

September 16, 2019
BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
Y20-703-RC / ADDENDUM NO. 3
CONSTRUCTION OF ORANGE COUNTY FIRE STATION #87

THE CURRENT BID OPENING DATE IS: September 24, 2019

This addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to, and shall take precedence over, the original documents. Underlining indicates additions, deletions are indicated by ~~strikethrough~~.

- A. **The bid opening date will remain** September 24, 2019 at 2:00 p.m.
- B. Revisions
1. Revision #3 Drawings: Pre-Bid RFI responses. Delete in its entirety and replace the following current drawing sheets with Revision #3 sheets: A-010, A-202, A-312, A-501, E-001, E-002, E-003, E-004, E-005, E-007, E-008, E-702, ID-401, ID-500, M-201.
 2. Revision # 3 Specifications: Pre-bid RFI responses. Delete in its entirety and replace the following current sections with Revision #3 sections: 074213 Metal Wall Panels, 083613 Sectional Doors, 087100 Door Hardware, 272626 Data Communications Integration.
- C. Additions: Include new drawing sheet: OCFS Alerting System by USDD.
- D. Questions and Answers:
1. **Question:** Sheet A-010 Monumental Wall Elevation: are these 5" and 4" tall letters and a 16" plaque? If yes, what are the components applies to? Or are they integral to the stucco? How many?
Answer: Yes, 5" and 4" Letters and a 16" digitally printed logo applied to recessed acrylic. Sheet A-010 revised for additional detail.
 2. **Question:** Dumpster Wall Elevation: are these addition cast metal letters and a plaque? See above. How many?
Answer: Sheet A-010 revised for additional clarity.
 3. **Question:** Sheet ID-500 42" Diameter Cast Aluminum Custom Logo: Anodized, Giclee Print? Or Custom Painted full color logo? Pin mount (Manufacturer: Gemini).
Answer: Logo to be 1/4" plate aluminum with vinyl graphic & urethane clear coat. ID-500 revised. E-101 revised to show power to sign.

4. **Question:** Type C: 8"x6"x1/8" thick Acrylic sign with raised text and graphics; tape mount (manufacturer: Advance Corp) Are these used? Not in schedule. How many?

Answer: Sign Type C not used in project. ID-500 revised.

5. **Question:** Fixture types SLC, SLZ, W1, EM are not shown on Sheet Electrical Drawings. Please Advise of fixture or if these fixtures have been deleted.

Answer: SLC, W1, and EM not used. SLZ fixtures to be installed at flag poles.

6. **Question:** Fixture types X1 and X2 are not marked along side the emergency exits. Please advise on the electrical drawings which fixtures are X1 and X2.

Answer: All exit signs are to be type X1. Type X2 is not used.

7. **Question:** Fixture types A1, A2, D1E and G2E on sheet E-201 these fixtures appear to be emergency lighting fixtures with proposed battery back-up. The fixture schedule does not indicate these fixture types with being battery backup. Please advise if these fixtures are to be ordered with an EM back-up ballast.

Answer: Emergency battery units are to be provided with fixtures.

8. **Question:** GM-1 glass tile from Somer tile, looked on-line and cannot find they style designer selected for pricing. Please advise.

Answer: Alternate tile: Susan Jablon Tile, 2x2 Deep Tomato Red Glass tile, SKU: 5715796. Sheet ID-401 Interior Finish Legend revised and re-issued.

9. **Question:** SSP-1 for shower walls, is that PWT-3?

Answer: SSP-1 is the "Swanstone" panels for shower walls. The panels are scored in a 12"X12" pattern to look like tile. PTW-3 is metal subway tile to be installed above and below GM-1.

10. **Question:** There does not appear to be any edging to delineate between the mulch and the 57 stone. There are several options: plastic, aluminum, or steel edging. IT could be done without. Please advise.

Answer: No edging is required.

11. **Question:** No structural attachment for 4" ISO and laminated 3/4" plywood to the sloped metal deck.

Answer: Please refer to specifications section 074113.16-1.4.D and the Structural drawings for the pressures required for this roof. This is a performance based spec - attachment per manufacturer's specifications.

12. **Question:** There are three competing spec sections dealing with copings, reglets, gutters, and downspouts (74113, 76200 & 7100). No specs for metal panels of soffit panels. Please provide specs if available.

Answer: Please disregard sections 76200 and 077100 for roof specialty items associated with the standing seam metal roof and use section 074113.16 for standing seam metal roof and accessories.

13. **Question:** Signage: Is the anodized aluminum natural/clear or is there a color/black. It is black on the drawings, except for the 87 - which could natural clear aluminum. If color is the case, do you have an alternative like powder coating or paint for the black?

Answer: Signage colors to be selected by owner in submittal process. Signage to be powder coated from manufacturer's standard range of colors.

14. **Question:** The OH door specs are almost unusable as there are so many contradictions in material operation and not to mention even the basis of design manufacturer can't meet the level D impact resistance.

Answer: Spec section 083613-Sectional Doors revised and re-issued. Sheets A-202, A-312 & A-501 revised and re-issued to accommodate sectional door operator size.

15. **Question:** The ADA schedule does not list a sign at every door/ room. Please confirm we are to bid ADA signs as scheduled not per door.

Answer: Please bid signs per sign schedule revised ID-500.

16. **Question:** Please provide spec for the 42" Dia logo on the wall and the 18" Dia logos on the monument. Is this a 1/4" cut alum with digital print? Is it cast alum with full paint? Other? Please specify.

Answer: Logo to be 1/4" plate aluminum with vinyl graphic & urethane clear coat. ID-500 revised.

17. **Question:** Monument wall signs confirm that the North elevation has FIRE STATION 87 ORANGE COUNTY 12345 + LOGO

Answer: Detail 6/A-010 revised for more clarity.

18. **Question:** West elevation does NOT include the ORANGE COUNTY 12345 (only the FIRE STATION 87 + LOGO as shown.

Answer: Dumpster monumental sign to be as shown in detail 6/A-010. Sheet A-010 revised.

19. **Question:** The pin mounted letters are to be CAST or 1/4" Cut aluminum?

Answer: Pin mounted building lettering to be .080 cut aluminum reverse channel faces welded to .063 returns.

20. **Question:** Is the anodized finish specified for the alum characters CLEAR? (As a note: Colorized anodized finish is much more expensive. If color is required, paint is a more economical solution)

Answer: Signage colors to be selected by owner in submittal process. Signage to be powder coated from manufacturer's standard range of colors.

21. **Question:** Can you please provide a spec for the metal panel wall system?

Answer: Spec Section 07 42 13 Formed Metal Wall Panels issued.

22. **Question:** What size is the grease trap to be?

Answer: Grease interceptor to be 750 gallon, 48"x78"x60". Size indicated on sheet P-701.

E. All other terms and conditions of the IFB remain the same.

The Bidder/Proposer shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of the bid or proposal.

Receipt acknowledged by:

Authorized Signature

Date Signed

Title

Name of Firm

SECTION 07 42 13

FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Concealed fastener metal wall panels and liner panels as part of the assembly described below.
 - 1. Metal Wall Panels and Metal Liner Panel Wall System: Single-skin concealed fastener metal wall panels applied as the exterior cladding over wall framing specified in Division 05 Section "Cold-Formed Metal Framing" with metal liner panels. Metal wall panel installation specified in this Section includes secondary metal subgirt framing for panel attachment and an interior sealed-joint metal liner panel that provides air and water vapor control.

1.2 RELATED REQUIREMENTS

- A. Division 07 Section "Joint Sealants" for field-applied joint sealants.
- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM):
 - 1. ASTM A 653/A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM A 755/A 755M - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - 3. ASTM C 754 - Specification for Installation of Steel Framing Members to Receive Screw Attached Gypsum Panel Products.
 - 4. ASTM C 920 - Specification for Elastomeric Joint Sealants.
 - 5. ASTM C 1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
 - 6. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
- D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA):
 - 1. Architectural Sheet Metal Manual.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Provide metal wall panel assemblies meeting performance requirements as determined by application of specified tests by a qualified testing agency on manufacturer's standard assemblies.
- B. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, per ASTM E 72:
 - 1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
 - 2. Limits of Deflection: Metal wall panel assembly shall withstand scheduled wind pressure with the following allowable deflection:
 - a. Maximum allowable deflection limited to L/180 deflection of panel perimeter normal to plane of wall with no evidence of failure.
 - 3. Secondary Metal Framing: Design secondary metal framing for metal wall panel assembly according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."

Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction.

- C. Missile Impact Requirements: Product shall meet the Florida Building Code 2017 edition stated Wind Loads which is 149 mph (3-second gust) according to the FBC Basic Wind Speed for an Essential Facility with a Risk Category IV and ASTM E 1996, it should be provided with an Enhanced Missile Impact Protection (Essential Facilities) Level "D" impact, tested for impact with a 9lb 2x4 lumber propelled @ 34mph (see ASTM E 1996.)

1.4 QUALITY ASSURANCE

- A. Manufacturer/Source: Provide metal wall panel and panel accessories from a single manufacturer.
- B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum 10 years experience in manufacture of similar products in successful use in similar applications.
 - 1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
 - a. Product data, including certified independent test data indicating compliance with requirements.
 - b. Load span tables including evaluation of panel clip and panel side joint interaction.
 - c. Samples of each component.
 - d. Project references: Minimum of 5 installations not less than 5 years old, with Owner and Architect contact information.
 - e. Sample warranty.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
 3. Approved manufacturers must meet separate requirements of Submittals Article.
- C. Installer Qualifications: Experienced Installer with minimum of 5 years experience with successfully completed projects of a similar nature and scope.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets, for specified products.
1. Include data indicating compliance with performance requirements.
- B. LEED Submittals:
1. Credit MR 4: Product data indicating the following:
 - a. Percentages by weight of post-consumer and pre-consumer recycled content.
 - b. Total weight of products provided.
- C. Shop Drawings: Provide shop drawings prepared by manufacturer or manufacturer's authorized Installer. Include full elevations showing openings and penetrations. Include details of each condition of installation and attachment. Provide details at a minimum scale of 1-1/2-inch per foot (1:8) of all required trim and extrusions needed for a complete installation.
1. Indicate points of supporting structure that must coordinate with metal wall panel assembly installation.
 2. Indicate details of fastening, including clip spacing, supported by load span tables that include an evaluation of clip and panel side joint interaction.
- D. Samples for Initial Selection: For each product specified. Provide representative color charts of manufacturer's full range of colors.
- E. Samples for Verification: Provide 12-inch (300 mm) section of panel(s) showing finishes. Provide 12-inch (300 mm) long pieces of trim pieces and other exposed components.

1.6 SUBMITTALS

- A. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.
- B. Buy American Act Certification: Submit documentation certifying that products comply with provisions of the Buy American Act 41 U.S.C 10a – 10d.
- C. Qualification Information: For Installer firm.
- D. Manufacturer's warranty: Submit sample warranty.
- E. Maintenance data.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect metal wall panel products during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage.
 - 1. Deliver, unload, store, and erect metal wall panel products and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations. WARRANTY
- B. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace components of metal wall panel assemblies that fail in materials and workmanship within two years from date of Substantial Completion.
- C. Special Panel Finish Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal wall panels that evidence deterioration of finish within the following periods from the date of substantial completion:
 - 1. Warranty Period: 20 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: CENTRIA, Concept Series Metal Wall Panels. Provide basis of design product, or comparable product approved by Architect prior to bid.
 - 1. CENTRIA Architectural Systems; Moon Township, PA 15108-2944. Tel: (800)759-7474. Tel: (412)299-8000. Fax: (412)299-8317. Email: info@CENTRIA.com. Web: www.CENTRIA.com.

2.2 METAL WALL PANEL MATERIALS

- A. Aluminum Face Sheet: Smooth surface coil-coated, ASTM B209, 3003-H14 alloy, 0.040 inch (1.0 mm) nominal thickness.

2.3 METAL WALL PANEL ACCESSORIES

- A. Metal Wall Panel Accessories, General: Provide complete metal wall panel assembly incorporating trim, copings, fasciae, parapet caps, sills, inside and outside corners, and miscellaneous flashings. Fabricate accessories in accordance with SMACNA Manual. Provide manufacturer's factory-formed clips, shims, flashings, and caps for a complete installation.
- B. Formed Flashing and Trim: Match material, thickness, and color of metal wall panel face sheets.
- C. Fasteners: Self-tapping 300 series stainless steel screws, No. 14 minimum, hex-head, and other acceptable fasteners recommended by panel manufacturer.

2.4 EXPOSED COIL-COATED FINISH SYSTEM:

- A. Fluoropolymer Three-Coat Metallic System: 0.2 mil nominal primer with 0.8-mil nominal 70 percent PVDF fluoropolymer color coat containing metal flakes, and a 0.5-mil nominal 70 percent PVDF fluoropolymer clear coat, AAMA 620.
 - 1. Basis of Design: CENTRIA Sundance AM.
- B. Color:
 - 1. Exterior Surface: As selected by Architect from manufacturer's standard colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine perforated metal wall screen substrate with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal wall panels.
- B. Wall Substrate: Confirm that wall substrate is within tolerances acceptable to metal wall panel system manufacturer.
 - 1. Maximum substrate and framing deviations from flat plane acceptable:
 - a. 1/4-inch in 20 feet vertically or horizontally.
 - b. 1/2-inch across building elevation.
 - c. 1/8-inch in 5 feet.
- C. Framing: Inspect framing that will support perforated screen to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable framing members at recommended spacing to match installation requirements of metal wall panels.
- D. Openings: Verify that window, door, louver and other penetrations match layout on shop drawings.
- E. Correct out-of-tolerance work and other deficient conditions prior to proceeding with metal wall panel system installation.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a service representative authorized by metal wall panel manufacturer to inspect completed installation. Submit written report.
- B. Correct deficiencies noted in manufacturer's report.

3.3 METAL WALL PANEL INSTALLATION

- A. General: Install metal wall panels in accordance with approved shop drawings and manufacturer's recommendations. Install metal wall panels in orientation, sizes, and locations indicated. Anchor metal wall panels and other components securely in place.
- B. Attach panels to metal framing using recommended screws, fasteners, sealants, and adhesives indicated on approved shop drawings.
 - 1. Provide escutcheons for pipe and conduit penetrating panels.
 - 2. Dissimilar Materials: Where elements of metal wall panel system will come into contact with dissimilar materials, separate faces and edges in contact with dissimilar materials utilizing non-metallic shims or closed cell foam material at each fastening point as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION

- A. General: Install metal wall panel accessories with positive anchorage to building. Coordinate installation with flashings and other components.
 - 1. Install related flashings and sheet metal trim per requirements of Division 07 Section "Sheet Metal Flashing and Trim."
 - 2. Install components required for a complete metal wall panel assembly, including trim, copings, corners, and similar items.
 - 3. Comply with performance requirements and manufacturer's written installation instructions.
 - 4. Set units true to line and level as indicated.

3.5 CLEANING AND PROTECTION

- A. Remove temporary protective films. Clean finished surfaces as recommended by metal wall panel manufacturer. Clear weep holes and drainage channels of obstructions, dirt, and sealant. Maintain in a clean condition during construction.
- B. Replace damaged panels and accessories that cannot be repaired by finish touch-up or minor repair.

END OF SECTION

SECTION 08 36 13

SECTIONAL DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sectional overhead doors of the following types:
 - 1. Minor ribbed steel doors, thermally-broken, polyurethane insulated. (Model 3729)
 - 2. Electric door operators

1.2 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Steel channel opening frame.
- B. Section 06100 - Rough Carpentry: Rough wood framing and blocking for door opening.
- C. Section 08710 - Door Hardware: Lock cylinders.
- D. Section 11150 - Parking Control Equipment: Remote door control.
- E. Division 16 Sections: Electrical service and connections for powered operators.

1.3 REFERENCES

- A. ASTM A 653/A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A 924/A 924M - Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- C. ASTM B 209/209M - Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- D. ASTM B 221/221M - Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.

- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Operation and maintenance data.
 - 5. Nameplate data and ratings for motors.
- C. Shop Drawings: Include opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- D. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 WIND PERFORMANCE REQUIREMENTS

- A. Design doors to withstand positive and negative wind loads as calculated in accordance with applicable building code.
 - 1. Design Wind Load: As indicated on structural drawings
 - 2. Safety Factor: 1.5 times design wind load.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of doors specified in this section, with not less than ten years of documented experience.
- B. Installer Qualifications: Company specializing in installing the types of products specified in this section, with minimum of five years of documented experience, and approved by the door manufacturer.

1.7 WARRANTY

- A. Finish Warranty: Provide manufacturer's standard finish warranty against rust through.
 - 1. Warranty period: 10 years.
- B. Delamination Warranty: Provide manufacturer's standard

warranty against delamination.

1. Warranty period: 10years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Clopay Building Products Company, which is located at: 8585 Duke Blvd. ASD; Mason, OH 45040-3101; Toll Free Tel: 800-526-4301 prompt #3; Fax: 888-434-3193; Email: CIA@clopay.com Web: www.clopaycommercial.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MINOR RIBBED STEEL DOORS, THERMALLY-BROKEN, POLYURETHANE INSULATED

- A. Door Construction:
 1. Panels: Foamed in place Polyurethane core construction between exterior and interior steel skins.
 2. Steel Skins: Formed from roll formed commercial or drawing quality steel sheet, hot-dip galvanized per ASTM A 924/A 924M and ASTM A 653/A 653M, pre-painted with primer and baked-on polyester topcoat; sections formed to create weather tight tongue-in-groove meeting joint.
 3. Reinforcing: Galvanized and primed steel reinforcement located under each hinge location, pre-punched for hinge attachment.
 4. Handle: High impact polymer step plate/lift handle on bottom panel section.
- B. Premium Duty 2-inches (51 mm) Door: Clopay Model 3729.
 1. Maximum Door Size: 20ft, 2 inches (6.2 m) wide by 18 ft (5.5 m) high.
 2. Overall Panel Thickness: 2-inches (51 mm).
 3. Steel Skin Thickness: Minimum 27 gauge 0.016 inch (0.40 mm) exterior; minimum 28 gauge 0.015 inch (0.38 mm) interior.
 4. End Stiles: Galvanized steel end stiles, engineered for easy hardware attachment through pre-punched holes. Minimum 18 gauge, 0.045 inch (1.14 mm) thick for single end hinge style and

- 16 gauge .056 inch (1.42 mm) minimum for double end hinge style.
5. Astragal: U-shaped flexible PVC in retainer of full-length 0.055 inch (1.4 mm) rigid PVC.
 6. Thermal Resistance (R-value): 18.4 deg F hr sq ft/Btu (3.0 (K sq m)/W); calculated door section R-value in accordance with DASMA TDS-163.
 7. Windows: 1 full vision, 24" high section, Level D impact rated.
 8. Finish: Minor Ribbed exterior design with stucco embossment, interior and exterior as follows:
 - a. White.
 - b. Almond.
 - c. Sandtone.
 - d. Desert Tan
 - e. Bronze.
 - f. Chocolate Brown.
 - g. Gray.
 - h. Glacier White.
 - i. Mocha Brown.
 - j. Black.
 - k. Trinar White.
 9. Locking: No Lock.
 10. Weatherstripping: Provide complete perimeter seals. Provide flexible top seal, flexible jamb seal and U shaped bottom seal.
 11. Tracks: Vertical tracks minimum 0.061 inch (1.55 mm) galvanized steel tapered and mounted for wedge type closing. Horizontal tracks minimum 0.075 inch (1.91 mm) galvanized steel, reinforced with minimum 0.0897 inch (2.28 mm) galvanized steel angles as required:
 - a. Track Width: min 2 inches (50 mm), per windload.
 - b. Provide min 24" high lift tracks for jackshaft operation.
 12. Spring Counterbalance: Torsion spring counterbalance mechanism sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of die cast aluminum with high strength galvanized aircraft cable with minimum 7 to 1 safety factor.
 - a. Standard Cycle Spring: 10,000 cycle.

2.3 ELECTRIC DOOR OPERATORS

- A. General: Provide electric door operator provided by door

manufacturer for door with operational life specified complete with electric motor and factory pre-wired motor controls, starter, gear-reduction unit, clutch, remote-control stations, control devices, integral gearing for locking door, and accessories required for proper operation. Comply with NFPA 70.

- B. Disconnect Device: Provide hand-operated disconnect or mechanism for emergency manual operation while disconnecting motor, without affecting timing of limit switch. Mount disconnect and operator so they are accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- C. Design operator so motor may be removed without disturbing limit switch adjustment and without affecting emergency auxiliary operator.
- D. Provide control equipment complying with NEMA ICS1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V, AC or DC.
- E. Electric Motors: Provide high-starting torque, reversible, continuous-duty, Class A insulated, electric motor, complying with NEMA MG 1, with overload protection, sized to start, accelerate, and operate door in either direction, from any position, at not less than 2/3 fps (0.2 m/s) and not more than 1 fps (.03m/s), without exceeding nameplate ratings or considering service factor.
 - 1. Type: Jackshaft
 - 2. Coordinate wiring requirements and electrical characteristics of motors with building electrical system.
- F. Remote Control Station: Provide momentary contact, 3-button control station with push - button controls labeled "Open", "Close" and "Stop". Coordinate with owner.
- G. Remote Control Station: Provide continuous contact, 3-button control station with push - button controls labeled "Open", "Close" and "Stop". Coordinate with owner.
- H. Obstruction Detection Device: Provide each motorized door with indicated external automatic safety sensor able to protect full width of door opening. Activation of sensor immediately stops and reverses downward door travel.
 - 1. Sensor Edge: Provide each motorized door with an automatic safety sensing edge, located within astragal or weather

stripping mounted to bottom bar. Contact with sensor immediately stops and reverses downward door travel. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cord. Sensing edge shall be operated by:

- a. Electric.
2. Photo-electric control: Provide each motorized door with a photo-electric device that will stop and reverse the downward door travel if the light beam is broken or blocked. Device shall be:
 - a. NEMA Type 4.
- I. Limit Switches: Provide adjustable switches, interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

J. Radio Controls: Provide 3 button radio transmitter to provide remote open, close, stop functionality. Coordinate with owner.

 1. Provide external antenna and coaxial wiring to receiver to enhance radio control reception.
 - K. Provide auxiliary chain hoist: for emergency manual operation while disconnecting motor, without affecting timing of limit switch. Mount disconnect and operator so they are accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine wall and overhead areas, including opening framing and blocking, with installer present, for compliance with requirements for installation tolerances, clearances, and other conditions affecting performance of Work in this Section.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the

manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial completion.

3.5 Gate Arms LED Illuminated Door Safety Kits:

1. Basis of Design Manufacturer: GATEARMS+ or equivalent system as approved by Owner.
2. Provide 10' LED Light Strips on driver side of outbound Apparatus bay door frames
3. One LED Controller for each sectional door opener.
 - a. LED Bright Red when door completely closed.
 - b. LED Flash Red when door in motion.
 - c. LED Bright Green when door fully open.
 - d. LED Flash White if safety device is tripped
 - e. LED Flash Red if door operator loses power.
4. System to include:
 - a. LED Controller with 110V to 12VDC power supply with cables.
 - b. LED Wiring harness and signal wire.
 - c. LED Strip and retainer mounting track

END OF SECTION

SECTION 087100

FINISH HARDWARE

PART 1 - 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. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding doors.
 - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Operations and Maintenance".
 - 2. Division 08 Section "Door Schedule".
 - 3. Division 08 Section "Door Hardware Schedule".
 - 4. Division 08 Section "Hollow Metal Doors and Frames".
 - 5. Division 08 Section "Flush Wood Doors".
 - 6. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
 - 7. Division 08 Section "Access Control Hardware".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ANSI/SDI A250.13 - Testing and Rating of Severe Windstorm Resistant Components for Swing Door Assemblies.

SECTION 087100

FINISH HARDWARE

3. ICC/IBC - International Building Code.
4. NFPA 70 - National Electrical Code.
5. NFPA 80 - Fire Doors and Windows.
6. NFPA 101 - Life Safety Code.
7. NFPA 105 - Installation of Smoke Door Assemblies.
8. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards:

1. ANSI/BHMA Certified Product Standards - A156 Series
2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.

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- c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- D. Informational Submittals:
1. Hurricane Resistant Openings (State of Florida): Within the State of Florida, provide copy of current State of Florida Product Approval or Metro-Dade County Notice of Acceptance (NOA) as proof of compliance that doors, frames and hardware for exterior opening assemblies have been tested and approved for use at the wind load and design pressure level requirements specified for the Project.
 - a. Hurricane Resistant Components (State of Florida): Within the State of Florida, provide copy of independent, third party certified listing to ANSI A250.13.
 2. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

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- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Hurricane Resistant Exterior Openings (State of Florida including the High Velocity Hurricane Zone (HVHZ)): Provide exterior door hardware as complete and tested assemblies, or component assemblies, including approved doors and frames specified under Section 081113 "Hollow Metal Doors and Frames", to

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meet the wind loads, design pressures, debris impact resistance, and glass and glazing requirements as detailed in the current State of Florida building code sections applicable to the Project.

1. Each unit to bear third party permanent label in accordance with the Florida Building Code requirements.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.

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5. Review the required inspecting, testing, commissioning, and demonstration procedures

- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of

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the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual surface door closer bodies.
 - 4. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

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PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

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2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 5. Manufacturers:
 - a. Hager Companies (HA)
 - b. McKinney Products (MK)
 - c. Stanley Hardware (ST)
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:

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- a. Hager Companies (HA).
- b. McKinney Products (MK).
- c. Pemko Products (PE).

2.3 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
 - 1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
 - 2. Furnish dust proof strikes for bottom bolts.
 - 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
 - 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
 - 5. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
- B. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 - 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 - 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 - 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 - 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.

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5. Manufacturers:

- a. Ives (IV).
- b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- c. Trimco (TC).

2.4 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
 1. Manufacturers:
 - a. Yale Locks and Hardware (YA).
 - b. No Substitution.
- C. Cylinders: Original manufacturer cylinders complying with the following:
 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 5. Keyway: Manufacturer's Standard.
- D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- E. Keying System: Each type of lock and cylinders to be factory keyed.

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1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. New System: Key locks to a new key system as directed by the Owner.
- F. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Three (3).
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys (where required): Ten (10).
 4. Construction Control Keys (where required): Two (2).
 5. Permanent Control Keys (where required): Two (2).
- G. Construction Keying: Provide temporary keyed construction cores.
- H. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
1. Manufacturers:
 - a. Lund Equipment (LU).
 - b. Telkee (TK).

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
1. Manufacturers:
 - a. Schlage (SC) – L9000 Series.
 - b. Yale Locks and Hardware (YA) – 8800FL Series.

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2.6 STAND ALONE ACCESS CONTROL LOCKING DEVICES

- A. Stand Alone Touchscreen Locksets: ANSI A156.2, Series 4000, Grade 1 locking mechanism complete with integrated touchscreen for access and programming. Voice-guided programming with 12-digit PIN code selection and up to 1000 user option. Locks to accept standard, small format interchangeable core, security and patented cylinders. Battery-operated, with low power indicator, or hard-wired (9 Volt external power supply) option.

1. Manufacturers:

- a. Yale Locks and Hardware (YA) - nexTouch Series.

2.7 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

- B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.8 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

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1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

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9. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
 - a. Von Duprin (VD) – 99 Series.
 - b. Yale (YA) 7000 Series

2.9 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

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6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Commercial Duty): ANSI/BHMA 156.4, Grade 1 certified surface mounted, institutional grade door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide non-handed units standard.
 1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DC6000 Series.
 - b. LCN Closers (LC) – 4040 Series.

2.10 SURFACE MOUNTED CLOSER HOLDERS

- A. Multi-Point Closer Holders with Motion Sensor: ANSI A156.15, Grade 1 certified multi-point, closer holder devices designed to keep doors in a held-open position if presence is detected within the opening. Push side or pull side mounting applications having a maximum opening of 180° (hold open to 175°) and dual voltage input (24V /120V). Voltage to be 24VDC unless otherwise specified. Units are fail safe, closing the door in the event of fire alarm system or electrical power interruption.
 1. Safe Zone Detection: Closer holders units to have an integral motion sensor device monitoring a "zone of safety" at the door opening. Safe zone detection prevents the door from closing in event of movement within the adjustable sensing field. Movement is detectable in both directions with selectable closer hold open time and sensor sensitivity. Provide optional handheld device for programming safe zone sensor settings.
 2. Manufacturers:
 - a. Norton Door Controls (NO) - 7100SZ Series.
 - b. LCN Door Closers (LC) – 4310/4410HSA Series.

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2.11 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

2.12 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with

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anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

- a. Ives (IV).
- b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

- a. Glynn Johnson (GJ).
- b. Rixson Door Controls (RF).

2.13 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

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- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.14 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

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- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

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2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

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3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- B. The supplier is responsible for handing and sizing all products and providing the correct option for the appropriate door type and material where more than one is presented in the hardware sets. Quantities listed are for each pair of doors, or for each single door.
- C. Manufacturer's Abbreviations:

- 1. MK - McKinney
- 2. PE - Pemko
- 3. SA - SARGENT
- 4. YA - Yale

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- 5. VD - Von Duprin
- 6. RO - Rockwood
- 7. RF - Rixson
- 8. RU - Corbin Russwin
- 9. NO - Norton
- 10. OT - OTHER

Hardware Sets

Set: 1.0

Doors: 100

Description: Ext-Alum-Entrance

1 Continuous Hinge	CFMxxSLF-HD1		PE
1 Access Control Keypad Lock	CRR NTM615-NR Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6210 A11	689	RU
1 Threshold	2005AV x door width		PE

Notes: -Weather seals to be provided by door manufacturer

-Provide necessary drop plates and fillers for proper installation of door closers

-Exterior doors and hardware to comply with FBC windstorm requirements.

Set: 2.0

Doors: 107

Description: Ext-HM-Pair

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6 Hinge (heavy weight)	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK
2 Surface Bolt SA	988	Bright Zinc	
1 Access Control Keypad Lock	CRR NTM615-NR Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Surface Overhead Stop	9-X36	630	RF
1 Closer (surface)	DC6210 A12	689	RU
2 Kick Plate	K1050 8" x LAR	US32D	RO
1 Threshold	2005AV x door width		PE
1 Rain Guard	346C x door width plus 4"		PE
1 Gasketing	303CS head & jambs		PE
2 Sweep	315CN x door width		PE

Notes: -Exterior doors and hardware to comply with FBC windstorm requirements.
-Astragal included with HM doors

Set: 3.0

Doors: 104, 110, 131A, 137A

Description: Ext-HM-Keypad Lock

3 Hinge (heavy weight)	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Access Control Keypad Lock	CRR NTM615-NR Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6210 A11	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Threshold	2005AV x door width		PE
1 Rain Guard	346C x door width plus 4"		PE
1 Gasketing	303CS head & jambs		PE
1 Sweep	315CN x door width		PE

Notes: -Exterior doors and hardware to comply with FBC windstorm requirements.

Set: 4.0

Doors: 130, 130E

Description: Ext-HM Apparatus Bay

3 Hinge (heavy weight)	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Access Control Keypad Lock	CRR NTM615-NR Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6210 A11	689	RU

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1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	466-RKW	Black	RO
1 Threshold	2005AV x door width		PE
1 Rain Guard	346C x door width plus 4"		PE
1 Gasketing	303CS head & jambs		PE
1 Sweep	315CN x door width		PE

Notes: -Exterior doors and hardware to comply with FBC windstorm requirements.

Set: 5.0

Doors: 101

Description: Office - no closer

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Entrance Lock	CRR 8847FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 6.0

Doors: 100A

Description: Corridor w/ Keypad Lock

3 Hinge (heavy weight)	T4A3786xNRP 4-1/2" x 4-1/2"	US26D	MK
1 Access Control Keypad Lock	CRR NTM615-NR Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6210 A3	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
1 Smoke Gasketing	S773D x head and jambs		PE

Set: 7.0

Doors: 106D

Description: LT Office

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Entrance Lock	CRR 8847FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA

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1 Closer (surface)	DC6210 A3	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
1 Smoke Gasketing	S773D x head and jambs		PE
1 Door Bottom	4131CRL		PE

Set: 8.0

Doors: 130C, 130D

Description: Apparatus Bay From Air Lock

3 Hinge (heavy weight)	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Fire Rated Rim Exit	99L-F 03 996L	US26D	VD
1 Cylinder	As required	626	YA
1 Core	1210	626	YA
1 Elec Closer w/Motion Sensor	7113SZ	689	NO
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
1 Smoke Gasketing	S773D x head and jambs		PE

Set: 9.0

Doors: 119, 128

Description: Air Lock

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Fire Rated Rim Exit	99L-BE-F 03 996L-BE	US26D	VD
1 Closer (surface)	DC6210 A3	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
1 Smoke Gasketing	S773D x head and jambs		PE

Set: 10.0

Doors: 129

Description: Physical Agility

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Classroom Lock	CRR 8808FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6200	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO

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3 Silencer	608		RO
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Set: 11.0

Doors: 110A

Description: Dayroom

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Classroom Lock	CRR 8808FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Door Stop	442 or 409 as required	US26D	RO

Notes: COORDINATE HARDWARE REQUIREMENTS WITH OPERABLE PARTITION DOOR,
REFER TO MANUFACTURER

Set: 12.0

Doors: 135

Description: Storeroom-Closer

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lock	CRR 8805FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6200	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 13.0

Doors: 133, 140

Description: SCBA / Janitor

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Classroom Lock	CRR 8808FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6200	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 14.0

Doors: 132

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Description: Turnout Gear - Safezone closer

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Classroom Lock	CRR 8808FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Elec Closer w/Motion Sensor	7113SZ	689	NO
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 15.0

Doors: 102, 118, 121, 127, 136

Description: Toilet-Closer

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Privacy Lock	CRR 8802FL IND	626	YA
1 Closer (surface)	DC6200	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Mop Plate	K1050 4" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 16.0

Doors: 137, 139

Description: Corr / Decon

3 Hinge (heavy weight)	T4A3786 5" x 4-1/2"	US26D	MK
1 Passage Latch	CRR 8801FL	626	YA
1 Closer (surface)	DC6200	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 17.0

Doors: 134

Description: Ice Room

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Push Plate	70C	US32D-MSRO	
1 Pull	RM301	US32D	RO

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1 Closer (surface)	DC6200	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Mop Plate	K1050 4" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 18.0

Doors: 115, 117, 120, 122, 123, 124, 125, 126

Description: Bunk

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Privacy Lock	CRR 8802FL IND	626	YA
1 Door Stop	442 or 409 as required	US26D	RO
3 Silencer	608		RO

Set: 19.0

Doors: 106A, 106C

Description: Corridor

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Passage Latch	CRR 8801FL	626	YA
1 Closer (surface)	DC6210 A3	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
1 Smoke Gasketing	S773D x head and jambs		PE

Set: 20.0

Doors: 105

Description: Telecom

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lock	CRR 8805FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6210 A4	689	RU
1 Smoke Gasketing	S773D x head and jambs		PE

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Set: 21.0

Doors: 131

Description: Mech/Elec

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lock	CRR 8805FL Temp Core-6 pin	626	YA
1 Core	1210	626	YA
1 Closer (surface)	DC6200	689	RU
1 Kick Plate	K1050 8" x LAR	US32D	RO
1 Door Stop	442 or 409 as required	US26D	RO
1 Smoke Gasketing	S773D x head and jambs		PE

Set: 22.0

Doors: 130A, 130B, 130F, 130G

Description: Overhead Door

1 Overhead Drs 00	Hardware furnished by door manufacturer
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Set: 23.0

Doors: 112, 113, 114

Description: Pantry

1 Overhead Drs 00	Hardware furnished by door manufacturer
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Set: 24.0

Doors: 141, 142, 143, 144, 145, 146

Description: Gates

1 Gates OT	All hardware furnished by gate supplier
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FINISH HARDWARE

END OF SECTION 087100

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DATA COMMUNICATIONS INTEGRATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. STANDARDS
 - 1. TIA/EIA-568-B.1 "Commercial Building Telecommunications Cabling Standard", CSA T529.
 - 2. TIA/EIA-568-B.2-1 "Transmission Performance Specifications for 4-pair 100Ohm Category 6 Cabling".
 - 3. TIA/EIA-569 "Commercial Building Standard for Telecommunications Pathways and Spaces", CSA T530.
 - 4. TIA/EIA-606 "Administration Standard for Telecommunications Infrastructure of Commercial Buildings", CSA T528.
 - 5. TIA/EIA-607 "Commercial Building Grounding/Bonding Requirements".
 - 6. TSB-67 "Transmission Performance Specification for Field Testing of Unshielded Twisted Pair Cabling Systems".
 - 7. TIA/EIA TSB-72 "Centralized Optical Fiber Cabling Guidelines".
 - 8. *TIA/EIA PN-3398 TSB-75 "Additional Horizontal Cabling Practices for Open Offices".
 - 9. ANSI/NFPA 70 National Electrical Code, CSA C22.1.
 - 10. BICSI Telecommunications Distribution Methods Manuals
 - 11. BICSI Telecommunications Installation Manuals
 - 12. County Codes and Regulations.
 - 13. Underwriters Laboratories (UL)
 - 14. FCC -Federal Communications Commission
 - 15. ADA Requirements
 - 16. Occupational Safety and Health Regulations (OSHA)
 - 17. National Fire Protection Association (NFPA)
 - 18. Florida Statutes and Administrative Rules
 - 19. Cabling System Certified Cabling Catalog

1.2 DESCRIPTION

- A. General: Furnish and install, complete with all accessories an EIA/TIA 568-B.2-1 Category 6 Premise Distribution System (PDS) with a minimum 25-year, LINK AND CHANNEL WARRANTY for the entire system. This warranty shall provide for guaranteed system performance and the replacement of any defective products or installation. The goal of the project is to provide an enhanced PDS system that shall serve as a vehicle for transport of data, video, and voice telephony signals throughout the building and from building to building from designated demarcation points to outlets located at various desks, workstation and other locations as indicated on the contract drawings and described herein.
- B. Support analog and digital voice applications, data, local area networks (LAN), video and low voltage devices for building controls and management on a common cabling platform. The applications that shall be supported include, but are not limited to:
1. Data Processing - EIA-232-D, EIA-422A, EIA-43-A, RS-485, StarLAN, Fiber Distributed Data Interface (FDDI), Ethernet 10BASE-T (IEEE 802.3i), 10BASE-F (IEEE 802.3j), and TP-PMD. In addition, these links/channels shall be capable of supporting high-end applications such as 100 Base-T (IEEE 802.3u), 1000Base-T (IEEE 802.3z, ab), and 1000 base TX.
 2. Voice Over Internet Protocol (VOIP) – Cisco Unified Communications Manager (Call manager).
 3. Video – Broadband and base band Analog Video, Digital Video, Video Conferencing.
 4. WLAN applications, cabling for Wireless Access points (WAP), shall be compliant with applicable EIA/TIA standards, as well as the IEEE 802.3af standard for providing PoE, (Power over Ethernet) for Data Terminal Equipment (DTE) over Category rated UTP cable.
 5. Direct Digital Control (DDC) Building Automatin System (BAS) Central Site.
 6. Other Applications: ISDN, ATM, ADSL, VoIP.
- C. General: The system shall utilize a network of unshielded twisted pair cables (UTP) and fiber optic cables (FO) for horizontal cabling, Backbone cabling, Riser cabling, tie cabling, and patch cords. Cables and terminations shall be provided and located as shown and in the quantities indicated on the drawings. FO Cables shall terminate on rack-mounted Fiber Distribution Centers (FDC's), UTP cables shall terminate on rack-mounted modular patch panels and work area outlets located as shown on the drawings. All cables and terminations shall be identified at all locations according to the EIA/TIA 606 standard. All cables shall be terminated in an alphanumeric sequence at all termination locations.

