ADDENDUM 1

February 03, 2026

Crestview Fire Station 3
585 Brookmeade Drive, Crestview, FL 32536

Sam Marshall Architects

THIS ADDENDUM IS ISSUED FOR THE PURPOSE OF MODIFYING AND/OR CLARIFYING THE ORIGINAL PLANS AND SPECIFICATIONS AND IS TO BE CONSTRUED AS BEING THEREIN.

Plans and Specifications:

Sheet Number(s):	Sheet Name:	Description:	Date:
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02280	TERMITE AND PEST CONTROL STANDARDS	SEE BELOW	02/03/2026
02920	SODDING AND SEEDING	SEE BELOW	02/03/2026
08110	STEEL DOORS AND FRAMES	SEE BELOW	02/03/2026
A001	TITLE SHEET INDEX ABBREVIATIONS VICINITY MAP	SEE BELOW	02/03/2026
D101	DEMOLITION FLOOR PLAN	SEE BELOW	02/03/2026
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A502	DETAILS	SEE BELOW	02/03/2026
S101	FOUNDATION & SLAB ON GRADE PLAN	SEE BELOW	02/03/2026
S111	ROOF FRAMING PLAN	SEE BELOW	02/03/2026
S120	ALUMINUM CANOPY PLAN & DETAILS	SEE BELOW	02/03/2026
E201	ELECTRICAL NEW WORK PLAN	SEE BELOW	02/03/2026

1. Spec Section TABLE OF CONTENTS:
Summary:
The table of contents was updated to accurately reflect the spec book. Also added were the electrical and telecom specifications.

2. Spec Section 02280 TERMITE AND PEST CONTROL STANDARDS:
Summary:
Replace this section in its entirety.

3. **Spec Section 02920 SODDING AND SEEDING:**
Summary:
Replace this section in its entirety.

4. **Spec Section 08110 STEEL DOORS AND FRAMES:**
Summary:
Replace this section in its entirety.

5. **Spec Section 264000-284621.11 ELECTRICAL & TELECOMMUNICATIONS SPECIFICATIONS:**
Summary:
These sections were added to the specificaitons.

6. **Sheet A001 TITLE SHEET INDEX ABBREVIATIONS VICINITY MAP:**
Summary:
Updated sheet index.

7. **Sheet D101 DEMOLITION FLOOR PLAN:**
Summary:
Shed demolition has been removed from the project.

8. **Sheet A101 FLOOR PLAN:**
Summary:
South side of the building has had its canopy reduced from 8’ to 4’ deep.
Windows on the west side of the building will be replaced. – **note this is a discussion item to be confirmed.**

9. **Sheet A102 DIMENSIONED FLOOR PLAN:**
Summary:
South side of the building has had its canopy reduced from 8’ to 4’ deep.
Bollard detail has also been added to this sheet

10. **Sheet A201 ELEVATIONS:**
Summary:
Windows on the west side of the building will be replaced. – **note this is a discussion item to be confirmed.**

11. **Sheet A501 DETAILS AND SCHEDULES:**
Summary:
Windows details were added

12. **Sheet A502 DETAILS:**
Summary:
Windows tags were added for the details.

13. Sheet S101 FOUNDATION & SLAB ON GRADE PLAN:

Summary:
South side of the building has had its canopy reduced from 8' to 4' deep.

14. Sheet S111 ROOF FRAMING PLAN:

Summary:
South side of the building has had its canopy reduced from 8' to 4' deep.

15. Sheet S120 ALUMINUMCANOPY PLAN & DETAILS:

Summary:
South side of the building has had its canopy reduced from 8' to 4' deep.

Product Substitution Requests:
The following products have been submitted and reviewed for use on this project and are accepted or rejected as noted below, subject to meeting all the requirements of the specifications:

RFI:

1. *Please provide specifications (or basis of design product) for Acoustical Ceilings.*
Please provide specifications for Electrical work.
A. See the Attached Addendum for updated TOC and Electrical Specifications.

2. *•Does the drywall on the interior side of the exterior walls get fully demolished (we suggest it does)*
•There are ~100 l.f. of gypsum walls shown to remain on the demo plan, some have slab trenches going under them. We suggest fully removing these walls.
•The Chief's toilet and shower are indicated to remain, but a plumbing trench is shown to be cut under the shower and toilet. We suggest new fixtures here.
•Please confirm ALL Flooring gets demolished
•Please provide drawing clarity at plan Southwest corner of hardened room. It appears that maybe a door should be indicated. Does it remain or get replaced?
A. The interior side of the exterior wall are to be demolished as needed and patched. If it is more cost effective to demolish the west and north interior finishes to create clean joints throughout that will be acceptable.

Some of the walls you intent to fully demolish have doors in them and utilties/panels/mechanical/plumbing units mounted on them. a clean cut will suffice

The area to be demolished is trenched as necessary. The trench may need to be narrower at that area to have the plumbing fixtures remain. If that is impossible, we would recommend only removing the toilet and the shower to remain.
All flooring gets demolished.

The opening at the southwest corner of the hardened room is currently a cased opening. The cased opening becomes door 101A. reusing the existing frame is acceptable.

3. *INPRO offers the Palladium Rigid Sheets in 3x8, 3x10, 4x8, 4x10 sizes. The plans call for the panels to be 5' high. Would the design team consider installing to 4' or other to minimize labor, cutting, waste, # of joints, etc.?*
A. **PROPOSED ANSWER FOR DISCUSSION.** It acceptable to reduce the panel height to be 4’ everywhere except the kitchen area. (between door 101B and 101C) bring it up and use as a backspash over the casework.

4. *The Table of Contents indicates a Sheet T401, but it is not included in the 100% Document set we have. Please issue this sheet if it is to be included.*
A. See the addendum.

END OF ADDENDUM 1

STANDARD TECHNICAL DESIGN SPECIFICATIONS

Crestview Fire Station 3 Renovation and Addition
100% Documents

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SECTION 02280 – TERMITE & PEST CONTROL STANDARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Written verification of the method of termite treatment to be used is required to be filed with the Santa Rosa County Building Inspection Department before work can commence on all types of construction. (example: both wood and metal construction.) A copy of this "termite treatment letter" shall be emailed to the architect within five (5) days of the receipt of a notice to proceed.

B. The contractor shall furnish all labor, materials, tools, equipment, and perform all work and services for soil poisoning as shown on drawings and as specified in accordance with provisions of the contract documents, and completely coordinated with work of all other trades.

C. Poison all soil under all horizontal and vertical barriers and hollow masonry units of the foundation so as to provide an unbroken chemical barrier between the soil and wood in the structure. After final grading, the contractor shall treat the disturbed perimeter as per label directions.

1.2 SUBMITTALS

A. Product label instructions

1.3 GUARANTEE:

A. Treatment shall remain effective for not less than five (5) years from the date of the certificate of occupancy. The contractor shall furnish a written 5-year guarantee in three (3) copies stating that if at any time during the 5-year period, ground nesting termites occur, treatment will be applied to exterminate all infestations without cost to owner. The City inspector must be present at all re-treatments under the same conditions as treatment.

B. There shall be no annual cost, to the owner, to keep the policy in effect for the full five (5) year period.

PART 2 - PRODUCTS

2.1 MATERIALS

A. At the option of the contractor, shall be one of the following solutions, with application rates in accordance with the label for the intended purpose of a termiticide:

1. Termidor 80 WG

2. Premise

PART 3 - EXECUTION

3.1 APPLICATION:

A. Application shall be in strict accordance with the recommendations of the national pest control association and in accordance with label. If the label states a range of dilution for subterranean termite control, the higher range will be utilized. The applicator shall prepare and show the inspector his calculations of application and the numbers will be verified by the City's inspector.

3.2 OWNER'S VERIFICATION OF TREATMENT:

A. **THE SOIL TREATMENT CONTRACTOR SHALL GIVE THE ARCHITECT A MINIMUM 48-HOURS NOTICE OF WHEN THE SOIL POISONING WILL TAKE PLACE. THE POISONING MUST TAKE PLACE NO EARLIER THAN 7 A.M. OR LATER THAN 1 P.M. NO WORK WILL BE DONE ON WEEKENDS OR BEFORE OR AFTER THE HOURS STATED. THE TERMITE INSPECTOR MUST BE AT THE JOB SITE WHEN ALL WORK IS DONE. THE SOIL TREATMENT CONTRACTOR WILL MIX THE CHEMICALS, FROM UNOPENED ORIGINAL FACTORY SEALED AND LABELED CONTAINER, IN THE PRESENTS OF THE INSPECTOR.**

THE INSPECTOR AND SOIL TREATMENT CONTRACTOR WILL WORK OUT A PLAN BY WHICH THE INSPECTOR CAN VERIFY THE AMOUNT OF CHEMICALS AND RATE APPLIED AT THE JOB. PRE-MIXED CHEMICALS WILL NOT BE USED.

B. At the time of the scheduled treatment, the applicator shall provide the following to the inspector.

1. label of termiticide being used. Label must show mixing and application volume for pre-construction subterranean termite treatment. Product used must display a legible label.
2. computations for volume of application
3. M.s.d.s. for termiticide being used.

C. At the time of application, the applicator shall adhere to and enforce the protective measures required by the m.s.d.s

D. Conduit supports may not be used to support conduit passing through slabs on grade unless the open ends of conduit supports have been filled with np-1 sealant prior to calling for a termite treatment inspection. Failure to adhere with this requirement will result in the termite treatment inspection being canceled. A reinspection fee of $500.00 payable to the architect must be received prior to rescheduling a termite treatment inspection.

E. Failure to comply with any provisions of this division will result in the architect stopping the job and/or requiring removal of all affected areas and retreatment to specifications.

F. The contractor is not to schedule concrete delivery until the inspector, is afforded the opportunity to witness the application of the termiticide. The county inspection department is also required to witness the application

END OF SECTION 02280

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SECTION 02920 - SODDING AND SEEDING

PART 1 – GENERAL

1. Summary:

   A. Furnish all labor, materials, tools, equipment, and services for all sodding and/or seeding within disturbed areas, in accordance with the provisions of the contract documents.

   B. Completely coordinate with work of all other trades.

   C. Location of work

      1. Establish lawns by sodding on all disturbed areas, as indicated on the construction plans, which are not occupied by other planting or construction.

      2. All disturbed areas not indicated to be sodded on the construction plans shall be seeded and subsequently covered with disc-anchored mulch.

      3. Existing sodded areas which are disturbed during construction shall be re-sodded to match existing.

2. Quality assurance:

   A. All seed used shall be labeled in accordance with U.S. department of agriculture rules and regulations under the federal seed act in effect on the date of invitation for bids. All seed shall be furnished in sealed standard containers, unless exception is granted in writing by the owner. Seed which has become wet, moldy, or otherwise damaged in transit or in storage shall not be used.

   B. Fertilizer shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes cake or otherwise damaged, making it unsuitable for use, shall not be used.

   C. Sod, seed, fertilizer and other grassing materials shall be stored under cover and protected from damage which would make then unacceptable for use.

3. Submittals:

   A. Certificates for sod and seed stating botanical and common names and percentages of each species percentage of each species percentage of purity. Certificate of quality.

   B. Guarantee.

PART 2 – PRODUCTS

1. Materials:

A. Topsoil: if the quantity of existing stored or excavated topsoil is inadequate for planting, sufficient additional topsoil shall be furnished. Topsoil furnished shall be a natural, fertile, friable soil, possessing characteristics of representative productive soils in the vicinity. It shall be obtained from naturally well-drained areas. Topsoil shall be without admixture of subsoil and free from Johnson grass (sorghum halepense), nut grass (cyperus rotundus) and objectionable weeds and toxic substances

B. Soil amendments

1. Lime: ground limestone (dolomite) shall contain not less than 85 percent of total carbonates, and shall be ground to such a fineness that 50 percent will pass a 100-mesh sieve and 90 percent will pass a 20-mesh sieve.

2. Fertilizer: fertilizer shall be 16-16-16 formulation. The nitrogen shall be 60% urea-formaldehyde form. Fertilizer shall conform to the applicable state fertilizer laws and shall be granulated so that 80 percent is held on a 16-mesh screen, uniform in composition, dry and free-flowing.

3. mulch: clean hay or fresh straw mulch.

C. Sod: the sod shall be Argentine Bahia. The sod shall be live, fresh, and uninjured at the time of planting and shall have a thick mat of roots with enough adhering soil to assure growth. Apply sod within 48 hours of cutting or stack and keep moist. Do not plant dormant sod or if ground is frozen. Rye grass of any other seeds are not to be used to overcast or repair sod.

D. Grass seed

1. Seed shall meet federal specifications jjj-s-18 and shall satisfy the following requirements:

seed	pure seed	hard seed	weed seed
Argentine Bahia (80% min. Germination)	85%	15%	0.25%

2. Seed failing to meet the purity or germination requirements by not more than twenty-five percent may be used, but the quantity shall be increased to yield the required rate of pure live seed. Seed failing to meet the weed seed requirements shall not be used.

E. Water: potable, free of substances harmful to growth.

PART 3 – EXECUTION

1. Job conditions:

   A. Perform sodding and seeding during conditions conducive to successful results.

   B. Provide proper and adequate protection.

   C. Do not sod or seed when temperature is below 32°f.

   D. do not sod or seed on frozen or dried soil.

2. Soil preparation:

   A. Limit preparation to areas which will be planted or grassed soon after preparation.

   B. Loosen surface to minimum depth of 4 inches (100 mm).

   C. Remove stones and debris over 1 inch (25 mm) in any dimension.

   D. Spread lime uniformly over appropriate areas at rate of 50 lb./1000 sf (0.23 kg/sm) and incorporate with topsoil.

   E. Distribute fertilizer uniformly over areas to be seeded at rate of 30 lb./1000 sf (0.14 kg/sm).

      1. Incorporate fertilizer into soil to depth of at least 2 inches.

   F. Clean surface of substances which will interfere with turf development or subsequent mowing operations.

   G. Grade swale areas to smooth, even surface with loose, uniformly fine texture.

      1. Roll and rake, remove ridges and fill depressions, as required to meet finish grades.

      2. Fine grade just prior to planting.

   H. Restore lawn areas to specified condition if eroded or otherwise disturbed between fine grading and planting.

   I. If fertilizer application rate is determined (by invoices submitted) to be less than required, apply additional fertilizer.

3. Installation:

A. Sod

1. Within 24 hours after soil preparation has been completed, the sod shall be placed firmly and carefully by hand. Each piece of sod shall be packed tightly against the edge of adjacent pieces so that the fewest possible gaps will be left between the pieces. Unavoidable gaps shall be closed with small pieces of sod.

2. Sod shall be placed beginning at the toe of the slope with the long edge horizontal and with staggered vertical joints. The edge of the sod shall be turned slightly into the ground at the top of a slope and a layer of earth placed over it and compacted so as to conduct the surface water over and onto the top of the sod.

3. On all slopes 4:1 or steeper, in drainage channels, and on any areas that are in such condition that there is danger of sod slipping, sod shall be staked in place by driving stakes flush with the sod. Staking shall be done concurrently with sod placement and prior to tamping by the use of sound wooden stakes approximately 1 inch square or 1 inch in diameter and not less than 12 inches in length. The number of stakes shall be sufficient to prevent slipping or displacement of the sod. Stakes shall be driven perpendicular to the slope. Where backfill is necessary on cut slopes to obtain a uniform sodding area, stakes shall be of sufficient length to reach a minimum of 3 inches into the solid earth underneath the backfill.

4. After the sod has been placed, and staked where necessary, it shall then be tamped carefully and firmly by commonly accepted means. Extreme care shall be taken to prevent the installed sod from being torn or displaced.

B. Seed

1. Shall be applied at the rate of6 lbs./1000 sq. Ft.

2. Seeded areas shall be mulched at the rate of not less than 1-1/2" loose measurement over all seeded areas. Spread by hand, blower, or other suitable equipment. Mulch shall be cut into the soil with equipment capable of cutting the mulch uniformly into the soil. Mulching shall be done within 24 hours of the time seeding is completed.

3. Rolling: after seeding and mulching, a cultipacker, traffic roller, or other suitable equipment shall be used for rolling the grassed areas. Areas shall then be watered with a fine spray.

4. Maintenance:

A. Maintain lawns until final acceptance after planting.

1. Water, fertilization, weed, mow, edge, trim, roll, re-grade, replant as required. Sod that is brown or sparsely covered 10 days after laying will not be accepted and must be replaced.

2. Establish a smooth, healthy, uniform, close stand, free of eroded or bare areas, weeds, and surface irregularities.

B. Mow lawns as soon as there is enough top growth to cut with mower set at recommended height.

1. Repeat mowing as required to maintain height. Board will assume mowing at time of sod acceptance.

2. Do not mow when grass is wet.

3. Do not mow lower than 1 ½".

C. Re-sod, re-seed or seed bare, dead, or dying areas using same materials specified.

END OF SECTION

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Provide steel doors.
B. Provide steel door frames and interior view window frames.
C. All exterior doors and frames shall be hurricane rated with impact glass.

1.02 SUBMITTALS

A. Submit for approval samples, shop drawings, product data.
B. Doors, frames, hardware, and steel frame components shall be as shown on shop drawings and schedules and shall be approved by the Architect before fabricating any material; this supplier shall submit complete shop drawings and schedules to the Architect for approval. Submittals are to include, but not limited to, location, size, swings, anchoring details, materials, vision lites and louvers. Architect may request samples or other additional information.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
B. Test Reports and Labeling Compliance: Where fire-rated door openings are indicated or required, provide fire-rated door and frame assemblies that comply with N.F.P.A. 80-2000 "*Standards for Fire Doors and Windows*", and have been tested in accordance with ASTME 152 "*Standard Methods of Fire Tests of Door Assemblies"*. Testing shall have been at a facility operated by Underwriters Laboratories or Warnock-Hershey. A label showing compliance shall be attached to each frame and door in a location readily visible to inspecting authorities. Note: Fire-rated doors shall be factory prepared for hardware so that it maintains the fire rating.
C. Supplier: To the greatest extent possible, obtain all doors and frames from one manufacturer. Hollow metal supplier shall have in his employ a Certified Door Consultant (CDC) or person of equal experience who will be available at reasonable times to consult with the Architect or Owner regarding the project. The hollow metal supplier shall have been in the business of fabricating hollow metal for a period of not less than ten (10) years and shall maintain an office, a fabrication shop, and a stocking warehouse within a distance of fifty (50) miles of the City of Crestview - to properly maintain and service the project after completion

1.04 MANUFACTURERS:

A. Specifications apply to steel doors, steel door frames, steel frame components and architectural stick assemblies such as side-lites, borrowed lites, transom frames and window walls as detailed on architectural plans and schedules. Manufacturer shall be one of the following:
   1. Steelcraft - Cincinnati, Ohio.

2. Curries - Mason City, Iowa.
3. Ceco Door – Milan, Tennessee

1.05 PACKAGING/STORAGE AND HANDLING:

A. Doors and frames are to be shipped to the jobsite clearly marked in a manner easily correlated to the approved schedules and the architectural plans. Doors are to be provided in manufacturer's original cartons.

B. Store doors and frames at the jobsite in an area protected from the weather. Do not store frames and doors in the open. Lay doors flat on wooden sills minimum of 4" from floor. Provide a ¼" space between doors to promote air circulation. Do not stack other materials on top of doors. Avoid the use of un-vented plastic or canvas coverings that may create humidity chambers. If door wrapper becomes wet, remove carton immediately.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials and Finishes:
1. Doors, frames, and frame components shall be manufactured from hot-dipped galvanized steel, G60 zinc coating conforming to ASTM specification A525.
2. All doors, frames, and frame components shall be cleaned, phosphatized and finished as standard with one coat of baked-on rust inhibiting prime painted in accordance with the ANSI A224.1 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."
3. Doors and frame shall be cleaned, phosphatized and finished with a baked-on rust inhibiting primer in compliance with 200-hour salt spray and 500-hour humidity test in accordance with ASTM test method B117 and D1735.

B. Construction of Doors:
1. Doors shall be full flush fabricated from hot-dipped galvanized steel (see Materials and Finishes section above), 16-gage for 1 3/4" doors. Doors shall be reinforced, stiffened, sound deadened and insulated with impregnated Kraft honeycomb core completely filling the inside of the doors and laminated to inside faces of both panels. Doors shall have continuous vertical mechanical interlocking joints at lock and hinge edges with visible edge seams. Doors shall have beveled (1/8" in 2") hinge and lock edges. Top and bottom steel reinforcement channels shall be 14-gage and spot welded within the doors. Hinge reinforcements shall be 8-gage for 1 3/4" doors. Lock reinforcements shall be 16-gage and closer reinforcements shall be 14-gage. Galvanized doors shall have galvanized hardware reinforcements. Adequate reinforcements shall be provided for other hardware as required.
2. Provide thermally improved doors with maximum U-value of 0.24 btu/hr/sq.ft./degree F (ASTM C236) for all exterior doors and elsewhere as noted.
3. Door lite units shall be screw type, not snap in.
4. Door lites shall not be more than half glass.

C. Construction of Frames:

1. Flush Frames: Flush frames shall be formed from 16-gage galvanized steel (see *Materials and Finishes* section B.6 above). Frames shall have 2" faces. Masonry frames shall typically have a 4" head with a 7'-0" door opening. Frames shall be set-up and arc-welded. Mitered corners shall have reinforcements with 4 integral tabs for secure and easy interlocking of jambs to head. Frames shall be supplied with factory-installed rubber bumpers, three (3) per strike jamb and two (2) per head for pair of doors. Frames for 1 3/4" doors shall have 8-gage steel hinge reinforcements, and frames shall be prepared for 4 1/2" x 4 1/2" standard or heavy weight template hinges. Strike reinforcements shall be 16-gage and prepared for an ANSI-A115.1-2 strike. Metal plaster guards shall be provided for all mortised cutouts. Reinforcements for surface closer shall be 14-gage steel. Galvanized frames shall have galvanized hardware reinforcements. Adequate reinforcements shall be provided for other hardware when required. Frames shall be furnished with a minimum of six wall anchors and two base anchors of manufacturer's standard design. Welded frames shall have a spreader bar securely welded to bottom of jambs. Spreader bar is for protection of frames during shipment and shall be removed before installing frames. Do not use this bar as an installation aid.
2. When specified, steel panels shall be 1 ¾" thick and made of same construction and materials as doors.
3. Frames for hurricane rated doors shall be 14-gage with heavy duty hinges.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Before installation begins, hollow metal supplier shall attend a pre-installation conference with the Contractor, Installer and Architect to discuss the installation procedure and clarify any questions about the installation.

B. Door and frames shall be installed in accordance with Door and Hardware Institute publication, "*The Installation of Commercial Doors and Steel Frames"* and manufacturer's instructions.

C. Fill all frames in masonry walls with grout and caulk top and sides for proper sealing. Door frames shall be set in their designated opening before being filled with grout.

D. Thresholds on exterior openings shall be embedded in a bed of sealant.

E. Fabricate work to be rigid, neat and free from seams, defects, dents, warp, buckle, and exposed fasteners. Install doors and frames in compliance with SDI-100, NFPA 80, and requirements of authorities having jurisdiction.

F. Touch-up damaged coatings and leave ready to receive finish painting.

G. When installation is complete, the hollow metal supplier shall visit the jobsite and do a walk-through inspection with the Contractor and Installer. Check frames and doors for proper installation and inform Contractor and Architect of any discrepancies.

END OF SECTION 08110

SECTION 26 05 00

ELECTRICAL GENERAL REQUIREMENTS

PART 1 - PART I GENERAL

1.1 RELATED DOCUMENTS: The Electrical General Requirements are supplementing and applicable to Division 26 Sections and shall apply to all phases of work specified herein, shown on the Drawings, or required to provide a complete installation of electrical systems.

1.2 JOB CONDITIONS:

A. Site Inspections: Before submitting proposals, each bidder should visit the site and fully familiarize himself with all job conditions and shall be fully informed as to the extent of his work. No consideration will be given after bid opening date for alleged misunderstanding as to the requirements of work involved in connecting to the utilities or as to requirements of materials to be furnished.

B. Existing Conditions: All utilities, existing system and conditions shown on the plans as existing are approximate, and the Contractor shall verify before any work is started.

C. Scheduled Interruptions: Planned interruptions of utilities service, to any facility affected by this contract, shall be carefully planned and approved by Architect at least ten (10) days in advance of the requested interruption. The Contractor shall not interrupt services until the Architect has granted specific approval. The request shall indicate services to be affected, date and time of interruption and duration of outage. Request for interruption of service will not be approved until all equipment and materials required for the completion of that particular phase of work are on the job site. The work may have to be scheduled after normal working hours.

D. Accidental Interruptions: All excavation and/or remodeling work required shall be performed with care so as not to interrupt other existing services (water, gas, electrical, sewer, sprinklers, etc.). If accidental utility interruption resulting from work performed by the Contractor occurs, service shall be immediately restored to its original condition without delay, by and at the expense of the Contractor, using skilled workmen of the trade required.

1. Maintaining Service:

2. Any existing service (or operating system) which must be interrupted for any length of time shall be supplied with a temporary service if necessary for continuation of the normal operation of this facility.

3. Any existing system or part of an existing system currently in operation shall remain so after all additions or renovations are made and all work is completed.

1.3 REGULATORY REQUIREMENTS:

A. Permits, Fees, and Inspections: This Contractor shall secure and pay for all permits, and inspections required on work performed under this section of the Specifications. He shall assume full responsibility for all assessments and taxes necessary for the completion and acceptance of the work.

B. Applicable Standards and Codes: The electrical installation shall comply with all applicable building codes; local, state, and federal ordinances. In case of a discrepancy among these applicable regulatory codes and ordinances, the most stringent requirement shall govern. The Contractor shall notify the Architect in writing of any such discrepancy. Should the Contractor perform any work that does not comply with the applicable regulatory codes and ordinances he shall bear all cost arising in correcting the deficiencies. Application standards and codes shall include all local ordinances, all state laws, and the applicable requirements of the following:

1. American National Standards Institute - ANSI
2. National Electrical Manufacturer's Association - NEMA
3. National Fire Protection Association – NFPA (latest editions)
4. Florida Building Code – 2023 Edition
5. Underwriters' Laboratories, Inc. – UL
6. The National Electrical Code – NFPA 70, 2020 Edition
7. The Life Safety Code – NFPA 101, 2021 Edition
8. The National Fire Alarm and Signaling Code – NFPA 72, 2019 Ed.

