacturer's Association

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18. NFPA - National Fire Protection Association

19. ORS - Office of Regulatory Services

20. SCAQMD - South Coast Air Quality Management District

21. SMACNA - Sheet Metal and Air Conditioning Contractors National Association

22. UFC - Uniform Fire Code

23. UL - Underwriter's Laboratories

24. UPC - Uniform Plumbing Code

D. Requirements of Regulatory Agencies: Materials and installation shall comply with applicable local, state, and national codes and ordinances. Rulings and interpretations of the enforcing agencies shall be considered as part of the local codes. No extras will be permitted for furnishing items required by the local codes but not specified or shown on the drawings.

E. Codes and Standards:

1. IBC and California Amendments (California Building Code - Part 2, Title 24, CCR).

2. UMC and California Amendments (California Mechanical Code - Part 4, Title 24 CCR).

3. UPC and California Amendments (California Plumbing Code - Part 5, Title 24 CCR).

4. Uniform Fire Code with State Amendments (California Fire Code - Part 9, Title 24 CCR).

5. National Fire Protection Associations - National Fire Code.

F. Nothing in these drawings and specifications is to be construed to permit work in violation thereof. Ordinances, regulations and codes are to be construed as minimum requirements.

G. The responsibility of the Architect to conduct construction reviews of the Contractor's performance is not intended to include the adequacy of the Contractor's safety measures in, on, or near the construction site.

H. Ventilating, refrigeration and electrical equipment and appliances are required to be approved by the Underwriters' Laboratories, Inc., or other nationally recognized testing agency and installed per the testing agency's specifications.

1.04 PERMITS, FEES AND INSPECTIONS

A. Obtain and pay for all necessary permits, fees, assessments, complimentary drawings, required by any legally constituted public authorities having jurisdiction.

1.05 DRAWINGS AND SPECIFICATIONS

A. The Architect's decision will be final on interpretation of the Drawings and Specifications.

B. The Drawings and Specifications are complimentary. Any work called for on the Drawings and not mentioned in the Specifications, or vice versa, shall be performed as though fully set forth in both.

C. Piping, ductwork and other equipment shown as existing has been taken from the Owner's drawings. Contractor shall verify exact location in field before proceeding with the work.

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D. Where codes, standards, drawings or specifications conflict, the most stringent shall prevail, unless prior approval for variance is obtained. Specific details on the drawings shall supersede the specification in the event of a conflict.

E. Alternate support or seismic detail shall have prior approval by the Architect; and the Contractor shall obtain agency approval without any additional cost or time to the contract and without any time penalty on the work schedule.

1.06 SUBMITTALS

A. Before starting work, the Contractor shall furnish for the approval of the Architect, Shop Drawings and Submittals with Itemized Equipment Lists, complete in all details that they proposes to install. All items shall be submitted at the same time.

B. Submittals must be specific to this project with respect to model number, capacities, performance, etc., generic submittals will not be accepted.

C. Variations or deviations on submitted items from that specified must be clearly tagged and / or identified

D. Submittals shall include, but not necessarily be limited to the following which are mandatory:

1. Draw Equipment Layouts to ¼" scale, including equipment, piping accessories, and showing clearances for operating and servicing.

2. Schedule of pipe, fittings, valves, with manufacturer and catalog number.

3. Specialties, valves, gauges and thermometers of all types.

4. Foundations, supports, hangers, inserts.

5. Insulation.

6. Shop fabrication drawings and installation drawings of ductwork and piping layouts. Submit for approval prior to fabrication. Drawings shall indicate dimensions from bottom of piping and ductwork to finish floor level.

7. Access panels.

8. Clean-outs

9. Fixture carriers.

10. Hangers, inserts, supports, anchors.

11. Hose bibs.

12. Hot water circulators.

13. Pipe, fittings and specialties.

14. Pipe isolators.

15. Plumbing fixtures, fittings, trim, drains and receptors.

16. Pressure regulators.

17. Roof flashing.

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18. Sleeves, escutcheons, caulking, waterproofing, fireproofing.

19. Strainers

20. Water hammer arrestors.

21. Water heating equipment.

22. Shop fabrications drawings and calculations.

23. Special and miscellaneous products furnished under this section and not listed herein.

1.07 RECORD DRAWINGS AND MANUALS

A. Record Set During the Work: At site, maintain at least one set of Drawings as a Field Record Set. Also maintain at least one copy of all Addenda, Modifications, approved submittals, correspondence, and transmittals at site. Keep Drawings and data in good order and readily available to Architect and Owner.

B. Changes: Clearly and correctly mark Record Drawings to show changes made during the construction process at the time the changed work is installed. No such changes shall be made in the work unless authorized by the Architect.

C. Final Record Drawings: Conform to Division 1 requirements.

D. Preparation of Final Record Drawings: Contractor shall transfer recorded changes in the work indicated on the Field Record Set to the record set. Changes shall be neatly and clearly drawn and noted by skilled draftsmen, and shown technically correct.

E. Approval: Prior to Architect's inspection for Substantial Completion, submit the Final Record Drawings to the Architect for review, and make such revisions as may be necessary for Final Record Drawings to be a true, complete, and accurate record of the work.

F. Manuals: Obtain data from the various manufacturers and submit instruction, operation, and maintenance manuals as required and to the extent required under other Sections.

G. Contents: Each manual shall have an index listing the contents. Information in the manuals shall include not less than:

1. General introductions and overall equipment description, purpose, functions and simplified theory of operation.

2. Specifications

3. Installation instructions, procedures, sequences, and precautions, including tolerances for level, horizontal and vertical alignment.

4. Grouting requirements.

5. List showing lubricants for each item of mechanical equipment and recommended lubrication intervals.

6. Start-up and beginning operation procedures.

7. Operational procedures.

8. Shutdown procedures.

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9. Maintenance and calibration procedures

10. Parts lists

11. Name, address and telephone number of each manufacturer's local representative.

H. Manual Submittals: Unless otherwise specified, each submittal shall include two copies of each manual, one of which will be returned to the Contractor, marked to show the required review. When approved, deliver four copies to Architect unless otherwise specified.

I. "As-Built" drawings of ductwork and piping, including all elbows, transitions, damper and valve locations shall be provided prior to commencement of air and water balance.

1.08 QUALITY OF EQUIPMENT, MATERIALS AND WORKMANSHIP

A. Unless otherwise specified, equipment and materials used in the installation shall be new and in perfect condition when installed. Articles provided for the same general purpose or use shall be of the same make. Workmanship shall be of the best quality and none but competent mechanics skilled in their trades shall be employed. Furnish the services of an experienced superintendent, who shall be constantly in charge of the work, together with all necessary journeymen, helpers and laborers required.

1.09 SEISMIC DESIGN

A. Contractor shall be responsible for anchors and connections of mechanical work to the building structure including calculations for approval by structural engineer or for approval by inspector of record, as applies, for items or work, where approval is deferred or where alternate support or anchorage detail is proposed to prevent damage as a result of an earthquake, including manufactured equipment, the connection and integrity of shop fabricated and field fabricated materials and equipment. The anchorage of all pipes, ducts, conduits, fixtures, equipment, etc. shall withstand the lateral forces and shall accommodate calculated building displacement as required by the California Building Code, and local city/county codes. (Building equipment and connections therefore shall be designed to resist lateral seismic forces equal to 1.0 of equipment weight to working allowable stress. Cantilever posts supporting equipment shall be designed to resist lateral seismic forces equal to 0.5 of equipment weight to allowable working stress. Conform to the following:

1. In accordance with Title 24, 2019 CBC Chapter 16A, details shall be provided for the seismic anchorage of all mechanical and electrical equipment, anchorage details shall be based upon appropriate design calculations.

2. For equipment weighing 400 pounds or more anchorage details and appropriate design calculations shall be submitted as part of the mechanical and electrical drawings. "Deferred Approval" items will not be permitted unless specifically approved by the plan check supervisor.

   a. Exception: Attachments of equipment weighting less than 400 pounds and supported directly on the floor or roof structure, furniture, or temporary or movable equipment and equipment weighing less than 20 pounds that is supported by vibration isolation devices suspended from the roof, wall or floor, need not be detailed on the plans provided the following notes are included on the mechanical and electrical plans.

3. The seismic anchorage of mechanical and electrical equipment shall conform to C.C.R. Title 24, 2019 CBC Chapter 16A. Anchorage details for roof/floor-mounted equipment shall be shown on plans.

1.10 SUBSTITUTIONS AND CHANGES

A. The design has been based on data from certain manufacturers, suitable for each application. Recommendations for alternative manufacturers are made for each product, except when "no substitutions permitted" is indicated.

B. It is the intent of the Owner to have this project constructed with materials, products and system originally designed and specified into the project.

C. Alternatives that may require the modification, realignment and/or adjustment of other associated components, including impact on other trades, shall be accomplished at no additional cost or time to the contract and shall have the approval of the Architect.

D. Substitutions shall be submitted addressing all features listed in the specifications. Features that deviate from the plans and specifications shall be clearly identified including justification for deviations. Design West Engineers will review initial submittal on substitutes only. Subsequent submittals made to correct deficiencies in original submittals will be reviewed at Contractor's expense based on Design West Engineer's hourly rate for engineering services.

E. Should the Contractor elect to propose substitutions for the Owner's interest, the substitutions shall be in compliance with Division 01.

1.11 APPROVALS

A. The Architect will have the right to accept or reject equipment, materials, workmanship, tests and determine when the Contractor has complied with the requirements herein specified.

1.12 SELECTION AND ORDERING OF EQUIPMENT AND MATERIALS

A. Immediately after award of the Contract and after the approval of submittals by the Architect, the Contractor shall arrange for the purchase and delivery of equipment and materials required, in ample quantities and at the proper time. He shall deliver to the Architect a complete list of equipment and materials ordered, giving descriptions, plate numbers, brochures, name of the wholesalers, date of the orders and approximate delivery dates.

1.13 LOCATIONS AND ACCESSIBILITY

A. Drawings show pipe and ductwork diagrammatically. Conform to Drawings as closely as possible in layout work. Vary run of piping, run and shape of ductwork and make offsets during progress of work as required to meet structural and other interferences as approved by Architect. Install piping and ductwork to best suit field conditions after coordinating with other trades. Run exposed piping and ductwork parallel to, or at right angle to, building walls. Keep horizontal lines as close to bottom of structures as possible. Conform to ceiling heights established on Drawings.

B. Install equipment in such a manner as to be readily accessible for maintenance and repairs. Install piping, ducts and conduit in such a manner as to preserve headroom, avoid obstructions and keep openings and passageways clear.

C. Installation at valves, thermometers, gauges, cleanouts, dampers, controls, steam and water specialties, duct access doors or any other indicating equipment or specialties requiring reading, adjustment, inspection, maintenance shall be conveniently and accessible located with reference to the finished building.

D. Where wall and ceiling access doors are required but not shown, such doors shall be furnished under other sections and as directed by the Architect. Coordinate this requirement with appropriate trade.

E. If changes in the indicated locations or arrangements are required, they shall be made without additional charges.

F. In an existing area, where required, remove, reinstall, reconnect or replace, etc., any existing work to accommodate new work without any additional cost to the Owner. Material shall match existing, unless otherwise specified or approved in writing by the Architect.

G. Provide sheaves and belts if required, to Test, Adjust and Balance Agency, to allow air moving equipment to meet flow requirements specified at no additional cost to the Owner.

1.14 COORDINATION OF TRADES

A. Contractor shall coordinate all trades in the interest of obtaining the most practical overall arrangement of equipment, piping, conduit, and ducts and to maintain maximum headroom and accessibility.

B. No extras will be allowed for changes made necessary by interference between trades.

C. Submit Composite Drawings in accordance with Special Conditions. Include dimensioned plans, elevations, sections and details and give complete information particularly as to the kinds and types of materials and equipment, size and location of sleeves, inserts, attachments, chases, openings, conduits, ducts, boxes, lighting, structural interferences. Coordinate these Composite Drawings and field layouts in the field for proper relationship to work of applicable trades based on field conditions. Contractor shall have competent personnel readily available for coordinating, checking, and supervision of field layouts. The procedures for submittals and resubmittals, and final distribution shall be as specified in Division 01. Do not start installation of work involved under Composite Drawings until the Architect reviews applicable submittal. Discrepancies between the Drawings and Composite Drawings shall be specifically noted and identified on the Composite Drawings. Drawings for the various trades involved shall be submitted as required and reviewed prior to preparation of Composite Drawings.

1. Equipment Foundations and Bases: Furnish certified details and drawings for approval before fabrication. Furnish parts necessary for each foundation sub base and support.

2. Pipe Sleeves and Inserts: Furnish and install pipe sleeves and pipe support inserts before concrete is poured.

3. Roof, Wall and Floor Openings: Furnish Shop Drawings showing exact locations and sizes of openings through roofs, walls and floors.

4. Concrete: Conform to Concrete Section of the Specifications.

1.15 GUARANTEES

A. Contractor shall guarantee workmanship, equipment and materials installed under his contract for a period of not less than one (1) year from the date of Substantial Completion. Should any defects occur during this period, the Contractor shall promptly repair or replace the defective item and any other damage caused to the building free of charge to the Owner, including cost of labor and materials.

B. Guarantee included in this section to cover:

1. Faulty or inadequate design of equipment or material installed

2. Improper assembly or erection

3. Defective workmanship or material

4. Incorrect or inadequate operation or other failure

C. He shall guarantee the complete and perfect operation of the entire system and that equipment will be supported in such a way as to be free of objectionable vibration and noise

D. Furnish the parts and labor to replace any items found to be defective in the refrigeration equipment with the guarantee period

E. In addition to other guarantees, furnish free maintenance for the refrigeration equipment, including replacement of refrigerant and oil, for a period of one (1) year. This shall include regular monthly maintenance and "On Call" service if required.

F. For equipment bearing a manufacturer's warranty in excess of one year, furnish a copy of the warranty to the Owner, who shall be named as beneficiary.

1.16 PROTECTION OF EQUIPMENT AND MATERIALS

A. Provide adequate storage facilities for equipment and materials on the site and shall make provisions to protect such materials and equipment from damage.

1.17 CLOSING-IN OF UNINSPECTED WORK

A. Contractor shall not allow or cause any of the work, specifically ductwork and piping, to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Should any of work be covered up or enclosed before such inspection and test, shall at their own expense, uncover the work and after it has been inspected, tested, and approved, make repairs with such materials as may be necessary to restore work to its original and proper condition.

1.18 BUILDING FOOTING CLEARANCES

A. Under no circumstances shall pipes, ducts, or conduits penetrate footings. They shall cross below footings or through sleeves above footings. Those running parallel to footings shall have the minimum clearance from the cone of influence indicated on the Drawings or as required by Code.

1.19 DAMAGE BY LEAKS

A. Contractor shall be responsible for all damage to any part of the premises caused by rain leaks through or around ducts or pipes, leaks or breaks in piping, equipment or fixtures furnished or installed by him for a period of one (1) year from the date of Substantial Completion.

B. EQUIPMENT LABELS

C. Equipment provided under this Section shall be provided with the manufacturer's metal identification labels attached to each individual piece of equipment showing complete performance characteristics, size, model and serial number.

1.20 PRELIMINARY OPERATION

A. Should the Owner request that any portion of the plant, apparatus, or equipment be operated for the Owner's beneficial use prior to the final completion and acceptance of the work, the Contractor shall conform to Beneficial Occupancy Provisions of the General Conditions. Such operation shall be under the supervision and direction of the Contractor. Such preliminary operation shall not be construed as an acceptance of any of the work.

1.21 MAINTAINING EXISTING SERVICES

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A. The premises and existing building at the site will be in use at the time the work of this Section is in progress. Contractor shall conduct his work so as to cause no inconvenience or danger to the personnel on the premises.

B. He shall maintain continuity of service to the existing mechanical systems, except for designated intervals during which connections can be made. The scheduling of the shut down period shall be at a time directed by the Architect.

C. In some instances, it may be necessary to defer work in certain areas and locations until such time as existing facilities can be relocated or rearranged by the Owner. Therefore, whenever it becomes necessary for the Contractor to perform work under this contract in areas in which the Owner's work is being performed. This contractor shall advise the Architect relative to this requirement and shall follow closely the directive issued by the Architect insofar as time and procedure are concerned. Allow Owner 72 hours prior notice.

D. This contractor shall include in his bid all premium time to which he may be subjected for performing work in such procedure and at such time as may be necessary to cause the least interference with the function of the Owner.

1.22 ELECTRICAL WORK

A. Coordinate with Division 26 inch making the line and low voltage electrical connections and be responsible for the operation of the equipment furnished under this section.

B. Voltage for electrical work will be included in Division 26. However, any control wiring which is required that is not shown on the control diagram shall be as described under this Section. In the event that the Contractor chooses to provide equipment that requires extra expense in the power or control wiring, he shall pay additional electrical costs.

C. Safety switches, starters, circuit breakers, unless provided as a portion of package equipment, and the electrical connections of mechanical equipment to the electrical power service shall be provided under Division 26.

D. Interconnecting wiring, safety switches, relays, controllers and motor starters which are integral components of packaged equipment shall be provided as an integral part of that equipment.

E. All interconnecting power wiring and conduits shall be provided by Division 26.

F. Control wiring shall be provided by Division 22, unless otherwise indicated on the drawings.

G. Conduit for control wiring shall be provided by Division 26.

END OF SECTION

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SECTION 22 0517
SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sleeves.
2. Sleeve-seal systems.
3. Grout.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 PRODUCTS

2.01 SLEEVES

A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.

C. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.

D. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

E. Galvanized-Steel-Sheet Sleeves: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.

2.02 SLEEVE-SEAL SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Advance Products & Systems, Inc
2. CALPICO, Inc
3. Metraflex Company
4. Pipeline Seal and Insulator, Inc
5. Proco Products, Inc

C. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

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1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.

2. Pressure Plates: Carbon steel.

3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.03 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 EXECUTION

3.01 SLEEVE INSTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch (25-mm) annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.

2. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.

2. Install sleeves that are large enough to provide 1/4-inch (6.4-mm) annular clear space between sleeve and pipe or pipe insulation.

3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 079200 "Joint Sealants."

E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078413 "Penetration Firestopping."

3.02 SLEEVE-SEAL-SYSTEM INSTALLATION

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A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.03 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above Grade:

a. Piping Smaller than NPS 6 (DN 150): Cast-iron wall sleeves.

b. Piping NPS 6 (DN 150) and Larger: Cast-iron wall sleeves.

2. Exterior Concrete Walls below Grade:

a. Piping Smaller than NPS 6 (DN 150): Cast-iron wall sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 (DN 150) and Larger: Cast-iron wall sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.

3. Concrete Slabs-on-Grade:

a. Piping Smaller than NPS 6 (DN 150): Cast-iron wall sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 (DN 150) and Larger: Cast-iron wall sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.

4. Concrete Slabs above Grade:

a. Piping Smaller than NPS 6 (DN 150): Galvanized-steel-pipe sleeves.

b. Piping NPS 6 (DN 150) and Larger: Galvanized-steel-pipe sleeves.

5. Interior Partitions:

a. Piping Smaller than NPS 6 (DN 150): Galvanized-steel-pipe sleeves.

b. Piping NPS 6 (DN 150) and Larger: Galvanized-steel-sheet sleeves.

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END OF SECTION

SECTION 22 1005
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, pipe fittings, specialties, and connections for piping systems.

1. Sanitary sewer.

2. Domestic water.

3. Valves.

4. Check.

5. Strainers.

1.02 REFERENCE STANDARDS

A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.

B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.

C. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

D. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2015a.

E. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2014.

F. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2010.

G. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2002 (Reapproved 2010).

H. AWWA C651 - Disinfecting Water Mains; 2005.

I. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2009.

J. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2011.

K. California Code of Regulations, Title 24, Part 5: California Plumbing Code (CPC), latestedition.

L. NSF 61 - Drinking Water System Components - Health Effects; 2014 (Errata 2015).

M. NSF 372 - Drinking Water System Components - Lead Content; 2011.

1.03 SUBMITTALS

A. See Division 1 for submittalprocedures.

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B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

C. Pipe Test Reports: Submit pipe pressure test reports for all piping installed under this contract indicating that piping systems have been tested in accordance with the California Plumbing Code.

1.04 REGULATORY REQUIREMENTS

A. Perform Work in accordance with State of California plumbing code.

B. All wetted parts of pipe, valves, equipment and appurtenances for use in potable water systems shall be in compliance with the Reduction of Lead in Drinking Water Act, amendments to Section 1417 of the Safe Drinking Water Act which are effective January 4, 2014. Lead content shall not exceed 0.25% byweight.

1.05 DELIVERY, STORAGE,AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completedsystem.

PART 2 PRODUCTS

2.01 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OFBUILDING

A. Cast Iron Pipe: CISPI 301,hubless.

1. Fittings: Cast iron.

2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.

2.02 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Copper Pipe: ASTM B42, harddrawn.

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper andbronze.

2. Joints: ASTM B32, alloy Sn95 solder.

2.03 DOMESTIC WATER PIPING, ABOVEGRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper andbronze.

2. Joints: ASTM B32, alloy Sn95 solder.

2.04 'LEAD FREE' BALL VALVES

A. Manufacturers:

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1. Nibco, Inc. Model:S-685-66-LF

B. Construction: 2" and smaller, bronze body, 2 piece, MSS SP-110; NSF 61-G; 600 psig, full port, stainless steel ball, teflon seats and packing, blow out proof stem, lever handle, solder ends.

2.05 SPRING LOADED CHECKVALVES

A. Manufacturers:

1. Hammond Valve; www.hammondvalve.com.

2. Crane Company; www.cranecpe.com.

3. Milwaukee Valve Company; www.milwaukeevalve.com.

B. Class 125, iron body, bronze trim, stainless steel springs, bronze disc, Buna N seals, wafer style ends.

2.06 STRAINERS

A. Manufacturers:

1. Armstrong International, Inc; www.armstronginternational.com/#sle.

2. Green Country FilterManufacturing; www.greencountryfilter.com/#sle.

B. Size 2 inch and Under:

1. Threaded brass body for 175 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.

2. Class 150, threaded bronze body 300 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 INSTALLATION

A. Install and test all plumbing piping systems in strict accordance with the California Plumbing Code.

B. Install in accordance with manufacturer'sinstructions.

C. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

D. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

E. Install piping to maintain headroom, conserve space, and not interfere with use of space.

F. Group piping whenever practical at common elevations.

G. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

3.03 TOLERANCES

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A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per footslope.

B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.04 DISINFECTION OF DOMESTIC WATER PIPINGSYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

D. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

E. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWAC651.

3.05 SERVICE CONNECTIONS

A. Provide new sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

3.06 SCHEDULES

A. Pipe Hanger Spacing:

1. Metal Piping:

a. Pipe Size: 1/2 inches to 1-1/4inches:

1) Maximum Hanger Spacing: 6.5 feet

2) Hanger Rod Diameter: 3/8 inches.

b. Pipe Size: 1-1/2 inches to 2inches:

1) Maximum Hanger Spacing: 10 feet

2) Hanger Rod Diameter: 3/8 inch.

c. Pipe Size: 2-1/2 inches to 3inches:

1) Maximum Hanger Spacing: 10 feet

2) Hanger Rod Diameter: 1/2 inch.

END OF SECTION

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SECTION 22 1006
PLUMBING PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Drains.

B. Cleanouts.

C. Hose bibbs.

D. Hydrants.

E. Refrigerator valve and recessed box.

F. Backflow preventers.

G. Water hammer arrestors.

1.02 REFERENCE STANDARDS

A. ASME A112.6.3 - Floor and Trench Drains; 2001 (R2007).

B. ASME A112.6.4 - Roof, Deck, and Balcony Drains; 2008 (Reaffirmed 2012).

C. ASSE 1011 - Hose Connection Vacuum Breakers; 2004.

D. ASSE 1012 - Backflow Preventer with Intermediate Atmospheric Vent; 2009.

E. ASSE 1013 - Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers; 2011.

F. ASSE 1019 - Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance; 2011.

G. NSF 61 - Drinking Water System Components - Health Effects; 2016.

H. NSF 372 - Drinking Water System Components - Lead Content; 2016.

I. PDI-WH 201 - Water Hammer Arresters; 2010.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

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A. Accept specialties on site in original factory packaging. Inspect for damage.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF 61 and NSF 372 for maximum lead content.

2.02 DRAINS

A. Manufacturers:

1. Josam Company; www.josam.com.
2. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
3. Zurn Industries, LLC; www.zurn.com.
4. Mifab: www.mifab.com

B. Roof Drains:

1. Assembly: ASME A112.6.4.
2. Body: Lacquered cast iron with sump.
3. Strainer: Removable polyethylene dome with vandal proof screws.

C. Roof Overflow Drains:

1. Lacquered cast iron body and clamp collar and bottom clamp ring; pipe extended to 2 inches above flood elevation.

D. Area Drains:

1. Assembly: ASME A112.6.4.
2. Body: Lacquered cast iron with sump.
3. Strainer: Round nickel-bronze.
4. Accessories: Membrane flange and membrane clamp with integral gravel stop, with adjustable under deck clamp.

E. Floor Drain:

1. ASME A112.6.3; lacquered cast iron or stainless steel, two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer.

F. Floor Sink:

1. Cast iron 8 inch square, 6 inch deep flanged receptor with seepage holes, acid resistant coated interior, loose set acid resistant coated cast iron grate, and aluminum dome bottom strainer.

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2.03 CLEANOUTS

A. Manufacturers:

1. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
2. Josam Company: www.josam.com.
3. Zurn Industries, LLC: www.zurn.com.
4. Mifab: www.mifab.com

2.04 HOSE BIBBS

A. Manufacturers:

1. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
2. Woodford: www.woodfordmfg.com.
3. Zurn Industries, LLC: www.zurn.com.
4. Mifab: www.mifab.com

2.05 HYDRANTS

A. Wall Hydrants:

1. ASSE 1019; freeze resistant, self-draining type with chrome plated wall plate hose thread spout, handwheel, and integral vacuum breaker.

2.06 REFRIGERATOR VALVE AND RECESSED BOX

A. Box Manufacturers:

1. IPS Corporation/Water-Tite: www.ipscorp.com.
2. Oatey Supply Chain Services, Inc: www.oatey.com.

B. Valve Manufacturers:

1. IPS Corporation/Water-Tite: www.ipscorp.com.
2. Zurn Industries, LLC: www.zurn.com.

2.07 BACKFLOW PREVENTERS

A. Manufacturers:

1. Conbraco Industries, Inc: www.apollovalves.com.
2. Watts Regulator Company, a part of Watts Water Technologies: www.wattsregulator.com.
3. Zurn Industries, LLC: www.zurn.com.

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B. Reduced Pressure Backflow Preventers:

1. ASSE 1013; bronze body with bronze internal parts and stainless steel springs; two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve that opens under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.

2.08 WATER HAMMER ARRESTORS

A. Manufacturers:

1. Precision Plumbing Products: www.pppinc.com.

2. Watts Regulator Company, a part of Watts Water Technologies: www.wattsregulator.com.

3. Zurn Industries, LLC: www.zurn.com.

4. Mifab: www.mifab.com

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

C. Install floor cleanouts at elevation to accommodate finished floor.

D. Install approved potable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibbs.

E. Pipe relief from backflow preventer to nearest drain.

END OF SECTION

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SECTION 27 1000
STRUCTURED CABLING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Communications system design requirements.

B. Communications pathways.

C. Copper cable and terminations.

D. Fiber optic cable and interconnecting devices.

E. Communications outlets.

F. Communications grounding and bonding.

G. Communications identification.

1.02 RELATED REQUIREMENTS

A. Section 26 05 33.13 - Conduit for Electrical Systems.

B. Section 26 05 33.16 - Boxes for Electrical Systems.

1.03 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. TIA-455-21 - FOTP-21 - Mating Durability of Fiber Optic Interconnecting Devices 1988a (Reaffirmed 2012).

C. TIA-606 - Administration Standard for Telecommunications Infrastructure 2017c.

D. TIA-607 - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises 2015c, with Addendum (2017).

E. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers Current Edition, Including All Revisions.

F. UL 1863 - Communications-Circuit Accessories Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate requirements for service entrance and entrance facilities with Communications Service Provider.

2. Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.

3. Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.

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4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

C. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).

D. Evidence of qualifications for installer.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

F. Field Test Reports.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.

B. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:

1. Employing a BICSI Registered Communications Distribution Designer (RCDD).

2. Supervisors and installers factory certified by manufacturers of products to be installed.

C. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a 2 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SYSTEM DESIGN

A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.

1. Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.

2. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees Fahrenheit at relative humidity of 0 to 95 percent, noncondensing.

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3. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.

B. Main Distribution Frame (MDF): Centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider.

1. For the entire campus there is one main distribution frame and for each building there is a building distribution frame (BDF) that functions as the main distribution frame (MDF) for that building.

2. Locate main distribution frame as indicated on the drawings.

C. Intermediate Distribution Frames (IDF): Support structures for terminating horizontal cables that extend to telecommunications outlets.

1. Locate intermediate distribution frames as indicated on the drawings.

D. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".

2.02 PATHWAYS

A. Conduit: As specified in Section 26 05 33.13; provide pull cords in all conduit.

B. Overhead Service Entrance: Weatherhead or service entrance fitting located on outside of building with galvanized rigid steel or intermediate metallic conduit running to entrance facility.

C. Underground Service Entrance: Rigid polyvinyl chloride (PVC) conduit, Schedule 40.

2.03 COPPER CABLE AND TERMINATIONS

A. Manufacturers:

B. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.

C. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.

1. Performance: 750 mating cycles.

2. Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.

D. Copper Patch Cords:

1. Description: Factory-fabricated 4-pair cable assemblies with 8-position modular connectors terminated at each end.

2.04 FIBER OPTIC CABLE AND INTERCONNECTING DEVICES

A. Manufacturers:

1. CommScope; : www.commscope.com/#sle.

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2. General Cable Technologies Corporation; : www.generalcable.com/#sle.

3. Siemon Company; : www.siemon.com/#sle.

B. Fiber Optic Interconnecting Devices:

1. Connector Type: Type SC.

2. Connector Performance: 500 mating cycles, when tested in accordance with TIA-455-21.

3. Maximum Attenuation/Insertion Loss: 0.3 dB.

C. Fiber Optic Patch Cords:

1. Description: Factory-fabricated 2-fiber cable assemblies with suitable connectors at each end.

2.05 COMMUNICATIONS OUTLETS

A. Manufacturers:

1. CommScope; : www.commscope.com/#sle.

2. Siemon Company; : www.siemon.com/#sle.

B. Outlet Boxes: Comply with Section 26 05 33.16.

1. Provide depth as required to accommodate cable manufacturer's recommended minimum conductor bend radius.

C. Wall Plates:

1. Comply with system design standards and UL 514C.

2. Accepts modular jacks/inserts.

3. Capacity:

a. Data or Combination Voice/Data Outlets: 6 ports.

4. Wall Plate Material/Finish - Flush-Mounted Outlets: High impact thermoplastic, color to be selected.

2.06 IDENTIFICATION PRODUCTS

A. Comply with TIA-606.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Comply with Communication Service Provider requirements.

B. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.

3.02 INSTALLATION OF PATHWAYS

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A. Install pathways with the following minimum clearances:

1. 48 inches from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.

2. 12 inches from power conduits and cables and panelboards.

3. 5 inches from fluorescent and high frequency lighting fixtures.

4. 6 inches from flues, hot water pipes, and steam pipes.

B. Conduit, in Addition to Requirements of Section 26 05 33.13:

C. Outlet Boxes:

1. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of telecommunications outlets provided under this section.

3.03 INSTALLATION OF EQUIPMENT AND CABLING

A. Cabling:

1. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.

2. Do not over-cinch or crush cables.

3. Do not exceed manufacturer's recommended cable pull tension.

4. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.

B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:

1. At Distribution Frames: 120 inches.

2. At Outlets - Copper: 12 inches.

3. At Outlets - Optical Fiber: 39 inches.

C. Copper Cabling:

1. For 4-pair cables in conduit, do not exceed 25 pounds (110 N) pull tension.

2. Use T568B wiring configuration.

D. Fiber Optic Cabling:

1. Prepare for pulling by cutting outer jacket for 10 inches from end, leaving strength members exposed. Twist strength members together and attach to pulling eye.

2. Support vertical cable at intervals as recommended by manufacturer.

E. Identification:

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1. Use wire and cable markers to identify cables at each end.

2. Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Comply with inspection and testing requirements of specified installation standards.

C. Visual Inspection:

1. Inspect cable jackets for certification markings.

2. Inspect cable terminations for color coded labels of proper type.

3. Inspect outlet plates and patch panels for complete labels.

D. Testing - Copper Cabling and Associated Equipment:

E. Testing - Fiber Optic Cabling:

F. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

END OF SECTION

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SECTION 27 4100
AUDIO/VISUAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. The work covered in this document consists of furnishing all labor, material and services necessary to install a complete audiovisual system as indicated on the project drawings and in these specifications.

B. Deliverables: Prior to ordering materials or commencing any construction activities, the contractor shall provide the Owner with a complete bill of materials, including all quantities of components, devices, equipment, and wiring required to complete this work. Submit product data, including manufacturer's data sheets for all proposed system components. Submit three copies with all specific items that will be provided clearly indicated and any options highlighted.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Extron Electronics Address: 1230 South Lewis Street, Anaheim, Ca 92805 Phone 714.491.1500 or 800.633.9876

B. Exceptions to the specifications are not acceptable. No substitutions permitted.

2.02 SYSTEMS DESCRIPTION

A. Provide a complete Audiovisual System for small to medium sized classrooms. The system switching and audio amplification equipment shall be securely mounted and concealed in an enclosure above the ceiling mounted projector. Portable video source equipment (OFE) can be connected to the system and displayed via three interface panels located throughout the room. Video and audio signals from source devices shall be transmitted from the interface panels over standard UTP cabling architecture.

B. Owner Furnished Equipment (OFE): In each system, the video source equipment, projection screen and video projector shall be furnished by the Owner (OFE). Portable source equipment such as DVDs, VCRs, laptop computers, document cameras, etc. shall be owner furnished.

2.03 GENERAL EQUIPMENT REQUIREMENTS

A. Acceptable products are listed below categorized by type of equipment. Quantities are listed for movable, portable or loose equipment, and other selected entries. Where quantities are not listed, refer to the system drawings.

B. Deviations from this specification must be documented in writing to the Architect and Owner at least ten business days prior to the bid date.