- D. Warranty: Cabling systems shall be required to be covered under a manufacturers warranty program for both LINK and Channel configurations. Including cable, jacks, patch panels, patch cords and include cabling specifically approved for the LINK and Channel configuration as specified in the connectivity manufacturers warranty. The patch cords and workstation cords shall be manufactured by the same manufacturer as the jacks and patch panels. The patch cords shall be 100% factory tested for compliance to the Category 6 standard.
- E. All terminations shall comply with, and be tested to the EIA/TIA 568B.2-1 Category 6 requirements at a minimum, and providing at least a 25-year warranty.
 - 1. It should be anticipated by all installers that all horizontal cable supporting data applications must meet at a minimum the Category 6 performance requirements as listed by EIA/TIA standards for the link and channel. (Field testing for LINK only, 100% factory patch cord testing required)
- F. Data Services: Wiring utilized for data communications shall originate at Owner provided hubs and concentrators in vertical free standing equipment racks located at individual IDF'S. Assist Owner by providing port counts for wall outlets and WAP.
- G. Work Included: Provide wiring, terminations and patch bays between these designated demarcation points and outlet locations designated on the plans shall be considered part of the contact.
- H. Utilize blue color for Category 6 components.

1.3 QUALIFICATIONS

- A. General: The contractor selected for the Project must show current certification as an installer of the manufacturers of the products approved for the project, adhere to the engineering, installation and testing procedures and utilize the authorized manufacturers components and distribution channels in provisioning the Project. The installer shall have a local office within 50 miles of the project site and show proof of at least 5 years prior experience performing a similar scope of work with this company in the same 50 mile area.
- B. General: The Contractor directly responsible for this work shall be a "Premise Distribution Wiring Contractor" (PDW) who is, and who has been, regularly engaged in the providing and installation of commercial and industrial

telecommunications wiring systems of this type and size for at least the immediate past five years. The Contractor shall be required to hold a valid State of Florida low voltage contractors license. Any sub-Contractor, who will assist the PDW contractor in performance of this work, shall have the same training and certification as the PDW contractor.

- C. Certification: The contractor's Project Manager shall possess a current BICSI Registered Communications Distribution Designer (RCDD) certificate. All shop drawings submitted by the contractor shall bear the RCDD's seal. The PM shall have been certified as an RCDD for at least the last 5 years.
- D. Experience: The Contractor shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar type and size. The Contractor shall own and maintain tools and equipment necessary for successful installation and testing of optical fiber and Category 6 copper premise distribution systems and have personnel who are adequately trained in the use of such tools and equipment.
- E. Submit contractor qualifications and certifications with bids.

1.4 E RATE PROGRAM REQUIREMENTS

- A. Contractor/CM must post form 470 to the Universal Service Administrative Company (USAC) website to assure a competitive bidding process. This must be made available a minimum of 28 days prior to closing the competitive bid process. See USAC website for additional details.
- B. The Installing contractor must complete FCC Form 498 Service Provider Identification Number and Contract Information Form (SPIN) and submit it to USAC. Assist the applicant with required information to file form FCC 471 to USAC. See USAC website for additional details and requirements for assisting the Owner to achieve the desired refunds.

1.5 SUBMITTALS

- A. General: Submittals required prior to commencement of work shall include manufactures cut sheets for all proposed equipment including, but not limited to, the following:
 - 1. All wire and cable.
 - 2. All connectors and required tooling.
 - 3. All termination system components for each cable type.

4. All IDF equipment frame types, hardware and LAN equipment if part of this project.
 5. All cable suspension j-hooks, cable fasteners, CAT 6 cable suspension components.
 6. All grounding and surge suppression system components for the systems portion of the project.
 7. AC Grade, Plywood Backboards painted with UL Classified fire retardant paint.
 8. Contractor qualifications should be submitted with bids.
- B. Adherence to Specifications: Manufacturers and/or products are listed in order of preference. Single manufacturer names means that no other manufacturers' product is accepted without written approval from the Owner and the Engineer. These manufacturers represent major components and are not intended to be comprehensive. Shop drawings and/or samples for all products not listed must be submitted to ICTS for approval. Also, an explanation in detail giving the reason(s) why and how the proposed items will meet the specifications and will not be considered an exception, and submit adequate information to support this claim. ICTS reserves the right to be the sole judge of what is equal or equivalent. These changes, if approved by the OWNER and the ENGINEER, must be issued in a WRITTEN ADDENDUM not later than seven (7) days prior to bid-opening date.
- C. Required to be submitted with the bid:
1. Copy of the Contractor's current Certification by the specific connectivity manufacturer.
 2. Installer qualifications.
- D. Provide EXCEL software spreadsheet that defines the telecommunications outlet number, location, and number of voice, data and special jacks. This database is to also include outlet patch panel connection to the riser/inter-floor cable, equipment, and telephone company demarcation circuit pairs.
1. WLAN applications, cabling for Wireless Access points (WAP), shall be compliant with applicable EIA/TIA standards, as well as the IEEE 802.3af standard for providing PoE, (Power over Ethernet) for Data Terminal Equipment (DTE) over Category rated UTP cable.
- E. Shop Drawings: Provide shop drawings that include site, floor and enlarged plans as necessary to show the interrelationship and position of all components indicating the following:
1. All equipment racks, panels and other major equipment.
 2. All device locations.
 3. Conduit sizes and quantities.
 4. Interconnection of equipment and devices.
 5. Rack and cabinet elevations

6. Block diagram
7. Installation details for all equipment

F. Close out:

1. Provide an as-built version of the shop drawings to indicate any revisions made during construction.
2. Certificate of warranty.
3. Test results

1.6 SPECIAL REQUIREMENTS FOR CABLE ROUTING AND INSTALLATION

- A. General: Cable routing and Installation practices shall be in accordance with BICSI's Telecommunications Distribution Methods Manual (TDMM) and Telecommunications Installation Manual.
- B. Plenum Spaces and cable routing: The majority of PDW wiring in this building will be installed above ceilings. All communications cabling used throughout this project shall comply with the requirements as outlined in the National Electric Code (NEC) article 800. All cabling ~~shall bare the CMR, MPR OR OFNR (RISER) and or appropriate markings for ducted "air return" applications and for cable run in conduit.~~ Cable shall bare CMP, MPP or OFNP (plenum) markings for all ~~non-ducted return air~~ applications or as required by local and/or State code requirements. Verify with local and State code enforcement officers where plenum and non-plenum cables are required. All cable shall bare the appropriate markings for the environment in which they are installed.
- C. Conduit will provide a pathway for all cables concealed within walls, run in exposed ceiling spaces, run in inaccessible ceiling spaces (Drop ceilings above 11' in height are also considered inaccessible), run exterior of the building, or subject to physical damage. Provide 3/4" minimum trade size.
- D. Cable Pathway: In suspended ceiling and raised floor areas where duct, cable trays, or conduits are not available, bundle in bundles of 40 or less, horizontal wiring with cable ties snug, but not deforming the cable geometry. Cable ties in plenum areas shall be plenum rated. The cable bundling shall be supported via "CLIC" fasteners in Telecommunications closets and non-plenum areas and Category 6 compliant J-hooks or basket tray in ceiling spaces. Provide a minimum of two hangers at any corners or 90 degree turns. Attachment shall be to the building structure and framework at a maximum of five (5) foot intervals. Ceiling suspension wire or independent tie wire shall not be allowed in any space for cable support. Where cable is run above the ceiling in areas without walls, all thread rod shall be used (minimum 1/4", however sized to support the intended weight) with the appropriate CAT 6 hanger for cross-room support. Support rods shall be level and plumb after cable installation. Adhere

to the manufacturers' requirements for bending radius and pulling tension of all cables.

- E. Protection: Sealing of openings through rated fire and smoke walls, existing or created for cable pass through shall be provided under division 7 section "Firestopping". Create openings as are necessary for cable passage between locations as shown on the drawings or required. Any openings created for this work and left unused shall also be sealed under Division 7 section "Firestopping".
- F. Damage: The contractor shall be responsible for any damage to any surfaces or work disrupted as a result of his work. Repair of surfaces including painting and ceiling tile replacement shall be included as part of this contract.
- G. Avoiding EMI: To avoid EMI, all pathways shall provide clearances of at least 4 feet (1.2 meters) from motors or transformers; 1 foot (1'2 inches) from conduit and cables used for electrical-power distribution; and 1 foot (12 inches) from fluorescent lighting. Pathways shall cross perpendicular to fluorescent lighting and electrical power cables and conduits.

1.7 WARRANTY REQUIREMENTS

- A. Cabling system warranties are to be supplied by the manufacturer of the connectivity, (jacks, patch panels and patch cords). A Warranty from the cable manufacturer or the contractor shall not be accepted.
- B. The warranty program shall include coverage for both Link and Channel configuration as specified in the connectivity manufacturer's warranty. ~~Warranty Design Standard: Hubbell Premise Wiring, 25-year, Mission Critical System Warranty. (www.hubbell-premise.com)~~

1.8 WORK EXTERNAL TO THE BUILDING

- A. General: the provisions of this specification shall govern any work external to the confines of this building as shown on the drawings.

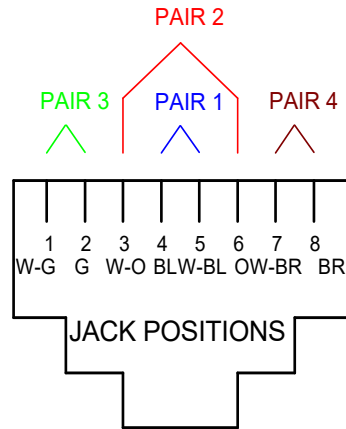
PART 2 - PRODUCTS

2.1 OUTLETS

- A. General: Communications outlets that contain copper services shall be equipped with ANSI/TIA/EIA-568-B.2-1 Category 6, 8-position modular jacks

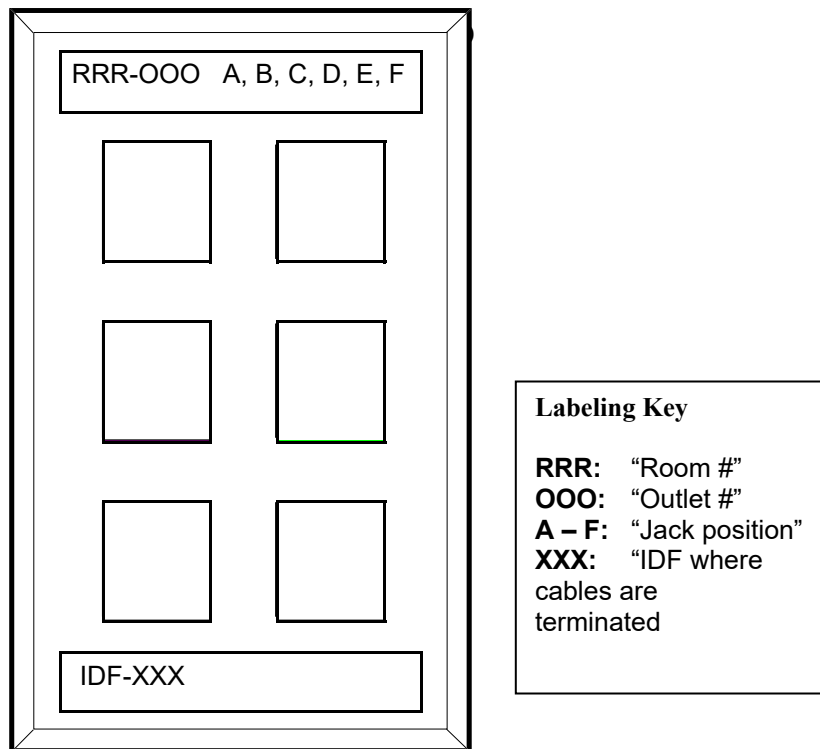
(RJ45 type) utilizing T568A wiring. All outlet cabling shall terminate on appropriate termination blocks at their associated IDF. Outlet jack module arrangement and quantities are shown on the drawings. Outlets shall be certified to operate at 1000 Mbps data speed with twisted pair terminal wiring as verified by ETL or UL. Faceplates shall be able to accommodate up to 6, 8-position modular jacks each.

- B. Wall outlets: shall consist of single gang wall plates. Provide blank module inserts for all unused module locations
- C. Floor outlets: shall consist of single gang wall plates inside the floor box. Provide blank module inserts for all unused module locations.
- D. Modular furniture outlets: Shall consist of modular furniture faceplate capable of housing up to (4) 8-position modular connectors. Provide blank module inserts for all unused module locations.
- E. House wall phone, if indicated, shall consist of SE630 type wall plates with Cat 6 minimum cable to each, terminating in 8-position modular jack.
- F. 8-position modular jacks: CAT 6 jacks shall meet or exceed the following electrical and mechanical specifications:
 - 1. Electrical Specifications:
 - a. Insulation resistance: 500 MΩ minimum
 - b. Dielectric withstand voltage 1,000 VAC RMS, 60 Hz minimum, contact-to-contact and 1,500 VAC RMS, 60 Hz minimum from any contact to exposed conductive surface.
 - c. Contact resistance: 20 mΩ maximum
 - d. Current rating: 1.5A at 68° F (20°C) per IEC Publication 512-3, Test 5b.
 - e. ISO 9001 Certified Manufacturer
 - f. U.L. Verified for EIA/TIA electrical performance
 - g. Comply with FCC Part 68
 - 2. Mechanical Performance:
 - a. Plug Insertion Life: 750 insertions
 - b. Contact Force: 3.5 oz (99.2 g) minimum using FCC-Approved modular plug.
 - c. Plug Retention Force: 30 lb (133 N) minimum between modular plug and jack.
 - d.
 - 3. Temperature Range: -40° to 150°F (-40° to 66°C)



Optional Eight-Position Jack Pin/Pair Assignments
(designation T568A)

- G. Channel Performance: All Enhanced CAT 6 jacks shall be utilized in a channel configuration meeting or exceeding the following specifications at 250 MHz:
- H. Category 6 jack component values:
1. NEXT (dB) at 250 MHz - 46.0 dB or exceed
 2. Insertion Loss (dB) at 250 MHz - .32 dB or less
 3. FEXT (dB) at 250 MHz - 35.1 dB or exceed
 4. Return Loss (dB) at 250 MHz - 16.0 dB or exceed
- I. Design Selection: ~~Hubbell Premise Wiring Xcelerator, as follows, Siemon components, coordinate with Orange County Fire IT Department for specific part numbers.~~ See drawing details for exact outlet configurations.
1. Wall faceplate (~~office whiteivory~~): #IFP16OW (6 port)
 2. PDS jacks (~~purpleivory~~): #HXJ6P or #HXJ6P25 (25 pack)
 3. Blanks (~~office whiteivory~~): #SFB10 (10 pack)
 - a. Provide blank module inserts for all unused module locations.
- J. Outlet Labeling: Each jack on all outlets shall be identified with permanent machine generated labels, meeting the EIA/TIA 606 requirements, matching the numbering plan indicated on the drawings with the addition of a letter suffix indicating the jack position on the faceplate. All labeling must be permanent. All labeling shall be a minimum 12 pt. in size. All labeling systems shall be submitted to the engineer for approval prior to fabrication.



2.2 CATEGORY 6 DATA AND VOICE HORIZONTAL CABLE

- A. General: Data pairs shall be extended between the outlet location and its associated IDF. The cable shall consist of 4 pair 23 gauge, solid copper conductors, Certified to the Category 6 standards. ETL or UL Verified for EIA/TIA electrical performance Comply with FCC Part 68. Cables shall be terminated on each of the 8-position modular jacks provided at each outlet. Voice jacks shall also utilize this cable type. Only virgin materials shall be used.

- B. General: Cable selection shall be based upon meeting an end-to-end channel performance and shall be shown to have been tested with the proposed component manufacturer's products and warranted as a complete permanent link and channel solution.
- C. Cable Insulation and Jacket: Cable jacket shall comply with Article 800 NEC for the environment in which the cable will be installed. All cables shall bear the U.L. and NEC, CMR or MPR markings. (All cable shall be RISER rated unless otherwise specified or required by code.) All PLENUM cables shall bear the UL and National Electrical Code, CMP or MPP markings. Cables utilizing 2x2, 3x1, or other combinations of construction shall not be acceptable.
- D. Horizontal Cables drops from IDF or MDF to specified outlets locations are to be without splices.
- E. Properties: Electrical Characteristics for horizontal cable tested on 100 m length shall be as follows:

	TIA/EIA CAT 6
Frequency	250MHz
Characteristic Impedance	100Ω ±15%
NEXT (db) Minimum	41.3dB
PSNEXT (dB) Minimum	39.3dB
ELFEXT Minimum	19.8dB
PSELFEXT Minimum	16.8dB
ACR Minimum	8.5dB
PSACR Minimum	6.5dB
Return Loss Minimum	17.3dB
Delay Skew (ns) Maximum	45ns

- F. Horizontal Cable Specified: In addition to meeting listed requirements cable is also required to meet a 25 year or greater total PDW warranty. The cable selected must be one of those approved for use in a warranted system from the connectivity manufacturer.
- G. Labels: Labeling for copper tie cabling shall be by Room, Outlet, and Jack position number (similar to plate labeling) at the IDF end. Cable shall be identified with IDF # at the outlet box end. Permanent machine type printed (1/8" min letters) vinyl or nylon cloth labels shall be considered acceptable the purpose. Identification shall include be provided at both ends of the cable (in junction box at jack and at IDF patch). Labels shall be by Brady or equal.

2.3 CABLE SUPPORT SYSTEM

- A. General – Horizontal cables shall be suspended by pre-manufactured CAT 6 rated J-hooks and by "CLIC" fasteners with cable inserts in closets where J-hooks, ladder tray or rack management is not available. All supports shall be permanently attached to the structure using drop rod suspension, beam clamps, or wall mount to the structural metal or wooden members. The J-hooks shall feature a wide base loop with smooth curves to eliminate snag potential and cable deformation. All cables shall utilize wire basket style cable tray, in accordance with 26 05 36, when running cables down the corridors. J-hooks should only be utilized when running within individual room spaces and should not be utilized for long runs back to the IDF/MDF.
- B. Cable ties used in plenum areas are to be plenum rated.
- C. J-hooks shall be in accordance with NEC, EIA/TIA requirements for structured cabling systems. All cable supports shall be U.L. listed.
- D. Design selection: Erico Caddy, J-Hook, HILTI Inc. J-hangers, CLIC" 32, 40, 50 with insert, or approved equal.

2.4 COPPER TIE CABLING

- A. General: Copper tie cabling (12pair or 25pair) shall be provided between IDF's and MDF if indicated on the contract drawings. All voice grade wire and cable place underground shall be solid twisted pair, multi-conductor, ASP-filled core cable. Cable jacket shall be aluminum steel polyethylene (ASP). Conductors shall be dual insulated with foam skin and plastic, and surrounded by filling compound. The cable shall be resistant to mechanical damage, lightning damage or damage from wildlife.

- B. The multi-pair copper cables shall meet the following specifications:
 - 1. Gauge: 24 AWG
 - 2. DC Resistance: 27.3Ω/1000 ft (8.96Ω/100m), maximum
 - 3. Mutual Capacitance (at 1khz)
 - 4. Impedance: 100Ω (25 pair)
 - 5. Buried/Underground Cable Attenuation (db/1,000 ft [305m]): at 1.0 MHz: 6.4 (25 pair), maximum
 - 6. Aerial Cable Attenuation (db/1,000 ft [305m]): at 1.0 MHz: 6.7 (25 pair), maximum.

- C. Design Selection;
 - 1. Outside Plant: ~~Mohawk Wire and Cable~~ Siemon (OSP, Below grade): ~~REA PE-89 AL-Filled or equal by General~~
 - 2. Inside Plant: Riser rated feeder cables: ~~Mohawk Wire and Cable~~ Siemon

- D. Labels: Labeling for copper tie cabling shall be by IDF number. Permanent machine type printed (1/8" min letters) vinyl or nylon cloth labels shall be considered acceptable the purpose. Labels shall also be provided at any exposed cable location 20' on center and at all IDF'S locations. Identification shall include "to" and "from" information. Labels shall be by Brady or equal.

2.5 SITE COPPER CABLE PROTECTION UNITS

- A. General: All site copper circuits shall be provided with protection between each building with an entrance cable protector chassis. All building-to-building circuits shall be routed through this protector. Protector shall be connected with a #6 AWG copper bonding conductor between the protector ground lug and the IDF ground point. Each protector chassis shall be provided with 5 pin plug-in protector modules for each pair terminated on the chassis.
 - 1. Design Selection:
 - a. Porta Systems, # 24100-110-M110C w/115SCN-240 modules (Analog phones), or #115SCN-75 (75 volt) modules for (Digital phones)
 - b. Or equal by Circa or Systimax

- B. VoIP Entrance protection (Cisco or other VoIP phones): All site copper circuits that are intended to distribute voice over IP (VoIP) are to be provided with protection between each building with data rated primary protectors. All copper data grade building-to-building circuits are to be routed through this protector.
 - 1. Design Selection:
 - a. Porta Systems #606-27 (non-PoE circuits)
 - b. Porta Systems #606-65 (for circuits providing PoE power)

- C. Portable classrooms; Site Cat 6 copper circuits from building or portable (Modular) IDF's to portables (Modular) shall be provided protection on both ends. At the IDF rack, multiport rack mounted protector patch panels shall be used for the outgoing Cat 6 cable. Cable shall be run in conduit to the portables where they will terminate in 3-port and 4-port Wall Plate protector units directly without splice.
 - 1. Design Selection:
 - a. Cat 6: Porta Systems

2.6 FIBER OPTIC CABLING

- A. General: Multi-mode and/or single mode fiber optic cabling shall be provided between IDF'S and MDF if designated on the contract drawings. Multimode and or singlemode selection depends on future Gigabit requirements and distance constraints. Cables placed below grade shall be certified by the manufacturer for that environment. The following tables are for planning the type of fibers to be selected for a specific run maintains a viable path for future Gigabit transmission speeds. These characteristics shall be used as a standard for type selection criteria.

1. Table 1: (850 nm) Operating Distance

Fiber Type	Modal Bandwidth @ 850 nm	Distance
50µm	700 MHz-km/1GBPS Ethernet	1000 m
50µm	700 MHz-km/10GBPS Ethernet	300 m

2. Table 2: (1300 nm) Operating Distance

Fiber Type	Modal Bandwidth @ 1300 nm	Distance
50µm	500 MHz-km/1 GBPS Ethernet	600 m
50µm SM	500 MHz-km/10 GBPS Ethernet	300 m

- B. Multimode Cable Construction (50 Micron):
 - 1. Number of fibers: 12 minimum, or higher as shown on the drawings.
 - 2. Core/Cladding: 50 micron/125 micron.
 - 3. Fiber type: 10G/300 fiber
 - 4. Buffering: 900 micron
 - 5. Attenuation: ≤ 1.5 decibels/kilometer at 850 nanometers, ≤ 1.25 dB decibels/kilometer at 1300 nanometers.
 - 6. Minimum laser bandwidth: 2000 megahertz/kilometer at 850 nanometers, 500 megahertz/kilometer at 1300 nanometers.
 - 7. Sheath construction: Non-metallic
- C. Composite cables are approved with compliance of above specifications where applicable.

- D. If loose tube 250 micron outside plant cable is installed it is required that all terminations utilize a Fan-out Kit: All kits shall be installed per manufacturer's guidelines to provide fiber protection at each termination point. Kits shall be equal to Siecor SKF-P.
- E. Labels: Labeling for fiber cabling shall be by IDF number, plus the color suffix designating which fiber is terminated. Die cut acetate labels or Kroy labels shall be considered acceptable the purpose. Labels shall also be provided at any exposed cable location 20' on center and at all IDF'S locations. Identification shall include to and from information.

2.7 EQUIPMENT RACKS

- A. General: Each IDF shall be equipped with 19" EIA rack(s), floor mounted), to house owner-provided equipment and contractor provided termination bays for the multiple cable types. Floor mounted racks shall be mounted on an isolation pad and utilize non-conductive washers to secure the rack to the floor. Floor mounted open racks shall be secured from the top rail to the backboard in the room with a length of cable runway to prevent movement. Wall racks shall be securely fastened to the wall studs with at least 1/4" hardware. All racks shall be bonded to the IDF ground bar using a standard ground lug and #6 jacketed green cable. Existing buildings and portables will require wall-mounted racks in most cases. Review drawings for clarification.
- B. Equipment Mounting Selections:
 - 1. Floor Rack
 - a. ~~Hubbell #HPW84RR19~~
 - b.a. ~~Great Lakes GLRR-1984BA~~Siemon
 - 2. Isolation Pad
 - a. ~~Chatsworth, Hubbell, B-Line, or Pathways & Spaces, Inc~~Siemon
 - 3. Wall mount
 - a. ~~Hubbell Quadcab HSQ24S26~~Siemon
- C. Rack Accessories: Each equipment rack will be provided with the following accessories:
 - 1. Power plug strip: ~~Hubbell # MCCPSS19~~Siemon
- D. Cable Routing: Station cables will be routed into the rear station Cable manager, neatly organized and terminated onto the patch panel following TIA/EIA-568-B, 569 termination guidelines. It is required that a horizontal cable

manager be installed above and below any patch panel installed onto a rack. Patch panels and front/rear cable managers will then be installed in alternating order on the rack. It is further required that on 48 port patch panels, the cable terminated to the top 24 ports shall be neatly routed through the cable manager mounted above the patch panel. The lower set of 24 ports shall be routed through the wire manager mounted below the patch panel. This routing method is required to allow easier moves, adds and changes at a later date.

- E. Vertical Cable Management: Free standing relay racks shall have vertical cable management installed on each side of the rack. If more than one rack is installed, then each rack will be separated by a vertical, duct style cable manager. Black, 6" channels with covers.

- 1. Design selection: ~~Hubbell #VS76H (hinged cover) (2 required for each rack)~~ Siemon

- F. Plywood backboards: Backboards shall be installed in each TC, IDF and MDF room on walls to a height of 8' AFF. Rooms shall have walls covered as shown on the drawings. Plywood shall be ¾" AC Grade with the best side out. All imperfections and voids shall be filled, sealed and sanded prior to being primed and painted with 2 coats of UL Classified, fire retardant intumescent paint on the front, back and all four sides of the plywood. Fire retardant coating shall be tested to UL723, "Test for surface burning characteristics of building materials." (Color to be Grey or white) Coordinate color selection with the owner/Architect. Backboards shall be clearly labeled with the name of the Backboard Manufacturer, UL Classification of the Fire Retardant Coating, NFPA 255 Coating Flame Spread Index Class and the APA Grade of the plywood.

- 1. Design Selection;
 - a. Pathways & Spaces, Inc. (ReadySpec Series),

- 1) #RB-AD4896G 48" x 96"*

- b. Equal field fabricated to all of the specifications listed above for "plywood backboards". Provide proof that AC Grade Plywood and UL Classified paint was used in making the backboards. Furthermore, provide verification that all backboards were primed, and painted on all sides (front, back and all sides) with two coats of the required paint. All voids shall be filled and sanded prior to being primed and painted. Refer to drawings for specified backboard coverage.

2.8 CATEGORY 6 PATCH PANELS

- A. General: Equipment racks: shall be equipped with 19" rack mounted, 8-position modular jacks (RJ-45 type), non-keyed, factory configured; patch panels for termination of all copper horizontal cables.
- B. Work Area outlet patch panels: Shall be tested to meet the Category 6 standard for component and channel performance and shall be modular-to-110, wired for T568A pin outs for the cables serving the Work Area Outlets
 - 1. Category 6 patch panels component values:
 - a. NEXT (dB) at 250 MHz - 46.0 dB or exceed
 - b. Insertion Loss (dB) at 250 MHz - 32.0 dB or less
 - c. FEXT (dB) at 250 MHz - 35.1 dB or exceed
 - 2. Patch panels shall be provided in 24 and 48 port configurations as shown on the drawings.
 - a. Design Selection: ~~Hubbell Premise Wiring Siemon~~
 - 1) 24 port - #HP624
 - 2) 48 port - #HP648
- C. Voice site patch panels; shall be used for distribution of the voice pairs to the work area patch panels via patch cords. Terminate the site copper tie cables, 25 pair or 50 Pair as shown on the drawings, via the protector units to voice patch panels. These patch panels shall be configured with one voice pair per port (Blue pair) via the 110-connector side of the panel. The panels shall be configured as 8-position modular jack-to-110 termination panels in quantities as indicated on the drawings. These panels shall be patched to another set of work area voice patch panels, which shall be connected to the voice jack of the work area outlets in the field. The panels shall be in 24 and 48 port configurations as shown on the drawings. Punch down all Cat 6 pairs to the work area 110 ports.
 - a. Design Selection: ~~Hubbell Premise Wiring Siemon~~
 - 1) 24 port - #HP624
 - 2) 48 port - #HP648
- D. Identification: Designation strips for each port shall be provided on the patch panel. All cables shall be terminated in numerical sequence and each position labeled as to outlet number and jack position as is noted for the outlets.
- E. Category 6 Modular Patch Cords and Work-area Cords: Patch cords are provided by the Owner

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide port counts to Owner at the beginning of the project to assist with Owner equipment purchase. The count should include all cables terminated in the IDF patch panels such as wall outlets, cameras, TV's and WAPS.

3.2 CAT 6 CABLE INSTALLATION

- A. Installation of Category 6 UTP cable shall be in accordance with EIA/TIA guidelines for Category 6. Replace Cable installation and terminations that do not comply.
 - 1. The maximum pulling tension shall not exceed 25 pounds to avoid stretching the conductors.
 - 2. The minimum bending radius of the cable shall not be less than 4x the diameter of the Category 6 cabling.
 - 3. The cable shall be installed without kinks or twists and the application of cable ties shall not deform the cable bundle. Cables are to be loose enough to be rotated easily by hand.
 - 4. Strip back only as much cable jacket as is required to terminate the cable and the amount of untwisting in a pair as a result of the termination shall not exceed 0.5 in.

3.3 OUTLET PLACEMENT

- A. Standard PDS Outlets shall be mounted as close as possible to the power outlet and at the same height.
- B. WAP ceiling outlets should be ceiling mounted in the center of the room or as shown.
- C. WAP wall mounted outlets should be mounted at 10 – 12 ' AFF.

3.4 SERVICE SLACK

- A. All cable runs shall contain service slack prior to the termination point. Provide 12-inch service slack in the ceiling above each outlet. Service slack at IDF shall consist of a 10 foot slack section all station cables located and placed neatly in the cable ladder above the equipment rack.

3.5 SUPPORT AND ROUTING OF CABLES

- A. Horizontal cables used in this system are to be installed within ceiling spaces. Cables shall be routed through these spaces at right angles to electrical power circuits and supported only from the structure. Tie cables shall be extended between MDF to IDF'S utilizing conduit runs as shown on the drawing
- B. Use of ceiling tiles, grid or hanger wires for support of PDW cables shall be prohibited.
- C. Install a complete set of supporting J-hooks and other supporting hardware for this system as part of the PDW contract. All supporting hardware shall be submitted to the engineer for approval prior to installation. Hardware shall also be utilized by other systems work. Comply with basic layout indicated on drawing details for cable placement.
- D. Do not exceed 80% of the J-hook or cable tray capacity.

3.6 FIRE AND SMOKE PARTITION PENETRATIONS

- A. Openings in sleeves and conduits used for the PDW system cables and those that remain (empty) spare shall be sealed under Division 7 section "Firestopping".

3.7 TRAINING

- A. Provide one 2-hour training session to familiarize the owner with the locations of all IDF's, cable and jack labeling and numbering systems, data and voice connections.

3.8 AS-BUILT DOCUMENTATION

- A. As-built documentation shall be provided as part of the contract. As-built drawings shall be a complete set of AutoCAD Release 2002 floor plans with all outlets shown and numbered as installed. The original project floor plan disks shall be obtained from the Owner. All cable routings (trunk lines) and elevations of each IDF or MDF indicating outlet, tie, and riser cable terminations shall be required. All addendum information or project revisions resulting in drawing changes that occur during the construction period shall be documented and included in the as-built material. All required as-built documentation is mandatory and shall be required prior to project closeout. A set of prints with all changes shall be submitted to the Engineer for review. Upon completion of the Engineer's review, provide updated disks and a

reproducible mylar set of drawings, which include final As-built conditions and the Engineer's review comments, if any.

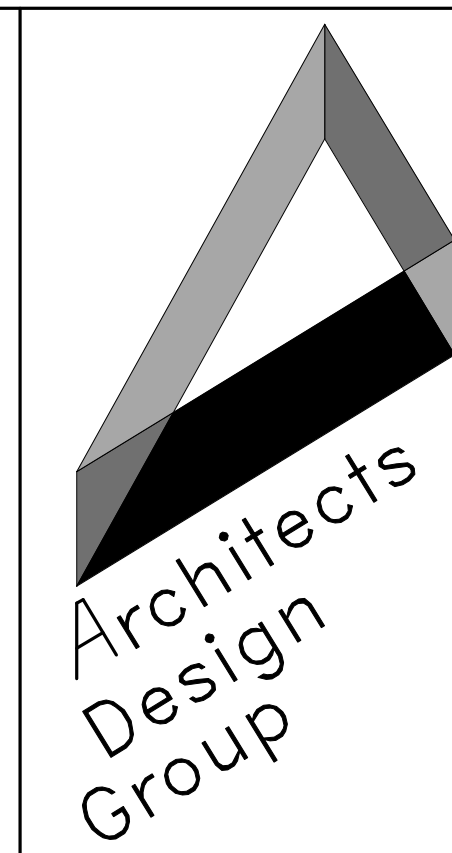
- B. Provide Excel software spreadsheet that defines the telecommunications outlet number, location, and number of voice, data and special jacks. This database shall also provide the outlet patch panel connection to the riser/inter-floor cable, equipment, and telephone company demarcation circuit pairs as part of the as-built documentation.