C. Drawings and Specifications: The drawings and these specifications are complementary each to the other. What is called for by one shall be as binding as if called for by both. Omissions from the drawings and specifications of details of work which are evidently necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such work. In any case of discrepancy in the figures or catalog numbers, the matter shall be submitted to the Architect, who shall promptly make a determination in writing. In any case of conflict between the drawings and specifications, the most stringent requirement shall apply unless a determination is made otherwise. Any adjustment by the Contractor shall be at the Contractor's own risk and expense. Electrical drawings are diagrammatic only. Do not scale these drawings. All equipment shall be installed in accordance with manufacturer's recommendations and any conflicting data shall be verified before bidding.

D. Letters Certifying Compliance and Review: The Contractor's bid shall be accompanied by a letter stating that these Documents will be revised, as required by any legal authority having jurisdiction and by any serving utility, with no additional cost to the Owner. As soon as practical after bidding, and before any work is commenced, the Contractor shall meet with all legal authorities having jurisdiction, review all materials and details of this project and agree on any required revisions. A letter shall be written to the Architect listing the names, dates, places of such review, the revisions required (at no additional cost). A copy of the letter shall also be sent to the reviewing authority. The Contractor shall also meet with each serving utility and repeat the above procedure. A letter certifying each meeting shall be written also with the information as described above.

The Contractor shall after completion of the work, furnish the Architect a certificate of final inspection and approval from the applicable local inspection department. Any necessary changes that must be made for the final approval shall be made at no additional cost to the Owner.

1.4 CONNECTION TO EXISTING UTILITIES

A. All utility work shall be coordinated with and approved by the local providing utility. Permission for all utility outages shall be requested a minimum of (10) days in advance unless an emergency arises. Explicit detail shall be shown for all connections to existing utilities. The applicable utility company must approve both the location and the method of the proposed connection.

B. The contractor shall coordinate procedure to, and shall pay for, all electric energy consumption during construction as part of the project.

C. The contractor shall include the electric utility connection fee in the bid unless specifically directed by Owner not to do so. If, prior to bid, the electric utility connection fee is unknown, the Contractor shall include $25,000 as a line item in the bid for each service. Once the utility connection fee is known, if the utility connection fee is less than $25,000, the balance shall be removed from the Contractor's total contract price.

1.5 COOPERATION:

A. Interfacing with Other Crafts: It shall be the responsibility of the Contractor to cooperate and coordinate with all other crafts working on this project. This Contractor shall do all cutting, trenching, backfill and structural removals to permit entry of the electrical system components. The General Contractor shall do all patching and finishing. The Architect's representative shall render a decision in writing as to space allotment in congested areas. No claims for "extras" due to such decisions shall be allowed, even though the work has already been installed. When the Contractor submits for approval any item or equipment, he shall determine for himself whether or not it will fit the space provided. If, after installation of any equipment, wiring or other items, it is determined that ample maintenance or passage space has not been provided, then the Contractor shall rearrange this work and/or furnish other equipment even though the equipment installed has been approved. A 1/2" = 1'0" scaled drawing of the main building equipment rooms shall be submitted with the electrical shop drawings showing the proposed location of all equipment in each room. SPACE ALLOCATION IN THESE ROOMS IS CRITICAL. ALSO SUBMIT ELEVATIONS OF EACH MAJOR WALL.

B. Equipment Furnished under Other Sections: This Contractor shall furnish and install complete electrical roughing-in and connections to all equipment furnished under other sections and indicate on drawings. This includes all outlets as shown on mechanical and electrical drawings. All such equipment shall be set in place as work of other sections.

C. Heating and Air Conditioning:

1. The Contractor shall furnish all branch circuit wiring to motors and control panels or centers including disconnects, receptacles, switches, and appurtenances to which the system at the units may be connected, to provide a complete system of wiring for power. Control equipment and control circuit wiring is specified in the Mechanical Section.

2. Control devices to be included in the branch circuit, except those furnished integral with the equipment, will be delivered by the Heating and Air Conditioning Contractor and installed by the Electrical Contractor.

1.6 WORKMANSHIP: All work shall be executed in a neat and substantial manner by skilled workman, well qualified, and regularly engaged in the type of work required. Substandard work shall be removed and replaced by the Contractor at no cost to the Owner.

1.7 1.06 APPROVAL OF MATERIALS AND EQUIPMENT:

A. Prior-submittals: The Contractor shall base his proposal on the materials specified herein and on the drawings. Reference to a particular product by manufacturer, trade name, or catalog number establishes the quality standards of material and equipment required for this installation and is not intended to exclude products equal in quality and similar design. The Architect reserves the sole right to decide the equality of materials proposed for use in lieu of these specified. It shall be the Contractor's responsibility to furnish the information and data sufficient to establish the quality and utility of the items in question, including furnishing of samples if required. If other equipment manufacturers determine that their equipment will fit in the space and meet the recommended clearances, suit all job conditions, equal or exceed the quality of the specified items, then a request may be made in writing to the Architect at least ten (10) days prior to bid date for permission to be included in the approved equipment list. All data required for evaluation shall accompany the above request.

B. Submittals:

1. Submittals: The Contractor shall submit a list of equipment proposed for installation. He shall submit catalog data and shop drawings on all proposed systems and their components. Where substitutions alter the design or space requirements, the Contractor shall defray all items of cost for the revised design and construction including costs to all allied trades involved. Provide six (6) copies of submittals and shop drawings as a minimum unless the General Conditions requires a greater number of copies.

2. Submittals Schedule: Submittals shall be submitted within thirty (30) days after the contract is awarded. It is not the responsibility of the Engineer to expedite the review of submittals if the contractor has not adequately prepared the submittals in a time efficient manner. The contractor bears all the responsibility for the added time requirements of resubmittals.

3. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
    - Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.

- Resubmittal Review: Allow 15 days for review of each resubmittal.

4. Identification: Place a permanent label or title block on each submittal for identification. Each major section of submittals such as power equipment, lighting equipment, fire alarm, etc., shall be secured in a booklet or stapled with a covering index which lists the following information:
   - Project name and date
   - Name, address, and phone number of General contractor and project manager.
   - Name, address, and phone number of Sub-contractor and project manager.
   - Supplier of equipment with phone number and person responsible for this project.
   - Index of each item covered in submittal and model number.
   - Any deviation from contract documents shall be specifically noted on submittal cover index and specifically identified with highlighting, encircling, or boldly on specific submittal sheet.

5. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   - Include previous submittal review comments.
   - For each item being resubmitted, include previous review comment and explain how resubmitted item meets the criteria of the previous review comment.
   - Only two (2) resubmittals will be accepted. If the resubmittals do not meet the review comments on the initial submittal or the intent of the contract documents the contractor shall provide the original specified equipment.

     - Determinations of Equipment Quality: The final authority on the determination of the quality of any piece of equipment specified, submitted, or resubmitted is solely the Professional Engineer's. As much information as is provided by the Contractor will be used to consider a submitted item to the specified item to determine compliance. The Contractor may provide the actual submitted piece of equipment and the specified item to the Engineer for a table top comparison at his convenience. In the event of a table top comparison, the equipment brought to the Engineer shall become the property of the Engineer upon its delivery.

6. Electrical and Mechanical/Plumbing/Fire Protection Equipment Coordination:

   The electrical power equipment submittals shall be accompanied by a letter verifying coordination of electrical services for all mechanical, plumbing, and fire protection equipment requiring power. The letter shall follow the format listed below.

To: _____
(General Contractor)

Re: _____
(Project name and location)

We the undersigned subcontractors certify that we have coordinated the electrical requirements for mechanical, plumbing, and fire protection sprinkler equipment as evidenced by the coordination chart listed herein.

Item	Load Full Load Amps	1 phase or 3 Phase	Number of Electrical Connections	Maximum Overcurrent Protection	Minimum Overcurrent Protection	Breaker Proposed	Circuit Proposed

The above list details all required electrical connections for mechanical equipment.

Signed: _____

For: _____
Mechanical Subcontractor

The above list details all required electrical connections for plumbing equipment.

Signed: _____

For: _____
Plumbing Subcontractor

The above list details all required electrical and fire alarm connections for fire protection equipment.

Signed: _____

For: _____
Fire Protection Sprinkler Subcontractor

The above list of equipment has been reviewed and the required connections are being provided. (Any exceptions or request for direction shall be listed here)

Signed: _____

For: _____
Electrical Subcontractor

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protection: Take necessary precautions to protect all material, equipment, apparatus and work from damage. Failure to do so to the satisfaction of the Architect will be sufficient cause for the rejection of the material, equipment or work in question. Contractor is responsible for the safety and good condition of the materials installed until final acceptance by the owner.

B. Cleaning: Conduit openings shall be capped or plugged during installation. Fixtures and equipment shall be tightly covered and protected against dirt, moisture, chemical and mechanical injury. At the completion of the work the fixtures, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the Architect.

1.9 TESTING AND BALANCING:

Make tests that may be required by the Owner or the Architect in connection with the operation of the electrical system in the buildings. Balance all single-phase loads connected to all panelboards in the buildings to insure approximate equal divisions of these loads on the main secondary power supply serving the buildings. All tests shall be made in accordance with the latest standards of the IEEE and the NEC. The installation shall be tested for performance, grounds and insulation resistance. A "megger" type instrument shall be used. Contractor shall perform circuit continuity and operational tests on all equipment furnished or connected by Contractor. The tests shall be made in the presence of the Architect or his representative. The Contractor shall notify the Architect at least twenty-four (24) hours in advance of tests. The Contractor shall provide all testing equipment and all costs shall be borne by him. Written reports shall be made of all tests. All faults shall be corrected immediately.

A letter shall be written giving the following:

- Measured aps on each phase of each panel.
- Resistance to ground of each grounding electrode.
- Measured voltage phase to phase and phase to neutral at each panel.
- Ground continuity and polarity instrument used.

1.10 OPERATING AND MAINTENANCE INSTRUCTIONS/AS BUILT DRAWINGS

A. Four (4) complete sets of instructions containing the manufacturer's operating and maintenance instructions for each piece of equipment shall be furnished to the Owner. Each set shall be permanently bound and shall have a hard cover. One complete set shall be furnished at the time that the test procedure is submitted, and remaining sets shall be furnished before the Contract is completed. Flysheets shall be placed before instructions covering each subject. The instruction sheets shall be approximately 8-1/2" by 11" with large sheets of Drawings folded in. The instructions shall include information for major pieces of equipment and systems.

B. Upon completion of the work and at the time designated, the services of one project engineer shall be provided by the Contractor to instruct the representative of the Owner in the operation and maintenance of the systems.

C. This Contractor shall provide as-built Drawings at the completion of the job. Drawings shall show all significant changes in equipment, wiring, routing, location, etc. All underground conduit routing shall be accurately indicated with locations dimensioned.

1.11 GUARANTEE AND SERVICE: Upon completion of all tests and acceptance, the Contractor shall furnish the Owner a written guarantee covering the electrical work done for a period of

one (1) year from date of acceptance. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Upon notice from the Architect or the Owner, the Contractor shall, during the guarantee period, rectify and replace any defective material or workmanship and repair any damage caused thereby without additional cost.

PART 2 - PART 2 – NOT USED

PART 3 - PART 3 – EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.
- Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

END OF SECTION

SECTION 26 05 10

ELECTRICAL METHODS AND BASIC MATERIALS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- Grounding and Bonding
- Supports
- Excavation, Trenching, and Backfilling
- Cutting and Patching
- Equipment Connection
- Identification of Equipment
- Cleaning and Painting
- Demolition
- Salvaged Materials

PART 2 - PRODUCTS

2.1 GROUNDING MATERIALS:

A. Grounding Electrode (Ground Rod): 16 feet x ¾" diameter or as indicated on the Drawings, copper clad steel, sectional driven.

B. Ground Connectors: Approved ground clamp type manufactured of cast bronze construction with matching bolts, nuts, and washers.

C. Exothermic Welds: Materials shall be from the same source. Welding process shall be Cadweld or approved equal.

D. Grounding Conductors:

1. Insulated Conductors: Green colored and coded insulated copper (#12 AWG minimum) wire or cable.

2. Bare Copper Conductors:

- Solid Conductors: ASTM B3.
- Stranded Conductors: ASTM B8
- Bonding Conductor: #4 or #6 AWG, stranded conductor.
- Bonding Cable: 28 kcmil, 14 strands of #17 AWG conductor.
- Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules.

2.2 SUPPORTS:

A. Framing Steel: Galvanized or painted rolled steel of standard shapes and sizes.

B. Manufactured Channel: Hot dipped galvanized with all hardware required for mounting as manufactured by Unistrut, Steel City, or approved equal.

C. Miscellaneous Hardware: Standard sizes treated for corrosion resistance.

2.3 IDENTIFICATION:

A. Nameplates: Laminated black micarta with ¼" high engraved white letters.

B. Panel Directories: Typewritten under plastic cover.

C. Wire and Cable Markers: Cloth, split sleeve, or tubing type.

PART 3 - EXECUTION

3.1 3.01 INSTALLATION

A. Products shall be installed in accordance with manufacturer's instructions.

B. Except where specifically indicated otherwise, all exposed non-current-carrying metallic parts of electrical equipment, metallic raceway systems, and service neutral of the electrical system shall be grounded.

1. Equipment grounding shall be accomplished by installing a separate grounding conductor in each raceway of the system. The Conductor shall be provided with a distinctive green insulation or marker and shall be sized in accordance with Article 250 of the National Electrical Code.

2. The electrical system grounding electrode connection shall be made at the main service equipment and shall be extended to the point of entrance of the metallic cold water service. A suitable ground clamp shall make connection to the water pipe. If flanged pipes are encountered, connection shall be made on the street side of the flange connection. If the metallic water service is coated with an insulating material or there is no metallic water service to the building, ground connection shall be made to additional ground rods as required by resistance tests, at the exterior of the building driven full length into the earth.

3. The maximum resistance of the driven ground shall be tested with a ground resistance Megger and shall not exceed 25 ohms under normally dry conditions. If this cannot be obtained with a single rod, additional or parallel rods shall be installed 7'-6" on center until 25 ohms or less is achieved without connection to the building water piping.

C. Install support systems sized and fastened to accommodate weight of equipment and conduit, including wiring, which they carry.

1. Fasten hanger rods, conduit clamps, and outlet junction boxes to building structure using precast insert system, expansion anchors, preset inserts, beam clamps, or spring steel clips.

2. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion and anchors on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

3. Do not fasten supports to piping, ceiling support wires, ductwork, mechanical equipment, or conduit.

4. Do not use powder-actuated anchors.

5. Do not drill structural steel members without written consent from the Architect.

6. Fabricate supports from structural steel or steel channel.

7. Install surface mounted cabinets and panelboards with minimum of four anchors.

8. Provide steel channel supports to stand cabinets one inch off wall in wet locations.

9. Bridge studs top and bottom with channels to support flush mounted cabinets and panelboards in stud walls.

10. Install freestanding electrical equipment on concrete pads.

D. Excavating, trenching, and backfilling shall be accomplished as indicated on the Drawings or where required to install systems and/or equipment.

1. Trenches for all underground conduits or equipment shall be excavated to the required depths. Where soft, wet, or unstable soil is encountered, the bottom of the trench shall be filled with 6 inches of compacted gravel and sand fill. All trench bottoms shall be tamped hard. Trenches shall be shored as required to meet OSHA requirements and general safe working conditions.

2. After conduits or equipment have been inspected and approved by the Architect and prior to backfilling, all forms shall be removed and the excavation shall be cleaned of all trash and debris. Material for backfilling shall consist of the excavation, or borrow of sand, gravel, or other materials approved by the Engineer and shall be free of trash, lumber or other debris. Backfill shall be placed in horizontal layers, not exceeding 9 inches in depth and properly moistened to approximate optimum requirements. Each layer shall be compacted by hand, or machine tamped to a density equivalent to surrounding soil. Backfill shall be brought to suitable elevation above ground to provide for anticipated settlement and shrinkage. All paving broken up shall be repaired and returned to the original condition.

E. Cutting and Patching: This Contractor shall provide all cutting, digging, etc., incident to his work and shall make all required repairs thereafter to the satisfaction of the Engineer, but in no case shall the Contractor cut into any major structural element, beam, or column without written approval of the Engineer.

1. Pavements, sidewalks, roads, curbs, walls, ceilings, floors, and roofs shall be sawcut, patched, repaired and/or replaced as required to permit the installation of the electrical work. Existing concrete floors and other slabs, which require vertical piercing for installation of conduit raceways shall be neatly core drilled. The Contractor shall carefully lay out his drilling in advance and arrange it to minimize exposed work.

2. The Contractor shall bear the expense of all cutting, patching, painting, repairing, or replacing of the work of other trades required because of his fault, error, or tardiness or because of any damage done by him.

3. All patching and finishing shall be performed by the General Contractor at this Contractor’s expense.

F. Make electrical connections to equipment in accordance with equipment manufacturer’s instructions.

1. Verify that wiring and outlet rough-in work is complete and that equipment is ready for electrical connection, wiring, and energization.

2. Make wiring connections in control panel or in wiring compartment of pre-wired equipment. Provide interconnecting wiring where indicated.

3. Install and connect disconnect switches, controllers, control stations, and control devices as indicated.

4. Make conduit connections to equipment using flexible conduit. Use liquid-tight flexible conduit in damp or wet locations.

5. Install pre-fabricated cord set where connections with attachment plug is indicated or specified, or use attachment plug with suitable strain-relief clamps.

6. Provide suitable strain-relief clamps for cord connections to outlet boxes and equipment connection boxes.

G. Identify electrical distribution and control equipment, and loads served, to meet regulatory requirements and as specified herein.

1. Degrease and clean surface to receive nameplates.

2. Secure nameplates to equipment fronts using screws or rivets with edges parallel to equipment lines.

3. Each new and existing panel shall have an external nameplate. Disconnect switches, starters or similar devices shall have a micarta engraved nameplate mechanically affixed indicating the load served and the location, such as “A/C 2” or “A/C 3” above ceiling”. Letters shall be ¼” white on a black background. Panels shall be designated in this manner:

“Panel A

120/208 Volts

3 Phase 4 Wire

Served from Panel MP”

4. Panel directories shall accurately indicate load served and location of load.

5. Engrave plates as indicated on the Drawings.

H. Raceway junction boxes for each system shall be identified by painting the inside of the junction box cover for exposed work and both sides of the covers for concealed work according to the following code:

- Receptacle Circuits Black
- 227 V. Lighting Circuits Orange
- 120 V. Lighting Circuits White
- 277/480 V. Power & Misc. Yellow
- 120/208 V. Power & Misc. Green
- Fire Alarm System Red
- Closed Circuit T.V. Brown
- T.V. Distribution System Blue
- Intercom System Gray

If the established color code at this site conflicts with the above, the contractor shall so state in a letter outlining his proposed colors to maintain conformity

I. Install wire markers on each conductor in panelboard gutters, boxes, and at load connections.

1. Use distribution panel and branch circuit or feeder number to identify power and lighting circuits.

2. Use control wire number as indicated on schematic and interconnection diagrams or equipment manufacturer's shop drawings to identify control wiring.

J. Cleaning and Painting: The respective Contractors for the various phases of work shall clear away all debris, surplus materials, etc., resulting form their work or operations, leaving the job and equipment furnished in the clean first class condition.

1. All fixtures and equipment shall be thoroughly cleaned of plaster, stickers, rust, stains and other foreign matter or discoloration, leaving every part in an acceptable condition ready for use.

2. The Contractor shall refinish and restore to the original condition and appearance, all electrical equipment, which has sustained damage to manufacturer's prime and finish coats or enamel or paint. Materials and workmanship shall be equal to the requirements described for other painting.

K. Demolition: All existing systems and conditions shown on the plans are approximate. The existing electrical circuits of power, receptacles, lighting, kitchen equipment, etc., being removed MAY NOT BE SHOWN on these documents, but are to be removed as required to build this project and to permit new finishes, walls, etc. The contractor shall field-verify all conditions prior to beginning any work and shall notify the Architect of

discrepancies. Failure to do so indicates that the contractor accepts the conditions as they exist and shall perform any additional work necessary to perform the work as shown and specified.

1. Conductors: Remove abandoned wiring to the source of supply. All existing conductors shown to be removed and are not to be re-used on this project site.

2. Conduit: Remove exposed abandoned conduit and boxes including conduit and boxes above accessible ceilings. Any existing conduit runs may be re-used concealed in place if the contractor through the Engineer's consent determines that it is in good condition. The contractor shall bear all costs, expenses incurred while attempting to re-use an existing conduit that is unable to receive the new work.

3. Circuits: If any existing conductor run is encountered which serves a critical load not indicated on the new wiring shown, it shall be brought to the attention of the Owner's Representative for evaluation before removal. When a load is to be removed and its continuing circuit feeds other loads, the wiring shall be made continuous to the remaining loads. No circuit continuity shall be lost. Care shall be taken to identify the conduit, feeder, or branch circuit as serving the demolition area before it is de-energized.

4. Outlets: Disconnect abandoned outlets and remove devices. Provide blank cover for abandoned outlets that are not removed.

5. Panelboards: Disconnect and remove abandoned panelboards and distribution equipment. Where panelboards or cabinets are to be removed, all feeders are to be removed unless indicated otherwise.

6. Lighting Fixtures: Disconnect and remove abandoned luminaries, brackets, stem, hangers, and other accessories.

7. Equipment being removed by Others: Remove all connections, disconnect switches, starters, and relays associated with equipment being removed by other contractors.

L. Salvaged Materials: Materials and equipment removed from the construction site shall remain the property of the Owner. This contractor shall remove and store materials until directed by the Owner as to disposition. Materials may be salvaged by the Owner at his discretion or disposed of by the contractor as directed by the Owner.

END OF SECTION

SECTION 26 05 33

RACEWAY SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- Conduit and Conduit Fittings
- Electrical Boxes and Fittings
- Wireway

PART 2 - PRODUCTS

2.1 2.01 CONDUIT AND FITTINGS:

A. Conduit:

1. Metal conduit: Galvanized steel as manufactured by Pittsburgh Standard galvanized rigid conduit, National Electric Products, Shearduct, or Youngstown Buckeye hot galvanized rigid conduit.

2. Metal tubing: Galvanized steel as manufactured by Pittsburgh Standard, Youngstown Buckeye or National Electric Products.

3. Flexible Conduit: Steel.

4. Liquid-tight Flexible Conduit: Flexible steel conduit with PVC jacket as manufactured by Anaconda or engineer approved equal.

5. Plastic Conduit and Tubing: NEMA TC 2; PVC. Use Schedule 40 conduit.

B. Conduit Fittings:

1. Conduit Fittings and Conduit Bodies: NEMA FB 1. Conduit fittings to be steel threaded type, as manufactured by Appleton, Thomas and Betts, Crouse-Hinds or Pyle-National.

2. Tubing Fittings: NEMA FB 1. Tubing fittings to be steel compression type for conduit up to 2" in diameter and set screw type for conduit 2-1/2" and larger, as manufactured by Appleton, Thomas and Betts, Crouse-Hinds or Pyle-National.

3. Flexible Conduit Fittings: NEMA FB 1. Flexible conduit fittings to be steel set screw or screw-in type.

4. Liquid-tight Flexible Conduit Fittings: NEMA FB 1. Liquid-tight flexible conduit fittings to be steel compression type.

5. Plastic Fittings and Conduit Bodies: NEMA TC 3.

2.2 2.02 ELECTRICAL BOXES:

A. Boxes:

1. Sheet Metal: NEMA OS 1; galvanized steel 4" octagonal x 1-1/2" minimum. Communications outlets shall be 2-1/2" deep minimum. Provide galvanized plaster/tile ring for recessed outlet boxes. Boxes shall be manufactured by Appleton, Steel City or Raco.

2. Cast Metal: Aluminum or cast ferroalloy, deep type, finished square corner, gasketed cover, threaded hubs as manufactured by Bell or engineer approved equal.

3. Nonmetallic: NEMA OS 2.

B. Large Enclosures: NEMA 250; Type 4, steel enclosures with manufacturer's standard enamel finish and cover, held closed screws.

C. Large Cast Metal Boxes:

1. Surface-mounted Type: NEMA 250; Type 4 and Type 6, flat-flanged, surface mounted junction box; galvanized cast iron or cast aluminum box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

2. Underground Type: NEMA 250; Type 4 flanged, recessed cover box for flush mounting; galvanized cast iron box and plain cover with neoprene gasket and stainless steel cover screw.

2.3 2.03 WIREWAY:

A. Enclosure: General purpose or raintight type with knockouts.

B. Cover: Screw type with full gasketing.

C. Fittings: Lay-in type with removable cover and drip shield for outdoor installation.

D. Finish: Rust inhibiting primer coating with enamel finish.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION:

A. Examine supporting surfaces to determine that surfaces are ready to receive work.

B. Electrical boxes shown on Drawings are approximate locations unless dimensioned. Obtain verification from Architect/Engineer of locations of outlets prior to rough-in. Outlets may be relocated to a distance of ten feet prior to rough-in with no additional cost to the Owner.

3.2 INSTALLATION:

A. Use conduit and tubing for raceways in the following locations:

1. Underground Installations: PVC schedule 40

2. Installations in Concrete: PVC schedule 40

3. In Slab Above Grade: Rigid steel conduit.

4. Exposed Outdoor Locations: Rigid steel conduit.

5. Wet Interior Locations: Rigid steel conduit or electrical metallic tubing. Use threaded or raintight fittings for conduit.

6. Concealed Dry Interior Locations: Rigid steel conduit or electrical metallic tubing.

7. Exposed Dry Interior Locations: Rigid steel conduit or electrical metallic tubing.

B. Size raceways for conductor type installed.

1. Minimum Size Conduit: ¾” in underground locations, ½” in all other locations.

2. Maximum Size Conduit in Slab Above Grade: 1 – inch; do not route conduits larger than ¾" to cross each other.

C. Arrange conduit and tubing to maintain headroom and to present a neat mechanical appearance.

1. Route exposed raceway parallel and perpendicular to walls and adjacent piping.

2. Maintain minimum 6 inch clearance to piping and 12 inch clearance to heat surfaces such as flues, steam piping, and heating appliances.

3. Maintain required fire, acoustic, and vapor barrier rating when penetrating walls, floors, and ceilings.

4. Route conduit through roof openings for piping and ductwork where possible; otherwise, route through roof jack with pitch pocket.

5. Group in parallel runs where practical. Use rack constructed of steel channel. Maintain spacing between raceways or de-rate circuit ampacities to NFPA 70 requirements.