C. The System components shall all be listed and labeled by Underwriters Laboratories Incorporated (UL).

D. All products shall be new and under warranty at the time of installation. B-stock, previously installed, refurbished or used equipment shall not be provided on this project.

E. Where the specification lists several manufacturers for a major item, or group of items, the AV Integrator shall provide that entire item from one manufacturer only.

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F. The contractor shall provide all options, accessories and hardware necessary to meet the function of the design even if they are not specifically listed (i.e. mounting kits, separate or additional power supplies, input modules, transformers, etc.).

2.04 FIXED EQUIPMENT

PROVIDE THE FOLLOWING POLEVAULT SYSTEM AS AN ALL INCLUSIVE SYSTEM AS DESCRIBED BELOW, ONE SYSTEM FOR EACH ROOM:

A. Projector Mounting - the Owner Furnished Projector (OFE) shall be mounted using the following components.

1. Extron PCM 240 (Part Number 60-772-03) drop ceiling mount.

a. The PCM 240 projector mount must be capable of mounting to the structural ceiling (concrete or wood joists), above the suspended ceiling via turnbuckles and tie wire or threaded rod. Note: this mount is only applicable for drop or suspended ceiling applications.

1) The mount shall be capable of supporting up to 50 pounds (23 kgs) of A/V equipment.

2) The mount must also include (1) single gang and (1) double gang knockout openings for junction boxes or for use as cable pass-throughs.

3) The mount must also include a 1.5” threaded pipe adapter for projector mount poles.

b. Extron UPB 25 (Part Number 60-773-02) Universal Projector Bracket.

1) The bracket shall be able to support projectors up to 25 pounds.

2) The projector bracket must have independent adjustments of horizontal tilt or roll (± 4 degrees of horizontal tilt), vertical angle or pitch (± 25 degrees of vertical angle), and rotation or yaw (360 degrees of rotation).

3) The projector bracket shall also use a 1.5” NTP (National Tapered Pipe) threaded pipe adapter for mounting a projector pole.

4) The projector bracket should also maintain positioning adjustments even if the projector is removed for service.

5) The bracket should also feature security flanges that enable the entire unit to be padlocked to prevent theft.

c. Extron PMP 6” (Part number 70-511-13) Projector Mounting Pole.

1) The projector mounting pole shall be 1.5” NTP (National Tapered Pipe) threaded pipe threaded at both ends to facilitate mounting the projector to the ceiling mount and to the universal projector mount.

2) The projector mounting pole shall be 6” with available optional lengths of 10” or 12” in lengths.

3) The pole shall provide a cutout section to all for cable access.

d. Extron PMK 450 (Part Number 70-618-03) Multi-Product Projector Mounting Kit.

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1) The multi-product projector mounting kit shall mount securely to the PMP mounting pole and house products used in each system. These products may be Extron PVS 204SA TP Switcher, power supplies, audio amplifiers, IP Link products and other Extron quarter rack product options.

2. Media Source Switching:

a. System source selection and switching shall be provided by the Extron PVS Switcher with Stereo Amplifier (Part Number 60-800-01).

1) The PVS 204SA Switcher shall have two (2) RGB video inputs capable of VGA

(a) - UXGA RGBHV, RGBS, RBsB and RsGsBs input resolution via (2) two pairs of female RJ-45 connectors.

2) The PVS 204SA Switcher shall have two (2) composite video inputs via two (2) female RJ-45 connectors.

3) Audio input shall be via four (4) stereo, balanced /unbalanced inputs via the same four (4) RJ-45 RGB and Composite video connectors.

4) The PVS 204SA Switcher shall have two video outputs, one (1) RGB output capable of outputting VGA - UXGA RGBHV, RGBS, RBsB and RsGsBs (following input type) via a 15-pin HD female connector and one (1) composite video via one (1) RCA female connector.

5) Connection from the PVS 204SA Switcher to the display device shall be provided with one 3' VGA to VGA molded cable (Part Number 26-567-01) and one 3' composite video cable (Part Number 26-600-03).

6) An onboard audio amplifier shall provide gain / volume adjustment from -10db to +10db, adjustable in 1 db steps. The speaker amplifier shall have two (2) channels, one (1) stereo (default) or dual (2) mono channels via one (1) 0.2 inch 4 pole captive screw connector. The output of the amplifier shall be 11 watts (rms) per channel at 4 ohms and 7 watts (rms) per channel at 8 ohms.

3. Media Source Control:

a. Classroom media sources shall be controlled with the Extron MLC 104 IP Plus (Part Number 60-818-03) MediaLink Controller with IP Link.

1) The MediaLink Controller shall contain six tri-color, multi-status LEDs push- buttons for device selection and projector on / off control. A rotary volume control knob with five (5) LED volume indicators shall permit system volume level control.

2) The MLC 104 IP Plus controller shall feature Extron IP Link Ethernet for monitoring, scheduling and control. This IP technology shall enable the device

(a) to be controlled, scheduled and monitored over a LAN, WAN or the Internet using Extron Global Viewer or MLC controller software.

3) The Controller shall contain a serial host port which shall consist of one (1) bi- directional RS-232 front panel 2.5mm mini stereo jack. This host connection port shall be for configuration and control of the controller itself and to install device drivers for the equipment to be controlled.

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4) The Controller shall also feature (2) bi-directional serial ports to provide device control. These two ports shall control the display device and PVS 204SA switcher respectively via bi-directional RS-232 control via one (1) 3.5mm direct insertion captive screw connector.

5) The MLC 104 IP plus shall also have two (3) configurable (via software) digital input / outputs for devices such as sensors, switches, LEDs and relays via one

(a) 3.5mm 4-pole direct insertion captive screw connector.

6) Connection from the MLC 104 IP Plus to the display shall be provided by one

(a) 50' Projector control cable (Part Number 26-621-50).

7) Connection from the MLC 104 IP Plus to the PVS 204SA switcher shall be provided by one (1) 50' Switcher Control cable (Part Number 26-626-50).

4. Speakers:

a. In suspended ceiling applications, a pair of Extron SI 3CT LP (Part Number 42-103-03 for a pair) shall be used.

1) These speakers shall feature 4” deep low profile metal back can for plenum environments.

2) The speakers shall feature a frequency response of 75 Hz to 17 kHz - 10 db, half space.

3) The power capacity shall be 16 watts of continuous pink noise or 32 watts of continuous program media.

4) The coverage angle of the speaker shall be 170 degrees of conical coverage.

5) The nominal impedance shall be 8 ohms.

6) The speakers shall feature 70volt rotary taps with taps at 16W, 8W, 4W, 2W, 1W and 100volt rotary taps with taps at null, 16W, 8W, 4W, and 2W.

7) The input connector shall be (1) 5mm captive screw for 1 input and 1 loop- through connection.

8) Connection from the PVS 204SA switcher to the SI 3CT LP speaker shall be provided by one (1) 25' Plenum rated 18 Gauge Speaker Cable Extron SPK-18 (Part Number 26-627-25).

9) Optional - second pair of Extron SI 3CT LP speakers and Extron SPK-18 cable

5. Media Source Interfacing:

a. Owner furnished media source equipment (OFE) shall be connected to the audiovisual system via four Twisted Pair Transmitter Wall Plates. These wall plates shall enable the system to display video and graphic data from Laptop computers, DVD and VCRs, document camera, camcorders, etc.

1) These interfaces shall be placed in convenient locations throughout the classroom to facilitate easy connection of sources.

2) Provide two types of interface panels. They are the Extron PVT RGB D VGA Transmitter (Part Number 60-820-03) and the PVT CV D Composite Video Transmitter (Part number 60-819-03).

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b. The System shall include two (2) Extron PVT RGB D - RGB Video Twisted Pair Transmitter - Wall Plates (Part Number 60-820-03).

1) The RGB Video Twisted Pair Transmitter - Wall Plates shall be used to connect up to two (2) RGB devices to the system and transmit the video and audio data to the switcher.

2) The RGB Video Twisted Pair Transmitter - Wall plates shall fit in a standard, single-gang electrical box and feature Decora® type faceplates.

3) The RGB Video Twisted Pair Transmitter - Wall plates shall transmit RGB video over UTP cable to the PVS 204SA Switcher and support video input resolutions of VGA - UXGA RGBHV, RGBS, RBsB and RsGsBs via one (1) female 15-pin HD connector.

4) Stereo audio shall be input via one (1) 0.14 inch mini stereo jack.

5) Connection to each PVT RGB D shall be provided via an Extron male VGA to male VGA and male 3.5mm TRS to male 3.5mm TRS cable for RGBHV and audio (Part Number 26-490-XX), length to be coordinated by owner.

6) The output of the interface shall be via two (2) female RJ-45 connectors.

7) Connection to the PVS 204SA Switcher shall be via two (2) plenum rated UTP cables.

c. The System shall include two (2) Extron PVT CV D Composite Video Twisted Pair Transmitter - Wall Plates. (Part number 60-819-03)

1) The Composite Video Twisted Pair Transmitter - Wall Plates shall transmit composite video over UTP cable to the PVS 204SA Switcher and support video input via a RCA female connector.

2) The Composite Video Twisted Pair Transmitter - Wall plates shall fit in a standard, single-gang electrical box and feature Decora® type faceplates.

3) Stereo audio shall be input via two (2) RCA female connectors.

4) Connections to the PVT CV D from the DVD/VCR shall be provided via one

(a) Extron male 3 x RCA to male 3 x RCA cable for composite video and audio, cable length to be coordinated by owner.

5) The output of the interface shall be via one (1) female RJ-45 connector.

6) Connection to the PVS 204SA Switcher shall be via one (1) plenum rated UTP cable.

PART 3 - EXECUTION

3.01 GENERAL

A. All equipment and enclosures described in this specification shall be installed plumb and square per manufacturer's instructions.

B. All equipment, except that designated as movable, portable or loose equipment, shall be secured and permanently attached to the permanent structure in a manner which will require the use of a tool (e.g.: screw driver, nut driver, etc.) for removal.

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C. All supports shall meet or exceed the load requirements of the intended application with a minimum safety factor of five.

D. Provide support structure and hardware with a SAE Grade 8 load rating (min.).

3.02 EXAMINATION

A. Site Verification of Conditions: Verify that related conditions, including equipment that has been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

B. All devices connected to equipment specified in this section shall bear the UL label and comply with the applicable National Electrical Code (NEC) standards.

3.03 INSTALLATION

A. Contractor shall furnish all equipment, labor, system setup, and other services necessary for the proper installation of the products/system as indicated on the drawings and specified herein. System setup information shall include each components proper mounting and alignment and properly verified signal pathways and operation. Proper operational and network support control functions shall be verified.

1. Install in accordance with manufacturer's handling and installation instructions.

B. Install in accordance with all local and pertaining codes and regulations

C. Utilize an installer with demonstrated experience in projects of similar size and complexity.

D. Equipment shall be ready for use to condition at the end of installation.

E. Energize equipment in accordance with manufacturer's instructions.

3.04 PROTECTION AND CLEANING

A. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

B. Repair or replace damaged components before Substantial Completion of the project.

C. Remove temporary tags, coverings, and construction debris from interior and exterior surfaces of the equipment. Remove construction debris from equipment area and dispose of properly.

END OF SECTION

SECTION 27 5116
PUBLIC ADDRESS SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Amplifier and control equipment.

B. Input equipment.

C. Reproducer equipment.

D. Sound system cable.

E. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 33.16 - Boxes for Electrical Systems.

1.03 REFERENCE STANDARDS

A. California Electrical Code; 2019.

1.04 SYSTEM DESCRIPTION

A. Public address system for voice.

B. Input components:

1. Local VOIP devices.

C. Features:

1. Interface to telephone system.

2. Talk back feature.

3. Selective speaker talkback.

1.05 SUBMITTALS

A. Shop Drawings: Indicate electrical characteristics and connection requirements. Indicate layout of equipment mounted in racks and cabinets, component interconnecting wiring, and wiring diagrams of field wiring to speakers and remote input devices.

B. Product Data: Provide data showing electrical characteristics and connection requirements for each component.

C. Test Reports: Indicate satisfactory completion of each test recommended by the manufacturer.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and

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starting of product.Project Record Documents: Record actual locations of speakers, control equipment, and outlets for input/output connectors.

E. Operation Data: Include instructions for adjusting, operating, and extending the system.

F. Maintenance Data: Include repair procedures and spare parts documentation.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70 and Federal Communications Commission.

B. Installer Qualifications: Authorized installer of specified manufacturer with service facilities within 100 miles of Project.

1. Products: Listed, classified, and labeled as suitable for the purpose intended.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Atlas IED: www.atlasied.com.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAGING HEAD END

A. Analog Inputs: 1 10kohm input with 2.0 VPP maximum.

B. Compatible with SIP server or VOIP communications manager.

C. Atlas IED IPS-VPS

2.03 COMPONENTS

A. Speakers: 8 inch POE+ Indoor Horn System with LED Display

1. Power Rating: 15 watts.

2. Frequency Range: 600Hz - 14kHz.

3. IEEE802.3 10/100Base0T Ethernet

4. Product: Atlas IED I8SCH+ w/ SEA-I8SC.

B. Software: Advanced Notification Application Software.

1. Atlas IED GCK

2.04 WIRE AND CABLE

A. Existing CAT6A

PART 3 EXECUTION

3.01 INSTALLATION

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A. Install in accordance with manufacturer's instructions.

B. Mounting Heights: Coordinate existing drop locations with school district prior to installation.

C. Splice cable only in accessible junction boxes or at terminal block units.

D. Remove all existing PA/Clock equipment from existing MPOE equipment room.

3.02 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Measure and record sound power levels at designated locations.

3.03 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.04 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate operation of system to Owner's personnel.

1. Use operation and maintenance data as reference during demonstration.

2. Conduct walking tour of project.

3. Briefly describe function, operation, and maintenance of each component.

B. Training: Train Owner's personnel on operation and maintenance of system.

1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

2. Provide minimum of two hours of training.

3. Location: At project site.

END OF SECTION

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SECTION 28 1000
ACCESS CONTROL

PART 1 GENERAL (NOT USED)

PART 2 PRODUCTS

2.01 ACCESS CONTROL SYSTEM REQUIREMENTS

A. Provide new access control system consisting of required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

1. Access Control Units and Readers: Listed and labeled as complying with UL 294.

2.02 ACCESS CONTROL UNITS AND SOFTWARE

A. Provide access control units and software compatible with readers to be connected.

B. Unless otherwise indicated, provide software and licenses required for fully operational system.

2.03 ACCESS CONTROL POINT PERIPHERALS

A. Provide devices compatible with control units and software.

B. Provide devices suitable for operation under the service conditions at the installed location.

C. Door Locking Devices (Electric Strikes and Magnetic Locks): Comply with Section 08 7100.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 28 1600
INTRUSION DETECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. The work under this section includes all labor, materials, equipment, and accessories required to furnish and install additions to the existing Intrusion Detection System as indicated on the drawings and as specified herein.

2. The system shall consist of door switches and motion detection devices connected to detect intrusion into covered areas. The system shall be zoned per classroom or as indicated on the drawings and have a control panel capable of providing alarm and trouble signals, by zone, for connection to the district equipment or transmitted as per District requirements. System on-off and access control from remote equipment furnished by the district or by a remote pushbutton key pad.

3. Each building shall be a separate compartment and can have a key pad mounted as shown. A master key pad position shall be provided as shown in the administrative area.

4. Document affecting work of the section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections of Division 16 of these specifications.

5. The work described by this part includes the furnishing of all materials, equipment, supplies, labor and the performing of all operations necessary of the installation of complete and operation systems.

6. All conduits, outlet boxes, back boxes, junction boxes, terminal cabinets, backboards, wiring, cables, equipment, devices, etc., shall be furnished and installed complete under this section. Conduit and junction box size shall be determined by the Installing Alarm System Contractor for the particular wire and cable fills required for the systems installed. Conduit sizes shall comply with requirements indicated in section 1611, Conduit. The entire responsibility of the systems, including the installation, operation, function, testing, and maintenance as required by this section shall be the responsibility of the Alarm System Contractor.

7. The Installing Contractor shall furnish and install all equipment, cables, devices, and other materials even though not specifically mentioned herein, which are necessary for the proper integration of all equipment so that the system shall perform the functions listed herein in compliance with all specified requirements.

1.03 DEFINITIONS

A. LCD: Liquid-crystal display.

B. LED: Light-emitting diode.

C. PIR: Passive infrared.

D. RFI: Radio-frequency interference.

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E. UPS: Uninterruptible power supply.

1.04 SUBMITTALS

A. Product Data: Components for sensing, detecting, systems integration, and control, including dimensions and data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: Detail assemblies of standard components that are custom assembled for specific application on this Project.

1. Functional Block Diagram: Show single-line interconnections between components including interconnections between components specified in this Section and those furnished under other Sections. Indicate methods used to achieve systems integration. Indicate control, signal, and data communication paths and identify programmable logic controllers networks and control interface devices and media to be used. Describe characteristics of network and other data communication lines.

2. Raceway Riser Diagrams: Detail raceway runs required for intrusion detection and for systems integration. Include designation of devices connected by raceway, raceway type, and size, and type and size of wire and cable fill for each raceway run.

3. UPS: Sizing calculations.

4. Site and Floor Plans: Indicate final outlet and device locations, routing of raceways, and cables inside and outside the building. Include room layout for central-station control-unit console, terminal cabinet, racks, and UPS.