3.9 TESTING OF WIRING ACCURACY

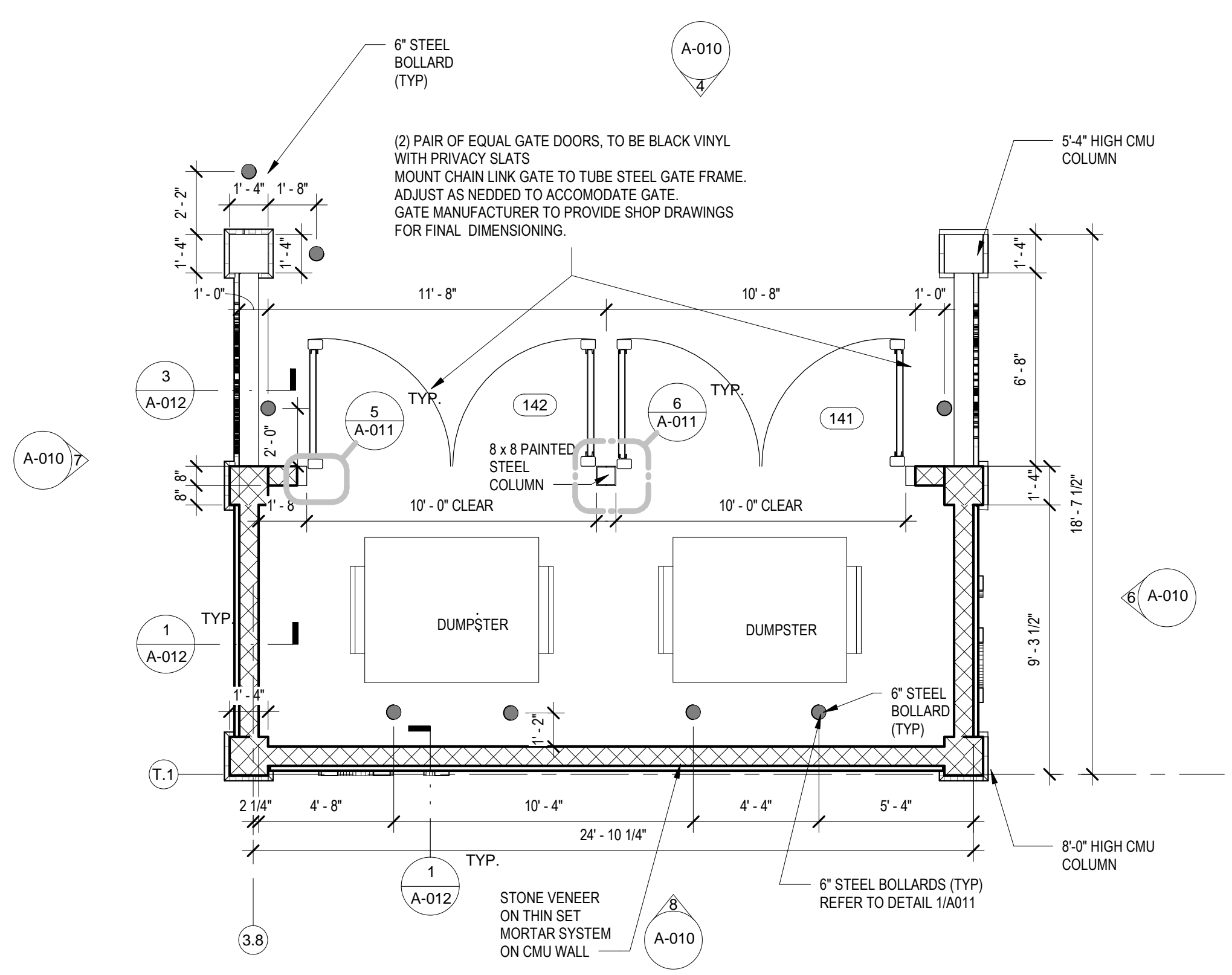
- A. General: Test wiring setting tester for a channel configuration which includes the patch cord, patch panel, UTP Cable, work-area jack and work-area cord.
- B. Testing Equipment: Tester shall be as manufactured by Agilent Technologies, Fluke, Microtest or Ideal. Tester shall be 100% Level III compliant with TIA/EIA 568B.2-1 specifications for testing of CAT 6 cabling. No tester will be approved with out meeting these requirements.
- C. Testing guidelines: Each jack in each outlet shall be tested at a minimum to Category 6 compliance. The test shall be done in a LINK configuration to verify the integrity of all conductors and the correctness of the termination sequence. The Contractor and Manufacturer shall provide a minimum 25 year application assurance Warranty for the LINK and CHANNEL.
- D. Testing shall be performed between the outlets and the patch panel at the equipment rack, prior to testing UTP runs the tester shall be calibrated per manufacturer's guidelines. The correct cable NVP shall be entered into the tester to assure proper length and attenuation readings.
- E. Verify that this testing method is acceptable to the manufacturer that will be providing the LINK AND CHANNEL warranty for this project.
 - 1. 250 MHz sweep tests, Wire map, Attenuation, NEXT, PSNEXT, ELFEXT, PSELFEXT, ACR, PSACR, Return Loss, Delay, Delay Skew, and the installed length for Category 6 cables.
 - 2. Cables not complying with ANSI/TIA/EIA-568-B.1 and B.2-1 Category 6 tests shall be identified to the engineer for corrective action which may include replacement at no additional expense to the Owner.
 - 3. Documentation of cable testing shall be required. Provide the results of all Category 6 cable tests in electronic format as well as two (2) hardbound copies in 3-ring binders. Provide IBM format text files on CD/electronic media. Provide a separate text file for each building in the project. Each

test page shall be separated by standard page break (one test per page).

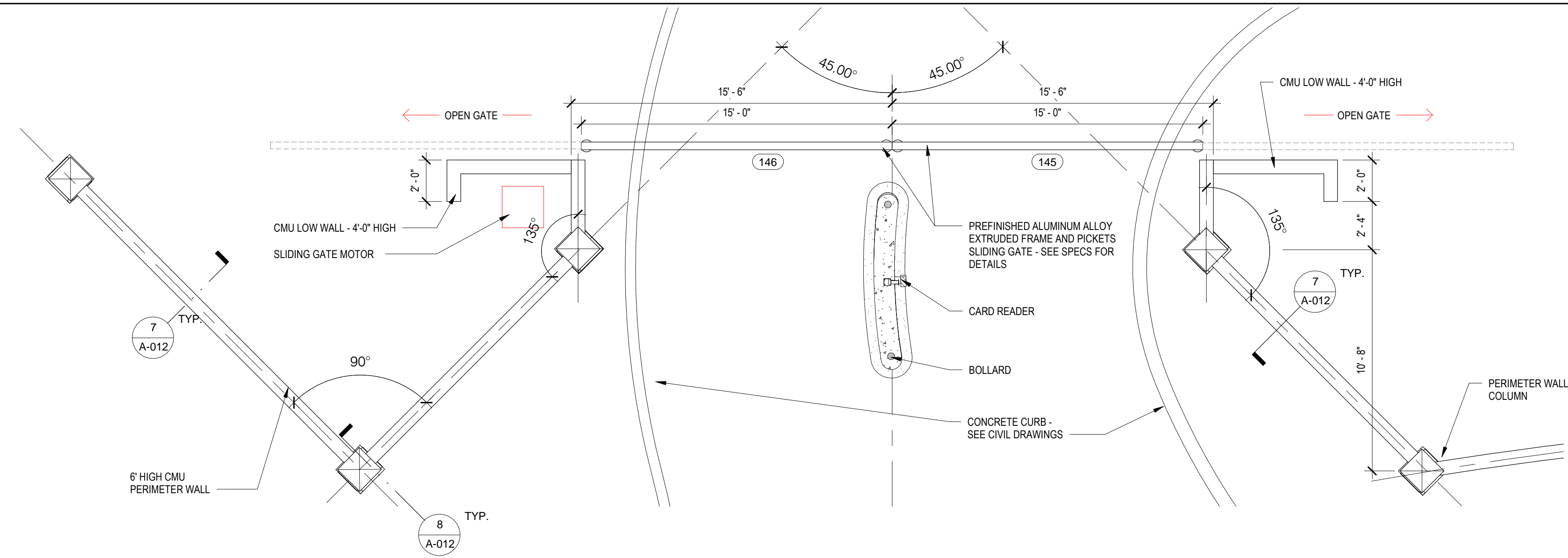
END OF SECTION 27 26 26



Architects and Planners
 I.S.K. Reeves, V, F.A.I.A.
 Ian A. Reeves, A.I.A.
 Susan Gantt, A.I.A., LEED-AP
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 Winter Park, Florida 32789
 P: (407) 647-1706
 Corporate Registration
 Number: AAC001197

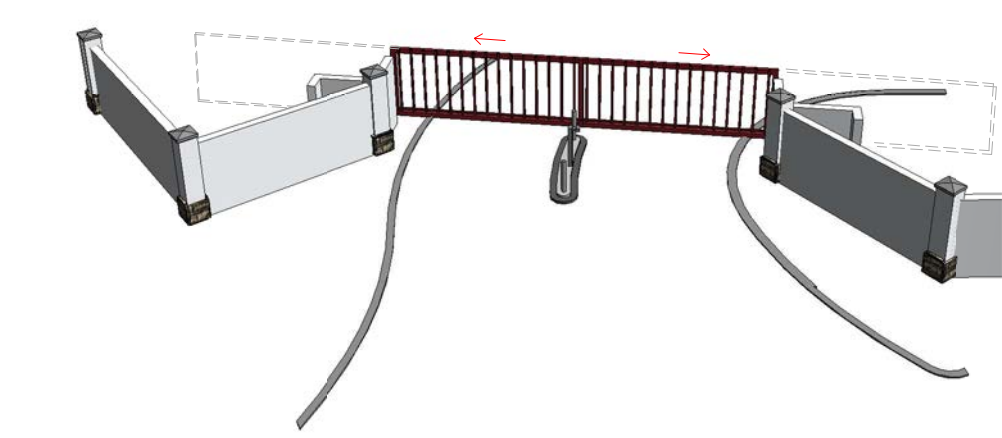


1 DUMPSTER ENCLOSURE PLAN
 1/4" = 1'-0"

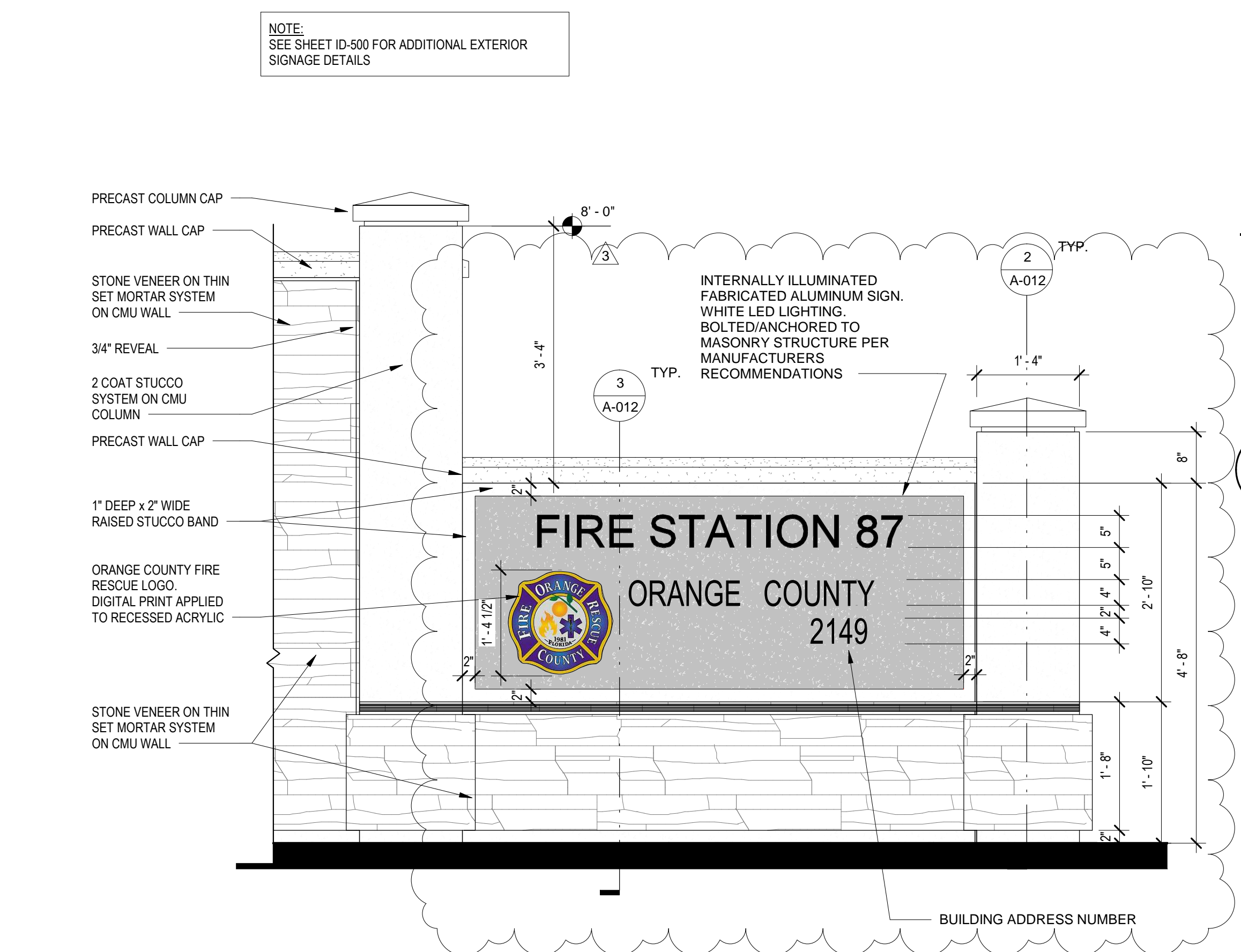


2 SECURITY FENCE AND GATE PLAN
 1/4" = 1'-0"

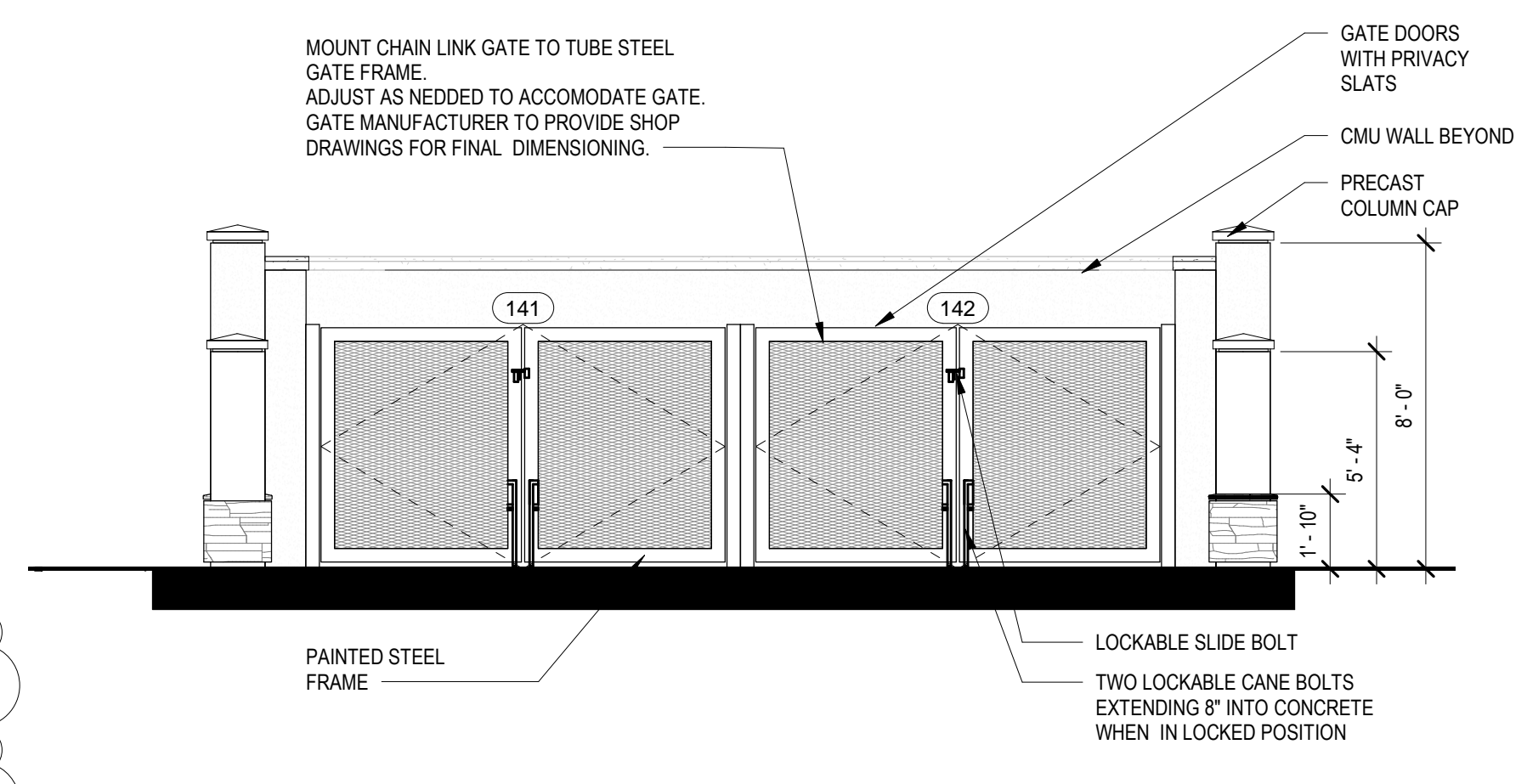
BID ALTERNATES
BID ALTERNATE DEDUCT #1 -
 REPLACE ALL MASONRY FENCING WITH 6" BLACK VINYL COATED CHAIN LINK (NO SLATS). LEAVE THE DECORATIVE WALLS AT THE DUMPSTER AND SIGN LOCATION. THERE IS NO OVERALL DEDUCTION IN FENCING/WALLS WITH THIS BID ALTERNATE.
 ON PERIMETER FENCING SEE DETAILS 5, 6, 7 AND 8/A-012



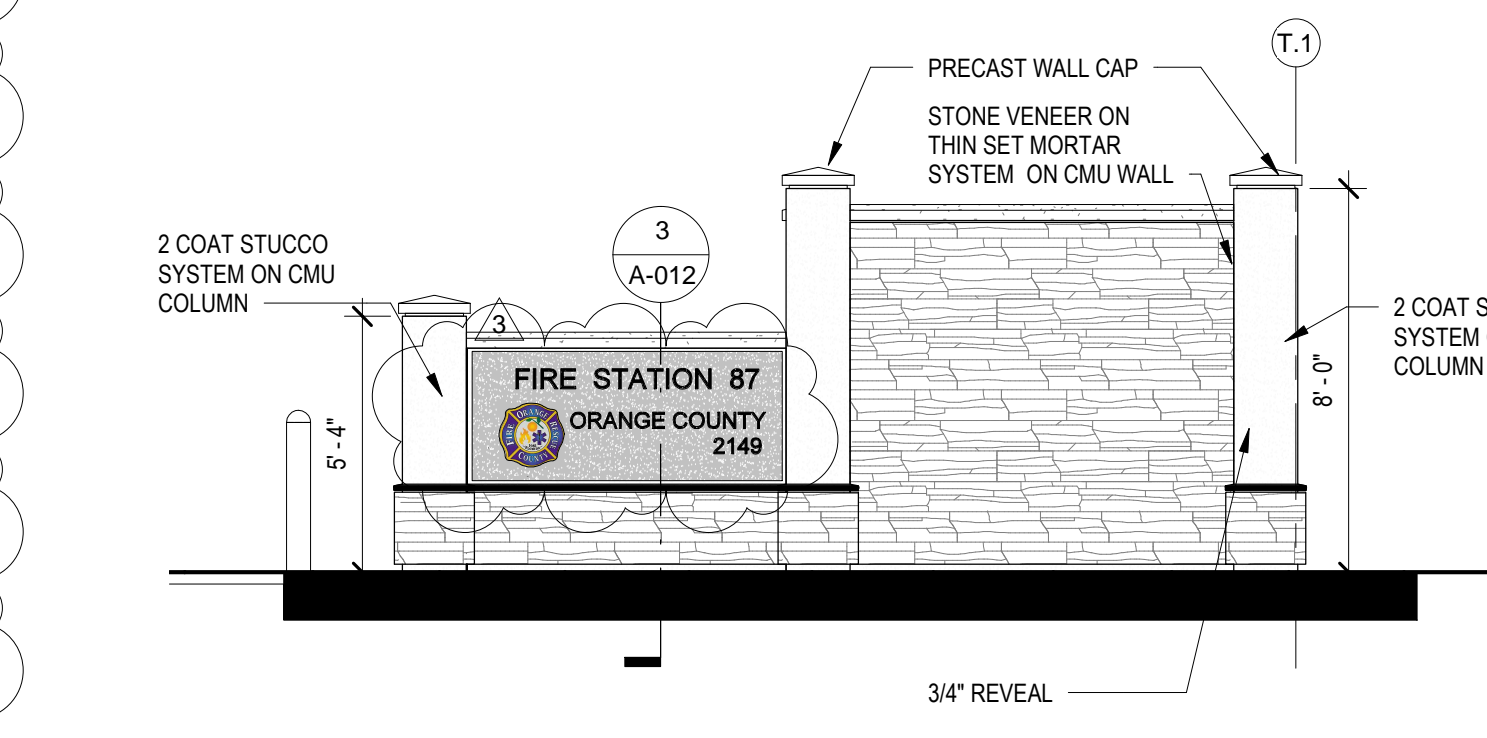
3 SECURITY FENCE VIEW



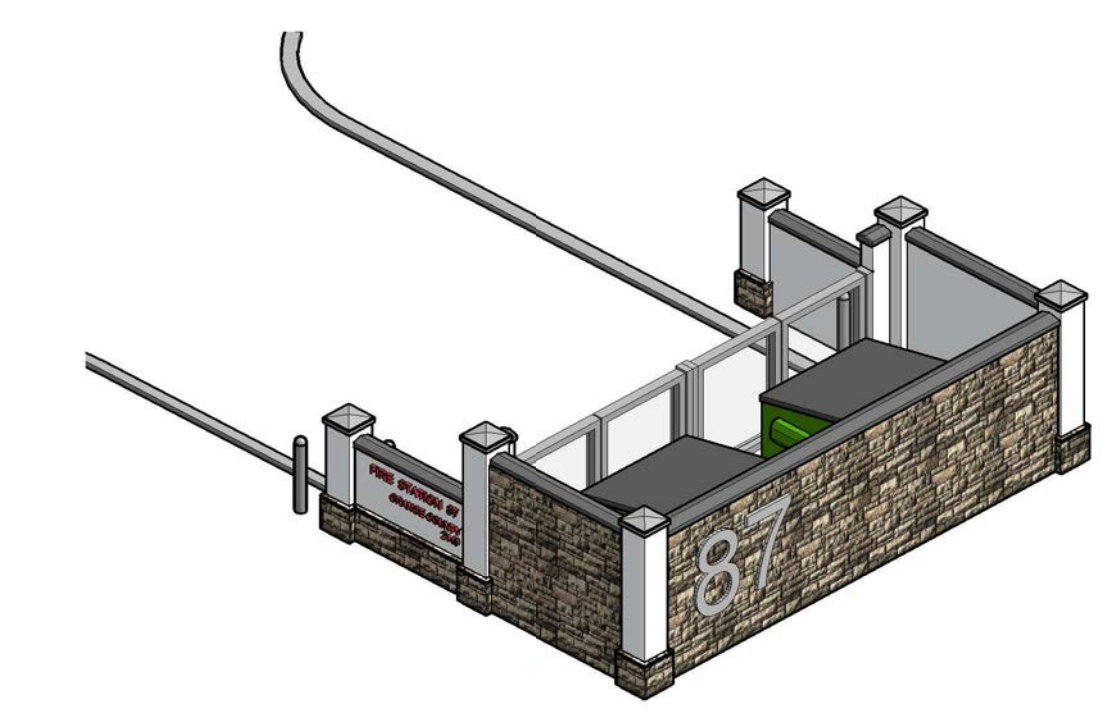
6 MONUMENT SIGN - DUMPSTER WALL ELEVATION
 3/4" = 1'-0"



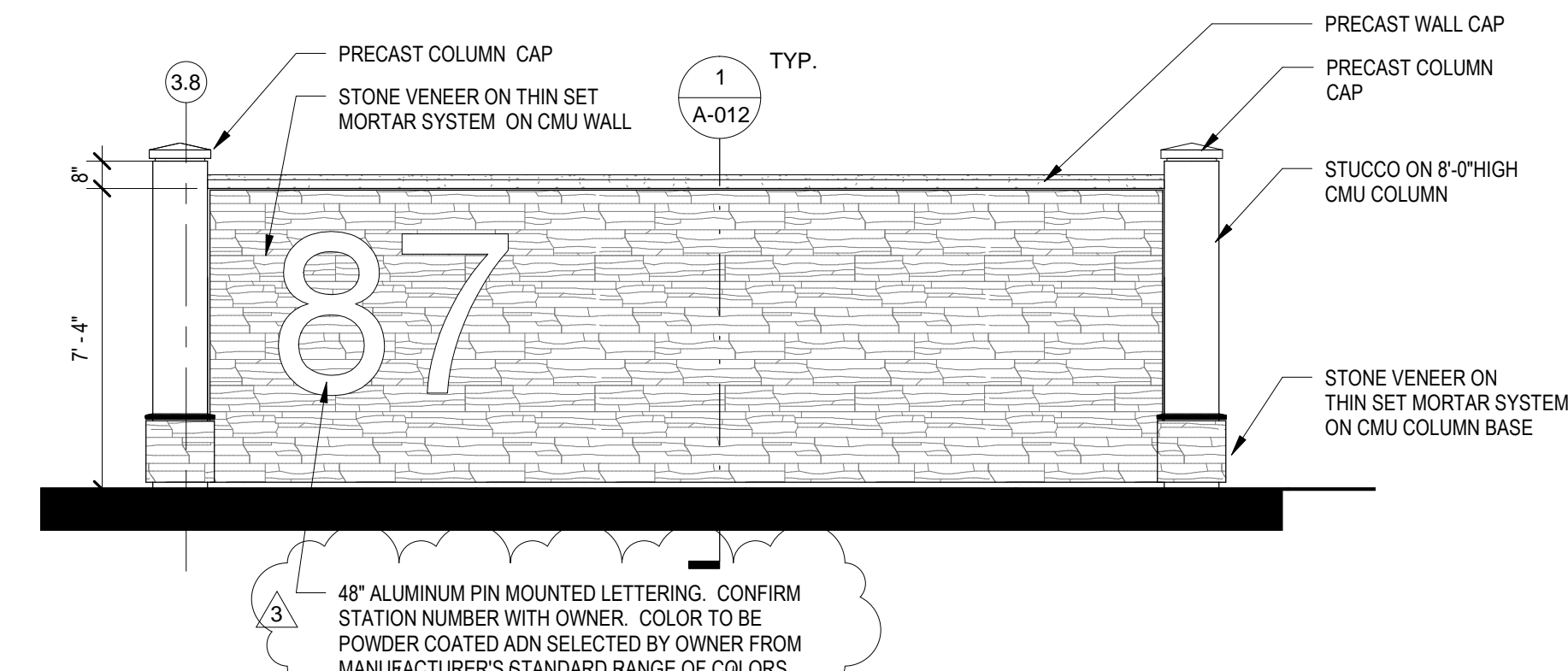
4 DUMPSTER NORTH ELEVATION
 1/4" = 1'-0"



7 DUMPSTER WEST ELEVATION
 1/4" = 1'-0"



5 MONUMENT SIGN- DUMPSTER VIEW



8 DUMPSTER SOUTH ELEVATION
 1/4" = 1'-0"

**ORANGE COUNTY
 FIRE STATION
 87**

**ORANGE COUNTY
 FIRE RESCUE**

BID & PERMIT SET

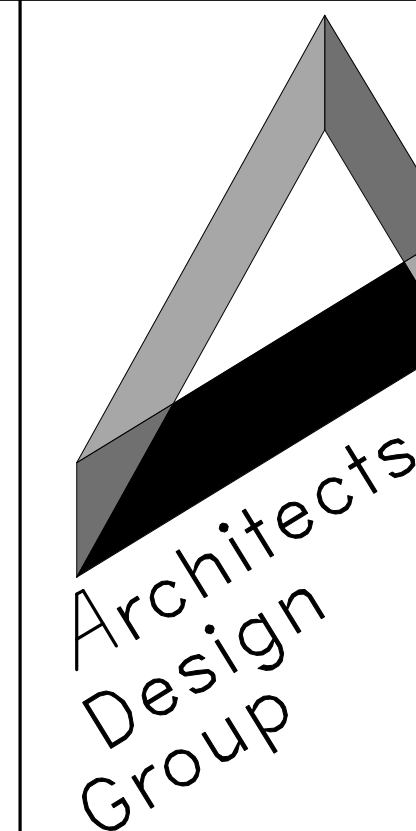
The architect hereby expressly reserves his common law copyright and other property rights in these drawings. These drawings shall not be reproduced without written permission and consent of the architect, nor are they to be assigned to any party without first obtaining written permission and consent.

revisions/addenda		
Number	Description	Date Issued
3	Addendum 3	9/13/19

sheet title
SITE DETAILS

- scale: As indicated
- drawn: EA
- checked: LG
- approved: SG
- date: 06/12/2019

project no.
963
 sheet number:
A-010

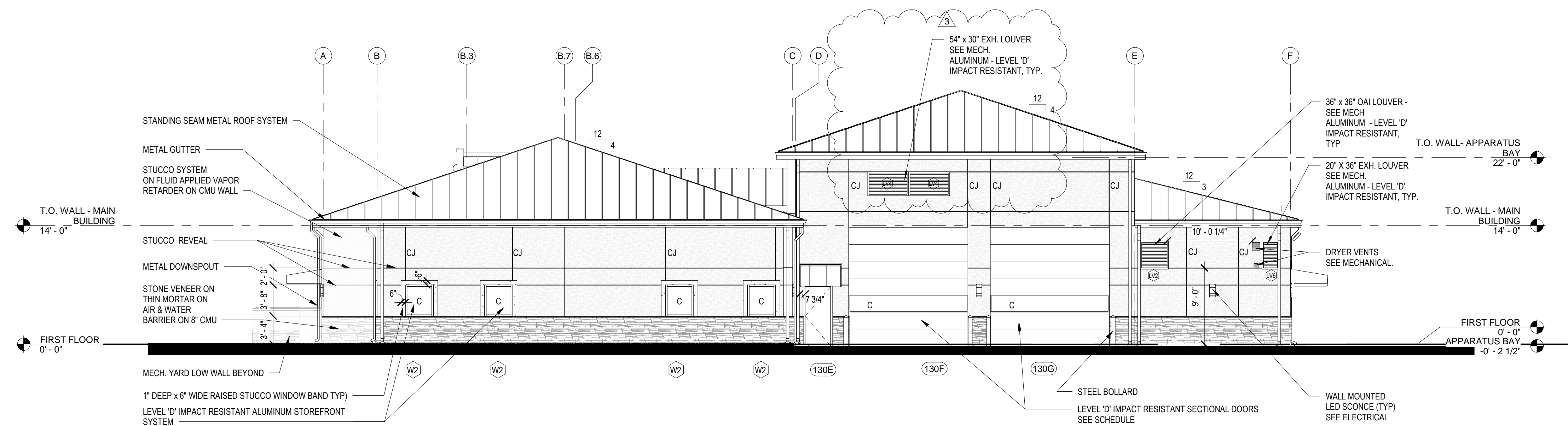


Architects and Planners

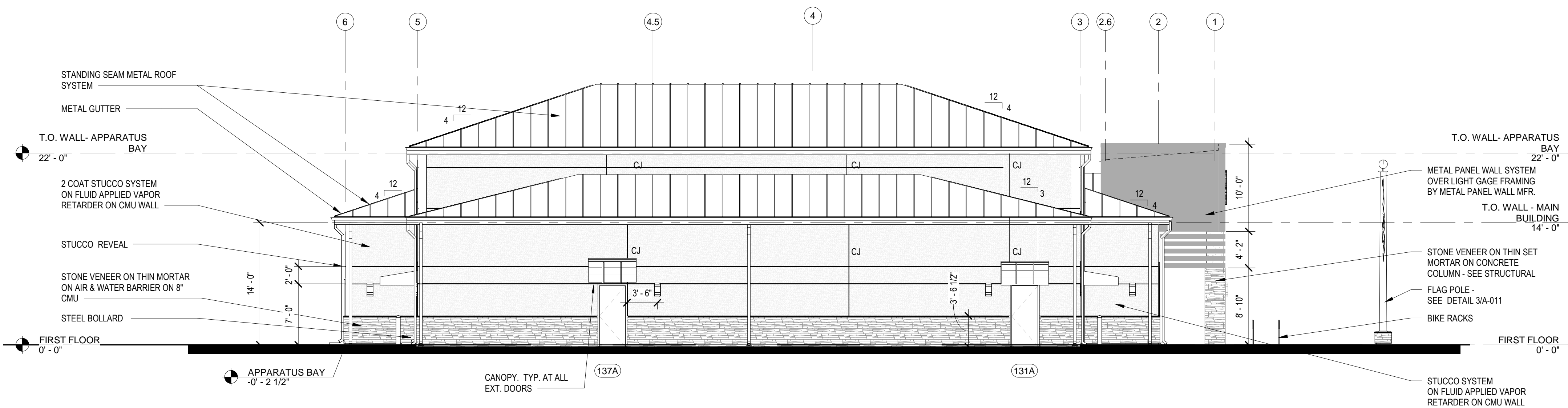
I.S.K. Reeves, V, F.A.I.A.
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Susan Gantt, A.I.A., LEED-AP

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1 REAR ELEVATION
1/8" = 1'-0"



2 SIDE ELEVATION @ APPARATUS BAY
1/8" = 1'-0"

**ORANGE COUNTY
FIRE STATION
87**

**ORANGE COUNTY
FIRE RESCUE**

BID & PERMIT SET

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• revisions/addenda		
Number	Description	Date Issued
3	Addendum 3	9/13/19

• sheet title
**EXTERIOR
ELEVATIONS**

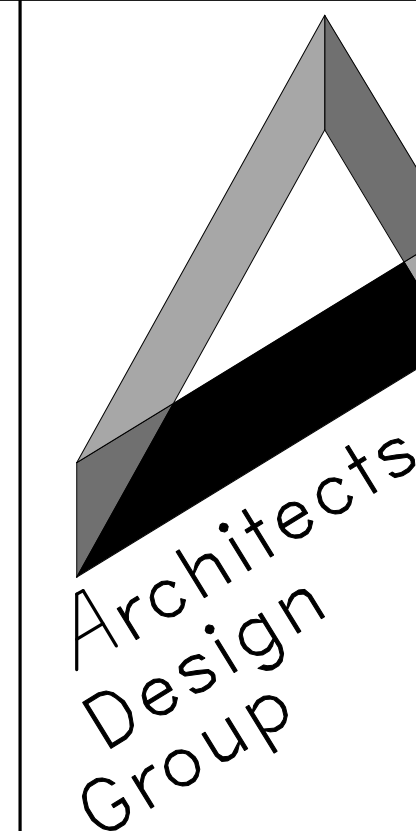
• scale: 1/8" = 1'-0"
• drawn: LG/EA
• checked: LG
• approved: SG
• date: 06/12/2019

• project no.