6. Use conduit hangers and clamps; do not fasten with wire or perforated pipe straps.

7. Use conduit bodies to make sharp changes in direction.

8. Terminate all conduits with insulated bushings.

9. Use suitable caps to protect installed raceway against entrance of moisture and dirt.

10. Provide a pull cord in all empty raceways.

11. Install expansion joint fittings where raceway crosses building expansion joints.

12. Install plastic conduit and tubing in strict accordance with the manufacturer's recommendations. When plastic conduit is installed, use galvanized rigid elbows for 90 degree bends.

D. Install electrical boxes as shown on the Drawings, and as required for splices, taps, wire pulling, equipment connections and regulatory requirements.

1. Use cast outlet box in exterior locations, wet locations, and exposed interior locations

2. Use large enclosure for interior pull and junction boxes larger than 12 inches in any dimension.

3. Locate and install electrical boxes to allow access. Provide access panels if required.

4. Locate and install electrical boxes to maintain headroom and to present a neat mechanical appearance.

5. Install pull boxes and junction boxes above accessible ceilings or in unfinished areas.

6. Provide knockout closure for unused openings.

7. Align wall-mounted outlet boxes plumb and level for switches, and similar devices.

8. Coordinate mounting heights and locations of outlets above counters and backsplashes

9. Install lighting outlets to locate luminaries as shown on the Drawings.

E. Use recessed outlet boxes in finished areas.

1. Secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness, and plaster/tile ring installation.

2. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.

3. Locate boxes in masonry walls to require cutting corner only. Coordinate masonry cutting to achieve neat openings for boxes

4. Do not install boxes back-to-back in walls; provide 6 inch separation, minimum. In acoustic-rated walls provide 24 inch separation minimum.

5. Do not damage insulation.

F. Install wireway in accordance with manufacturer's instructions.

1. Bolt wireway to wall using two-piece hangers or steel channels fastened to the wall or on a self-supporting structure. Install level.

2. Mount raintight gutter in horizontal position only.

G. Install non metallic surface raceway in accordance with manufacturer's instructions.

1. Use flat head screws or clips and straps suitable for the purpose, to fasten channel to surfaces. Mount plumb and level.

2. Use insulated bushings and inserts at connections to outlets and corner fittings.

3. Use fittings and accessories designed for use with the raceway system.

H. J. Interface outlet boxes with connection of equipment.

END OF SECTION

SECTION 260943 - DISTRIBUTED INTELLIGENCE BASED LIGHTING CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Delete items below not required for project.

B. Distributed Digital Lighting Control System: System includes

1. Digital Lighting Controls

2. Emergency Lighting Control.

1.2 RELATED SECTIONS

A. Delete any sections below not relevant to this project; add others as required.

B. Section 26 50 00 – LED Interior Lighting.

1.3 REFERENCES

A. NFPA 70 - National Electrical Code; National Fire Protection Association.

B. NEMA - National Electrical Manufacturers Association

C. FCC emission standards

D. UL - Underwriters Laboratories, Inc. Listings

E. UL 20 - General Use Switches

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Digital Lighting Management System shall accommodate the square-footage coverage requirements for each area controlled, utilizing room controllers, digital occupancy sensors, switches, daylighting sensors and accessories that suit the required lighting and electrical system parameters.

B. System shall conform to requirements of NFPA 70.

C. System shall comply with FCC emission standards specified in part 15, sub-part J for commercial and residential application.

D. System shall be listed under UL sections 916 and/or 508.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

- Catalog sheets and specifications.
- Ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
- Storage and handling requirements and recommendations.
- Installation instructions.

C. Shop Drawings: Wiring diagrams for the various components of the System specified including:

- Composite wiring and/or schematic diagram of each control circuit as proposed to be installed.
- Show location of all devices, including at minimum sensors, load controllers, and switches/dimmers for each area on reflected ceiling plans.
- Provide room/area details including products and sequence of operation for each room or area. Illustrate typical acceptable room/area connection topologies.
- Network riser diagram including floor and building level details. Include network cable specification. Illustrate points of connection to integrated systems. Coordinate integration with mechanical and/or other trades.

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

E. Closeout Submittals:

1. Project Record Documents: Record actual installed locations and settings for lighting control devices.
2. Operation and Maintenance Manual:
    a. Include approved Shop Drawings and Product Data.
    b. Include Sequence of Operation, identifying operation for each room or space.
    c. Include manufacturer's maintenance information.
    d. Operation and Maintenance Data: Include detailed information on device programming and setup.
    e. Include startup and test reports.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing of centralized and distributed lighting control systems with a minimum of 10 years documented experience.

1.7 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to commencing Work of this section. Meeting to be attended by Contractor, Architect, system installer, factory authorized manufacturer's representative, and representative of all trades related to the system installation.

B. Review installation procedures and coordination required with related Work and the following:

- Confirm the location and mounting of all devices, with special attention to placement of switches, dimmers, and any sensors.
- Review the specifications for low voltage control wiring and termination.
- Discuss the functionality and configuration of all products, including sequences of operation, per design requirements.
- Discuss requirements for integration with other trades

C. Inspect and make notes of job conditions prior to installation:

- Record minutes of the conference and provide copies to all parties present.
- Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
- Installation shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Do not install equipment until following conditions can be maintained in spaces to receive equipment:

- Ambient temperature: 32 to 104 degrees F (0 to 40 degrees C).

- Relative humidity: Maximum 90 percent, non-condensing.

1.10 WARRANTY

A. Manufacturer shall provide a 5 year limited warranty on products within this installation, except where otherwise noted, and consisting of a one for one device replacement.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. WattStopper, a division of Legrand North America, LLC.

2. nLIGHT, a division of Acuity Brands Inc.

3. Current, a division of Current

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 DISTRIBUTED DIGITAL LIGHTING CONTROL SYSTEM

A. System General: Provide Digital Lighting Management System complete with all necessary enclosures, wiring, and system components to ensure a complete and properly functioning system as indicated on the Drawings and specified herein. If a conflict is identified, between the Drawing and this Specification, contact the Architect for clarification prior to proceeding.

1. Space Control Requirements: Provide occupancy/vacancy sensors with Manual- or Partial-ON functionality as indicated in all spaces except toilet rooms, storerooms, library stacks, or other applications where hands-free operation is desirable and Automatic-ON occupancy sensors are more appropriate. Provide Manual-ON occupancy/vacancy sensors for any enclosed office, conference room, meeting room, open plan system and training room. For spaces with multiple occupants, or where line-of-sight may be obscured, provide ceiling- or corner-mounted sensors and Manual-ON switches.

2. Daylit Areas: Provide daylight-responsive automatic control in all spaces (conditioned or unconditioned) where daylight contribution is available as defined by relevant local building energy code:

a. All luminaires within code-defined daylight zones shall be controlled separately from luminaires outside of daylit zones.

b. Daytime setpoints for total ambient illumination (combined daylight and electric light) levels that initiate dimming shall be programmed in compliance with relevant local building energy codes.

c. Multiple-level switched daylight harvesting controls may be utilized for areas marked on drawings.

d. Provide smooth and continuous daylight dimming for areas marked on drawings. Daylighting control system may be designed to turn off electric lighting when daylight is at or above required lighting levels, only if system functions to turn lamps back on at dimmed level, rather than turning full-on prior to dimming.

3. Conference, meeting, training, auditoriums, and multipurpose rooms shall have controls that allow for independent control of each local control zone. Occupancy / vacancy sensors shall be provided to turn off all lighting in the space. Spaces with up to four moveable walls shall include controls that can be reconfigured when the room is partitioned.

B. Equipment Required: Lighting Control and Automation system as defined under this section covers the following equipment.

1. Select the equipment required for the project and delete those that are not applicable.

2. Item #6 is NOT required in Florida; other states should be verified before removal.

3. If compliance with ASHRAE 90.1 is required, keep Item #6 plug load control requirement.

4. Digital Lighting Management local network: Free topology, plug-in wiring system (Cat 5e) for power and data to room devices.

5. Digital Room Controllers: Self-configuring, digitally addressable one, two or three relay plenum-rated controllers for on/off control. Selected models include 0-10 volt or line voltage forward phase control dimming outputs and integral current monitoring capabilities.

6. Digital Occupancy Sensors: Self-configuring, digitally addressable, calibrated occupancy sensors with LCD display and two-way active infrared (IR) communications.

7. Digital Switches: Self-configuring, digitally addressable pushbutton on/off, dimming, and scene switches.

8. Digital Daylighting Sensors: Single-zone closed loop, multi-zone open loop and single-zone dual-loop daylighting sensors with two-way active infrared (IR) communications for daylight harvesting using switching, bi-level, tri-level or dimming control.

9. Digital Lighting Management segment network: Linear topology, BACnet MS/TP network (1.5 twisted pair, shielded) to connect multiple local networks for centralized control.

10. Network Bridge: Provides BACnet MS/TP-compliant digital networked communication between rooms, panels and the Segment Manager or building automation system (BAS) and automatically creates BACnet objects representative of connected devices.

11. Segment Manager: BACnet MS/TP-based controller with web browser-based user interface for system control, scheduling, power monitoring, room device parameter administration and reporting.

2.3 DIGITAL LOAD CONTROLLERS

A. Digital Load Controllers: Digital controllers for lighting zones, fixtures automatically bind room loads to the connected control devices in the space without commissioning or the use of any tools. Provide controllers to match the room lighting requirements. Controllers are simple to install, and do not have dip switches/potentiometers, or require special configuration for standard Plug n' Go applications. Control units include the following features

1. Automatic room configuration to the most energy-efficient sequence of operation based upon the devices in the room.

2. Simple replacement using the default automatic configuration capabilities, a room controller may be replaced with an off-the-shelf device.

3. Multiple room controllers connected together in a local network must automatically arbitrate with each other, without requiring any configuration or setup, so that individual load numbers are assigned based on each controller's device ID's from highest to lowest.

4. Device Status LEDs to indicate:

   a. Data transmission

   b. Device has power

   c. Status for each load

   d. Configuration status

5. Quick installation features including:

   a. Standard junction box mounting

   b. Quick low voltage connections using standard RJ-45 patch cable

6. Based on individual configuration, each load shall be capable of the following behavior on power up following the loss of normal power:

   a. Turn on to 100 percent

   b. Turn off

   c. Turn on to last level

7. Each load be configurable to operate in the following sequences based on occupancy:

   a. Auto-on/Auto-off (Follow on and off)

b. Manual-on/Auto-off (Follow off only)

8. BACnet object information shall be available for the following objects:

   a. Load status

   b. Schedule state, normal or after-hours

   c. Demand Response enable and disable

   d. Room occupancy status

   e. Total room lighting and plug loads watts

9. UL 2043 plenum rated

10. Manual override and LED indication for each load

11. Zero cross circuitry for each load

12. All digital parameter data programmed into an individual room controller or plug load controller shall be retained in non-volatile FLASH memory within the controller itself. Memory shall have an expected life of no less than 10 years.

13. Dimming Room Controllers shall share the following features:

   a. Each load shall have an independently configurable preset on level for Normal Hours and After Hours events to allow different dimmed levels to be established at the start of both Normal Hours and After Hours events.

   b. Fade rates for dimming loads shall be specific to bound switch buttons, and the load shall maintain a default value for any bound buttons that do not specify a unique value.

   c. Override button for each load provides the following functions:

      1) Press and release for on/off control

      2) Press and hold for dimming control

   d. Each dimming output channel shall have an independently configurable minimum and maximum calibration trim level to set the dimming range to match the true dynamic range of the connected ballast or driver. LED level indicators on bound dimming switches shall utilize this new maximum and minimum trim.

   e. Each dimming output channel shall have an independently configurable minimum and maximum trim level to set the dynamic range of the output within the new 0-100 percent dimming range defined by the minimum and maximum calibration trim.

   f. Calibration and trim levels must be set per output channel. Devices that set calibration or trim levels per controller (as opposed to per load) are not acceptable.

g. All configuration shall be digital. Devices that set calibration or trim levels per output channel via trim pots or dip-switches are not acceptable.

B. On/Off Room Controllers shall include:

- Dual voltage (120/277 VAC, 60 Hz) capable rated for 20A total load
- One or two relay configuration
- Simple 150 mA switching power supply.
- Three RJ-45 local network ports with integral strain relief and dust cover

C. On/Off/0-10V Dimming KO Mount Room Controllers shall include:

1. Dual voltage (120/277 VAC, 60 Hz) capable rated for 10A (or greater) total load
2. One or two relays configurations
3. Smart 150 mA switching power supply
4. Two RJ-45 local network ports. Provide molded strain relief ring
5. One dimming output per relay

a. 0-10V Dimming - Where indicated, one 0-10 volt analog output per relay for control of compatible LED drivers. The 0-10 volt output shall automatically open upon loss of power to the Room Controller to assure full light output from the controlled lighting.

D. On/Off/ Forward Phase Dimming Room Controllers shall include:

1. Dual voltage (120/277 VAC, 60 Hz) rated for 20A total load, with forward phase dimmed loads derating to 16A for some load types
2. One or two relays configurations
3. Smart 250 mA switching power supply
4. Four RJ-45 local network ports. Provide integral strain relief
5. One dimming output per relay

a. Line Voltage, Forward Phase Dimming - Where indicated, one forward phase control line voltage dimming output per relay for control of compatible two-wire or three-wire ballasts, LED drivers, MLV, forward phase compatible ELV, neon/cold cathode and incandescent loads.

2.4 DIGITAL WALL OR CEILING MOUNTED OCCUPANCY SENSOR

A. Digital Occupancy Sensors shall provide graphic LCD display for digital calibration and electronic documentation. Features include the following:

1. Digital calibration and pushbutton configuration for the following variables:

a. Sensitivity, 0-100 percent in 10 percent increments

b. Time delay, 1-30 minutes in 1 minute increments

c. Test mode, Five second time delay

d. Detection technology, PIR, Ultrasonic or Dual Technology activation and/or re-activation.

e. Walk-through mode

2. Load parameters options including Auto/Manual-ON, blink warning, and daylight enable/disable when photosensors are included on the local network.

3. Programmable control functionality including:

a. Each sensor may be programmed to control specific loads within a local network.

b. Sensor shall be capable of activating one of 16 user-definable lighting scenes.

c. Adjustable retrigger time period for manual-on loads. Load will retrigger (turn on) automatically within a configurable period of time (default 10 seconds) after turning off.

d. On dual technology sensors, independently configurable trigger modes are available for both Normal (NH) and After Hours (AH) time periods. The retrigger mode can be programmed to use the following technologies:

e. Ultrasonic and Passive Infrared

f. Ultrasonic or Passive Infrared

g. Ultrasonic only

h. Passive Infrared only

i. Independently configurable sensitivity settings for passive infrared and ultrasonic technologies (on dual technology sensors) for both Normal (NH) and After Hour (AH) time periods.

4. One or two RJ-45 port(s) for connection to local network.

5. Device Status LEDs, which may be disabled for selected applications, including:

a. PIR detection

b. Ultrasonic detection

c. Configuration mode

d. Load binding

6. Assignment of occupancy sensor to a specific load within the room without wiring or special tools.

7. Manual override of controlled loads.

8. All digital parameter data programmed into an individual occupancy sensor shall be retained in non-volatile FLASH memory within the sensor itself. Memory shall have an expected life of no less than 10 years.

B. BACnet object information shall be available for the following objects:

- Detection state
- Occupancy sensor time delay
- Occupancy sensor sensitivity, PIR and Ultrasonic

C. Units shall not have any dip switches or potentiometers for field settings

2.5 DIGITAL WALL SWITCH OCCUPANCY SENSORS

A. Digital Occupancy Sensors shall provide scrolling LCD display for digital calibration and electronic documentation. Features include the following:

1. Digital calibration and pushbutton configuration for the following variables:

a. Sensitivity: 0-100 percent in 10 percent increments

b. Time delay: 1-30 minutes in 1 minute increments

c. Test mode: Five second time delay

d. Detection technology: PIR, Dual Technology activation and/or re-activation.

e. Walk-through mode

f. Load parameters including Auto/Manual-ON, blink warning, and daylight enable/disable when photosensors are included in the local network.

2. Programmable control functionality including:

a. Each sensor may be programmed to control specific loads within a local network.

b. Sensor shall be capable of activating one of 16 user-definable lighting scenes.

c. Adjustable retrigger time period for manual-on loads. Load will retrigger (turn on) automatically during the configurable period of time (default 10 seconds) after turning off.

d. On dual technology sensors, independently configurable trigger modes are available for both Normal (NH) and After Hours (AH) time periods. The retrigger mode can be programmed to use the following technologies:

1) Ultrasonic and Passive Infrared

2) Ultrasonic or Passive Infrared

3) Ultrasonic only

4) Passive Infrared only

3. Independently configurable sensitivity settings for passive infrared and ultrasonic technologies (on dual technology sensors) for both Normal (NH) and After Hour (AH) time periods.

4. Two RJ-45 ports for connection to local network.

5. Device Status LEDs including

a. PIR detection

b. Ultrasonic detection

c. Configuration mode

d. Load binding

6. Assignment of any occupancy sensor to a specific load within the room without wiring or special tools.

7. Assignment of local buttons to specific loads within the room without wiring or special tools

8. Manual override of controlled loads

9. All digital parameter data programmed into an individual wall switch sensor shall be retained in non-volatile FLASH memory within the wall switch sensor itself. Memory shall have an expected life of no less than 10 years.

B. BACnet object information shall be available for the following objects:

1. Detection state

2. Occupancy sensor time delay

3. Occupancy sensor sensitivity, PIR and Ultrasonic

4. Button state

5. Switch lock control

6. Switch lock status

C. Units shall not have any dip switches or potentiometers for field settings.

D. Two-button wall switch occupancy sensors, when connected to a single relay dimming room or fixture controller, shall operate in the following sequence as a factory default:

1. Left button

a. Press and release - Turn load on

b. Press and hold - Raise dimming load

2. Right button

a. Press and release - Turn load off

b. Press and hold - Lower dimming load

E. Low voltage momentary pushbuttons shall include the following features:

1. Load/Scene Status LED on each switch button with the following characteristics:

a. Bi-level LED

b. Dim locator level indicates power to switch

c. Bright status level indicates that load or scene is active

2.6 DIGITAL WALL SWITCHES

A. Low voltage momentary pushbutton switches in 1, 2, 3, 4, 5 and 8 button configuration. Wall switches shall include the following features:

1. Removable buttons for field replacement with engraved buttons and/or alternate color buttons. Button replacement may be completed without removing the switch from the wall.

2. Load/Scene Status LED on each switch button with the following characteristics:

a. Bi-level LED

b. Dim locator level indicates power to switch

c. Bright status level indicates that load or scene is active

d. Dimming switches shall include seven bi-level LEDs to indicate load levels using 14 steps.

3. Programmable control functionality including:

a. Button priority may be configured to any BACnet priority level, from 1-16, corresponding to networked operation allowing local actions to utilize life safety priority

b. Scene patterns may be saved to any button other than dimming rockers. Once set, buttons may be digitally locked to prevent overwriting of the preset levels.

4. All digital parameter data programmed into an individual wall switch shall be retained in non-volatile FLASH memory within the wall switch itself. Memory shall have an expected life of no less than 10 years.

B. BACnet object information shall be available for the following objects:

- Button state
- Switch lock control
- Switch lock status

C. Two RJ-45 ports for connection to the local network.

D. Load and Scene button function may be reconfigured for individual buttons from Load to Scene, and vice versa.

- Individual button function may be configured to Toggle, On only or Off only.
- Individual scenes may be locked to prevent unauthorized change.
- Fade Up and Fade Down times for individual scenes may be adjusted from 0 seconds to 18 hours.
- Ramp rate may be adjusted for each dimmer switch.
- Switch buttons may be bound to any load on any load controller or relay panel and are not load type dependent; each button may be bound to multiple loads.

2.7 DIGITAL DAYLIGHTING SENSORS

A. Digital daylighting sensors shall work with load controllers and relay panels to provide automatic switching, bi-level, or tri-level or dimming daylight harvesting capabilities for any load type connected to the controller or panel. Daylighting sensors shall be interchangeable without the need for rewiring.

- Closed loop sensors measure the ambient light in the space and control a single lighting zone.

- Open loop sensors measure incoming daylight in the space and are capable of controlling up to three lighting zones.

B. Digital daylighting sensors shall include the following features:

1. Sensor's internal photodiode shall only measure lightwaves within the visible spectrum. The photodiode's spectral response curve shall closely match the entire photopic curve. Photodiode shall not measure energy in either the ultraviolet or infrared spectrums. Photocell shall have a sensitivity of less than 5 percent for any wavelengths less than 400 nanometers or greater than 700 nanometers.

2. Sensor light level range shall be from 1-6,000 foot-candles (fc) minimum.

3. Capability of ON/OFF, bi-level or tri-level switching, or dimming, for each controlled zone, depending on the selection of load controller(s) and load binding to controller(s).

4. For switching daylight harvesting, the photosensor shall provide a field-selectable deadband, or a separation, between the "ON Setpoint" and the "OFF Setpoint" that will prevent the lights from cycling excessively after they turn off.

5. For dimming daylight harvesting, the photosensor shall provide the option, when the daylight contribution is sufficient, of turning lights off or dimming lights to a field-selectable minimum level.

6. Photosensors shall have a digital, independently configurable fade rate for both increasing and decreasing light level in units of percent per second.

7. Photosensors shall provide adjustable cut-off time. Cut-off time is defined by the number of selected minutes the load is at the minimum output before the load turns off. Selectable range between 0-240 minutes including option to never cut-off.

8. Optional wall switch override shall allow occupants to reduce lighting level to increase energy savings or, if permitted by system administrator, raise lighting levels for a selectable period of time or cycle of occupancy.

9. Configuration LED status light on device that blinks to indicate data transmission.

10. Status LED indicates test mode, override mode and load binding.

11. Recessed switch on device to turn controlled load(s) ON and OFF.

12. BACnet object information shall be available for the following daylighting sensor objects, based on the specific photocell's settings:

    a. Light level

    b. Day and night setpoints

    c. Off time delay

    d. On and off setpoints

e. Up to three zone setpoints

f. Operating mode - on/off, bi-level, tri-level or dimming

13. One RJ-45 port for connection to the local network.

14. A choice of accessories to accommodate multiple mounting methods and building materials. Photosensors may be mounted on a ceiling tile, skylight light well or backbox.

15. Any load or group of loads in the room can be assigned to a daylighting zone

16. Each load within a daylighting zone can be individually enabled or disabled for discrete control (load independence).

17. All digital parameter data programmed into a photosensor shall be retained in non-volatile FLASH memory within the photosensor itself. Memory shall have an expected life of no less than 10 years.

C. Closed loop digital photosensors shall include the following additional features:

- An internal photodiode that measures light in a 100-degree angle, cutting off the unwanted light from bright sources outside of this cone.

- Automatic self-calibration, initiated from the photosensor, a wireless configuration tool or a PC with appropriate software.

- Automatically establishes application-specific setpoints following self-calibration. For switching operation, an adequate deadband between the ON and OFF setpoints shall prevent the lights from cycling; for dimming operation a sliding setpoint control algorithm with separate Day and Night setpoints shall prevent abrupt ramping of loads.

2.8 HANDHELD CONFIGURATION TOOLS

A. Provide a wireless configuration tool to facilitate customization of the local network using two-way infrared communications, and/or PC software that connects to each local network via a USB interface.

B. Features and functionality of the wireless configuration tool shall include but not be limited to:

- Two-way infrared (IR) communication with IR-enabled devices within a range of approximately 30 feet.

- High visibility organic LED (OLED) display, pushbutton user interface and menu-driven operation.

- Must be able to read and modify parameters for load controllers and relay panels, occupancy sensors, wall switches, daylighting sensors, network bridges, and identify network devices by type and serial number.

- Save up to eight occupancy sensor setting profiles, and apply profiles to selected sensors.

- Temporarily adjust light level of any load(s) on the local network and incorporate those levels in scene setting. Set room mode for testing of Normal Hours (NH) and After Hours (AH) parameter settings.

- Adjust or fine-tune daylighting settings established during auto-configuration, and input light level data to complete configuration of open loop daylighting controls.

- Set room mode for testing of Normal Hours (NH) and After Hours (AH) parameter settings.

- Verify status of building level network devices.

2.9 SEGMENT NETWORK

A. Provide a segment network using linear topology, BACnet-based MS/TP (or Cat-5e) subnet to connect local networks (rooms).

- Network bridges, relay panels and segment managers shall include terminal blocks, with provisions for separate "in" and "out" terminations, for segment network connections.

- Segment network utilizes 1.5 twisted pair, shielded, cable supplied by the lighting control manufacturer. Maximum cable run for each segment is 4,000 feet. Conductor-to-conductor capacitance of the twisted pair shall be less than 30 pf/ft and have a characteristic impedance of 120 Ohms.

- Network wire jacket is available in high visibility green, white, or black.

- Substitution of manufacturer-supplied cable is not permitted and may void the warranty, if non-approved cable is installed, and if terminations are not completed according to manufacturer's specific requirements.

- Network signal integrity requires that each conductor and ground wire be correctly terminated at every connected device.

- Segment networks shall be capable of connecting to any of the following: BACnet-compliant BAS (provided by others) directly via MS/TP, or BACnet/IP via an LMSM Unit.

2.10 NETWORK BRIDGE

A. Network bridge module connects a local network to a BACnet-compliant segment network for communication between rooms, relay panels and a segment manager or BAS. Each local network shall include a network bridge component to provide a connection to the local network room devices. Network bridge shall use industry standard BACnet MS/TP network communication and an optically isolated EIA/TIA RS-485 transceiver.

1. Network bridge shall be provided as a separate module connected on the local network through an available RJ-45 port.

2. Network bridge shall automatically create standard BACnet objects for selected network devices to allow any BACnet-compliant BAS to include lighting control and power monitoring features as provided by the network devices on each local network. BACnet objects will be created for the addition or replacement of any given device for the installed life of the system. Products requiring that an application-specific point database be loaded to create or map BACnet objects are not acceptable. Systems not capable of providing BACnet data for control devices via a dedicated BACnet Device ID and physical MS/TP (or Cat-5E) termination per room are not acceptable. Standard BACnet objects shall be provided as follows:

   a. Read/write the normal or after hours schedule state for the room

   b. Read the detection state of each occupancy sensor

   c. Read the aggregate occupancy state of the room

   d. Read/write the On/Off state of loads

   e. Read/write the dimmed light level of loads

   f. Read the button states of switches

   g. Read total current in amps, and total power in watts through the load controller

   h. Read/write occupancy sensor time delay, PIR sensitivity and ultrasonic sensitivity settings

   i. Activate a preset scene for the room

   j. Read/write daylight sensor fade time and day and night setpoints

   k. Read the current light level, in foot-candles, from interior and exterior photosensors and photocells

   l. Set daylight sensor operating mode

   m. Read/write wall switch lock status

   n. Read watts per square foot for the entire controlled room

   o. Write maximum light level per load for demand response mode

   p. Read/write activation of demand response mode for the room

   q. Activate/restore demand response mode for the room

2.11 SEGMENT MANAGER

A. For networked applications, the Digital Lighting Management system shall include at least one segment manager to manage network communication. It shall be capable of serving up a graphical user interface via a standard web browser utilizing either unencrypted TCP/IP traffic

via a configurable port (default is 80) or 256-bit AES encrypted SSL TCP/IP traffic via a configurable port (default is 443).

