

# Addendum No. 03



May 12, 2023

## Shields & Brawley Elementary School

Prepared By SIM-PBK Architects, Inc.; 7790 N. Palm Avenue; Fresno, California 93711

SIM-PBK Architects Project Number 17-67

### Notice to Bidders

- A. Receipt of this Addendum shall be acknowledged on the Proposal Form. Failure to acknowledge receipt of each addendum may subject bidder to disqualification.
- B. This Addendum forms part of the Contract Documents for the above referenced project and shall be incorporated integrally therewith.
- C. Each proposer shall make necessary adjustments and submit their proposal with full knowledge of all modifications, clarifications, and supplemental data included therein. Where provisions of the following supplemental data differ from those of the original Contract Documents, this Addendum shall govern.

### **GENERAL**

Item No. 3-01 **BUBBLES or CLOUDS and/or DELTA 3 TAGS**, indicates changes / revisions / modifications within the document, no changes to remaining of DSA approval set.

### **BID PACKAGES REVISIONS**

- Item No. 3-02 **SUMMARY OF WORK**  
**REPLACE** in its entirety, see attached AD3-02a.
- Item No. 3-03 **SB-1 SITE & OFF-SITE WORK & UNDERGROUND UTILITIES**  
**REPLACE** in its entirety, see attached AD3-03a.
- Item No. 3-04 **SB-2 GENERAL TRADES/BUILDING STRUCTURE**  
**REPLACE** in its entirety, see attached AD3-04a.
- Item No. 3-05 **SB-7 MECHANICAL**  
**REPLACE** in its entirety, see attached AD3-05a.
- Item No. 3-06 **SB-8 ELECTRICAL, OFF-SITE & SITE ELECTRICAL & LOW VOLTAGE**  
**REPLACE** in its entirety, see attached AD3-06a.
- Item No. 3-07 **SB-9 IRRIGATION & LANDSCAPE**  
**REPLACE** in its entirety, see attached AD3-07a.
- Item No. 3-08 **SB-12 METAL/IRON FENCING, GATE & HANDRAILS**  
**REPLACE** in its entirety, see attached AD3-08a.

### **CLARIFICATIONS**

Item No. 3-09 **BID OPENING CHANGED TO WEDNESDAY MAY 31 AT 2PM IN LIEU OF TUESDAY MAY 30, 2023.**

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- Item No. 3-10      **BID WALK 1 SIGN IN SHEETS**  
**ADDED** in its entirety, see attached AD3-10a.
- Item No. 3-11      **BID WALK 2 SIGN IN SHEETS**  
**ADDED** in its entirety, see attached AD3-11a.
- Item No. 3-12      **OFF-SITE, CITY OF FRESNO PUBLIC WORKS PLANS, TRAFFIC & STREET LIGHTS, REPLACE** sheet in its entirety, see attached AD 3-12a, 3-12b

### SPECIFICATIONS

- Item No. 3-13      **01 91 00 COMMISSIONING**  
**ADDED** in its entirety, see attached AD3-13a.
- Item No. 3-14      **08 41 00 ALUMINUM STOREFRONT AND ENTRANCES**  
**ADDED** in its entirety, see attached AD3-14a.
- Item No. 3-15      **08 54 13 FIBERGLASS WINDOWS**  
**ADDED** in its entirety, see attached AD3-15a.
- Item No. 3-16      **27 41 00 MPR AUDIO-VIDEO SYSTEM**  
**ADDED** in its entirety, see attached AD3-16a.
- Item No. 3-17      **27 42 00 CLASSROOM AV SYSTEM**  
**ADDED** in its entirety, see attached AD3-17a.
- Item No. 3-18      **27 51 13 PAGING SYSTEMS**  
**ADDED** in its entirety, see attached AD3-18a.
- Item No. 3-19      **32 84 00 PLANTING IRRIGATION**  
**ADDED** in its entirety, see attached AD3-19a.
- Item No. 3-20      **33 31 13 SANITARY SEWER PIPE**  
**REPLACE** in its entirety, see attached AD3-20a.

### DRAWINGS

- Item No. 3-21      **PG&E RULE 16**  
**ADDED** in its entirety, see attached AD3-X21a.
- Item No. 3-22      **PG&E RULE 20**  
**ADDED** in its entirety, see attached AD3-22a.
- Item No. 3-23      **PG&E GAS DESIGN**  
**ADDED** in its entirety, see attached AD3-23a.

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- Item No. 3-24      **SHEET LS.2.0, OVERALL PLANTING PLAN**  
**REPLACE** sheet in its entirety, see attached AD3-24a.
- Item No. 3-25      **SHEET M.0, MECHANICAL LEGEND, INDEX, NOTES & SECTION**  
**REPLACE** sheet in its entirety, see attached AD 3-25a.
- Item No. 3-26      **SHEET M.1, MECHANICAL FLOOR PLAN, MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-26a.
- Item No. 3-27      **SHEET M.2, MECHANICAL ROOF PLAN, MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-27a.
- Item No. 3-28      **SHEET M.3, MECHANICAL FLOOR PLAN, 1<sup>ST</sup> FLOOR (EAST)**  
**REPLACE** sheet in its entirety, see attached AD 3-28a.
- Item No. 3-29      **SHEET M.4, MECHANICAL FLOOR PLAN, 1<sup>ST</sup> FLOOR (WEST)**  
**REPLACE** sheet in its entirety, see attached AD 3-29a.
- Item No. 3-30      **SHEET M.5, MECHANICAL FLOOR PLAN, 2<sup>ND</sup> FLOOR (EAST)**  
**REPLACE** sheet in its entirety, see attached AD 3-30a.
- Item No. 3-31      **SHEET M.6, MECHANICAL FLOOR PLAN, 2<sup>ND</sup> FLOOR (WEST)**  
**REPLACE** sheet in its entirety, see attached AD 3-31a.
- Item No. 3-32      **SHEET M.7, MECHANICAL ROOF PLAN, 1<sup>ST</sup> FLOOR (EAST)**  
**REPLACE** sheet in its entirety, see attached AD 3-32a.
- Item No. 3-33      **SHEET M.8, MECHANICAL ROOF PLAN, 1<sup>ST</sup> FLOOR (WEST)**  
**REPLACE** sheet in its entirety, see attached AD 3-33a.
- Item No. 3-34      **SHEET M.9, MECHANICAL SCHEDULES**  
**REPLACE** sheet in its entirety, see attached AD 3-34a.
- Item No. 3-35      **SHEET M.10, MECHANICAL DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-35a.
- Item No. 3-36      **SHEET M.11, MECHANICAL DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-36a.
- Item No. 3-37      **SHEET M.12, MECHANICAL DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-37a.
- Item No. 3-38      **SHEET M.13, MECHANICAL DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-38a.
- Item No. 3-39      **SHEET M.14, MECHANICAL DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-39a.

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- Item No. 3-40      **SHEET M.15, MECHANICAL DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-40a.
- Item No. 3-41      **SHEET M.16, MECHANICAL DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-41a.
- Item No. 3-42      **SHEET P0A, PLUMBING, LEGEND, INDEX, AND NOTES**  
**REPLACE** sheet in its entirety, see attached AD 3-42a.
- Item No. 3-43      **SHEET P0B, PLUMBING SITE PLAN**  
**REPLACE** sheet in its entirety, see attached AD 3-43a.
- Item No. 3-44      **SHEET P1, WATER BOOSTER PUMP PLAN**  
**REPLACE** sheet in its entirety, see attached AD 3-44a.
- Item No. 3-45      **SHEET P2, PLUMBING FLOOR PLAN, MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-45a.
- Item No. 3-46      **SHEET P3, PLUMBING FLOOR PLAN, 1<sup>ST</sup> FLOOR**  
**REPLACE** sheet in its entirety, see attached AD 3-46a.
- Item No. 3-47      **SHEET P4, PLUMBING FLOOR PLAN, 1<sup>ST</sup> FLOOR, MAIN (WEST)**  
**REPLACE** sheet in its entirety, see attached AD 3-47a.
- Item No. 3-48      **SHEET P5, PLUMBING FLOOR PLAN, 2<sup>ND</sup> FLOOR**  
**REPLACE** sheet in its entirety, see attached AD 3-48a.
- Item No. 3-49      **SHEET P6, PLUMBING FLOOR PLAN, 2<sup>ND</sup> FLOOR, MAIN (WEST)**  
**REPLACE** sheet in its entirety, see attached AD 3-49a.
- Item No. 3-50      **SHEET P7, ENLARGED PLUMBING PLAN, MAIN**  
**REPLACE** sheet in its entirety, see attached AD 3-50a.
- Item No. 3-51      **SHEET P8, ENLARGED PLUMBING PLAN, MAIN**  
**REPLACE** sheet in its entirety, see attached AD 3-51a.
- Item No. 3-52      **SHEET P9, ENLARGED PLUMBING FLOOR PLAN, MAIN & MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-52a.
- Item No. 3-53      **SHEET P10, ENLARGED PLUMBING FLOOR PLAN, MAIN & MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-53a.
- Item No. 3-54      **SHEET P11, PLUMBING DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-54a.

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- Item No. 3-55      **SHEET P11A, PLUMBING DETAILS**  
**REPLACE** sheet in its entirety, see attached AD 3-55a.
- Item No. 3-56      **SHEET P12, PLUMBING SCHEDULES**  
**REPLACE** sheet in its entirety, see attached AD 3-56a.
- Item No. 3-57      **SHEET E0.1, ELECTRICAL SYMBOLS AND NOTES**  
**REPLACE** sheet in its entirety, see attached AD 3-57a.
- Item No. 3-58      **SHEET E0.2, ELECTRICAL DETAILS AND SCHEDULES**  
**REPLACE** sheet in its entirety, see attached AD 3-58a.
- Item No. 3-59      **SHEET E2.1 LIGHTING SITE PLAN**  
**REPLACE** sheet in its entirety, see attached AD 3-59a.
- Item No. 3-60      **SHEET E3.2, LIGHTING PLAN, 1ST FLOOR, MAIN (CENTER)**  
**REPLACE** sheet in its entirety, see attached AD 3-60a.
- Item No. 3-61      **SHEET E3.3, LIGHTING PLAN, 1ST FLOOR, MAIN (WEST)**  
**REPLACE** sheet in its entirety, see attached AD 3-61a.
- Item No. 3-62      **SHEET E3.7, LIGHTING PLAN, MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-62a.
- Item No. 3-63      **SHEET E4.2, POWER & LOW VOLTAGE PLAN, 1ST FLOOR, MAIN (CENTER)**  
**REPLACE** sheet in its entirety, see attached AD 3-63a.
- Item No. 3-64      **SHEET E4.3, POWER & LOW VOLTAGE PLAN, 1ST FLOOR, MAIN (EAST)**  
**REPLACE** sheet in its entirety, see attached AD 3-64a.
- Item No. 3-65      **SHEET E4.6, POWER & LOW VOLTAGE PLAN, 2ND FLOOR, MAIN (WEST)**  
**REPLACE** sheet in its entirety, see attached AD 3-65a.
- Item No. 3-66      **SHEET E4.7, POWER & LOW VOLTAGE PLAN, MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-66a.
- Item No. 3-67      **SHEET E4.11, ELECTRICAL ROOF PLAN, MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-67a.

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- Item No. 3-68      **SHEET E5.2, FIRE ALARM PLAN, 1ST FLOOR, MAIN (CENTER)**  
**REPLACE** sheet in its entirety, see attached AD 3-68a.
- Item No. 3-69      **SHEET E5.3, FIRE ALARM PLAN, 1ST FLOOR, MAIN (EAST)**  
**REPLACE** sheet in its entirety, see attached AD 3-69a.
- Item No. 3-70      **SHEET E5.7, FIRE ALARM PLAN, MPR**  
**REPLACE** sheet in its entirety, see attached AD 3-70a.
- Item No. 3-71      **PROJECT MILESTONES**  
**ADDED** sheet in its entirety, see attached AD 3-71a.

**END OF ADDENDUM**



**SUMMARY of WORK**

Construction of a new elementary school campus for the Central Unified School District. Project includes off-site improvements to North Brawley and West Shields Avenues, Play fields, and 73,541 sf of new building construction that includes a main education/classroom building, a multi-purpose building, and a pre-fabricated pre-school building.

**The following chart summarizes the twelve bid scopes for the prospective prime contracts.**

	Bid Package Description	Contractor License Requirement (, = or)
SB 1	SITE & OFF SITE WORK/UNDERGROUND UTILITIES	A or B
SB 2	GENERAL TRADES/BUILDING STRUCTURE	B
SB 3	ROOFING	C-39
SB 4	ELEVATOR <b>Moved into SB 2</b>	<del>C-11</del>
SB 5	FIRE PROTECTION	C-16
SB 6	PLUMBING	C-36
SB 7	MECHANICAL	C-20
SB 8	ELECTRICAL/LOW VOLTAGE	C-7/C-10
SB 9	LANDSCAPE & IRRIGATION	C-27
SB 10	SURVEYING/STAKING	PROFESSIONAL LAND SURVEYOR
SB 11	SWPPP	C-61/D64
SB 12	METAL/IRON FENCING, GATE & HANDRAILS	C-13

Following, are extended descriptions of the above bid scopes for 12ea of the prospective prime contracts for constructing this project.

THE *FINAL SECTIONS* OF EACH BID PACKAGES ARE IDENTICAL AND DESCRIBES RESPONSIBILITIES AND ITEMS OF WORK THAT ARE INCLUDED IN ALL BID PACKAGES

**End of Summary Section**

SUMMARY

**SB-1 SITE & OFF-SITE WORK & UNDERGROUND UTILITIES**

The work of this Bid Package includes the fabrication, delivery, unloading, hoisting, distribution, setting, and installation complete of the work described by the documents including, but not limited to, the following:

Perform a complete job of all work associated with the project Plans and Specifications, all for a lump sum bid price, including all taxes, as indicated and in accordance with the Bid Documents, Project Manual, Technical Specifications and as described below, to complete the intended scope of work.

Bidders will be required to have the appropriate current license issued by the State of California Contractor's License Board for the work in which the Subcontractor would perform. Bidder's will also be required to have a valid DIR number, provided by the Department of Industrial Relations.

**A. Specifications:**

Division 1

- 023000 Subsurface Investigation
- 003132 Geotechnical Investigation Report
- 311100 Site Clearing
- 312300 Earthwork

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. All onsite **and offsite** site clearing and earthwork including but not limited to any and all necessary dewatering, over-excavation, importing (if required), exporting, compaction and sub grade preparation for a complete job and as outlined in the plans and specifications.
2. Provide protection for all items (fencing, trench plates, etc.) as noted on the drawings to be, "protected in place".
3. Drawing C1.1 – Note 3 – *power poles* to be removed and disposed of by this bid package.
4. Remove and properly dispose of all trees/shrubs/vegetation/roots, signage, fencing, debris, unsuitable material, asphalt paving, concrete, landscaping and irrigation indicated on the contract drawings.
5. Provide excavation, over-excavation, backfill, compaction, rough and final grading for building pads, Preschool, future rels, service yard, hardcourts, play fields, including pitchers mound(s), ramps, amphitheater, stairs, sidewalks, curb and gutter, inlets, swales, flatwork and paving areas, planters and landscape areas, swales and other site and frontage road improvements. All *off site grading* as outlined in the contract documents. (C4.1). Reference the drawings for "Zone of Excavation" and recompaction at building locations.

Bid Package 1  
Sitework

Initial \_\_\_\_\_  
Acceptance of Entire Bid Package,  
No Additions, No Omissions

6. Over-excavate as shown or required on contract documents. Replace with engineered fill per specifications.
7. Processing, handling and/or removal from site of any rock and/or wet soil as required.
8. Import materials as necessary to balance the site and comply with project plans and specifications requirements. If import material is needed, obtain approval for all import material prior to import operations.
9. Provide temporary driveways to lay down area. Provide grading at lay down area, parking and temporary office locations. Furnish and place base rock at Fire Lane as indicated on site plan C2.1, Parking Lot B, and temporary office location as indicated on Site Logistics Plan.
10. At the completion of construction activities or when instructed by the CM, remove and dispose of all base rock, fabric, asphalt, etc. at location where temporary construction offices and material were staged during construction activities.
11. Provide maintenance of grades and compaction requirements until pad certification. Trade Contractor to provide pad certification once final grading operations are complete.
12. Finish site grading at +/- 1/10th of a foot for appropriate grade.
13. Provide proper shoring/trench safety required for own work.
14. Provide trench plates if required to maintain access for all scopes of work for other trade contractor's work.
15. Trade Contractor must hire an *Underground Utility Locating service to locate existing underground utility pathways in areas affected by the scope of work* for excavations, trenching, grading, potholing and any earthwork. An as built drawing is required with multiple-colored lines indicating separate utilities located. Underground locating and submitted as built drawing must occur before any demo, grading or trenching activities can start.
16. Coordinate with landscape contractor for any irrigation installation and planting after preparation of rough grade to receive topsoil and final grades by landscape contractor.
17. The offsite work includes, but is not limited to, demolition, grading, excavation, underground wet utilities, gutters, curbs, grates, paving, and striping, in accordance with the City of Fresno Plans and Specifications for the offsite work. Offsite electrical, street lights, and traffic signal lights by SB-8 Electrical. Offsite landscape and irrigation by SB-9 Landscape & Irrigation.

**B. Specifications:**

- Division 1
- 312316 Trenching Backfill and Compaction
- 330132 Sewer and Manhole Testing
- 330513 Manholes and Structures
- 330516 Utility Structures

Bid Package 1  
Sitework

Initial \_\_\_\_\_  
Acceptance of Entire Bid Package,  
No Additions, No Omissions

- 330517 Precast Concrete Vaults
- 331213 Water Service Connections
- 331300 Disinfecting Water Distribution System
- 333113 Sanitary Sewer Pipe
- 334113 Storm Drain Piping
- 210000 General Fire Protection Provisions
- 210001 Fire Protection System (as applies)
- 003132 Geotechnical Investigation Report

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all domestic water, sanitary sewer, storm drain, water meter and valves and fire water protection system work complete per Contract Documents. This bid package is responsible for installing tie-ins at the main or capped points of connection. Bring all services to within 5' of all buildings, PReschool building and all future relocatable buildings as referenced on the drawings. Provide all required services/systems to future relocatable buildings/future build out of the campus. Systems to be brought to within 5' of the future buildings or as shown on the contract documents. Fire Service work to include but not limited to, traffic rated boxes/vaults, meters, valves, detector check, hardware, miscellaneous accessories.
2. Install all underground site gas piping, including excavation and backfill. Provide and install underground gas lines, meter, etc. for complete system. Coordinate location of new gas meter with PG & E.
3. Backfill at all planters to within 2" from top of planter curb. The Irrigation/Landscape contractor will provide and place topsoil at all planters.
4. If this scope of work is being performed during the rainy season, this contractor is to provide proper protection of all excavations/trenches, so they don't fill with water and/or collapse. Dewatering if required by this bid package.
5. This bid package is responsible for furnishing and installation of backflow preventers including irrigation backflow preventer, booster pump systems both domestic and irrigation.
6. Coordinate installation of any underground utilities with Construction Manager that crosses public paths of travel. Any work affecting public paths of travel must be done on Saturday to avoid path of travel disruptions.
7. Furnish and installation of fire service water lines, fire hydrants, backflow preventers, detector check valves and vault, post indicator valves, FDC, and pressure regulating/reducing valves per the contract documents, Civil Drawings, Fire Department Plan, Fire Protection Drawings.

Bid Package 1

Sitework

Initial \_\_\_\_\_

Acceptance of Entire Bid Package,  
No Additions, No Omissions

8. Bring fire risers into rooms and service yard outlined on the drawings. Coordinate location of stub-up with the Fire Protection contractor
9. Supply and provide all drain lines, under sidewalk drains, gravel beds, concrete structures, catch basins, trench drains, drains at apparatus yard and filter fabric as required including connection to existing storm drain, drain inlets, drain box, sloping and grates for a complete system and as outlined on the Contract Documents. Coordinate with the Roofing and Plumbing Contractor to provide final connection of downspouts to drains. Drains for down spouts are to be placed within 3' of the finish grade and marked with a 2'-6" post in front of point of connection.
10. Furnish and install all utility structures and vaults as required. All excavation and backfill needed for the utilities scope of work is by this bid package. Grout, concrete topping, bituminous interior coating at utility structures, covers, frames are to be included in this package. Follow City of Fresno Standard details.
11. Furnish and install cleanouts and water valves complete per plans and specifications.
12. All flushing, testing (and retesting if needed), inspection, disinfection, balancing and maintenance of own work and connecting work until accepted by the Construction Manager/IOR. This includes vacuum and mandrel testing as outlined in the contract documents.
13. Include all patch back and repairs of all existing surfaces required to be removed for installation of underground work, this includes temporary patch backs/trench plates if needed.
14. Prior to any *work within the existing public right-of-way*, encroachment or easements, the Trade Contractor shall pay for and obtain all permits and bonds required by the City of Fresno. Contractor will be reimbursed by the District for the permit cost, no markup will be added just a direct reimbursement.

15. The offsite work includes, but is not limited to, demolition, grading, excavation, underground wet utilities, gutters, curbs, grates, paving, and striping, in accordance with the City of Fresno Plans and Specifications for the offsite work. Offsite electrical, street lights, and traffic signal lights by SB-8 Electrical. Offsite landscape and irrigation by SB-9 Landscape & Irrigation.
16. Provide gas service in accordance with PG&E Rule 20 drawings. This bid package is responsible for the applicant Construction Responsibilities listed on drawing titled, "Applicant/PG&E Instructions NOTIF.:114715210" dated, 6/10/2019.

**C. Specifications:**

Division 1

321123 Aggregate Base Courses

Bid Package 1  
Sitework

Initial \_\_\_\_\_  
Acceptance of Entire Bid Package,  
No Additions, No Omissions

321216 Asphalt Paving, Striping and Markings

003132 Geotechnical Investigation Report

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all asphalt concrete paving work noted on the Contract Documents. Asphalt paving to be provided over AB on compacted subgrade. Not necessarily will all asphalt be placed at the one time, Contractor to include pricing based on project phasing and sequencing of work.
2. During the course of construction, paving will be performed in two (2) separate mobilizations. Parking Lot A and adjacent driveway will be paved during the first paving mobilization. All remaining paving will be done during the second paving mobilization, including repairs and addition of slurry coat to Parking Lot A and its' driveway.
3. Provide paving patch back for area required by the Contract Documents, frontage improvement areas and any other patch back areas that need to be addressed.
4. Asphalt paving to be provided per the contract documents. Thoroughly clean asphalt surface prior to painting.
5. All exposed asphalt edges shall have header boards.
6. Provide water and flood testing in the presence of the project inspector and Construction Manager. Perform necessary corrections to achieve proper drainage.
7. All concrete markings, playfield/hardcourt markings, striped clear accessible path and stenciling as required in Contract Documents. Coordinate with the Construction Manager for final colors and details.
8. Furnish and install all parking/traffic/ADA related pavement markings as indicated on drawings. Pavement markings is to include but not limited to, fire lane, bus turn-around, no parking, loading/unloading zones, curbs, arrows, etc. Disabled and Van Accessible parking, Parking Lot Entrance Signage are to be included in this bid package. Include footings, concrete and all other accessories for a complete install. Comply with City of Fresno standard details for sign posts.
9. The offsite work includes, but is not limited to, demolition, grading, excavation, underground wet utilities, gutters, curbs, grates, paving, and striping, in accordance with the City of Fresno Plans and Specifications for the offsite work. Offsite electrical, street lights, and traffic signal lights by SB-8 Electrical. Offsite landscape and irrigation by SB-9 Landscape & Irrigation.

Bid Package 1  
Sitework

Initial \_\_\_\_\_  
Acceptance of Entire Bid Package,  
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**D. Specifications:**

Division 1

321613 Sidewalks, Curbs, Gutters, and Driveways

107500 Flag Pole

115000 Miscellaneous Specialties

079000 Joint Protection (as it applies)

003132 Geotechnical Investigation Report

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install playground equipment as indicated in the Contract Documents including but not limited to footing excavation, footing concrete, sleeves/sockets, and all accessories for basketball backstops/poles/rims/nets, funnel ball, volleyball, tetherball equipment, soccer, softball and baseball equipment, trash receptacles and bicycle racks. This includes the equipment, home/base plates, aluminum benches, backstop posts/rails, goalies, etc... at the baseball, softball and soccer fields. Work includes, sleeves, anchors, caps, posts, etc. for a complete installation. Work in this bid package should include all concrete painting, which is to include exterior sport/game lines, compass, etc.
2. Furnish and install all site concrete as required by the Contract Documents. This includes by is not limited to all fine grading, base rock, forming, reinforcements, embeds, curbs, aprons, valley gutters, site stem-walls, retaining walls, hardcourt, flatwork, stairs, ramps, trash can wash area, mow strips, concrete paving, contrast stripe/score lines including color at steps, any necessary accessories, truncated domes, color, coatings, temperature control measures, patching, curing, control / expansion joint material, sealants/caulking. All building concrete foundations and slab on grade is covered by the General Trades bid package but must be coordinated where any site concrete meets the building concrete.
3. Construct Fiber Play Areas complete per plans.
4. Footings for bicycle racks and flag pole are part of this bid package. Work to include steel plate, corrugated tube and sand at flagpole footing. Provide concrete finish at flag pole as indicated on the drawings.
5. Furnish and install joint sealants at flatwork and perimeter of buildings
6. Truncated domes are to be furnished and installed by this contractor.
7. Furnish and install all floor grates and trench drains. Include in pricing mock-ups as required by the specifications.
8. Furnish and install, including excavation, of all concrete footings, curbs, walls, reinforcing, drains, drain rock, etc. at hardcourt playground areas.

Bid Package 1  
Sitework

Initial \_\_\_\_\_  
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9. Furnish and install all bollards (removable and permanent) as shown including any required footings, gravel base, concrete, rebar, pipe cap, U-bolts/chain and padlocks. Painting of bollard by painting contractor.
10. Provide and install protection for all exposed rebar, including caps for masonry dowels and formwork stakes.
11. Shop priming and painting, galvanization of own work as required by plans or specifications.
12. Exclude TV brackets listed in specification section 11 50 00, paragraph 2.01.C.

**E. THE FOLLOWING ITEMS OF WORK ARE INCLUDED IN ALL BID PACKAGES**

1. The regular hours of work are 7:00 AM to 5:00 PM, Monday through Friday unless specifically controlled by local municipalities. Any other working hours must have prior written approval from the Construction Manager.
2. Specification sections as noted in the above descriptions of each specific Bid Package.
3. This Bid Package may contain Scope of Work items and/or related items of work that are not customarily performed by Trade Contractor. If such work is required to be performed by Trade Contractor pursuant to the Bid Package Documents, Trade Contractor will provide this work either by its own forces or by contracting such work in accordance with local trade practice.
4. Construction Manager will provide temporary construction power, sanitation facilities, construction trash removal, and segregation site fencing, as required. Trade contractors are to provide and pay for their own, drinking water, phones, and security, etc.
5. Trade Contractors are responsible for storage and security of own materials and/or equipment located on and off the jobsite property. Work shed, yard, lighting and security fence if required for storage shall be the responsibility of the Trade Contractor. Location of storage/staging area to be determined / approved by Construction Manager.
6. All Trade Contractors shall furnish to the Construction Manager on a weekly basis, completed daily reports of the total number of its workers, by classification, employed on the project (including any sub-tier subcontractors' workers), and a description of work performed, (refer to General Conditions and Supplemental General Conditions for required information). Daily reports shall be on a form acceptable to the Construction Manager. Current daily reports are a condition of release of monthly payment to each trade contractor.
7. There will be multiple prime contractors for the project and there will be work by others occurring simultaneously with the work of this trade contractor. It is the responsibility of this trade contractor to be aware of the other operations and coordinate their work accordingly.
8. If a particular item of work appears to be included in more than one bid package, the bidder shall ensure they have covered this item(s) of work and shall not assume it is covered by another bid package. Bidders are responsible for all items of work listed in their specific scope of work.
9. Provide and maintain dewatering operation as required to eliminate the ponding of water immediately after rainfall has occurred in order to allow these areas to

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dry out as quickly as possible. Dewatering to be done by whatever means necessary, including mechanical pumps, siphons, etc. Any SWPPP measures defeated or removed in the dewatering process shall be replaced per the posted SWPPP plan by the removing Contractor. Dewatering for grading operation, trenches, footings, pits, slab areas, etc, shall be done immediately by affected Trade Contractor.

10. Storm Water Pollution control as required including conformance with erosion control plan and protection of own work as applies. **Bid package #11** Trade Contractor is responsible to initially furnish, install and implement the Storm Water Pollution Prevention Plan complete per plans and specifications. Work is to include all sandbags, hay bales, swales, etc. as required to complete a system in compliance with all Federal, State, and Local requirements. All trade contractors are responsible for repair and replacement of SWPPP control measures disturbed by or required by their own operations. All trade contractors shall follow all directions given by the Construction Manager. All requested work shall be at no extra cost to the owner or construction manager.
11. Offloading, scaffolding, ladders, rigging, hoisting and moving of materials and/or equipment for own work.
12. Provide traffic control (vehicular and pedestrian) as required when on or off-loading materials and/or equipment. Include flag person, cones, signs, and additional safeguards as necessary.
13. Submittal preparation and material procurement shall begin immediately upon award or letter of intent. Reference the master schedule to review when material is needed on site. Submittals shall be bookmarked and a searchable document.
14. Submittals, including product data, shop drawings, mock-ups, samples and as-built drawings as specified. See submittal requirements of appropriate specification sections, including requirements for closeout submission.
15. Identify all long lead items and develop a procurement schedule. Submit a copy to the Construction Manager at the Pre-Construction Meeting.
16. Submit all deferred approvals as specified on plans and specifications within 30 days of the Notice to Proceed.
17. Each bid package contractor is responsible for temporary power, portable lighting and extension cords necessary to complete work that is not within 100' of buildings.
18. The electrical trade contractor will provide for temporary electrical power and or temporary power supply infrastructure from Public Utilities. Electrical trade contractor will supply all necessary 100-amp spider boxes in each building location. Each bid package contractor is responsible to furnish any additional items required for their work, (i.e., extension cords, adaptors, task lighting, etc.).
19. Electrical trade contractor will provide general lighting in the structures. Each bid package contractor shall provide their own task lighting, including any extension cords as may be required.
20. Coordination and protection of own work with other trades is the responsibility of each Trade Contractor.
21. Trade Contractor is to provide all temporary protection (against dust, for safety, etc.) for exposures which are created or generated by or associated with, this Work. Protection of existing surfaces scheduled to remain to prevent damage

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- while performing the work of this bid package.
22. Dumpsters will be provided for the Trade Contractor's use. Trade Contractor to dispose of all debris onsite as directed by the Construction Manager. Trade Contractor to be responsible for all continuous cleanup and segregation of all debris generated by the work of this Bid Package into the proper dumpsters as required by Waste Management and directed by the Construction Manager. If this item is not performed consistently, the Construction Manager may elect to have the work done on behalf of the Trade Contractor and monies deducted to cover this expense. Debris typically not discarded in dumpsters, i.e., soils, spoils, stripping's, tree shrubs, concrete, demolished materials, etc, will be disposed of offsite by the Trade Contractor.
  23. Trade Contractor shall be responsible for preparing and submitting to the Construction Manager a detailed Contractor's Waste and Recycling Plan as it is related specifically to Trade Contractor's scope of work within ten (10) calendar days of award of contract. The Construction Manager will consolidate Trade Contractors' Plans into a Master Construction Waste & Recycling Plan to be issued and adhered to at all times during the course of construction. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite. This includes but not limited to, concrete, grout, taping mud, paint, etc..
  24. Daily cleanup of own debris, packing materials and boxes, and placement into owner supplied dumpster each day. Each Trade Contractor shall be responsible to remove off site at their own expense any and all concrete, concrete residue, or hazardous materials generated by their work operations. Jobsite to be kept in a "broom-swept" condition at all times.
  25. Each Prime Contractor shall include eight (8) hours (while on site) within their cost proposal to participate in the weekly composite cleanup efforts scheduled by the Construction Manager.
  26. Upon failure by trade contractor to provide sufficient cleanup, and after 48-hour Notice, Construction Manager will perform the cleanup and assess all costs against the trade contractor requiring the cleanup.
  27. Each Trade Contractor is responsible for control of their own environmental conditions (i.e. temperature control, moisture control, etc) affecting their own work.
  28. Provide layout and field measurements for own work from line and grade coordinates supplied by Construction Manager. Survey provided by Bid Package 10. Any additional survey work requested other than that provided by BP 10 will be the responsibility of the affected / requesting Trade Contractor.
  29. Should re-staking be required due to stakes damaged or removed by trade contractor, said re-staking shall be performed at the expense of that Trade Contractor. Each Trade Contractor is responsible for protection of stakes placed for own work.
  30. Safety requirements for own work, shall be in compliance with most recent CAL OSHA regulations and in accordance with Trade Contractors Safety Program, of which a copy shall be provided to the Construction Manager for its reference only. Hardhats, boots, eye protection, long pants and shirts with sleeves, and 100% tie off are required for all personnel at all times during construction of the Project. Failure to comply with any Safety Regulations will be grounds for

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removal of personnel from the jobsite. See also Supplemental General Conditions.

31. Include in the Bid Price, all personnel costs for safety related meetings, etc., for all Trade Contractor's and subcontractor's labor forces working on this jobsite, regardless of tier. Safety meetings may be scheduled by the Construction Manager and may last approximately one-half hour per week.
32. Comply with all applicable Construction Safety Standards, Cal OSHA, Federal, State, and Local safety rules and regulations. Protect life and property, which is not to be injured, damaged, disturbed or blemished. Trade Contractor will conduct his operations at all times and confine equipment and personnel to areas within the limits of the work. Provide copy of any required OSHA permits to the Construction Manager.
33. Flammable products must be continually stored per OSHA regulations.
34. Compliance with regulatory agency, trade organization, and governing body requirements having jurisdiction over own work.
35. Each Trade Contractor shall submit a Job Hazard Analysis report to Construction Manager prior to commencement of work.
36. Trade Contractor to comply with all ordinances regarding parking, hours of work and routing of delivery trucks to the project site, and as required by the Construction Manager.
37. Parking for own employees, equipment, suppliers and sub-tier contractors shall be in areas designated by Construction Manager. Provide off site parking for same if adequate space is not available on or convenient to jobsite.
38. Compliance with specified warranty and guarantee requirements, both standard and special.
39. Provide at a minimum one qualified superintendent or one lead foreman for the duration of own work on project, including punch list corrections at completion of project. Foreman must be on-site when work is being performed. Superintendent/Foreman is subject to approval by the Construction Manager and shall not be changed without Construction Manager's approval.
40. Attendance at jobsite weekly progress meeting, coordination, scheduling and safety meetings is MANDATORY.
41. Sealants and caulking for own work as per Division 7.
42. Provide relocation of staging area as necessary due to construction progress and as directed by Construction Manager.
43. Procurement of business license as needed.
44. Conformance with project manual, specifications, Construction Documents, and project time.
45. Trade Contractor has primary responsibility for locating existing utilities prior to commencing underground work. Trade Contractor must make own notification to required agencies and hold a pre-dig conference prior to starting underground work. Trade Contractor shall not rely on any representation made by anyone other than those individuals duly authorized to survey, locate and stake existing utilities.
46. Inspect all surfaces to receive own work. Promptly notify Construction Manager in writing, of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.

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47. Responsibility to provide Construction Manager with all backing requirements for own work prior to wall framing operations. Each Trade Contractor will layout backing required and verify installation prior to covering. Failure to provide backing requirements transfers backing responsibility to each trade contractor for their own work.
48. Dust control as applies to own work and the performance thereof. Any fines for violations for non-compliance will be the Trade Contractor's responsibility.
49. Protection of own work including barricades, traffic control, and/or flagmen for traffic control.
50. Public travel shall not be needlessly inconvenienced, nor shall it be wholly obstructed at any point without the Construction Manager's approval. Trade Contractor shall furnish necessary lanterns, barricades and other devices to protect the public fully, including the requirements of the Specification and local codes. All work in the public right-of-way shall be done in full conformance with the (requirements of local and State authorities.
51. All welding required for own work. Submit current and valid welder's certifications prior to beginning any welding installation on site for IOR, Owner or Construction Managers review and retention. Provide any needed ventilation equipment.
52. Fire-stopping at own penetrations as required.
53. Additional testing costs as required should initial tests fail.
54. Contractors to provide minimum 48 hours written notice to Construction Manager for testing/inspection, and staking and survey requests/requirements.
55. Re-inspection costs due to failure of Trade Contractor to notify the Construction Manager 48 hours prior to canceling an inspection will be charged to the responsible Trade Contractor.
56. All project record documents as required per plans and specifications. Weekly updates of as-built documents on Construction Manager's plan set, and transfer to digital format at end of project as required by specifications. Update as-built drawing before own work is covered up.
57. Trade Contractors shall at no extra cost to the Owner or Construction Manager provide the required crew sizes and or work as required to meet the project schedule. Trade Contractor agrees to accept the Construction Managers direction for said work.
58. Multiple move-ons to comply with Construction Manager's Master Schedule.
59. Each trade contractor is responsible for coordination onto the site for own work (i.e. cranes, concrete trucks, etc.)
60. Smoking, tobacco, and vaping is prohibited anywhere on the project site.
61. When required - All Trade Contractors shall comply with fingerprinting requirements at own expense (including Contractor Fingerprinting Certification) in accordance with Education Code 45125. Additionally, Trade Contractor will participate in a project badge identification system if instituted by the Construction Manager and the District.
62. Labor rates to be used in pricing any extra work that may be required are to be submitted within 10 days from the Notice to Proceed. Rates are to be complete billing rates and are to include wages, taxes, fringe benefits, insurance, small tools and incidentals. Base price on current rates in effect at time of bid. As labor agreement wages and fringes change, these increases

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- will be added to the labor rates at actual cost. List all rates by submitting the Wage Rate Breakdown Form for each classification of worker anticipated.
63. All utility or public agency fees will be paid by the District, unless otherwise noted. Any and all other permit and/or service fees, assessment or bonding required in conjunction with the work of this Bid Package shall be the responsibility of Trade Contractor. All notifications with various agencies required in the performance of the work shall remain the responsibility of Trade Contractor.
  64. Trade Contractor shall furnish all general conditions and support services it requires for the satisfactory performance of the work of this Bid Package. If a project trailer or central work location is established, items such as trailer facilities, water, power, phones, toilets, disposal services, security, etc., are the Trade Contractor's responsibility. Refer to General Conditions and the Specification for further definition.

**END OF SECTION**

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**SB-2 GENERAL TRADES/BUILDING STRUCTURE** (See revisions that will include the addition of Elevator and Lift to this package)

The work of this Bid Package includes the fabrication, delivery, unloading, hoisting, distribution, setting, and installation complete of the work described by the documents including, but not limited to, the following:

Perform a complete job of all work associated with the project Plans and Specifications, all for a lump sum bid price, including all taxes, as indicated and in accordance with the Bid Documents, Project Manual, Technical Specifications and as described below, to complete the intended scope of work.

Bidders will be required to have the appropriate current license issued by the State of California Contractor's License Board for the work in which the Subcontractor would perform. Bidder's will also be required to have a valid DIR number, provided by the Department of Industrial Relations.

**A. Specification Sections:**

Division 1

- 031100 Concrete Forming
- 032000 Concrete Reinforcement
- 033000 Cast-In-Place Concrete
- 033300 Architectural Concrete
- 055000 Metal Fabrications (entire section applies except for site fencing and gates)
- 072600 Concrete Moisture Vapor Emission Control
- 061000 Rough Carpentry (as applies)
- 079000 Joint Protection (as applies)
- 142400 Hydraulic Elevators (as applies)
- 144200 Wheelchair Lifts (as applies)
- 312316 Trenching,
- 321123 Backfilling and Compaction and Aggregate Base Course (as applies)
- 003132 Geotechnical Investigation Report

Refer to additional related specification sections for work specifically included in this contract.

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**INCLUSIONS:**

1. This Trade Contractor is to include all project building concrete including but not limited to building footings, spread footings, structural foundations, slab on grade, depressed slabs, thickened slabs, slab adjustments at planter areas, stepped footings, fill at pad footing bump outs and MEP housekeeping pads (interior and exterior), mow strips, and curbs in and around buildings that are not provided by Sitework contractor.
2. Concrete and reinforcing steel at steel columns is part of this bid package. Prior to placing this concrete, coordinate roof and overflow drains with the Plumbing Contractor.
3. Off haul of spoils generated by this bid package.
4. This package also includes concrete at the baseball and softball fields, mow strips, concrete at dugouts, etc. Coordinate with play equipment contractor for concrete at team benches.
5. Foundations for the Preschool are to be included in this bid package. This includes forming, concrete footings, reinforcing steel, metal grating for vent/crawl space including the grates, plywood/structo-crete, gravel base. The slurry and mow strip listed as "Optional" on the drawings is to be included. In lieu of slurry provide concrete. Coordinate piping through footings with all other applicable Contractors.
6. Coordinate, install and provide all dowels, reinforcement, control and expansion joints where building concrete meets site concrete. Do not place expansion joint material at exterior door ways.
7. Work includes, but is not limited to, all structural excavation, spoil removal, waterproofing and structural backfill, rough and fine grading, aggregate sub-base, rock dust, vapor barrier, forming, reinforcing steel, block outs, concrete. concrete over at baseplates, placing, finishing, curing, pumping, distribution, and special architectural finishes for all building concrete. This bid package includes saw cutting of construction joints.

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8. At Toilet Rooms, furnish depressed slabs and install copper flashing as noted in detail 117/A8.6.
9. At concrete steps, provide inlaid or score line at each step per contract documents.
10. As required by the drawings, provide chamfer edges at Stage and Ramps.
11. Where required, application of concrete moisture vapor emission control is to be part of this bid package. This includes concrete subfloors on or below grade footings, stem walls, slabs.
12. This bid package shall turn over to the Wood Athletic Flooring contractor a level condition. Any and all leveling for low and high spots shall be the responsibility of this bid package.
13. All excavation, dewatering and backfill of own work.
14. All excavations at **elevator**, concrete slab and walls at elevator pit. Prior to pouring walls, roughen and/or sandblast slab surface. Coordinate work with other applicable contractors. Coordinate all work around the elevator shaft with the Elevator Contractor. Thoroughly read and understand the scope of work required by this bid package for work at the elevators and wheelchair lifts. The work includes but is not necessarily limited to the work not provided by the Elevator contractor namely specification 14 24 00 C items 1 through 13, 16 through 27 and items 32 & 33.
15. Provide excavation, base rock, vapor barrier, rigid insulation and protective slip sheet over insulation and depressed freezer slab. Provide grout fill at panel to floor connection. Reference Kitchen drawings for complete outline of scope. Protect open footings, building pads and other compacted areas from rain events. Trade Contractor to repair damage caused by failure to protect these areas, at Trade Contractor's expense.
16. Provide and install all Class II Base Rock or aggregate for own work, including subgrade preparation, placement and compaction if required.

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17. Coordinate all elevations and layout of all concrete with all applicable Trade Contractors. For sloped slabs at drains, coordinate work with applicable subcontractor.
18. Concrete trucks to be washed out at an area as designated by Construction Manager. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite.
19. Layout, furnish and install all anchor bolts/templates, post installed anchors and hold downs bolts for framing as required. Including added anchor bolts at MEP risers.
20. Notify Construction Manager a minimum of 72 Hours (not including weekends and holidays) in advance of concrete pour of any embedded items that have not been provided by the other Trade Contractors.
21. All non-shrink grout and dry packing as required for your work and under base plates for all steel base plates and grout at steel angle sill and around entrances of elevator.
22. Furnish and install all wood nailers as applies to your work.
23. Furnish and install all reinforcing steel, mesh, dowels, curb dowels, cages, weldable bar, keyways, etc. as required, including layout, installation, welding if required, blocking, etc. If rebar is to be welded to steel members, provide rebar FOB for steel contractor to weld to beams/columns.
24. Provide and install protection for all exposed rebar, including caps for masonry dowels, formwork stakes and anchor bolts.
25. Certified mill test reports as required.
26. Install embedded materials provided by others that are integral with concrete systems. This includes bolts at housekeeping pads.

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27. Furnish, install and maintain construction “batter boards”, allowing other Trade Contractors to complete their own layout off one set of reference points.
28. Install all steel that is integral with concrete footings, including tube steel columns, c-channels, angles, etc.
29. Coordinate encasement and sleeving of utility pipes under slab and through footings with other Trade Contractors as required. Other Trade Contractors to provide sleeves for installation by General Trades Contractor. Coordinate placement of concrete around other Trade Contractor’s work that may be protruding through slab-on-grade and footings.
30. Sack and patch as necessary.
31. This bid package to familiarize themselves with varied slab conditions and thicknesses.

**B. Specification Section:**

Division 1

042200 Concrete Masonry Units at locations including but not limited to the West property line wall, Service Yard and at the Multi-Purpose

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all CMU as indicated in the Contract Documents, including but not limited to, footing excavation, footing concrete, reinforcement, ties and anchors, CMU block, grouting, mortar/concrete caps, associated miscellaneous metals, weep holes, joint sealants, control and control joints and sealant including elastomeric control joints. CMU color and pattern as shown on the drawings. As noted on the drawings, the block wall shall comply with City of Fresno Standard Details.

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2. All CMU under cement plaster.
3. Roughen surface/sandblast at concrete under CMU is to be included in the bid package.
4. Coordination with other contractors for any "thru wall" systems. Comply with specifications for built in items.
5. Protect in place the existing private wooden fence (located along the West property line) during the work to construct the foundation and 6ft block wall. Refer to C2.1 and Addendum item AD 2-45a.

**C. Specification Section:**

Division 1

051200 Structural Steel Framing

053100 Steel Decking

055000 Metal Fabrications (entire section applies except for site fencing and gates)

079000 Joint Protection (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all structural steel, metal decking (including nelson studs, supports, welding, openings in deck or roof), and steel ladders (exterior and interior) as outlined in the drawings and specifications. All HSS, HSSR, WF Beams/Columns, lintels, wind girts, canopies/awnings, mechanical screen, deck support plates, bent plate are included complete with base/top/side plates, stiffeners and fasteners in this bid package.
2. Work at canopies/awnings to include steel, steel angle, fiberglass grating, and sealant. Sheet metal cover by Metal Paneling contractor.
3. Concrete slab closures are to be included with the metal deck installation.

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4. Furnish and install all structural steel and miscellaneous metals per plans and specifications, including support brackets for projection screens as required.
5. This bid package is responsible for all shop and field primers on steel members. This bid package is also responsible for the capability of the primer with finish paint.
6. If applicable, welding rebar to structural members is included in the bid package. Rebar to be provided to this bid package by the Concrete contractor.
7. Steel at elevator is to be included in the bid package. Work includes but not limited to, safety hoist beam, ladder, rail bracket supports, steel supports, guide rail, posts and brackets. Also included in this bid package is steel angle at the entrance sill. Grout at sill and entrance by Concrete bid package. This bid package is responsible for preparation and submission of the Deferred submittal as required for the Elevator Guide Rails and Support Brackets. Deferred submittal shall include structural calculations, stamp and signature by the design professional.
8. Furnish and install countertop bracket support/tube steel for specified countertops, reference detail 69/A8.4. Coordinate with casework subcontractor for quantity, location and size. Coordinate with the framing contractor for sequencing of this work.
9. Furnish and install all steel supports, L angle at overhead/coiling doors.
10. Furnish and install all safety cabling at landings, stairs and other openings that present fall exposures, this also includes safety cable at the perimeter at the roof levels. Cleanly cut and removal of safety cabling when instructed to do so.
11. All cutting, shaping, welding by certified welders, fasteners, adhesives, steel-to-wood connections and any accessories required for a complete installation.

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12. Coordinate with Mechanical, Electrical and Plumbing Trade Contractors as to the dimensions, layout, plumbing and electrical requirements of roof framing at HVAC units to ensure proper opening size, curb layout, flashing and roofing.
13. Supply of miscellaneous metal items embedded in concrete including anchor bolt templates. All anchor bolts to be installed in templates and provided to the steel contractor for installation.
14. Cleaning as required of any materials scheduled to receive paint or other finishes.
15. Shop priming of own work as required by plans or specifications.
16. Galvanization of own work as required by plans or specifications.
17. This trade contractor is responsible for crane, hoists, lifts and all required equipment for a complete installation. This includes temporary power or generators as required for their own welding operations. Verification of items installed by others prior to concrete pour. A qualified representative from this Trade Contractor's company shall be onsite during all concrete pours to ensure that embedded items are properly placed and are not disturbed during the pour.

**D. Specification Section:**

Division 1

062000 Finish Carpentry

064000 Architectural Woodwork

064116 Laminated Plastic Casework

097200 Protective Wall Panels

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097260 Tackable Wall Covering

097720 Decorative Fiberglass Reinforced Wall Panels

079000 Joint Protection

061000 Rough Carpentry (as applies)

078413 Penetration Firestopping, (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all Plastic Laminate Casework complete, including interior trim and associated hardware complete per plans and specifications.
2. Furnish and install all glazing, shelves including glass and fixed shelving, swing gates at millwork, and lighting, grommets, hardware, metal support brackets, access panels, filler panels, mirrors, wardrobe bars, garment hooks, and accessories, etc. contained in casework items per plans and specifications.
3. Cutout for sinks, and faucets. Coordinate with the Plumbing contractor.
4. All anchors, fasteners, accessories, trim and items as required for a complete installation.
5. All finish carpentry work sills, caps (PL caps at Stairs), stair trim, shelving etc.), including pine edges/cleats, pine stool at window sills is included in this bid package. Site applied treatment, finishing, painting and wood fillers for work within the bid package.
6. Plywood blocking at underside of countertops as required for installation of accessories or hardware. Provide quantities and lengths of steel supports to miscellaneous metals contractor.
7. Furnish detailed casework layout and coordinate placement and installation of backing required for complete and accurate installation of casework.

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8. Ensure proper storage of materials prior to installation per manufacturer's recommendations to avoid damage or interference with progress of work.
9. Verify all field dimensions necessary for proper fitting and completion of work.
10. Anchorage for all cabinets/casework as outlined on the drawings.
11. Coordinate grommet locations with owner prior to installation. Provide the number of grommets as specified on the drawings.
12. Caulking of own work. Firestopping at all rated walls. Caulking to include undercounter caulking as required.
13. Cleaning and touch up of installed material finishes.
14. Coordination of own work with other Trade Contractors whose work adjoins, combines or aligns with same.
15. Verify location of all appliances and coordinate dimensions to ensure correct size openings are provided.
16. Coordinate installation casework adjacent to markerboards, if necessary.
17. Coordinate installation of electrical raceways, outlets, etc. in casework with the Electrical contractor.
18. Furnish and install all hardware, locks, keys, bolts, etc. as required.
19. Turn over all casework keys to the Contraction Manager separated by room and building along with a key metric's identifying room and building. Keys to be identified by a unique mark. Keys are not to be left in casework at any time.
20. Furnish and install seismic restraints, as required for your work.
21. Furnish and install all miscellaneous accessories and materials required for your work.

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22. Compliance with the "Manual of Millwork" of the Woodwork Institute of California. Certification on shop drawings is required. WIC conformance applies to the Architectural Woodwork and Laminated Plastic Casework.
23. Ensure all moving or operating parts are adjusted to operate smoothly and correctly.
24. Furnish and install all fiberglass reinforced plastic wall paneling (FRP), including trim.

**E. Specification Section:**

Division 1

081113 Hollow Metal Doors and Frames

081423.16 Plastic Laminate Faced Wood Doors

083113 Access Doors and Frames

087100 Door Hardware

088000 Glass and Glazing (as applies)

079000 Joint Protection (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all metal doors and frames, solid core, plastic laminate faced wood doors, and finish hardware work associated with this project in its entirety. Scope includes such items as, but not limited to all hollow metal doors, plastic laminate faced wood doors and hardware including locks, padlocks, panic hardware, doors stops, door seal, thresholds, vision frames, sidelights, and windows integral with doors and frames.
2. Furnish and install access doors, panels and frames as shown in the Contract Documents, and as required to access all equipment requiring maintenance, replacement or inspection including but not limited to  
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smoke/heat detectors, fire dampers, clean-outs, valves, etc. MEP contractors will provide access doors for their specific requirements.

3. Furnish and install magnetic hold opens at fire doors. Coordinate backing with metal Framing Contractor and location of mag hold opens with the Fire Alarm Contractor.
4. Furnish and install Dutch door including stainless steel shelf.
5. Furnish and install door at Library Reception Desk.
6. Provide all "rated" assemblies as noted in the Contract Documents.
7. All interior and exterior sealants at door frames, required for a complete installation.
8. All shop coatings specified. Coordinate with painting contractor on timing of frames and doors that require field paint.
9. All adjusting, protection, and cleaning of all doors, frames and hardware.
10. Furnish and install all finish hardware.
11. Provide and install all door louvers/glazing as required for wood/solid core doors.
12. All keys and keying as required by specifications and manufacturer. Scope to include all meetings with the Owner and delivery of quantities of keys and cylinders as specified, including all visual key identification and key control systems, key control cabinets with index system sized for additional capacity as specified. Provide key cabinet to accommodate, at a minimum, 100 keys. Including Aluminum Storefront door keyways and keys are provided in this scope of work.
13. Construction and control keying and keys. Provide temporary construction locks until such time as determined by Construction Manager at which time

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permanent locks will be installed. Construction locks and keys for all exterior doors and electrical room door at the minimum.

14. All adjusting and cleaning as specified and dictated by bid documents.
15. Furnish and install Knox box at each building. Coordinate with the Construction Manager for exact location. Coordinate with local jurisdiction for type of Knox box and core required. City of Fresno emergency services X1 cores can be purchased through Sierra Lock and Glass, Fresno, CA.
16. All work performed over 6', employees must be 100% tied off.

**F. Specification Section:**

Division 1

083320 Overhead Coiling Counter Doors

079000 Joint Sealants (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all overhead coiling counter doors, including but not limited to – all curtains, grilles, frames, jambs, guides endlocks, windlocks, coiling door/grille, hood, locking, safety systems for a complete and fully operational system.
2. Provide fire rating as required.
3. All counterbalancing devices, barrels, spring balancers, torsion rods and brackets.
4. Furnish and install aluminum break metal flashing as called out in the architectural details.

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- 5. All adjusting, lubrication and demonstration to train District's Maintenance Personnel to operate and maintain overhead coiling doors and side coiling grilles.
- 6. Coordinate and provide layout of backing and ensure proper anchorage for your work.
- 7. All sealants at frame perimeter as specified.
- 8. All work performed over 6', employees must be 100% tied off.

**G. Specification Section:**

- Division 1
- 085113 Aluminum Service Windows
- 088000 Glass and Glazing
- 076200 Sheet Metal Flashing and Trim (as applies)
- 079000 Joint Sealants (as applies)

088713 Solar Control Film

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

- 1. Furnish and install all aluminum serving windows, storefront windows, glass and glazing, spandral, tempered glass complete, including but not limited to frames, glass, hardware, spacers, shims, weather stripping, fasteners, adhesives and any items required for a complete installation.
- 2. Furnish and install all glass and glazing per plans and specifications, including but not limited to glass, screens, sealants/caulking of window and curtain wall systems, primers, self-adhered membrane flashing, setting blocks, edge blocks, finish hardware, spacers, shims, clips, pre-formed

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gaskets, compressible filler rods, sill flashing, drip flashing with end dams at windows, mastic, weather stripping, fasteners, adhesives, and any items required for a complete installation.

3. This bid package is responsible for preparation and submission of the Deferred submittal as required for the Windows and Storefront Systems. Deferred submittal shall include structural calculations, stamp and signature by the design professional.
4. Follow flashing sequence as referenced in the contract documents, 97/A8.5.
5. Fiberglas window as referenced in details 94 and 98/A8.5 are included in the bid package.
6. At head of roll up door, furnish and install aluminum break metal flashing as outlined in details 118/A8.6 and 312/A8.17.
7. Furnish all deferred submittals as required by the contract documents.
8. Furnish and install all clear glass, sealed insulated glass, tinted glass, wire glass, heat treated glass, tempered float glass, monolithic tempered glass, mirrored glass, fire rated glass and any other glazing required for a complete installation.
9. Provide certifications by third party independent testing laboratory.
10. Removal of all labels, signs, tape, protection paper, etc. after installation.
11. Provide and install all caulking for own work, including caulking of aluminum frames to adjacent surfaces for weather tight seal, interior and exterior, including and/all fire caulking if required.
12. Trade Contractor to furnish and install all flashings and flashing membranes, sill plates, required for own work.
13. Interior and Exterior joint sealants for own work.
14. Leave window at each end of the building out for trash chute. Coordinate installation of window with Construction Manager.
15. Provide coordination with other Trade Contractors as needed for layout.

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16. Protection of installed glazing and all materials until acceptance by Owner.
17. Turn over all door keys to the Contraction Manager separated by building and door number along with a key metric's identifying door and building. Keys are not to be left in doors at any time.

18. Provide and install solar control film.

#### H. Specification Section:

Division 1

072100 Thermal Batt Insulation

092236.23 Metal Lath (Expansion and Contraction Joints- per paragraph 3.05)

078413 Penetration Firestopping (as applies)

079000 Joint Protection (as applies)

Refer to additional related specification sections for work specifically included in this contract.

#### INCLUSIONS:

1. Installation of all exterior/interior expansion and contraction joints for complete finished system. Include J-molding at expansion joint in this bid package. Color to be selected by Architect.
2. Provide all thermal, batt, and sound/acoustic insulation within walls (exterior and interior), ceilings, above t-bar ceiling, under stage platform, roof deck per the Contract Documents. Provide all insulation with proper R-values as required at all locations.
3. Furnish and install all fire rated expanding form at the metal deck, as outlined in the drawings.

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4. Furnish and install all adhesives, fasteners, tape, stickpins, wires, rods, wire mesh and accessories. Insulation to be kept inside wall cavity without failure, use means to hold insulation in place.
5. Penetration fire stopping and joint protection as it relates to work within this bid package.

**I. Specification:**

Division 1

074213 Metal Wall Panels

074213.23 Metal Composite Material Wall Panels

076200 Sheet Metal Flashing and Trim (as applies),

079000 Joint Protection (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install preformed metal panel systems complete per contract documents. Furnish anchor and panel clips, fasteners, furring strips, foam closures, underlayment, wood shims for this work, flashing and trim at/under metal panels, for construction of a complete system.
2. Prior to taking ownership of substate, inspect it carefully for buckling, waves, warping, etc... If these conditions exist, notified the Construction Manager immediately. Starting installation of metal panel systems indicates all substate conditions are accepted.
3. Schedule periodic inspections from manufacture's rep. as outlined in the specifications.
4. Caulking and sealant as required for the metal panel systems.
5. Rigid board insulation under metal panels will be installed by the plaster/metal framing/gyp board contractor's scope of work.

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6. Provide all pre-finished continuous cap/flashing, as a reference use 277/A8.14. All pre-finished metal indicated to match metal panel system is by this contractor.
7. Furnish and install galvanized sheet metal covers and sealant at canopies/awnings.
8. Specification section 074213 – Metal Wall Panels, a three (3) year warranty is to be provided. Specification Section 0784213.23 – Metal Composite Material Wall Panels – language pertaining to ICC ESR-1185 shall be followed.

**J. Specification:**

Division 1

054000 Cold-Formed Metal Framing

092236.23 Metal Lath

092400 Cement Plastering

092900 Gypsum Board

083113 Access Doors and Frames

061000 Rough Carpentry (as applies)

078413 Penetration Firestopping (as applies)

079000 Joint Protection, (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

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1. Furnish and install lathing including metal lath, underlayment, water, weather resistive barrier and air barrier, sheathing/felt paper, beads, screeds, vents, soffits, casings, reinforcement mesh, fasteners, adhesives, control and expansion joints, wires, reveals, reglet and sheet metal flashings etc. as required for a complete system. Coordinate this work with all other trades that have systems at the plaster walls, e.g. lights, louvers, access panels, expansion joints, etc. Exterior access panels are to be provided by the metal framing contractor and installed with the lath/plaster system by this plaster contractor.
2. Furnish and install all building paper, densglass/gold board at exterior of building as indicated on the drawings. Where indicated on the drawings, furnish and install all rigid insulation board with specified R-value.
3. Styrofoam plant-on at exterior walls is to be included in this scope of work.
4. Furnish and install Portland cement plaster including lath, scratch, brown and integral color coat, sealers as indicated on the contract documents for a complete job per plans, specifications, sequencing and cure requirements.
5. This Trade Contractor to furnish and install all sheet metal trim at plaster, windows, doors and louvers that is integral to the plaster system. Prefinished metal trim at plaster system is to be included in this bid package, reference details on A8.13, (Foam Plant-On Detail).
6. Coordination and layout of weep screeds to ensure that proper elevation is maintained with relations to adjoining concrete, asphalt and landscaping.
7. Per ASTM C-1063, it is recommended that Control Joints be used to delineate stucco areas not greater than 144sf or a maximum distance of 18 feet between Controls Joints. It is the responsibility of the Lath/Plaster Contractor to identify if modifications to the Controls Joints are required.
8. Protection of adjacent surfaces to prevent overspray, water or debris from contacting surface.
9. Remove and dispose of excess plaster left on the ground. Rake clean and return grade to original surface.

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10. Inspect all surfaces to receive own work. Promptly notify Construction Manager of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.
11. All exterior and interior cold formed metal framing for a complete system.
12. Furnish and install all gypsum board, gypsum liner panels, draft stops, fasteners, joint treatment material, metal trim, texture and accessories. Walls not covered with panels or other coverings shall receive a finish as required by the plans and specifications. Walls covered with Tackboard to have joints taped and depressions filled for a smooth finish surface.
13. The Construction Manager may opt to use, Mold and Abuse gyp board in order to keep the project on schedule.
14. Drywall enclosure of structural members to achieve fire resistant rating per plans and specifications.
15. Dust all taped, textured walls following completion of work and before turnover to the painter.
16. Framing of all recessed pockets, curtain tracks, metal stud curbs, as required.
17. Furnish and install gypsum board fire rated enclosures for recessed light fixtures, electrical panels, and fire extinguisher enclosures as required.
18. Acoustical sealant at gyp walls and for own work to be included in this bid package.
19. Furnish and install required wood framing which is to include all plywood sheathing and Type A plywood at Stage Floor. Mortar bedding at sill plates is to be included in this bid package.
20. Thoroughly read and understand the scope of work required by this bid package for work at the elevator and wheelchair lift. This includes sequence of work, rated walls, firestopping, cutouts, access panel, etc.... Framing to

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achieve two (2) hour fire rating and maintain fire resistance rating per contract documents. Provide opening at Elevator Machine Room for oil line and wiring duct. Coordinate location with the Elevator contractor.

21. Provide backing and blocking (metal and/or wood including fire rated blocking if required) for work on other trade contractors. Provide all framed openings and supports as required for the installation of light fixtures, electrical units, mechanical equipment, access panels, casework, special equipment, etc... Roof cants and curbs for MEP, as shown. Use of high pressure-treated Douglas Fir for Mechanical curbs. Coordinate location and layout with other contractors.
22. This bid package is to provide ¾" plywood temporary covers at all roof penetrations at the time of framing. Covers are to remain in place until equipment is ready for placement. Spray paint on plywood cover, "Do Not Step or Remove".
23. Frame all draft and fire stopping as shown on the contract drawings.
24. Clean and prepare all surfaces to receive own work.
25. Primers, sealers, fillers and surface preparations required for own work.
26. Repair damaged drywall as necessary after installation of all finishes, but before punch list.
27. Ensure all testing, field observations and curing requirements are performed per specifications.
28. Protect work from weather damage and other hazards during course of installation. Provide temporary building enclosure measures as necessary based on weather conditions anticipated per Preliminary/Master Construction Schedule.

**K. Specification:**

Division 1

095113 Acoustical Panel Ceilings

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**095123 Acoustical Wood Fiber Panels**

079000 Joint Protection, (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install acoustical panel ceilings, including but not limited to all grids/ main runners/tracks, cross and sub tees, acoustical lay-in ceiling panels, acoustical tiles, hanger wires for the ceiling system, seismic, compression struts, trim, wall angle/molding, etc. for a complete installation per plans, specifications and all applicable code requirements. **This pricing to include ceiling tiles at the Preschool building.**
2. Allow for two Ceiling tile drops. The first after MEP initial installation to grid before balancing and fire alarm testing. The second drop when all above ceiling testing/work complete.
3. Layout of lights, registers, fire sprinkler, grilles by MEP contractors. Cutting of tile for these items by this bid package.
4. Coordinate t-bar ceiling and projector lift and screen installation with General Trades contractor.
5. Provide 15 hours in bid for replacement of damaged tiles. Time will be tracked by the Construction Manager.
6. Cleanup of installed work, including removal of tape, labels, protective coatings, smudges, fingerprints, etc.
7. Delivery materials to the project site and store in the building for a minimum of 24 hours prior to installation of material.
8. **Furnish and install Acoustical Wood Fiber panels for a complete installation per 09 51 23.**

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**L. Specifications:**

Division 1

093000 Tiling

096466 Wood Athletic Flooring

096513 Resilient Base and accessories

096610 Safety Floor Covering

096600 Resilient Floor Covering

096818sf Tile Carpeting,

099656 Epoxy Floor Coating

096700 Epoxy Flooring

079000 Joint Protection (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all floor covering, including but not limited to carpeting, resilient flooring and accessories, tiling, wood athletic flooring, epoxy flooring, vapor dissipation system, waterproofing membrane, base, transitions, etc. for a complete and operable installation. Wood Athletic Flooring to include vapor barrier, subfloor, sanding, finishing including game lines and vented base.
2. Furnish and install all base, caulking, transitions, reducers, adapters, and trim accessories as required for your work. Reference detail 78/A8.4 for various transitions.
3. Provide grouting, joints, crack protection, and waterproofing membranes as required. This includes joint filler at all cracks, control joints at finished floor

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slabs. Product specified for joint filler is referenced on the Structural drawings.

4. Tile at walk-in refrigerator(s) to be by this bid package.
5. Coordinate floor drain elevations, sloping and location with the Concrete and Plumbing contractors. Furnish all materials required to achieve permanent, watertight installation of flooring at drains and floor sinks. If protection needs to be removed from the floor drain for grout and tile work, coordinate this with the plumber. Avoid scrapping and disposing grout and debris in the floor drains.
6. Elevator floor finishes are included in this bid package.
7. Provide leveling coats where required to eliminate variations relevant to floor tolerance requirements.
8. Verify all field dimensions necessary for proper fitting and completion of work.
9. Ensure project conditions are optimal for flooring installation per specifications, including ambient temperature and material acclimation requirements.
10. Verify surfaces to receive flooring are smooth and level with no more than 1/8 inch in 10ft variation from level.
11. Floor preparation as required for own work, including filling, patching, scraping, sweeping, vacuuming and cleaning.
12. Provide and install all moisture/vapor barrier material under flooring as required.
13. Provide warning stripes at steps and platform edges as required. This applies if stripes is made from flooring material.
14. Wood cap trim at hardwood floor to be included in this bid package.

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15. Expansion/contraction joints shall be clear of grout. Caulk or seal all expansion joints as required.
16. Cleaning, curing, waxing, sealing and covering of installed work including ventilation and temperature control.
17. Protection of own work after installation including paper protection, (ram board, kraft paper, seekure, rosin paper) and access restriction measures in traffic areas.

**M. Specifications:**

Division 1

099123 Painting

079000 Joint Protection (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all exterior and interior priming, painting, staining and coatings complete per contract documents. This pricing to include all painting required at the Preschool building. Pavement markings and game lines at the flatwork is not included in the bid package.
2. All interior caulking around doors, windows, etc. is part of this bid package.
3. Inspect all surfaces to receive own work. Promptly notify Construction Manager of any unsuitable substrate conditions. Commencement of installation implies acceptance and ownership of all substrate conditions.
4. Protection and cleanup of adjacent surfaces to prevent overspray, water or debris from contacting surface.
5. Paint interior of all mechanical grilles flat black. Paint angle iron at mechanical roof supports flat black.
6. Clean and prepare all surfaces as needed to receive own work.

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7. Primers, sealers, fillers and surface preparations required for own work, including pickling/etching of galvanized steel as required.
8. Prime/paint all unpainted or unfinished exposed building and site components including but not limited to wood curbs, pipes and conduit, including sprinkler piping, exposed insulation covered piping, galvanized fixed pipe bollards, and metal ductwork, which run exposed across finished or painted surfaces.
9. Paint all fire-resistant plywood in Telecom and Electrical rooms. Paint around fire resistant labeling. Coordinate this work with the Electrical contractor.
10. Provide painted warning stripes at steps and platform edges as required. Concrete Contractor will provide score lines.
11. Paint material visible through screens, grilles, louvers, etc.
12. Paint mechanical louvers and vents if required.
13. Prime/paint access doors as required.
14. Prime/paint access ladders, hatches, stairs and stair rails as required.
15. Field finish of steel doors, frames, handrails, and guardrails.
16. Provide all touch-up of all painted surfaces prior to punchlist (i.e., nicks, dings, scrapes, etc.). Complete final paint touch-up upon completion of punch list and prior to occupancy.
17. Include within this scope of work 60 hours for touch-up. All touch-up work to be approved and tracked by the Construction Manager.
18. Store paint and coating materials in a single suitable place in compliance with health, fire regulations and OSHA compliance.

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19. Place waste cloths and used painting materials that may constitute a fire hazard in closed OSHA approved metal containers and remove daily from site.
20. Furnish washout bin as needed to comply with SWPPP requirements. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite.

**N. Specifications:**

Division 1

101116 Markerboards

101123 Tackboards

101200 Trophy and Poster Cases

101400 Signage

101416 Plaques

101700 Toilet Partitions

102123 Cubicle Curtains and Track

102600 Acrovyn

102613 Corner Guards

102813.13 Electric Hand Dryers

104413 Fire Extinguishers and Cabinets

~~105100 Heavy Duty Ventilated Lockers~~

105000 Metal Lockers and Benches

105613 Metal Storage Shelving

108000 Toilet and Bath Accessories

115213.52 Electric Projection Screens

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115000 Miscellaneous Specialties (only paragraph 2.01.C TV Brackets)

~~122116 Vertical Louver Blinds~~

122113 Roller Window Shades

079000 Joint Protection (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install all markerboards and tackboards. Scope to include all sliding panels, hardware, trim, trim moulding, rails, chalk trays, end stops, map hooks, fasteners/adhesives, and accessories as specified. Coordinate all markerboard installation with completion of tackboard.
2. Trophy and poster cases are included in this bid package. Coordinate recess pocket and backing requirement with metal framing contractor. Case lighting is part of this bid package. Coordinate power requirements with the Electrical contractor. Glass shelving is provided by this bid package.
3. Signage
4. Provide and install cast bronze building plaque as outlined in the contract documents. Coordinate layout and installation with other contractors. Work includes all fasteners and anchors. Protection of plaque until building is ready for turn-over to the District.
5. Furnish and install all Solid Color Reinforced Composite Toilet Compartments. Scope to include all partitions and urinal screens, panels, screens, pilasters, and doors; stirrup brackets, hinges, coat hooks, mounting brackets, latches, keepers, door bumpers, hardware and accessories, anchorages and fasteners, and overhead bracing for a completely installed

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system. Partitions to have Graffiti, Scratch, Impact and Fire Resistance properties. Coordinate all layout and backing requirements with the framing contractor.

6. Furnish and install all signage, including but not limited to plastic room signage, toilet room signs, plastic accessible symbol signs, dimensional letters and numbers (metal letters/polished aluminum letters). Provide all backing, adhesives, fasteners, anchors, paint touch up and accessories as required for a complete installation. All code related signs to be compliance with DSA, CBC and/or ADA requirements. Exterior parking, disabled and van accessible parking signages are not included in this scope of work.
7. All cubicle curtains and track are to be included in this bid package. Provide fire resistant fabric as outlined in the specification. Scope to include track, guides, chain drop, end stops, splicers, supports, anchorage and all other accessories for a complete install

8. Furnish and install complete per plans and specifications stainless steel and/or wall protection and corner guards.

9. All electrical hand dryers are to be included in this bid package. Coordinate backing requirements with the metal framing contractor. Coordinate all power requirements with the electrical contractor.

10. Furnish and install all Fire Extinguishers and Cabinets as outlined in the contract documents. Scope to include, but not limited to, all fire extinguishers, fire rated and non-rated cabinets, recessed and surface mounted cabinets, tempered glass, mounting brackets, door hardware, anchors, fasteners, adhesives, certifications and accessories as required for a complete installation. Coordinate recessed opening sizes and backing requirements with metal framing contractor.

11. Heavy Duty Ventilated Metal Lockers and Benches are to be included in this bid package. All lockers shall be installed with pre-locking device. All recessed handles to be ADA compliant. All lockers to be provided with shelving, finish paint, number plates, latching and locking device(s).

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Coordinate backing requirements with metal framing contractor. Installation includes adequately securing lockers to the wall and/or floor.

12. Furnish and install all Metal Storage Shelving per contract documents. Work includes all shelving and accessories (T and Box post uprights, shelf clips, shelves, cross braces, backs, holders, bases, etc...) for a complete shelving system. Anchorage to wall and floor as outlined in the contract documents.
13. Furnish and install all Toilet Accessories as shown in the Contract Documents, including but not limited to all outlined toilet accessories, baby changing station/table, installation fasteners, adhesives, etc. Price to include installation of District Supplied accessories. Coordinate recessed and backing requirements with the metal framing contractor. Coordinate power requirements with the electrical contractor.
14. The Electronic Projection Screen is to be included in this bid package. Coordinate with the electrical contractor for wiring needs and location of remote control switches. Coordinate with framing contractor for backing needed, recessed pocket and ceiling contractor for location of installation.
15. Furnish and install flame retardant ~~vertical louver blinds~~ roller window shades. The framing contractor to provide backing per layout from the roller window shades subcontractor/installer.
16. Initial cleaning of installed work for entire scopes of work, including removal of tape, labels, protective coatings, smudge, fingerprints, etc.
17. This bid package is responsible for any/all sealants including firestopping sealant as required for a complete professional install.

18. Furnish and install TV brackets per Specification Section 11 50 00 Miscellaneous Specialties, part 2.01.C. Coordinate power/data and backing requirements.

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**O. Specifications:**

Division 1

110620 Stage Curtains

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install the stage curtain complete per plans and specifications. Work included is to include all hardware and accessories for a complete install.
2. Coordination and provide layout for any and all backing/blocking required for this scope of work.
3. It is the responsibility of this bid package to field verify site conditions for installation tolerances that may affect your work. If conditions are unsatisfactory, notify the Construction Manager immediately.

**P. Specifications:**

Division 1

114000 Food Service Equipment

114127 Walk In Cooler and Freezer

078413 Penetration Firestopping, (as applies)

079000 Joint Protection

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish all labor and material required to provide and deliver all Food Service Equipment as specified into the building, uncrate, assemble, set in place, level and completely install, exclusive of final utility

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connections. This work shall be in strict accordance with the plans and specifications with all dimensions verified in the field prior to any fabrication. Work to include but not limited to all equipment, counters, cabinets, wall paneling, shelving, finishes, trim/closure panels, grease drains, monitors and controls, control screens, back and side splashes, filters, drawers, steel plate at walk in box refrigeration unit(s), insulation of refrigerant lines, controls and T-stat installation and wiring, insert pans, filters, SS cove base, and seismic wiring and bracing, hardware, accessories, anchors/rods/clips, etc. Furnish and install all light fixtures that are integral to the Food Service Equipment and/or Walk-In Freezer/Cooler.

2. Any and all rooftop mounted food service equipment shall be by this Contractor. This includes curbs, flashing, sealant/caulking as required for a complete installation. Coordinate opening of metal deck with the Steel and Roofing Contractors.
3. Wrap freezer drain lines with electrical heater tape to be by this bid package. Furnish and install floor troughs and drip pans.
4. Provide piping, valves and plumbing accessories that are integral within and for the kitchen equipment.
5. Provide wiring, wiring devices, controls and mechanical accessories that are integral to and for the kitchen equipment.
6. Provide ventilating ducts, flues, controls and mechanical accessories that are integral to and for the kitchen equipment.
7. This Contractor is to assist in providing layout for depressed slabs to the Concrete contractor.
8. Support all other contractors on the project to include the furnishing of information in the form of drawings, wiring diagrams and other data.

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9. All food service equipment shall be installed per the "Guidelines for Seismic Restraints of Kitchen Equipment" by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
10. Installation cooperation, details and scheduling of the Kitchen Equipment will be coordinated that the work with other contractors may progress without unnecessary delay, interference or damage. Kitchen Equipment Contractor shall do all fitting, joining, fastening, scribing, caulking and adjusting necessary to install any fixed item of equipment in its designated locations.
11. Provide layout for backing/blocking, this also includes layout for any recessed or semi-recessed items.
12. Provide layout of items located in concrete and framing prior to installation of concrete and framing. In the event layout does not occur in a timely manner, this Contractor becomes responsible for all rework, reframing, coring, cutting etc required to install own work including patch and repair to like new condition. Provide cut sheets indicating layout dimensions.
13. Store portable, non-fixed items as directed by the Construction Manager with due regard for the security and protection from damage of the items involved.
14. Perform a preconstruction inspection of all equipment prior to installation.
15. Provide equipment start-up by a Factory Authorized service dealer. Demonstration and training of equipment to be performed for the operation team and another demonstration and training for the maintenance personnel.
16. Equipment is to be inspected, tested, calibrated and adjusted for normal operation conditions. If inspection or testing indicated defects, such defects shall be corrected and the inspection and test repeated to insure all equipment is operating as designed and constructed.

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Acceptance of Entire Bid Package,

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17. Commissioning and operation test as required for this scope of work.
18. All equipment shall be thoroughly cleaned prior to final turnover to the District. This to include removal of all stains, protective wrapping and coatings, tapes, grease, etc. Cleaning to be verified by the Construction Manager.
19. All fire safing, fire caulking, joint penetration sealants/caulking as it applies to this scope of work.
20. This contractor is responsible for the coordination and scheduling of all inspections by the Health Department.
21. Turn over all keys to the Construction Manager. Keys are not to be left in the doors at any time.

22. **EXCLUDE:** Kitchen Exhaust Hood, Hood Controls & Fire Suppression System that is described on drawings K5.0, K5.1, K5.2, K5.3, K5.4 & M11 (This work will be provided by the SB 7 MECHANICAL Contractor)

**Q. INCLUSIONS:**

**Scaffolding**

1. Furnish and erect scaffolding at perimeter of buildings for work by all other trades. This is to include multiple work levels, railing, toe boards, and access ladders.
2. Provide a stair tower at each end of the main building for access to the roof tops. Stair towers are required for roof levels that exceed 20'
3. Provide a stair tower at Multi-Purpose building for roof levels that exceed 20'.
4. Furnish and place trash chute at each end of main building for trash removal by all trades.

**Miscellaneous, Carpentry and Final Cleaning**

1. This bid package is responsible for applying and pulling the OSHA project permit.

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2. Pull and pay for all necessary permits required. The District will reimburse the Contractor for the actual permit cost, with no markup.
3. Furnish, install and maintain railing at stairways, safety railing (as directed by the Construction Manager), during construction. Temporary railing should include railing at the 2<sup>nd</sup> Floor, top of Stair 1 until metal guard rail system is in place.
4. Protection of all stained and sealed (exposed) concrete floors.
5. Rough cleaning prior to punch walk. Final cleaning for occupying the building. Bidder should include a total of two (2) cleanings of the buildings, roof tops and exterior.
6. Exterior cleaning of windows, flatwork, removal of debris from roof tops, etc.
7. Interior cleaning to include removal of debris from the building, dusting, vacuuming, cleaning windows.

**R. Specifications:**

**Division 1**

142400 Hydraulic Elevator

144200 Wheelchair Lifts

0788413 Penetration Firestopping (as applies)

079000 Joint Protection (as applies)

003132 Geotechnical Investigation Report

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish and install hydraulic elevators per contract documents for a complete functioning system. It is the responsibility of this bid package to confirm and achieve required clearances as noted in the contract documents.
2. The elevator equipment shall be manufactured and installed as a complete system by a single source manufacturer/installer who is regularly engaged in the engineering,

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design, manufacturing and installation of electric elevators as described within the specifications.

3. Provide all cab finishes as required per plans and specifications. Exception: Cab finish flooring to be provided and installed by Flooring Contractor.
4. This bid package is responsible for aluminum threshold, sealant, grout at elevator sill. This also includes support angle iron and plates.
5. Coordinate layout of all concrete with applicable Trade Contractor. Coordinate walls, rated wall and cutouts/access panels with Metal Framing Contractor.
6. Coordinate layout of Structural Steel with applicable Trade Contractor. To include hoist beam at top of elevator shaft, ladders, etc...
7. Coordinate all power and low voltage pathways for Elevators as shown on the plans and specifications with Electrical Contractor.
8. Electrical Trade Contractor to furnish and install conduit, cable, and disconnect to deliver power to wall mounted disconnect in elevator control room. Scope to include empty conduit from disconnect to a J-box mounted adjacent the Elevator controller. Elevator subcontractor to make final wire terminations to disconnect. Furnish and install light fixture and outlet at Elevator pit.
9. Furnish and install conduit and cable for cab light and ventilation to J-box with empty conduit extending from J-box to elevator controller. Final switch controls, wire, and terminations from elevator controller to J-box by Elevator vendor.
10. Electrical Trade Contractor to furnish and install all conduit, cable, light fixtures, and switch controls for light in elevator pit. Coordinate layout and interface with General Trade Contractor and Elevator vendor.
11. Traveling cable for elevator to be furnished and installed by elevator vendor; final connections by Electrical Trade Contractor.
12. This bid package is to furnish and install wall protection.

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13. Elevator Contractor will closely coordinate delivery timing of elevator equipment with install.
14. Furnish and install wheelchair lift complete per plans and specifications. Coordinate power requirements with the Electrical contractor.
15. Coordinate encasement and sleeving of utility pipes under slab and through footings with appropriate Trade Contractors.
16. Inspect all surfaces to receive own work. Promptly notify the Construction Manager of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.
17. Elevator Contractor to furnish at their expense, all necessary inspections, permits, and tests as required by local regulations and authorities. The District will reimburse the Contractor for the cost of the permit(s), with no markup by the Contractor. Tests to be made in the presence of authorized representatives of such authorities.
18. Provide and install a set of fitted protective blankets. Blankets will remain with the school after the project.

**A. THE FOLLOWING ITEMS OF WORK ARE INCLUDED IN ALL BID PACKAGES**

1. The regular hours of work are 7:00 AM to 5:00 PM, Monday through Friday unless specifically controlled by local municipalities. Any other working hours must have prior written approval from the Construction Manager.
2. Specification sections as noted in the above descriptions of each specific Bid Package.
3. This Bid Package may contain Scope of Work items and/or related items of work that are not customarily performed by Trade Contractor. If such work is required to be performed by Trade Contractor pursuant to the Bid Package Documents, Trade Contractor will provide this work either by its own forces or by contracting such work in accordance with local trade practice.

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4. Construction Manager will provide temporary construction power, sanitation facilities, construction trash removal, and segregation site fencing, as required. Trade contractors are to provide and pay for their own, drinking water, phones, and security, etc.
5. Trade Contractors are responsible for storage and security of own materials and/or equipment located on and off the jobsite property. Work shed, yard, lighting and security fence if required for storage shall be the responsibility of the Trade Contractor. Location of storage/staging area to be determined / approved by Construction Manager.
6. All Trade Contractors shall furnish to the Construction Manager on a weekly basis, completed daily reports of the total number of its workers, by classification, employed on the project (including any sub-tier subcontractors' workers), and a description of work performed, (refer to General Conditions and Supplemental General Conditions for required information). Daily reports shall be on a form acceptable to the Construction Manager. Current daily reports are a condition of release of monthly payment to each trade contractor.
7. There will be multiple prime contractors for the project and there will be work by others occurring simultaneously with the work of this trade contractor. It is the responsibility of this trade contractor to be aware of the other operations and coordinate their work accordingly.
8. If a particular item of work appears to be included in more than one bid package, the bidder shall ensure they have covered this item(s) of work and shall not assume it is covered by another bid package. Bidders are responsible for all items of work listed in their specific scope of work.
9. Provide and maintain dewatering operation as required to eliminate the ponding of water immediately after rainfall has occurred in order to allow these areas to dry out as quickly as possible. Dewatering to be done by whatever means necessary, including mechanical pumps, siphons, etc. Any SWPPP measures defeated or removed in the dewatering process shall be replaced per the posted

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SWPPP plan by the removing Contractor. Dewatering for grading operation, trenches, footings, pits, slab areas, etc, shall be done immediately by affected Trade Contractor.

10. Storm Water Pollution control as required including conformance with erosion control plan and protection of own work as applies. **Bid package #11** Trade Contractor is responsible to initially furnish, install and implement the Storm Water Pollution Prevention Plan complete per plans and specifications. Work is to include all sandbags, hay bales, swales, etc. as required to complete a system in compliance with all Federal, State, and Local requirements. All trade contractors are responsible for repair and replacement of SWPPP control measures disturbed by or required by their own operations. All trade contractors shall follow all directions given by the Construction Manager. All requested work shall be at no extra cost to the owner or construction manager.
11. Offloading, scaffolding, ladders, rigging, hoisting and moving of materials and/or equipment for own work.
12. Provide traffic control (vehicular and pedestrian) as required when on or off-loading materials and/or equipment. Include flag person, cones, signs, and additional safeguards as necessary.
13. Submittal preparation and material procurement shall begin immediately upon award or letter of intent. Reference the master schedule to review when material is needed on site. Submittals shall be bookmarked and a searchable document.
14. Submittals, including product data, shop drawings, mock-ups, samples and as-built drawings as specified. See submittal requirements of appropriate specification sections, including requirements for closeout submission.
15. Identify all long lead items and develop a procurement schedule. Submit a copy to the Construction Manager at the Pre-Construction Meeting.
16. Submit all deferred approvals as specified on plans and specifications within 30 days of the Notice to Proceed.
17. Each bid package contractor is responsible for temporary power, portable lighting and extension cords necessary to complete work that is not within 100' of buildings.

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18. The electrical trade contractor will provide for temporary electrical power and or temporary power supply infrastructure from Public Utilities. Electrical trade contractor will supply all necessary 100-amp spider boxes in each building location. Each bid package contractor is responsible to furnish any additional items required for their work, (i.e., extension cords, adaptors, task lighting, etc.).
19. Electrical trade contractor will provide general lighting in the structures. Each bid package contractor shall provide their own task lighting, including any extension cords as may be required.
20. Coordination and protection of own work with other trades is the responsibility of each Trade Contractor.
21. Trade Contractor is to provide all temporary protection (against dust, for safety, etc.) for exposures which are created or generated by or associated with, this Work. Protection of existing surfaces scheduled to remain to prevent damage while performing the work of this bid package.
22. Dumpsters will be provided for the Trade Contractor's use. Trade Contractor to dispose of all debris onsite as directed by the Construction Manager. Trade Contractor to be responsible for all continuous cleanup and segregation of all debris generated by the work of this Bid Package into the proper dumpsters as required by Waste Management and directed by the Construction Manager. If this item is not performed consistently, the Construction Manager may elect to have the work done on behalf of the Trade Contractor and monies deducted to cover this expense. Debris typically not discarded in dumpsters, i.e., soils, spoils, stripping's, tree shrubs, concrete, demolished materials, etc, will be disposed of offsite by the Trade Contractor.
23. Trade Contractor shall be responsible for preparing and submitting to the Construction Manager a detailed Contractor's Waste and Recycling Plan as it is related specifically to Trade Contractor's scope of work within ten (10) calendar days of award of contract. The Construction Manager will consolidate Trade Contractors' Plans into a Master Construction Waste & Recycling Plan to be issued and adhered to at all times during the course of construction. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite.

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This includes but not limited to, concrete, grout, taping mud, paint, etc..

24. Daily cleanup of own debris, packing materials and boxes, and placement into owner supplied dumpster each day. Each Trade Contractor shall be responsible to remove off site at their own expense any and all concrete, concrete residue, or hazardous materials generated by their work operations. Jobsite to be kept in a "broom-swept" condition at all times.
25. Each Prime Contractor shall include eight (8) hours (while on site) within their cost proposal to participate in the weekly composite cleanup efforts scheduled by the Construction Manager.
26. Upon failure by trade contractor to provide sufficient cleanup, and after 48-hour Notice, Construction Manager will perform the cleanup and assess all costs against the trade contractor requiring the cleanup.
27. Each Trade Contractor is responsible for control of their own environmental conditions (i.e. temperature control, moisture control, etc) affecting their own work.
28. Provide layout and field measurements for own work from line and grade coordinates supplied by Construction Manager. Survey provided by Bid Package 10. Any additional survey work requested other than that provided by BP 10 will be the responsibility of the affected / requesting Trade Contractor.
29. Should re-staking be required due to stakes damaged or removed by trade contractor, said re-staking shall be performed at the expense of that Trade Contractor. Each Trade Contractor is responsible for protection of stakes placed for own work.
30. Safety requirements for own work, shall be in compliance with most recent CAL OSHA regulations and in accordance with Trade Contractors Safety Program, of which a copy shall be provided to the Construction Manager for its reference only. Hardhats, boots, eye protection, long pants and shirts with sleeves, and 100% tie off are required for all personnel at all times during construction of the Project. Failure to comply with any Safety Regulations will be grounds for removal of personnel from the jobsite. See also Supplemental General Conditions.

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31. Include in the Bid Price, all personnel costs for safety related meetings, etc., for all Trade Contractor's and subcontractor's labor forces working on this jobsite, regardless of tier. Safety meetings may be scheduled by the Construction Manager and may last approximately one-half hour per week.
32. Comply with all applicable Construction Safety Standards, Cal OSHA, Federal, State, and Local safety rules and regulations. Protect life and property, which is not to be injured, damaged, disturbed or blemished. Trade Contractor will conduct his operations at all times and confine equipment and personnel to areas within the limits of the work. Provide copy of any required OSHA permits to the Construction Manager.
33. Flammable products must be continually stored per OSHA regulations.
34. Compliance with regulatory agency, trade organization, and governing body requirements having jurisdiction over own work.
35. Each Trade Contractor shall submit a Job Hazard Analysis report to Construction Manager prior to commencement of work.
36. Trade Contractor to comply with all ordinances regarding parking, hours of work and routing of delivery trucks to the project site, and as required by the Construction Manager.
37. Parking for own employees, equipment, suppliers and sub-tier contractors shall be in areas designated by Construction Manager. Provide off site parking for same if adequate space is not available on or convenient to jobsite.
38. Compliance with specified warranty and guarantee requirements, both standard and special.
39. Provide at a minimum one qualified superintendent or one lead foreman for the duration of own work on project, including punch list corrections at completion of project. Foreman must be on-site when work is being performed. Superintendent/Foreman is subject to approval by the Construction Manager and shall not be changed without Construction Manager's approval.

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40. Attendance at jobsite weekly progress meeting, coordination, scheduling and safety meetings is MANDATORY.
41. Sealants and caulking for own work as per Division 7.
42. Provide relocation of staging area as necessary due to construction progress and as directed by Construction Manager.
43. Procurement of business license as needed.
44. Conformance with project manual, specifications, Construction Documents, and project time.
45. Trade Contractor has primary responsibility for locating existing utilities prior to commencing underground work. Trade Contractor must make own notification to required agencies and hold a pre-dig conference prior to starting underground work. Trade Contractor shall not rely on any representation made by anyone other than those individuals duly authorized to survey, locate and stake existing utilities.
46. Inspect all surfaces to receive own work. Promptly notify Construction Manager in writing, of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.
47. Responsibility to provide Construction Manager with all backing requirements for own work prior to wall framing operations. Each Trade Contractor will layout backing required and verify installation prior to covering. Failure to provide backing requirements transfers backing responsibility to each trade contractor for their own work.
48. Dust control as applies to own work and the performance thereof. Any fines for violations for non-compliance will be the Trade Contractor's responsibility.
49. Protection of own work including barricades, traffic control, and/or flagmen for traffic control.
50. Public travel shall not be needlessly inconvenienced, nor shall it be wholly obstructed at any point without the Construction Manager's approval. Trade Contractor shall furnish necessary lanterns, barricades and other devices to

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protect the public fully, including the requirements of the Specification and local codes. All work in the public right-of-way shall be done in full conformance with the (requirements of local and State authorities.

51. All welding required for own work. Submit current and valid welder's certifications prior to beginning any welding installation on site for IOR, Owner or Construction Managers review and retention. Provide any needed ventilation equipment.
52. Fire-stopping at own penetrations as required.
53. Additional testing costs as required should initial tests fail.
54. Contractors to provide minimum 48 hours written notice to Construction Manager for testing/inspection, and staking and survey requests/requirements.
55. Re-inspection costs due to failure of Trade Contractor to notify the Construction Manager 48 hours prior to canceling an inspection will be charged to the responsible Trade Contractor.
56. All project record documents as required per plans and specifications. Weekly updates of as-built documents on Construction Manager's plan set, and transfer to digital format at end of project as required by specifications. Update as-built drawing before own work is covered up.
57. Trade Contractors shall at no extra cost to the Owner or Construction Manager provide the required crew sizes and or work as required to meet the project schedule. Trade Contractor agrees to accept the Construction Managers direction for said work.
58. Multiple move-ons to comply with Construction Manager's Master Schedule.
59. Each trade contractor is responsible for coordination onto the site for own work (i.e. cranes, concrete trucks, etc.)
60. Smoking, tobacco, and vaping is prohibited anywhere on the project site.
61. When required - All Trade Contractors shall comply with fingerprinting requirements at own expense (including Contractor Fingerprinting Certification) in

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accordance with Education Code 45125. Additionally, Trade Contractor will participate in a project badge identification system if instituted by the Construction Manager and the District.

62. Labor rates to be used in pricing any extra work that may be required are to be submitted within 10 days from the Notice to Proceed. Rates are to be complete billing rates and are to include wages, taxes, fringe benefits, insurance, small tools and incidentals. Base price on current rates in effect at time of bid. As labor agreement wages and fringes change, these increases will be added to the labor rates at actual cost. List all rates by submitting the Wage Rate Breakdown Form for each classification of worker anticipated.
63. All utility or public agency fees will be paid by the District, unless otherwise noted. Any and all other permit and/or service fees, assessment or bonding required in conjunction with the work of this Bid Package shall be the responsibility of Trade Contractor. All notifications with various agencies required in the performance of the work shall remain the responsibility of Trade Contractor.
64. Trade Contractor shall furnish all general conditions and support services it requires for the satisfactory performance of the work of this Bid Package. If a project trailer or central work location is established, items such as trailer facilities, water, power, phones, toilets, disposal services, security, etc., are the Trade Contractor's responsibility. Refer to General Conditions and the Specification for further definition.

**END OF SECTION**

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**SB-7 MECHANICAL**

The work of this Bid Package includes the fabrication, delivery, unloading, hoisting, distribution, setting, and installation complete of the work described by the documents including, but not limited to, the following:

Perform a complete job of all work associated with the project Plans and Specifications, all for a lump sum bid price, including all taxes, as indicated and in accordance with the Bid Documents, Project Manual, Technical Specifications and as described below, to complete the intended scope of work.

Bidders will be required to have the appropriate current license issued by the State of California Contractor’s License Board for the work in which the Subcontractor would perform. Bidder’s will also be required to have a valid DIR number, provided by the Department of Industrial Relations.

**A. Specifications:**

- Division 1
- 230000 General Mechanical Provisions
- 230001 Heating, Ventilating and Air Conditioning
- 076200 Sheet metal Flashing and Trim (as applies)
- 078413 Penetration Firestopping
- 079000 Joint Protection (as applies)
- 083113 Access Doors & Frames (as applies)

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. It is the general intent of this bid package that the Trade Contractor includes all HVAC for the project complete. Furnish and install complete heating, ventilation, cooling systems and controls including all mechanical equipment, fans (time clock for exhaust fans), kitchen hood **in accord with drawings K5.0, K5.1, K5.2, K5.3, K5.4, & M11 with its Fire Suppression system**, acoustic lining, piping, equipment flues, ducting, exhaust duct, flexible duct connection, grease filter, grease duct drop, duct wrap, ventilators, dampers (including remote and backdraft dampers as required), vanes, connectors, hardware, grilles, duct access doors, diffusers, registers, sensors, T-stats, VAV boxes, pumps, drain pan, finish material, etc. as required to meet the performance criteria specified and for a complete and operating system.
2. ~~Furnish and install mechanical louvers and vents as shown in Mechanical drawings. Provide layout (size and location) and coordination with the framing contractor. Joint sealant at wall louvers and vents to be performed~~

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- by this Trade Contractor. Reference architectural and mechanical drawings for locations.
3. Furnish and install fly fan complete per Fly Fan Schedule. Coordinate backing/blocking needs with the Framing contractor.
  4. All sheet metal, flashing, covers and caps for mechanical equipment and duct connections, roof supports, etc. shall be part of this bid package.
  5. Furnish and install metal cover for T-stats and CO2 sensors as outlined on the drawings.
  6. Final connections to all food service equipment as it relates to your work.
  7. Coordinate installation of any work with Construction Manager that crosses public pathways of travel during construction. Any work affecting public-right-of-way must be done on Saturday to avoid path of travel disruptions.
  8. Provide all fire safing, fire caulking, sealants and fire barrier duct wrap as it applies to your work and at penetrations through rated walls.
  9. Provide all seismic bracing, expansion, and/or anchorage, gravity hangers, hangers, supports, Unistrut, and bracing required for your work. Reference the structural drawings for supporting requirements from metal deck/steel beams.
  10. Provide and install mechanical insulation as required for your work.
  11. Provide and install all equipment curbs/platforms and platforms as required for your work. Reference typical mechanical curb/platform details outlined in the contract documents. This work includes but is not limited to, platform, angle iron (painted black), sheet metal flashing, blocking/wood nailer, hardware, platform cover, neoprene pads, caulking and sealants, Provide spring isolators as required
  12. Access doors required for work of this bid package. Coordinate layout and size with the framing contractor.
  13. Conduit pathway and wiring requirements for HVAC controls and elsewhere as it applies to your work.
  14. This bid package is responsible for the Installation of all duct smoke detectors. The Electrical contractor will purchase and furnish to the mechanical contractor and the Electrical Contractor will complete wiring and final termination.
  15. Provide and install all labeling and identification signs required for your work.
  16. Turn over properly labeled panel door keys to the Contraction Manager. Keys are not to be left in doors at any time.
  17. Coordinate dimensions and layout with Roofing contractor, to ensure proper opening size, curb layout, flashing and roofing. Verify roof openings, curbs, pipes, sleeves, ducts and vents through roof are solidly set.
  18. Commissioning and preliminary operation test required as part of this work. Testing includes a smoke detector shutoff test.
  19. Perform testing of all systems outlined in the contract documents. Hire a qualified, TABB certified Test and Balance contractor. Follow all Test and Balance procedures as outlined in the specifications. All testing reports to be included with the O & M manual.

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20. Perform Commissioning of Mechanical Systems.
21. Mechanical contractor must coordinate all training and operation instruction sessions per the specification requirements. An authorized representative of the equipment manufacturer shall train Owner-designated personnel in maintenance and adjustment of equipment. The representative may be an employee of the equipment manufacturer, or a manufacturer-certified contractor. Submit written certification from the manufacturer stating that the representative is qualified to perform the Owner training for the equipment installed.
22. Pull and pay for all necessary permits required. The District will reimburse the Contractor for the actual permit cost, with no markup.
23. Provide layout of items located in concrete, masonry and framing prior to installation of concrete, masonry, and framing. In the event layout does not occur in a timely manner, this prime contractor becomes responsible for all rework, reframing, coring, cutting, etc. required to install own work including patch and repair to like new condition. Provide cut sheets indicating layout dimensions.

**B. THE FOLLOWING ITEMS OF WORK ARE INCLUDED IN ALL BID PACKAGES**

1. The regular hours of work are 7:00 AM to 5:00 PM, Monday through Friday unless specifically controlled by local municipalities. Any other working hours must have prior written approval from the Construction Manager.
2. Specification sections as noted in the above descriptions of each specific Bid Package.
3. This Bid Package may contain Scope of Work items and/or related items of work that are not customarily performed by Trade Contractor. If such work is required to be performed by Trade Contractor pursuant to the Bid Package Documents, Trade Contractor will provide this work either by its own forces or by contracting such work in accordance with local trade practice.
4. Construction Manager will provide temporary construction power, sanitation facilities, construction trash removal, and segregation site fencing, as required. Trade contractors are to provide and pay for their own, drinking water, phones, and security, etc.
5. Trade Contractors are responsible for storage and security of own materials and/or equipment located on and off the jobsite property. Work shed, yard, lighting and security fence if required for storage shall be the responsibility of the Trade Contractor. Location of storage/staging area to be determined / approved by Construction Manager.
6. All Trade Contractors shall furnish to the Construction Manager on a weekly basis, completed daily reports of the total number of its workers, by classification, employed on the project (including any sub-tier subcontractors' workers), and a description of work performed, (refer to General Conditions and Supplemental General Conditions for required information). Daily reports shall be on a form acceptable to the Construction Manager. Current daily reports are a condition of release of monthly payment to each trade contractor.
7. There will be multiple prime contractors for the project and there will be work by

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- others occurring simultaneously with the work of this trade contractor. It is the responsibility of this trade contractor to be aware of the other operations and coordinate their work accordingly.
8. If a particular item of work appears to be included in more than one bid package, the bidder shall ensure they have covered this item(s) of work and shall not assume it is covered by another bid package. Bidders are responsible for all items of work listed in their specific scope of work.
  9. Provide and maintain dewatering operation as required to eliminate the ponding of water immediately after rainfall has occurred in order to allow these areas to dry out as quickly as possible. Dewatering to be done by whatever means necessary, including mechanical pumps, siphons, etc. Any SWPPP measures defeated or removed in the dewatering process shall be replaced per the posted SWPPP plan by the removing Contractor. Dewatering for grading operation, trenches, footings, pits, slab areas, etc, shall be done immediately by affected Trade Contractor.
  10. Storm Water Pollution control as required including conformance with erosion control plan and protection of own work as applies. **Bid package #11** Trade Contractor is responsible to initially furnish, install and implement the Storm Water Pollution Prevention Plan complete per plans and specifications. Work is to include all sandbags, hay bales, swales, etc. as required to complete a system in compliance with all Federal, State, and Local requirements. All trade contractors are responsible for repair and replacement of SWPPP control measures disturbed by or required by their own operations. All trade contractors shall follow all directions given by the Construction Manager. All requested work shall be at no extra cost to the owner or construction manager.
  11. Offloading, scaffolding, ladders, rigging, hoisting and moving of materials and/or equipment for own work.
  12. Provide traffic control (vehicular and pedestrian) as required when on or off-loading materials and/or equipment. Include flag person, cones, signs, and additional safeguards as necessary.
  13. Submittal preparation and material procurement shall begin immediately upon award or letter of intent. Reference the master schedule to review when material is needed on site. Submittals shall be bookmarked and a searchable document.
  14. Submittals, including product data, shop drawings, mock-ups, samples and as-built drawings as specified. See submittal requirements of appropriate specification sections, including requirements for closeout submission.
  15. Identify all long lead items and develop a procurement schedule. Submit a copy to the Construction Manager at the Pre-Construction Meeting.
  16. Submit all deferred approvals as specified on plans and specifications within 30 days of the Notice to Proceed.
  17. Each bid package contractor is responsible for temporary power, portable lighting and extension cords necessary to complete work that is not within 100' of buildings.
  18. The electrical trade contractor will provide for temporary electrical power and or temporary power supply infrastructure from Public Utilities. Electrical trade contractor will supply all necessary 100-amp spider boxes in each building location. Each bid package contractor is responsible to furnish any additional

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- items required for their work, (i.e., extension cords, adaptors, task lighting, etc.).
19. Electrical trade contractor will provide general lighting in the structures. Each bid package contractor shall provide their own task lighting, including any extension cords as may be required.
  20. Coordination and protection of own work with other trades is the responsibility of each Trade Contractor.
  21. Trade Contractor is to provide all temporary protection (against dust, for safety, etc.) for exposures which are created or generated by or associated with, this Work. Protection of existing surfaces scheduled to remain to prevent damage while performing the work of this bid package.
  22. Dumpsters will be provided for the Trade Contractor's use. Trade Contractor to dispose of all debris onsite as directed by the Construction Manager. Trade Contractor to be responsible for all continuous cleanup and segregation of all debris generated by the work of this Bid Package into the proper dumpsters as required by Waste Management and directed by the Construction Manager. If this item is not performed consistently, the Construction Manager may elect to have the work done on behalf of the Trade Contractor and monies deducted to cover this expense. Debris typically not discarded in dumpsters, i.e., soils, spoils, stripping's, tree shrubs, concrete, demolished materials, etc, will be disposed of offsite by the Trade Contractor.
  23. Trade Contractor shall be responsible for preparing and submitting to the Construction Manager a detailed Contractor's Waste and Recycling Plan as it is related specifically to Trade Contractor's scope of work within ten (10) calendar days of award of contract. The Construction Manager will consolidate Trade Contractors' Plans into a Master Construction Waste & Recycling Plan to be issued and adhered to at all times during the course of construction. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite. This includes but not limited to, concrete, grout, taping mud, paint, etc..
  24. Daily cleanup of own debris, packing materials and boxes, and placement into owner supplied dumpster each day. Each Trade Contractor shall be responsible to remove off site at their own expense any and all concrete, concrete residue, or hazardous materials generated by their work operations. Jobsite to be kept in a "broom-swept" condition at all times.
  25. Each Prime Contractor shall include eight (8) hours (while on site) within their cost proposal to participate in the weekly composite cleanup efforts scheduled by the Construction Manager.
  26. Upon failure by trade contractor to provide sufficient cleanup, and after 48-hour Notice, Construction Manager will perform the cleanup and assess all costs against the trade contractor requiring the cleanup.
  27. Each Trade Contractor is responsible for control of their own environmental conditions (i.e. temperature control, moisture control, etc) affecting their own work.
  28. Provide layout and field measurements for own work from line and grade coordinates supplied by Construction Manager. Survey provided by Bid Package 10. Any additional survey work requested other than that provided by BP 10 will be the responsibility of the affected / requesting Trade Contractor.