963

• sheet number:

A-202



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 Corporate Registration
 Number: AAC001197

**ORANGE COUNTY
 FIRE STATION
 87**

**ORANGE COUNTY
 FIRE RESCUE**

BID & PERMIT SET

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• revisions/addenda

Number	Description	Date Issued
3	Addendum 3	9/13/19

• sheet title
**WALL
 SECTIONS**

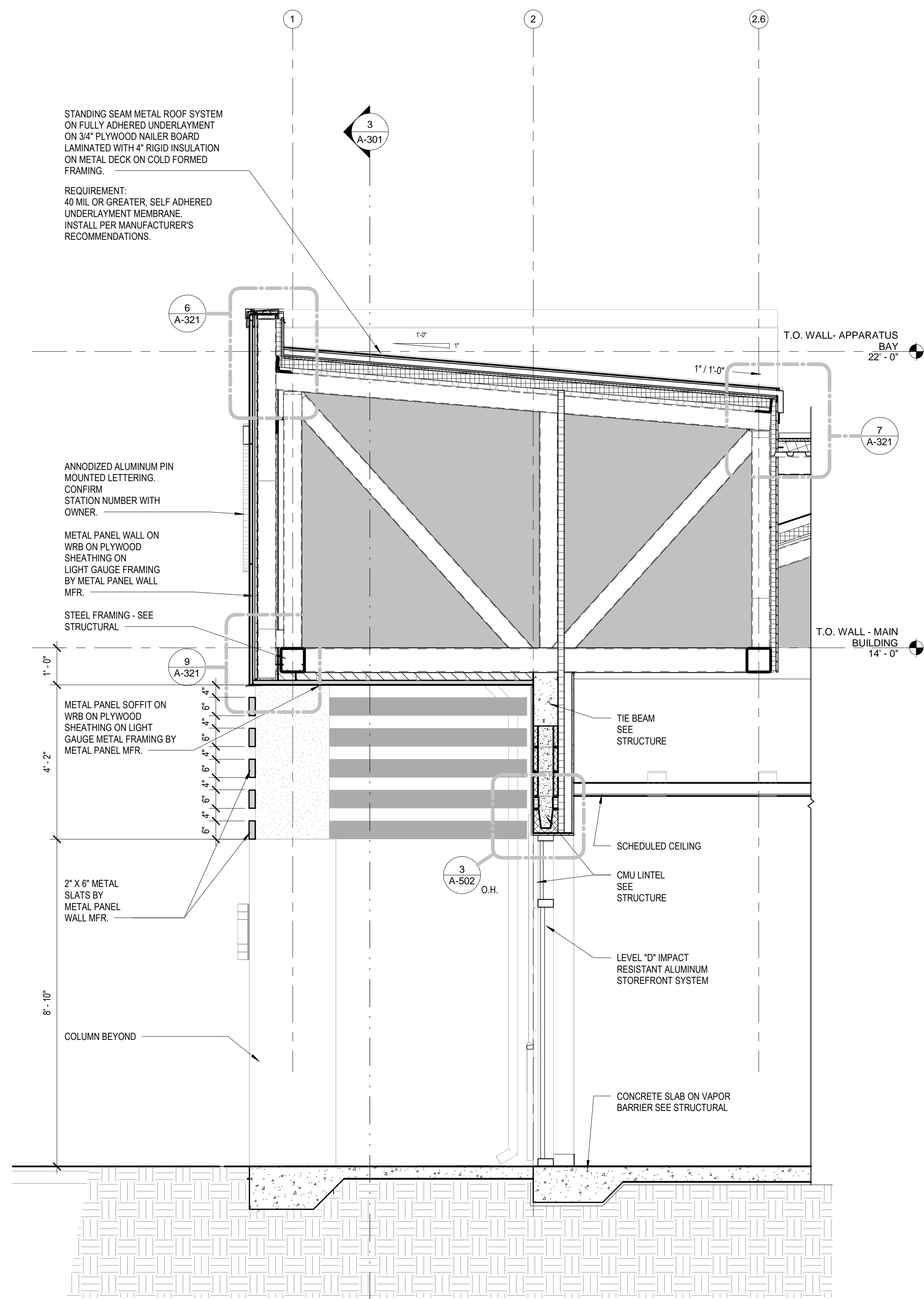
- scale: 1/2" = 1'-0"
- drawn: EA
- checked: FR
- approved: FR
- date: 06/12/2019

• project no.

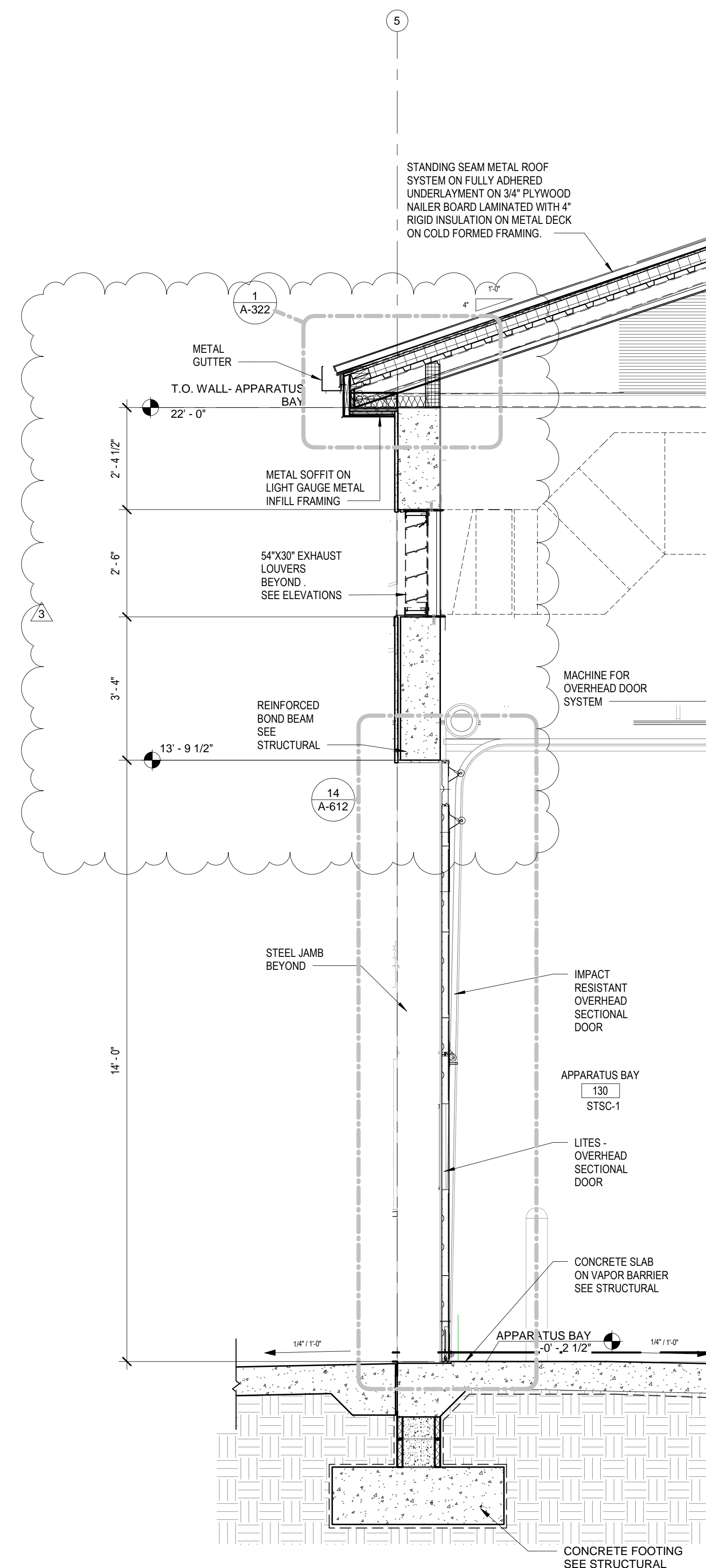
963

• sheet number:

A-312

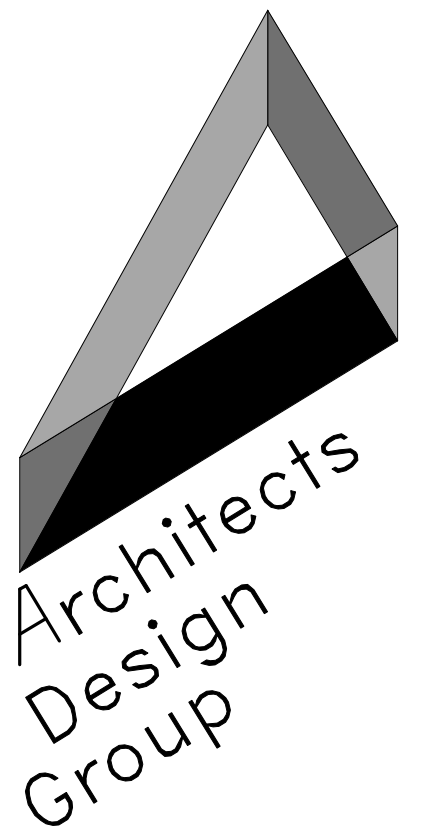


1 WALL DETAIL
 1/2" = 1'-0"



3 SECTION THRU APPARATUS BAY
 1/2" = 1'-0"

GLAZING MATERIAL TYPES	
A.	FLOAT OR PLATE GLASS, CLEAR, GLAZING QUALITY: 1/4" THICK MINIMUM.
B.	SAFETY GLASS, CLEAR, FULLY TEMPERED, 1/4" THICK MINIMUM.
C.	LOW E, LAMINATED / INSULATED, IMPACT RESISTANT LEVEL "D" GLAZING.
D.	1 HR FIRE-RATED GLAZING MATERIAL, 1/4" THICK MINIMUM. WIRE GLASS IS NOT ACCEPTABLE.
E.	MIRROR, POLISHED FLOAT GLASS, 1/4" THICK MINIMUM, EDGES SEALED AND SEALED WITH "MIRROR EDGE SEALER"



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**ORANGE COUNTY
 FIRE STATION
 87**

**ORANGE COUNTY
 FIRE RESCUE**

BID & PERMIT SET

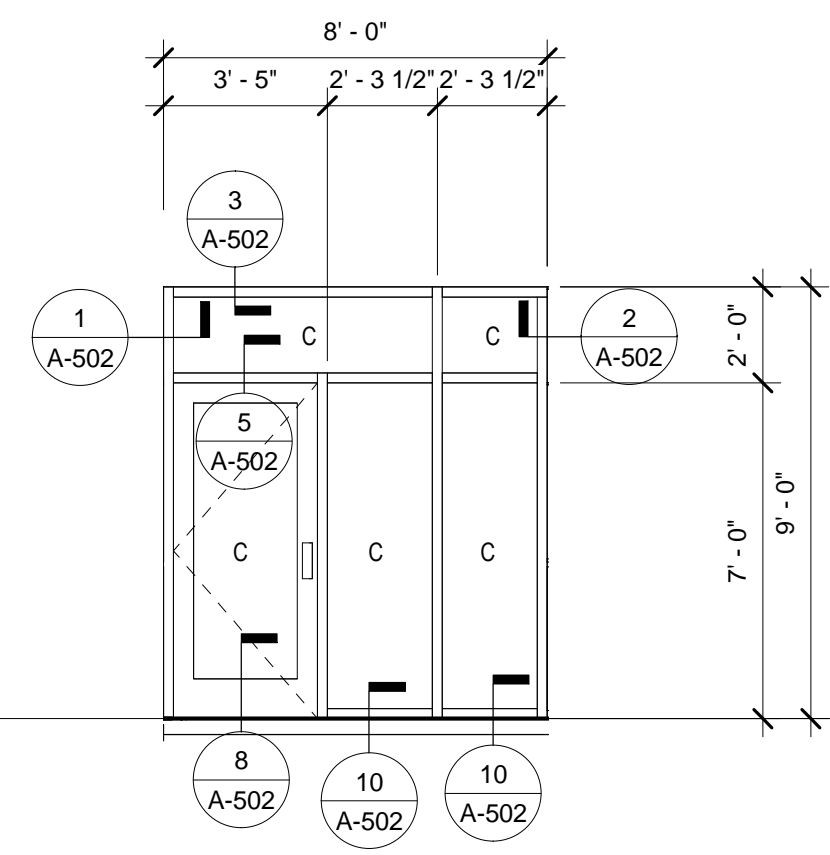
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revisions/addenda		
Number	Description	Date Issued
3	Addendum 3	9/13/19

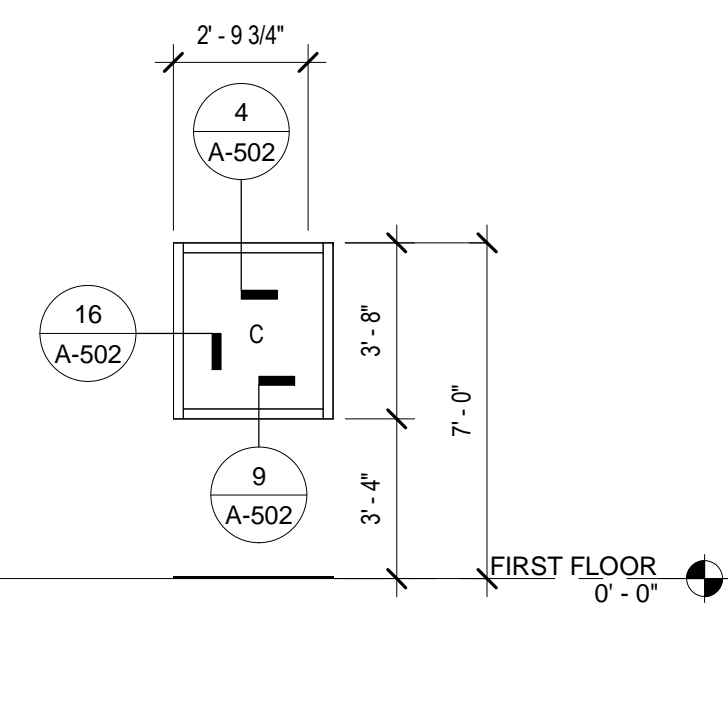
sheet title
**WINDOW &
 LOUVER
 ELEVATIONS**

- scale: As indicated
- drawn: EA
- checked: LG
- approved: FR
- date: 06/12/2019

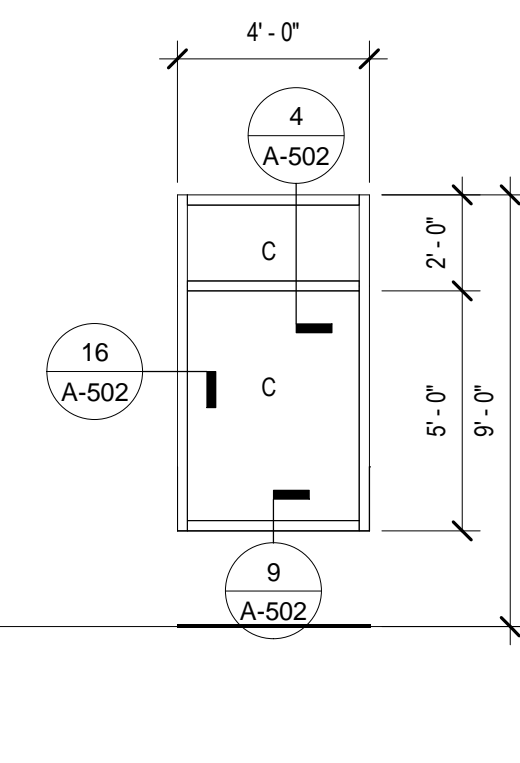
project no.
963
 sheet number:
A-501



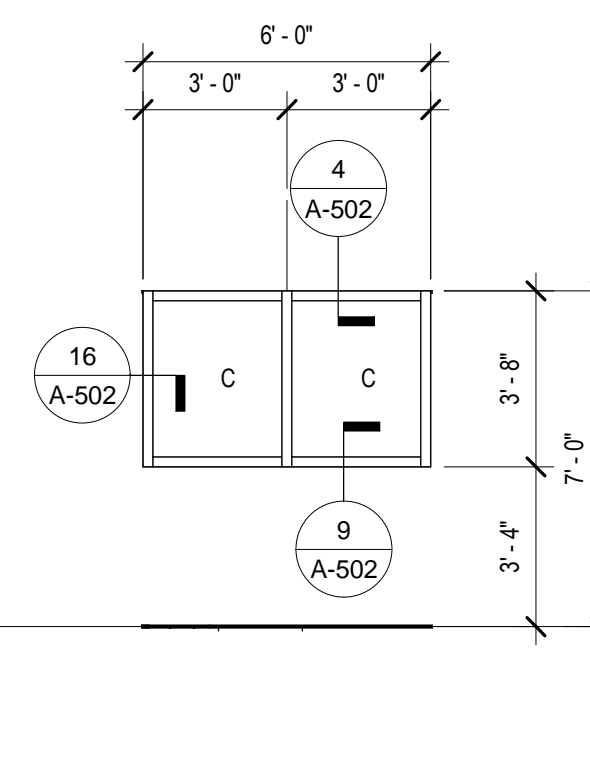
W1
 1/4" = 1'-0"



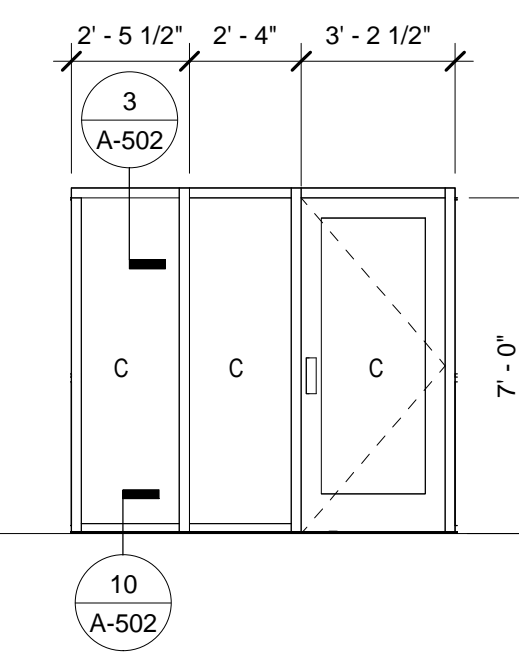
W2
 1/4" = 1'-0"



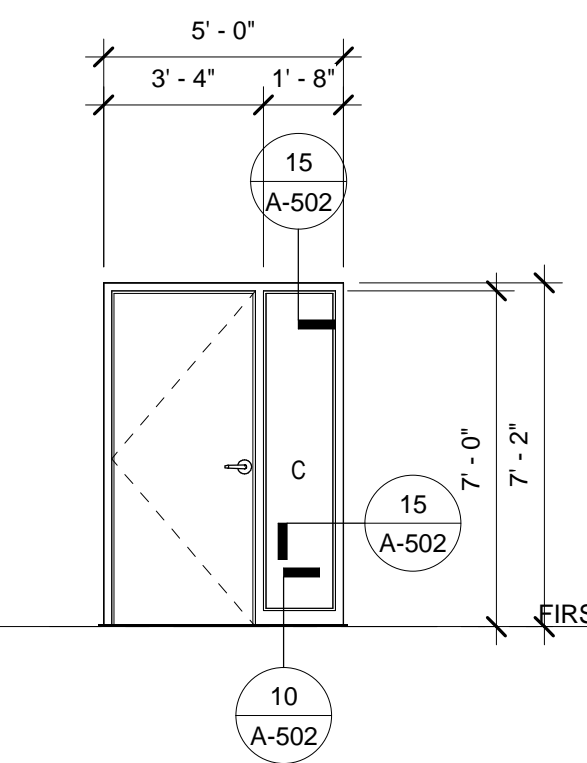
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 1/4" = 1'-0"



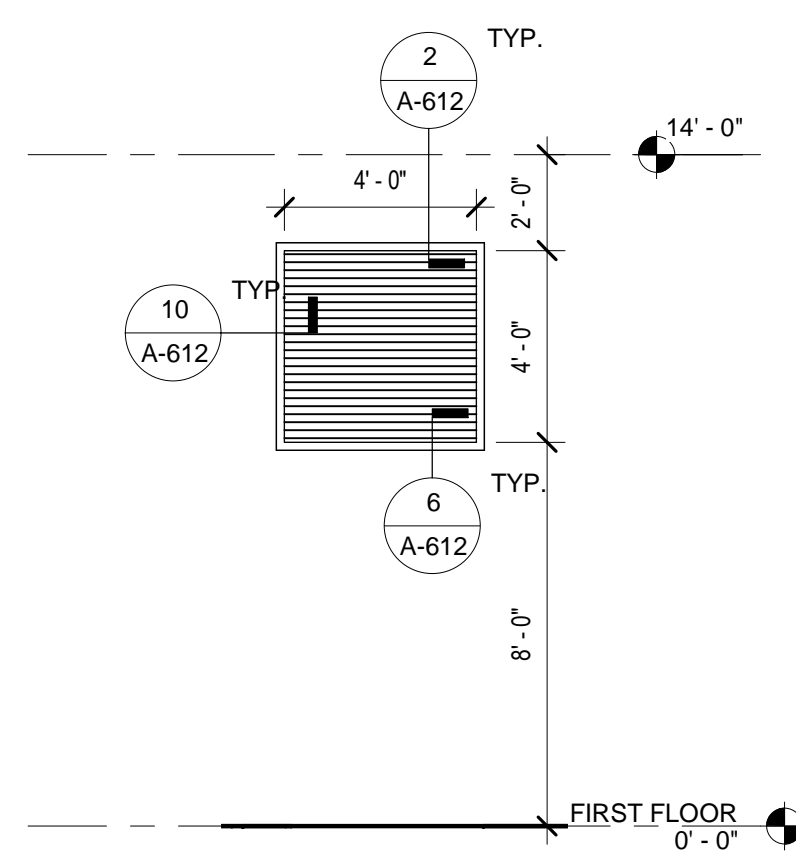
W4
 1/4" = 1'-0"



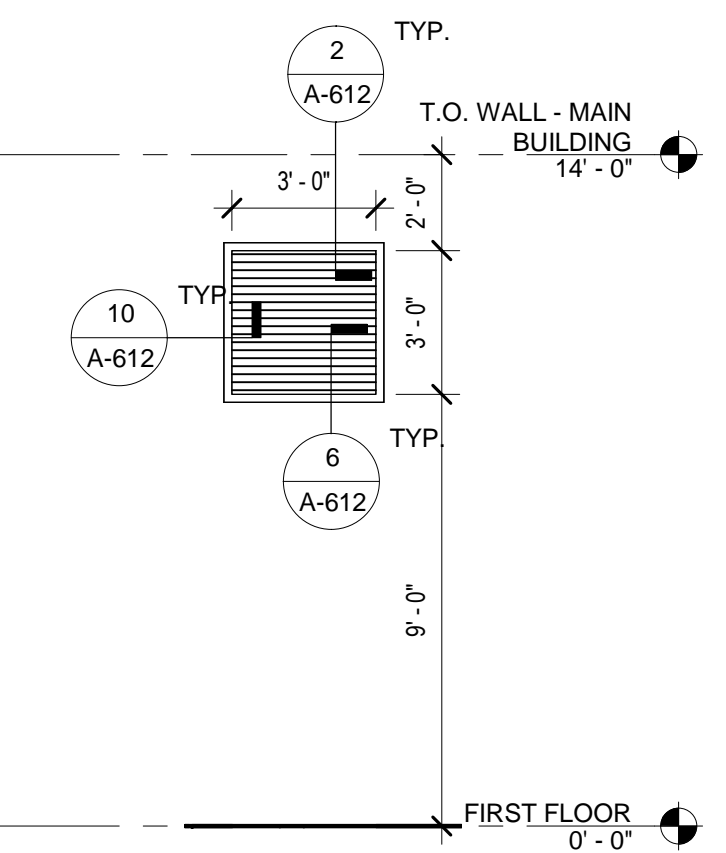
W5
 1/4" = 1'-0"



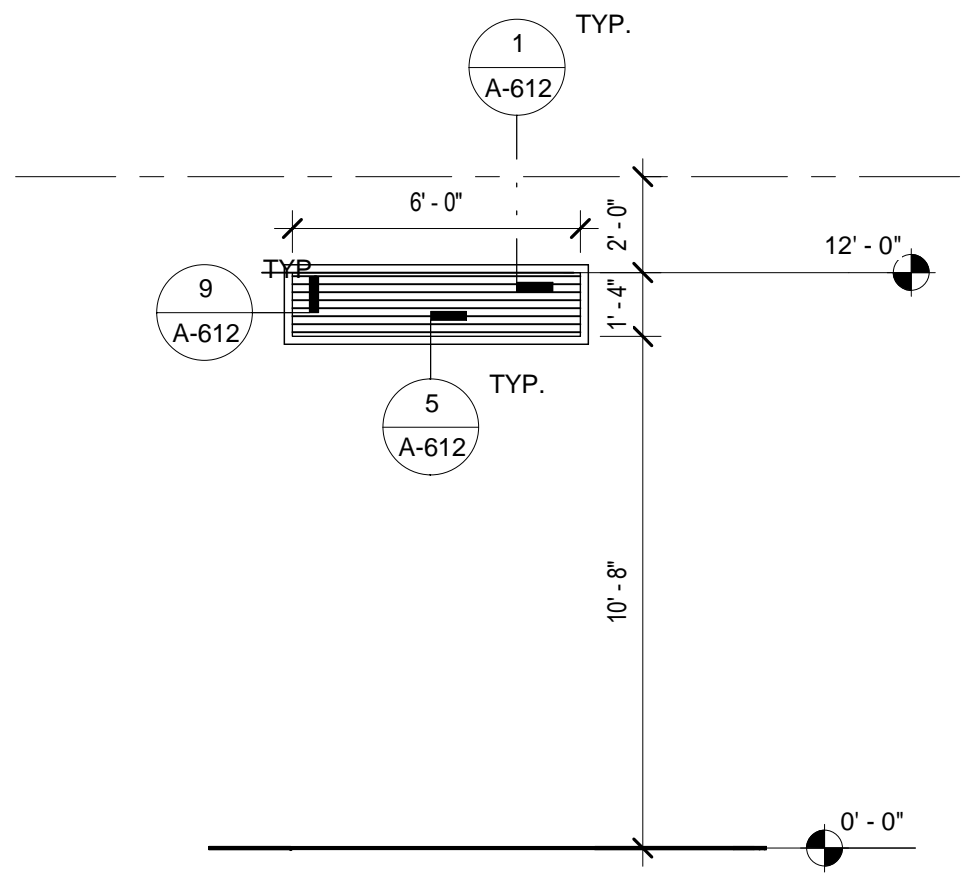
W6
 1/4" = 1'-0"



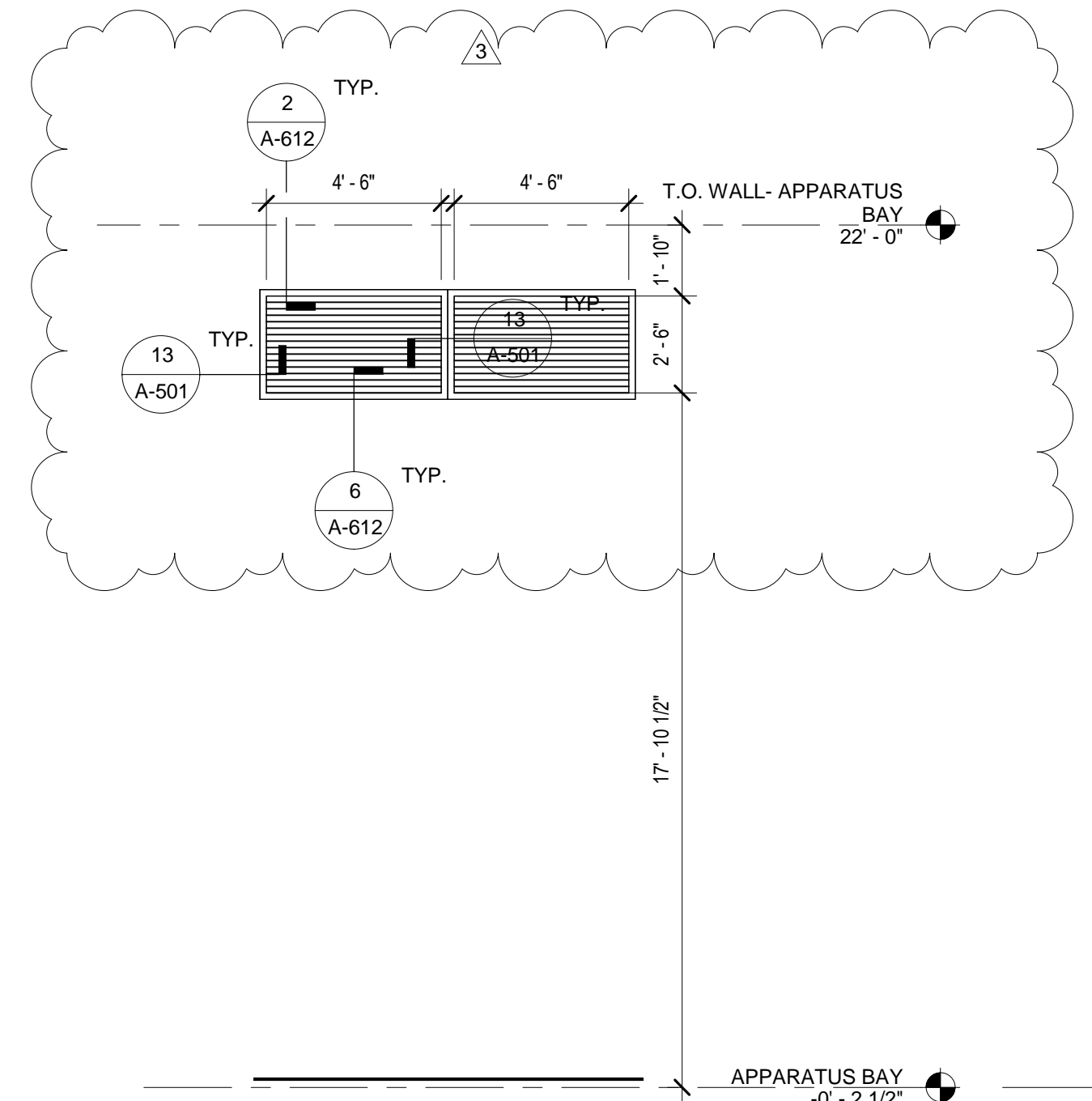
LV1
 1/4" = 1'-0"



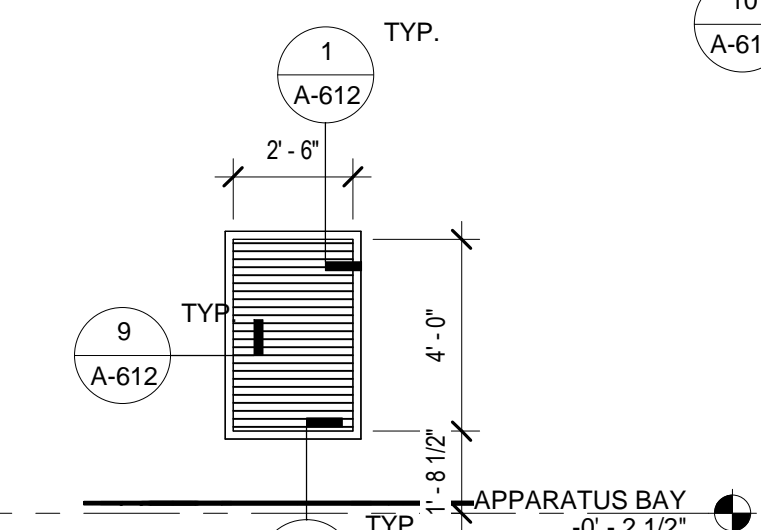
LV2
 1/4" = 1'-0"



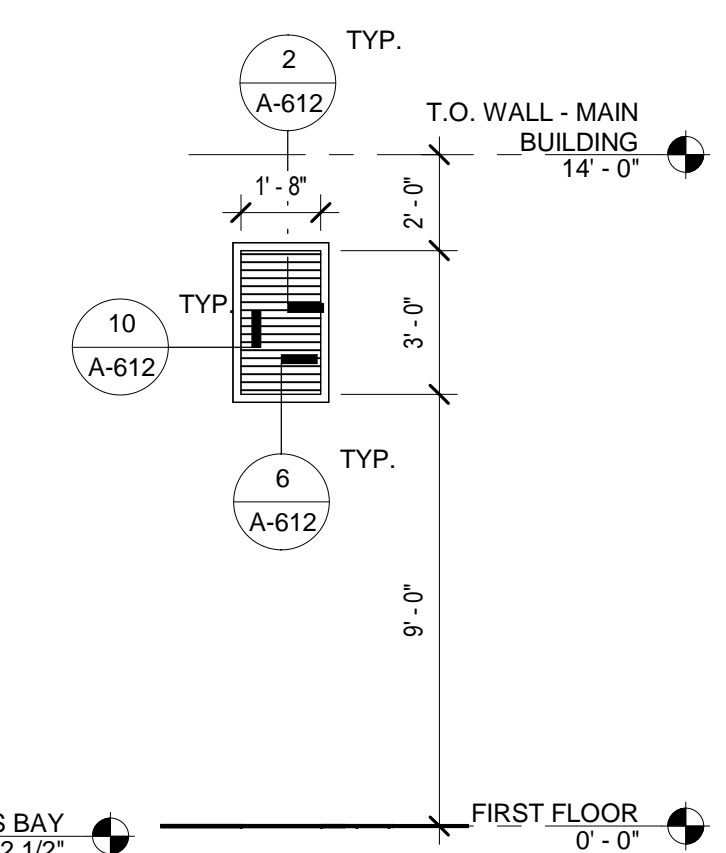
LV3
 1/4" = 1'-0"



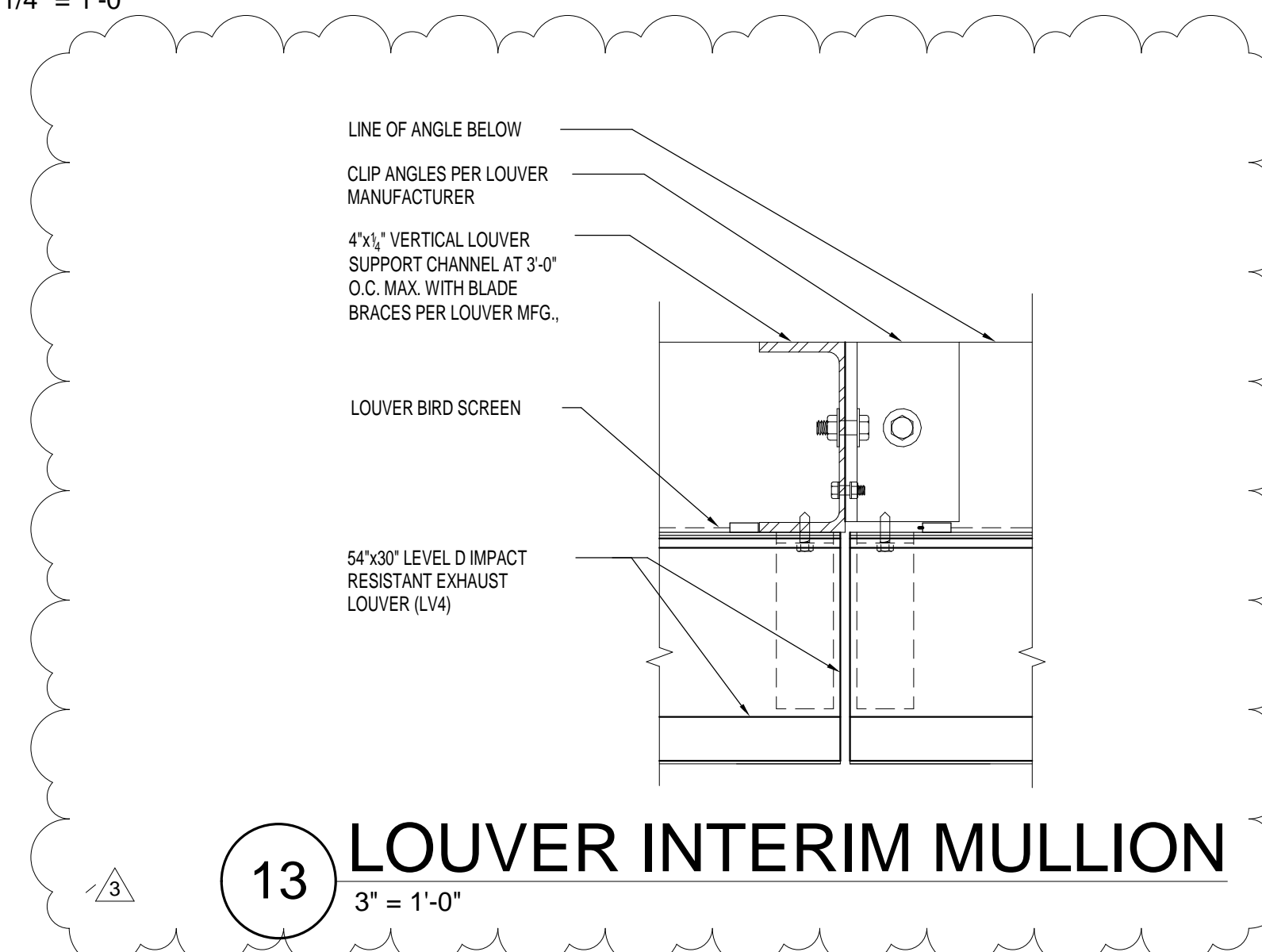
LV4
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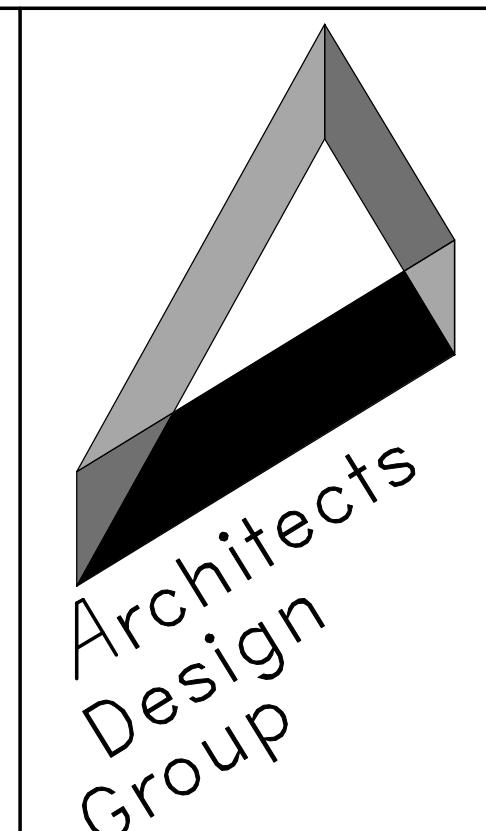
LV5
 1/4" = 1'-0"



LV6
 1/4" = 1'-0"



13 LOUVER INTERIM MULLION
 3" = 1'-0"



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**ORANGE COUNTY
 FIRE STATION 87**

**ORANGE COUNTY
 FIRE RESCUE**

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• revisions/addenda

Number	Description	Date Issued
1	Permit Responses	July 18, 2019
3	Addendum 3	Sept 13, 2019

• sheet title
**ELECTRICAL
 SYMBOL
 LEGEND**

• scale: 12" = 1'-0"
 • drawn: SFD
 • checked: JLM
 • approved: JLM
 • date: 06/12/19

• project no.
963
 • sheet number:
E-001

GENERAL NOTES:

- VOLTAGE DROP - FEEDERS AND BRANCH CIRCUITS SIZES ARE DESIGNED FOR A MAXIMUM COMBINED VOLTAGE DROP OF 5 PERCENT AT THE DESIGN LOAD PER F.B.C. ENERGY CONSERVATION C405.3
- DESIGNED IN ACCORDANCE WITH F.B.C. 6th EDITION (2017) AND NFPA 70 (2014 NEC)

PREMISE DISTRIBUTION SYSTEM

MOUNTING 3" ABOVE COUNTER OR BACK SPLASH
 X = MOUNTING (F) FLUSH, (S) SURFACE, (M) MODULAR FURNITURE ADAPTER (P) POLE, (R) RACEWAY, (D) DOUBLE GANG FLUSH, (PD) PEDESTAL
 N = # OF DATA JACKS

COMMUNICATIONS "INFORMATION OUTLET" MOUNTED, AT RECEPTACLE HEIGHT UNLESS OTHERWISE NOTED. MODULE AND FACEPLATE

SPECIAL NOTES:

- DATA JACKS:
 EACH RJ45 CAT6 JACK FOR DATA SHALL BE CONNECTED TO A DEDICATED UTP 4 PR CAT6 CABLE

WIRELESS ACCESS POINT, PROVIDE CAT 6 CABLE HOMERUN TO IDF AND TERMINATE WITH RJ45 JACK FLUSH CEILING MOUNTED, WITH 10' OF COILED CABLE ABOVE CEILING.