B. Each segment manager shall have integral support for at least three segment networks. Segment networks may alternately be connected to the segment manager via external BACnet-to-IP interface routers and switches, using standard Ethernet structured wiring. Each router shall accommodate one segment of the network. Provide the quantity of routers and switches as shown on the Drawings.

C. Operational features of the Segment Manager shall include the following:

1. Connection to PC or LAN via standard Ethernet TCP/IP via standard Ethernet TCP/IP with the option to use SSL encrypted connections for all traffic.

2. Easy to learn and use graphical user interface, compatible with Internet Explorer 8, or equal browser. The Segment Manager shall not require installation of any lighting control software on an end-user PC.

3. Log in security capable of restricting some users to view-only or other limited operations.

4. Segment Manager shall provide two main sets of interface screens - those used to initially configure the unit (referred to as the config screens), and a those used to allow users to dynamic monitor the performance of their system and provide a centralized scheduling interface. Capabilities using the Config Screens shall include:

a. Automatic discovery of networked devices and relay panels on the segment network(s). Commissioning beyond activation of the discovery function shall not be required to provide communication, monitoring or control of all local networks and lighting control panels.

b. Allow information for all discovered networked devices to be imported into the Segment Manager via a single XML based site file from the LMCS Software. Importable information can include text descriptions of every networked component and individual loads, and automatic creation of room location information and overall structure of network. Info entered into LMCS should not have to be re-entered manually via keystrokes into the Segment Manager

c. After discovery, all rooms and panels shall be presented in a standard navigation tree format. Selecting a device from the tree will allow the device settings and operational parameters to be viewed and changed by the user.

d. Ability to view and modify networked device operational parameters. It shall be possible to set device parameters independently for normal hours and after-hours operation including sensor time delays and sensitivities, and load response to sensor including Manual-On or Auto-On.

e. Provide capabilities for integration with a BAS via BACnet protocol. At a minimum, the following points shall be available to the BAS via BACnet IP connection to the segment manager: room occupancy state; room schedule mode; room switch lock control; individual occupancy sensor state; room lighting power; room plug-load power; load ON/OFF state; load dimming level; panel channel

schedule state; panel relay state; and Segment Manager Group schedule state control. Any of above items shall be capable of being moved into an "Export Table" that will provide any integrator with only the data they need, and by using the Export Table effectively create a firewall between the integrator's request for info and the overall system performance.

5. Capabilities using the Segment Manager's Dashboard Screens shall include:

   a. A dynamic "tile" based interface that allows easy viewing of each individual room's lighting and plug load power consumption, and lighting and plug load power density. Tiles will be automatically organized according to location so a single tile for the building summarizes all information for tiles beneath it on every floor, in every area, in every room. Tiles use three color coded energy target parameters, allowing an owner to quickly identify rooms that are not performing efficiently. Tiles for rooms with occupancy sensors shall include an icon to indicate whether that room is occupied. Tiles shall be clickable, and when clicked the underlying hierarchical level of tiles shall become visible. Tile interface shall be accessible via mouse, or touch screen devices. Tiles shall be created automatically by the segment manager, based on the information found during the device discovery and/or information included in a file imported in from LMCS (such as tagged descriptions for each room) without any custom programming.

   b. Ability to set up schedules for local networks (rooms) and panels. Schedules shall be capable of controlling individual rooms with either on/off or normal hours/after-hours set controlled zones or areas to either a normal hours or after hours mode of operation. Support for annual schedules, holiday schedules and unique date-bound schedules, as well as astro On or astro Off events with offsets. Schedules shall be viable graphically as time bars in a screen set up to automatically show scheduled events by day, week or month.

6. If shown on the Drawings, Segment Managers shall be integrated into a larger control network by the addition of a Network Supervisor package. The Supervisor is a server level computer running a version of the Segment Manager interface software with dedicated communication and networking capability, able to pull information automatically from each individual Segment Manager in the network. By using a Supervisor, information for individual Segment Managers can be accessed and stored on the Supervisor's hard drive, eliminating the risk of data being overwritten after a few days because of Segment Manager memory limits.

7. Segment Manager shall allow access and control of the overall system database via Native Niagara AX FOX connectivity. Systems that must utilize a Tridium Niagara controller in addition to the programming, scheduling and configuration server are not acceptable.

D. Segment Manager shall support multiple networked rooms as follows:

- Support up to 120 network bridges and 750 digital in-room devices (small networks).

- Support up to 200 network bridges and 1,100 digital in room devices, connected via network routers and switches (large networks).

2.12 PROGRAMMING, CONFIGURATION AND DOCUMENTATION SOFTWARE

A. PC-native application for optional programming of detailed technician-level parameter information for all networked products, including all parameters not accessible via BACnet and the handled IR configuration tool. Software must be capable of accessing room-level parameter information globally for many segment networks simultaneously utilizing standard BACnet/IP communication.

B. Additional parameters exposed through this method include but are not limited to:

- Occupancy sensor detection LED disable for performance and other aesthetic spaces where blinking LEDs present a distraction.
- Six occupancy sensor action behaviors for each controlled load, separately configurable for normal hours and after-hours modes. Modes include: No Action, Follow Off Only, Follow On Only, Follow On and Off, Follow On Only with Override Time Delay, Follow Off Only with Blink Warn Grace Time, Follow On and Off with Blink Warn Grace Time.
- Separate fade time adjustments per load for both normal and after hours from 0 - 4 hours.
- Configurable occupancy sensor re-trigger grace period from 0 - 4 minutes separate for both normal hours and after hours.
- Separate normal hours and after hours per-load button mode with modes including: Do nothing, on only, off only, on and off.
- Load control polarity reversal so that on events turn loads off and vice versa.
- Per-load DR (demand response) shed level in units of percent.
- Load output pulse mode in increments of 1second.
- Fade trip point for each load for normal hours and after hours that establishes the dimmer command level at which a switched load closes its relay to allow for staggered On of switched loads in response to a dimmer.

C. Generation of reports at the whole file, partial file, or room level. Reports include but are not limited to:

- Device list report: All devices in a project listed by type.
- Load binding report: All load controller bindings showing interaction with sensors, switches, and daylighting.
- BACnet points report: Per room Device ID report of the valid BACnet points for a given site's BOM.
- Room summary report: Device manifest for each room, aggregated by common BOM, showing basic sequence of operations.

- Device parameter report: Per-room lists of all configured parameters accessible via handheld IR programmer for use with O&M documentation.

- Scene report: All project scene pattern values not left at defaults (i.e., 1 = all loads 100 percent, 2 = all loads 75 percent, 3 = all loads 50 percent, 4 = all loads 25 percent, 5-16 = same as scene 1).

- Occupancy sensor report: Basic settings including time delay and sensitivities for all occupancy sensors.

D. Network-wide programming of parameter data in a spreadsheet-like programming environment including but not limited to the following operations:

- Set, copy/paste an entire project site of sensor time delays.

- Set, copy/paste an entire project site of sensor sensitivity settings.

- Search based on room name and text labels.

- Filter by product type to allow parameter set by product.

- Filter by parameter value to search for product with specific configurations.

E. Network-wide firmware upgrading remotely via the BACnet/IP network.

- Mass firmware update of entire rooms.

- Mass firmware update of specifically selected rooms or areas.

- Mass firmware upgrade of specific products

PART 3 - EXECUTION

3.1 PREPARATION

A. Do not begin installation until measurements have been verified and work areas have been properly prepared.

B. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that the required pre-installation meeting specified in Part 1 of this specification has been completed, recorded meeting minutes have been distributed and all outstanding issues noted have been resolved prior to the start of installation.

3.2 INSTALLATION

A. Install system in accordance with the approved system shop drawings and manufacturer's instructions.

B. Install all room/area devices using manufacturer's factory-tested Cat 5e cable with pre-terminated RJ-45 connectors.

- If pre-terminated cable is not used for room/area wiring, each field-terminated cable shall be tested prior to proceeding with the Work.
- If fixtures have internal network Control Modules, ensure that they are also connected with Cat 5e cable.
- Install all room to room network devices using MSTP network wire.
- Low voltage wiring topology must comply with manufacturer's specifications.
- Route network wiring as indicated on the Drawings as closely as possible. Document final wiring location, routing and topology on as built drawings.

C. All line voltage connections shall be tagged to indicate circuit and switched legs.

D. Test all devices to ensure proper communication.

E. Calibrate all sensor time delays and sensitivity to guarantee proper detection of occupants and energy savings. Adjust time delay so that controlled area remains lighted while occupied.

F. Provide written or computer-generated documentation on the configuration of the system including room by room description including:

- Sensor parameters, time delays, sensitivities, and daylighting setpoints.
- Sequence of operation, (e.g., manual ON, Auto OFF. etc.)
- Load Parameters (e.g., blink warning, etc.)

G. Post start-up tuning - Adjust sensor time delays and sensitivities to meet the Owner's requirements 30 days from beneficial occupancy. Provide a detailed report to the Architect / Owner of post start-up activity.

H. All Class II cabling shall enter enclosures from within low-voltage wiring areas and shall remain within those areas. No Class I conductors shall enter a low-voltage area.

I. Run separate neutrals for any phase dimmed branch load circuit. Different types of dimming loads shall have separate neutral.

J. Verify all non-panel-based lighting loads to be free from short circuits prior to connection to room controllers.

3.3 FIELD QUALITY CONTROL

A. Tests and Inspections: Manufacturer's service representative shall perform the following inspections and prepare reports.

- Verify Class I and II wiring connections are terminated properly by validating system performance.
- Set IP addresses and other network settings of system front end hardware per facilities IT instructions.
- Verify / complete task programming for all switches, dimmers, time clocks, and sensors.
- Verify that the control of each space complies with the Sequence of Operation.
- Correct any system issues and retest.

B. Provide a report in table format with drawings or using a software file that can be opened in the manufacturer's system software including each room or space that has lighting control installed. Indicate the following:

- Date of test or inspection.
- Loads per space, or Fixture Address identification.
- Quantity and Type of each device installed
- Reports providing each device's settings.

3.4 POST OCCUPANCY QUALITY CONTROL

A. Convene at a maximum of 30-days after beneficial occupancy. Meeting to be attended by Contractor, Architect, system installer, factory authorized manufacturer's representative, and representative of all trades related to the system installation.

B. Post occupancy tuning - Adjust sensor time delays and sensitivities to meet the Owner's requirements. Update any adjustments to the field quality control report and return an updated copy to the Architect / Owner of any post occupancy activity.

3.5 SOFTWARE SERVICE AGREEMENT

A. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

B. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.

- Upgrade Notice: At least 30 days to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

3.6 DEMONSTRATION AND TRAINING

A. Before Substantial Completion, arrange and provide a one-day Owner instruction period to designated Owner personnel. Set-up, starting of the lighting control system and Owner instruction includes:

- Confirmation of entire system operation and communication to each device.
- Confirmation of operation of individual relays, switches, and sensors.
- Confirmation of system Programming, photocell settings, override settings, etc.
- Provide training to cover installation, programming, operation, and troubleshooting of the lighting control system.

3.7 PRODUCT SUPPORT AND SERVICE

A. Factory telephone support shall be available at no cost to the Owner following acceptance. Factory assistance shall consist of assistance in solving application issues pertaining to the control equipment.

END OF SECTION

SECTION 26 27 26

WIRE, CABLE, AND DEVICES

PART 1 - GENERAL

1.1 1.01 RELATED DOCUMENTS:

A. Section 26050 – Electrical General Requirements, apply to the work specified in this Section, with additions and modifications specified herein.

1.2 SECTION INCLUDES:

- Wire and Cable
- Wiring Devices

PART 2 - PRODUCTS

2.1 2.01 WIRE AND CABLE:

A. Building Wire:

1. Feeder and Branch Circuits 10 AWG and Smaller: Copper, solid conductor, 600 volt insulation, THHN/THWN.

2. Feeder and Branch Circuits 8 AWG and 6 AWG: Copper, stranded conductor, 600 volt insulation, THHN/THWN.

3. Feeder and Branch Circuits Larger than 6 AWG: Copper, stranded, conductor, 600 volt insulation, THW.

4. Control Circuits: Copper, stranded conductor, 600 volt insulation, THHN/THWN.

B. Remote Control Signal Cable:

1. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 60 degree C, individual conductors twisted together, shielded, and covered with PVC jacket.

2. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60 degree C, individual conductors twisted together, shielded, and covered with PVC jacket; UL listed.

2.2 WIRING DEVICES AND WALLPLATES:

A. Manufacturers:

1. Hubbell.

2. Pass and Seymour.

3. Slater.

B. Wall Switches: AC general use, quiet – operating snap switch rated 20 amperes and 120/277 volts AC, with plastic toggle handle, ivory color.

1. Single Pole Switch Hubbell 1221 - I

2. Double Pole Switch: Hubbell 1222 - I

3. Three Way Switch: Hubbell 1223 - I

C. Receptacle:

1. Convenience Receptacle Configuration: Type 5-20R, plastic face, ivory color. Model GF-5362-I manufactured by Hubbell.

2. Specific Purpose Receptacle: Configuration indicated on Drawings with black plastic face.

3. Provide straight-blade receptacles to NEMA WD 1.

4. Provide locking-blade receptacles to NEMA WD 5.

5. GFCI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter. Model GF-5362-I manufactured by Hubbell.

D. Decorative Cover Plate: Plastic

E. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device covers rated raintight while in use on accordance with Article 410-57 of the National Electrical Code.

PART 3 - EXECUTION:

3.1 3.01 EXAMINATION AND PREPERATION:

A. Verify that interior of building has been physically protected from weather.

B. Verify that mechanical work which is likely to injure conductors has been completed.

C. Completely and thoroughly swab raceway system before installing conductors.

3.2 3.02 INSTALLATION:

A. Wiring Methods:

1. Concealed Interior Locations: Building wire in raceway.

2. Exposed Interior Locations: Building wire in raceway.

3. Above Accessible Ceilings: Building wire in raceway.

4. Wet or Damp Interior Locations: Building wire in raceway.

5. Exterior Locations: Building wire in raceway.

6. Underground Locations: Building wire in raceway.

B. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.

1. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 100 feet; and for 20 ampere, 277 volt branch circuit home runs longer than 200 feet..

C. Neatly train and secure wiring inside boxes, equipment and panelboards.

D. Use UL listed wire pulling lubricant for pulling conductors in raceways.

E. Protect exposed cables.

F. Support cables above accessible ceilings to keep them from resting on ceiling tiles.

G. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.

H. Terminate spare conductors with electrical tape.

I. Devices shall mount flush or as indicated on the Drawings.

J. Install wiring devices in accordance with manufacturer's instructions.

1. Install wall switches 48 inches above floor, "OFF" position down.

2. Install wall dimmers 48 inches above floor. De-rate ganged dimmers as instructed by manufacturer. Do not use a common neutral, provide a separate neutral for each dimmed circuit.

3. Install convenience receptacles 18 inches above floor, 6 inches above counters or splashbacks, with grounding pole on bottom.

4. Install GFCI receptacles at all outdoor locations and all indoor locations as required by NFPA70, and as indicated.

5. Install specific purpose receptacles at heights shown on Drawings.

6. Install cord and attachment plug caps on equipment under the provisions of Section 16100. Size cord for connected load and rating of branch circuit over-current protection.

K. Install wall plates flush and level.

1. decorative plates on switch, receptacle, telephone, television and blank outlets in finished areas.

2. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3. Install weatherproof coverplates on all devices/boxes in wet or outdoor locations.

3.3 FIELD QUALITY CONTROL:

A. Perform field inspection and testing of circuits under provisions of Section 16000.

1. Inspect wire and cables for physical damage and proper connection.

2. Torque test conductor connections and terminations to manufacturer's recommended values.

3. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION

SECTION 26 40 00

SERVICE AND DISTRIBUTION

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- Grounding and bonding
- Service entrance and metering
- Utility requirements
- Panelboards
- Enclosed switches
- Enclosed circuit breakers

1.2 SERVICE TYPE DESCRIPTION: Electric Service System is an existing 208Y/120 volts three phase 4 wire served from an overhead utility primary service and an underground service lateral.

1.3 PROJECT CONDITIONS: Verify field measurements for the equipment to ensure proper fit within the space provided.

1.4 UTILITY REQUIREMENTS:

A. The serving utility is Florida Power and Light.

B. Metering shall be provided by the utility company, existing to remain.

1. Coordinate with the utility for exact metering requirements.

2. Install metering equipment provided by the utility company.

3. Pay for all assessments, service charges, fees, etc. from the utility for service requirements. These costs from the electrical utility for providing the electric service shall be included in the Contractor's bid.

1.5 EQUIPMENT APPLICATION: All equipment and materials shall have ratings established by a recognized independent agency or laboratory. The Contractor shall apply the items used on this project within those ratings and application shall be subject to any stipulations or exceptions established by the independent agency or laboratory. Use of equipment or materials in applications beyond that certified by the agency or beyond that recommended by the manufacturer shall be cause for removal and replacement of such mis-applied items.

PART 2 - PRODUCTS

2.1 GROUNDING MATERIALS:

A. GROUND ROD: 16 feet x ¾" diameter, copper clad steel, sectional driven.

B. GROUND CONNECTORS: Approved ground clamp manufactured of cast bronze construction with matching bolts, nuts, and washers.

C. EXOTHERMIC WELDS: Materials shall be from the same source. Welding process shall be Cadweld or approved equal.

D. GROUNDING CONDUCTORS: Green colored and coded insulated copper (#12 AWG minimum) or bare soft drawn copper as indicated on Drawings.

2.2 PANELBOARDS:

A. DISTRIBUTION PANELBOARDS: NEMA PB 1; circuit breaker type.

- Bus Material: Tin-plated Aluminum.
- Ground Bus: Copper.
- Enclosures: Type 1 or 3R as shown on the Drawings.
- Mounting: Surface or flush mount as indicated on the Drawings.
- Door: Hinged with lock. Door assembly shall be hinged to enclosure for panels rated 250 amps or larger.
- Circuit Breakers: Bolt-on, ratings as shown on Drawings.

B. LIGHT AND POWER PANELBOARDS: NEMA PB 1; circuit breaker type.

- Bus Material: Tin-plated Aluminum.
- Ground Bus: Copper.
- Enclosures: Type 1 or 3R as shown on the Drawings.
- Mounting: Surface or flush mount as indicated on the Drawings.

- Door: Hinged with lock.
- Circuit Breakers: Bolt-on, ratings as shown on Drawings.

C. ACCESSORIES: Provide panel and branch device accessories as indicated on the Drawings

D. FUTURE PROVISIONS: Where space provisions are indicated on the Drawings, provide bussing, bus extensions, etc. required to mount future circuit breakers. Where spare provisions are indicated on the Drawings, provide circuit breakers complete and ready for connection.

E. MANUFACTURERS:

- Square D Company
- Eaton/Cutler – Hammer
- General Electric
- ITE - Siemens

2.3 ENCLOSED SWITCHES:

A. ENCLOSED SWITCH ASSEMBLIES: NEMA KS 1, Type HD

B. ENCLOSURES: NEMA KS 1; Type 1 or 3R as required.

C. GROUND: Provide grounding lug.

D. RATINGS: 600 or 250 volts to match system service requirements, poles and amp ratings as indicated on the Drawings and coordinated with other equipment installers.

E. E. MANUFACTURERS:

- Square D Company
- Eaton/Cutler – Hammer
- General Electric
- ITE - Siemens

2.4 ENCLOSED CIRCUIT BREAKERS:

A. CIRCUIT BREAKER: NEMA AB 1; Voltage and Accessories as indicated on Drawings.

B. ENCLOSURES: Code gauge steel, NEMA 1 or 3R as required.

C. MANUFACTURERS:

- Square D Company
- Eaton/Cutler – Hammer
- General Electric
- ITE – Siemens

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION:

A. Make arrangements with utility company to obtain permanent electrical service to the facility. Provide CT Cabinet and Meter base as required by utility for service connection.

B. Provide concrete pad for utility transformer. Pad details on the Drawings are for estimating purposes. Coordinate exact pad requirements with the utility prior to installation.

C. Provide pressure treated service/metering pole of class and size indicated on the Drawings.

3.2 INSTALLATION:

A. Install utility services in accordance with utility company standards and requirements.

1. Underground Service: Install service entrance conduits and conductors from the utility service point to the service equipment as shown on the Drawings.

2. Provide lugs on utility transformer spaces sized to accommodate service entrance conductors.

B. Install equipment in accordance with manufacturer's instructions.

C. Except where specifically indicated otherwise, all exposed non-current-carrying metallic parts of electrical equipment, metallic raceway systems, and service neutral of the electrical system shall be grounded.

1. Equipment grounding shall be accomplished by installing a separate grounding conductor in each raceway of the system. The Conductor shall be provided with a distinctive green insulation or marker and shall be sized in accordance with Article 250 of the National Electrical Code.

2. The electrical system grounding electrode connection shall be made at the main service equipment and shall be extended to the point of entrance of the metallic cold water service. A suitable ground clamp shall make connection to the water pipe. If flanged pipes are encountered, connection shall be made on the street side of the flange connection. If the metallic water service is coated with an insulating material or there is no metallic water service to the building, ground connection shall be made to additional ground rods as required by resistance tests, at the exterior of the building driven full length into the earth.

3. The maximum resistance of the driven ground shall be tested with a ground resistance Megger and shall not exceed 25 ohms under normally dry conditions. If this cannot be obtained with a single rod, additional or parallel rods shall be installed 7'-6" on center until 25 ohms or less is achieved without connection to the building water piping. A typewritten test report shall be written.

D. Install panelboards to NEMA PB 1.1.

E. Provide labels for all switchboards, panelboards, and distribution equipment.

F. Provide label for each breaker/switch position in switchboards.

G. Provide typewritten directory inside panel door for all panelboards.

H. Provide neatly typed label inside each motor starter enclosure door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Provide nameplate on cover exterior to indicate motor served.

END OF SECTION

SECTION 265000 - LED LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes interior only LED luminaires:

1.3 DEFINITIONS

- CCT: Correlated color temperature.
- CRI: Color Rendering Index.
- Fixture: See "Luminaire."
- IP: International Protection or Ingress Protection Rating.
- LED: Light-emitting diode.
- Lumen: Measured output of lamp and luminaire, or both.
- Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Arrange in order of luminaire designation.

2. Include data on features, accessories, and finishes.

3. Include physical description and dimensions of luminaires.

4. Include emergency lighting units, including batteries and chargers.

5. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.

- Manufacturer's Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the NVLAP for Energy Efficient Lighting Products.

6. Wiring diagrams for power, control, and signal wiring.

7. Means of attaching luminaires to supports and indication that the attachment is suitable for components involved.

1.5 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.

1. Provide a list of all types used on Project; use ANSI and manufacturers' codes.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.

2. Globes and Guards: One for every 50 of each type and rating installed. Furnish at least one of each type.

1.8 QUALITY ASSURANCE

A. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.10 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

- Structural failures, including luminaire support components.
- Faulty operation of luminaires and accessories.
- Deterioration of metals, metal finishes, and other materials beyond normal weathering.

B. Warranty Period: Two year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Ambient Temperature: 41 to 104 deg F (5 to 40 deg C).

B. Altitude: Sea level to 1000 feet (300 m).

2.2 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Factory-Applied Labels: Comply with UL 1598. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp module characteristics:

- Manufacturer
- Model number
- CCT and CRI.

C. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.

D. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.

E. Interior Luminaire CRI requirements: Greater than **80 CRI** unless noted otherwise on Drawings.

F. Interior Luminaire CCT requirements: **4000K** unless noted otherwise on Drawings.

G. Exterior Luminaire CRI: Minimum of **70 CRI** unless noted otherwise or is specific to wildlife lighting requirements.

H. Exterior Luminaire CCT: **3000K** unless noted otherwise on Drawings or is specific to wildlife lighting requirements.

I. Luminaire Lumen outputs: As indicated on Drawings or comparable with luminaire model specified on Drawings.

J. Luminaire Rated Lamp Life: As comparable with luminaire model specified on Drawings.

K. Nominal Operating Voltage: as indicated on Drawings.

L. Dimmable from 100 percent to 10 percent of maximum light output.

M. Internal driver.

N. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Components are designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

O. Lens Thickness (if applicable): At least 0.125-inch (3.175-mm) minimum unless otherwise indicated.

P. Standards:

1. ENERGY STAR certified.

2. RoHS compliant.

3. Recessed luminaires shall comply with NEMA LE 4.

4. UL Listing: Listed for damp or wet location as indicated on drawings and in part numbers specified on the drawings.

5. Industrial luminaires Class 1, Division 2 Group.

6. Ratings below as indicated on drawings and in part numbers specified on the drawings:

7. NEMA 4X

8. IP 54

9. IP 66

10. IP 67

2.3 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.

2. Sheet metal components shall be steel unless otherwise indicated.

3. Form and support to prevent warping and sagging.

B. Steel:

1. ASTM A36/A36M for carbon structural steel.

2. ASTM A568/A568M for sheet steel.

C. Stainless Steel:

1. 1. Manufacturer's standard grade.

2. 2. Manufacturer's standard type, ASTM A240/240M.

D. Galvanized Steel: ASTM A653/A653M.

E. Aluminum: ASTM B209.

2.4 METAL FINISHES

A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.5 LUMINAIRE SUPPORT

A. Single-Stem Hangers: Minimum 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.

B. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

C. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

D. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

C. Examine walls, roofs, canopy ceilings and overhang ceilings for suitable conditions where luminaires will be installed.

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

3.2 INSTALLATION

A. Comply with NECA 1.

B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

C. Supports:

- Sized and rated for luminaire weight.
- Able to maintain luminaire position after cleaning and relamping.
- Provide support for luminaire without causing deflection of ceiling or wall.
- Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.

D. Flush-Mounted Luminaires:

- Secured to outlet box.
- Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
- Trim ring flush with finished surface.

E. Wall-Mounted Luminaires:

- Attached to structural members in walls.
- Do not attach luminaires directly to gypsum board.