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29. Should re-staking be required due to stakes damaged or removed by trade contractor, said re-staking shall be performed at the expense of that Trade Contractor. Each Trade Contractor is responsible for protection of stakes placed for own work.
30. Safety requirements for own work, shall be in compliance with most recent CAL OSHA regulations and in accordance with Trade Contractors Safety Program, of which a copy shall be provided to the Construction Manager for its reference only. Hardhats, boots, eye protection, long pants and shirts with sleeves, and 100% tie off are required for all personnel at all times during construction of the Project. Failure to comply with any Safety Regulations will be grounds for removal of personnel from the jobsite. See also Supplemental General Conditions.
31. Include in the Bid Price, all personnel costs for safety related meetings, etc., for all Trade Contractor's and subcontractor's labor forces working on this jobsite, regardless of tier. Safety meetings may be scheduled by the Construction Manager and may last approximately one-half hour per week.
32. Comply with all applicable Construction Safety Standards, Cal OSHA, Federal, State, and Local safety rules and regulations. Protect life and property, which is not to be injured, damaged, disturbed or blemished. Trade Contractor will conduct his operations at all times and confine equipment and personnel to areas within the limits of the work. Provide copy of any required OSHA permits to the Construction Manager.
33. Flammable products must be continually stored per OSHA regulations.
34. Compliance with regulatory agency, trade organization, and governing body requirements having jurisdiction over own work.
35. Each Trade Contractor shall submit a Job Hazard Analysis report to Construction Manager prior to commencement of work.
36. Trade Contractor to comply with all ordinances regarding parking, hours of work and routing of delivery trucks to the project site, and as required by the Construction Manager.
37. Parking for own employees, equipment, suppliers and sub-tier contractors shall be in areas designated by Construction Manager. Provide off site parking for same if adequate space is not available on or convenient to jobsite.
38. Compliance with specified warranty and guarantee requirements, both standard and special.
39. Provide at a minimum one qualified superintendent or one lead foreman for the duration of own work on project, including punch list corrections at completion of project. Foreman must be on-site when work is being performed. Superintendent/Foreman is subject to approval by the Construction Manager and shall not be changed without Construction Manager's approval.
40. Attendance at jobsite weekly progress meeting, coordination, scheduling and safety meetings is MANDATORY.
41. Sealants and caulking for own work as per Division 7.
42. Provide relocation of staging area as necessary due to construction progress and as directed by Construction Manager.
43. Procurement of business license as needed.
44. Conformance with project manual, specifications, Construction Documents, and

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- project time.
45. Trade Contractor has primary responsibility for locating existing utilities prior to commencing underground work. Trade Contractor must make own notification to required agencies and hold a pre-dig conference prior to starting underground work. Trade Contractor shall not rely on any representation made by anyone other than those individuals duly authorized to survey, locate and stake existing utilities.
  46. Inspect all surfaces to receive own work. Promptly notify Construction Manager in writing, of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.
  47. Responsibility to provide Construction Manager with all backing requirements for own work prior to wall framing operations. Each Trade Contractor will layout backing required and verify installation prior to covering. Failure to provide backing requirements transfers backing responsibility to each trade contractor for their own work.
  48. Dust control as applies to own work and the performance thereof. Any fines for violations for non-compliance will be the Trade Contractor's responsibility.
  49. Protection of own work including barricades, traffic control, and/or flagmen for traffic control.
  50. Public travel shall not be needlessly inconvenienced, nor shall it be wholly obstructed at any point without the Construction Manager's approval. Trade Contractor shall furnish necessary lanterns, barricades and other devices to protect the public fully, including the requirements of the Specification and local codes. All work in the public right-of-way shall be done in full conformance with the (requirements of local and State authorities.
  51. All welding required for own work. Submit current and valid welder's certifications prior to beginning any welding installation on site for IOR, Owner or Construction Managers review and retention. Provide any needed ventilation equipment.
  52. Fire-stopping at own penetrations as required.
  53. Additional testing costs as required should initial tests fail.
  54. Contractors to provide minimum 48 hours written notice to Construction Manager for testing/inspection, and staking and survey requests/requirements.
  55. Re-inspection costs due to failure of Trade Contractor to notify the Construction Manager 48 hours prior to canceling an inspection will be charged to the responsible Trade Contractor.
  56. All project record documents as required per plans and specifications. Weekly updates of as-built documents on Construction Manager's plan set, and transfer to digital format at end of project as required by specifications. Update as-built drawing before own work is covered up.
  57. Trade Contractors shall at no extra cost to the Owner or Construction Manager provide the required crew sizes and or work as required to meet the project schedule. Trade Contractor agrees to accept the Construction Managers direction for said work.
  58. Multiple move-ons to comply with Construction Manager's Master Schedule.
  59. Each trade contractor is responsible for coordination onto the site for own work (i.e. cranes, concrete trucks, etc.)
  60. Smoking, tobacco, and vaping is prohibited anywhere on the project site.

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61. When required - All Trade Contractors shall comply with fingerprinting requirements at own expense (including Contractor Fingerprinting Certification) in accordance with Education Code 45125. Additionally, Trade Contractor will participate in a project badge identification system if instituted by the Construction Manager and the District.
62. Labor rates to be used in pricing any extra work that may be required are to be submitted within 10 days from the Notice to Proceed. Rates are to be complete billing rates and are to include wages, taxes, fringe benefits, insurance, small tools and incidentals. Base price on current rates in effect at time of bid. As labor agreement wages and fringes change, these increases will be added to the labor rates at actual cost. List all rates by submitting the Wage Rate Breakdown Form for each classification of worker anticipated.
63. All utility or public agency fees will be paid by the District, unless otherwise noted. Any and all other permit and/or service fees, assessment or bonding required in conjunction with the work of this Bid Package shall be the responsibility of Trade Contractor. All notifications with various agencies required in the performance of the work shall remain the responsibility of Trade Contractor.
64. Trade Contractor shall furnish all general conditions and support services it requires for the satisfactory performance of the work of this Bid Package. If a project trailer or central work location is established, items such as trailer facilities, water, power, phones, toilets, disposal services, security, etc., are the Trade Contractor's responsibility. Refer to General Conditions and the Specification for further definition.

**END OF SECTION**

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**SB-8 ELECTRICAL, OFF-SITE & SITE ELECTRICAL & LOW VOLTAGE**

Switch Gear has been purchased by Central USD. The ship date is anticipated for February 2024. The receiving, handling, installation, and *testing required* of the Switch Gear is the responsibility this contractor.

Specifically, the items purchased by the district are:

- MSB

The work of this Bid Package includes the fabrication, delivery, unloading, hoisting, distribution, setting, and installation complete of the work described by the documents including, but not limited to, the following:

Perform a complete job of all work associated with the project Plans and Specifications, all for a lump sum bid price, including all taxes, as indicated and in accordance with the Bid Documents, Project Manual, Technical Specifications and as described below, to complete the intended scope of work.

Bidders will be required to have the appropriate current license issued by the State of California Contractor’s License Board for the work in which the Subcontractor would perform. Bidder’s will also be required to have a valid DIR number, provided by the Department of Industrial Relations.

**A. Specifications:**

Division 1

Division 3 Site Concrete (as it applies)

Division 14 Elevators and Wheelchair Lifts (as it applies)

260000 Electrical

260500 Common Work Results for Electrical,

265000 Lighting

270000 Communications

271000 Structured Cabling

275113 Paging Systems

280000 Electronic Safety and Security

281600 Intrusion Detection

The **Intrusion Detection** scope of work for SB-8 will be *limited* to 1.3B3 (power supply), 1.3B6 (wiring), 1.3B7 (conduit) & 1.3B8 (back boxes).

283100 Fire Detection and Alarm

312316 Trenching, Backfilling and Compaction (as it applies)

079200 Joint Sealants (as it applies)

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083113 Access Door and Frames (as it applies)

003132 Geotechnical Investigation Report

Off-Site plans and specifications

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. It is the general intent of this bid package that the Trade Contractor includes all electrical for the project complete, including but not limited to; all Off-Site and On-Site electrical and fixtures, electrical work for future build out, including trenching, conduits, backfilling and compaction. Furnish and install complete power, lighting, (including lighting, maintenance switch and conduit runs, j-hook cable supports in the attic space, Key note 4/E3.1, General Note 25/E0.1), Off-Site traffic signal light controls and fixtures per the drawings, theatrical lighting, data and sound communication, safety and security, intrusion and fire detection/alarm Systems. Work includes all light fixtures, emergency lighting, exterior building lighting, lighting controls, low voltage, transformers, electrical panels, conduit, wiring, receptacles, j-boxes, light fixtures, racks, firestop for electrical and low voltage systems, etc. per plans and specifications needed to complete the project. Contractor must include all electrical work included in Contract Documents.
2. ~~The kitchen hood extinguishing system must be interconnected to the building alarm system.~~
3. All final connections (power, lighting, low voltage, security) for Bringing power to the Preschool modular building and energize the service panel are to be included in this bid package.
4. Provide raceway and low voltage wire from the security head end panel to the Preschool modular building.
5. Furnish and install a complete fire alarm system for the Preschool modular building and integrate with the campus Fire Alarm system. Including wire, raceways, and backboxes.
6. ~~Installation of power for all kitchen equipment is included in this bid package. Exhaust hood lights provided by Kitchen Vendor, installed by this bid package. Coordinate all power requirements with the Kitchen vendor. Provide electrical shut offs for Kitchen equipment as outlined in the contract documents.~~
7. Provide electrical and low voltage and security infrastructure to all relocatable / future buildings. All services to be brought to within 5' of location shown on the contract documents. There will be services to each relocatable / future building, install large enough conduits to accommodate for all services.
8. Furnish and install main electrical, low voltage, telecommunication connections to the Construction Manager/IOR temporary offices, to include overhead power and conduit pathways between buildings. Disconnection and removal of temporary systems to be included in this bid package.

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9. Provide temp lighting outside at Construction Manager/IOR Temporary Project Offices and other areas of the laydown yard. Temp lighting should have the capabilities to be on/off and timer switch. Removal of power and poles/conduit at the end of the project. (See items 21 – 30 herein for further requirements for temp power.)
10. Theatrical lighting systems to include all equipment, e.g. processors, receivers, transceiver, controller, etc...
11. Furnish and install all Wireless Area Controllers as outlined on the contract documents.
12. All electrical connections to Food Service Equipment and Walk In Freezer as indicated on the drawings. This is to include inter-wiring between the freezer condensing units and freezer blower coils and all power to disconnects on condensing units and racks.
13. All power, lighting, fire alarm, low voltage/telephone at elevator/wheelchair lift by this bid package. Provide a feeder and branch wiring circuits including main line switch for car light and fan. Thoroughly read and understand the scope of work required by this bid package for work at the elevator and wheelchair lift and in the control rooms. Coordinate with the Elevator contractor for placement of equipment in order to maintain required distances.
14. Coordination with utility service provider(s) related to your work.
15. All tie-ins related to electrical will be fully coordinated with Construction Manager.
16. Coordinate installation of any work with Construction Manager that crosses public pathways of travel during construction. Any work affecting public paths of travel must be done on Saturday to avoid path of travel disruptions.
17. For pipes/piping that cross through footings, provide sleeving and sealant as indicated on the drawings. Include all slurry backfill at conduits at footings, if not poured in unison with footings.
18. Install electrical/low voltage and final terminations required for landscaping/irrigation scopes (e.g. Irrigation Booster Pump, Irrigation Controller, etc.) of work. Reference Landscape drawings for electrical scope.
19. Furnish and install site lighting (parking lot and pedestrian), including pole footings/concrete/base, rebar, anchors, grout, pole light, covers/closure piece, pull boxes for complete system. Pull boxes to include crush rock, tar paper, grout as outlined in the details. Layout and surveying for site lighting is the responsibility of this bid package.
20. All power and data for Marquee signs to be included in this bid package. Bring services to within 3' of Marquee signs, that will be installed at a later date.
21. Theatrical lighting is part of this bid package and includes but not limited to, controls, controller, DMX processor, transceiver, console, battens are to be part of this bid package. Provide batten theatrical lights as outlined on the drawings.
22. Refer to 015000 – Temporary Facilities and Controls, for electrical requirements related to temporary facilities.
23. *Temporary Power (Items 21 – 30)* Electrical Trade Contractor shall provide a complete Temporary Electrical distribution system to service the Project, until such time as the permanent electrical distribution system is available for use.
24. Temporary power shall include the following:
25. Installation of underground conduit and primary feeders from an existing PG&E Primary Splice Box or existing ground mounted transformer located across West

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- Fountain Way to the location of the future new PG&E Transformer as shown on Sheet E2.2. or unless noted otherwise.
26. Electrical Trade Contractor shall then construct an above ground Temporary Power Center adjacent to the future location of the permanent PG&E Transformer.
  27. Temporary Power Center to consist of a suitably sized dry-type step down transformer, and a distribution panel sized to accommodate the required loads. Panel shall have sufficient circuitry to provide OSHA required general temporary lighting throughout all areas of the new construction; sufficient circuitry to provide spider boxes to within one hundred (100) feet of any area of the new construction, including any roof areas. Sufficient spider boxes shall be provided by this contractor to accommodate work by the various trades that will be working simultaneously on the site. Electrical Trade Contractor shall be responsible for providing the power cords to spider boxes as noted previously to accommodate the needs of other trades or as directed by Kitchell. Power cords from the spider boxes shall be provided by the trade requiring same.
  28. From the Power Center, Electrical Trade Contractor shall run temporary overhead power lines to the Construction Trailer Complex. Overhead lines shall be supported by temporary power poles arranged in such a manner as to avoid conflict with construction of the building pad and future permanent site concrete and paving work. Assume a maximum of a three hundred (300) foot run to the trailer complex.
  29. Electrical Trade Contractor shall provide fiber data lines running overhead to Kitchell's temporary office trailer and the Inspector of Record's trailer, located adjacent to the Kitchell trailer.
  30. Electrical Trade Contractor shall provide all temporary light strings, warehouse lights, or other temporary light sources necessary to provide temporary lighting, until such time as permanent lights are available. All temporary lighting shall feed from a dedicated circuit at the power center. Lighting is not to be fed from a spider box.
  31. Electrical Trade Contractor shall provide all power cords from the power center to the spider boxes; and all required spider boxes. Electrical Trade Contractor shall be responsible for all maintenance and storage of same.
  32. When permanent power is ready to be activated and temporary power no longer required, Trade Contractor shall remove the entire temporary power distribution system and all temporary lighting. Trade Contractor shall have the permanent electrical distribution system completely serviceable before scheduling a shutdown to remove temporary feeders.
  33. All fire safing work completed in this package including fire caulking, fire sealants, putty pads, at all electrical penetrations through fire rated barriers. Follow fire rating details in the contract documents,
  34. All seismic bracing and/or anchorage required for your work - anchorage, Unistrut, all-thread, supports, embeds, inserts, hanger, backing plates, and bracing. Reference the structural drawings for supporting requirements from metal deck/steel beams.
  35. This bid package is responsible for all required electrical clearances at panels, equipment, etc.

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36. Furnish and install all required access panels for work outlined in this bid package. Provide location and layout to the framing contractor for backing/blocking needed.
37. Trenching for own work is to be part of this bid package. Compliance with all trenching details is required.
38. Furnish and install flashing associated with own work where required.
39. All labeling and identification signs required for your work.
40. Equipment furnished by others: Contractor shall make electrical connections to all equipment furnished and installed by others. Specific requirements shall be obtained from contractor providing the equipment and used to perform electrical work. Contractor's responsibility is limited to having correctly installed and connected electrical work in accordance with diagrams and specifications furnished by the appropriate equipment contractor.
41. This bid package is responsible for all conduit pathway requirements for power, line voltage, low voltage, audio visual, theatrical lighting, fire alarm, security. Conduit for control wiring is responsibility of the Mechanical contractor.
42. Verify low voltage labeling with the Construction Manager. The District may have a template to follow to keep labeling uniform throughout their school district.
43. Layout of items located in concrete, masonry and framing prior to installation of concrete, masonry, and framing. In the event layout does not occur in a timely manner, Trade Contractor becomes responsible for all rework, reframing, coring, cutting, etc. required to install own work including patch and repair to like new condition. Provide cut sheets indicating layout dimensions. Contractor to provide competent person onsite during all concrete pours to monitor own work and ensure components in concrete are not disturbed and are at proper elevation and configuration.
44. Concrete associated with own work including precast, cast-in-place, reinforcing, encasements, etc. excluding equipment pads shown in Contract Documents. Layout of equipment pads by this bid package. This bid package is to provide the Concrete Contractor all hardware at pads, which includes, bolts, mounting frame, etc.  
Equipment pads to be coordinated with the Sitework and General Trades contractors. Transformer equipment pads that are not concrete are to be included in this bid package. This includes but not limited to the roof mounted transformer(s). Roof curb, blocking, flashing, sealant is part of this bid package. Coordinate work with the Structural Steel/Metal Deck and Roofing Contractors.
45. Excavation, dewatering, bedding material, backfill and compaction for own work, including shoring and lagging if required. During the winter months, provide protection of trenches so they do not collapse and/or only trench what can be installed, inspected and backfilled during the day.
46. Provide trench plates if required to maintain access for all scopes of work for other trade contractor's work.
47. Trade Contractor must coordinate all training and operation instruction sessions per the specification requirements.
48. Provide layout and field measurements for own work from line and grade coordinates provided. Any additional survey work requested other than that provided by District will be the responsibility of the affected contractor.

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49. Furnish and install infrastructure (power, low voltage) to location of future marquis sign.
50. Installation of all electrical/low voltage at casework and motorized screen. Coordinate with General Trades contractor.
51. Electrical Trade Contractor to cover scope as indicated in HVAC drawings and notes calling out Electrical Contractor and/or Div 26.
52. Furnish duct/fire/smoke detectors as indicated in the contract documents to the Mechanical contractor, for install. Power and wiring of duct/fire/smoke detectors and cabling to test switch, to be part of this bid package.
53. Furnish and install fire treated plywood backboards in electrical and telecom rooms as shown on the drawings. Coordinate painting of plywood with the painting contractor.
54. Provide data drops and 120V power to HVAC control panel locations. Reference HVAC drawings for locations.
55. All power/low voltage for mechanical equipment. Coordinate power and low voltage requirements with the mechanical contractor.
56. Turn over all panel door keys to the Construction Manager separated by building and room number and panel name along with a key metric's identifying key's to doors and rooms. Keys are not to be left in doors at any time.
57. All testing and support for your work, including any testing required by the Utility companies. Work includes all mandrel pulls required for the underground conduits. All testing reports to be included in the O & M manual.
58. Trade Contractor must coordinate all training and operation instruction sessions per the contract documents.
59. Commissioning and operation test required as part of this work. This includes all Title 24 documentation.
60. Pull and pay for all necessary permits required. The District will reimburse the Contractor for the actual permit cost, with no markup.
61. Offsite electrical, street lights, and traffic signal work shall be provided by this bid package. Including undergrounding PG&E power lines per PG&E Rule 16. The "wreck out" of the existing PG&E poles and power lines will be completed by PG&E.

**B. THE FOLLOWING ITEMS OF WORK ARE INCLUDED IN ALL BID PACKAGES**

1. The regular hours of work are 7:00 AM to 5:00 PM, Monday through Friday unless specifically controlled by local municipalities. Any other working hours must have prior written approval from the Construction Manager.
2. Specification sections as noted in the above descriptions of each specific Bid Package.
3. This Bid Package may contain Scope of Work items and/or related items of work that are not customarily performed by Trade Contractor. If such work is required to be performed by Trade Contractor pursuant to the Bid Package Documents, Trade Contractor will provide this work either by its own forces or by contracting such work in accordance with local trade practice.
4. Construction Manager will provide temporary construction power, sanitation facilities, construction trash removal, and segregation site fencing, as required.

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- Trade contractors are to provide and pay for their own, drinking water, phones, and security, etc.
5. Trade Contractors are responsible for storage and security of own materials and/or equipment located on and off the jobsite property. Work shed, yard, lighting and security fence if required for storage shall be the responsibility of the Trade Contractor. Location of storage/staging area to be determined / approved by Construction Manager.
  6. All Trade Contractors shall furnish to the Construction Manager on a weekly basis, completed daily reports of the total number of its workers, by classification, employed on the project (including any sub-tier subcontractors' workers), and a description of work performed, (refer to General Conditions and Supplemental General Conditions for required information). Daily reports shall be on a form acceptable to the Construction Manager. Current daily reports are a condition of release of monthly payment to each trade contractor.
  7. There will be multiple prime contractors for the project and there will be work by others occurring simultaneously with the work of this trade contractor. It is the responsibility of this trade contractor to be aware of the other operations and coordinate their work accordingly.
  8. If a particular item of work appears to be included in more than one bid package, the bidder shall ensure they have covered this item(s) of work and shall not assume it is covered by another bid package. Bidders are responsible for all items of work listed in their specific scope of work.
  9. Provide and maintain dewatering operation as required to eliminate the ponding of water immediately after rainfall has occurred in order to allow these areas to dry out as quickly as possible. Dewatering to be done by whatever means necessary, including mechanical pumps, siphons, etc. Any SWPPP measures defeated or removed in the dewatering process shall be replaced per the posted SWPPP plan by the removing Contractor. Dewatering for grading operation, trenches, footings, pits, slab areas, etc, shall be done immediately by affected Trade Contractor.
  10. Storm Water Pollution control as required including conformance with erosion control plan and protection of own work as applies. **Bid package #11** Trade Contractor is responsible to initially furnish, install and implement the Storm Water Pollution Prevention Plan complete per plans and specifications. Work is to include all sandbags, hay bales, swales, etc. as required to complete a system in compliance with all Federal, State, and Local requirements. All trade contractors are responsible for repair and replacement of SWPPP control measures disturbed by or required by their own operations. All trade contractors shall follow all directions given by the Construction Manager. All requested work shall be at no extra cost to the owner or construction manager.
  11. Offloading, scaffolding, ladders, rigging, hoisting and moving of materials and/or equipment for own work.
  12. Provide traffic control (vehicular and pedestrian) as required when on or off-loading materials and/or equipment. Include flag person, cones, signs, and additional safeguards as necessary.
  13. Submittal preparation and material procurement shall begin immediately upon award or letter of intent. Reference the master schedule to review when material

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- is needed on site. Submittals shall be bookmarked and a searchable document.
14. Submittals, including product data, shop drawings, mock-ups, samples and as-built drawings as specified. See submittal requirements of appropriate specification sections, including requirements for closeout submission.
  15. Identify all long lead items and develop a procurement schedule. Submit a copy to the Construction Manager at the Pre-Construction Meeting.
  16. Submit all deferred approvals as specified on plans and specifications within 30 days of the Notice to Proceed.
  17. Each bid package contractor is responsible for temporary power, portable lighting and extension cords necessary to complete work that is not within 100' of buildings.
  18. The electrical trade contractor will provide for temporary electrical power and or temporary power supply infrastructure from Public Utilities. Electrical trade contractor will supply all necessary 100-amp spider boxes in each building location. Each bid package contractor is responsible to furnish any additional items required for their work, (i.e., extension cords, adaptors, task lighting, etc.).
  19. Electrical trade contractor will provide general lighting in the structures. Each bid package contractor shall provide their own task lighting, including any extension cords as may be required.
  20. Coordination and protection of own work with other trades is the responsibility of each Trade Contractor.
  21. Trade Contractor is to provide all temporary protection (against dust, for safety, etc.) for exposures which are created or generated by or associated with, this Work. Protection of existing surfaces scheduled to remain to prevent damage while performing the work of this bid package.
  22. Dumpsters will be provided for the Trade Contractor's use. Trade Contractor to dispose of all debris onsite as directed by the Construction Manager. Trade Contractor to be responsible for all continuous cleanup and segregation of all debris generated by the work of this Bid Package into the proper dumpsters as required by Waste Management and directed by the Construction Manager. If this item is not performed consistently, the Construction Manager may elect to have the work done on behalf of the Trade Contractor and monies deducted to cover this expense. Debris typically not discarded in dumpsters, i.e., soils, spoils, stripping's, tree shrubs, concrete, demolished materials, etc, will be disposed of offsite by the Trade Contractor.
  23. Trade Contractor shall be responsible for preparing and submitting to the Construction Manager a detailed Contractor's Waste and Recycling Plan as it is related specifically to Trade Contractor's scope of work within ten (10) calendar days of award of contract. The Construction Manager will consolidate Trade Contractors' Plans into a Master Construction Waste & Recycling Plan to be issued and adhered to at all times during the course of construction. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite. This includes but not limited to, concrete, grout, taping mud, paint, etc..
  24. Daily cleanup of own debris, packing materials and boxes, and placement into owner supplied dumpster each day. Each Trade Contractor shall be responsible to remove off site at their own expense any and all concrete, concrete residue,

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- or hazardous materials generated by their work operations. Jobsite to be kept in a "broom-swept" condition at all times.
25. Each Prime Contractor shall include eight (8) hours (while on site) within their cost proposal to participate in the weekly composite cleanup efforts scheduled by the Construction Manager.
  26. Upon failure by trade contractor to provide sufficient cleanup, and after 48-hour Notice, Construction Manager will perform the cleanup and assess all costs against the trade contractor requiring the cleanup.
  27. Each Trade Contractor is responsible for control of their own environmental conditions (i.e. temperature control, moisture control, etc) affecting their own work.
  28. Provide layout and field measurements for own work from line and grade coordinates supplied by Construction Manager. Survey provided by Bid Package 10. Any additional survey work requested other than that provided by BP 10 will be the responsibility of the affected / requesting Trade Contractor.
  29. Should re-staking be required due to stakes damaged or removed by trade contractor, said re-staking shall be performed at the expense of that Trade Contractor. Each Trade Contractor is responsible for protection of stakes placed for own work.
  30. Safety requirements for own work, shall be in compliance with most recent CAL OSHA regulations and in accordance with Trade Contractors Safety Program, of which a copy shall be provided to the Construction Manager for its reference only. Hardhats, boots, eye protection, long pants and shirts with sleeves, and 100% tie off are required for all personnel at all times during construction of the Project. Failure to comply with any Safety Regulations will be grounds for removal of personnel from the jobsite. See also Supplemental General Conditions.
  31. Include in the Bid Price, all personnel costs for safety related meetings, etc., for all Trade Contractor's and subcontractor's labor forces working on this jobsite, regardless of tier. Safety meetings may be scheduled by the Construction Manager and may last approximately one-half hour per week.
  32. Comply with all applicable Construction Safety Standards, Cal OSHA, Federal, State, and Local safety rules and regulations. Protect life and property, which is not to be injured, damaged, disturbed or blemished. Trade Contractor will conduct his operations at all times and confine equipment and personnel to areas within the limits of the work. Provide copy of any required OSHA permits to the Construction Manager.
  33. Flammable products must be continually stored per OSHA regulations.
  34. Compliance with regulatory agency, trade organization, and governing body requirements having jurisdiction over own work.
  35. Each Trade Contractor shall submit a Job Hazard Analysis report to Construction Manager prior to commencement of work.
  36. Trade Contractor to comply with all ordinances regarding parking, hours of work and routing of delivery trucks to the project site, and as required by the Construction Manager.
  37. Parking for own employees, equipment, suppliers and sub-tier contractors shall be in areas designated by Construction Manager. Provide off site parking for

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- same if adequate space is not available on or convenient to jobsite.
38. Compliance with specified warranty and guarantee requirements, both standard and special.
  39. Provide at a minimum one qualified superintendent or one lead foreman for the duration of own work on project, including punch list corrections at completion of project. Foreman must be on-site when work is being performed. Superintendent/Foreman is subject to approval by the Construction Manager and shall not be changed without Construction Manager's approval.
  40. Attendance at jobsite weekly progress meeting, coordination, scheduling and safety meetings is MANDATORY.
  41. Sealants and caulking for own work as per Division 7.
  42. Provide relocation of staging area as necessary due to construction progress and as directed by Construction Manager.
  43. Procurement of business license as needed.
  44. Conformance with project manual, specifications, Construction Documents, and project time.
  45. Trade Contractor has primary responsibility for locating existing utilities prior to commencing underground work. Trade Contractor must make own notification to required agencies and hold a pre-dig conference prior to starting underground work. Trade Contractor shall not rely on any representation made by anyone other than those individuals duly authorized to survey, locate and stake existing utilities.
  46. Inspect all surfaces to receive own work. Promptly notify Construction Manager in writing, of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.
  47. Responsibility to provide Construction Manager with all backing requirements for own work prior to wall framing operations. Each Trade Contractor will layout backing required and verify installation prior to covering. Failure to provide backing requirements transfers backing responsibility to each trade contractor for their own work.
  48. Dust control as applies to own work and the performance thereof. Any fines for violations for non-compliance will be the Trade Contractor's responsibility.
  49. Protection of own work including barricades, traffic control, and/or flagmen for traffic control.
  50. Public travel shall not be needlessly inconvenienced, nor shall it be wholly obstructed at any point without the Construction Manager's approval. Trade Contractor shall furnish necessary lanterns, barricades and other devices to protect the public fully, including the requirements of the Specification and local codes. All work in the public right-of-way shall be done in full conformance with the (requirements of local and State authorities.
  51. All welding required for own work. Submit current and valid welder's certifications prior to beginning any welding installation on site for IOR, Owner or Construction Managers review and retention. Provide any needed ventilation equipment.
  52. Fire-stopping at own penetrations as required.
  53. Additional testing costs as required should initial tests fail.
  54. Contractors to provide minimum 48 hours written notice to Construction

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- Manager for testing/inspection, and staking and survey requests/requirements.
55. Re-inspection costs due to failure of Trade Contractor to notify the Construction Manager 48 hours prior to canceling an inspection will be charged to the responsible Trade Contractor.
  56. All project record documents as required per plans and specifications. Weekly updates of as-built documents on Construction Manager's plan set, and transfer to digital format at end of project as required by specifications. Update as-built drawing before own work is covered up.
  57. Trade Contractors shall at no extra cost to the Owner or Construction Manager provide the required crew sizes and or work as required to meet the project schedule. Trade Contractor agrees to accept the Construction Managers direction for said work.
  58. Multiple move-ons to comply with Construction Manager's Master Schedule.
  59. Each trade contractor is responsible for coordination onto the site for own work (i.e. cranes, concrete trucks, etc.)
  60. Smoking, tobacco, and vaping is prohibited anywhere on the project site.
  61. When required - All Trade Contractors shall comply with fingerprinting requirements at own expense (including Contractor Fingerprinting Certification) in accordance with Education Code 45125. Additionally, Trade Contractor will participate in a project badge identification system if instituted by the Construction Manager and the District.
  62. Labor rates to be used in pricing any extra work that may be required are to be submitted within 10 days from the Notice to Proceed. Rates are to be complete billing rates and are to include wages, taxes, fringe benefits, insurance, small tools and incidentals. Base price on current rates in effect at time of bid. As labor agreement wages and fringes change, these increases will be added to the labor rates at actual cost. List all rates by submitting the Wage Rate Breakdown Form for each classification of worker anticipated.
  63. All utility or public agency fees will be paid by the District, unless otherwise noted. Any and all other permit and/or service fees, assessment or bonding required in conjunction with the work of this Bid Package shall be the responsibility of Trade Contractor. All notifications with various agencies required in the performance of the work shall remain the responsibility of Trade Contractor.
  64. Trade Contractor shall furnish all general conditions and support services it requires for the satisfactory performance of the work of this Bid Package. If a project trailer or central work location is established, items such as trailer facilities, water, power, phones, toilets, disposal services, security, etc., are the Trade Contractor's responsibility. Refer to General Conditions and the Specification for further definition.

**END OF SECTION**

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**SB-8 ELECTRICAL, OFF-SITE & SITE ELECTRICAL & LOW VOLTAGE**

APPENDEX A

NOTIFICATION PROVIDED BY PRIME CONTRACTOR TO PG&E CUSTOMERS:

Power shutdowns are disruptive especially if the affected resident relies on power who are medical dependent on devices that use power, use HVAC or use other assistive technology devices.

As a result, so that proper arrangements can be made, the Prime Contractor must notify residences, businesses and any other PG&E customer that are affected of intermittent power shut downs three weeks prior to executing the shutdown **in writing**.

The notification letter shall list the date, time and duration of shutdown including the Prime Contractor's emergency contact phone number and a secondary contact number. Prime Contractor shall coordinate with PG&E throughout the duration of the work.

Notification Letter must be submitted to the Construction Manager for review and approval prior to distribution.

**SB-9 IRRIGATION AND LANDSCAPE**

The work of this Bid Package includes the fabrication, delivery, unloading, hoisting, distribution, setting, and installation complete of the work described by the documents including, but not limited to, the following:

Perform a complete job of all work associated with the project Plans and Specifications, all for a lump sum bid price, including all taxes, as indicated and in accordance with the Bid Documents, Project Manual, Technical Specifications and as described below, to complete the intended scope of work.

Bidders will be required to have the appropriate current license issued by the State of California Contractor's License Board for the work in which the Subcontractor would perform. Bidder's will also be required to have a valid DIR number, provided by the Department of Industrial Relations.

**A. Specifications:**

Division 1

328400 Planting Irrigation

328400.13 Planting Irrigation Appendix

329300 Plants

312316 Trenching, Backfill, and Compaction

003132 Geotechnical Investigation Report

Refer to additional related specification sections for work specifically included in this contract.

**INCLUSIONS:**

1. Furnish all labor, materials, tools, equipment and transportation required to perform and complete and full installation of an automatic sprinkler irrigation system including all piping, sprinkler heads, sleeves, valves, air release/relief valves, gate valves, flow sensors, controller including pedestal, control valves, control wiring, valve boxes including bricks and pea gravel, thrust blocks for your own work, connection from water meter, programing and testing, etc. per the Contract Documents.
2. If necessary, it is the responsibility of this bid package to have sleeves under hardscape/flatwork in place prior to placement of concrete. If this is not done and rework is required, all associated costs to be borne by this bid package contractor.
3. Furnish and install EZ-flo fertilizing system complete per contract documents.
4. Furnish and install all labor, material, tools, transportation and testing required for a full installation of a landscape system including all trees, plants, sod, turf, finish grading, topsoil, fertilizer, mulch, staking, header

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- boards, root barrier, weed control, accessories, etc. per the Contract Documents.
5. Furnish and place compacted decomposed granite including filter fabric and stabilizer. This contractor is responsible to compacted subgrade as indicated in G/LS.5.1.
  6. Layout and provide blackout for trees, reference detail N/LS5.0. It is the responsibility of this bid package to achieve compaction as indicated under all landscaping work.
  7. All tree grates (furnish and install) are to be included in this bid package.
  8. Construct planting pits to test soil percolation per Contract Documents.
  9. Provide plant material as indicated on landscape plans. Contractor shall verify required plant quantities.
  10. Protect irrigation and landscape materials before, during and after installation and protect related work and materials.
  11. Planting areas to have at a minimum of 6" of rock free top soil as required by the contract documents.
  12. Perform irrigation and central control system start-up including startup of booster pump and testing of all system functions and settings including flow, pressure, electrical currents, wire connections, flow sensors, grounding, bypass, etc.
  13. Furnish and install all components and accessories required for a fully functional installation of the central control system regardless if they are specifically shown on the drawings.
  14. Verify grading, soil conditions, field conditions and field measurements of all areas related to own work are in conformance with Contract Documents prior to commencing work.
  15. Furnish and install clean fill for trench backfill.
  16. Coordinate Ethernet and electrical connections with the Electrical Contractor.
  17. Erosion control measures as necessary to prevent erosion, displacement, runoff for work outlined in this bid package.
  18. Coordinate and schedule pre-construction meetings and inspections with District personnel and design consultants as required per Contract Documents.
  19. Confirm prior to submitting pricing that specified plants are available. Plant substitutions are not ideal.
  20. No planting of type two Bermuda grass outside the planning window, reference the specifications.
  21. Water coverage and find grade water test to be included in this pricing.
  22. Price to include "Bidding Allowance" as outlined in the specifications. If allowance is unused, it will be returned to the District.
  23. Furnish a 90 Day Landscape Maintenance Period as required by the Contract Documents.
  24. Maintain turf until Final Completion and acceptance by the District.
  25. Pull and pay for all necessary permits required. The District will reimburse the Contractor for the actual permit cost, with no markup.

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26. **Schedule Phase 1:** Irrigation and Planting for the Baseball, Softball, and Soccer play fields.
27. **Schedule Phase 2:** Irrigation and Planting for the remaining campus.
28. **Schedule Phase 3:** Irrigation and Planting in the area of the Construction Manager/IOB trailer and temporary construction entrance.
29. **Onsite:** This bid package is responsible for the furnishing and installation of irrigation backflow preventer and booster-pump per the Landscaping Plans and Specifications.
30. **Off-site: Schedule Phase 4:** Off-site, City of Fresno Public Works Plans, Landscape and Irrigation. See Addendum 1, Item #1-37 for drawings L1 and L2.
31. **Offsite:** offsite work includes but is not limited to, irrigation controller, water meter, backflow preventor with thrust blocks, irrigation, and plants. See Addendum 1, Item #1-37 for drawings L1 and L2 for a complete installation.

**B. THE FOLLOWING ITEMS OF WORK ARE INCLUDED IN ALL BID PACKAGES**

1. The regular hours of work are 7:00 AM to 5:00 PM, Monday through Friday unless specifically controlled by local municipalities. Any other working hours must have prior written approval from the Construction Manager.
2. Specification sections as noted in the above descriptions of each specific Bid Package.
3. This Bid Package may contain Scope of Work items and/or related items of work that are not customarily performed by Trade Contractor. If such work is required to be performed by Trade Contractor pursuant to the Bid Package Documents, Trade Contractor will provide this work either by its own forces or by contracting such work in accordance with local trade practice.
4. Construction Manager will provide temporary construction power, sanitation facilities, construction trash removal, and segregation site fencing, as required. Trade contractors are to provide and pay for their own, drinking water, phones, and security, etc.
5. Trade Contractors are responsible for storage and security of own materials and/or equipment located on and off the jobsite property. Work shed, yard, lighting and security fence if required for storage shall be the responsibility of the Trade Contractor. Location of storage/staging area to be determined / approved by Construction Manager.
6. All Trade Contractors shall furnish to the Construction Manager on a weekly basis, completed daily reports of the total number of its workers, by classification, employed on the project (including any sub-tier subcontractors' workers), and a description of work performed, (refer to General Conditions and Supplemental General Conditions for required information). Daily reports shall be on a form acceptable to the Construction Manager. Current daily reports are a condition of release of monthly payment to each trade contractor.
7. There will be multiple prime contractors for the project and there will be work by others occurring simultaneously with the work of this trade contractor. It is the responsibility of this trade contractor to be aware of the other operations and

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- coordinate their work accordingly.
8. If a particular item of work appears to be included in more than one bid package, the bidder shall ensure they have covered this item(s) of work and shall not assume it is covered by another bid package. Bidders are responsible for all items of work listed in their specific scope of work.
  9. Provide and maintain dewatering operation as required to eliminate the ponding of water immediately after rainfall has occurred in order to allow these areas to dry out as quickly as possible. Dewatering to be done by whatever means necessary, including mechanical pumps, siphons, etc. Any SWPPP measures defeated or removed in the dewatering process shall be replaced per the posted SWPPP plan by the removing Contractor. Dewatering for grading operation, trenches, footings, pits, slab areas, etc, shall be done immediately by affected Trade Contractor.
  10. Storm Water Pollution control as required including conformance with erosion control plan and protection of own work as applies. **Bid package #11** Trade Contractor is responsible to initially furnish, install and implement the Storm Water Pollution Prevention Plan complete per plans and specifications. Work is to include all sandbags, hay bales, swales, etc. as required to complete a system in compliance with all Federal, State, and Local requirements. All trade contractors are responsible for repair and replacement of SWPPP control measures disturbed by or required by their own operations. All trade contractors shall follow all directions given by the Construction Manager. All requested work shall be at no extra cost to the owner or construction manager.
  11. Offloading, scaffolding, ladders, rigging, hoisting and moving of materials and/or equipment for own work.
  12. Provide traffic control (vehicular and pedestrian) as required when on or off-loading materials and/or equipment. Include flag person, cones, signs, and additional safeguards as necessary.
  13. Submittal preparation and material procurement shall begin immediately upon award or letter of intent. Reference the master schedule to review when material is needed on site. Submittals shall be bookmarked and a searchable document.
  14. Submittals, including product data, shop drawings, mock-ups, samples and as-built drawings as specified. See submittal requirements of appropriate specification sections, including requirements for closeout submission.
  15. Identify all long lead items and develop a procurement schedule. Submit a copy to the Construction Manager at the Pre-Construction Meeting.
  16. Submit all deferred approvals as specified on plans and specifications within 30 days of the Notice to Proceed.
  17. Each bid package contractor is responsible for temporary power, portable lighting and extension cords necessary to complete work that is not within 100' of buildings.
  18. The electrical trade contractor will provide for temporary electrical power and or temporary power supply infrastructure from Public Utilities. Electrical trade contractor will supply all necessary 100-amp spider boxes in each building location. Each bid package contractor is responsible to furnish any additional items required for their work, (i.e., extension cords, adaptors, task lighting, etc.).
  19. Electrical trade contractor will provide general lighting in the structures. Each bid

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- package contractor shall provide their own task lighting, including any extension cords as may be required.
20. Coordination and protection of own work with other trades is the responsibility of each Trade Contractor.
  21. Trade Contractor is to provide all temporary protection (against dust, for safety, etc.) for exposures which are created or generated by or associated with, this Work. Protection of existing surfaces scheduled to remain to prevent damage while performing the work of this bid package.
  22. Dumpsters will be provided for the Trade Contractor's use. Trade Contractor to dispose of all debris onsite as directed by the Construction Manager. Trade Contractor to be responsible for all continuous cleanup and segregation of all debris generated by the work of this Bid Package into the proper dumpsters as required by Waste Management and directed by the Construction Manager. If this item is not performed consistently, the Construction Manager may elect to have the work done on behalf of the Trade Contractor and monies deducted to cover this expense. Debris typically not discarded in dumpsters, i.e., soils, spoils, stripping's, tree shrubs, concrete, demolished materials, etc, will be disposed of offsite by the Trade Contractor.
  23. Trade Contractor shall be responsible for preparing and submitting to the Construction Manager a detailed Contractor's Waste and Recycling Plan as it is related specifically to Trade Contractor's scope of work within ten (10) calendar days of award of contract. The Construction Manager will consolidate Trade Contractors' Plans into a Master Construction Waste & Recycling Plan to be issued and adhered to at all times during the course of construction. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite. This includes but not limited to, concrete, grout, taping mud, paint, etc..
  24. Daily cleanup of own debris, packing materials and boxes, and placement into owner supplied dumpster each day. Each Trade Contractor shall be responsible to remove off site at their own expense any and all concrete, concrete residue, or hazardous materials generated by their work operations. Jobsite to be kept in a "broom-swept" condition at all times.
  25. Each Prime Contractor shall include eight (8) hours (while on site) within their cost proposal to participate in the weekly composite cleanup efforts scheduled by the Construction Manager.
  26. Upon failure by trade contractor to provide sufficient cleanup, and after 48-hour Notice, Construction Manager will perform the cleanup and assess all costs against the trade contractor requiring the cleanup.
  27. Each Trade Contractor is responsible for control of their own environmental conditions (i.e. temperature control, moisture control, etc) affecting their own work.
  28. Provide layout and field measurements for own work from line and grade coordinates supplied by Construction Manager. Survey provided by Bid Package 10. Any additional survey work requested other than that provided by BP 10 will be the responsibility of the affected / requesting Trade Contractor.
  29. Should re-staking be required due to stakes damaged or removed by trade contractor, said re-staking shall be performed at the expense of that Trade

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- Contractor. Each Trade Contractor is responsible for protection of stakes placed for own work.
30. Safety requirements for own work, shall be in compliance with most recent CAL OSHA regulations and in accordance with Trade Contractors Safety Program, of which a copy shall be provided to the Construction Manager for its reference only. Hardhats, boots, eye protection, long pants and shirts with sleeves, and 100% tie off are required for all personnel at all times during construction of the Project. Failure to comply with any Safety Regulations will be grounds for removal of personnel from the jobsite. See also Supplemental General Conditions.
  31. Include in the Bid Price, all personnel costs for safety related meetings, etc., for all Trade Contractor's and subcontractor's labor forces working on this jobsite, regardless of tier. Safety meetings may be scheduled by the Construction Manager and may last approximately one-half hour per week.
  32. Comply with all applicable Construction Safety Standards, Cal OSHA, Federal, State, and Local safety rules and regulations. Protect life and property, which is not to be injured, damaged, disturbed or blemished. Trade Contractor will conduct his operations at all times and confine equipment and personnel to areas within the limits of the work. Provide copy of any required OSHA permits to the Construction Manager.
  33. Flammable products must be continually stored per OSHA regulations.
  34. Compliance with regulatory agency, trade organization, and governing body requirements having jurisdiction over own work.
  35. Each Trade Contractor shall submit a Job Hazard Analysis report to Construction Manager prior to commencement of work.
  36. Trade Contractor to comply with all ordinances regarding parking, hours of work and routing of delivery trucks to the project site, and as required by the Construction Manager.
  37. Parking for own employees, equipment, suppliers and sub-tier contractors shall be in areas designated by Construction Manager. Provide off site parking for same if adequate space is not available on or convenient to jobsite.
  38. Compliance with specified warranty and guarantee requirements, both standard and special.
  39. Provide at a minimum one qualified superintendent or one lead foreman for the duration of own work on project, including punch list corrections at completion of project. Foreman must be on-site when work is being performed. Superintendent/Foreman is subject to approval by the Construction Manager and shall not be changed without Construction Manager's approval.
  40. Attendance at jobsite weekly progress meeting, coordination, scheduling and safety meetings is MANDATORY.
  41. Sealants and caulking for own work as per Division 7.
  42. Provide relocation of staging area as necessary due to construction progress and as directed by Construction Manager.
  43. Procurement of business license as needed.
  44. Conformance with project manual, specifications, Construction Documents, and project time.
  45. Trade Contractor has primary responsibility for locating existing utilities prior to

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- commencing underground work. Trade Contractor must make own notification to required agencies and hold a pre-dig conference prior to starting underground work. Trade Contractor shall not rely on any representation made by anyone other than those individuals duly authorized to survey, locate and stake existing utilities.
46. Inspect all surfaces to receive own work. Promptly notify Construction Manager in writing, of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.
  47. Responsibility to provide Construction Manager with all backing requirements for own work prior to wall framing operations. Each Trade Contractor will layout backing required and verify installation prior to covering. Failure to provide backing requirements transfers backing responsibility to each trade contractor for their own work.
  48. Dust control as applies to own work and the performance thereof. Any fines for violations for non-compliance will be the Trade Contractor's responsibility.
  49. Protection of own work including barricades, traffic control, and/or flagmen for traffic control.
  50. Public travel shall not be needlessly inconvenienced, nor shall it be wholly obstructed at any point without the Construction Manager's approval. Trade Contractor shall furnish necessary lanterns, barricades and other devices to protect the public fully, including the requirements of the Specification and local codes. All work in the public right-of-way shall be done in full conformance with the (requirements of local and State authorities.
  51. All welding required for own work. Submit current and valid welder's certifications prior to beginning any welding installation on site for IOR, Owner or Construction Managers review and retention. Provide any needed ventilation equipment.
  52. Fire-stopping at own penetrations as required.
  53. Additional testing costs as required should initial tests fail.
  54. Contractors to provide minimum 48 hours written notice to Construction Manager for testing/inspection, and staking and survey requests/requirements.
  55. Re-inspection costs due to failure of Trade Contractor to notify the Construction Manager 48 hours prior to canceling an inspection will be charged to the responsible Trade Contractor.
  56. All project record documents as required per plans and specifications. Weekly updates of as-built documents on Construction Manager's plan set, and transfer to digital format at end of project as required by specifications. Update as-built drawing before own work is covered up.
  57. Trade Contractors shall at no extra cost to the Owner or Construction Manager provide the required crew sizes and or work as required to meet the project schedule. Trade Contractor agrees to accept the Construction Managers direction for said work.
  58. Multiple move-ons to comply with Construction Manager's Master Schedule.
  59. Each trade contractor is responsible for coordination onto the site for own work (i.e. cranes, concrete trucks, etc.)
  60. Smoking, tobacco, and vaping is prohibited anywhere on the project site.
  61. When required - All Trade Contractors shall comply with fingerprinting requirements at own expense (including Contractor Fingerprinting Certification) in

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accordance with Education Code 45125. Additionally, Trade Contractor will participate in a project badge identification system if instituted by the Construction Manager and the District.

62. Labor rates to be used in pricing any extra work that may be required are to be submitted within 10 days from the Notice to Proceed. Rates are to be complete billing rates and are to include wages, taxes, fringe benefits, insurance, small tools and incidentals. Base price on current rates in effect at time of bid. As labor agreement wages and fringes change, these increases will be added to the labor rates at actual cost. List all rates by submitting the Wage Rate Breakdown Form for each classification of worker anticipated.
63. All utility or public agency fees will be paid by the District, unless otherwise noted. Any and all other permit and/or service fees, assessment or bonding required in conjunction with the work of this Bid Package shall be the responsibility of Trade Contractor. All notifications with various agencies required in the performance of the work shall remain the responsibility of Trade Contractor.
64. Trade Contractor shall furnish all general conditions and support services it requires for the satisfactory performance of the work of this Bid Package. If a project trailer or central work location is established, items such as trailer facilities, water, power, phones, toilets, disposal services, security, etc., are the Trade Contractor's responsibility. Refer to General Conditions and the Specification for further definition.

**END OF SECTION**

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## **SB-12 METAL/IRON FENCING, GATE & HANDRAILS**

The work of this Bid Package includes the fabrication, delivery, unloading, hoisting, distribution, setting, and installation complete of the work described by the documents including, but not limited to, the following:

Perform a complete job of all work associated with the project Plans and Specifications, all for a lump sum bid price, including all taxes, as indicated and in accordance with the Bid Documents, Project Manual, Technical Specifications and as described below, to complete the intended scope of work.

Bidders will be required to have the appropriate current license issued by the State of California Contractor's License Board for the work in which the Subcontractor would perform. Bidder's will also be required to have a valid DIR number, provided by the Department of Industrial Relations.

### **A. Specifications:**

Division 1

323113 Chain Link Fences & Gates

~~323119 Wrought Iron Fences & Gates~~

323120 Decorative Galvanized Metal Fences and Gates

055200 Metal Railings

057300 Decorative Metal Railings

055000 Metal Fabrications (as applies to fencing and gates)

087100 Door Hardware (as applies for fencing and gates)

Refer to additional related specification sections for work specifically included in this contract.

### **General Items:**

1. Furnish and install chain link fencing, gates, posts, fabric, wheels and all other components and accessories relating to this work. Reference detail A/C6.3 for a clear understanding of this work. This work includes fencing/posts/backstops at the baseball and softball fields.
2. Furnish and install ~~wrought iron~~ decorative galvanized metal fences and gates, fencing, gates, metal screen, tube/privacy slats and all other components, kickplates, accessories relating to this work. Fence shall be all-welded construction. Fence and gate components shall be hot galvanized.
3. This bid package is responsible for all post holes, concrete and rebar required of their work.
4. All Decorative Metal Railings are to be included in this bid package. Work includes layout, cores, anchors, plates, railings, posts, etc. for a complete package. Access for anchors that require through bolting either vertically/horizontally to be by this bid package.

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5. All hardware including ADA compliant hardware for metal, service and chain link, roof screen gates to be provided by this bid package.
6. Metal, stainless steel and aluminum handrails and guardrails for stairs, sidewalks and ramps (both interior and exterior) to be provided and installed by this contractor. This contractor is responsible for layout of any/all backing needs for their work. Using detail 47/A8.3 where polished aluminum is called out, this should be priced/provided for polish 320/400 grit with a finish of 600.
7. Furnish and install stainless steel escutcheons at railing per contract details. Coordinate wood curb cap with General Trades contractor.
8. Any spoils from post holes should be disposed of or graded with other adjacent finish grades and landscaping areas. Coordinate fencing post and fencing/gate installations where site concrete, paving and utilities, landscaping/irrigation have been or will be installed. Coordinate, locate and mark all underground utilities prior to post-hole digging. Review layout, underground utility indicators and paint on ground location of all utilities within a 10' radius of any post hole then review with Construction Manager prior to post-hole digging and installations.
9. Furnish and install all finish hardware included in section 087100 as applies to sections 323113 and 323119.

**B. THE FOLLOWING ITEMS OF WORK ARE INCLUDED IN ALL BID PACKAGES**

1. The regular hours of work are 7:00 AM to 5:00 PM, Monday through Friday unless specifically controlled by local municipalities. Any other working hours must have prior written approval from the Construction Manager.
2. Specification sections as noted in the above descriptions of each specific Bid Package.
3. This Bid Package may contain Scope of Work items and/or related items of work that are not customarily performed by Trade Contractor. If such work is required to be performed by Trade Contractor pursuant to the Bid Package Documents, Trade Contractor will provide this work either by its own forces or by contracting such work in accordance with local trade practice.
4. Construction Manager will provide temporary construction power, sanitation facilities, construction trash removal, and segregation site fencing, as required. Trade contractors are to provide and pay for their own, drinking water, phones, and security, etc.
5. Trade Contractors are responsible for storage and security of own materials and/or equipment located on and off the jobsite property. Work shed, yard, lighting and security fence if required for storage shall be the responsibility of the Trade Contractor. Location of storage/staging area to be determined / approved by Construction Manager.
6. All Trade Contractors shall furnish to the Construction Manager on a weekly basis, completed daily reports of the total number of its workers, by classification, employed on the project (including any sub-tier subcontractors' workers), and a description of work performed, (refer to General Conditions and Supplemental General Conditions for required information). Daily reports shall be on a form

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Acceptance of Entire Bid Package,  
No Additions, No Omissions

- acceptable to the Construction Manager. Current daily reports are a condition of release of monthly payment to each trade contractor.
7. There will be multiple prime contractors for the project and there will be work by others occurring simultaneously with the work of this trade contractor. It is the responsibility of this trade contractor to be aware of the other operations and coordinate their work accordingly.
  8. If a particular item of work appears to be included in more than one bid package, the bidder shall ensure they have covered this item(s) of work and shall not assume it is covered by another bid package. Bidders are responsible for all items of work listed in their specific scope of work.
  9. Provide and maintain dewatering operation as required to eliminate the ponding of water immediately after rainfall has occurred in order to allow these areas to dry out as quickly as possible. Dewatering to be done by whatever means necessary, including mechanical pumps, siphons, etc. Any SWPPP measures defeated or removed in the dewatering process shall be replaced per the posted SWPPP plan by the removing Contractor. Dewatering for grading operation, trenches, footings, pits, slab areas, etc, shall be done immediately by affected Trade Contractor.
  10. Storm Water Pollution control as required including conformance with erosion control plan and protection of own work as applies. **Bid package #11** Trade Contractor is responsible to initially furnish, install and implement the Storm Water Pollution Prevention Plan complete per plans and specifications. Work is to include all sandbags, hay bales, swales, etc. as required to complete a system in compliance with all Federal, State, and Local requirements. All trade contractors are responsible for repair and replacement of SWPPP control measures disturbed by or required by their own operations. All trade contractors shall follow all directions given by the Construction Manager. All requested work shall be at no extra cost to the owner or construction manager.
  11. Offloading, scaffolding, ladders, rigging, hoisting and moving of materials and/or equipment for own work.
  12. Provide traffic control (vehicular and pedestrian) as required when on or off-loading materials and/or equipment. Include flag person, cones, signs, and additional safeguards as necessary.
  13. Submittal preparation and material procurement shall begin immediately upon award or letter of intent. Reference the master schedule to review when material is needed on site. Submittals shall be bookmarked and a searchable document.
  14. Submittals, including product data, shop drawings, mock-ups, samples and as-built drawings as specified. See submittal requirements of appropriate specification sections, including requirements for closeout submission.
  15. Identify all long lead items and develop a procurement schedule. Submit a copy to the Construction Manager at the Pre-Construction Meeting.
  16. Submit all deferred approvals as specified on plans and specifications within 30 days of the Notice to Proceed.
  17. Each bid package contractor is responsible for temporary power, portable lighting and extension cords necessary to complete work that is not within 100' of buildings.
  18. The electrical trade contractor will provide for temporary electrical power and or temporary power supply infrastructure from Public Utilities. Electrical trade contractor will supply all necessary 100-amp spider boxes in each building

Initial \_\_\_\_\_  
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- location. Each bid package contractor is responsible to furnish any additional items required for their work, (i.e., extension cords, adaptors, task lighting, etc.).
19. Electrical trade contractor will provide general lighting in the structures. Each bid package contractor shall provide their own task lighting, including any extension cords as may be required.
  20. Coordination and protection of own work with other trades is the responsibility of each Trade Contractor.
  21. Trade Contractor is to provide all temporary protection (against dust, for safety, etc.) for exposures which are created or generated by or associated with, this Work. Protection of existing surfaces scheduled to remain to prevent damage while performing the work of this bid package.
  22. Dumpsters will be provided for the Trade Contractor's use. Trade Contractor to dispose of all debris onsite as directed by the Construction Manager. Trade Contractor to be responsible for all continuous cleanup and segregation of all debris generated by the work of this Bid Package into the proper dumpsters as required by Waste Management and directed by the Construction Manager. If this item is not performed consistently, the Construction Manager may elect to have the work done on behalf of the Trade Contractor and monies deducted to cover this expense. Debris typically not discarded in dumpsters, i.e., soils, spoils, stripping's, tree shrubs, concrete, demolished materials, etc, will be disposed of offsite by the Trade Contractor.
  23. Trade Contractor shall be responsible for preparing and submitting to the Construction Manager a detailed Contractor's Waste and Recycling Plan as it is related specifically to Trade Contractor's scope of work within ten (10) calendar days of award of contract. The Construction Manager will consolidate Trade Contractors' Plans into a Master Construction Waste & Recycling Plan to be issued and adhered to at all times during the course of construction. This Trade Contractor is responsible for supplying bins and removal of washout debris and any other hazardous waste generated by its operations to a legal dumpsite offsite. This includes but not limited to, concrete, grout, taping mud, paint, etc..
  24. Daily cleanup of own debris, packing materials and boxes, and placement into owner supplied dumpster each day. Each Trade Contractor shall be responsible to remove off site at their own expense any and all concrete, concrete residue, or hazardous materials generated by their work operations. Jobsite to be kept in a "broom-swept" condition at all times.
  25. Each Prime Contractor shall include eight (8) hours (while on site) within their cost proposal to participate in the weekly composite cleanup efforts scheduled by the Construction Manager.
  26. Upon failure by trade contractor to provide sufficient cleanup, and after 48-hour Notice, Construction Manager will perform the cleanup and assess all costs against the trade contractor requiring the cleanup.
  27. Each Trade Contractor is responsible for control of their own environmental conditions (i.e. temperature control, moisture control, etc) affecting their own work.
  28. Provide layout and field measurements for own work from line and grade coordinates supplied by Construction Manager. Survey provided by Bid Package 10. Any additional survey work requested other than that provided by BP 10 will

Initial \_\_\_\_\_  
Acceptance of Entire Bid Package,  
No Additions, No Omissions

- be the responsibility of the affected / requesting Trade Contractor.
29. Should re-staking be required due to stakes damaged or removed by trade contractor, said re-staking shall be performed at the expense of that Trade Contractor. Each Trade Contractor is responsible for protection of stakes placed for own work.
  30. Safety requirements for own work, shall be in compliance with most recent CAL OSHA regulations and in accordance with Trade Contractors Safety Program, of which a copy shall be provided to the Construction Manager for its reference only. Hardhats, boots, eye protection, long pants and shirts with sleeves, and 100% tie off are required for all personnel at all times during construction of the Project. Failure to comply with any Safety Regulations will be grounds for removal of personnel from the jobsite. See also Supplemental General Conditions.
  31. Include in the Bid Price, all personnel costs for safety related meetings, etc., for all Trade Contractor's and subcontractor's labor forces working on this jobsite, regardless of tier. Safety meetings may be scheduled by the Construction Manager and may last approximately one-half hour per week.
  32. Comply with all applicable Construction Safety Standards, Cal OSHA, Federal, State, and Local safety rules and regulations. Protect life and property, which is not to be injured, damaged, disturbed or blemished. Trade Contractor will conduct his operations at all times and confine equipment and personnel to areas within the limits of the work. Provide copy of any required OSHA permits to the Construction Manager.
  33. Flammable products must be continually stored per OSHA regulations.
  34. Compliance with regulatory agency, trade organization, and governing body requirements having jurisdiction over own work.
  35. Each Trade Contractor shall submit a Job Hazard Analysis report to Construction Manager prior to commencement of work.
  36. Trade Contractor to comply with all ordinances regarding parking, hours of work and routing of delivery trucks to the project site, and as required by the Construction Manager.
  37. Parking for own employees, equipment, suppliers and sub-tier contractors shall be in areas designated by Construction Manager. Provide off site parking for same if adequate space is not available on or convenient to jobsite.
  38. Compliance with specified warranty and guarantee requirements, both standard and special.
  39. Provide at a minimum one qualified superintendent or one lead foreman for the duration of own work on project, including punch list corrections at completion of project. Foreman must be on-site when work is being performed. Superintendent/Foreman is subject to approval by the Construction Manager and shall not be changed without Construction Manager's approval.
  40. Attendance at jobsite weekly progress meeting, coordination, scheduling and safety meetings is MANDATORY.
  41. Sealants and caulking for own work as per Division 7.
  42. Provide relocation of staging area as necessary due to construction progress and as directed by Construction Manager.
  43. Procurement of business license as needed.
  44. Conformance with project manual, specifications, Construction Documents, and project time.

Initial \_\_\_\_\_  
Acceptance of Entire Bid Package,  
No Additions, No Omissions

45. Trade Contractor has primary responsibility for locating existing utilities prior to commencing underground work. Trade Contractor must make own notification to required agencies and hold a pre-dig conference prior to starting underground work. Trade Contractor shall not rely on any representation made by anyone other than those individuals duly authorized to survey, locate and stake existing utilities.
46. Inspect all surfaces to receive own work. Promptly notify Construction Manager in writing, of any unsuitable substrate conditions. Commencement of installation implies acceptance of all substrate conditions.
47. Responsibility to provide Construction Manager with all backing requirements for own work prior to wall framing operations. Each Trade Contractor will layout backing required and verify installation prior to covering. Failure to provide backing requirements transfers backing responsibility to each trade contractor for their own work.
48. Dust control as applies to own work and the performance thereof. Any fines for violations for non-compliance will be the Trade Contractor's responsibility.
49. Protection of own work including barricades, traffic control, and/or flagmen for traffic control.
50. Public travel shall not be needlessly inconvenienced, nor shall it be wholly obstructed at any point without the Construction Manager's approval. Trade Contractor shall furnish necessary lanterns, barricades and other devices to protect the public fully, including the requirements of the Specification and local codes. All work in the public right-of-way shall be done in full conformance with the (requirements of local and State authorities.
51. All welding required for own work. Submit current and valid welder's certifications prior to beginning any welding installation on site for IOR, Owner or Construction Managers review and retention. Provide any needed ventilation equipment.
52. Fire-stopping at own penetrations as required.
53. Additional testing costs as required should initial tests fail.
54. Contractors to provide minimum 48 hours written notice to Construction Manager for testing/inspection, and staking and survey requests/requirements.
55. Re-inspection costs due to failure of Trade Contractor to notify the Construction Manager 48 hours prior to canceling an inspection will be charged to the responsible Trade Contractor.
56. All project record documents as required per plans and specifications. Weekly updates of as-built documents on Construction Manager's plan set, and transfer to digital format at end of project as required by specifications. Update as-built drawing before own work is covered up.
57. Trade Contractors shall at no extra cost to the Owner or Construction Manager provide the required crew sizes and or work as required to meet the project schedule. Trade Contractor agrees to accept the Construction Managers direction for said work.
58. Multiple move-ons to comply with Construction Manager's Master Schedule.
59. Each trade contractor is responsible for coordination onto the site for own work (i.e. cranes, concrete trucks, etc.)
60. Smoking, tobacco, and vaping is prohibited anywhere on the project site.

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Acceptance of Entire Bid Package,  
No Additions, No Omissions

61. When required - All Trade Contractors shall comply with fingerprinting requirements at own expense (including Contractor Fingerprinting Certification) in accordance with Education Code 45125. Additionally, Trade Contractor will participate in a project badge identification system if instituted by the Construction Manager and the District.
62. Labor rates to be used in pricing any extra work that may be required are to be submitted within 10 days from the Notice to Proceed. Rates are to be complete billing rates and are to include wages, taxes, fringe benefits, insurance, small tools and incidentals. Base price on current rates in effect at time of bid. As labor agreement wages and fringes change, these increases will be added to the labor rates at actual cost. List all rates by submitting the Wage Rate Breakdown Form for each classification of worker anticipated.
63. All utility or public agency fees will be paid by the District, unless otherwise noted. Any and all other permit and/or service fees, assessment or bonding required in conjunction with the work of this Bid Package shall be the responsibility of Trade Contractor. All notifications with various agencies required in the performance of the work shall remain the responsibility of Trade Contractor.
64. Trade Contractor shall furnish all general conditions and support services it requires for the satisfactory performance of the work of this Bid Package. If a project trailer or central work location is established, items such as trailer facilities, water, power, phones, toilets, disposal services, security, etc., are the Trade Contractor's responsibility. Refer to General Conditions and the Specification for further definition.

**END OF SECTION**

Initial \_\_\_\_\_  
Acceptance of Entire Bid Package,  
No Additions, No Omissions













**STREETLIGHT NOTES:**

- ALL WORK SHALL CONFORM TO APPLICABLE SECTIONS OF THE STATE OF CALIFORNIA "STANDARD SPECIFICATIONS", ISSUED BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION, THE NATIONAL ELECTRICAL CODE, AND THESE SPECIAL PROVISIONS:
- LUMINARIE SHALL BE COBRA HEAD TYPE, 120V LIGHT EMITTING DIODE (LED) WITH QUICK ACTING PHOTOELECTRIC CELL AND SHALL BE SELECTED PURSUANT TO SECTION 23-3 OF THE CITY SPECIFICATIONS. INSTALL FUSE (KTK-5) AND FUSE HOLDER (BUS-HEB) IN LUMINARIE. CONTRACTOR TO WELD HAND HOLD CLOSED AFTER FINAL INSPECTION.
- ALL STREETLIGHTS SHALL BE NUMBERED PER STD. DWG. E-25. NUMERICAL SEQUENCE TO BE OBTAINED FROM PG&E. NUMERALS SHALL BE 2-1/2" HIGH AND INSTALLED 10'-6" ABOVE FINISHED GRADE.
- ALL CONDUITS SHALL BE SCH. 80 P.V.C., OR SCH. 40 P.V.C., AS PER STD. DWG. NOS. E-1, E-2, AND E-6 (NOTE 1), EXCEPT THAT CONDUIT FOR MAJOR STREET CROSSINGS SHALL BE GALVANIZED RIGID CONDUIT. ALL PVC CONDUIT SHALL BE UNDER SIDEWALK. IF NOT UNDER SIDEWALK, GALVANIZED RIGID CONDUIT SHALL BE BACKFILLED IN A 4" WIDE TWO SACK CONCRETE SLURRY MIX.
- PULL BOX SPACING SHALL NOT EXCEED 200 FT. PULL BOXES SHALL BE REQUIRED AT ALL CONDUIT CHANGE OF DIRECTION AND ADJACENT TO EACH STREETLIGHT. INSTALL 6" 6 SACK CONCRETE CAP AND CLEAN PEA GRAVEL. STAMP THE LETTERS "SL" 2-1/2" TALL INTO THE FINISHED CONCRETE USING A STAMP DESIGNED FOR THAT PURPOSE. "POINT OF SERVICE" PULL BOX LID SHALL BE VANDAL RESISTANT LOCKING LIDS OR APPROVED EQUIVALENT WITH NO CONCRETE OR PEA GRAVEL. VANDAL RESISTANT LOCKING LIDS SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR AT FINAL INSPECTION. CONTRACTOR SHALL PROVIDE TEMPORARY LID DURING CONSTRUCTION. LOCKING LIDS SHALL BE GALVANIZED STEEL DIAMOND PLATE, MINIMUM THICKNESS 3/16", WITH TWO (2) CLAMPING JAWS AND BE KEYPED TO THE CITY OF FRESNO KEY. PULL BOXES IN NON-CONCRETE AREAS SHALL BE SURROUNDED BY A ONE-FOOT RING OF CONCRETE TO THE DEPTH OF THE PULL BOX AND EXTENSION, AND ALL CONDUITS SHALL ENTER THESE PULL BOXES THROUGH THE BOTTOM, USING 90 DEGREE ELBOWS, AND SHALL EXTEND 3 TO 5 INCHES ABOVE THE FINISHED GROUT. CONTRACTOR SHALL TIGHTEN DOWN ALL LOCKING LID(S) TO A MINIMUM TORQUE SPEC OF 25 FOOT POUNDS.
- IF THE SERVICE PEDESTAL IS EQUIPPED WITH A LIGHTING CONTACTOR AND NO MASTER PHOTO CONTROL IS INSTALLED, THE CONTRACTOR SHALL INSTALL A MASTER PHOTO CONTROL ATOP A 30' TALL SIGNAL POLE ADJACENT TO THE SERVICE PEDESTAL, OR ATOP THE NEAREST STREETLIGHT POLE. THE MASTER PHOTO CONTROL SHALL BE WIRED BACK TO THE SERVICE PEDESTAL USING THREE NO. 12 AWG STRANDED COPPER WIRES COLOR MATCHED TO THE PEC. THE PEC WILL BE MOUNTED USING HARDWARE MANUFACTURED FOR THAT PURPOSE, OR FABRICATED HARDWARE APPROVED BY THE TSSL SUPERVISOR. IF THE PEDESTAL IS NOT EQUIPPED WITH A LIGHTING CONTACTOR THE CONTRACTOR SHALL UPGRADE THE PEDESTAL TO MEET THE LATEST CITY OF FRESNO STANDARDS.
- ALL STREETLIGHTS AND SAFETY LIGHTS FED FROM A PEDESTAL EQUIPPED WITH A CONTACTOR SHALL BE SWITCHED BY THAT CONTACTOR, AND THEIR PEC'S REPLACED WITH SHORTING CAPS.
- ALL WORK SHALL COMPLY WITH CITY OF FRESNO STANDARD DRAWINGS NOS. E-1 THROUGH E-37, AND CITY OF FRESNO STANDARD SPECIFICATIONS.
- ALL STREETLIGHT MATERIALS (LUMINAIRES AND POLES) SHALL BE APPROVED IN WRITING BY CITY OF FRESNO TRAFFIC SIGNALS & STREETLIGHTS (TSSL) DIVISION PRIOR TO ORDERING OF MATERIAL. ALL MATERIAL NOT APPROVED PRIOR TO ORDERING SHALL BE SUBJECT TO REJECTION AT NO COST TO THE CITY.
- THE EXISTING STREET LIGHTING SYSTEM SHALL REMAIN OPERATIONAL DURING CONSTRUCTION, UNLESS OTHERWISE NOTED ON THESE PLANS.
- ANY STREET LIGHT OR TRAFFIC SIGNAL PULL BOX IN THE SCOPE OF WORK OR ACCESSED BY THE CONTRACTOR SHALL BE CLEANED COMPLETELY, GROUTED, AND DUCT SEAL SHALL BE INSTALLED IN CONDUITS.
- ANY BROKEN PULL BOX WITHIN THE PROJECT SHALL BE REPLACED BY THE CONTRACTOR.
- ANY PULL BOX ADJUSTED TO GRADE SHALL BE ABLE TO ACCEPT A CITY OF FRESNO APPROVED LOCKING LID, AND THE CONDUITS SHALL BE ADJUSTED TO MEET CITY STANDARDS AND SPECIFICATIONS.

**SPECIAL NOTE:**

WHERE UNDERGROUND AND SURFACE STRUCTURES ARE SHOWN ON THE PLANS, THE LOCATIONS, DEPTH AND DIMENSIONS OF STRUCTURES ARE BELIEVED TO BE REASONABLY CORRECT, BUT ARE NOT GUARANTEED. SUCH STRUCTURES ARE SHOWN FOR THE INFORMATION OF THE CONTRACTOR, BUT INFORMATION SO GIVEN IS NOT TO BE CONSTRUED AS A REPRESENTATION THAT SUCH STRUCTURES WILL, IN ALL CASES, BE FOUND WHERE SHOWN, OR THAT THEY REPRESENT ALL OF THE STRUCTURES WHICH MAY BE ENCOUNTERED.

CONTRACTOR SHALL NOTIFY "USA" (UNDERGROUND SERVICE ALERT) AT 811, 48 HOURS BEFORE COMMENCING EXCAVATION AND ALL UTILITY AUTHORITIES OR UTILITY COMPANIES HAVING POSSIBLE INTEREST IN THE WORK OF CONTRACTOR'S INTENTION TO EXCAVATE PROXIMATE TO EXISTING FACILITIES, AND CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UTILITIES WITHIN THE WORK AREA.

**ASSESSOR'S PARCEL NUMBER:**

310-091-25

**RECORD OWNERSHIP:**

CENTRAL UNIFIED SCHOOL DISTRICT  
5652 WEST GETTYSBURG  
FRESNO, CA 93722

**IMPROVEMENTS BY:**

CENTRAL UNIFIED SCHOOL DISTRICT  
5652 WEST GETTYSBURG  
FRESNO, CA 93722

**PREPARED BY:**

QUAD KNOPF, INC (QK)  
601 POLLASKY AVENUE, SUITE 301  
CLOVIS, CA. 93612  
(559) 449-2400

**TOPOGRAPHIC SURVEY:**

TOPOGRAPHIC INFORMATION WAS COLLECTED  
IN MARCH 2018.

**BENCHMARK:**

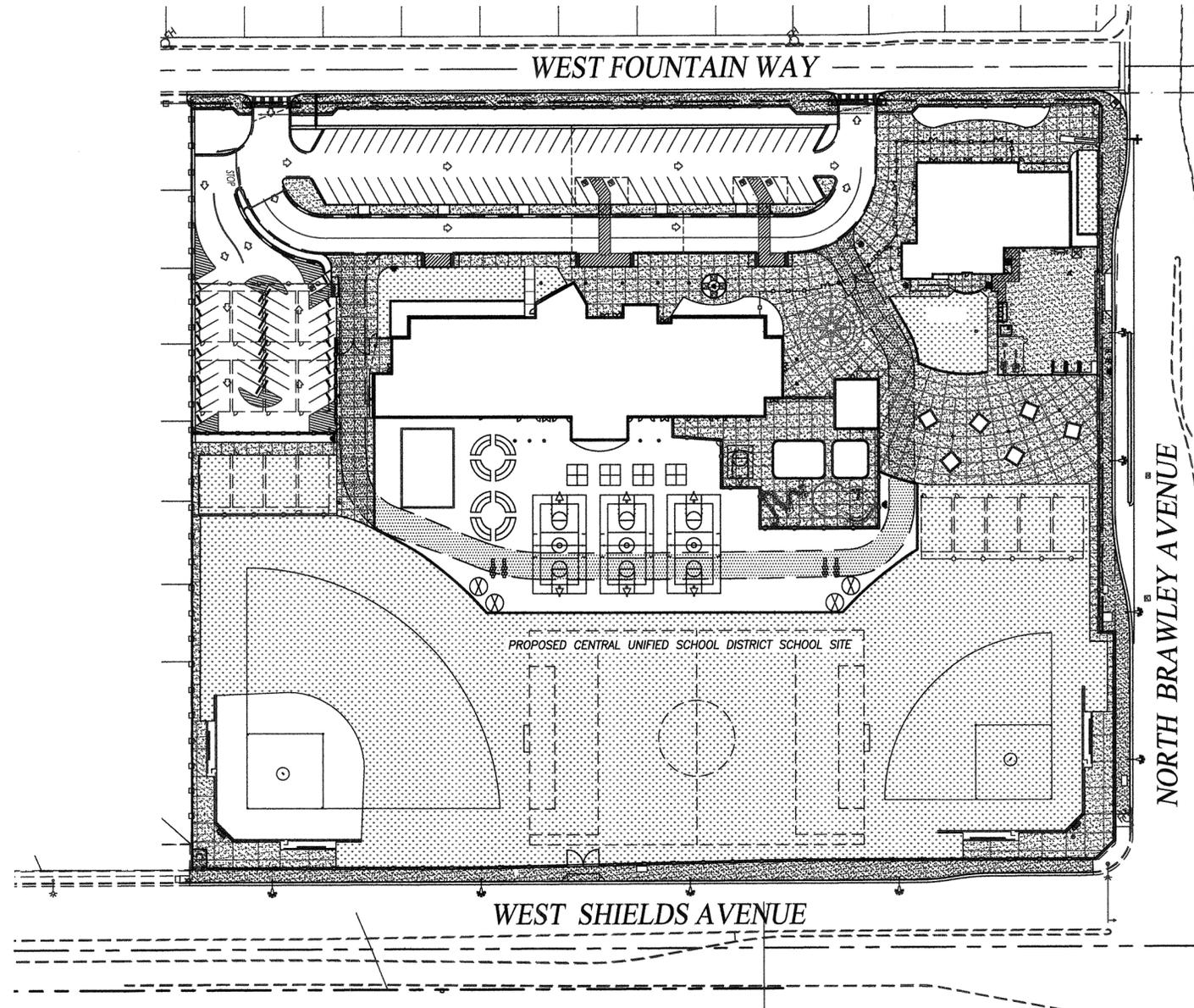
CITY OF FRESNO TBM 3496 - CHISELED SQUARE ON  
NORTHWEST CORNER OF DRIVEWAY, SOUTHEAST  
CORNER OF SHIELDS AND BLYTHE AVENUES.  
ELEVATION = 287.50

**BASIS OF BEARING:**

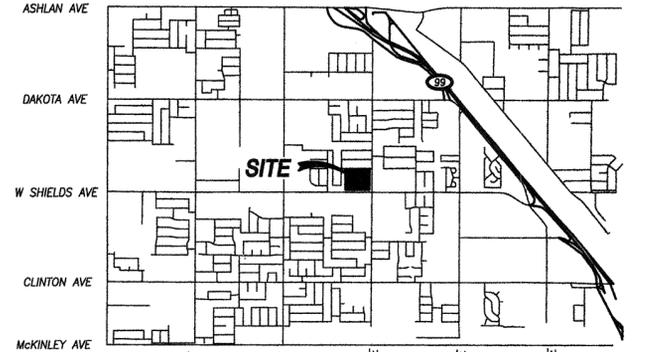
THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 23,  
TOWNSHIP 13 SOUTH, RANGE 19 EAST (ALSO BEING THE  
CENTERLINE OF NORTH BRAWLEY AVENUE) IS TAKEN TO BE  
N0°04'06"E AS SHOWN ON THE MAP OF TRACT 5148, RECORDED  
IN VOLUME 69 OF PLATS, AT PAGES 68 AND 69, FRESNO COUNTY  
RECORDS.

**LEGEND:**

- EXISTING STREETLIGHT
- INSTALL 1-1/2" CONDUIT PER CITY STD. E-1
- INSTALL PULL BOX PER CITY STD. E-4A, E-4B
- EXISTING CONDUIT
- EXISTING TESCO
- EXISTING PULL BOX
- INSTALL STREETLIGHT PER CITY STANDARDS E-1  
CREE LUMINAIRE (RSWS-A-HT-2ME-3L-40KB-UL-GY-N, FULL POWER;  
RATED: 29W, 3300 LUMEN, 4000K, CRI180, B1-U0-G1) AND PER  
SECTION 23-1.23 OF CITY SPECIFICATIONS SKURSW9054&SP
- INSTALL STREETLIGHT PER CITY STANDARDS E-1  
CREE LUMINAIRE (RSWM-A-HT-2LG-9L-40KB-UL-GY-N-X6; RATED: 75W,  
8850 LUMEN, 4000K, CRI180, B2-U0-G2) AND PER SECTION 23:1.23 OF  
CITY SPECIFICATIONS SKURSW9036&SP



AD 3-12a  
S&B Elementary  
02-116800



**VICINITY MAP**  
NOT TO SCALE

**SHEET INDEX:**

No.	SHEET TITLE	DRAWING No.
1	COVER SHEET	4-C-1801
2	STREETLIGHT PLAN	4-C-1802

**DESIGN ENGINEER:**

*Scott M. Zayer*  
SCOTT M. ZAYER, RCE 61276  
04/06/2023  
DATE

**APPROVED BY:**

*Supervisor*  
CITY OF FRESNO - TRAFFIC SIGNAL AND STREETLIGHT SUPERVISOR  
4.27.23  
DATE

*Scott M. Zayer*  
SCOTT M. ZAYER, RCE 61276  
4/27/2023  
DATE



**STREETLIGHT PLAN REVIEW FEES: \$263.00**  
PWT-8774 (08/16/2019)

**QK**  
601 POLLASKY AVE., STE. 301 TEL: (559) 449-2400  
CLOVIS, CA 93612 WWW.QKINC.COM  
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PW FILE NO.	13211
PROJ. ID.	
FUND. NO.	
ORG. NO.	
REF. & REV.	

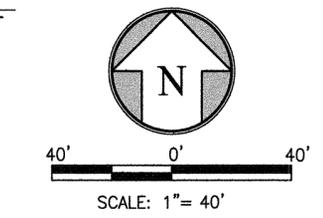
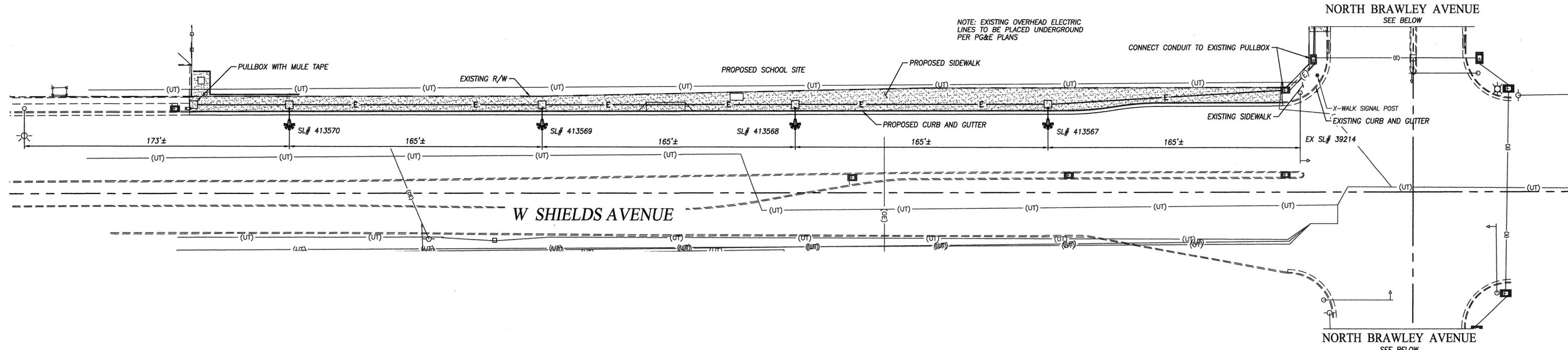
**CITY OF FRESNO**  
DEPARTMENT OF PUBLIC WORKS  
PLANS AND SPECIFICATIONS FOR  
THE DEVELOPMENT OF STREETS  
WEST SHIELDS ELEMENTARY SCHOOL  
COVER SHEET

REVIEWED:	OFFICE ENG. <i>ST</i>	CITY ENG. <i>ST</i>
DR. BY: SK		SHEET NO. 1
CH. BY:		OF 2 SHEETS
DATE:		4-C-1801
SCALE:	AS NOTED	

QK PROJECT : 180155

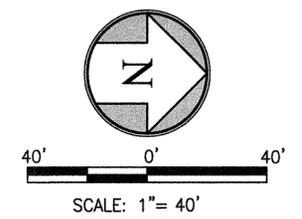
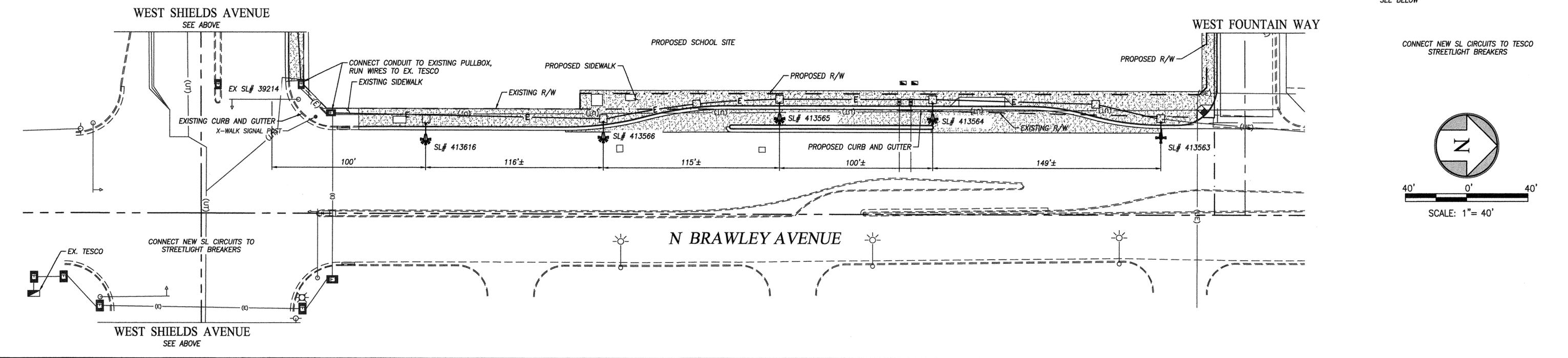
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- LEGEND:**
- EXISTING STREETLIGHT
  - INSTALL 1-1/2" CONDUIT PER CITY STD. E-1
  - INSTALL PULL BOX PER CITY STD. E-4A, E-4B
  - EXISTING CONDUIT
  - EXISTING TESCO
  - EXISTING PULL BOX
  - INSTALL STREETLIGHT PER CITY STANDARDS E-1  
CREE LUMINAIRE (RSWS-A-HT-2ME-3L-40K8-UL-GY-N, FULL POWER; RATED: 29W, 3300 LUMEN, 4000K, CRI180, B1-U0-G1) AND PER SECTION 23-1.23 OF CITY SPECIFICATIONS SKURSW9054&SP
  - INSTALL STREETLIGHT PER CITY STANDARDS E-1  
CREE LUMINAIRE (RSWM-A-HT-2LG-9L-40K8-UL-GY-N-X6; RATED: 75W, 8850 LUMEN, 4000K, CRI180, B2-U0-G2) AND PER SECTION 23.1.23 OF CITY SPECIFICATIONS SKURSW9036&SP
  - EXISTING TRAFFIC SIGNAL AND SAFETY LIGHT

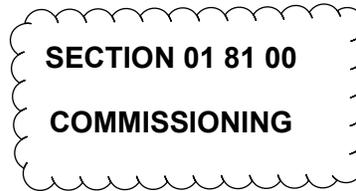
AD 3-12b  
S&B Elementary  
02-116800



PW FILE NO. 13211 PROJ. ID. _____ FUND. NO. _____ ORG. NO. _____	<b>CITY OF FRESNO</b> DEPARTMENT OF PUBLIC WORKS	REVIEWED: _____ OFFICE ENG. <u>ST</u> CITY ENG. <u>ASB</u> DR. BY: SK SHEET NO. <u>2</u> CH. BY: _____ OF <u>2</u> SHEETS DATE: _____ SCALE: AS NOTED 4-C-1802
<b>PLANS AND SPECIFICATIONS FOR THE DEVELOPMENT OF STREETS WEST SHIELDS ELEMENTARY SCHOOL STREETLIGHT PLAN</b>		



OK PROJECT : 180155



**PART 1- GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.
- B. This Section includes:
  - 1. Contractor's responsibilities.
  - 2. Test Equipment.
  - 3. Procedures for Pre-Functional Testing
  - 4. Procedures for Functional Performance Testing.
  - 5. Systems Manual.
  - 6. Training of Owners Personnel.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 01 - General Requirements
    - a. 01 33 00 Submittal Procedures
    - b. 01 78 23 Operation and Maintenance Data
    - c. 01 78 39 Project Record Documents
    - d. 01 79 00 Demonstration and Training
  - 2. Division 22 - Plumbing
  - 3. Division 23 - Heating, Ventilating, and Air Conditioning
  - 4. Division 26 – Electrical

**1.02 DEFINITIONS**

- A. Commissioning Authority (CxA): The individual designated to originate, lead, and review the completion of the commissioning process.
- B. Commissioning: The process of verifying and documenting that a building and all its systems and assemblies are planned, designed, installed, operated and maintained to meet the owner's project requirements.
- C. Commissioning Plan: A document that outlines the organization, sequence and/or schedule, allocation of contractor's resources, startup, testing, test reports, documentation, roles and responsibilities of the commissioning process.
- D. Commissioning Team: The commissioning team includes the owner or owner's representative, architect, engineers, contractor(s), and construction manager.

- E. Pre-Functional Test (PFT) Checklists: Equipment installation and start-up checklists completed by the contractor that demonstrate the systems and equipment are ready for operation, testing, and balancing.
- F. Functional Performance Test Procedures (FPTP): FPTP are written procedures that define the methods to test the dynamic functions and operation of equipment and systems using manual (direct observation) or monitoring methods.
- G. Functional Performance Testing (FPT): The execution of the FPTPs by the Contractor and witnessed by the CxA.
- H. Issues Log: A record of the issues and resolutions that have been observed by the Commissioning Team during the course of the commissioning process.
- I. Systems Manual: A systems focused composite document that includes all documents related to the building's design, construction, operation and maintenance.

### 1.03 SUMMARY

- A. Commissioning is a comprehensive and systematic process to verify and document that a building and all its systems and assemblies are planned, designed, installed, operated and maintained to meet the owner's project requirements. Commissioning during the construction and warranty phases is intended to achieve the following specific objectives:
  - 1. Verify and document that equipment is installed, started, and operates per the drawings, specifications, and manufacturer's recommendations by installing Contractors.
  - 2. Verify and document that equipment and systems receive complete operational checkout by installing Contractors.
  - 3. Verify that all outstanding documented issues have been addressed and resolved by installing Contractors.
- B. The commissioning process does not relieve the Contractor's responsibility to provide complete and fully functioning systems.
- C. The project shall meet the commissioning requirements of 2013 California Building Energy Efficiently Standards (Title 24, part 6) and 2013 California Green Building Standards Code (Title 24, part 11).

### 1.04 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
  - 1. Attend commissioning team progress meetings and focus technical sessions during the course of the project to coordinate commissioning, such as the following:

- a. Commissioning Kick-off Meeting
  - b. Commissioning Progress Meetings
  - c. MEP Systems Start-up & Testing Coordination Meetings
  - d. Final Commissioning Meeting
2. Cooperate with the CxA in scheduling, sequencing, and integrating commissioning activities, identified in the commissioning plan, into the construction schedule.
  3. Complete the PFTs for all equipment and systems undergoing commissioning. Contractor's shall and provide the completed PFT forms to the CxA for review during construction and all PFTs shall be completed prior to Functional Performance Testing.
  4. Perform FPT to demonstrate to the CxA that systems and equipment meet defined performance criteria.
  5. Evaluate performance deficiencies identified in CxA Issues Log in collaboration with design team, CxA, manufacturer, installer, and recommend corrective action to resolve the issue.
  6. Provide documentation required for the development of a Systems Manual.
  7. Provide systems training for all equipment as identified in the contract specifications.

## **PART 2 - PRODUCTS**

### **2.01 TEST EQUIPMENT**

- A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Contractor for the equipment being tested.

## **PART 3 - EXECUTION**

### **3.01 PROCEDURES FOR PRE-FUNCTIONAL TESTING**

- A. In conjunction with the Pre-Functional Checklists, adjustments and tests shall be made by Contractor as specified herein and as required by governing codes, regulations, manufacturer's recommendations and specification requirements. Contractor shall adjust, calibrate, and test equipment and devices installed under these Specifications. Except as otherwise specified, Contractor shall furnish labor, materials, tools, and instruments required to perform the work.
- B. In accordance with the Contract Documents, individual systems and items of equipment shall be completed in a sequence that will permit systematic checkout, and trial operation of each such component before it is incorporated in the initial operation. Contractor shall provide supervision and other workers required to make adjustments and correct deficiencies as may be required.
- C. Work shall be performed as necessary to meet the Contract Document requirements and the approved construction schedule.

- D. Personnel completing Pre-Functional Checklists shall be the installing Contractor qualified to perform adjustments and conduct tests. Adjustments and tests shall be performed as many times as is necessary to assure proper operation of equipment and systems and quality of materials and workmanship.
- E. The Contractor shall submit completed Pre-Functional Checklists and inspection reports for each item of equipment or system that verifies and documents tests and inspections performed. When manufacturer's service representative has been involved, report shall include verification by that representative that the equipment or system is ready for operation.

### 3.02 PROCEDURES FOR FUNCTIONAL PERFORMANCE TESTING (FPT)

- A. Contractor shall provide labor, equipment, and services to place systems and equipment into service. Contractor shall demonstrate that each system correctly operates through each control mode, sequence, and set points using the FPTPs.
- B. Contractor shall review the FPTPs to ensure feasibility, safety and equipment protection prior to the scheduled FPT and report any items to the CxA that do not represent the actual system configuration and operation. The Contractor shall bring to the attention of the CxA any test item, which presents a hazard, may damage equipment, or cannot be tested in the manner described.
- C. Contractor shall demonstrate systems operation for CxA verification. Under direction of the CxA, contractor shall exercise all equipment and controls through each sequence using the FPTP forms for occupied and unoccupied modes, and seasonal conditions. The CxA shall witness and document the results of all functional performance tests using the specific procedural forms developed for that purpose.

### 3.03 DOCUMENTATION AND NON-CONFORMANCE

- A. Documentation
  - 1. The CxA shall witness and document the results of all functional performance tests using the specific procedural forms developed for that purpose.
- B. Non-Conformance
  - 1. The CxA will record the results of the functional test on the test form. All deficiencies or non-conformance issues shall be noted and reported to the Commissioning Team and documented on the Issues Log.
  - 2. Corrections of minor deficiencies identified may be made by the Contractor during the tests at the discretion of the CxA. In such cases, the deficiency and resolution will be documented on the test form.
  - 3. As tests progress and a deficiency is identified, the CxA will notify the executing contractor of the deficiency.
  - 4. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the testing procedures.

- a. When there is no dispute on the deficiency and the contractor accepts responsibility to correct it:
  - 1) The CxA documents the deficiency on the FPT forms. After testing, the CxA documents deficient test items on the Issues Log.
  - 2) The contractor reschedules the test and coordinates with CxA to establish a time and date that the test is to be repeated.
- b. If there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible:
  - 1) The deficiency shall be documented on the Issues Log.
  - 2) Resolutions will be made at the lowest management level possible. Other parties will be brought into the discussions as needed. Final interpretive authority is with the Architect or Engineer of Record.
  - 3) The CxA documents the resolution process.
  - 4) Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency, and indicates the resolution on the Issues Log. The contractor reschedules the test and coordinates with CxA to establish a time and date that the test is to be repeated.

5. Cost of Retesting

- a. The cost for the Contractor to retest a functional performance test will be the responsibility of the Contractor. The CxA will allow for one retest of the test item during the initial testing period. Costs associated with any additional testing beyond the initial testing period where the CxA is required to attend will be charged to the Contractor.

3.04 DEFERRED TESTING

- A. Unforeseen Deferred Tests: If any check or test cannot be completed due to the building structure, required occupancy condition, or other deficiency, execution of functional testing may be delayed upon approval Owner.
- B. Seasonal Testing: During the warranty period, seasonal testing (tests delayed until weather conditions are closer to the system's design) shall be completed as part of this contract. Tests will be executed and documented and any deficiencies corrected by the appropriate contractor. Any final adjustments made to the systems by the Contractor due to the testing shall be documented in the Systems Manual and as-built documents.

3.05 SYSTEMS MANUAL

- A. Contractor shall provide the CxA the following documents to develop as Systems Manual:

1. Construction record documents and as-built drawings
2. As-built sequence of operation
3. Start-up records and documents
4. Air and water testing and balancing report
5. Original setpoints for all commissioned systems
6. Recommended schedule for sensor calibration
7. Equipment operation and maintenance manuals as soon as they are available

### 3.06 TRAINING OF OWNER PERSONNEL

- A. Contractor shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed.
- B. Contractor shall coordinate the scheduling of the training with the CxA and the Owner prior to the commencement of the training.
- C. Contractor and vendor responsible for training will submit a written training plan to the CxA for review. The plan will cover the following elements:
  1. System or Equipment (included in training)
  2. Location of training
  3. Learning Objectives
  4. Topics or Subjects
  5. Duration of training on each topic or subject
  6. Instructor(s) Name, Trade, Title, Company and Instructor Qualifications
  7. Instructional Methods (classroom lecture, site walk-through, actual operational demonstrations, etc.)

**END OF SECTION**

**SECTION 08 41 00**  
**ALUMINUM STOREFRONT AND ENTRANCES**

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**S&B Elementary**  
**02-116800**

**PART 1: GENERAL**



**1-01 DESCRIPTION:**

- A. Work Included: Furnishings and installation Aluminum Window System as described on drawings and as specified herein.

**1-02 RELATED WORK:**

- A. Section 08800 - Glazing

**1-03 QUALITY ASSURANCE:**

- A. Qualifications of personnel: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.
- B. Codes and reference standards:
1. Comply with all applicable codes and the standards of "AA" Aluminum Association.
  2. Entrance equipment to comply with ANSI A156.10.

**1-04 SUBMITTALS:**

- A. General: Comply with the provisions of the General Conditions.
- B. Samples: 6" length perimeter (interior frames if applicable) and mullion with glazing gasket.
- C. Colors.
- D. Structural calculations for DSA Approvals if required.

**1-05 PRODUCT HANDLING:**

- A. Protection: Use all means necessary to protect the work and materials of this Section before, during, and after installation and to protect the Work and materials of all other trades.

- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART 2: PRODUCTS

2-01 CENTER GLAZING SYSTEM:

- A. Design: Equal to Tri-Fab 451 for dual-glazing system (exterior) as manufactured by Kawneer. Color to be selected by Architect from the Fluropon Architectural Finishes.
- B. Material: Extruded aluminum of G.S10A-T5 alloy in accordance with (ASTM B-221 alloy G.S. 10A-T5).
- C. Glazing:
  - 1. Neoprene gaskets for 1" glazing (exterior).
  - 2. Silicone: Shall be either Dow Corning Silicone Rubber Sealant - Black; or General Electric Company's SCS 1203 Silicone Construction Sealant. No other silicone or any other sealants are acceptable.
  - 3. Air infiltration shall not exceed .06 CFM/sq. ft at a static pressure of 6.24 psi.
- D. Mullion Stiffener: Provide mullion stiffener in glazing mullion when required for deflection control. The structural design of this system is the responsibility of the Offset Glazing System Supplier. DSA will require seismic calculations on the larger window systems. Supplier is required to provide calculation to Architect sufficient for DSA approvals.
- E. Structural Design Attachment: The structural design of the glazing system and its attachment to the building shall be the responsibility of the offset glazing supplier. The storefront system shall be designed to withstand a minimum wind pressure of 20 psi or per local code requirements, whichever is greater. The structural design of this system is the responsibility of the Offset Glazing System Supplier. DSA will require seismic calculations on the larger window systems. Supplier is required to provide calculation to Architect sufficient for DSA approvals.
- F. Accessories: As required to complete the system.

2-02 ENTRANCE DOORS IN EXTERIOR GLAZING SYSTEM:

- A. Design:
  - 1. 500 Tuffline® Entrance; Wide stile, 5" vertical face dimension, 2" depth,

3/16" wall thickness door and frame, high traffic and high abuse applications as manufactured by Kawneer

- B. Material: Extruded aluminum shall be 6063-T5 alloy of G.S10A-T5 alloy in accordance with ASTM B-221.
- C Hardware:
  - 1. Pull handle: 1 pair Style CS9
  - 2. Weatherstripping:
    - a. Meeting stiles on pairs of doors shall be equipped with an adjustable astragal utilizing two polymeric fins.
    - b. The door weathering on a single acting offset pivot or butt hung door and frame shall be Kawneer Sealair® weathering. This is comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing.
  - 3. Sill Sweep Strips: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners. (Necessary to meet specified performance tests.)
  - 4. See 08710 for additional hardware
- D. Accessories: As required to complete system.
- E. Finish: To be selected by Architect.

### PART 3: EXECUTION

#### 3-01 INSPECTION:

- A. Prior to installation of offset glazing system inspect the installed Work executed under other Sections which affects the installation of offset glazing system.
- B. Report unacceptable conditions to Architect. Do not begin Work until unacceptable conditions have been corrected.
- C. Installation of offset glazing system shall constitute acceptance of existing conditions.
- D. Do not install or take measurements for glazing system or doors until exterior finishes and roofing system have been installed. (This is to allow building to achieve dead load deflection).

#### 3-02 INSTALLATION:

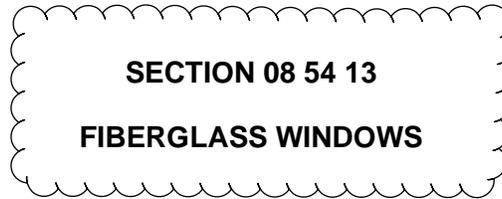
- A. In accordance with manufacturer's instructions.

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17-67 SHIELDS & BRAWLEY ELEMENTARY SCHOOL

- B. In accordance with approved shop drawings.
- C. Set to established lines, plumb, square and true.
- D. Set door thresholds in mastic.
- E. Provide watertight caulking around window system and between different window and door systems.

END OF SECTION



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## **PART 1 - GENERAL**

### **1.01 SUMMARY**

- A. Section includes:
1. Shop fabricated Pultruded Fiberglass Windows.
  2. Glass and glazing, operating hardware and other accessories.
  3. Configurations Including:
    - a. Picture Windows
  4. Configuration Color Selection: by Architect

### **1.02 REFERENCES**

- A. Windows shall comply with the requirements of AAMA 101-93 (American Architectural Manufacturer's Association).
- B. Windows to meet performance standards for:
1. ASTM E 283 - Test method for infiltration rate of air leakage through exterior windows, curtain walls, and doors under specified pressure differences across the specimen.
  2. ASTM E 330 - Test method for structural performance of exterior windows and doors by uniform static air pressure differential.
  3. ASTM E 547 - Test method for water penetration of exterior windows, curtain walls, and doors by cyclic static air pressure differential.

### **1.03 PERFORMANCE REQUIREMENTS**

- A. Testing standards for air infiltration, water penetration and structural performance: AAMA 101-93 for type of window configuration indicated.
- B. Air infiltration: Maximum 0.32 CFM per foot of overall sash crack at inward test pressure of 1.57, ASTM E 283.
- C. Water penetration: No water penetration at inward test pressure of 3.0 psf, ASTM E 547.
- D. Structural performance: No glass breakage, damage to hardware, permanent deformation at positive and negative test pressure of 30.0 psi ASTM E 330.

#### 1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product specifications, shop drawings, technical support, installation and maintenance recommendations and details for each type of unit required, including finishing methods, hardware and accessories.
- B. Product Drawings: For each type of window specified, submit standard assembly and details for stucco and plywood sheathing. Include stacking bar details for any mulled windows or configurations. Also include full schedule of windows showing number and size of each window along with the appropriate referenced detail.
- C. Material Samples: Submit samples of pultruded fiberglass with appropriate color paint finish applied.
- D. Certification: Provide certification by a recognized, independent testing laboratory certifying that each required type of window complies with performance requirement indicated.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's instructions for protection of window units from damage.
- B. Deliver in manufacturer's protective packaging.