WAP

W F1 WALL TELEPHONE OUTLET FOR HOUSE PHONE, MOUNTED AT 52" ABOVE FINISHED FLOOR TO TOP.

WAP WALL WIRELESS ACCESS POINT WALL MOUNTED 10'-0" TO 12'-0" ABOVE FINISHED FLOOR PROVIDE CAT 6 CABLE HOMERUN TO IDF AND TERMINATE TO RJ45 JACK FLUSH ON WALL.

SX WALL DATA OUTLET, SURFACE MOUNTED AT 48" ABOVE FINISHED FLOOR TO TOP OF BACKBOX. X = # OF DATA JACKS

FLOOR BOX DATA OUTLET, DATA OUTLET INSTALLED IN FLOOR BOX WITH UTP HOMERUN TO COMM ROOM. X = # OF DATA JACKS

3/4" PLYWOOD BACKBOARD, FIRE RETARDANT.

IDF - 2 POST RACK

TELEVISION OUTLET, RG6 CABLE TO COMMUNICATIONS ROOM

FIRE ALARM SYSTEM

MANUAL FIRE ALARM PULL STATION

FIRE ALARM COMBINATION HORN/STROBE DEVICE (75 CANDELA MINIMUM, 110 CANDELA WHERE NOTED)

FIRE ALARM STROBE ONLY, 75 CANDELA MINIMUM UNLESS NOTED OTHERWISE
 135" HEAT DETECTOR

SMOKE DETECTOR

DUCT SMOKE DETECTOR - "R" = RETURN, "S" = SUPPLY. PROVIDE LED SUPERVISORY INDICATOR FOR BOTH DETECTORS IN AN ACCESSIBLE LOCATION AND CLEARLY LABELED.

CONTROL MODULE RELAY

WEATHERPROOF WATER FLOW SWITCH MONITOR MODULE CONNECTED TO FIRE SPRINKLER SYSTEM

WEATHERPROOF TAMPER SWITCH MONITOR MODULE CONNECTED TO FIRE SPRINKLER SYSTEM

KNOXBOX WITH TAMPER SWITCH MOUNTED 8'-0" TO 12'-0" ABOVE FINISHED GRADE.

FIRE ALARM CONTROL PANEL "FACP"

CEILING MOUNTED CO2 SENSOR

ALERT SYSTEM

COORDINATE ALL ROUGHIN OF ALERT SYSTEM WITH USDD INSTALLATION DRAWINGS. ALL SYSTEM COMPONENTS ARE TO BE INSTALLED BY AUTHORIZED INSTALLER ONLY.

CEILING-MOUNTED SPEAKER

WEATHER PROOF SPEAKER

CEILING-MOUNTED SPEAKER WITH LED

ROOM REMOTE

MESSAGE SIGN

G2 HDTV REMOTE

ALARM STROBE

PUSH BUTTON

ELECTRICAL SYMBOLS LEGEND

LIGHTING FIXTURES

- 1x4' FLUORESCENT FIXTURE
- 2x2' FLUORESCENT FIXTURE
- 2x4' FLUORESCENT FIXTURE
- 4' WALL MOUNT FLUORESCENT LUMINAIRE
- 4' WALL MOUNT FLUORESCENT LUMINAIRE, EMERGENCY
- 1x4' FLUORESCENT FIXTURE, BATTERY/EMERGENCY
- 2x2' FLUORESCENT FIXTURE, BATTERY/EMERGENCY
- 2x4' FLUORESCENT FIXTURE, BATTERY/EMERGENCY
- 4' FLUORESCENT STRIP FIXTURE
- 4' FLUORESCENT STRIP FIXTURE, BATTERY/EMERGENCY
- 4' FLUORESCENT STRIP FIXTURE, WALL MOUNTED
- 4' FLUORESCENT STRIP FIXTURE, WALL MOUNTED, BATTERY/EMERGENCY
- TRACK FIXTURE
- CEILING MOUNTED RECESSED, DOWN LIGHT
- CEILING MOUNTED RECESSED, EMERGENCY DOWN LIGHT
- CEILING MOUNTED RECESSED, WALL WASHER (ARROW INDICATES DIRECTION OF WASH)
- SURFACE MOUNTED LIGHTING FIXTURE
- WALL MOUNTED SCONCE FIXTURE, BATTERY/EMERGENCY
- FLOOD LIGHT FIXTURE
- EMERGENCY LIGHT FIXTURE
- SINGLE FACE EXIT LIGHT FIXTURE, ARROW INDICATES DIRECTION OF EGRESS
- DOUBLE FACE EXIT LIGHT FIXTURE, ARROW INDICATES DIRECTION OF EGRESS
- POLE MOUNTED SITE LIGHTING FIXTURE, RECTANGLES INDICATE NUMBER OF FIXTURES
- SINGLE POLE MOUNT LUMINAIRE, RECTANGLES INDICATE NUMBER OF FIXTURES
- POLE MOUNTED LUMINAIRE
- BOLLARD OR PENDANT LIGHT FIXTURE
- BOLLARD OR PENDANT LUMINAIRE, EMERGENCY

LIGHTING CONTROL DEVICES

- PHOTOCELL
- TIMECLOCK
- PIR-WALL MOUNT SENSOR, LOW TEMP, 24 VDC/AC, 20mA, WATTSTOPPER CB-100 OR EQUAL
- PIR-CEILING MOUNT SENSOR 24 VDC/VAC, 11mA, WATTSTOPPER CI-205 OR EQUAL
- DUAL ULTRASONIC/PIR-CEILING MOUNT SENSOR, 24 VDC/VAC, 35mA, WATTSTOPPER DT-305 OR EQUAL
- DUAL ULTRASONIC/PIR-WALL MOUNT SENSOR, 24 VDC/VAC, 40mA, WATTSTOPPER WT-2250 OR EQUAL
- ULTRASONIC-CEILING CORRIDOR MOTION SENSOR, 24 VDC/VAC, 800/1200W, WATTSTOPPER PW-100 OR EQUAL
- PIR-WALL SWITCH DECORATOR MOTION SENSOR, 120/277 VAC, 800/1200W, WATTSTOPPER DW-100 OR EQUAL
- DUAL ULTRASONIC/PIR-WALL SWITCH DECORATOR MOTION SENSOR, 120/277VAC, 800/1200W, WATTSTOPPER DW-100 OR EQUAL
- DUAL ULTRASONIC/PIR-DUAL RELAY WALL SWITCH DECORATOR MOTION SENSOR, 120/277VAC, 800/1200W, WATTSTOPPER DW-200 OR EQUAL
- DUAL ULTRASONIC/PIR-MULTI-WAY WALL SWITCH DECORATOR MOTION SENSOR, 120/277VAC, 800/1200W, WATTSTOPPER DW-103 OR EQUAL
- POWER PACK 120/277 VAC; 20 AMPS, 225mA SECONDARY, WATTSTOPPER BZ-150 OR EQUAL

*FOR LOW VOLTAGE OCCUPANCY SENSORS, PROVIDE POWER PACK(S) 120/277 VAC; 20 AMPS, 225mA SECONDARY AS NEEDED FOR ZONE/AREA CONTROL, WATTSTOPPER BZ-150 OR EQUAL.

POWER DEVICES

- SINGLE RECEPTACLE
- DUPEX RECEPTACLE
- DOUBLE DUPEX (QUAD) RECEPTACLE
- ABOVE COUNTER DUPEX RECEPTACLE
- DUPEX RECEPTACLE, HALF SWITCHED
- SPECIAL PURPOSE RECEPTACLE
- SINGLE 250V, NON-LOCKING TYPE RECEPTACLE
- BLACK DUPEX RECEPTACLE FOR COMPUTER WORKSTATION
- BLACK QUAD RECEPTACLE FOR COMPUTER WORKSTATION
- DUPEX RECEPTACLE FOR TV LOCATED AT 84" AFF, UNLESS NOTED OTHERWISE
- DUPEX RECEPTACLE FOR TV LOCATED AT 18" AFF, LOCATE IN COMMON BOX WITH CCTV
- CEILING MOUNTED RECEPTACLE
- RECESSED FLOOR RECEPTACLE
- DUPEX RECEPTACLE, GROUND FAULT
- DUPEX RECEPTACLE, GROUND FAULT, ABOVE COUNTER
- QUAD RECEPTACLE, GROUND FAULT
- DUPEX RECEPTACLE, GROUND FAULT WITH CAST ALUMINUM WEATHERPROOF "IN USE" COVER
- QUAD RECEPTACLE, GROUND FAULT WITH CAST ALUMINUM WEATHERPROOF "IN USE" COVER
- DUPEX RECEPTACLE, GROUND FAULT LOCATE WITHIN ELECTRIC WATER COOLER PER MANUFACTURER'S INSTRUCTIONS
- CLOCK
- POWER/DATA POLE
- POWER POLE
- DISCONNECT SWITCH
- MOTOR STARTER
- STARTER/DISCONNECT SWITCH
- JUNCTION BOX
- FLOOR MOUNTED JUNCTION BOX
- PULL BOX
- EQUIPMENT CONNECTION
- DOOR BELL PUSH BUTTON
- TRANSFORMER
- DOOR BELL
- SHUNT TRIP
- ELECTRIC STRIKE
- MOTOR
- GENERATOR
- LOCKBOX
- GROUND BUS BAR
- 5/8" X 30' GROUND ROD WITH TEST INSPECTION WELL
- SURGE PROTECTION DEVICE, SEE SPECIFICATIONS

MISCELLANEOUS SYMBOLS

DETAIL NUMBER

SCALE: DETAIL TITLE REFERENCE

SHEET NUMBER WHERE DETAIL IS REFERENCED

ADDITIONAL SHEET REFERENCES

DETAIL NUMBER

SHEET NUMBER TO WHERE DETAIL IS REFERENCED

MATCH LINE

ABBREVIATIONS

- A -AMPERES
- AE -AUDIO ENHANCEMENT
- AFC -ABOVE FINISHED CEILING
- AFF -ABOVE FINISHED FLOOR
- AFG -ABOVE FINISHED GRADE
- AIC -AMPERES INTERRUPTING CAPACITY
- AL -ALUMINUM
- AWG -AMERICAN WIRE GAUGE
- BFC -BELOW FINISHED CEILING
- BFG -BELOW FINISHED GRADE
- C -CONDUIT
- CAB -CABINET
- CKT -CIRCUIT
- CLG -CEILING
- CLL -CENTERLINE
- CT's -CURRENT TRANSFORMERS
- CU -COPPER
- DISC -DISCONNECT(ING)
- DWG -DRAWING(S)
- EA -EACH
- ECB -ENCLOSED CIRCUIT BREAKER
- EF -EXHAUST FAN
- EMT -ELECTRICAL METALLIC TUBING
- EQUIP -EQUIPMENT
- EUH -ELECTRIC UNIT HEATER
- EWC -ELECTRIC WATER COOLER
- EWL -ELECTRIC WATER HEATER
- EXH -EXHAUST
- EXIST -EXISTING
- EXP -EXPLOSION PROOF
- FA -FIRE ALARM
- FLA -FULL LOAD AMPERES
- FLUOR -FLUORESCENT
- GFCI -GROUND FAULT CIRCUIT INTERRUPTER
- GFP -GROUND FAULT PROTECTION
- GND -GROUND
- HGT -HEIGHT
- HID -HIGH INTENSITY DISCHARGE
- HPS -HIGH PRESSURE SODIUM
- HDA -HAND-OFF-AUTOMATIC
- HP -HORSEPOWER
- HVAC -HEATING, VENTILATING, & AIR CONDITIONING
- HV -HIGH VOLTAGE
- INC -INCANDESCENT
- JB -JUNCTION BOX
- kV -KILO-VOLTS
- kVA -KILO-VOLTS-AMPERES
- kVAR -KILO-VOLTS-AMPERES REACTIVE
- kW -KILO-WATTS
- kWh -KILO-WATT-HOURS
- LTG -LIGHTING
- m -METER
- mm -MILLIMETER
- MAX -MAXIMUM
- MCB -MAIN CIRCUIT BREAKER
- MCC -MOTOR CONTROL CENTER
- MCP -MOTOR CIRCUIT PROTECTOR
- MFR -MANUFACTURER
- MH -METAL HALIDE
- MIN -MINIMUM
- MISC -MISCELLANEOUS
- MMS -MANUAL MOTOR STARTER SWITCH
- MTR -MOTOR
- MTD -MOUNTED
- MTG -MOUNTING
- NAC -NOTIFICATION APPLIANCE CIRCUIT
- NEC -NATIONAL ELECTRICAL CODE
- NL -NIGHT LIGHT, UNSWITCHED
- PNL -PANEL
- PSI -PULL STATION INSIDE
- PVC -POLYVINYL CHLORIDE
- REC -RECEPTACLE
- RGS -RIGID GALVANIZED STEEL
- SPD -SURGE PROTECTION DEVICE
- TEL -TELEPHONE
- TYP -TYPICAL
- UNON -UNLESS OTHERWISE NOTED
- V -VOLTS
- VA -VOLT-AMPERES
- VFD -VARIABLE FREQUENCY DRIVE
- W -WATTS
- WP -WEATHER PROOF
- XFMR -TRANSFORMER

POWER DISTRIBUTION

- 120/208V PANELBOARD, RECESSED
- 120/208V PANELBOARD, SURFACE MOUNT
- 277/480V PANELBOARD, SURFACE MOUNT
- 277/480V PANELBOARD, RECESSED
- FEEDER OR BRANCH CIRCUIT CONCEALED IN WALL, CEILING OR FLOOR
- HOMERUN CONSISTING OF ONE SINGLE-PHASE, 1-POLE CIRCUIT: (2) 12 AWG + (1) 12 AWG GND IN 3/4" CONDUIT, UNLESS OTHERWISE NOTED. PANELBOARD AND CIRCUIT DESIGNATION ARE INDICATED.
- HOMERUN CONSISTING OF ONE SINGLE-PHASE, 2-POLE CIRCUIT: (2) 12 AWG + (1) 12 AWG GND IN 3/4" CONDUIT, UNLESS OTHERWISE NOTED. PANELBOARD AND CIRCUIT DESIGNATIONS ARE INDICATED.
- HOMERUN CONSISTING OF TWO SINGLE-PHASE CIRCUITS: (3) 12 AWG + (1) 12 AWG GND IN 3/4" CONDUIT, UNLESS OTHERWISE NOTED. PANELBOARD AND CIRCUIT DESIGNATION ARE INDICATED.
- HOMERUN CONSISTING OF THREE SINGLE-PHASE CIRCUITS: (4) 12 AWG + (1) 12 AWG GND IN 3/4" CONDUIT, UNLESS OTHERWISE NOTED. PANELBOARD AND CIRCUIT DESIGNATIONS ARE INDICATED.
- HOMERUN CONSISTING OF ONE THREE-PHASE CIRCUITS: (3) 12 AWG + (1) 12 AWG GND IN 3/4" CONDUIT, UNLESS OTHERWISE NOTED. PANELBOARD AND CIRCUIT DESIGNATIONS ARE INDICATED.

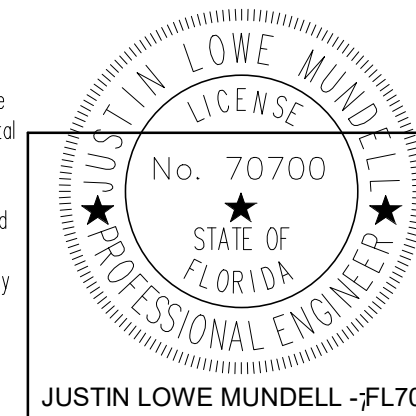
SWITCHES

- SWITCH
- SWITCH, 2 POLE
- SWITCH, 3-WAY
- SWITCH, 4-WAY
- SWITCH - LINE VOLTAGE TIMER, 120/277 VAC, WATTSTOPPER TS-400 OR EQUAL
- SWITCH - PILOT LIGHT
- SWITCH LEG a FOR CONTROL OF THE INBOARD LAMP IN NORMAL AND EMERGENCY POWERED LUMINAIRE
- SWITCH LEG b FOR CONTROL OF THE OUTBOARD LAMP IN NORMAL AND EMERGENCY POWERED LUMINAIRE
- SWITCH, 3-WAY, LEG a FOR CONTROL OF THE INBOARD LAMP IN NORMAL AND EMERGENCY POWERED LUMINAIRE
- SWITCH, 3-WAY, LEG b FOR CONTROL OF THE OUTBOARD LAMP IN NORMAL AND EMERGENCY POWERED LUMINAIRE
- SWITCH, KEYSWITCH, 3-WAY
- SWITCH, DIMMING 0-10V
- SWITCH, KEYSWITCH
- MOTOR RATED SWITCH
- SWITCH, EXPLOSION PROOF

LIGHTNING PROTECTION

- AIR TERMINAL (ALUMINUM CLASS 1 MIN)
- ROOFTOP MAIN CONDUCTOR, RUN EXPOSED ACROSS ROOF
- DOWN CONDUCTOR, RUN CONCEALED IN STRUCTURE - COPPER CLASS 1
- 3/4" X 20' COPPER-CLAD DRIVEN GROUND ROD AND TEST WELL
- BOLTED 3-WAY SPLICE
- BOLTED 4-WAY SPLICE

This item has been electronically signed and sealed by Justin Lowe Mundell, P.E., using a dated Digital Signature, per F.A.C. Rule 61015-23.004. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



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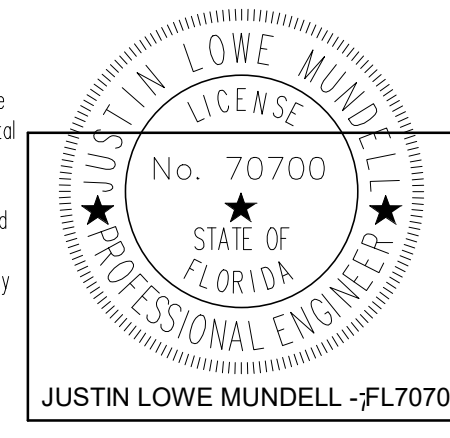
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 CA-00006208

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LIGHT FIXTURE SCHEDULE ORANGE COUNTY FIRE STATION							
TYPE	DESCRIPTION	DESIGN SELECTION	DESIGN SELECTION	DESIGN SELECTION	VOLTS	LAMPS	LUMENS
A1	LED RECESSED ARCHITECTURAL 2 FT X 4 FT, FLAT, CEILING TRIM AS REQUIRED.	COLUMBIA # LCAT24 40 VW G ED U	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 30W	3450
A1E	LED RECESSED ARCHITECTURAL 2 FT X 4 FT, FLAT, CEILING TRIM AS REQUIRED. WITH 1400 LUMEN EMERGENCY BATTERY	COLUMBIA # LCAT24 40 VW G ED U ELL14	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 30W	3450
A2	LED RECESSED ARCHITECTURAL 2 FT X 4 FT, FLAT, CEILING TRIM AS REQUIRED.	COLUMBIA # LCAT24 40 HL G ED U	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 47W	6200
A2E	LED RECESSED ARCHITECTURAL 2 FT X 4 FT, FLAT, CEILING TRIM AS REQUIRED. WITH 1400 LUMEN EMERGENCY BATTERY	COLUMBIA # LCAT24 40 HL G ED U ELL14	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 47W	6200
B1	LED RECESSED ARCHITECTURAL 2 FT X 2 FT, FLAT, CEILING TRIM AS REQUIRED.	COLUMBIA # LCAT22 40 ML G ED U	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 29W	3470
D1	RECESSED LED DOWNLIGHT, CLEAR ALZAK REFLECTOR, 6 INCH DIAMETER, UL LISTED FOR DAMP LOCATIONS AND THRU WIRING.	PRESCOLITE# LBP6 6LBP 15L 40K AZ	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 20.2W	1500
D1E	RECESSED LED DOWNLIGHT, CLEAR ALZAK REFLECTOR, 6 INCH DIAMETER, UL LISTED FOR DAMP LOCATIONS AND THRU WIRING. WITH EMERGENCY BATTERY	PRESCOLITE# LBP6 6LBP 15L 40K AZ UFO-LED25	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 20.2W	1500
D2	RECESSED LED SHOWER LIGHT, TRIM, PRISMATIC LENS, UL WET LOCATION.	PRESCOLITE # LBP6 6LBP 8L 40K WH	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 10.4W	800
G2	FOUR (4) FOOT WRAP AROUND LED, EXTRUDED ACRYLIC DIFFUSER, WHITE END PLATES.	COLUMBIA # LAW4 35 ML ED U	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 48W	4700
G2E	FOUR (4) FOOT WRAP AROUND LED, EXTRUDED ACRYLIC DIFFUSER, WHITE END PLATES. WITH 1400 LUMEN EMERGENCY BATTERY	COLUMBIA # LAW4 35 ML ED U ELL14	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 48W	4700
J	LED 4' GARAGE TYPE STRIP FIXTURE. STAINLESS STEEL LATCHES	COLUMBIA # LXEP4-40ML-DFA-EU-GLR-SSL	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 47W	4500
JE	LED 4' GARAGE TYPE STRIP FIXTURE. STAINLESS STEEL LATCHES, WITH 90 MINUTE BATTERY BACKUP.	COLUMBIA # LXEP4-40ML-DFA-EU-GLR-SSL-ELL14	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 47W	4500
SLA	SINGLE-HEAD LED MOUNTED 20' A.F.G. ON DIRECT BURIED COMPOSITE POLE. FIXTURE TO HAVE BACKLIGHT CONTROL. FIXTURE AND POLE FINISHES SELECTED BY ARCHITECT.	BEACON # VPS-60NB-136-4K T4 UNV BLC - COMPOSITE DIRECT BURIAL POLE	APPROVED EQUAL	APPROVED EQUAL	208	LED 136W	15274
SLD	SIGNAGE LIGHTING, LED IN CROSS SECTION, EXTRUDED ALUMINUM HOUSING, UL WET LOCATION, SPACE 4' ON CENTER	HUBBELL # ALF-12LU-5K-BZ	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 22W	1913
SLU	WALL MOUNTED LED UP/DOWN LIGHT, UL WET LISTED LOCATION, FINISH BY ARCHITECT	PERFORMANCE IN LIGHTING MIMIK 20 FLAT B # 071188	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 25W	1930
SLW	WALL MOUNTED LED SCONCE, FULL CUTOFF, DIE CAST ALUMINUM HOUSING, WIDE THROW, FLAT GLASS LENS, COLOR AS SELECTED BY ARCHITECT. UL WET LABEL. MOUNTING HEIGHT AS SHOWN ON ARCHITECTURAL ELEVATIONS. PROVIDE WITH BATTERY WHERE INDICATED.	HUBBELL # LNC2 12L U 4K 3 (SPECIFY FINISH) WITH 93044013 DIFFUSER	APPROVED EQUAL	APPROVED EQUAL	120	LED 28W	2662
SLZ	GRADE MOUNTED FLOOD LIGHT, CAST ALUMINUM HOUSING, DARK BRONZE, THREADED KNUCKLE MOUNT WITH ARCHITECTURAL J-BOX, TEMPERED GLASS LENS, MEDIUM SYMMETRIC DIST.	SPAULDING # ARF2 K 20L 4K 070 M U FML-VISOR-DB	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 50W	4675
UC	42" UNDER CABINET LED, TRANSLUCENT ACRYLIC LENS, STEEL HOUSING, WHITE FINISH, INTEGRAL HIGH/LOW SWITCH	LUMAX # LEDUC 42 WH	APPROVED EQUAL	APPROVED EQUAL	UNV	LED 15W	1080
WS	OPAL GLASS WALL SCONCE (ADA COMPLAINT) SEE ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHT	SUNPARK # MDF030D-62-3000K	APPROVED EQUAL	APPROVED EQUAL	120	LED 16W	1150
X1	DIE-CAST ALUMINUM LED EXIT SIGN, RED LETTERS, BLACK BODY, BATTERY BACK UP, NUMBER OF FACES AND DIRECTIONAL ARROWS AS SHOWN ON PLANS.	COMPASS CCESRE OR CCEDE	APPROVED EQUAL	APPROVED EQUAL	UNV	LED	
X2	PHOTOLUMINESCENT EXIT SIGN, RED BACKGROUND	MULE # EGX1 10B R	APPROVED EQUAL	APPROVED EQUAL	UNV	LED	
EM	TWIN HEAD, SELF CONTAINED EMERGENCY BATTERY LIGHTING UNIT WITH CHARGER AND TEST SWITCH. WALL MOUNT AT 7'-6" AFF TO TOP.	COMPASS # CU2	APPROVED EQUAL	APPROVED EQUAL	120	FURNISHED	

- LIGHTING FIXTURE SCHEDULE GENERAL NOTES:
- CONTRACTOR SHALL CAREFULLY COORDINATE THE LIGHTING FIXTURE TRIM TYPES WITH THE TYPE OF CEILING WHERE THE LIGHTING FIXTURES ARE TO BE INSTALLED. MODIFY FIXTURE CATALOG NUMBER AS REQUIRED TO COORDINATE FIXTURE WITH CEILING.
 - CONTRACTOR, AT HIS OPTION, MAY USE A U.L. LISTED FLEXIBLE WIRING SYSTEM FOR LIGHTING FIXTURE BRANCH CIRCUITRY ABOVE ACCESSIBLE LAY-IN CEILINGS. ALL HOMERUNS, CONNECTIONS TO LIGHT SWITCHES, AND BRANCH CIRCUITRY FOR ALL OTHER CEILING CONDITIONS SHALL BE IN A CONVENTIONAL RACEWAY SYSTEM PER SPECIFICATIONS.
 - WHEN FIXTURE MODEL NUMBER DIFFERS FROM FIXTURE DESCRIPTION, CONTRACTOR IS TO SUBMIT RFI REQUESTING CLARIFICATION PRIOR TO BID. PRIOR TO SHOP DRAWING SUBMITTAL AND PRIOR TO ORDERING OF FIXTURE. WHERE CONTRACTOR DOES NOT REQUEST CLARIFICATION PRIOR TO BID, CONTRACTOR SHALL PROVIDE THE MOST EXPENSIVE OPTION BETWEEN A FIXTURE THAT MATCHES THE DESCRIPTION AND FIXTURE THAT MATCHES THE MODEL N

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FIRE STATION 87**

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• revisions/addenda		
Number	Description	Date Issued
3	Addendum 3	Sept 13, 2019

• sheet title
**LIGHT FIXTURE
SCHEDULE**

- scale: 12" = 1'-0"
- drawn: SFD
- checked: JLM
- approved: JLM
- date: 06/12/19

• project no.
963

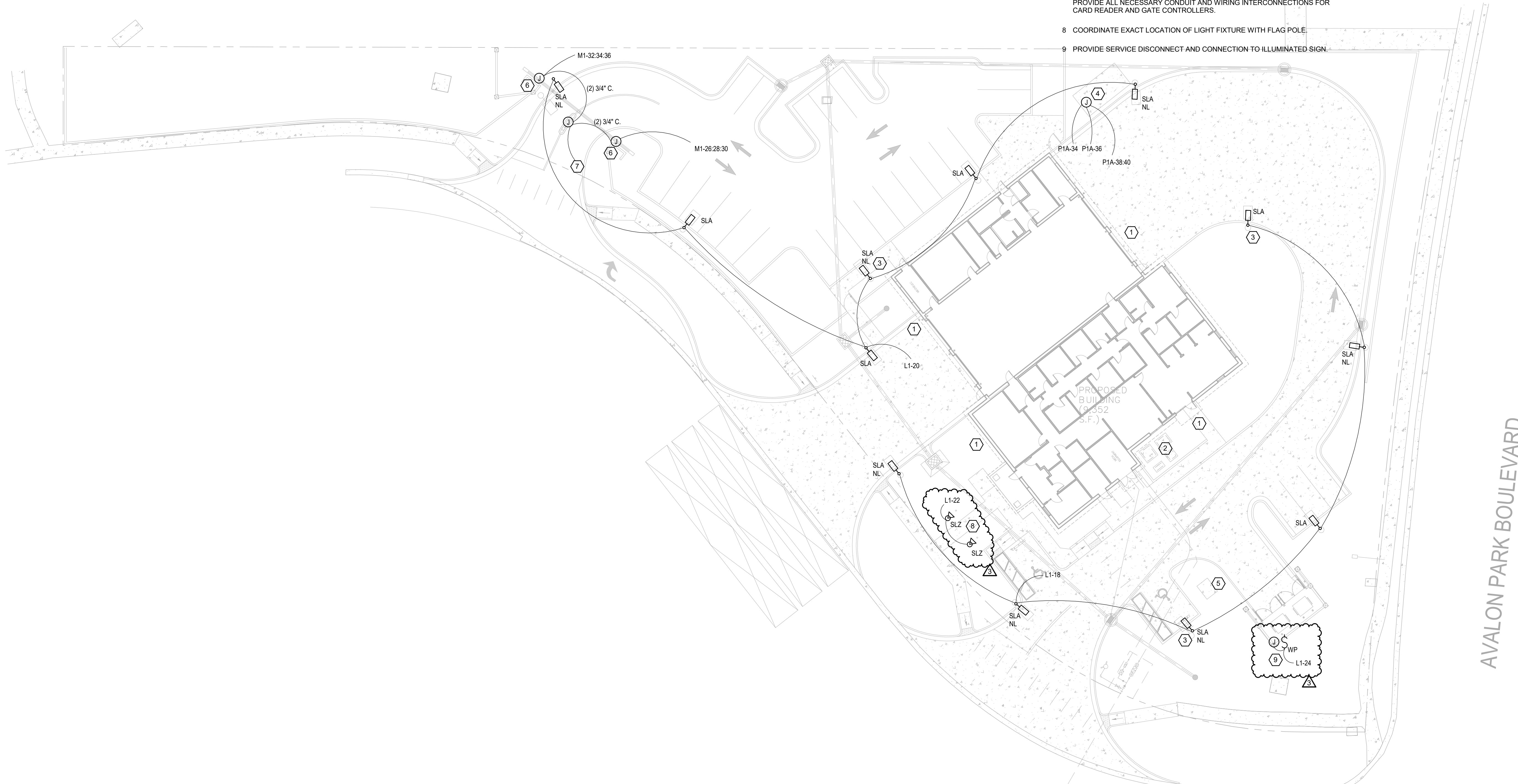
• sheet number:
E-002

GENERAL NOTES:

- REFER TO SYMBOL LEGEND AND GENERAL NOTES ON SHEET E-001 AND FIXTURE SCHEDULE ON SHEET E-002.
- REFER TO BOOK SPECIFICATIONS.
- REFER TO ARCHITECTURAL INTERIOR ELEVATIONS TO COORDINATE EXACT PLACEMENT OF ALL DEVICES, EQUIPMENT, FIXTURES, SWITCHES, AND OUTLETS.
- CONNECT ALL EMERGENCY BALLAST, EMERGENCY BATTERY UNITS AND EXITS AHEAD OF ALL SWITCHING TO LOCAL LIGHTING CIRCUIT.
- ALL MOTION SENSOR DEVICES SHALL BE CONNECTED AHEAD OF ALL LOCAL SWITCHES.
- MOTION SENSOR LOCATIONS ARE SHOWN FOR GENERAL INFORMATION. LOCATE IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. LOCATE MOTION SENSORS A MINIMUM OF 4' AWAY FROM ANY A/C DIFFUSER.
- ALL EXIT LIGHT FIXTURES ARE TYPE X1 UNLESS OTHERWISE NOTED.

PLAN KEY NOTES:

- SEE SHEET E-201 FOR LIGHT FIXTURES TO BE INSTALLED ON THE EXTERIOR OF THE BUILDING.
- SEE SHEET E-202 FOR MECHANICAL EQUIPMENT CONNECTIONS.
- ROUTE EXTERIOR LIGHTING HOMERUN VIA LIGHTING CONTACTOR. CONNECT ALL "NL" LABELED FIXTURES TO "PHOTOCELL ONLY" CONTACTOR CONTROL AND ALL OTHERS TO "PHOTOCELL - TIMECLOCK" CONTACTOR. SEE DETAILS ON SHEET E-803.
- EMERGENCY GENERATOR LOCATION. PROVIDE CONNECTIONS FOR TRANSFER SWITCH, START WIRING, BLOCK HEATER, BATTERY CHARGER, AND REMOTE ANNUNCIATOR. SEE DETAIL 5 ON SHEET E-802.
- UTILITY TRANSFORMER LOCATION. COORDINATE WITH DUKE ENERGY FOR ALL REQUIREMENTS INCLUDING PROVIDING CONCRETE PAD AND METER PEDISTAL. PROVIDE UNDERGROUND MAIN SERVICE FEEDER. SEE ONE LINE DIAGRAM ON SHEET E-501. COORDINATE WITH DUKE ENERGY FOR ALL INSTALLATION REQUIREMENTS.
- PROVIDE SERVICE DISCONNECT AND CONNECTION TO GATE OPERATOR.
- PROVIDE 1" HOME RUN CONDUIT FOR GATE CONTROLS TO COMMUNICATIONS ROOM. COORDINATE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PROVIDE ALL NECESSARY CONDUIT AND WIRING INTERCONNECTIONS FOR CARD READER AND GATE CONTROLLERS.
- COORDINATE EXACT LOCATION OF LIGHT FIXTURE WITH FLAG POLE.
- PROVIDE SERVICE DISCONNECT AND CONNECTION TO ILLUMINATED SIGN.