F. Suspended Luminaires:

- Pendants, Aircraft Cable and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
- Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
- Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

G. Ceiling-Grid-Mounted Luminaires:

- Secure to any required outlet box.
- Use approved devices and support components to connect luminaire to ceiling grid and building structure in a minimum of four locations, spaced near corners of luminaire.

H. Installation of individual ground-mounted luminaires

- Install on concrete base with top 6 inches above finished grade or surface at luminaire location. Cast conduit into base, and finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Section 033000 "Cast-in-Place Concrete."

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

3.4 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting the direction of aim of luminaires to suit occupied conditions. Make up to two visits to Project during other-than-normal hours for this purpose. Some of this work may be required during hours of darkness.

- During adjustment visits, inspect all luminaires. Replace lamps or luminaires that are defective.
- Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
- Adjust the aim of luminaires in the presence of the Architect.

END OF SECTION 265000

SECTION 27 01 00

TELECOMMUNICATIONS SYSTEMS

PART 1 -GENERAL

1.1 This Section outlines the quality, type and installation of the telecommunications (high speed data) building premise wiring system and active network equipment. Included in this Section shall be providing all labor, equipment, software and materials necessary for a complete and operational system.

1.2 RELATED DOCUMENTS:

Section 26 05 00 - Electrical General Requirements, applies to the work specified in this Section with additions and modifications specified herein.

1.3 SECTION INCLUDES:

A. DATA SYSTEM PROVISIONS

B. TELECOMMUNICATIONS CABLING

1.4 APPLICABLE STANDARDS AND CODES: The telecommunication installation shall comply with all applicable building codes; local, state, federal, and the following standards list. In case of a discrepancy among these applicable regulatory codes and standards, the most stringent requirement shall govern. The Contractor shall notify the Owner's representative in writing of any such discrepancy. Should the Contractor perform any work that does not comply with the applicable regulatory codes and standards he shall bear all cost arising in correcting the deficiencies.

(1)	EIA/TIA-569	Electronic Industries Association/Telecommunications Industry Association - Commercial Building Standard for Telecommunications Pathways and Spaces.
(2)	EIA/TIA-568	Electronic Industries Association/Telecommunications Industry Association - Commercial Building Standard for Telecommunications Wiring Standard.
(3)	IEEE 802.3af	Institute of Electrical and Electronics Engineers – Power over Ethernet (PoE)
(4)	IEEE 802.3u	Institute of Electrical and Electronics Engineers - LAN Standard for Ethernet 100Base-T.
(5)	IEEE 802.3ab	Institute of Electrical and Electronics Engineers - LAN Standard for Ethernet 1000Base-T.
(6)	UL	Underwriters' Laboratories, Inc.
(7)	FCC Part 68	Federal Communications Commission - Connection to Premises Equipment and Wiring to the Network.

1.5 CONTRACTOR QUALIFICATIONS:

A. The Contractor shall be registered in the State of Florida. The Contractor shall have a minimum of three (3) years experience installing Network architecture on projects of similar size and complexity.

B. CERTIFIED RCDD: The Structured Cabling System Contractor shall present the name and certification number of a BICSI certified Registered Communications Distribution Designer (RCDD), who is a permanent employee of the Contractor. The Contractor shall maintain this RCDD, or another RCDD approved by the Engineer, in his permanent employment throughout this project. The RCDD shall have overall responsibility for certifying that the installed structured cabling system conforms to these contract documents and to the referenced EIA/TIA, IEEE, BICSI, and UL standards. Specific requirements for the RCDD are as follows:

(1) The RCDD shall affix his stamp to the Contractor's pre-installation submittal drawings, indicating that he has reviewed and approved the drawings for conformance to the contract documents and to the referenced codes and standards.

(2) The RCDD shall sign off of all copper and fiber optic cable test results, indicating that he was in responsible charge of all cable testing procedures and that all cables were tested in compliance with the contract documents and met or exceeded the requirements stated therein.

(3) The RCDD shall affix his stamp to the Contractor's as-built drawings, indicating that he has reviewed and approved the drawings as being complete, accurate, and representative of the system as actually installed.

1.6 SUBMITTALS:

A. Product data shall be submitted on all major pieces of equipment and cabling.

B. Shop drawings shall be submitted on all equipment racks indicating layout of all equipment in the rack.

C. The Contractor shall furnish a complete wiring diagram for approval by the Owner's representative prior to installation. A typical diagram will not be acceptable. The wiring diagram shall contain sufficient information, clearly presented, to determine compliance with the drawings and specifications. The drawings shall indicate mapping and labeling of the entire installation including all segment lengths.

PART 2 - PRODUCTS

2.1 DATA SYSTEM PROVISIONS:

A. CER BACKBOARD:

(1) Material: Plywood.

(2) Size: 8'H x ¾" x required width, mounted behind comm rack.

(3) Paint: Two coats of fire retardant paint colored to match adjacent wall.

B. DATA GROUND:

(1) Ground Conductor: #4 AWG Copper with 5 feet slack conductor connected to building service grounding system.

(2) Ground Clamp: Bronze.

(3) Ground Busbar: 10"w x 4"H x ¼" thick copper with a minimum of ten 7/16" diameter connection points. Busbar shall be insulated away from the backboard by 3" minimum.

C. DATA OUTLETS:

(1) Standard outlets: The data telecommunication outlet shall consist of modularized interchangeable jack assemblies that snap into a flush mount double gang face plate assembly and mate with a contained connector to which the station cables shall be permanently connected. The jack assemblies shall be rated as indicated on the Drawings.

D. PATCH PANELS:

(1) Patch panels will be used in the comm rack to terminate all distribution cables. Specifications will comply to Universal wiring patterns and provide supports for the quantity as indicated on the Drawings. The modular 8-position jack will comply with all FCC, ISO, UL and CSA requirements. Patch panel installations shall contain a retaining trough between every 100 pair termination panel.

2.2 TELECOMMUNICATIONS CABLING:

A. HORIZONTAL CABLES:

(1) Comply with TIA-568-C.1.

(2) Comply with BICSI's Information Transport Systems Installation Methods Manual, Ch. 5, "Copper Structured Cabling Systems," "Cable Termination Practices" Section.

(3) Install 110-style IDC termination hardware unless otherwise indicated.

(4) Do not untwist twisted pair cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.

(5) Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.

(6) Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.

(7) Install lacing bars to restrain cables, prevent straining connections, and prevent bending cables to smaller radii than minimums recommended by manufacturer.

(8) Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI information Transport Systems Installation Methods Manual, Ch. 5, "Copper Structured Cabling Systems," "Cable Termination Practices" Section. Use lacing bars and distribution spools.

(9) Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation, and replace it with new cable.

(10) Cold-Weather Installation: Bring cable to room temperature before de-reeling. Heat lamps shall not be used for heating.

(11) In the communications equipment room, install a 10-foot- (3-m-) long service loop on each end of cable.

(12) Pulling Cable: Comply with BICSI Information Transport Systems Installation Methods Manual, Ch. 5, "Copper Structured Cabling Systems," "Pulling and Installing Cable" Section. Monitor cable pull tensions.

B. PATCH CORDS: The contractor shall furnish factory produced EIA Category 6e patch cords as required to provide all communication rack equipment and workstation connections. Actual lengths shall be field measured and shall allow 3 feet slack.

C. OPTICAL FIBER CABLES:

(1) Description: Single mode, 9/125-micrometer, 24 fibers, stranded loose tube, armored optical fiber cable.

(2) Standards:

a. Comply with TIA-492CAAA for detailed specifications.

b. Comply with TIA-568-C.3 for performance specifications.

c. Comply with ICEA S-104-696 for mechanical properties.

(3) Retain first paragraph below if armored cable is specified above. If both unarmored and armored cables are specified, consider copying and revising the title of the article to distinguish the conductive from nonconductive cables. Indicate locations of each on Drawings.

(4) Armored cable shall be steel armored type.

(5) Jacket:

a. Jacket Color: Yellow.

b. Cable cordage jacket, fiber, unit, and group color shall be according to TIA-598-D.

c. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

(2) Cable Connectors: Quick-connect, simplex- and duplex-type LC couplers with self-centering, axial alignment mechanisms. Insertion loss not more than 0.7 dB.

(3) Patch Panel: Modular panels housing multiple-numbered duplex cable connectors.

a. Permanent Connection: Permanently connect one end of each connector module to installed cable fiber.

b. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to satisfy specified expansion criteria.

c. Mounting: Rack.

(4) Patch Cords: Dual fiber cables in 60-inch lengths.

a. Terminations: Two duplex connectors arranged to mate with patch-panel connectors, one at each end of each fiber in cord.

D. CABLE PENETRATIONS OF RATED WALLS: Cable penetrations of rated walls shall be accomplished using a removable system equal to the Nelson PLW Firestop Pillow, meeting the requirements of the Standard Building Code for the application.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. GENERAL REQUIREMENTS: Electrical installations shall conform to the requirements of NFPA 70 and to the requirements specified herein.

B. All materials, equipment and parts comprising the units specified herein, shall be new and unused, of current manufacture and of highest grade, free from all defects or imperfections affecting performance. Workmanship shall be of highest grade in accordance with modern practice.

C. The construction of the system shall be such that it is neat and clean in appearance, and that normal adjustments and maintenance can be effected without the use of special tools.

D. Install data, access control and IP security provisions and cabling in accordance with the following requirements.

(1) Entrance conduits to be 36” below grade.

(2) Extend ground conductors to the point of the building-grounding electrode.

(3) Attach backboards securely to building wall at each corner.

(4) Minimum size raceways for telephone shall be ¾".

(7) Install a ¾" conduit from each outlet to above accessible ceiling.

(8) Install cable from each outlet terminated at the modular jack to the backboard, label and identify each termination.

3.2 WARRANTY:

A. Equipment furnished under this Section shall be guaranteed against defective parts and workmanship under terms of the manufacturer's and dealers standard warranty. But, in no event, shall it be for a period of less than two (2) years from date of acceptance or from the date of first beneficial use of the system and shall include labor and travel time for necessary repairs at the job site.

3.3 FIELD QUALITY CONTROL:

A. The following inspections and test procedures shall be performed by factory trained field service personnel.

B. VISUAL INSPECTION:

(1) Inspect equipment for signs of damage

(2) Verify installation per drawings

(3) Inspect equipment for foreign objects

(4) Verify ground

(5) Inspect each rack for neatness and identification

(6) Verify all printed circuit boards are configured properly

C. MECHANICAL INSPECTION:

(1) Check all wiring connections for tightness

(2) Check all power wiring connections for tightness

(3) Check all terminal screws, nuts, and/or plug connections for tightness.

3.4 ELECTRICAL TEST:

A. COPPER:

Test twisted pair cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross-connection.

In addition to a continuity test each cable will be tested to verify each cable to be category 6a compliant. The tester shall provide a hard copy printout of each cable tested.

All telco patch panel for the Intercom/PA shall be tested through the 110 punch down block. This test shall test for continuity, and proper pair location.

Each cable tested is to be recorded in a log with the cable number, date, and the initials of the technician who tested the cable. A mark shall be made on each connector tested, this mark shall either be removed or not visible to the customer at the completion of the project.

Data for each measurement shall be documented. Data for submittals shall be printed in a summary report that is formatted similarly to Table 10.1 in BICSI's "Telecommunications Distribution Methods Manual," or shall be transferred from the instrument to the computer, saved as text files, printed, and submitted.

B. FIBER:

After installation and termination of the fiber optic cable a continuity test, and a power loss test shall be performed on each strand of fiber installed.

Each fiber strand tested is to be recorded in a log with the fiber number, date, attenuation in dB, and the initials of the technician who tested the fiber.

C. TEST RESULTS:

A copy of all test results shall be supplied to the Engineer and Owner at the completion of the project.

END OF SECTION 27 01 00

SECTION 284621.11 - ADDRESSABLE FIRE-ALARM SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-alarm control unit.
2. Manual fire-alarm boxes.
3. System smoke detectors.
4. Heat detectors.
5. Notification appliances.
6. Digital alarm communicator transmitter.

B. Related Requirements:

1. Section "Control Voltage Electric Power Cables" for cables and conductors for fire-alarm systems.

1.2 DEFINITIONS

A. EMT: Electrical Metallic Tubing.

B. FACP: Fire Alarm Control Panel.

C. HLI: High Level Interface.

D. NICET: National Institute for Certification in Engineering Technologies.

E. PC: Personal computer.

F. VESDA: Very Early Smoke-Detection Apparatus.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product, including furnished options and accessories.

1. Include construction details, material descriptions, dimensions, profiles, and finishes.
2. Include rated capacities, operating characteristics, and electrical characteristics.

B. Shop Drawings: For fire-alarm system.

1. Comply with recommendations and requirements in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
2. Include plans, elevations, sections, details, and attachments to other work.

3. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and locations. Indicate conductor sizes, indicate termination locations and requirements, and distinguish between factory and field wiring.
4. Detail assembly and support requirements.
5. Include voltage drop calculations for notification-appliance circuits.
6. Include battery-size calculations.
7. Include input/output matrix.
8. Include statement from manufacturer that all equipment and components have been tested as a system and meet all requirements in this Specification and in NFPA 72.
9. Include performance parameters and installation details for each detector.
10. Verify that each duct detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
11. Provide program report showing that air-sampling detector pipe layout balances pneumatically within the airflow range of the air-sampling detector.
12. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale; coordinate location of duct smoke detectors and access to them.
    a. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators.
    b. Show field wiring required for HVAC unit shutdown on alarm.
    c. Show field wiring and equipment required for HVAC unit shutdown on alarm and override by firefighters' control system.
    d. Show field wiring and equipment required for HVAC unit shutdown on alarm and override by firefighters' smoke-evacuation system.
    e. Locate detectors according to manufacturer's written recommendations.
13. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.
14. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits and point-to-point wiring diagrams.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm **Level II** technician.

C. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

1.5 PROJECT CONDITIONS

A. Perform a full test of the existing system prior to starting work. Document any equipment or components not functioning as designed.

B. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.6 SEQUENCING AND SCHEDULING

A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service, and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Noncoded, UL-certified addressable system, with multiplexed signal transmission and horn/strobe evacuation.

B. Automatic sensitivity control of certain smoke detectors.

C. All components provided shall be listed for use with the selected system.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices:

1. Manual stations.
2. Heat detectors.
3. Smoke detectors.
4. Duct smoke detectors.
5. Carbon monoxide detectors.
6. Automatic sprinkler system water flow.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.
2. Identify alarm and specific initiating device at fire-alarm control unit.
3. Transmit an alarm signal to the remote alarm receiving station.
4. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
5. Close smoke dampers in air ducts of designated air-conditioning duct systems.

6. Unlock secured path of egress doors.
7. Release smoke door hold open devices.
8. Record events in the system memory.
9. Indicate device in alarm on the graphic annunciator.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. User disabling of zones or individual devices.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of communication with any addressable sensor, input module, relay, control module, remote annunciator, printer interface, or Ethernet module.
4. Loss of primary power at fire-alarm control unit.
5. Ground or a single break in internal circuits of fire-alarm control unit.
6. Abnormal ac voltage at fire-alarm control unit.
7. Break in standby battery circuitry.
8. Failure of battery charging.
9. Abnormal position of any switch at fire-alarm control unit or annunciator.

E. System Supervisory Signal Actions:

1. Initiate notification appliances.
2. Identify specific device initiating the event at fire-alarm control unit.
3. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.
4. Display system status on graphic annunciator.

2.3 FIRE-ALARM CONTROL UNIT

A. Manufacturers: Subject to compliance with requirements, undefined:

1. Fire-Lite Alarms, Inc.; a Honeywell International company.
2. GE UTC Fire & Security; A United Technologies Company.
3. Notifier.
4. Siemens Industry, Inc.; Fire Safety Division.
5. SimplexGrinnell LP.

B. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864.
    a. System software and programs shall be held in nonvolatile flash, electrically erasable, programmable, read-only memory, retaining the information through failure of primary and secondary power supplies.

b. Include a real-time clock for time annotation of events on the event recorder and printer.
c. Provide communication between the FACP and remote circuit interface panels, annunciators, and displays.
d. The FACP shall be listed for connection to a central station signaling system service.
e. Provide nonvolatile memory for system database, logic, and operating system and event history. The system shall require no manual input to initialize in the event of a complete power down condition. The FACP shall provide a minimum 500-event history log.

2. Addressable Initiation Device Circuits: The FACP shall indicate which communication zones have been silenced and shall provide selective silencing of alarm notification appliance by building communication zone.
3. Addressable Control Circuits for Operation of Notification Appliances and Mechanical Equipment: The FACP shall be listed for releasing service.

C. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, two line(s) of 40 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands and to indicate control commands to be entered into the system for control of smoke-detector sensitivity and other parameters.

D. Initiating-Device, Notification-Appliance, and Signaling-Line Circuits:

1. Pathway Class Designations: NFPA 72, Class B.
2. Pathway Survivability: Level 0.
3. Install no more than 50 addressable devices on each signaling-line circuit.
4. Serial Interfaces:

a. One dedicated RS 485 port for remote station operation using point ID DACT.
b. One RS 485 port for remote annunciators, Ethernet module, or multi-interface module (printer port).
c. One USB port for PC configuration.
d. One RS 232 port for VESDA HLI connection.
e. One RS 232 port for voice evacuation interface.

E. Stairwell Pressurization: Provide an output signal using an addressable relay to start the stairwell pressurization system. Signal shall remain on until alarm conditions are cleared, and fire-alarm system is reset. Signal shall not stop in response to alarm acknowledge or signal silence commands.

1. Pressurization starts when any alarm is received at fire-alarm control unit.
2. Alarm signals from smoke detectors at pressurization air supplies have a higher priority than other alarm signals that start the system.

F. Smoke-Alarm Verification:

1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.
2. Activate an approved "alarm-verification" sequence at fire-alarm control unit and detector.
3. Record events by the system printer.
4. Sound general alarm if the alarm is verified.
5. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.

G. Notification-Appliance Circuit:

1. Audible appliances shall sound in a three-pulse temporal pattern, as defined in NFPA 72.
2. Where notification appliances provide signals to sleeping areas, the alarm signal shall be a 520-Hz square wave with an intensity 15 dB above the average ambient sound level or 5 dB above the maximum sound level, or at least 75 dBA, whichever is greater, measured at the pillow.
3. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.

H. Elevator Recall:

1. Elevator recall shall be initiated only by one of the following alarm-initiating devices:
    a. Elevator lobby detectors except the lobby detector on the designated floor.
    b. Smoke detector in elevator machine room.
    c. Smoke detectors in elevator hoistway.
2. Elevator controller shall be programmed to move the cars to the alternate recall floor if lobby detectors located on the designated recall floors are activated.
3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.
    a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

I. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke-barrier walls shall be connected to fire-alarm system.

J. Secure Egress Door Controls: Provide an output signal using an addressable relay to unlock secured path of egress door devices upon system notification.

K. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

L. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals shall be powered by 24-V dc source.

1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

M. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

1. Batteries: Sealed lead calcium.

N. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.4 MANUAL FIRE-ALARM BOXES

A. Manufacturers: Subject to compliance with requirements, undefined:

1. Fire-Lite Alarms, Inc.; a Honeywell International company.
2. GE UTC Fire & Security; A United Technologies Company.
3. Notifier.
4. Siemens Industry, Inc.; Fire Safety Division.
5. SimplexGrinnell LP.
6. Wheelock; a brand of Eaton.

B. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.

1. Single-action mechanism, breaking-glass or plastic-rod type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Double-action mechanism requiring two actions to initiate an alarm, breaking-glass or plastic-rod type; with addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
3. Station Reset: Key- or wrench-operated switch.
4. Indoor Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.
5. Weatherproof Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.

2.5 SYSTEM SMOKE DETECTORS

A. Manufacturers: Subject to compliance with requirements, undefined:

1. Fire-Lite Alarms, Inc.; a Honeywell International company.
2. GE UTC Fire & Security; A United Technologies Company.
3. Notifier.
4. Siemens Industry, Inc.; Fire Safety Division.
5. SimplexGrinnell LP.

B. General Requirements for System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.
2. Detectors shall be four-wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.
7. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.
    a. Rate-of-rise temperature characteristic of combination smoke- and heat-detection units shall be selectable at fire-alarm control unit for 15 or 20 deg F per minute.
    b. Fixed-temperature sensing characteristic of combination smoke- and heat-detection units shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F.
    c. Multiple levels of detection sensitivity for each sensor.
    d. Sensitivity levels based on time of day.

C. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Sensor range (normal, dirty, etc.).

D. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Sensor range (normal, dirty, etc.).

3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector for smoke detection in HVAC system ducts.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Fully programmable relay rated to interrupt fan motor-control circuit.

2.6 HEAT DETECTORS

A. Manufacturers: Subject to compliance with requirements, undefined:

1. Fire-Lite Alarms, Inc.; a Honeywell International company.
2. GE UTC Fire & Security; A United Technologies Company.
3. Notifier.
4. Siemens Industry, Inc.; Fire Safety Division.
5. SimplexGrinnell LP.

B. General Requirements for Heat Detectors: Comply with UL 521.

1. Temperature sensors shall test for and communicate the sensitivity range of the device.

C. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F or a rate of rise that exceeds 15 deg F per minute unless otherwise indicated.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.7 NOTIFICATION APPLIANCES

A. Manufacturers: Subject to compliance with requirements, undefined:

1. GE UTC Fire & Security; A United Technologies Company.
2. SimplexGrinnell LP.
3. Wheelock; a brand of Eaton.

B. General Requirements for Notification Appliances: Individually addressed, connected to a signaling-line circuit, equipped for mounting as indicated, and with screw terminals for system connections.

C. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

D. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.

E. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- high letters on the lens.

1. Rated Light Output:

a. 75 110 cd.
b. 75/110 cd, selectable in the field.

2. Mounting: Wall mounted unless otherwise indicated.
3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
4. Flashing shall be in a temporal pattern, synchronized with other units.
5. Strobe Leads: Factory connected to screw terminals.
6. Mounting Faceplate: Factory finished, red.

2.8 DIGITAL ALARM COMMUNICATOR TRANSMITTER

A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632.

B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture one telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.

C. Local functions and display at the digital alarm communicator transmitter shall include the following:

1. Verification that both telephone lines are available.
2. Programming device.
3. LED display.
4. Manual test report function and manual transmission clear indication.
5. Communications failure with the central station or fire-alarm control unit.

D. Digital data transmission shall include the following:

1. Address of the alarm-initiating device.
2. Address of the supervisory signal.
3. Address of the trouble-initiating device.
4. Loss of ac supply.
5. Loss of power.

6. Low battery.
7. Abnormal test signal.
8. Communication bus failure.

E. Secondary Power: Integral rechargeable battery and automatic charger.

F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.

1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.

B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.

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

3.2 EQUIPMENT INSTALLATION

A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."

1. Devices placed in service before all other trades have completed cleanup shall be replaced.
2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.

B. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.

C. Manual Fire-Alarm Boxes:

1. Install manual fire-alarm box in the normal path of egress within 60 inches of the exit doorway.
2. Mount manual fire-alarm box on a background of a contrasting color.
3. The operable part of manual fire-alarm box shall be between 42 inches and 48 inches above floor level. All devices shall be mounted at the same height unless otherwise indicated.

D. Smoke- or Heat-Detector Spacing:

1. Comply with the "Smoke-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for smoke-detector spacing.
2. Comply with the "Heat-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for heat-detector spacing.
3. Smooth ceiling spacing shall not exceed 30 feet.
4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Annex A in NFPA 72.
5. HVAC: Locate detectors not closer than 36 inches from air-supply diffuser or return-air opening.
6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture and not directly above pendant mounted or indirect lighting.

E. Install a cover on each smoke detector that is not placed in service during construction. Cover shall remain in place except during system testing. Remove cover prior to system turnover.

F. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct. Tubes more than 36 inches long shall be supported at both ends.

1. Do not install smoke detector in duct smoke-detector housing during construction. Install detector only during system testing and prior to system turnover.

G. Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location. Do not install smoke detectors in sprinklered elevator shafts.

H. Single-Station Smoke Detectors: Where more than one smoke alarm is installed within a dwelling or suite, they shall be connected so that the operation of any smoke alarm causes the alarm in all smoke alarms to sound.

I. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.

J. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.

K. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.

L. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.3 PATHWAYS

A. Pathways above recessed ceilings and in nonaccessible locations may be routed exposed.

1. Exposed pathways located less than 96 inches above the floor shall be installed in EMT.

B. Pathways shall be installed in EMT.

C. Exposed EMT shall be painted red enamel.

3.4 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, verify that hardware and devices are listed for use with installed fire-alarm system before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Alarm-initiating connection to smoke-control system (smoke management) at firefighters' smoke-control system panel.
2. Alarm-initiating connection to stairwell and elevator-shaft pressurization systems.
3. Smoke dampers in air ducts of designated HVAC duct systems.
4. Magnetically held-open doors.
5. Electronically locked doors and access gates.
6. Alarm-initiating connection to elevator recall system and components.
7. Alarm-initiating connection to activate emergency lighting control.
8. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
9. Supervisory connections at valve supervisory switches.
10. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
11. Supervisory connections at elevator shunt-trip breaker.
12. Data communication circuits for connection to building management system.
13. Data communication circuits for connection to mass notification system.
14. Supervisory connections at fire-extinguisher locations.
15. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.
16. Supervisory connections at fire-pump engine control panel.