#### 1.06 QUALIFICATIONS

- A. Manufacturer: Company experienced in manufacturing pultruded fiberglass windows.

#### 1.07 WARRANTY

- A. Commercial
  - 1. Provide manufacturer's standard warranty, which agrees to repair or replace units that fail in workmanship for a period of ten years from the final completion.
  - 2. Warranty includes coverage of materials and labor in full by the manufacturer.

### **PART 2 - PRODUCTS**

#### 2.01 MANUFACTURERS

- A. Subject to compliance of materials and requirements listed.
- B. Milgard Pultruded Fiberglass Windows or equal.
- C. Pella, Fibertec or equal per Spec Section 01 25 00 Substitution Procedures.

## 2.02 MATERIALS

### 2.03 GLASS AND GLAZING

- A. Provide the manufacturer's standard clear sealed insulating glazing material that complies with ASTM E 774 Class A and is at least 7/8" overall in thickness.
- B. Insulated Glass Units: ASTM E 774, Class A, 7/8 inch (22 mm) thick overall:
  - 1. Glazing Type: Insulated SunCoatMAX with Solar Grey at exterior windows.
  - 2. Glazing Type: Clear double-pane at windows facing into the Student Union.
- C. Glazing area in vent to be per drawings.

### 2.04 HARDWARE

- A. Provide the manufacturer's standard hardware fabricated from a non-corrosive material and of sufficient strength to perform its intended function. Provide positive-action lock. For application of hardware, use fasteners that match the finish of the hardware.

### 2.05 ACCESSORIES

- A. Weather-stripping: Operating sash members shall be weather-stripped with soft vinyl T-bulb weather-stripping or polypropylene fin seal weather-stripping depending on the window indicated.

### 2.06 FABRICATION

- A. Fabricate framing, mullions and sash members with mechanically joined, mitered, sealed corners and joints. Supplement frame sections at corners with structural hidden corner keys.
- B. Glazing: Factory exterior glazed, except where field glazing is required due to window unit dimensions. Designed for easy replacement without dismantling sash framing.
- C. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- D. Provide internal offset weepholes & channels to migrate moisture outside.
- E. Prepare components to receive anchor devices. Fins to be 1-3/8".
- F. Form weather stop flange to perimeter of unit.
- G. Provide soft vinyl T-bulb or polypropylene fin seal weather-stripping.

- H. Assemble insect screens to fully integrate with window frame. Frames to be manufactured of cambered aluminum and reinforced with rigid plastic corner keys. Screen mesh to fit taut in frame and secured.

## 2.07 FINISHES

- A. Fiberglass: High strength pultruded fiberglass, color to be Exterior: Pre-finished color to be selected & Interior: Pre-finished White.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

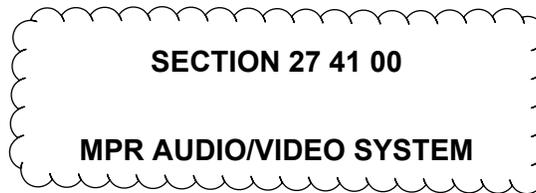
### 3.02 INSTALLATION

- A. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, flashings, accessories and other window components.
- B. Installation of windows to follow Installation Guidelines attached to the end of this specification section.
- C. Windows shall be factory sized to fit in each framed opening so that they are 1/2" smaller than the framed opening to allow 1/4" clearance on all sides (tolerance +/- 1/16").
- D. Opening panels must be closed and locked during installation. Windows must be installed level, plumb and square with 1/4" clearance on all sides and with weep holes at bottom in a weathertight manner.
- E. Headers must not be screwed. Screw through fin into framing along sides and base. Full support is required along entire length of sill.
- F. Operating sash and hardware should fit tight fit at contact points.

### 3.03 CLEANING

- A. Remove protective material from window unit.
- B. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- C. Do not use petroleum distillants.

**END OF SECTION**



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## **PART 1 – GENERAL**

### **1.1 SECTION INCLUDES**

- A. System Components
- B. Audio Cabling
- C. Video Connectors
- D. Digital Video Cabling

### **1.2 RELATED WORK**

- A. Section 26 00 00 – Basic Electrical Requirements
- B. Section 26 05 00 – Basic Electrical Materials
- C. Section 26 05 26 – Grounding
- D. Section 27 20 00 – Data Cabling and Equipment

### **1.3 QUALITY ASSURANCE**

- A. **Manufacturer:** The manufacturer of equipment shall have a complete service organization for all products in the manufacturer's line.
- B. **Integrator/Dealer:** The Contractor must be a factory-authorized and certified integrator/dealer specializing in the selected manufacturer's products, with demonstrated prior experience with the selected manufacturer's system installation and programming.
- C. The Contractor(s) shall provide a résumé of prior experience in similar types and scales of projects, and other projects that may have been completed with the client. The résumé shall include the project name, square footage, budget, system descriptions, and references with email addresses and phone numbers.
- D. **Servicing Contractor:** The installer must be factory certified to provide service on the installed manufacturer's equipment and must have local service representatives within a 100-mile radius of the project site.

### **1.4 REFERENCES**

- A. ADA - Americans with Disabilities Act
- B. ADAAG - Americans with Disability Accessibility Guidelines
- C. ANSI - American National Standards Institute
- D. AVIXA – Audiovisual and Integrated Experience Association (Formerly InfoComm)
- E. ANSI/InfoComm A102.01:2017 - Audio Coverage Uniformity
- F. ANSI/InfoComm 2M-2010 - Standard Guide for Audiovisual Systems Design

- and Coordination Processes
- G. ANSI/InfoComm F501.01:2015 – Cable Labeling for Audiovisual Systems
  - H. ANSI/InfoComm 10:2013 – Audiovisual Systems Performance Verification
  - I. ANSI/InfoComm 3M-2011 – Projected Image System Contrast Ratio
  - J. IBC - International Building Code
  - K. IEC - International Electrotechnical Commission
  - L. NFPA 70 - National Electrical Code (NEC)
  - M. UL 813 - Commercial Audio Equipment
  - N. UL 1419 – Professional Video and Audio Equipment
  - O. UL 1480 - Speakers for Fire Alarm, Emergency, and Commercial and Professional Use
  - P. UL 1492 – Audio/Video Products and Accessories

## 1.5 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 27 05 00.
- B. Initial Submittals: To be submitted after the project is awarded but before equipment is purchased and installed.
  - 1. Contractor(s) résumé of qualifications.
  - 2. Product Data Submittal: Provide manufacturer's technical product specification sheet for each individual component type. Submitted data shall show the following:
    - a. Compliance with each requirement of these documents.
    - b. All component options and accessories specific to this project.
    - c. Electrical power consumption rating and voltage.
    - d. Wiring requirements.
    - e. Pre-terminated cable distances and requirements identified by each room where required.
  - 3. Manufacturer Certifications:
    - a. All certifications shall be current and valid. Any certificate with expired dates will not be accepted.
    - b. All other applicable dealer, installation, and programming certifications.
  - 4. If an alternate manufacturer(s) is submitted, the equivalent certifications to the basis of design manufacturer(s) shall be required and submitted.
- C. Later Submittals: To be submitted after all initial submittals have been approved but before equipment is installed, configured, and programmed.
  - 1. System Drawings: Project-specific system CAD drawings shall be provided as follows:

- a. Provide a system block diagram noting system components and interconnection between components. The interconnection of components shall clearly indicate all wiring required in the system. When multiple pieces of equipment are required in the exact same configuration (e.g., multiple identical controllers), the diagram may show one device and refer to the others as “typical” of the device shown.
- D. The Contractor shall submit the number of IP addresses, VLANS, and subnetworks that will be required from the Owner’s Information Systems Department.
  - E. Submit meeting agenda for planning/programming meetings as required in Part 3 of this specification.
  - F. Submit detailed description of Owner training to be conducted at project end, including specific training times.
  - G. Submit the engineered and coordinated rigging solution(s) for the following items:
    1. Surface-mounted and/or flown loudspeakers.
    2. Ceiling-mounted and/or flown projectors, including distance from the screen, height to the lens, and the angle of the projector based on actual field conditions.
    3. Projection screens, including height from the finished floor and black screen masking from finished ceiling.
    4. Projector lifts, including height from the finished floor and decorative ceiling cover.
  - H. Quality Assurance:
    1. Provide system checkout and commissioning procedure to be performed at acceptance.
  - I. Discontinued Products and New Model Releases:
    1. For each product, the Contractor shall submit (in addition to the specified product) a product cut sheet if the specified product has been replaced, improved upon, phased out or otherwise upgraded at the time of shop drawing submittal.
      - a. The intent of this requirement is for the Contractor to submit only direct replacements for the specified products. A direct replacement shall be defined as a product of newer release that has equal or greater capabilities, which is available for not more than a 10% premium over the specified product’s bid unit

cost.

- b. It is not the intent of this requirement for the Contractor to submit new products or other product options that significantly differ in capability and/or cost from the specified product.

J. Coordination Drawings:

1. Include all ceiling-mounted devices in composite electronic coordination files. Refer to Section 27 05 00 for coordination drawing requirements.

## 1.6 SYSTEM DESCRIPTION

- A. This specification section describes the furnishing, installation, commissioning and programming of audio/video components and systems.
- B. Performance Statement: This specification section and the accompanying Contract Documents are performance based, describing the minimum material quality, required features, and operational requirements of the system. These documents do not convey every wire that must be installed, every equipment connection that must be made and every feature and function that must be programmed and configured. Based on the equipment constraints described and the performance required of the system, as presented in these documents, the Vendor and the Contractor are solely responsible for determining all wiring, programming and miscellaneous equipment required for a complete and operational system.
- C. This document describes the major components of the system. All additional hardware, subassemblies, supporting equipment and other miscellaneous equipment required for proper system installation and operation shall be provided by the Contractor.
- D. This document describes the major programming features and functions of the system. All additional programming, configuration and integration required for proper system installation and operation shall be provided by the Contractor.

## 1.7 PROJECT RECORD DOCUMENTS

- A. Submit documents under the provisions of Section 01 33 00.
- B. Provide all applicable certifications.
- C. Provide final system block diagram showing any deviations from shop drawing submittal.
- D. Provide statement that system checkout test, as outlined in the shop drawing submittal, is complete and satisfactory.
- E. Provide schedules documenting all terminal block wiring, including cable numbers.

- F. Warranty: Submit written warranty and complete all Owner registration forms.
- G. Complete all operation and maintenance manuals as described below.

## 1.8 OPERATION AND MAINTENANCE DATA

- A. Submit documents under the provisions of Section 26 00 00.
- B. Manuals: Final copies of the manuals shall be delivered after completing the installation. Each manual's contents shall be identified on the cover. The manual shall include names, addresses, and telephone numbers of the Contractor responsible for the installation and maintenance of the system and the factory representatives for each item of equipment for each system. The manuals shall have a table of contents and labeled sections. The final copies delivered after completion of the installation shall include all modifications made during installation, checkout, and acceptance. Manuals shall be submitted in both hardcopy and electronic format. The manuals shall consist of the following:
  - 1. Functional Design Manual: The functional design manual shall identify the operational requirements for the system and explain the theory of operation, design philosophy, and specific functions. A description of hardware and software functions, interfaces, and requirements shall be included.
  - 2. Hardware Manual: The manual shall describe all equipment furnished including:
    - a. General description and specifications.
    - b. Installation and checkout procedures.
    - c. Equipment layout and electrical schematics to the component level.
    - d. System layout drawings and schematics.
    - e. Alignment and calibration procedures.
    - f. Manufacturers repair parts list indicating sources of supply.
  - 3. Software Manual: The software manual shall describe the functions of all software and shall include all other information necessary to enable proper loading, testing, and operation. The manual shall include:
    - a. Definition of terms and functions.
    - b. System use and application software.
    - c. Initializations, startup, and shutdown.
    - d. Reports generation.
    - e. Details on forms customization and field parameters.
  - 4. Operator's Manual: The operator's manual shall fully explain all procedures and instructions for the operation of the system including:
    - a. Computers and peripherals.

- b. System startup and shutdown procedures.
  - c. Use of system, command, and applications software.
  - d. Recovery and restart procedures.
  - e. Use of report generator and generation of reports.
  - f. Data entry.
  - g. Operator commands.
  - h. Alarm messages and reprinting formats.
  - i. System permissions functions and requirements.
5. Maintenance Manual: The maintenance manual shall include descriptions of maintenance for all equipment including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

## 1.9 WARRANTY

- A. Unless otherwise noted, provide warranty for one (1) year after Date of Substantial Completion for all materials and labor.
- B. Onsite Work During Warranty Period: This work shall be included in the Contractor's bid and performed during regular working hours, Monday through Friday.
  1. Inspections: The Contractor shall perform two (2) minor inspections at even intervals (or more often if required by the manufacturer), and two (2) major inspections offset equally between the minor inspections.
  2. Minor Inspections: These inspections shall include:
    - a. Visual checks and operational tests of all equipment, field hardware, and electrical and mechanical controls.
    - b. Mechanical adjustments if required on any mechanical or electromechanical devices.
  3. Major Inspections: These inspections shall include all work described under paragraph Minor Inspections and the following work:
    - a. Clean all equipment, including filters, interior and exterior surfaces.
    - b. Perform diagnostics on all equipment.
    - c. Check, test, and calibrate (if required) any sensors or other equipment that contain settings.
    - d. Check zoom and focus of all projectors.
    - e. Run all system software diagnostics and correct all diagnosed problems.

- C. Operation: Upon the performance of any scheduled adjustments or repairs, Contractor shall verify operation of the systems.
- D. Emergency Service: The Owner will initiate service calls when the systems are not functioning properly. Qualified personnel shall be available to provide service within the distance defined within this specification section. The Owner shall be furnished with telephone number(s) where service personnel can be reached 24/7/365. Service personnel shall be at site within 24 hours after receiving a request for service.
- E. Records and Logs: The Contractor shall keep records and logs of each task completed under warranty. The log shall contain all initial settings at substantial completion. Complete logs shall be kept and shall be available for review on site, demonstrating that planned and systematic adjustments and repairs have been accomplished for the systems.
- F. Work Requests: The Contractor shall separately record each service call request on a service request form. The form shall include the model and serial number identifying the component involved, its location, date and time the call was received, specific nature of trouble, names of service personnel assigned to the task, instructions describing what must be done, the amount and nature of the materials used, the time and date work started, and the time and date of completion. The Contractor shall deliver a record of the work performed within five (5) business days after work is accomplished.
- G. System Modifications: The Contractor shall make any recommendations for system modification in writing to the Owner. No system modifications shall be made without prior approval of the Owner. Any modifications made to the system shall be incorporated into the operations and maintenance manuals, and other documentation affected. To the fullest extent possible, the Owner shall be provided with electronic restorable versions of all configurations prior to the modifications being made.
- H. Software: The Contractor shall provide all software and firmware updates during the period of the warranty and verify operation of the system upon installation. These updates shall be accomplished in a timely manner, fully coordinated with system operators, shall include training for the new changes/features, and shall be incorporated into the operations and maintenance manuals, and software documentation.
- I. Refer to the individual product sections for further warranty requirements of individual system components.

## PART 2 – PRODUCTS

### 2.1 SYSTEM COMPONENTS

- A. Audio/Video Equipment:
1. Equipment Cabinet: Middle Atlantic CWR-18-26PD
  2. Audio/Video Processor: DALITE 24469L
  3. Audio/Video Control Processor: Extron IPCP-PRO-360
  4. Audio/Video Switcher: Extron IN1604 HD
  5. DTP Receivers: Extron DTP-HDMI-4K-300-Rx
  6. Mixer: Allen Heath QU-PAC
  7. Amplifier: Crown XTI-4002
  8. Wireless Mic Receiver & (2) Wireless Mics: MIPRO ACT-30H2
  9. Power Distribution Unit with surge suppression
  10. (2) RJ-45 data jacks connected to building IDF/MDF
  11. PA cable for paging override
- B. Main Speakers: JBL Control 5
- C. Control Panel: Extron TLP-PRO-520M
1. Verify exact location with Central Unified and rough in appropriately.
- D. Wall Inputs: Extron DTP-T-UWP-4K-332-D
1. Verify exact locations with Central Unified and rough in appropriately.
- E. Projector: **Epson EB-PU1008W WUXGA 3LCD** laser projector with appropriate lens and mount.
- F. Projector Screen: SEE SPECIFICATIONS SECTION 11 52 13 ELECTRIC PROJECTOR SCREEN
- G. Assisted Listening Systems (ALS):
1. Listen Technologies LT-800-072 transmitter with compatible receivers.
  2. All spaces with amplified audible communications require an ALS. The Contractor shall refer to the ADA and ADAAG guidelines, as well as IBC Section 1108.2.7 for ALS rules, regulations, and guidelines. Refer to the table below for the required number of receivers to be provided for each space (*Source: IBC, Table 1108.2.7.1*). Alternatively, if the building is managed by a single entity and all systems are fully compatible and interoperable, the total number of seats for all areas can be used in accordance with the table below.

<b>Capacity of Seating in Assemble Areas</b>	<b>Minimum Required Number of Receivers</b>	<b>Minimum Number of Receivers to be Hearing-aid (T-coil) Compatible</b>
50 or less	2	2
51 to 200	2, plus 1 per 25 seats over 50 seats	2
201 to 500	2, plus 1 per 25 seats over 50 seats	1 per 4 receivers
501 to 1,000	20, plus 1 per 33 seats over 500 seats	1 per 4 receivers
1,101 to 2,000	35, plus 1 per 50 seats over 1,000 seats	1 per 4 receivers
Over 2,000	55, plus 1 per 100 seats over 2,000 seats	1 per 4 receivers

3. Receivers required to be hearing-aid compatible shall interface with telecoils in hearing aids through the provision of neckloops and shall be over-the-ear type headphones. Earbuds are not acceptable for this use.
  4. Receivers shall include a 1/8" (3.2mm) standard mono output jack.
  5. Refer to the Access Board Research "Large Area Assistive Listening Systems: Review and Recommendations" ALS report for additional recommendations.
- H. Equivalent products shall meet or exceed all requirements defined herein and on the project drawings.

## **2.2 AUDIO CONNECTORS**

- A. Loudspeaker Connector:
1. Panel Mount: Twist-lock type, 4-conductor. Neutrik Speakon or approved equal.

## **2.3 AUDIO CABLING**

- A. Provide with plenum-rated jacket where used in a plenum space without conduit. Refer to Section 27 05 00 for plenum or non-plenum cable rating requirements.
- B. Line Level Audio Cabling:
1. For patch cables less than or equal to 25 feet:
    - a. 22 AWG 2-conductor, twisted, stranded (7x30) tinned bare copper.
    - b. Single Layer Shield:
      - 1) Shield: 100% aluminum foil shield.

- c. Nominal Capacitance for non-plenum cable: 24.0pF/Ft.
  - d. Nominal Capacitance for plenum cable: 35.0 pF/Ft
  - e. Acceptable Manufacturers:
    - 1) Belden 9461 non-plenum or Belden 82761 plenum
    - 2) West Penn
    - 3) Liberty
    - 4) Gepco
2. For cable runs greater than or equal to 25 feet:
- a. 18 AWG 2-conductor, twisted, stranded (16x30) tinned bare copper.
  - b. Single Layer Shield:
    - 1) Shield: 100% aluminum foil shield.
  - c. Nominal Capacitance for non-plenum cable: 30.0 pF/Ft
  - d. Nominal Capacitance for plenum cable: 51.0 pF/Ft.
  - e. Acceptable Manufacturers:
    - 1) Belden 9460 non-plenum or Belden 82760 plenum
    - 2) West Penn
    - 3) Liberty
    - 4) Gepco
- C. Constant Voltage Speaker Cabling:
- 1. Class 2, stranded, twisted, shielded 2-conductor, 16-gauge wire for all 25/70.7/100-volt applications unless noted otherwise.
  - 2. All shielded cables drain wire SHALL be grounded and continuous throughout the entire length of the system. The shield shall be grounded to the building ground system at the amplifier end of the cable only.
  - 3. The Contractor shall size cabling as required for distance power and shall provide larger gauge cable as required.
  - 4. As manufactured by Belden 5200FE (non-plenum) or Belden 6200FE (plenum), Liberty, Gepco, or approved equal.

D. High Performance Constant Voltage Speaker Cabling:

1. Class 2, stranded, twisted, shielded 2-conductor, 12-gauge wire for all 25/70.7/100-volt high wattage (50-watts per speaker or greater) applications unless noted otherwise.
2. All shielded cables drain wire SHALL be grounded and continuous throughout the entire length of the system. The shield shall be grounded to the building ground system at the amplifier end of the cable only.
3. The Contractor shall size cabling as required for distance power and shall provide larger gauge cable as required.
4. As manufactured by Belden 5000FE (non-plenum) or Belden 6000FE (plenum), Liberty, Gepco, or approved equal.

E. Low Capacitance Speaker/Subwoofer Cabling:

1. Class 2, high strand count (65x34), oxygen free copper, low capacitance (19.9 pF/Ft), twisted, 2-conductor, 16-gauge wire for all 2/4/8/16 ohm low impedance applications where amplifier output is 150 watts or less and/or the distance is less than 50', unless noted otherwise.
2. The Contractor shall size cabling as required for distance power and shall provide larger gauge cable as required.
3. Cable shall be installed in conduit within plenum areas.
4. As manufactured by Belden 1307A, Liberty, Gepco, or approved equal.

F. High Performance Low Capacitance Speaker/Subwoofer Cabling:

1. Class 2, high strand count (259x34), oxygen free copper, low capacitance (23.2 pF/Ft), twisted, 2-conductor, 10-gauge wire for all 4/8-ohm low impedance applications where amplifier output is 150 watts or greater and/or the distance is greater than 50', unless noted otherwise.
2. The Contractor shall size cabling as required for distance power and shall provide larger gauge cable as required.
3. Cable shall be installed in conduit within plenum areas.
4. As manufactured by Belden 1313A, Liberty, Gepco, or approved equal.

## 2.4 VIDEO CONNECTORS

A. RJ-45 Un-shielded Connector:

1. 100 ohm, un-shielded, Category 5e rated, 8-pin, 8-conductor crimp type with strain relief boot. Match manufacturer or manufacturer partner of approved UTP cabling.
- B. RJ-45 Un-shielded Jack:
1. 100 ohm, un-shielded, Category 5e rated, 8-pin, 8-conductor punch-down type. Provide with appropriate faceplate; coordinate color with Electrical Contractor. Match manufacturer or manufacturer partner of approved UTP cabling.
- C. RJ-45 Shielded Connector:
1. 100 ohm, shielded, Category 6 or 6A rated, 8-pin, 8-conductor shielded crimp type with strain relief boot. Match manufacturer or manufacturer partner of approved ScTP or FTP cabling.
- D. RJ-45 Shielded Jack:
1. 100 ohm, shielded, Category 6 or 6A rated, 8-pin, 8-conductor shielded punch-down type. Provide with appropriate faceplate; coordinate color with Electrical Contractor. Match manufacturer or manufacturer partner of approved ScTP or FTP cabling.

## 2.5 DIGITAL VIDEO CABLING

- A. Provide with plenum-rated jacket where used in a plenum space without conduit.
- B. High Definition Multi-Media Interface (HDMI) "High Speed" Cable:
1. For any cable run that exceeds the manufacturer-recommended distances or fails to transmit video or audio due to cable length, the Contractor shall provide and install an HDCP-compliant signal equalizer at the far end (sink).
  2. For cable runs less than or equal to 25 feet:
    - a. Four (4) 28AWG solid bonded twisted pairs for clock and data, and seven (7) 28AWG solid conductors for control.
    - b. Two Layer Shield:
      - 1) Inner shield: non-bonded aluminum foil tape.
      - 2) Outer shield: 85% tinned copper braid shield.
    - c. Nominal attenuation of clock and data pairs (per 100 feet):
      - 1) at 100-MHz: 9.6 dB
      - 2) at 400-MHz: 19.3 dB
      - 3) at 825-MHz: 28.9 dB

- 4) at 1200-MHz: 36.1 dB
  - d. Nominal capacitance between shielded pairs: 15.3 pF/ft nominal.
  - e. Nominal capacitance between control pairs: 16.5 pF/ft nominal.
  - f. Nominal return loss of shielded pairs: 15 dB, 1-1200 MHz.
  - g. Nominal shield DC resistance of individual shield: 24.4 ohms/1000 ft.
  - h. Nominal shield DC resistance of overall shield: 3.7 ohms/1000 ft.
  - i. The cable shall be HDMI 1.3a Category 1 certified to 25 feet, and HDMI 1.3a Category 2 certified to 15 feet.
  - j. Supports a maximum digital data rate of 10.2 Gbit/s.
  - k. Supports up to eight (8) channels of HD audio.
  - l. HDCP compliant.
  - m. Acceptable Manufacturers:
    - 1) Belden BJC Series-F2 as assembled by Blue Jeans Cable
    - 2) Atlona Technologies
    - 3) Extron
    - 4) Approved equal
3. For cable runs greater than 25 feet:
- a. Four (4) 24AWG solid bonded twisted pairs for clock and data, and seven (7) 24AWG solid conductors for control.
  - b. Two Layer Shield:
    - 1) Inner shield: non-bonded aluminum foil tape.
    - 2) Outer shield: 82% tinned copper braid shield.
  - c. Nominal attenuation of clock and data pairs (per 100 feet):
    - 1) at 100-MHz: 6.0 dB
    - 2) at 400-MHz: 13.5 dB
    - 3) at 825-MHz: 19.8 dB
    - 4) at 1200-MHz: 24.1 dB
  - d. Nominal capacitance between shielded pairs: 15.3 pF/ft nominal.
  - e. Nominal capacitance between control pairs: 16.5 pF/ft nominal.

- f. Nominal return loss of shielded pairs: 15 dB, 1-1200 MHZ.
  - g. Nominal shield DC resistance of individual shield: 15.0 ohms/1000 ft.
  - h. Nominal shield DC resistance of overall shield: 1.75 ohms/1000 ft.
  - i. The cable shall be HDMI 1.3a Category 1 certified to 45 feet, and HDMI 1.3a Category 2 certified to 25 feet.
  - j. Supports a maximum digital data rate of 10.2 Gbit/s.
  - k. Supports up to eight (8) channels of HD audio.
  - l. HDCP compliant.
  - m. Acceptable Manufacturers:
    - 1) Belden BJC Series-1 as assembled by Blue Jeans Cable
    - 2) Atlona Technologies
    - 3) Extron
    - 4) Approved equal
- C. Display Port Cable:
- 1. For any cable run that exceeds the manufacturer-recommended distances, the Contractor shall provide and install an HDCP and DPCP compliant signal equalizer at the far end (sink).
  - 2. Supports a maximum digital data rate of 8.64 Gbit/s.
  - 3. Supports HDCP and DPCP.
  - 4. Acceptable Manufacturers:
    - a. Blue Jeans Cable
    - b. Atlona Technologies
    - c. Extron
    - d. Approved equal

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that surfaces are ready to receive work.
- B. Verify field dimensions and coordinate physical size of all equipment with the architectural requirements of the spaces into which they are to be installed.

Allow space for adequate ventilation and circulation of air.

- C. Verify that required utilities are available, in proper location, and ready for use.
- D. Beginning of installation means installer accepts existing conditions.

### 3.2 INSTALLATION

- A. Comply with the manufacturer's instructions and recommendations for installation of all products.
- B. Provide all system wiring between all components as directed by the manufacturer or required for proper system operation.
- C. Mount all touch screen and keypad devices where shown on plans in accordance with Americans with Disabilities Act (ADA) requirements for both side reach and front reach.
- D. Cabling Requirements:
  - 1. Non-plenum rated cabling may be used instead of plenum when installed with-in conduit in plenum rated areas.
  - 2. All cabling shall be routed according to function. Cabling shall be grouped and bundled by groups, such as: microphone and line level audio, control, video and speaker. In no case shall cabling from different functional groups be intermixed. No cabling shall be routed parallel to 120 VAC or higher power circuits unless separated by a minimum of 6" and the 120 VAC or higher power is installed in conduit.
  - 3. When cabling is installed in conduit, a separate conduit shall be provided for each cabling functional type.
  - 4. Cable bundles shall be loosely bundled to allow the visual following of individual cables within the bundle and to permit the easy removal and addition of cables as necessary.
  - 5. Horizontal cabling installed as open cable or in cable tray shall be bundled at not less than 10' intervals with hook-and-loop tie wraps. The use of plastic cable zip ties is strictly prohibited in any situation.
  - 6. Cabling shall not be spliced under any circumstances.
  - 7. Each cable shall be appropriately identified (as defined on the record documents) at each end's termination point using pressure sensitive label strips.

8. Audio Cabling:
  - a. All amplified audio cabling shall not be in the same enclosed pathway as any other type of cabling as required by the NEC. Refer to the NEC for definitions and additional requirements.
  - b. The polarity of all cabling shall remain consistent throughout the project, on all equipment. Red conductors shall be used for the positive "+" side, and black used for the negative "-" side.
  - c. Cable shield length shall be equal to the cable's conductor length.
  - d. All shielded cables drain wire SHALL be grounded and continuous throughout the entire length of the system, including splices where speakers are installed.
  - e. Balanced audio connections shall be used whenever the mating equipment allows.
  - f. Do not run unbalanced cables longer than 3m. For interconnecting of unbalanced equipment in lengths longer than 3m, the Contractor shall provide a line driver located at the source.
9. Video Cabling:
  - a. All video cabling, unless otherwise noted, shall be provided with BNC connectors of the two-piece compression type. Twist-on BNC connectors are not permitted.
  - b. Provide BNC 75-ohm terminators where required for all open BNC connectors.
  - c. All coaxial video cables used for S-video, component/RGB and RGBHV shall be the same length to minimize skew.
10. Twisted Pair Cabling for All Applications:
  - a. The Contractor shall ensure that the twists in each cable pair are preserved to within 0.5 inch of the termination. The cable jacket shall be removed only to the extent required to make the termination.
  - b. The Contractor shall ensure that the cable shields are continuous throughout, terminated, and grounded according to the manufacturer's recommendations.

E. Grounding Requirements:

1. Provide a minimum of #6 AWG conductor from the nearest electrical service ground bus or nearest telecommunications room ground bus bar to the A/V equipment racks and cabinets regardless of location. Size cable as required by the NEC.
2. Cables containing shields shall not have the shields grounded at conduits, boxes, racks, etc. Ground the shield only at the equipment end.
3. Audio cable shields for line-level signals shall be connected to the metal equipment chassis at both ends of the cable.
4. Audio cables connected to transformers shall have the cable shield connected to the transformer shield and transformer case ground.
5. The Contractor shall not connect cable shields together from differing cables.
6. XLR cable shields shall be connected to chassis ground.
7. Signal-grounded balanced shields are not acceptable and shall not be installed. All balanced shields shall be chassis grounded.

F. Rack and Cabinet Requirements:

1. Ground equipment racks/cabinets as noted within this specification section and Section 27 05 26 - Communications Grounding.
2. Provide one (1) RU of space between adjacent pieces of equipment with top and/or bottom vents, above the topmost piece of equipment, and below the bottommost piece of equipment. Provide a vented cover panel covering each rack space.
3. Terminate all speaker cabling on individual barrier strips for positive "+", negative "-", and shield. The shield barrier strip shall be grounded.
4. Provide a power conditioning surge arrestor in the rack for distribution of AC power from the wall receptacles indicated on the plans. The quantity of plugs shall be adequate so that no equipment in the rack shall require plugging into an AC source outside the rack.
5. Power sequencing shall be provided in the racks where shown on the drawings. All amplifiers located in the racks shall be sequenced "last on – first off". Power sequencers shall provide power conditioning and surge protection.

G. Video System Installation Requirements:

1. The Contractor shall perform calculations for the optimal distance from the screen to the projector lens based on actual field conditions and submit to the Architect/Engineer for review and approval.
2. If the projector and screen are in a fixed position, the Contractor shall provide the appropriate lens for the throw distance.

H. Audio System Installation Requirements:

1. The Contractor shall perform calculations for the optimal speaker tap settings to reach the desired SPL level and coverage without overloading the amplifier(s).
2. Connections of balanced to unbalanced equipment shall only be done through an active converter at the unbalanced side.
3. Connections of unbalanced to balanced equipment shall only be done through an active converter at the unbalanced side.
4. Connections from stereo balanced or unbalanced equipment to mono equipment of the same signal type shall only be done through a passive combiner.
5. Connections from mono balanced or unbalanced equipment to stereo equipment of the same signal type shall only be done through a passive divider.
6. The Contractor shall provide an isolation transformer for any balanced or unbalanced audio line that exhibits a hum, noise from EMI or RFI, power line noise, or ground loops.
7. The Contractor shall provide an active audio line driver for all balanced and unbalanced signals that exceed the distance limitations of the cabling.

I. Control System Installation Requirements:

1. The Contractor shall perform calculations for the required wire AWG size based on distance for system power for touch panels, keypads and other devices being powered. A minimum of a 15% overhead is required.

### **3.3 VIDEO SYSTEM TESTING AND CALIBRATION**

- A. All video equipment shall receive proper testing and configuration.
- B. Color Space Optimization:
1. The Contractor shall set the color space of each source and display device to a uniform color space to optimize the switching speed and

compatibility of a digital video system. Each device shall be set to an RGB or YCbCr color space depending on the systems primary function and compatibility of the devices.

2. If the primary function of the space is video and other digital media, the color space of each device shall be set to a YCbCr color space. If the primary function of the space is computer-based graphics and presentations, the color space of each device shall be set to an RGB color space.
  3. Chroma subsampling shall be set to a consistent 4:4:4 or 4:2:2 across all devices. Set to 4:4:4 when all equipment is capable.
  4. If all devices are not capable of displaying a certain color space, all devices shall be set to a common shared color space.
- C. Extended Display Identification Data (EDID) Management:
1. The Contractor shall set the EDID management tables in capable equipment so all sources output the highest common EDID table of the displays (sinks).
  2. For systems with capable matrix switches, the matrix shall dynamically adjust its EDID tables so any source will output the highest common EDID table of the displays (sinks) being outputted to.
  3. If any source or Owner-furnished equipment (OFE) is not outputting properly, the Contractor shall provide and install an EDID Emulator and set it to the highest common EDID table of the displays (sinks) being outputted to.
- D. Projector, monitors and receivers shall be tested and adjusted for proper signal sync, convergence, brightness, contrast, and color level. The Contractor shall adjust all other parameters necessary to achieve a proper video image.
- E. All video source selections shall be tested and verified.
- F. All projectors and displays shall have a minimum burn-in time of 96 hours prior to any adjustments are made and the completion of the project
- G. All projectors and displays shall have their hue/tint and color/saturation calibrated with a video signal test generator and blue lens filter after a minimum warmup time of 20 minutes. Provide all calibrated settings results for each projector and display in the final documentation.
- H. All projectors and displays shall have their brightness, contrast and sharpness calibrated with a video signal test generator after a minimum warmup time of 20 minutes. Provide all calibrated settings results for each projector and display in the final documentation.

- I. All dynamic contrast functions shall be turned off.
- J. Full video calibration for all projectors and displays shall be provided with the following minimum requirements:
  1. The Contractor shall utilize non-contact professional video calibration tools such as Sencore OTC1000-CM ColorPro Optical Tri-stimulus Colorimeter or Klein K- 10 Tri-stimulus CIE Colorimeter, Sencore or Extron Video Generator and the latest version of ColorPro by CalMan software or approved equal.
  2. The projector or display shall have a minimum burn-in time of 96 hours prior to calibration.
  3. The projector or display shall have a minimum warmup time of 20 minutes before calibration begins. All efforts shall be taken to allow the display to warm up for a minimum of 60 minutes to allow the luminance to fully stabilize.
  4. The space shall be as dark as possible. The colorimeter's ambient light sensor filter shall be recalibrated every 30 minutes when outside ambient light is present to account for the changes in daylight levels.
  5. All inputs utilized on the projector or display shall be calibrated using the appropriate video signal, aspect ratio and resolution. Submit results for each input as a separate report.
  6. The projector or display shall be calibrated to the Rec. 709 HDTV color standard. White balance shall be calibrated as close as possible to the D65 point for both high IRE and low IRE levels.
  7. The projector or display shall have its 3D Color Management calibrated.
  8. The projector or display shall have its brightness and contrast adjusted both before and after the gamma is calibrated.
  9. Gamma shall be calibrated to an average of 2.2. Gamma shall be verified after the calibration is completed and readjusted as necessary.
  10. The projector or display shall have its hue/tint and color/saturation calibrated with a blue lens filter.
  11. For calibrating 3D projectors and displays, the matching 3D glasses shall be secured to the front of the Colorimeter "looking" through the glasses for the 3D mode calibration only.
  12. Record the full on/full off contrast ratio both before and after calibration. Provide these results in the final documentation.
  13. The Contractor shall submit the final calibration results to the

Architect/Engineer for approval and include the approved results in final documentation submitted to the Owner.

14. Calibration by eye is not acceptable.
15. Any setting that cannot be calibrated because the projector or display lacks the functions shall be noted in the final documentation.
16. For video wall applications, or where multiple projectors or displays that will share content are being used within a single space, all displays after calibration shall be adjusted to match the lowest performing projector or display so all projectors or displays are uniform. If a projector or display differs greatly from the other displays, that projector or display shall be replaced at no cost to the Owner and recalibrated.

### **3.4 AUDIO SYSTEM TESTING AND CALIBRATION:**

- A. This Contractor shall adjust any surface-mounted or flown loudspeaker orientation to achieve the necessary coverage pattern.
- B. All speakers shall be connected in-phase.
- C. The Contractor shall make incremental adjustments on the equipment output and input tolerances to achieve matching signal levels.
- D. The Contractor shall utilize a Real Time Audio (RTA) spectrum analyzer with AES2 Broadband pink noise at a minimum of 1/3 octave, capable of providing detailed plots and reports.
- E. The Contractor shall provide graphic plots of the reference ambient noise for each space at the time of the calibration and submit with the calibration results.
- F. The Contractor shall use a listener sitting height of four (4) feet  $\pm$  1" for rooms where the primary function will be sitting. The Contractor shall use a listener standing height of five feet three inches (5.25')  $\pm$  1" for rooms where the primary function will be standing.
- G. Calibration by ear is not acceptable.

### **3.5 AUDIO SYSTEM PERFORMANCE REQUIREMENTS**

- A. The Contractor shall test and provide documents verifying all the following performance criteria. The Architect/Engineer shall be informed when the testing will take place and have the option to witness the testing and ask for additional testing for any reason.
- B. The Contractor shall develop an Audio Coverage Uniformity Measurement Location (ACUML) plan for each required space based on the project floor plans, and submit to the Architect/Engineer for review and approval prior to

testing. The plan shall represent the majority of the listening areas and a "sweet" spot directly under an overhead speaker in the center of the listening area or directly in line of a point source speaker.

- C. The tests shall be performed at the multiple locations defined on the ACUML plan representing the majority of the listening area(s). The Contractor shall indicate on the floor plan drawings where each test was performed, with the corresponding graphic plot, and submit with the final documentation for review and approval by the Architect/Engineer.
- D. The test shall be taken with AES2 Broadband pink noise at a minimum of 25 dB above the reference ambient noise level, taking caution to not overdrive and clip any component of the system beyond 0.5% Total Harmonic Distortion (THD), with a maximum system THD of 1.0%.

### **3.6 ASSISTED LISTENING SYSTEM (ALS) PERFORMANCE REQUIREMENTS**

- A. The Contractor shall verify that the ALS system(s) meets the following minimum performance requirements at the earphone or headset:
  - 1. Reach a minimum total SPL of 110dB and no greater than 118dB, with a minimum of a 50dB dynamic range volume control.
  - 2. Achieve a minimum Speech Transmission Index (STI) value of 0.84.
  - 3. Achieve a minimum signal-to-noise (S/N) ratio of 18dB. It is recommended to achieve a minimum signal-to-noise (S/N) ratio of 25dB to accommodate children.
  - 4. Ensure the peak clipping levels do not exceed 18dB down from the peak input signal level.
- B. FM-based systems shall operate within the FCC-reserved assisted listening frequencies of 72 to 76 MHz or the 216 to 217 MHz (preferred) range and comply with the FCC transmitter power requirements.
- C. Infrared (IR)-based systems shall provide IR coverage throughout the entire listening area.
  - 1. The IR system's RF sub-carrier frequency shall operate at 95kHz, 250kHz, or 2.3MHz.

### **3.7 SYSTEM COMMISSIONING**

- A. The Contractor shall notify the Architect/Engineer and Owner prior to conducting final system commissioning.
- B. Contractors' tests shall be scheduled and documented in accordance with the commissioning requirements. Refer to Section 01 09 00 - General Commissioning for additional information.

- C. System verification testing is part of the commissioning process. Verification testing shall be performed by the Contractor and witnessed and documented by the Commissioning Agent. Refer to Section 01 09 00 - General Commissioning for system verification tests and commissioning requirements.
- D. Contractor shall demonstrate system performance of all equipment and adjust settings as directed by the Architect/Engineer and/or Owner.
  - 1. All system settings, software options and other parameters shall be simulated and tested by the Contractor

### **3.8 FIELD QUALITY CONTROL**

- A. Where these specifications require a product or assembly without the use of a brand or trade name, provide a product that meets the requirements of the specifications, as supplied and warranted by the system vendor. If the product or assembly is not available from the system vendor, provide product or assembly as recommended by the system vendor.
- B. Periodic observations will be performed during construction to verify compliance with the requirements of the specifications. These services do not relieve the Contractor of responsibility for compliance with the Contract Documents.

### **3.9 FIELD SERVICES**

- A. The installer shall conduct a planning meeting with the Owner. The purpose of this meeting shall be to determine all equipment settings that are considered preferences (where proper system operation does not depend on the setting).
- B. The installer shall include labor for all planning and all programming activities required to implement the Owner's preferences for equipment settings.
- C. It shall be the responsibility of the Contractor/installer to provide a complete, functional system as described by the design documents. These responsibilities include:
  - 1. Complete hardware setup, installation and wiring and software configuration.
  - 2. Complete programming of software in accordance with the Owner's desires determined by the planning meeting.
  - 3. Complete system diagnostic verification.
  - 4. Complete system commissioning.

### **3.10 SYSTEM ACCEPTANCE**

- A. The Contractor shall submit for review a formal acceptance and system checkout procedure. The system checkout procedures shall include all system components and software. The Contractor shall perform the tests and settings and document all results.

### **3.11 SYSTEM DOCUMENTATION**

- A. Complete documentation shall be provided for the system. The documentation shall describe:
  - 1. All operational parameters of the system.
  - 2. Complete documentation of programming and features.
  - 3. Complete operating instructions for all hardware and software.
- B. The following sections shall be provided in the system documentation:
  - 1. User Manual: A step-by-step guide and instructions detailing all system user functions.
  - 2. Technical Manual: A comprehensive document providing all system operations, troubleshooting flowcharts, functional system layout, wiring diagrams, block diagrams and schematic diagrams.
  - 3. Maintenance Manual: A comprehensive document on all aspects of physical maintenance of the systems, including cleaning of the displays, bulb changes, filter cleaning, filter changing and UPS maintenance.

### **3.12 SYSTEM TRAINING**

- A. All labor and materials required for on-site system training shall be provided. Training shall be conducted at the project site using the project equipment.
  - 1. Provide two week's advanced notice of training to the Owner and Architect/Engineer.
  - 2. The Architect/Engineer shall be presented with the option to attend the training.
  - 3. Provide a training outline agenda describing the subject matter and the recommended audience for each topic.
- B. At a minimum, the following training shall be conducted:
  - 1. User Manual: A course detailing the system functions and operations that a daily user will encounter.
  - 2. Technical User: Provide configuration training on all aspects of the system(s), including equipment and software.

3. Maintenance User: Provide training on all aspects of physical maintenance of the systems, including cleaning of the displays, bulb changes, filter cleaning and filter changing.

**END OF SECTION 27 41 00**

**SECTION 27 42 00**  
**CLASSROOM AUDIO/VISUAL SYSTEMS**

**AD 3-17a**  
**S&B Elementary**  
**02-116800**

**PART 1 – GENERAL**



**1.1 SCOPE OF WORK**

- A. This document describes the products and execution requirements relating to furnishing and installing Classroom Audio/Visual systems. Classroom Audio/Visual System Electronics and installation requirements are covered under this document.
- B. The intent of these Specifications is to provide a complete classroom audio/visual system and it is the responsibility of the bidding Contractor to provide a complete solution. It is also the responsibility of the Contractor to provide all material necessary to provide a complete system even if the material is not described specifically in the following documentation. All questions concerning non-specified product and services will be address to the Owner's Representative before the Contactor provides a bid. Owner expects that by accepting the Contractor's bid proposal that they [the Contractor] have provided a competent bid for a complete solution.
- C. Contractor to include labor costs to install owner provided projector in each room an Extron system is installed in. If not installed, a credit is to be issued to owner for the labor costs not preformed.
- D. Excluded in this scope: projection surface & projection.

**1.2 RELATED WORK IN OTHER SECTIONS**

- A. Division 270000 for all general conditions and work required by the contractor.
- B. All 120VAC power conductors and conduits associated with power circuits to all equipment locations shall be furnished and installed by Division 260000 contractor.
- C. All raceway systems including but not limited to conduit, j-boxes, outlet boxes, floor boxes, & surface mounted raceway shall be furnished and installed by Division 260000 and 270528 contractors.

**1.3 APPROVALS**

- A. The system shall maintain the following listings and/or approvals from the following agencies:
  - 1. (UL) Underwriters Laboratories
  - 2. (FCC) Federal Communications Commission

#### **1.4 CONTRACTOR QUALIFICATIONS/QUALITY ASSURANCE**

- A. Safety and Indemnity
  - 1. Contractors will submit the necessary documentation to demonstrate their compliance with Section 270000 "1.5 A. Safety & Indemnity".
- B. Contractor Qualifications
  - 1. Contractors will submit the necessary documentation to demonstrate their compliance with Section 270000 "1.5 B. Contractor Qualification".
- C. Quality Assurance
  - 1. Contractor shall comply with all requirements as specified in Section 270000 "1.5 C. Quality Assurance".
- D. Warranty
  - 1. Contractor shall comply with all requirements as specified in Section 270000 "1.8. Acceptance & Warranties".
  - 2. Contractor to provide liaison services of manufactures THREE YEAR WARRANTY.

#### **1.5 SUBMITTAL DOCUMENTATION**

- A. The successful contractor shall provide their submittal package in accordance with the Section 01 20 00 1.06 Submittal Schedule, and Section 270000 "1.6 Submittal Documentation".
- B. Contractor shall also include in their Submittal Package:
  - 1. A shop drawing depicting all system components and interconnections.

#### **1.6 EQUIVALENT PRODUCTS**

- A. All Contractor provided product in this Specification are those of: 1. Extron Systems
- B. Pre-Approved Equals:
  - 1. Equivalent Products must comply with Section 274200 1.8 Classroom Audio/Visual System Specification contained within this document.
- C. Contractors wishing to approve a system other than those specified in this document shall do so in accordance with Section 270000 "1.7 Equivalent Products".
- D. Equivalent products (equals), may be substituted for the specified Extron Systems by submitting a "Substitution Request Form" (see attached). The "Substitution Request Form" must be submitted to the Architect and District for evaluation. A complete product data submittal must be submitted along with the "substitution Request Form".

## 1.7 TECHNOLOGY CLAUSE

- A. As technology advances, it is understood that improved or enhanced products may supersede existing products in both price and performance and yet be essentially similar. This request for bids seeks to address the rapid advances in technology by allowing functionally similar or identical products that may be introduced in the future, during the term of this bid, to be included under the general umbrella of compatible product lines and are thus specifically included in this bid document.
- B. Discontinued or end of life products shall be replaced with an equal product to the original specified product at no additional costs to the owner.

## 1.8 EXTRON SYSTEMS ONLY -- CLASSROOM AUDIO/VISUAL SYSTEM SPECIFICATION (NOT USED IN THIS PROJECT)

- A. Control System
  1. The Control System shall provide on/off for all connected devices, projector control, audio and video switching, and volume control for all connected audio.
  2. Control System shall be operated from a wall mounted control panel located at the front of the classroom.
  3. The Control System shall use either RS-232 or Ethernet for projector control.
  4. The Control System shall be attached to the site's IP data network via CAT 6 ethernet cabling.
  5. The Control System shall also be remote accessible via IP data network using administration software, web interface, as well as an iOS device.
  6. The control panel shall be mounted within 3' to the left side of the projection surface (while facing the surface) at 48"aff, UON. Field verify placement with District staff.
- B. Switcher
  1. System shall incorporate a switching system that can allow for a minimum of two RGB inputs and two HDMI inputs.
  2. System cannot rely on projector for switching of any kind. Projector is only to be used for video output only.
  3. Switcher must output via a digital interface (HDMI, DVI, Display Port).
  4. Switcher must be able to output audio from both analog and digital sources to amplifier/speakers.
  5. Switcher components shall not be visible nor shall it be placed in existing cabinetry.
- C. Architecturally mounted AV Inputs
  1. One double-gang wallplate with one (1) 15pin VGA video input and a 3.5mm TRS audio connection as well as a (1) HDMI input located to the left of the screen.
  2. One double-gang wallplate with one (1) 15pin VGA video input and a 3.5mm TRS audio connection as well as a (1) HDMI input located to the right of the screen.

3. All structured cabling from AV wallplates to switcher shall be over twisted-pair cabling. All AV input sources must have the appropriate media and cabling converts on both ends.
- D. Audio and speakers
1. System shall provide sound amplification for all audio and video sources. Voice (microphone) amplifications is not required unless otherwise noted.
  2. Projector may not be used to switch, de-embed, or pass-through audio.
  3. Speakers shall be flush mounted ceiling speakers located at the center of the room for even sound distribution.
- E. Manufacturer warranty three years parts and labor.
- F. Projectors and Mounting.  
Projectors are owner provided, contractor installed/configured. Verify projector type and mount location with owner prior to installation.
1. Projector mounts shall be installed on the walls whenever possible. Please verify with owner if there are any questions as to which type to use.
  2. Ceiling Mounted Environments.
    - Projector mount must be designed for use with drop ceilings.
    - Projector shall be mounted in the ceiling centered on the learning wall, 10'-0 (+/- 6" or nearest tile) from screen/whiteboard or nearest grid alignment +/-6".
    - Classrooms that have a Smart Board, centered on the board, 10'-0 (+/- 6" or nearest tile) away from board.
    - Classrooms that only have a white board, centered on the board, 10'-0 (+/- 6" or nearest tile) from white board.
    - Classrooms that have an existing screen, centered on the screen, 10'-0(+/- 6" or nearest tile) from screen.
    - Contractor to contact CUSD if multiple conditions exist in the room or if anything is not clear on location of mounting equipment.
  3. Wall Mounted Environments.
    - Wall mounts shall be aesthetically pleasing. Structural support hardware shall be covered by an enclosure and should not be visible. Contact Owner if there are any issues. Wall mount is to be mounted as close to the top of the projection surface as possible to allow for any interactive devices.
    - Wall mount extension arm shall not exceed 36" from wall and shall be centered on the learning wall, which should align with the center of the projected surface.
    - Wall mount must support a projector weighing up to 20 pounds at full extension.
- G. Classroom that are non typical in shape (interior classrooms) or have offset/split whiteboards, both the control panel and projector mount will have to be located on an individual basis.
1. Contact Owner to locate the mount and controls in those rooms.

## 1.9 TYPICAL CLASSROOM SETUP

- A. Control System
  - 1. There is no control system. The projector will be controlled with the remote control.
- B. Switcher
  - 1. There is no Switcher. The inputs will be controlled with the remote control.
- C. Architecturally mounted AV Inputs
  - 1. One single-gang wallplate with one (1) 15pin VGA video input and a 3.5mm TRS audio connection as well as a (1) HDMI and (1) USB input located to the left of the projection surface.
  - 2. One 12 inch active USB repeater pigtail is to be included and connected to the wallplate above.
- D. Audio and speakers
  - 1. Speakers shall be flush mounted ceiling speakers located at the center of the room for even sound distribution. Contractor to supply the cables from projector, to the amplifier, and on to the speakers.
- E. Projectors and Mounting.  
Projector is owner provided, contractor installed/configured.
  - 1. The typical install will be with a Wall Mounted projector.
    - Wall mounts shall be aesthetically pleasing. Structural support hardware shall be covered by an enclosure and should not be visible. Contact Owner if there are any issues. Wall mount is to be mounted as close to the top of the projection surface as possible to allow for any interactive devices.
    - Wall mount extension arm shall not exceed 36" from wall and shall be centered on the learning wall, which should align with the center of the projected surface.
    - Wall mount must support a projector weighing up to 20 pounds at full extension.

## PART 2 – PRODUCTS

The following sections specifically list the acceptable equipment types and items for this project. Where quantities are not noted, they may be obtained from the project drawings. In the event of a discrepancy between the specifications and the project drawings, the greater quantity or better quality shall be furnished.

- 2.1 Classroom Equipment for all rooms have the same system with either wall mount or ceiling mounted speakers. Ceiling mounted speakers are preferred unless ceiling configuration does not allow for it.

- A. STANDARD SYSTEM:  
Wall Mounted UST projector – Owner provided, contractor installed and configured.

--Projector comes with a USB cable to connect from the projector to a laptop.

This cable should be used to connect to the USB pigtail and wall plate. If not used, contractor responsible to provide the appropriate cable.

Actiontek Screenbeam 750W – Owner provided and configured, contractor installed.

--This unit provides wireless connectivity to the projector and plugs into the HDMI input on the projector. Connect it to HDMI 1 on the projector. Unit is to be secured to the wall mount arm with Velcro.

Wallplate with USB/VGA/3.5mm Audio/HDMI – Contractor provided, configured and installed.

COVID – W1408-WH-P-A-ALT

COVID - CWP 0010-USB-BA-AC8”

--Contractor to provide the VGA, 3.5mm, USB, and Active HDMI cable that connects from this wallplate to the projector. The USB cable is provided with the projector and contractor is to connect the USB cable from the projector to the pigtail, which connects to this wall plate. Note the provided cable is 15’ long. If a longer length is needed, contractor is to provide the active USB cable needed to connect from the projector to the wallplate.

--The 3.5mm cable is to be provided by the Contractor and is to be connected to the wallplate to the audio input on the projector.

Two ceiling mounted speakers – Contractor provided, installed, and configured. Extron 42-120-13, FF 120T Speakers (one pair)

Extron Amp -- Contractor provided, installed, and configured. Extron 60-1449-01, MPA 601-70V

Audio Cable -- Contractor provided, installed, and configured. Extron 18 AWG speaker cable.

- B. Voice Amplification System (Not included in bid unless shown in drawings or requested by CUSD) If a voice amplification system is requested, add the following to the above Extron PVS 400D configuration.
1. (1) Extron VLM 2000H - VoiceLift Pendant and Handheld Microphone System

## **PART 3 – EXECUTION**

### **3.1 GENERAL**

- A. All Work described in this specifying document and on the Project drawings shall be performed in accordance with the acknowledged Professional and Industry standards and practices. All installed equipment shall meet and/or exceed the specified manufactures regulations.
- B. The Contractor shall maintain a competent supervisor and Manufacture Certified

- Technician assigned to this installation for the duration of the Project.
- C. Furnish and install all materials, devices, components and equipment required for a complete and operational system.
  - D. It is the contractor's obligation to inform the Owner and/or the Owner's Representative of any and all conflict's, between the project documents and the onsite conditions.
  - E. It is the Contractor's responsibility and obligation to coordinate with all necessary trades to ensure the integrity and compliance of the Manufacture and Industry standards are meet during the duration of the installation.

### **3.2 INSTALLATION**

- A. Furnish components, wire, connectors, materials, parts, equipment, labor, etc. necessary for the complete installation of the systems in full accordance with the recommendations of the equipment manufacturers and the requirements of the drawings and specifications.
- B. Wire and cable for all other devices shall be supplied in accordance with the recommendations of the device manufacturer and the National Electrical Code.
- C. Equipment shall be held firmly in place with proper types of mounting hardware. All equipment affixed to the building structure must be self-supporting with a safety factor of at least three. All equipment shall be installed so as to provide reasonable safety to the operator. Supply adequate ventilation for all enclosed equipment items which produce heat.
- D. Furnish the system to facilitate expansion and servicing using modular, solid-state components. All equipment shall be designed and rated for continuous operation and shall be UL listed, or manufactured to UL standards.
- E. Observe proper circuit polarity and loudspeaker wiring polarity. No cables shall be wired with a polarity reversal between connectors with respect to either end.
- F. Route cables and wiring according to function, separating wires of different signal levels (video, microphone, line level, amplifier output, AC, control, etc.) by as much physical distance as possible. Neatly arrange and bundle all cables loosely with velcro cable ties. Cables and wires shall be continuous lengths without splices.
- G. All cables in conduits shall be insulated from each other and from the conduit the entire length and shall not be spliced. All cables and wires are to be continuous lengths without splices.
- H. Mechanical connections shall be made using approved connectors of the correct size and type for the connection. Wire nuts will not be accepted.
- I. Label all wires as to destination and purpose. Clearly and permanently label all jacks, controls, and connections with permanent labels, unless otherwise noted.

- J. Contractor to include labor costs to install owner provided projector in each room an Extron system is installed in. Projector is to be aligned to designated screen/board, as directed by Owner. If not installed, a credit is to be issued to owner for the labor costs not preformed.
- K. Contractor is to turn over to the owner any items included with the kit, including but not limited to, any extra cables, labels, templates, tools, and manuals. All items to be placed in a bag with the room number on the bag.
- L. Contractor to label control panel buttons 1 - 4 and label the inputs accordingly. Verify with Owner prior to printing.
- M. One CAT6 data cable shall be connected from the Control Panel to the nearest IDF (Extron installs only).
- N. Projector (whether owner contractor provided or owner provided) and Control Panel are to be assigned an IP address (contact Owner on what to use). Assigned address to be documented for every unit and provided back to Owner. Contact owner for sample spreadsheet to use.
- O. All wall mounted projectors come with interactive capabilities via pens. Contractor to calibrate the system prior to turning over to Owner.

### **3.3 PROGRAMMING**

- A. Contractor shall provide all necessary programming to provide a complete operating Audio Visual System.
- B. Contractor shall include in their bid a one (1) hour planning meetings with the owner and their Representatives to outline all specific programming issues, as well as, but limited to:
  - 1. Contractor will be informed of any specific requirements for use of the system.
  - 2. Contractor will provide overview of system capabilities.
  - 3. Contractor will address all concerns of the Owner and their Representatives.
- C. All Control System Programming shall be custom produced for this installation by qualified factory-trained installer and software support shall be provided to owner for 12 months after the final acceptance of this project. AV contractor to work with the Owner's staff to assign IP addresses and set-up of all A/V equipment.
- D. Any programming needed to configure the interactive capabilities is to be included and completed by the contractor.

### **3.4 TESTING**

- A. The completed AV systems shall be physically inspected by the Owner's representative to assure that all equipment is installed in a neat and professional manner, and in accordance with these Specifications.

- B. The final system testing and commissioning shall be performed after all installation and initial testing has been completed by the Installer, but prior to any use of the systems.
- C. The Contractor, prior to requesting systems testing and demonstration to the Owner's representative, shall ensure that all systems are in first-class working condition and free of short circuits, ground loops, parasitic oscillations, excessive hum and noise, RF interference, or instability of any form.
- D. The Contractor shall be responsible for properly performing all setup and alignment of systems, and all assembly and setup of portable equipment.
- E. The Contractor to provide a listing of each room/location and sign off that each part of the system was tested and the result of the test. Contact owner for an example form to use.

### **3.5 SYSTEM COMMISSIONING**

- A. Audio Visual System Commissioning
  - 1. In the presence of the Owner's Representative the Contractor shall perform the attached functions listed below:
    - (1) Inspection of all terminations
    - (2) Inspection of all inputs and output devices
    - (3) Verify polarity of speaker system and connectors (4) Check wire types at all locations
    - (5) Verify connector types
    - (6) Check Impedance of speaker lines (7) Verify coverage of speaker system
    - (8) Check general operation of control surface
    - (9) Check programming of control surface for routing and proper function
    - (10) Check power sequencing
  - 2. All testing documentation will be supplied as a part of the Contractors As-built Documentation.
- B. Contractor will include in their bid price six (6) hours for onsite commissioning. Contractor will provide the installation technician who was responsible for this project to be present at the system commissioning to tune, fix, repair, replace all system components that do not operate within the tolerance as set forth in this specification, the project documents, and industry standards.
- C. The final acceptance of the system by the Owner will be based upon the report of the Owner representative following inspection, testing, and commissioning. A list of items in need of completion or correction shall be generated by the owner, which must be corrected by the Installer before final acceptance will be granted.

### **3.6 TRAINING**

- A. Contractor shall provide no less than two (2) one (1) hour training sessions.
  - 1. The first training session will be a "Train the Trainer". The owner will appoint

their representative to be provided extensive training so that he/she will be able to provide additional support once the project has been completed.

2. The additional training session will be provided as a general overview of the system operation for large groups or several smaller groups as designated by the owner. Usually these additional training events will coincide with a school function when the sound system will be used.
3. Provide sign in sheets for all training events. Deliver to architect in the close out documents.

### **3.7 WARRANTY**

- A. Contractor will provide a minimum of a 1 year Workmanship Warranty that includes Parts and Labor.
- B. All equipment provided under this specification shall be warranted to be free from defects in materials and workmanship for a period of 12 months from the notice of completion.
- C. The Contractor shall maintain regular service facilities and provide a qualified technician familiar with the work specified for this project. Contractor will respond to all notice of malfunction from the Owner within 24 hours of receiving trouble call. As part of this warranty, the Contractor shall provide, at no expense to the Owner, all material, devices, equipment, and personnel necessary and resolve malfunction and/or to provide alternate facilities, services, or equipment for the duration of repairs to any defective work as described in this section.
- D. All repairs and service under warranty shall be at the jobsite unless in violation of manufacturer's warranty, wherein contractor shall provide substitute equipment for the duration of repairs. Transportation of substitute or test equipment and personnel to and from the jobsite shall be at no expense to the owner.
- E. All repair and service work under warranty work, except emergency repairs can be performed during regular working hours of regular working days. Emergency repairs shall be made when a system or component malfunctions during use, and shall be performed on an immediate basis. All work shall be performed by personnel in the employ of contractor, having specific experience in the work of this specification and shall not be subcontracted or assigned to another company for service, unless Owner has approved such assignment in writing, in which event contractor shall nevertheless be responsible to the Owner for such work.

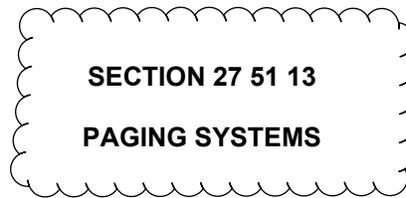
### **3.8 SYSTEM DOCUMENTATION**

- A. Upon completion of the installation, the contractor shall provide four copies (one hardcopy and three electronic copies) of Project Close-Out Documents to the Owner. Documentation shall include the items detailed in the sub-sections below:
  1. Maintenance and Operation Manuals
  2. All System source codes and passwords must be handed over to, and become property of the Owner upon completion of this project.

### 3. As-Built Drawings

- B. The As-Built drawings are to include cable routes, outlet locations and the approved labeling identifiers, equipment layout and system single line drawings. The Owner will provide floor plans in paper and electronic (DWG, AutoCAD 2008) formats on which as-built construction information can be added. These documents will be modified accordingly by the telecommunications contractor to denote as-built information as defined above and returned to the Owner.
- C. Contractor to provide a document with the site and reseller at the top of the page and a table listing the Room and MAC of the controller for every room a system is installed. The sticker on the control panel shall be attached to this document. Assigned IP addresses and MAC addresses are to be included in the documentation.

**END OF SECTION 27 42 00**



**AD 3-18a**  
**S&B Elementary**  
**02-116800**

## **PART 1 – GENERAL**

### **1.1 RELATED SECTIONS**

- A. Section 26 05 00 – Common Work Results for Electrical
- B. Section 27 00 00 – Communications
- C. Section 27 20 00 – Structured Cabling

### **1.2 REFERENCES**

- A. The system shall be listed as a Power Limited Device and be listed under the standards in this section. Each system shall be supplied with complete details on all installation criteria necessary to meet all of the listings.
- B. California Code of Regulations
  - 1. Title 24, Part 3 – California Electrical Code
- C. National Fire Protection Association (NFPA)
  - 1. NFPA 70 – National Electric Code (NEC)
  - 2. NFPA 72 – Local Protective Signaling
  - 3. NFPA 72 – Remote Station Protective Signaling
  - 4. NFPA 72 – Proprietary Protective Signaling

### **1.3 SCOPE OF WORK**

- A. Furnish, install, and program as shown on plans and as hereinafter specified all equipment, cabling, and terminations for a fully functional system.
- B. The contractor shall furnish complete shop drawings for review and approval.

### **1.4 SYSTEM DESCRIPTION**

- A. The paging system shall be a highly configurable district wide system that runs on the District's wide area network (WAN) or virtual private network (VPN) by means of a single server application.
- B. The system shall be programmed, monitored, and controlled via a web based Graphical User Interface (GUI) provided by a factory designed server application running on a Microsoft Windows 2000 or 2003 server. The server to receive the application shall be designated by the District.
- C. The application shall support different levels of user privileges as designated by the paging system administrator.

- D. The GUI shall be accessible to all networked computer residing on the district's WAN or VPN. Access to the server shall be granted via login and authentication that supports the Secure Sockets Layer (SSL) / Transport Layer Security (TSL) protocol.
- E. The system shall automatically recognize all system speakers connected to the District's WAN or VPN. Paging options shall be universally configurable to include district wide all page, specific campus all page, campus zone paging, etc.
- F. The number of configurable zones shall be unlimited. A zone may be as small as one speaker or as large as all of the speakers. Each speaker may be assigned to an unlimited number of zones.
- G. In addition to live and ad hoc paging, the system shall support playback of recorded messages stored as .wav files, to include the program bell tone, daily announcements, lockdown alert, evacuation alert, etc. The system shall allow a different tone or message for each zone. The system shall also be able to broadcast messages to computer screens running a client application.
- H. The system shall support special calendar schedules to adjust for special events, holidays, etc. The system shall support multiple simultaneous schedules on the same facility (e.g., one schedule for grades 1-6, another for kindergarten, etc.) The system shall be able to automatically compensate for daylight savings time and automatically synchronize the system time with internet time servers.
- I. The system shall log all events that occur and trigger and alarm for any errors or changes (e.g. message send failure, speaker failure, new speaker connected to network, etc.).
- J. The system shall receive voice input from SIP softphones installed on designated computers. The system shall also be capable of interfacing with any analog PBX or VoIP communications system to provide paging from telephone system handsets.
- K. The system shall be capable of initiating sounding specific messages or sending text messages to designate computers as triggered by other systems (e.g., fire alarm, security, etc.) via analog to digital zone controllers.
- L. The system shall be capable of interfacing with any legacy paging system to provide paging features inherent to the legacy system.
- M. Paging system speakers shall connect to the school LAN via CAT6 data cabling and IEEE 802.11af compliant power over ethernet (POE) switches located in data distribution frames. Each speaker shall be individually addressable via dynamic host control protocol (DHCP) addressing. The number of supported speakers shall be limited only by the number of available IP addresses. Speaker operation shall be accomplished by individual amplifiers on each speaker.
- N. The system shall support synchronized digital wall clocks as an integral component of the speaker.

- O. Stand-alone clocks shall be installed and connected to the master clock. Provide master clock at each building IDF where stand-alone clocks are used.

## **PART 2 – PRODUCTS**

### **2.1 MANUFACTURER**

- A. (Existing PA Rack)
- B. Sapling, Inc.  
1633 Republic Road, Huntingdon Valley, PA 19006  
Phone (215) 322-6063. FAX (215) 322-8498. Website: [www.sapling-inc.com](http://www.sapling-inc.com)
- C. Atlas Sound  
4545 E. Baseline Road, Phoenix, AZ 85042  
Phone (800) 876-3333.  
FAX (800) 765-3435.  
Website: [www.atlassound.com](http://www.atlassound.com)
- D. The manufacturer shall have at least twenty-five (25) years of experience in the role of public address system manufacturing, and a proven track record of forward and backward compatibility for a minimum of twenty (20) years for its product's auxiliary devices, including speakers, amplifiers, and paging equipment.

### **2.2 HEAD END**

- A. Existing Atlas Sound #CK-K12 "ControlKom" Server Application

### **2.3 SPEAKERS**

- A. Suspended Ceiling Mount: Atlas Sound #I128SYS
- B. Wall Mount: Atlas Sound #I8S speaker and #FEST-I8S (flush mount) or #SEST-I8S (surface mount) enclosure
- C. Exterior Vandal Resistant Speaker: Atlas Sound #IH-VP speaker and #FEST-IH (flush mount) or #SEST-IH (surface mount) enclosure
- D. Pendant Mounted Speaker: Atlas Sound #PM8FA

### **2.4 CLOCKS**

- A. Wall Mount: Sapling wireless to match existing.

### **2.5 CLOCK/SPEAKER CMBO**

- A. Wall Mount: Atlas Sound #I8SC speaker/clock and #FEST-I8SC (flush mount) or #SEST-I8SC (surface mount) enclosure

**2.6 CLOCKS (STAND-ALONE)**

- A. Wall Mount: Sapling #SBD-004-254-1 wall clock
- B. Clock Master: Sapling #SSM-100-0-1 IP synchronized master clock

**2.7 IP ADDRESSIBLE ZONE INTERFACE MODULES WITH BALANCED LINE LEVEL OUTPUT (SEE SECTION 3.2, BELOW)**

- A. Single Zone: Atlas Sound #IPS-ZC1
- B. Dual Zone: Atlas Sound #IPS-ZC2

**2.8 AMPLIFIERS**

- A. 100 Watt Rack Mounted Amplifier: Atlas Sound #PA1001G and 19" rack

**2.9 EQUIPMENT COLOR**

- A. Where equipment is available in different colors, the contractor shall contact the architect for the color selection.

**PART 3 – EXECUTION****3.1 INSTALLATION**

- A. Horizontal cabling jackets, patch cable jackets, and modular RJ-45 jacks serving the Paging System shall be green in color. All cabling shall be installed and labeled in accordance with 27 20 00.
- B. Install ControlKom software on the server designated by the district and configure per specifications.
- C. Provide (3) SIP softphones and connect to computers at locations designated by the district.

**3.2 ZONE INTERFACE MODULE / AMPLIFIER APPLICATION NOTE**

- A. It shall be understood that all components in this system shall be IP devices, unless specifically noted otherwise. It is not acceptable to create-a-device with a zone interface module and conventional speaker. Zone interface modules and amplifiers shall be used only where specifically called for in the plans.

**END OF SECTION 27 51 13**





**SECTION 32 84 00  
PLANTING IRRIGATION**



**AD 3-19a  
S&B Elementary  
02-116800**

**PART I - GENERAL**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Provide all materials, labor, equipment and services necessary to furnish and install Irrigation System, accessories and other related items necessary to complete the Project as indicated by the Contract Documents unless specifically excluded. The extent of the underground irrigation system is shown on the drawings. Point of Connection (P.O.C). and controller location are shown on the drawings.
- B. Related Work:

32 93 00 PLANTS

1.3 CODES AND REGULATIONS

- A. All work and materials shall be in full accordance with the following codes adopted and amended by the authority having jurisdiction. Nothing in these drawings or specifications is to be construed to permit work not conforming to these codes. The specifications shall govern in the event that the drawings or specifications call for material or methods of construction of higher quality or standard than required by these codes.
1. California Plumbing Code
  2. California Administrative Codes:
    - a. Title 8, Industrial Relations
    - b. Title 19, Public Safety
  3. California Electrical Code
  4. Standards and Regulations of other agencies or organizations as listed in this specification relating to products or procedures. For example, American Society for Testing and Materials.

#### 1.4 EXPLANATION OF DRAWINGS

- A. The intent of the drawings and specifications is to indicate and specify a complete and efficient sprinkler irrigation system ready for use in accordance with the manufacturer's recommendations, and all applicable local codes and ordinances. Questions concerning interpretation of irrigation plans and specifications shall be submitted to the Landscape Architect.
- B. All plot dimensions are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and shall report any variations to the Landscape Architect.
- C. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, etc., which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all his work, and plan his work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed in the most direct and workmanlike manner, so that conflicts between sprinkler systems, planting, utilities, and architectural features will be avoided.

Contractor shall provide and install any and all material, labor, operations necessary to provide a complete fully functional irrigation system as deemed acceptable by the Owner. No additional compensation will be given to the Contractor for work required by the Owner.

- D. All work called for on the drawings by notes shall be furnished and installed whether or not specifically mentioned in the specifications.
- E. The Contractor shall not willfully install the irrigation facilities as indicated on the drawings when it is obvious in the field that unknown obstructions might not have been considered in the engineering. Such obstructions or differences should be brought to the attention of the Landscape Architect.
- F. The Contractor shall examine carefully the site of work contemplated and the proposal, plans, specifications, and all other contract documents. It will be assumed that the Contractor has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantity of work to be performed and materials to be furnished, and as to the requirements of the specifications. The Contractor shall take necessary precautions to protect existing site conditions that are to remain. Should damage be incurred, the Contractor shall make the necessary repair or replacement to bring it back to its original condition at his own expense.
- G. Prior to cutting into the soil, the Contractor shall coordinate with the Project Inspector locate all cables, conduits, sewers, septic tanks, and other such utilities as are commonly encountered underground and Contractor shall take proper precaution not to damage or disturb such improvements. If a conflict exists between such obstacles, notify the Project Inspector who will consider realignment of the proposed work. The Contractor will proceed in the same manner if a rock layer or any other condition encountered underground makes

change advisable. Should utilities not shown on the plans be found during excavations, Contractor shall promptly notify the Project Inspector for instructions as to further action. Failure to do so will make Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown in plans.

- H. The Contractor shall verify the correctness of all finish grades within the work area in order to insure the proper soil coverage (as specified) of the sprinkler system pipes. The Contractor shall verify and be familiar with location and size of the proposed water supply (P.O.C.). He shall make approved type connection and install new work.
- I. The Contractor shall be responsible for notifying the Project Inspector in the event any equipment or methods indicated on the drawings or in the specifications conflict with local codes, are incompatible or an error is apparent, prior to installing. In the event the Contractor neglects to do this, he will accept full responsibility for any revisions necessary. No additional compensation will be given to the Contractor for necessary revisions resulting from this event.

#### 1.5 PERMITS AND INSPECTIONS

- A. The Contractor shall obtain and pay required fees to any governmental or public agency as required in General Conditions. Any permits for the installation or construction of any of the work included under this contract, which are required by any of the legally constituted authorities having jurisdiction, shall be obtained and paid for by the Contractor, each at the proper time. He shall also arrange for and pay all costs in connection with any inspections and examination required by these authorities.
- B. In all cases, where inspection of the irrigation system work is required and/or where portions of the work are specified to be performed under the direction and/or inspection of the Inspector of Record the Contractor shall notify the Inspector of Record at least 48 hours in advance of the time when such inspection and/or direction is required. Any necessary re-excavation or alterations to the system needed because of failure of the Contractor to have the required inspection, shall be performed at the Contractor's own expense.

#### 1.6 GUARANTEE

- A. Irrigation system shall be guaranteed for one year from date of final acceptance.

#### 1.7 OPERATIONS AND MAINTENANCE INSTRUCTIONS/RECORD DOCUMENTS

- A. The Contractor shall prepare and deliver to the District within ten (10) calendar days prior to completion of the construction, all required and necessary descriptive material in complete detail and sufficient quantity, properly prepared in three individually bound sets of Operating and Maintenance Manuals.
- B. These manuals shall describe the material installed and shall be in sufficient depth to permit operating personnel to understand, operate and maintain all

equipment. Spare part lists and related manufacturer identification shall be included for each installed equipment item. Each complete, bound manual shall contain the following information:

1. Index sheet stating Contractor's address and telephone number, duration of guarantee period, and list of equipment, with names and addresses of local manufacturer representatives.
  2. The Contractor to issue a "CERTIFICATE OF CONSTRUCTION COMPLIANCE" to the Project Inspector which indicates that all work done, materials and equipment used and installed are in compliance with the approved plans, specifications and all authorized revisions. The certificate shall be in form as required in the Project General Conditions.
  3. Complete operating and maintenance instruction on all major equipment.
  4. Complete set of manufacturer's literature and specifications of material installed, including parts list.
  5. Diagrams for all wiring of controller, controller valves, etc.
  6. Initial electrical data on each control valve.
    - a. Ohmmeter reading for each valve taken at the controller and valve.
    - b. Voltmeter reading for each valve.
- A. The contractor shall furnish one set of bond copies As-Built drawings, and one set of Autocad 2007 drawing files on compact disc of As Builts after all As Built information is transferred to the Auto Cad file as record documents.
1. Label first page of each document, or set of documents, "PROJECT RECORD" in neat large printed letters on lower right hand corner. Record information concurrently with construction progress. This set of drawings shall be kept on the site and shall be used only as a record set. Do not conceal any work until required information is recorded.

These drawings shall also serve as work in progress sheets, and the Contractor shall make neat and legible annotations thereon daily as the work progresses, showing the work as actually installed. These drawings shall be available at all times for inspection and shall be kept in a location designated by the Project Inspector.
  2. Drawings: Legibly mark to record actual construction:
    - a. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Give sufficient horizontal and vertical dimensions to accurately trace route and invert of each concealed line or item. Accurately locate each capped, plugged or stubbed line.

- b. Field changes of dimension and detail.
  - c. Changes made by Field Order, by Addenda, by RFI, or by Change Order.
  - d. Details not on original Contract Drawings.
3. Deliver all Record Documents (As-Builts) to Owner. Accompany submittal with transmittal letter in duplicate, containing:
- a. Date.
  - b. Project title.
  - c. Contractor's name and address.
  - d. Title and number of each Record Document (As-Built).
  - e. Signature of Contractor or his authorized representative.
- B. The Contractor shall provide one controller chart for each controller installed. The chart will show the area irrigated by the controller and shall be the maximum size the controller door will allow. The chart may be a reduced drawing of the actual plans. The chart shall be colored with a different color for each station. The chart shall be laminated or covered in a watertight envelope.
- C. The Contractor shall provide three (3) copies of laminated, typewritten legible controller programming charts for each individual controller. The chart shall show all stations on controller, run times, start times and program.

## 1.8 SUBMITTALS

- A. Contractor shall submit six (6) copies of complete lists of proposed materials to the Owner, including manufacturer's name and catalog numbers. No substitution will be allowed without prior written approval by the Landscape Architect.
- B. Shop drawings shall follow for all equipment, including dimensions, capacities, and other characteristics as listed in product specifications. Materials and equipment shall not be ordered until given written approval by the Landscape Architect.
- C. When specific name brands of equipment and materials are used, they are intended as preferred standards only. This does not imply any right upon the part of the Contractor to furnish other materials unless specifically approved in writing as equal in quality and performance by the Landscape Architect. Decisions by the Landscape Architect shall govern as to what name brands of equipment and materials are equal to those specified on the plans and his decisions shall be final.

- D. It shall be the responsibility of the prospective bidder to furnish proof as to equality of any proposed equipment or material.
- E. Approval of any item, alternate or substitute indicates only that the products apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.
- F. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.
- G. Acceptance of any submittals, deliverables, or other work product of the Contractor shall not be construed as assent that contractor has complied, nor in any way relieved the Contractor of, compliances with (i) the applicable standard of care of (ii) applicable statues, regulations, rules, guidelines and contract requirements.

#### 1.9 DEFINITIONS

- A. Piping: All pipe fittings, valves, and accessories as required for a complete piping system.
- B. PVC: Polyvinyl Chloride.
- C. Agencies and Organizations:
  - 1. ASTM- American Society for Testing and Materials
  - 2. AWWA- American Water Works Association
  - 3. IAPMO- International Association of Plumbing and Mechanical Officials
  - 4. NEC - National Electrical Code.
  - 5. UL - Underwriter's Laboratories

#### 1.10 REJECTION OF MATERIAL OR WORK

- A. The Landscape Architect reserves the right to reject any material or work which does not conform to the contract plans, specifications without any written approval from the Landscape Architect. The rejected material or work shall be removed or corrected by the Contractor at no additional cost to the Owner.

### **PART II - PRODUCTS**

#### 2.1 PIPING MATERIALS

- A. Piping:
  - 1. Pressure pipe/upstream of control valve:

- a. 2 ½" and larger: Bell end 'O' ring gasketed PVC 1120 Class 200 SDR 21 high impact pipe (ASTM D1784 and ASTM D2241).
  - b. 2" and smaller: Solvent weld bell end PVC 1120 Schedule 40 high impact pipe (ASTM D1785 and ASTM D1784).
2. Lateral line/downstream of control valve:
    - a. Solvent weld bell end PVC 1120 Class 200 low pipe (ASTM D1784 and ASTM D2241).
  3. Sleeving under paving:
    - a. Solvent weld bell end PVC 1120 Schedule 40 high impact pipe (ASTM D1784 and ASTM D2241).
  4. All pipe shall be continuously and permanently marked and conform with the following information:
 

Manufacturer's name or trademark, nominal pipe size, schedule and type of pipe, pressure rating in PSI and (NSF) seal of approval. Pipe shall be of improved white rigid polyvinyl chloride (PVC) compound manufactured by Lasco Industries or approved equal.
  5. **Add tracer wire to all new irrigation main lines. Provide 10 gauge solid copper Blue No. 10 wire**
- B. Fittings:
1. For PVC plastic pipe: white rigid polyvinyl chloride (PVC) Schedule 40 type I and II grade 1, solvent weld socket fittings ASTM D2466 for all lateral lines. Harco Deep Bell Ductile Iron gasketed fittings, grade 65-45-12 in accordance with ASTM A-536, deep bell push on joints with gaskets meeting ASTM F-477 manufactured by The Harrington Corporation (804) 845-7094, or approved equivalent, for all mainline pipe. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable (IPS) schedule, and (NSF) seal of approval.
  2. All plastic fittings and connectors shall be injection molded of an improved polyvinyl chloride compound featuring high tensile strength, high chemical resistance and high impact strength in terms of current ASTM standards for such fittings and as manufactured by Lasco Industries or approved equal. Where threads are required in plastic fittings, these shall be injection molded also.
  3. For connections between main line fittings and electric control valves: Schedule 80 PVC ASTM D2464, threaded one end.
  4. Saddles shall be used for all connections between mainline and electric control valves, blow off valves, air release valves and quick coupling valves. Saddles shall be coated ductile iron with two (2) stainless steel straps. Romac Industries (800) 426-9341, #202NS or equivalent.

- C. Galvanized pipe and fittings:
1. Galvanized Pipe shall be hot dip galvanized continuous welded, seamless steel pipe SCH 40 conforming to applicable current (ASTM) standards.
  2. Galvanized Fittings shall be galvanized malleable iron ground joint SCH 40 conforming to applicable current (ASTM) standards.
- D. Solvent Weld Adhesive:
1. All socket type connections shall be joined with primer and PVC solvent cement which shall meet the requirements of ASTM F656 for primer and ASTM D2564, "Standard Specification for Solvent Cements for Polyvinyl Chloride (PVC) Plastic Pipe and Fittings." Solvent cement joints for plastic pipe and fittings will be made as prescribed by manufacturer. The high chemical resistance of the pipe and fitting compounds specified in the foregoing sections makes it mandatory that an aggressive colored primer, which is a true solvent for (PVC) be used in conjunction with a solvent cement designed for the fit of pipe and fittings of each size range specified. A medium bodied solvent cement to be used on pipe joints with interference fits only and not with Schedule 80 fittings. A heavy bodied solvent cement can be used for all classes and schedules of pipe and fittings.
- E. Pipe Thread Sealant:
1. A non-hardening all purpose sealant and lubricant similar to Permatex or Lasco blue pipe thread sealant which is certified by the manufacturer to be harmless to PVC pipe and fittings. Apply sealant to clean male threads, brushing into grooves and to the first three threads of the female threads. A good quality grade of teflon tape recommended by the manufacturer for use with plastics may also be used. Minimum width of tape to be used is 3/4". A minimum of two wraps and a maximum of three wraps to be used.

## 2.2 VALVES

- A. Electric Control Valves: Globe valves operated by low-power solenoid, normally closed, manual flow adjustment. Sizes and types as shown on drawings.
- B. Control Wire: Paige P7350 twisted pair solid core with polyethylene jacket, AWG-UF type UL approved for direct burial, minimum size #14.
- C. Control Wire Connectors: 3M DBR/Y-6 Direct Bury splice kit, and connectors or equivalent.
- D. Control Wire Marking: Christy wire marker or equivalent.

- E. Control Valve Boxes: Old Castle / Carson 1419 and 1220 with lockable green plastic covers or equivalent.
- F. Mainline and Quick Coupler valve boxes: Old Castle / Carson 910 with lockable green plastic covers or equivalent.
- G. Mainline valve: Nibco cast iron resilient wedge valve w/ operating nut. Conforming to AWWA C-509 or equivalent.
- H. Quick Coupling Valve: Two piece quick coupling valve as shown on plan.
- I. Control valve box marking: Heat imprinting on top of lid with 2" high letters showing controller letter and station number.

### 2.3 CONTROLLER

- A. Solid state controller, completely automatic in operation, which shall electrically start the sprinkler cycle and program and time the individual stations. Controller have attached instruction booklet, integral 24V transformer, clock indicating time of day and day of week, 24V master valve circuit and terminal connection strip. Controller shall be universal remote ready with pre-installed connectors.
- B. Controller shall be capable of receiving weather data and adjust controller schedules based upon evapotranspiration data. Possessing modular construction with input-output modules, self contained diagnostic, and capable of radio communications.

### 2.4 IRRIGATION HEADS

- A. Spray Head: Molded plastic body with plastic nozzles. Refer to schedule on drawings. Manufacturer's numbers are listed with description.
- B. Rotor Head: Molded plastic and stainless steel construction, Gear driven with memory arc, balanced nozzle sets. Refer to schedule on drawings. Manufacturer's numbers are listed with description.
- C. Dripline: Polyethylene tubing with inline emitter. Pre emergent herbicide impregnated self cleaning emitter welded to dripline wall. Refer to schedule on drawings. Manufacturers numbers are listed with description.

### 2.5 BOOSTER PUMP

- A. The prefabricated pump station shall have a minimum capacity and discharge pressure at skid edge as described in the technical specifications. Provide product as described in Specification Section 32 84 00 Planting Irrigation Appendix attached.

### 2.6 BACKFLOW PREVENTOR

- A. Reduced pressure type with resilient seated shut off valves as shown on plans. The backflow preventer shall be approved by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.
- B. After being installed at the project site, the backflow prevention unit must be tested and approved as functioning properly by the Water Provider's Representative. Approval of the backflow prevention unit must precede any final inspection of the irrigation system. All costs for the test to be the responsibility of the Contractor.

## 2.7 UNIVERSAL REMOTE

- A. Remote unit shall be able to have complete control over any solid state or electro/mechanical controllers. Unit shall have a range of one mile from receiver to transmitter located at controller.
- B. Remote unit shall be capable of coded FM transmissions which eliminate unwanted interference and works amid buildings or hilly terrain.

## 2.8 OTHER MATERIALS

- A. Materials not specifically indicated but necessary for proper execution of this work shall be of first quality as selected by the Contractor subject to the acceptance of Landscape Architect.
- B. All materials appearing in the legend and details of the irrigation drawings are part of this job. Contractor is responsible for installation according to plans and details. The system shall efficiently and uniformly irrigate all areas and perform as required by these plans and specifications.

# PART 3 - EXECUTION

## 3.1 SYSTEM DESIGN

- A. Design pressure and flow as indicated on drawings.
- B. Contractor shall verify design layout and specifications as specified on drawings and inform the Owner of discrepancies, errors or incompatibilities in writing prior to installation of irrigation system. Failure to inform the Owner of any discrepancy seven working days prior to beginning system installation will institute the responsibility of corrective action to the Contractor at no expense to the Owner.

## 3.2 PIPING INSTALLATION

- A. General:
  - 1. Any equipment installed by the Contractor and deemed to be for the use of the State in various situations (i.e., control valves, control panels, etc.) shall be so installed to be readily accessible and quickly operable. Equipment deemed by the Owner to be inoperable for its intended

purpose shall be reinstalled by the Contractor in an operable position before approval will be given. Any changes made by the Contractor shall be done without any additional cost to the Owner.

2. The Contractor shall be responsible for layout of proposed facilities and any minor adjustments required due to differences between site and drawings. Any such deviations in layout shall be within the intent of the original drawings, and without additional costs to the Owner. The Landscape Architect will indicate the proposed precise location of the control panels. Head spacing on drawings is diagrammatic. Head spacing and patterns shall be adjusted to provide complete and adequate coverage with a minimum spray on non-planted areas. Where head spacing is not noted, Contractor is to install sprinkler heads evenly along the irrigation area's perimeter. Flush all lines prior to installation of heads.
  3. Support piping without strain on joints or fittings and allow for piping expansion and contraction. "Snake" pipe into trench in accordance to manufacturer's recommendations to allow for expansion. Lay on solid sub-base, at uniform depth.
- B. The Contractor shall examine all other portions of working drawings and plan trenching and pipe lays so that no conflict will arise between irrigation and any other work. Any corrective action will be the Contractors responsibility at no further expense to the Owner.
- C. Excavations:
1. Excavations shall be open vertical construction, sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and tamping.
  2. The use of a vibratory plow or methods other than open vertical trenching will not be allowed without the written approval of the Landscape Architect. To obtain such approval, a field test must be performed, at the proposed site, with the equipment to be used in the presence of the Landscape Architect. The field test is to indicate if the proposed site is favorable to the plowing method. Approval for plowing at one location does not allow the use of plowing at another location. Approval for plowing must be obtained for each location where the use of plowing is proposed. If, at previously approved plowing locations, conditions for plowing become unfavorable as determined by the Project Inspector or Landscape Architect, plowing shall be terminated.
  3. Trenches for pipe and equipment shall be cut to required grade lines, and compacted to provide an accurate grade and uniform bearing for the full length of the line.
  4. When two pipes are to be placed in the same trench, it is required to maintain a minimum four inch (4") horizontal separation between pipes.

5. Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:
  - a. 24-inch over main lines.
  - b. 12-inch minimum over non-pressure lateral lines.
  - c. 24-inch minimum over lines located out in road surface area of paved streets.
6. Maximum cover above the top of the pipe shall not exceed twelve inches (12") greater than the required minimum cover.

D. Assemblies

1. Routing of pressure supply lines as indicated on drawings is diagrammatic. Install lines (and various assemblies) in such a manner as to conform with details on plans.
2. Install all assemblies specified herein according to the respective detail drawings or specifications pertaining to specific items required to complete the work. Perform work according to best standard practice, with prior approval.
3. Install no multiple assemblies on plastic lines. Provide each assembly with its own outlet.
4. All brass pipe and fittings shall be assembled using an approved teflon tape, or equivalent, applied to the male threads only. A minimum of two (2) wraps and a maximum of three (3) wraps of an approved teflon tape will be required.
5. All plastic and galvanized steel threaded pipe and fittings shall be assembled using an approved teflon tape applied to the male threads only. A minimum of two (2) wraps and a maximum of three (3) wraps of an approved teflon tape will be required.
6. No elbows, tees or valves are to be located closer than five (5') feet of each other without prior approval of the Project Inspector.

E. Line Clearance

1. All lines shall have a minimum clearance of four inches (4") from each other, and six inches (6") from lines of other trades. Parallel lines shall not be installed directly over one another.

F. Plastic to Steel Connections

1. At all plastic (PVC) pipe connections, the Contractor shall work the steel connections first. Connections shall always be plastic into steel, never

steel into plastic. An approved teflon tape shall be used on all threaded (PVC) to steel, never steel into plastic. An approved teflon tape shall be used on all thread (PVC) to steel pipe joints applied to the male threads only, and light wrench pressure is to be applied. A minimum of two (2) wraps and a maximum of three (3) wraps of an approved 3/4" wide teflon tape will be required.

2. A non-hardening sealant and lubricant similar to Permatex #51 or LASCO blue pipe sealant may be used in lieu of teflon tape. Apply sealant to clean male threads brushing into grooves and to the first three threads of the female threads.

G. Plastic Pipe

1. The Contractor shall exercise care in handling, loading, unloading, and storing plastic pipe and fittings. All plastic pipe and fittings shall be stored under a weatherproof roofed structure before using and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lie flat so as not to be subject to undue bending or concentrated external load at any point.
  - a. All lumber, rubbish, rubble, concrete and rocks shall be removed from the trenches by the Contractor. Pipe shall have a firm uniform bearing for the entire length of each pipe line to prevent uneven settlement. Wedging or blocking under riser tees shall be done only if specified on the plans. Pad trenches with soil as necessary to provide uniform bearing surfaces.
  - b. Where extensive lengths of pipe are installed, snake pipe in trench from side to side to allow for expansion and contraction. One additional foot per one hundred (100) feet of pipe is the minimum allowance for snaking. Never lay pipe when there is water in the trench or when the temperature is 32 degrees F or below.
  - c. All changes in direction of pipe shall be made with fittings, not by bending.
  - d. Make solvent weld joints with a non-synthetic bristle brush in the following sequence:
    - 1) Make sure pipe is cut square and all rough edges and burrs are removed. All connecting surfaces are properly cleaned and dry prior to application of pipe primer.
    - 2) Apply an even coat of colored primer to pipe and fitting prior to application of solvent.
    - 3) Apply an even coat of solvent to the outside of the pipe, making sure that the coated area is equal to the depth of the fitting socket.

- 4) Apply an even light coat of solvent to the inside of the fitting.
- 5) Apply a second coat of solvent to the pipe.
- 6) Insert the pipe quickly into the fitting and turn pipe approximately one-eighth to one-quarter turn to distribute the solvent and remove air bubbles. Hold the joint for approximately fifteen seconds so the fittings do not push off the pipe.
- 7) Using a clean rag, make sure to wipe off all excess solvent to prevent weakening at joint.
- 8) Exercise care in going to the next joint so that pipe is not twisted, thereby disturbing the last completed joint.
- 9) Allow at least fifteen minutes setup time for each welded joint before moving.
- 10) Repairing plastic pipe when damaged shall be done by replacing the damaged portion of pipe.

H. Concrete Thrust Blocks:

1. Concrete anchors or thrust blocks shall be provided on main pipelines at abrupt changes in pipeline grade, changes in horizontal alignment (elbows, tees and crosses), reduction in pipe size (reducers, reducing tees or crosses), end-line caps or plugs, and in-line valve to absorb any axial thrust of the pipeline. The pipe manufacturer's recommendation for thrust control shall be followed. Thrust blocks must be formed against solid unexcavated earth (undisturbed). Do not enclose entire joint in concrete. Provide a minimum of three (3) cubic feet of 3,500 PSI concrete for each concrete thrust block.

### 3.3 HEAD INSTALLATION

- A. Equipment spacing on drawings is diagrammatic. Spacing shall be adjusted to provide complete and adequate coverage with a minimum water loss on non-planted areas. Flush all lateral and mainlines lines prior to installation of equipment.
- B. Rotary pop-up sprinkler heads adjacent to walks or mowstrips shall be set four inches (4") from edge of walk or mowstrips and pop-up spray heads adjacent to walks or mowstrips shall be set one inch (1") minimum/two inches (2") maximum from edge of walk or mowstrips or as noted otherwise on the plans and details.

- C. Upon completion of the installation, the Contractor shall adjust all individual systems to properly distribute water flow and shall place entire irrigation system in first-class operating condition.
- D. Adjustable heads shall be adjusted by fully opening the head furthest from the control valve. Adjust sprinkler heads which spray toward buildings in shrub / turf areas so that water does not contact sides of buildings.
- E. Install irrigation heads in accordance with details on plans.

#### 3.4 PIPE DEPTH AND BACKFILL

- A. Backfill shall not be placed until the installed system has been inspected and approved by the Project Inspector.
- B. Backfill material shall be approved soil. Unsuitable material, such as pipe remnants and wire including clods and rocks over two inches (2") in size, shall be removed from the premises and disposed of legally at no cost to the Owner. Backfill for first six inches (6") around mainline pipe and control wires shall be native soil.
- C. All backfilling shall be done carefully and shall be properly tamped. All soil shall be tamped and puddled to eliminate any voids.
- D. Surplus earth remaining after backfilling shall be disposed of off site.
- E. Backfilling for all pipe shall be carried out in two basic stages.

1. Stage One Backfilling:

This shall be accomplished as soon as possible after the pipe is laid. A bedding of uniform depth with no voids must be provided along the entire length of the pipe. The bedding dirt should be placed in the trench and tamped into the areas under the pipe, using a suitable tool. Joints should be left exposed until hydrostatic tests are completed. Cover only those portions of the pipe necessary to prevent movement or damage.

2. Stage Two Backfilling:

This shall be completed after all hydrostatic tests are completed and the piping system has been thoroughly checked for leaks or other defects. Continue to add backfill soil in four inch (4") layers and hand tamp to achieve density similar to adjacent soil. After twelve inches (12") in main line trenches and eight inches (8") in lateral line trenches of hand tamped soil is in place over the pipe and fittings, backfilling can be continued, using light machinery to place dirt in the trenches in six inch (6") layers and to compact the dirt to conform to adjacent soil. Extreme care should be taken to avoid damage to the pipe from machinery that is too heavy.

All trenches shall then be water jetted to assure uniform settling and compaction. Backfilling operations will not be considered complete until the top surface has been graded to conform to the adjacent soil. All rocks uncovered and not used as backfill must be collected and removed from the site.

- F. PVC piping and fittings shall not be backfilled during periods of extreme heat or when a sudden lowering of temperature of the pipe may cause separation of joints or fittings.

### 3.5 CONTROL WIRE

- A. Install control wires in PVC conduit. Provide long radius sweep elbows at all turns and control valve boxes. Provide minimum of six inches (6") separation to irrigation mainline. Minimum cover shall be 24 inches. Crimp wires together at valve manifold with wire connector. Seal splice with 3M DBR/Y-6 splice kit or approved equal. Tag all control wire splices and at control valve and controller with approved control wire markers.
- B. Wire size shall be determined by the number of valves operating on a given wire and the distance from the controller to the farthest valve, as specified by the charts furnished by the remote control valve manufacturer. Splices are not encouraged but allowed. All splice connections must be provided in a valve box.

### 3.6 ELECTRIC CONTROL VALVES

- A. Electric control valves shall be adjusted so the most remote heads operate at the pressure recommended by the head manufacturer. Electric control valves shall be adjusted so a uniform distribution of water is applied by the heads to the planting areas for each individual valve system. The Contractor shall make all necessary connections for operation. Where pressure regulating electric control valves are called for the Contractor shall adjust the valve so a uniform distribution of water is applied by the heads.
- B. Valve boxes and lids shall be set to finished grade or as indicated on the Construction Plans. Heat imprint electric control valve identification numbers on top of valve box with two inch (2") high letters. Not more than one electric control valve may be installed in each box.
- C. Electric control valves shall be connected and aligned to provide the most efficient flow of water to the irrigation heads. Each valve is to be enclosed in the specified valve box. The valve box shall be secured on firm soil clear of valves and wiring connections. Backfill carefully to prevent settlement and subsequent damage.
- D. A valve box must be provided at all underground irrigation control wire splice connections.

### 3.7 AUTOMATIC CONTROLLER

- A. Contractor shall be required to program and schedule the controller to maximize and utilize the design flow indicated. Programming and scheduling shall be compatible with controller on site. It shall be the complete responsibility of the Contractor to ensure that the controller provides for a fully functioning, smooth running irrigation system. Contractor shall provide all wiring and rewiring of irrigation controller necessary to accomplish programming and scheduling which utilizes the design flow indicated.
- B. Install controller, pedestal, and accessories per manufacturer's approved details, construction plans and contract requirements.
- C. Install automatic controller chart in laminated or watertight plastic envelope inside controller cover showing which valves are connected to which stations on controller.
- D. Controller Charts:
  - 1. The Contractor shall provide one controller chart for each controller supplied.
  - 2. The chart shall show the area controlled by the automatic controller and shall be the maximum size that the controller door will allow.
  - 3. The chart may be a reduced drawing of the actual as-built system. However, in the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a size that will be readable when reduced.
  - 4. The chart shall be colored with a different color for each station.
  - 5. The chart shall be a permanent photo copy or approved equal and enclosed in a waterproof envelope or laminated.
- E. Provide three (3) copies of laminated, typewritten, legible programming charts for each controller. Charts shall show all stations on the controller, run times, start times for each individual program on the controller.

### 3.8 ELECTRICAL SERVICE

- A. Electrical service shall be provided to control panel, as indicated on the plans. All work shall be in conformance to all local ordinances, codes, regulations and requirements. All cost for the electrical service is to be the responsibility of the Contractor.

### 3.9 TESTING

- A. General: Unless otherwise directed, tests shall be witnessed by the Landscape Architect. Work to be concealed shall not be covered until prescribed tests are made. Should any work be covered before such tests, the Contractor shall, at his expense, uncover, test and repair his work and that of other contractors to

original conditions. Leaks and defects shown by tests shall be repaired and entire work re-tested. Tests may be made in sections, however, all connections between sections previously tested and new section must be included in the test.

- B. Piping Upstream of Control Valves: Maintain 100 PSI water pressure for a duration of four (4) hours. There shall be no drop in pressure during test except that due to ambient temperature changes (+ 5PSI).

### 3.10 INSPECTION

- A. Inspection of Work:

1. Installation and operations must be approved by the Project Inspector.
2. In no event shall the Contractor cover up or otherwise remove from view any work under this contract without prior approval of the Project Inspector. Any work covered prior to inspection shall be opened to view by the Contractor at his expense.

- B. General Inspection: Periodic inspections shall be required for basic operations and installations during progression of the project. Such inspections will include but not necessarily be limited to the following items:

1. Layout and flagging of sprinkler heads and system.
2. Trenching.
3. Wire placement.
4. Partial fill compaction of trenches.
5. Control valve installation.
6. Irrigation controller installation and operation.
7. Mainline sustained pressure check.

- C. Coverage Test: When the irrigation system is completed, the Contractor in the presence of the Project Inspector shall perform a coverage test of water afforded in the planting areas. Contractor is required to provide 100% complete coverage of all planting areas through the irrigation system. The Contractor shall furnish all materials and labor required to correct any inadequacies of coverage disclosed. The Contractor shall inform the Landscape Architect of any deviation from the plan required due to wind, planting, soil, or site conditions that bear on proper coverage. If such corrections or additions are required in the irrigation system, the Contractor shall make all adjustments and corrections without any extra cost to the Owner.

- D. Completion: The work will be accepted in writing when the entire project improvements have been completed satisfactorily to the Landscape Architect as

stated in Section 32 93 00 Plants, Part 3.8. In judging the work, no allowance for deviation from the original plans and specifications will be made unless already approved in writing at proper time. Should it become necessary, due to developed conditions, to occupy any portion of the work before the contract is fully completed, such occupancy shall not constitute acceptance. The Contractor will not be responsible for any damage caused by the Owner's work forces.

### 3.11 MAINTENANCE

- A. Adjustments: Irrigation system shall be maintained and adjusted as required to provide proper coverage throughout the 90 day maintenance period. Irrigation system maintenance shall commence upon general inspection following irrigation installation, planting operations and general clean-up. Maintenance shall be continued until final acceptance.

After the system has been completed, the Contractor shall instruct an authorized representative of the Owner in the operations and maintenance of the system and shall set the desired controller irrigation time for each station.

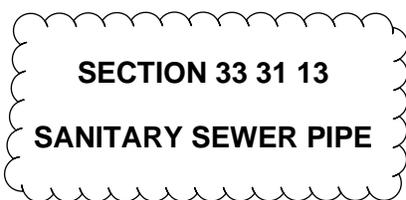
### 3.12 GUARANTEE

- A. The entire irrigation system shall be guaranteed by the Contractor to give satisfactory service and to the quality of materials equipment and workmanship including settling of backfilled areas below finish grade for a period of one (1) year following the date of the final acceptance of all the work by the Landscape Architect. If, within one year from the date of completion and final acceptance of all of the work, any trouble develops resulting from inferior or faulty materials or workmanship or settlement occurs and adjustments in pipes, valves, and heads, sod, or paving to the proper level of the permanent grades, the Contractor, as part of the work under his contract, shall make all adjustments and corrections without extra cost to the Owner, including the complete restoration of all damaged planting, paving, or other improvements of any kind.
- B. The Owner reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the Owner shall not relieve the Contractor of his responsibilities under the terms of the guarantee as herein specified.
- C. Should any operational difficulties in connection with the irrigation system develop within the specified guarantee period which in the opinion of the Landscape Architect may be due to inferior material and/or workmanship, said difficulties shall be immediately corrected by the Contractor to the satisfaction of the Owner at no additional cost to the Owner including any and all other damage caused by such defects.