ELECTRICAL SITE PLAN

1
E-101 1" = 20'-0"

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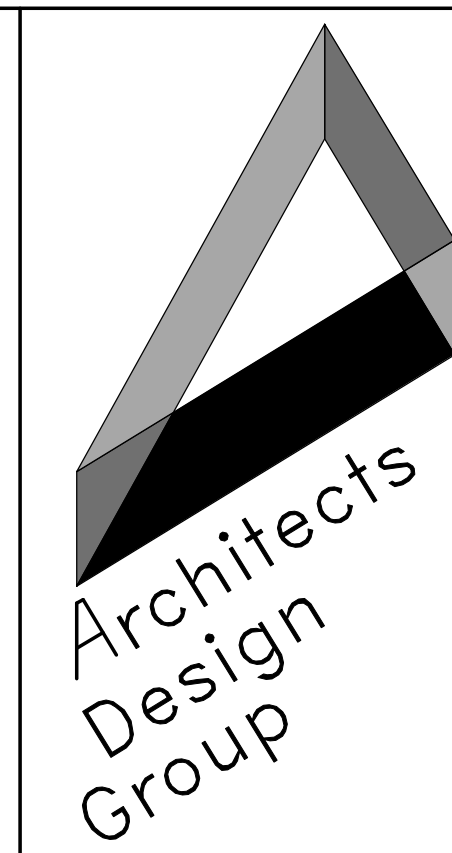
Number	Description	Date Issued
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• sheet title
Electrical Site Plan

- scale: 1" = 20'-0"
- drawn: Author
- checked: Checker
- approved: Approver
- date: 06/12/19

• project no.
963

• sheet number:
E-101



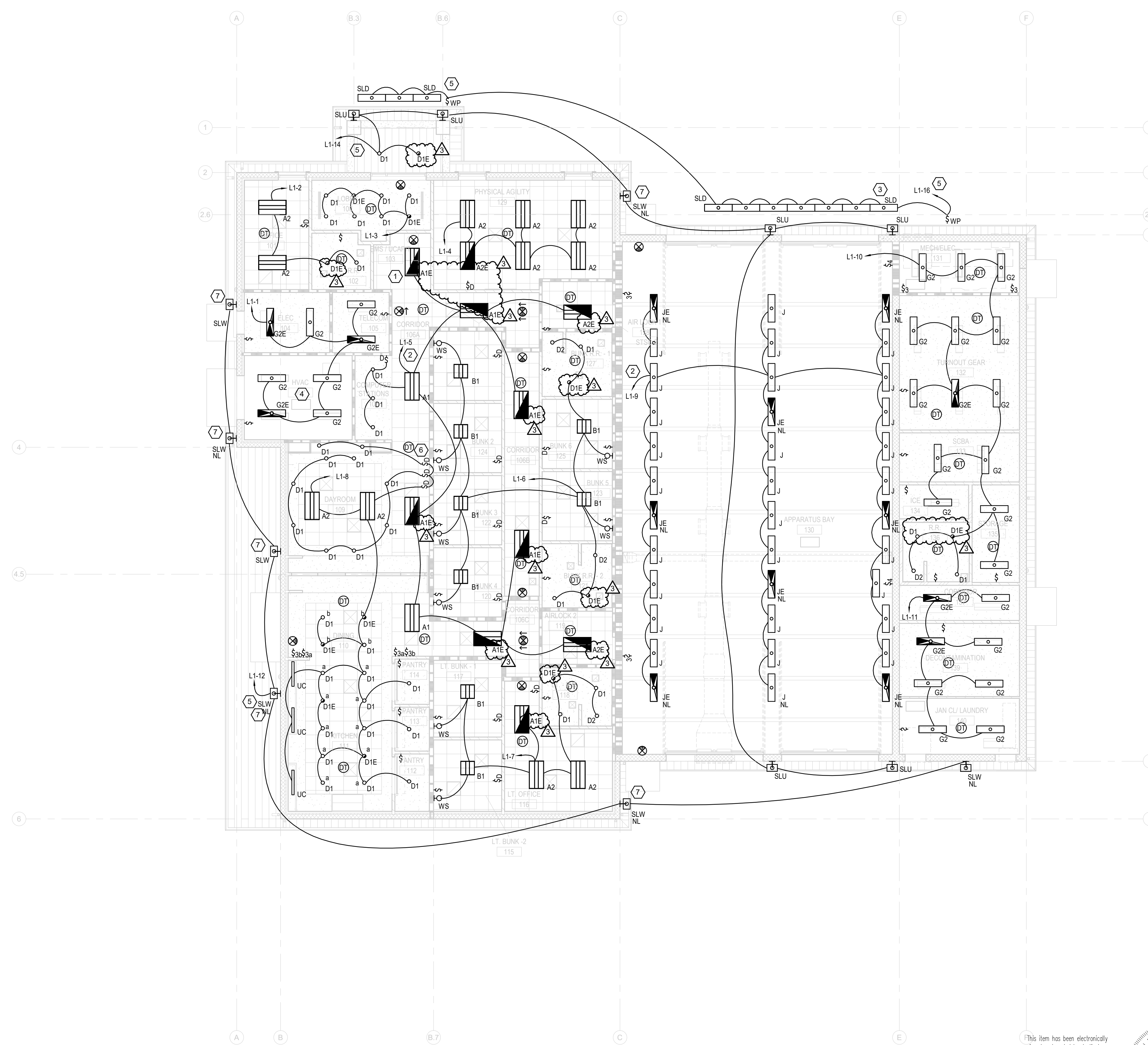
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GENERAL NOTES:

- a. REFER TO SYMBOL LEGEND AND GENERAL NOTES ON SHEET E-001 AND FIXTURE SCHEDULE ON SHEET E-002.
- b. REFER TO BOOK SPECIFICATIONS.
- c. REFER TO ARCHITECTURAL INTERIOR ELEVATIONS TO COORDINATE EXACT PLACEMENT OF ALL DEVICES, EQUIPMENT, FIXTURES, SWITCHES, AND OUTLETS.
- d. CONNECT ALL EMERGENCY BALLAST, EMERGENCY BATTERY UNITS AND EXITS AHEAD OF ALL SWITCHING TO LOCAL LIGHTING CIRCUIT.
- e. ALL MOTION SENSOR DEVICES SHALL BE CONNECTED AHEAD OF ALL LOCAL SWITCHES.
- f. MOTION SENSOR LOCATIONS ARE SHOWN FOR GENERAL INFORMATION. LOCATE IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. LOCATE MOTION SENSORS A MINIMUM OF 4' AWAY FROM ANY A/C DIFFUSER.
- g. ALL EXIT LIGHT FIXTURES ARE TYPE X1 UNLESS OTHERWISE NOTED.

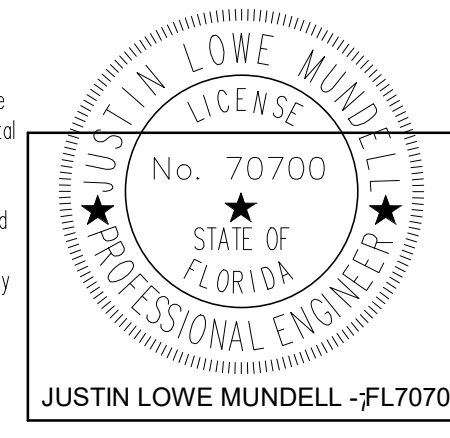
PLAN KEY NOTES:

- 1. PROVIDE CONSTANT (UNCONTROLLED) PART OF LIGHTING CIRCUIT TO BATTERY UNITS.
- 2. CONNECT ALL APPERATUS BAY AND CORRIDOR LIGHT FIXTURES VIA ALERT SYSTEM CONTACTOR. ALL FIXTURES TO BE ENERGIZED ON ALERT SIGNAL REGARDLESS OF SWITCH OR OCCUPANCY CONTROL. SEE DETAIL.
- 3. PROVIDE SERVICE DISCONNECT FOR SIGN LIGHT FIXTURE. COORDINATE EXACT LOCATION AND ELEVATION OF FIXTURE TO ILLUMINATE WALL SIGN.
- 4. COORDINATE FIXTURE LOCATIONS WITH EQUIPMENT AND ASSOCIATED DUCTS AND PIPES. FIXTURES ARE TO BE SUSPENDED BELOW ALL DUCTWORK AND PIPES, BUT NO LOWER THAN 7' 6" AFF TO BOTTOM OF FIXTURES.
- 5. CONNECT ALL EXTERIOR LIGHTING CIRCUITS TO EXTERIOR LIGHTING CONTACTORS. ALL FIXTURES DESIGNATED AS NIGHT LIGHTS, 'NL', ARE TO BE ROUTED TO PHOTOCELL ONLY. ALL OTHERS TO 'PHOTOCELL-TIMELOCK'. SEE DETAIL.
- 6. PROVIDE SWITCHES IN COMMON JUNCTION BOX WITH SINGLE SWITCHBANK COVER.
- 7. COORDINATE FIXTURE MOUNTING PRIOR TO ROUGH-IN TO ENSURE FIXTURE IS BELOW CANOPY.



1 LIGHTING PLAN
 E-201 1/8" = 1'-0"

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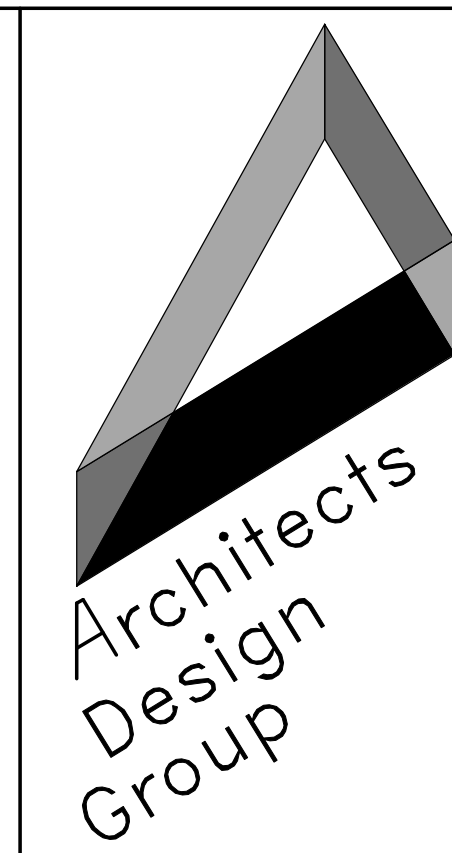
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Number	Description	Date Issued
3	Addendum 3	Sept 13, 2019

• sheet title
LIGHTING PLAN

• scale: 1/8" = 1'-0"
 • drawn: SFD
 • checked: JLM
 • approved: JLM
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• project no.
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 • sheet number:
E-201



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Number	Description	Date Issued
1	Permit Responses	July 18, 2019
3	Addendum 3	Sept 13, 2019

• sheet title
POWER PLAN

- scale: As indicated
- drawn: SFD
- checked: JLM
- approved: JLM
- date: 06/12/19

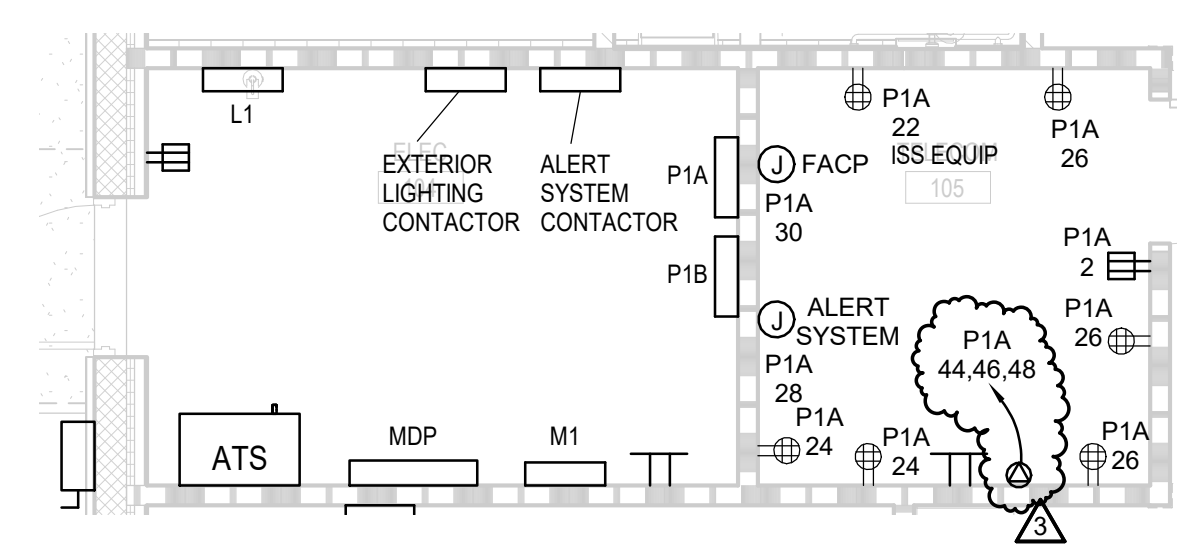
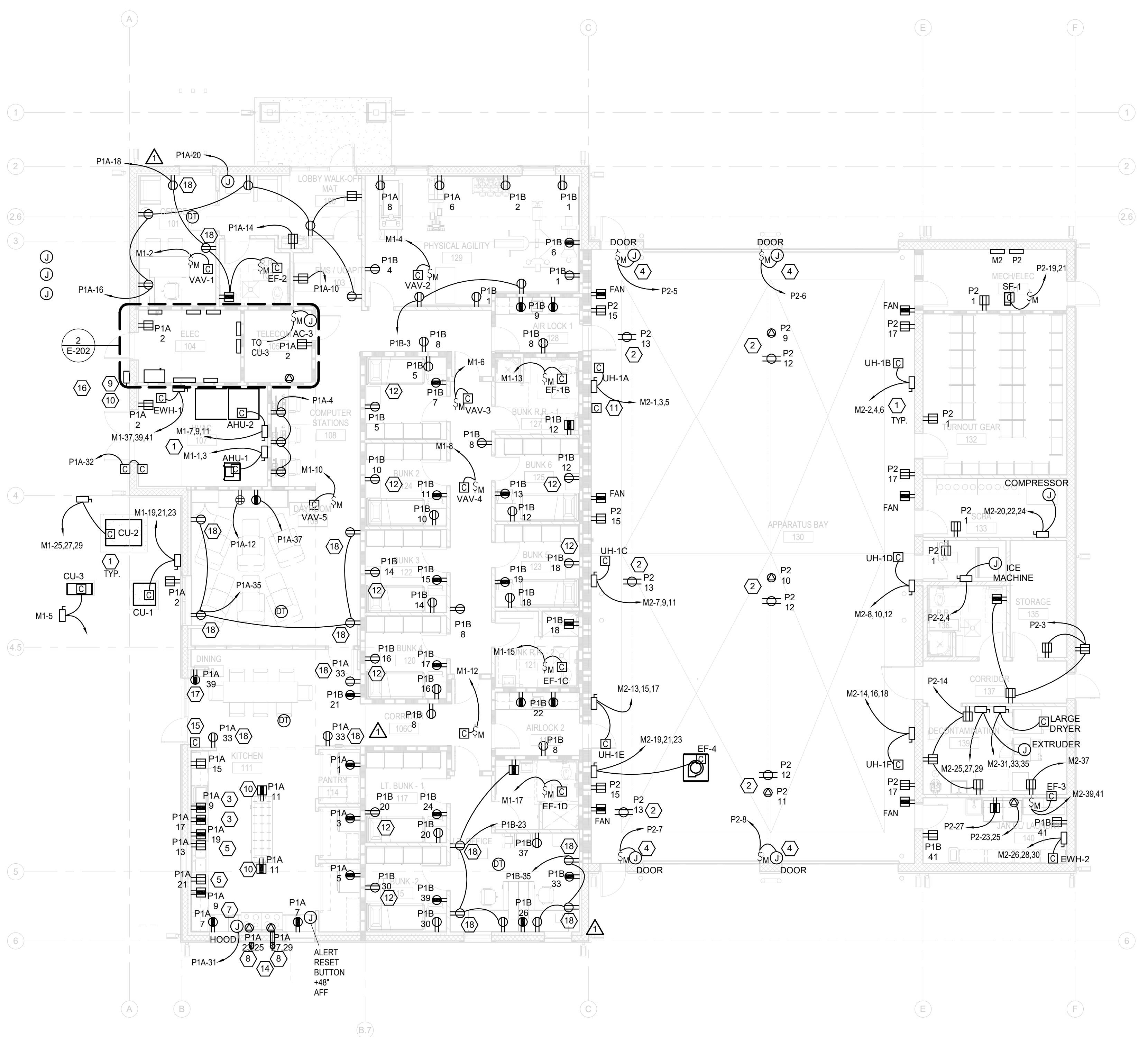
• project no.
963
 • sheet number:
E-202

GENERAL NOTES:

- REFER TO SYMBOL LEGEND ON SHEET E.001.
- REFER TO BOOK SPECIFICATIONS.
- REFER TO ARCHITECTURAL INTERIOR ELEVATIONS TO COORDINATE EXACT PLACEMENT OF ALL DEVICES, EQUIPMENT, FIXTURES, SWITCHES AND OUTLETS.
- REFER TO EQUIPMENT FEEDER SCHEDULES FOR DISCONNECT, CONDUIT AND WIRE SIZES.
- ALL FEEDERS ARE TO HAVE LESS THAN 2% TOTAL VOLTAGE DROP AND ALL BRANCH CIRCUITS SHALL HAVE LESS THAN 3% VOLTAGE DROP.
- IF CIRCUITS ARE COMBINED AND RUN AS MULTI-WIRE BRANCH CIRCUITS SHARING A COMMON NEUTRAL, THEN EACH UNGROUNDED CONDUCTOR MUST BE DISCONNECTED SIMULTANEOUSLY BY A COMMON TRIP CIRCUIT BREAKER. CONTRACTOR MAY, AT THEIR OPTION, PROVIDE EITHER COMMON TRIP MULTI-POLE CIRCUIT BREAKERS OR UTILIZE MANUFACTURERS LISTED HANDLE TIES IN ORDER TO PROVIDE THE SIMULTANEOUS TRIP. THESE DEVICES ARE NOT SHOWN IN THE PANEL SCHEDULES AND MUST BE PROVIDED BY THIS SCOPE OF WORK, NO MORE THAN 3 CURRENT CARRYING CONDUCTORS MAY BE COMBINED IN A SINGLE RACEWAY WITHOUT PRIOR APPROVAL BY THE ENGINEER OF RECORD (EOR).

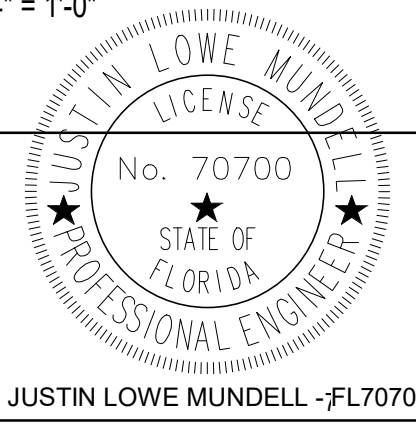
PLAN KEY NOTES:

- PROVIDE SERVICE DISCONNECT AND CONNECTION TO EQUIPMENT. SEE EQUIPMENT FEEDER SCHEDULE FOR CONDUIT, WIRE, AND DISCONNECT SIZES.
- PROVIDE 'SO' DROP CORD WITH BREAK-AWAY RECEPTACLE WITH #10 AWG CONDUCTORS FOR ENTIRE CIRCUIT. PROVIDE STRAIGHT BLADE RECEPTACLES.
- RECEPTACLE FOR MICROWAVE OVEN, COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH ARCHITECT.
- PROVIDE SERVICE DISCONNECT AND CONNECTION TO DOOR MOTOR. COORDINATE ALL CONTROL REQUIREMENTS WITH INSTALLER AND PROVIDE ALL NECESSARY CONDUIT AND WIRING FOR CONTROL STATIONS AND CONNECTION TO ALERT SYSTEM.
- RECEPTACLE FOR DISHWASHER, COORDINATE EXACT LOCATION WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- RECEPTACLE FOR DISPOSAL, PROVIDE ABOVE COUNTER SWITCH AND WIRING. COORDINATE EXACT LOCATIONS OF RECEPTACLE AND SWITCH WITH ARCHITECTURAL PLANS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- PROVIDE POWER CONNECTION TO RANGE HOOD AND PROVIDE ANY NECESSARY INTERCONNECTION WIRING TO HOOD SWITCH.
- RECEPTACLE FOR RANGE/OVEN, MATCH RECEPTACLE TYPE TO CORD PROVIDED PLUG. SEE EQUIPMENT FEEDER SCHEDULE FOR CONDUIT AND WIRE SIZES.
- MAIN SERVICE DISCONNECT, PROVIDE ENGRAVED SIGNAGE "MAIN SERVICE DISCONNECT".
- GENERATOR FUEL SHUT OFF, PROVIDE BREAK-GLASS TYPE SHUNT TRIP BUTTON PER NFPA 110.
- PROVIDE "MUSHROOM HEAD" TYPE BUTTON FOR TRAFFIC SIGNAL CONTROL.
- ALL BERTHING RECEPTACLES AND RECEPTACLES ADJACENT TO DATA OUTLETS TO INCLUDE USB CHARGING PORT. PROVIDE HUBBELL #USB20X OR APPROVED EQUAL.
- COORDINATE WITH ALERT SYSTEM INSTALLATION AND PROVIDE ALL CONDUITS WITH PULLSTRINGS AND JUNCTION BOXES REQUIRED FOR SYSTEM.
- SEE ALERT SYSTEM DETAIL AND ROUTE ALL POWER FOR COOKING EQUIPMENT THROUGH CONTACTOR. PROVIDE LOCAL RESET BUTTON FOR OVERRIDE OF ALERT SYSTEM.
- GENERATOR ANNUNCIATOR PANEL, COORDINATE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR QUANTITY AND SIZE OF WIRES.
- PROVIDE ALL REQUIRED CONNECTIONS TO GENERATOR, INCLUDING START WIRING, FUEL SHUT OFF, CONTROL POWER, BLOCK HEATER, ANNUNCIATOR WIRING. PROVIDE ONE 1" SPARE CONDUIT FROM GENERATOR TO ELECTRICAL ROOM. SEE ONE LINE DIAGRAM FOR SERVICE CONDUIT AND WIRE SIZES.
- COORDINATE LOCATION AND ELEVATION OF RECEPTACLE FOR THE KRONOS TIME CLOCK WITH OWNER PRIOR TO INSTALLATION.
- RECEPTACLE TO BE CONTROLLED BY OCCUPANCY SENSOR, SEE DETAIL 2 ON SHEET E-802.



ENLARGED MAIN ELECT ROOM
 1/4" = 1'-0"

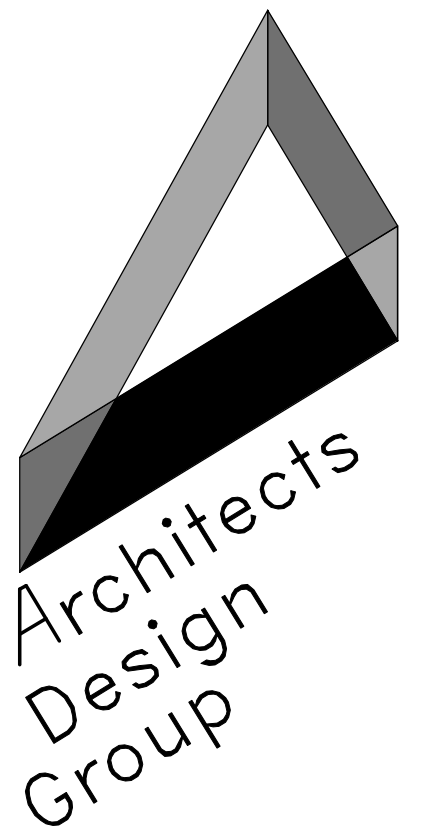
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POWER PLAN
 1/8" = 1'-0"

1
 E-202



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• revisions/addenda

Number	Description	Date Issued
3	Addendum 3	Sept 13, 2019

• sheet title
**ELECTRICAL
 ONE LINE
 DIAGRAM**

- scale: 12" = 1'-0"
- drawn: SFD
- checked: JLM
- approved: JLM
- date: 06/12/19

• project no.

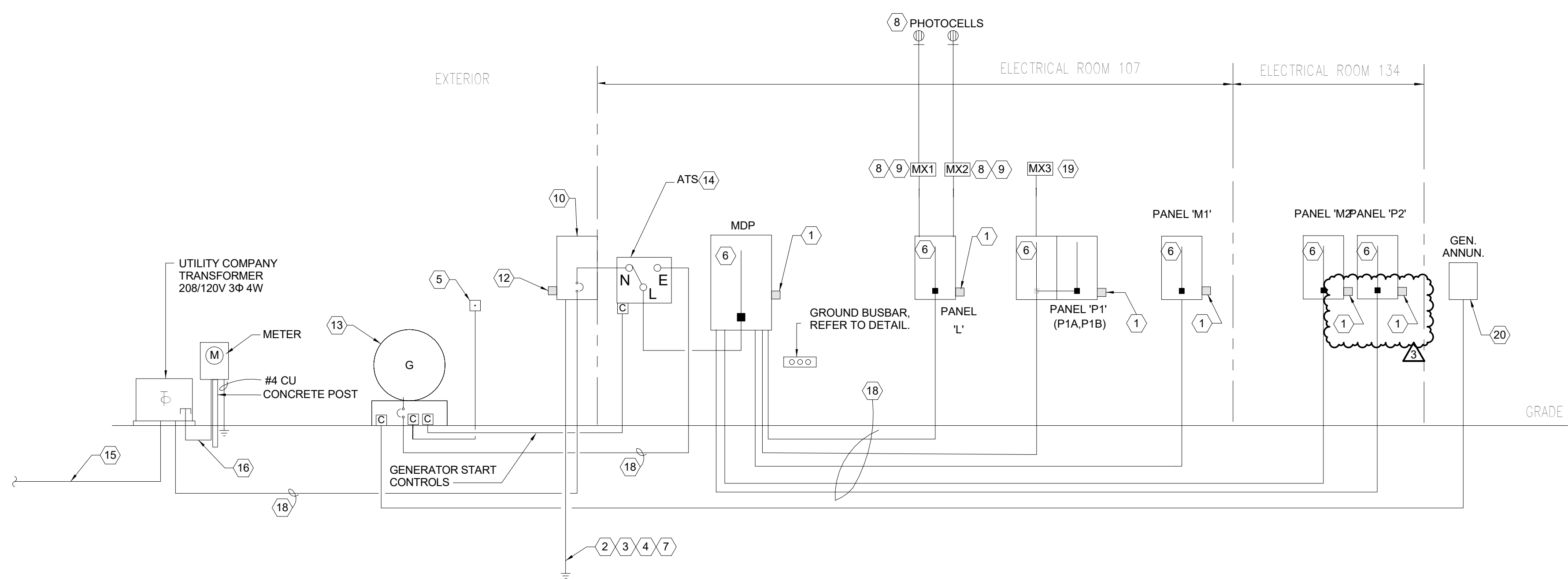
963

• sheet number:

E-501

PLAN KEY NOTES

- 80 KA SURGE SUPPRESSION (SPD). SEE SPECIFICATIONS.
- #3/0 COPPER GROUND WIRE TO BUILDING STEEL.
- #3/0 COPPER GROUND WIRE TO COLD WATER PIPE.
- #3/0 COPPER GROUND WIRE TO 3 (THREE) 30"x5/8" COPPER WELD DRIVEN GROUND ROD. PROVIDE GROUND TEST/INSPECTION WELLS.
- SHUNT TRIP BUTTON FOR EMERGENCY POWER SERVICE SHUTOFF. LABEL "GENERATOR POWER SHUTOFF". IF GENERATOR FUEL SHUT-OFF AND SHUNT TRIP ARE INTERLOCKED, THE CONTRACTOR MAY PROVIDE (1) SHUNT TRIP BUTTON. MOUNT ADJACENT TO MAIN BUILDING DISCONNECT.
- ELECTRICAL DISTRIBUTION PANEL. SEE PANEL SCHEDULE FOR DETAILS.
- SEE "GROUNDING SYSTEM" DETAIL.
- REFER TO EXTERIOR LIGHTING CONTROL DETAIL.
- LIGHTING CONTACTOR "MX1" TO BE PHOTOCELL ONLY CONTROLLED. "MX2" TO BE PHOTOCELL/BMS CONTROLLED.
- SERVICE ENTRANCE RATED MAIN CIRCUIT BREAKER: 208V, 3Ø, 800 AMPS, 42,000 A.I.C., NEMA 3R. PROVIDE PHENOLIC LABEL MAIN BUILDING DISCONNECT WHITE LETTERING RED BACKGROUND.
- EMERGENCY SHUT OFF SWITCH FOR FUEL ISLAND. SWITCH SHALL BE RED MUSHROOM TYPE, WEATHER PROOF. SEE SITE PLAN. PROVIDE 1" CONDUIT TO FUTURE FUEL ISLAND LOCATION. LABEL AS FUTURE.
- 75KA SURGE SUPPRESSION (SPD). SEE SPECIFICATIONS. CONNECT TO LOAD SIDE. PROVIDE FUSE BLOCK AND FUSES IN APPROPRIATE ENCLOSURE.
- DIESEL GENERATOR SET: 120/208V, 3 PHASE, 4 WIRE, 180 KW WITH 600 A. SHUNT TRIP OPERATED MAIN CIRCUIT BREAKER, 80 HOUR CAPACITY SKID MOUNTED FUEL TANK, SEE SPECIFICATIONS.
- AUTOMATIC TRANSFER SWITCH: 120/208V, 3 PHASE, 3 POLE, 800 AMP TRANSFER SWITCH. SEE SPECIFICATIONS.
- UTILITY TRANSFORMER PRIMARY. COORDINATE WITH ELECTRICAL UTILITY PROVIDER FOR ALL INSTALLATION AND CONNECTION REQUIREMENTS.
- U.G. SECONDARY. COORDINATE EXACT LOCATION OF STUB UP AND HEIGHT OF STUB UP WITH POWER COMPANY. PROVIDE SLACK SECONDARY CONDUCTORS PER POWER COMPANY REQUIREMENTS.
- 120/208V, 3Ø, 4 POLE, 45 AMP CONTACTOR. CONTACTOR SHALL BE NORMALLY CLOSED, SHALL OPEN ONLY WHEN EXTERIOR EMERGENCY SWITCH IS PUSHED. COIL VOLTAGE SHALL BE 120V. CONTACTOR SHALL ONLY BE RESET MANUALLY (PROVIDE RESET SWITCH ADJACENT TO CONTACTOR).
- REFER TO PANEL FEEDER SCHEDULE.
- RANGE SHUT-OFF CONTACTOR "MX3". SEE POWER FLOOR PLAN AND DETAIL.
- GENERATOR ANNUNCIATOR PANEL.



ELECTRICAL ONE LINE DIAGRAM
 NTS

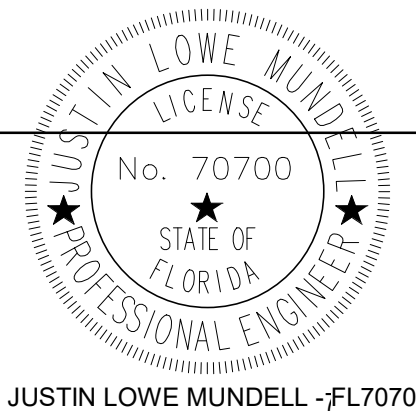
EQUIPMENT FEEDER SCHEDULE:

EQUIPMENT DESCRIPTION	VOLTS	PH	NEUT Y/N	MOTOR (LARGEST)		ADDITIONAL MOTORS		HEAT STRIPS		MISC AMPS	TOTAL AMPS	PNL C.B. SIZE	DISCONNECT SIZE	STARTER NEMA TYPE	WIRE PER WIRE	NEUT WIRE	GND WIRE	# OF RUNS	CONDUIT SIZE	APPROX. DIST. FT	VOLT DROP %	NOTES	
				H.P.	FLA	H.P.	FLA	KW	AMPS														
AHU-1	208	1	Y	0.33	4.00			2.9	13.9		17.9	25	30	NF	1	#10	#10	#10	1	3/4"	50	1.04%	
AHU-2	208	3	Y	5.00	16.70						16.7	25	30	NF	1	#10	#10	#10	1	3/4"	50	0.83%	
CU-1	208	3	Y	2.00	7.50						7.5	15	30	NF	3R	#12	#12	#12	1	3/4"	75	0.94%	
CU-2	208	3	Y	5.00	16.70	5.00	16.70				33.4	45	60	NF	3R	#6	#6	#10	1	1-1/4"	75	1.02%	
AC-3/CU-3	120	1	Y	0.50	9.80	0.10	1.60				11.4	15	30	NF	3R	#10	#10	#10	1	3/4"	100	2.28%	
VAV-1	120	1	Y					2.0	16.7		16.7	25	MMS	1	#10	#10	#10	1	3/4"	75	2.50%		
VAV-2	120	1	Y					1.0	8.3		8.3	15	MMS	1	#12	#12	#12	1	3/4"	75	2.08%		
VAV-3	120	1	Y					1.0	8.3		8.3	15	MMS	1	#12	#12	#12	1	3/4"	50	1.39%		
VAV-4	120	1	Y					2.0	16.7		16.7	25	MMS	1	#10	#10	#10	1	3/4"	30	1.00%		
VAV-5	120	1	Y					0.5	4.2		4.2	15	MMS	1	#12	#12	#12	1	3/4"	75	1.04%		
VAV-6	120	1	Y					1.0	8.3		8.3	15	MMS	1	#12	#12	#12	1	3/4"	75	2.08%		
UH-1 (6 UNITS)	208	3	Y					5.6	15.6		15.6	20	60		3R	#10	#10	#10	1	3/4"	150	2.33%	
EF-1	120	1	Y	0.10	1.60						1.6	15	MMS	1	#12	#12	#12	1	3/4"	50	0.27%		
EF-2	120	1	Y	0.10	1.60						1.6	15	MMS	1	#12	#12	#12	1	3/4"	50	0.27%		
EF-3	208	1	Y	0.75	7.60						7.6	15	MMS	1	#12	#12	#12	1	3/4"	50	0.73%		
EF-4	208	3	Y	3.00	10.60						10.6	15	MMS	1	#12	#12	#12	1	3/4"	150	2.65%		
EF-5	208	3	Y	3.00	10.60						10.6	15	MMS	1	#12	#12	#12	1	3/4"	150	2.65%		
SF-1	208	1	Y	0.75	7.60						7.6	15	MMS	1	#12	#12	#12	1	3/4"	30	0.44%		
EWH-1	208	3	Y					9.0	25.0		25.0	35	60		1	#8	#8	#10	1	1"	50	0.81%	
SLIDING GATE (2 UNITS)	208	3	Y	2.00	7.50						7.5	20	30		3R	#12	#12	#12	1	3/4"	200	2.50%	
GEN. JACKET HEATER	208	1	Y					5.0	24.0		24.0	30			#8	#8	#8	1	1"	100	1.80%		
DISHWASHER	120	1	Y						12.0		12.0	15			#8	#8	#8	1	1"	150	2.34%		
RANGE	208	1	Y					10.0	48.1		48.1	60			#4	#4	#10	1	1-1/4"	150	2.15%		
MICROWAVE	120	1	Y						12.0		12.0	15			#8	#8	#8	1	1"	150	2.34%		
DRYER	208	1	Y					5.0	24.0		24.0	30			#8	#8	#8	1	1"	50	0.90%		
EXTRACTOR	208	1	Y						8.0		8.0	15			#12	#12	#12	1	3/4"	100	1.54%		
BIG DRYER	208	3	Y						79.0		79.0	100			#2	#2	#8	1	2"	100	1.32%		
FUTURE AIR COMPRESSOR	208	3	N						0.0		0.0	15			#12	#12	#12	1	3/4"	75	0.00%		

PANEL FEEDER SCHEDULE:

FEEDER DESCRIPTION	SOURCE	LOAD	VOLTS	PH	NEUT Y/N	200% NEUT		ISO GND Y/N	MAIN SIZE	LOAD AMPS*	DISCONNECT SIZE	FUSE	NEMA	WIRE PER WIRE	NEUT WIRE	ADD NEUT	GND WIRE	ISO GND	# OF RUNS	CONDUIT SIZE	APPROX. DIST. FT	VOLT DROP %	NOTES
						Y/N	Y/N																
UTILITY MAIN	UTILITY	MAIN	208	3	Y	N	N	N	800	640	800	ECB	3R	#500	#500				2	4"	150	1.16%	
MAIN	MAIN	ATS (N)	208	3	Y	N	Y	N	800	640				#500	#500		#2/0		2	4"	30	0.23%	
GENERATOR	GENERATOR	ATS (E)	208	3	Y	N	Y	N	800	640				#500	#500		#2/0		2	4"	150	1.16%	
ATS (N)	ATS (N)	MDP	208	3	Y	N	Y	N	800	640				#500	#500		#1/0		2	4"	30	0.23%	
MDP	MDP	L1	208	3	Y	N	Y	N	100	80				#3	#3		#8		1	1-1/4"	50	0.83%	
MDP	MDP	M1	208	3	Y	N	Y	N	250	200				#250	#250		#4		1	3"	50	0.45%	
MDP	MDP	M2	208	3	Y	N	Y	N	400	320				#500	#500		#3		1	4"	150	1.16%	
MDP	MDP	P1A	208	3	Y	N	Y	N	250	200				#250	#250		#4		1	3"	50	0.45%	
P1A	P1A	P1B	208	3	Y	N	Y	N	250	200				#250	#250		#4		1	3"	10	0.09%	
MDP	MDP	P2	208	3	Y	N	Y	N	150	120				#10	#10		#6		1	2"	150	1.80%	

This item has been electronically signed and sealed by Justin Lowe Mundell, P.E., using a dated digital signature, per F.A.C. Rule 61015-23.004. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



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Switchboard: MDP

Location: ELEC 104
Supply From: MDP
Mounting: Enclosure

Volts: 120/208V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 35,000
Mains Type: MLO
Mains Rating: 800 A
MCB Rating:

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PANEL M1	3	400 A	300 A	51.2	
2	PANEL L1	3	400 A	100 A	8.1	
3	PANELS P1A/P1B	3	400 A	350 A	54.3	
4	PANEL M2	3	400 A	400 A	90.8	
5	PANEL P2	3	400 A	150 A	19.1	
6	SURGE PROTECTION DEVICE	3	100 A	60 A	0.0	
7	SPARE	3	400 A	200 A	0.0	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
Total Conn. Load:					223509 VA	
Total Amps:					620 A	

Legend:	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Load Classification				
HVAC	125254 VA	100.00%	125254 VA	
Lighting	6583 VA	125.00%	8229 VA	Total Conn. Load: 223.5 kVA
Other	1552 VA	100.00%	1552 VA	Total Est. Demand: 205.8 kVA
Receptacle	25560 VA	69.56%	17780 VA	Total Conn. Current: 620 A
Equipment	31560 VA	100.00%	31560 VA	Total Est. Demand...: 571 A
Appliance	33000 VA	65.00%	21450 VA	

Branch Panel: M1

Location: ELEC 104
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 120/208V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MLO
Mains Rating: 250 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A (KW)	B (KW)	C (KW)	Poles	Trip	Circuit Description	CKT	
1	AHU-1	15 A	2	1.87	2.00			1	25 A VAV-1	2	
3								1	15 A VAV-2	4	
5	AC-3 / CU-3	15 A	1		1.87	1.00		1	15 A VAV-3	6	
7								1	25 A VAV-4	8	
9	AHU-2	15 A	3	2.00	2.00			1	15 A VAV-5	10	
11								1	15 A VAV-6	12	
13	EF-1B	15 A	1	1.00	0.00			1	15 A SPARE	14	
15	EF-1C	15 A	1		1.00	0.00		1	20 A SPARE	16	
17	EF-1D	15 A	1					1	20 A SPARE	18	
19								1	20 A SPARE	20	
21	CU-1	25 A	3	0.90	0.00			1	20 A SPARE	22	
23								1	20 A SPARE	24	
25				4.01	0.90					26	
27	CU-2	50 A	3	4.01	0.90			3	20 A SLIDING GATE	28	
29									4.01	0.90	30
31	SPARE	20 A	1	0.00	0.90					32	
33	SPARE	20 A	1			0.00	0.90		3	20 A SLIDING GATE	34
35	SPARE	20 A	1				0.00	0.90		36	
37				3.00	0.00					38	
39	EW-1	35 A	3	3.00	0.00			3	30 A SURGE PROTECTION DEVICE	40	
41										42	
				Total Load:	18.58 kW	16.08 kW					
				Total Amps:	155 A	134 A	139 A				

Legend:	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Load Classification				
Lighting	0 VA	0.00%	0 VA	
Receptacle	0 VA	0.00%	0 VA	Total Conn. Load: 51.24 kW
HVAC	45836 VA	100.00%	45836 VA	Total Est. Demand: 51.24 kW
Appliance	0 VA	0.00%	0 VA	Total Conn. Current: 142 A
Equipment	5400 VA	100.00%	5400 VA	Total Est. Demand...: 142 A
Motor	0 VA	0.00%	0 VA	
Other	0 VA	0.00%	0 VA	
Spare	0 VA	0.00%	0 VA	

Branch Panel: L1

Location: ELEC 104
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 120/208V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MLO
Mains Rating: 100 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A (KW)	B (KW)	C (KW)	Poles	Trip	Circuit Description	CKT		
1	LIGHTING ELECT/MECH/IT ROOMS	20 A	1	0.26	0.13			1	20 A LIGHTING RMS 101, 102, 104, 106	2		
3	LIGHTING LOBBY 100	20 A	1		0.16	0.28		1	20 A LIGHTING RM 103	4		
5	LIGHTING CORRIDORS	20 A	1				0.53	0.57	1	20 A LIGHTING DORMS	6	
7	LIGHTING DORMS	20 A	1	0.37	0.68				1	20 A LIGHTING KIT/DINING/DAY ROOM	8	
9	LIGHTING VEHICLE BAYS	20 A	1			1.15	0.53		1	20 A LIGHTING RMS 133 - 138	10	
11	LIGHTING RMS 139 - 142	20 A	1				0.26	0.25	1	20 A LIGHTING BACK EXTERIOR	12	
13	SPARE	20 A	1	0.00	0.29				1	20 A LIGHTING FRONT EXTERIOR	14	
15	SPARE	20 A	1		0.00	0.35			1	20 A SIGN LIGHTING	16	
17	SPARE	20 A	1				0.00	0.82	1	20 A SITE LIGHTING	18	
19	SPARE	20 A	1	0.00	0.82				1	20 A SPARE	20	
21	SPARE	20 A	1		0.00	0.20			1	20 A FLAG POLE LIGHTS	22	
23	SPARE	20 A	1				0.00	0.50	1	20 A SITE SIGN	24	
25	SPARE	20 A	1	0.00	0.00				1	20 A SPARE	26	
27	SPARE	20 A	1		0.00	0.00			1	20 A SPARE	28	
29	SPARE	20 A	1				0.00	0.00	1	20 A SPARE	30	
31	SPARE	20 A	1	0.00	0.00				1	20 A SPARE	32	
33	SPARE	20 A	1				0.00	0.00	1	20 A SPARE	34	
35	SPARE	20 A	1					0.00	0.00	1	20 A SPARE	36
37	SPARE	20 A	1	0.00	0.00				3	30 A SPARE	38	
39	SPARE	20 A	1		0.00	0.00			3	30 A SURGE PROTECTION DEVICE	40	
41	SPARE	20 A	1					0.00	0.00	42		
				Total Load:	2.55 kW	2.68 kW						
				Total Amps:	21 A	22 A	24 A					

Legend:	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Load Classification				
Lighting	6583 VA	125.00%	8229 VA	
Receptacle	0 VA	0.00%	0 VA	Total Conn. Load: 8.14 kW
HVAC	0 VA	0.00%	0 VA	Total Est. Demand: 9.78 kW
Appliance	0 VA	0.00%	0 VA	Total Conn. Current: 23 A
Equipment	0 VA	0.00%	0 VA	Total Est. Demand...: 27 A
Motor	1552 VA	100.00%	1552 VA	
Other	0 VA	0.00%	0 VA	
Spare	0 VA	0.00%	0 VA	

Branch Panel: P1B

Location: ELEC 104
Supply From: P1A
Mounting: Surface
Enclosure: Type 1

Volts: 120/208V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MLO
Mains Rating: 250 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT	
1	RECEPTS TRAINING	20 A	1	0.54	0.18			1	20 A RECEPTS TRAINING	2	
3	RECEPTS TRAINING	20 A	1		0.36	0.18		1	20 A RECEPTS TRAINING	4	
5	RECEPTS BUNK 2, RR	20 A	1			0.36	0.18	1	20 A TRAINING TV	6	
7	TV BUNK 2	20 A	1	0.18	1.08			1	20 A RECEPTS CORRIDORS	8	
9	COUNTER RECEPT AIRLOCK 1	20 A	1		0.18	0.36		1	20 A RECEPTS BUNK 8	10	
11	TV BUNK 8	20 A	1			0.18	0.54	1	20 A RECEPTS BUNK 6, RR	12	
13	TV BUNK 6	20 A	1	0.18	0.36			1	20 A RECEPTS BUNK 7	14	
15	TV BUNK 7	20 A	1		0.18	0.36		1	20 A RECEPTS BUNK 5	16	
17	TV BUNK 5	20 A	1			0.18	0.54	1	20 A RECEPTS BUNK 4, RR	18	
19	TV BUNK 4	20 A	1	0.18	0.54			1	20 A RECEPTS BUNK 3	20	
21	TV BUNK 3	20 A	1		0.18	0.18		1	20 A COUNTER RECEPT AIRLOCK 2	22	
23	RECEPTS BUNK 1, RR	20 A	1			0.72	0.18	1	20 A TV BUNK 1	24	
25	SPARE	20 A	1	0.00	0.18			1	20 A RECEPTACLE	26	
27	SPARE	20 A	1		0.00	0.00		1	20 A SPARE	28	
29	SPARE	20 A	1			0.00	0.36	1	20 A RECEPTACLE	30	
31	SPARE	20 A	1	0.00	0.00			1	20 A SPARE	32	
33	RECEPTACLE	20 A	1		0.18	0.00		1	20 A SPARE	34	
35	RECEPTACLE	20 A	1			0.54	0.00	1	20 A SPARE	36	
37	RECEPTACLE	20 A	1	0.18	0.00			1	20 A SPARE	38	
39	RECEPTACLE	20 A	1		0.18	0.00		1	20 A SPARE	40	
41	RECEPTACLE	20 A	1			0.36	0.00	1	20 A SPARE	42	
43	SPARE	20 A	1	0.00	0.00			1	20 A SPARE	44	
45	SPARE	20 A	1		0.00	0.00		1	20 A SPARE	46	
47	SPARE	20 A	1			0.00	0.00	1	20 A SPARE	48	
49	SPARE	20 A	1	0.00	0.00			1	20 A SPARE	50	
51	SPARE	20 A	1		0.00	0.00		1	20 A SPARE	52	
53	SPARE	20 A	1			0.00	0.00	1	20 A SPARE	54	
				Total Load:	3.60 kW	2.34 kW					
				Total Amps:	32 A	20 A	36 A				

Legend:	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Load Classification				
Lighting	0 VA	0.00%	0 VA	
Receptacle	10080 VA	99.60%	10040 VA	Total Conn. Load: 10.08 kW
HVAC	0 VA	0.00%	0 VA	Total Est. Demand: 10.04 kW
Appliance	0 VA	0.00%	0 VA	Total Conn. Current: 28 A
Equipment	0 VA	0.00%	0 VA	Total Est. Demand...: 28 A
Motor	0 VA	0.00%	0 VA	
Other	0 VA	0.00%	0 VA	
Spare	0 VA	0.00%	0 VA	

Branch Panel: P1A

Location: ELEC 104
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 120/208V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MLO
Mains Rating: 250 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT	
1	REFRIGERATOR	20 A	1	0.18	0.72			1	20 A RECEPTS ELECT/MECH/COMM	2	
3	REFRIGERATOR	20 A	1		0.18	0.54		1	20 A RECEPTS COMP STATIONS	4	
5	REFRIGERATOR	20 A	1				0.18	0.18	1	20 A ELIPTICAL	6
7	KITCHEN COUNTER RECEPTS	20 A	1	0.36	0.18			1	20 A TREADMILL	8	
9	KITCHEN COUNTER RECEPTS	20 A	1		0.36	0.18		1	20 A EMS VENDING	10	
11	KITCHEN ISLAND RECEPTS	20 A	1			0.36	0.36	1	20 A RECEPTACLE	12	
13	DISHWASHER	20 A	1	0.18	0.18			1	20 A EVC	14	
15	DISHWASHER	20 A	1		0.18	1.26		1	20 A RECEPTS LOBBY, OFFICE	16	
17	MICROWAVE	20 A	1			0.18	1.72	1	20 A RECEPTS OFFICE	18	
19	MICROWAVE	20 A	1	0.18	0.50			1	20 A LOBBY EQUIPMENT	20	
21	ICE MACHINE	20 A	1		0.18	0.54		1	20 A TELECOM RECEPTACLES		

Branch Panel: P2

Location: MDP
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 120/208V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MLO
Mains Rating: 150 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A (KW)	B (KW)	C (KW)	Poles	Trip	Circuit Description	CKT	
1	RECEPTS RM 134, 135, 138	20 A	1	0.72	0.75			2	20 A	ICE MACHINE	2
3	RECEPTS RM 137, 139, 140, 141	20 A	1		0.90	0.75			20 A	ROLL UP DOOR	4
5	ROLL UP DOOR	20 A	1			0.50	0.50	1	20 A	ROLL UP DOOR	6
7	ROLL UP DOOR	20 A	1	0.50	0.50			1	20 A	ROLL UP DOOR	8
9	HANGING 30A RECEPT	30 A	1		0.50	0.50		1	20 A	HANGING 30A RECEPT	10
11	HANGING 30A RECEPT	20 A	1			0.50	0.54	1	20 A	HANGING RECEPTS	12
13	HANGING RECEPTS	20 A	1	0.54	0.54			1	20 A	RECEPTACLE	14
15	RECEPTS BAY	20 A	1		0.54	0.00		1	20 A	SPARE	16
17	RECEPTS BAY	20 A	1			0.54	0.00	1	20 A	SPARE	18
19	SF-1	20 A	2	0.79	0.00			1	20 A	SPARE	20
21					0.79	0.00		1	20 A	SPARE	22
23	DRYER	20 A	2			4.00	0.00	1	20 A	SPARE	24
25				4.00	0.00			1	20 A	SPARE	26
27	WASHER RECEPTACLE	20 A	1		0.18	0.00		1	20 A	SPARE	28
29	SPARE	20 A	1			0.00	0.00	1	20 A	SPARE	30
31	SPARE	20 A	1	0.00	0.00			1	20 A	SPARE	32
33	SPARE	20 A	1		0.00	0.00		1	20 A	SPARE	34
35	SPARE	20 A	1			0.00	0.00	1	20 A	SPARE	36
37	SPARE	20 A	1	0.00	0.00						38
39	SPARE	20 A	1		0.00	0.00					40
41	SPARE	20 A	1			0.00	0.00	3	30 A	SURGE PROTECTION DEVICE	42
Total Load:				8.34 kW	4.16 kW	6.58 kW					
Total Amps:				73 A	35 A	58 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	0 VA	0.00%	0 VA	
Receptacle	4500 VA	100.00%	4500 VA	Total Conn. Load: 19.08 kW
HVAC	1581 VA	100.00%	1581 VA	Total Est. Demand: 17.18 kW
Appliance	9500 VA	80.00%	7600 VA	Total Conn. Current: 53 A
Equipment	3500 VA	100.00%	3500 VA	Total Est. Demand... 48 A
Motor	0 VA	0.00%	0 VA	
Other	0 VA	0.00%	0 VA	
Spare	0 VA	0.00%	0 VA	

Branch Panel: M2

Location: MECH/ELEC 131
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 120/208V Wye
Phases: 3
Wires: 4

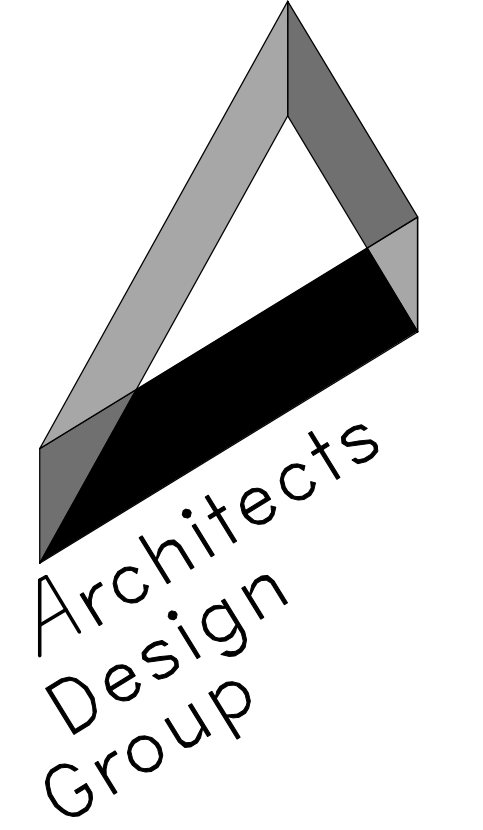
A.I.C. Rating: 22,000
Mains Type: MLO
Mains Rating: 400 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT	
1				1.87	1.87						2
3	UH-1A	20 A	3	1.87	1.87	1.87		3	20 A	UH-1D	4
5						1.87	1.87				6
7				1.87	1.87						8
9	UH-1B	20 A	3		1.87	1.87		3	20 A	UH-1E	10
11						1.87	1.87				12
13	UH-1C	20 A	3	1.87	1.87			3	20 A	UH-1F	14
15						1.87	1.87				16
17											18
19	EF-4	20 A	3	1.27	4.00			3	45 A	AIR COMPRESSOR	20
21					1.27	4.00					22
23						1.27	4.00				24
25				0.72	3.00			3	20 A	EWB-2	26
27	EXTRUDER	15 A	3		0.72	3.00					28
29						0.72	3.00				30
31				9.48	0.00			1	20 A	SPARE	32
33	LARGE DRYER	100 A	3		9.48	0.00		1	20 A	SPARE	34
35						9.48	0.00	1	20 A	SPARE	36
37	DRYER RACK	20 A	1	0.18	0.00			1	20 A	SPARE	38
39	EF-3	20 A	2		0.79	0.00		1	20 A	SPARE	40
41						0.79	0.00	1	20 A	SPARE	42
43	SPARE	20 A	1	0.00	0.00			1	20 A	SPARE	44
45	SPARE	20 A	1		0.00	0.00		1	20 A	SPARE	46
47	SPARE	20 A	1			0.00	0.00	1	20 A	SPARE	48
49	SPARE	20 A	1	0.00	0.00						50
51	SPARE	20 A	1			0.00	0.00	3	30 A	SURGE PROTECTION DEVICE	52
53	SPARE	20 A	1			0.00	0.00				54
Total Load:				29.85 kW	30.46 kW	30.46 kW					
Total Amps:				249 A	255 A	255 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	0 VA	0.00%	0 VA	
Receptacle	180 VA	100.00%	180 VA	Total Conn. Load: 90.78 kW
HVAC	76437 VA	100.00%	76437 VA	Total Est. Demand: 90.78 kW
Appliance	0 VA	0.00%	0 VA	Total Conn. Current: 252 A
Equipment	14160 VA	100.00%	14160 VA	Total Est. Demand... 252 A
Motor	0 VA	0.00%	0 VA	
Other	0 VA	0.00%	0 VA	
Spare	0 VA	0.00%	0 VA	



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**ORANGE COUNTY
FIRE STATION 87**

**ORANGE COUNTY
FIRE RESCUE**

**BID AND PERMIT
SET**

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• revisions/addenda

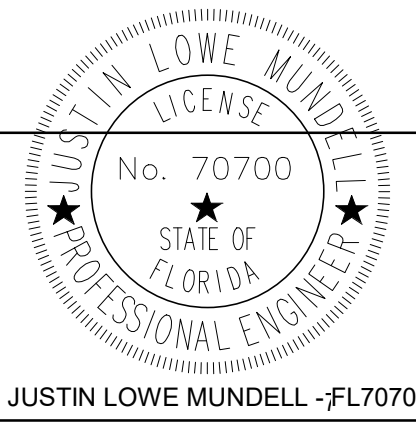
Number	Description	Date Issued
1	Permit Responses	July 18, 2019
3	Addendum 3	Sept 13, 2019

• sheet title
**ELECTRICAL
SCHEDULES**



• scale:
• drawn: SFD
• checked: JLM
• approved: JLM
• date: 06/12/19

• project no.
963
• sheet number:
E-702

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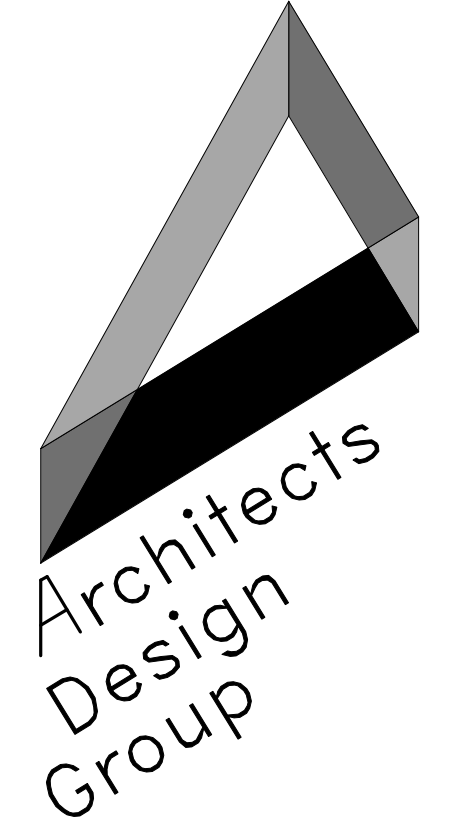


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INTERIOR FINISH LEGEND						
FINISH TAG	MATERIAL / FINISH	MANUFACTURER	STYLE	COLOR / FINISH	SIZE	COMMENTS
033543	Sealed Concrete					
SC-1	Sealed Concrete	L.M. Scofield Co.	Grade 1 / Class 2	Clear	N/A	All Elec, Telecom, and Mech rooms
STSC-1	 Dyed & Polished Concrete	L.M. Scofield Co.	Formula One Liquid Dye	Black	N/A	Apparatus Bay #130, Turnout Gear #132, SCBA #133, Ice #134, Storage #135, Corridor #137, Jan #138, Decon #139, and Laundry #140
STSC-2	Dyed & Polished Concrete	L.M. Scofield Co.	Formula One Liquid Dye	Black	N/A	Air Locks #119 and #128
06067	Plastic Surfacing					
SSP-1	Solid Surface Paneling	Swanstone	12-inch Square Tile Panels pattern	Mountain Haze (129)	Varies - Verify in Field	Class I Fire Rating; Corner Molding #CM-2096 at inside corners
064116	High Pressure Plastic Laminate					
PL-1	Plastic Laminate	Formica	White Twill	9285-58, Matte Finish	N/A	See elevations for exact locations.
PL-2	Plastic Laminate	Formica	Citadel Warp	5882-58, Matte Finish	N/A	See elevations for exact locations.
PL-3	Plastic Laminate	Pionite	Moonlighting Papel	AV971 SD, Textured/Suede Finish	N/A	"Dry" countertops. See elevations for exact locations.
PL-4	Plastic Laminate	Wilsonart	Charcoal Velvet	Traceless Finish	N/A	See elevations for exact locations.
064020	Stainless Steel					
SS-1	Stainless Steel	Refer to specs				See elevations for exact locations.
081416	Flush Interior Doors					
DR-1	Wood-grained High-Pressure Plastic Laminate	VT Industries / Nevamar	Pennylane A17500-SD	Textured/Suede Finish	N/A	All Interior Wood Doors UNO; Refer to Door Schedule
093013	Porcelain Tile					
PTF-1	Porcelain Tile - Floor	DalTile	Chord	Rhythm Brown CH23, Light Polished	12" x 24"	Install 1/3 Stacked. Refer to finish plan for pattern direction; 1/8" Grout Joint; Custom Building Products, #185 New Taupe
PTF-2	Porcelain Tile Plank - Floor	Landmark Ceramics / dist. by CeramicTechnics	Nashville	Chestnut	8" x 40"	Install in random linear pattern with maximum 33% stagger, to mimic actual hardwood flooring installation. 1/8" Grout Joint; Custom Building Products #60 Charcoal
PTF-3	Porcelain Mosaic Tile - Floor	DalTile	Keystones	Uptown Taupe Speckle D202	2" x 2"	1/8" Grout Joint; Custom Building Products #370 Dove Gray
PTW-1	Porcelain Tile - Wall	Trinity Tile	Muse	Pitch, Matte	12" x 24"	Install Vertical Stacked. Refer to elevations for locations; 1/8" Grout Joint; Custom Building Products #333 Alabaster
PTW-2	Porcelain Tile - Wall Accent (Kitchen Backsplash)	Somer Tile / dist by DalTile	Projectos	Vermelho, Matte	3 7/8" x 7 3/4"	Install in Brick Pattern, with Schluter edge trim RONDEC-DB-14-AE to finish / protect exposed edges. Refer to elevations for locations. 1/8" Grout Joint; Custom Building Products #60 Charcoal
PTW-3	Stainless Steel over Porcelain Mosaic Tile - Wall Accent (Restrooms)	Somer Tile / dist. by DalTile	Subway	Alloy	12" x 24"	Cut and use individual rows: one continuous row above & adjacent to the accent row of GM-1 Tile, and one continuous row below & adjacent to the same accent row of GM-1 Tile. Refer to elevations for locations. 1/8" grout joint; Custom Building Products #19 Pewter
PTW-4	Porcelain Tile - Wall	Trinity Tile	Muse	Motion, Matte	3" x 12"	1/8" Grout Joint; Custom Building Products #135 Mushroom
PTB-1	Porcelain Tile - Base	DalTile	Chord	Rhythm Brown CH23, Light Polished	6" x 12"	Install with Schluter cove profile DILEX-AHK- 1S-125-AE in restrooms only. 1/8" Grout Joint, Custom BP #185 New Taupe
PTB-2	Porcelain Tile - Base	Landmark Ceramics / dist. by CeramicTechnics	Vision	Dark	6" x 12"	1/8" Grout Joint; Custom Building Products #60 Charcoal
093023	Glass Mosaic Tile					
 GM-1	Glass Mosaic Tile - Wall Accent (Restrooms)	Susan Jablon Tile	2X2 Tomato Red Glass Tile. SKU: 5715796	Tomato Red	2"X2"	Cut sheet into strip. To be bordered with PTW-3 Tile. Refer to Elevations for locations. 1/8" Grout Joint; Custom Building Products #333 Alabaster
093030	Ceramic Tile					
CTW-1	Ceramic Tile - Wall Accent (Kitchen Backsplash)	Somer Tile / dist. by DalTile	Projectos	Vermelho, Matte	3 7/8" x 7 3/4"	Install Horizontal Stacked. Install with cap Schuler RONDEC-DV-14-AE on exposed ends; 1/8" Grout Joint; Custom Bldg. Products #60 Charcoal
CTW-2	Ceramic Tile Trim - Wall Accent	DalTile	SemiGloss	Elemental Tan 6466	2" X 6"	To finish exposed edges of SSP-1 shower wall panels; 1/8" Grout Joint; Custom Building Products, #135 Mushroom.
095123	Acoustical Panel Ceilings					
ACT-1	Acoustical Ceiling Tile	Rockfon	Alaska, High NRC, Narrow Square Tegular Edge, Fine Texture, 9/16" Suspension Grid	White	24" x 24" x 3/4"	Typical suspended acoustical ceiling system UNO; NRC 0.90; CAC 22; AC 180, Fire Class A, Light Reflectance 0.86
ACT-2	Acoustical Ceiling Tile Vinyl	Rockfon	Koral; Item Number 1100, Square Lay-In Grid	White	24" x 24" x 3/4"	Typical suspended acoustical ceiling system UNO; NRC 0.85; CAC 20; AC 170, Fire Class A, Light Reflectance 0.86
096513	Resilient Wall Base					
RWB-1	Resilient Rubber Base 4"	Johnsonite	Rubber Base	82 Black Pearl 'B'	4"	4" cove base at rubber and concrete flooring
096500	Resilient Athletic Flooring					
RAF-1	Resilient Athletic Flooring	Ecore Commercial	EcoNights	Mission Possible 646	4' wide roll x 8mm thick	
096813	Carpet					
CPT-1	Walk-Off Carpet Tile	Shaw	Steppin Out Collection, Welcome II - 5T031	31557 Sterling	24" x 24" tiles	100% Solution-Dyed, Pet Polyester Fiber, EcoWorx Tile Backing
099123	Paints and Special Coatings					
P-1	Interior Paint	Sherwin Williams	SW 7012 Creamy	Satin	N/A	General Wall Color
P-2	Interior Paint	Sherwin Williams	7015 Repose Gray	Satin	N/A	Accent Wall Color
P-3	Interior Paint	Sherwin Williams	7017 Dorian Gray	Satin	N/A	Accent Wall Color
P-4	Interior Paint	Sherwin Williams	SW6868 Real Red	Satin	N/A	Accent Wall Color
P-5	Interior Paint	Sherwin Williams	SW 7007 Ceiling Bright White	Flat	N/A	Ceiling Paint
P-6	Interior Paint	Sherwin Williams	SW 7015 Repose Gray	Semi-Gloss	N/A	Upper Walls in Apparatus Bay
P-7	Interior Paint	Sherwin Williams	SW 7017 Dorian Gray	Semi-Gloss	N/A	Lower Walls in Apparatus Bay
P-8	Interior Paint	Sherwin Williams	SW 6868 Real Red	Semi-Gloss	N/A	Accent Wall Color
PM-1	Interior Paint	Sherwin Williams	SW 7015 Repose Gray	Flat	N/A	Exposed Structure
PM-2	Interior Paint	Sherwin Williams	SW 7018 Dovetail	Semi-Gloss	N/A	Interior HM Doors and Door Frames
102232	Operable Partition Wall					
OPW-1	Partition Wall Surfaces	Hufcor	Standard Vinyl, Cairn Pattern	Gray Flannel 44-306		Standard Trim, Gray
102600	Wall Protection					
CG-1	Corner Guard	Nystrom	Stainless Steel 1" Wing	Satin #4		Refer to specifications, All corridor corner loctions.
122413	Roller Shades					
RS-1	Single Roller Shades	Mechoshades / Mecho/5	Single Shade, Manual, ThermoVeil Dense Basketweave 1300 Series 5% Open	Shade: 1320 Shadow Grey	Varies - See Equip. Plan	Windows to receive shades are noted on Equipment Plan. Field verify.
RS-2	Dual Roller Shade with Blackout	Mechoshades / Mecho/5	Double Shade, Manual, Front Shade - ThermoVeil Dense Basketweave 1300 Series 5% Open; Black-Out Shade - Midnite 0200 Series Opaque	Front Shade: 1320 Shadow Grey, Black-Out Shade: 0211 Slate	See Equipment Plan	Window in Dining #110 to receive dual shade, including black-out shade

BID ALTERNATES

BID ALTERNATE DEDUCT #3 - REPLACE THE STAINLESS STEEL CABINETS AND COUNTERTOPS WITH WOOD CABINETS AND LAMINATE COUNTERTOPS.



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**ORANGE COUNTY
 FIRE STATION
 87**

**ORANGE COUNTY
 FIRE RESCUE**

BID & PERMIT SET

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• revisions/addenda

Number	Description	Date Issued
2	Addendum 2	9/6/19
3	Addendum 3	9/13/19

• sheet title
**INTERIOR
 FINISH LEGEND**

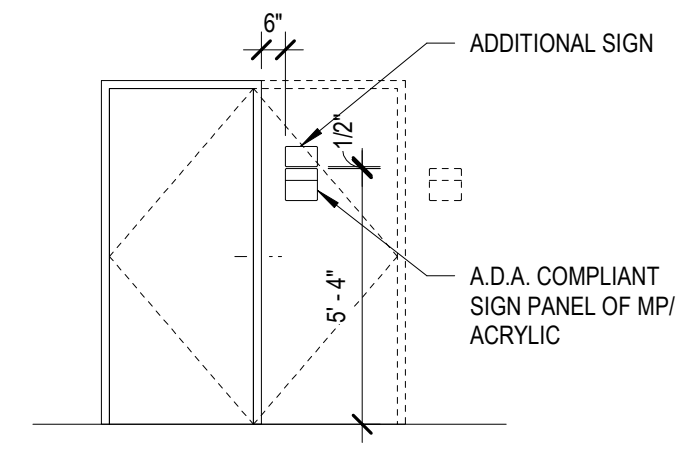
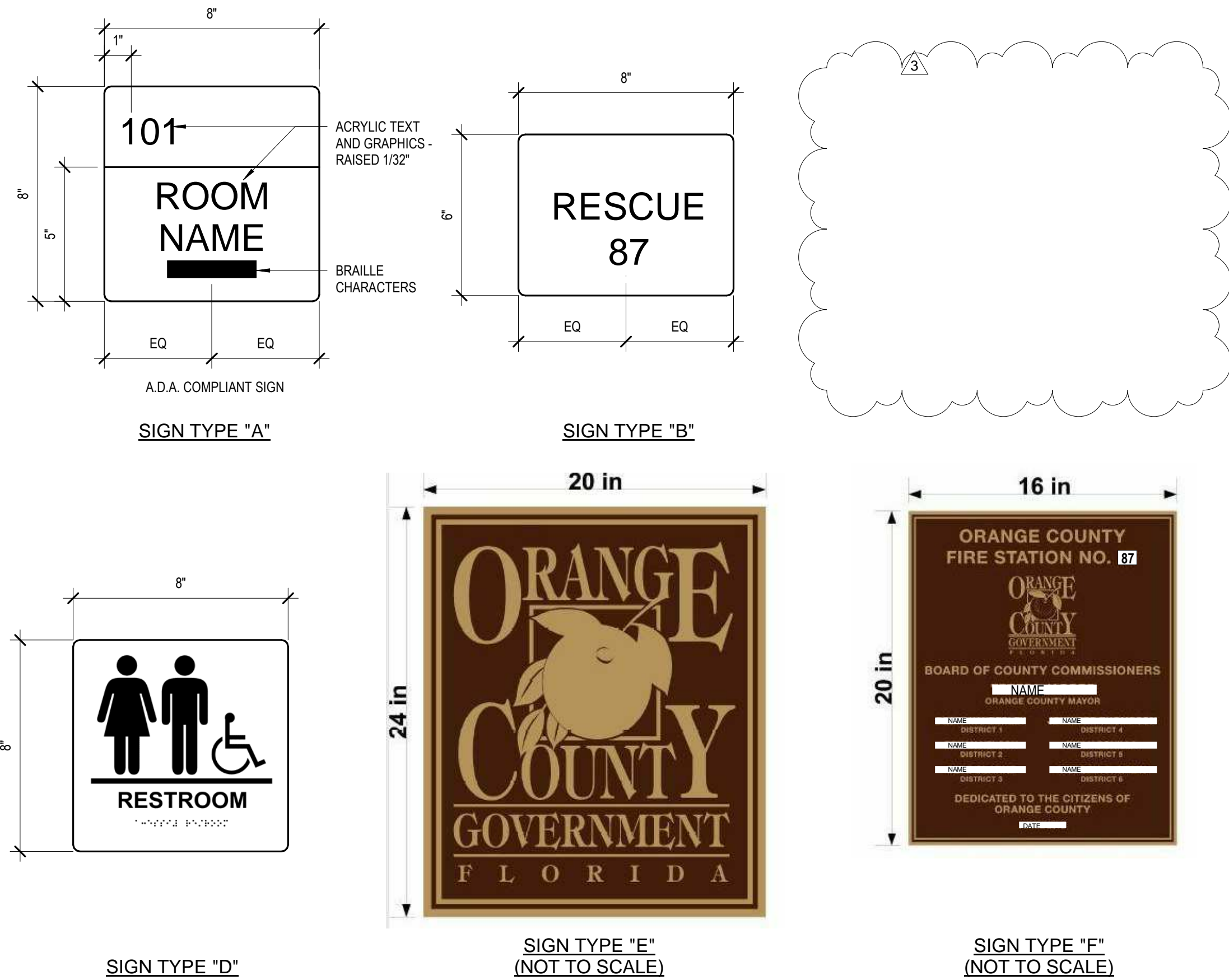
• scale: 12" = 1'-0"
 • drawn: LG
 • checked: RM
 • approved: RM
 • date: 06/12/2019

• project no.
963
 • sheet number:
ID-401

INTERIOR SIGNAGE

ALL SIGNAGE CONSTRUCTED AND INSTALLED TO MEET 2010 ADA/ FAC 2017 STANDARDS

1. PROVIDE SIGNAGE FOR ALL ROOMS, INDICATING ROOM NAME AND NUMBER
2. SIGNAGE TO BE MINIMUM 8" X 8" SINGLE PLY ACRYLIC WITH NON-GLARE MATTE FINISH, AND BRAILLE.
3. PROVIDE SIGNAGE FOR EACH FIRE APPARATUS.
4. PROVIDE SIGNAGE FOR FIRE EXTINGUISHERS.
5. PROVIDE 20" X 24" X MINIMUM 5/16" THICK CAST BRONZE PLAQUE W/ ORANGE COUNTY GOVERNMENT LOGO.
6. PROVIDE 16" X 24" X MINIMUM 5/16" THICK CAST BRONZE PLAQUE INDICATING STATION DESIGNATION AND BOARD OF COUNTY COMMISSIONERS.
7. PROVIDE 1/32" TACTILE LETTERS TO COMPLY WITH A.D.A.
8. SIGNAGE COLORS TO BE VERIFIED WITH OWNER FOR APPROVAL. PROVIDE SHOP DRAWINGS FOR REVIEW.
 - A. DRIFTWOOD - GENERAL SIGNAGE COLOR
 - B. RED- SPECIFIC FIRE SIGNAGE COLOR
9. FINAL TEXT AND SIGNAGE LOCATION SHALL BE COORDINATED WITH OWNER.