3.5 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 270553 "Identification for Communications Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.6 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.7 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by authorities having jurisdiction.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Visual Inspection: Conduct visual inspection prior to testing.
    a. Inspection shall be based on completed record Drawings and system documentation that is required by the "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
    b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

D. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

E. Fire-alarm system will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

G. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

H. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION 284621.11

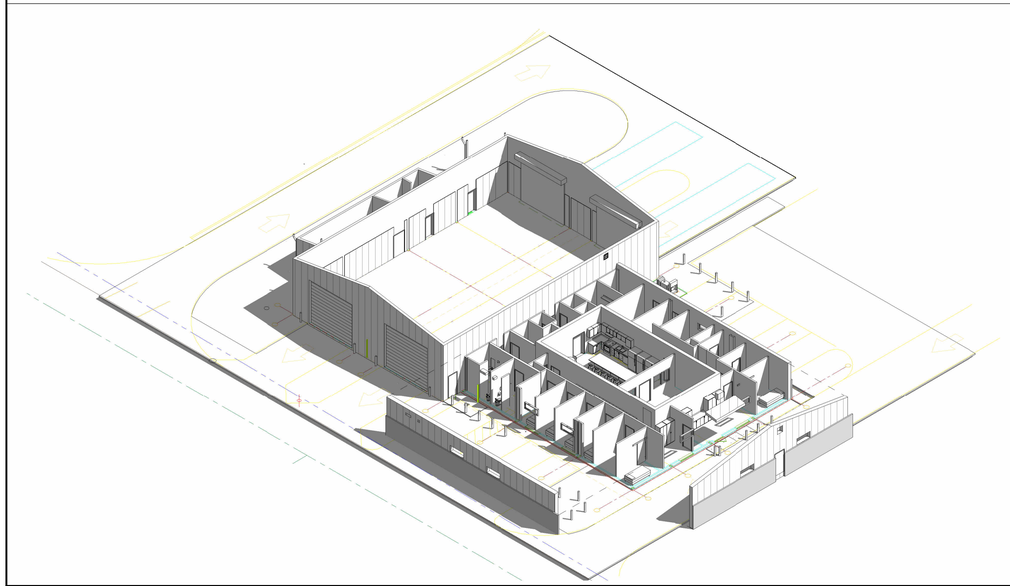
FIRE STATION 3 - 100% SET DECEMBER 19, 2025

CITY OF CRESTVIEW

GRAPHIC LEGEND

- CONCRETE
- SHOWER
- ADA SHOWER
- TOILET
- DRINKING FOUNDTAINS
- MW1 — MILLWORK
- OVERHEAD COILING DOOR
- 101 — NEW DOOR - SEE SCHEDULE
- CASED OPENING
- NEW STUD WALL
- NEW MASONRY WALL
- A — WINDOW
- EXISTING WALL
- DEMOLISHED WALL
- DEMOLISHED DOOR
- ACOUSTICAL CEILING
- DEMOLISHED FLOOR SLAB

RENDER



585 BROOKMEADE DRIVE, CRESTVIEW, FL

EXISTING BUILDING

SHEET INDEX

1

SYMBOLS LEGEND (SOME SYMBOLS MAY NOT BE USED)

- 1 — DETAIL NUMBER
- B / A4 — BUILDING SECTION/ WALL SECTION
- 1 / A4 — BUILDING ELEVATION/INTERIOR ELEVATION
- 206 — ROOM NUMBER
- 105 — DOOR NUMBER
- A — WINDOW TYPE
- A — WALL TYPE
- ELEVATION
- 1 — PHOTOGRAPH
- 1 — DEMOLITION NOTE
- 1 — CONSTRUCTION NOTE
- 1 / A4 — DETAIL NUMBER SHEET NUMBER

PROJECT DESCRIPTION

THE EXTERIOR SCOPE OF THE PROJECT WILL INCLUDE INFILLING THE WINDOWS ON THE WEST, REPLACING THE BAY DOORS, AND AN ADDITION TO THE NORTH OF THE BUILDING FOR THE GEAR STORAGE AND DECONTAMINATION AREA.

THE INTERIOR SCOPE OF THE PROJECT WILL INCLUDE A NEW LAYOUT FOR THE BUNK ROOMS, SHOWER ROOMS, DAY ROOM, AND LAUNDRY ROOM. THE MECHANICAL SYSTEM WILL BE REWORKED WITH NEW DUCT LAYOUT. THE LIGHTING AND CEILINGS WILL BE REPLACED.

FLORIDA BUILDING CODE INFORMATION

THIS PROJECT IS DESIGNED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, EXISTING BUILDINGS, EIGHT EDITION (2023). - THIS PROJECT IS CONSIDERED A LEVEL 3 ALTERATION AND ADDITION

FLORIDA PLUMBING CODE, 2023 EIGHTH EDITION

FLORIDA FIRE PREVENTION CODE 2023 EIGHTH EDITION

FLORIDA MECHANICAL CODE, 2023 EIGHTH EDITION

FLORIDA ENERGY CODE (FEC) 2023 EIGHTH EDITION

FLORIDA ACCESSIBILITY CODE, 2023 EIGHTH EDITION

NATIONAL ELECTRIC CODE 2020 EDITION

PRODUCT APPROVAL NUMBERS

CATEGORY/SUBCATEGORY	MANUFACTURER	PRODUCT DESCRIPTION	APPROVAL NUMBER
PANEL WALLS / STOREFRONTS	KAWNEER	IR501 ALUMINUM STOREFRONT SYSTEM	FL8787.2
EXTERIOR DOORS / EXTERIOR DOOR COMPONENTS	CECO DOORS	SWINGING HOLLOW METAL DOORS AND FRAMES	FL10732.1
ROOFING/ PRODUCTS INTRODUCED AS A RESULT OF ANEW TECHNOLOGY	ELITE ALUMINUM CORPERATION	3"X0.032X1LB ESP COMPOSITE PANEL	FL7561.1
ROOFING / METAL ROOFING	PETERSON ALUMNUM	.032 X12" THRU 19" WIDE ALUMNUM PANEL OVER STEEL DECK	FL24423.6
ROOFING / UNDERLAYMENTS	PETERSON ALUMNUM	ASTM D 1970 SELF- ADHERING ROOF UNDERLAYMENT	FL41144.1
PANEL WALLS / SOFFITS	PETERSON ALUMNUM CORP	PAC-850 ALUMNUM SOFFIT X 12" WIDE, .032: (MIN) SOLID	FL23157.6

THESE ITEMS REPRESENT THE BASIS FOR THE DESIGN. EACH SECTION OF THE SPECIFICATIONS LISTS EQUAL PRODUCTS. THE EQUALS ARE REQUIRED TO HAVE PRODUCT APPROVAL NUMBERS SUBMITTED AS WELL.

CONSULTANTS

MECHANICAL/PLUMBING FIRE PROTECTION
WATFORD ENGINEERING
4452 CLINTON STREET
MARIANNA, FL 32446
P: (850) 526-3447

ELECTRICAL/TELECOM
HG ENGINEERS
4286 WOODBINE RD, SUITE D
PACE, FL 32571
P: (850) 243-6723

STRUCTURAL
TRUE NORTH STRUCTURAL ENGINEERING
5800 GLENBY CT.
PACE, FL 32571
P: (850) 696-6784

Ajax BUILDING CORPORATION

GMC

FIRE STATION 3
585 BROOKMEADE DR,
CRESTVIEW, FL 32539

SEAL

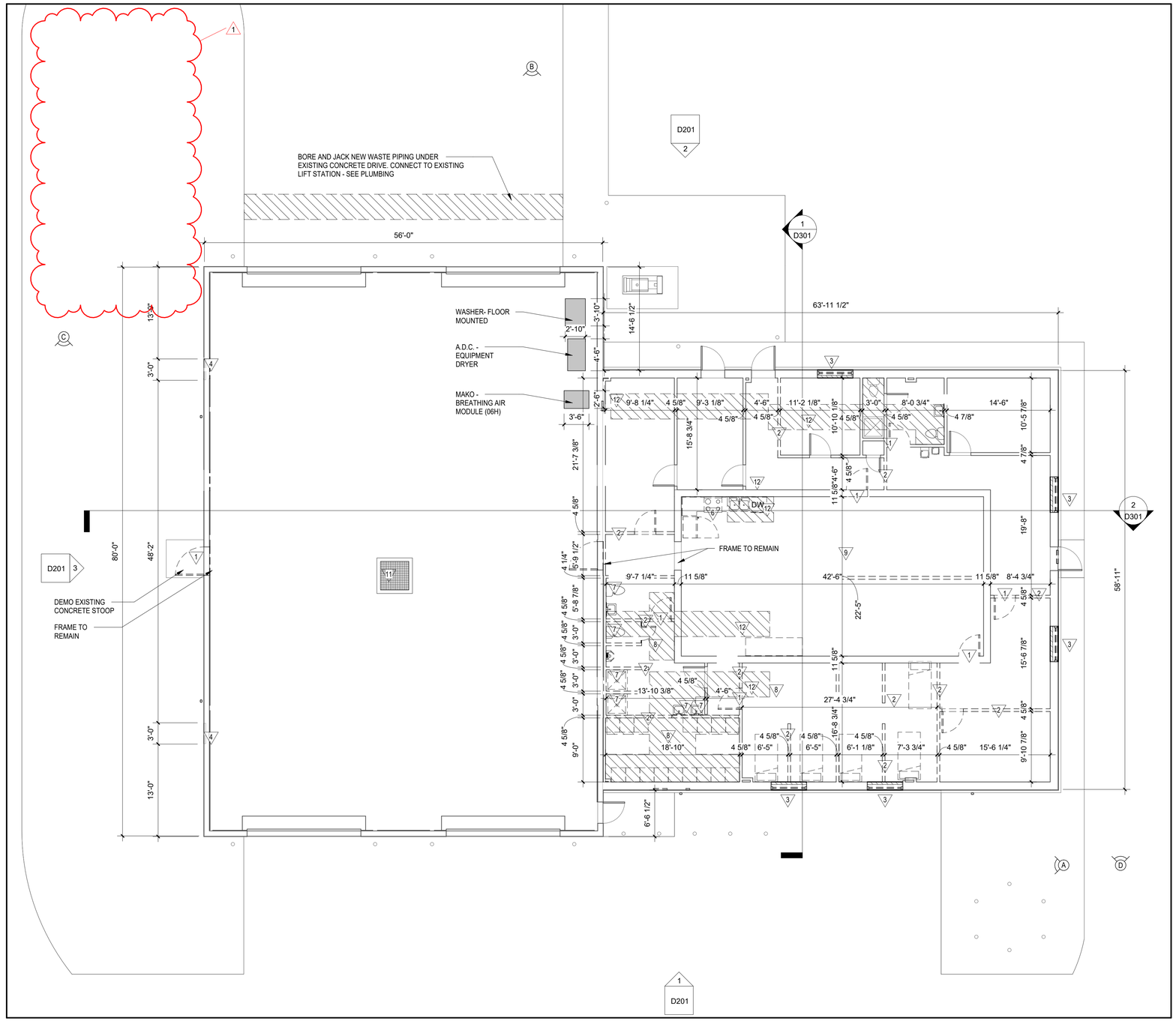
STATE OF FLORIDA
JOHN LUKE MARSHALL
100974
REGISTERED ARCHITECT

No.	Description	Date
1	ADDENDUM 1	02.03.26

TITLE SHEET
INDEX
ABBREVIATIONS
VICINTY MAP

Date	12/19/2025
Drawn By	MM
Checked By	JF

A001



N 1 DEMOLITON FLOOR PLAN
1/8" = 1'-0"

DEMO WORK NOTES

PROTECT EXISTING FLOORING TO REMAIN

PROTECT AND MAINTAIN EXISTING SPRINKLER PIPING

FIELD VERIFY ALL DIMENSIONS

DEMO WORK NOTES

1. DEMO DOOR.
2. DEMO WALL
3. DEMO WINDOW
4. DEMO LOUVER
5. DEMO SHED AND CLEAR FOUNDATION (14 DAYS BEFORE SUBSTANTIAL COMPLETION) - not used
6. DEMO COUNTER AND CABINETRY - PROTECT CONNECTIONS
7. DEMO PLUMBING - SEE PLUMBING
8. DEMO FLOORING
9. DEMO OVERHEAD TRACK FOR MOVABLE CURTAIN
10. DEMO ALL CEILINGS - SEE ELECTRICAL MECHANICAL AND FIRE PROTECTION
11. PROTECT EXISTING SANITARY INLETS FROM CONSTRUCTION DEBRIS
12. DEMO EXISTING FLOOR SLAB FOR PLUMBING - SEE PLUMBING FOR FINAL LOCATIONS

FIRE STATION 3

585 BROOKMEADE DR,
CRESTVIEW, FL 32539

SEAL

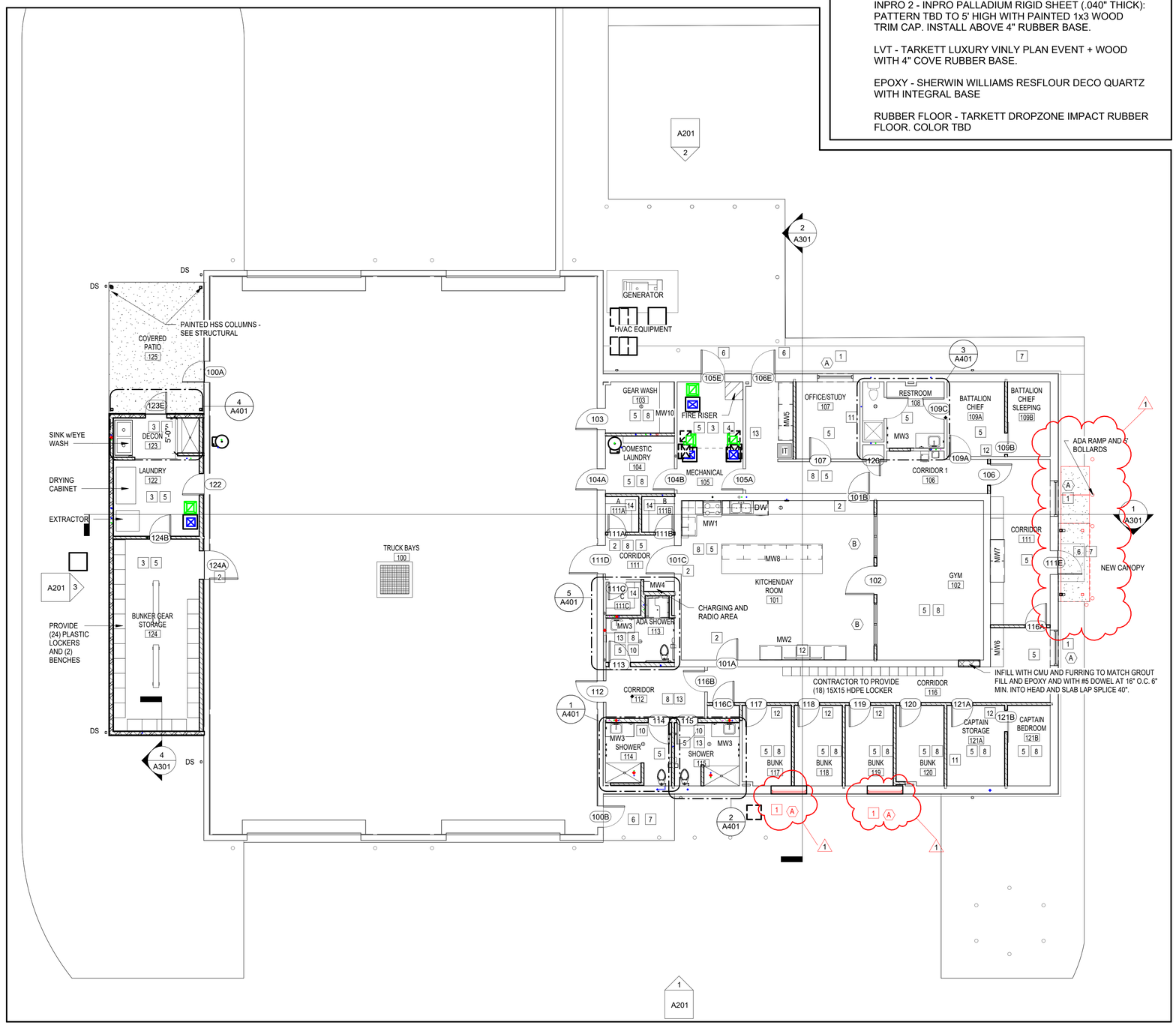
STATE OF FLORIDA
JOHN LUKE MARSHALL
100974
REGISTERED ARCHITECT

No.	Description	Date
1	ADDENDUM 1	02.03.26

DEMOLITION FLOOR PLAN

Date	12/19/2025
Drawn By	LM
Checked By	MM

D101



≈ 2 FLOOR PLAN - NEW WORK
1/8" = 1'-0"

FINISH WORK ABBREVIATIONS

INPRO 1- INPRO PALLADIUM RIGID SHEET (.040" THICK): SOLID COLOR TBD TO 5' HIGH WITH PAINTED 1x3 WOOD TRIM CAP. INSTALL ABOVE 4" RUBBER BASE.

INPRO 2 - INPRO PALLADIUM RIGID SHEET (.040" THICK): PATTERN TBD TO 5' HIGH WITH PAINTED 1x3 WOOD TRIM CAP. INSTALL ABOVE 4" RUBBER BASE.

LVT - TARKETT LUXURY VINLY PLAN EVENT + WOOD WITH 4" COVE RUBBER BASE.

EPOXY - SHERWIN WILLIAMS RESFLOUR DECO QUARTZ WITH INTEGRAL BASE

RUBBER FLOOR - TARKETT DROPZONE IMPACT RUBBER FLOOR. COLOR TBD

GENERAL NOTES

1 FIELD VERIFY ALL DIMENSIONS SIZES

2 COORDINATE (ALL LIGHTS DIFFUSERS, AND GRILLES) WITH ELECTRICAL AND MECHANICAL

NEW WORK NOTES

1 INSTALL NEW WINDOW SYSTEM INTO EXISTING OPENINGS. ANCHOR WINDOWS INTO ADJACENT WALL IN ACCORDANCE WITH FLORIDA PRODUCT APPROVAL NUMBER DESCRIPTION. APPLY SEALANT INSIDE AND OUTSIDE WINDOWS AS INDICATED FOR A WATERTIGHT INSTALLATION

2 INSTALL NEW DOOR INTO EXISTING FRAME.

3 2 PART EPOXY PAINT OVER CONCRETE FLOOR INSIDE MECHANICAL ROOMS AND BASE.

4 SEAL WALLS IN MECHANICAL ROOM

5 PAINT ALL ROOMS

6 PAINT EXTERIOR DOORS AND FRAMES.

7 PRESSURE WASH EXTERIOR AND EXTERIOR SIDEWALK. PERFORM APPROX. 7 DAYS BEFORE SUBSTANTIAL COMPLETION

8 NEW FLOORING - SEE FLOOR SCHEDULE/PLAN

9 PROVIDE AND INSTALL DOOR SIGNS AT EACH ROOM DOOR.

10 MARBLE SILL TRANSITION AT SILLS BETWEEN TILE AND OTHER FLOORING

11 BLOCKING FOR MARKERBOARDS AT 6'4"

12 BLOCKING FOR TV'S AT 6'4"

13 PATCH FLOOR SLAB - SEE DEMO SHEET AND PLUMBING

14 WIRE MESH SHELVING UNITS IN STORAGE ROOMS

ROOM SCHEDULE

NUMBER	NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	Area
100	TRUCK BAYS	EXISTING			4274 SF
101	KITCHEN/DAY ROOM	LVT	4" RUBBER	INPRO 2	607 SF
102	GYM	RUBBER FLOOR	4" RUBBER	INPRO 1	336 SF
103	GEAR WASH	EPOXY	EPOXY		70 SF
104	DOMESTIC LAUNDRY	EPOXY	EPOXY	INPRO 1	79 SF
105	MECHANICAL	EPOXY			146 SF
106	CORRIDOR 1	LVT	4" RUBBER	INPRO 1	241 SF
107	OFFICE/STUDY	LVT	4" RUBBER	INPRO 1	98 SF
108	RESTROOM	LVT	4" RUBBER	INPRO 2	103 SF
109A	BATTALION CHIEF	LVT	4" RUBBER		85 SF
109B	BATTALION CHIEF SLEEPING	LVT	4" RUBBER		63 SF
111	CORRIDOR	LVT	4" RUBBER	INPRO 1	69 SF
111	CORRIDOR	LVT	4" RUBBER	INPRO 1	195 SF
111A	A	LVT	4" RUBBER		23 SF
111B	B	LVT	4" RUBBER		23 SF
111C	C	LVT	4" RUBBER		23 SF
112	CORRIDOR	LVT	4" RUBBER	INPRO 1	102 SF
113	ADA SHOWER	LVT	4" RUBBER	INPRO 2	70 SF
114	SHOWER	LVT	4" RUBBER	INPRO 2	79 SF
115	SHOWER	LVT	4" RUBBER	INPRO 2	80 SF
116	CORRIDOR	LVT	4" RUBBER	INPRO 1	287 SF
116A	IT	LVT	4" RUBBER		8 SF
117	BUNK	LVT	4" RUBBER	INPRO 1	77 SF
118	BUNK	LVT	4" RUBBER	INPRO 1	76 SF
119	BUNK	LVT	4" RUBBER	INPRO 1	76 SF
120	BUNK	LVT	4" RUBBER	INPRO 1	75 SF
121A	CAPTAIN STORAGE	LVT	4" RUBBER		92 SF
121B	CAPTAIN BEDROOM	LVT	4" RUBBER		68 SF
122	LAUNDRY	EPOXY	EPOXY	INPRO 1	132 SF
123	DECON	EPOXY	EPOXY	INPRO 1	66 SF
124	BUNKER GEAR STORAGE	EPOXY	EPOXY		326 SF
125	COVERED PATIO	BROOM FINISHED			246 SF

CITY OF CRESTVIEW, FLORIDA — The Hub City of Northwest Florida — OKALOOSA 1916 WALTON

Ajax BUILDING CORPORATION

GMC

FIRE STATION 3

585 BROOKMEADE DR,
CRESTVIEW, FL 32539

SEAL

STATE OF FLORIDA — JOHN LUKE MARSHALL — I00974 — REGISTERED ARCHITECT

No.	Description	Date
1	ADDENDUM 1	02.03.26

FLOOR PLAN

Date 12/19/2025
Drawn By LM
Checked By MM

A101

GENERAL NOTES

1 FIELD VERIFY ALL DIMENSIONS SIZES

2 COORDINATE (ALL LIGHTS DIFFUSERS, AND GRILLES) WITH ELECTRICAL AND MECHANICAL

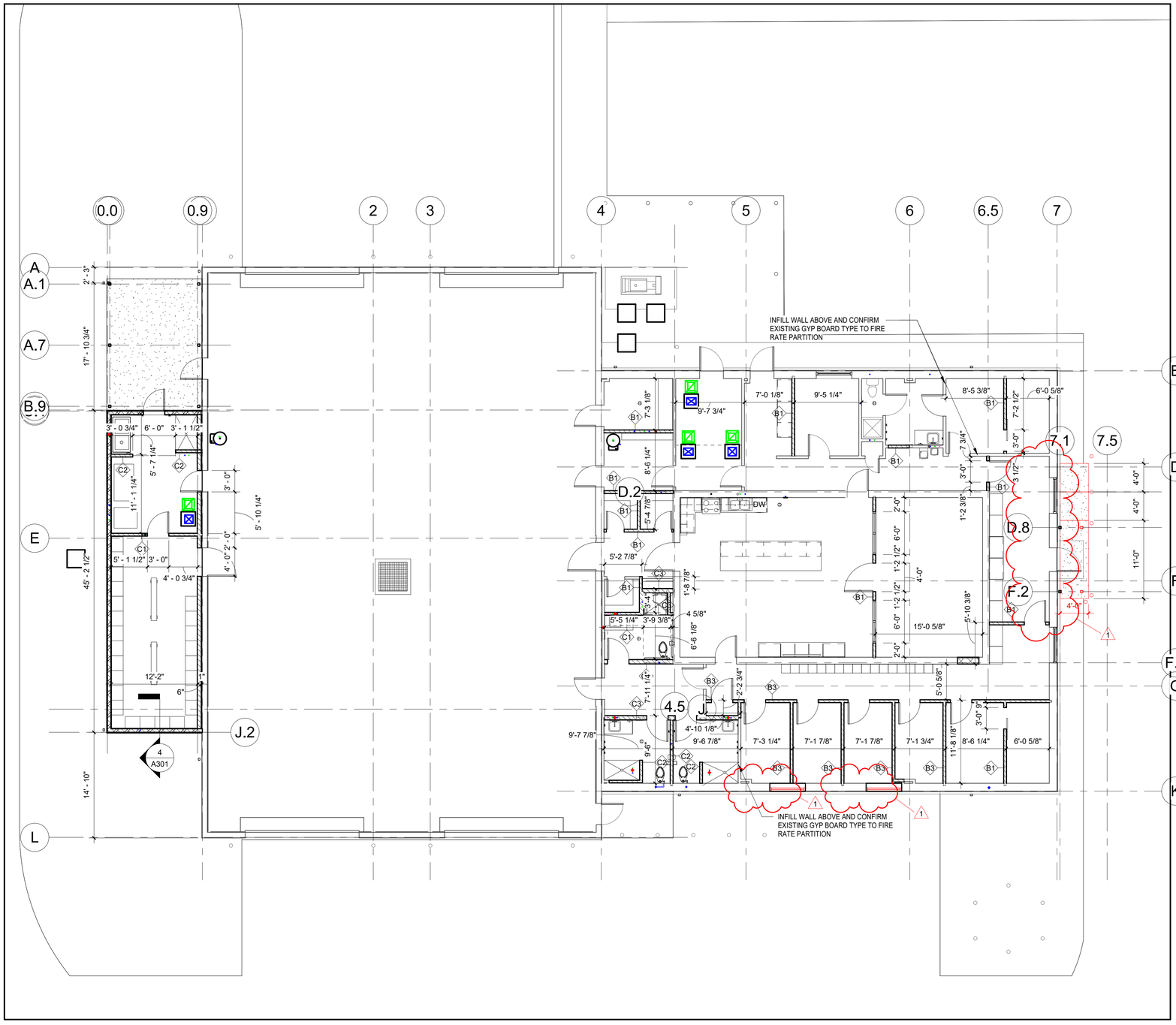
NEW WORK NOTES

WALL DIMENSIONS ARE TO PLAN NORTH AND PLAN EAST SIDE OF METAL STUDS.

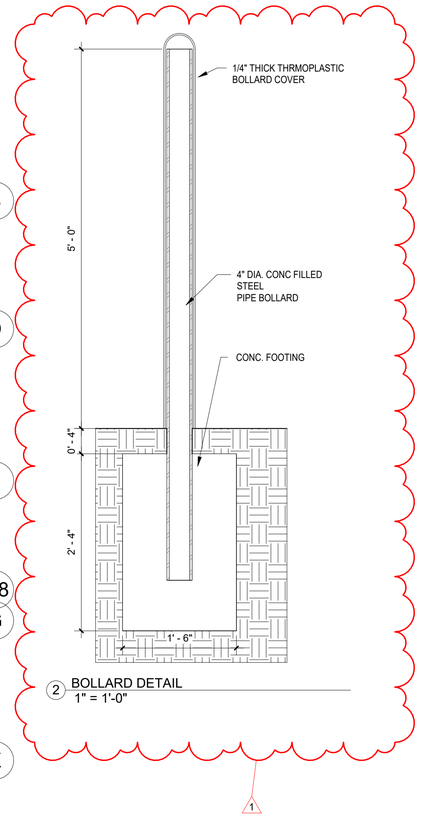
GRIDLINES ARE DIMENSIONED TO COLUMN CENTERLINES

WINDOWS AND DOORS ARE DIMENSIONED TO ROUGH OPENING

PLUMBING FIXTURES ARE DIMENSIONED TO CENTERLINE.