**END OF SECTION**







**AD 3-20a**  
**S&B Elementary**  
**02-116800**

## **PART 1 GENERAL**

### **1.1 SUMMARY**

- A. Section Includes:
1. Sanitary sewer pipe and fittings starting 5-feet beyond the operations building.
  2. Wye branches and tees.
  3. Sanitary laterals.
  4. Connection to existing manholes.
- B. See Section 22 00 00 – Plumbing for sewer piping within the building to 5-feet beyond.
- C. Related Sections include but are not necessarily limited to:
1. Section 03 30 00 – Cast-In-Place Concrete.
  2. Section 31 23 00 – Earthwork.
  3. Section 31 23 16 – Trenching Backfilling and Compaction.
  4. Section 33 01 32 – Sewer and Manhole Testing.
  5. Section 33 05 13 – Manholes and Structures
- D. Measurement and Payment:
1. The contract lump sum price shall include full compensation for all costs and work involved with furnishing and installing sanitary sewer pipe.

### **1.2 REFERENCES**

- A. ASTM International (ASTM):
1. A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  2. C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
  3. C923 – Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
  4. D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
  5. D2729 – Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
  6. D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
  7. D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
  8. F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
  9. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
  10. F679 – Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
  11. F794 – Standard Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

12. F949 – Standard Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings.

B. AmericanAmericanAmerican National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

3. C150 – ANSI Standard for the Thickness Design of Ductile Iron Pipe.

4. C151 – American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.

5. C153 – AmericaSUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for general submittal requirements and content.

B. Shop Drawings:

1. Indicate layout of sewer system and appurtenances. Show size, materials, components of system and burial depth.

C. Product Data:

1. Submit catalog cuts and other pertinent data indicating proposed materials, accessories, details, and construction information.

D. Quality Assurance:

1. Reports: Submit reports indicating field tests made and results obtained.

2. Instructions: Furnish Manufacturer's installation instructions and indicate special procedures required to install Products specified.

3. Manufacturer's Certificate: Certify products meet or exceed specified requirements of the City of Fresno.

E. Closeout Submittals:

1. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

2. Project Record Documents: Record location of pipe runs, connections, manholes, cleanouts, and invert elevations.

#### 1.4 QUALITY ASSURANCE

A. Perform Work in accordance with City of Fresno standards.

B. All materials shall be new and all similar materials shall be from the same manufacturer.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 65 00 – Delivery, Storage, and Handling for general requirements.

B. Block individual and stockpiled pipe lengths to prevent moving.

#### 1.6 FIELD MEASUREMENTS

A. Verify field measurements and elevations are as indicated.

#### 1.7 COORDINATION

A. Coordinate the Work with City of Fresno.

- B. Notify affected utility companies minimum of 72 hours prior to construction.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Pipe and Fittings:
  - 1. 4 through 15-inch: ASTM D3034, SDR 35 PVC.
  - 2. 18 through 27-inch: ASTM F679, SDR 35 PVC.
- B. Joints:
  - 1. ASTM D3213 Push-on joints
- C. Gaskets:
  - 1. ASTM F477elastomeric.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

### **3.2 PREPARATION**

- A. Remove large stones or other hard matter capable of damaging pipe or impeding consistent backfilling or compaction.
- B. Protect and support existing sewer lines, utilities, and appurtenances.
- C. Maintain profiles of utilities. Coordinate with other utilities to eliminate interference. Notify ENGINEER where crossing conflicts occur.

### **3.3 PIPE INSTALLATION**

- A. Excavate pipe trench in accordance with Section 31 23 16 – Trenching, Backfill, and Compaction.
- B. Dewater excavations to maintain dry conditions and preserve final grades at bottom of excavation.
- C. Place bedding material at trench bottom, level materials in continuous layer not exceeding 6 inches, and compact to 90 percent.
- D. Install pipe, fittings, and accessories in accordance with ASTM D2321. Lay pipe to slope gradients noted on drawings; with maximum variation from indicated slope of 1/8-inch in 10-

feet. Begin at downstream end and progress upstream laying bell and spigot pipe with bells upstream.

- E. Place pipe in a shaped bed of material. Excavate suitable bell holes so entire barrel of pipe rests on the bedding material.
- F. Keep pipe and fittings clean until work is completed and accepted by /Engineer. Cap open ends during periods of work stoppage.

#### 3.4 INSTALLATION OF WYE BRANCHES AND TEES

- A. See City of Fresno Standard Drawings S-8 and S-9.
- B. Install wye branches or pipe tees at locations indicated on Drawings concurrent with pipe laying operations. Use standard fittings of same material and joint type as sewer main.
- C. Maintain minimum 5-foot separation distance between wye connection and manhole.
- D. Use saddle wye or tee with stainless steel clamps for taps into existing piping. Mount saddles with solvent cement or gasket and secure with metal bands. Layout holes with template and cut holes with mechanical cutter.

#### 3.5 INSTALLATION - SANITARY LATERALS

- A. Construct laterals from wye branch to terminal point at 5-feet from building.
- B. Maintain 3-foot minimum depth of cover over pipe.
- C. Install watertight plug, braced to withstand pipeline test pressure thrust, at termination of lateral. Install temporary marker stake extending from end of lateral to 12 inches above finished grade. Paint top 6 inches of stake with fluorescent orange paint.

#### 3.6 CONNECTION TO MANHOLES

- A. Connect to manholes in accordance with Section 33 05 13 – Manholes and Structures.

#### 3.7 BACKFILLING

- A. Backfill around sides and to top of pipe with cover fill in maximum lifts of 8 inches, tamp in place and compact to 90 percent. Maintain optimum moisture content of bedding material to attain required compaction density.
- B. Backfill around sides and to top of pipe in accordance with Section 31 23 16 – Trenching, Backfill, and Compaction.
- C. Install tracer wire and warning tape per Section 40 05 13 –General Pipe Requirements, Couplings, and Accessories.

#### 3.8 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

- B. Pressure Test: Test in accordance with Section 33 01 32 – Sewer and Manhole Testing.
- C. Infiltration Test: Test in accordance with Section 33 01 32 – Sewer and Manhole Testing.
- D. Deflection Test: Test in accordance with Section 33 01 32 – Sewer and Manhole Testing.
- E. Request inspection prior to placing bedding.
- F. When tests indicate Work does not meet specified requirements, remove work, replace, and retest.
- G. Frequency of Compaction Tests on site work. One test for each lift for each 500-LF of pipe or fraction thereof.
- H. Provide Sewer video record in accordance with City of Fresno Standards.
- I. VIDEO INSPECTION OF INTERIOR OF INSTALLED PIPE
  - 1. The Contractor shall furnish Closed-circuit television (CCTV) video inspection for the interior inspection of a newly installed Sewer main, lateral, trunk and waste lines. The video check of the installed pipe shall be made after leakage and deflection tests have been performed and prior to placing of aggregate base or asphalt paving. Any broken pipe, separation of joints, or any pipe exceeding the permitted tolerances for line and grade shall be replaced or repaired.
  - 2. Any pipe repaired or replaced as a result of video inspection shall be retested for leakage and deflection.
  - 3. A video of the inspection (multi-format) shall be provided to the Owner at no additional cost to the Owner. The Contractor shall be responsible for all costs associated with furnishing the video inspection and making final repairs to the installed pipe and reinspection utilizing the video equipment.
  - 4. The extent of the video inspection shall be one hundred feet past the existing point of connection (POC).
- J. Requirements for Sewer Video Inspections:
  - 1. The testing Company is to certify as to their ability to adequately perform the video inspection.
  - 2. The Contractor is to provide 48-hour notice of testing schedule and Owner representatives shall be present to monitor the test.
  - 3. A flush truck will be required to be on-site to aid in the video inspection.
  - 4. A copy of the video inspection shall be submitted to the Owner as proof of inspection and be certified to comply with the contract documents or pointing out by measurement of the pipe any defects found.
  - 5. Lateral lines to be documented by measurement from center line of manhole and the video inspection firm shall provide a map of the tested lines.

### 3.9 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

**END OF SECTION**



**Applicant Instructions**



35059669(E) - Totals as of: 02/17/21 09:29PM

**AD 3-21a  
S&B Elementary  
02-116800**

Work Location	Work Type	Qty	Unit	Description
LOC 2				
INSTALL CONDUIT				
	INSTALL	200	FT	SVC/SL Conduit, Plastic, 4", 1Way
	INSTALL	2	EA	Bend, Conduit, 4", 22Deg, 36"R
	INSTALL	1	EA	Conduit Cap Plug, Temp, 4"



## Applicant Materials

35059669(E) - Totals as of: 02/17/21 09:29PM

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Quantity	Unit	M-Code	Description	Lead Time(wks)
1	EA	M360443	CAP PLSTC CONDUIT 4" PLUG	1
200	FT	M016472	RIGID CONDUIT PLASTIC 4" PVC SCHEDULE 40	2
2	EA	M360760	BEND CONDUIT 4" PVC SCHD 40 36"R 22-1/2	1

REV	DESCRIPTION	BY	DATE						
-	----	--	--/--/--	-	----	--	--/--/--	-	----

Reviewed.  
 Jim Bedgood  
 Hardin-Davidson Engineering  
 1-2-23

T-bus 19.5 in      T-bus 19.5 in      T-bus 19.5 in

**SWITCHBOARD GENERAL NOTES**  
**PRODUCT DESCRIPTION & RATINGS**

**Power System Data**  
 480Y/277V 3Ph 4W 60Hz / 3 Phase Wye  
 Solidly Grounded  
 System Short Circuit Current Rating: 65kA RMS  
 Incoming Section 1 Cable Through the Bottom Left of Lineup

**Bus System Data**  
 2000A Silver Plated Copper Main Bus  
 (4) .25x1.50 IN/6x38 mm Cu Bus Bar Per Phase/Neutral  
 (1) .25x.875 IN/6x22 mm Cu Ground Bus

**Enclosure Data**  
 Type 3R Free Standing  
 Exterior Paint Color: ANSI 49  
 Front Accessibility Only Required  
 Handling: Rollers  
 Rodent barriers  
 1.5H Corrosion Resist Base Channels  
 Steel Bottom Closure Plate  
 Base channels cannot be removed from EUSERC switchboard line-ups  
 Utility sealing hardware installed for unmetred bus compartments

**Estimated Shipping Weight**  
 Shipping Split 1 1771.00 lbs / 803.33 kgs  
 Shipping Split 2 1273.00 lbs / 577.43 kgs  
 Complete Lineup 3044.00 lbs / 1380.76 kgs

**Code Standards**  
 U.L. Deadfront and suitable for use as Service Entrance  
 when not more than six (6) disconnecting means are provided.

**Rating Nameplates**  
 ST1- Deadfront - Section Bus 2000A  
 ST2- Service Entrance - Section Bus 2000A  
 ST3- Deadfront - Section Bus 2000A

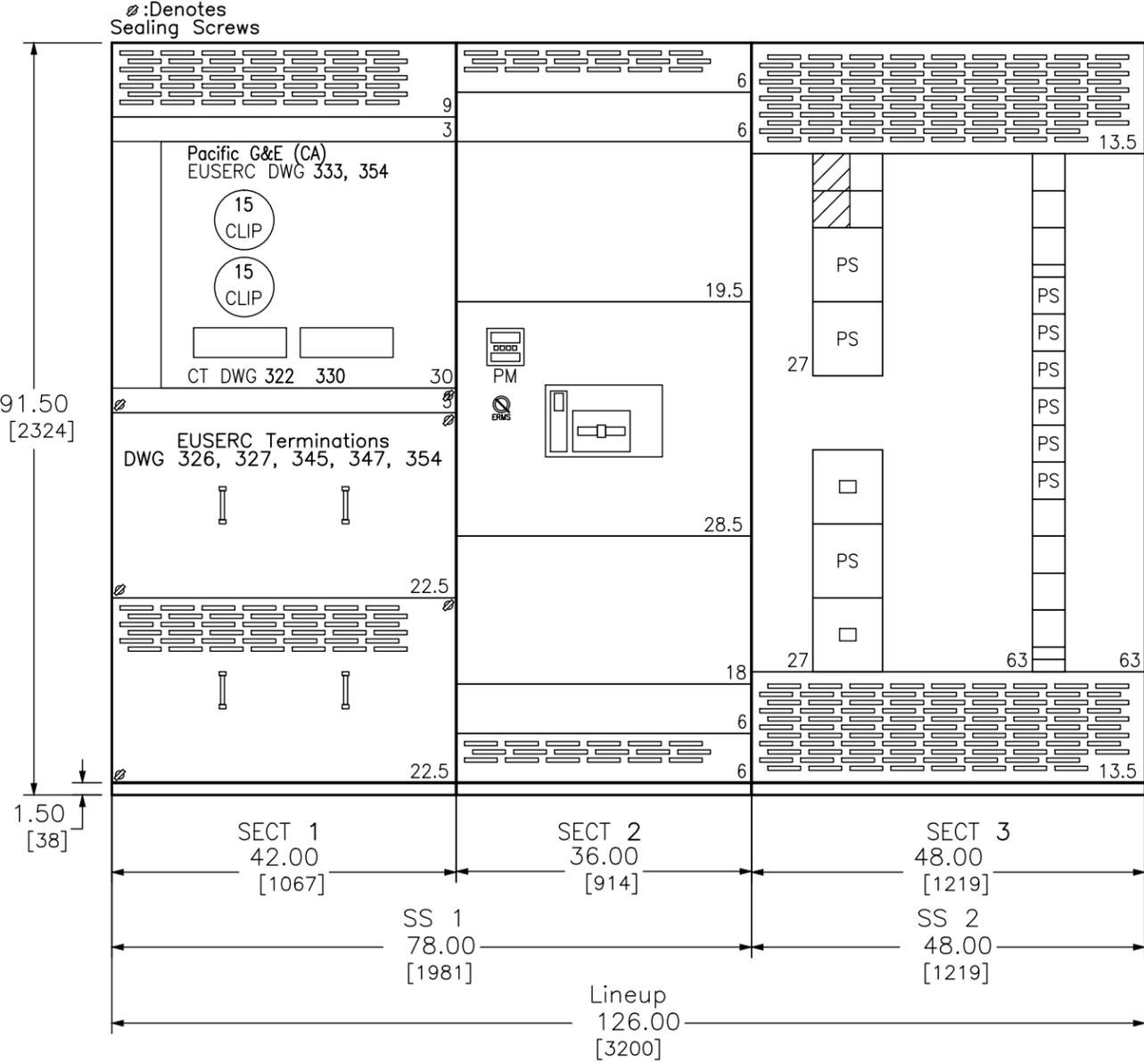
**PRODUCT INFORMATION**

**Wiring**  
 All wiring to be Machine Tool Wire type

**Instruction Bulletins**  
 Reference 80043-055 For Handling, Installation,  
 Anchoring, Inspection And Maintenance Information

**Product Accessories/Options**

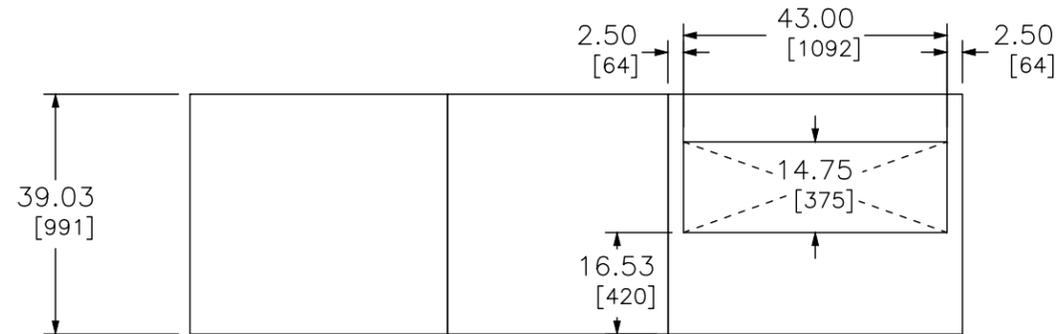
Seismic Qualified  
 24V Trip Unit Display Power  
 Locally Mounted ERMS Switch



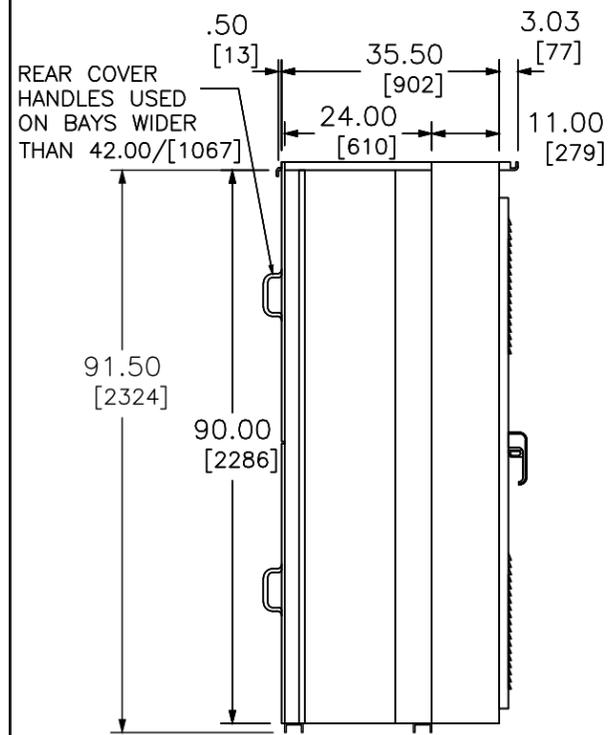
DUAL DIMENSIONS: INCHES  
 MILLIMETERS

JOB NAME: Shields & Brawley Elem School	EQUIPMENT DESIGNATION: MSB
JOB LOCATION:	EQUIPMENT TYPE: QED-2 Switchboard
DRAWN BY: (Q2C)	DRAWING TYPE: GENERAL NOTES
ENGR:	<b>SQUARE D</b> by Schneider Electric
DATE: December 20 2022	
DRAWING STATUS: QUOTE	DWG# FQ-3787293-108129577-01 PG 1 OF 2 REV -

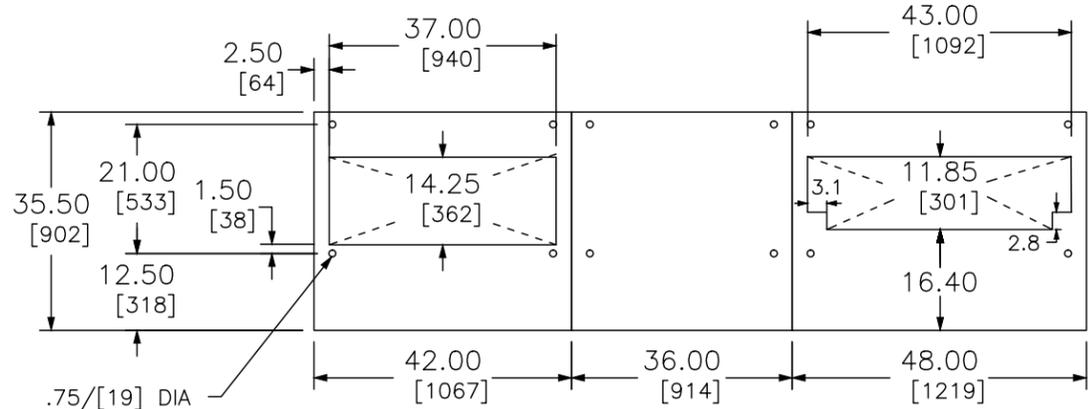
REV	DESCRIPTION	BY	DATE						
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**TOP VIEW - FRONT**



**LEFT SIDE VIEW**



**FLOOR PLAN - FRONT**

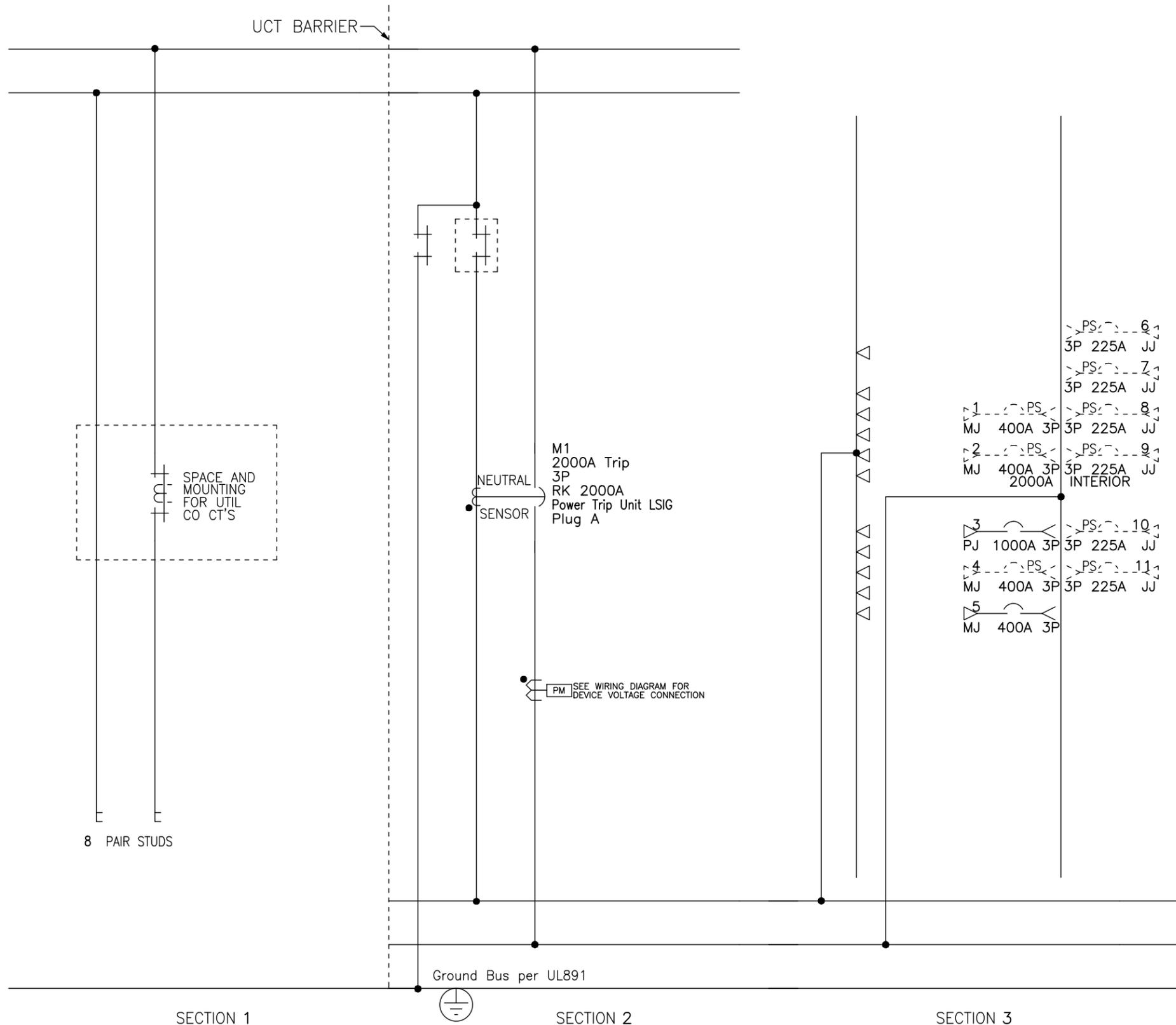
NOTE: ALL DEVICES REQUIRING DRILLING OR INSERTION IN MOUNTING PAD SUCH AS CONDUIT, ANCHORING STUDS, SLEEVE INSERTS, ETC. SHOULD BE INSTALLED BEFORE SETTING EQUIPMENT IN PLACE.

DUAL DIMENSIONS: INCHES  
MILLIMETERS

NOTE:  
A MINIMUM OF 2.00/[51] CLEARANCE BEHIND THE SWITCHBOARD IS REQUIRED FOR TOP COVER OVERHANG.

JOB NAME:	Shields & Brawley Elem School	EQUIPMENT DESIGNATION:	MSB
JOB LOCATION:		EQUIPMENT TYPE:	QED-2 Switchboard
DRAWN BY:	(Q2C)	DRAWING TYPE:	SIDE, TOP VIEW & FLOOR PLAN
ENGR:		<b>SQUARE D</b> by Schneider Electric	
DATE:	December 20 2022	DWG#	FQ-3787293-108129577-01
DRAWING STATUS:	QUOTE	PG	2 OF 2
		REV	-

REV	DESCRIPTION	BY	DATE						
-	----	--	---/---/---	-	----				



- PS 6 3P 225A JJ
- PS 7 3P 225A JJ
- 1 PS 8 3P 225A JJ
- 2 PS 9 3P 225A JJ INTERIOR
- 3 PS 10 3P 225A JJ
- 4 PS 11 3P 225A JJ
- 5 MJ 400A 3P

JOB NAME: Shields & Brawley Elem School	EQUIPMENT DESIGNATION: MSB
JOB LOCATION:	EQUIPMENT TYPE: QED-2 Switchboard
DRAWN BY: (Q2C)	DRAWING TYPE: ONE LINE
ENGR:	<b>SQUARE D</b> <small>by Schneider Electric</small>
DATE: December 20 2022	
DRAWING STATUS: QUOTE	DWG# OQ-3787293-108129577-01

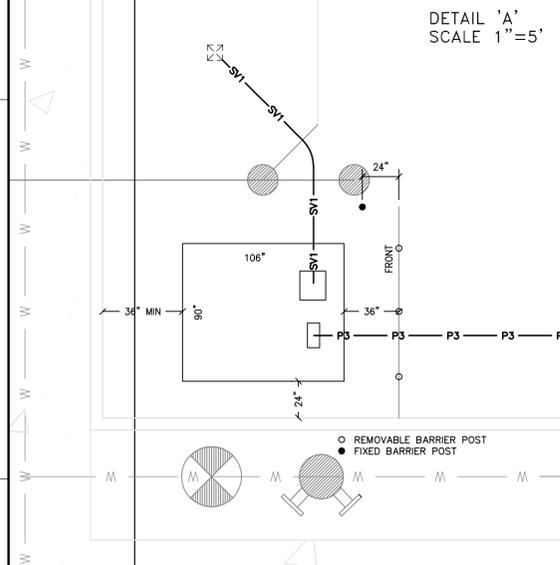
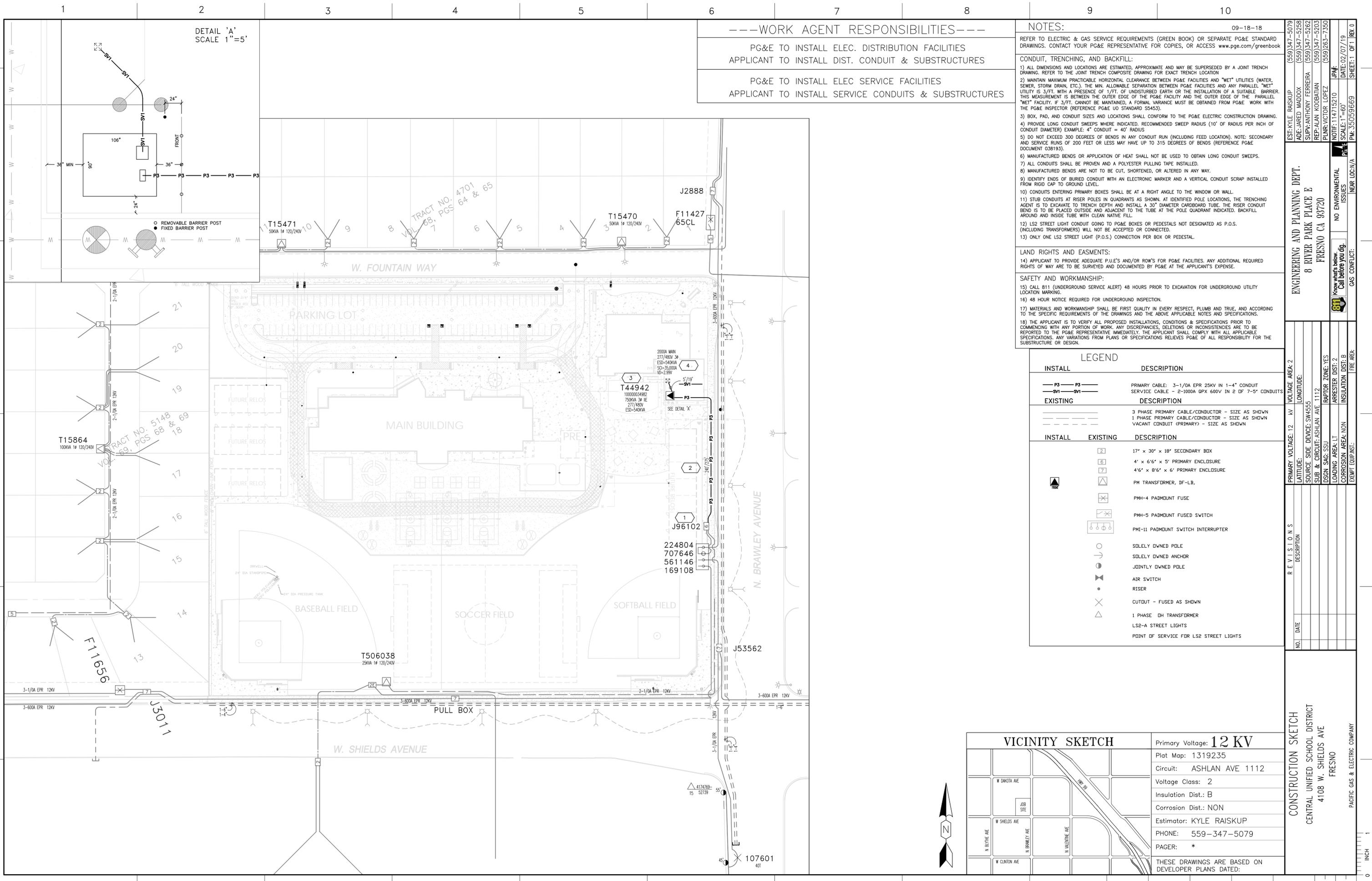
REV	DESCRIPTION	BY	DATE									
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POWER STYLE QED-2 SWITCHBOARD

SECT NO	CKT NO	IMD /GMD CONFIG	DEVICE/FRAME RATING	TRIP AMP	FUSE/TRIP	#P	DESIGNATION	N/P	LUG/WIRE INFORMATION				ACCESSORIES / NOTES
									QTY	PHASE WIRE RANGE	QTY	NEUT WIRE RANGE	
1	UCT	-	2000A	-	-	-	Pacific G&E (CA)	No	8	Pair Studs	8	Pair Studs	
2	M1	FIX	RK 2000A Plug A	2000A	P-LSIG	3P		No	-	-	-	-	GF PLA,PM5K,ERMS,TU
3	1	9 in	MJ (PS)	(400A)	-	3P		No	2	3/0 - 250 kcmil	2	3/0 - 250 kcmil	
3	2	9 in	MJ (PS)	(400A)	-	3P		No	2	3/0 - 250 kcmil	2	3/0 - 250 kcmil	
3	3	9 in	PJ	1000A	-	3P		No	4	3/0 - 500 kcmil	4	3/0 - 500kcmil	
3	4	9 in	MJ (PS)	(400A)	-	3P		No	2	3/0 - 250 kcmil	2	3/0 - 250 kcmil	
3	5	9 in	MJ	400A	-	3P		No	2	3/0 - 250 kcmil	2	3/0 - 250 kcmil	
3	6	4.5 in	JJ (PS)	(225A)	-	3P		No	1	3/0 - 350 kcmil	1	3/0 - 350kcmil	
3	7	4.5 in	JJ (PS)	(225A)	-	3P		No	1	3/0 - 350 kcmil	1	3/0 - 350kcmil	
3	8	4.5 in	JJ (PS)	(225A)	-	3P		No	1	3/0 - 350 kcmil	1	3/0 - 350kcmil	
3	9	4.5 in	JJ (PS)	(225A)	-	3P		No	1	3/0 - 350 kcmil	1	3/0 - 350kcmil	
3	10	4.5 in	JJ (PS)	(225A)	-	3P		No	1	3/0 - 350 kcmil	1	3/0 - 350kcmil	
3	11	4.5 in	JJ (PS)	(225A)	-	3P		No	1	3/0 - 350 kcmil	1	3/0 - 350kcmil	

LEGEND	
ERMS	Energy Reduction Maintenance SW
GF	Ground Fault
PLA	Padlock Attachment-Fixed
PM5K	Power Meter PM55XX
TU	24V Trip Unit Display Power

JOB NAME:	Shields & Brawley Elem School	EQUIPMENT DESIGNATION:	MSB
JOB LOCATION:		EQUIPMENT TYPE:	QED-2 Switchboard
DRAWN BY:	(Q2C)	DRAWING TYPE:	SCHEDULE
ENGR:		 <small>by Schneider Electric</small>	
DATE:	December 20 2022		
DRAWING STATUS:	QUOTE	DWG#	OQ-3787293-108129577-01
		PG	2 OF 2
		REV	-



---WORK AGENT RESPONSIBILITIES---

PG&E TO INSTALL ELEC. DISTRIBUTION FACILITIES  
APPLICANT TO INSTALL DIST. CONDUIT & SUBSTRUCTURES

PG&E TO INSTALL ELEC SERVICE FACILITIES  
APPLICANT TO INSTALL SERVICE CONDUITS & SUBSTRUCTURES

**NOTES:** 09-18-18

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**CONDUIT, TRENCHING, AND BACKFILL:**

- 1) ALL DIMENSIONS AND LOCATIONS ARE ESTIMATED, APPROXIMATE AND MAY BE SUPERSEDED BY A JOINT TRENCH DRAWING. REFER TO THE JOINT TRENCH COMPOSITE DRAWING FOR EXACT TRENCH LOCATION
- 2) MAINTAIN MAXIMUM PRACTICABLE HORIZONTAL CLEARANCE BETWEEN PG&E FACILITIES AND "WET" UTILITIES (WATER, SEWER, STORM DRAIN, ETC.). THE MIN. ALLOWABLE SEPARATION BETWEEN PG&E FACILITIES AND ANY PARALLEL "WET" UTILITY IS 3/FT. WITH A PRESENCE OF 1/FT. OF UNDISTURBED EARTH OR THE INSTALLATION OF A SUITABLE BARRIER. THIS MEASUREMENT IS BETWEEN THE OUTER EDGE OF THE PG&E FACILITY AND THE OUTER EDGE OF THE PARALLEL "WET" FACILITY. IF 3/FT. CANNOT BE MAINTAINED, A FORMAL VARIANCE MUST BE OBTAINED FROM PG&E. WORK WITH THE PG&E INSPECTOR (REFERENCE PG&E UO STANDARD S5453).
- 3) BOX, PAD, AND CONDUIT SIZES AND LOCATIONS SHALL CONFORM TO THE PG&E ELECTRIC CONSTRUCTION DRAWING.
- 4) PROVIDE LONG CONDUIT SWEEPS WHERE INDICATED. RECOMMENDED SWEEP RADIUS (10' OF RADIUS PER INCH OF CONDUIT DIAMETER) EXAMPLE: 4" CONDUIT = 40' RADIUS
- 5) DO NOT EXCEED 300 DEGREES OF BENDS IN ANY CONDUIT RUN (INCLUDING FEED LOCATION). NOTE: SECONDARY AND SERVICE RUNS OF 200 FEET OR LESS MAY HAVE UP TO 315 DEGREES OF BENDS (REFERENCE PG&E DOCUMENT 038193).
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- 7) ALL CONDUITS SHALL BE PROVEN AND A POLYESTER PULLING TAPE INSTALLED.
- 8) MANUFACTURED BENDS ARE NOT TO BE CUT, SHORTENED, OR ALTERED IN ANY WAY.
- 9) IDENTIFY ENDS OF BURIED CONDUIT WITH AN ELECTRONIC MARKER AND A VERTICAL CONDUIT SCRAP INSTALLED FROM RIGID CAP TO GROUND LEVEL.
- 10) CONDUITS ENTERING PRIMARY BOXES SHALL BE AT A RIGHT ANGLE TO THE WINDOW OR WALL.
- 11) STUB CONDUITS AT RISER POLES IN QUADRANTS AS SHOWN. AT IDENTIFIED POLE LOCATIONS, THE TRENCHING AGENT IS TO EXCAVATE TO TRENCH DEPTH AND INSTALL A 30" DIAMETER CARDBOARD TUBE. THE RISER CONDUIT BEND IS TO BE PLACED OUTSIDE AND ADJACENT TO THE TUBE AT THE POLE QUADRANT INDICATED. BACKFILL AROUND AND INSIDE TUBE WITH CLEAN NATIVE FILL.
- 12) LS2 STREET LIGHT CONDUIT GOING TO P&E BOXES OR PEDESTALS NOT DESIGNATED AS P.O.S. (INCLUDING TRANSFORMERS) WILL NOT BE ACCEPTED OR CONNECTED.
- 13) ONLY ONE LS2 STREET LIGHT (P.O.S.) CONNECTION PER BOX OR PEDESTAL.

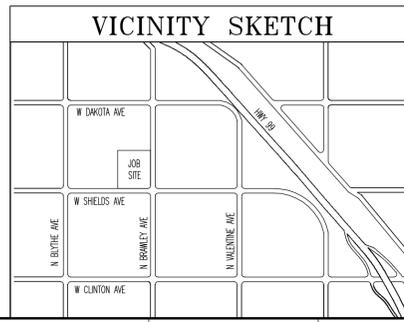
**LAND RIGHTS AND EASMENTS:**

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- 18) THE APPLICANT IS TO VERIFY ALL PROPOSED INSTALLATIONS, CONDITIONS & SPECIFICATIONS PRIOR TO COMMENCING WITH ANY PORTION OF WORK. ANY DISCREPANCIES, DELETIONS OR INCONSISTENCIES ARE TO BE REPORTED TO THE PG&E REPRESENTATIVE IMMEDIATELY. THE APPLICANT SHALL COMPLY WITH ALL APPLICABLE SPECIFICATIONS. ANY VARIATIONS FROM PLANS OR SPECIFICATIONS RELIEVES PG&E OF ALL RESPONSIBILITY FOR THE SUBSTRUCTURE OR DESIGN.

INSTALL		DESCRIPTION
---	P3	PRIMARY CABLE - 3-1/0A EPR 25KV IN 1-4" CONDUIT
---	SV1	SERVICE CABLE - 2-1000A 0PX 600V IN 2 OF 7-5" CONDUITS
EXISTING		DESCRIPTION
---		3 PHASE PRIMARY CABLE/CONDUCTOR - SIZE AS SHOWN
---		1 PHASE PRIMARY CABLE/CONDUCTOR - SIZE AS SHOWN
---		VACANT CONDUIT (PRIMARY) - SIZE AS SHOWN
INSTALL	EXISTING	DESCRIPTION
□	□	17' x 30' x 18" SECONDARY BDX
□	□	4' x 6'6" x 5' PRIMARY ENCLOSURE
□	□	4'6" x 8'6" x 6' PRIMARY ENCLOSURE
□	□	PM TRANSFORMER, DF-LB.
□	□	PMH-4 PADMOUNT FUSE
□	□	PMH-5 PADMOUNT FUSED SWITCH
□	□	PMI-11 PADMOUNT SWITCH INTERRUPTER
○	○	SDLELY OWNED POLE
○	○	SDLELY OWNED ANCHOR
○	○	JOINTLY OWNED POLE
○	○	AIR SWITCH
○	○	RISER
×	×	CUTOUT - FUSED AS SHOWN
△	△	1 PHASE OH TRANSFORMER
△	△	LS2-A STREET LIGHTS
△	△	POINT OF SERVICE FOR LS2 STREET LIGHTS



**VICINITY SKETCH**

Primary Voltage: 12 KV

Plot Map: 1319235

Circuit: ASHLAN AVE 1112

Voltage Class: 2

Insulation Dist.: B

Corrosion Dist.: NON

Estimator: KYLE RAISKUP

PHONE: 559-347-5079

PAGER: \*

THESE DRAWINGS ARE BASED ON DEVELOPER PLANS DATED:

EST: KYLE RAISKUP (559)347-5079	ENGINEERING AND PLANNING DEPT.	NO ENVIRONMENTAL ISSUES	DATE: 02/07/19	SHEET: 1 OF 1 REV: 0
ADD: JARED MADDOX (559)347-5258	8 RIVER PARK PLACE E	NEAR LOC: N/A	SCALE: 1"=60'	
SUP: ANTHONY FERREIRA (559)347-5262	FRESNO CA 93720			
REP: ALAN KOUBATIAN (559)347-9203				
PLN: VICTOR LOPEZ (559)263-7350				
NOTE: 114715210				
PM: 35059669				
PROJECT NO: 114715210				
PROJECT NAME: 811				
PROJECT LOCATION: 811				
PROJECT DESCRIPTION: 811				
PROJECT DATE: 811				
PROJECT STATUS: 811				
PROJECT TYPE: 811				
PROJECT PHASE: 811				
PROJECT AREA: 811				
PROJECT INSULATION: 811				
PROJECT CORROSION: 811				
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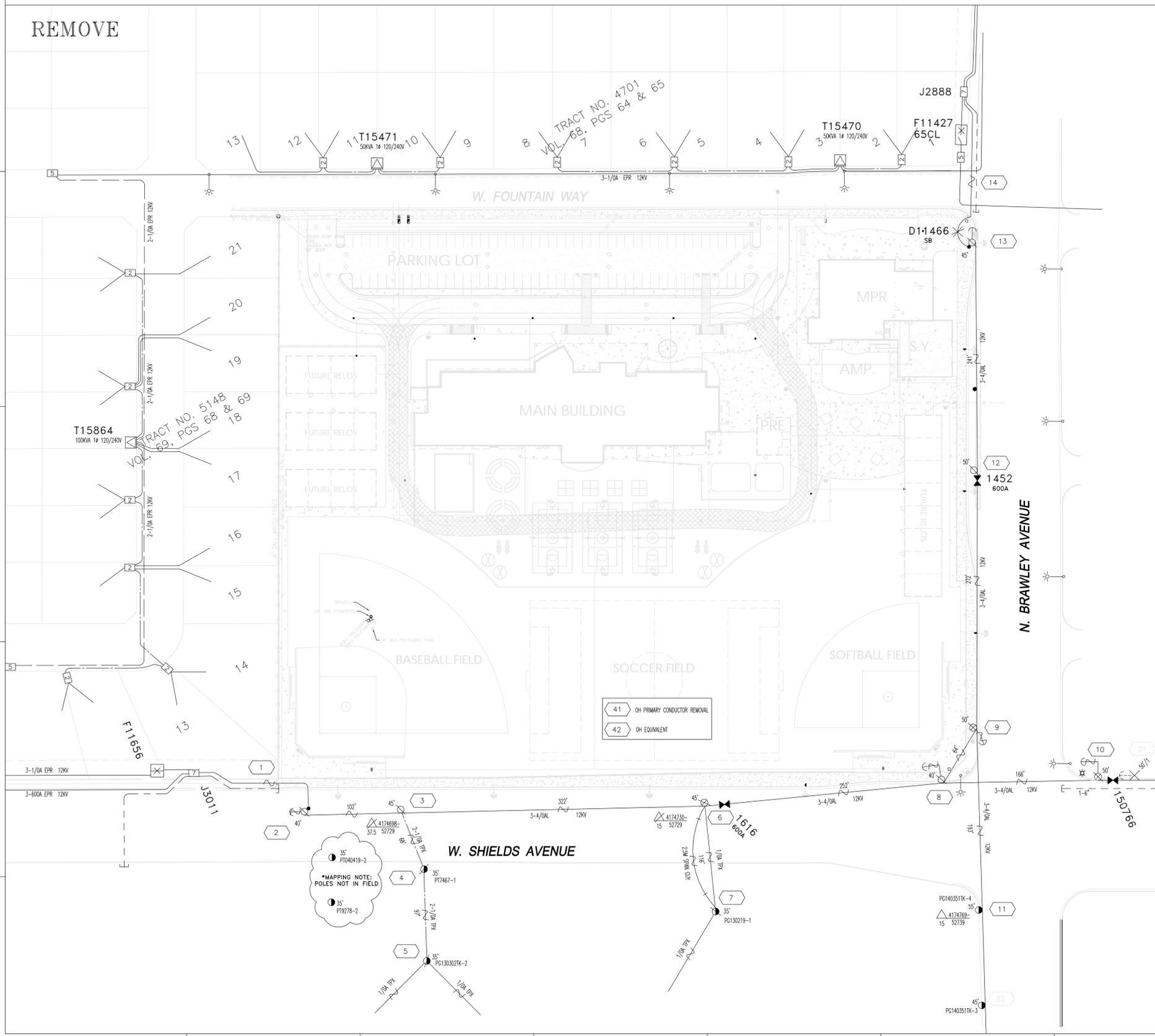
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EST: KYLE RAISKUP (559) 347-5079  
 ADE: JARED MADDOX (559) 347-5258  
 SUP: ANTHONY FERREIRA (559) 347-5262  
 REP: ALAN KOOBATAN (559) 347-5203  
 PLNR: VICTOR LOPEZ (559) 263-7350

NOTE: 114715210  
 DATE: 02/07/19  
 SCALE: 1" = 60'  
 PM: 350534-31

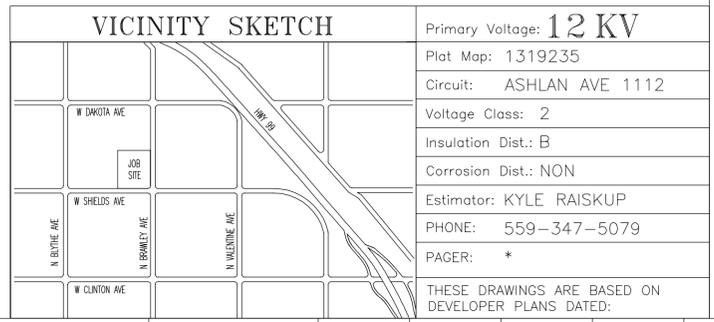
ENGINEERING AND PLANNING DEPT.  
 8 RIVER PARK PLACE E  
 FRESNO CA 93720

NO ENVIRONMENTAL ISSUES  
 GAS CONFLICT: NEAR LOC: N/A



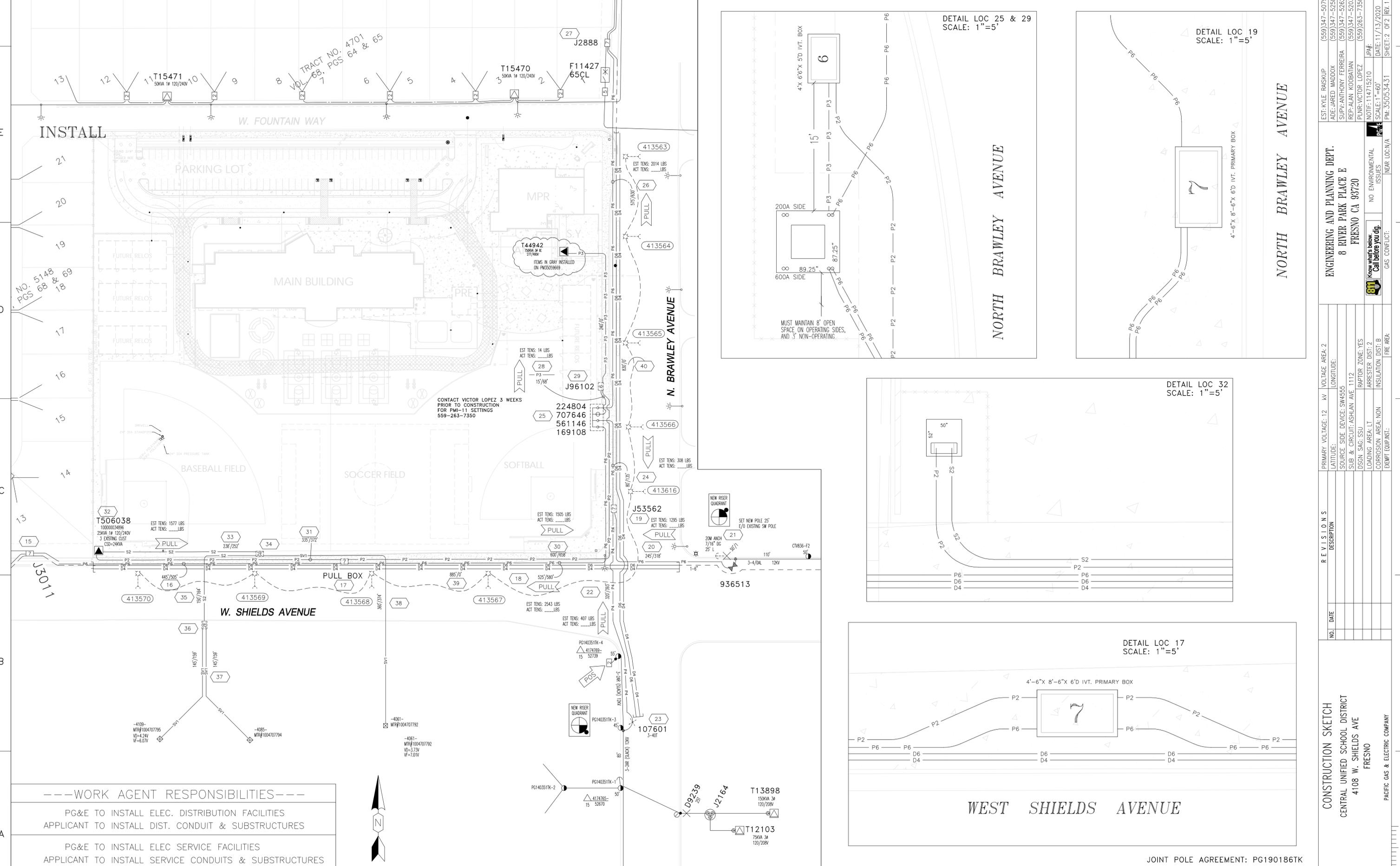
INSTALL	EXISTING	DESCRIPTION
P2	P2	PRIMARY CABLE: 2-1/0A EPR 25KV IN 1-4" CONDUIT
P3	P3	PRIMARY CABLE: 3-1/0A EPR 25KV IN 1-4" CONDUIT
P4	P4	PRIMARY CABLE: 3-1/0A EPR 25KV IN 1-8" CONDUIT
P6	P6	PRIMARY CABLE: 3-600A EPR 25KV IN 1-8" CONDUIT
S2	S2	SECONDARY CABLE - 350AL TPX 600V IN 1-4"
SV1	SV1	SERVICE CABLE - 4/0AL TPX 600V IN 1-3"
ST	ST	STREETLIGHT CABLE - INSTALLED BY CITY OF FRESNO
DB	DB	VACANT CONDUIT (PRIMARY), 1-4"
DE	DE	VACANT CONDUIT (PRIMARY), 1-6"
EXISTING	DESCRIPTION	
[Symbol]	3 PHASE PRIMARY CABLE/CONDUCTOR - SIZE AS SHOWN	
[Symbol]	1 PHASE PRIMARY CABLE/CONDUCTOR - SIZE AS SHOWN	
[Symbol]	VACANT CONDUIT (PRIMARY) - SIZE AS SHOWN	
INSTALL	EXISTING	DESCRIPTION
[Symbol]	[Symbol]	17' x 30' x 18" SECONDARY BDX
[Symbol]	[Symbol]	4' x 6'6" x 5' PRIMARY ENCLOSURE
[Symbol]	[Symbol]	4'6" x 8'6" x 6' PRIMARY ENCLOSURE
[Symbol]	[Symbol]	PM TRANSFORMER, DF-LB,
[Symbol]	[Symbol]	PMH-4 PADMOUNT FUSE
[Symbol]	[Symbol]	PMH-5 PADMOUNT FUSED SWITCH
[Symbol]	[Symbol]	PMI-11 PADMOUNT SWITCH INTERRUPTER
[Symbol]	[Symbol]	SOLELY OWNED POLE
[Symbol]	[Symbol]	SOLELY OWNED ANCHOR
[Symbol]	[Symbol]	JOINTLY OWNED POLE
[Symbol]	[Symbol]	AIR SWITCH
[Symbol]	[Symbol]	RISER
[Symbol]	[Symbol]	CUTOUT - FUSED AS SHOWN
[Symbol]	[Symbol]	1 PHASE OH TRANSFORMER
[Symbol]	[Symbol]	LS2-A STREET LIGHTS
[Symbol]	[Symbol]	POINT OF SERVICE FOR LS2 STREET LIGHTS

JOINT POLE AGREEMENT: PG190186TK



CONSTRUCTION SKETCH  
 CENTRAL UNIFIED SCHOOL DISTRICT  
 4108 W. SHIELDS AVE  
 FRESNO

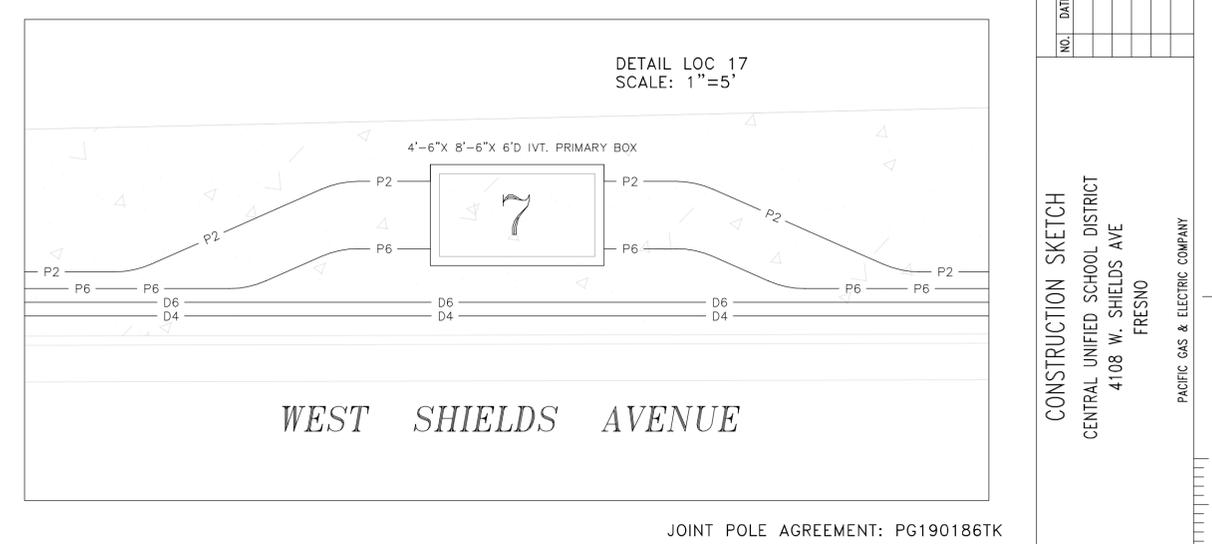
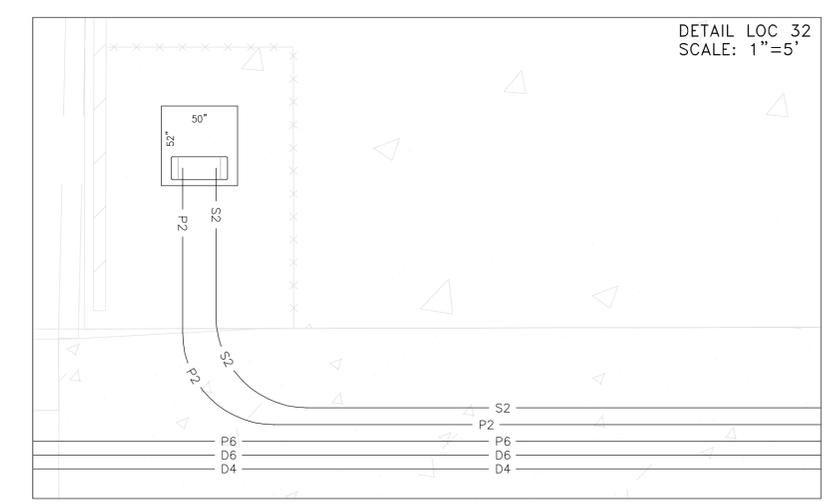
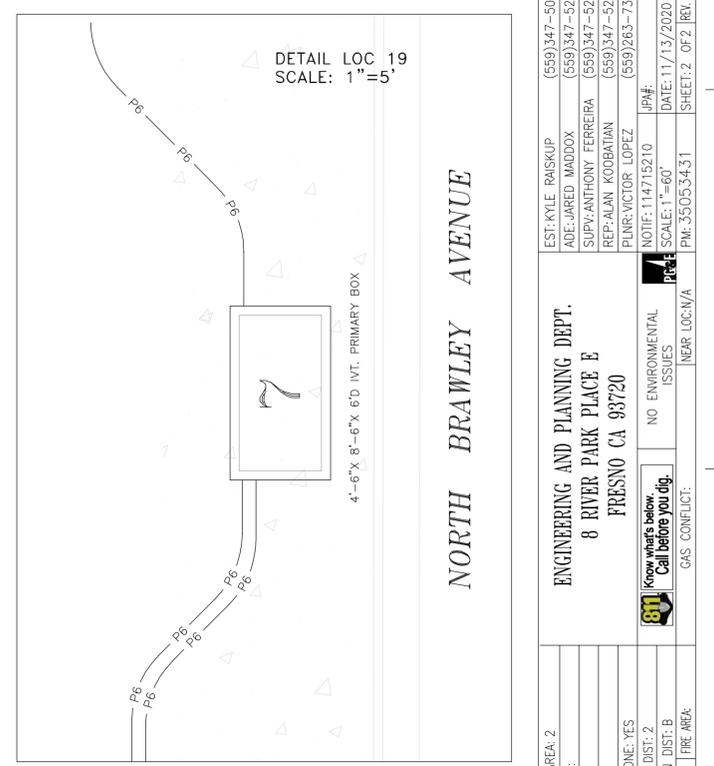
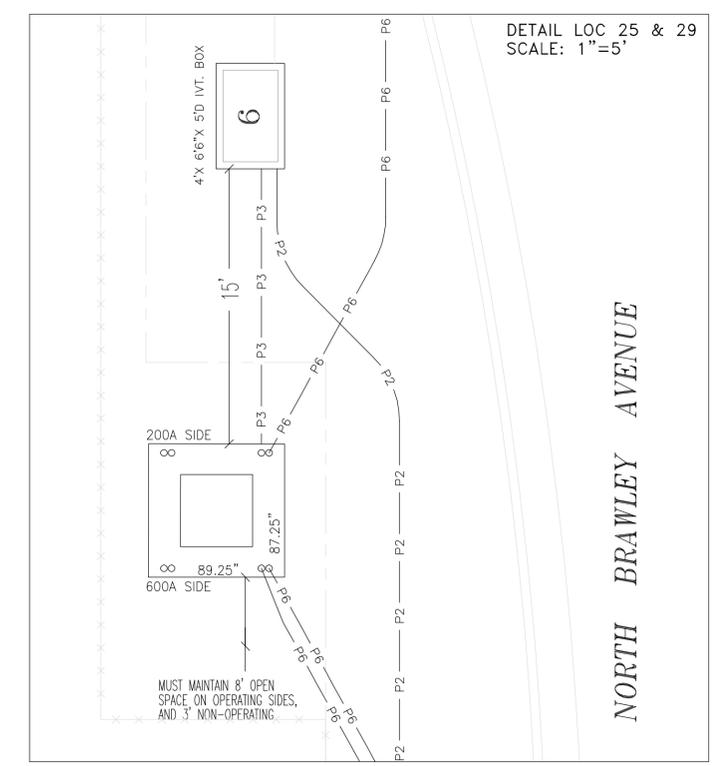
PACIFIC GAS & ELECTRIC COMPANY



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 APPLICANT TO INSTALL SERVICE CONDUITS & SUBSTRUCTURES



EST. KYLE RAISKUP (559)347-5079		ENGINEERING AND PLANNING DEPT.		GAS CONFLICT: NEAR LOC: N/A	
ADE: JARED MADDOX (559)347-5258		8 RIVER PARK PLACE E		NO ENVIRONMENTAL ISSUES	
SUP: ANTHONY FERREIRA (559)347-5262		FRESNO CA 93720		DATE: 11/13/2020	
REP: ALAN KOUBATIAN (559)347-5203		Call before you dig.		SHEET: 2 OF 2 REV. 1	
PLN: VICTOR LOPEZ (559)263-7350		81		PACIFIC GAS & ELECTRIC COMPANY	
JPN: (559)263-7350		REVISIONS		NO. DATE	
NOTE: 114715210		DESCRIPTION		PRIMARY VOLTAGE: 12 KV	
SCALE: 1"=60'		NO. DATE		VOLTAGE AREA: 2	
P.M.: 35053431		NO. DATE		LATITUDE: _____	
		NO. DATE		LONGITUDE: _____	
		NO. DATE		SOURCE SIDE DEVICE: SW4555	
		NO. DATE		SUB & CIRCUIT: ASHLAN AVE 1112	
		NO. DATE		DSGN SAC: SSU	
		NO. DATE		RAPTOR ZONE: YES	
		NO. DATE		ARRESTER DIST: 2	
		NO. DATE		CORROSION AREA: NON	
		NO. DATE		EXEMPT EQUIP: _____	
		NO. DATE		FIRE AREA: _____	

CONSTRUCTION SKETCH  
 CENTRAL UNIFIED SCHOOL DISTRICT  
 4108 W. SHIELDS AVE  
 FRESNO



Applicant Instructions



AD 3-22a  
S&B Elementary  
02-116800

35088273(G) - Totals as of: 07/19/21 09:49AM

Work Location	Work Type	Qty	Unit	Description
SERVICE				
PRIVATE (APPLICANT)				
	INSTALL	44	FT	PIPE PL 2" 500' COIL TAPE WIRE
	INSTALL	1	EA	ELBOW 90D PL CONSTAB 2"
	INSTALL	2	EA	COUPLING PL CONSTAB 2"
	INSTALL	1	EA	PREFAB RISER RGL FLG 2" X 2" BP 1-1/4"



## Applicant Materials

35088273(G) - Totals as of: 07/19/21 09:49AM

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Quantity	Unit	M-Code	Description	Lead Time(wks)
44	FT	M294414	WIRE ELECTRICAL INS COPPER 600V 10AWG	1
44	FT	M379947	TAPE WARNING PIPELINE GAS U/G #42-0084	1
1	RL	M384095	TAPE ELECTRICAL POLYVINYL 3/4"X.085"X65'	1
44	FT	M016079	PIPE POLYETHYLENE 2" IPS SDR 11	1
2	EA	M021559	COUPLING CON-STAB 2" IPS	1
1	EA	M041038	RISER GAS SERVICE 2" X 2" IPS PREFAB	1
1	EA	M021687	ELL 2" IPS SDR 11 PE2406	1

---WORK AGENT RESPONSIBILITIES---

PG&E TO INSTALL ELEC. DISTRIBUTION FACILITIES  
APPLICANT TO INSTALL DIST. CONDUIT & SUBSTRUCTURES

PG&E TO INSTALL ELEC SERVICE FACILITIES  
APPLICANT TO INSTALL SERVICE CONDUITS & SUBSTRUCTURES

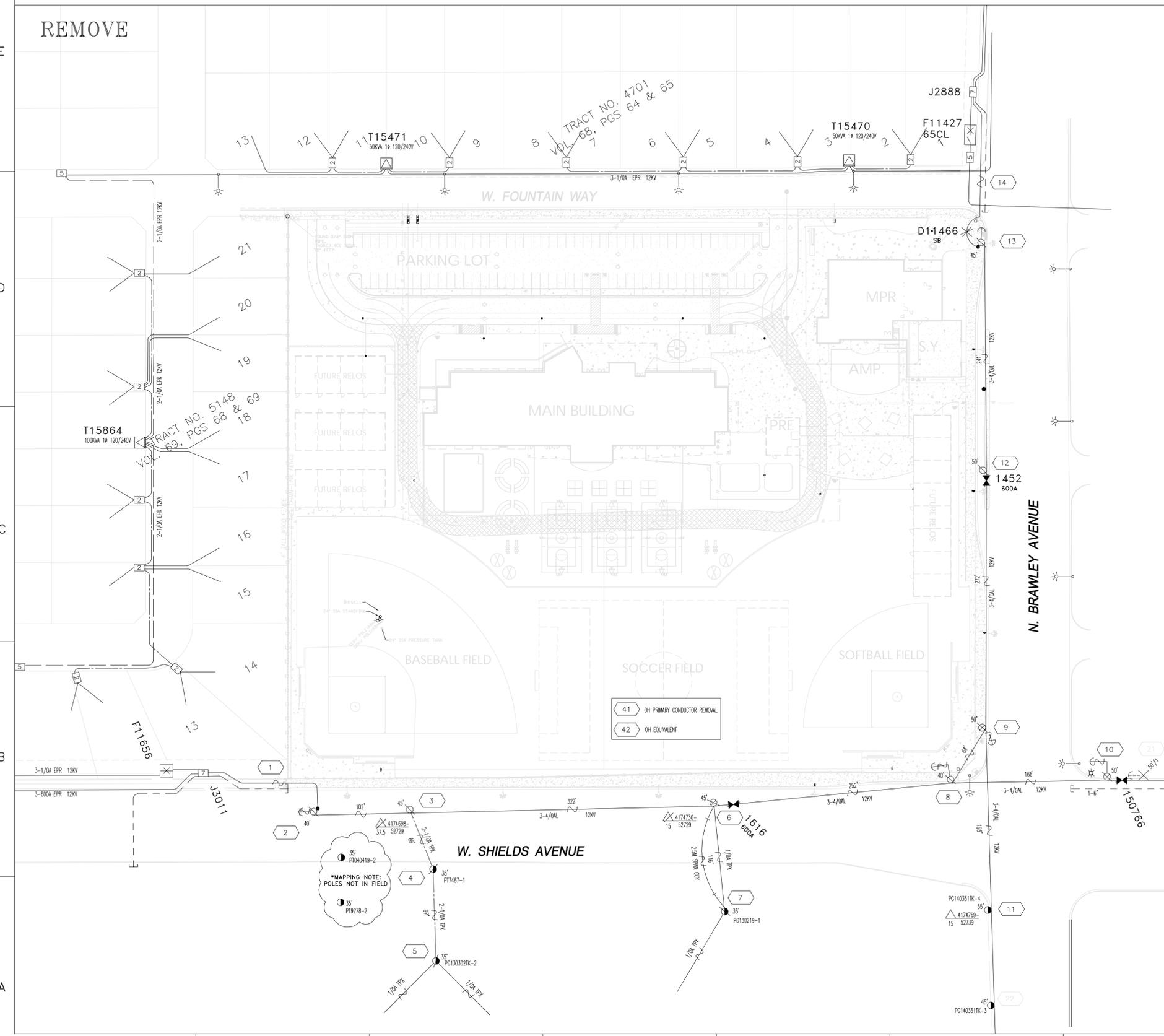
- NOTES:** 09-18-18
- REFER TO ELECTRIC & GAS SERVICE REQUIREMENTS (GREEN BOOK) OR SEPARATE PG&E STANDARD DRAWINGS. CONTACT YOUR PG&E REPRESENTATIVE FOR COPIES, OR ACCESS [www.pge.com/greenbook](http://www.pge.com/greenbook)
- CONDUIT, TRENCHING, AND BACKFILL:**
- 1) ALL DIMENSIONS AND LOCATIONS ARE ESTIMATED, APPROXIMATE AND MAY BE SUPERSEDED BY A JOINT TRENCH DRAWING. REFER TO THE JOINT TRENCH COMPOSITE DRAWING FOR EXACT TRENCH LOCATION
  - 2) MAINTAIN MAXIMUM PRACTICABLE HORIZONTAL CLEARANCE BETWEEN PG&E FACILITIES AND "WET" UTILITIES (WATER, SEWER, STORM DRAIN, ETC.). THE MIN. ALLOWABLE SEPARATION BETWEEN PG&E FACILITIES AND ANY PARALLEL "WET" UTILITY IS 3/FT. WITH A PRESENCE OF 1/FT. OF UNDISTURBED EARTH OR THE INSTALLATION OF A SUITABLE BARRIER. THIS MEASUREMENT IS BETWEEN THE OUTER EDGE OF THE PG&E FACILITY AND THE OUTER EDGE OF THE PARALLEL "WET" FACILITY. IF 3/FT. CANNOT BE MAINTAINED, A FORMAL VARIANCE MUST BE OBTAINED FROM PG&E. WORK WITH THE PG&E INSPECTOR (REFERENCE PG&E UO STANDARD S5453).
  - 3) BOX, PAD, AND CONDUIT SIZES AND LOCATIONS SHALL CONFORM TO THE PG&E ELECTRIC CONSTRUCTION DRAWING.
  - 4) PROVIDE LONG CONDUIT SWEEPS WHERE INDICATED. RECOMMENDED SWEEP RADIUS (10' OF RADIUS PER INCH OF CONDUIT DIAMETER) EXAMPLE: 4" CONDUIT = 40' RADIUS
  - 5) DO NOT EXCEED 300 DEGREES OF BENDS IN ANY CONDUIT RUN (INCLUDING FEED LOCATION). NOTE: SECONDARY AND SERVICE RUNS OF 200 FEET OR LESS MAY HAVE UP TO 315 DEGREES OF BENDS (REFERENCE PG&E DOCUMENT 038193).
  - 6) MANUFACTURED BENDS OR APPLICATION OF HEAT SHALL NOT BE USED TO OBTAIN LONG CONDUIT SWEEPS.
  - 7) ALL CONDUITS SHALL BE PROVEN AND A POLYESTER PULLING TAPE INSTALLED.
  - 8) MANUFACTURED BENDS ARE NOT TO BE CUT, SHORTENED, OR ALTERED IN ANY WAY.
  - 9) IDENTIFY ENDS OF BURIED CONDUIT WITH AN ELECTRONIC MARKER AND A VERTICAL CONDUIT SCRAP INSTALLED FROM RIGID CAP TO GROUND LEVEL.
  - 10) CONDUITS ENTERING PRIMARY BOXES SHALL BE AT A RIGHT ANGLE TO THE WINDOW OR WALL.
  - 11) STUB CONDUITS AT RISER POLES IN QUADRANTS AS SHOWN. AT IDENTIFIED POLE LOCATIONS, THE TRENCHING AGENT IS TO EXCAVATE TO TRENCH DEPTH AND INSTALL A 30" DIAMETER CARDBOARD TUBE. THE RISER CONDUIT BEND IS TO BE PLACED OUTSIDE AND ADJACENT TO THE TUBE AT THE POLE QUADRANT INDICATED. BACKFILL AROUND AND INSIDE TUBE WITH CLEAN NATIVE FILL.
  - 12) LS2 STREET LIGHT CONDUIT GOING TO PO&E BOXES OR PEDESTALS NOT DESIGNATED AS P.O.S. (INCLUDING TRANSFORMERS) WILL NOT BE ACCEPTED CONNECTED.
  - 13) ONLY ONE LS2 STREET LIGHT (P.O.S.) CONNECTION PER BOX OR PEDESTAL.
- LAND RIGHTS AND EASMENTS:**
- 14) APPLICANT TO PROVIDE ADEQUATE P.U.E.'S AND/OR ROW'S FOR PG&E FACILITIES. ANY ADDITIONAL REQUIRED RIGHTS OF WAY ARE TO BE SURVEYED AND DOCUMENTED BY PG&E AT THE APPLICANT'S EXPENSE.
- SAFETY AND WORKMANSHIP:**
- 15) CALL 811 (UNDERGROUND SERVICE ALERT) 48 HOURS PRIOR TO EXCAVATION FOR UNDERGROUND UTILITY LOCATION MARKING.
  - 16) 48 HOUR NOTICE REQUIRED FOR UNDERGROUND INSPECTION.
  - 17) MATERIALS AND WORKMANSHIP SHALL BE FIRST QUALITY IN EVERY RESPECT, PLUMB AND TRUE, AND ACCORDING TO THE SPECIFIC REQUIREMENTS OF THE DRAWINGS AND THE ABOVE APPLICABLE NOTES AND SPECIFICATIONS.
  - 18) THE APPLICANT IS TO VERIFY ALL PROPOSED INSTALLATIONS, CONDITIONS & SPECIFICATIONS PRIOR TO COMMENCING WITH ANY PORTION OF WORK. ANY DISCREPANCIES, DELETIONS OR INCONSISTENCIES ARE TO BE REPORTED TO THE PG&E REPRESENTATIVE IMMEDIATELY. THE APPLICANT SHALL COMPLY WITH ALL APPLICABLE SPECIFICATIONS. ANY VARIATIONS FROM PLANS OR SPECIFICATIONS RELIEVES PG&E OF ALL RESPONSIBILITY FOR THE SUBSTRUCTURE OR DESIGN.

EST: KYLE RAISKUP (559) 347-5079  
 ADE: JARED MADDOX (559) 347-5258  
 SUP: ANTHONY FERREIRA (559) 347-5262  
 REP: ALAN KOOBATAN (559) 347-5203  
 PLNR: VICTOR LOPEZ (559) 263-7350  
 JPN#: 114715210  
 DATE: 02/07/19  
 SCALE: 1" = 60'  
 P.M.: 350534-31  
 SHEET: 1 OF 2 REV. 0

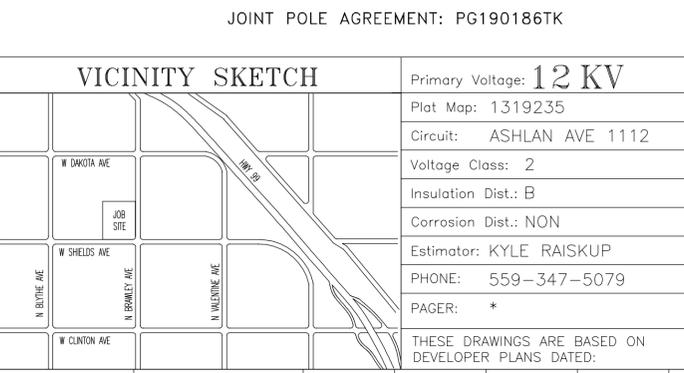
**ENGINEERING AND PLANNING DEPT.**  
**8 RIVER PARK PLACE E**  
**FRESNO CA 93720**

NO ENVIRONMENTAL ISSUES  
 GAS CONFLICT: NEAR LOC: N/A

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



INSTALL	EXISTING	DESCRIPTION
P2	P2	PRIMARY CABLE: 2-1/0A EPR 25KV IN 1-4" CONDUIT
P3	P3	PRIMARY CABLE: 3-1/0A EPR 25KV IN 1-4" CONDUIT
P4	P4	PRIMARY CABLE: 3-1/0A EPR 25KV IN 1-8" CONDUIT
P6	P6	PRIMARY CABLE: 3-600A EPR 25KV IN 1-8" CONDUIT
S2	S2	SECONDARY CABLE - 350AL TPX 600V IN 1-4"
SV1	SV1	SERVICE CABLE - 4/0AL TPX 600V IN 1-3"
ST	ST	STREETLIGHT CABLE - INSTALLED BY CITY OF FRESNO
DB	DB	VACANT CONDUIT (PRIMARY), 1-4"
DE	DE	VACANT CONDUIT (PRIMARY), 1-6"
EXISTING	DESCRIPTION	
[Symbol]	3 PHASE PRIMARY CABLE/CONDUCTOR - SIZE AS SHOWN	
[Symbol]	1 PHASE PRIMARY CABLE/CONDUCTOR - SIZE AS SHOWN	
[Symbol]	VACANT CONDUIT (PRIMARY) - SIZE AS SHOWN	
INSTALL	EXISTING	DESCRIPTION
[Symbol]	[Symbol]	17' x 30' x 18" SECONDARY BDX
[Symbol]	[Symbol]	4' x 6'6" x 5' PRIMARY ENCLOSURE
[Symbol]	[Symbol]	4'6" x 8'6" x 6' PRIMARY ENCLOSURE
[Symbol]	[Symbol]	PM TRANSFORMER, DF-LB,
[Symbol]	[Symbol]	PMH-4 PADMOUNT FUSE
[Symbol]	[Symbol]	PMH-5 PADMOUNT FUSED SWITCH
[Symbol]	[Symbol]	PMI-11 PADMOUNT SWITCH INTERRUPTER
[Symbol]	[Symbol]	SOLELY OWNED POLE
[Symbol]	[Symbol]	SOLELY OWNED ANCHOR
[Symbol]	[Symbol]	JOINTLY OWNED POLE
[Symbol]	[Symbol]	AIR SWITCH
[Symbol]	[Symbol]	RISER
[Symbol]	[Symbol]	CUTOUT - FUSED AS SHOWN
[Symbol]	[Symbol]	1 PHASE OH TRANSFORMER
[Symbol]	[Symbol]	LS2-A STREET LIGHTS
[Symbol]	[Symbol]	POINT OF SERVICE FOR LS2 STREET LIGHTS

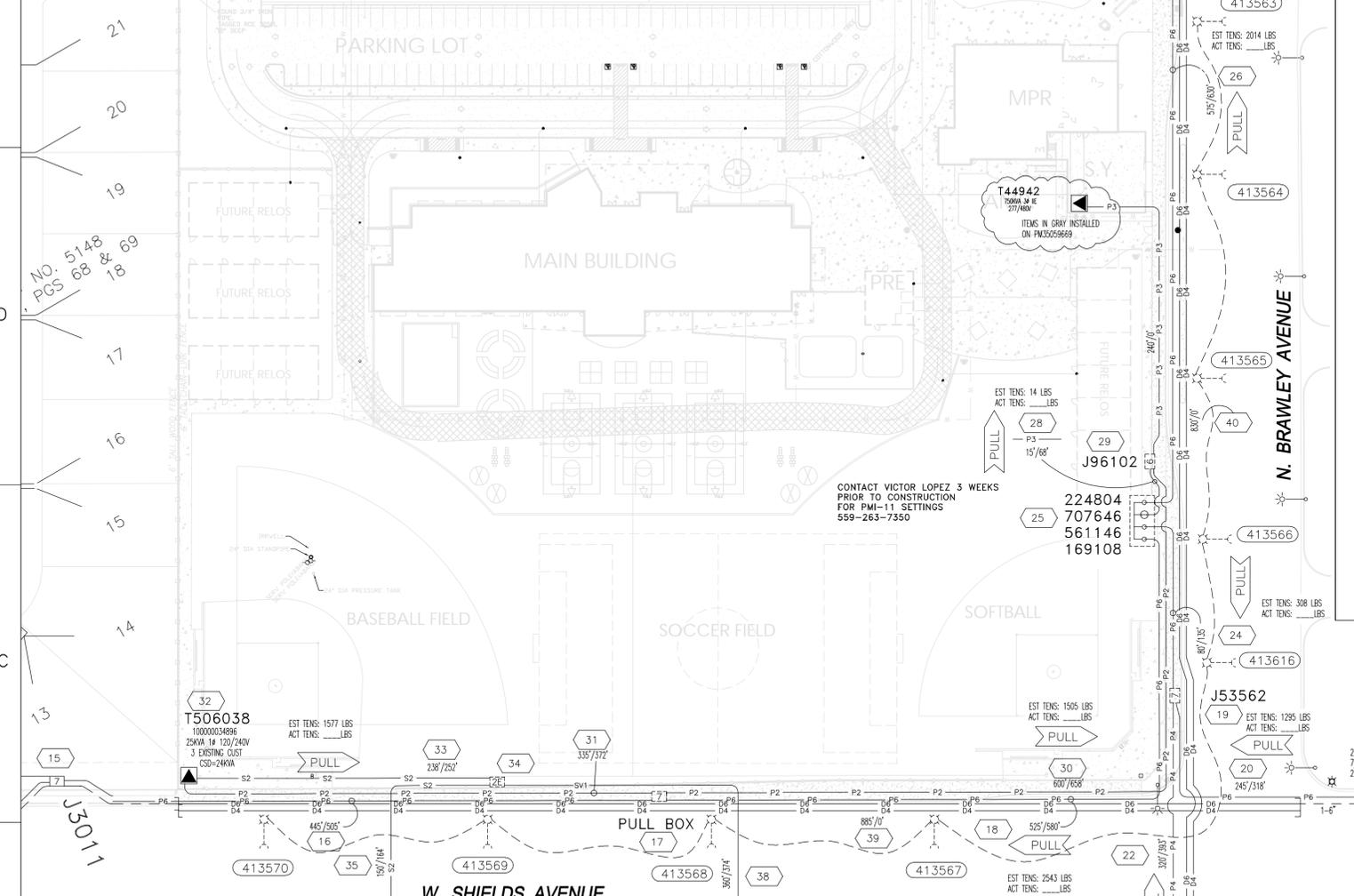


**CONSTRUCTION SKETCH**

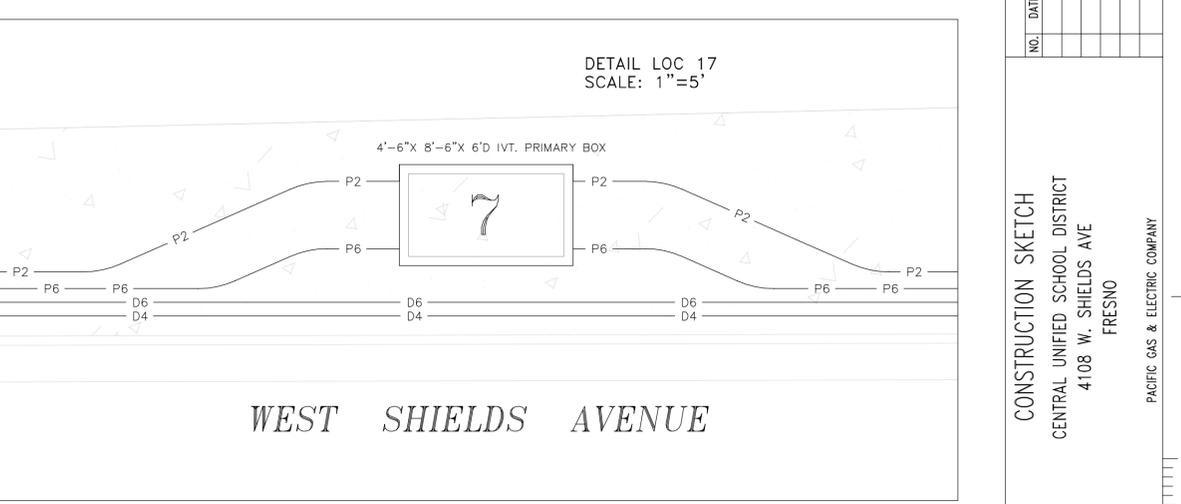
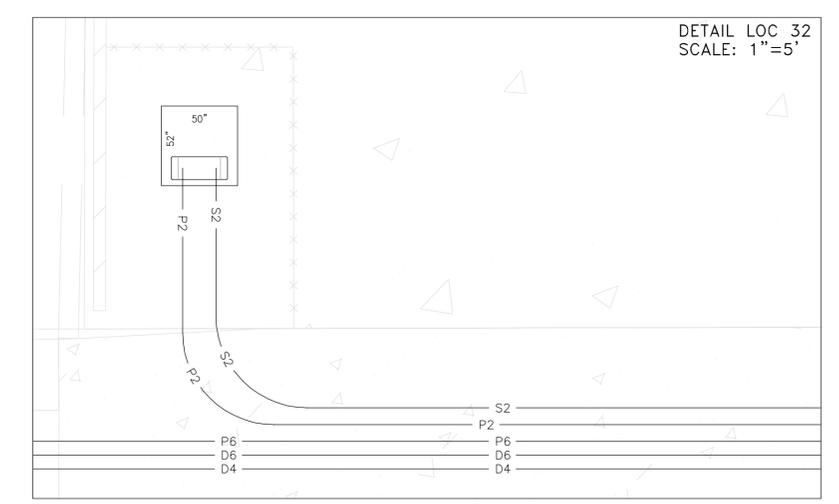
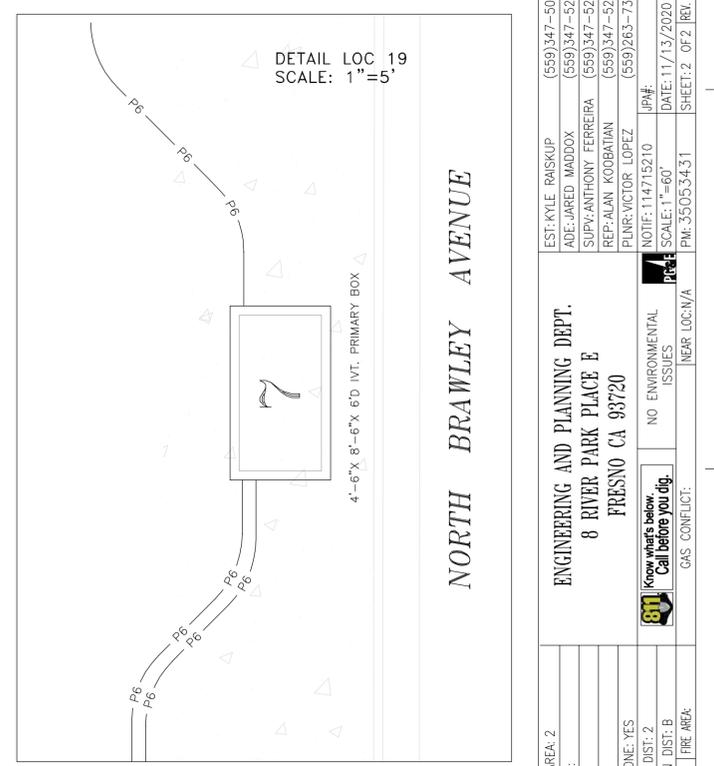
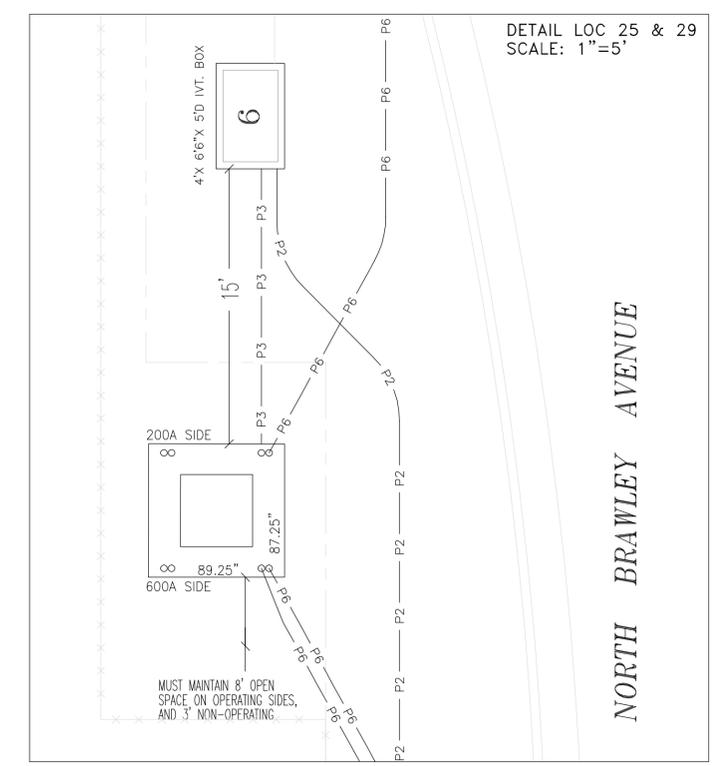
CENTRAL UNIFIED SCHOOL DISTRICT  
 4108 W. SHIELDS AVE  
 FRESNO

PACIFIC GAS & ELECTRIC COMPANY

INSTALL  
W. Fountain Way



W. Shields Avenue



---WORK AGENT RESPONSIBILITIES---

PG&E TO INSTALL ELEC. DISTRIBUTION FACILITIES  
APPLICANT TO INSTALL DIST. CONDUIT & SUBSTRUCTURES

PG&E TO INSTALL ELEC SERVICE FACILITIES  
APPLICANT TO INSTALL SERVICE CONDUITS & SUBSTRUCTURES



EST: KYLE RAISKUP (559) 347-5079		ENGINEERING AND PLANNING DEPT.		NO ENVIRONMENTAL ISSUES		GAS CONFLICT: NEAR LOC: N/A	
ADE: JARED MADDOX (559) 347-5258		8 RIVER PARK PLACE E		FRESNO CA 93720		DATE: 11/13/2020	
SUP: ANTHONY FERREIRA (559) 347-5262		FRESNO		FRESNO		SHEET: 2 OF 2 REV. 1	
REP: ALAN KOUBATIAN (559) 347-5203		FRESNO		FRESNO		SCALE: 1"=60'	
PLN: VICTOR LOPEZ (559) 263-7350		FRESNO		FRESNO		SHEET: 2 OF 2 REV. 1	
JPN: (559) 263-7350		FRESNO		FRESNO		SCALE: 1"=60'	
NOTE: 11/17/2020		FRESNO		FRESNO		SHEET: 2 OF 2 REV. 1	
SCALE: 1"=60'		FRESNO		FRESNO		SHEET: 2 OF 2 REV. 1	
P.M.: 35053431		FRESNO		FRESNO		SHEET: 2 OF 2 REV. 1	

NO.	DATE	DESCRIPTION	REVISIONS	PRIMARY VOLTAGE: 12 KV	VOLTAGE AREA: 2	LATITUDE:	LONGITUDE:
				SOURCE SIDE DEVICE: SW4555			
				SUB & CIRCUIT: ASHLAN AVE 1112			
				DSGN SAG: SSU			
				LOADING AREA: LT			
				CORROSION AREA: NON			
				EXEMPT EQUIP: INST.			

CONSTRUCTION SKETCH	
CENTRAL UNIFIED SCHOOL DISTRICT	
4108 W. SHIELDS AVE	
FRESNO	
PACIFIC GAS & ELECTRIC COMPANY	





**Applicant Instructions**



**35088273(G) - Totals as of: 07/19/21 09:49AM**

**AD 3-23a  
S&B Elementary  
02-116800**

<b>Work Location</b>	<b>Work Type</b>	<b>Qty</b>	<b>Unit</b>	<b>Description</b>
SERVICE				
PRIVATE (APPLICANT)				
	INSTALL	44	FT	PIPE PL 2" 500' COIL TAPE WIRE
	INSTALL	1	EA	ELBOW 90D PL CONSTAB 2"
	INSTALL	2	EA	COUPLING PL CONSTAB 2"
	INSTALL	1	EA	PREFAB RISER RGL FLG 2" X 2" BP 1-1/4"



## Applicant Materials

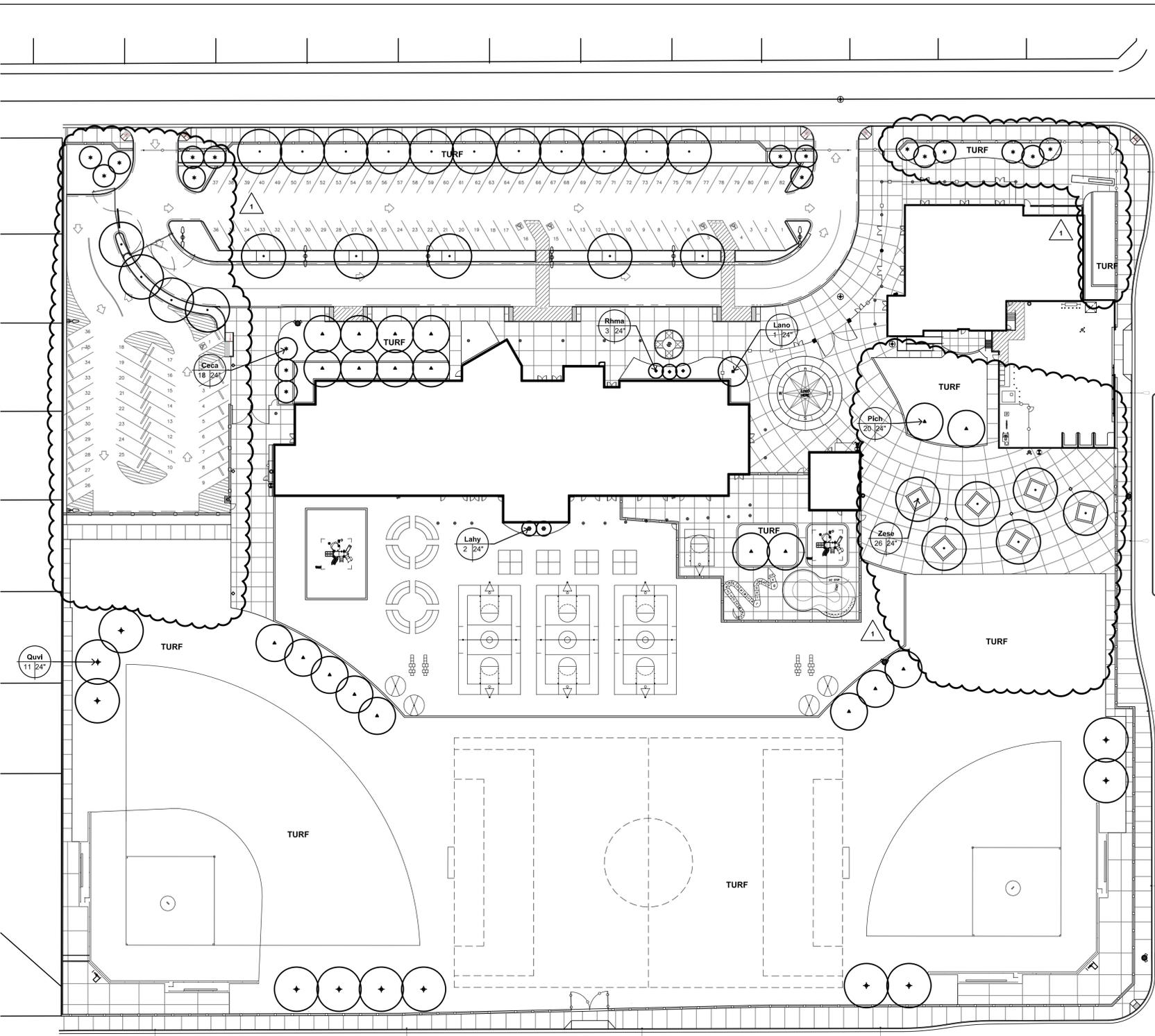
35088273(G) - Totals as of: 07/19/21 09:49AM

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Quantity	Unit	M-Code	Description	Lead Time(wks)
44	FT	M294414	WIRE ELECTRICAL INS COPPER 600V 10AWG	1
44	FT	M379947	TAPE WARNING PIPELINE GAS U/G #42-0084	1
1	RL	M384095	TAPE ELECTRICAL POLYVINYL 3/4"X.085"X65'	1
44	FT	M016079	PIPE POLYETHYLENE 2" IPS SDR 11	1
2	EA	M021559	COUPLING CON-STAB 2" IPS	1
1	EA	M041038	RISER GAS SERVICE 2" X 2" IPS PREFAB	1
1	EA	M021687	ELL 2" IPS SDR 11 PE2406	1



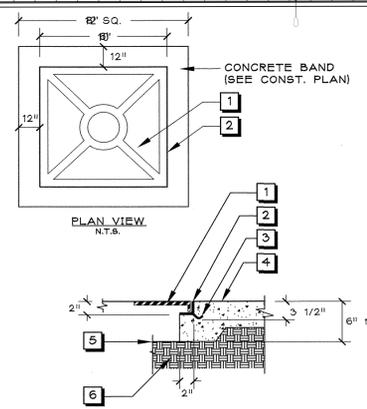
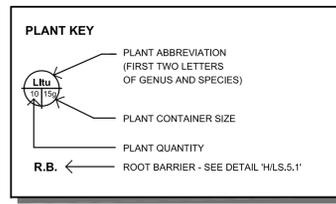
\\STEVE-PC\Boro Archives\18-2688\DSA BACKCHECK 2\_boro plan.dwg 2-09-23 03:57:08 PM Justin



PLANT LEGEND					
Symbol	Botanical Name	Common Name	Size	Quantity	Comments
Cavi	Callistemon viminalis 'Little John'	Dwarf Bottle Brush	5 Gal	40	
Ceca	Cercis canadensis texensis 'Oklahoma'	Oklahoma Redbud	24" Box	18	STANDARD, TRIPLE-STAKED.
Dibi	Diates bicolor	Fortnight Lily	1 Gal	38	
Hely	Hemerocallis hybrid 'Evergreen Orange'	Daylily	1 Gal	635	TRI-SPACED @ 18" O.C.
Lahy	Lagerstroemia hybrid 'Tuscara'	Crape Myrtle	24" Box	2	STANDARD, TRIPLE-STAKED.
Lano	Laurus nobilis	Bay Laurel	24" Box	1	STANDARD, TRIPLE-STAKED.
Nado	Nandina domestica 'Fire Power'	Dwarf Heavenly Bamboo	1 Gal	190	TRI-SPACED @ 14" O.C.
Patr	Parthenocissus tricuspidata	Boston Ivy	5 Gal	1	STAKED, TRAIN TO WALL.
Pich	Pistacia chinensis 'Pistache'	Chinese Pistache	24" Box	20	STANDARD, TRIPLE-STAKED.
Pld	Pittosporum tobira 'Wheeler's Dwarf'	Wheeler's Dwarf Pittosporum	5 Gal	15	
Rhin	Rhaphiolepis indica 'Spring Rapture'	Indian Hawthorn	5 Gal	126	
Rhma	Rhaphiolepis indica 'Magnificent'	Indian Hawthorn Tree	24" Box	1	STANDARD, TRIPLE-STAKED.
Roof	Rosmarinus officinalis 'Huntington Carpet'	Rosemary	1 Gal	113	TRI-SPACED @ 30" O.C.
Sagr	Salvia greggii 'Hot Lips'	Hot Lips Sage	5 Gal	33	
Turf	Tulbaghia violacea	Society Garlic	1 Gal	142	TRI-SPACED @ 14" O.C.
Vtl	Viburnum tinus 'Spring Bouquet'	Laurus Tinus	5 Gal	1	
Zese	Zelkova serrata 'Village Green'	Japanese Zelkova	24" Box	26	STANDARD, TRIPLE-STAKED.

TURF LEGEND				
Symbol	Type	Quantity	Type	Comments
(Symbol)	TYPE ONE TURF	15,143 S.F.	SOD	SEE SPECIFICATION SECTION 32 93 00.
(Symbol)	TYPE TWO TURF	154,418 S.F.	SOD	SEE SPECIFICATION SECTION 32 93 00.

- PLANTING NOTES**
- QUANTITIES ARE LANDSCAPE ARCHITECTS ESTIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL MATERIAL APPEARING ON PLAN.
  - DO NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. SUCH CONDITION SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH PLANTING OPERATIONS.
  - SEE SPECIFICATIONS FOR PLANTING REQUIREMENTS, MATERIALS AND EXECUTION.
  - ALL PLANT MATERIAL SHALL BE APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION.
  - FINAL LOCATION OF ALL PLANT MATERIALS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER'S AUTHORIZED REPRESENTATIVE.
  - CONTRACTOR SHALL NOTIFY OWNER'S AUTHORIZED REPRESENTATIVE 48 HOURS PRIOR TO COMMENCEMENT OF WORK TO COORDINATE PROJECT OBSERVATION SCHEDULES.
  - SEE DETAILS AND SPECIFICATIONS FOR STAKING METHOD, PLANT PIT DIMENSION AND BACKFILL REQUIREMENTS.
  - IF CONFLICTS ARISE BETWEEN SIZE OF AREAS AND PLANS, CONTRACTOR SHALL CONTACT LANDSCAPE ARCHITECT FOR RESOLUTION. FAILURE TO MAKE SUCH CONFLICTS KNOWN TO THE LANDSCAPE ARCHITECT, WILL RESULT IN CONTRACTOR'S LIABILITY TO RELOCATE THE MATERIALS.
  - ALL GROUND COVER SHALL EXTEND BENEATH TALLER PLANT MATERIAL.
  - NO PLANTING SHALL BE DONE UNTIL INSTALLATION OF THE IRRIGATION SYSTEM IS COMPLETED. FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING AREAS HAVE BEEN PROPERLY GRADED AND SOIL PREPARED, AND THE WORK APPROVED BY THE LANDSCAPE ARCHITECT.
  - PROVIDE ROOT BARRIER FOR TREES WHERE INDICATED ON PLAN.
  - PROVIDE ARBOR GUARD FOR ALL TREES IN TURF AREAS.
  - PROVIDE & PLACE 3" THICK LAYER OF WOOD TOP DRESS MULCH IN ALL PLANTING AREAS.
  - THE CONTRACTOR SHALL PROVIDE A SOILS FERTILITY ANALYSIS & SOIL MANAGEMENT REPORT AS PART OF THE CONTRACT WORK. ALL SOILS ANALYSIS & SOIL MANAGEMENT PLANS SHALL COMPLY WITH THE STATE OF CALIFORNIA MODEL WATER EFFICIENT LANDSCAPE ORDINANCE. SOIL AMENDMENTS SHALL BE ADJUSTED TO SATISFY THE RESULTS OF THE SOILS MANAGEMENT PLAN. SUBMIT DOCUMENTATION TO OWNER VERIFYING IMPLEMENTATION OF SOILS MANAGEMENT PLAN.



- LEGEND**
- TREE GRATE, TG172 (F), dark green WABASH VALLEY MANUF. INC. (800) 253-8619, www.wabashvalley.com
  - TREE GRATE FRAME (2 1/2"x2 1/2") TG412N, WABASH VALLEY MANUF. INC. (800) 253-8619, www.wabashvalley.com
  - 1/2" DIA. IRON ANCHOR ROD (ATTACHED TO FRAME)
  - FINISHED SURFACE
  - FINISHED GRADE IN TREE WELL MIN. 6" BELOW TREE GRATE
  - SUBGRADE

**OVERALL PLANTING PLAN**  
1" = 40'-0"



**AD 3-24a**  
**S&B Elementary**  
**02-116800**

**ROBERT BORO**  
LANDSCAPE ARCHITECT  
P.O. Box 4734  
Fresno, California 93744  
TEL: (559) 266-4367  
FAX: (559) 266-3005



**TREE GRATE**  
SCALE: 1" = 1'-0"



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



JOHN H. SMITH, A.I.A. C15885



THE FIRM OF SMITH, SWANAGA, MELHUSE, ARCHITECTS, INC. EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER APPLICABLE PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED, OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO A THIRD PARTY WITHOUT FIRST OBTAINING THE WRITTEN PERMISSION AND CONSENT OF THE ARCHITECT. IN THE EVENT OF UNAUTHORIZED REUSE OF THESE PLANS BY A THIRD PARTY, THE THIRD PARTY SHALL HOLD THE ARCHITECT HARMLESS, AND SHALL BEAR THE COST OF THE ARCHITECT'S LEGAL FEES ASSOCIATED WITH DEFENDING AND ENFORCING THESE RIGHTS.

**PROJECT DEVELOPMENT**

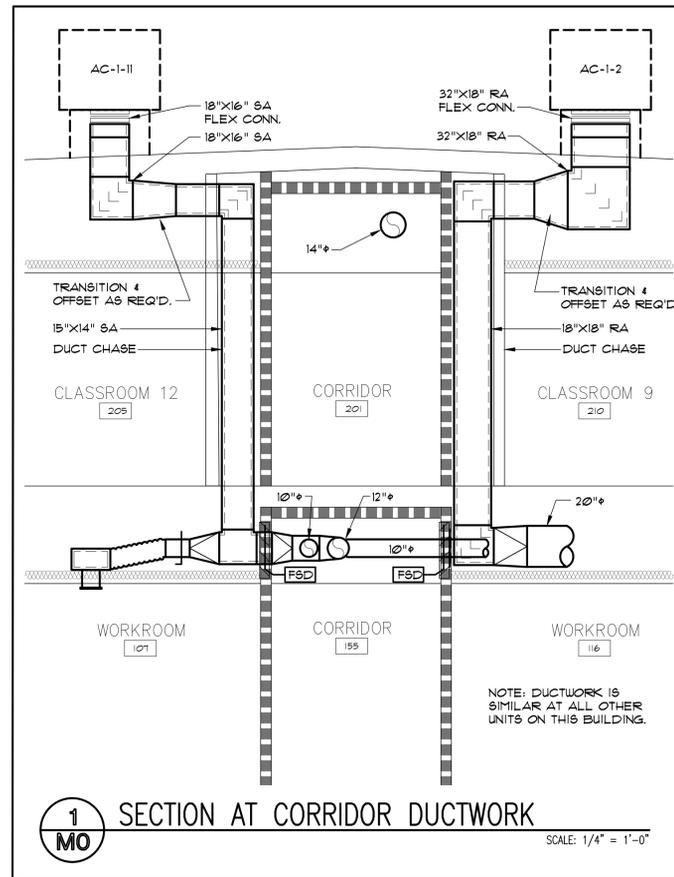
DATE	ISSUED FOR

**REVISIONS**

No.	DATE	DESCRIPTION
1	2.14.23	DISTRICT MODIFICATIONS

**SHEET DESCRIPTION**

OVERALL PLANTING PLAN	
PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>LS.2.0</b>
DATE 1.27.23	
SCALE 1" = 40'-0"	



**1** SECTION AT CORRIDOR DUCTWORK  
SCALE: 1/4" = 1'-0"

**MEP COMPONENT ANCHORAGE NOTE**

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRIC, GAS OR WATER.
3. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.

1. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
2. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUND PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

**PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE**

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.5.6, 13.6.7, 13.6.8, AND 2016 CBC, SECTION 1616A.1.24, 1616A.1.25, AND 1616A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., SMACNA OR OSHPD OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO START OF AND DURING THE HANGING AND BRACING OF DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY ADEQUACY OF THE STRUCTURE SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

- MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.
- MP MD PP E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #).
- MP MD PP OPTION 3: SHALL COMPLY WITH THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION (2009), INCLUDING ANY ADDENDA. FASTNERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION, ARE DETAILED ON APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR THE APPLICABLE SEISMIC HAZARD LEVEL 'A' AND CONNECTION LEVEL '1' OR '2' FOR THE PROJECT AND CONDITIONS.

**MECHANICAL LEGEND**

SYMBOL	ITEM	ABBR.	SYMBOL	ITEM	ABBR.
	SUPPLY AIR	SA		DUCT TURNED TOWARD	
	RETURN AIR	RA		DUCT TURNED AWAY	
	EXHAUST AIR	EXH		VOLUME CONTROL DAMPER	VD
	OUTSIDE AIR	OSA		FIRE DAMPER W/ ACCESS	FD
	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN			OPPOSED BLADE DAMPER	OBD
	EQUIPMENT DESIGNATION UNIT ABBREVIATION NUMBER			BACKDRAFT DAMPER	BDD
	GRILLE DESIGNATION NECK SIZE & BLOW FIRE DAMPER WHERE REQ'D CFM			THERMOSTAT MOUNTED AT 48" AFF TO TOP OF BOX	T'STAT
	ACOUSTIC LINED DUCT			TRANSFER AIR GRILLE	TAG
	TURNING VANES	TV		ABOVE FINISHED FLOOR	AFF
	DUCT FLEXIBLE CONNECTION			OUTSIDE AIR	OSA
				PIPE RISER	
				SMOKE DETECTOR	SD
				BOTTOM OF DUCT	BOD
				FIRE SMOKE DAMPER	FSD
				CO <sub>2</sub> SENSOR	

**MECHANICAL GENERAL NOTES**

1. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES AND 2016 C.B.C. AS APPROVED BY DSA.
2. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWING OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT, MECHANICAL ENGINEER AND DSA FIELD ENGINEER.
3. CONTRACTOR SHALL COORDINATE ALL VOLTAGES WITH ELECTRICAL PRIOR TO ORDERING ANY EQUIPMENT.
4. CONTRACTOR SHALL COORDINATE ALL DUCTWORK ROUTING WITH WORK OF OTHER TRADES AND MAKE ANY OFFSETS AS REQUIRED TO AVOID CONFLICT WITH PIPING, LIGHT FIXTURES, TRUSSES, ETC.
5. CONTRACTOR SHALL COORDINATE ALL GRILLE LOCATIONS AND CEILING TYPES PRIOR TO ORDERING GRILLES. SEE ARCHITECTURAL CEILING PLANS AND ELECTRICAL LIGHTING PLANS.

**MECHANICAL SHEET INDEX**

MECHANICAL DRAWINGS:	
M0	MECHANICAL LEGEND, INDEX AND NOTES
M1	MECHANICAL FLOOR PLAN - MULTI-PURPOSE
M2	MECHANICAL FLOOR PLAN - MULTI-PURPOSE
M3	1ST FLOOR MECHANICAL PLAN EAST SIDE - MAIN BUILDING
M4	1ST FLOOR MECHANICAL PLAN WEST SIDE - MAIN BUILDING
M5	2ND FLOOR MECHANICAL PLAN EAST SIDE - MAIN BUILDING
M6	2ND FLOOR MECHANICAL PLAN WEST SIDE - MAIN BUILDING
M7	MECHANICAL ROOF PLAN EAST SIDE - MAIN BUILDING
M8	MECHANICAL ROOF PLAN WEST SIDE - MAIN BUILDING
M9	MECHANICAL SCHEDULES
M10	MECHANICAL DETAILS
M11	MECHANICAL DETAILS
M12	MECHANICAL DETAILS
M13	MECHANICAL DETAILS
M14	MECHANICAL DETAILS
M15	MECHANICAL DETAILS
M16	MECHANICAL DETAILS

**CAL GREEN NOTES**

1. **TESTING AND ADJUSTING.** TESTING AND ADJUSTING OF SYSTEMS SHALL BE REQUIRED FOR NEW BUILDINGS LESS THAN 10,000 SQUARE FEET OR NEW SYSTEMS TO SERVE AN ADDITION OR ALTERATION SUBJECT TO SECTION 303.1
2. **SYSTEMS.** DEVELOP A WRITTEN PLAN OF PROCEDURES FOR TESTING AND ADJUSTING SYSTEMS. SYSTEMS TO BE INCLUDED FOR TESTING AND ADJUSTING SHALL INCLUDE, AS APPLICABLE TO THE PROJECT:
  - A. HVAC SYSTEMS AND CONTROLS.
  - B. INDOOR AND OUTDOOR LIGHTING AND CONTROLS.
  - C. WATER HEATING SYSTEMS.
  - D. RENEWABLE ENERGY SYSTEMS.
  - E. LANDSCAPE IRRIGATION SYSTEMS.
  - F. WATER REUSE SYSTEMS.
3. **PROCEDURES.** PERFORM TESTING AND ADJUSTING PROCEDURES IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND APPLICABLE STANDARDS ON EACH SYSTEM.
  - A. **HVAC BALANCING.** IN ADDITION TO TESTING AND ADJUSTING, BEFORE A NEW SPACE-CONDITIONING SYSTEM SERVING A BUILDING OR SPACE IS OPERATED FOR NORMAL USE, BALANCE THE SYSTEM IN ACCORDANCE WITH THE PROCEDURES DEFINED BY THE TESTING ADJUSTING AND BALANCING BUREAU NATIONAL STANDARDS; THE NATIONAL ENVIRONMENTAL BALANCING BUREAU PROCEDURAL STANDARDS; ASSOCIATED AIR BALANCE COUNCIL NATIONAL STANDARDS OR AS APPROVED BY THE ENFORCING AGENCY.
4. **REPORTING.** AFTER COMPLETION OF TESTING, ADJUSTING AND BALANCING, PROVIDE A FINAL REPORT OF TESTING SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.
5. **OPERATION AND MAINTENANCE (O & M) MANUAL.** PROVIDE THE BUILDING OWNER OR REPRESENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTEES/WARRANTIES FOR EACH SYSTEM. O & M INSTRUCTIONS SHALL BE CONSISTENT WITH OSHA REQUIREMENTS IN CCR, TITLE 8, SECTION 5142, AND OTHER RELATED REGULATIONS.
  - A. **INSPECTIONS AND REPORTS.** INCLUDE A COPY OF ALL INSPECTION VERIFICATIONS AND REPORTS REQUIRED BY THE ENFORCING AGENCY.
6. **TEMPORARY VENTILATION.** THE PERMANENT HVAC SYSTEM SHALL ONLY BE USED DURING CONSTRUCTION IF NECESSARY TO CONDITION THE BUILDING WITHIN THE REQUIRED TEMPERATURE RANGE FOR MATERIAL AND EQUIPMENT INSTALLATION. IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, USE RETURN AIR FILTERS WITH A MINIMUM REPORTING VALUE (MERV) OF 8, BASED ON ASHRAE 52.2-1999 OR AN AVERAGE EFFICIENCY OF 30 PERCENT BASED ON ASHRAE 52.1-1992. REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY, OR, IF THE BUILDING IS OCCUPIED DURING ALTERATIONS, AT THE CONCLUSION OF CONSTRUCTION.
7. **COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION.** AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATION EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH WRAP, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.
8. **FILTERS.** IN MECHANICALLY VENTILATED BUILDINGS, PROVIDE REGULARLY OCCUPIED AREAS OF THE BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY THAT PROVIDE AT LEAST A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8. MERV 8 FILTERS SHALL BE INSTALLED PRIOR TO OCCUPANCY AND RECOMMENDATIONS FOR MAINTENANCE WITH FILTERS OF THE SAME VALUE SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL.
 

**EXCEPTIONS:**

  - A. AN ASHRAE 10-PERCENT TO 15-PERCENT EFFICIENCY FILTER SHALL BE PERMITTED FOR AN HVAC UNIT MEETING THE 2016 CALIFORNIA ENERGY CODE HAVING 60,000 BTU/H OR LESS CAPACITY PER FAN COIL, IF THE ENERGY USE OF THE AIR DELIVERY SYSTEM IS 0.4 W/CFM OR LESS AT DESIGN AIR FLOW.
  - B. EXISTING MECHANICAL EQUIPMENT.
9. **OZONE DEPLETION AND GREENHOUSE GAS REDUCTIONS.** INSTALLATIONS OF HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT SHALL COMPLY WITH SECTIONS 5.508.1.1 AND 5.508.1.2.
  - A. **CHLOROFLUOROCARBONS (CFCs).** INSTALL HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT THAT DO NOT CONTAIN CFCs.
  - B. **HALONS.** INSTALL HVAC REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT THAT DO NOT CONTAIN HALONS.
10. **ADHESIVES, ADHESIVE BONDING PRIMERS, ADHESIVE PRIMERS, SEALANTS, SEALANT PRIMERS AND CAULKS** SHALL COMPLY WITH LOCAL OR REGIONAL AIR POLLUTION CONTROL OR AIR QUALITY MANAGEMENT DISTRICT RULES WHERE APPLICABLE, OR SCAQMD RULE 1168 VOC LIMITS, AS SHOWN IN TABLES 5.504.4.1



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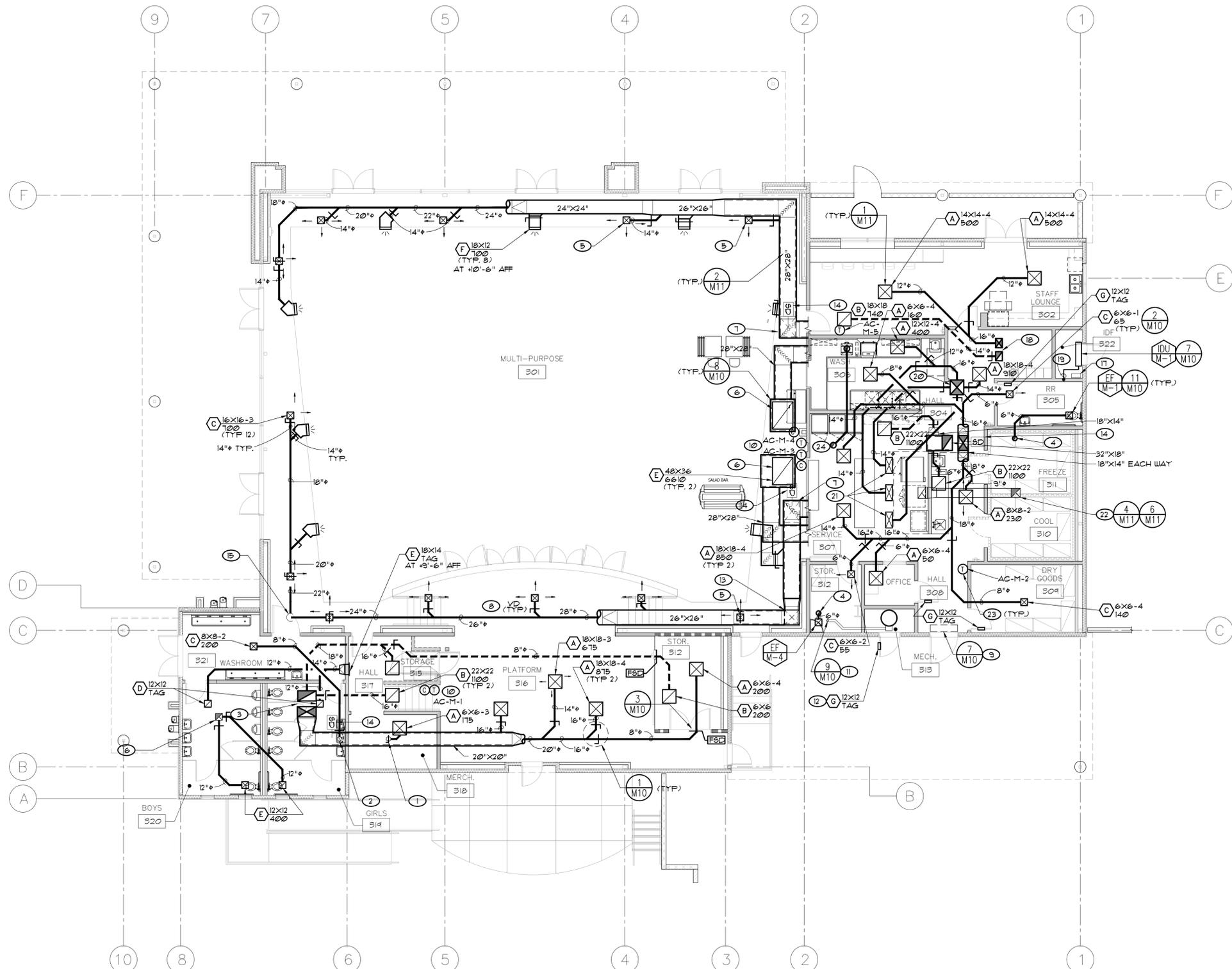
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DATE	ISSUED FOR

REVISIONS		
No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION  
**MECHANICAL LEGEND, INDEX, NOTES & SECTION**

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>MO</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	

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job #: 18-1024



MECHANICAL FLOOR PLAN



SCALE: 1/8" = 1'-0"

KEYNOTES

- ① 8" SA OFF BOTTOM OF DUCT. PROVIDE VD AND CONNECT TO GRILLE.
- ② 8" SA OFF BOTTOM OF DUCT. PROVIDE VD AND RUN LOW TO GRILLE IN WASHROOM.
- ③ 33"x18" SA & 32"x18" RA ACOUSTIC LINED DUCT DROPS THRU ROOF.
- ④ 6" EXHAUST DUCT UP THROUGH ROOF WITH CAP AND FLASHING. MINIMUM 10FT FROM ANY OSA INTAKE.
- ⑤ 12" SA DROP FROM BOTTOM OF MAIN TO GRILLE AT BOTTOM OF SOFFIT. PROVIDE VOLUME DAMPER IN DROP.
- ⑥ RA GRILLE AT BOTTOM OF SOFFIT WITH ACOUSTIC LINED FLENUM.
- ⑦ 28"x28" ACOUSTIC LINED SA DROP TO 16" ABOVE SOFFIT FRAMING WITH TURNING VANES.
- ⑧ PROVIDE REMOTE DAMPER CONTROL FOR VOLUME DAMPERS IN SOFFIT SPACE.
- ⑨ FLY FAN ABOVE DOOR BY KITCHEN CONSULTANT.
- ⑩ PROVIDE LOCKING EXPANDED METAL COVER FOR THERMOSTAT AND CO2 SENSORS.
- ⑪ 3" COMBUSTION AIR INTAKE & FLUE FROM WATER HEATER THROUGH ROOF WITH CAP AND FLASHING. EXTEND A MINIMUM OF 12" ABOVE TOP OF ROOF. MIN. OF 10'-0" FROM AC-M-3 OSA.
- ⑫ 12"x12" LOUVERS IN DOOR. (1) WITHIN 12" OF FLOOR AND (1) WITHIN 12" OF CEILING.
- ⑬ 26"x28" ACOUSTIC LINED DUCT RISER (+ 5'-0") WITH TURNING VANES IN ELBOWS. PROVIDE DUCT TRANSITIONS IN HORIZONTAL POSITION WHERE SHOWN ON DRAWINGS.
- ⑭ DUCT SMOKE DETECTOR IN ATTIC PROVIDED AND WIRED BY ELECT. AND INSTALLED IN DUCT BY MECH. PROVIDE 24"x24" CEILING ACCESS PANEL.
- ⑮ DUCT DROP DOWN (- 5'-0").
- ⑯ 12"x12" EXHAUST DUCT THRU ROOF TO EXHAUST FANS.
- ⑰ TIME CLOCK FOR EXHAUST FANS.
- ⑱ 12"x16" SA & 12"x18" RA ACOUSTIC LINED DUCT DROPS THRU ROOF.
- ⑲ REFRIGERANT PIPES ROUTE ON UNDERSIDE OF ROOF, DROP DOWN ON WALL AND CONNECT TO IDU.
- ⑳ 22"x22" DOUBLE WALL DUCT THRU ROOF WITH ROUND SS. DUCT TAP-IN ON EACH SIDE.
- ㉑ 12"x28" SS. DUCT CONNECTION AT HOOD, BALANCE EACH TO 130 CFM.
- ㉒ 16"x16" GREASE DUCT DROP THRU ROOF. EXTEND IN ATTIC AS HIGH AS POSSIBLE, TRANSITION TO 19"x14" AND CONNECT TO HOOD.
- ㉓ THERMOSTAT AT 48" AFF TO TOP OF BOX. ALL WIRE SHALL BE INSIDE CONDUIT CONCEALED IN WALL AND ATTIC.
- ㉔ 10" SS. DUCT DROP THRU ROOF. ROUTE IN ATTIC, DROP DOWN AND CONNECT TO 10" CONNECTION AT DISHWASHER HOOD.

WALL LEGEND

----- 1 HR RATED WALL



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REVISIONS

No.	DATE	DESCRIPTION
△ 1	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

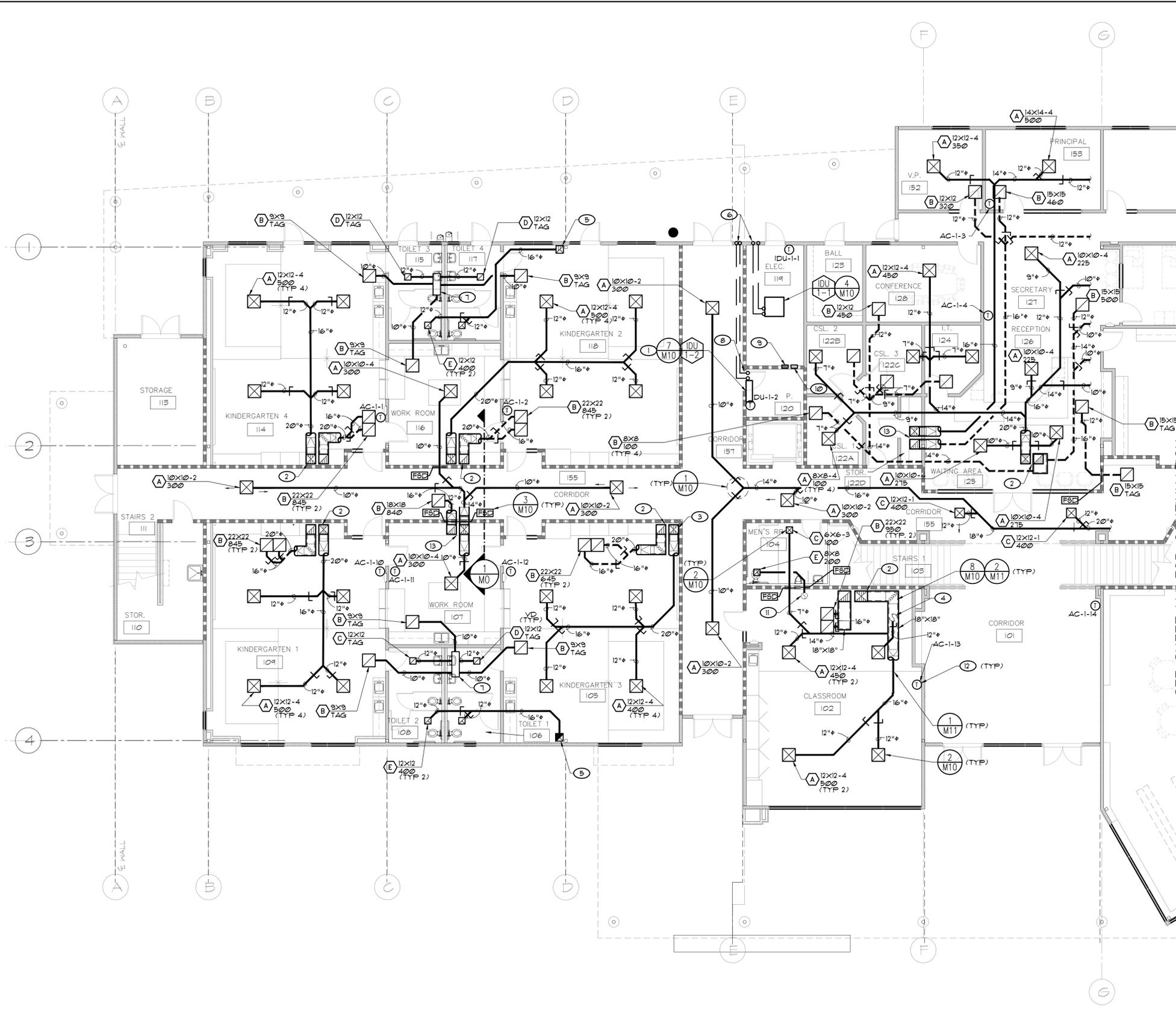
MECHANICAL FLOOR PLAN

PROJECT COORDINATOR	SHEET No.
JOHN SMITH	M1
PROJECT NO.	17-67
DATE	3.30.23
SCALE	1/8" = 1'-0"



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1ST FLOOR MECHANICAL PLAN  
EAST SIDE



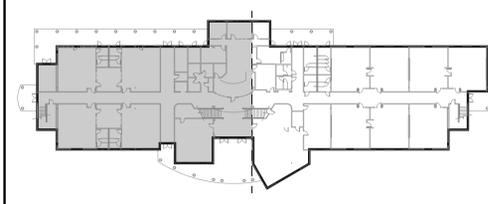
SCALE: 1/8" = 1'-0"

KEYNOTES

- 1 WALL MOUNT INDOOR UNIT MOUNTED ABOVE DOOR AT 1'-6" AFF. PROVIDE REFRIGERANT PIPE RISERS FROM UNIT EXPOSED IN ROOM TO ATTIC AND EXTEND AS SHOWN.
- 2 18"x18" SA/RA DROP FROM 2ND FLOOR.
- 3 OFFSET DROPS IN 1ST FLOOR ATTIC SPACE TO AVOID FIRE RATED WALL.
- 4 14" SA OFF BOTTOM OF DUCT. PROVIDE VD AND CONNECT TO GRILLE AS SHOWN.
- 5 14"x14" EXHAUST DUCT UP THROUGH FLOOR INTO SECOND FLOOR CHASE. SEE SHEET M5 FOR CONTINUATION.
- 6 MECHANICAL PIPING UP IN WALL TO 2ND FLOOR ATTIC SPACE. SEE SHEET M5 FOR CONTINUATION.
- 7 14"x14" TRANSFER AIR PLENUM IN ATTIC.
- 8 PROVIDE FIRE CAULKING AT PIPING PENETRATION THROUGH WALL. SEE DETAIL 13/ P11.
- 9 LIGHTING CONTROL PANEL.
- 10 TIME CLOCK FOR EXHAUSTING FAN.
- 11 8" EXHAUST DUCT UP THROUGH FLOOR INTO SECOND FLOOR CHASE. SEE SHEET M5 FOR CONTINUATION.
- 12 THERMOSTAT AT 48" AFF TO TOP OF BOX. ALL WIRE SHALL BE INSIDE CONDUIT CONCEALED IN WALL AND ATTIC.
- 13 14"x15" SA/RA DROPS FROM 2ND FLOOR.

SEE SHEET M4 FOR CONTINUATION

KEY PLAN



WALL LEGEND



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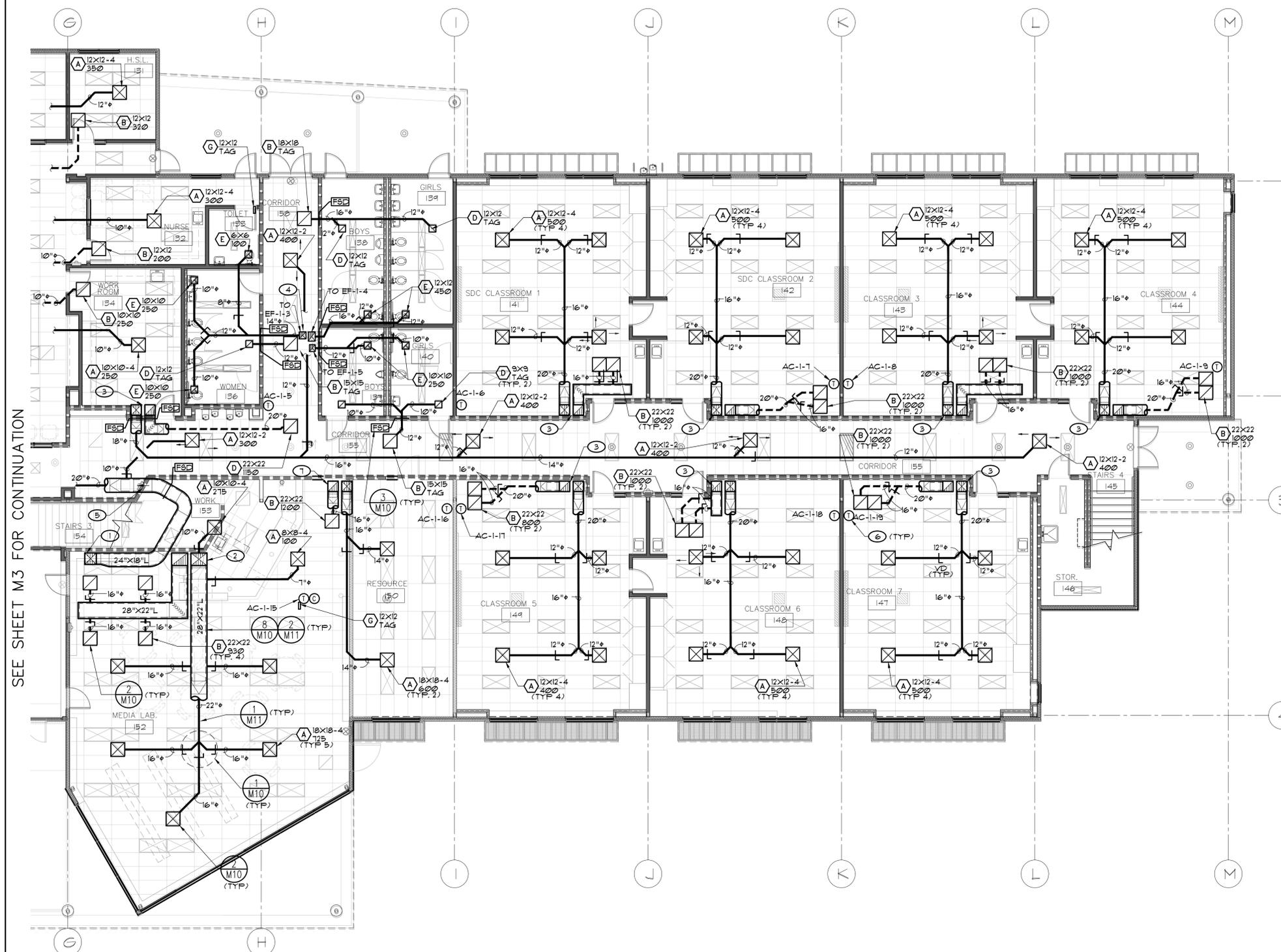
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No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

**MECHANICAL FLOOR PLAN**

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>M3</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



SEE SHEET M3 FOR CONTINUATION

1ST FLOOR MECHANICAL PLAN  
WEST SIDE



SCALE: 1/8" = 1'-0"

KEYNOTES

- ① 20"x22" L SA DROP FROM 2ND FLOOR TO 1ST FLOOR ATTIC SPACE.
- ② 28"x22" L SA/RA DROP FROM 2ND FLOOR TO 1ST FLOOR ATTIC SPACE.
- ③ 18"x18" L SA/RA DROP FROM 2ND FLOOR TO 1ST FLOOR ATTIC SPACE.
- ④ EXHAUST DUCT UP TO SECOND FLOOR CHASE:  
12"x12" TO EF-1-3  
12"x16" TO EF-1-4  
10"x12" TO EF-1-5  
SEE SHEET M6 FOR CONTINUATION.
- ⑤ OFFSET DUCTWORK UP WITH TURNING VANES IN 45° ELBOWS TO HALLWAY ATTIC. DUCTWORK OVER WORK AREA SHALL BE KEPT TIGHT UP TO BOTTOM OF FRAMING.
- ⑥ THERMOSTAT AT 48" AFF TO TOP OF BOX. ALL WIRE SHALL BE INSIDE CONDUIT CONCEALED IN WALL AND ATTIC.
- ⑦ 14"x15" L SA/RA DROPS FROM 2ND FLOOR

KEY PLAN



WALL LEGEND

----- 1 HR. RATED WALL



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△ 1	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

**MECHANICAL  
FLOOR PLAN**

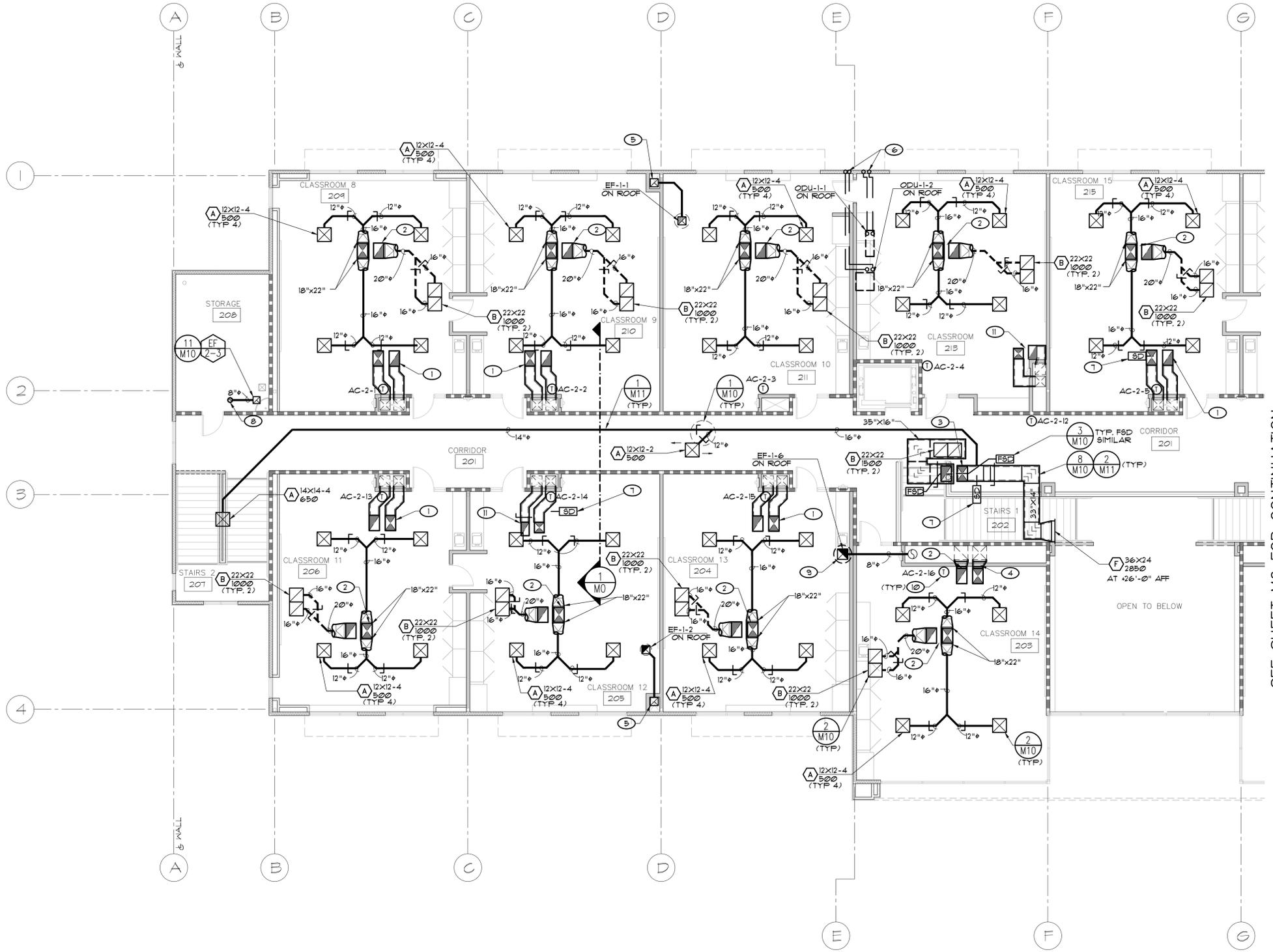
MAIN - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>M4</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



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2ND FLOOR MECHANICAL PLAN  
EAST SIDE



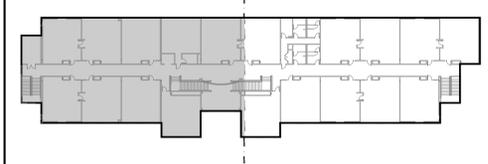
SCALE: 1/8" = 1'-0"

KEYNOTES

- 1 18"x33" SA AND 18"x32" RA LINED DUCT DROPS. PROVIDE TRANSITION WITHIN ATTIC TO 18"x18" SA/RA DUCTS DOWN IN CHASE.
- 2 18"x33" SA AND 18"x32" RA LINED DUCT DROPS.
- 3 18"x33" SA AND 18"x32" RA LINED DUCT DROPS IN RATED ROOF ASSEMBLY WITH F&D'S.
- 4 PROVIDE TRANSITION WITHIN ATTIC FROM UNIT DUCT DROPS TO 18"x18" DUCT DOWN IN SHAFT TO 1ST FLOOR.
- 5 14"x14" EXHAUST DUCT FROM 1ST FLOOR. OFFSET IN ATTIC TO EF ON ROOF.
- 6 MECHANICAL PIPING FROM 1ST FLOOR. OFFSET IN 2ND FLOOR ATTIC SPACE AND RISE THROUGH ROOF TO ODU ON ROOF.
- 7 DUCT SMOKE DETECTOR IN ATTIC PROVIDED AND WIRED BY ELECT. AND INSTALLED IN DUCT BY MECH.
- 8 8"Ø EXHAUST DUCT UP THROUGH ROOF WITH CAP AND FLASHING.
- 9 8"x8" EXHAUST DUCT THROUGH ROOF. TRANSITION TO 8"Ø. EXTEND TO CHASE AND DROP DOWN TO FIRST FLOOR. SEE SHEET M3 FOR CONTINUATION.
- 10 THERMOSTAT AT 48" AFF TO TOP OF BOX. ALL WIRE SHALL BE INSIDE CONDUIT CONCEALED IN WALL AND ATTIC.
- 11 16"x18" SA AND 14"x24" RA LINED DUCT DROPS. PROVIDE TRANSITION WITHIN ATTIC TO 14"x18" SA/RA DUCTS DOWN IN CHASE.

SEE SHEET M6 FOR CONTINUATION

KEYPLAN



WALL LEGEND



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02-116800

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

DATE	ISSUED FOR

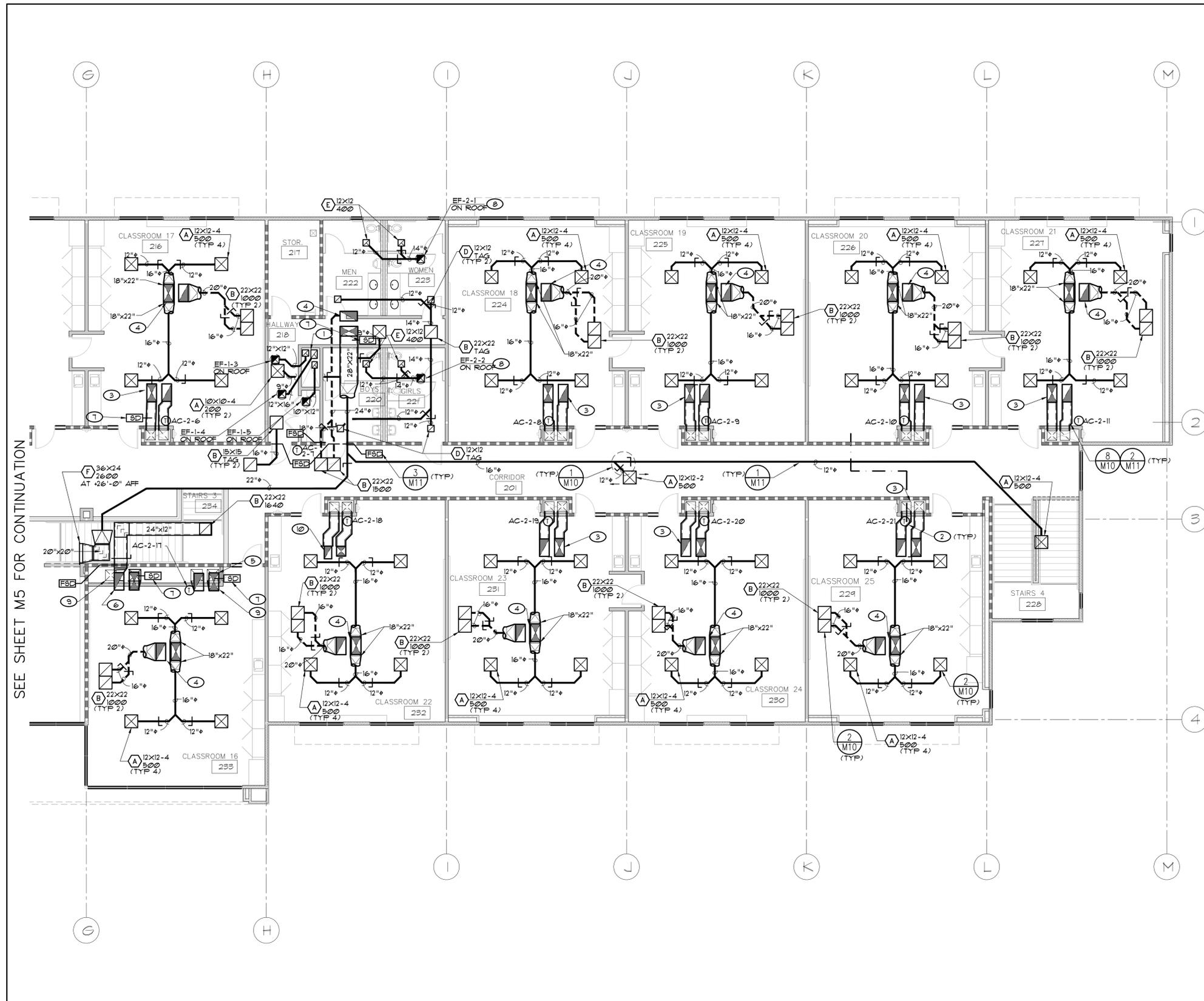
REVISIONS

No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

MECHANICAL FLOOR PLAN

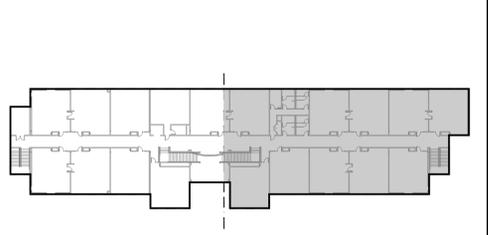
PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>M5</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



### KEYNOTES

- 1 EXHAUST DUCTWORK FROM 1ST FLOOR OFFSET AS SHOWN IN ATTIC SPACE TO EF ON ROOF.
- 2 THERMOSTAT AT 48" AFF TO TOP OF BOX. ALL WIRE SHALL BE INSIDE CONDUIT CONCEALED IN WALL AND ATTIC.
- 3 18"x33" SA AND 18"x32" RA LINED DUCT DROPS. PROVIDE TRANSITION WITHIN ATTIC TO 18"x18" SA/RA DUCTS DOWN IN CHASE. PROVIDE OFFSET IN ATTIC AS SHOWN.
- 4 18"x33" SA AND 18"x32" RA LINED DUCT DROPS.
- 5 18"x33" SA AND 18"x32" RA LINED DUCT DROPS. PROVIDE TRANSITION WITHIN ROOF CURB TO 28"x22" SA/RA DUCTS DOWN IN CHASE.
- 6 18"x33" SA AND 18"x32" RA LINED DUCT DROPS. SA SHALL TRANSITION TO 20"x20" WITH OFFSET INTO CHASE. RA SHALL ELBOW OVER AND TRANSITION TO 24"x12" RA IN ATTIC.
- 7 DUCT SMOKE DETECTOR IN ATTIC PROVIDED AND WIRED BY ELECT. AND INSTALLED IN DUCT BY MECH.
- 8 14"x14" EXHAUST DUCT THRU ROOF TO EXHAUST FAN.
- 9 PROVIDE DUCT OFFSETS IN ATTIC TO LINE UP WITH DUCT DROPS IN CHASE DOWN TO FIRST FLOOR. SEE SHEET M4 FOR CONTINUATION.
- 10 16"x18" SA AND 14"x24" RA LINED DUCT DROPS. PROVIDE TRANSITION WITHIN ATTIC TO 14"x18" SA/RA DUCTS DOWN IN CHASE.

### KEY PLAN



### WALL LEGEND



REGISTERED PROFESSIONAL ENGINEER  
GREEN M. LENCIONI  
NO. 1901  
REV. 8-27-11  
STATE OF CALIFORNIA

**LEAF ENGINEERS**  
A PBK COMPANY

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job #: 18-1024

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PROJECT:

## SHIELDS & BRAWLEY ELEMENTARY SCHOOL

CENTRAL UNIFIED SCHOOL DISTRICT  
"No Student, Every Day"

AD 3-31a  
S&B Elementary  
02-116800

JOHN H. SMITH, A.I.A. C15885

LICENSED ARCHITECT  
JOHN HAMILTON SMITH  
C 15885  
9-30-2008  
STATE OF CALIFORNIA

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PROJECT DEVELOPMENT	
DATE	ISSUED FOR

REVISIONS		
No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

## MECHANICAL FLOOR PLAN

MAIN - 2ND FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">M6</div>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	

KEYNOTES

- ① MINIMUM 10FT FROM ANY O&A INTAKE.
- ② 18"X33" SA 4 18"X32" RA DUCT FLEX CONNECTIONS AND ACOUSTIC LINED DROPS THRU ROOF.
- ③ 16"X18" SA 4 14"X24" RA DUCT FLEX CONNECTIONS AND ACOUSTIC LINED DROPS THRU ROOF.



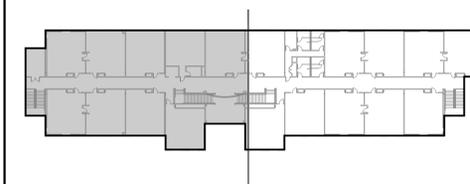
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PROJECT:  
**SHIELDS  
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 SCHOOL**



**AD 3-32a**  
**S&B Elementary**  
**02-116800**

KEY PLAN



JOHN H. SMITH, A.I.A. C15885



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No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

**MECHANICAL  
 ROOF PLAN**

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>M7</b>
PROJECT NO. 17-67	<b>M7</b>
DATE 3.30.23	
SCALE AS NOTED	



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 job #: 18-1024



SEE SHEET M8 FOR CONTINUATION

**MECHANICAL ROOF PLAN  
 EAST SIDE**



SCALE: 1/8" = 1'-0"



SEE SHEET M7 FOR CONTINUATION

MECHANICAL ROOF PLAN  
WEST SIDE

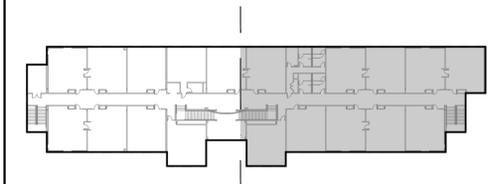


SCALE: 1/8" = 1'-0"

KEYNOTES

- ① 18"x33" SA & 18"x32" RA DUCT FLEX CONNECTIONS AND ACOUSTIC LINED DROPS THRU ROOF.
- ② MINIMUM OF 12FT FROM ANY OSA INTAKE.
- ③ 16"x18" SA & 14"x24" RA DUCT FLEX CONNECTIONS AND ACOUSTIC LINED DROPS THRU ROOF.

KEY PLAN



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PROJECT:  
**SHIELDS  
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SCHOOL**



**AD 3-33a**  
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JOHN H. SMITH, A.I.A. C15885



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△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

MECHANICAL ROOF PLAN

PROJECT COORDINATOR JOHN H. SMITH	SHEET No. M8
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE	



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EXHAUST FAN SCHEDULE									
NUMBER	TYPE	1, 2		3		4		5	
		1	2	1	2	1	2	1	2
1ST FLOOR MAIN BLDG (EF-1-___)	CENTRIFUGAL								
2ND FLOOR MAIN BLDG (EF-2-___)	UPBLAST								
MULTI-PURPOSE BLDG (EF-M-___)	UPBLAST								
TYPE	CENTRIFUGAL	UPBLAST	UPBLAST	UPBLAST	UPBLAST	CENTRIFUGAL	UPBLAST	KITCHEN	UPBLAST
MOUNTING	CEILING	ROOF	ROOF	ROOF	ROOF	CEILING	ROOF	ROOF	ROOF
HP/WATTS/BHP	~18/-	0.25/-/0.11	0.25/-/0.09	0.25/-/0.15	0.167/-/0.1	~443/-	0.067/-/0.03	1.5/-/0.89	0.17/-/0.07
VOLTS/PHASE	115/1	115/1	115/1	115/1	115/1	115/1	460/3	115/1	115/1
CFM	100	800	600	900	500	200	2880	525	525
E.S.P. (IN.WC.)	0.25	0.4	0.5	0.5	0.5	0.25	2.0	1.0	0.4
DRIVE	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	BELT	DIRECT	DIRECT
FAN RPM	1056	1241	1174	1392	1463	837	1666	1475	1475
SONES/dBA	0.6/-	6.7/53	5.9/51	8.0/56	7.3/55	1.5/-	5.0/49	14.1/65	6.8/53
SERVICE	SEE PLAN	SEE PLAN	SEE PLAN						
CONTROL	SEE NOTES	SEE NOTES	SEE NOTES						
OPER. WT. (LBS.)	20	90	90	90	90	400	60	60	60
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK						
MODEL	SP-A125	CUE-100-VG	CUE-100-VG	CUE-100-VG	CUE-095-VG	SP-A200	CUE-070-VG	USGF-180-15	CUE-090-VG

NOTES:  
1. PROVIDE BACKDRAFT DAMPER EXCEPT FOR EF-M-2.  
2. PROVIDE FACTORY SOLID STATE SPEED CONTROLLER MOUNTED WITHIN THE FAN CASING FOR ALL DIRECT DRIVE FANS.  
3. FANS SHALL RUN CONTINUOUS DURING OCCUPIED TIMES EXCEPT FOR EF-M-2 & M-5. CONTROL BY 7-DAY DIGITAL TIME CLOCK, (1) AT EACH BLDG.  
4. ALL CUE FANS HAVE PREMIUM EFFICIENCY MOTORS WITH VARI-GREEN SPEED CONTROL DIAL INTEGRAL WITH MOTOR.  
5. EF-M-2 & M-5 SHALL BE CONTROLLED BY HOOD SWITCH AND INTERLOCKED WITH MUA-M-1.  
6. PROVIDE ROOF CAP FOR ALL CEILING FANS.  
7. PROVIDE ROOF CURB FOR ALL ROOF FANS. EF-M-2 SHALL HAVE VENTILATED CURB AND HINGED ACCESS.

AIR CONDITIONING SCHEDULE									
NUMBER	TYPE	3, 11, 16		5, 12, 17		1, 2, 6, 7, 8, 9, 10, 13, 14, 18, 19		4	
		1	2	1	2	1	2	1	2
1ST FLOOR MAIN BLDG (AC-1-___)									
2ND FLOOR MAIN BLDG (AC-2-___)									
MULTI-PURPOSE BLDG (AC-M-___)									
TYPE	ROOFTOP	ROOFTOP	ROOFTOP	ROOFTOP	ROOFTOP	ROOFTOP	ROOFTOP	ROOFTOP	ROOFTOP
DISCHARGE	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN
VOLTS/PHASE	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3
*** MAX. OCP	10.0/11.4	12.1/13.7	13.3/15.2	-/18.0	-/21.0	-/29.0	-/54.0	-/22.8	-/22.8
SEER/IEER	15	20	20	20	20	20	20	20	20
AFUE %	17.5/13.0/-	17.5/13.0/-	17.2/13.0/-	-/12.1/15.9	-/12.1/16.6	-/11.4/15.1	-/10.8/16.3	15.0/12.0/-	15.0/12.0/-
NOMINAL TONS	3	4	5	6	7.5	10	20	2.5	2.5
POWER EXH. VOLTS/PHASE	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3
POWER EXH. AMPS	1.1	1.1	1.1	1.1	2.8	4.5	10.5	1.1	1.1
POWER EXH. HP	0.50	0.50	0.50	0.50	1.00	2.0	4.0	0.5	0.5
B MOTOR NOMINAL H.P.	0.75	1.0	1.0	1.0	3.1	3.1	3.1	0.5	0.5
L MOTOR BRAKE H.P.	0.47	0.59	0.70	0.768	1.361	2.052	2.525	0.5	0.5
O SUPPLY AIR CFM	1200	1600	2000	2400	3000	4000	7000	1060	1060
W E.S.P. (IN.W.C.)	0.8	0.8	0.8	0.8	0.8	0.8	1.0	0.5	0.5
E MIN. OA CFM	SEE OA SCHEDULE	SEE OA SCHEDULE	SEE OA SCHEDULE	SEE OA SCHEDULE					
R DRIVE	BELT	BELT	BELT	BELT	BELT	BELT	BELT	BELT	BELT
COOLING TYPE	DX	DX	DX	DX	DX	DX	DX	DX	DX
C TOTAL CAP. (MBH)	32.1	45.3	53.7	68.7	79.3	110.5	218.1	28.5	28.5
O SENS. CAP. (MBH)	23.9	33.5	40.7	53.1	74.9	86.9	160.3	19.0	19.0
O E.A. DB (°F)	80	80	80	80	80	80	80	80	80
L E.A. WB (°F)	67	67	67	67	67	67	67	68	68
A MB. TEMP. (°F)	105	105	105	105	105	105	105	105	105
H HEATING TYPE	GAS	GAS	GAS	GAS	GAS	GAS	GAS	ELECT.	ELECT.
E INPUT (MBH)	60.0	60.0	60.0	60.0	150.0	200.0	250.0	5 KW	5 KW
A OUTPUT (MBH)	48.0	49.0	64.0	64.8	121.5	162.0	202.5	17.1	17.1
T FUEL	NAT. GAS	NAT. GAS	ELECT.	ELECT.					
FILTER SIZE (IN.)	(2)20x30x2	(4)16x25x2	(4)16x25x2	(4)20x25x2	(4)20x25x2	(2)20x30x2	(12)20x20x2	-	-
CLIPS	SEE PLAN	SEE PLAN	SEE PLAN	SEE PLAN					
OPER. WT. (LBS.)	1525	1655	1675	1750	2155	2260	3800	700	700
MANUFACTURER	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE
MODEL	YHC037E4RLA	YHC047E4RLA	YHC067E4RMA	YHJ072A4SOL	YHJ090A4SOM	YHJ120A4SOM	YHJ240A4SOL	4WCY5030A1	4WCY5030A1
C MODEL	CRBY-PR20BHA-11	CRBY-PR20BHA-11	CRBY-PR20BHA-11	CRBY-PR20BHA-11	CRBY-PR20BHA-11	CRBY-PR20BHA-11	CRBY-PR20BHA-11	CRBY-IMP25FA-11	CRBY-IMP25FA-11
U CLIPS	(2) 14 GA. EA./LS	(3) 14 GA. EA./LS	(3) 14 GA. EA./LS	(2) 14 GA. ON	(2) 14 GA. ON				
B ISOLATORS	(3) #12x1/2"	(4) #12x1/2"	(5) #12x1/2"	(3) #12x1/2"	(3) #12x1/2"				

NOTES:  
1. SCHEDULED LOADS INCLUDE FAN AND MOTOR HEAT.  
2. PROVIDE ANTI-RECYCLE TIMER, CRANKCASE HEATER, LOW AMBIENT KIT AND HIGH CAPACITY FILTER RACK.  
3. PROVIDE FACTORY "MICROMETL" MODULATING ECONOMIZER WITH "MICROMETL" MODULATING POWER EXHAUST ASSEMBLY EXCEPT FOR AC-M-5 HAS MIN. OA HOOD.  
4. PROVIDE MICROMETL 21" SPRING ISOLATED CURBS. SEE CURB PORTION OF SCHEDULE ABOVE FOR MODEL NUMBER, QUANTITY OF CLIPS, QUANTITY OF TEK SCREWS AND QUANTITY OF ISOLATORS. HOLDOWN CLIPS SHALL ALIGN WITH ISOLATORS ON LONG SIDE. ISOLATORS SHALL BE CALDYN MODEL JGA.  
5. BYPASS UNITS ANTI-RECYCLE TIMER WHEN ANTI-RECYCLE FUNCTION IS INCLUDED IN THE THERMOSTAT.  
6. PROVIDE A DUCT SMOKE DETECTOR IN THE SUPPLY AIR PLENUM OF AC-1-4, 5, 11, 14, 15; AC-2-7, 12; AC-M-1, 2, 3, 4 TO SHUT-OFF THE UNIT UPON DETECTION OF SMOKE AND ACTIVATE THE FIRE ALARM SYSTEM. INSTALL IN STRICT ACCORDANCE WITH THE 2016 CALIFORNIA MECHANICAL CODE, SECTION 608.  
7. PROVIDE FACTORY DISCONNECT SWITCH.  
8. INTERLOCK MODULATING POWER EXHAUST TO SCHEDULED AC UNIT. PROVIDE SEPARATE POWER CONNECTION AND DISCONNECT BY ELECTRICAL.  
9. PROVIDE FACTORY CONDENSER COIL GUARDS.  
10. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT WITH LOCKING COVER COMPATIBLE WITH ALL REQUIRED FUNCTION AND T-24. VENSTAR MODEL T8900 COLOR TOUCH WITH WIFI.  
11. NOT USED.  
12. DOWN DISCHARGE UNITS SHALL ALSO HAVE DUCT FLEX CONNECTIONS INSTALLED WITHIN ROOF CURB.  
13. ALL AC UNITS SHALL HAVE R-410A REFRIGERANT.

OUTSIDE AIR SCHEDULE			
BLDG	UNIT	OSA CFM	SPACE DESCRIPTION
1st FLOOR (AC-1-___)	1	450	CLASSROOM
	2	450	CLASSROOM
	3	100	OFFICES
	4	600	OFFICES
	5	450	CORRIDOR
	6	450	CLASSROOM
	7	450	CLASSROOM
	8	450	CLASSROOM
	9	450	CLASSROOM
	10	450	CLASSROOM
	11	360	OFFICES
	12	450	CLASSROOM
	13	450	CLASSROOM
	14	600	CORRIDOR/FOYER
	15	280	MEDIA
	16	300	CLASSROOM
	17	450	CLASSROOM
2nd FLOOR (AC-2-___)	1	450	CLASSROOM
	2	450	CLASSROOM
	3	450	CLASSROOM
	4	135	STAFF
	5	450	CLASSROOM
	6	450	CLASSROOM
	7	1000	RR/CORR/FOYER
	8	450	CLASSROOM
	9	450	CLASSROOM
	10	450	CLASSROOM
	11	450	CLASSROOM
MULTI-PURPOSE (AC-M-___)	1	600	PLATFORM
	3, 4	200	SERVICE
	5	390	MULTI-PURPOSE
		260	STAFF LOUNGE
		260	STAFF LOUNGE

NOTES:  
1. PROVIDE CO2 SENSOR MOUNTED NEXT TO TEMP. SENSOR TO CONTROL OUTSIDE AIR QUANTITIES PER TITLE 24. CFM LISTED IS MINIMUM OUTSIDE AIR FOR EACH UNIT.

MAKE-UP AIR UNIT SCHEDULE	
NUMBER	MUA-M-1
MOUNTING	ROOF
MCA/MOP (AMPS)	4.6/15
DISCONNECT (AMPS)	-/11.3
S FAN QUANTITY, TYPE	1/FC
A SUPPLY AIR CFM	3500
T.S.P./E.S.P. (IN. WC.)	1.021/0.4
F NOM. HP/BHP	1.5/1.01
N DRIVE	1444
R DRIVE TYPE	BELT
N TYPE	DISPOSABLE
F NO. OF FILTER SECTIONS	1
I SIZE (IN.)/QUANTITY	2" ALUM. MESH / 2
L GAUGE	2"
E EFFICIENCY	MERV 13
R MANUFACTURER	-
E DIRECT SECTION	NONE
V MEDIA WIDTH	12"
A TYPE	CELDEK
P E.A. DB/WB (°F)	103.6/73.7
L.A. DB/WB (°F)	76.5/73.7
H HEATING COIL TYPE	INDIRECT GAS
E GAS TYPE	NAT. GAS
A GAS INPUT (MBH)	200
T TOTAL CAPACITY (MBH)	160
I AFUE	80
N E.A. DB (°F) / L.A. DB	32.0/73.8
G HEAT EXCHANGER TYPE	S.S.
V VENT TYPE	VERT. STACK
S SERVICE	SEE PLANS
A ACCESSORIES	SEE NOTES
O OPERATING WEIGHT (LBS.)	1650
M MANUFACTURER	GREENHECK
T TYPE	ROOFTOP
MODEL	IGX-P116-H22

NOTES:  
1. PROVIDE PREMIUM EFFICIENT FAN MOTORS.  
2. PROVIDE SINGLE POINT POWER CONNECTION, CONTROL PANEL & DISCONNECT.  
3. PROVIDE A DUCT SMOKE DETECTOR IN THE SUPPLY AIR DUCT OF UNIT TO SHUT-OFF UNIT UPON DETECTION OF SMOKE. INSTALL IN STRICT ACCORDANCE WITH THE 2016 CALIFORNIA MECHANICAL CODE, SECTION 608. COORDINATE WITH ELECTRICAL CONTRACTOR AND/OR FIRE ALARM SYSTEM CONTRACTOR. SEE PLAN FOR LOCATION.  
4. PRIOR TO MECHANICAL PERMIT FINAL, A SMOKE DETECTOR SHUT-OFF TEST WILL BE REQUIRED.  
5. PROVIDE DOUBLE WALL CONSTRUCTION FOR ENTIRE UNIT.  
6. PROVIDE QUICK OPENING ACCESS DOORS AT EACH SECTION.  
7. PROVIDE BAKED ENAMEL FINISH (DESERT SAND).  
8. PROVIDE STAINLESS STEEL SLOPED DRAIN PAN.  
9. PROVIDE CONTROL CENTER.  
10. PROVIDE FACTORY CURB.  
11. PROVIDE HEATING AND COOLING AIR INLET SENSORS.  
12. PROVIDE OUTLET BACKDRAFT DAMPER.  
13. PROVIDE (1) SET OF SPARE BELTS.  
14. PROVIDE FLUE EXTENSIONS TO 3'-0" ABOVE ANY OUTSIDE AIR INTAKE WITHIN 10'-0".  
15. PROVIDE ALL PURPOSE WATER FILTER #API0PCL TO BE INSTALLED BY PLUMBING CONTRACTOR AFTER VALVE AT CW CONNECTION.

INDOOR UNIT SCHEDULE		
NUMBER	IDU-1-1	IDU-1-2 & M-1
TYPE	CEILING CASSETTE	HORIZONTAL
MOUNTING	EXPOSED	WALL
FLA/MCA/MOCP	-/11.3/15	-/0.4/15
VOLTS/PHASE	208/1	208/1
DRIVE	DIRECT	DIRECT
CFM/FAN SPEED	1180/HI	500/HI
E.S.P. (IN. WC.)	0	0
N OUTSIDE AIR (CFM)	0	0
L LEAD/B/EAWB (°F)	80/67	80/67
C TOTAL CAP. (MBH)	35.9	16.9
O SENSIBLE CAP. (MBH)	24.0	13.3
O REFRIGERANT	R-410A	R-410A
L SEER/IEER	12.6/11.4	18.6/12.7
H EADB (°F)	105	105
E TOTAL CAP. (MBH)	N/A	N/A
A HSPF/COP	N/A	N/A
T AMB. AIR (°F)	N/A	N/A
FILTER SIZE (IN.)	-	-
TYPE	SEE SPEC.	SEE SPEC.
SERVICE	ELEC. ROOM	ELEV EQUIP
A ACCESSORIES	SEE NOTES	SEE NOTES
OPER. WT. (LBS.)	70	49
MANUFACTURER	DAIKIN	DAIKIN
MODEL	FCQ36PAVJU	FAQ18PVJU

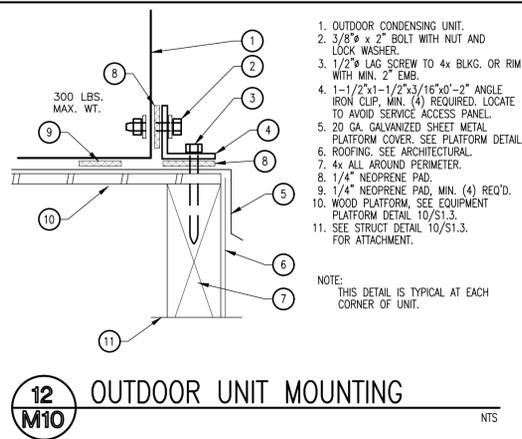
NOTES:  
1. PROVIDE VENSTAR MODEL 8900 THERMOSTAT WITH WIFI.  
2. PROVIDE WITH CONDENSATE PUMP CAPABLE OF LIFTING 48".  
3. SIZE REFRIGERANT LINES PER MANUFACTURER RECOMMENDATIONS.

OUTDOOR UNIT SCHEDULE			
NUMBER	ODU-1-1	ODU-1-2 & M-1	
TYPE	COOLING ONLY	COOLING ONLY	
FLA/MCA	-/27.0	-/16.5	
MOCP	30	20	
MOTOR HP	-	-	
VOLTS/PHASE	208/3	208/1	
COOLING CAP. (MBH)	35.9	16.9	
AMB. TEMP. (°F)	105	105	
CONDENSER COIL ROWS	2	1	
HEATING CAP. (MBH)	N/A	N/A	
SERVICE	IDU-1-1	IDU-1-2	
OPER. WT. (LBS.)	300	180	
MANUFACTURER	DAIKIN	DAIKIN	
MODEL	RZR36PVJUB	RZR18PVJUB	

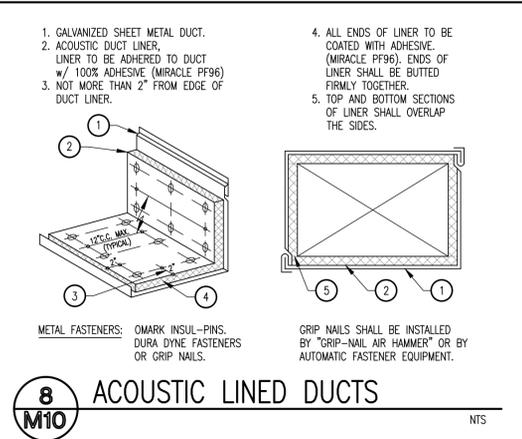
NOTES:  
1. SEE DETAIL 12/M10 AND 13/M10 FOR MOUNTING.  
2. PROVIDE FACTORY CONDENSER COIL GUARDS.  
3. MAINTAIN MANUFACTURER'S REQUIRED SERVICE CLEARANCES.  
4. SIZE REFRIGERANT LINES PER MANUFACTURER RECOMMENDATIONS.  
5. PROVIDE FACTORY CRANKCASE HEATER, LOW AMBIENT KIT, AND HIGH & LOW PRESSURE SWITCHES.

KITCHEN AIR BALANCE SCHEDULE			
UNIT #	EXHAUST AIR CFM	MAKE-UP AIR CFM	POSITIVE PRESS. CFM
EF-M-1 (RESTROOM)	100		-100
EF-M-2 (KITCHEN HOOD)	2880		-2880
EF-M-5 (KITCHEN HOOD)	525		-525
MUA-M-1		3500	+3500
AC-M-2		200	+200
TOTAL SPACE CFM	3505	3700	+195

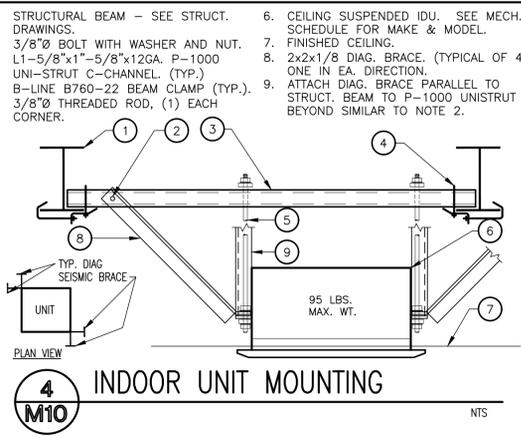
DUCT CONSTRUCTION STANDARDS							
DIMENSION OF LOWEST SIDE INCHES	SHEET METAL GAGE (ALL FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS &/OR INTERMEDIATE REINFORCING	TRANSVERSE REINFORCING (1)				
			MIN. HT. IN.	DRIVE SLIP	HEMMED S SLIP	ALTERN. BAR SLIP	REINFORCED BAR SLIP
UP THRU 12	26	NONE REQUIRED	1	26	26	24	24
13 - 18	24	NONE REQUIRED	1	24	24	24	24
19 - 30	24	1" x 1" x 1/8" @ 60 IN.	1		24	24	24
31 - 42	22	1" x 1" x 1/8" @ 60 IN.	1		22	22	22
43 - 60	20	1" x 1" x 1/8" @ 60 IN.	1			20	20
61 & ABOVE	18	1" x 1" x 1/8"					



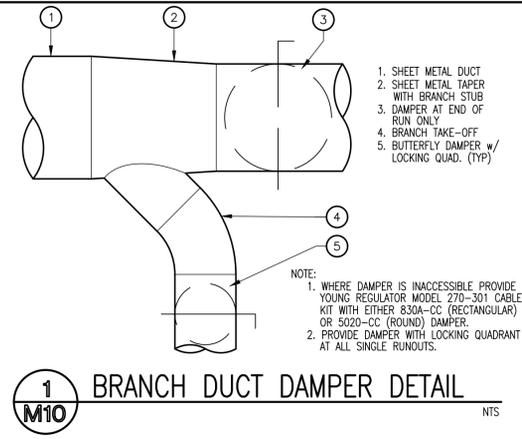
**12** M10 OUTDOOR UNIT MOUNTING NTS



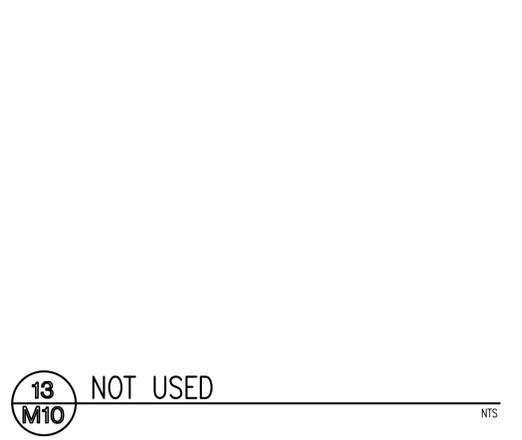
**8** M10 ACOUSTIC LINED DUCTS NTS



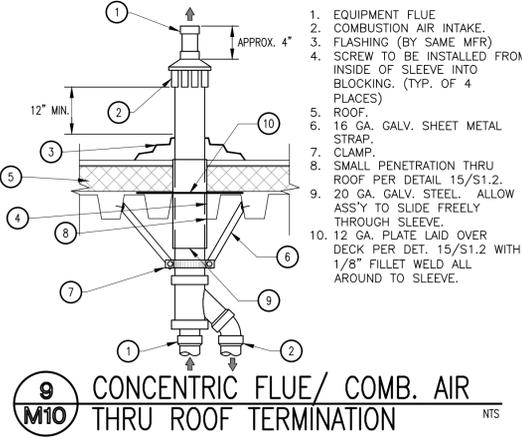
**4** M10 INDOOR UNIT MOUNTING NTS



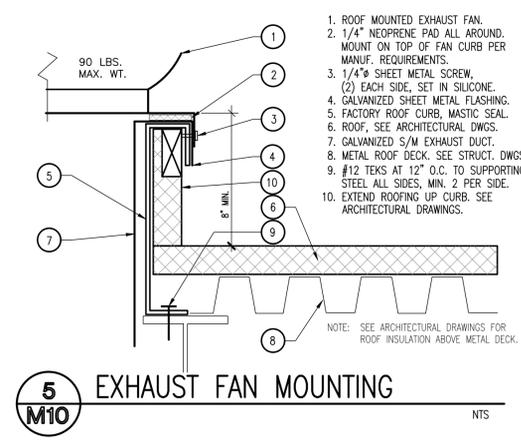
**1** M10 BRANCH DUCT DAMPER DETAIL NTS



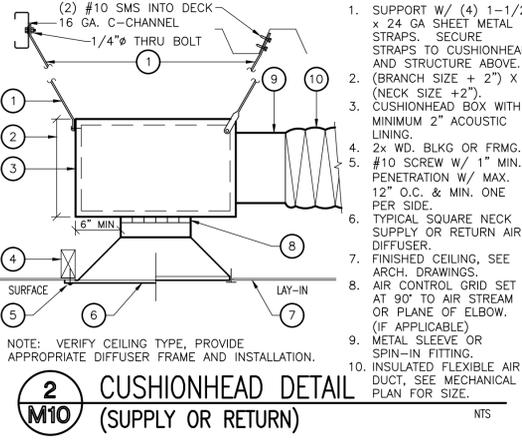
**13** M10 NOT USED NTS



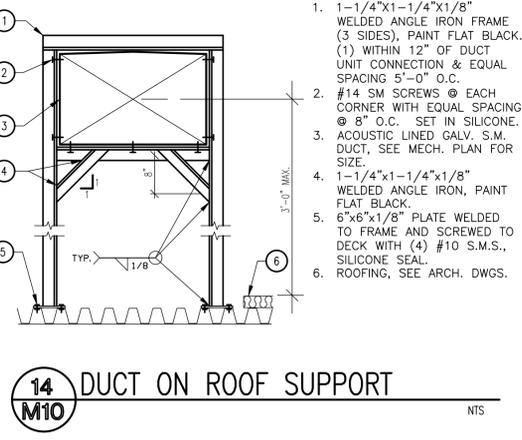
**9** M10 CONCENTRIC FLUE/ COMB. AIR THRU ROOF TERMINATION NTS



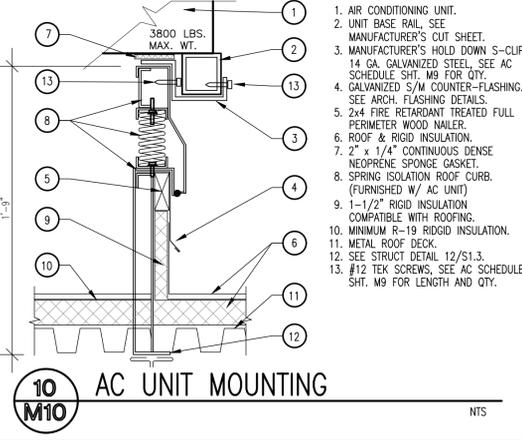
**5** M10 EXHAUST FAN MOUNTING NTS



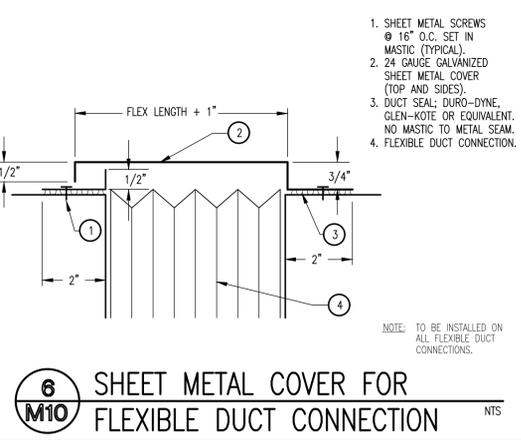
**2** M10 CUSHIONHEAD DETAIL (SUPPLY OR RETURN) NTS



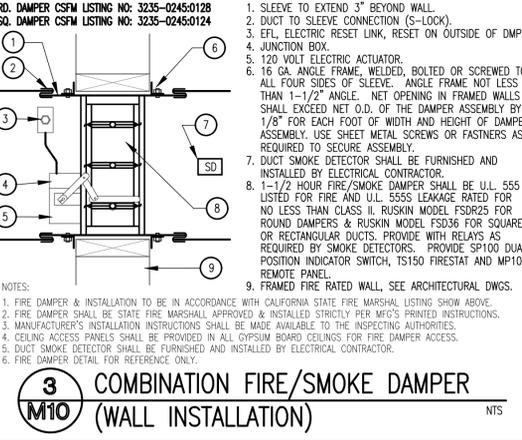
**14** M10 DUCT ON ROOF SUPPORT NTS



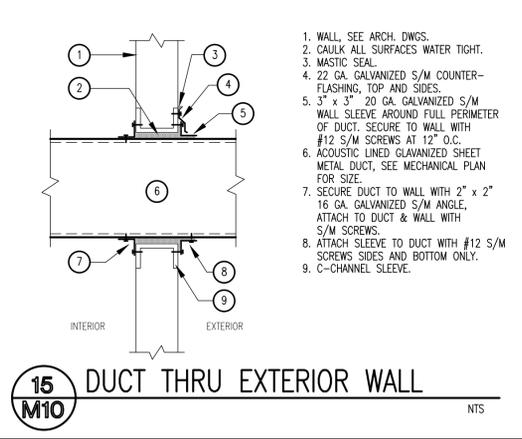
**10** M10 AC UNIT MOUNTING NTS



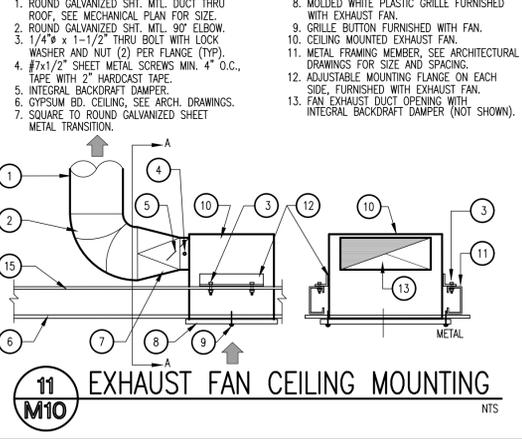
**6** M10 SHEET METAL COVER FOR FLEXIBLE DUCT CONNECTION NTS



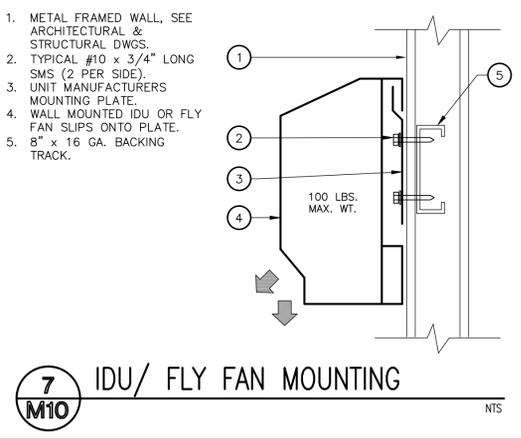
**3** M10 COMBINATION FIRE/SMOKE DAMPER (WALL INSTALLATION) NTS



**15** M10 DUCT THRU EXTERIOR WALL NTS



**11** M10 EXHAUST FAN CEILING MOUNTING NTS



**7** M10 IDU/ FLY FAN MOUNTING NTS



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PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-35a**  
**S&B Elementary**  
**02-116800**



JOHN H. SMITH, A.I.A. C15885

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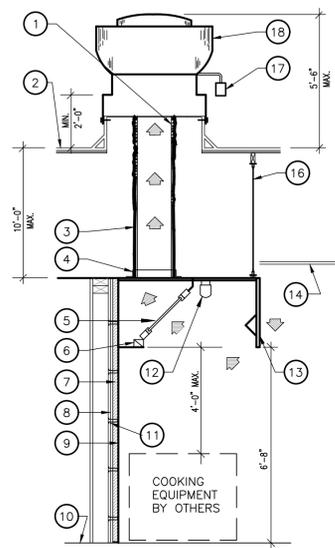
PROJECT DEVELOPMENT		
DATE	ISSUED FOR	
REVISIONS		
No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION	
MECHANICAL DETAILS	
PROJECT COORDINATOR	SHEET No.
JOHN SMITH	M10
PROJECT NO.	17-67
DATE	3.30.23
SCALE	NTS

**LEAF ENGINEERS**  
A PBK COMPANY

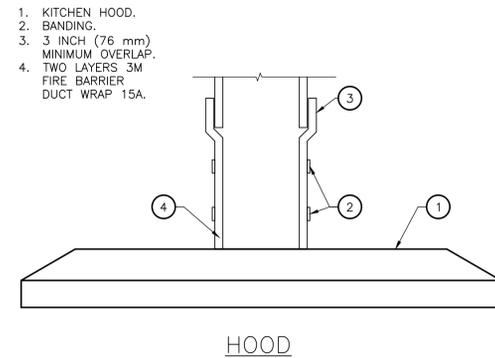
895 W. Ashlan Ave, Suite 101 Clovis, CA 93612  
p 559-223-9600 www.LEAFengineers.com  
job #: 18-1024

- 16 GA. ALL WELDED GALVANIZED SHEET METAL EXHAUST DUCT PER PLAN.
- ROOF - SEE ARCHITECTURAL DRAWINGS.
- 2-LAYERS OF 3M FIRE WRAP BARRIER DUCT WRAP 15A, U.L. 1978 (SECTIONS 12 & 13) FOR GREASE DUCT ENCLOSURE SYSTEM. SEE DETAILS 4/M11 & 6/M11.
- 16 GA. GALVANIZED S/M FLASHING AROUND EXHAUST DUCT @ BOTTOM OF SHAFT.
- REMOVABLE CLASS 1 APPROVED ALUMINUM BAFFLE TYPE GREASE FILTERS, TO BE INSTALLED @ AN ANGLE NOT LESS THAN 45 DEGREES.
- GREASE TROUGH AND REMOVABLE CUP.
- 1" RIGID FOIL BACKING INSULATION, PRIOR TO INSTALLATION CONTRACTOR SHALL SUBMIT A COPY OF INSULATION LISTING AND MANUFACTURER'S CUT SHEETS TO THE INSPECTOR AND THE BUILDING DEPARTMENT FOR APPROVAL.
- 3" AIR SPACE REQUIRED WITH WOOD FRAMED WALLS.
- 22 GA. STAINLESS STEEL BACK SPLASH BEHIND COOKING APPLIANCE, ATTACH TO HAT CHANNEL WITH #8 x 1-1/2" S.S. SCREWS @ 12" O.C.
- FLOOR - SEE ARCHITECTURAL DRAWINGS.
- 22 GA. HAT CHANNEL SPACER @ 24" O.C. ATTACH TO WALL STUD WITH #10 x 2-1/2" SCREWS @ 12" O.C.
- LIGHTS EVENLY SPACED.
- 18 GA. TYPE 304 STAINLESS STEEL CLASS 1 WALL HOOD TO OVERLAP A MIN. OF 6" BEYOND THE COOKING EQUIP. PROVIDE A MIN. OF 18" CLEARANCE ABOVE THE HOOD FROM ALL COMBUSTIBLE CONSTRUCTION OR A MIN. 3" CLEARANCE PROVIDED THE COMBUSTIBLE MATERIAL IS PROTECTED WITH 1 HR. CONSTRUCTION ON HOOD SIDE.
- CEILING, FIRE RATED WITHIN 18" OF HOOD (MIN).
- NOT USED.
- (4) 1/2" THREADED ROD TO BLOCKING OR JOIST WITH HANGER. (TYPICAL). SEE HANGING ROD DETAILS ON SHEET M4.
- GREASE TERMINATOR, CHANGE EVERY 30 TO 45 DAYS. MOUNT AT BOTTOM OF FAN HOUSING.
- UPBLAST ROOF EXHAUSTER - SEE DETAIL 5/M10.

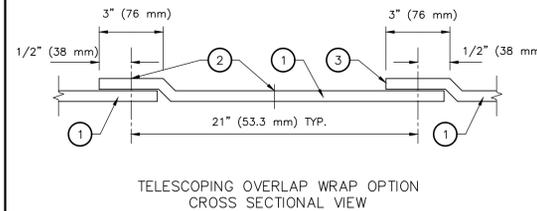


- NOTES:
- HOOD & EXHAUST SYSTEM SHALL COMPLY WITH ALL REQUIREMENTS OF CHAPTER 5 OF THE 2016 CALIFORNIA MECHANICAL CODE AND NFPA 96.
  - ALL GREASE DUCTS SHALL BE MADE WITH A CONTINUOUS LIQUID TIGHT WELD OR BLAZE MADE ON THE EXTERNAL SURFACE OF THE DUCT SYSTEM.
  - LISTED EXHAUST HOODS ARE TO BE INSTALLED IN ACCORDANCE WITH THE TERMS OF THEIR LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - HOOD SHALL BE EQUIPPED WITH A DRY CHEMICAL EXTINGUISHING SYSTEM ANSUL OR APPROVED EQUAL WITH FUEL SHUT-OFF SWITCH.

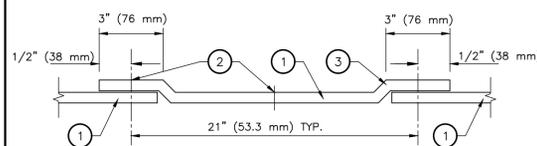
**8** M11 KITCHEN HOOD DETAIL NTS



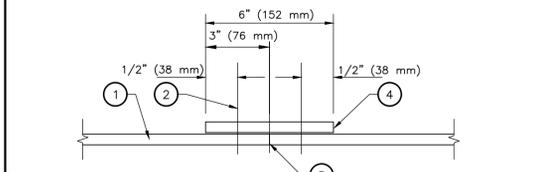
- TWO LAYERS 3M FIRE BARRIER DUCT WRAP 15A.
- 1-1/2" IN SQUARE (38 mm) OR 1-1/2" DIA (38 mm) GALVANIZED SPEED CLIPS.
- 3 IN (76 mm) MIN. LONGITUDINAL OVERLAP.
- 6 IN (152 mm) WIDE COLLAR MADE FROM 3M FIRE BARRIER DUCT WRAP 15A. ALTERNATE COLLAR PREFABRICATED 3M FIRE BARRIER 20A COLLAR.
- FIRMLY BUFFED JOINT.



TELESCOPING OVERLAP WRAP OPTION CROSS SECTIONAL VIEW

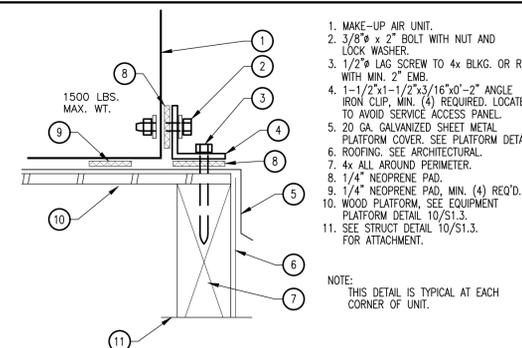


CHECKERBOARD OVERLAP WRAP OPTION CROSS SECTIONAL VIEW



CHECKERBOARD OVERLAP WRAP OPTION CROSS SECTIONAL VIEW DUCT OVERLAP WRAP DETAIL

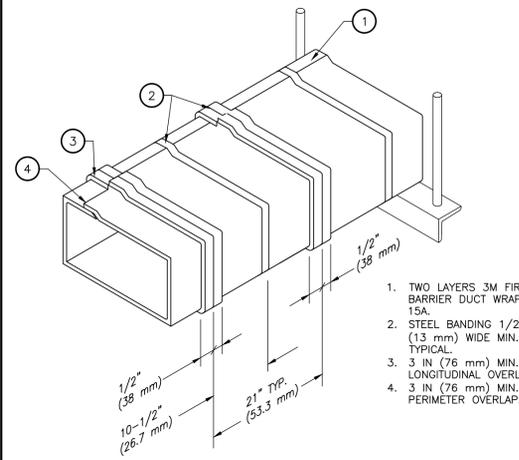
**6** M11 FIRE BARRIER DUCT WRAP DETAIL 2 NTS



- MAKE-UP AIR UNIT.
- 3/8" x 2" BOLT WITH NUT AND LOCK WASHER.
- 1/2" LAG SCREW TO 4x BLKG. OR RIM WITH MIN. 2" EMB.
- 1-1/2"x1-1/2"x3/16"x0'-2" ANGLE IRON CLIP, MIN. (4) REQUIRED. LOCATE TO AVOID SERVICE ACCESS PANEL.
- 20 GA. GALVANIZED SHEET METAL PLATFORM COVER. SEE PLATFORM DETAIL.
- ROOFING. SEE ARCHITECTURAL.
- 4x ALL AROUND PERIMETER.
- 1/4" NEOPRENE PAD.
- 1/4" NEOPRENE PAD, MIN. (4) REQ'D.
- WOOD PLATFORM, SEE EQUIPMENT PLATFORM DETAIL 10/S1.3.
- SEE STRUCT DETAIL 10/S1.3 FOR ATTACHMENT.

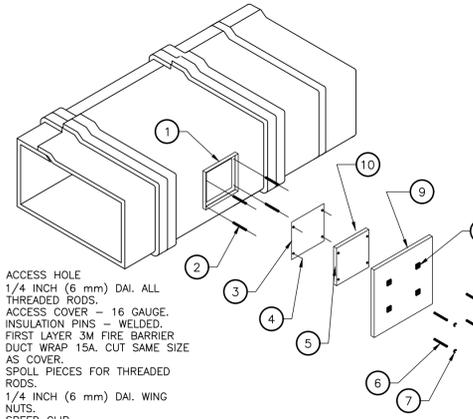
NOTE: THIS DETAIL IS TYPICAL AT EACH CORNER OF UNIT.

**7** M11 MAKE-UP AIR UNIT MOUNTING NTS



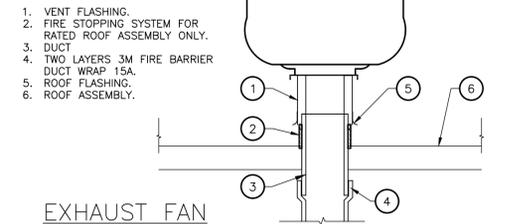
- TWO LAYERS 3M FIRE BARRIER DUCT WRAP 15A.
- STEEL BANDING 1/2 IN. (13 mm) WIDE MIN. TYPICAL.
- 3 IN (76 mm) MIN. LONGITUDINAL OVERLAP.
- 3 IN (76 mm) MIN. PERIMETER OVERLAP.

DUCT WRAP INSULATION



- ACCESS HOLE 1/4 INCH (6 mm) DIA. ALL THREADED RODS.
- ACCESS COVER - 16 GAUGE.
- INSULATION PINS - WELDED.
- FIRST LAYER 3M FIRE BARRIER DUCT WRAP 15A. CUT SAME SIZE AS COVER.
- SPILL PIECES FOR THREADED RODS.
- 1/4 INCH (6 mm) DIA. WING NUTS.
- SPEED CLIP.
- SECOND LAYER 3M FIRE BARRIER DUCT WRAP 15A WITH 1 IN. (25 mm) OVERLAP ON ALL SIDES.
- ALUMINUM TAPE COVERING ALL EXPOSED EDGES.

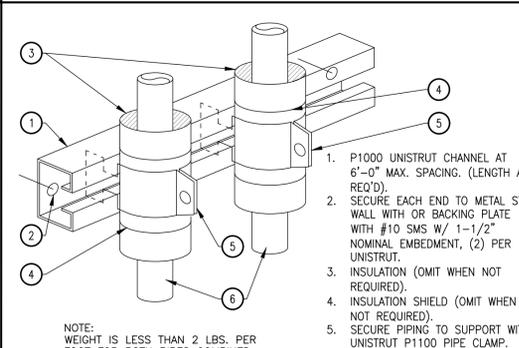
DUCT ACCESS CLEAN-OUT



- VENT FLASHING.
- FIRE STOPPING SYSTEM FOR RATED ROOF ASSEMBLY ONLY.
- DUCT.
- TWO LAYERS 3M FIRE BARRIER DUCT WRAP 15A.
- ROOF FLASHING.
- ROOF ASSEMBLY.

EXHAUST FAN

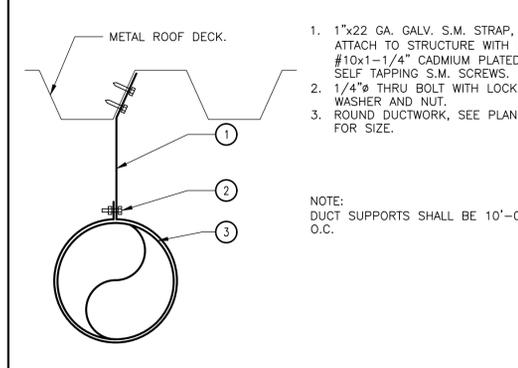
**4** M11 FIRE BARRIER DUCT WRAP DETAIL 1 NTS



- P1000 UNISTRUT CHANNEL AT 6'-0" MAX. SPACING. (LENGTH AS REQ'D).
- SECURE EACH END TO METAL STUD WALL WITH OR BACKING PLATE WITH #10 SMS W/ 1-1/2" NOMINAL EMBEDMENT, (2) PER UNISTRUT.
- INSULATION (OMIT WHEN NOT REQUIRED).
- INSULATION SHIELD (OMIT WHEN NOT REQUIRED).
- SECURE PIPING TO SUPPORT WITH UNISTRUT P1100 PIPE CLAMP.
- SEE PLAN FOR TYPE OF PIPING.

NOTE: WEIGHT IS LESS THAN 2 LBS. PER FOOT FOR BOTH PIPES COMBINED.

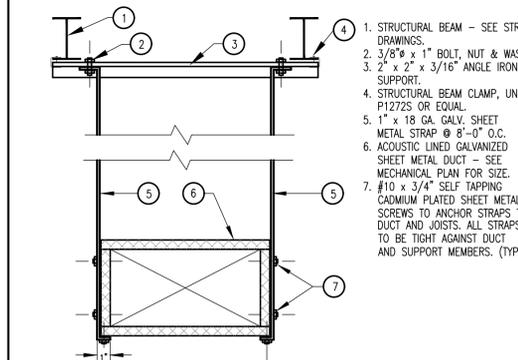
**5** M11 PIPE SUPPORT DETAIL (TYPICAL FOR VERTICAL) NTS



- 1"x22 GA. GALV. S.M. STRAP, ATTACH TO STRUCTURE WITH (2) #10x1-1/4" CADMIUM PLATED SELF TAPPING S.M. SCREWS.
- 1/4" THRU BOLT WITH LOCK WASHER AND NUT.
- ROUND DUCTWORK; SEE PLAN FOR SIZE.

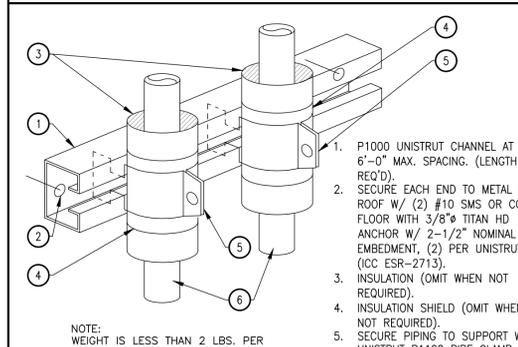
NOTE: DUCT SUPPORTS SHALL BE 10'-0" O.C.

**1** M11 ROUND DUCT SUPPORT NTS



- STRUCTURAL BEAM - SEE STRUCT. DRAWINGS.
- 3/8" x 1" BOLT, NUT & WASHER.
- 2" x 2" x 3/16" ANGLE IRON SUPPORT.
- STRUCTURAL BEAM CLAMP, UNISTRUT P1272S OR EQUAL.
- 1" x 18 GA. GALV. SHEET METAL STRAP @ 8'-0" O.C.
- ACOUSTIC LINED GALVANIZED SHEET METAL DUCT - SEE MECHANICAL PLAN FOR SIZE.
- #10 x 3/4" SELF TAPPING CADMIUM PLATED SHEET METAL SCREWS TO ANCHOR STRAPS TO DUCT AND JOISTS. ALL STRAPS TO BE TIGHT AGAINST DUCT AND SUPPORT MEMBERS. (TYP.)

**2** M11 DUCT HANGING SUPPORT FOR RECTANGULAR DUCTS NTS



- P1000 UNISTRUT CHANNEL AT 6'-0" MAX. SPACING. (LENGTH AS REQ'D).
- SECURE EACH END TO METAL DECK ROOF W/ (2) #10 SMS OR CONC. FLOOR WITH 3/8" TITAN HD ANCHOR W/ 2-1/2" NOMINAL EMBEDMENT, (2) PER UNISTRUT (CC ESR-2713).
- INSULATION (OMIT WHEN NOT REQUIRED).
- INSULATION SHIELD (OMIT WHEN NOT REQUIRED).
- SECURE PIPING TO SUPPORT WITH UNISTRUT P1100 PIPE CLAMP.
- SEE PLAN FOR TYPE OF PIPING.

NOTE: WEIGHT IS LESS THAN 2 LBS. PER FOOT FOR BOTH PIPES COMBINED.