5. Central-Station Control-Unit Console Layout: At 1" = 1'-0" (1:12) scale, showing required artwork and device identification.

6. Device Address List: Coordinate with final system programming.

7. System Wiring Diagrams: Include system diagrams unique to Project. Show connections for all devices, components, and auxiliary equipment. Include diagrams for equipment and for system with all terminals and interconnections identified.

8. Details of surge-protection devices and their installation.

9. Sensor detection patterns and adjustment ranges.

C. Equipment and System Operation Description: Include method of operation and supervision of each component and each type of circuit. Show sequence of operations for manually and automatically initiated system or equipment inputs. Description must cover this specific Project; manufacturer's standard descriptions for generic systems are not acceptable.

D. Samples for Initial Selection: For units with factory-applied color finishes.

E. Samples for Verification: For each type of exposed finish required.

F. Qualification Data: For Installer and testing agency.

G. Field quality-control test reports.

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H. Operation and Maintenance Data: For intrusion detection system to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Data for each type of product, including features and operating sequences, both automatic and manual.

2. Central-station control-unit hardware and software data.

I. Warranty: Special warranty specified in this Section.

J. Other Information Submittals:

1. Test Plan and Schedule: Test plan defining all tests required to ensure that system meets technical, operational, and performance specifications within 15 of date of Contract award.

2. Examination reports documenting inspections of substrates, areas, and conditions.

3. Anchor inspection reports documenting inspections of built-in and cast-in anchors.

1.05 QUALITY ASSURANCE

A. Installer Qualifications:

1. An employer of workers, at least one of whom is a technician certified by the National Burglar & Fire Alarm Association.

2. Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Intrusion Detection Systems Integrator Qualifications: An experienced intrusion detection equipment supplier and Installer who has completed systems integration work for installations similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Testing Agency Qualifications: An independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the National Burglar & Fire Alarm Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to Owner's insurance underwriter.

1. Testing Agency's Field Supervisor: Person currently certified as an advanced alarm technician by the National Burglar & Fire Alarm Association to supervise on-site testing specified in Part 3.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of detection devices and central-station control units and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. FMG Compliance: FMG-approved and -labeled intrusion detection devices and equipment.

G. Comply with CEC

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1.06 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer and Installer agree to repair or replace components of intrusion detection devices and equipment that fail in materials or workmanship within specified warranty period.

1. Warranty Period: One year from date of Substantial Completion.

1.07 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Intrusion Detection Devices: Furnish quantity equal to five percent of the number of units of each type installed, but no fewer than one of each type.

2. Fuses: Three of each kind and size.

3. Tool Kit: Provide six sets of tools for use with security fasteners, each packaged in a compartmented kit configured for easy handling and storage.

4. Security Fasteners: Furnish no fewer than 1 box for every 50 boxes or fraction thereof, of each type and size of security fastener installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Radonics or approved equal

2.02 SYSTEM COMPONENT REQUIREMENTS

A. Compatibility: Detection devices and their communication features, connecting wiring, and central-station control unit shall be selected and configured with accessories for full compatibility with the existing system .

B. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor entry connection to components.

1. Minimum Protection for Power Lines 120 V and More: Auxiliary panel suppressors complying with requirements in Division 16 Section "Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits."

2. Minimum Protection for Communication, Signal, Control, and Low-Voltage Power Lines: Comply with requirements in Division 16 Section "Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits" as recommended by manufacturer for type of line being protected.

C. Interference Protection: Components shall be unaffected by radiated RFI and electrical induction of 15 V/m over a frequency range of 10 to 10,000 MHz and conducted interference signals up to 0.25-V RMS injected into power supply lines at 10 to 10,000 MHz.

D. Tamper Protection: Tamper switches on detection devices, controllers, annunciators, pull boxes, junction boxes, cabinets, and other system components shall initiate a tamper-alarm signal when unit is opened or partially

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disassembled and when entering conductors are cut or disconnected. Central-station control-unit alarm display shall identify tamper alarms and indicate locations.

E. Self-Testing Devices: Automatically test themselves periodically, but not less than once per hour, to verify normal device functioning and alarm initiation capability. Devices transmit test failure to central-station control unit.

F. Antimasking Devices: Automatically check operation continuously or at intervals of a minute or less, and use signal-processing logic to detect blocking, masking, jamming, tampering, or other operational

1. dysfunction. Devices transmit detection of operational dysfunction to central-station control unit as an alarm signal.

G. Addressable Devices: Transmitter and receivers shall communicate unique device identification and status reports to central-station control unit.

H. Remote-Controlled Devices: Individually and remotely adjustable for sensitivity and individually monitored at central-station control unit for calibration, sensitivity, and alarm condition.

2.03 SECURE AND ACCESS DEVICES

A. Manufacturers:

1. Radionics

B. Keypad and Display Module: Arranged for entering and executing commands for system-status changes and for displaying system-status and command-related data.

C. Key-Operated Switch: Change protected zone between secure and access conditions.

2.04 DOOR SWITCHES

A. Manufacturers:

1. Sentrol or approved equal.

B. Description: Balanced-magnetic switch, complying with UL 634, installed on frame with integral overcurrent device to limit current to 80 percent of switch capacity. Bias magnet and minimum of three encapsulated reed switches shall resist compromise from introduction of foreign magnetic fields.

C. Flush-Mounted Switches: Unobtrusive and flush with surface of door and window frame.

D. Overhead Door Switch: Balanced-magnetic type, listed for outdoor locations, and having door-mounting magnet and floor-mounting switch unit.

E. Remote Test: Simulate movement of actuating magnet from central-station control unit.

2.05 MICROWAVE-PIR DUAL-TECHNOLOGY MOTION SENSORS

A. Manufacturers:

1. Sentrol or approved equal.

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B. Description: Single unit combining a sensor that detects changes in microwave signals and a PIR sensor that detects changes in ambient level of infrared emissions caused by standard-intruder movement within detection pattern.

C. Device Performance: An alarm is transmitted when either sensor detects a standard intruder within a period of three to eight seconds from when the other sensor detects a standard intruder.

1. Minimum Detection Pattern: A room 20 by 30 feet.

2. PIR Sensor Sensitivity: Adjustable pattern coverage to detect a change in temperature of 2 degrees Fahrenheit or less, and standard-intruder movement within sensor's detection patterns at any speed between 0.3 to 7.5 fps (0.09 to 2.52 yard/s) across 2 adjacent segments of detector's field of view.

3. Microwave Sensor Sensitivity: Adjustable, able to detect standard-intruder movement within sensor's detection pattern at any speed between 0.3 to 7.5 fps (0.09 to 2.52 yard/s). Sensor sensitivity adjustments shall be accessible only when sensor housing is removed, and sensors shall comply with 47 CFR 15.

4. Activation Indicator: LED indicator shall not be visible during normal operation. Indicator shall light when sensor detects a standard intruder. Locate test enabling switch under sensor housing cover.

5. Remote Test: When initiated by central-station control unit, start a test sequence for each detector element that simulates standard-intruder movement within sensor's detection patterns, causing an alarm.

PROVIDE ALL NECESSARY HARDWARE AND SOFTWARE FOR A COMPLETE AND OPERABLE SYSTEM.

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 intrusion detection.

1. Examine roughing-in for embedded and built-in anchors to verify actual locations of intrusion detection connections before intrusion detection installation.

2. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of intrusion detection.

B. Inspect built-in and cast-in anchor installations, before installing intrusion detection, to verify that anchor installations comply with requirements. Prepare inspection reports.

1. Remove and replace anchors where inspections indicate that they do not comply with requirements. Reinspect after repairs or replacements are made.

2. Perform additional inspections to determine compliance of replaced or additional anchor installations. Prepare inspection reports.

C. For material whose orientation is critical for its performance as a ballistic barrier, verify installation orientation.

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

3.02 SYSTEM INSTALLATION

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A. Comply with UL 681.

B. Security Fasteners: Where accessible to inmates, install intrusion detection components using security fasteners with head style appropriate for fabrication requirements, strength, and finish of adjacent materials except that a maximum of two different sets of tools shall be required to operate security fasteners for Project. Provide stainless-steel security fasteners in stainless-steel materials.

3.03 WIRING INSTALLATION

A. Wiring Method: Install wiring in metal raceways according to Division 16 Section "Raceway and Boxes for Electrical Systems." Conceal raceway except in unfinished spaces and as indicated. Minimum conduit size shall be ¾ inch 0.79 inch. Control and data transmission wiring shall not share conduit with other building wiring systems.

B. Wiring Method: Install wiring in raceways except in accessible indoor ceiling spaces and in interior hollow gypsum board partitions where cable may be used. Conceal raceways and wiring except in unfinished spaces and as indicated. Minimum conduit size shall be ¾ inch 0.79 inch. Control and data transmission wiring shall not share conduit with other building wiring systems.

C. Wiring Method: Cable, concealed in accessible ceilings, walls, and floors when possible.

D. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Use lacing bars and distribution spools. Separate power-limited and non-power-limited conductors as recommended in writing by

1. manufacturer. Install conductors parallel with or at right angles to sides and back of enclosure. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with intrusion system to terminal blocks. Mark each terminal according to system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

E. Wires and Cables:

1. Conductors: Size as recommended in writing by system manufacturer, unless otherwise indicated.

2. 120-V Power Wiring: Install according to Division 16 Section "Low-Voltage Electrical Power Conductors and Cables," unless otherwise indicated.

3. Control and Signal Transmission Conductors: Install unshielded, twisted-pair cable, unless otherwise indicated or if manufacturer recommends shielded cable, according to Division 16 Section "Conductors and Cables for Electronic Safety and Security."

F. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

G. Install power supplies and other auxiliary components for detection devices at controllers, unless otherwise indicated or required by manufacturer. Do not install such items near devices they serve.

H. Identify components with engraved, laminated-plastic or metal nameplate for central-station control unit and each terminal cabinet, mounted with corrosion-resistant screws. Nameplates and label products are specified in Division 16 Section "Identification for Electrical Systems."

3.04 GROUNDING

A. Ground system components and conductor and cable shields to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.

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B. Signal Ground Terminal: Locate at main equipment rack or cabinet. Isolate from power system and equipment grounding. Provide 5-ohm ground. Measure, record, and report ground resistance.

C. Install grounding electrodes of type, size, location, and quantity indicated. Comply with installation requirements in Division 16 Section "Grounding and Bonding for Electrical Systems."

3.05 FIELD QUALITY CONTROL

A. Pretesting: After installation, align, adjust, and balance system and perform complete pretesting to determine compliance of system with requirements in the Contract Documents. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new ones and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.

1. Report of Pretesting: After pretesting is complete, provide a letter certifying that installation is complete and fully operable; include names and titles of witnesses to preliminary tests.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field

1. testing. Report results in writing.

C. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

D. Perform the following field tests and inspections and prepare reports:

1. Inspection: Verify that units and controls are properly labeled and interconnecting wires and terminals are identified.

2. Operational Tests: Schedule tests after pretesting has been successfully completed. Test all modes of system operation and intrusion detection at each detection device. Test for detection of intrusion and for false alarms in each protected zone. Test for false alarms by simulating activities outside indicated detection patterns.

3. Electrical Tests: Comply with NFPA 72, Section A-7. Minimum required tests are as follows:

a. Verify the absence of unwanted voltages between circuit conductors and ground.

b. Test all conductors for short circuits using an insulation-testing device.

c. With each circuit pair, short circuit at the far end of circuit and measure circuit resistance with an ohmmeter. Record circuit resistance of each circuit on Record Drawings.

d. Verify that each controller is in normal condition as detailed in manufacturer's operation and maintenance manual.

e. Test signal and data transmission circuits complying with requirements in Division 16 Section "Conductors and Cables for Electronic Safety and Security" for proper signal transmission under open-circuit conditions. One connection each should be opened at not less than 10 percent of initiating and indicating devices. Observe proper signal transmission according to class of wiring used.

f. Verify that transient surge-protection devices are installed according to manufacturer's written instructions.

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g. Test each initiating and indicating device for alarm operation and proper response at central-station control unit.

h. Test both primary and secondary power. Verify, by test, that UPS is capable of operating the system for period and in manner specified.

E. Report of Tests and Inspections: Prepare a written record of tests, inspections, and detailed test results in the form of a test log.

F. Tag all equipment, stations, and other components for which tests have been satisfactorily completed.

3.06 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain intrusion detection. Refer to Division 01 Section "Demonstration and Training."

3.07 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to three visits to Project during other than normal occupancy hours for this purpose. Visits for this purpose shall be in addition to any required by warranty.

END OF SECTION

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SECTION 28 2000
VIDEO SURVEILLANCE

PART 1 GENERAL (NOT USED)

PART 2 PRODUCTS

2.01 VIDEO SURVEILLANCE SYSTEM

A. Provide new video surveillance system consisting of all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.

B. System Description: IP system with connection to network (IP) cameras.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) Limits: Comply with FCC requirements of 47 CFR 15, for Class B, consumer application.

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 28 3111
DIGITAL, ADDRESSABLE FIRE ALARM SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. SECTION INCLUDES:

1. Fire-alarm control unit.
2. Manual fire-alarm boxes.
3. System smoke detectors.
4. Air-sampling smoke detectors.
5. Nonsystem smoke detectors.
6. Heat detectors.
7. Notification appliances.
8. Device guards.
9. Firefighters' two-way telephone communication service.
10. Firefighters' smoke-control station.
11. Magnetic door holders.
12. Remote annunciator.
13. Graphic annunciator.
14. Addressable interface device.
15. Digital alarm communicator transmitter.
16. Radio alarm transmitter.
17. Network communications.
18. System printer.

B. RELATED REQUIREMENTS

1. Section 280513 "Conductors and Cables for Electronic Safety and Security" for cables and conductors for fire alarm systems.

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1.03 DEFINITIONS

A. Retain terms that remain after this section has been edited for a project.

B. EMT: electrical metallic tubing.

C. FACP: fire alarm control panel.

D. HLI: high level interface.

E. NICET: national institute for certification in engineering technologies.

F. PC: personal computer.

G. VESDA: very early smoke-detection apparatus.

1.04 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT, INCLUDING FURNISHED OPTIONS AND ACCESSORIES.

1. Include construction details, material descriptions, dimensions, profiles, and finishes.

2. Include rated capacities, operating characteristics, and electrical characteristics.

B. SHOP DRAWINGS: FOR FIRE-ALARM SYSTEM

1. Comply with recommendations and requirements in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.

2. Include plans, elevations, sections, details, and attachments to other work.

3. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and locations. Indicate conductor sizes, indicate termination locations and requirements, and distinguish between factory and field wiring.

4. Detail assembly and support requirements.

5. Include voltage drop calculations for notification-appliance circuits.

6. Include battery-size calculations.

7. Include input/output matrix.

8. Include statement from manufacturer that all equipment and components have been tested as a system and meet all requirements in this Specification and in NFPA 72.

9. Include performance parameters and installation details for each detector.

10. Verify that each duct detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.

11. Provide program report showing that air-sampling detector pipe layout balances pneumatically within the airflow range of the air-sampling detector.

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12. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale; coordinate location of duct smoke detectors and access to them.

    a. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators.

    b. Retain one of first three subparagraphs below.

    c. Show field wiring required for HVAC unit shutdown on alarm.

    d. Show field wiring and equipment required for HVAC unit shutdown on alarm and override by firefighters' control system.

    e. Show field wiring and equipment required for HVAC unit shutdown on alarm and override by firefighters' smoke-evacuation system.

    f. Locate detectors according to manufacturer's written recommendations.

    g. Show air-sampling detector pipe routing.

13. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.

14. Retain subparagraph below for projects where routing of cable or conduit is critical and only outlet locations are indicated on Drawings. Delete reference to device addresses if indicated on Drawings.

15. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits and point-to-point wiring diagrams.

C. GENERAL SUBMITTAL REQUIREMENTS:

1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.

2. Shop Drawings shall be prepared by persons with the following qualifications:

    a. Trained and certified by manufacturer in fire-alarm system design.

    b. NICET-certified, fire-alarm technician; Level III minimum.

    c. Retain subparagraph below if authorities having jurisdiction have licensing requirements.

    d. Licensed or certified by authorities having jurisdiction.

D. Delegated-Design Submittal: For notification appliances and smoke and heat detectors, in addition to submittals listed above, indicate compliance with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Drawings showing the location of each notification appliance and smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the device.

2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72. Calculate spacing and intensities for strobe signals and sound-pressure levels for audible appliances.

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3. Indicate audible appliances required to produce square wave signal per NFPA 72.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Seismic Qualification Certificates: For fire-alarm control unit, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Field quality-control reports.

1.06 Sample Warranty: For special warranty.

1.07 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

a. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

b. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documents" Article in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.

c. Complete wiring diagrams showing connections between all devices and equipment. Each conductor shall be numbered at every junction point with indication of origination and termination points.

d. Riser diagram.

e. Device addresses.

f. Air-sampling system sample port locations and modeling program report showing layout meets performance criteria.

g. Record copy of site-specific software.

h. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:

1) Equipment tested.

2) Frequency of testing of installed components.

3) Frequency of inspection of installed components.

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4) Requirements and recommendations related to results of maintenance.

5) Manufacturer's user training manuals.

i. Manufacturer's required maintenance related to system warranty requirements.

j. Abbreviated operating instructions for mounting at fire-alarm control unit and each annunciator unit.

B. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.

2. Program Software Backup: On magnetic media or compact disk, complete with data files.

3. Device address list.

4. Printout of software application and graphic screens.

1.08 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Revise subparagraphs below to suit Project.

2. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.

3. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.

4. Insert flame detectors in Part 2 if retaining first option in "Smoke Detectors, Fire Detectors(, and Flame Detectors)" Subparagraph below.

5. Smoke Detectors, Fire Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.

6. Detector Bases: Quantity equal to two percent of amount of each type installed, but no fewer than one unit of each type.

7. Keys and Tools: One extra set for access to locked or tamperproofed components.

8. Audible and Visual Notification Appliances: One of each type installed.

9. Fuses: Two of each type installed in the system. Provide in a box or cabinet with compartments marked with fuse types and sizes.

10. Filters for Air-Sampling Detectors: Quantity equal to two percent of amount of each type installed, but no fewer than one unit of each type.

1.09 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

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B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level III technician.

C. Retain one of four "NFPA Certification" paragraphs below to require independent system verification.

D. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL (nationally recognized testing laboratory).

E. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

F. NFPA Certification: Obtain certification according to NFPA 72 inch the form of a placard by an FM Global-approved alarm company.

G. NFPA Certification: Obtain certification according to NFPA 72

1.10 PROJECT CONDITIONS

A. Perform a full test of the existing system prior to starting work. Document any equipment or components not functioning as designed.

B. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

1. Notify Construction Manager no fewer than three days in advance of proposed interruption of fire-alarm service.

2. Do not proceed with interruption of fire-alarm service without Construction Manager's written permission.

C. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.11 SEQUENCING AND SCHEDULING

A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service, and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.

1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION

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A. Source Limitations for Fire-Alarm System and Components: Components shall be compatible with, and operate as an extension of, existing system. Provide system manufacturer's certification that all components provided have been tested as, and will operate as, a system.

B. Noncoded, UL-certified addressable system, with multiplexed signal transmission and horn/strobe evacuation.

C. Automatic sensitivity control of certain smoke detectors.

D. All components provided shall be listed for use with the selected system.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.02 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices:

1. Manual stations.
2. Heat detectors.
3. Flame detectors.
4. Smoke detectors.
5. Duct smoke detectors.
6. Carbon monoxide detectors.
7. Automatic sprinkler system water flow.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.
2. Identify alarm and specific initiating device at fire-alarm control unit and remote annunciators.
3. Transmit an alarm signal to the remote alarm receiving station.
4. Unlock electric door locks in designated egress paths.
5. Release fire and smoke doors held open by magnetic door holders.
6. Activate voice/alarm communication system.
7. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
8. Activate smoke-control system (smoke management) at firefighters' smoke-control system panel.
9. Activate stairwell and elevator-shaft pressurization systems.
10. Close smoke dampers in air ducts of designated air-conditioning duct systems.
11. Coordinate first subparagraph below with "Elevator Recall" Paragraph in "Fire-Alarm Control Unit" Article.

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12. Activate emergency lighting control.

13. If supplies are not essential to life safety, retain first subparagraph below for shutoffs installed in supplies that may be hazardous.

14. Activate emergency shutoffs for gas and fuel supplies.

15. Record events in the system memory.

16. Record events by the system printer.

17. Indicate device in alarm on the graphic annunciator.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.

2. Independent fire-detection and -suppression systems.

3. User disabling of zones or individual devices.

4. Loss of communication with any panel on the network.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.

2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.

3. Loss of communication with any addressable sensor, input module, relay, control module, remote annunciator, printer interface, or Ethernet module.

4. Loss of primary power at fire-alarm control unit.

5. Ground or a single break in internal circuits of fire-alarm control unit.

6. Abnormal ac voltage at fire-alarm control unit.

7. Break in standby battery circuitry.

8. Failure of battery charging.

9. Abnormal position of any switch at fire-alarm control unit or annunciator.

E. System Supervisory Signal Actions:

1. Initiate notification appliances.

2. Identify specific device initiating the event at fire-alarm control unit and remote annunciators.

3. Record the event on system printer.

4. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.

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5. Transmit system status to building management system.

6. Display system status on graphic annunciator.

2.03 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2.04 FIRE-ALARM CONTROL UNIT

A. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864.

a. System software and programs shall be held in nonvolatile flash, electrically erasable, programmable, read-only memory, retaining the information through failure of primary and secondary power supplies.

b. Include a real-time clock for time annotation of events on the event recorder and printer.

c. Provide communication between the FACP and remote circuit interface panels, annunciators, and displays.

d. The FACP shall be listed for connection to a central-station signaling system service.

e. Provide nonvolatile memory for system database, logic, and operating system and event history. The system shall require no manual input to initialize in the event of a complete power down condition. The FACP shall provide a minimum 500-event history log.

2. Addressable Initiation Device Circuits: The FACP shall indicate which communication zones have been silenced and shall provide selective silencing of alarm notification appliance by building communication zone.

3. Addressable Control Circuits for Operation of Notification Appliances and Mechanical Equipment: The FACP shall be listed for releasing service.

B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 80 characters, minimum.

2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

C. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 80 characters, minimum.

2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

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D. Initiating-Device, Notification-Appliance, and Signaling-Line Circuits:

1. Pathway Class Designations: NFPA 72, Class B.

2. Pathway Survivability: Level 0.

3. Install no more than 50 addressable devices on each signaling-line circuit.

4. Serial Interfaces:

a. One dedicated RS 485 port for central-station operation using point ID DACT.

b. One RS 485 port for remote annunciators, Ethernet module, or multi-interface module (printer port).

c. One USB port for PC configuration.

d. One RS 232 port for VESDA HLI connection.

e. One RS 232 port for voice evacuation interface.

E. Smoke-Alarm Verification:

1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.

2. Activate an approved "alarm-verification" sequence at fire-alarm control unit and detector.

3. Record events by the system printer.

4. Sound general alarm if the alarm is verified.

5. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.

F. Notification-Appliance Circuit:

1. Audible appliances shall sound in a three-pulse temporal pattern, as defined in NFPA 72.

2. Where notification appliances provide signals to sleeping areas, the alarm signal shall be a 520-Hz square wave with an intensity 15 dB above the average ambient sound level or 5 dB above the maximum sound level, or at least 75 dBA, whichever is greater, measured at the pillow.

3. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.

G. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke-barrier walls shall be connected to fire-alarm system.

H. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.

I. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

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J. Printout of Events: On receipt of signal, print alarm, supervisory, and trouble events. Identify zone, device, and function. Include type of signal (alarm, supervisory, or trouble) and date and time of occurrence. Differentiate alarm signals from all other printed indications. Also print system reset event, including same information for device, location, date, and time. Commands initiate the printing of a list of existing alarm, supervisory, and trouble conditions in the system and a historical log of events.

K. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals supervisory and digital alarm communicator shall be powered by 24-V dc source.

1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

L. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

1. Batteries: Sealed lead calcium.

M. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.05 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.

1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.

2. Station Reset: Key- or wrench-operated switch.

3. Indoor Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.

4. Weatherproof Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.

2.06 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.

2. Detectors shall be two-wire type.

3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.

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5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.

6. Integral Visual-Indicating Light: LED type, indicating detector has operated.

7. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.

    a. Rate-of-rise temperature characteristic of combination smoke- and heat-detection units shall be selectable at fire-alarm control unit for 15 or 20 degrees Fahrenheit per minute.

    b. Fixed-temperature sensing characteristic of combination smoke- and heat-detection units shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 degrees Fahrenheit.

    c. Multiple levels of detection sensitivity for each sensor.

    d. Sensitivity levels based on time of day.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.

2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.

    b. Device type.

    c. Present average value.

    d. Present sensitivity selected.

    e. Sensor range (normal, dirty, etc.).

C. Ionization Smoke Detector:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.

2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.

    b. Device type.

    c. Present average value.

    d. Present sensitivity selected.

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e. Sensor range (normal, dirty, etc.).

D. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.

2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

a. Primary status.

b. Device type.

c. Present average value.

d. Present sensitivity selected.

e. Sensor range (normal, dirty, etc.).

3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector for smoke detection in HVAC system ducts.

4. Each sensor shall have multiple levels of detection sensitivity.

5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.

6. Relay Fan Shutdown: Fully programmable relay rated to interrupt fan motor-control circuit.

2.07 CARBON MONOXIDE DETECTORS

A. General: Carbon monoxide detector listed for connection to fire-alarm system.

1. Mounting: Adapter plate for outlet box mounting.

2. Testable by introducing test carbon monoxide into the sensing cell.

3. Detector shall provide alarm contacts and trouble contacts.

4. Detector shall send trouble alarm when nearing end-of-life, power supply problems, or internal faults.

5. Comply with UL 2075.

6. Locate, mount, and wire according to manufacturer's written instructions.

7. Provide means for addressable connection to fire-alarm system.

8. Test button simulates an alarm condition.

2.08 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Individually addressed, connected to a signaling-line circuit, equipped for mounting as indicated, and with screw terminals for system connections.

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B. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

C. Chimes, Low-Level Output: Vibrating type, 75-dBA minimum rated output.

D. Chimes, High-Level Output: Vibrating type, 81-dBA minimum rated output.

E. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.

F. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- (25-mm-) high letters on the lens.

1. Rated Light Output:

a. 15/30/75/110 cd, selectable in the field.

2. Mounting: Wall mounted unless otherwise indicated.

3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.

4. Flashing shall be in a temporal pattern, synchronized with other units.

5. Strobe Leads: Factory connected to screw terminals.

6. Mounting Faceplate: Factory finished, white.

G. Voice/Tone Notification Appliances:

1. Comply with UL 1480.

2. Speakers for Voice Notification: Locate speakers for voice notification to provide the intelligibility requirements of the "Notification Appliances" and "Emergency Communications Systems" chapters in NFPA 72.

3. High-Range Units: Rated 2 to 15 W.

4. Low-Range Units: Rated 1 to 2 W.

5. Mounting: Flush, semirecessed or surface mounted and bidirectional.

6. Matching Transformers: Tap range matched to acoustical environment of speaker location.

H. Exit Marking Audible Notification Appliance:

1. Exit marking audible notification appliances shall meet the audibility requirements in NFPA 72.

2. Provide exit marking audible notification appliances at the entrance to all building exits.

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3. Provide exit marking audible notification appliances at the entrance to areas of refuge with audible signals distinct from those used for building exit marking.

2.09 MAGNETIC DOOR HOLDERS

A. Description: Units are equipped for wall or floor mounting as indicated and are complete with matching doorplate.

1. Electromagnets: Require no more than 3 W to develop 25-lbf (111-N) holding force.

2. Wall-Mounted Units: Flush mounted unless otherwise indicated.

3. Rating: 24-V ac or dc.

4. Rating: 120-V ac.

B. Material and Finish: Match door hardware.

2.10 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.

1. Mounting: Surface cabinet, NEMA 250, Type 1.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.11 ADDRESSABLE INTERFACE DEVICE

A. General:

1. Include address-setting means on the module.

2. Store an internal identifying code for control panel use to identify the module type.

3. Listed for controlling HVAC fan motor controllers.

B. Monitor Module: Microelectronic module providing a system address for alarm-initiating devices for wired applications with normally open contacts.

C. Integral Relay: Capable of providing a direct signal

1. Allow the control panel to switch the relay contacts on command.

2. Have a minimum of two normally open and two normally closed contacts available for field wiring.

D. Control Module:

1. Operate notification devices.

2. Operate solenoids for use in sprinkler service.

2.12 DIGITAL ALARM COMMUNICATOR TRANSMITTER

1

A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632.

B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.

C. Local functions and display at the digital alarm communicator transmitter shall include the following:

1. Verification that both telephone lines are available.
2. Programming device.
3. LED display.
4. Manual test report function and manual transmission clear indication.
5. Communications failure with the central station or fire-alarm control unit.

D. Digital data transmission shall include the following:

1. Address of the alarm-initiating device.
2. Address of the supervisory signal.
3. Address of the trouble-initiating device.
4. Loss of ac supply.
5. Loss of power.
6. Low battery.
7. Abnormal test signal.
8. Communication bus failure.

E. Secondary Power: Integral rechargeable battery and automatic charger.

F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

2.13 RADIO ALARM TRANSMITTER

A. Transmitter shall comply with NFPA 1221 and 47 CFR 90.

B. Description: Manufacturer's standard commercial product; factory assembled, wired, and tested; ready for installation and operation.

1. Packaging: A single, modular, NEMA 250, Type 1 metal enclosure with a tamper-resistant flush tumbler lock.

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2. Signal Transmission Mode and Frequency: VHF or UHF 2-W power output, coordinated with operating characteristics of the established remote alarm receiving station designated by Owner.

3. Normal Power Input: 120-V ac.

4. Secondary Power: Integral-sealed, rechargeable, 12-V battery and charger. Comply with NFPA 72 requirements for battery capacity; submit calculations.

5. Antenna: Omnidirectional, coaxial half-wave, dipole type with driving point impedance matched to transmitter and antenna cable output impedance. Wind-load strength of antenna and mounting hardware and supports shall withstand 100 mph (160 km/h) ???Insert value??? with a gust factor of 1.3 without failure.

6. Antenna Cable: Coaxial cable with impedance matched to the transmitter output impedance.

7. Antenna-Cable Connectors: Weatherproof.

8. Alarm Interface Devices: Circuit boards, modules, and other auxiliary devices, integral to the transmitter, matching fire-alarm and other system outputs to message-generating inputs of the transmitter that produce required message transmissions.

C. Functional Performance: Unit shall receive alarm, supervisory, or trouble signal from fire-alarm control unit or from its own internal sensors or controls and shall automatically transmit signal along with a unique code that identifies the transmitting station to the remote alarm receiving station. Transmitted messages shall correspond to standard designations for fire-reporting system to which the signal is being transmitted and shall include separately designated messages in response to the following events or conditions:

1. Transmitter Low-Battery Condition: Sent when battery voltage is below 85 percent of rated value.

2. System Test Message: Initiated manually by a test switch within the transmitter cabinet, or automatically at an optionally preselected time, once every 24 hours, with transmission time controlled by a programmed timing device integral to transmitter controls.

3. Transmitter Trouble Message: Actuated by failure, in excess of one-minute duration, of the transmitter normal power source, derangement of the wiring of the transmitter, or any alarm input interface circuit or device connected to it.

4. Local Fire-Alarm-System Trouble Message: Initiated by events or conditions that cause a trouble signal to be indicated on the building system.

5. Local Fire-Alarm-System Alarm Message: Actuated when the building system goes into an alarm state. Identifies device that initiated the alarm.

6. Local Fire-Alarm-System, Supervisory-Alarm Message: Actuated when the building alarm system indicates a supervisory alarm ???Insert condition???.

2.14 SYSTEM PRINTER

A. Printer shall be listed and labeled as an integral part of fire-alarm system.

2.15 DEVICE GUARDS

A. Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.

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1. Factory fabricated and furnished by device manufacturer.

2. Finish: Paint of color to match the protected device.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.

1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.

B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.

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

3.02 EQUIPMENT INSTALLATION

A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."

1. Devices placed in service before all other trades have completed cleanup shall be replaced.

2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.

B. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.

1. Comply with requirements for seismic-restraint devices specified in Section 260548.16 "Seismic Controls for Electrical Systems."

C. Manual Fire-Alarm Boxes:

1. Install manual fire-alarm box in the normal path of egress within 60 inches of the exit doorway.

2. Mount manual fire-alarm box on a background of a contrasting color.

3. The operable part of manual fire-alarm box shall be between 42 inches and 48 inches above floor level. All devices shall be mounted at the same height unless otherwise indicated.

D. Smoke- or Heat-Detector Spacing:

1. Comply with the "Smoke-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for smoke-detector spacing.

2. Comply with the "Heat-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for heat-detector spacing.

3. Smooth ceiling spacing shall not exceed 30 feet.

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4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Annex A in NFPA 72.

5. HVAC: Locate detectors not closer than 36 inches ((35.83 inch)) from air-supply diffuser or return-air opening.

6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture and not directly above pendant mounted or indirect lighting.

E. Install a cover on each smoke detector that is not placed in service during construction. Cover shall remain in place except during system testing. Remove cover prior to system turnover.

F. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct. Tubes more than 36 inches long shall be supported at both ends.

1. Do not install smoke detector in duct smoke-detector housing during construction. Install detector only during system testing and prior to system turnover.

G. Air-Sampling Smoke Detectors: If using multiple pipe runs, the runs shall be pneumatically balanced.

H. Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location. Do not install smoke detectors in sprinklered elevator shafts.

I. Single-Station Smoke Detectors: Where more than one smoke alarm is installed within a dwelling or suite, they shall be connected so that the operation of any smoke alarm causes the alarm in all smoke alarms to sound.

J. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.

K. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.

L. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.

M. Device Location-Indicating Lights: Locate in public space near the device they monitor.

N. Antenna for Radio Alarm Transmitter: Mount to building structure where indicated. Use mounting arrangement and substrate connection that resists 100-mph (160-km/h) wind load with a gust factor of 1.3 without damage.

3.03 PATHWAYS

A. Pathways above recessed ceilings and in nonaccessible locations may be routed exposed.

1. Exposed pathways located less than 96 inches above the floor shall be installed in EMT.

B. Pathways shall be installed in EMT.

C. Exposed EMT shall be painted red enamel.

3.04 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Section 087100 "Door Hardware." Connect hardware and devices to fire-alarm system.