FLOOR PLAN - NEW WORK DIMENSIONED
1/8" = 1'-0"



2 BOLLARD DETAIL
1" = 1'-0"

FIRE STATION 3

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100974
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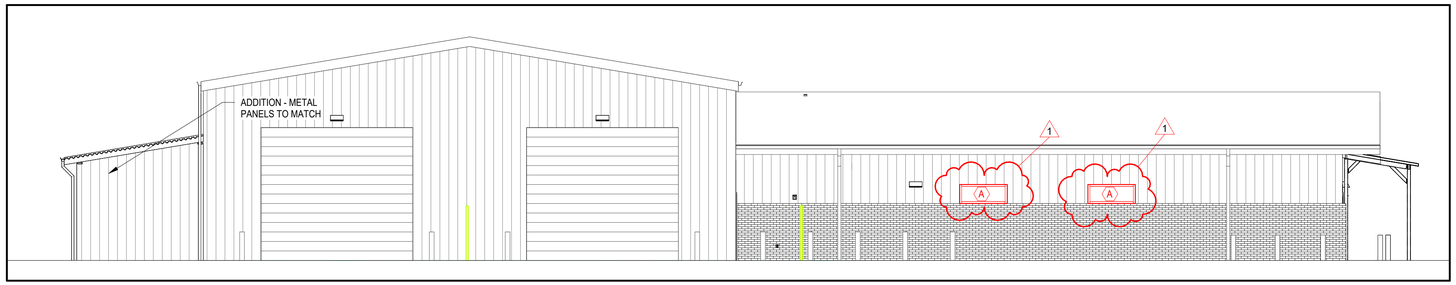
No.	Description	Date
1	ADDENDUM 1	02.03.26

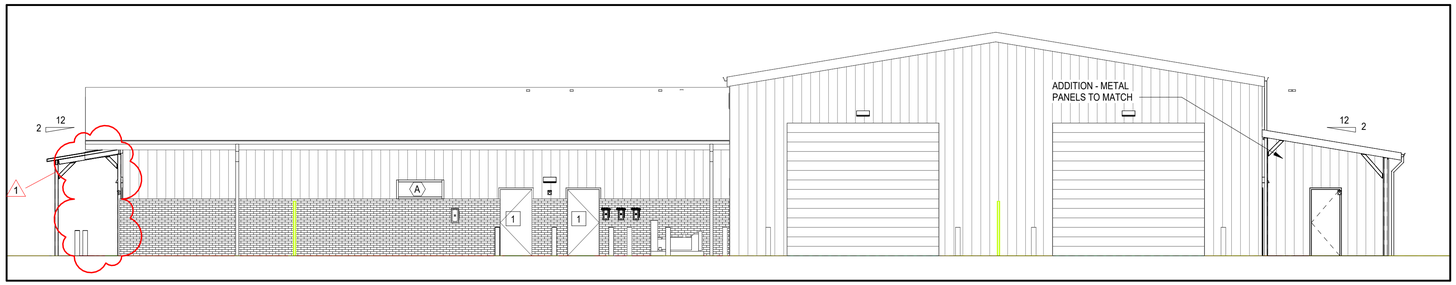
FLOOR PLAN DIMENSIONED

Date	12/19/2025
Drawn By	LM
Checked By	MM

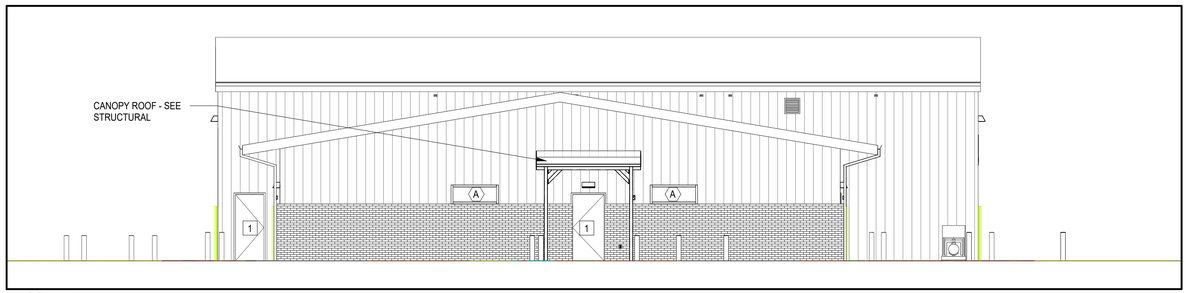
A102



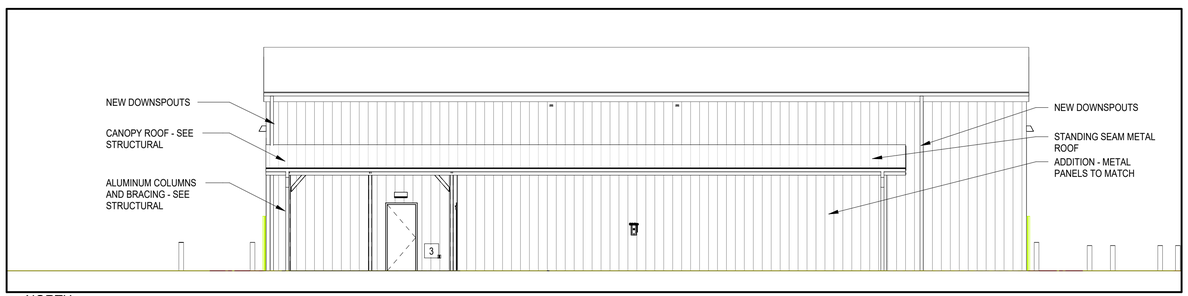
1 WEST
1/8" = 1'-0"



2 EAST
1/8" = 1'-0"



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



3 NORTH
1/8" = 1'-0"

GENERAL NOTES

1 FIELD VERIFY ALL DIMENSIONS SIZES

2 COORDINATE (ALL LIGHTS DIFFUSERS, AND GRILLES) WITH ELECTRICAL AND MECHANICAL

NEW WORK ELEVATION NOTES

1 PAINT EXISTING DOOR AND FRAME

2 INFILL EXISTING WINDOW - *not used*

3 INFILL EXISTING LOUVER

Ajax BUILDING CORPORATION

GMC

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REGISTERED ARCHITECT

No.	Description	Date
1	ADDENDUM 1	02.03.26

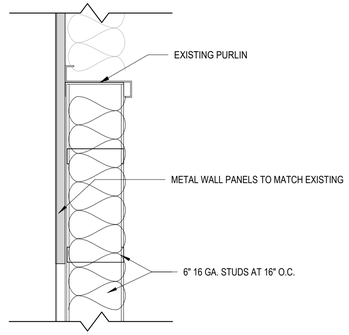
ELEVATIONS

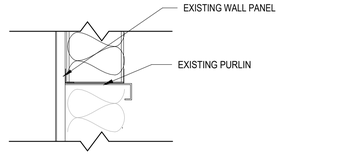
Date	12/19/2025
Drawn By	LM
Checked By	MM

A201

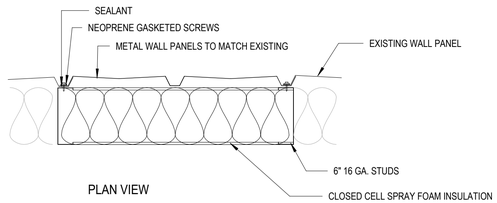
DOOR SCHDEULE

MARK	TYPE	HEIGHT	WIDTH	HEAD	JAMB	SILL	HDW	COMMENTS
100A	2	7' - 0"	3' - 0"	K	L	C	20	
100B	EX	7' - 0"	3' - 0"	K	L	C	20	EXISTING
101A	6	7' - 0"	3' - 0"	A	B		14	
101B	6	7' - 0"	3' - 0"	A	B		15	
101C	3	7' - 0"	4' - 0"	A	B		13	KICKPLATE
102	4	7' - 0"	4' - 0"	D	E		7	KICKPLATE
103	2	7' - 0"	3' - 0"	K	L	C	18	KICKPLATE
104A	2	7' - 0"	3' - 0"	K	L	C	19	KICKPLATE
104B	4	7' - 0"	3' - 0"	D	E		3	KICKPLATE
105A	4	7' - 0"	3' - 0"	D	E		3	KICKPLATE
105E	EX	7' - 0"	3' - 4"	K	L	C	26	EXISTING
106	5	7' - 0"	3' - 0"	D	E		21	
106E	EX	7' - 0"	3' - 4"	K	L	C	26	EXISTING
107	5	7' - 0"	3' - 0"	D	E		4	
108E	3	7' - 0"	3' - 0"	D	E		11	
109A	5	7' - 0"	3' - 0"	D	E		6	20 MIN
109B	7	7' - 0"	3' - 0"	I			23	
109C	3	7' - 0"	3' - 0"	D	E		9	
111A	3	7' - 0"	2' - 6"	D	E		16	
111B	3	7' - 0"	2' - 6"	D	E		16	
111C	3	7' - 0"	2' - 6"	D	E		16	
111D	3	7' - 0"	4' - 0"	K	L	C	27	KICKPLATE
111E	EX	7' - 0"	3' - 4"	K	L	C	25	EXISTING
112	2	7' - 0"	3' - 0"	K	L	C	22	KICKPLATE
113	5	7' - 0"	3' - 0"	D	E		11	
114	EX	7' - 0"	3' - 0"	D	E		-	EXISTING
115	5	7' - 0"	3' - 0"	D	E		11	
116A	5	7' - 0"	3' - 0"	D	E		21	
116B	2	7' - 0"	3' - 0"	D	E		1	KICKPLATE
116C	5	7' - 0"	3' - 0"	D	E		12	
117	5	7' - 0"	3' - 0"	D	E		10	20 MIN
118	5	7' - 0"	3' - 0"	D	E		10	20 MIN
119	5	7' - 0"	3' - 0"	D	E		10	20 MIN
120	5	7' - 0"	3' - 0"	D	E		10	20 MIN
121A	5	7' - 0"	3' - 0"	D	E		5	20 MIN
121B	7	7' - 0"	3' - 0"	I			23	
122	1	7' - 0"	3' - 0"	K	L	C	17	KICKPLATE
123E	1	7' - 0"	3' - 0"	D	E	C	20	
124A	3	7' - 0"	4' - 0"	K	L	C	22	KICKPLATE
124B	1	7' - 0"	3' - 0"	D	E		8	KICKPLATE
126	EX	7' - 0"	2' - 0"	D	E		2	
127	EX	14' - 0"	16' - 0"				24	EXISTING
128	EX	14' - 0"	16' - 0"				24	EXISTING
129	EX	14' - 0"	16' - 0"				24	EXISTING
130	EX	14' - 0"	16' - 0"				24	EXISTING



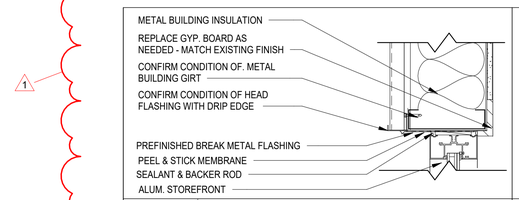


SECTION VIEW



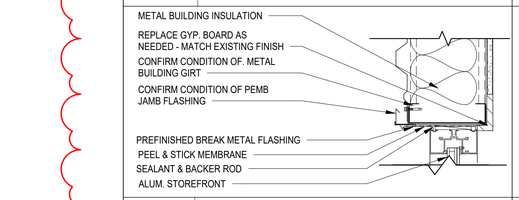
PLAN VIEW

1 LOUVER INFILL DETAIL
1 1/2" = 1'-0"



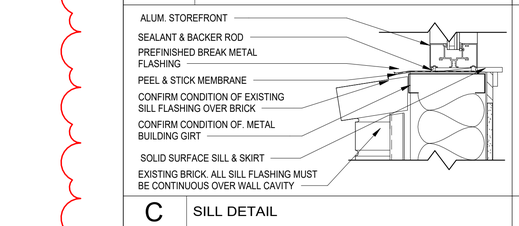
A HEAD DETAIL

D HEAD DETAIL



B JAMB DETAIL

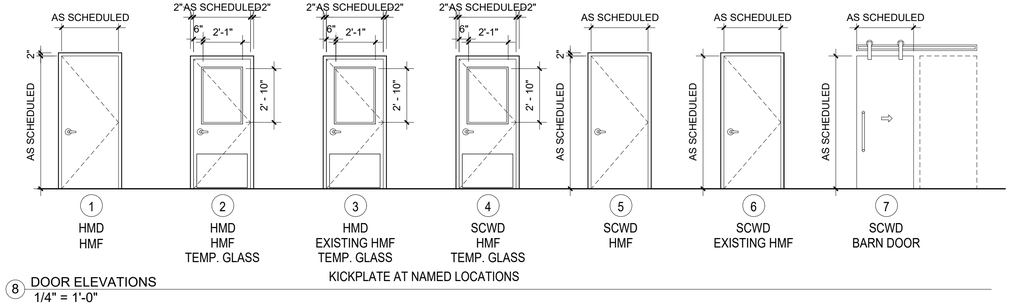
E JAMB DETAIL



C SILL DETAIL

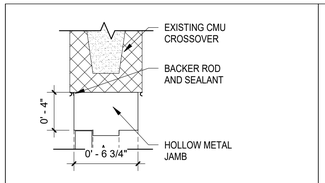
F SILL DETAIL

2 WINDOW DETAILS
1 1/2" = 1'-0"

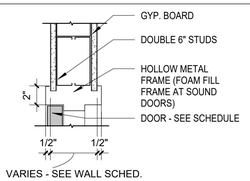


KICKPLATE AT NAMED LOCATIONS

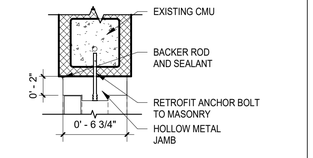
8 DOOR ELEVATIONS
1/4" = 1'-0"



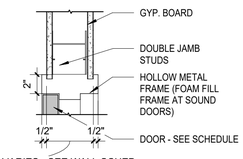
A HEAD DETAIL



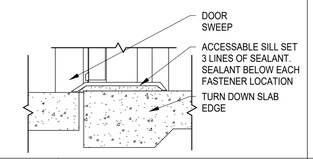
D HEAD DETAIL



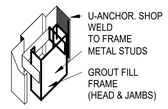
B JAMB DETAIL



E JAMB DETAIL



C SILL DETAIL



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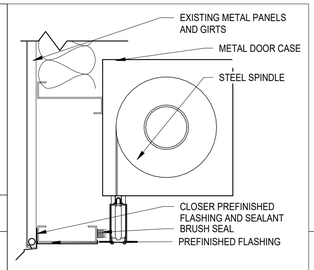
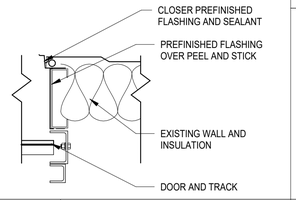
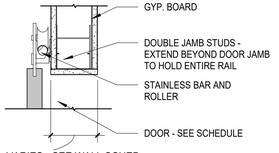


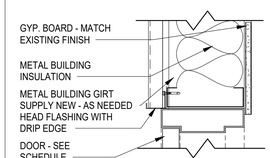
G COILING DOOR HEAD



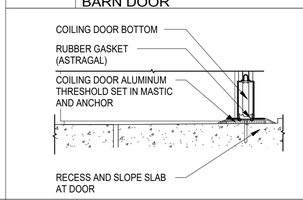
H COILING DOOR JAMB



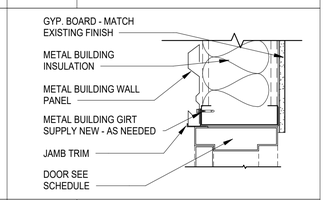
I HEAD DETAIL BARN DOOR



K HEAD DETAIL

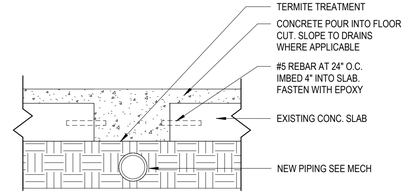


J COILING DOOR SILL



L JAMB DETAIL

6 DOOR DETAILS
1 1/2" = 1'-0"



4 FLOOR PATCH DETAIL
1 1/2" = 1'-0"

CITY OF CRESTVIEW, FLORIDA
The Hub City of Northwest Florida
OKALOOSA COUNTY 1916

Ajax BUILDING CORPORATION

GMC

FIRE STATION 3

585 BROOKMEADE DR,
CRESTVIEW, FL 32539

SEAL

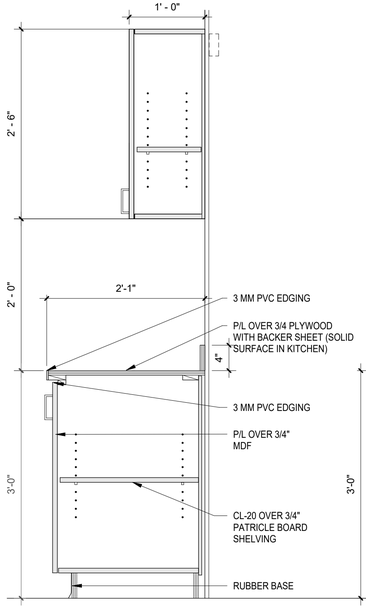
STATE OF FLORIDA
JOHN LUKE MARSHALL
100974
REGISTERED ARCHITECT

No.	Description	Date
1	ADDENDUM 1	02.03.26

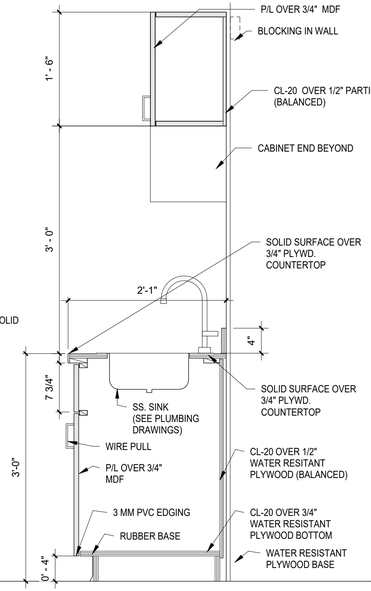
DETAILS AND SCHEDULES

Date	12/19/2025
Drawn By	Author
Checked By	Checker

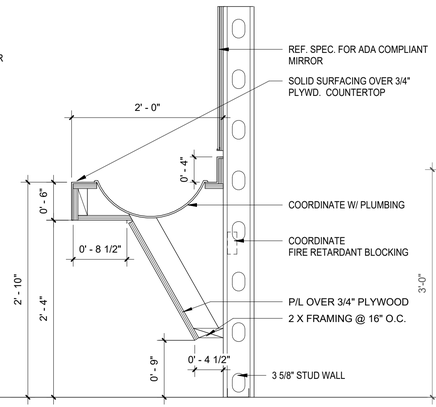
A501



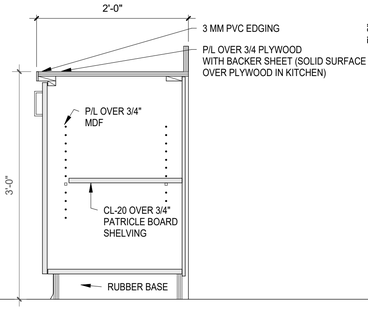
MW DETAIL



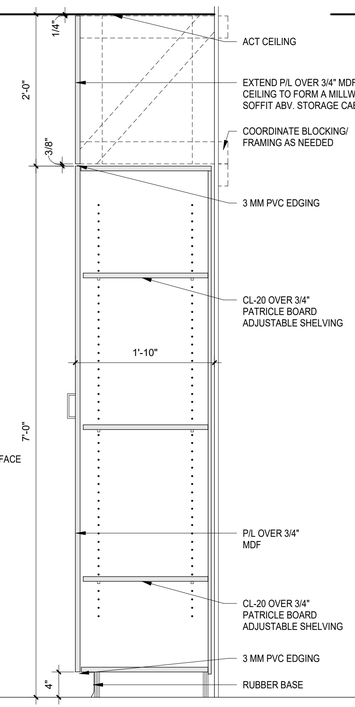
MW DETAIL



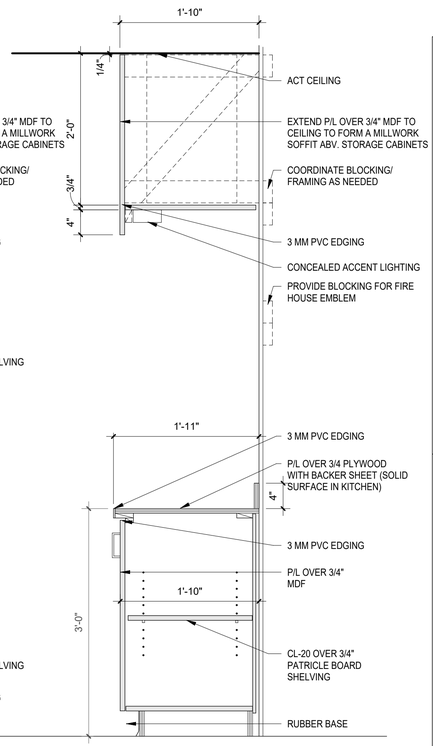
MW DETAIL



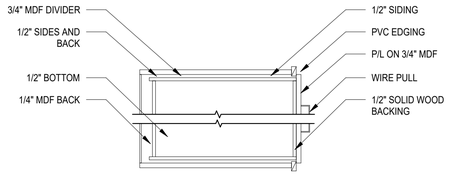
MW CABINET DETAIL



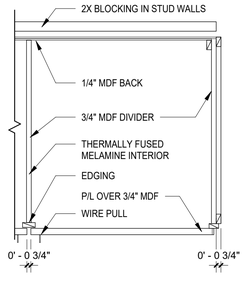
MW DETAIL



MW DETAIL

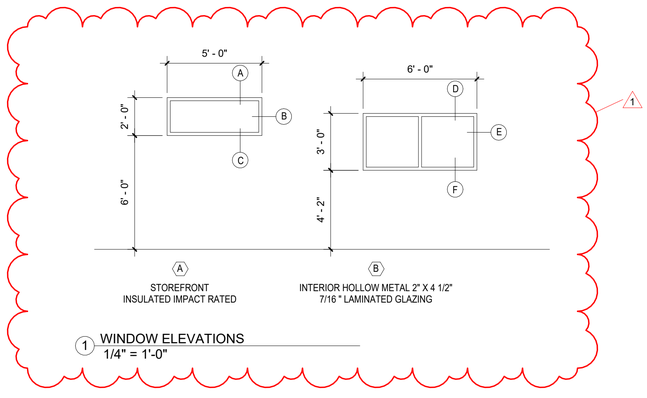


5 TYPICAL DRAWER PLAN
SCALE: 1"=1' 0"

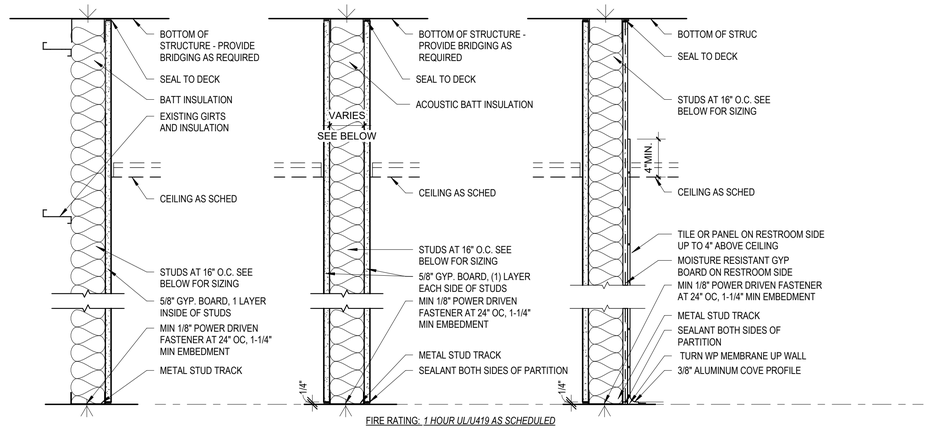


6 TYPICAL CABINET PLAN
SCALE: 1"=1' 0"

4 MW1 DETAIL
1" = 1'-0"



1 WINDOW ELEVATIONS
1/4" = 1'-0"



FIRE RATING: *1 HOUR UL/U419 AS SCHEDULED*

FULL HEIGHT FURRING

- A.1 — 3 5/8" METAL STUD 16" O.C. WITH 5/8" GYP BOARD FLOOR TO DECK ONE SIDE.
- A.2 — 3 5/8" METAL STUD STUD 16" O.C. WITH TILE OVER 1/2" RATED CEMENT BOARD ONE SIDE.

FULL HEIGHT PARTITION

- B.1 — 3 5/8" METAL STUD 16" O.C. WITH 5/8" GYP BOARD FLOOR TO DECK EACH SIDE. SOUND INSULATION BATT. SEAL TO FLOOR TO DECK ACOUSTICAL SEALANT
- B.2 — 6" METAL STUD 16" O.C. WITH 5/8" GYP BOARD FLOOR TO DECK EACH SIDE. SOUND INSULATION BATT. SEAL TO FLOOR TO DECK ACOUSTICAL SEALANT
- B.3 — *1 HOUR RATED* 3 5/8" METAL STUD 24" O.C. WITH 5/8" TYPE X GYP BOARD FLOOR TO DECK EACH SIDE. SOUND INSULATION BATT. SEAL TO FLOOR TO DECK FIRE RATED SEALANT. - STENCIL ABOVE CEILING TO SEAL ALL PENETRATIONS

FULL HEIGHT RESTROOM PARTITION

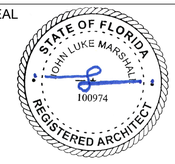
- C.1 — 3 5/8" METAL STUD 16" O.C. WITH 5/8" GYP BOARD FLOOR TO DECK ONE SIDE. INPRO OVER MOISTURE RESISTANT GYP - SEE FINISH SCHEDULE
- C.2 — 3 5/8" METAL STUD 16" O.C. INPRO OVER MOISTURE RESISTANT GYP BOTH SIDES - SEE FINISH SCHEDULE. SOUND INSULATION BATT.
- C.3 — 6" METAL STUD 16" O.C. INPRO OVER MOISTURE RESISTANT GYP BOTH SIDES - SEE FINISH SCHEDULE. SOUND INSULATION BATT.
- C.4 — 6" METAL STUD 16" O.C. WITH 5/8" GYP BOARD FLOOR TO DECK ONE SIDE. INPRO OVER MOISTURE RESISTANT GYP ONE SIDE - SEE FINISH SCHEDULE. SOUND INSULATION BATT.