**3** M11 PIPE SUPPORT DETAIL (TYPICAL FOR HORIZONTAL) NTS



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PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-36a**  
**S&B Elementary**  
**02-116800**



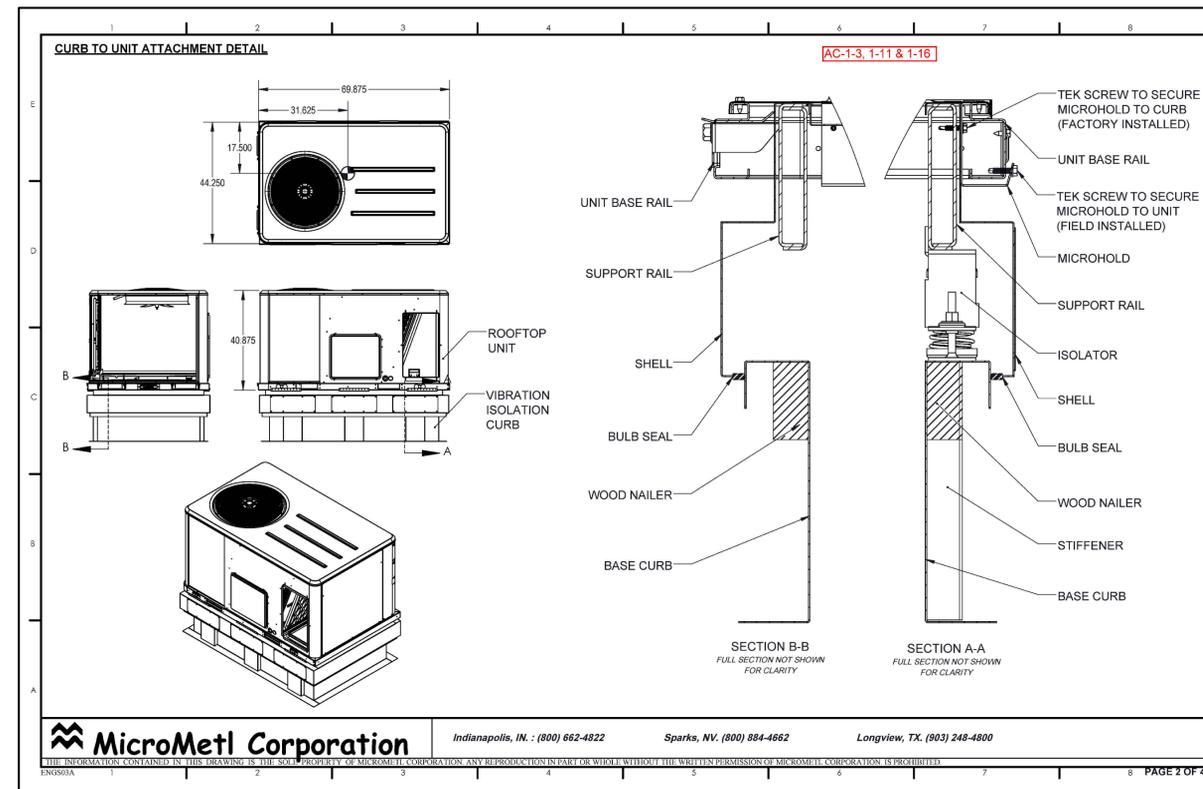
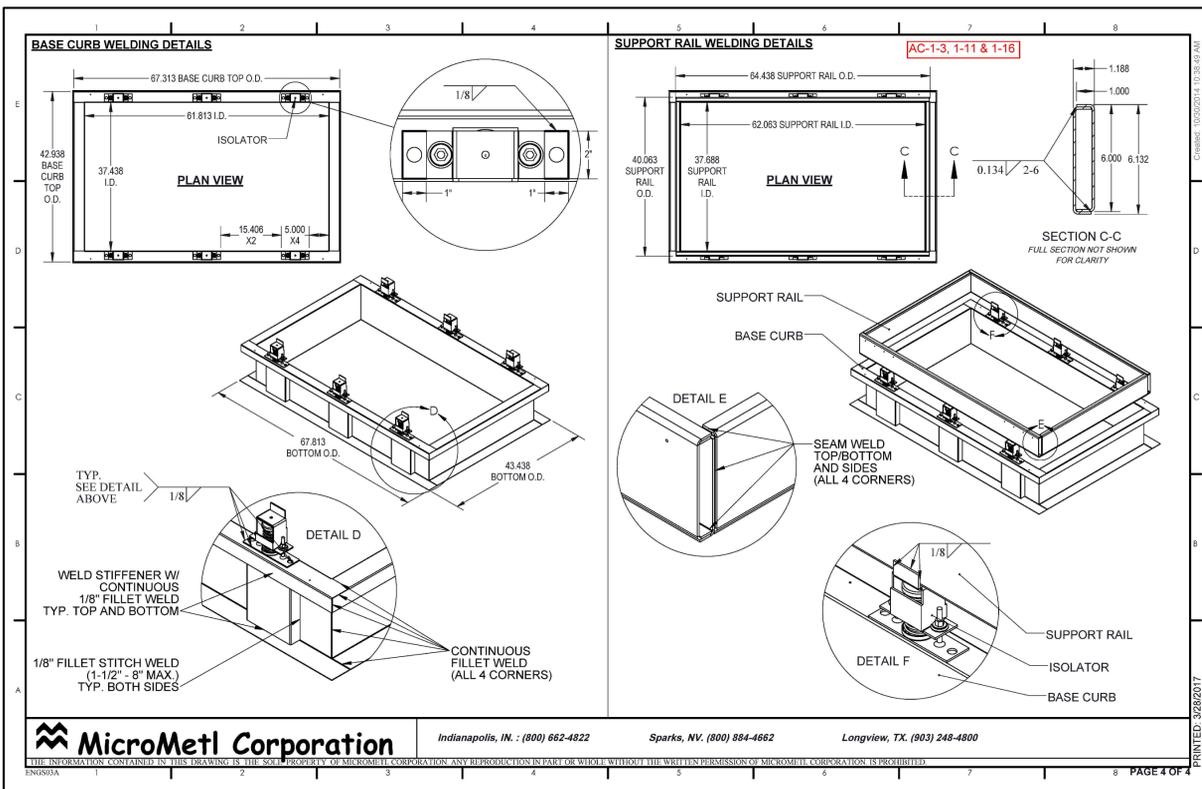
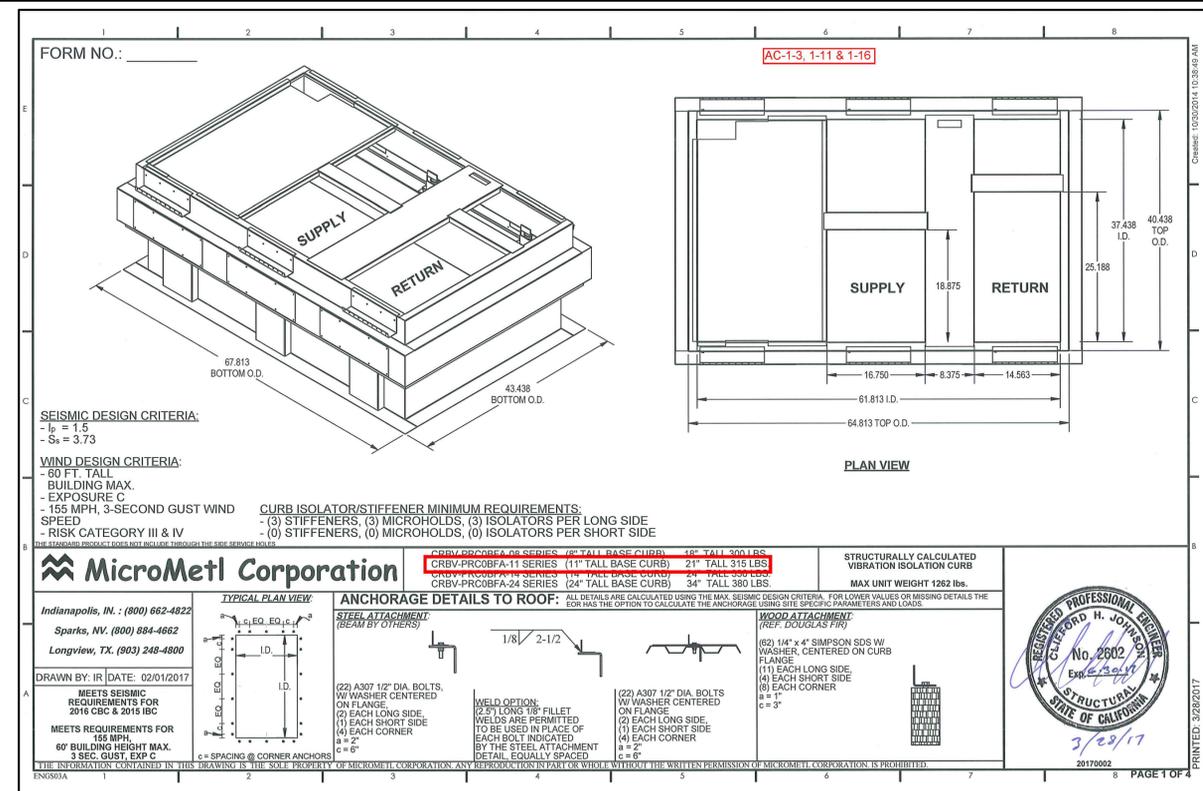
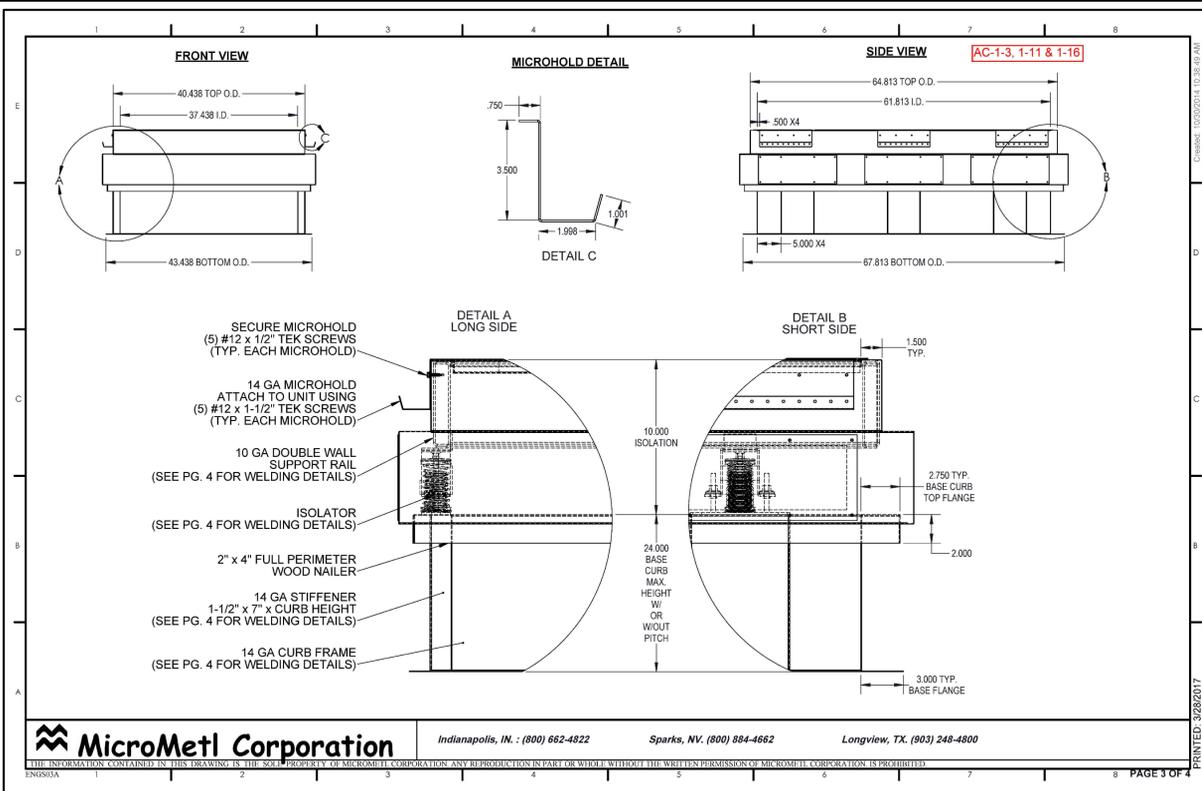
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PROJECT DEVELOPMENT	
DATE	ISSUED FOR

REVISIONS		
No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION	
PROJECT COORDINATOR	SHEET No.
JOHN SMITH	M11
PROJECT NO.	17-67
DATE	3.30.23
SCALE	NTS





TYPICAL MECHANICAL CURB DETAILS  
 AC-1-3, 1-11 & 1-16



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PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-37a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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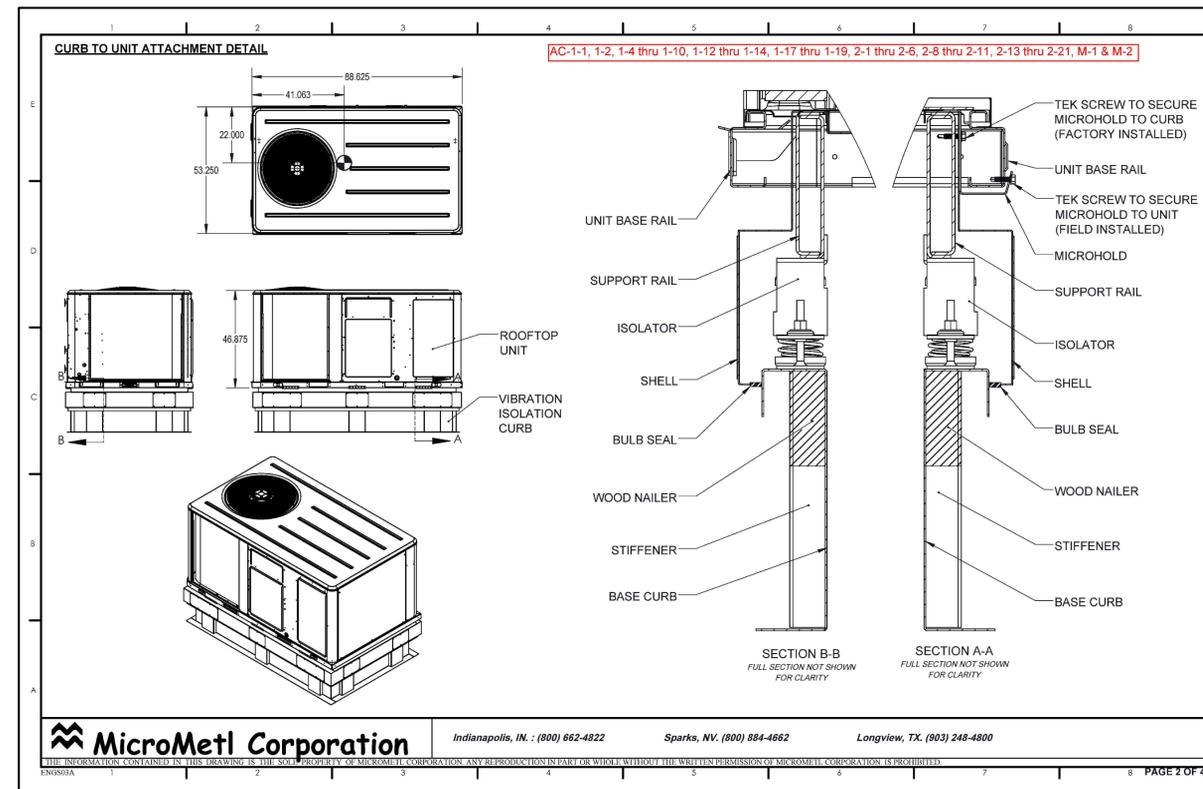
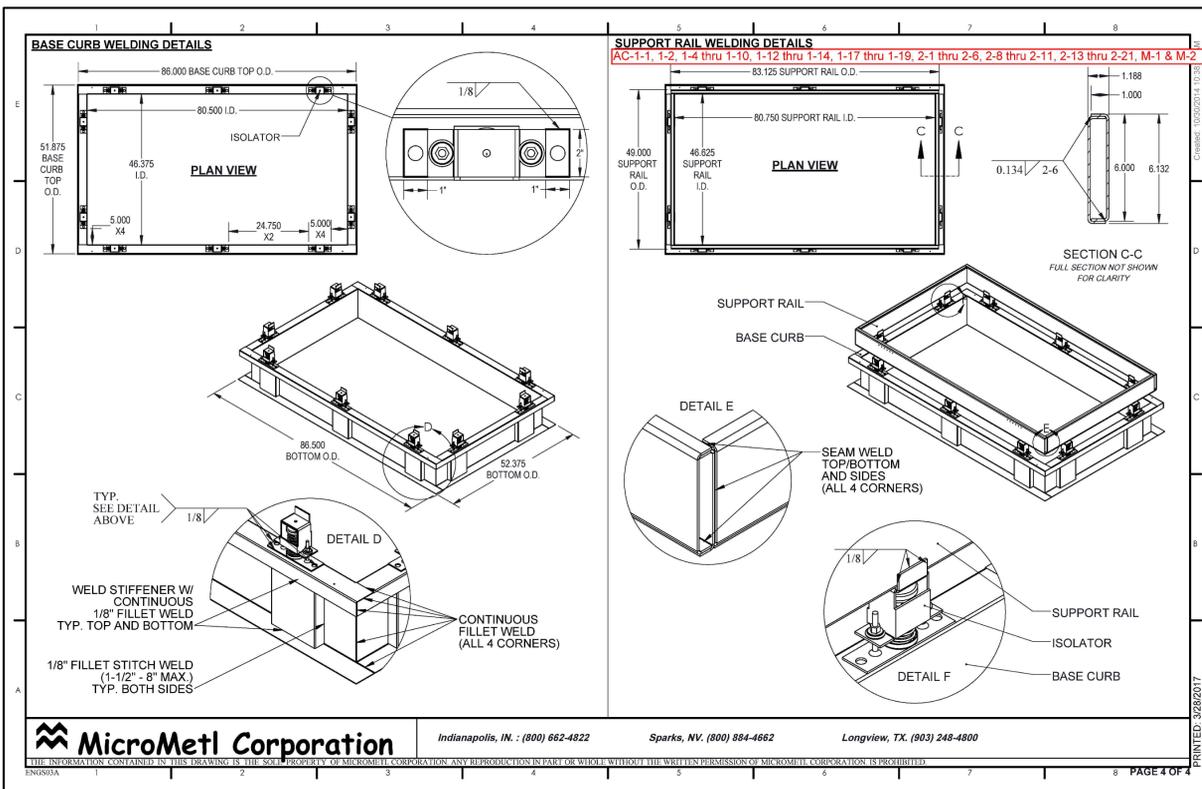
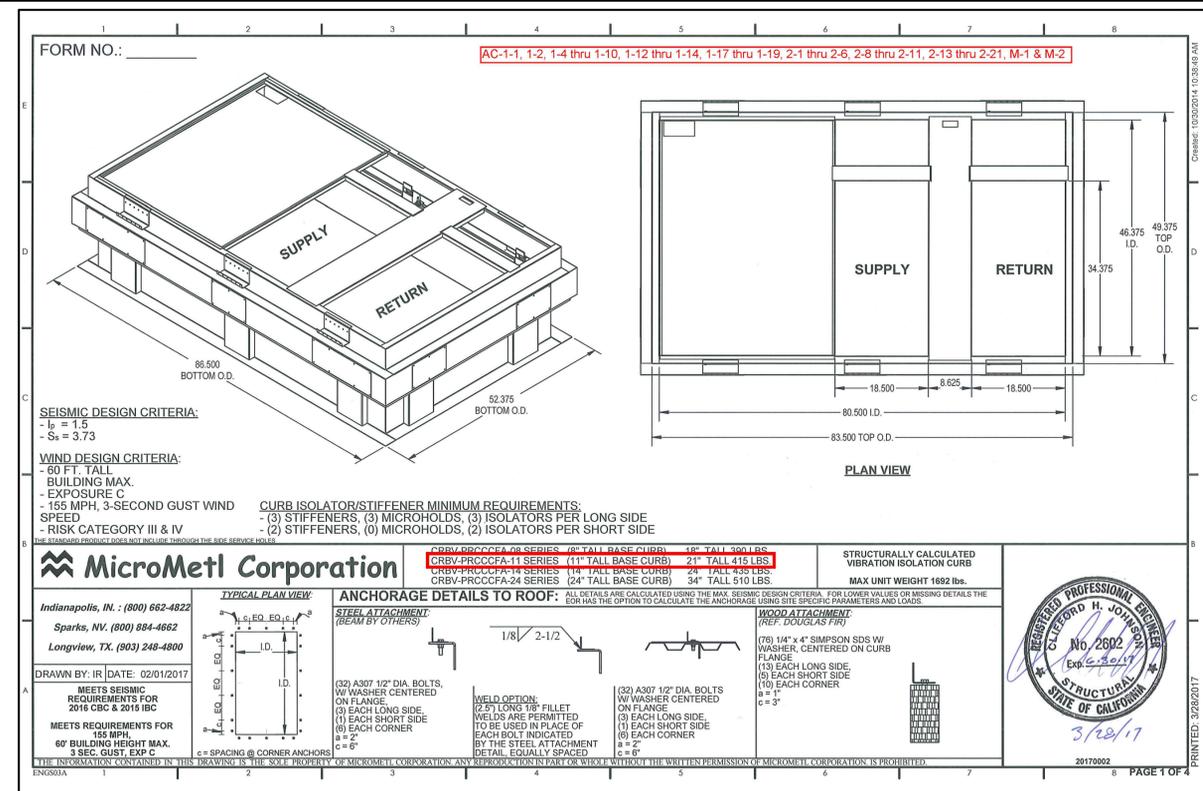
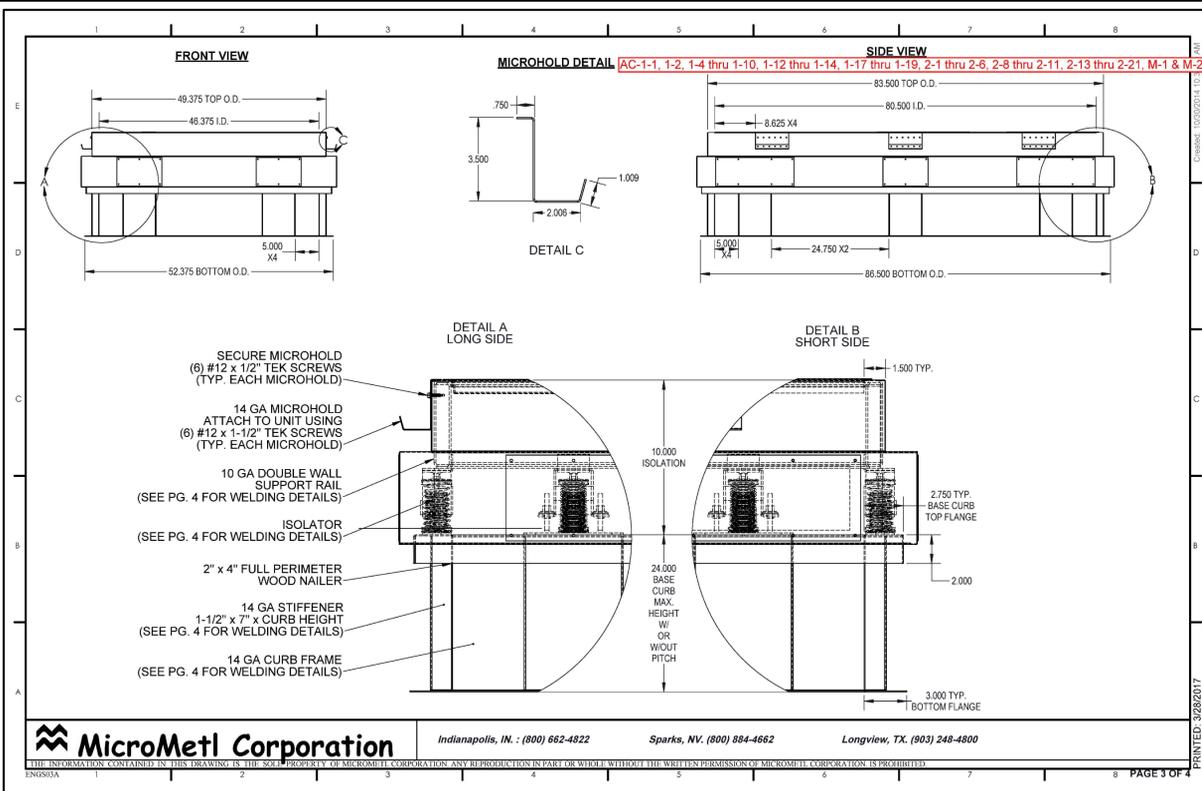
MECHANICAL DETAILS

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>M12</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE NTS	



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 job #: 18-1024



**TYPICAL MECHANICAL CURB DETAILS**  
 AC-1-1, 1-2, 1-4 THRU 1-10, 1-12 THRU 1-14, 1-17 THRU 1-19, 2-1 THRU 2-6, 2-8 THRU 2-11, 2-13 THRU 2-21, M-1 & M-2



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**PROJECT:**  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-38a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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**PROJECT DEVELOPMENT**

DATE	ISSUED FOR

**REVISIONS**

No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

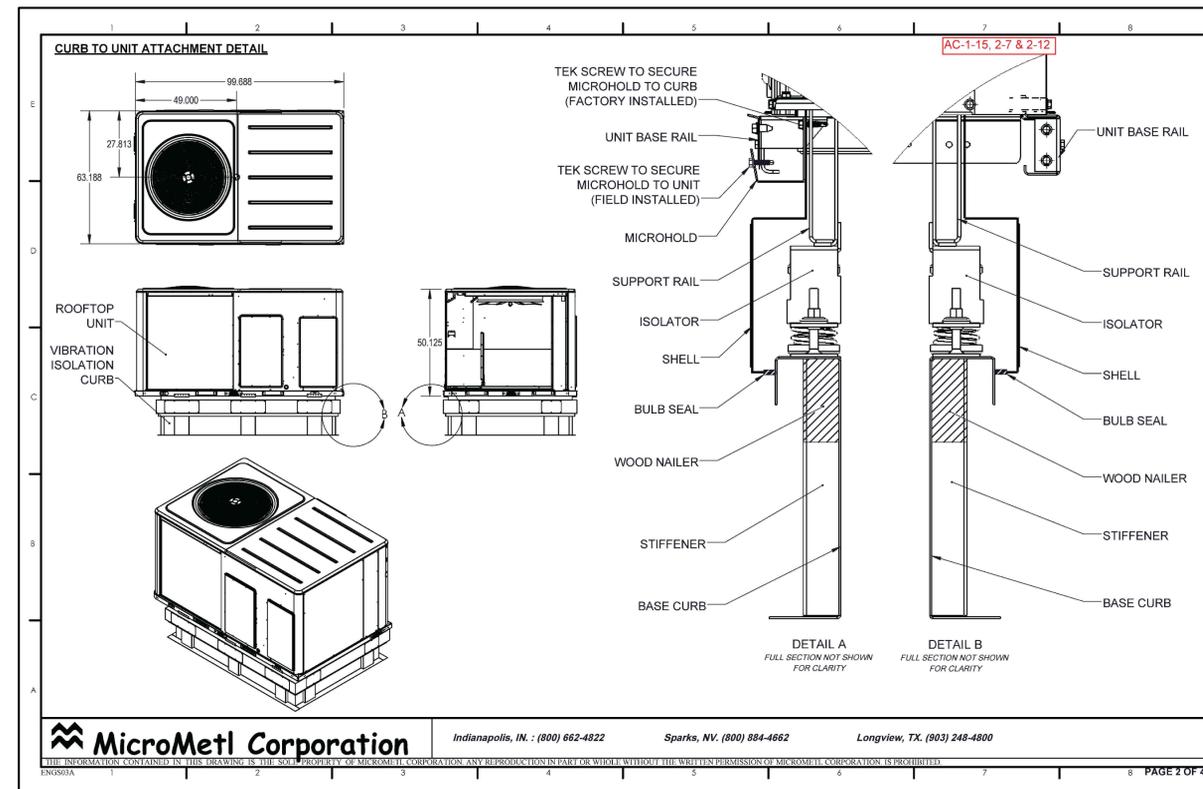
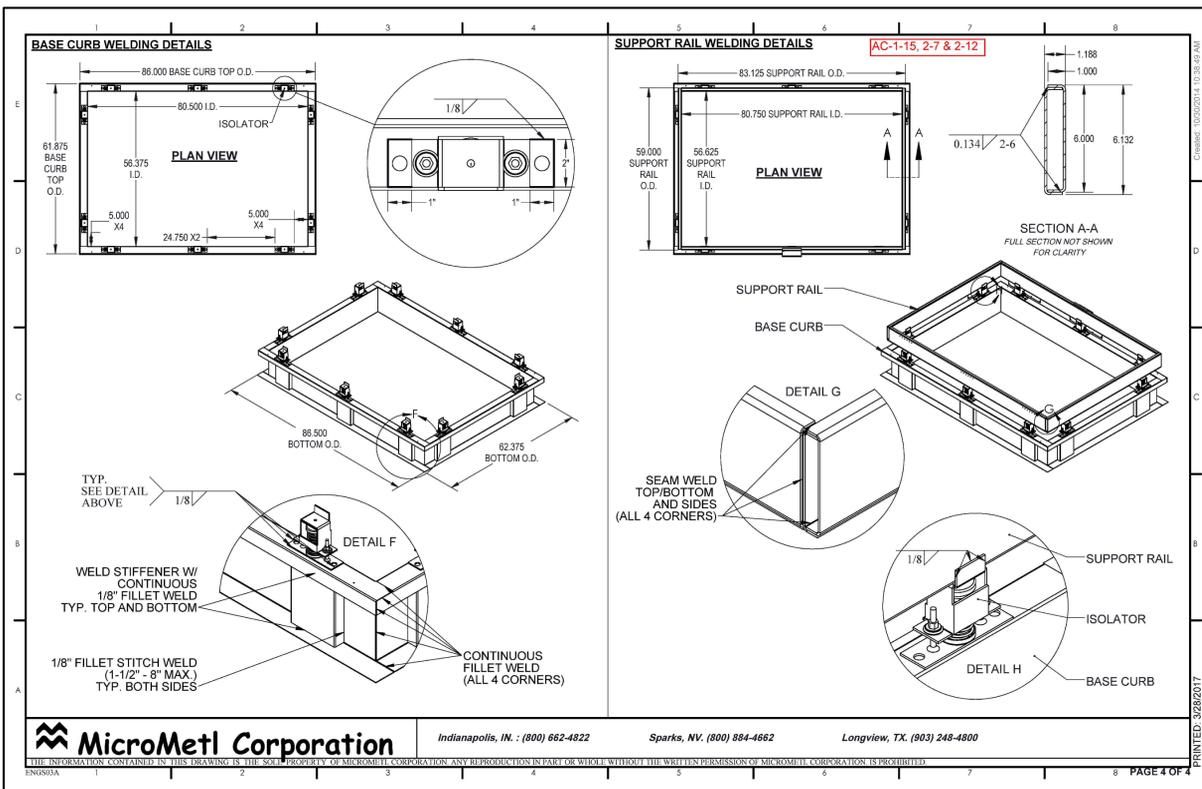
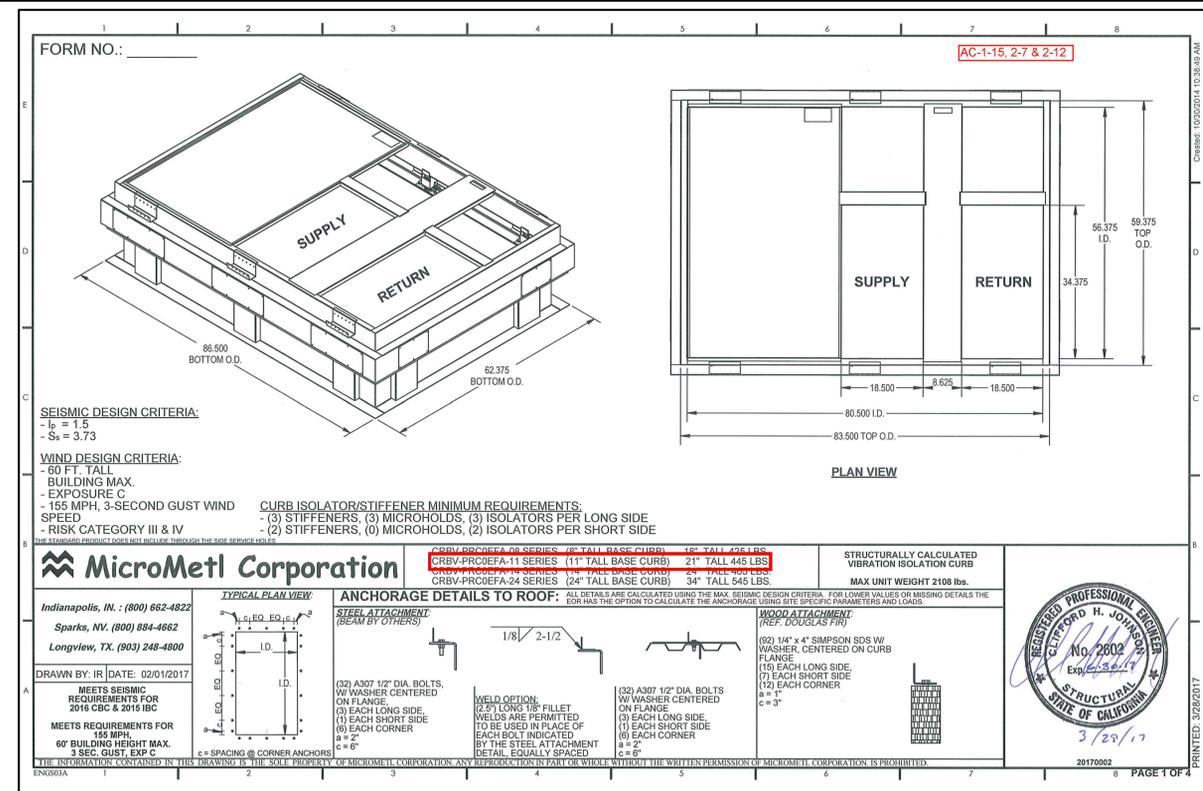
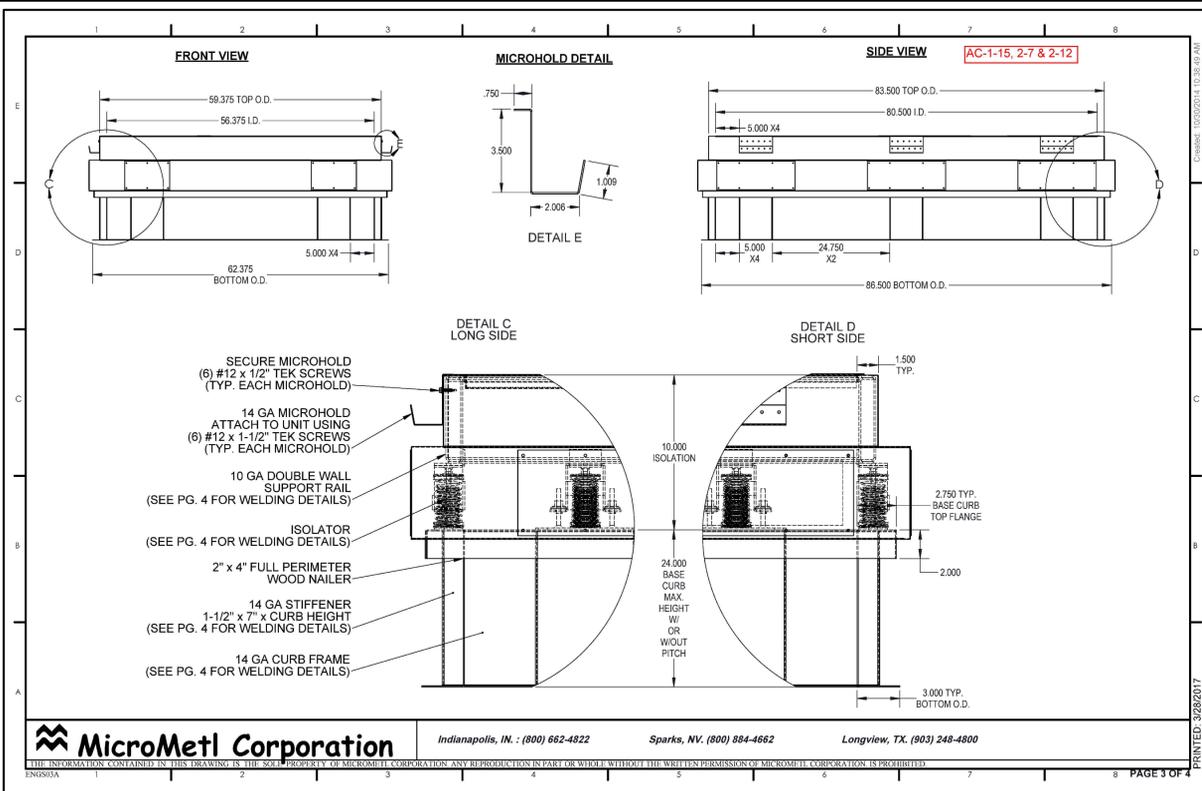
**SHEET DESCRIPTION**

**MECHANICAL DETAILS**

PROJECT COORDINATOR	SHEET No.
JOHN SMITH	M13
PROJECT NO.	17-67
DATE	3.30.23
SCALE	NTS



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**TYPICAL MECHANICAL CURB DETAILS**  
 AC-1-15, 2-7 & 2-12



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**PROJECT:**  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-39a**  
**S&B Elementary**  
**02-116800**



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**PROJECT DEVELOPMENT**

DATE	ISSUED FOR

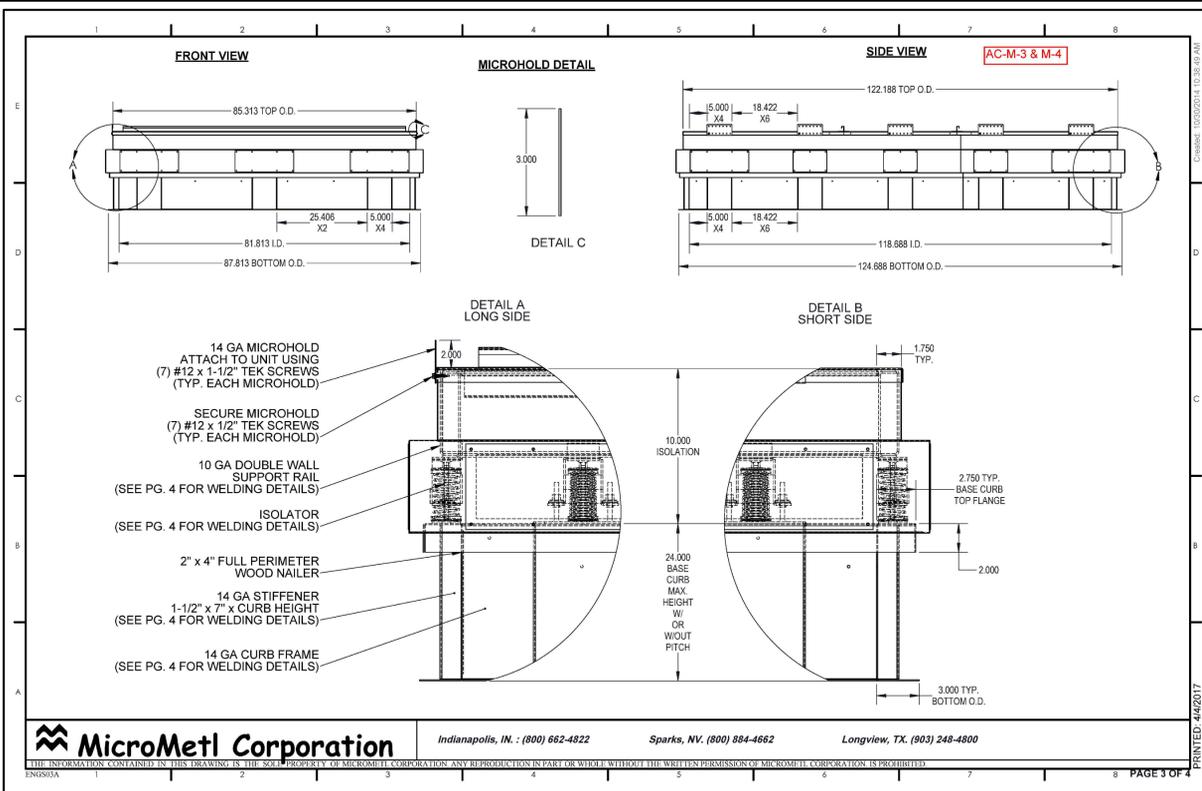
**REVISIONS**

No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

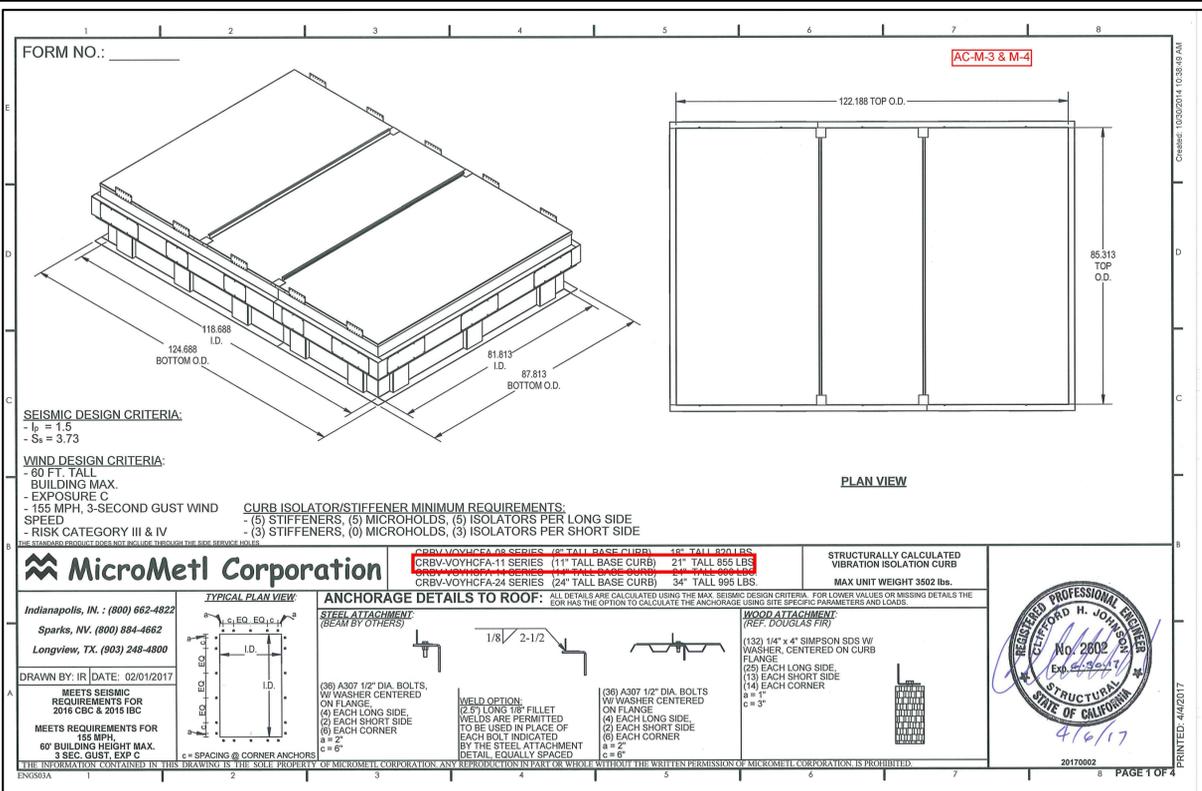
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**MECHANICAL DETAILS**

PROJECT COORDINATOR JOHN SMITH	SHEET No. M14
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE NTS	

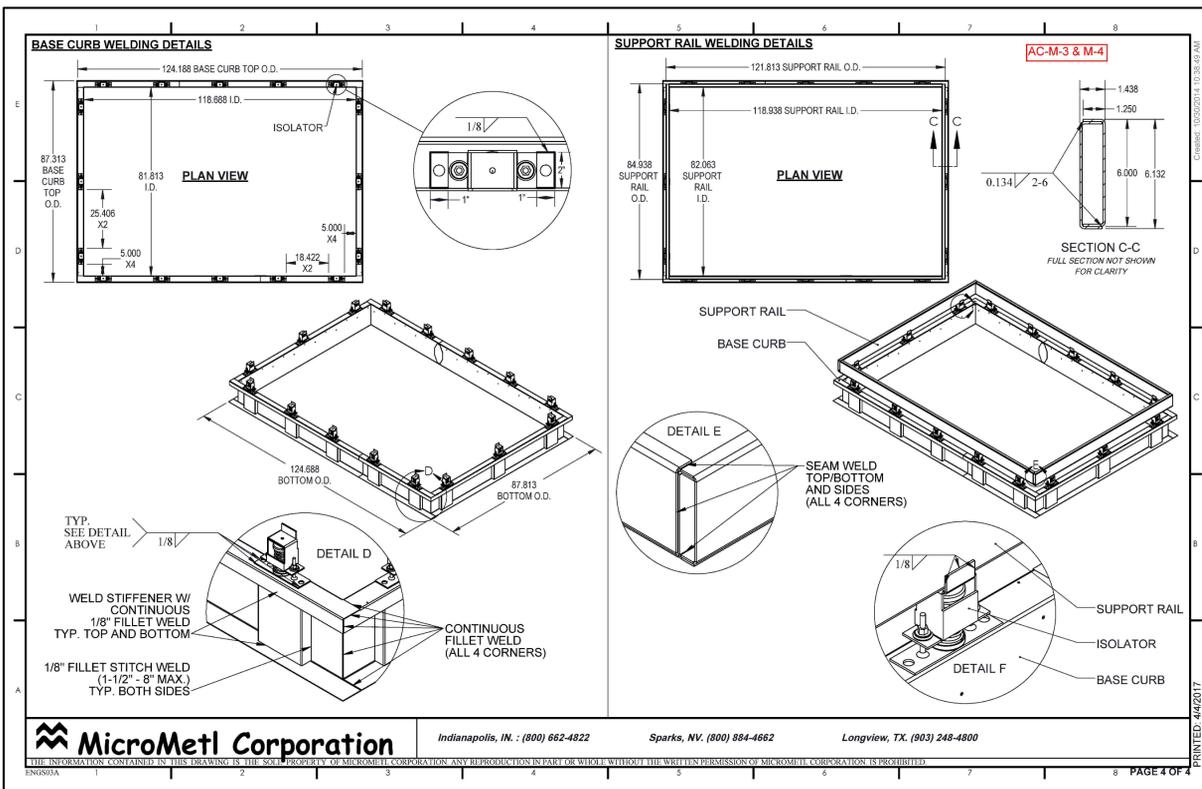
**REGISTERED PROFESSIONAL ENGINEER**  
**GREEN M. LENCIONI**  
 NO. 1901  
 REV. 8-27-11  
**LEAF ENGINEERS**  
 A PBK COMPANY  
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 job # 18-1024



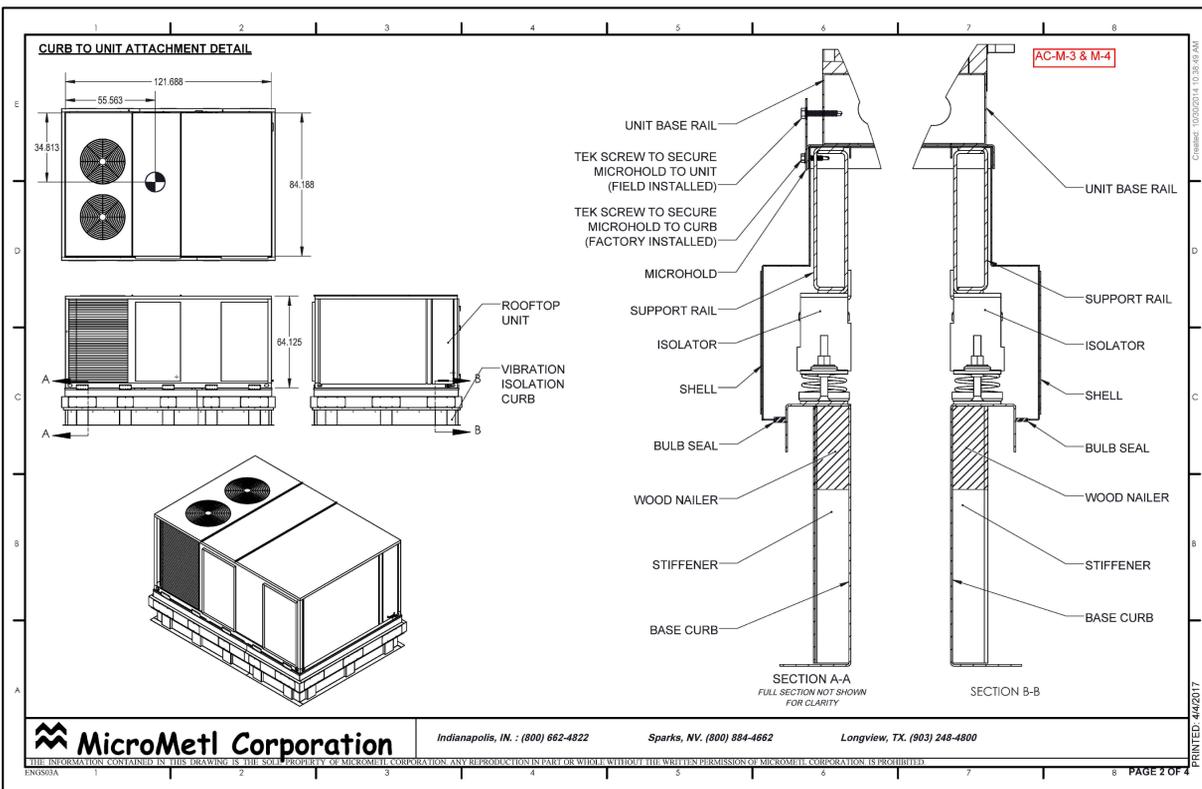
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# PROJECT: SHIELDS & BRAWLEY ELEMENTARY SCHOOL



**AD 3-40a  
S&B Elementary  
02-116800**



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PROJECT DEVELOPMENT

DATE	ISSUED FOR

REVISIONS

No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

## MECHANICAL DETAILS

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>M15</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE NTS	

### TYPICAL MECHANICAL CURB DETAILS AC-M-3 & M-4



**CALIFORNIA GREEN BUILDING STANDARDS**

THE FOLLOWING SHALL BE REQUIRED WHETHER OR NOT SPECIFICALLY SHOWN OR MENTIONED IN DRAWINGS AND/OR SPECIFICATIONS:

- **5.303.1 METERS:** SEPARATE SUBMETERS OR METERING DEVICES SHALL BE INSTALLED FOR USES DESCRIBED IN SECTIONS 5.303.1.1 AND 5.303.1.2.
- **5.303.1.1 NEW BUILDINGS OR ADDITIONS IN EXCESS OF 50,000 SQUARE FEET:**
  1. FOR EACH INDIVIDUAL LEASED, RENTED, OR OTHER TENANT SPACE WITHIN THE BUILDING PROJECTED TO CONSUME MORE THAN 100 GAL/DAY, INCLUDING, BUT NOT LIMITED TO, SPACES USED FOR LAUNDRY OR CLEANERS, RESTAURANT OR FOOD SERVICE, MEDICAL OR DENTAL OFFICE, LABORATORY, OR BEAUTY SALON OR BARBER SHOP.
  2. WHERE SEPARATE SUBMETERS FOR INDIVIDUAL BUILDING TENANTS ARE UNFEASIBLE, FOR WATER SUPPLIED TO THE FOLLOWING SUBSYSTEMS:
    - a. MAKE-UP WATER FOR COOLING TOWERS WHERE FLOW THROUGH IS GREATER THAN 500 GPM.
    - b. MAKE-UP WATER FOR EVAPORATIVE COOLERS GREATER THAN 6 GPM.
    - c. STEAM AND HOT-WATER BOILERS WITH ENERGY INPUT MORE THAN 500,000 BTUH/H.
- **5.303.1.2 EXCESS CONSUMPTION:** A SEPARATE SUBMETER OR METERING DEVICE SHALL BE PROVIDED FOR ANY TENANT WITHIN A NEW BUILDING OR WITHIN AN ADDITION THAT IS PROJECTED TO CONSUME MORE THAN 1,000 GAL/DAY.
- **5.303.2 RESERVED**
- **5.303.3 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS:** PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL COMPLY WITH THE FOLLOWING:
  - **5.303.3.1 WATER CLOSETS:** THE EFFECTIVE FLUSH VOLUME OF ALL WATER CLOSETS SHALL NOT EXCEED 1.28 GALLONS PER FLUSH. TANK-TYPE WATER CLOSETS SHALL BE CERTIFIED TO THE PERFORMANCE CRITERIA OF THE U.S. EPA WATERSENSE SPECIFICATION FOR TANK-TYPE TOILETS. NOTE: THE EFFECTIVE FLUSH VOLUME OF DUAL FLUSH TOILETS IS DEFINED AS THE COMPOSITE, AVERAGE FLUSH VOLUME OF TWO REDUCED FLUSHES AND ONE FULL FLUSH.
  - **5.303.3.2 URINALS:**
    - **5.303.3.2.1 WALL-MOUNTED URINALS:** THE EFFECTIVE FLUSH VOLUME OF WALL-MOUNTED URINALS SHALL NOT EXCEED 0.125 GALLONS PER FLUSH.
    - **5.303.3.2.2 FLOOR-MOUNTED URINALS:** THE EFFECTIVE FLUSH VOLUME OF FLOOR-MOUNTED URINALS SHALL NOT EXCEED 0.5 GALLONS PER FLUSH.
- **5.303.3.3 SHOWERHEADS:**
  - **5.303.3.3.1 SINGLE SHOWERHEAD:** SHOWERHEADS SHALL HAVE A MAXIMUM FLOW RATE OF NOT MORE THAN 2.0 GALLONS PER MINUTE AT 80 PSI. SHOWERHEADS SHALL BE CERTIFIED TO THE PERFORMANCE CRITERIA OF THE U.S. EPA WATERSENSE SPECIFICATION FOR SHOWERHEADS.
  - **5.303.3.3.2 MULTIPLE SHOWERHEADS SERVING ONE SHOWER:** WHEN A SHOWER IS SERVED BY MORE THAN ONE SHOWERHEAD, THE COMBINED FLOW RATE OF ALL SHOWERHEADS AND/OR SHOWER OUTLETS CONTROLLED BY A SINGLE VALVE SHALL NOT EXCEED 2.0 GALLONS PER MINUTE AT 80 PSI, OR THE SHOWER SHALL BE DESIGNED TO ALLOW ONLY ONE SHOWER OUTLET TO BE IN OPERATION AT A TIME. NOTE: A HAND-HELD SHOWER SHALL BE CONSIDERED A SHOWERHEAD.
  - **5.303.3.4 FAUCETS AND FOUNTAINS:**
    - **5.303.3.4.1 NONRESIDENTIAL LAVATORY FAUCETS:** LAVATORY FAUCETS SHALL HAVE A MAXIMUM FLOW RATE OF NOT MORE THAN 0.5 GALLONS PER MINUTE AT 60 PSI.
    - **5.303.3.4.2 KITCHEN FAUCETS:** KITCHEN FAUCETS SHALL HAVE A MAXIMUM FLOW RATE OF NOT MORE THAN 1.8 GALLONS PER MINUTE AT 60 PSI. KITCHEN FAUCETS MAY TEMPORARILY INCREASE FLOW ABOVE THE MAXIMUM RATE, BUT NOT TO EXCEED 2.2 GALLONS PER MINUTE AT 60 PSI, AND MUST DEFAULT TO A MAXIMUM FLOW RATE OF 1.8 GALLONS PER MINUTE AT 60 PSI.
    - **5.303.3.4.3 WASH FOUNTAINS:** WASH FOUNTAINS SHALL HAVE A MAXIMUM FLOW RATE OF NOT MORE THAN 1.8 GALLONS PER MINUTE/20 [RIM SPACE (INCHES) AT 60 PSI].
    - **5.303.3.4.4 METERING FAUCETS:** METERING FAUCETS SHALL NOT DELIVER MORE THAN 0.20 GALLONS PER CYCLE.
    - **5.303.3.4.5 METERING FAUCETS FOR WASH FOUNTAINS:** METERING FAUCETS FOR WASH FOUNTAINS SHALL HAVE A MAXIMUM FLOW RATE OF NOT MORE THAN 0.20 GALLONS PER CYCLE/20 [RIM SPACE (INCHES) AT 60 PSI]. NOTE: WHERE COMPLYING FAUCETS ARE UNAVAILABLE, AERATORS OR OTHER MEANS MAY BE USED TO ACHIEVE REDUCTION.

**MEP COMPONENT ANCHORAGE NOTE**

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (e.g. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRIC, GAS OR WATER.
3. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.

1. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
2. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUND PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

**PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE**

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.5.6, 13.6.7, 13.6.8, AND 2016 CBC, SECTION 1616A.1.23, 1616A.1.24, 1616A.1.25, AND 1616A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO START OF AND DURING THE HANGING AND BRACING OF DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY ADEQUACY OF THE STRUCTURE SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP□MD□PP□E□ OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP□MD□PP□E□ OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #).

MP□MD□PP□ OPTION 3: SHALL COMPLY WITH THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION, INCLUDING ANY ADDENDA. FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION, ARE DETAILED ON APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR THE APPLICABLE SEISMIC HAZARD LEVEL 'A' AND CONNECTION LEVEL '1' OR '2' FOR THE PROJECT AND CONDITIONS.

**PLUMBING GENERAL NOTES**

1. ALL BRACING OF PIPING SHALL BE INSTALLED IN ACCORDANCE WITH DETAILS 1 & 8/ P11A, SMACNA GUIDELINES AND 2016 C.B.C AS APPROVED BY DSA.
2. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWING OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT, MECHANICAL ENGINEER AND DSA FIELD ENGINEER.
3. A COPY OF THE GUIDELINES PUBLISHED BY SMACNA AND APPROVED BY DSA SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES.
4. SUPPORT AND BRACING OF ALL PIPING SHALL BE IN ACCORDANCE WITH 2016 C.B.C.
5. DRAINAGE PIPING SMALLER THAN 4" SHALL SLOPE 1/4" PER FOOT.
6. FOR PLUMBING FIXTURE MOUNTING HEIGHTS AND LOCATIONS, REFER TO ARCHITECTURAL DRAWINGS.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL PIPE ROUTING WITH WORK OF OTHER TRADES AND MAKE ANY OFFSETS AS REQUIRED TO AVOID CONFLICT WITH DUCTWORK, LIGHT FIXTURES, SKYLIGHTS, ETC.
8. PLUMBING CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR ALL GAS AND CONDENSATE DRAIN CONNECTIONS TO MECHANICAL EQUIPMENT.
9. ALL PIPE, PIPE OR PLUMBING FITTING OR FIXTURE, SOLDER, OR FLUX SHALL BE LEAD FREE THAT PROVIDES WATER FOR HUMAN CONSUMPTION PER CALIFORNIA ASSEMBLY BILL 1953.

**PLUMBING SHEET INDEX**

**PLUMBING DRAWINGS**

- P0A PLUMBING LEGEND, INDEX AND NOTES
- P0B PLUMBING SITE PLAN
- P1 WATER BOOSTER PUMP PLAN
- P2 PLUMBING FLOOR PLAN – MULTI-PURPOSE BUILDING
- P3 1ST FLOOR PLUMBING PLAN EAST SIDE – MAIN BUILDING
- P4 1ST FLOOR PLUMBING PLAN WEST SIDE – MAIN BUILDING
- P5 2ND FLOOR PLUMBING PLAN EAST SIDE – MAIN BUILDING
- P6 2ND FLOOR PLUMBING PLAN WEST SIDE – MAIN BUILDING
- P7 ENLARGED PLUMBING FLOOR PLANS – MAIN BUILDING
- P8 ENLARGED PLUMBING FLOOR PLANS – MAIN BUILDING
- P9 ENLARGED PLUMBING FLOOR PLANS – MAIN BLDG. & MULTI-PURPOSE
- P10 ENLARGED PLUMBING FLOOR PLANS – MAIN BLDG. & MULTI-PURPOSE
- P11 PLUMBING DETAILS
- P11A PLUMBING DETAILS
- P12 PLUMBING SCHEDULES

**PLUMBING LEGEND**

SYMBOL	ITEM	ABBR.
	FIXTURE DESIGNATION UNIT ABBREVIATION NUMBER	
	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
	DOMESTIC COLD WATER	CW
	DOMESTIC HOT WATER	HW
	DOMESTIC HW RETURN	HWR
	EXISTING PIPING	
	POINT OF CONNECTION	POC
	CONDENSATE DRAIN	
	SHUT-OFF VALVE IN BOX	SOV
	PIPING RISE	
	PIPING DROP	
	SOIL OR WASTE	S OR W
	VENT	V
	VENT THRU ROOF	VTR
	FLOOR CLEANOUT	FCO
	CLEANOUT TO GRADE	COTG
	WALL CLEANOUT	WCO
	HOSE BIBB	HB
	ROOF DRAIN	RD
	OVERFLOW DRAIN	OD
	DOWN SPOUT	DS
	UNDERGROUND	UG
	TRAP PRIMER	TP
	STORM DRAIN	SD
	(E) EXISTING	EXIST.
	(N) NEW	NEW
	UNDERFLOOR	UF
	OVERHEAD	OH
	RELIEF	
	DRAIN	
	CONDENSATE DRAIN CLEAN OUT	CO
	SECONDARY CONDENSATE DRAIN	
	FURNACE CONDENSATE	
	GAS SHUT OFF VALVE	GSOV
	CONDENSATE DRAIN TRAP	CDT
	LIQUIFIED PETROLEUM GAS	LPG
	NATURAL GAS	G
	FIRE SPRINKLER RISER	FSR
	FIRE SPRINKLER LINE	FSL
	KITCHEN EQUIPMENT CONTRACTOR	K.E.C.
	GREASY WASTE	GW
	FILTERED COLD WATER	FCW



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PROJECT:

**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-42a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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**PROJECT DEVELOPMENT**

DATE	ISSUED FOR

**REVISIONS**

No.	DATE	DESCRIPTION
Δ	5.19.23	ADDENDUM 3

**SHEET DESCRIPTION**

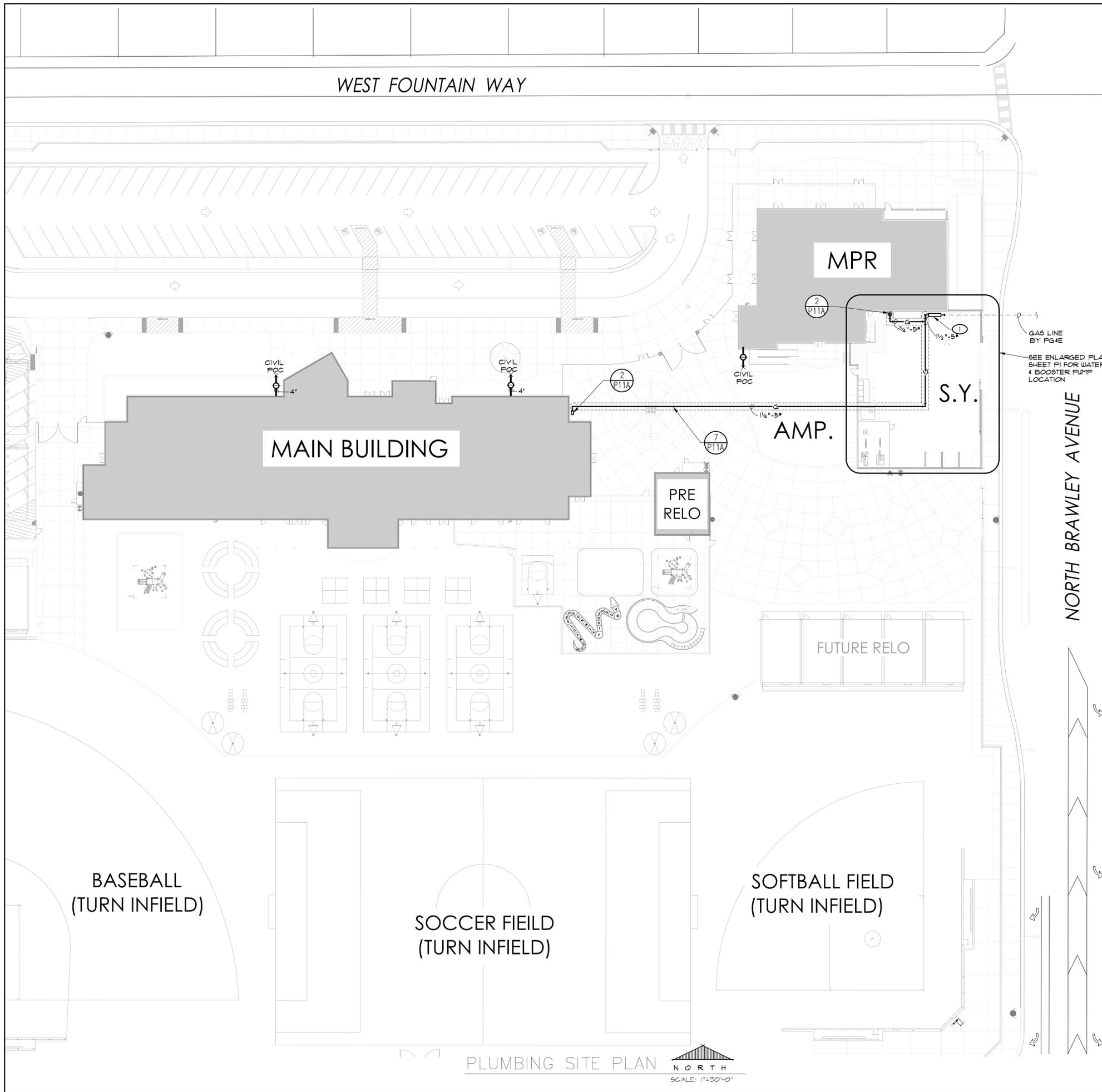
**PLUMBING LEGEND, INDEX AND NOTES**

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	POA
DATE 3.30.23	
SCALE NTS	



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job #: 18-1024



KEYNOTES

① GAS METER AND SERVICE PIPING BY FG4E. CONTRACTOR SHALL ARRANGE FOR INSTALLATION OF METER AND SERVICE AND OWNER SHALL PAY ALL COSTS. TOTAL DEMAND 5135 MBH/ 4668 CFH.



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PROJECT:  
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**AD 3-43a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

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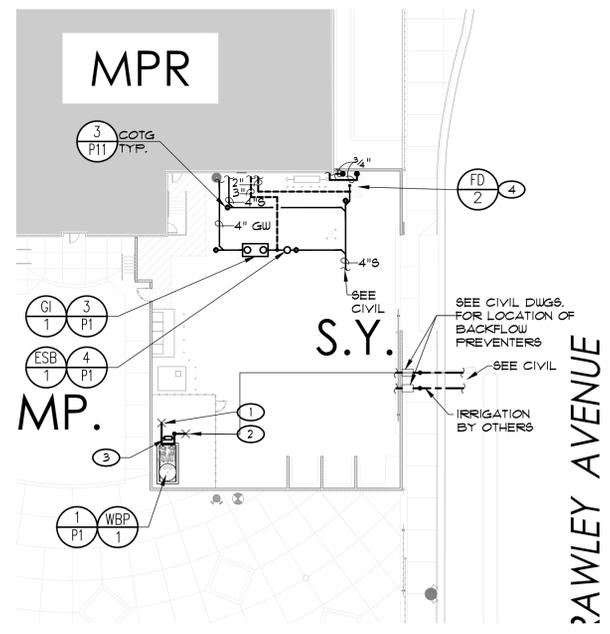
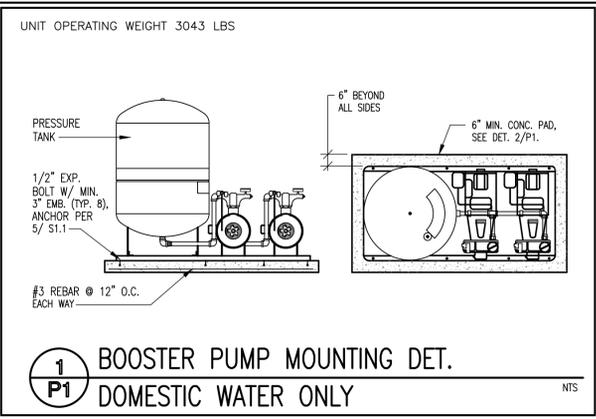
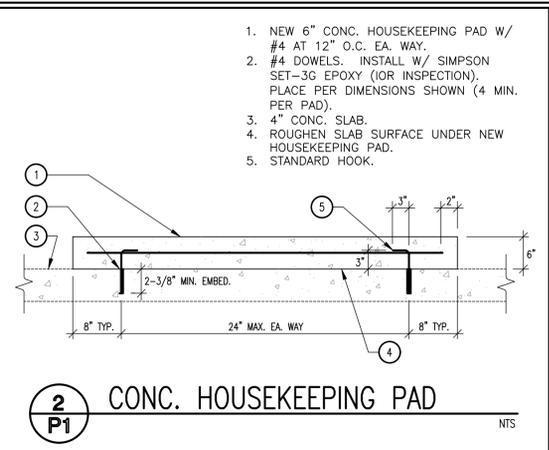
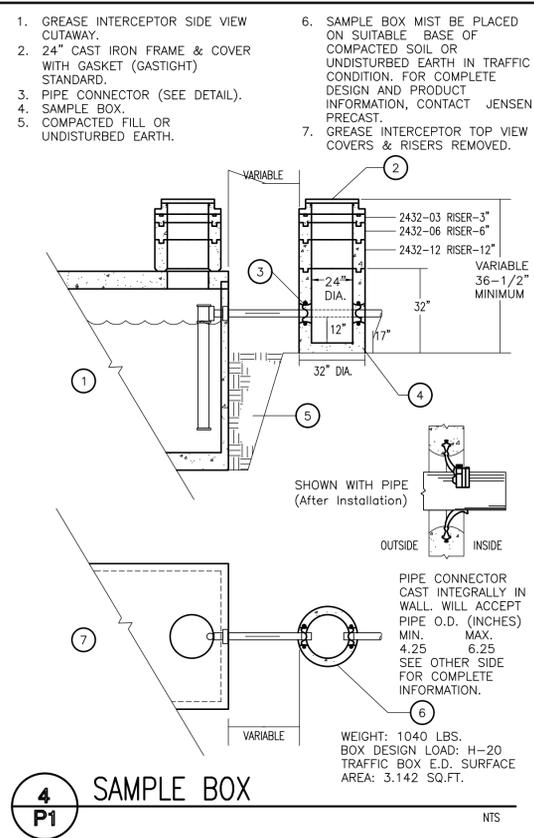
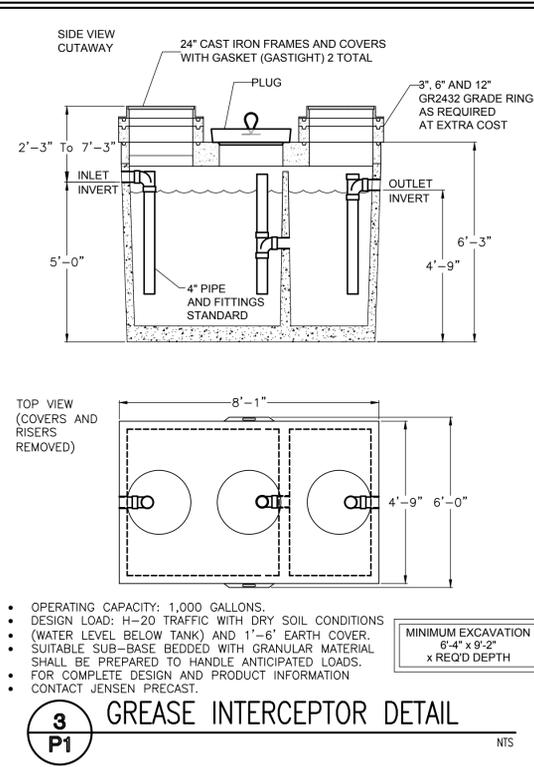
No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION  
**PLUMBING SITE PLAN**

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>POB</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE 1"=30'-0"	

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 job #: 18-1024

PLUMBING SITE PLAN  
 NORTH  
 SCALE: 1"=30'-0"



WATER BOOSTER PUMP  
SCALE: 1"=20'-0"

KEYNOTES

- ① 4" COLD WATER INLET TO WBP-1. SEE CIVIL DRAWING C5.1 FOR CONTINUATION.
- ② 4" COLD WATER FROM WBP-1 TO SITE. SEE CIVIL DRAWING C5.1 FOR CONTINUATION.
- ③ 4" BUTTERFLY AND CHECK VALVE FOR BYPASS OF WATER BOOSTER SYSTEM.
- ④ MOUNT CAN WASH CONTROL PANEL EXPOSED ON BLOCK WALL AT 48" AFF TO CONTROL VALVE HANDLES. ROUTE 1/2" CW 1/2" HU & 1/2" TU EXPOSED ON WALL TO BELOW GRADE. 1/2" TU SHALL CONNECT TO MAIN 2" CW LINE BELOW GRADE. 1/2" CW SHALL EXTEND BELOW GRADE OVER TO BUILDING AND RISE UP INSIDE WALL AS SHOWN. ALL PIPING SHALL BE INSULATED PER SPECIFICATIONS.



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PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-44a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

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No.	DATE	DESCRIPTION
△ 1	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

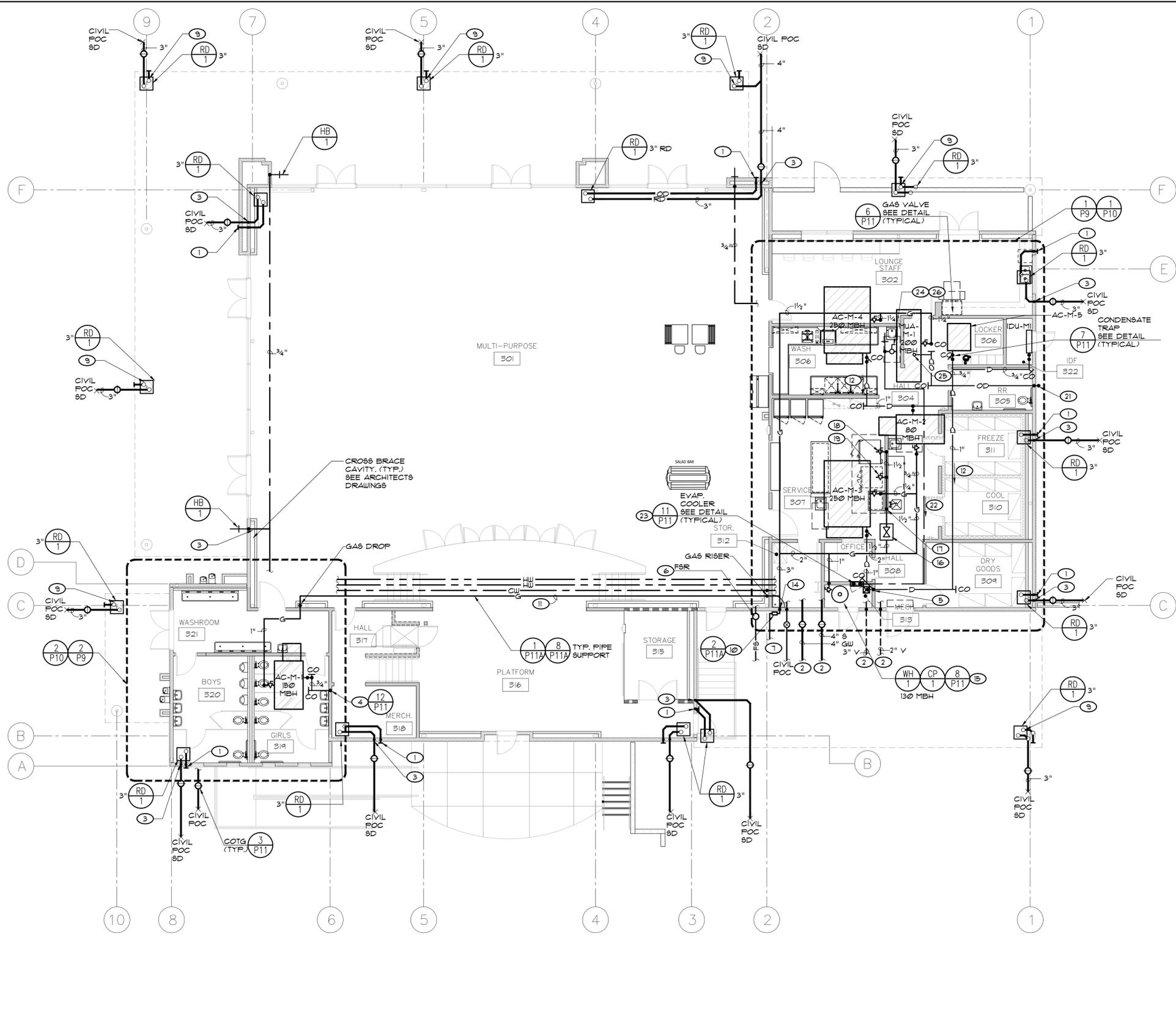
WATER BOOSTER PUMP PLAN

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P1</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE	

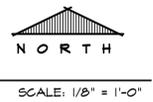


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PLUMBING FLOOR PLAN



KEYNOTES

- 1 DAYLIGHT 3" OVERFLOW DRAIN LINE UP HIGH THRU EXTERIOR WALL. PROVIDE S.S. COVER ON OUTLET PER ARCH. DUG'S. SEE DETAIL 147/ A&B.
- 2 SEE SHEET P1 FOR CONTINUATION.
- 3 ROUTE PIPING DOWN IN EXTERIOR WALL. DO NOT ROUTE ANY PIPING DOWN IN CROSS BRACE CAVITY.
- 4 ROUTE 3/4" CONDENSATE DRAIN FROM ROOFTOP MECHANICAL UNIT DOWN IN WALL ELBOW OUT 4 CONNECT TO TAIL PIECE AT LAVATORY.
- 5 ROUTE 1-1/4" CONDENSATE DRAIN FROM ROOFTOP MECHANICAL UNITS DOWN IN WALL ELBOW OUT, TURN DOWN 4 SPILL INTO FLOOR SINK 4 TERMINATE THRU AIR BREAK.
- 6 SIZING AND ROUTING OF FIRE SPRINKLER LINES IN BUILDING AND PLACEMENT OF SPRINKLER HEADS TO BE DESIGNED BY THE FIRE PROTECTION CONTRACTOR/ENGINEER. SEE FIRE PROTECTION PLANS.
- 7 SEE GAS SITE PLAN SHEET P0 FOR CONTINUATION. 3/4"-5" GAS LINE SIZED PER 2016 C.P.C. TABLE 1216.2(6) AT 100 FOOT COLUMN. TOTAL DEMAND 1460 MBH/ 1321 CFH.
- 8 NOT USED.
- 9 3" RD AND OD DRAIN DOWN IN COLUMN CONNECT RD WITH SD PIPING BELOW GRADE. OFFSET PIPING ABOVE COLUMN FOOTING BELOW GRADE. DAYLIGHT OD LINE THROUGH COLUMN 6" ABOVE FINISHED GRADE 4 1/4" BEYOND COLUMN FINISH. PROVIDE S.S. COVER ON OUTLET PER ARCH. DUG'S. SEE DETAIL 147/ A&B.
- 10 AMERICAN METER #183-C, 3/4" INLET 4 OUTLET W/ 3/8" ORIFICE GAS PRESSURE REGULATOR MOUNT ABOVE GRADE IN PROTECTIVE CASE. REGULATE 5" GAS TO 1" W.C. PIPING IN BLDG. SIZED PER 2016 C.P.C. TABLE 1216.2(1) AT 150 FOOT COLUMN. TOTAL DEMAND 1460 MBH/ 1321 CFH.
- 11 ROUTE GAS HIGH OVERHEAD IN ARCHITECTURAL SOFFIT.
- 12 SLOPE PIPING 1/8" PER FOOT IN DIRECTION INDICATED.
- 13 NOT USED.
- 14 ROUTE 3" GAS LINE RISE UP IN WALL TO BELOW ROOF.
- 15 ROUTE 1" GAS DOWN IN WALL CONNECT TO WATER HEATER WITH GAS SHUT OFF VALVE.
- 16 1-1/2" GAS SOLENOID VALVE FOR CONNECTION TO EXHAUST HOOD FIRE EXTINGUISHING SYSTEM. VALVE FURNISHED BY FIRE PROTECTION CONTRACTOR. INSTALLED BY PLUMBING CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR. MOUNT VALVE ABOVE 14"x14" CEILING ACCESS PANEL. LABEL ACCESS PANEL TO READ "GAS SOLENOID VALVE". LETTERS SHALL BE MINIMUM 1" HIGH. TOTAL 400 MBH/ 364 CFH.
- 17 ROUTE 2" GAS DOWN EXPOSED ON WALL TO 12" MINIMUM ABOVE FLOOR. PROVIDE 4" DIRT LEG AND EXTEND 2" HEADER BEHIND COOKING EQUIPMENT.
- 18 STUB (2) 3/4" GAS VALVE WITH "DORMONT" CERTIFIED FLEXIBLE QUICK DISCONNECT FOR COMBI OVEN (K.E. #2) 85 MBH EACH.
- 19 STUB 1/4" GAS VALVE WITH "DORMONT" CERTIFIED FLEXIBLE QUICK DISCONNECT FOR DOUBLE CONVECTION OVEN (K.E. #2) 230 MBH.
- 20 NOT USED.
- 21 1/2" OVERFLOW DRAIN FROM COOLER SECTION. DROP THRU ROOF AND RUN DOWN IN WALL TO FLOOR SINK. TERMINATE WITH AIR BREAK.
- 22 SLOPE 1/16" PER FOOT BACK TO DROP TO EVAP COOLER COLD WATER SUPPLY AND WINTER DRAIN DOWN VALVE BOX.
- 23 MOUNT EVAP COOLER COLD WATER SUPPLY AND WINTER DRAIN VALVE BOX IN WALL. ANCHOR WITH 3/8" X 3" LONG BOLTS (4) REQUIRED. MOUNT AT 4'-0" AFF.
- 24 SET FLOAT IN COOLER SECTION TO AVOID OVERFLOWING AN WASTING OF WATER.
- 25 1/2" BALL VALVE COLD WATER SUPPLY TO MUA COOLER. SET FLOAT IN COOLER SECTION TO AVOID OVERFLOWING AND WASTING OF WATER.
- 26 HOSE BIBB MOUNTED ON ROOF.

WALL LEGEND

----- 1 HR. RATED WALL



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PROJECT:  
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**AD 3-45a**  
**S&B Elementary**  
**02-116800**

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PROJECT DEVELOPMENT

DATE	ISSUED FOR

REVISIONS

No.	DATE	DESCRIPTION
△ 1	5.19.23	ADDENDUM 3

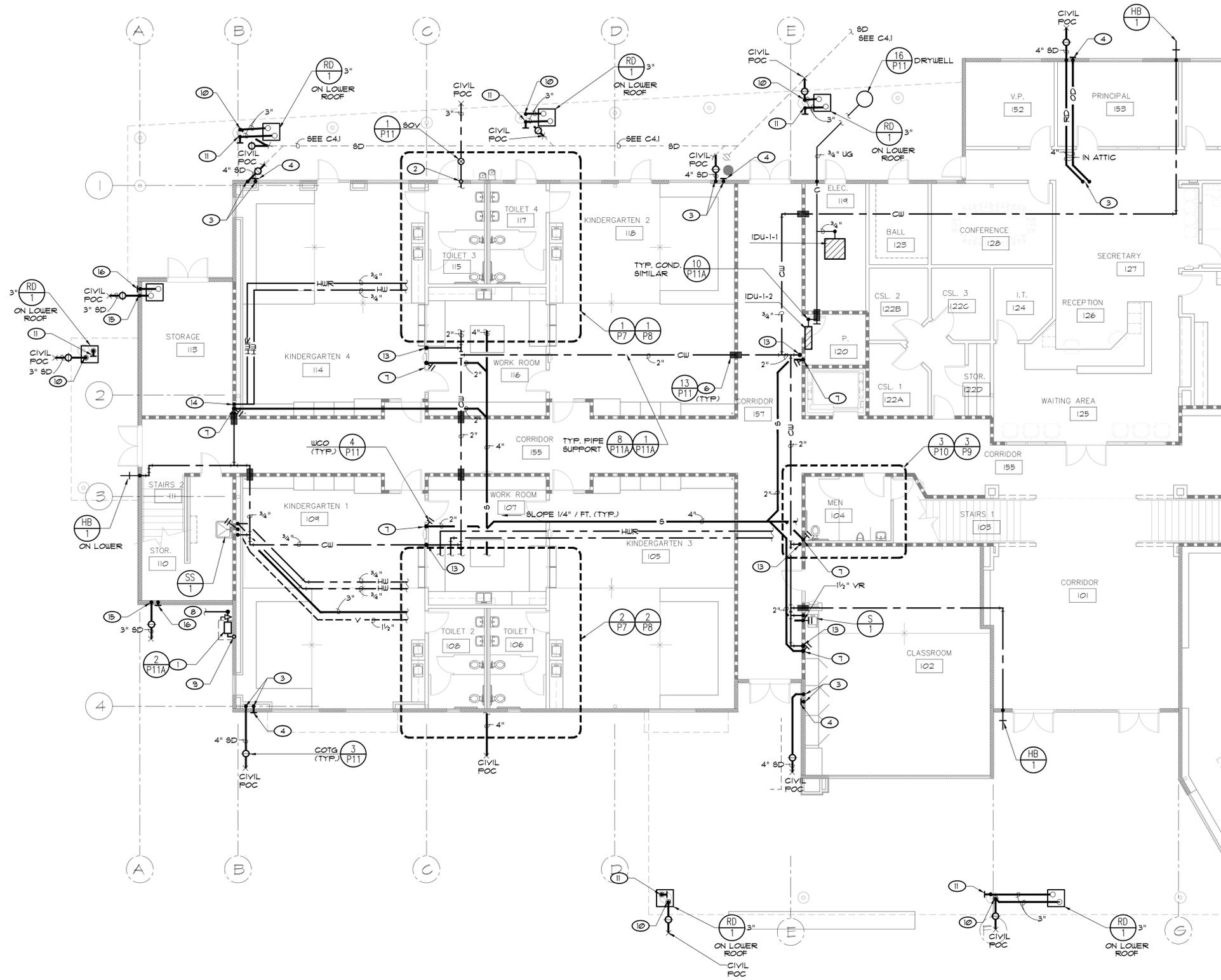
SHEET DESCRIPTION

**PLUMBING FLOOR PLAN**  
MULTI-PURPOSE

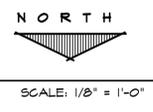
PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P2</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE 1/8"=1'-0"	



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1ST FLOOR PLUMBING PLAN  
EAST SIDE

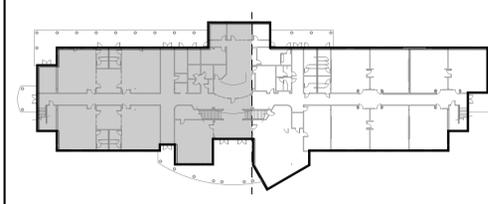


KEYNOTES

- 1 AMERICAN METER, 1813-B, 1 1/4" INLET & 4" OUTLET w/ 3/8" ORIFICE GAS PRESSURE REGULATOR MOUNT ABOVE GRADE IN PROTECTIVE CAGE. REGULATE 5" \* GAS TO 1" W.C. PIPING IN BLDG. SIZED PER 2016 C.F.C. TABLE 1216.2(1) AT 400 FOOT COLUMN. TOTAL DEMAND 3440 MBH/ 3121 CFH.
- 2 3" CW RISER IN WALL TO FIRST FLOOR ATTIC SPACE. SEE 1/P8 FOR CONTINUATION.
- 3 4" ROOF & OVERFLOW DRAIN LINES FROM SECOND FLOOR ROOF. SEE SHEET P5.
- 4 DAYLIGHT 4" OVERFLOW DRAIN LINE UP HIGH THRU EXTERIOR WALL. PROVIDE S.S. COVER ON OUTLET PER ARCH. DWG'S. SEE DETAIL 141/ A8.8.
- 5 NOT USED.
- 6 PIPE THRU FIRE RATED WALL.
- 7 2" SEWER FROM SECOND FLOOR FIXTURES. SEE SHEET P5.
- 8 SEE GAS SITE PLAN ON SHEET P0 FOR CONTINUATION. 1/4"-5" \* GAS LINE SIZED PER 2016 C.F.C. TABLE 1216.2(6) AT 300 FOOT COLUMN. TOTAL DEMAND 3440 MBH/ 3121 CFH.
- 9 ROUTE 4" GAS UP IN WALL TO SECOND FLOOR ATTIC. SEE SHEET P5.
- 10 3" RD DOWN IN COLUMN FROM CANOPY ROOF TO BELOW GRADE STORM DRAIN. SEE C41 FOR CONTINUATION.
- 11 3" OD DOWN IN COLUMN FROM CANOPY ROOF TO DISCHARGE AT 6" ARG & 1/2" BEYOND COLUMN FINISH. PROVIDE S.S. COVER ON OUTLET PER ARCH. DWG'S. SEE DETAIL 141/ A8.8.
- 12 NOT USED.
- 13 3/4" CW UP IN SECOND FLOOR WALL TO S-1.
- 14 3/4" CW & HW UP IN SECOND FLOOR WALL TO MS-1.
- 15 3" ROOF & OVERFLOW DRAIN LINES FROM SECOND FLOOR ROOF. SEE SHEET P5.
- 16 DAYLIGHT 3" OVERFLOW DRAIN LINE UP HIGH THRU EXTERIOR WALL. PROVIDE S.S. COVER ON OUTLET PER ARCH. DWG'S. SEE DETAIL 141/ A8.8.

SEE SHEET P4 FOR CONTINUATION

KEY PLAN



WALL LEGEND



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PROJECT:  
**SHIELDS & BRAWLEY  
ELEMENTARY  
SCHOOL**



**AD 3-46a  
S&B Elementary  
02-116800**

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PROJECT DEVELOPMENT

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REVISIONS

No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

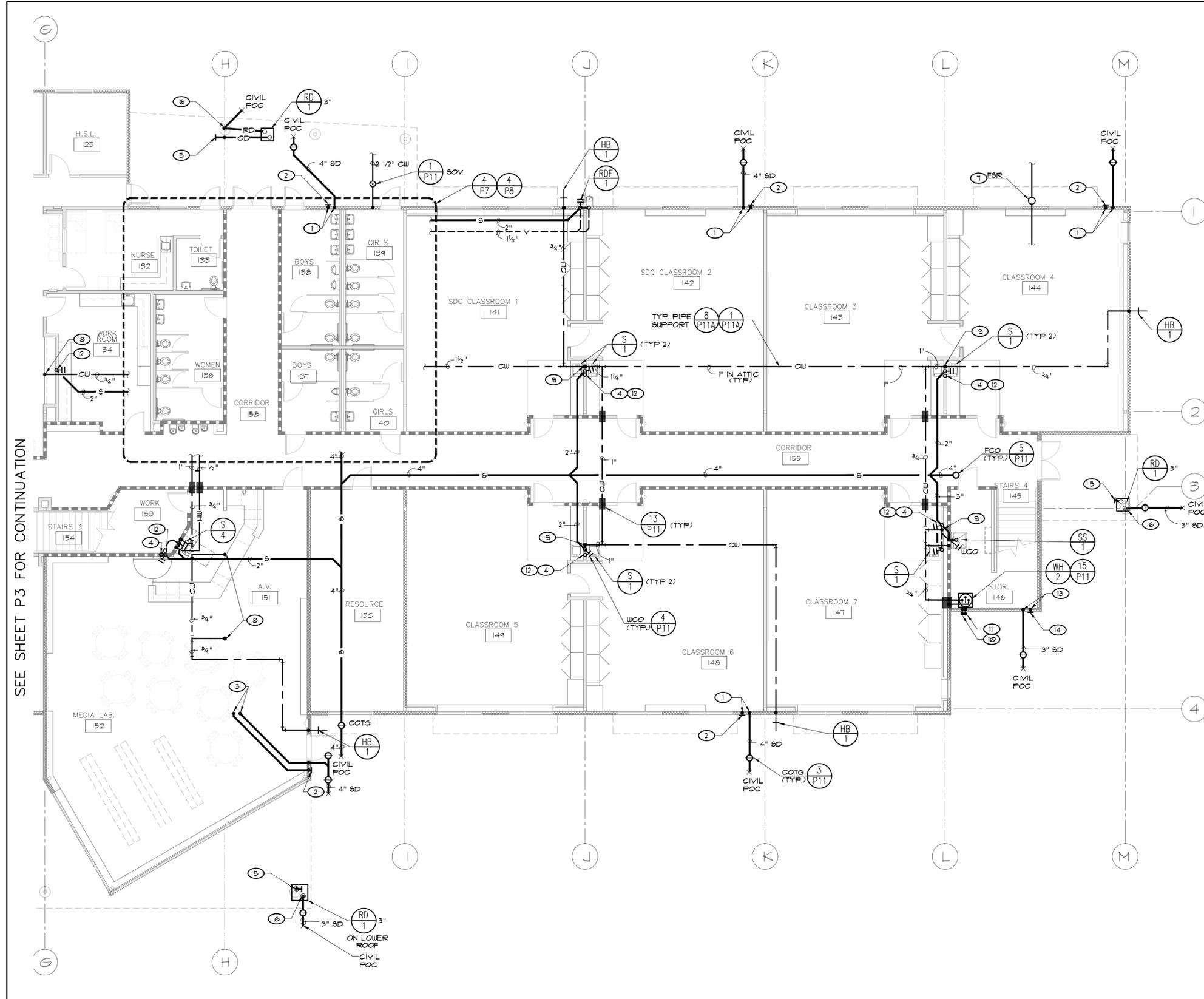
**PLUMBING  
FLOOR PLAN**  
MAIN - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P3</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



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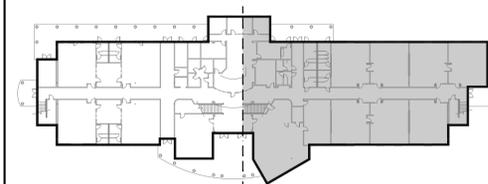
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job #: 18-1024



KEYNOTES

- 1 4" ROOF 4 OVERFLOW DRAIN LINES FROM SECOND FLOOR ROOF. SEE SHEET P6. RD DROPS BELOW GRADE. SEE C4J FOR CONTINUATION.
- 2 DAYLIGHT 4" OVERFLOW DRAIN LINE UP HIGH THRU EXTERIOR WALL. PROVIDE S.S. COVER ON OUTLET PER ARCH. DUG'S. SEE DETAIL 147/ A8.8.
- 3 4" ROOF 4 OVERFLOW DRAIN LINES FROM SECOND FLOOR ROOF OFFSET ABOVE MEDIA LAB CEILING TO EXTERIOR WALL. RD DROPS BELOW GRADE. SEE C4J FOR CONTINUATION.
- 4 ROUTE 2" VENT UP IN WALL TO SECOND FLOOR ATTIC & EXTEND THRU ROOF. SEE SHEET P6.
- 5 3" OD DOWN IN COLUMN FROM CANOPY ROOF TO DISCHARGE AT 6" APG & 1/2" BEYOND COLUMN FINISH. PROVIDE S.S. COVER ON OUTLET PER ARCH. DUG'S. SEE DETAIL 147/ A8.8.
- 6 3" RD DOWN IN COLUMN FROM CANOPY ROOF TO BELOW GRADE STORM DRAIN. SEE C4J FOR CONTINUATION.
- 7 SIZING AND ROUTING OF FIRE SPRINKLER LINES IN BUILDING AND PLACEMENT OF SPRINKLER HEADS TO BE DESIGNED BY THE FIRE PROTECTION CONTRACTOR/ ENGINEER. SEE FIRE PROTECTION PLANS.
- 8 3/4" CW UP IN SECOND FLOOR WALL TO S-1.
- 9 3/4" CW UP AND DOWN TO CLASSROOM SINKS.
- 10 3/4" DRAIN FROM FAN UNDER WATER HEATER. ROUTE DOWN IN WALL, ELBOW OUT AND DOWN, TERMINATE MIN. 6" ABOVE GROUND.
- 11 FULL SIZE RELIEF FROM T4P VALVE AT WATER HEATER. ROUTE DOWN IN WALL, ELBOW OUT AND DOWN, TERMINATE MIN. 6" ABOVE GROUND.
- 12 2" SEWER FROM SECOND FLOOR FIXTURES. SEE SHEET P6.
- 13 3" ROOF 4 OVERFLOW DRAIN LINES FROM SECOND FLOOR ROOF. SEE SHEET P6. RD DROPS BELOW GRADE. SEE C4J FOR CONTINUATION.
- 14 DAYLIGHT 3" OVERFLOW DRAIN LINE UP HIGH THRU EXTERIOR WALL. PROVIDE S.S. COVER ON OUTLET PER ARCH. DUG'S. SEE DETAIL 147/ A8.8.

KEY PLAN



WALL LEGEND



REGISTERED PROFESSIONAL ENGINEER  
GREEN M. LENCIONI  
NO. 1901  
RENEWED 8-27-11  
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JOHN H. SMITH, A.I.A. C15885

LICENSED ARCHITECT  
JOHN HAMILTON SMITH  
C 15885  
9-30-2008  
STATE OF CALIFORNIA

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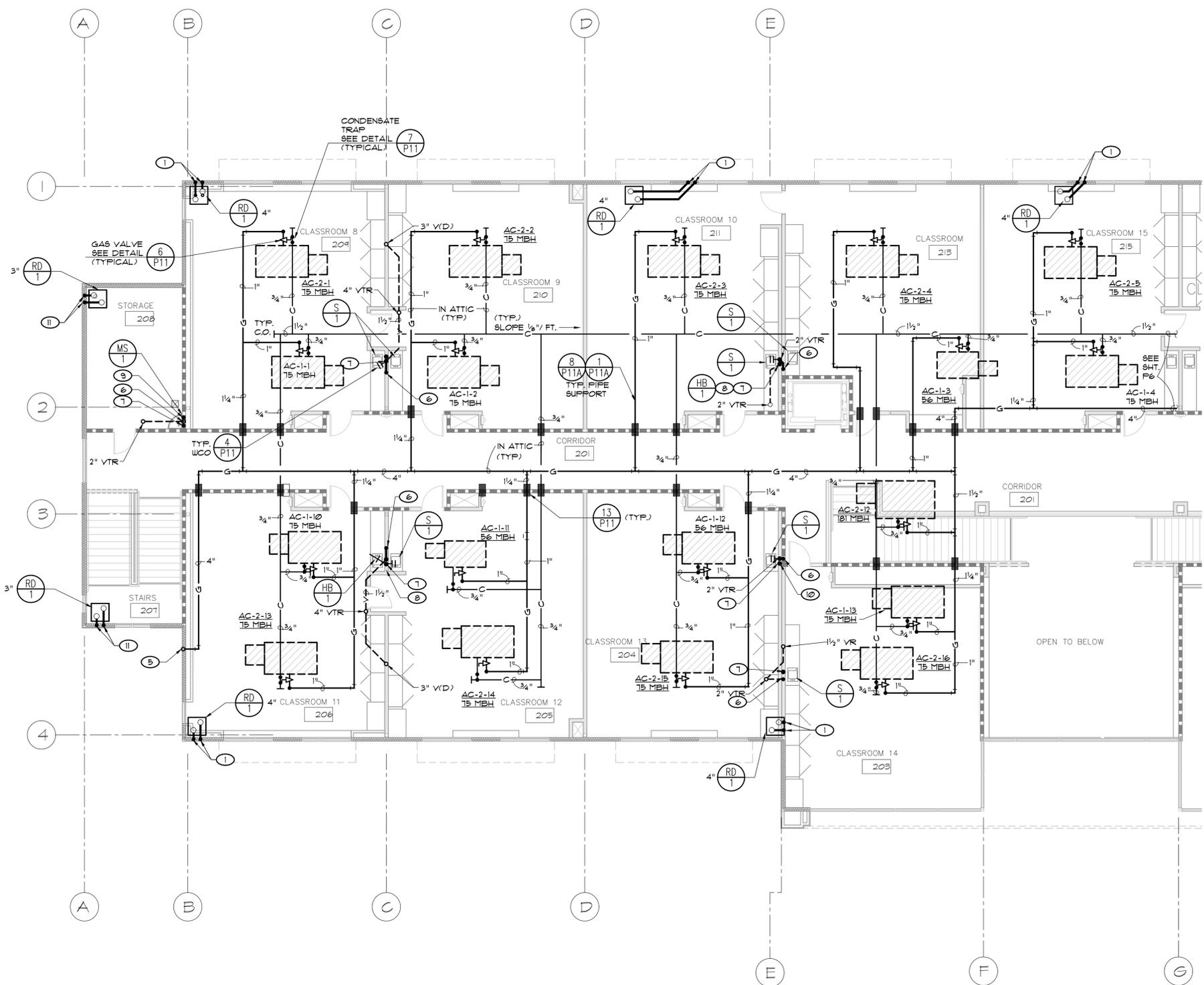
No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

**PLUMBING  
FLOOR PLAN**

MAIN - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P4</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



2ND FLOOR PLUMBING PLAN  
EAST SIDE



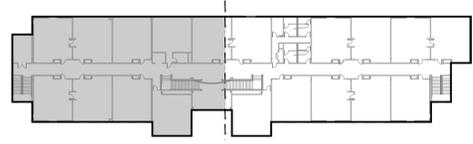
SCALE: 1/8" = 1'-0"

KEYNOTES

- ① ROUTE 4" ROOF & OVERFLOW DRAIN LINES DOWN IN WALL. SEE SHEET P3 FOR CONTINUATION.
- ② NOT USED.
- ③ NOT USED.
- ④ NOT USED.
- ⑤ 4" GAS RISER FROM FIRST FLOOR. SEE SHEET P3.
- ⑥ 2" SEWER DROP THROUGH FIRST FLOOR. SEE P3 FOR CONTINUATION.
- ⑦ 3/4" CU UP FROM FIRST FLOOR ATTIC SPACE. SEE SHEET P3 FOR CONTINUATION.
- ⑧ PROVIDE 3/4" CU UP THROUGH ROOF WITH STAND PIPE FOR ROOF MOUNTED HOSE BIBB.
- ⑨ 3/4" HU UP FROM FIRST FLOOR ATTIC SPACE. SEE SHEET P3 FOR CONTINUATION.
- ⑩ 2" VR FROM FIRST FLOOR. CONNECT VR WITH 2" SINK VENT, THEN CONTINUE THRU ROOF.
- ⑪ ROUTE 3" ROOF & OVERFLOW DRAIN LINES DOWN IN WALL. SEE SHEET P3 FOR CONTINUATION.

SEE SHEET P6 FOR CONTINUATION

KEY PLAN



WALL LEGEND

— 1 HR RATED WALL



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PROJECT:  
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& BRAWLEY  
ELEMENTARY  
SCHOOL**



AD 3-48a  
S&B Elementary  
02-116800

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SHEET DESCRIPTION

PLUMBING  
FLOOR PLAN

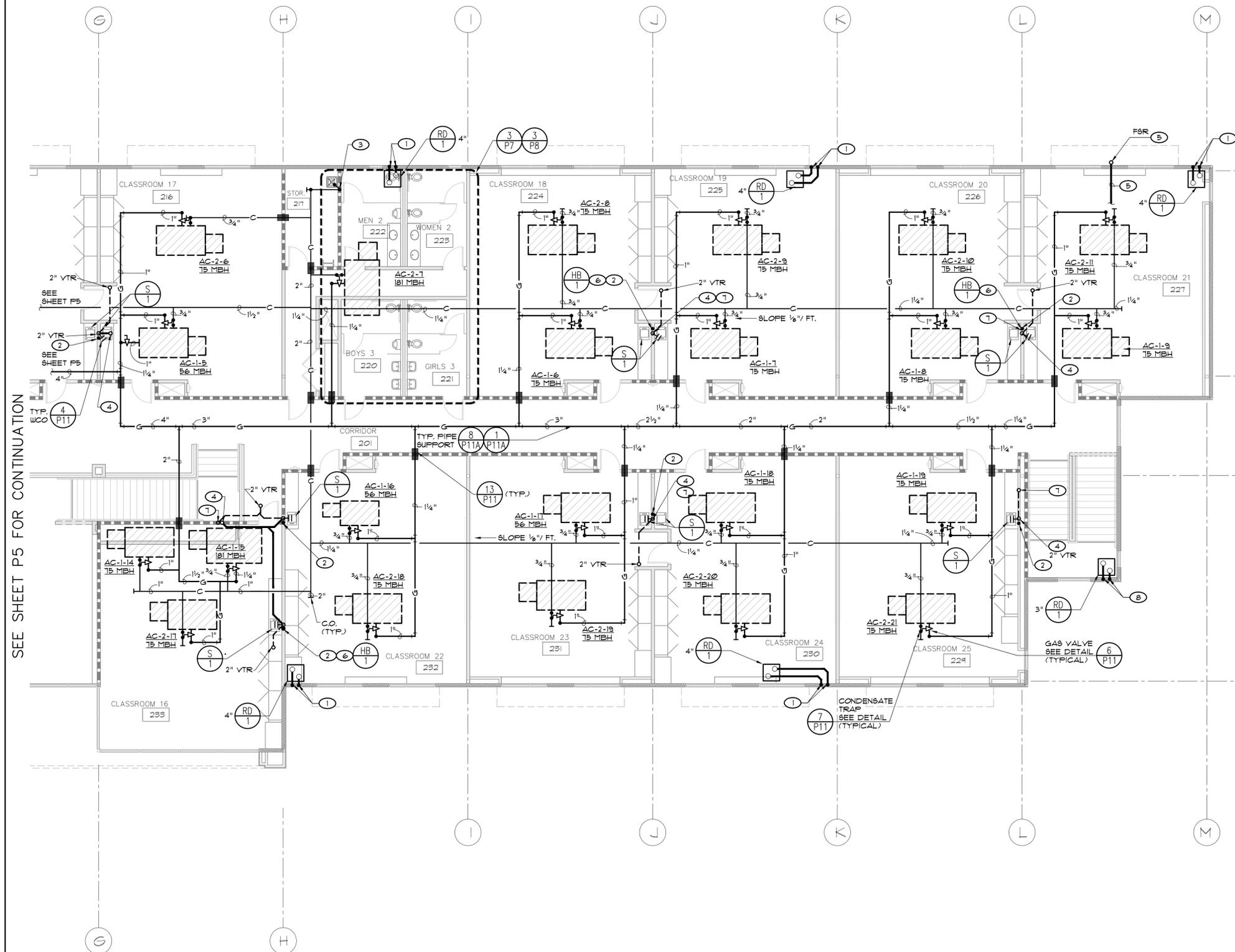
MAIN - 2ND FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P5</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



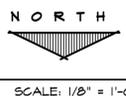
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job #: 18-1024



SEE SHEET P5 FOR CONTINUATION

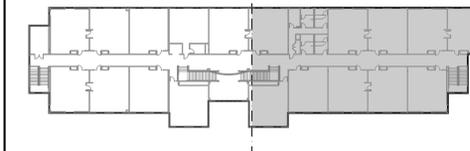
2ND FLOOR PLUMBING PLAN  
WEST SIDE



KEYNOTES

- ① ROUTE 4" ROOF & OVERFLOW DRAIN LINES DOWN IN WALL. SEE SHEET P4 FOR CONTINUATION.
- ② 3/4" CW UP FROM FIRST FLOOR ATTIC SPACE.
- ③ ROUTE 2" CONDENSATE DRAIN FROM ROOFTOP MECHANICAL UNITS DOWN IN WALL ELBOW OUT TURN DOWN AND SPILL INTO FLOOR SINK THRU AIR BREAK.
- ④ 2" SEWER DROP THROUGH FIRST FLOOR. SEE P4 FOR CONTINUATION.
- ⑤ SIZING AND ROUTING OF FIRE SPRINKLER LINES IN BUILDING AND PLACEMENT OF SPRINKLER HEADS TO BE DESIGNED BY THE FIRE PROTECTION CONTRACTOR/ENGINEER. SEE FIRE PROTECTION PLANS.
- ⑥ PROVIDE 3/4" CW UP THRU ROOF WITH STAND PIPE FOR ROOF MOUNTED HOSE BIBB.
- ⑦ 2" VENT FROM FIRST FLOOR SINKS.
- ⑧ ROUTE 3" ROOF & OVERFLOW DRAIN LINES DOWN IN WALL. SEE SHEET P4 FOR CONTINUATION.