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1. Verify that hardware and devices are listed for use with installed fire-alarm system before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Alarm-initiating connection to smoke-control system (smoke management) at firefighters' smoke-control system panel.
2. Alarm-initiating connection to stairwell and elevator-shaft pressurization systems.
3. Smoke dampers in air ducts of designated HVAC duct systems.
4. Magnetically held-open doors.
5. Electronically locked doors and access gates.
6. Alarm-initiating connection to elevator recall system and components.
7. Alarm-initiating connection to activate emergency lighting control.
8. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
9. Supervisory connections at valve supervisory switches.
10. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
11. Supervisory connections at elevator shunt-trip breaker.
12. Data communication circuits for connection to building management system.
13. Data communication circuits for connection to mass notification system.
14. Supervisory connections at fire-extinguisher locations.
15. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.

3.05 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.06 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.07 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by authorities having jurisdiction.

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B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

D. Perform the following tests and inspections:

1. Visual Inspection: Conduct visual inspection prior to testing.

a. Inspection shall be based on completed record Drawings and system documentation that is required by the "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.

b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.

4. Test audible appliances for the private operating mode according to manufacturer's written instructions.

5. Test visible appliances for the public operating mode according to manufacturer's written instructions.

6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.08 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

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2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.09 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.

1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.10 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION

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SECTION 32 8410
IRRIGATION SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Includes all labor, materials, equipment, and operations required to complete the Irrigation System in accordance with the SSPWC latest edition, and the applicable Drawings.

1.2 RELATED SECTIONS

A. Section 32 0190 – Landscape Maintenance

B. Section 32 9000 – Landscape Planting

1.3 REQUIREMENTS OF REGULATORY AGENCIES

A. Secure all permits and licenses necessary for the work. Give all notices and comply with all laws, ordinances, rules, and regulations concerning the installation of the sprinkler system as drawn and specified.

1.4 SITE CONDITIONS

A. Prior to beginning any work, the Contractor and the District Representative shall participate in a thorough irrigation system review of the project site. All remote-control valves shall be turned on and observed in operation by both the Contractor and District Representative. Any existing defects will be listed in detail identifying the specific valve station number and describing the exact broken or non-functioning irrigation component noted during the site review. At the conclusion of the irrigation review, the Contractor shall generate a summary of the items identified by both parties listing all remote-control valves operated, identifying if the valve performed without any defects or specifically identifying any observed defects or non-functioning components, such as broken heads, clogged nozzles, non-operating valve solenoids, broken piping, or other noted defects. The completed summary of items noted shall be listed on a document called 'Existing Irrigation System Observations.' This document shall be signed by the Contractor and submitted to the District Representative for a confirming signature. The mutually signed 'Existing Irrigation System Observations' document shall be sent to the attention of the Landscape Architect for inspection purposes at the conclusion of the construction work. If requested by the District Representative, the Contractor shall provide a list of the existing defective irrigation components noted with a detailed written proposal to repair each item identified on the list. A copy of this proposal will be sent to the Landscape Architect. This additional work proposal must be reviewed and approved in writing by the District and formally presented to the General Contractor before the Landscape Subcontractor can begin any additional repair work. The mutually signed 'Existing Irrigation System Observation' document shall be used as a guide to identify any collateral damage caused to the existing irrigation system because of new construction performed on site by the Contractors. Any damage caused to the existing irrigation system not specifically identified on the 'Existing Irrigation System Observation' document shall be repaired or replaced at the Contractor's expense. If the Contractor does not participate or perform the existing irrigation site review, any existing irrigation equipment or components damaged on the project site noted by the Landscape Architect during the final irrigation system review shall be repaired or replaced by the Contractor at their expense to the satisfaction of the District.

B. Do not willfully install the sprinkler system as indicated on the drawing when it is obvious in the field that unknown obstructions or grade differences exist that might not have been considered in the engineering. Such obstructions or differences should be brought to the attention of the District Engineer.

C. Before excavating for sprinkler lines, locate all underground utility lines so that the proper precautions may be taken to avoid damage to such utilities. In the event of a conflict between underground lines, promptly notify the District Engineer who will arrange for the relocation of one or the other. Failure to follow this procedure places the responsibility upon the Contractor for making all repairs for damage of any kind at his own expense.

D. Provide necessary safeguards and exercise caution against injury or defacement of any existing site improvements. Contractor shall be responsible for any damage resulting from his operations and shall repair or replace such damage at his own expenses. No trucks or vehicles of any kind shall be allowed to pass over sidewalks, curbs, etc., unless adequate protection is provided.

E. Existing Trees

1. Exercise all possible care and precautions to avoid injury to tree roots, trunks, and branches. All excavating within drip line of trees shall be done very carefully and by hand pick and shovel if it appears that large roots are within trenching zones.

2. Alter alignment of pipe to avoid large tree roots, 2-inch and larger in diameter.

3. Wrap exposed and bridging tree roots with several layers of burlap and keep moist. Close all trenches within drip lines, within 24 hours.

4. All severed roots 1-inch and larger shall be hand pruned with sharp tools and painted with acceptable horticultural seal.

1.5 MATERIAL LIST

A. Submit to the District for acceptance, five (5) copies of all materials and equipment, including Manufacturer's names and catalog numbers, to be furnished and installed under this contract within 10 days after the award of the contract.

1.6 RECORD DRAWINGS

A. Provide and record daily a complete record set of prints on bond which shall be corrected to show changes from the original drawings and specifications and the exact installed locations, sizes, and kinds of equipment. Prints for this purpose may be obtained from the District. Keep this set of drawings on the site and use only as a record set.

B. Use these drawings as work progress sheets. Make neat and legible annotations thereon as the work proceeds, showing the work as actually installed. Keep these drawings available at all times for inspection and in a location designated by the District.

C. Before the date of the final inspection, transfer all information from the record prints to a clean set of prints procured from the District. Make work neat, in ink and subject to review and acceptance of the District. District will scan final drawings into a permanent electronic record document.

D. Dimension from two permanent points of reference such as building corners, sidewalks or road intersections, the location of:

1. Connection to existing water lines.

2. Connection to existing electrical power.

3. Gate valves.

4. Routing of sprinkler pressure lines and control wiring.

5. Electric control valves.

6. Quick coupling valves.

7. Other related equipment as directed by District.

1.7 CONTROLLER CHARTS

A. Record drawings shall be reviewed and accepted by the District before charts are prepared.

B. Provide one controller chart for each controller supplied.

C. The chart shall show the area controlled by automatic controller and shall be the maximum size controller door will allow.

D. The chart is to be reduced from the final record drawing set. 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.

E. Chart shall be blackline print and a different color shall be used to show area of coverage for each station.

F. The chart shall be mounted using Velcro, or an approved equal type of tape.

G. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils. thick.

H. These charts shall be completed and approved prior to final inspection of the irrigation system.

1.8 TESTS AND SITE OBSERVATIONS

A. All tests shall be made in the presence of the District; at least forty-eight (48) hours' notice shall be given for tests.

B. Record drawings must be current and shall be verified by the District at the time of all observations.

C. Site observations for all items pertaining to the work of this Section shall be performed by the District.

D. Specific site observations for valve assemblies, sprinkler coverage, control wires and splices and any other observations deemed necessary by the District shall be performed by the District.

E. An open trench main line check for pipe quality and depths shall be performed by the District.

F. Head Layout - using flag marker layout all drip emitter, tree flood bubblers, and spray heads in field prior to trenching. Review head layout with District and Landscape Architect and adjust in field as directed prior to installing irrigation.

G. Center load pipe with small amount of backfill to prevent arching and whipping under pressure. Leave joints exposed for observation during pressure test. No water shall be permitted in the pipe until the above has been accomplished and a period of at least 24 hours has elapsed for solvent weld setting and curing.

Main lines to be tested up to valve at 125 pounds pressure and there shall be no leaks. Furnish force pump and pressure gauge. Lateral lines of system to be tested at line pressure with risers capped. Tests to be for 2-hour period and verified by the District.

H. Backfill quality and compaction of trenches shall be verified by the District. Do not backfill trenches until all tests have been completed and accepted.

I. The new auto controller shall be Toro 'Eagle Plus' Series auto controller capable of direct connection to the internet via cell phone connection. Unit shall be housed in a factory plastic wall mounted enclosure. The auto controller will be able to measure remote control valve flow on actual site weather conditions. Toro Model EGPi16-PLAST-RM-ISVC-5Y. Field verify the exact location desired for wall mounted auto controller with District Representative. Perform as related work required to connecting flow sensor to auto controller so that it measures discharge flow of sprinkler valves as per manufacturers' specifications.

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J. Perform a coverage test in the presence of the District to determine if the water coverage for planting areas is complete and adequate. Furnish materials and perform all work required to correct any inadequacies of coverage due to deviations from drawings, or where the system has been willfully installed as indicated on the drawings when it is obviously inadequate, without bringing this to the attention of the District.

K. The coverage test shall be completed, and the irrigation system modified if necessary and accepted, prior to the start of the planting operations.

L. The entire system shall be checked out thoroughly and completely by the Contractor, five (5) days prior to the final observation. All heads shall be properly aligned and adjusted for coverage and cleared of any foreign materials. All valves shall be properly adjusted. Sprinkler controller valve chart shall be checked for accuracy.

M. At the end of the Maintenance Period, a final observation shall be made by the Contractor and District to check out the entire system.

N. Final inspection prior to acceptance:

1. Operate each system in its entirety for the District at time of final inspection. Rework any items deemed not acceptable to the District.

2. Deliver to the District all accessories, charts, record drawings, and equipment as required before final inspection.

1.9 GUARANTEE

A. The entire sprinkler system shall be guaranteed for a period of one (1) year from date of final acceptance.

B. Should any portion of the irrigation system malfunction due to poor workmanship or defective materials, corrections shall be promptly made by the Contractor at his own expense.

C. Any damage to paving, plating, or other developments due to the settlements of improperly compacted trench soil, shall also be promptly repaired at the Contractor's expense, to the satisfaction of the District.

PART 2 PRODUCTS

2.1 GENERAL

A. Irrigation materials shall be in accordance with Subsection 212-2 in the SSPWC “Greenbook” and as specified herein.

B. The irrigation products specified on the drawings in these specifications are selected to match existing products in use. Substitutions are permitted only when product name is followed by or equal.

C. Use only new materials of brands and types as noted on the drawings and as specified.

2.2 MATERIALS

A. Electrical conductors - 24-volt conductors shall be U.F. type, solid wire, U.L. approved for direct burial. Minimum size shall be 14-gauge or as noted on drawings. Acceptable products for 14-gauge wires splice connections shall be 3M Model DBR-Y6, Toro Model TW-SPLICE, Spears Model DS-400 Dri-Splice, or King Innovation Dryconn Dry-Splice wire connectors. Use only 3M Model DBR-Y6 or Toro Model TW-SPLICE wire connectors for Toro EV-CAB-SEN sensor cable splice connections. No known equal.

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B. Fittings - galvanized malleable steel, Schedule 40.

C. PVC primer and solvents - as recommended by Manufacturer. John-Manville, Lasco, or Pacific Western.

D. Main Line Fittings for Mainline Piping - Schedule 80, PVC Type 1, Grade 1, Cell Classification 12454-B, side gated, Lasco Spears, or approved equal.

E. Lateral non-pressure line fittings - Schedule 40, PVC Type 1, Grade 1, Cell Classification 12454-B, side gated, Lasco or approved equal.

F. Ball valve shall be Schedule 80 PVC manufactured by Spears, Tru-Union-Series, line size, or approved equal.

G. Pop up turf rotors shall be 6” pop up height furnished with built in check valves and stainless steel riser. Hunter Model i20-06-SS, with 35’ MPR Series nozzles, Rain Bird Model 5006+PCSAMSS and 5006+FCSAMSS with 35’ MPR Series nozzles.

H. Nipples and Risers - PVC Schedule 80.

I. Irrigation Mainline

1. Mainline piping sized 2 ½” to 4” shall be Class 315 PVC, solvent weld pipe in conformance with ASTM D-1785 and ASTM D-1784. JM Eagle, Pacific Plastics, or approved equal.

2. Mainline piping sized 1 ½" or less shall be Schedule 40 PVC, solvent weld pipe in conformance with ASTM D-1785 and ASTM D-1784. JM Eagle, Pacific Plastics, or approved equal.

J. Pipe, Lateral Non-Pressure Lines shall be PVC Schedule 40, solvent weld in conformance with ASTM D-1785, D-1784. JM Eagle, Pacific Plastics, or approved equal.

K. Thread Sealant shall be smooth, non-hardening sealant, compatible with the pipe materials specified. Do not use Teflon tape.

L. Valve Boxes

1. Schedule 80 PVC ball valves shall be housed in a Carson Model 1220-12-4B with bolt down lid, NDS Model 218BCB, or approved equal.

2. Remote Control Valves shall be housed in a Carson Model 1220-12-4B with bolt down lid, NDS Model 218BCB, or approved equal.

3. Quick coupling valves shall be housed in a Carson Model 910-4B Series, NDS Model 212BCB, or approved equal.

4. Wire pull boxes, master valve and flow sensor shall be Carson Model 1419-12-4B Series, NDS Model 214BCB, or approved equal.

M. Irrigation Mainlines 1 ½" size or less shall be furnished with concrete thrust blocks. Concrete sidewalks to access controller and controller pads shall be hardrock concrete with minimum compressive strength at 28 days of 2,500 PSI and conform to ASTM L-94. Finish for walks shall be medium broom finish.

N. Mainline fittings and transition couplers for existing asbestos cement mainline shall be manufactured by Romac, Smith-Blair or approved equal.

O. Furnish and install 8'-0" copper clad lightning ground rod and install in a standard rectangular valve box for Toro Irrigation Systems auto controllers. Install ground rod with copper clamp and #8 copper wire as per Toro specifications. House exposed copper grounding wire in a 1" Sch. 40 PVC electrical conduit from base of wall mounted auto controller to valve box housing ground rod and clamp a minimum distance of 8'-0" from controller location. 1

P. PVC flange fittings shall be PVC Schedule 80, Type 1, Grade 1, loose ringer, ANSI Class 150 flange, Lasco Series 954 or approved equal with full face 1/8" thick elastomeric gasket, 5-70 Shore A hardness.

Q. Irrigation wire shall be 14-gauge, solid, polyethylene coated, colors as per irrigation plan. Paige Wire Spec 'P7079D' or approved equal.

R. Auto controller shall be Toro Model EGPi16-PLAST-RM-ISVC-5Y, housed in a factory plastic box enclosure, 16 stations and flow sensing capability. No known equal.

S. Wireless Rain Shut Off Device shall be Toro Model RS1000. Provide all required batteries. No known equal.

T. Flow Sensor shall be Creative Sensor Technology Model FSI-T15-001, plastic solvent weld body, 1 ½" size. No known equal. 1

U. Drip Remote Control Vales shall be Rain Bird PESB Series, 1" size, in an assembly with a Rain Bird pressure regulating drip filter model PRB-QKCHK-100 or Hunter 1" ICV-FS Series remote control valve with a 1" x ¾" Hunter drip filter Model HY-100-075 with Hunter ¾" pressure regulator Model (30 PSI) PRLV30MF3F3FV.

V. Remote Control Valves shall be Rain Bird PESB Series or Hunter Model ICV-FS-Series.

W. Pop Up Lawn Spray Bodies shall be manufactured by Rain Bird, built-in 30 PSI pressure regulator, built-in check valve, 6" plastic riser, Model No. RD-06-S-P30 furnished with Rain Bird high efficiency adjustable nozzles Model No. HE-VAN series or Hunter Model PROS-06-PRS30-CV-PRO with Pro High Efficiency adjustable nozzle series.

X. Tree and flood bubblers with PVC Flexible Hose shall be manufactured by GPH Irrigation. Flood bubblers shall be pressure compensating with built-in check valves and an FPT plastic body. Flood bubbler nozzle shall be Model GPCBCV1 for 1.0 gallon per minute flood bubbler. PVC Flexible Hose shall be 3/8" IPS size, algae resistant, UVR treated, hose Model No. GPVCSSAR050IRR with matching 3/8" x ½" PVC black colored male adapters Model No. G436073B or Hunter Model IH-250 brown PVC flexible hose with brown male adapters Model IH-FIT-3850 and a tree flood bubbler nozzle Model PCB-10.

Y. Dripline tubing shall be 0.56" x 0.66" wall thickness (17 MM) tubing with 0.9 GPH emitters spaced 12" O.C. with matching 17 MM barbed fittings. Manufactured by NDS, Model No. SFCV-BR-6412-025S. Tubing system will be furnished with dripline air relief valve NDS Model No. AVRV, installed on highest elevation on tubing system installed in a 6" round valve box or Netafim Techline CV Series, Model TLCV9-1210 with 17 mm fittings Model TLAVRV or approved equal.

Z. Sand backfill for irrigation mainline trench shall be angular plaster sand. Provide sample for approval by the District.

2.3 SPARE EQUIPMENT

A. Furnish to the District the following spare equipment:

1. Five (5) 1-gallon per hour tree bubblers 1

PART 3 EXECUTION

3.1 GENERAL

A. Irrigation materials shall be in accordance with Subsection 308-5 in the SSPWC "Greenbook" and as specified herein.

3.2 WORKMANSHIP AND INSTALLATION.

A. Layout and Adjustments

1. The drawings are diagrammatic to the extent that many offsets, special fittings, and exact locations of the equipment are not shown. The locations of all valves, heads, lines, etc., shall be installed, however, as accurately as possible to the locations that are indicated on the drawings.