INT. SIGNAGE SCHEDULE (CODE REQUIRED)			
DOOR #	ROOM #	SIGN TYPE	TO ROOM:
			SIGN TEXT
100	100	SIGN E	-
100A	103	SIGN F	-
101	101	SIGN A	OFFICE
102	102	SIGN D	PUBLIC RESTROOM
104	104	SIGN A	ELECTRICAL ROOM
105	105	SIGN A	TELECOMM ROOM
106A	106B	SIGN A	HALLWAY
106C	106B	SIGN A	HALLWAY
106D	116	SIGN A	LIEUTENANT SUITE
107	107	-	-
110	110	-	-
110A	106A	-	-
112	-	-	-
113	-	-	-
114	-	-	-
115	115	SIGN A	LIEUTENANT BUNK 2
117	117	SIGN A	LIEUTENANT BUNK 1
118	116	SIGN D	RESTROOM
119	119	SIGN A	AIRLOCK 2 VESTIBULE
120	120	SIGN A	BUNK 4
121	106B	SIGN D	UNISEX RESTROOM
122	122	SIGN A	BUNK 3
123	123	SIGN A	BUNK 5
124	124	SIGN A	BUNK 2
125	125	SIGN A	BUNK 6
126	126	SIGN A	BUNK 1
127	127	SIGN D	RESTROOM
128	128	SIGN A	AIRLOCK 1 VESTIBULE
129	129	SIGN A	EXERCISE ROOM
130	130	-	-
130A	130	SIGN B	-
130B	130	SIGN B	-
130C	130	-	-
130D	130	-	-
130E	130	-	-
130F	130	SIGN B	-
130G	130	SIGN B	-
131	131	SIGN A	MECHANICAL ROOM
131A	-	-	-
132	132	SIGN A	GEAR STORAGE
133	133	SIGN A	SCBA
134	134	SIGN A	ICE MACHINE
135	135	SIGN A	STORAGE
136	136	SIGN D	RESTROOM
137	137	SIGN A	HALLWAY
137A	-	-	-
139	139	SIGN A	DECON ROOM
140	140	SIGN A	WASHER/ DRYER
141	-	-	-
142	-	-	-
143	-	-	-
144	-	-	-
145	-	-	-
146	-	-	-

1 SIGNAGE TYPES

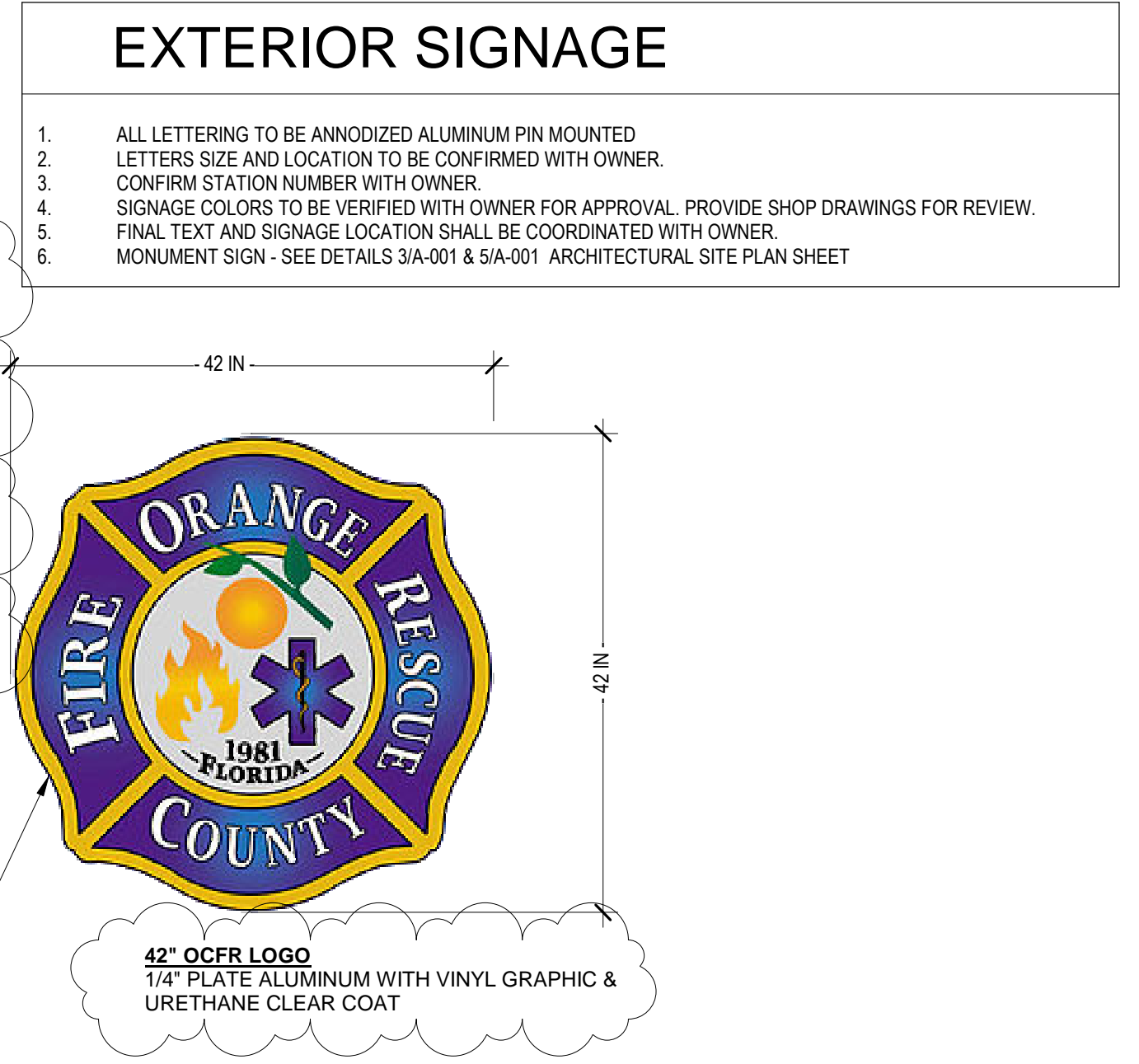
3" = 1'-0"

2 INTERIOR SIGNAGE

1/4" = 1'-0"

3 FRONT ELEVATION EXTERIOR SIGNAGE

1/8" = 1'-0"



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ORANGE COUNTY FIRE STATION 87

ORANGE COUNTY FIRE RESCUE

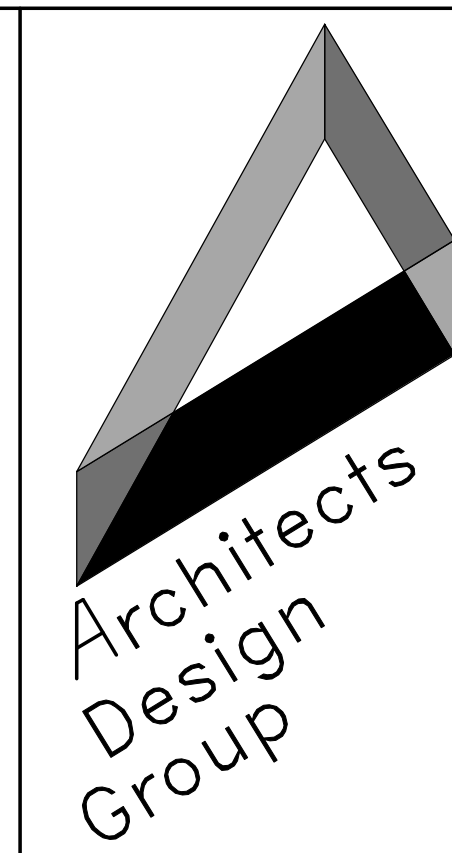
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revisions/addenda		
Number	Description	Date Issued
3	Addendum 3	9/13/19

SIGNAGE SCHEDULE

- scale: As indicated
- drawn: ML
- checked: LG
- approved: FR
- date: 06/12/2019
- project no. 963
- sheet number: ID-500



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**ORANGE COUNTY
 FIRE STATION 87**

**ORANGE COUNTY
 FIRE RESCUE**

**BID AND PERMIT
 SET**

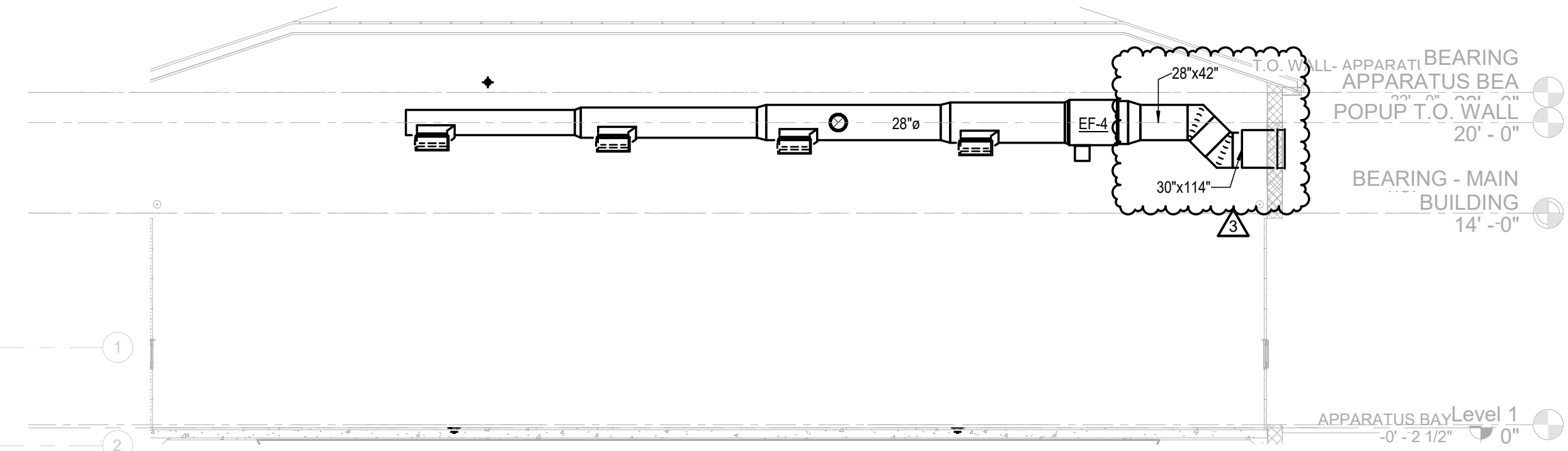
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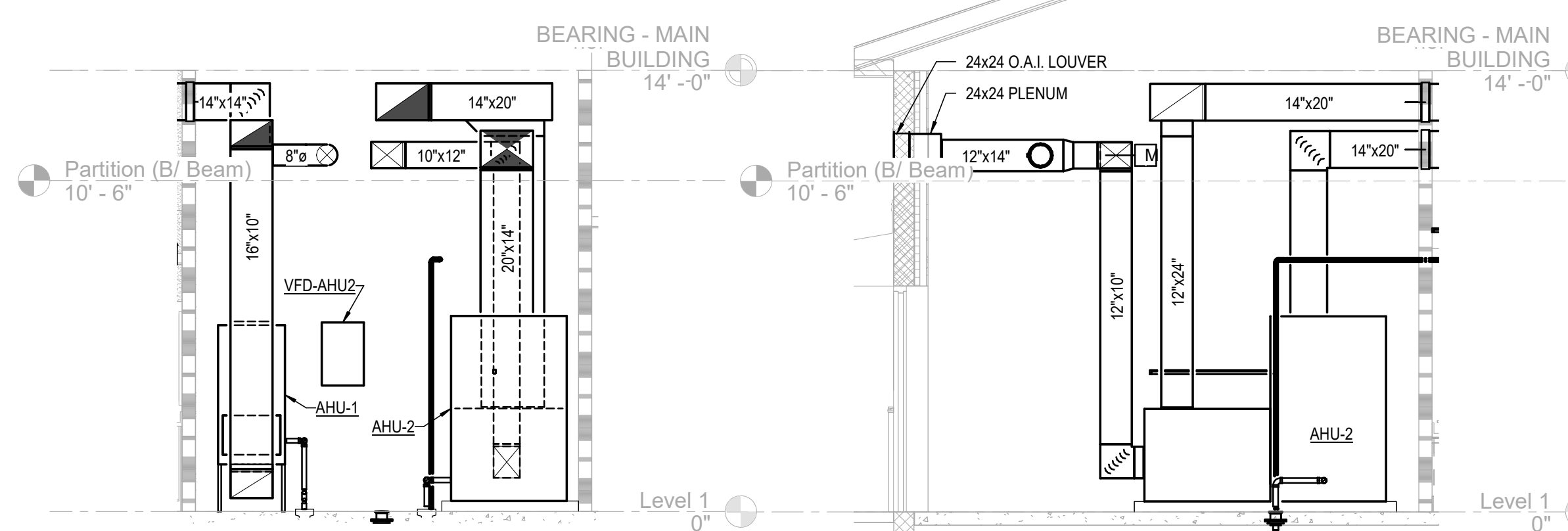
• sheet title
**MECHANICAL
 PLAN**

• scale: As indicated
 • drawn: AD
 • checked: JS
 • approved: JS
 • date: 06/12/19

• project no.
963
 • sheet number:
M-201

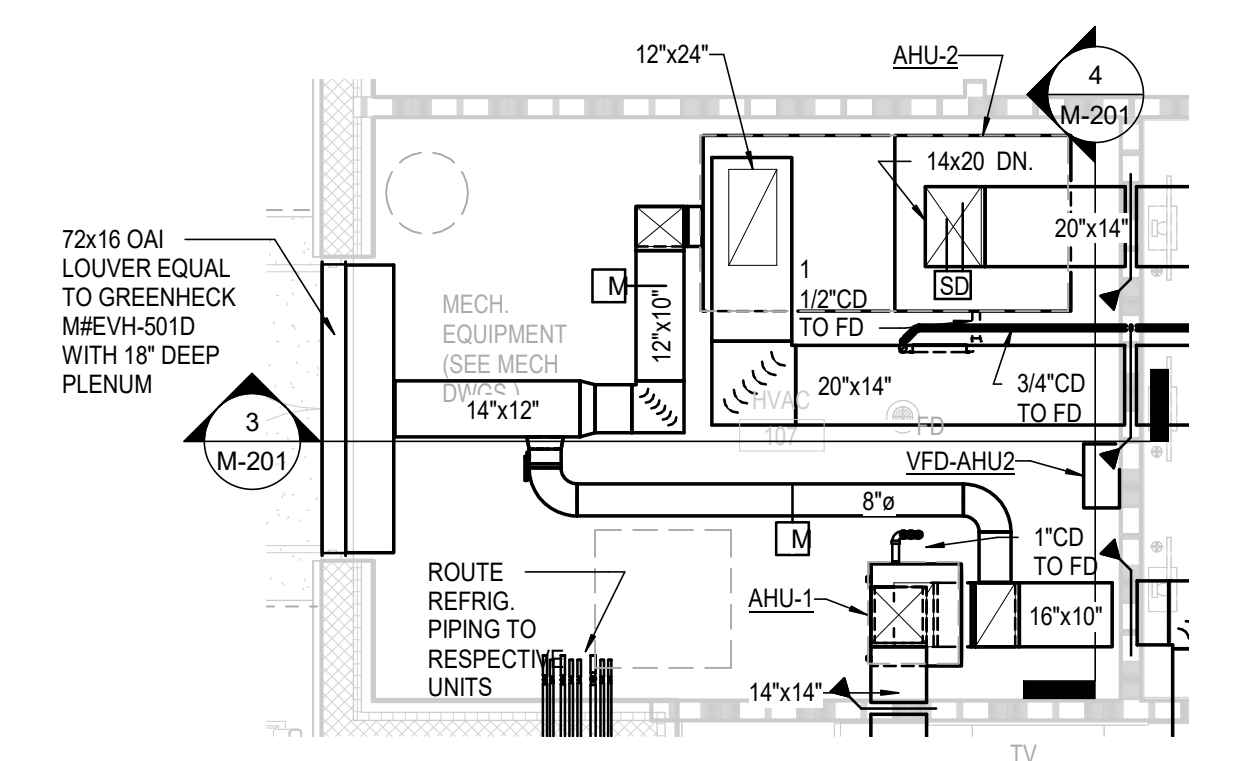


APPARATUS BAY SECTION
 5 M-201 1/8" = 1'-0"

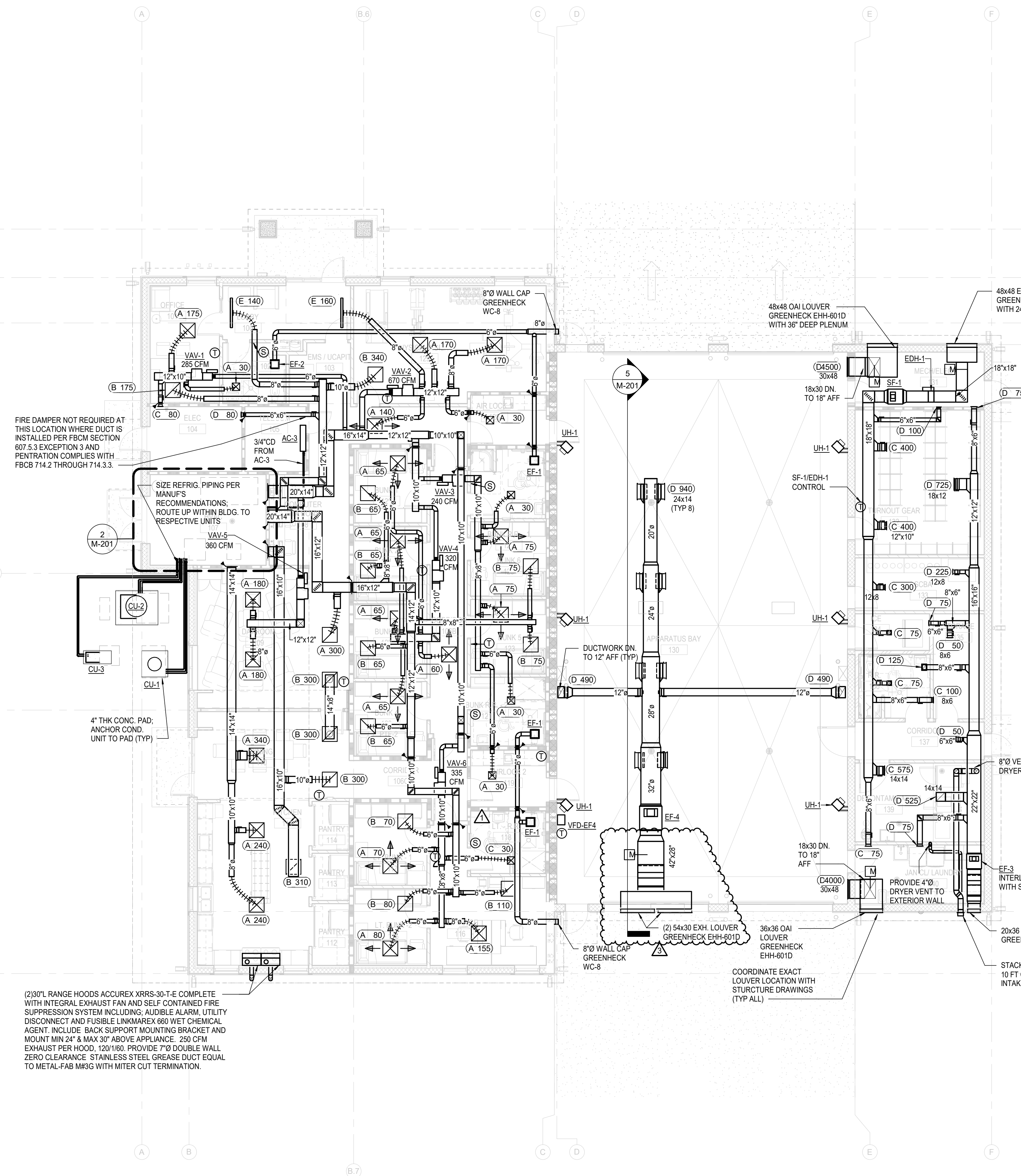


MECH ROOM SECTION 4
 4 M-201 1/4" = 1'-0"

MECH ROOM SECTION 3
 3 M-201 1/4" = 1'-0"



MECHANICAL FIRST FLOOR ENLARGED PLAN
 2 M-201 1/4" = 1'-0"



MECHANICAL PLAN
 1 M-201 1/8" = 1'-0"

FIRE DAMPER NOT REQUIRED AT THIS LOCATION WHERE DUCT IS INSTALLED PER FBCM SECTION 607.5.3 EXCEPTION 3 AND PENETRATION COMPLIES WITH FBCB 714.2 THROUGH 714.3.3.

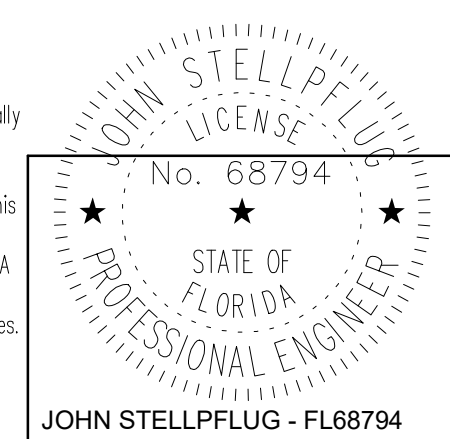
SIZE REFRIG. PIPING PER MANUF'S RECOMMENDATIONS. ROUTE UP WITHIN BLDG. TO RESPECTIVE UNITS.

(2)30" RANGE HOODS ACCUREX XR85-30-T-E COMPLETE WITH INTEGRAL EXHAUST FAN AND SELF CONTAINED FIRE SUPPRESSION SYSTEM INCLUDING: AUDIBLE ALARM, UTILITY DISCONNECT AND FUSIBLE LINK/MAREX 660 WET CHEMICAL AGENT. INCLUDE BACK SUPPORT MOUNTING BRACKET AND MOUNT MIN 24" & MAX 30" ABOVE APPLIANCE. 250 CFM EXHAUST PER HOOD. 120"/160. PROVIDE 7"Ø DOUBLE WALL ZERO CLEARANCE STAINLESS STEEL GREASE DUCT EQUAL TO METAL-FAB M#3G WITH MITER CUT TERMINATION.

COORDINATE EXACT LOUVER LOCATION WITH STRUCTURE DRAWINGS (TYP ALL)

STACK DRY VENTS. MAINTAIN 10 FT CLEARANCE FROM INTAKE LOUVER

This item has been electronically signed and sealed by John Stellpflug, P.E. using a Digital Signature. Printed copies of this document are not considered signed and sealed and the SIA authentication code must be verified on any electronic copies.



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NOTES:

1. SEE ARCHITECTURAL SPECIFICATIONS FOR ALL ROUGH-IN AND INSTALLATION DETAILS.
2. US DIGITAL DESIGNS DOES NOT SUPPLY BACK BOXES, CONDUITS, OR MOUNTING FASTENERS.
3. US DIGITAL DESIGNS FIRE STATION ALERTING PLANS ARE DIAGRAMMATIC AND FOR QUOTING PURPOSES ONLY. DRAWING MAY NOT BE TO SCALE.
4. PHOENIX G2 SYSTEM IS ABLE TO SIGNAL OWNER-FURNISHED SYSTEMS, (EXHAUST, LIGHT, GAS SHUT OFF, ETC.) BUT USDD DOES NOT SUPPLY THESE SYSTEMS AND CANNOT WARRANT OR SUPPORT ANY OF THEIR PERFORMANCE BEYOND THE TRANSMISSION OF RELAY SIGNAL TO THEM.

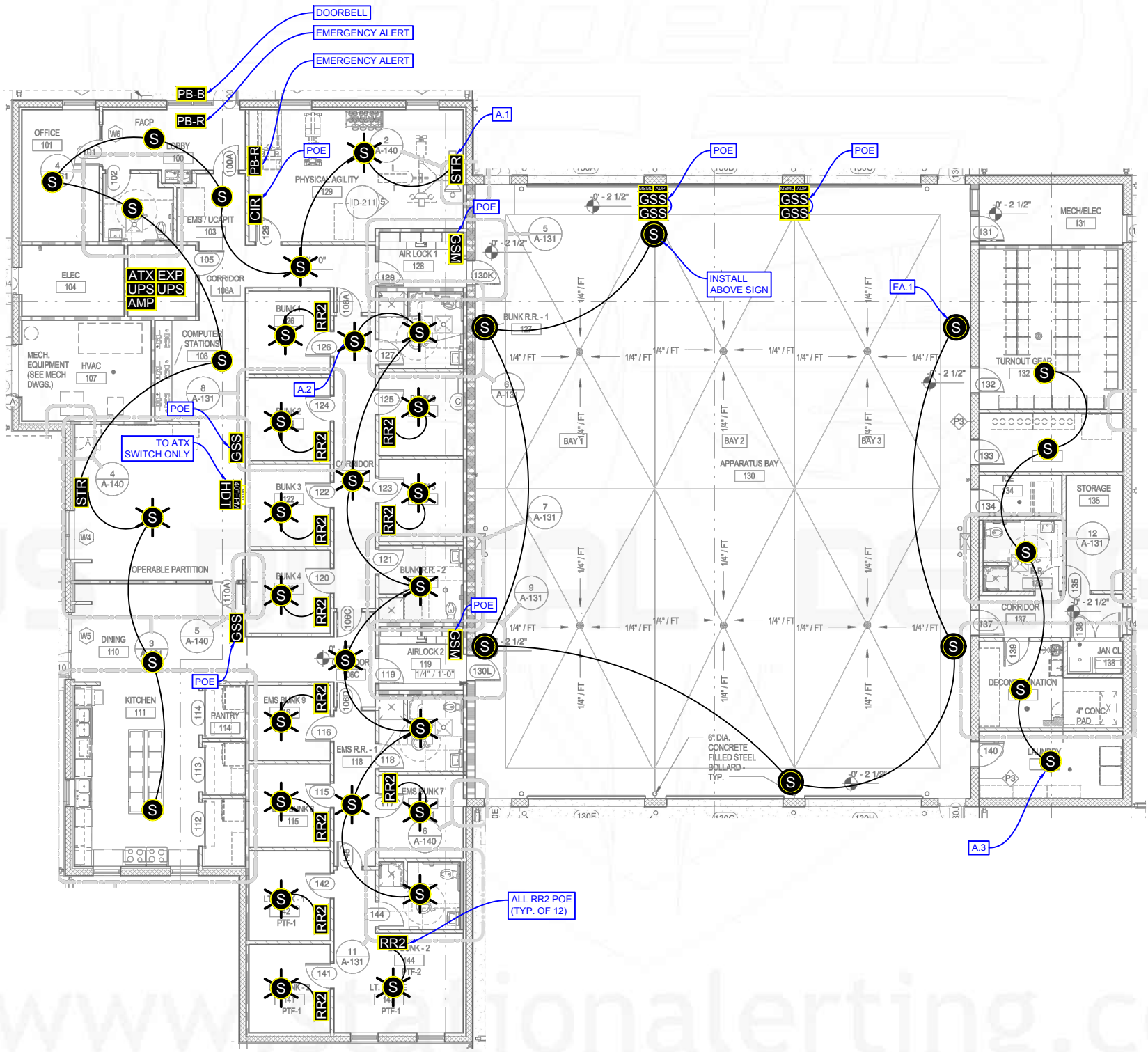
INSTALLER NOTES:

1. INSTALLER TO INCLUDE CONNECTION BETWEEN ATX STATION CONTROLLER'S LINE-LEVEL AUDIO OUTPUT AND (EXISTING) OWNER-FURNISHED HOUSE AUDIO SYSTEM (AMP).(IF APPLICABLE)
2. INSTALLER TO PROVIDE 1 CAT5/6 CABLE FROM ATX CONTROLLER TO CUSTOMER EXISTING STATION RADIO AND NETWORK SYSTEM FOR BACKUP.
3. INSTALLER TO PROVIDE CONNECTION BETWEEN (EXISTING) OWNER-FURNISHED STATION LIGHTING CONTROL SYSTEM AND RELAY OUTPUT FROM ATX STATION CONTROLLER OR I/O REMOTE. (IF APPLICABLE)
4. INSTALLER TO VERIFY WALL AND CEILING TYPE TO DETERMINE NEED FOR FLUSH OR SURFACE MOUNT INSTALLATION OF EQUIPMENT SPECIFIED.

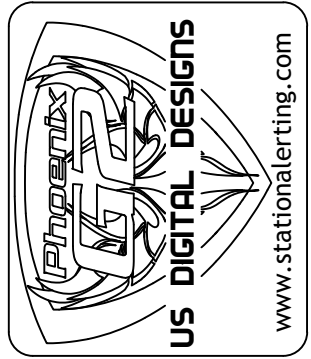
US DIGITAL DESIGNS	
Count	Name
1	EXTERNAL AMPLIFIER (60-100W)
2	G2 ATX STATION CONTROLLER
1	G2 COLOR INDICATOR REMOTE
1	G2 EXPANSION UNIT (G2-EXP-12)
1	G2 FLAT PANEL MONITOR 40 INCH
1	G2 FLAT PANEL MOUNT
1	G2 HDTV REMOTE
23	G2 LED SPEAKER (G2-LVL-HC-70)
2	G2 MESSAGE SIGN MINI (MS-G-M)
6	G2 MESSAGE SIGN STANDARD (MS-G2-S)
2	G2 MS ADAPTOR PLATE DOUBLE (AP-D)
2	G2 STROBE LIGHT
2	G2 UPS (G2-UPS)
2	MS-MNT-ART-L
1	PUSH BUTTON (BLACK)
2	PUSH BUTTON (RED)
12	ROOM REMOTE 2 (RR-2)
12	SPEAKER FLUSH MOUNT
6	SPEAKER WEATHER-PROOF

SYMBOL	DESCRIPTION
ATX	G2 ATX STATION CONTROLLER
G2	PHOENIX G2 STATION CONTROLLER
EXP	G2 EXPANSION MODULE
I/O	G2 I/O REMOTE
MR	G2 MESSAGE REMOTE
MS	G2 MESSAGE SIGN
RR	G2 ROOM REMOTE
RR2	G2 ROOM REMOTE 2
HDT	G2 HDTV REMOTE
CIR	G2 COLOR INDICATOR REMOTE
SR	G2 SIGN REMOTE
UPS	G2-UNINTERRUPTIBLE POWER SUPPLY
I/O	G2 I/O REMOTE
PB	OEM PUSH BUTTON
STR	OEM STROBE LIGHT
AMP	OEM AMPLIFIER
T	OEM TRANSFORMER
S (with star)	G2 LED SPEAKER, FLUSH MOUNT
S (with square)	G2 LED SPEAKER, METAL BOX
S (with circle)	SPEAKER, WEATHER-PROOF
S (with triangle)	SPEAKER, FLUSH MOUNT
S (with diamond)	SPEAKER, METAL BOX
EXP	G2 FLAT PANEL MONITOR, XX", WITH MOUNT
ADS	APPARATUS DETECTION SENSOR
GSS	G2 MESSAGE SIGN
VC	VOLUME CONTROL (CUSTOMER SUPPLIED)
OH	OFF-HOOK
FPD	OEM FLAT PANEL DISPLAY
MX1	24 PORT MIXER v1
MX2	24 PORT MIXER v2
MSML	ARTICULATING ARM MOUNT FOR GSS
ADP	ADAPTER PLATE FOR MSML/GSS

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POE = USDD device connects to G2 ATX Power-Over-Ethernet (POE) port 1 thru 8 or G2 Expansion Module(s) ports 1 thru 12
 A.n = G2 ATX Amplifier 1...4
 EA.n = G2 External Amplifier 1...n



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project	ORANGE COUNTY (FL)
building	PROTOTYPE STATION 87
filename	USDD_OCFL_FS87.DWG
date	07-Feb-2019

design by JA

8 February 2019

Orange County Fire Rescue Department
 Attn: Chief Kimberly Stewart-Horan
 P.O. Box 5879
 Winter Park, FL 32793

Dear Chief Stewart-Horan:

Orange County Fire Rescue Department (the "Department") uses the Phoenix G2 Fire Station Alerting System (the "System") as its alerting standard. The System is designed to use its proprietary Communications Gateways, interfaced to Orange County's CAD system, to send alerting messages directly to the ATX Station Controllers installed in the Department's existing stations. Transmission of alerts is done in milliseconds and has been proven to reduce response times. The Department is working with US Digital Designs ("USDD") as the designer and manufacturer of the System, to develop prototype station designs for future stations to be added to the Department's system. These prototype stations will include the following components manufactured and provided by USDD:

Qty	Description	Part No.
1	G2 ATX STATION CONTROLLER - Power/Signal/Control up to 8 peripheral Remote Options.	ATX
1	G2 EXPANSION KIT - Allows ability to Power/Signal/Control up to 12 more peripheral Remote options per EXP.	EXP
2	ATX UPS, Standard	UPS-STD
1	Audio Amplifier, External, Standard	AMP
1	G2 Color Indicator Remote Module – Up to 8 unique colors	CIR
1	G2 HDTV Remote module	TVR
1	G2 Flat Panel Monitor – 40 inch	FP-43
1	G2 Flat Panel Mount	FPM-U
1	Push Button, Standard (Black)	PB-B
2	Push Button, Standard (Red)	PB-R
2	G2 MESSAGE SIGN (Digital LED) MINI GammaSign / 12" Active Screen Width / Turn Out Timing ONLY	MS-G-M
6	G2 MESSAGE SIGN (Digital LED) STANDARD GammaSign / 24" Active Screen Width	MS-G-S
2	MS-G Adapter Plate, DOUBLE, VESA 100, joins (2) MS-G -S(or-E) to any standard mount with VESA 100 hole patterns (mount not included)	MS-AP-D
2	MS Mount – Articulating – Long reach	MS-MNT-ART-L
12	G2 Room Remote 2 module	RR2

February 8, 2019

Page 2

23	G2 Speaker – LED Illuminated (Flush Mount / Surface Mount – Metal Box) 70v	SPK-LED-FM; SPK-LED-SM
12	Speaker – Standard – Flush Mount – y70v	SPK-STD-FM
6	Speaker – App Bay/Outdoor – Weatherized, Surface Mount, 70v	SPK-W-SM
2	G2 Strobe Light / Red LED	STR

In addition each prototype station will be provided x1 G2 VoiceAlert License (VA) to provide automated VoiceAlert messaging in the station, and will have access to x24 G2 Mobile FSAS App Licenses (G2-APP-DLI) while the station is under warranty and continuing service and support through a Service Agreement with USDD.

US Digital Designs, Inc. is the sole manufacturer of the Phoenix G2 Fire Station Alerting system. All design, manufacturing, service and support originates from our Tempe, Arizona location. As the manufacturer, US Digital Designs is able to offer the lowest factory-direct pricing to the Department and Orange County. In addition, with the exception of certified installation companies authorized to perform “installation only” services, no other organization or entity is able or authorized to service and/or support our station alerting systems.

As the manufacturer of the System, and because the System is a mission-critical system assisting in saving the lives and property of the community, USDD requires that the System be installed in each station by G2 Certified Installers that have been trained by USDD on the characteristics of each component and proper wiring/installation in the fire station.

Please let us know if we can answer any additional questions. Thank you for the opportunity to support your community.

Sincerely,



DOMINIC MAGNONI

Vice President

Phone: (602) 687-1730

Email: dmagnoni@usdd.com