KEY PLAN



WALL LEGEND

— 1 HR. RATED WALL



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PROJECT:  
**SHIELDS  
& BRAWLEY  
ELEMENTARY  
SCHOOL**



**AD 3-49a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

DATE	ISSUED FOR

REVISIONS

No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

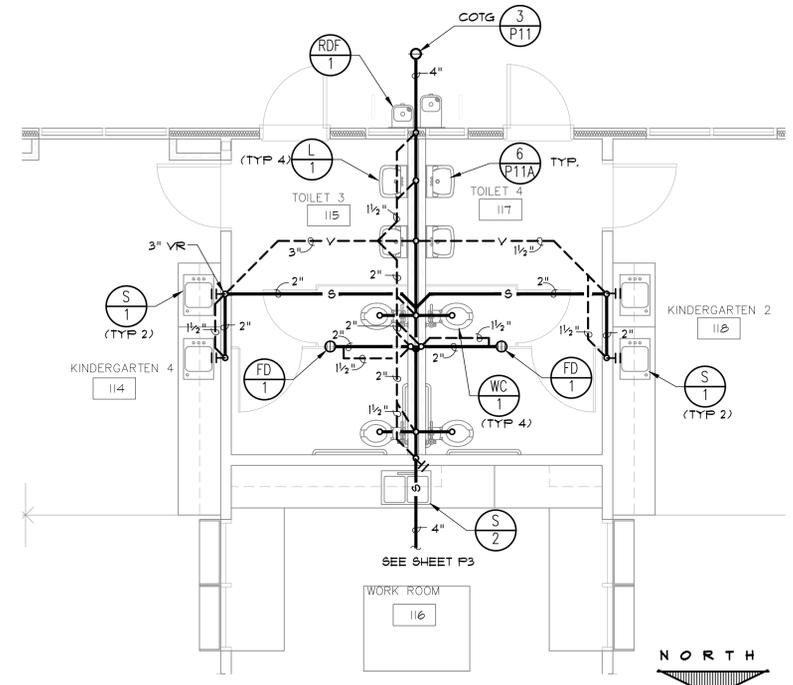
**PLUMBING  
FLOOR PLAN**  
MAIN - 2ND FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P6</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	

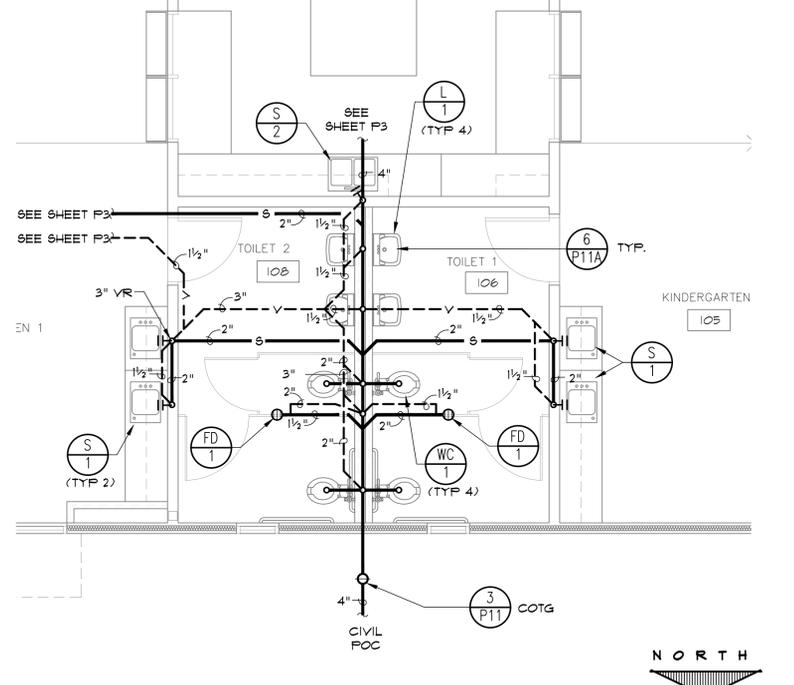


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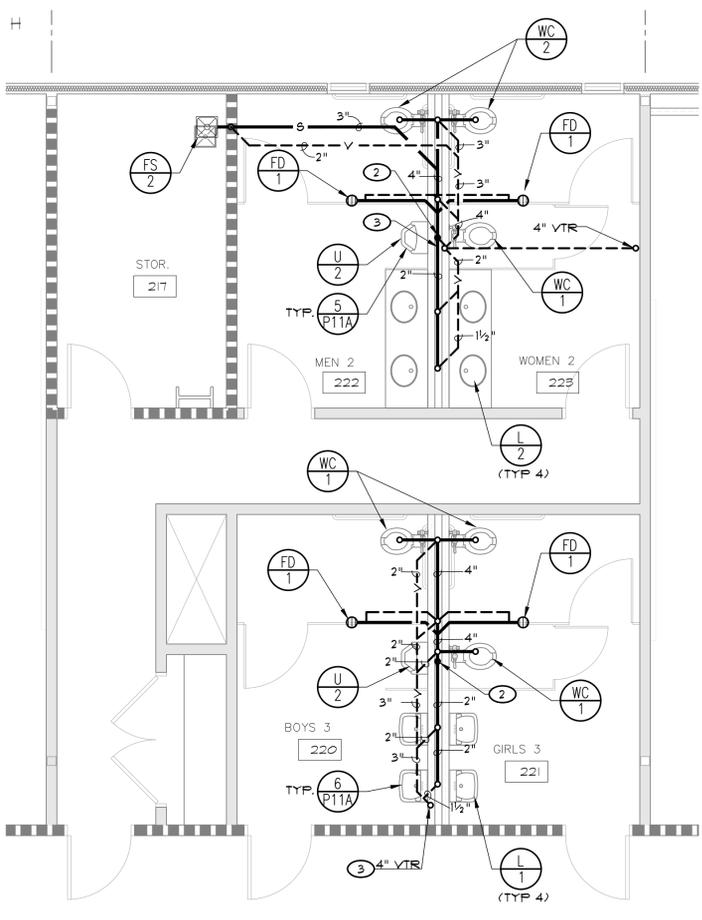
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job #: 18-1024



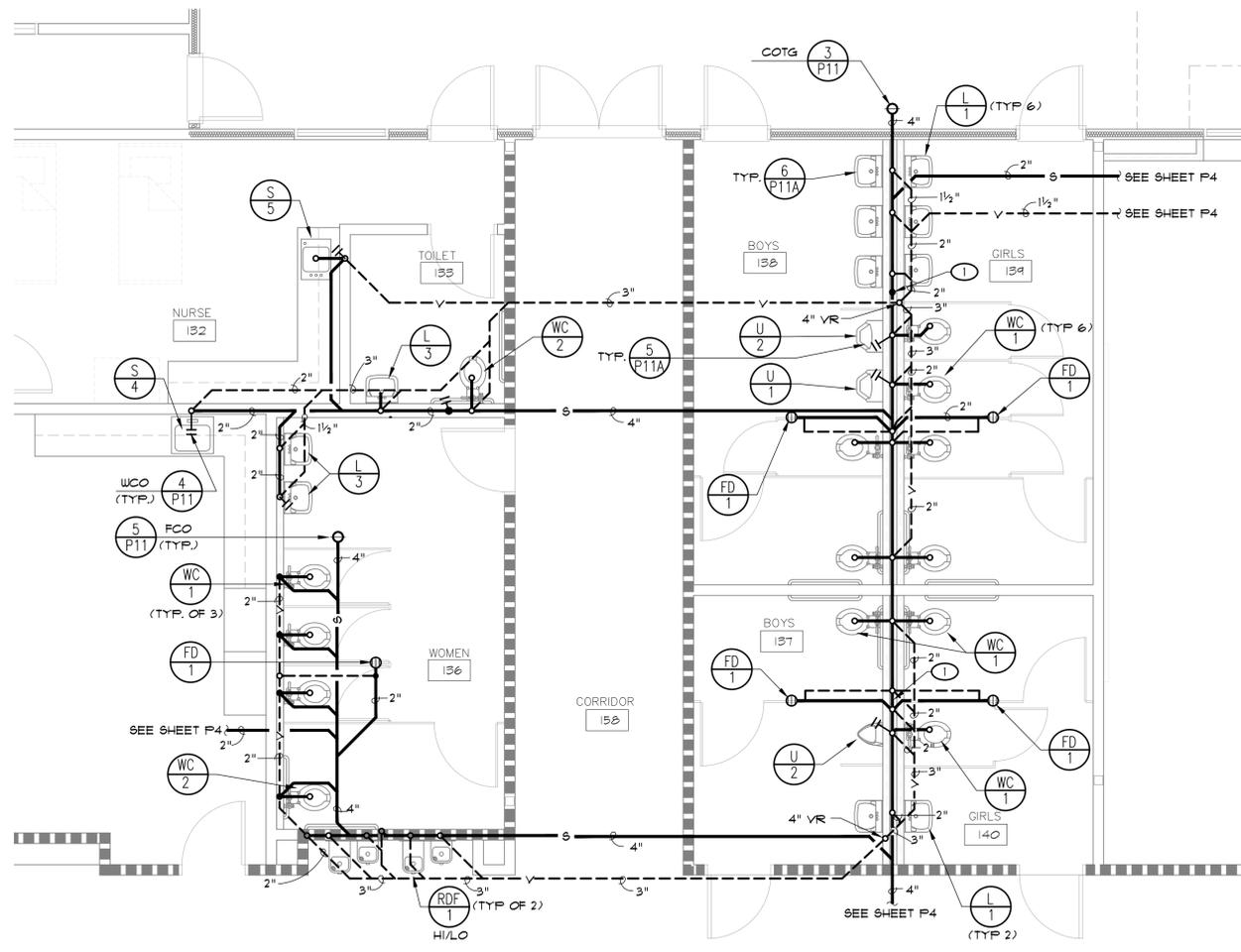
1 1st Floor Soil & Vent Plumbing Floor Plan  
SCALE: 1/4" = 1'-0"



2 1st Floor Soil & Vent Plumbing Floor Plan  
SCALE: 1/4" = 1'-0"



3 2nd Floor Soil & Vent Plumbing Floor Plan  
SCALE: 1/4" = 1'-0"



4 1st Floor Soil & Vent Plumbing Floor Plan  
SCALE: 1/4" = 1'-0"

KEYNOTES

- ① 4" SEWER DROP FROM 2ND FLOOR
- ② 4" SEWER DROP TO 1ST FLOOR
- ③ 4" VENT RISER FROM 1ST FLOOR

WALL LEGEND



REVISIONS

No.	DATE	DESCRIPTION
△ 1	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

ENLARGED PLUMBING FLOOR PLAN  
MAIN BUILDING

PROJECT COORDINATOR JOHN SMITH	SHEET No. P7
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



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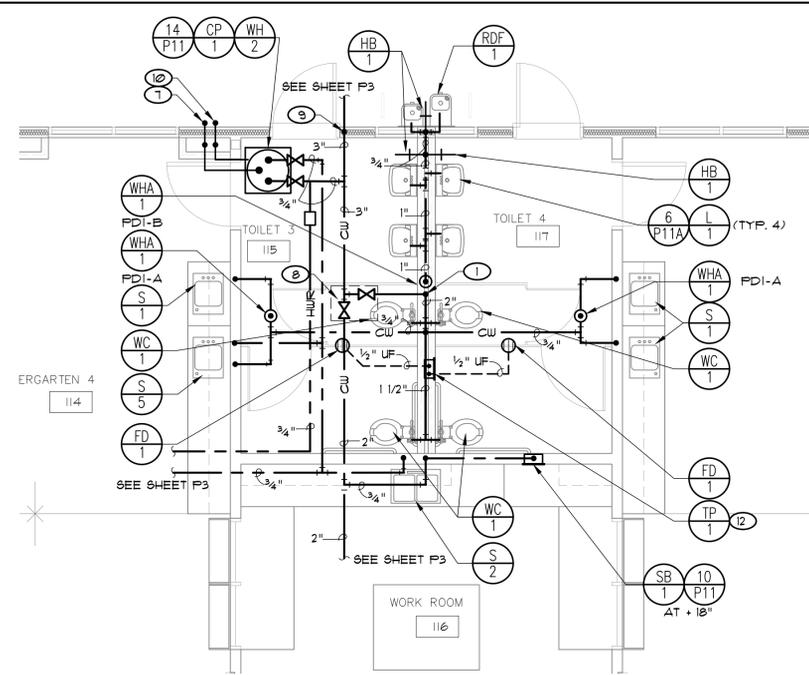
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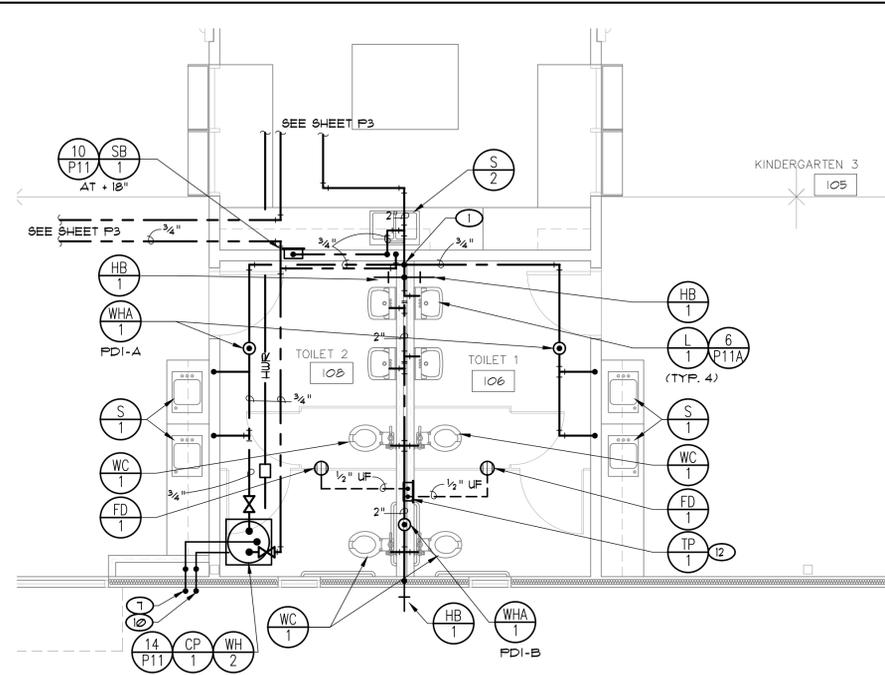
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PROJECT DEVELOPMENT

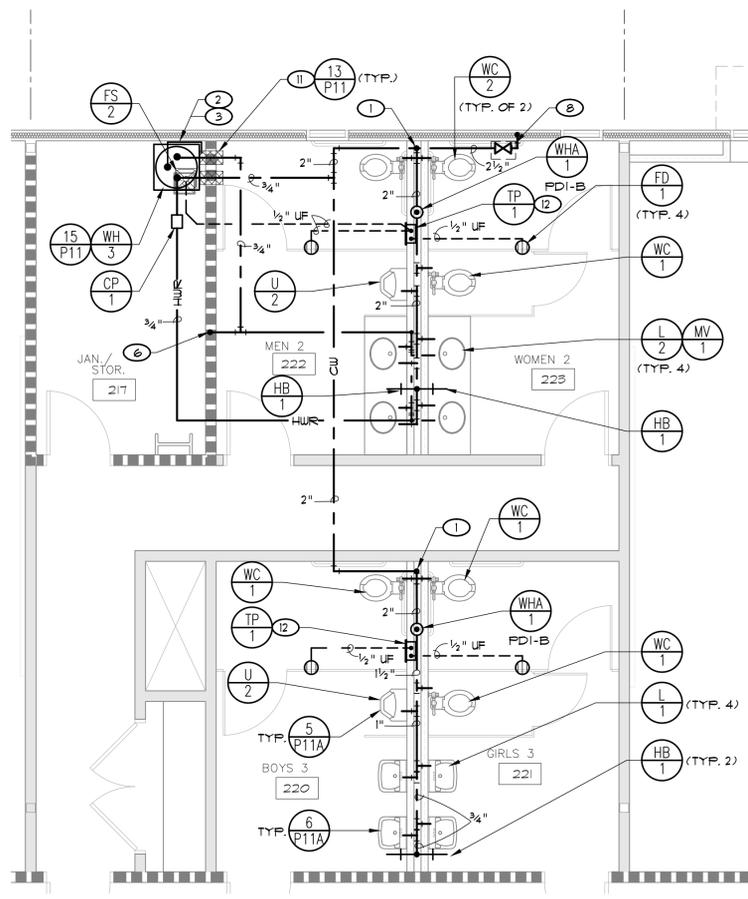
DATE	ISSUED FOR



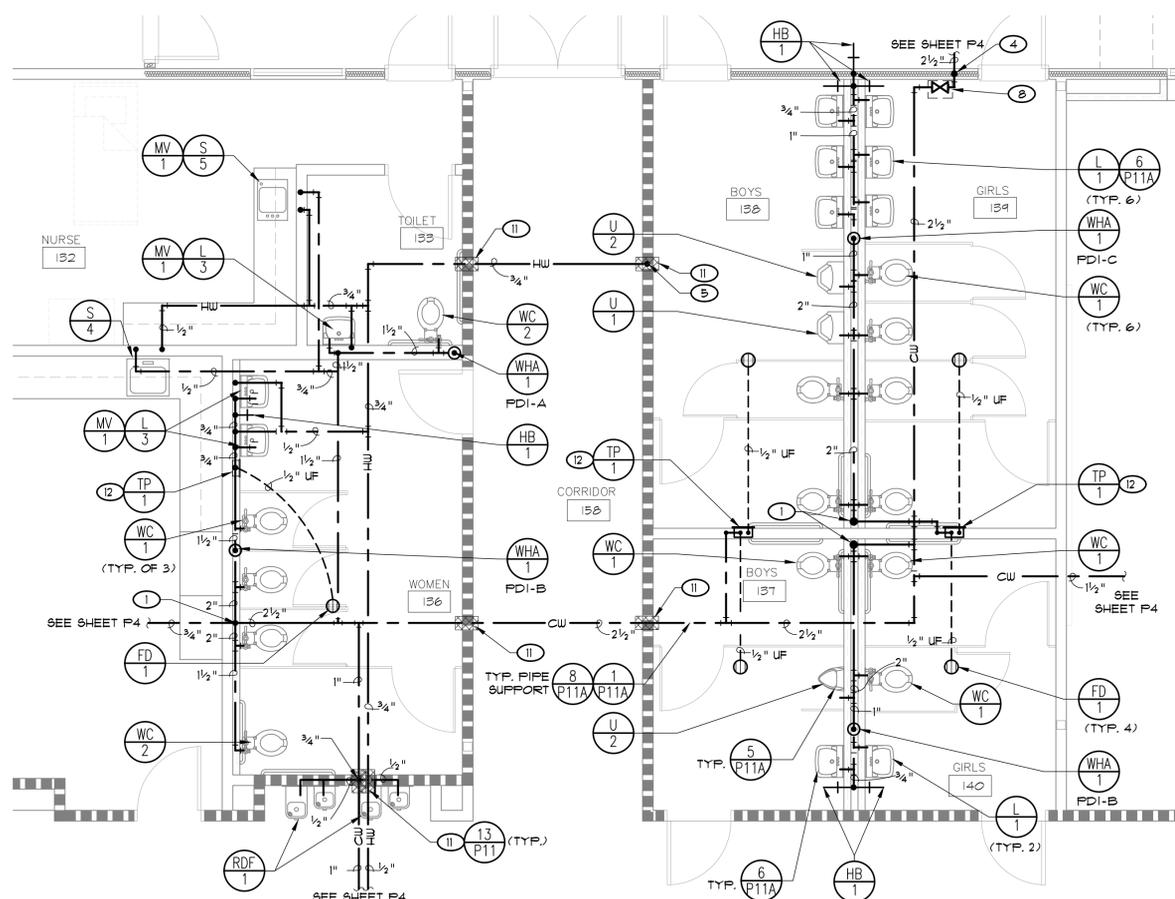
1 1st FLOOR COLD WATER PLUMBING FLOOR PLAN  
SCALE: 1/4" = 1'-0"



2 1st FLOOR COLD WATER PLUMBING FLOOR PLAN  
SCALE: 1/4" = 1'-0"



3 2ND FLOOR COLD & HOT WATER PLUMBING FLOOR PLAN  
SCALE: 1/4" = 1'-0"



4 1st FLOOR COLD & HOT WATER PLUMBING FLOOR PLAN  
SCALE: 1/4" = 1'-0"

KEYNOTES

- 1 ROUTE 2" COLD WATER DOWN IN PLUMBING WALL & EXTEND TO FIXTURES.
- 2 FULL SIZE RELIEF FROM T&P VALVE AT WATER HEATER ROUTE DOWN IN WALL, ELBOW OUT AND DOWN TERMINATE 6" ABOVE FS.
- 3 3/4" DRAIN FROM FAN UNDER WATER HEATER ROUTE DOWN IN WALL ELBOW OUT AND DOWN, TERMINATE 6" ABOVE FS.
- 4 2 1/2" CW UP IN WALL FROM BELOW GRADE. TEE 2 1/2" CW TO FIRST FLOOR ATTIC AND 2 1/2" UP TO SECOND FLOOR ATTIC SPACE. SEE 3/P8 THIS SHEET, FOR CONTINUATION.
- 5 3/4" HOT WATER FROM SECOND FLOOR WATER HEATER. SEE FLOOR PLAN 3/P8 THIS SHEET & KEYNOTE 6.
- 6 ROUTE 3/4" HOT WATER DOWN IN WALL. SEE FLOOR PLAN 4/P8 THIS SHEET.
- 7 FULL SIZE RELIEF FROM WATER HEATER, ELBOW DOWN & TERMINATE 6" ABOVE GRADE.
- 8 ISOLATION VALVE ABOVE CEILING. PROVIDE CEILING ACCESS PANEL.
- 9 3" CW UP IN WALL TO FIRST FLOOR ATTIC SPACE.
- 10 3/4" DRAIN FROM FAN UNDER WATER HEATER, ROUTE DOWN IN WALL, ELBOW OUT AND DOWN. TERMINATE MIN. 6" ABOVE GRADE.
- 11 PIPE THRU FIRE RATED WALL.
- 12 ROUTE 1/2" CW DOWN TO BELOW FLOOR FROM TP-1 TO FD-1.

WALL LEGEND



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PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-51a**  
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**02-116800**

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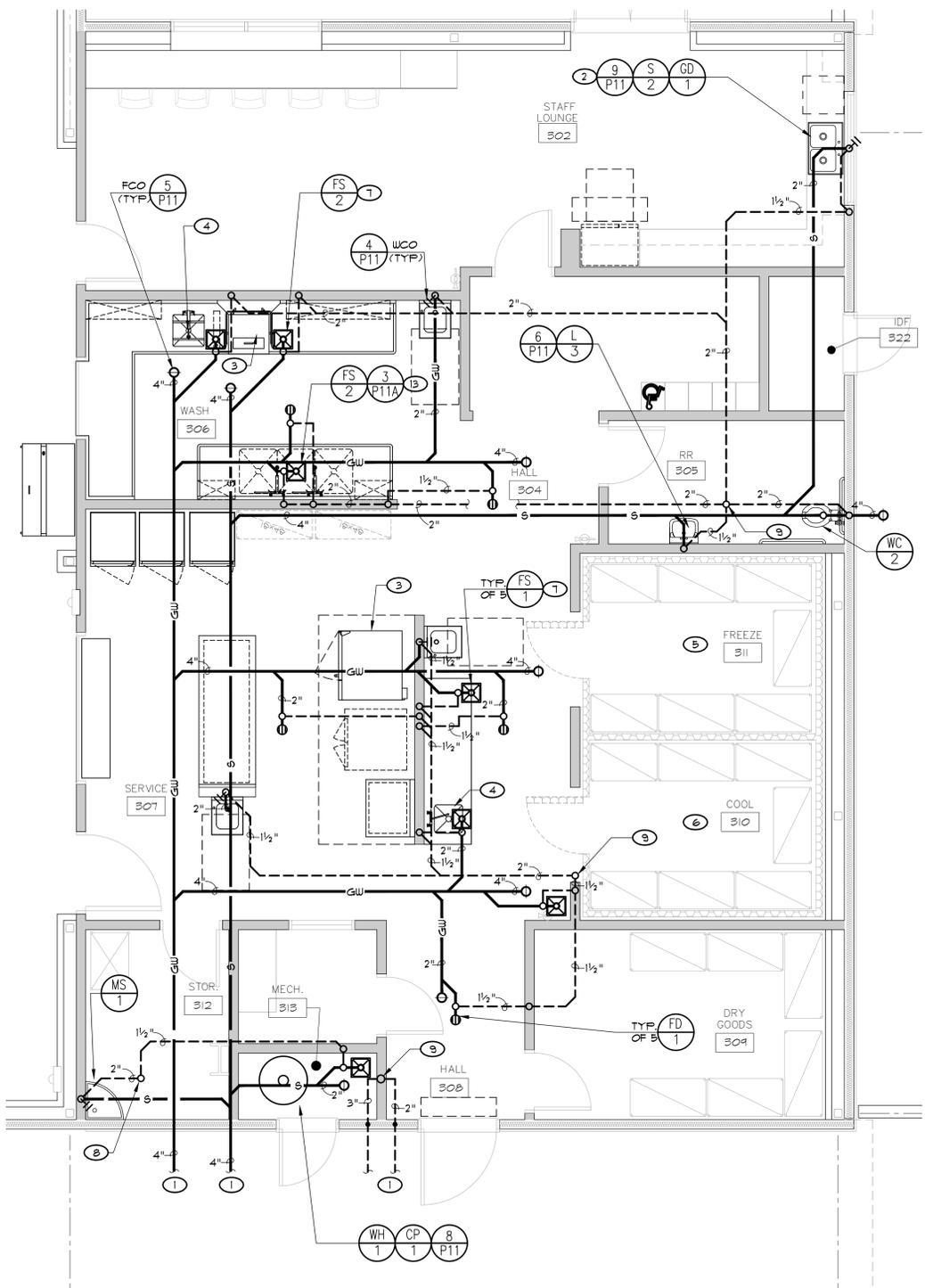
REVISIONS

No.	DATE	DESCRIPTION
△ 1	5.19.23	ADDENDUM 3

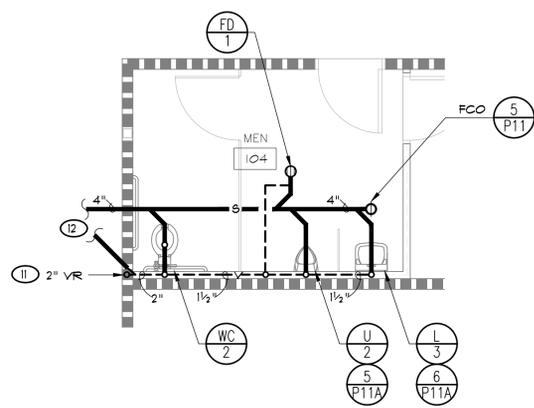
SHEET DESCRIPTION

ENLARGED PLUMBING FLOOR PLAN

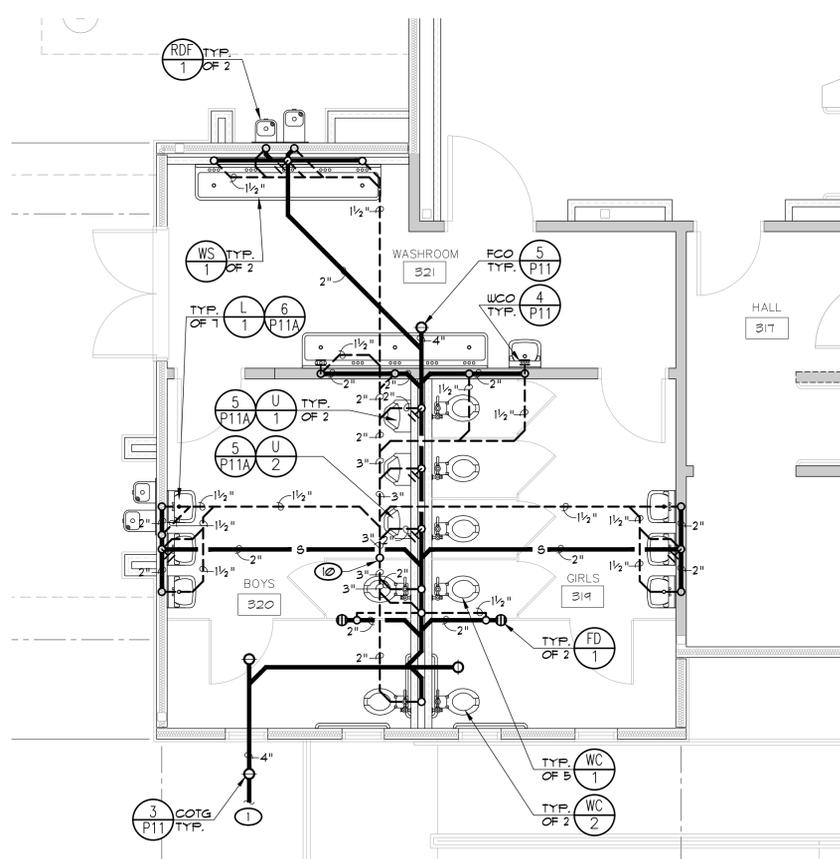
PROJECT COORDINATOR JOHN SMITH	SHEET No. P8
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE AS NOTED	



1  
P9  
MULTI-PURPOSE SOIL & VENT PLUMBING FLOOR PLAN  
SCALE: 1/4" = 1'-0"



3  
P9  
1ST FLOOR SOIL & VENT PLUMBING FLOOR PLAN  
SCALE: 1/4" = 1'-0"



2  
P9  
MULTI-PURPOSE SOIL & VENT PLUMBING FLOOR PLAN  
SCALE: 1/4" = 1'-0"

KEYNOTES

- ① SEE SHEETS P1 & P2 FOR CONTINUATION.
- ② OFFSET VENT UNDER COUNTER 6" ABOVE FLOOD RIM OF SINK.
- ③ DISCHARGE 1/2" INDIRECT WASTE FROM KITCHEN APPLIANCE (K.E.C. #1, 25) TO FLOOR SINK WITH AIR GAP.
- ④ DISCHARGE 2" INDIRECT WASTE FROM SINK (K.E.C. #4, 34) TO FLOOR SINK WITH AIR GAP.
- ⑤ DISCHARGE 1" CONDENSATE DRAIN FROM WALK-IN REFRIGERATOR EVAP COIL (K.E.C. #42) TO FLOOR SINK ELBOW DOWN AND TERMINATE WITH 1" MIN. AIR GAP ABOVE FLOOD RIM OF FLOOR SINK.
- ⑥ DISCHARGE 1" CONDENSATE DRAIN FROM WALK-IN FREEZER EVAP COIL (K.E.C. #41) TO FLOOR SINK ELBOW DOWN AND TERMINATE WITH 1" MIN. AIR GAP ABOVE FLOOD RIM OF FLOOR SINK. PROVIDE HEAT TRACE WIRE ON ALL DRAIN LINES IN THE FREEZER COMPARTMENT (35 WATTS PER LINEAL FEET).
- ⑦ INDIRECT WASTE RECEPTORS SHALL BE LOCATED WHERE THEY ARE READILY ACCESSIBLE FOR INSPECTION AND CLEANING.
- ⑧ 2" VTR
- ⑨ 3" VTR
- ⑩ 4" VTR
- ⑪ VENT RISER IN WALL, SEE SHEET P5 FOR CONTINUATION.
- ⑫ SEE SHEET P3 FOR CONTINUATION.
- ⑬ ROUTE 1-1/2" INDIRECT WASTE FROM EACH COMPARTMENT OF 3 COMP. SINK (K.E.C. #5) TO 2" INDIRECT WASTE WITH FLOW CONTROL. DISCHARGE 2" INDIRECT WASTE TO FLOOR SINK WITH AIR GAP.



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**02-116800**

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SHEET DESCRIPTION

**ENLARGED PLUMBING FLOOR PLAN**

MAIN BLDG. & MULTI-PURPOSE

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P9</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE 1/4"=1'-0"	



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KEYNOTES

- ① 3" CW RISER IN WALL TO BELOW ROOF.
- ② 1" CW DOWN IN WALL. RUN IN WALL TO LAYS.
- ③ 2" CW DROP IN WALL TO 2" HEADER IN CHASE.
- ④ 3/4" CW AND HU DOWN IN WALL. OFFSET IN WALL BELOW WINDOW TO S-2.
- ⑤ CW RISE UP IN WALL TO BELOW HIGH ROOF. SEE PLAN FOR SIZE.
- ⑥ CW DROP DOWN IN WALL TO BELOW LOW ROOF. SEE PLAN FOR SIZE.
- ⑦ PROVIDE 3/4" CW UP THRU ROOF WITH STAND PIPE FOR ROOF MOUNTED HOSE BIBB.
- ⑧ SEE SHEET P3 FOR CONTINUATION.
- ⑨ SEE SHEET P2 FOR CONTINUATION.
- ⑩ SHUT-OFF VALVE ABOVE CEILING ACCESS PANEL. SEE PLAN FOR SIZE.
- ⑪ PIPE THRU FIRE RATED WALL.
- ⑫ ROUTE 1/2" CW & HU AND 3/4" HU DOWN TO WATER HEATER WITH SHUT OFF VALVE.
- ⑬ 1/2" CW & HU DOWN TO DISHWASHER (K.E.C. #7) WITH WATER HAMMER ARRESTER. INSTALL SIMILAR TO DETAIL 10/P11.
- ⑭ 1/2" CW & HU DOWN TO FAUCET (K.E.C. #6, 10, 14).
- ⑮ 3/4" CW DOWN TO WATER FILTER (K.E.C. #36)
- ⑯ 3/4" CW DOWN TO COMBI OVEN (K.E.C. #25)
- ⑰ ROUTE 1/2" CW DOWN TO BELOW FLOOR FROM TP-1 TO FD-1.
- ⑱ SEE SHEET P1 FOR CONTINUATION.



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REVISIONS

No.	DATE	DESCRIPTION
△ 1	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

## ENLARGED PLUMBING FLOOR PLAN

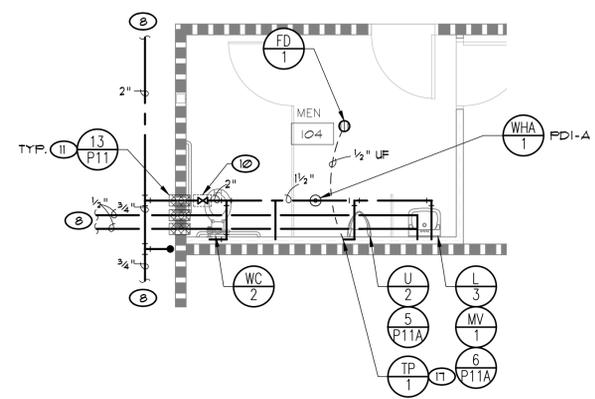
MAIN BLDG. & MULTI-PURPOSE

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>P10</b>
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE 1/4"=1'-0"	

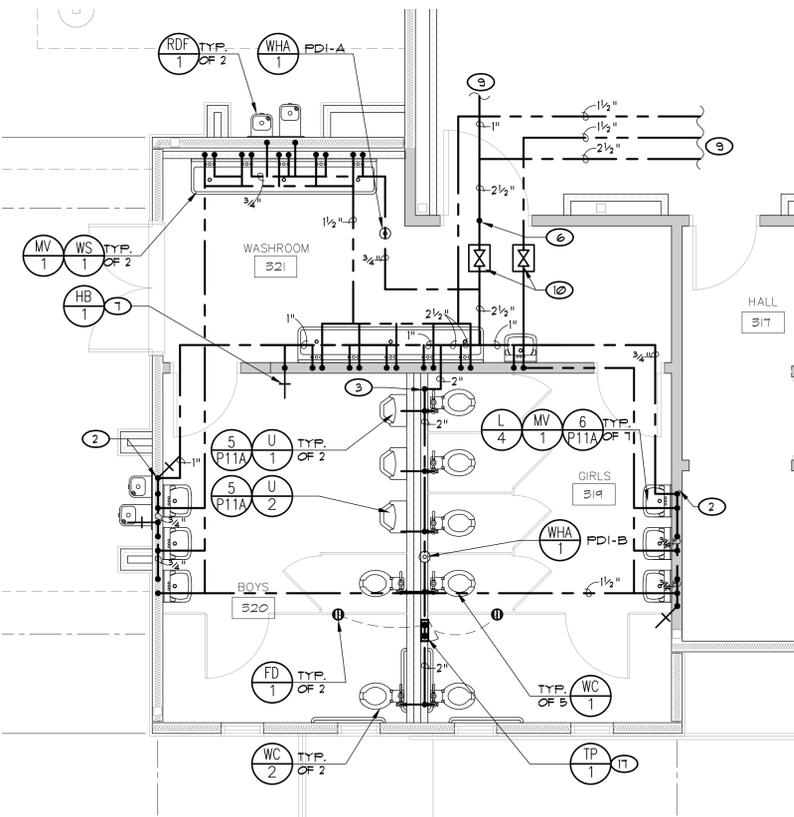


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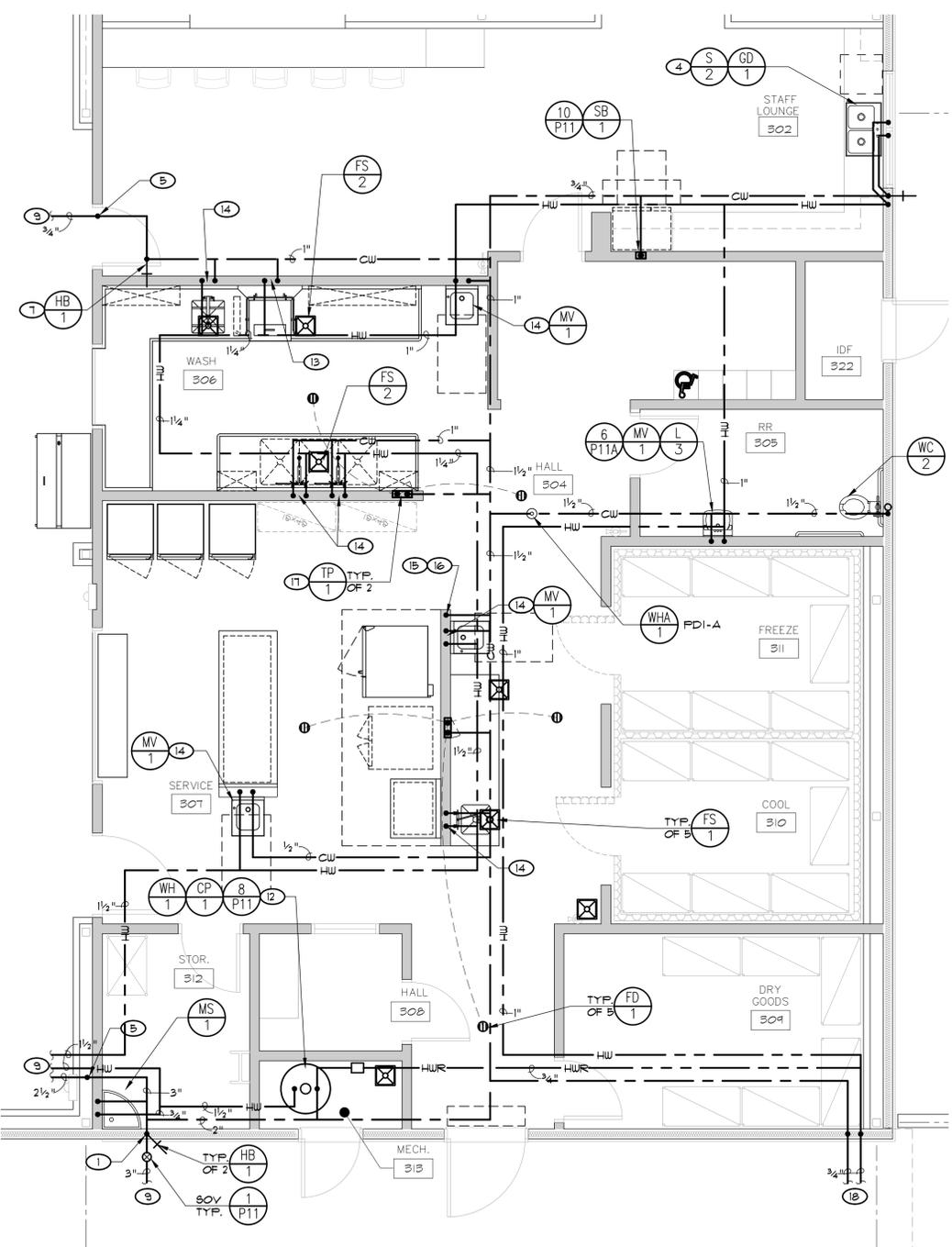
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3 P10 1ST FLOOR COLD & HOT WATER PLUMBING FLOOR PLAN SCALE: 1/4" = 1'-0"

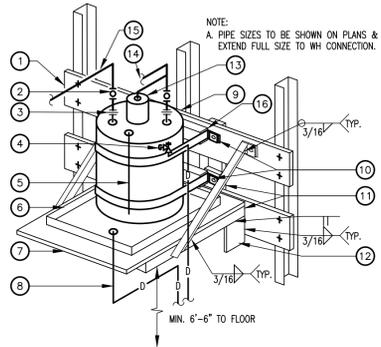


2 P10 MULTI-PURPOSE COLD & HOT WATER PLUMBING FLOOR PLAN SCALE: 1/4" = 1'-0"

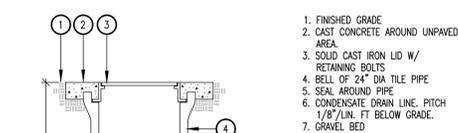


1 P10 MULTI-PURPOSE COLD & HOT WATER PLUMBING FLOOR PLAN SCALE: 1/4" = 1'-0"

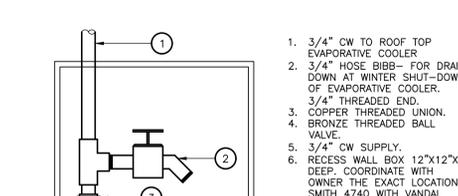
- 1/4" THICK STEEL PLATE. BOLT TO MINIMUM 3 STUDS W/ MIN. (2) #8 x 1" SMS
- BALL VALVE (TYPICAL).
- UNION (TYPICAL).
- TEMPERATURE & PRESSURE RELIEF VALVE WITH FULL SIZE DRAIN. SEE PLAN FOR ROUTING.
- MAGNESIUM ANODE.
- 22 GAUGE GALV. SHEET METAL DRIP PAN WITH 3/4" DRAIN.
- 24"x24"x1/4" THICK STEEL WATER HEATER MOUNTING SHELF WELDED TO FRAME.
- 3/4" DRAIN TO MOP SINK.
- WELD IF STUDS ARE STEEL (TYPICAL).
- (2) 2" x 16 GA. STEEL STRAPS. LOCATE STRAPS ON UPPER AND LOWER THIRD OF WATER HEATER. DRILL AND TAP TO STEEL PLATE 3/8" BOLTS FOR STUD WALL.
- 1-1/4" x 1-1/4" x 2-0" ANGLE IRON WELD TO MITC. FRAME AND SECURE TO WALL SAME AS STEEL STRAP ABOVE.
- 3/16" STL. PLATE. SECURE MITC. FRAME TO PLATE OR WALL SAME AS STEEL STRAP ABOVE.
- AMTROL ST-5 THERM-X-TROL EXPANSION TANK. COLD WATER INLET.
- HOT WATER OUTLET.
- PROVIDE 18 GA. GALV. METAL SPACERS TO HOLD WATER HEATER AT 1" MIN. DISTANCE FROM WALL. 5/16"x2" BOLT TO METAL STUD FRAMING.



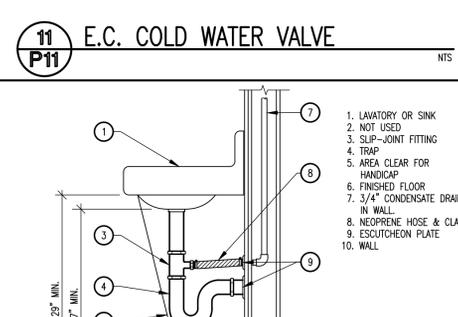
**15 WALL MOUNTED ELECTRIC WATER HEATER** NTS  
OPERATING WEIGHT: 243 LBS. MAX.



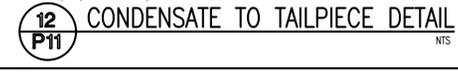
**16 CONDENSATE DRAIN DRYWELL** NTS



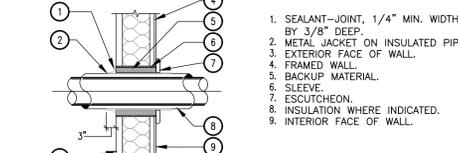
**11 E.C. COLD WATER VALVE** NTS



**12 CONDENSATE TO TAILPIECE DETAIL** NTS



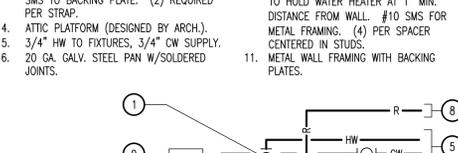
**13 TYPICAL PIPE THRU FIRE RATED WALL** NTS



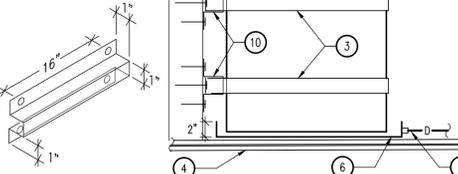
**9 TYPICAL DISHWASHER HOOK-UP** NTS



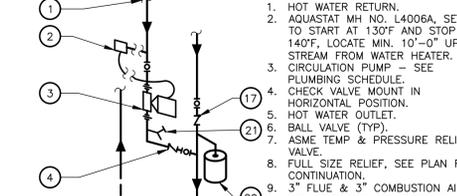
**10 COLD WATER SUPPLY BOX FOR REFRIGERATOR ICE MAKER** NTS



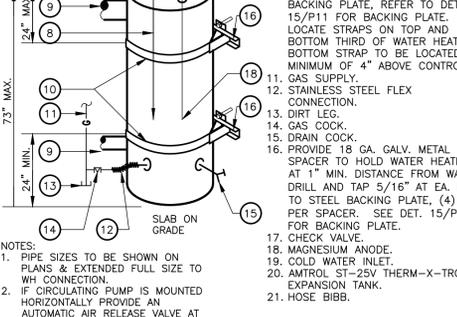
**14 WATER HEATER - ATTIC** NTS  
OPERATING WEIGHT: 91 LBS. MAX.



**8 GAS WATER HEATER** NTS  
OPERATING WEIGHT: 630 LBS. MAX.



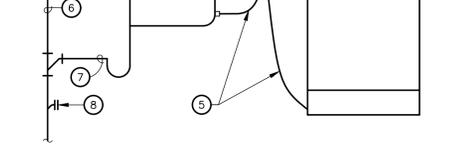
**5 FLOOR CLEANOUT (FCO)** NTS



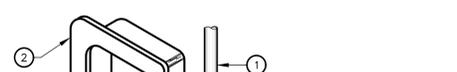
**6 MECH. UNIT GAS CONNECTION** NTS



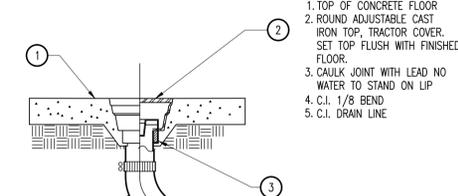
**3 SURFACE CLEANOUT TO GRADE (COTG)** NTS



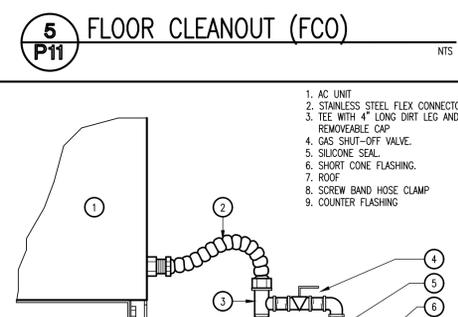
**4 WALL CLEANOUT** NTS



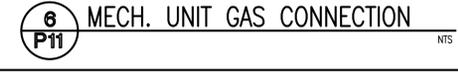
**7 CONDENSATE/RAIN CONNECTION** NTS



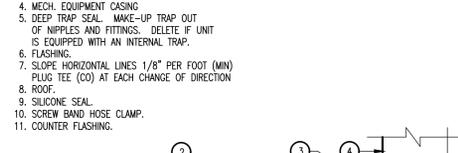
**1 WATER SHUTOFF** NTS



**2 CONCENTRIC FLUE/ COMB. AIR THRU ROOF TERMINATION** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS



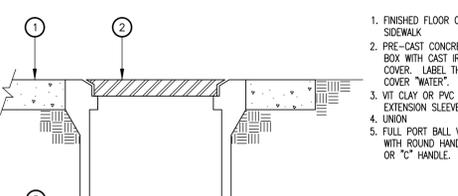
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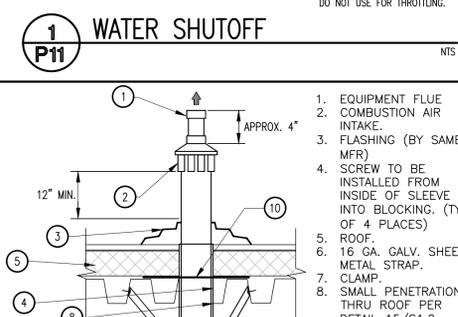
**7 CONDENSATE/RAIN CONNECTION** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS



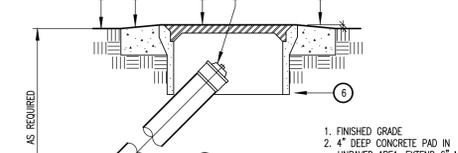
**4 WALL CLEANOUT** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS



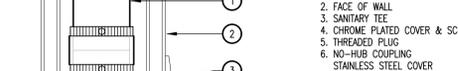
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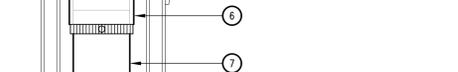
**7 CONDENSATE/RAIN CONNECTION** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS



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**7 CONDENSATE/RAIN CONNECTION** NTS



**7 CONDENSATE/RAIN CONNECTION** NTS

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PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**  
CENTRAL UNIFIED SCHOOL DISTRICT  
"Every Day!"

**AD 3-54a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885  
LICENSED ARCHITECT  
JOHN HAMILTON SMITH  
C 15885  
9-30-2008  
STATE OF CALIFORNIA

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PROJECT DEVELOPMENT

DATE	ISSUED FOR

REVISIONS

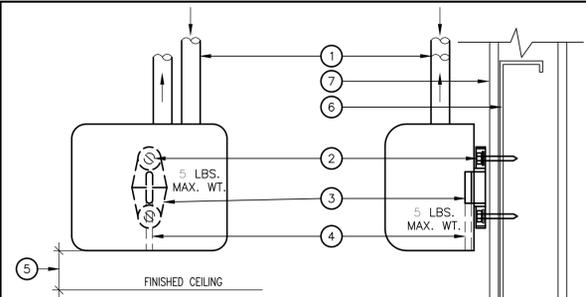
No.	DATE	DESCRIPTION
Δ	5.19.23	ADDENDUM 3

SHEET DESCRIPTION

PROJECT COORDINATOR: JOHN SMITH  
PROJECT NO.: 17-67  
DATE: 3.30.23  
SCALE: NTS

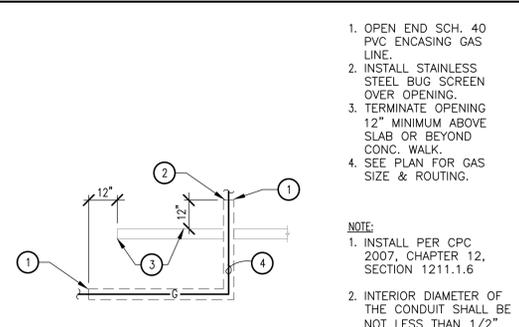
SHEET NO.: P11

REGISTERED PROFESSIONAL ENGINEER  
GREEN M. LENCIONI  
NO. 1901  
REV. 8-27-11  
STATE OF CALIFORNIA  
LEAF ENGINEERS  
A PBK COMPANY  
895 W. Ashlan Ave, Suite 101 Clovis, CA 93612  
p 559-223-9600 www.LEAFengineers.com  
job #: 18-1024



- CONDENSATE DRAIN LINES.
- MOUNTING BRACKET SECURE TO METAL WALL FRAMING ABOVE CEILING WITH (2) #10 X 1" LONG SMS.
- UNIT MANUFACTURERS MOUNTING BRACKET.
- PUMP SLIDES ONTO MOUNTING BRACKET PER MANUFACTURER'S RECOMMENDATION.
- MOUNT ABOVE CEILING AT APPROPRIATE HEIGHT FOR PROPER DRAINAGE PER PUMP KIT MANUFACTURER'S INSTALLATION INSTRUCTION.
- 8" X 16 GA. BACKING TRACK, SEE DET. 9/SKX.
- METAL FRAMED WALL, SEE ARCHITECTURAL & STRUCTURAL DWGS.

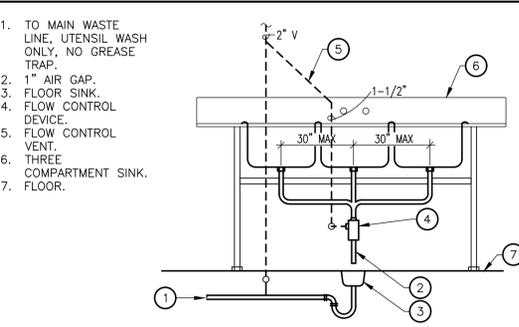
**10** CONDENSATE PUMP MOUNTING  
P11A NTS



- OPEN END SCH. 40 PVC ENCASING GAS LINE.
- INSTALL STAINLESS STEEL BUG SCREEN OVER OPENING.
- TERMINATE OPENING 12" MINIMUM ABOVE SLAB OR BEYOND CONC. WALK.
- SEE PLAN FOR GAS SIZE & ROUTING.

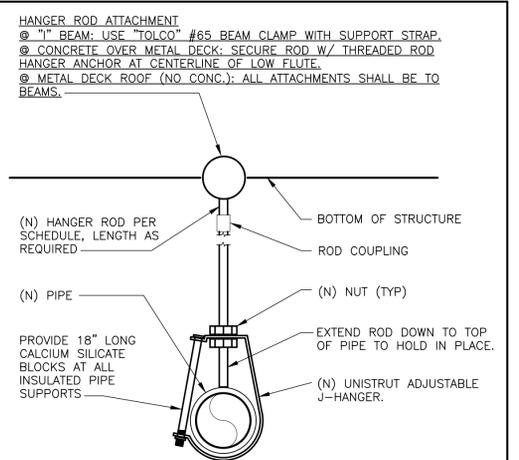
**NOTE:**  
1. INSTALL PER CPC 2007, CHAPTER 12, SECTION 1211.1.6  
2. INTERIOR DIAMETER OF THE CONDUIT SHALL BE NOT LESS THAN 1/2" LARGER THAN THE OUTSIDE DIAMETER OF THE GAS PIPING.

**7** GAS LINE SLEEVE  
P11A NTS



- TO MAIN WASTE LINE.
- 1" AIR GAP.
- FLOOR SINK.
- FLOW CONTROL DEVICE.
- FLOW CONTROL VENT.
- THREE COMPARTMENT SINK.
- FLOOR.

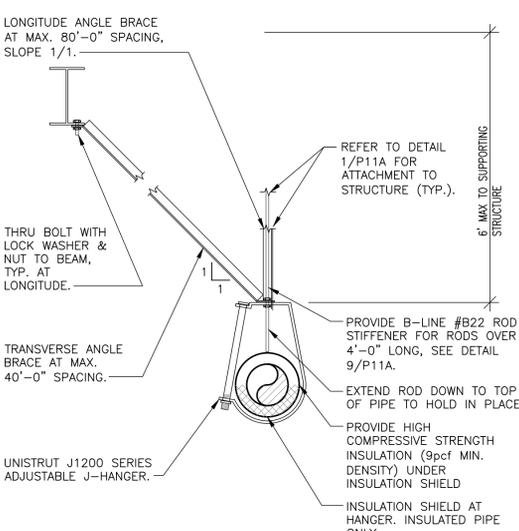
**3** SINK DRAINAGE DETAIL  
P11A NTS



HANGER ROD	MAX. PIPE SIZE	ANCHOR DIAMETER	MIN. EMBED. FOR TITEN HD	MAX. SUPPORT SPACING
3/8"	1/2"	3/8"	2-1/2"	6'-0" O.C.
3/8"	3/4"-1"	3/8"	2-1/2"	8'-0" O.C.
3/8"	1-1/4"-2"	3/8"	2-1/2"	10'-0" O.C.

**NOTE:**  
THREADED ROD HANGERS SHALL BE SIMPSON TITAN HD. USING A CALIBRATED TORQUE WRENCH, INSTALL EACH SCREW ANCHOR PER MANUFACTURER'S APPROVED TEST REPORT (ICC ESR-2713). SEE DETAIL 5/S1.1 FOR OTHER INFORMATION. ANCHORS SHALL BE FULLY SEATED AND SHALL NOT EXCEED 1/4 TURN OF THE SCREW AFTER INITIAL SEATING. DO NOT EXCEED THE MAXIMUM INSTALLATION TORQUE LISTED IN THE ESR REPORT.

**1** PIPE SUPPORT & TABLE  
P11A NTS



- CENTERLINE OF FIXTURE.
- CENTERLINE OF FIXTURE SUPPORT HANGER.
- 3/8" x 2" HEX HEAD BOLTS, (3) PER STUD, TYPICAL.
- 1/4" x 8" STEEL PLATE FOR FIXTURE WALL BACKING PLATE. (2) REQUIRED FOR MOUNTING URINAL.
- 16 GA. HEAVY DUTY METAL STUDS.

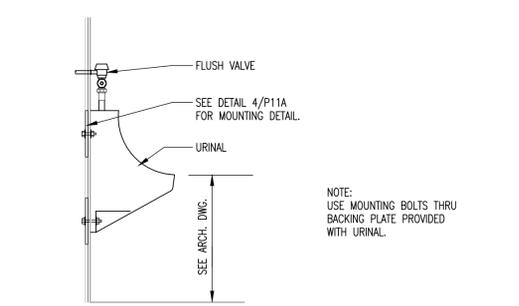
**NOTES:**  
A. FOR SINGLE FIXTURE, PLATE SHALL BE ANCHORED TO A MINIMUM OF (4) VERTICAL STUDS.  
B. FOR CONDITIONS AT BATTERY OF FIXTURES, MOUNT ON A CONTINUOUS STEEL PLATE. EXTEND PLATE (2) STUDS BEYOND CENTER OF END FIXTURE.  
C. MODIFY WALL FINISH FOR FLUSH SURFACE.

**4** FIXTURE SUPPORT BACKING PLATE  
P11A NTS

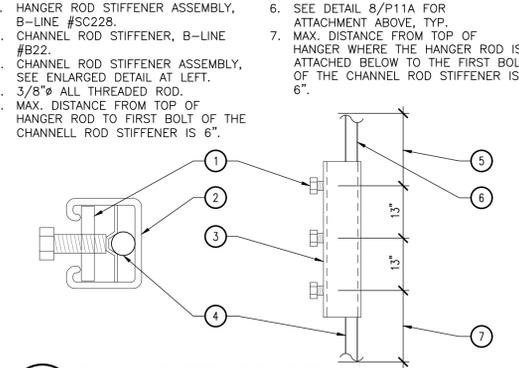
**TYPICAL SEISMIC BRACING FOR PIPE**

PIPE SIZE	ANGLE BRACE	ROD & BOLT SIZE	ANGLE CLIP	ANCHOR BOLT OR INSERT
2-1/2"	2" x 2" x 16 GA	3/8"	3" x 3" x 1/4"	3/8"
3", 4"	2-1/2" x 2-1/2" x 16 GA	3/8"	3" x 3" x 1/4"	1/2"

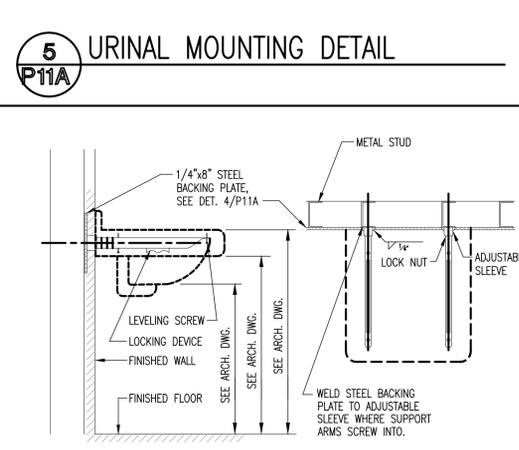
**8** PIPE SEISMIC BRACING DETAIL (PER SMACNA TABLE 5-7)  
P11A NTS



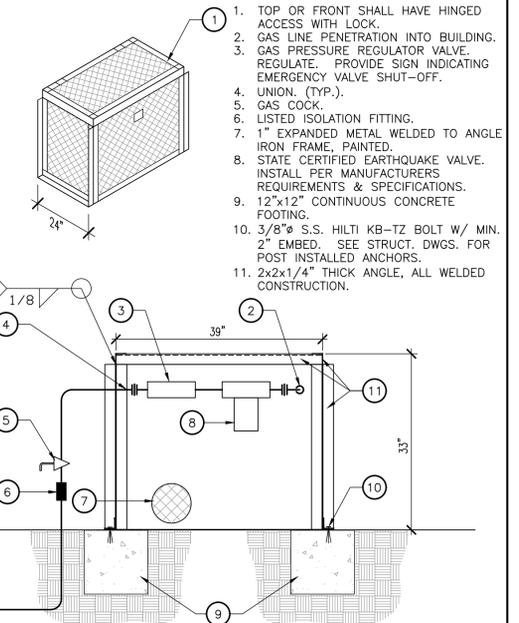
**5** URINAL MOUNTING DETAIL  
P11A NTS



**9** ROD STIFFENER DETAIL  
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**6** LAVATORY SUPPORT  
P11A NTS



**2** CAGE FOR PRV (PRESSURE REGULATING VALVE)  
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**PROJECT DEVELOPMENT**

DATE	ISSUED FOR

**REVISIONS**

No.	DATE	DESCRIPTION
△	5.19.23	ADDENDUM 3

**SHEET DESCRIPTION**

**PLUMBING DETAILS**

PROJECT COORDINATOR JOHN SMITH	SHEET No. P11A
PROJECT NO. 17-67	
DATE 3.30.23	
SCALE NTS	

**LEAF ENGINEERS**  
A PBK COMPANY  
895 W. Ashlan Ave, Suite 101 Clovis, CA 93612  
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job #: 18-1024

PLUMBING FIXTURE SCHEDULE						
MARK	FIXTURE	S or W	V	CW	HW	DESCRIPTION
WC 1	WATER CLOSET	3"	2"	1-1/2"	---	ZURN Z5655-BWL1 ELONGATED FLOOR MOUNTED WITH ZER6000-ONE-CPM BATTERY OPERATED AUTOMATIC FLUSH VALVE WITH METAL COVER AND Z59555S-EL OPEN-FRONT SEAT. 1.1 GPF. CBC FOR SMALL CHILDREN.
WC 2	WATER CLOSET	3"	2"	1-1/2"	---	ZURN Z5665-BWL1 HET ELONGATED FLOOR MOUNTED WITH ZER6000-ONE-CPM BATTERY OPERATED AUTOMATIC FLUSH VALVE WITH METAL COVER AND Z59555S-EL OPEN-FRONT SEAT. THE FLUSH HANDLE TO BE MOUNTED ON WIDE SIDE OF STALL, 1.28 GPF. CBC COMPLIANT.
U 1	URINAL	2"	1-1/2"	1"	---	ZURN Z5755 WALL-HUNG FLUSH RIM, 3/4" TOP SPUD, ZER6003AV-ULF-CP BATTERY OPERATED SENSOR FLUSH VALVE, AND MOUNTED WITH BACKING PLATE PER DETAIL 4 & 5/P11A. SEE ARCH. SHEETS FOR MTG. HEIGHT. 1/8 GPF.
U 2	URINAL	2"	1-1/2"	1"	---	ZURN Z5755 WALL-HUNG FLUSH RIM, 3/4" TOP SPUD, ZER6003AV-ULF-CP BATTERY OPERATED SENSOR FLUSH VALVE, AND MOUNTED WITH BACKING PLATE PER DETAIL 4 & 5/P11A. URINAL SHALL EXTEND MIN. OF 14" FROM WALL. SEE ARCH. SHEETS FOR MTG. HEIGHT. CBC COMPLIANT. 1/8 GPF.
L 1	LAVATORY	2"	1-1/2"	1/2"	---	ZURN Z5364 WALL-HUNG, 20"x18" VITREOUS CHINA WITH BACKSPLASH & WALL BRACKET, SINGLE HOLE PUNCH, Z6915-XL-M (0.35 GPM) BATTERY POWERED SENSOR SINGLE SUPPLY FAUCET, GRID DRAIN, P-TRAP, SPEEDWAY COMPRESSION WALL STOP & SUPPLY TUBING. MOUNTED WITH BACKING PLATE PER DETAIL 4 & 6/P11A. SEE ARCH. SHEETS FOR MOUNTING HEIGHT. CBC COMPLIANT.
L 2	LAVATORY	2"	1-1/2"	1/2"	1/2"	ZURN Z5114, COUNTERTOP LAVATORY, 20"x17"x6", HOLES ON 4" CENTERS. CHICAGO FAUCETS 2200-4E39VPABCP LEVER HANDLE FAUCET, PERFORATED GRID DRAIN, P-TRAP, SPEEDWAY COMPRESSION WALL STOP & SUPPLY TUBING. CBC COMPLIANT.
L 3	LAVATORY	2"	1-1/2"	1/2"	1/2"	ZURN Z5364 WALL-HUNG, 20"x18" VITREOUS CHINA WITH BACKSPLASH & WALL BRACKET, HOLES ON 4" CENTERS CHICAGO FAUCETS 2200-4E39VPABCP LEVER HANDLE FAUCET, PERFORATED GRID DRAIN, P-TRAP, SPEEDWAY COMPRESSION WALL STOP & SUPPLY TUBING. MOUNTED WITH BACKING PLATE PER DETAIL 4 & 6/P11A. SEE ARCH. SHEETS FOR MOUNTING HEIGHT. CBC COMPLIANT.
L 4	LAVATORY	2"	1-1/2"	1/2"	1/2"	ZURN Z5364 WALL-HUNG, 20"x18" VITREOUS CHINA WITH BACKSPLASH & WALL BRACKET, HOLES ON 4" CENTERS. ZURN Z86300-XL-CP4 METERING FAUCET, FLOOR MOUNTED CARRIER JAY. R SMITH 0700. ADJUSTED TO STAY OPEN 10 SECONDS WITH (0.35 GPM) FLOW RESTRICTOR, PERFORATED GRID DRAIN, P-TRAP, SPEEDWAY COMPRESSION WALL STOP & SUPPLY TUBING. MOUNTED WITH BACKING PLATE PER DETAIL 4 & 6/P11A. SEE ARCH. SHEETS FOR MOUNTING HEIGHT. CBC COMPLIANT.
WHA 1	WATER HAMMER ARRESTER	---	---	VARIES	VARIES	SIoux CHIEF 650 SERIES HYDRA-RESTER, SEAMLESS COPPER CHAMBER SUITABLE FOR CONCEALED INSTALLATION, PDI SIZE INDICATED ON PLANS. INSTALL PER MANUFACTURER RECOMMENDATION.
TP 1	TRAP PRIMER	---	---	1/2"	---	PRECISION PLUMBING PRODUCTS INC. BRASS DIAPHRAM TYPE TRAP PRIMER W/INTEG. VAC. BREAKER & GRAVITY OUTLET, PROVIDE INLET BALL VALVE & ACCESS PANEL. SEE PLANS FOR NUMBER OF TRAPS SERVED.
FD 1	FLOOR DRAIN	2"	1-1/2"	TP	---	ZURN Z415-5B COATED CAST IRON WITH 5" ROUND CHROME PLATED GRATE. DOUBLE DRAINAGE FLANGE & NO HUB OUTLET. TRAP PRIMER CONNECTION. GRATE OPENING NOT MORE THAN 1/4".
FD 2	CAN WASH FLOOR DRAIN	3"	2"	1/2"	1/2"	ZURN Z1982-WB-31, 12"x12"x8" ALL TYPE 304 STAINLESS STEEL CAN WASH DRAIN WITH LOOSE SET GRATE AND SEDIMENT BUCKET INCLUDING S.S. MESH LINER. DRAIN HAS INTEGRAL SPRAY NOZZLE OUT CENTER OF GRATE. PROVIDE WITH Z51464 TYPE 304 S.S. WATER SUPPLY CONTROL BOX WITH INTERNAL MIXING VALVE AND LOCKING BOX.
HB 1	HOSE BIBB	---	---	3/4"	---	BRASS FAUCET, SHIELDED LOOSE KEY HANDLE, NON REMOVABLE VACUUM BREAKER, & ROUGH CHROME FINISH FOR OUTDOORS; POLISHED CHROME INDOORS. WOODFORD 24P-3/4 WITH WALL FLANGE AT WALLS; WOODFORD Y24 AT STAND PIPES.
FS 1	FLOOR SINK	2"	1-1/2"	TP	---	ZURN Z-1901 COATED CAST IRON WITH ACID RESISTANT PAINTED INTERIOR, 12" SQUARE TOP, 8" DEEP, DOUBLE DRAINAGE. NO HUB OUTLET & DOME STRAINER, TRAP PRIMER CONNECTION, 1/2 GRATE.
FS 2	FLOOR SINK	2"	1-1/2"	TP	---	ZURN Z1910-KC-32-19 COATED CAST IRON WITH ACID RESISTANT PAINTED INTERIOR, 8" SQUARE TOP, 6" DEEP, DOUBLE DRAINAGE. NO HUB OUTLET & DOME STRAINER, TRAP PRIMER CONNECTION, 1/2 GRATE.
S 1	SINK	2"	1-1/2"	1/2"	---	JUST CRA-ADA-1931-A-GR, STAINLESS STEEL, SINGLE COMPARTMENT, 16"x22"x6-1/2", CHICAGO 350-GBAE35ABCP-VPC FAUCET, HAWS 5017LF PUSH BUTTON BUBBLER AND JUST J-35-FS PERFORATED GRID DRAIN, SPEEDWAY COMPRESSION, P-TRAP, WALL STOPS AND SUPPLY TUBING. CBC COMPLIANT.
S 2	SINK	2"	1-1/2"	1/2"	1/2"	JUST DL-ADA-2233-A-GR, 22"x33"x6-1/2", DOUBLE COMPARTMENT, STAINLESS STEEL, WITH HOLES PUNCH. TWO J-35GS BASKET STRAINER AND CHICAGO FAUCETS 2300-8E34VPABCP-VPC SINGLE LEVER FAUCET, P-TRAP, WALL ANGLE STOPS AND SUPPLY TUBING. CBC COMPLIANT.
S 4	SINK	2"	1-1/2"	1/2"	1/2"	JUST SL-ADA-1921-GR, 18 GA STAINLESS STEEL, SINGLE COMPARTMENT, 14"x18"x6-1/2" 1-HOLE PUNCH WITH CHICAGO 50-E35VPABCP-VPC GOOSENECK FAUCET WITH #369 HANDLE J-35-FS PERFORATED GRID DRAIN, SPEEDWAY COMPRESSION WALL STOPS & SUPPLY, P-TRAP. CBC COMPLIANT.
S 5	SINK	2"	1-1/2"	1/2"	1/2"	JUST CRA-ADA-1931-A-GR, STAINLESS STEEL, SINGLE COMPARTMENT, 16"x22"x6-1/2", CHICAGO 350-E35VPABCP-VPC FAUCET, HAWS 5017LF PUSH BUTTON BUBBLER AND JUST J-35-FS PERFORATED GRID DRAIN, SPEEDWAY COMPRESSION, P-TRAP, WALL STOPS AND SUPPLY TUBING. CBC COMPLIANT.
GD 1	GARBAGE DISPOSAL	---	---	---	---	IN-SINK-ERATOR EVOLUTION GARBAGE DISPOSER, 3/4 HP, 120 VOLTS, 8.1 AMPS, AUTOMATIC REVERSING MOTOR, QUICK LOCK MOUNTING.
MV 1	MIXING VALVE	---	---	1/2"	1/2"	BRADLEY S59-4000 POINT OF USE MIXING VALVE, INLINE CHECK VALVES. ADJUSTABLE SET POINT TEMPERATURE CONTROL, SET OUTLET TEMPERATURE AT 108°F. 0.35 GPM MINIMUM FLOW.
SB 1	SUPPLY BOX	---	---	1/2"	---	SPECIAL PRODUCTS #0B-504 RECESSED METAL WATER SUPPLY BOX WITH SHUT-OFF VALVE.
MS 1	MOP SINK	3"	1 1/2"	3/4"	3/4"	COMMERCIAL ENAMELING CO. 871 ENAMELED CAST IRON CORNER FLOOR MOUNTED WITH C.E.C.O. B-872 REMOVABLE RIM GUARD, CHICAGO FAUCETS 897-CP FAUCET WITH HOSE END, BUCKET HOOK, VACUUM BREAKER. INTEGRAL SHANK STOPS AND WALL BRACE. PROVIDE WITH 5'-0" HOSE.

PLUMBING FIXTURE SCHEDULE						
MARK	FIXTURE	S or W	V	CW	HW	DESCRIPTION
DF 1	DRINKING FOUNTAIN	2"	1 1/2"	1/2"	---	ELKAY LK4430BF1U PEDISTAL MOUNTED TR-LEVEL HEAVY DUTY 316 STAINLESS STEEL OUTDOOR DRINKING FOUNTAIN WITH PUSH BUTTON BOTTLE FILLER, SELF CLOSING PUSH BUTTON VALVES, SEE ARCH. SHEETS FOR MOUNTING HEIGHT. CBC COMPLIANT. NSF APPROVED. COLOR SELECTED BY ARCH. SEE CIVIL DRAWING C5.1 FOR LOCATIONS.
RDF 1	REFRIG. DRINKING FOUNTAIN	2"	1 1/2"	1/2"	---	ELKAY LZSTL8WSLP WALL-HUNG HIGH-LOW UNIT WITH SENSOR BOTTLE FILLER, FILTER WITH VISUAL FILTER MONITOR, HANGER BRACKET & STAINLESS STEEL RECEIVER. CAPACITY: 8.0 GPH AT 80°F INLET WATER & 90°F AMBIENT AIR, 115/1, 5.5 FLA. SEE ARCH. SHEETS FOR MOUNTING HEIGHT. CBC COMPLIANT FOR ACCESS. STAINLESS STEEL CABINET.
WS 1	WASH STATION	2"	1-1/2"	3/4"	3/4"	BRADLEY MODEL 6951B-5, 5-STATION WALL MOUNTED STAINLESS STEEL SINK, BRADLEY PUSH BUTTON METERING FAUCETS MODEL 90-75, WALL MOUNTING BRACKETS, 14 GAUGE TYPE 304 STAINLESS STEEL CONSTRUCTION WITH VANDAL RESISTANT REINFORCED STAINLESS STEEL CHANNELS WELDED TO UNDERSIDE, P-TRAP, WALL STOP VALVES. WITH MV-1 FOR EACH FAUCET.
RD 1	COMBO ROOF & OVERFLOW DRAIN	---	---	---	---	ZURN Z164 COMPLETE WITH CAST IRON MEMBRANE CLAMP. CAST IRON DOME GRATES ON ROOF & OVERFLOW DRAIN INLETS, MINIMUM 2" WATER DAM FOR OVERFLOW PIPE. SEE PLUMBING PLAN FOR SIZE.
GI 1	GREASE INTERCEPT.	4"	2"	---	---	JENSEN MODEL JP1000EP-E 1000 GALLON CAPACITY GREASE INTERCEPTOR PRECAST REINFORCED CONCRETE TANK WITH TRAFFIC H-20 RATING WITH MANHOLE RISERS AS NEEDED.
ESB 1	EFFLUENT SAMPLE BOX	4"	---	---	---	JENSEN MODEL 2432-2 EFFLUENT SAMPLE BOX WITH PIPE CONNECTORS 24" GAS TIGHT MAN HOOD COVERS BROUGHT TO GRADE.
SS 1	SERVICE SINK	3"	1-1/2"	1/2"	1/2"	ZURN Z5888, ENAMELED CAST IRON 22"x18"x12-1/2" ACID RESISTING SERVICE SINK, WITH Z5900-IP3 PEDESTAL-TRAP & CLEANOUT, RIM GUARD AND WALL HANGER, CHICAGO 697 FAUCET. PROVIDE STRAINER.
WH 1	WATER HEATER	---	---	1"	1"	RHEEM GHE100, 100 GALLON S.S. TANK, GAS FIRED DIRECT VENT, ULTRA LOW NOX, 130,000 BTUH, 191 GAL/HR AT 80°F TEMP. RISE, WATTS 40XL, TEMPERATURE PRESSURE RELIEF VALVE, OPERATING WEIGHT = 1600 LBS., C.E.C. APPROVED. 98% THERMAL EFF. PROVIDE WITH CPVC CONCENTRIC VENT. 120 VOLT SERVICE REQUIRED.
WH 2	WATER HEATER	---	---	3/4"	3/4"	RHEEM EGSP 6, 6 GALLON STORAGE CAPACITY, 8 GPH RECOVERY RATE AT 80°F TEMP. RISE WITH 1500 WATT, 7.2 AMPS, 208/1 PHASE ELEMENT, AND 3/4" P&T RELIEF VALVE. OPERATING WEIGHT 91 LBS. C.E.C. APPROVED. MIN. ENERGY FACTOR SHALL BE 0.92.
WH 3	WATER HEATER	---	---	3/4"	3/4"	RHEEM EGSP 20, 20 GALLON STORAGE CAPACITY, 15 GPH RECOVERY RATE AT 80°F TEMP. RISE WITH 3000 WATT, 14.4 AMPS, 208/1 PHASE ELEMENT, AND 3/4" P&T RELIEF VALVE. OPERATING WEIGHT = 243 LBS., C.E.C. APPROVED. MIN. ENERGY FACTOR SHALL BE 0.92.
CP 1	CIRCULATION PUMP	---	---	---	---	PIPE MOUNTED CIRCULATOR WITH CERAMIC SHAFT FOR 5 GPM AT 8' TDH, 115/1, TACO SMART PLUS 008 WITH INTEGRAL FLOW CHECK, REMOTE SENSOR.

- NOTES:
- ALL PLUMBING FIXTURES, FLUSH VALVES, FAUCETS, SHOWER CONTROLS, FLOOR DRAINS, FLOOR SINKS, DRINKING FOUNTAINS, ETC. SHALL BE VANDAL RESISTANT.
  - PLUMBING FIXTURES AND PIPING SHALL COMPLY WITH AB1953 FOR LEAD CONTENT.
  - ALL ACCESS PANELS SHALL HAVE CYLINDER KEY LOCK.

GREASE INTERCEPTOR SIZING (WASTE FIXTURE UNITS)				
NO. OF FIX.	TYPE OF FIXTURE	F.U. / FIX	TOTAL FIX UNITS	
1	3 COMPARTMENT SINK (KITCHEN)	6.0	6.0	
2	HAND WASH SINK (KITCHEN)	1.0	2.0	
2	FLOOR SINK	3.0	6.0	
5	FLOOR DRAIN	2.0	10.0	
1	PREP SINK	3.0	3.0	
TOTAL			27.0	

GREASE INTERCEPTOR SIZE MINIMUM IS 1000 GALLONS PER UPC 2016 TABLE 1014.3.6.

H.W. DEMAND - MPR				
ITEM	QTY.	GPH	TOTAL GPH	
LAVATORY/HAND SINK	9	5.0	45.0	
SINK	1	20.0	20.0	
DISHWASHER (DOMESTIC)	1	15.0	15.0	
3-COMP SINK	1	90.0	90.0	
DISHWASHER (COMMERCIAL)	1	50.0	50.0	
MOP SINK	1	20.0	20.0	
WASH STATION	2	25.0	50.0	
TOTAL GPH			290.0	
MAXIMUM DEMAND			290.0	
MAXIMUM DEMAND FACTOR (%) X MAX. DEMAND (GPH)	30		87.0	
MAXIMUM STORAGE FACTOR (%) X	1.0		87.0	
WATER HEATER TO MEET GPH @ 80° TEMP RISE			87.0	
WATER HEATER(S) STORAGE GALLONS			90.0	

WATER BOOSTER PUMP SCHEDULE	
NUMBER	WBP-1
TYPE	CENTRIFUGAL
MOUNTING	VERTICAL
HP / BHP	3 / -
VOLTS / PHASE	460 / 3
MOTOR FLA	2.6
RPM / EFF. (%)	3450 / -
# OF PUMPS	2
GPM / TDH (FT. WC.)	68 / 92.6
INLET/OUTLET (IN.)	1-1/2 / 1
SERVICE	DOMESTIC WATER
OPER. WT. (LBS.)	1850
MANUFACTURER	QUANTUMFLO
MODEL	PRODIGY 2
NOTES:	
1.	PROVIDE NEMA 3R CONTROL PANEL, VFD CONTROLLER, 304 STAINLESS STEEL FRAME, BACNET. PROVIDE BY-PASS ASSEMBLY WITH CHECK VALVE, VIBRATION ISOLATION KIT.
2.	MEET NSF 61 & NSF 372.
3.	PROVIDE CHALLENGER PC366FR - 119 GAL. TANK, 16 GA., (1200 LBS. OP. WT., INCLUDED ABOVE)

DOMESTIC WATER DEMAND AND PIPE SIZING			
PLAN CHECK#	DATE: 1/22/19	PREPARED BY: K.R.L.	
PROJECT: SHIELDS & BRAWLEY ELEM. SCHOOL	LOCATION: FRESNO, CA		
Water Meter Size	4	TOTAL GPM:	129
Total Fixture Units:	418.0	Total Distance from water meter to most remote plbg. fixture:	1000 ft.
Total rise for head loss	20 ft. x 0.43		8.6 PSI
PSI required for water closet/urinal	(F.V.=25.0 PSI, F.T.=8.0 PSI)		15.0 PSI
PSI flow loss through water meter (Chart A-1)			1.7 PSI
PSI flow loss through backflow preventer	(RP=12.0 PSI, D.C.=12.0 PSI)		12.0 PSI
MINIMUM PSI available @ jobsite		Total system loss	37.3 PSI
Total system loss in PSI			35.0 PSI
Remaining PSI available (if negative use booster pump)			-2.3 PSI
Booster pump PSI			35.0 PSI
Total remaining PSI available			32.7 PSI
PSI available 32.7 / 1000 Total Feet = .041 x 100 =			4.1 PSI/100 FT
Use line 4.1 On Chart			
VELOCITIES SHALL NOT EXCEED 8 FT/SEC.			

PIPE SIZE (IN.)	WILL DELIVER (GPM)	FOR F.V. (F.U.)	FOR FT (F.U.)
6"			
5"			
4"			
3"	180	450	450
2-1/2"	110	305	429
2"	68	104	214
1-1/2"	33	18	60
1-1/4"	23	6	37
1"	12	---	15
3/4"	6	---	8
1/2"	3	---	3

F.V. = Flushometer Valve  
F.T. = Flush Tank  
CPC 2016, APPENDIX A

FIXTURE UNIT (COLD WATER)			
NO. OF FIX.	TYPE OF FIXTURE	F.U. / FIX.	TOTAL FIX. UNITS
---	BATHTUB	4.0	---
---	CLOTHESWASHER	4.0	---
---	DISH WASHER (COMM.)	1.5	---
7	DRINKING FOUNTAIN (2) BUBBLER	0.5	3.5
1	HOSE BIBB	2.5	2.5
33	HOSE BIBB (EA. ADDITION)	1.0	33.0
41	CLASSROOM SINK	1.5	61.5
1	KITCHEN SINK 3- COMP. (POT)	2.5	2.5
---	LAUNDRY SINK	1.5	---
38	LAVATORY	1.0	38.0
1	MOP SINK	3.0	3.0
2	SERVICE SINK	3.0	6.0
---	SHOWER	2.0	---
2	SINK	2.0	4.0
8	URINAL	4.0	32.0
1	WASHFOUNTAIN	4.0	4.0
---	WATER CLOSET (F. TANK)	2.5	---
37	WATER CLOSET (F. VALVE)	5.0	185.0
1	FUTURE	20.0	20.0
TOTAL			395.0

PER CPC 2016, TABLE A-103.1, APPX. A



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PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-56a**  
**S&B Elementary**  
**02-116800**



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PROJECT DEVELOPMENT	
DATE	ISSUED FOR

REVISIONS		
No.	DATE	DESCRIPTION
Δ	5.19.23	ADDENDUM 3

SHEET DESCRIPTION  
**PLUMBING SCHEDULES**

PROJECT COORDINATOR	SHEET No.
JOHN SMITH	
PROJECT NO.	
17-67	
DATE	
3.30.23	
SCALE	
NTS	

**P12**



895 W. Ashlan Ave, Suite 101 Clovis, CA 93612  
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job #: 18-1024

## ELECTRICAL EQUIPMENT ANCHORAGE NOTES

ALL ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10, CHAPTERS 13, 26 AND 30:

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING ELECTRICAL UTILITY SERVICE.
- MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED CONDUIT.

- COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORTS THE COMPONENT.
- COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL, RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

## ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTES

THE ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10, SECTION 13.3 AS DEFINED IN ASCE 7-10, SECTIONS 13.6.5.6, 13.6.7, 13.6.8, AND 2016 CBC, SECTIONS 1616A.1.24, 1616A.1.25, AND 1616A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., OSHDP OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

THE ELECTRICAL DISTRIBUTION SYSTEM IS DETAILED ON THE APPROVED DRAWINGS WITH SPECIFIC NOTES AND DETAILS. WHEN A DETAIL IS NOT PROVIDED ON THE PLANS, THE ELECTRICAL DISTRIBUTION SYSTEM SHALL COMPLY WITH OSHDP PRE-APPROVAL #0PM-0052-13 (B-LINE).

## LIGHTING GENERAL NOTES

- THE CONTRACTOR SHALL PROVIDE A COMPLETE SYSTEM OF LIGHT FIXTURES AND CONTROLS THAT COMPLY WITH THE REQUIREMENTS OF CALIFORNIA ENERGY COMMISSION TITLE 24.
- PROVIDE A COMPLETE AND OPERATIONAL CONTROLS PACKAGE IN LIGHTING AREAS. PROVIDE WALL SWITCHES, SENSORS, POWER PACKS, MISCELLANEOUS APPURTENANCES, FACTORY CABLING, AND FACTORY COMMISSIONING.
- AN EQUAL SUBSTITUTE PACKAGE BY ANOTHER MANUFACTURER MAY BE ACCEPTABLE. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL REQUIRED COMPONENTS, ADDITIONAL WIRING FOR DIMMING OPERATION OF LIGHT FIXTURES, AND ANYTHING ELSE NEEDED FOR A COMPLETE AND OPERATIONAL SYSTEM. SUBMIT SUBSTITUTE PACKAGE, INCLUDING SHOP DRAWINGS, TO ENGINEER FOR REVIEW AND APPROVAL. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN REJECTION OF SUBSTITUTE COMPONENTS.
- THE PLANS GENERALLY SHOW THE LOCATION OF SWITCHES, SENSORS, CONTROL MODULES ETC. ACTUAL LOCATIONS AND INSTALLATION REQUIREMENTS SHALL BE DETERMINED BY THE MANUFACTURER. SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL.
- PROVIDE FACTORY COMMISSIONING, TO INCLUDE COMPLETE CONTROL WIRING/ CALIBRATION/ PROGRAMMING OF LIGHTING CONTROL COMPONENTS.
- LIGHTING SYSTEM ACCEPTANCE TESTING IS REQUIRED AS PER TITLE 24. THE CONTRACTOR SHALL INCLUDE ACCEPTANCE TESTING COSTS IN BID. THE CONTRACTOR IS RESPONSIBLE TO MAKE ANY ADJUSTMENTS NECESSARY TO ACHIEVE ACCEPTANCE.
- LIGHTING FIXTURE COLORS, WHEN NOT SPECIFIED, SHALL BE SELECTED BY THE ARCHITECT'S OFFICE. DO NOT SUBMIT COLORS THAT HAVE NOT BEEN APPROVED BY THE ARCHITECT.

## LOW VOLTAGE SYSTEMS NOTES

- THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL DATA AND VOICE COMMUNICATIONS AREA NETWORK (LAN), INCLUDING MAIN AND INTERMEDIATE DATA FRAMES, SITEWIDE SINGLEMODE FIBER OPTIC CABLING, COPPER CAT6 AND CAT6A CABLING, LADDER RACKING, CABLE MANAGEMENT, TERMINATION OF ALL CABLES, PATCH PANELS AND CABLES, COMMUNICATIONS GROUND BUS BAR AND GROUND CONNECTION, UNINTERFERABLE POWER SUPPLIES, DATA AND COMMUNICATION OUTLETS, WIRELESS ACCESS POINT OUTLETS, AND TESTING AND REPORTS FOR ALL INSTALLED CABLES, NETWORK ELECTRONICS SUCH AS GATEWAYS AND SWITCHES SHALL BE FURNISHED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL ATLAS/IED IP BASED PUBLIC ADDRESS SYSTEM, SOFTWARE, INTERIOR IP SPEAKERS WITH CLOCKS AND TALKBACK AND SPEAKER HOUSINGS, EXTERIOR SPEAKERS WITH VANDAL HOUSINGS, CAT6 CABLING, INTEGRATION WITH ACCESS SYSTEM FOR LOCKDOWN, PROGRAMMING, TESTING, AND REPORTS. IP SYSTEM COMPONENTS SHALL BE THE MOST CURRENT MODELS. THE PA SYSTEM SHALL BE INTERFACED WITH THE VOIP SYSTEM TO ALLOW ANNOUNCEMENTS AND INTERFACED WITH OTHER AUDIO/VIDEO SYSTEMS TO OVERRIDE THOSE SYSTEMS WHEN MAKING ANNOUNCEMENTS.
- THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL VIDEO SURVEILLANCE SYSTEM, INCLUDING POWER SUPPLIES, CATEGORY CABLING, OUTLETS AND JACKS, HOUSINGS, MOUNTING HARDWARE, AND AIMING/FRAMING IMAGES, INTERFACE OF NVR WITH THE LAN, PROGRAMMING, TESTING, AND REPORTS. THE LOCATIONS OF CAMERAS SHALL BE DIRECTED BY THE DISTRICT. IP CAMERAS AND NVRs WILL BE PROVIDED BY THE DISTRICT AND INSTALLED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL MULTIPURPOSE ROOM

## GENERAL ELECTRICAL NOTES

- ALL WORK SHALL MEET THE LATEST ADOPTED ADDITIONS OF THE CALIFORNIA CODE OF REGULATIONS, TITLE 24 AND ALL OTHER APPLICABLE REGULATIONS, WHICH INCLUDE:
 

CALIFORNIA BUILDING CODE	2016
CALIFORNIA ELECTRICAL CODE	2016
NON RESIDENTIAL CEC ENERGY STANDARDS	2016
- NOTHING IN THE PLANS OR SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.
- IT IS THE INTENTION OF THESE PLANS AND SPECIFICATIONS TO COVER EVERYTHING REQUIRED TO PROVIDE FOR COMPLETE AND OPERATIVE SYSTEMS. THE CONTRACTOR IS TO FURNISH LABOR, MATERIAL, TRANSPORTATION, EQUIPMENT, MISCELLANEOUS SERVICES, ETC. REQUIRED TO ACCOMPLISH THIS RESULT. ANYTHING WHICH MAY BE REASONABLY CONSTRUED AS A NECESSARY PART OF THE INSTALLATION IS TO BE INCLUDED, WHETHER OR NOT SPECIFICALLY SHOWN OR MENTIONED.
- THE CONTRACTOR SHALL EXAMINE THE SITE AND EXISTING CONDITIONS AND MAKE ALLOWANCES IN THE BID FOR ANY CONDITIONS NOT SHOWN ON THE ELECTRICAL DOCUMENTS.
- THE PLANS AND SPECIFICATIONS ARE INTENDED TO BE USED AS CONSTRUCTION GUIDELINES AND ARE NOT THE TOTAL INSTRUMENT OF CONTRACT DOCUMENTS. IT IS NOT THE INTENTION OF ANY CONSTRUCTION PLANS TO DIVIDE WORK AMONG DIFFERENT TRADES. VERIFY THE SCOPE OF WORK WITH THE ARCHITECT AND THE GENERAL CONTRACTOR.
- ELECTRICAL ROUTING IS DIAGRAMMATIC ONLY. ACTUAL ROUTING & PHYSICAL CONDITIONS MAY VARY. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL ROUTING, CONNECTIONS, & PROVISION OF ALL APPURTENANCES NECESSARY FOR A COMPLETE & OPERATING SYSTEM.
- ELECTRICAL EQUIPMENT SHALL HAVE AN APPROVED TESTING LABORATORY LABEL ATTACHED (UL, CSA ETC.) PER CEC 110.2.
- PROVIDE LABELING AND DIRECTORIES FOR ALL SWITCHBOARDS AND PANELBOARDS PER CEC 408.4.
- ELECTRICAL EQUIPMENT SHALL HAVE A SHORT CIRCUIT CURRENT RATING CAPABLE OF WITHSTANDING THE AVAILABLE SHORT CIRCUIT CURRENT PER CEC 110.9.
- PROVIDE MINIMUM 30" WIDE x 78" HIGH x 36" DEEP [42" DEEP] WORK CLEARANCES IN FRONT OF PANELS, SERVICE OR EQUIPMENT RATED AT 120/208V 3Ø 4W [277/480V 3Ø 4W] PER CEC 110.26.
- ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUIT OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTABLES SHALL BE MOUNTED BETWEEN 15" AFF AND 48" AFF AND SHALL COMPLY WITH CBC SECTION 11B-308. THE LOW REACH SHALL BE MEASURED TO THE BOTTOM OF THE OUTLET BOX AND THE HIGH REACH SHALL BE MEASURED TO THE TOP OF THE OUTLET BOX. IF THE REACH IS OBSTRUCTED (E.G. BY CASEWORK, COUNTERS, ETC.), RECEPTABLES SHALL BE LOCATED WITHIN THE REACH RANGES SPECIFIED IN CBC 11B-308.2.2 AND 11B-308.3.2.
- CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF A ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES, OR COOLING, HEATING AND VENTILATING EQUIPMENT SHALL BE MOUNTED BETWEEN 15" AFF AND 48" AFF AND SHALL COMPLY WITH CBC SECTION 11B-308. THE LOW REACH SHALL BE MEASURED TO THE BOTTOM OF THE OUTLET BOX AND THE HIGH REACH SHALL BE MEASURED TO THE TOP OF THE OUTLET BOX. IF THE REACH IS OBSTRUCTED (E.G. BY CASEWORK, COUNTERS, ETC.), SWITCHES AND CONTROLS SHALL BE LOCATED WITHIN THE REACH RANGES SPECIFIED IN CBC 11B-308.2.2 AND 11B-308.3.2.
- ALL WALL AND SURFACE MOUNTED FIXTURES PROTRUDING IN THE PATH OF TRAVEL (POI) OR COMMON PEDESTRIAN WAYS SHALL COMPLY WITH CBC 11B-307.2, OR SHALL BE MOUNTED LESS THAN 27" AFF OR GREATER THAN 80" AFF, OR SHALL BE PROVIDED WITH A BARRIER CONFORMING TO CBC 11B-307.4.
- EMERGENCY EGRESS LIGHTING SHALL PROVIDE A MINIMUM LUMINANCE OF 1 FOOTCANDLE AT THE WALKING SURFACE FOR A MINIMUM OF 90 MINUTES.
- FIRE ALARM EQUIPMENT SHALL BE SERVED BY DEDICATED FIRE ALARM BRANCH CIRCUITS PER NFPA 72 10.6.5.1.2. THE CIRCUIT NUMBER SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM EQUIPMENT PER NFPA 10.6.5.2.1. THE CIRCUIT BREAKER SHALL BE EQUIPPED WITH RED HANDLE AND LOCK-ON DEVICE, AND PERMANENTLY IDENTIFIED AS "FIRE ALARM CIRCUIT" PER NFPA 72 10.6.5.2.2, 10.6.5.2.3, 10.6.5.2.4, AND 10.6.5.4.
- WIRING FOR 120/208V AND 277/480V SYSTEMS SHALL BE MIN. #12 AWG THHN/THWN-2 COPPER.
- FEEDERS SIZE #4 AND LARGER SHALL BE MEGGER TESTED. TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER.
- COLORS/FINISHES/MATERIALS FOR ALL ELECTRICAL DEVICES, PLATES, LIGHT FIXTURES, ETC. SHALL BE CHOSEN BY THE ARCHITECT.
- CONTRACTOR SHALL EXTEND ALL SIGNAL AND FIRE ALARM SYSTEMS AS REQUIRED. MODIFY HEAD-IN EQUIPMENT TO ACCOMMODATE NEW DEVICES AS REQUIRED. VERIFY THE CONDITION AND EXPANDABILITY OF ALL HEAD-IN EQUIPMENT PRIOR TO BID AND MODIFY ACCORDINGLY.
- CALL USA UNDERGROUND ALERT AND VERIFY WITH DISTRICT THE DESIRED ROUTING AND LOCATIONS OF UNDERGROUND CONDUITS AND STRUCTURES PRIOR TO TRENCHING.
- EXISTING EQUIPMENT TO BE REMOVED AND/OR REPLACED SHALL BE DELIVERED TO THE DISTRICT MAINTENANCE DEPARTMENT OR DISPOSED OF, AT THE DISCRETION OF THE DISTRICT.
- ALL CONDUITS UNDER CONCRETE OR ASPHALT WILL HAVE 24" MINIMUM COVER OF ROCK FREE NATIVE SOIL, METALLIC WARNING TAPE AT 12", AND NO ENCASEMENT REQUIRED. ALL CONDUITS THAT HAVE CONDUCTORS WITH A POTENTIAL OF 250 VOLT TO GROUND OR GREATER, THAT ARE NOT UNDER ASPHALT AND/OR CONCRETE SHALL REQUIRE 1,500 PSI CONCRETE ENCASEMENT, METALLIC WARNING TAPE AT 12", AND A MINIMUM COVER FROM TOP OF ENCASEMENT OF 36". ALL CONDUITS THAT HAVE CONDUCTORS WITH A POTENTIAL OF LESS THAN 250 VOLTS TO GROUND, THAT ARE NOT UNDER ASPHALT AND/OR CONCRETE WILL HAVE 36" MINIMUM COVER OF NATIVE SOIL, METALLIC WARNING TAPE AT 12" AND NO ENCASEMENT REQUIRED.
- INSTALL GALVANIZED RIGID STEEL RISERS & ELBOWS WHERE THEY OCCUR. WRAP GALVANIZED RIGID STEEL BELOW GRADE. PVC SHALL NOT BE INSTALLED ABOVE GRADE.
- CONDUIT INSTALLED ABOVE GRADE SHALL BE MIN. 3/4" TRADE SIZE. CONDUIT BELOW GRADE SHALL BE MIN. 1" TRADE SIZE.
- PROVIDE (4) 1" CONDUIT STUBS FROM NEW ELECTRICAL PANEL TO ACCESSIBLE ATTIC SPACE FOR FUTURE USE.
- CIRCUIT BREAKERS SERVING FIRE ALARM EQUIPMENT SHALL HAVE A RED HANDLE AND LOCK-ON DEVICE.
- HOLES ARE NOT ALLOWED THROUGH TOP PLATES OF BEARING WALLS AND SHEAR WALLS.
- INCLUDE FIRE STOP SYSTEMS REQUIRED FOR ALL WORK AFFECTED BY FIRE RATED ASSEMBLIES.
- INCLUDE ALL WORK REQUIRED TO INVESTIGATE, DEMOLISH, & RECONNECT EXISTING ITEMS.

- THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL CLASSROOM AUDIO/VIDEO SYSTEMS, INCLUDING VIBRASONIC IP7550-3 MONITORS, WALL BRACKET, APPLE TV 4K BOX AND REMOTE (2nd GEN. 64GB), RELATED OUTPUTS AND (3) DATA JACKS LOCATED CONCEALED BEHIND THE TV MONITOR, AUDIO/VIDEO INPUTS FOR TEACHER WITH HDMI AUDIO/VIDEO, HDMI SIGNAL EXTENDERS WHERE NEEDED, A WALL MOUNTED REMOTE CONTROL HOLDER FOR THE MONITOR AND APPLE TV REMOTES, INSTALLATION OF ALL COMPONENTS, SETUP, PROGRAMMING, TESTING, AND REPORTS.
- THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL, TOTAL COVERAGE, FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATIONS, TO INCLUDE CONTROL PANELS, ANNUNCIATORS, OPERATING CONSOLES, POWER SUPPLIES, AMPLIFIERS, PULL STATIONS, SMOKE AND HEAT DETECTION DEVICES, ADDRESSABLE INPUT AND OUTPUT MODULES, SPEAKER STROBES, SPEAKERS, NFPA STYLE 7 NETWORK WITH DEDICATED 6-STRAND SINGLE MODE FIBER OPTIC CABLING, LOCAL COPPER CABLING, PROGRAMMING, TESTING, AND REPORTS.
- THE CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL SIELX "PINNACLE"/ "ANYWHERE"/ "CLASS" ACCESS CONTROL SYSTEM, INCLUDING SERVER, DATABASES, PROGRAMMING, DOOR CONTROLLERS, CARD READERS, SENSORS, CONNECTIONS TO DOOR HARDWARE, PA INTEGRATION, CABLING, POWER SUPPLIES, RACEWAYS, ANY OTHER REQUIRED COMPONENTS, TESTING, AND REPORTS.