3 WALL TYPE LEGEND
1 1/2" = 1'-0"

FIRE STATION 3

585 BROOKMEADE DR,
CRESTVIEW, FL 32539

SEAL



No.	Description	Date
1	ADDENDUM 1	02.03.26

DETAILS

Date	12/19/2025
Drawn By	Author
Checked By	Checker

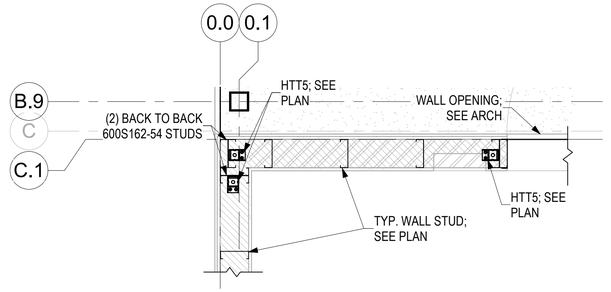
A502

LEGEND

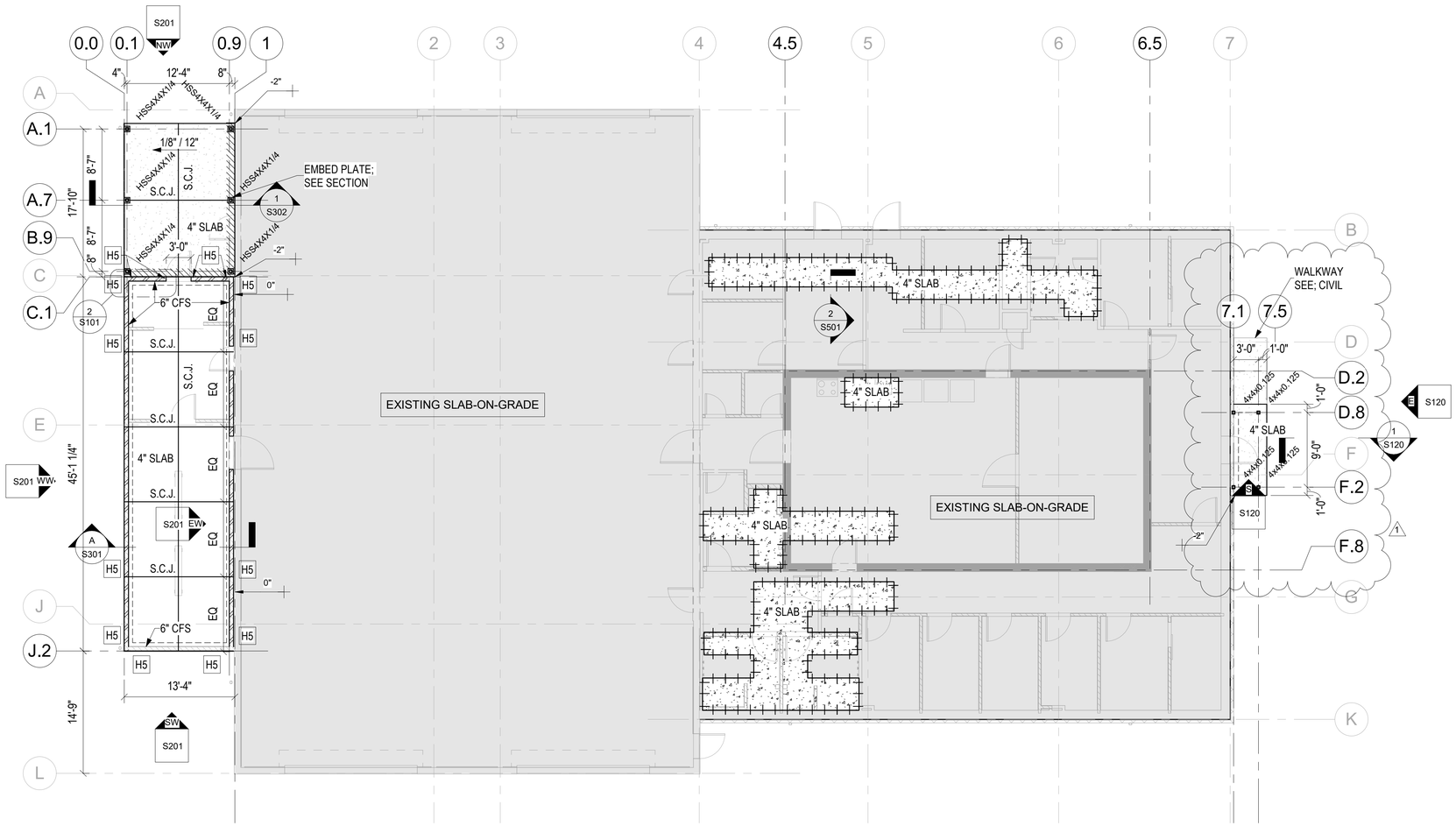
S.C.J.	=	SAWN CONTRACTION JOINT OR CONSTRUCTION JOINT; CONTRACTOR'S OPTION U.N.O. PLACE S.C.J. WHERE SHOWN.
-X'-X"	=	SLAB DEPRESSION; SEE PLAN FOR DEPRESSION EXTENTS AND DEPRESSION DEPTH BELOW REF. EL: 0'-0"
4" SLAB	=	4" MINIMUM THICKNESS SLAB-ON-GRADE REINFORCED WITH WWF 6x6 W2.0xW2.0 WITH 2 1/2" CLR. POSITIVE SUPPORT FROM BOTTOM OF SLAB. SLAB SHALL BE PLACED OVER A VAPOR BARRIER AND CAPILLARY BREAK AS INDICATED IN THE GENERAL NOTES SECTION 2.08 ON SHEET S-001.
6" CFS	=	6" COLD FORMED STEEL FRAMED WALL WITH 600S162-54, 50 KSI WALL STUDS SPACED AT 16" ON CENTER; U.N.O.
4x4x0.125	=	4"x4"x1/8" ALUMINUM COLUMN.
H5	=	SIMPSON HTT5 AT EACH JAMB, BLDG. CORNER & END OF X-BRACING W/ (1) 5/8" Ø HILTI KWIK HUS-EZ W/ 6" MIN EMBEDMENT

G.C. NOTE: NO FOUNDATION UNDERCUT SHALL OCCUR WITHIN 10.0-FEET OF THE EXISTING BUILDING AS MEASURED FROM THE EXISTING EXTERIOR WALL FACE.

SHEET NOTE: ROOF JOISTS BETWEEN GRID LINES 0.1 AND 1.0 MUST ALIGN VERTICALLY WITH LOAD-BEARING CFS STUDS BELOW. DO NOT OFFSET JOISTS FROM SUPPORTING STUDS.



2 / S101 ENLARGED HOLD DOWN DETAIL
3/4" = 1'-0"



1 / S101 FOUNDATION & SLAB-ON-GRADE PLAN
1/8" = 1'-0"

TRUE NORTH
STRUCTURAL ENGINEERING

True North Structural Engineering, LLC
Florida Registry No. 36287
2608 Wallace Lake Rd. Pace, FL 32571
850.696.6784

CITY of CRESTVIEW, FLORIDA
The Hub City of Northwest Florida
OKALOOSA 1916 COUNTY

Ajax BUILDING CORPORATION
GMC

FIRE STATION 3

585 BROOKMEADE DR.
CRESTVIEW, FL 32539

SEAL

JACOB E. SUMRALL
LICENSE
No. 90760
STATE OF FLORIDA
PROFESSIONAL ENGINEER

No.	Description	Date
1	ADDENDUM A	02.03.26

FOUNDATION & SLAB-ON-GRADE PLAN

Date	12/19/2025
Drawn By	JES
Checked By	JES

S101

LEGEND

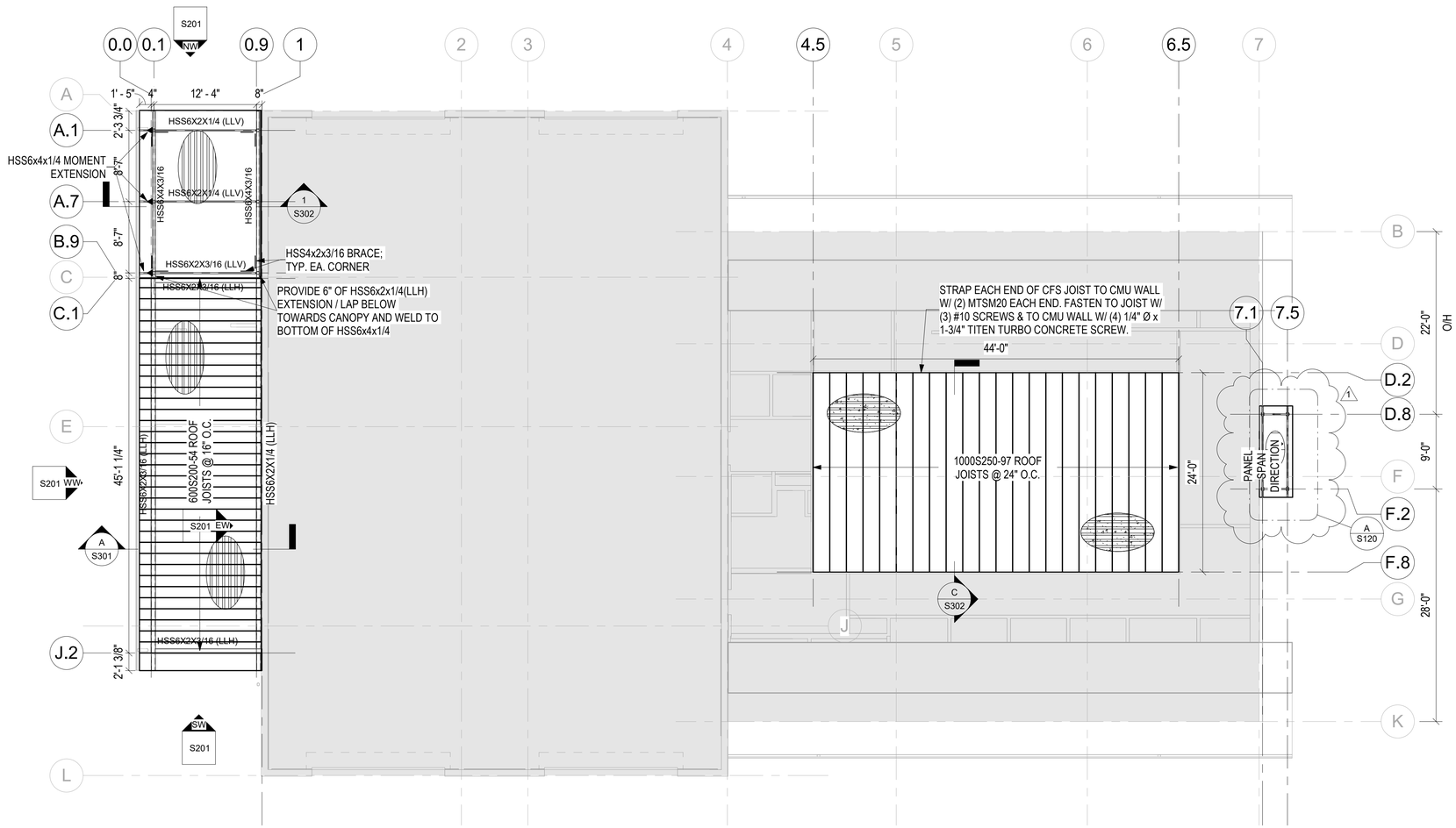
= 1.5" TYPE B 18 GA VULCRAFT OR EQUIVALENT ROOF DECK
TH= 0.0474 in I= 0.289 in^4/ft

INSTALLATION/ATTACHMENT **OVER CFS TRUSSES**:
SUPPORT FASTENERS: #12 SCREWS
SIDELAP FASTENERS: #10 SCREWS
FASTENER LAYOUT:
ZONES 1, 2 & 3: #12 SCREWS @ **36/7 PATTERN**
SIDELAP FASTENER @ 18" ON CENTER

INSTALLATION/ATTACHMENT **OVER CANOPY HSS FRAMING**:
SUPPORT FASTENERS: #12 SCREWS
SIDELAP FASTENERS: #10 SCREWS
FASTENER LAYOUT:
ZONES 1, 2 & 3: #12 SCREWS @ **36/14 PATTERN**
SIDELAP FASTENER @ 18" ON CENTER

= 1.5" TYPE C 22 GA VULCRAFT OR EQUIVALENT ROOF DECK (TH= 0.0295 in, I= 0.177 in^4/ft) ROOF DECK WITH 2" **LIGHT WEIGHT CONCRETE** COVER (3 1/2" TOTAL) REINFORCED WITH ONE LAYER WWF W2.9 x 2.9 CHAIRED WITH 1-1/2" SLAB BOLSTERS AT 4'-0" ON CENTER OFF METAL DECK.
INSTALLATION/ATTACHMENT:
SUPPORT FASTENERS: #12 SCREWS
SIDELAP FASTENERS: #10 SCREWS
FASTENER LAYOUT:
ZONES 1, 2 & 3: #12 SCREWS @ 36/4 PATTERN
SIDELAP FASTENER SPACING: 18" O.C.

= NEW 3"x0.032" ESP "ELITE ALUMINUM" ROOF PANELS (SPANS BY DO KIM & ASSOCIATES, LLC FLORIDA PRODUCT APPROVAL # FL7561) (NET LOAD =40 PSF, L/120)



1 S111 ROOF FRAMING PLAN
1/8" = 1'-0"

CITY of CRESTVIEW FLORIDA
The Hub City of Northwest Florida
OKALOOSA 1916 COUNTY

Ajax BUILDING CORPORATION
GMC

FIRE STATION 3
585 BROOKMEADE DR.
CRESTVIEW, FL 32539

SEAL
JACOB E. SUMRALL LICENSE No. 90760 STATE OF FLORIDA PROFESSIONAL ENGINEER

No.	Description	Date
1	ADDENDUM A	02.03.26

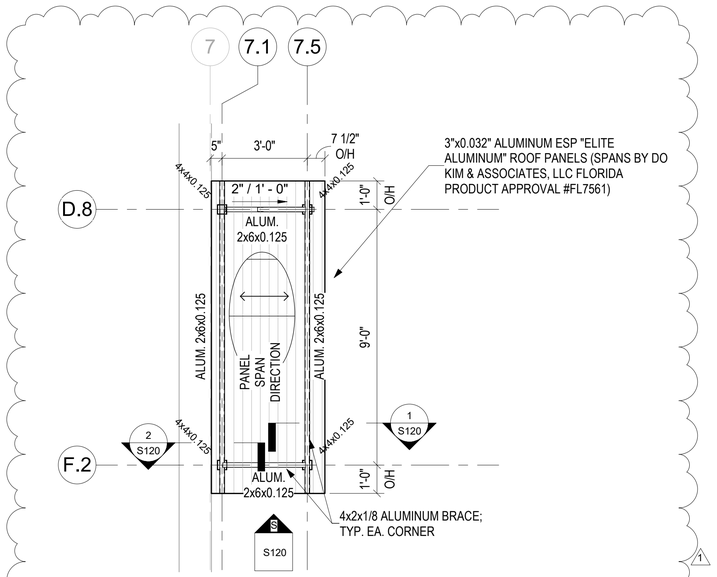
ROOF FRAMING PLAN

Date 12/19/2025
Drawn By JES
Checked By JES

S111

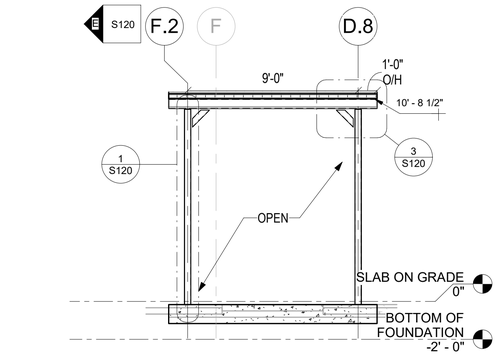
TRUE NORTH
STRUCTURAL ENGINEERING

True North Structural Engineering, LLC
Florida Registry No. 36287
2608 Wallace Lake Rd. Pace, FL 32571
850.696.6784



A S120 ALUMINUM CANOPY ROOF PLAN

3/8" = 1'-0"

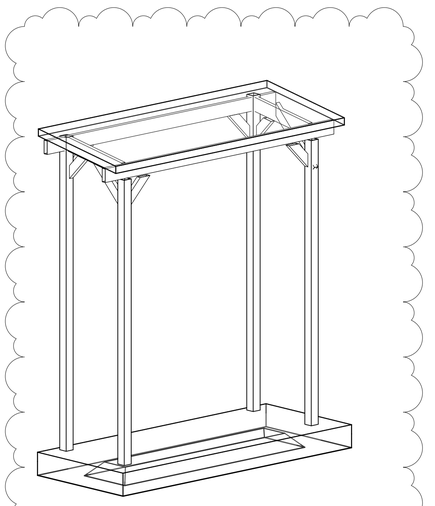


E S120 EAST CANOPY - EAST ELEVATION

1/4" = 1'-0"

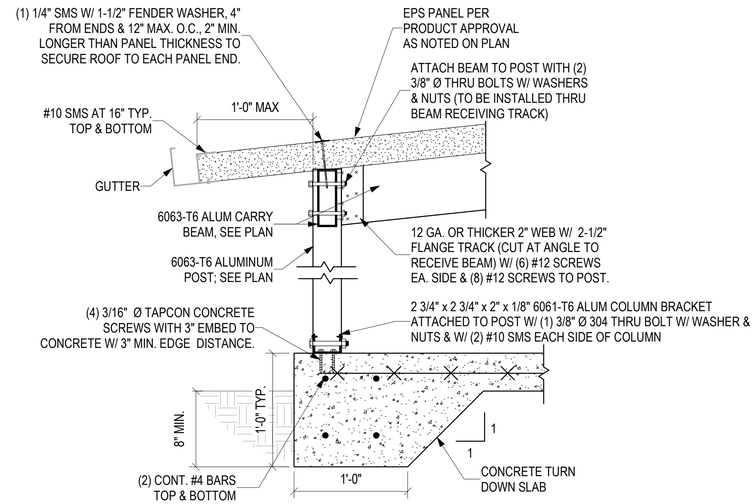
S S120 EAST CANOPY - SOUTH ELEVATION

1/4" = 1'-0"



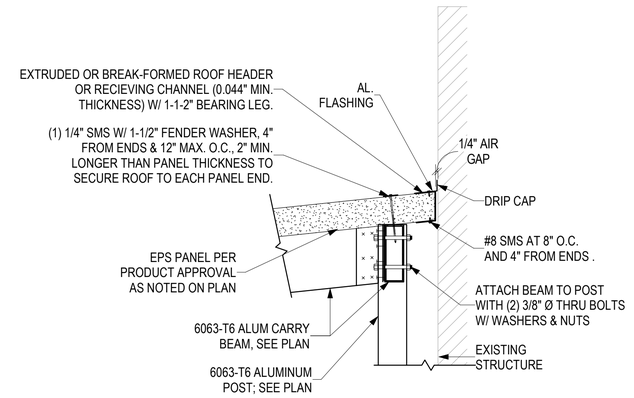
ISO S120 CANOPY ISOMETRIC

EXISTING STRUCTURE NOT SHOWN FOR CLARITY



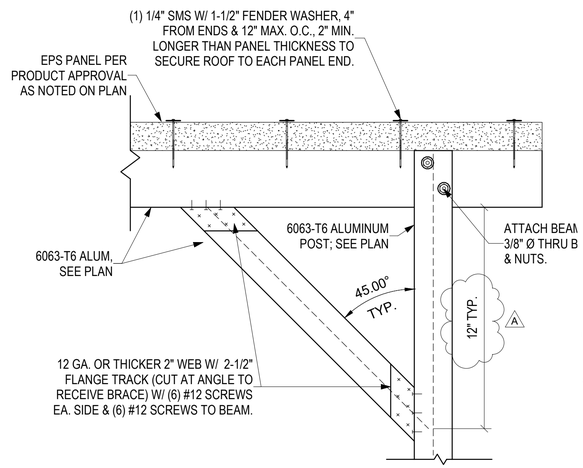
1 S120 ALUMINUM FRAMING SECTION 1

1 1/2" = 1'-0"



2 S120 ALUMINUM FRAMING SECTION 2

1 1/2" = 1'-0"



3 S120 ALUMINUM BRACING DETAILS

1 1/2" = 1'-0"

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CITY of CRESTVIEW, FLORIDA
The Hub City of Northwest Florida
OKALOOSA 1916 COUNTY

Ajax BUILDING CORPORATION
GMC

FIRE STATION 3

585 BROOKMEADE DR.
CRESTVIEW, FL 32539

SEAL

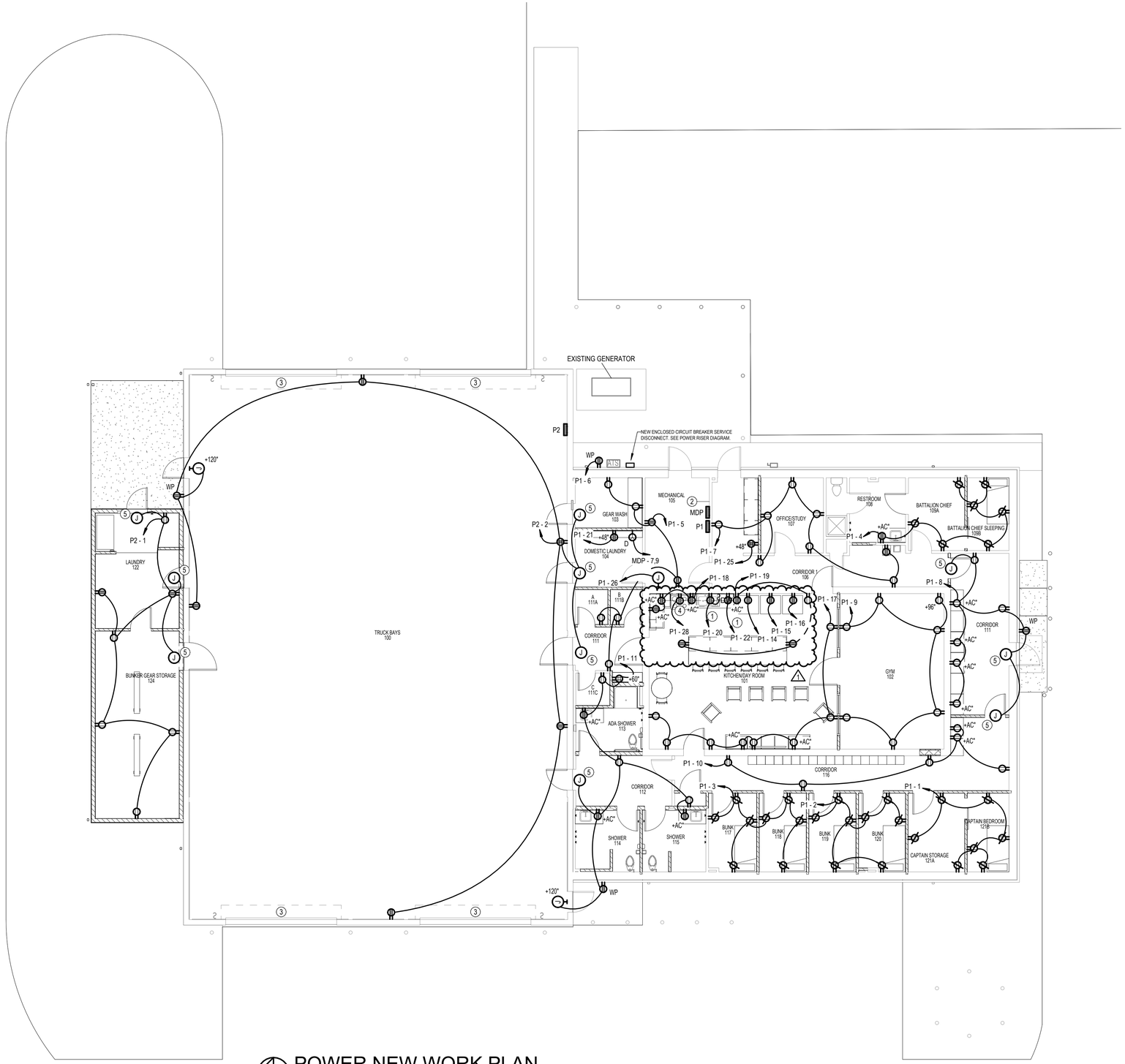
JACOB E. SUMRALL
LICENSE
No. 90760
STATE OF FLORIDA
PROFESSIONAL ENGINEER

No.	Description	Date
1	ADDENDUM A	02.03.26

ALUMINUM CANOPY PLAN & DETAILS

Date	12/19/2025
Drawn By	JES
Checked By	JES

S120



KEYNOTES

1. CONNECT NEW RECEPTACLE FOR KITCHEN EQUIPMENT TO EXISITNG CIRCUIT.
2. PROVIDE NEW MAIN GROUND BAR NEXT TO PANEL MDP. SEE GROUNDING DIAGRAM.
3. REPOWER ROLL UP DOOR FROM NEW PANEL. SEE PANEL SCHEDULES. INTERLOCK EXISTING DOOR WITH NEW AUTOMATIC DOOR CONTROL SYSTEM. SEE DOORHOIST INTERFACE SCHEMATIC. DISPATCH SIGNAL SHALL ACTIVATE AUTOMATIC DOOR OPEN/CLOSE SEQUENCE.
4. POWER FOR GAS OVEN/RANGE AND HOOD VENT.
5. LOCATE JUNCTION BOX FOR ACCESS CONTROLLED DOOR ABOVE CEILING GRID. SEE ACCESS CONTROL DETAILS.

POWER NEW WORK PLAN

1/8" = 1'-0"

0 4' 8' 16'

CITY OF CRESTVIEW, FLORIDA — The Hub City of Northwest Florida — OKALOOSA COUNTY — 1916

Ajax BUILDING CORPORATION

GMC

FIRE STATION 3

585 BROOKMEADE DR,
CRESTVIEW, FL 32539

SEAL

No.	Description	Date
1	Addendum 1	2-3-26

ELECTRICAL NEW WORK PLAN

Date	12/09/2025
Drawn By	LR
Checked By	KS

E201

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25106 Job No.