2. The locations of main lines are indicated as bordering walks, curbs and fences shall be placed as close as possible. Locate lines within planting areas wherever possible.

3. All indicated locations of heads and equipment are placed with careful consideration to overlap, protection of the premises, lights, proposed tree locations and general layout. Coordinate installation of sprinkler irrigation materials, including pipe, so there is no interference with utilities, other construction, or difficulty in planting trees and shrubs. Layout sprinkler heads and make any minor adjustments required due to differences between site and drawings. Adjustments shall be accomplished, maintaining proper sprinkler head coverage and overlap of sprinkler throws.

B. Connections

1. All connections shall be made into existing lines as indicated on the drawings.

2. Field verify existing line types in the field.

C. Cutting and Patching

1. When piping crosses concrete paving and asphalt paving, saw cutting is required. Cut AC paving and/or concrete with concrete saw cutting tools straight and, in those locations, approved by the District.

2. Remove concrete and/or AC, base, and soil to the required depth for mainlines.

3. Concrete walks shall be backfilled entirely with compacted plaster sand. Compact to 95% and patched with new concrete.

4. AC paving shall be backfilled entirely with a 2-sac sand slurry mix. Compact to 95% and patch with new AC paving.

5. Concrete paving shall be received medium broom finish.

6. Remove from site any excavated soil.

D. Trenching and Backfilling

1. Trench and excavate as necessary to install the system. Excavated material shall be neatly arranged to cause a minimum of inconvenience to pedestrian and vehicular traffic. No soil shall be placed on concrete paving without an adequate moisture proof membrane to protect paving.

2. Trenches for all pipes shall be open vertical construction with firm level bottom and sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and tamping. Provide a 6" deep layer of plaster sand between bottom of excavated trench and bottom of irrigation mainline piping.

3. Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:

a) Mains and control wires: 24-inches minimum cover.

b) PVC laterals: 12-inches minimum cover.

4. When two (2) pipes are to be placed in the same trench, provide a minimum of 3-inch horizontal clearance. Place pipe side by side; do not install one pipe on top of another.

5. After the installation is complete and the required tests and inspections have been made and approved, the excavations and trenches shall be backfilled with plaster sand until the irrigation mainline and wire conduit have a minimum cover from top of mainline of a 6" layer of sand. The remainder of the trench can be backfilled with native soil.

E. Plastic Pipe

1. Do not install multiple assemblies on plastic lines. Provide each assembly with its own outlet.

2. Install assemblies specified herein in accordance with respective detail. In absence of detail drawings or specifications pertaining to specific items required to complete work, perform such work in accordance with best standard practice.

3. Clean PVC pipe and fittings before installation. For solvent weld pipe use installation and solvent welding methods as recommended by the pipe and fitting manufacturer. For gasketed pipe installation follow detailed assembly instructions furnished by the manufacturer.

4. On PVC to metal connections, work the metal connections first. Use non-hardening sealant on all threaded joints. Screw hand tight and ½ turn by wrench. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded.

5. Pipe shall have a firm, uniform bearing, for the entire length of each pipeline, to prevent uneven settlement. Pipe shall be snaked from side to side of trench bottom to allow for expansion and contraction. One additional foot per 100 feet of pipe is the minimum allowance for snaking. Never lay PVC pipe when there is water in the trench or when the temperature is 32° F or below.

6. Use 45° fittings at all changes in depth of pipe. Coupling to be of same materials and wall thickness as pipe.

F. Concrete Thrust Blocks – for mainline 1 ½" and less. Install concrete thrust blocks at all directional changes.

G. Control Wiring

1. Control wires and mains shall be installed in common trenches wherever possible housed in Schedule 40 PVC electrical conduits. All wires shall be 14-gauge size.

2. Control wires shall be installed at least 24-inches below finish grade within Schedule 40 PVC electrical conduits equipped with sch. 40 PVC sweep elbows into and out of all valve boxes. Wire conduits shall be kept to the side of the main line where possible. Wire conduits shall be a minimum of 3" from any pipe or fittings except at terminal points. Provide looped 3'-0" hand loop slack at valves and pull boxes. Tie wires in bundles within conduits at 10' intervals.

3. Control wire splices allowed only on runs more than 500 feet. Splice as follows:

   a) Strip off minimum of 2 ½" inches of insulation from each wire and twist wires together 4 complete twists.

   b) Make splices with 3M model DBR-Y6, or Spears model DS-400 Dri-Splice, or King Innovation model Dry Conn Dry-Splice wire connectors. Use one splice per connector sealing pack. All wire splices shall be housed in either a remote-control valve box or separate wire splice box. Do not make field splices outside of any valve box.

4. Wire conduits passing under future or existing paving, construction, etc., shall be encased in a PVC sleeve, size, and pipe material as per Irrigation Plan, extending at least 12-inches beyond edges of paving or construction.

5. Identify all control wires at valve boxes and controller with "wire marker tags" manufactured by Christy, 3M or equal.

6. Pull one extra common (white with red stripe) and one spare (red) to all valve locations.

H. Valves:

1. Piping systems shall be supplied with valves at all points shown on the drawings or specified herein and shall be arranged to give complete regulating control throughout.

2. Valves shall be the full size of the line in which they are installed unless otherwise indicated.

3. Valves shall be installed in accordance with the drawings and Manufacturer's specifications, so all parts are easily accessible and maintained. Valves near walk, curbs, etc., shall be set with 12-inches and parallel to same. Remote control valves shall be installed in groundcover or shrub areas wherever feasible.

4. Remote control valves shall be adjusted so that the sprinkler heads operate at pressure recommended by the head manufacturer. Remote control valves shall be adjusted so that a uniform distribution of water is applied by the sprinkler heads to the planting areas from each individual valve system.

5. Valve boxes shall be set ½-inch above the designated finish grade at each valve.

I. Sprinkler Heads

1. Prior to installing heads, flush laterals, and risers with full line pressure. Repeat whenever system is opened for repairs or replacements. Start flushing operation at the highest point of delivery and work to the lowest.

2. Align all part circle heads so that no spray shall hit building walls or concrete paving.

3. Adjust all spray nozzles so that there will be no amount of overspray, and so that the entire set will be as evenly balanced as possible.

4. Install with each lawn area sprinkler head, a "Triple Swing" joint with Schedule 80 PVC nipples and threaded elbows.

5. Install all tree bubblers on PVC flexible hose with two (2) solvent weld male adapters. Install two (2) bubbler assemblies per each tree planted on project.

3.3 FIELD QUALITY CONTROL

A. Adjustment to System

1. Flush and adjust all sprinkler heads for optimum performance and to prevent overspray onto walk, roadways, and buildings wherever possible.

2. Select the best degree of arc to fit existing site conditions.

3. Set all sprinkler heads perpendicular to finished grades unless other designated on the drawings.

3.4 TESTING AND INSPECTION

A. Do not allow or cause any work of this section to be covered up or enclosed until it has been inspected, tested, and approved by the District. Before backfilling the main line, and with all control valves in place, but before lateral pipes are connected, completely flush and test the mainline, and repair all leaks. Flush out each section of lateral pipe before emitters are attached.

B. Make all necessary provisions for thoroughly bleeding the line of air and debris. Before testing, fill the line with water for a period of at least 24 hours.

C. After valves have been installed, test all pressure main lines for leaks at a pressure of 150 PSI for a period of two hours, with all couplings exposed, and all pipe sections carefully center-loaded. Furnish all necessary testing equipment and personnel. Correct all leaks, and retest until accepted by the Engineer.

3.5 FINAL INSPECTION

A. Thoroughly clean, adjust and balance all systems. Demonstrate the entire system to the District proving that all remote control valves are properly balanced, that all emitters are properly flowing, and that the entire system is installed and is workable, clean, and efficient.

END OF SECTION

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DSA ADDENDUM No. 1

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Date: October 23, 2026

Project: Gateway Annex School
DSA A#: 03-122398 File #: 56-44

Owner: Ventura County Office of Education
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Architect: Perkins Eastman
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PE No.: 88910.00

The clarifications, modifications, changes, additions and/or deletions contained herein shall be incorporated within the construction documents for the project. Such information shall take precedence over that previously published.

The Addendum consists of 245 pages including:

ATTACHMENTS

Specifications: Specification Signature Sheet , 06 8316, 08 7100 ,09 5113, 09 9900, 11 4000, 21, 22 0010, 22 0517, 22 1005, 22 1006, 27 1000, 27 4100, 27 5116, 28, 32 8410

Sheets: G001, G003, G004, G005, C-1, C-2, C-3, C-4, L1, L2, L3, L4, L7, L8, AD001, A001, A002, A011, A013, A014, A101, A102, A103, A121, A131, A201, A202, A221, A231, A232, A301, A403, A404, A602, A701, A702, A704, A721, A732, A734, A771, A801, A802, A823, A831, A832, A841, A843, S101, S102, S301, S303, S402, S601, S602, S603, S604, S612, S613, M101, M141, M601, M602, P101, P141, P401, P701, E141, E502, E601, E602, E701, FA202, FA302

CHANGES TO THE BID DOCUMENTS

None

CHANGES TO THE SPECIFICATIONS

Item No. 1.1
Reference: Specification Signature Sheet
Description: Specifications
Add the Specification Signature Sheet to the specifications package.

Item No. 1.2
Reference: Fiberglass Reinforced Plastic Panels
Description: 06 8316
Add new specification section 06 8316, Fiberglass Reinforced Plastic Panels.

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Item No. 1.3 Door Hardware
Reference: 08 7100
Description: Replace specification 08 7100 with the attached **08 7100**. The changes are as follows:

- 3.07 through 3.23: Hardware Groups 012, 020, 030, 040, 044, 405, 442.1, 442.2, 443.1, 453.1, 455.1, A032.7, A482.1, A482.5, A582R.1, and A585R.1 revised.

Item No. 1.4 Colors
Reference: 09 9900
Description: Replace specification 09 9900 with attached **09 9900**. The changes are as follows:

- The Color/Finish on the Finish List matrix are revised for the following Specification Sections: 08 4313, 08 8000, 09 6519, and 09 6813.

Item No. 1.5 Acoustical Panel Ceilings
Reference: 09 5113
Description: Revise specification 09 5113, Acoustical Panel Ceilings, to include new Section 2.04.

Item No. 1.6 Foodservice Equipment
Reference: 11 4000
Description: Replace specification 11 4000 with attached **11 4000**. The changes are as follows:

- Specification section completely updated.

Item No. 1.7 Fire Supression
Reference: Division 21
Description: Replace Division 21 with attached **Division 21**. The changes are as follows:

- All sections are completely updated.

Item No. 1.8 Basic Plumbing Requirements
Reference: 22 0010
Description: Replace specification 22 0010 with attached **22 0010**. The changes are as follows:

- Specification section completely updated.

Item No. 1.9 Sleeves and Sleeve Seals for Plumbing Piping
Reference: 22 0517
Description: Replace specification 22 0517 with attached **22 0517**. The changes are as follows:

- Specification section completely updated.

Item No. 1.10 Plumbing Piping
Reference: 22 1005
Description: Replace specification 22 1005 with attached **22 1005**. The changes are as follows:

- Specification section completely updated.

Item No. 1.11 Plumbing Piping Specialties
Reference: 22 1006
Description: Replace specification 22 1006 with attached **22 1006**. The changes are as follows:

- Specification section completely updated.

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Item No. 1.12 Structured Cabling
Reference: 27 1000
Description: Replace specification 27 1000 with attached **27 1000**. The changes are as follows:
- Specification section completely updated.

Item No. 1.13 Audio/Visual Systems
Reference: 27 4100
Description: Replace specification 27 4100 with attached **27 4100**. The changes are as follows:
- Specification section completely updated.

Item No. 1.14 Public Address Systems
Reference: 27 5116
Description: Replace specification 27 5116 with attached **27 5116**. The changes are as follows:
- Specification section completely updated.

Item No. 1.15 Access Control
Reference: 28 1000
Description: Replace specification 28 1000 with attached **28 1000**. The changes are as follows:
- Specification section completely updated.

Item No. 1.16 Intrusion Detection
Reference: 28 1600
Description: Replace specification 28 1600 with attached **28 1600**. The changes are as follows:
- Specification section completely updated.

Item No. 1.17 Video Surveillance
Reference: 28 2000
Description: Replace specification 28 2000 with attached **28 2000**. The changes are as follows:
- Specification section completely updated.

Item No. 1.18 Digital, Addressable Fire Alarm System
Reference: 28 3111
Description: Replace specification 28 3111 with attached **28 3111**. The changes are as follows:
- Specification section completely updated

Item No. 1.19 Irrigation System
Reference: 32 8410
Description: Replace specification 32 8410 with the attached **32 8410**. The changes are as follows:
- 1.8-I: change auto controller specification from original Rain Bird auto controller to Ventura County School's preferred auto controller manufactured by Toro Irrigation.
- 2.2-A: change wire splice connector options to include Toro Irrigation wire splice connector.
- 2.2-O: change ground rod manufacturer to Toro Irrigation.
- 2.2-R: change auto controller from original Rain Bird controller to Ventura County School's preferred Toro Irrigation auto controller.
- 2.2-S: change wireless rain shut-off device from Rain Bird

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product to preferred Toro Irrigation wireless rain shut-off products.

- 2.2-T: change Rain Bird flow sensor product to Creative Sensor Technology product capable of operating with preferred Toro Irrigation auto controller.
- Eliminate Rain Master handheld transmitter now obsolete for new Toro Irrigation auto controller.
- Part 2 Products; 2.3 Spare Equipment – eliminate Rain Master handheld transmitter now obsolete for new Toro Irrigation auto controller.

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CHANGES TO THE DRAWINGS

GENERAL

Item No. 1.20 Cover Sheet
Reference: G001
Description: Replace sheet G001 with attached **G001**. The changes are as follows:

- Revised Sheet A701 sheet name.
- Added Sheet A702 sheet number and name.
- Revised Sheet S612 sheet name.
- Added Sheet S613 to the Drawing Index.
- Revised total number of sheets.
- Revised Statement of General Conformance
- Revised the AOR Stamp

Item No. 1.21 Site Plan – Code Analysis
Reference: G003
Description: Replace sheet G003 with attached **G003**. The changes are as follows:

- On plan C10: the buildings (A, B and C) and the central recreation area have been moved 21'-0" to the south of their current location to avoid the existing easements, resulting on landscape increasing on the north of Building A and C. The courts and the safe dispersal area have been rearranged to accommodate the shift of the buildings.
- Buildings design has not been impacted by this change.

Item No. 1.22 Site Plan – Local Fire Authority
Reference: G004
Description: Replace sheet G004 with attached **G004**. The changes are as follows:

- On plan D10: On plan C10: the buildings (A, B and C) and the central recreation area have been moved 21'-0" to the south of their current location to avoid the existing easements, resulting on landscape increasing on the north of Building A and C.
- Buildings design has not been impacted by this change.
- The Fire Lane coming into the south courts was reduced to 90'-0".

Item No. 1.23 Floor Plan – Egress Analysis
Reference: G005
Description: Replace sheet G005 with attached **G005**. The changes are as follows:

- On plan A10: Exit Path was rearranged based on the updated courts layout and Safe Dispersal Area.

CIVIL

Item No. 1.24 Horizontal Control Plan
Reference: C-1
Description: Replace sheet C-1 with attached **C-1**. The changes are as follows:

- Civil sheets have been renumbered in comparison to the previously submitted set. Horizontal Control Plan sheet was moved from C-3 to C-1.
- Revised site dimensions for the new building location.

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Item No. 1.25 Engineered Site Plan Grading, Drainage, and Storm Drain
Reference: C-2
Description: Replace sheet C-2 with attached **C-2**. The changes are as follows:

- Civil sheets have been renumbered in comparison to the previously submitted set. Engineered Site Plan Grading, Drainage, and Storm Drain sheet was moved from C-1 to C-2.
- The previous Engineered Site Plan Grading, Drainage, and Storm Drain sheet has been split into two sheets. C-2 shows the northern part of the site plan.
- Revise finished grade elevations for the update site layout.
- Added annotation for ADA ramp at drop off to be flush
- Revised clouded area
- Added Annotation for restroom sink area per Arch plan and 2% max slope

Item No. 1.26 Engineered Site Plan Grading, Drainage, and Storm Drain
Reference: C-3
Description: Replace sheet C-3 with attached **C-3**. The changes are as follows:

- Civil sheets have been renumbered in comparison to the previously submitted set. Engineered Site Plan Grading, Drainage, and Storm Drain sheet was moved from C-1 to C-3.
- The previous Engineered Site Plan Grading, Drainage, and Storm Drain sheet has been split into two sheets. C-3 shows the southern part of the site plan.
- Revise finished grade elevations for the update site layout.
- Added Annotation for restroom sink area per Arch plan and 2% max slope
- Removed existing truncated domes to avoid confusion with proposed ramp

Item No. 1.27 Overall Utility Site Plan Water and Sewer
Reference: C-4
Description: Replace sheet C-4 with attached **C-4**. The changes are as follows:

- Civil sheets have been renumbered in comparison to the previously submitted set.
- New sheet C-4 added. Overall Utility Site Plan Water and Sewer sheet was moved from C-2 to C-4.
- Maintain utility connection location to the building with the shift and adjust all utility routes back to main line services. Add underground storage and water quality treatment requirements to meet the new permit.