### SYMBOL

	POLE WITH SINGLE AREA LUMINAIRE
	POLE WITH DOUBLE AREA LUMINAIRES
	POLE WITH POST TOP AREA LUMINAIRE
	FIXTURE TYPE "A"
	SURFACE CEILING LIGHT
	RECESSED DOWN LIGHT
	WALL LIGHT
	FIXTURE ON EMERGENCY POWER
	EXIT SIGN, CEILING (ARROWS INDICATE CHEVRONS)
	EXIT SIGN, WALL (ARROWS INDICATE CHEVRONS)
	EXIT SIGN, WALL (ARROWS INDICATE CHEVRONS) LOW LEVEL PER CBC 1013.7
	INVERTER
	SWITCH AT +48" AFF TO TOP OF BOX
	3-WAY SWITCH AT +48" AFF TO TOP OF BOX
	ROUGH IN WITH 1G BOX PER SWITCH W/ RING, 0-10V DIMMING, AT +48" AFF TO TOP OF BOX
	ROUGH IN WITH 1G BOX PER SWITCH W/ RING, W/ SEPARATE EXHAUST FAN RELAY, AT +45" AFF U.O.N. AT +48" AFF TO TOP OF BOX
	ROUGH IN WITH BOX SIZED FOR ONE GANG PER LIGHTING ZONE WITH 1" C. TO ACCESSIBLE ATTIC SPACE, CONNECT TO CONSTANT 120-277V LIGHTING CIRCUIT.
	ROUGH IN WITH BOX SIZED FOR ONE GANG PER LIGHTING ZONE WITH 1" C. TO ACCESSIBLE ATTIC SPACE, CONNECT TO CONSTANT 120-277V LIGHTING CIRCUIT.
	ROUGH IN WITH 1G BOX W/ RING, 3/4" C. TO ACCESSIBLE ATTIC SPACE
	ATTACH DIRECTLY TO CEILING SURFACE
	ROUGH IN WITH 1G BOX W/ RING, 1/2" C. TO ACCESSIBLE ATTIC SPACE
	MOUNT PACK TO J-BOX IN ACCESSIBLE ATTIC SPACE OR INCONSPICUOUS, HIGH ON WALL, WHEN NO CEILING
	MOUNT AT SAME BOX AS DIMMING POWER PACK FUNCTIONAL DEVICES #ESRM, OR EQUAL
	MOUNT PACK TO J-BOX IN ACCESSIBLE ATTIC SPACE OR INCONSPICUOUS, HIGH ON WALL, WHEN NO CEILING
	PROVIDE CAT6 DATA CONNECTION AND 120/277V POWER TO ADAPTER
	SEE SHEET E3.7
	PRIMARY DAYLIGHT ZONE BOUNDARY
	SECONDARY DAYLIGHT ZONE BOUNDARY

### SYMBOL

	SWITCHBOARD	REFER TO POWER SINGLE LINE DIAGRAM
	POWER PANEL	REFER TO PANEL SCHEDULE
	JUNCTION BOX	4-11/16" SQUARE BOX & COVER PLATE MIN.
	DISCONNECT SWITCH, FUSIBLE	REFER TO MECH. PLANS & SPECS.
	COMBINATION STARTER/DISCONNECT SWITCH	REFER TO MECH. PLANS & SPECS.
	MOTOR	REFER TO MECH. PLANS & SPECS.
	EXHAUST FAN, CEILING MOUNTED	REFER TO MECH. PLANS & SPECS.
	SINGLE CONVENIENCE OUTLET AT +15" AFF TO BOTTOM OF BOX, U.O.N.	20A SPEC. GRADE, NEMA GROUNDED TAMPER RESISTANT
	DUPLEX CONVENIENCE OUTLET AT +15" AFF TO BOTTOM OF BOX, U.O.N.	20A SPEC. GRADE, NEMA GROUNDED TAMPER RESISTANT, LEVITON #IDR20-W
	QUADPLEX CONVENIENCE OUTLET AT +15" AFF TO BOTTOM OF BOX, U.O.N.	20A SPEC. GRADE, NEMA GROUNDED TAMPER RESISTANT, LEVITON #IDR20-W
	OUTLETS WITH INTEGRATED USP PORTS	PASS & SEYMOUR TM826USB*CG6 3.1A USB POWER SUPPLY
	GFI CONVENIENCE OUTLET AT +15" AFF TO BOTTOM OF BOX, U.O.N.	20A SPEC. GRADE, NEMA GROUNDED TAMPER RESISTANT, LEVITON #GFTR2-W
	WEATHERPROOF, GFI OUTLET AT +15" AFF TO BOTTOM OF BOX, U.O.N. W/ WEATHERPROOF IN-USE TYPE COVER	20A SPEC. GRADE, NEMA GROUNDED TAMPER RESISTANT, LEVITON #GFTR2-W
	DUPLEX CONVENIENCE OUTLET AT +15" AFF TO BOTTOM OF BOX, U.O.N. SPLIT-WIRED WITH UNSWITCHED AND SWITCHED BY OCCUPANCY SENSOR	20A SPEC. GRADE, NEMA GROUNDED TAMPER RESISTANT, LEVITON #IDR20-SIW CODE COMPLIANT MARKING REQUIRED
	QUADPLEX CONVENIENCE OUTLET, CONTROLLED AT +15" AFF TO BOTTOM OF BOX, U.O.N. ONE UNSWITCHED AND ONE SWITCHED BY OCCUPANCY SENSOR	20A SPEC. GRADE, NEMA GROUNDED TAMPER RESISTANT, LEVITON #IDR20-W AND LEVITON #IDR20-S2W CODE COMPLIANT MARKING REQUIRED
	208V EQUIPMENT OUTLET AT +15" AFF TO BOTTOM OF BOX, U.O.N.	VERIFY REQ'TS W/ EQUIPMENT VENDOR
	POWER POLE	
	FLOOR BOX	4-GANG BOX WITH CAST ALUMINUM COVER AND VOLTAGE DIVIDER
	12" CU GROUND BUS BAR	WITH #6 GREEN GROUND WIRE TO G.E.C.
	FIRE/SMOKE DAMPER	PROVIDE 120V F.A. CIRCUIT TO DAMPER VIA F.A. RELAY.
	WHEELCHAIR LIFT REQUEST BUTTON AT +48" AFF MAX TO TOP OF BOX	VERIFY REQUIREMENTS WITH VENDOR

## ELECTRICAL SYMBOLS

### SYMBOL

	TERMINAL CABINET
	DATA OUTLET (RJ-45 CAT6) WITH 2 JACKS AT +18" AFF, U.O.N. QTY. OF JACKS NOTED WHEN > 1
	(2) WAP DATA JACKS (RJ-45 CAT6) MOUNTED IN ATTIC SPACE YELLOW JACKS & CABLE
	WALL MOUNT VOIP OUTLET (RJ-45 CAT6) AT +45" AFF, U.O.N. WHITE JACKS & CABLE
	DATA/TELEPHONE OUTLET (RJ-45 CAT6) AT +18" AFF, U.O.N. (1) DATA JACK AND (1) TELEPHONE JACK, U.O.N.
	"MAIN DISTRIBUTION FRAME"/"MAIN CROSS-CONNECT"
	"INTERMEDIATE DISTRIBUTION FRAME"/ "HORIZONTAL CROSS-CONNECT"
	INTRUSION DOOR/WINDOW CONTACT
	INTRUSION PIR MOTION SENSOR AT CEILING
	INTRUSION LONG RANGE MOTION SENSOR AT CEILING
	INTRUSION GLASS BREAK SENSOR AT CEILING
	INTRUSION STAFF PANIC BUTTON
	INTRUSION KEY PAD AT +48" AFF TO TOP OF BOX
	INTRUSION 4-ZONE ADDRESSABLE MODULE IN ACCESSIBLE ATTIC SPACE
	SURVEILLANCE (CCTV) CAMERA PROVISIONS EXACT LOCATIONS DETERMINED IN FIELD PER OWNER
	SURVEILLANCE (CCTV) NVR
	IP PUBLIC ADDRESS SPEAKER, CEILING MOUNTED
	IP PUBLIC ADDRESS SPEAKER, WALL MOUNTED
	IP WP OUTDOOR PUBLIC ADDRESS SPEAKER
	IP PUBLIC ADDRESS SPEAKER & WIRELESS CLOCK COMBINATION, WALL MOUNTED
	IP WIRELESS WALL CLOCK
	MPR CEILING PROJECTOR. SURGE PROTECTED QUAD POWER OUTLET, (2) DATA JACKS, AND (2) HDMI OUTLETS.
	OFCI TV MONITOR. SURGE PROTECTED QUAD POWER OUTLET, (3) DATA, (1) HDMI, AND (1) USB JACKS. PROVIDE CHIEF PAC-501 IN-WALL ENCLOSURE AND PNRW SWING ARM MOUNT PER ARCHITECTURAL. INSTALL OFCI INTERACTIVE MONITOR AND WALL MOUNT POWERED SPEAKERS.
	TEACHER'S STATION WITH (2) DATA, (1) HDMI, AND (1) USB JACKS. PROVIDE EXTENDERS TO MAINTAIN CABLE LENGTH LIMITATIONS AS REQUIRED.
	AUDIO/VIDEO HDMI INPUT JACK @ +18" AFF
	MPR SPEAKER, WALL MOUNTED
	MPR ASSISTIVE LISTENING SYSTEM ANTENNA
	MPR WIRELESS MICROPHONE ANTENNA
	MPR AUDIO/VIDEO/MICROPHONE INPUT STATION
	MPR AUDIO/VIDEO CONTROL STATION

### SYMBOL

	WRING IN CONDUIT, BELOW GRADE	3/4" CONDUIT MIN.
	WRING IN CONDUIT, IN WALL OR CEILING	3/4" CONDUIT MIN.
	LOW VOLTAGE WRING IN ATTIC SPACE	TYPE PER EQUIPMENT MANUFACTURER
	CONDUIT RISER	3/4" CONDUIT MIN.
	FLEXIBLE CONDUIT	3/4" CONDUIT MIN.
	CONDUIT STUB AND CAP	3/4" CONDUIT MIN.
	HOME RUN (TO PANEL "A", CIRCUIT "15")	3/4" CONDUIT MIN.
	CURVED CROSS HATCHES INDICATE #14 AWG PURPLE & GRAY CONDUCTORS FOR DIMMING CONTROL.	3/4" CONDUIT MIN.
	CROSS HATCHES INDICATE NUMBER OF #12 AWG. CONDUCTORS IN CONDUIT, WHEN MORE THAN TWO. WIRE SIZE INDICATED ON PLANS WHEN OTHER #12 AWG. PROVIDE GROUND PER CEC 250. PROVIDE DEDICATED NEUTRAL FOR EACH CIRCUIT.	3/4" CONDUIT MIN.
	"EXISTING"	
	"UNLESS OTHERWISE NOTED"	
	"WEATHERPROOF" / NEMA 3R	
	"GROUND FAULT INTERRUPTER"	



**Hardin-Davidson Engineering**  
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# SHIELDS & BRAWLEY ELEMENTARY SCHOOL



**AD 3-57a**  
**S&B Elementary**  
**02-116800**



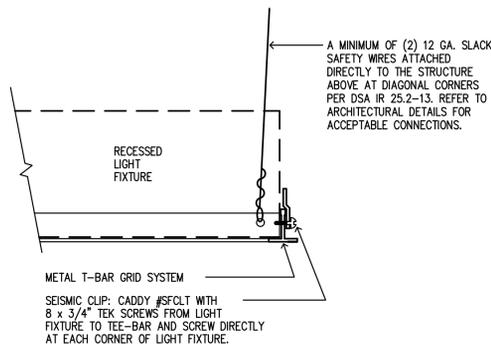
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PROJECT DEVELOPMENT	
DATE	ISSUED FOR

REVISIONS		
No.	DATE	DESCRIPTION

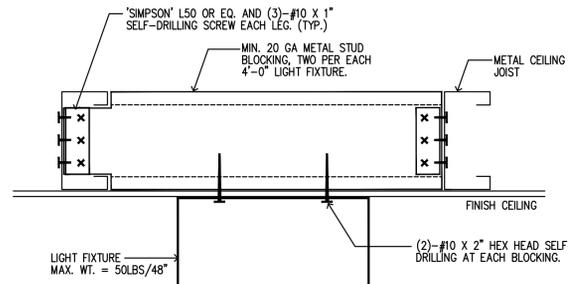
SHEET DESCRIPTION	
PROJECT COORDINATOR	SHEET No.
JOHN SMITH	
PROJECT NO.	17-67
DATE	1.27.23
SCALE	AS NOTED
<b>E0.1</b>	

HEAVY DUTY GRID SYSTEM			
LIGHT FIXTURE DIMENSION	WEIGHT	NO. OF HANGER WIRES	TYPE
< 24" x 48"	< 56 LBS	2	SLACK
> 24" x 48"	> 56 LBS	4	TAUT



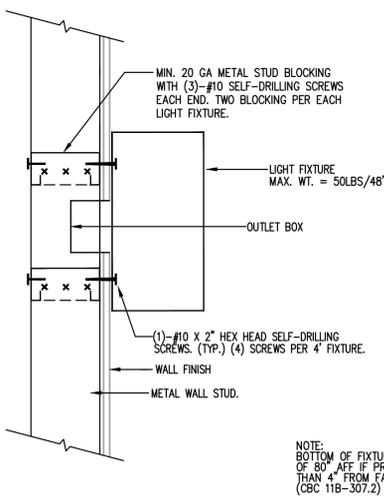
### 1 FIXTURE T-BAR MOUNTING DETAIL

No Scale



### 2 FIXTURE SURFACE MOUNTING DETAIL

No Scale



NOTE:  
BOTTOM OF FIXTURE TO BE MIN. OF 80" AFF IF PROTRUDE MORE THAN 4" FROM FACE OF WALL (CBC 11B-307.2)

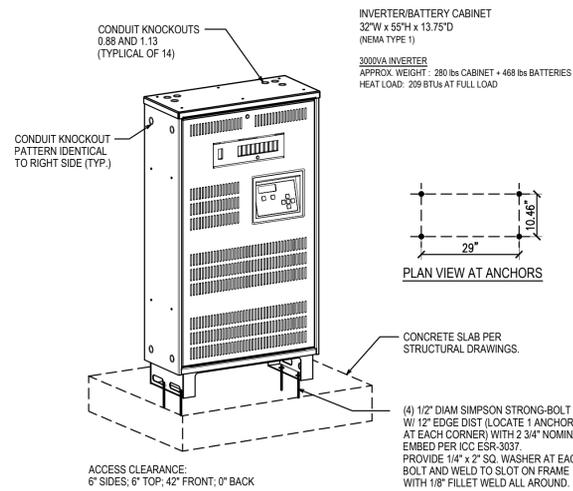
### 3 FIXTURE WALL MOUNTING DETAIL

No Scale

TYPE	MANUFACTURER	PART NO.	LAMP	WATTS	VOLT	MOUNTING	CONTROL / REMARKS
A	ABL - LITHONIA	ENVX 2X4 HRGC 6000LM 80CRI 40K MIN1 MVOLT NLTAIR2 RES7PDT	LED	51	UNV	RECESSED	nLIGHT AIR WIRELESS
AE	ABL - LITHONIA	ENVX 2X4 HRGC 6000LM 80CRI 40K MIN1 MVOLT EMG NLTAIR2 RES7PDT	LED	51	UNV	RECESSED	nLIGHT AIR WIRELESS - EMG FOR INVERTER
A2	ABL - LITHONIA	ENVX 2X4 HRGC 4800LM 80CRI 40K MIN1 MVOLT NLTAIR2 RES7PDT	LED	41	UNV	RECESSED	nLIGHT AIR WIRELESS
A2E	ABL - LITHONIA	ENVX 2X4 HRGC 4800LM 80CRI 40K MIN1 MVOLT EMG NLTAIR2 RES7PDT	LED	41	UNV	RECESSED	nLIGHT AIR WIRELESS - EMG FOR INVERTER
A3	ABL - LITHONIA	ENVX 2X4 HRGC 4800LM 80CRI 40K MIN1 MVOLT	LED	41	UNV	RECESSED	SPST SWITCH
A3E	ABL - LITHONIA	ENVX 2X4 HRGC 4800LM 80CRI 40K MIN1 MVOLT	LED	41	UNV	RECESSED	SPST SWITCH, GTD FOR INVERTER
B	ABL - LITHONIA	ENVX 2X2 HRGC 3300LM 80CRI 40K MIN1 MVOLT NLTAIR2 RES7PDT	LED	30	UNV	RECESSED	nLIGHT AIR WIRELESS
BE	ABL - LITHONIA	ENVX 2X2 HRGC 3300LM 80CRI 40K MIN1 MVOLT EMG NLTAIR2 RES7PDT	LED	30	UNV	RECESSED	nLIGHT AIR WIRELESS - EMG FOR INVERTER
C4	ABL - LUMINAIRE	VPF8 4FT MIN1 NLTAIR2 50W 40K MVOLT OP WHT RES7PDT	LED	53.3	UNV	SURFACE	nLIGHT AIR WIRELESS
C4E	ABL - LUMINAIRE	VPF8 4FT MIN1 NLTAIR2 50W 40K MVOLT EMG OP WHT RES7PDT	LED	53.3	UNV	SURFACE	nLIGHT AIR WIRELESS - EMG FOR INVERTER
C8	ABL - LUMINAIRE	VPF8 LSL 8FT MSL4 MIN1 NLTAIR2 50W 40K MVOLT OP WHT RES7PDT	LED	106.6	UNV	SURFACE	nLIGHT AIR WIRELESS
D4E	ABL - LUMINAIRE	VPF84 4FT MIN1 50W 40K MVOLT OP WHT	LED	53.3	UNV	SURFACE	SPST SWITCH, GTD FOR INVERTER
F	ABL - GOTHAM	EVO6 40/15 AR LSS MWD MVOLT GZ1 90CRI	LED	14.7	UNV	RECESSED	nLIGHT AIR POWER PACK
FE	ABL - GOTHAM	EVO6 40/15 AR LSS MWD MVOLT GZ1 90CRI	LED	14.7	UNV	RECESSED	nLIGHT AIR EM POWER PACK
G	ABL - LITHONIA	CLX L48 4000LM SEF RDL MVOLT GZ1 40K 80CRI WH / HC36	LED	30.6	UNV	CHAIN	OCC SENSOR SWITCH
H	DURALAMP	DL HV 37 0 35 W/ 45-DEGREE BASE	LED	3.7/FT	120	SURFACE	SEE KEYNOTES
M16E	ABL - MARK	S4PID LLP 16FT MSL8 80CRI 35K 1000LMF I80CRI I35K I300LMF BW SCT MIN1 DRP1 DC MVOLT WHTT 1EC NLTAIR2 APDT SAPDT F2/144A RDCY WHTCY WCRD MCS	LED	159	UNV	PENDANT/CABLE	nLIGHT AIR WIRELESS - EM FOR INVERTER
M24E	ABL - MARK	S4PID LLP 24FT MSL8 80CRI 35K 1000LMF I80CRI I35K I300LMF BW SCT MIN1 DRP1 DC MVOLT WHTT 1EC NLTAIR2 APDT SAPDT F2/144A RDCY WHTCY WCRD MCS	LED	238	UNV	PENDANT/CABLE	nLIGHT AIR WIRELESS - EM FOR INVERTER
M27E	ABL - MARK	S4PID LLP 27FT MSL8 80CRI 35K 1000LMF I80CRI I35K I300LMF BW SCT MIN1 DRP1 DC MVOLT WHTT 1EC NLTAIR2 APDT SAPDT F2/144A RDCY WHTCY WCRD MCS	LED	268	UNV	PENDANT/CABLE	nLIGHT AIR WIRELESS - EM FOR INVERTER
M28E	ABL - MARK	S4PID LLP 28FT MSL8 80CRI 35K 1000LMF I80CRI I35K I300LMF BW SCT MIN1 DRP1 DC MVOLT WHTT 1EC NLTAIR2 APDT SAPDT F2/144A RDCY WHTCY WCRD MCS	LED	278	UNV	PENDANT/CABLE	nLIGHT AIR WIRELESS - EM FOR INVERTER
M36E	ABL - MARK	S4PID LLP 36FT MSL8 80CRI 35K 1000LMF I80CRI I35K I300LMF BW SCT MIN1 DRP1 DC MVOLT WHTT 3EC NLTAIR2 APDT SAPDT TNS16 F2/144A RDCY WHTCY WCRD MCS	LED	357	UNV	PENDANT/CABLE	nLIGHT AIR WIRELESS - EM FOR INVERTER
N	TECH LIGHTING	700FJNIS-LED930 / 700FJ4RFS-LED	LED	6.5	UNV	CABLE	nLIGHT AIR POWER PACK
P1	ABL - GOTHAM	EVO6 40/15 AR LSS MWD MVOLT GZ1 90CRI	LED	14.7	UNV	RECESSED	nLIGHT AIR POWER PACK
P1E	ABL - GOTHAM	EVO6 40/15 AR LSS MWD MVOLT GZ1 90CRI	LED	14.7	UNV	RECESSED	nLIGHT AIR EM RELAY PACK
P2	LUMUX	WS740 25W WHITE 40K 120/277 SILVER	LED	25	UNV	SURFACE WALL	nLIGHT AIR RELAY PACK
P2E	LUMUX	WS740 25W WHITE 40K 120/277 SILVER	LED	25	UNV	SURFACE WALL	nLIGHT AIR EM RELAY PACK
S1	ABL - LITHONIA	(2) RAD1 LED P5 40K ASY MVOLT RPA DNATXD / ASR3-5 280 / RTS 25	LED	244	UNV	POLE	nLIGHT AIR RELAY PACK
S2	ABL - LITHONIA	RADPT LED P3 40K SYM MVOLT PT4 DNATXD / RSS 12	LED	54	UNV	POLE	nLIGHT AIR RELAY PACK
X	BEGHELLI	FME-HT-LG-U-M	LED	1	UNV	UNV	DIRECT INVERTER CONNECTION. * SEE PLANS FOR FACES/MOUNTING/CHEVRONS.
XT	BEGHELLI	TSL 1 B 20 B U (20 YR TRITIUM)	N/A	N/A	N/A	SURFACE	

### 5 LIGHTING INVERTER MOUNTING DETAIL

No Scale



### 3 FIXTURE WALL MOUNTING DETAIL

No Scale

## LIGHTING FIXTURE SCHEDULE

**SIMPRK**

PROJECT:

**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-58a  
S&B Elementary  
02-116800**

JOHN H. SMITH, A.I.A. C15885



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#### PROJECT DEVELOPMENT

DATE	ISSUED FOR

#### REVISIONS

No.	DATE	DESCRIPTION
Δ	2.14.23	DISTRICT MODIFICATIONS
Δ	2.27.23	DISTRICT MODIFICATIONS
Δ	4.19.23	DISTRICT MODIFICATIONS

#### SHEET DESCRIPTION

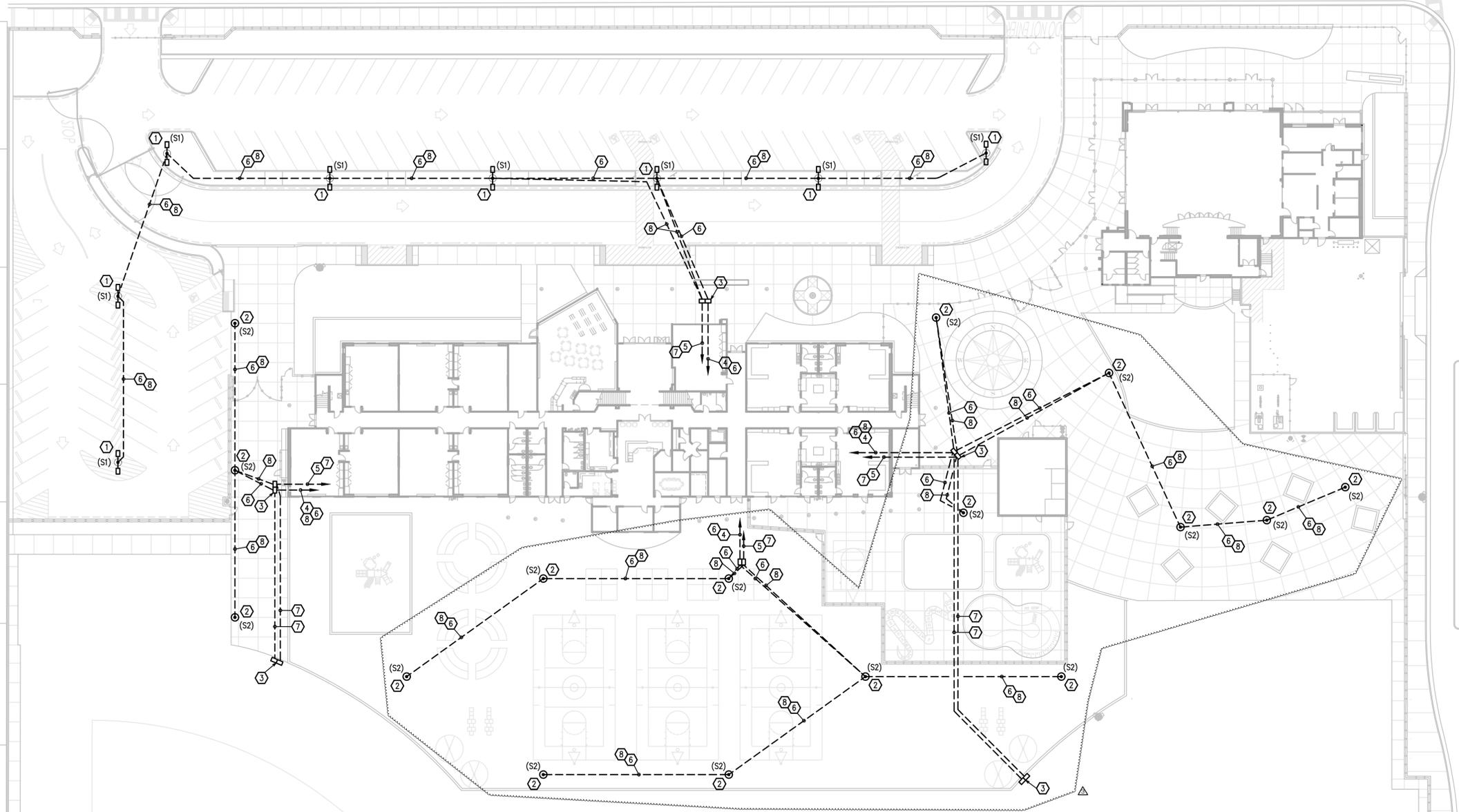
**ELECTRICAL DETAILS AND SCHEDULE**

PROJECT COORDINATOR	SHEET No.
JOHN SMITH	<b>E0.2</b>
PROJECT NO.	
DATE	
SCALE	



**Hardin-Davidson Engineering**  
356 Pollasky Ave., Suite 200  
Clovis, CA 93612  
559.323.4995 tel  
559.323.4928 fax

WEST FOUNTAIN WAY



# SHIELDS & BRAWLEY ELEMENTARY SCHOOL



**AD 3-59a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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△	2.14.23	DISTRICT MODIFICATIONS
△	2.27.23	DISTRICT MODIFICATIONS
△	4.19.23	DISTRICT MODIFICATIONS

SHEET DESCRIPTION

## LIGHTING SITE PLAN

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E2.1</b>
DATE 1.27.23	
SCALE AS NOTED	

1 LIGHTING SITE PLAN  
SITE

SCALE: 1" = 30'-0"  
N

### KEYNOTES

1. PROVIDE PARKING LOT POLE LIGHT AND CONCRETE BASE.
2. PROVIDE PEDESTRIAN POLE LIGHT AND CONCRETE BASE.
3. B1017 PULLBOX FOR LIGHTING AND B1324 PULLBOX FOR LVS. PROVIDE BOLT-DOWN H/20 RATED LIDS "LIGHTING" AND "LOW VOLTAGE".
4. TO PANEL HA FOR LIGHTING. HOMERUN 1" C. VIA LIGHTING POWER PACK.
5. TO LVS BACKBOARD.
6. 1" C. 2#10, 1#10G.
7. 2" C. WITH PULL LINE.
8. 1" C. WITH PULL LINE.

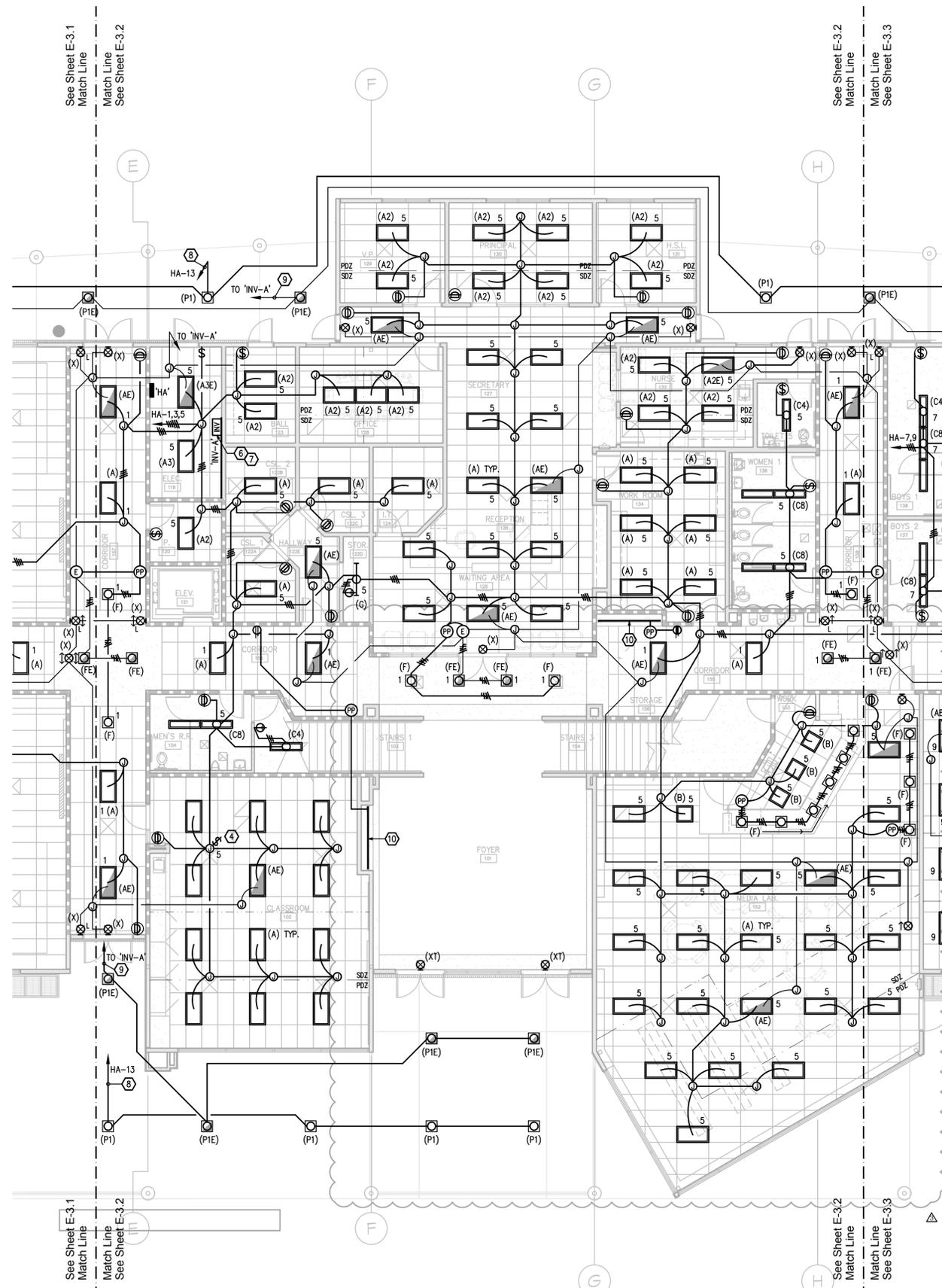


**HD**  
Hardin-Davidson  
Engineering  
356 Pollasky Ave.  
Suite 200  
Clovis, CA 93612  
559.323.4995 tel  
559.323.4928 fax

WEST SHIELDS AVENUE

PLT DATE: 6/28/23 9:40 AM  
PLOT: Z:\Clients\17-67\17-67-02-116800 - Shields & Brawley ES Fabcast\CAD Files\23032 - Elec.dwg

PLOT DATE: 4/28/23 9:40 AM  
 PLOT BY: Z:\Clients\PIE\23032 - Shields & Brawley ES Rebuild\CAD Files\23032 - Elec.dwg



**1 LIGHTING PLAN**  
 MAIN BUILDING - 1ST FLOOR  
 SCALE: 1/8" = 1'-0"

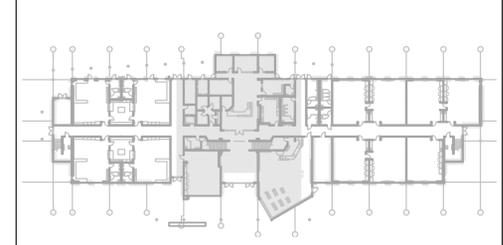
**KEYNOTES**

1. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 2/E3.1.
2. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 3/E3.1.
3. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 4/E3.1.
4. PROVIDE MAINTENANCE SWITCH IN ATTIC SPACE FOR LIGHTS.
5. MOUNT WIRELESS AREA CONTROLLER (WAC) IN ACCESSIBLE ATTIC SPACE.
6. PROVIDE EATON WAVEPIX POWER PACK AND POWER PACK WITH EMERGENCY CONTROL RELAY AT INVERTER LOCATION FOR EXTERIOR LIGHTING.
7. EMERGENCY LIGHTING INVERTER: ISOLITE #E3MAC-3000-1P-1B/OB-C3-MB-EEW, WITH FACTORY STARTUP, FLOOR MOUNTED. SEE DETAIL 5/E0.2.
8. HOMERUN VIA nLIGHT AIR POWER PACK.
9. HOMERUN VIA nLIGHT AIR POWER PACK WITH EMERGENCY CONTROL RELAY.
10. GLASS CASE LIGHTING. CONNECT VIA LINE VOLTAGE DIMMING POWER PACK TO 120V SOURCE. RUN LIGHT STRIP AROUND PERIPHERY OF CASE, 1" BEHIND GLASS AND 2" FROM EDGES - APPROX. (4) 68" SECTIONS.

**EMERGENCY LIGHTING NOTES**

1. INTERIOR EMERGENCY LIGHTS REQUIRE CONNECTIONS TO BOTH THE EMERGENCY CIRCUIT FROM THE INVERTER (ON-LINE POWER) AND A NORMAL CIRCUIT (UTILITY POWER SENSE). THE FIXTURE AUTOMATICALLY TURNS ON AND RAISES THE LIGHT LEVEL TO 100% WHEN POWER LOSS IS SENSED.
2. PULL A HOT CONDUCTOR FOR EXIT SIGNS ALONG WITH CONTROLLED CONDUCTORS THAT SHARE A COMMON RUN. EXIT SIGNS SHALL ALWAYS BE ON.
3. EXTERIOR EMERGENCY LIGHTS SHALL BE CONNECTED TO THE EMERGENCY LIGHTING INVERTER VIA A UL924 CONTROL DEVICE. THE FIXTURES SHALL AUTOMATICALLY TURN ON WHEN NORMAL POWER IS LOST.
4. EMERGENCY POWER CIRCUITS MUST BE RUN IN A SEPARATE RACEWAYS THAN NORMAL POWER CIRCUITS.

**KEY PLAN**



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-60a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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**PROJECT DEVELOPMENT**

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**REVISIONS**

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Δ	2.27.23	DISTRICT MODIFICATIONS
Δ	4.19.23	DISTRICT MODIFICATIONS

**SHEET DESCRIPTION**

**LIGHTING PLAN**

MAIN BUILDING - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E3.2</b>
DATE 1.27.23	
SCALE AS NOTED	

**Hardin-Davidson Engineering**  
 356 Pollasky Ave., Suite 200  
 Clovis, CA 93612  
 559.323.4995 tel  
 559.323.4928 fax

KEYNOTES ☐

1. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 2/E3.1.
2. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 3/E3.1.
3. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 4/E3.1.
4. PROVIDE MAINTENANCE SWITCH IN ATTIC SPACE FOR LIGHTS.
5. MOUNT WIRELESS AREA CONTROLLER (WAC) IN ACCESSIBLE ATTIC SPACE.
6. PROVIDE EATON WAVELINX POWER PACK AND POWER PACK WITH EMERGENCY CONTROL RELAY AT INVERTER LOCATION FOR EXTERIOR LIGHTING.
7. EMERGENCY LIGHTING INVERTER: ISOLITE #E3MAC-3000-1P-1B/0B-C3-MB-EEW, WITH FACTORY STARTUP, FLOOR MOUNTED. SEE DETAIL 5/E0.2.
8. HOMERUN VIA nLIGHT AIR POWER PACK.
9. HOMERUN VIA nLIGHT AIR POWER PACK WITH EMERGENCY CONTROL RELAY.
10. GLASS CASE LIGHTING. CONNECT VIA LINE VOLTAGE DIMMING POWER PACK TO 120V SOURCE. RUN LIGHT STRIP AROUND PERIPHERY OF CASE, 1" BEHIND GLASS AND 2" FROM EDGES - APPROX. (4) 68" SECTIONS.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-61a**  
**S&B Elementary**  
**02-116800**

EMERGENCY LIGHTING NOTES

1. INTERIOR EMERGENCY LIGHTS REQUIRE CONNECTIONS TO BOTH THE EMERGENCY CIRCUIT FROM THE INVERTER (ON-LINE POWER) AND A NORMAL CIRCUIT (UTILITY POWER SENSE). THE FIXTURE AUTOMATICALLY TURNS ON AND RAISES THE LIGHT LEVEL TO 100% WHEN POWER LOSS IS SENSED.
2. PULL A HOT CONDUCTOR FOR EXIT SIGNS ALONG WITH CONTROLLED CONDUCTORS THAT SHARE A COMMON RUN. EXIT SIGNS SHALL ALWAYS BE ON.
3. EXTERIOR EMERGENCY LIGHTS SHALL BE CONNECTED TO THE EMERGENCY LIGHTING INVERTER VIA A UL924 CONTROL DEVICE. THE FIXTURES SHALL AUTOMATICALLY TURN ON WHEN NORMAL POWER IS LOST.
4. EMERGENCY POWER CIRCUITS MUST BE RUN IN A SEPARATE RACEWAYS THAN NORMAL POWER CIRCUITS.

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

DATE	ISSUED FOR

REVISIONS

No.	DATE	DESCRIPTION
△	2.14.23	DISTRICT MODIFICATIONS
△	2.27.23	DISTRICT MODIFICATIONS
△	4.19.23	DISTRICT MODIFICATIONS

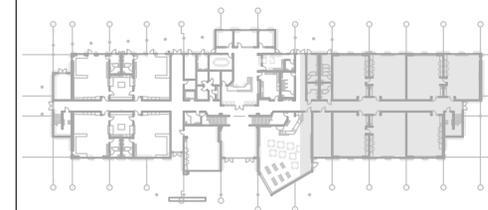
SHEET DESCRIPTION

**LIGHTING PLAN**

MAIN BUILDING - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>E3.3</b>
PROJECT NO. 17-67	
DATE 1.27.23	
SCALE AS NOTED	

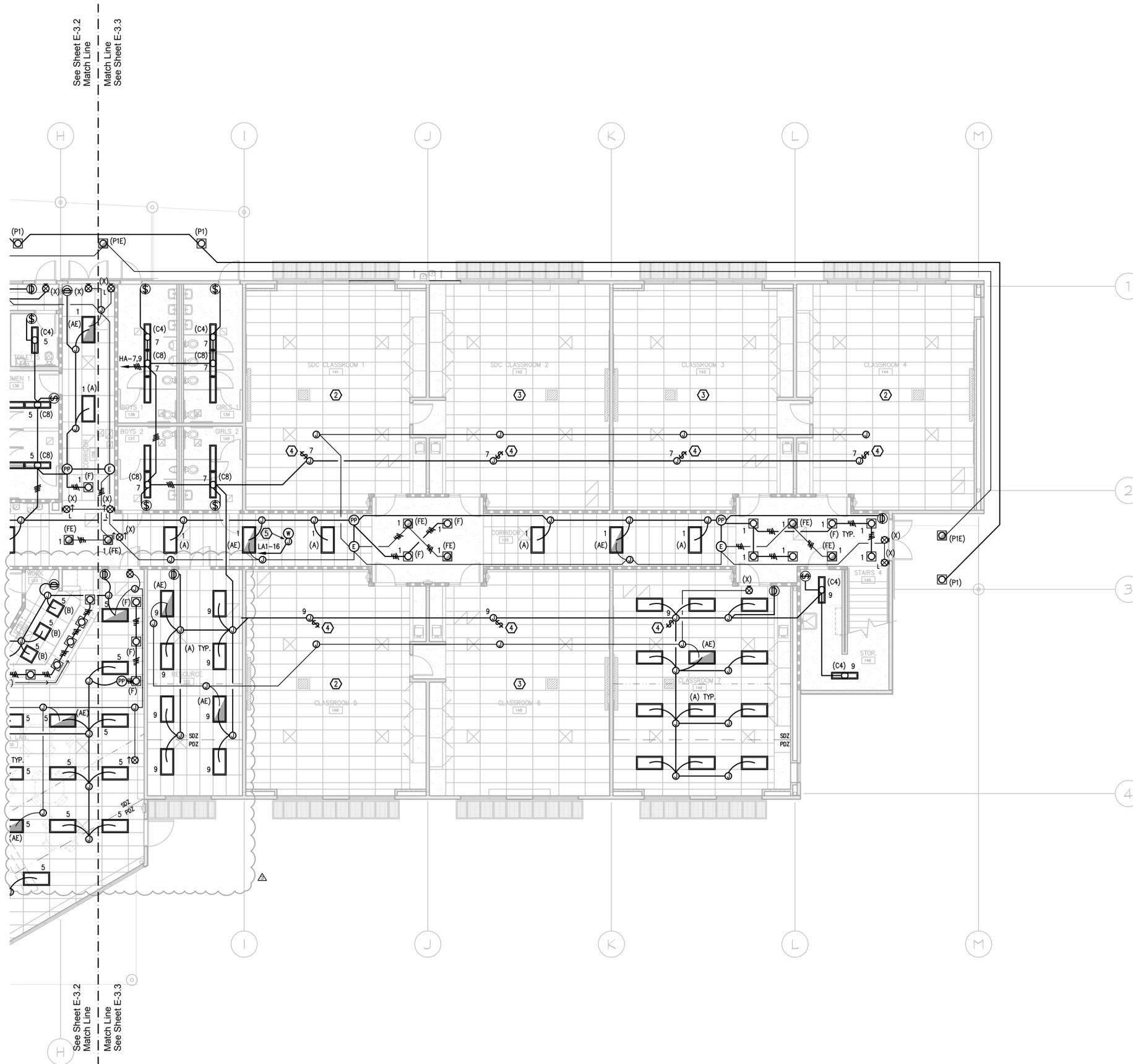
KEY PLAN

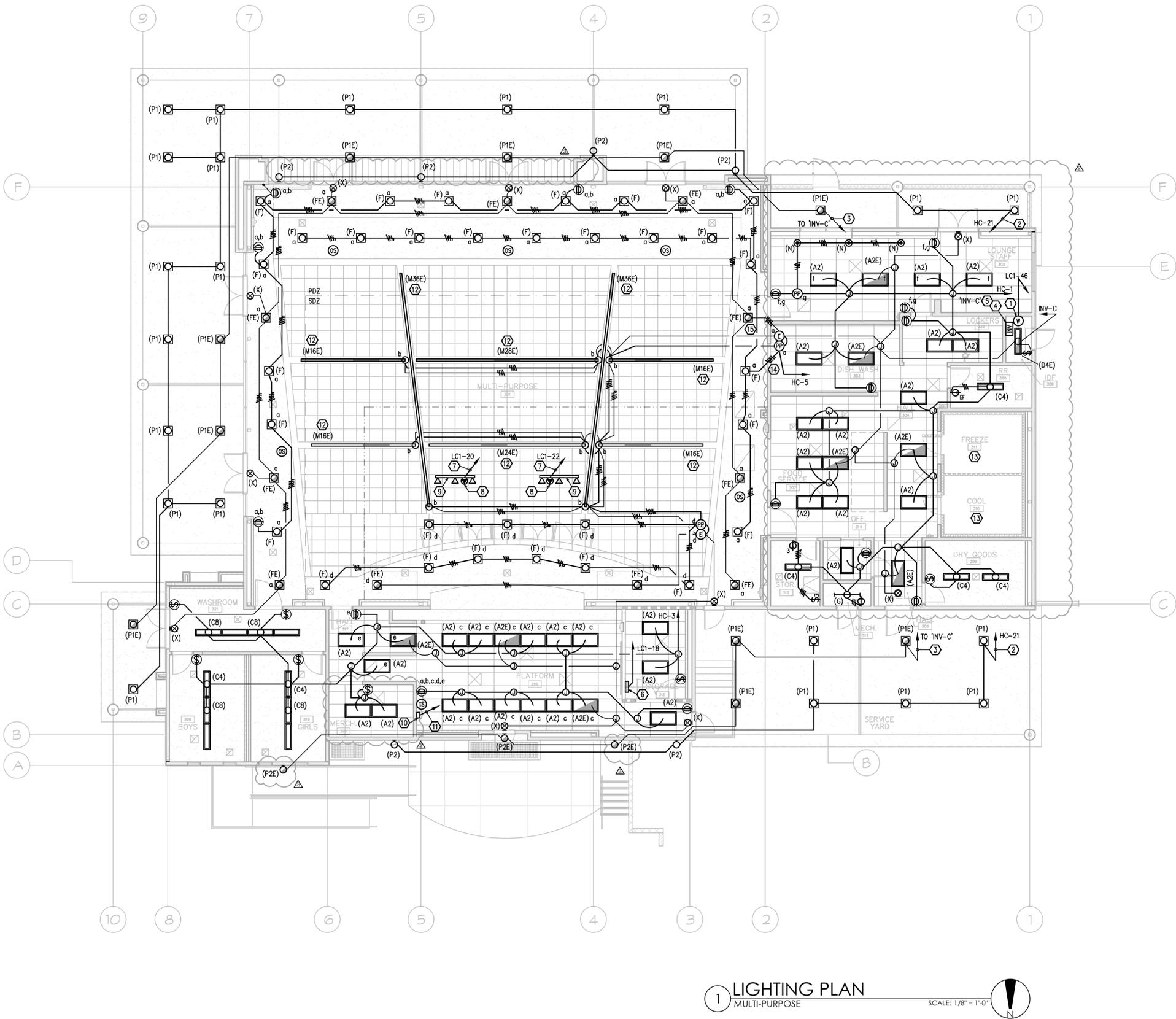


**Hardin-Davidson Engineering**  
356 Pollasky Ave., Suite 200  
Clovis, CA 93612  
559.323.4995 tel  
559.323.4928 fax

**1 LIGHTING PLAN**  
MAIN BUILDING - 1ST FLOOR

SCALE: 1/8" = 1'-0"





**1 LIGHTING PLAN**  
MULTI-PURPOSE  
SCALE: 1/8" = 1'-0"

**KEYNOTES**

1. MOUNT WIRELESS AREA CONTROLLER (WAC) IN ELECTRICAL ROOM.
2. HOMERUN VIA EATON WAVELINX POWER PACK ABOVE PANELBOARD TO CONTROL NORMAL EXTERIOR LIGHTING.
3. HOMERUN VIA EATON WAVELINX POWER PACK WITH EMERGENCY CONTROL RELAY.
4. PROVIDE EATON WAVELINX POWER PACK AND UL924 EMERGENCY SHUNT RELAY ABOVE INVERTER TO CONTROL EMERGENCY EXTERIOR LIGHTING.
5. EMERGENCY LIGHTING INVERTER: ISOLITE #E3MAC-3000-1P-1B/0B-C3-MB-EEM, WITH FACTORY STARTUP, FLOOR MOUNTED. SEE DETAIL 5/E0.2.
6. THEATRICAL LIGHTING DMX PROCESSOR AND WIRELESS TRANSCEIVER. MOUNT IN LOCATION HIGH ON WALL PER MFG'R INSTRUCTIONS.
7. RUN #10 WIRES WITH DEDICATED NEUTRALS.
8. PROVIDE L5-20 LOCKING RECEPTACLE ABOVE BATTEN ON TRUSS. SEE DETAILS 6, 8/E0.3.
9. THEATRICAL LIGHTS, DMX/RELAY MODULE WITH TRANSCEIVER, AND PIPE BATTEN. PROVIDE (3) LIGHTS PER BATTEN. MOUNT BATTEN AT BOTTOM CHORD OF TRUSS. SEE DETAILS 6, 7, 8/E0.3.
10. COLOR TOUCHSCREEN CONTROLLER AND DMX CONSOLE OUTLET FOR THEATRICAL LIGHTS. MOUNT WAVELINX SWITCHES WITH CONTROL FOR ALL HOUSE LIGHTING ZONES ADJACENT TO TOUCHSCREEN.
11. RUN DMX CABLING PER MFG'R TO DMX CONTROLLER.
12. PENDANT LIGHT FIXTURE, SEE MOUNTING DETAIL 3/E0.3. COORDINATE LOCATIONS OF EMERGENCY LIGHTING SECTIONS SHOWN ON THIS PLAN WITH MANUFACTURER.
13. SEE SHEET E4.7 FOR WALK-IN BOX LIGHTING CONNECTIONS.
14. PULL A HOT CONDUCTOR ALONG WITH CONTROLLED CONDUCTORS FOR WALL SWITCHES. THE SWITCHES REQUIRE POWER THAT IS ALWAYS ON.
15. PULL A HOT INVERTER CONDUCTOR ALONG WITH CONTROLLED CONDUCTORS FOR EXIT SIGNS. THE EXIT SIGNS REQUIRE POWER THAT IS ALWAYS ON.

**THEATRICAL LIGHTING SYSTEM**

PROVIDE A COMPLETE AND OPERATIONAL THEATRICAL LIGHTING SYSTEM. THE SYSTEM SHALL BE COMPRISED OF A COLOR TOUCHSCREEN CONTROLLER, CONSOLE OUTLET, DMX PROCESSOR, WIRELESS TRANSCEIVERS, DMX/RELAY MODULES, CONTROL CABLING, POWER OUTLETS, PIPE BATTENS, AND FIVE-COLOR LED THEATRICAL LIGHTS. PROVIDE ALL PROGRAMMING, STARTUP, AND ANY ADDITIONAL REQUIRED COMPONENTS NEEDED FOR A FULLY FUNCTIONAL, TURN KEY SYSTEM. PROVIDE 8 HOURS OF TRAINING FOR OWNER'S DESIGNATED PERSONNEL.

THE SYSTEM SHOWN ON THE PLANS IS BASED ON COMPONENTS FROM LEIGH ELECTRIC PRODUCTS COMPANY. THE MAJOR SYSTEM COMPONENTS CONSIST OF:

1. ONE (1) #SDE-DOI DMX PROCESSOR W/ WIRELESS TRANSCEIVER
2. ONE (1) #DTM-TS "IMPRESS" DMX TOUCHSCREEN/CUE CAPTURE INTERFACE
3. ONE (1) "IMPRESS" COMPATIBLE DMX CONSOLE OUTLET
4. TWO (2) #SR2WL "SLIMDIM" DMX RELAY MODULES W/ WIRELESS TRANSCEIVER
5. TWO (2) PIPE BATTENS CONSTRUCTED OF STANDARD 1.5" SCHEDULE 40 BLACK PIPE
6. SIX (6) #E-910FC "CHAUVET" FIVE-COLOR THEATRICAL LIGHTS, 26 DEG. LENS, 200 WATTS

SEE SHEET E4.7 FOR LIGHTING CONTROL LOCATIONS.

THE THEATRICAL LIGHTING SYSTEM INSTALLATION SHALL BE INSTALLED AS PER THE MANUFACTURER'S APPROVED SHOP DRAWINGS AND THESE PLANS.

**EMERGENCY LIGHTING NOTES**

1. INTERIOR EMERGENCY LIGHTS REQUIRE CONNECTIONS TO BOTH THE EMERGENCY CIRCUIT FROM THE INVERTER (ON-LINE POWER) AND A NORMAL CIRCUIT (UTILITY POWER SENSE). THE FIXTURE AUTOMATICALLY TURNS ON AND RAISES THE LIGHT LEVEL TO 100% WHEN POWER LOSS IS SENSED.
2. PULL A HOT CONDUCTOR FOR EXIT SIGNS ALONG WITH CONTROLLED CONDUCTORS THAT SHARE A COMMON RUN. EXIT SIGNS SHALL ALWAYS BE ON.
3. EXTERIOR EMERGENCY LIGHTS SHALL BE CONNECTED TO THE EMERGENCY LIGHTING INVERTER VIA A UL924 CONTROL DEVICE. THE FIXTURES SHALL AUTOMATICALLY TURN ON WHEN NORMAL POWER IS LOST.
4. EMERGENCY POWER CIRCUITS MUST BE RUN IN A SEPARATE RACEWAYS THAN NORMAL POWER CIRCUITS.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-62a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A., C15885



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**PROJECT DEVELOPMENT**

DATE	ISSUED FOR

**REVISIONS**

No.	DATE	DESCRIPTION
Δ	2.14.23	DISTRICT MODIFICATIONS
Δ	2.27.23	DISTRICT MODIFICATIONS
Δ	4.19.23	DISTRICT MODIFICATIONS

**SHEET DESCRIPTION**

**LIGHTING PLAN**

MULTI-PURPOSE

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E3.7</b>
DATE 1.27.23	
SCALE AS NOTED	



**HD**  
**Hardin-Davidson**  
**Engineering**  
356 Pollasky Ave.  
Suite 200  
Clovis, CA 93612  
559.323.4995 tel  
559.323.4928 fax

PLT DATE: 5/28/23 9:00 AM  
PWT: Z:\Clients\1767\1767-0002 - Shields & Brawley ES Rebuild\CAD Files\23032 - Elec.dwg

KEYNOTES

1. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 2/E4.1.
2. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 3/E4.1.
3. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 4/E4.1.
4. PROVIDE TEL/COMM FIRE RESISTANT 3/4" PLYWOOD BACKBOARD AND PAINT. MOUNT FIRE ALARM, INTRUSION, TEL, AND PA SYSTEM EQUIPMENT. ATTACH TO WALL STUDS WITH #8 x 3" FLAT HEAD SMS AT 18" VERTICAL CENTERS AT EACH STUD. TERMINAL PA, INTRUSION CABLES.
5. 12" COPPER COMMUNICATION GROUND BUS BAR. RUN #6 GREEN GROUND WIRE TO BUILDING GEC.
6. PROVIDE DATA MDF, 2-POST RACKS, WIRE MANAGEMENT, AND APPURTENANCES PER SPECIFICATIONS, SEE DETAIL 1/E0.6 FOR MOUNTING TO CONCRETE FLOOR. TERMINATE FIBER OPTIC CABLE TO FIBER TERMINATION UNIT. TERMINAL CAT6 CABLING TO CAT6 PATCH PANELS. PROVIDE 120VAC & 208VAC 1Ø RECEPTACLES.
7. L5-20P, 120V 1Ø.
8. L6-30R, 208V 1Ø.
9. LIGHTING INVERTER 'INV-A'. SEE LIGHTING PLAN AND DETAIL 5/E0.2.
10. CONNECT FIRE/SMOKE DAMPER MOTOR VIA FIRE ALARM RELAY.
11. CONNECT ELEVATOR CONTROLLER: 480V 3Ø, MAKE CONNECTIONS PER MANUFACTURER'S REQUIREMENTS. INTERFACE WITH FIRE ALARM ELEVATOR RECALL RELAYS. VERIFY LOAD.
12. ELEVATOR PIT: PROVIDE LED TASK LIGHTS, SWITCH AND OUTLET. MAKE POWER AND SIGNAL CONNECTIONS TO CAR.
13. CAR POWER CIRCUIT AND EMPTY 1 1/2°C. FOR CONTROL WIRING FROM CONTROLLER TO HOISTWAY BY VENDOR.
14. SEE POWER SINGLE LINE DIAGRAM FOR CONDUIT AND CONDUCTORS.
15. ENCLOSED CIRCUIT BREAKER WITH SHUNT-TRIP DEVICE. INTERFACE SHUNT-TRIP WITH FIRE ALARM SYSTEM. SEE POWER SINGLE LINE DIAGRAM.
16. PROVIDE POWER AND DATA OUTLET ABOVE TV CABINET.
17. DISTRIBUTION BOARD. SEE POWER SINGLE LINE DIAGRAM AND DETAIL 3/E0.4.
18. MOUNT DEVICES IN CASEWORK. SEE ARCHITECTURAL FOR EXACT LOCATION.
19. PENDANT MOUNTED 42" VIEWSONIC TV MONITOR. PROVIDE DUAL HDMI INPUTS AT RECEPTION DESK AND I.T. OFFICE FOR SEPARATE BROADCAST TO EACH MONITOR FOR EITHER LOCATION. SEE ARCHITECTURAL DETAILS.
20. ACCESS CONTROLLED DOOR/DOORS: PROVIDE DOOR CONTROLLER, POWER SUPPLY, DOOR POSITION SENSORS (SEPARATE FROM INTRUSION), EXTERIOR CARD READER, CONNECTION TO DOOR SOLENOID, MAGNETIC DOOR HOLD-OPEN/RELEASE, DATA CABLES, AND SINGLE DEDICATED 120V CIRCUIT TO GROUP OF DOORS IN VICINITY OF LOCAL PANEL.
21. PROVIDE CYBERDATA IP INTERCOM CALL BOX AT EXTERIOR WALL ADJACENT TO WEST MAIN ENTRY DOORS (OUTSIDE OF DOOR SWING) AND CONNECT TO ADMIN RECEPTION DESK.
22. PROVIDE INTEGRATION OF IP PHONES WITH CYBERDATA INTERCOM SYSTEM AND ACCESS CONTROL SYSTEM. DOOR UNLOCK BUTTON FOR WEST MAIN ENTRY DOORS, AND LOCKDOWN INITIATE/RESET BUTTONS WITH TAMPER COVERS AT RECEPTION DESK. VERIFY LOCATIONS WITH DISTRICT.
23. PROVIDE POWER SUPPLY, DOOR CONTROLLER, AND HOLD-OPEN/RELEASE AT INTERIOR DOOR/DOORS. DOOR TO RELEASE AND CLOSE AUTOMATICALLY ON LOCKDOWN SIGNAL. CONTROLLERS AND POWER SUPPLIES MAY BE GROUPED. CONNECT TO DEDICATED 120V DOOR CONTROLLER CIRCUIT.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-63a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

DATE	ISSUED FOR

REVISIONS

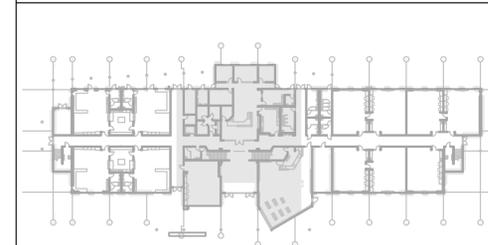
No.	DATE	DESCRIPTION
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△	2.27.23	DISTRICT MODIFICATIONS
△	4.19.23	DISTRICT MODIFICATIONS

SHEET DESCRIPTION

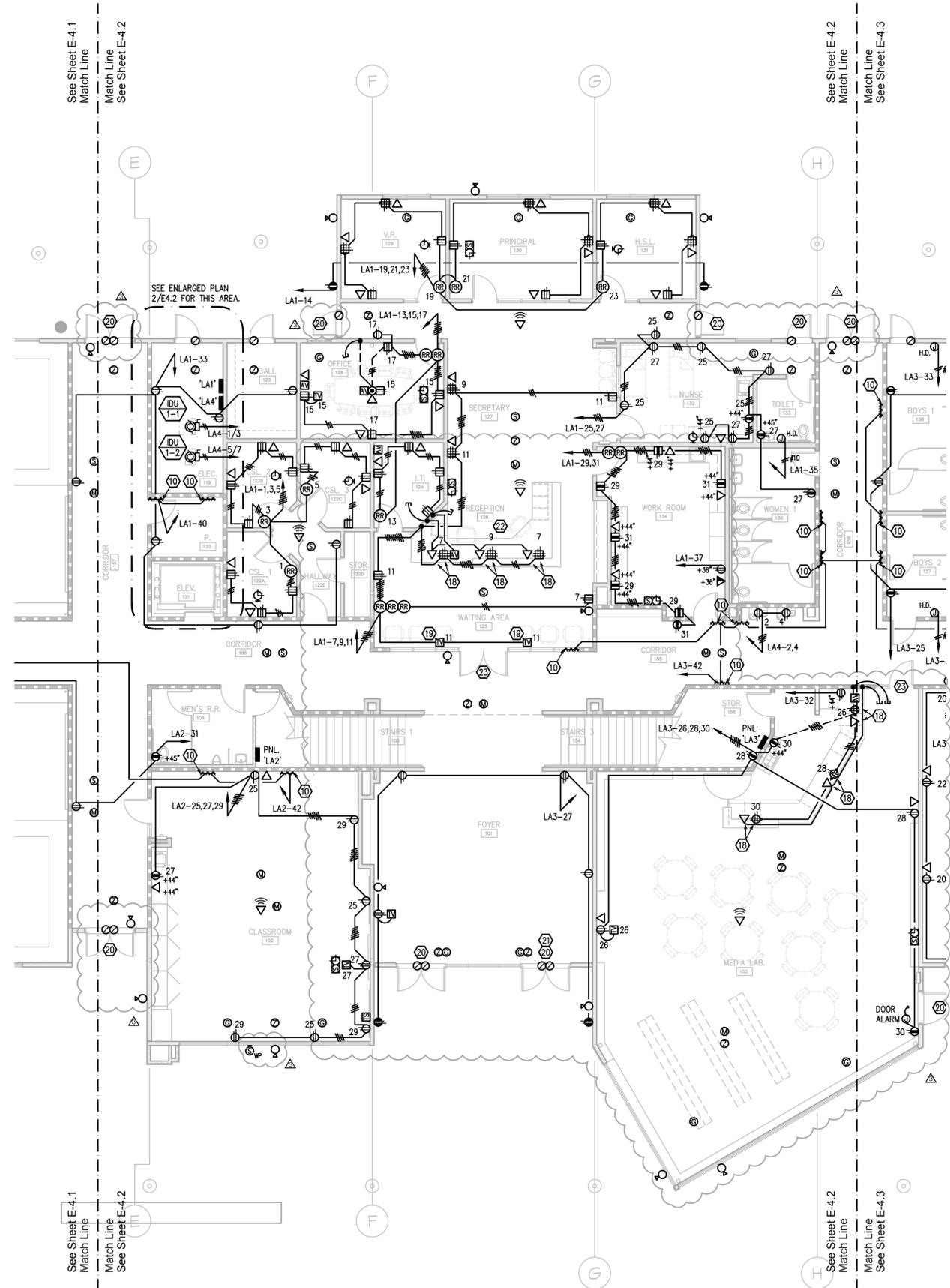
**POWER & LOW VOLTAGE PLAN**  
MAIN BUILDING - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E4.2</b>
DATE 1.27.23	
SCALE AS NOTED	

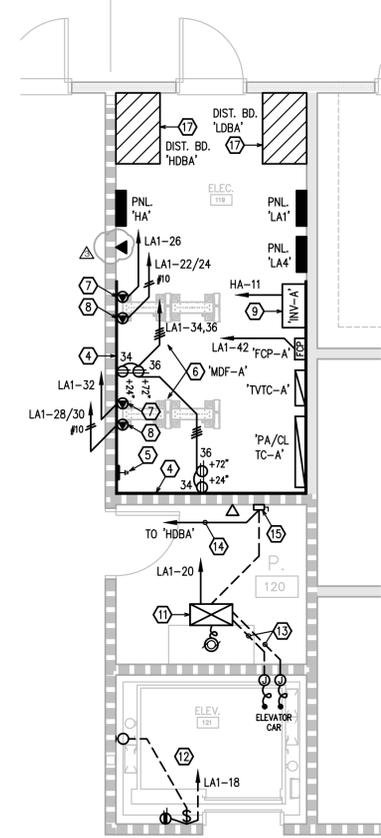
KEY PLAN



**Hardin-Davidson Engineering**  
356 Pollasky Ave.  
Suite 200  
Clovis, CA 93612  
559.323.4995 tel  
559.323.4928 fax



**1 POWER & LOW VOLTAGE PLAN**  
MAIN BUILDING - 1ST FLOOR  
SCALE: 1/8" = 1'-0"



**2 ENLARGED PLAN**  
ELEC. 119, P. 120, ELEV. 121  
SCALE: 1/4" = 1'-0"

KEYNOTES

1. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 2/E4.1.
2. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 3/E4.1.
3. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 4/E4.1.
4. PROVIDE TEL/COMM FIRE RESISTANT 3/4" PLYWOOD BACKBOARD AND PAINT. MOUNT FIRE ALARM, INTRUSION, TEL, AND PA SYSTEM EQUIPMENT. ATTACH TO WALL STUDS WITH #8 x 3" FLAT HEAD SMS AT 18" VERTICAL CENTERS AT EACH STUD. TERMINAL PA, INTRUSION CABLES.
5. 12" COPPER COMMUNICATION GROUND BUS BAR. RUN #6 GREEN GROUND WIRE TO BUILDING GEC.
6. PROVIDE DATA MDF, 2-POST RACKS, WIRE MANAGEMENT, AND APPURTENANCES PER SPECIFICATIONS. SEE DETAIL 1/E0.6 FOR MOUNTING TO CONCRETE FLOOR. TERMINATE FIBER OPTIC CABLE TO FIBER TERMINATION UNIT. TERMINAL CAT6 CABLING TO CAT6 PATCH PANELS. PROVIDE 120VAC & 208VAC 1Ø RECEPTACLES.
7. L5-20P, 120V 1Ø.
8. L6-30R, 208V 1Ø.
9. LIGHTING INVERTER 'INV-A'. SEE LIGHTING PLAN AND DETAIL 5/E0.2.
10. CONNECT FIRE/SMOKE DAMPER MOTOR VIA FIRE ALARM RELAY.
11. CONNECT ELEVATOR CONTROLLER: 480V 3Ø, MAKE CONNECTIONS PER MANUFACTURER'S REQUIREMENTS. INTERFACE WITH FIRE ALARM ELEVATOR RECALL RELAYS. VERIFY LOAD.
12. ELEVATOR PIT: PROVIDE LED TASK LIGHTS, SWITCH AND OUTLET. MAKE POWER AND SIGNAL CONNECTIONS TO CAR.
13. CAR POWER CIRCUIT AND EMPTY 1 1/2"C. FOR CONTROL WIRING FROM CONTROLLER TO HOISTWAY BY VENDOR.
14. SEE POWER SINGLE LINE DIAGRAM FOR CONDUIT AND CONDUCTORS.
15. ENCLOSED CIRCUIT BREAKER WITH SHUNT-TRIP DEVICE. INTERFACE SHUNT-TRIP WITH FIRE ALARM SYSTEM. SEE POWER SINGLE LINE DIAGRAM.
16. PROVIDE POWER AND DATA OUTLET ABOVE TV CABINET.
17. DISTRIBUTION BOARD. SEE POWER SINGLE LINE DIAGRAM AND DETAIL 3/E0.4.
18. MOUNT DEVICES IN CASEWORK. SEE ARCHITECTURAL FOR EXACT LOCATION.
19. PENDANT MOUNTED 42" VIEWSONIC TV MONITOR. PROVIDE DUAL HDMI INPUTS AT RECEPTION DESK AND I.T. OFFICE FOR SEPARATE BROADCAST TO EACH MONITOR FROM EITHER LOCATION. SEE ARCHITECTURAL DETAILS.
20. ACCESS CONTROLLED DOOR/DOORS: PROVIDE DOOR CONTROLLER, POWER SUPPLY, DOOR POSITION SENSORS (SEPARATE FROM INTRUSION), EXTERIOR CARD READER, CONNECTION TO DOOR SOLENOID, MAGNETIC DOOR HOLD-OPEN/RELEASE, DATA CABLES, AND SINGLE DEDICATED 120V CIRCUIT TO GROUP OF DOORS IN VICINITY OF LOCAL PANEL.
21. PROVIDE CYBERDATA IP INTERCOM CALL BOX AT EXTERIOR WALL ADJACENT TO WEST MAIN ENTRY DOORS (OUTSIDE OF DOOR SWING) AND CONNECT TO ADMIN RECEPTION DESK.
22. PROVIDE INTEGRATION OF IP PHONES WITH CYBERDATA INTERCOM SYSTEM AND ACCESS CONTROL SYSTEM. DOOR UNLOCK BUTTON FOR WEST MAIN ENTRY DOORS, AND LOCKDOWN INITIATE/RESET BUTTONS WITH TAMPER COVERS AT RECEPTION DESK. VERIFY LOCATIONS WITH DISTRICT.
23. PROVIDE POWER SUPPLY, DOOR CONTROLLER, AND HOLD-OPEN/RELEASE AT INTERIOR DOOR/DOORS. DOOR TO RELEASE AND CLOSE AUTOMATICALLY ON LOCKDOWN SIGNAL. CONTROLLERS AND POWER SUPPLIES MAY BE GROUPED. CONNECT TO DEDICATED 120V DOOR CONTROLLER CIRCUIT.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-64a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

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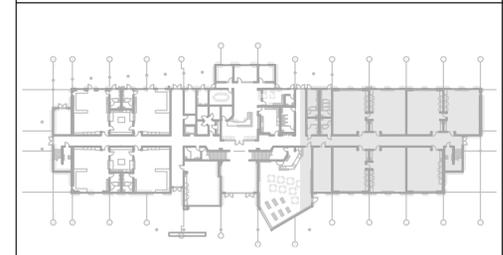
No.	DATE	DESCRIPTION
Δ	2.14.23	DISTRICT MODIFICATIONS
Δ	2.27.23	DISTRICT MODIFICATIONS
Δ	4.19.23	DISTRICT MODIFICATIONS

SHEET DESCRIPTION

**POWER & LOW VOLTAGE PLAN**  
MAIN BUILDING - 1ST FLOOR

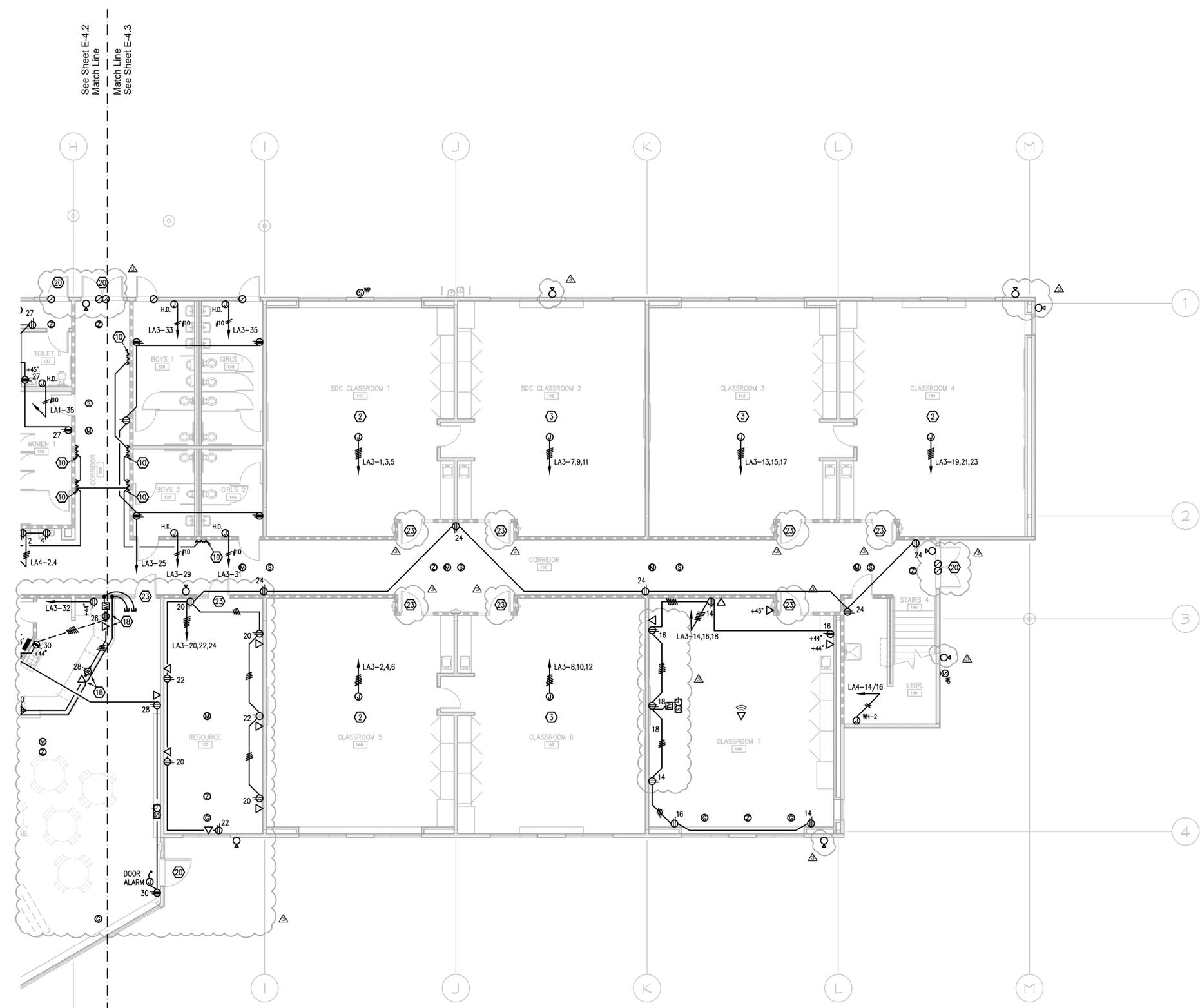
PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E4.3</b>
DATE 1.27.23	
SCALE AS NOTED	

KEY PLAN



**Hardin-Davidson Engineering**  
356 Pollasky Ave., Suite 200  
Clovis, CA 93612  
559.323.4995 tel  
559.323.4928 fax

**1 POWER & LOW VOLTAGE PLAN**  
MAIN BUILDING - 1ST FLOOR  
SCALE: 1/8" = 1'-0"



PLOT DATE: 4/26/23 9:40 AM  
 PLOT BY: Z:\Clients\PI\230302 - Shields & Brawley ES Rebuild\CAD Files\230302 - Elec.dwg

KEYNOTES

1. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 2/E4.4.
2. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 3/E4.4.
3. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 4/E4.4.
4. PROVIDE ELECTRICAL INSTALLATION AS PER DETAIL 2/E4.5.
5. PROVIDE TEL/COMM FIRE RESISTANT 3/4" PLYWOOD BACKBOARD AND PAINT. MOUNT FIRE ALARM, INTRUSION, TEL, AND PA SYSTEM EQUIPMENT. ATTACH TO WALL STUDS WITH #6 x 3" FLAT HEAD SMS AT 18" VERTICAL CENTERS AT EACH STUD. TERMINAL PA, INTRUSION CABLES.
6. 12" COPPER COMMUNICATION GROUND BUS BAR. RUN #6 GREEN GROUND WIRE TO BUILDING GEC.
7. PROVIDE DATA IDF, 2-POST RACKS, WIRE MANAGEMENT, AND APPURTENANCES PER SPECIFICATIONS. SEE DETAIL 1/E0.6 FOR MOUNTING TO CONCRETE FLOOR. TERMINATE FIBER OPTIC CABLE TO FIBER TERMINATION UNIT. TERMINAL CAT6 CABLING TO CAT6 PATCH PANELS. PROVIDE 120VAC & 208VAC 1Ø RECEPTACLES.
8. L5-20P, 120V 1Ø.
9. L6-30R, 208V 1Ø.
10. LIGHTING INVERTER 'INV-B'. SEE LIGHTING PLAN.
11. CONNECT FIRE/SMOKE DAMPER MOTOR VIA FIRE ALARM RELAY.
12. (6) 2"C. FROM 1ST FLOOR ELEC ROOM BACKBOARD TO 2ND FLOOR ELEC ROOM BACKBOARD.
23. PROVIDE POWER SUPPLY, DOOR CONTROLLER, AND HOLD-OPEN/RELEASE AT INTERIOR DOOR/DOORS. DOOR TO RELEASE AND CLOSE AUTOMATICALLY ON LOCKDOWN SIGNAL. CONTROLLERS AND POWER SUPPLIES MAY BE GROUPED. CONNECT TO DEDICATED 120V DOOR CONTROLLER CIRCUIT.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-65a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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PROJECT DEVELOPMENT

DATE	ISSUED FOR

REVISIONS

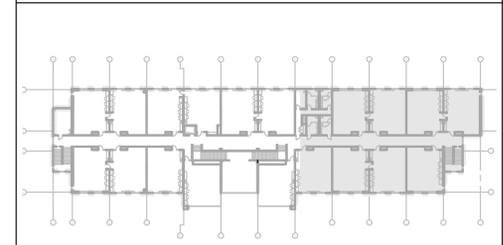
No.	DATE	DESCRIPTION
△	2.14.23	DISTRICT MODIFICATIONS
△	2.27.23	DISTRICT MODIFICATIONS
△	4.19.23	DISTRICT MODIFICATIONS

SHEET DESCRIPTION

**POWER & LOW VOLTAGE PLAN**  
MAIN BUILDING - 2ND FLOOR

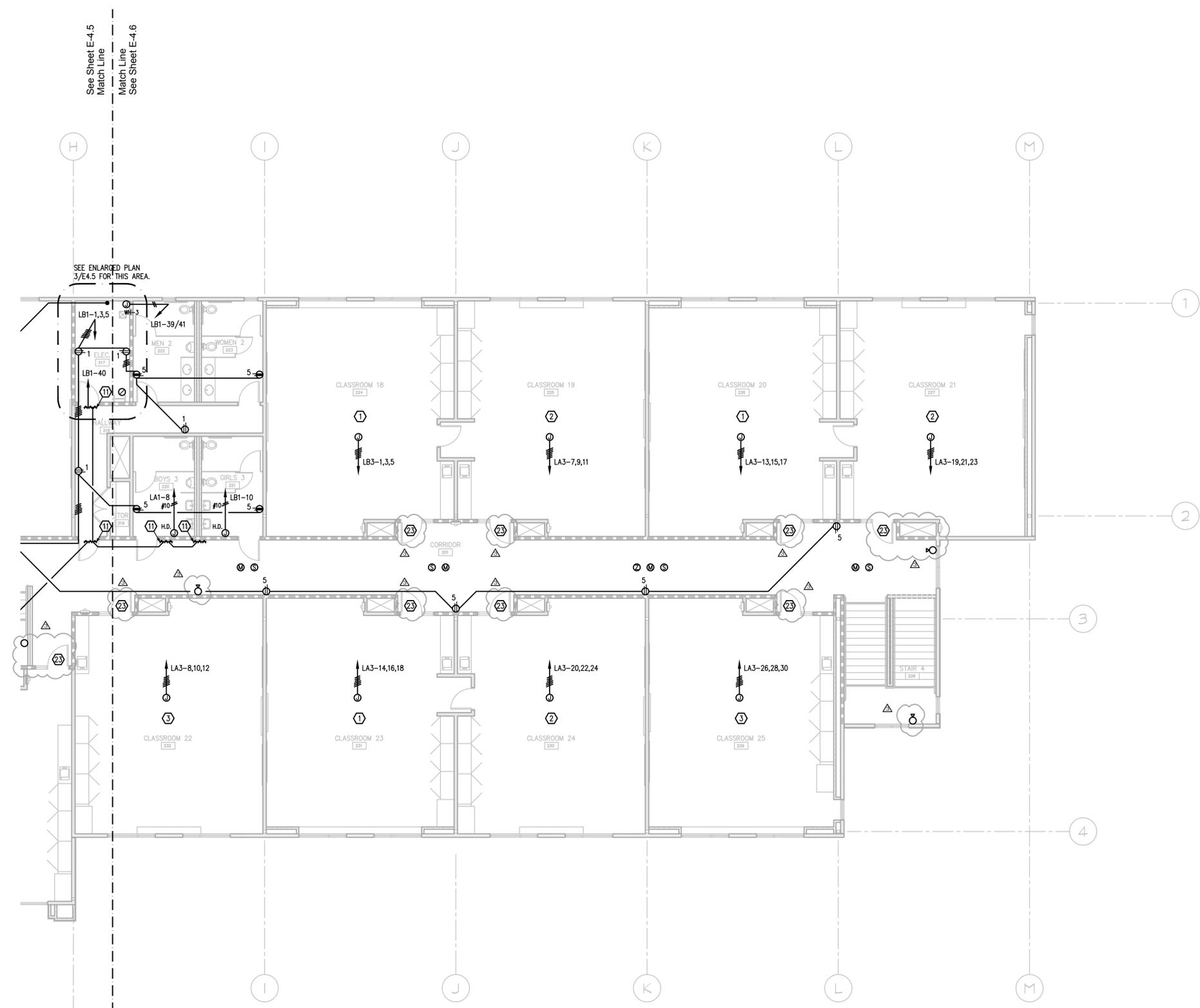
PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>E4.6</b>
PROJECT NO. 17-67	
DATE 1.27.23	
SCALE AS NOTED	

KEY PLAN

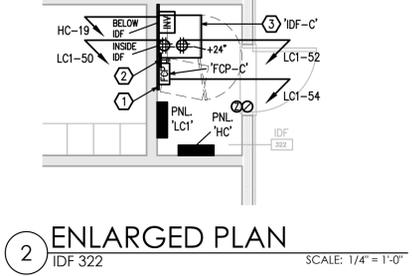
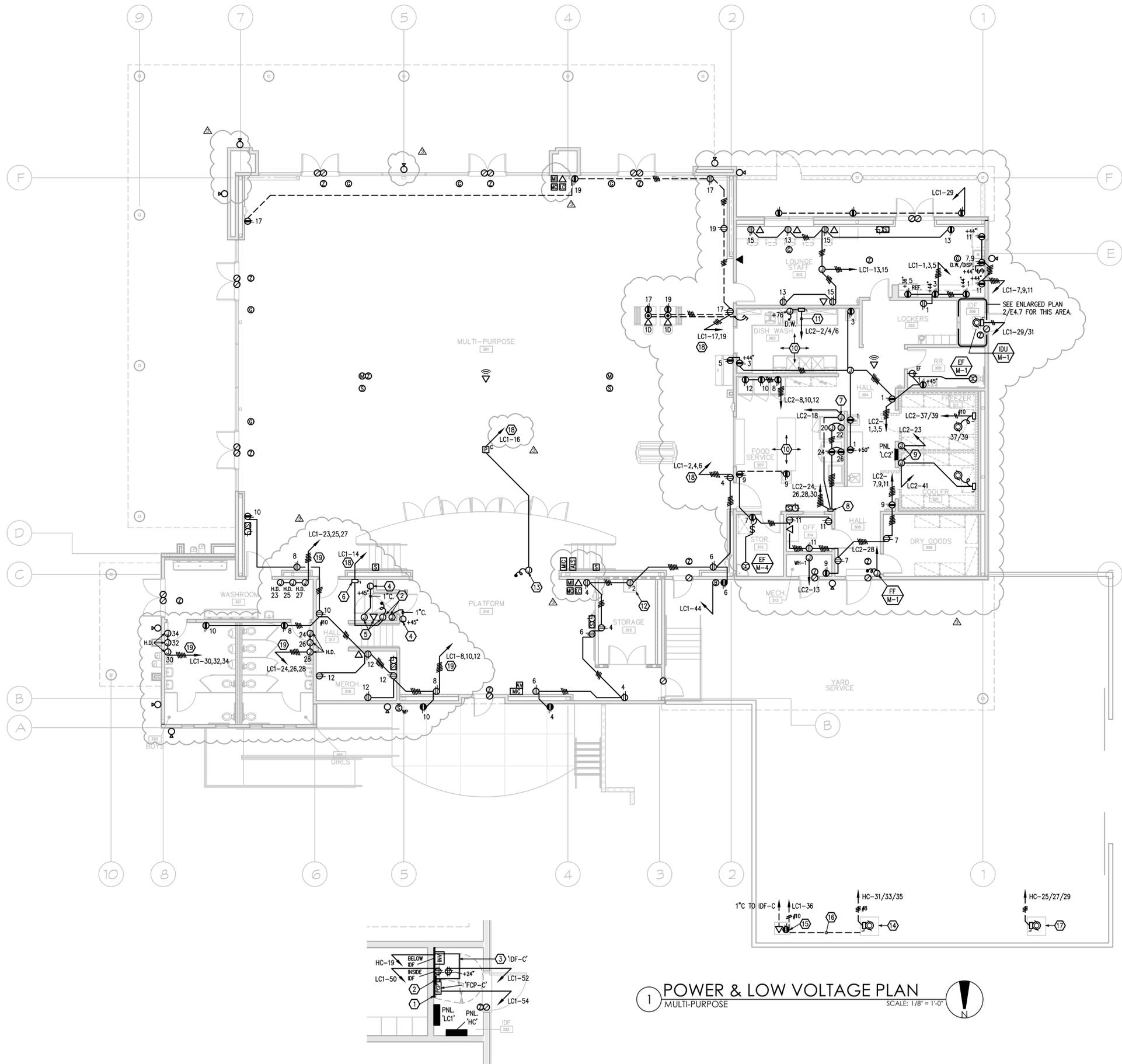


**Hardin-Davidson Engineering**  
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**POWER & LOW VOLTAGE PLAN**  
MAIN BUILDING - 2ND FLOOR  
SCALE: 1/8" = 1'-0"



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**1 POWER & LOW VOLTAGE PLAN**  
MULTI-PURPOSE SCALE: 1/8" = 1'-0"

**2 ENLARGED PLAN**  
IDF 322 SCALE: 1/4" = 1'-0"

**KEYNOTES**

1. PROVIDE TEL/COMM FIRE RESISTANT 3/4" PLYWOOD BACKBOARD AND PAINT. MOUNT FIRE ALARM, INTRUSION, TEL, AND PA SYSTEM EQUIPMENT. ATTACH TO WALL STUDS WITH #8 x 3" FLAT HEAD SMS AT 18" VERTICAL CENTERS AT EACH STUD. TERMINAL PA, INTRUSION CABLES.
2. 12" COPPER COMMUNICATION GROUND BUS BAR. RUN #6 GREEN GROUND WIRE TO BUILDING GEC.
3. IDF CABINET PER SPECS. MOUNT POWER OUTLET INSIDE IDF. TERMINATE FIBER OPTIC CABLE TO FO PATCH PANEL. TERMINATE CAT6 CABLING TO CU PATCH PANEL. SEE DETAIL 3/E0.6.
4. VERIFY LOCATION OF STAIR LIFT CALL BUTTONS WITH ARCHITECT PRIOR TO ROUGH-IN.
5. VERIFY LOCATIONS OF STAIR LIFT SIGNAL CONNECTION POINTS AND POWER FEED WITH MANUFACTURER PRIOR TO ROUGH-IN.
6. PROVIDE DISCONNECT SWITCH WITH LOCKOUT HASP.
7. EXHAUST HOOD: INSTALL CONDUIT AND WIRE/CABLING, AND MAKE CONNECTIONS TO OUTLETS, HOOD LIGHTS (PROVIDED BY VENDOR), GAS SOLENOID, EXHAUST FAN, MAKE-UP AIR, DUCT TEMPERATURE SENSOR, ROOM TEMPERATURE SENSORS, LCD DISPLAY, WALL CONTROLLER, AND RACEWAYS ONLY FOR CAT6 ETHERNET AND BMS CONNECTIONS. MOUNT CONTROL SWITCHES BELOW CONTROLLER. VERIFY LOCATIONS OF ITEMS AND COORDINATE THE REQUIREMENTS WITH THE VENDOR AND MANUFACTURER DRAWINGS.
8. PROVIDE ENCLOSED 15A SHUNT TRIP BREAKER (OXT LC2-18) AND SEPARATE ENCLOSURE WITH DIN RAIL AND 4-POLE 20 AMP CONTACTOR WITH 120V COIL. WIRE BREAKER TO CONTACTOR COILS. WIRE SHUNT TRIP TO ANSUL SHUNT TRIP CONTACTS. WIRE UNDER HOOD OUTLET CIRCUITS THROUGH CONTACTORS. COORDINATE LOCATIONS WITH HOOD VENDOR.
9. CONNECT WALK-IN BOX LIGHTS, SWITCH, EVAPORATOR, AND COMPRESSOR PER MFG'R. PROVIDE RACEWAY TO THERMOSTAT LOCATION.
10. COORDINATE ALL DEVICE MOUNTING HEIGHTS IN KITCHEN AND INSTALLATION OF ELECTRICAL DEVICES ON KITCHEN EQUIPMENT WITH KITCHEN EQUIPMENT VENDOR AND DRAWINGS.
11. 1" C. 3#6, 1#10.
12. A/V SYSTEM RACK. SEE DETAIL 1/E0.6.
13. CONNECT MOTORIZED SCREEN AND CONTROL. VERIFY LOCATION OF CONTROLS WITH ARCHITECT PRIOR TO ROUGH-IN.
14. IRRIGATION BOOSTER PUMP SKID: 15HP 480V 3# VFD MOTOR CONTROL. VERIFY EXACT LOCATION.
15. IRRIGATION CONTROLLER: MOUNT POWER AND DATA OUTLETS AT INTERIOR. VERIFY EXACT LOCATION.
16. 1" C. FROM IRRIGATION CONTROLLER TO BOOSTER PUMP SKID CONTROLLER.
17. DOMESTIC WATER BOOSTER PUMP SKID: (2) 3HP 480V 3# MOTORS. VERIFY EXACT LOCATION.
18. PROVIDE #10 CONDUCTORS AND GROUND THROUGH RUN.
19. PROVIDE 1" C. AND #8 CONDUCTORS AND GROUND THROUGH RUN.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-66a**  
**S&B Elementary**  
**02-116800**

JOHN H. SMITH, A.I.A. C15885



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△	2.27.23	DISTRICT MODIFICATIONS
△	4.19.23	DISTRICT MODIFICATIONS

SHEET DESCRIPTION

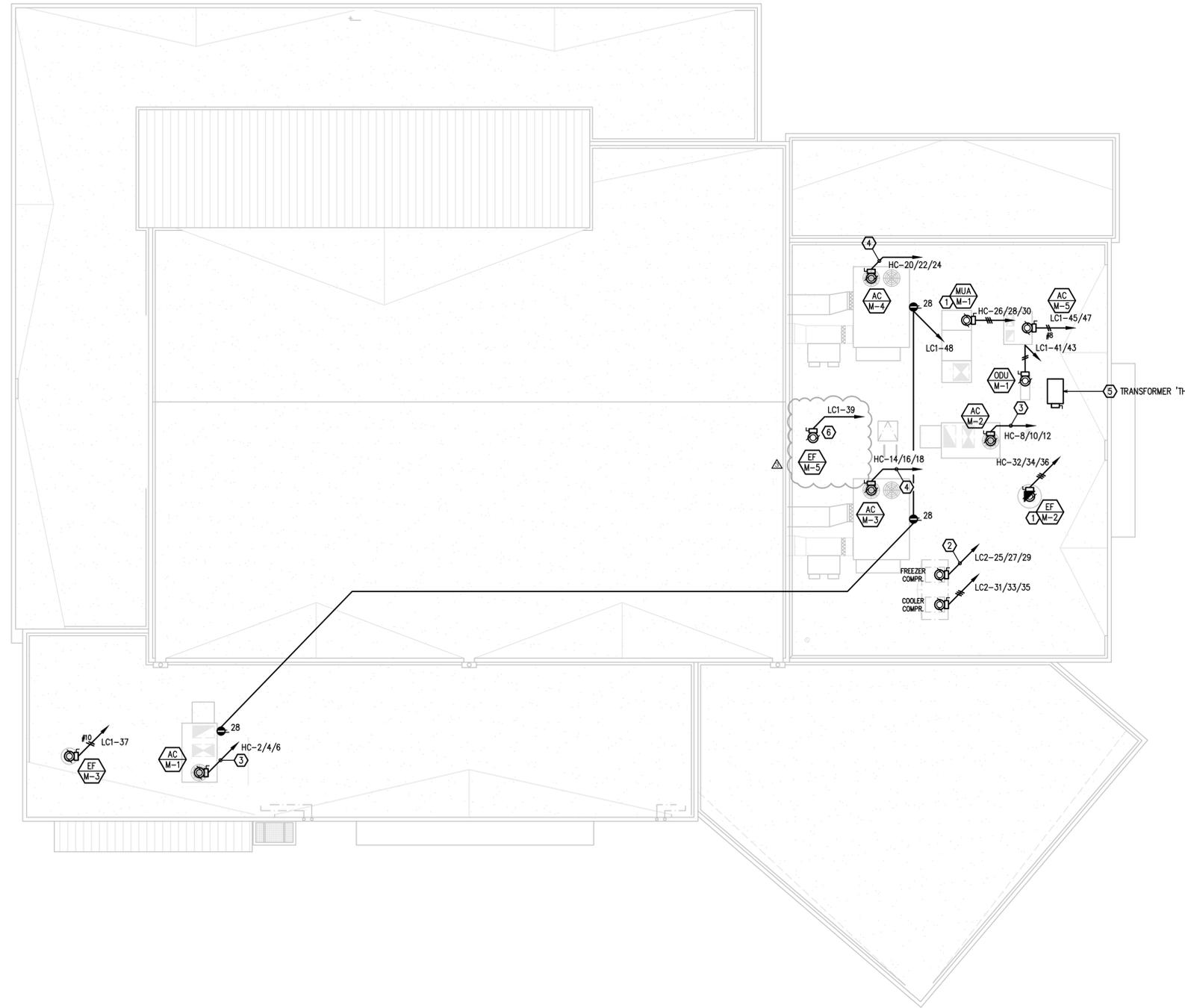
**POWER & LOW VOLTAGE PLAN**  
MULTI-PURPOSE

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E4.7</b>
DATE 1.27.23	
SCALE AS NOTED	



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1 ELECTRICAL ROOF PLAN  
MULTI-PURPOSE SCALE: 1/8" = 1'-0"

KEYNOTES

- 1. HOMERUN TO ELECTRICAL PANEL VIA KITCHEN HOOD CONTROLLER MOTOR STARTERS. SEE HOOD DRAWINGS AND MECHANICAL SHEETS FOR ALL REQUIREMENTS.
- 2. 1" C. 3#8, 1#10G.
- 3. 3/4" C. 3#10, 1#10G.
- 4. 1 1/4" C. 3#3, 1#8G.
- 5. ROOF MOUNT TRANSFORMER, SEE DETAIL 5/E0.4.
- 6. PROVIDE HOOD SWITCH TO CONTROL DISHWASHER EXHAUST FAN. LOCATE PER VENDOR. ALSO INTERCONNECT CIRCUIT WITH MUA-M-1 AS PER MECHANICAL.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



AD 3-67a  
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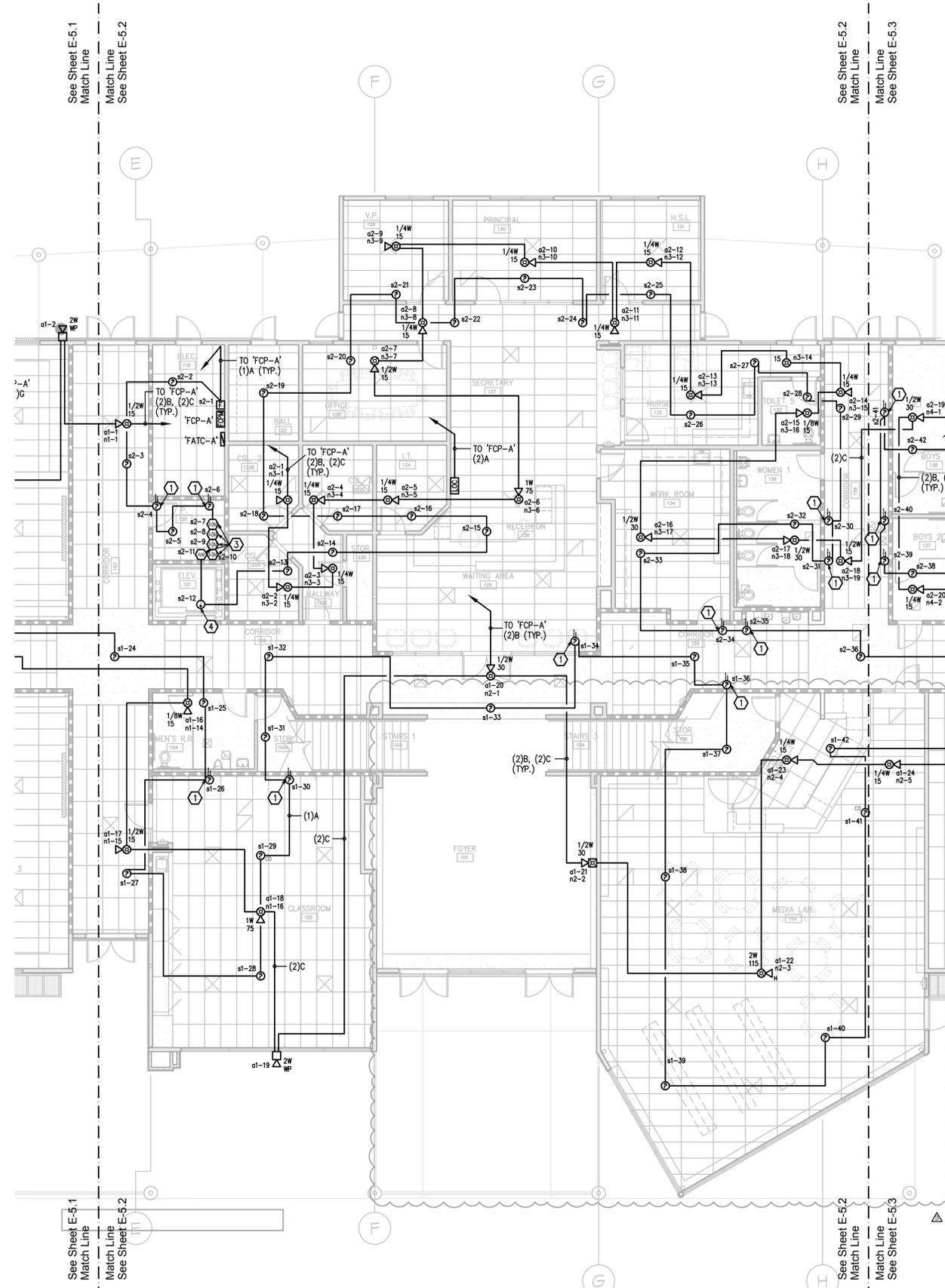
**ELECTRICCAL ROOF PLAN**  
MULTI-PURPOSE

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	E4.11
DATE 1.27.23	
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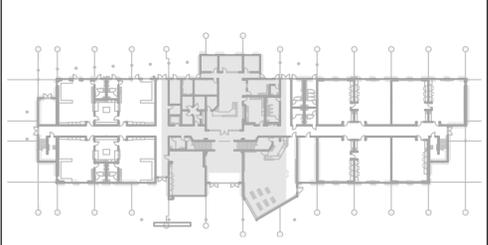


**1 FIRE ALARM PLAN**  
 MAIN BUILDING - 1ST FLOOR  
 SCALE: 1/8" = 1'-0"

**KEYNOTES**

1. DUCT SMOKE DETECTOR: CONNECT 120V TO FSD VIA RELAY. MOUNT REMOTE TEST SWITCH AT +96" TO +120" OR 6" BELOW CEILING, WHICHEVER IS HIGHER. PROVIDE CABLING TO TEST SWITCH.
2. CONNECT RELAY MODULE TO HVAC SHUTDOWN TERMINALS.
3. PROVIDE (1) MONITOR MODULE AND (4) RELAY MODULES. CONNECT FOR ELEVATOR CONTROLLER FOR RECALL.
4. LOCATE IN ELEVATOR PIT.
5. LOCATE AT UNDERSIDE OF STAIR LANDING.

**KEY PLAN**



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-68a**  
**S&B Elementary**  
**02-116800**

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**FIRE ALARM PLAN**

MAIN BUILDING - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No. <b>E5.2</b>
PROJECT NO. 17-67	DATE 1.27.23
DATE 1.27.23	SCALE AS NOTED



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KEYNOTES

1. DUCT SMOKE DETECTOR: CONNECT 120V TO FSD VIA RELAY. MOUNT REMOTE TEST SWITCH AT +96" TO +120" OR 6" BELOW CEILING, WHICHEVER IS HIGHER. PROVIDE CABLING TO TEST SWITCH.
2. CONNECT RELAY MODULE TO HVAC SHUTDOWN TERMINALS.
3. PROVIDE (1) MONITOR MODULE AND (4) RELAY MODULES. CONNECT FOR ELEVATOR CONTROLLER FOR RECALL.
4. LOCATE IN ELEVATOR PIT.
5. LOCATE AT UNDERSIDE OF STAIR LANDING.



PROJECT:

# SHIELDS & BRAWLEY ELEMENTARY SCHOOL



**AD 3-69a**  
**S&B Elementary**  
**02-116800**

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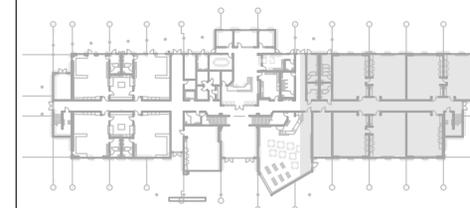
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## FIRE ALARM PLAN

MAIN BUILDING - 1ST FLOOR

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E5.3</b>
DATE 1.27.23	
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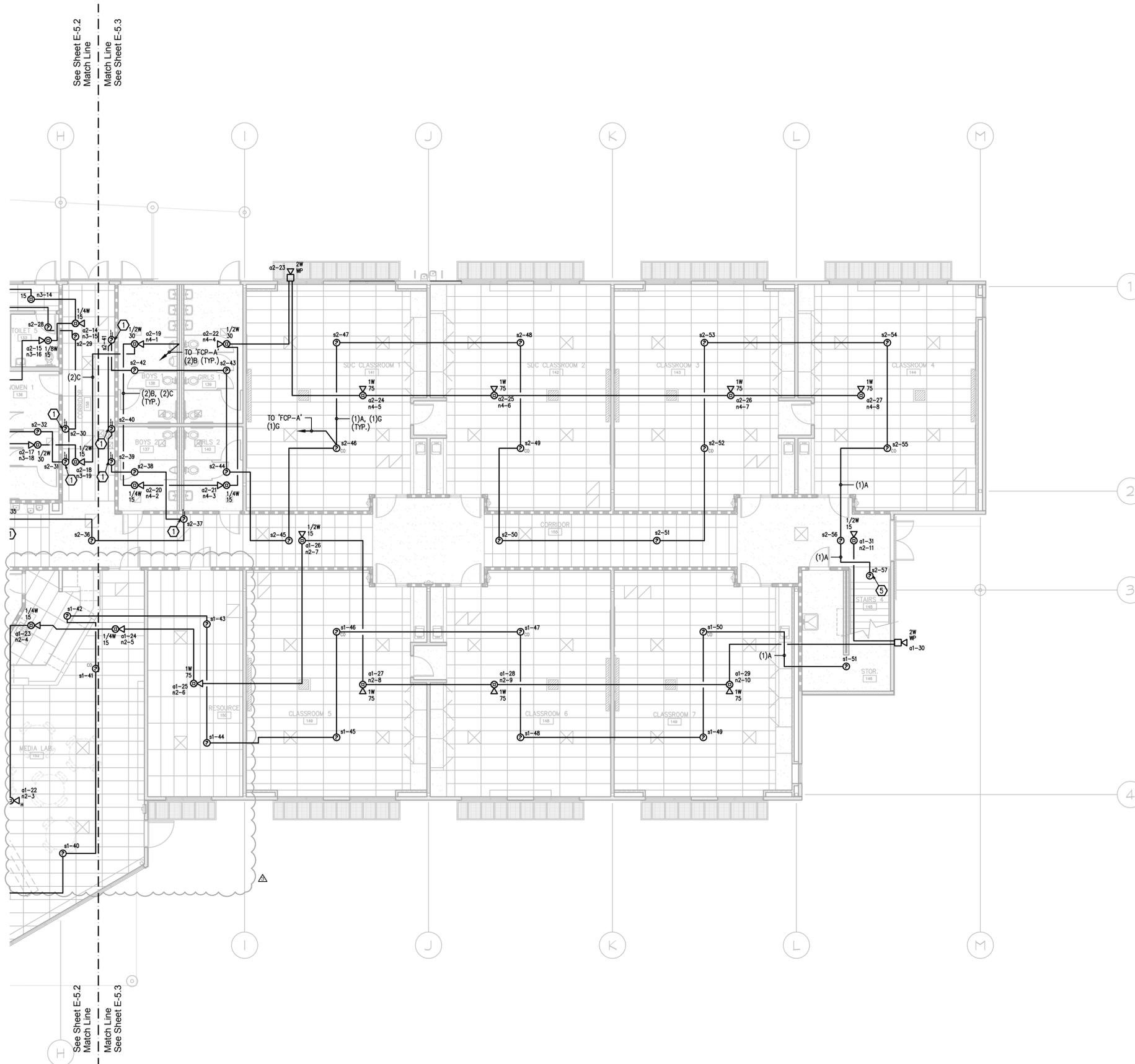
KEY PLAN

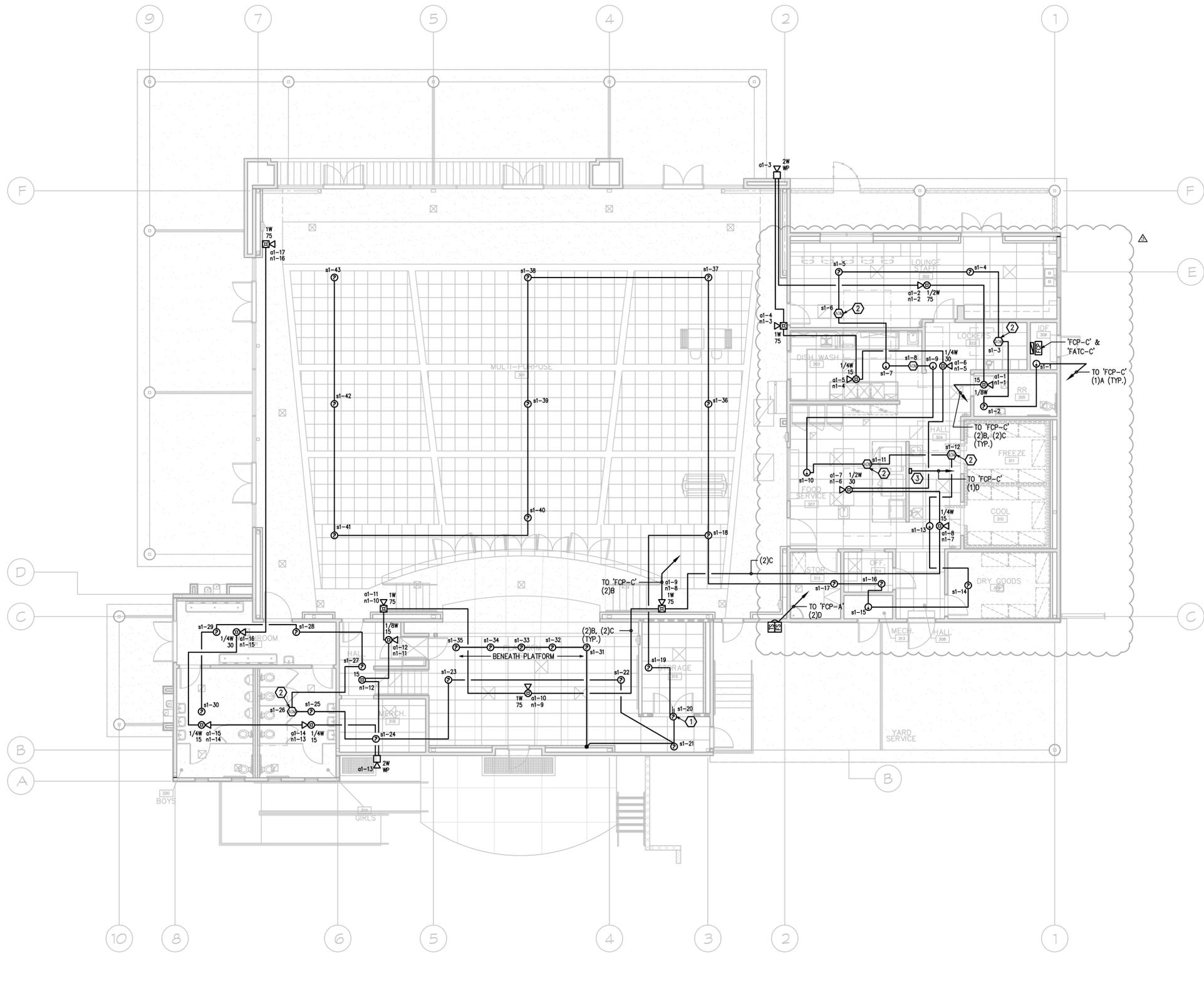


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**1 FIRE ALARM PLAN**  
 MAIN BUILDING - 1ST FLOOR

SCALE: 1/8" = 1'-0"





**1 FIRE ALARM PLAN**  
 MULTI-PURPOSE SCALE: 1/8" = 1'-0"

**KEYNOTES**

1. DUCT SMOKE DETECTOR: CONNECT 120V TO FSD VIA RELAY. MOUNT REMOTE TEST SWITCH AT +96" TO +120" OR 6" BELOW CEILING, WHICHEVER IS HIGHER. PROVIDE CABLING TO TEST SWITCH.
2. CONNECT RELAY MODULE TO HVAC SHUTDOWN TERMINALS.
3. CONNECT MONITOR MODULE TO HOOD FIRE SUPPRESSION SYSTEM. VERIFY LOCATION.



PROJECT:  
**SHIELDS & BRAWLEY ELEMENTARY SCHOOL**



**AD 3-70a**  
**S&B Elementary**  
**02-116800**

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**SHEET DESCRIPTION**

**FIRE ALARM PLAN**

MULTI-PURPOSE

PROJECT COORDINATOR JOHN SMITH	SHEET No.
PROJECT NO. 17-67	<b>E5.7</b>
DATE 1.27.23	
SCALE AS NOTED	

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# SCHEDULE MILESTONES

## IN CALENDAR DAYS FROM THE NTP

AD 3-71a  
S&B Elementary  
02-116800

### SB 1 - SITE WORK, OFF SITE WORK & UNDERGROUND UTILITIES

- Mass excavation, grading and building pads (complete **60 days** from NTP)
- Underground utilities to the building pads (complete 90 days from NTP)
- Fire Hydrants set tested and operable (complete 90 days from NTP)
- North Parking Lot paved (complete 130 days from NTP)
- W. Fountain Way off-site street improvements (complete 120 days from NTP)
- N. Shields Avenue off-site street improvements (complete 250 days from NTP)
- N. Brawley Avenue off-site street improvements (complete 450 days from NTP)

### SB 2 - GENERAL TRADES/BUILDING STRUCTURE

- Main Building footings (complete 160 days from NTP)
- Main Building S-O-G (complete 195 days from NTP)
- Main Building structural steel & 2<sup>nd</sup> floor concrete (complete 285 days from NTP)
- Main Building Dry-in & Roofing (complete 380 days from NTP)
- Main Building Floorcovering (complete 450 days from NTP)
- Multi-Purpose Building footings (complete 220 days from NTP)
- Multi-Purpose Building S-O-G concrete (complete 258 days from NTP)
- Multi-Purpose Building structural steel (complete 328 days from NTP)
- Multi-Purpose Building Dry-in (complete 420 days from NTP)
- Multi-Purpose Building Floorcovering (complete 460 days from NTP)
- Multi-Purpose Building Food Service start-up & test (complete 500 days from NTP)
- Preschool Modular foundation (complete 300 days from NTP)

### SB 3 – ROOFING

- Main Building Roofing (complete 360 days from NTP)
- Multi-Purpose Building Roofing (complete 420 days from NTP)

### SB 4 – ELEVATOR

- Main Building Elevator (complete 415 days from NTP)

### SB 5 – FIRE PROTECTION

- Main Building (complete 373 days from NTP)
- Multi-Purpose Building (complete 400 days from NTP)
- Preschool Modular Building connection (complete 400 from NTP)

### **SB 6 – PLUMBING**

- Main Building under slab rough (complete 160 days from NTP)
- Main Building rough plumbing (complete both floors 365 days from NTP)
- Main Building plumbing finishes (complete both floors 420 days from NTP)
- Multi-Purpose Building under slab rough (complete 240 days from NTP)
- Multi-Purpose Building plumbing rough (complete 360 days from NTP)
- Multi-Purpose Building finishes (complete 450 days from NTP)
- Preschool Modular Building connections (complete 450 days from NTP)

### **SB 7 – MECHANICAL**

- Main Building ductwork rough (complete both floors 365 days from NTP)
- Main Building set equipment (complete 390 days from NTP)
- Main Building test & balance (complete 434 days from NTP)
- Multi-Purpose Building ductwork rough (complete 360 days from NTP)
- Multi-Purpose Building set equipment (complete 420 days from NTP)
- Multi-Purpose Building test & balance (complete 450 days from NTP)

### **SB 8 - ELECTRICAL/LOW VOLTAGE**

- Main Building under slab rough (complete 160 days from NTP)
- Main Building electrical rough (complete 379 days from NTP)
- Main Building electrical finishes (complete 456 days from NTP)
- Multi-Purpose Building under slab rough (complete 210 days from NTP)
- Multi-Purpose Building electrical rough (complete 407 days from NTP)
- Multi-Purpose Building finishes (complete 474 days from NTP)
- Preschool Modular Building connections (complete 450 days from NTP)
- Main Building permanent power (complete 415 days from NTP)
- Multi-Purpose Building permanent power (complete 425 days from NTP)

### **SB 9 - LANDSCAPE & IRRIGATION**

- Two ball fields and one soccer field turf, trees, and plants (complete 330 days from the NTP)
- Remaining turf, trees, and plants (complete 480 days from the NTP)

### **SB 10 - SURVEYING/STAKING**

- Staking for mass excavation grading and building pads (completed 15 days from the NTP)

### **SB 11 – SWPPP**

- Installation of SWPPP/BMP's (completed 15 days from the NTP)

### **SB 12 - METAL/IRON FENCING, GATE & HANDRAILS**

- Backstops and ball field fences (complete 180 days from NTP)
- Remaining fence, gates, and handrails (complete 480 days from NTP)