LANDSCAPE

Item No. 1.28 Irrigation Plan
Reference: L1
Description: Replace sheet L1 with attached **L1**. The changes are as follows:

- The irrigation system was redesigned to accommodate the modified school site layout due to the buildings being repositioned approximately 20'-0" to the south from the original layout as well as to avoid existing S.C.E. buried conduits and recorded easement through the landscape planter.

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Item No. 1.29 Irrigation Legend and Notes
Reference: L2
Description: Replace sheet L2 with attached **L2**. The changes are as follows:

- The MWELO landscape water use calculations were revised to address the changes to the landscape square foot areas due to the site modification.
- Ventura County Schools have standardized sprinkler auto controllers to an interned based control system. The product is manufactured by Toro Irrigation. The auto controller, flow sensor, and rain shut-off device have been changed to reflect the desired Toro products.

Item No. 1.30 Planting Plan
Reference: L3
Description: Replace sheet L3 with attached **L3**. The changes are as follows:

- The planting plan has been redesigned to accommodate the modified school site layout due to the buildings being repositioned approximately 20'-0" to the south from the original layout. Trees were repositioned to avoid conflicts with existing buried S.C.E. electrical conduits and recorded S.C.E. easement through the landscape planter.

Item No. 1.31 Planting Legend and Notes
Reference: L4
Description: Replace sheet L4 with attached **L4**. The changes are as follows:

- The tree and shrub quantities were modified to accommodate the revised planting areas and new site design.

Item No. 1.32 Landscape Shading Plan
Reference: L7
Description: Replace sheet L7 with attached **L7**. The changes are as follows:

- Shading area on the north revised per updated site plan.

Item No. 1.33 Landscape Shading Plan Legend and Notes
Reference: L8
Description: Replace sheet L8 with attached **L8**. The changes are as follows:

- Tree legend revised.

ARCHITECTURE

Item No. 1.34 Demolition Site Plan
Reference: AD001
Description: Replaced sheet AD001 with attached **AD001**. The changes are as follows:

- On Plan A10: added Keynote 2.

Item No. 1.35 Site Plan
Reference: A001
Description: Replace sheet A001 with attached **A001**. The changes are as follows:

- On plan A10: revised location of Buildings A, B and C. The courts and their finishes have been rearranged based on the updated buildings location.
- Buildings design has not been impacted by this change.

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Item No. 1.36 Enlarged Site Plan
Reference: A002
Description: Replace sheet A002 with attached **A002**. The changes are as follows:

- On plan A10: revised location of Buildings A, B and C. The courts and their finishes have been rearranged based on the updated buildings location.
- Buildings design has not been impacted by this change.
- Revised elevation callouts for South Gate at Workout Area and East Gate between Buildings B and C.
- Truncated dome has been revised to match the Civil drawings.

Item No. 1.37 Site Details
Reference: A011
Description: Replace sheet A011 with attached **A011**. The changes are as follows:

- On Details A4, A6, A8, E6, G4, J4, & J6: revised or added various notes, graphics, and/or dimensions.

Item No. 1.38 Ornamental Metal Fencing & Gate Details
Reference: A013
Description: Replace sheet A013 with attached **A013**. The changes are as follows:

- On Details A3 & A10: revised or added various notes, graphics, and/or dimensions.

Item No. 1.39 Miscellaneous Site Details
Reference: A014
Description: Replace sheet A014 with attached **A014**. The changes are as follows:

- On Detail D4: revised blocking detail callout.

Item No. 1.40 Overall Floor Plan
Reference: A101
Description: Replace sheet A101 with attached **A101**. The changes are as follows:

- Revised Floor Plan Legend.
- On Plan A10: added a few new gridlines to represent the exterior walls of Building A as necessary; added a few new centerlines to represent the steel canopy posts or fence posts as necessary; revised or added various gridline or steel post dimensions as necessary; revised or added various notes as necessary.

Item No. 1.41 Enlarged Floor Plan – Building A
Reference: A102
Description: Replace sheet A102 with attached **A102**. The changes are as follows:

- Revised Floor Plan Legend.
- On Plan A10: revised or added various notes, wall tags, storefront tags, and dimensions as necessary.

Item No. 1.42 Enlarged Plan – Buildings A, B, & C
Reference: A103
Description: Replace sheet A103 with attached **A103**. The changes are as follows:

- Revised Floor Plan Legend.
- On Plan A10: revised or added various notes, wall tags, storefront tags, and dimensions as necessary.

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Item No. 1.43 Reflected Ceiling Plan
Reference: A121
Description: Replace sheet A121 with attached **A121**. The changes are as follows:
- On Plan A10: revised or added various notes, ceiling heights, and dimensions as necessary.

Item No. 1.44 Roof Plan
Reference: A131
Description: Replace sheet A131 with attached **A131**. The changes are as follows:
- Revised Roof Legend.
- Removed roof type R1 under Roof Assembly Types.
- On Plan A10: revised or added various notes, roof slopes, and spot elevation callouts as necessary.

Item No. 1.45 Exterior Elevations
Reference: A201
Description: Replace sheet A201 with attached **A201**. The changes are as follows:
- On elevation A10: relocation of the monument sign and its landscape on the West Elevation of building A.
- On Elevation A5: lowered exterior ceiling height over east entry at Building A.

Item No. 1.46 Exterior Elevations
Reference: A202
Description: Replace sheet A202 with attached **A202**. The changes are as follows:
- On Elevations F10 & J7: removed clerestory windows at Building B.

Item No. 1.47 Building Sections
Reference: A221
Description: Replace sheet A221 with attached **A221**. The changes are as follows:
- On Section A10: added various detail callouts as necessary.

Item No. 1.48 Exterior Wall Sections
Reference: A231
Description: Replace sheet A231 with attached **A231**. The changes are as follows:
- On wall sections: revised or added various detail callouts, wall tags, storefront tags, and graphics as necessary.

Item No. 1.49 Exterior Wall Sections
Reference: A232
Description: Replace sheet A232 with attached **A232**. The changes are as follows:
- On wall sections: revised or added various detail callouts, wall tags, storefront tags, and graphics as necessary.

Item No. 1.50 Enlarged Restroom Floor Plans & Elevations
Reference: A301
Description: Replace sheet A301 with attached **A301**. The changes are as follows:
- On Enlarged Plans A4, A8, & A10: revised or added various dimensions as necessary.

Item No. 1.51 Interior Elevations – Building A
Reference: A403
Description: Replace sheet A403 with attached **A403**. The changes are as follows:

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- Added missing Legends to right hand margin.
- On Elevation K4: revised glazing graphic at Reception Area as necessary.

Item No. 1.52
Reference: Interior Elevations – Building B
A404
Description: Replace sheet A404 with attached **A404**. The changes are as follows:

- On Elevations G6 & G10: lowered ceiling heights and removed clerestory windows at Building B as necessary.

Item No. 1.53
Reference: Interior Finish Schedule
A602
Description: Replace sheet A602 with attached **A602**. The changes are as follows:

- Added some finishes under Finish Legend.
- Revised some finishes in the Finish Schedule.

Item No. 1.54
Reference: Schedules
A701
Description: Replace sheet A701 with attached **A701**. The changes are as follows:

- Added an Exterior Wall Schedule to sheet for reference.
- Revised height for Gate 6 on Gate Schedule.
- Revised height for Door B109 on Door Schedule.
- On Storefront Type Elevations: revised or added various storefront tags or dimensions as necessary.

Item No. 1.55
Reference: Typical Assemblies – Exterior Walls
A702
Description: Add sheet **A702**:

- New sheet added for typical exterior wall assemblies.

Item No. 1.56
Reference: Interior Wall Schedule and Details
A704
Description: Replace sheet A704 with attached **A704**. The changes are as follows:

- Added Partition Type E02.
- Revised title at Partition Type B.

Item No. 1.57
Reference: Exterior Wall Details
A721
Description: Replace sheet A721 with attached **A721**. The changes are as follows:

- On Details A6, A10, D4, D6, G10, & K10: revised or added various notes, detail callouts, wall tags, and graphics as necessary.

Item No. 1.58
Reference: Door and Window Details
A732
Description: Replace sheet A732 with attached **A732**. The changes are as follows:

- Added Detail C6 showing exterior window head condition.
- On Details E8 & E10: revised or added various notes as necessary.

Item No. 1.59
Reference: Tubular Skylight Details
A734
Description: Replace sheet A734 with attached **A734**. The changes are as follows:

- Removed Roof Assembly Types and General Roof Notes from sheet.
- Removed Details A6 and E6 from sheet.

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Item No. 1.60 Stair and Ramp Details
Reference: A771
Description: Replace sheet A771 with attached **A771**. The changes are as follows:
- On Details A6 & F8: revised or added various notes, detail callouts, wall tags, and graphics as necessary.

Item No. 1.61 Casework Details
Reference: A801
Description: Replace sheet A801 with attached **A801**. The changes are as follows:
- On Details A2, A4, A8, & C2: revised or added various notes and detail callouts as necessary.
- Removed Details G8 and J10 from sheet.

Item No. 1.62 Reception Desk Details
Reference: A802
Description: Replace sheet A802 with attached **A802**. The changes are as follows:
- On Details A3, K2, K6, & L2: revised or added various notes, detail callouts, and graphics as necessary.

Item No. 1.63 Typ. Lay-in Ceiling Details
Reference: A823
Description: Replace sheet A823 with attached **A823**. The changes are as follows:
- On Details A2 & D6: revised or added various notes and detail callouts as necessary.

Item No. 1.64 Roof Details
Reference: A831
Description: Replace sheet A831 with attached **A831**. The changes are as follows:
- Removed Detail C5 from sheet.
- Detail G8 has been revised

Item No. 1.65 Roof Details
Reference: A832
Description: Replace sheet A832 with attached **A832**. The changes are as follows:
- On Details A3, A6, D6, & G8: revised or added various notes and detail callouts as necessary.

Item No. 1.66 Miscellaneous Details
Reference: A841
Description: Replace sheet A841 with attached **A841**. The changes are as follows:
- On Details A6, C10, E4, E10, G6, J8, K2, K4, & L10: revised or added various notes, detail callouts, and graphics as necessary.

Item No. 1.67 Folding Partition Details
Reference: A843
Description: Replace sheet A843 with attached **A843**. The changes are as follows:
- On Details A2, A4, E4, G2, G4, & J6: revised or added various notes, dimensions, and graphics as necessary.

STRUCTURAL

Item No. 1.68 Foundation Plan

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Reference: S101
Description: Replace sheet S101 with attached **S101**. The changes are as follows:

- Dimensions for gridlines removed to prevent duplicate reference from Architect.
- At Gridline A: Top of Footing Elevation denoted. Footings stepped for underground utilities.
- At Gridline B: Post and hold-down clarified at shear wall.
- At Gridline 1: Detail callout added to show wall over footing.
- At Gridline 2: Post and hold-down clarified at shear wall.
- At Gridline 6 between AA & BB: Top of Footing Elevations denoted. Footings stepped for underground utilities.

Item No. 1.69 Roof Framing Plan
Reference: S102
Description: Replace sheet S102 with attached **S102**. The changes are as follows:

- Detail 3/S102: Deflection limit changed to ¾" max under code limit and truss easier to fabricate.
- Symbols for fall arrest and blocking added to Framing Legend.
- At Gridline A.2: Detail callout updated to show correct equipment support detail.
- Fall arrest anchors added to plans.
- Roof Framing Plan: All Mechanical Units updated weight values to match Mechanical Schedule

Item No. 1.70 Typical Concrete Slab on Grade Details
Reference: S301
Description: Replace sheet S301 with attached **S301**. The changes are as follows:

- Detail 12/S301: Pipe in wall curb detail added on detail sheet.
- Detail 14/S301: Detail for slab at stepped footing added on detail sheet.

Item No. 1.71 Concrete Footing Details
Reference: S303
Description: Replace sheet S303 with attached **S303**. The changes are as follows:

- Detail 8/S303: Details 13/S301 called out for slab isolation pocket detail.
- Detail 12/S303: Detail 13/S301 called out for slab isolation pocket detail.
- Detail 16/S303: Light pole footing detail added.
- Det 6/S303 Reinforcement in wing wall conc pad updated to show std hook.

Item No. 1.72 Trash Enclosure
Reference: S402
Description: Replace sheet S402 with attached **S402**. The changes are as follows:

- Detail 2/S402: Middle post added to gate for trash enclosure.
- Detail 3/S402: CMU cap added to wall.
- Detail 4/S402: Angle and anchor bolt added to section view to match elevation.
- Detail 7/S402: Post foundation added for trash enclosure gate.

Item No. 1.73 Typical Wood Connection Details
Reference: S601
Description: Replace sheet S601 with attached **S601**. The changes are as follows:

- Detail 4/S601: Note added referring to truss connections.

Item No. 1.74 Typical Wood Details

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Reference: S602
Description: Replace sheet S602 with attached **S602**. The changes are as follows:

- Detail 8/S602: Channel rim beam removed from detail.

Item No. 1.75 Typical Wood Details
Reference: S603
Description: Replace sheet S603 with attached **S603**. The changes are as follows:

- Detail 6/S603: Equipment support updated to reflect trusses parallel to cross section. Blocking added at top of truss.
- Det 6/S603: Equipment support updated to reflect trusses parallel to cross section. 4x6 Blocking added at top of truss. Maximum weight of equipment updated to reflect Mechanical unit schedule.

Item No. 1.76 Wood Details
Reference: S604
Description: Replace sheet S604 with attached **S604**. The changes are as follows:

- Detail 4/S604: Gap between wall and drag truss closed.

Item No. 1.77 Wood Details
Reference: S612
Description: Replace sheet S612 with attached **S612**. The changes are as follows:

- Titleblock updated to reflect information on details.
- Detail 7/S612: Blocking between truss joists added to provide anchorage point for equipment above.

Item No. 1.78 Wood Details
Reference: S613
Description: Add sheet **S613**:

- New sheet added for fall protection system details.

MECHANICAL

Item No. 1.79 Mechanical First Floor Plan – Duct
Reference: M101
Description: Replace sheet M101 with attached **M101**. The changes are as follows:

- Adjusted ductwork in multiple locations.
- Added reference Note 14/S621 at GL C.3 for duct through shear wall detail.

Item No. 1.80 Mechanical Roof Plan
Reference: M141
Description: Replace sheet M141 with attached **M141**. The changes are as follows:

- Rotated units 90 degrees to align with roof truss openings for HP-5, HP-6, HP-7, HP-8, and HP-9.

Item No. 1.81 Mechanical Schedules
Reference: M601
Description: Replace sheet M601 with attached **M601**. The changes are as follows:

- Updated model number of HVAC units to new model for Split Heat Pumps (SHP) and Fan Coils (FC). Approved units no longer being manufactured. Units are comparable in size and weights.

Item No. 1.82 Mechanical Schedules
Reference: M602
Description: Replace sheet M602 with attached **M602**. The changes are as follows:

- Updated model number of HVAC units to new model for Rooftop Packaged Heat Pumps (HP). Approved units no longer being manufactured. Units are comparable in size and weights.
- Updated structural anchorage detail to 7/S612.

PLUMBING

Item No. 1.83
Reference: P101
Description: Replace sheet P101 with attached **P101**. The changes are as follows:
- Added missing storm drain and overflow drain at Building A on GL 3A.

Item No. 1.84
Reference: P141
Description: Replace sheet P141 with attached **P141**. The changes are as follows:
- Revised connections for condensate drain lines for HVAC units that rotated on roof.

Item No. 1.85
Reference: P401
Description: Replace sheet P401 with attached **P401**. The changes are as follows:
- Added sewer connection and venting to floor drain per Enlarged Plan 3.
- Updated sewer connection per Civil drawings per Enlarged Plan 1.

Item No. 1.86
Reference: P701
Description: Replace sheet P701 with attached **P701**. The changes are as follows:
- Added floor drain to riser diagram and updated calculations.

ELECTRICAL

Item No. 1.87
Reference: E141
Description: Replace sheet E141 with attached **E141**. The changes are as follows:
- Updated electrical for HVAC Unit HP-9 on Building A.
- Updated associated Sheet Note 2.
- Updated electrical for HVAC Unit HP-A on Building B.
- Updated reference Note 5 for HVAC equipment.

Item No. 1.88
Reference: E502
Description: Replace sheet E502 with attached **E502**. The changes are as follows:
- Added Detail 11 Area Light Base.

Item No. 1.89
Reference: E601
Description: Replace sheet E601 with attached **E601**. The changes are as follows:
- Updated Lighting Fixture Schedule.

Item No. 1.90
Reference: E602
Description: Replace sheet E602 with attached **E602**. The changes are as follows:

- Updated various Panel Schedules.

Item No. 1.91 Electrical Single Line Diagram
Reference: E701
Description: Replace sheet E701 with attached **E701**. The changes are as follows:

- Updated Single Line Diagram.

FIRE PROTECTION

Item No. 1.92 Four Square Building Fire Alarm Plan
Reference: FA202
Description: Replace sheet FA202 with attached **FA202**. The changes are as follows:

- Added missing duct detector for HVAC Unit HP-A on Building B.

Item No. 1.93 Fire Alarm Riser Diagrams and Calcs
Reference: FA302
Description: Replace sheet FA302 with attached **FA302**. The changes are as follows:

- Added duct detector on Fire Alarm Riser Diagram.
- Updated battery calculations.

END OF DSA ADDENDUM