

Addendum

Project Name No.	LRH Pre-Engineered Building 26022	Date	6/16/2026
Owner	Lakes Regional Healthcare	Addendum	01

ALL PLAN HOLDERS:

This Addendum forms a part of the Contract Documents and modifies the Drawings and Project Manual dated June 1, 2026, with amendments and additions noted below.

Acknowledge receipt of this Addendum in the space provided on the Form of Bid. Failure to do so may subject the Bidder to disqualification.

This Addendum supersedes or modifies conflicting portions of the Drawings and Project Manual. All bidders shall base their bids on the Contract Documents as modified by this Addendum.

This Addendum consists of (43) forty-three pages

Project Manual	33
Drawings	3
Other	7
Total	43

Changes to Prior Addenda:

ITEM 1 NONE

General Information:

- ITEM 2 **CLARIFY** all bids are to be received/combined in one large envelope with the bid security in a separate envelope inside.
- ITEM 3 **CLARIFY** the construction cost is estimated between \$550,000 and \$650,000, excluding alternates.
- ITEM 4 Attached meeting notes from the pre-bid conference held on June 11, 2026.

Changes to Technical Specifications:

- ITEM 5 SECTION 00 11 13 - NOTICE TO BIDDERS
 - a. **REVISE** the address to 2301 US-71, Spirit Lake, IA 51360 instead of 2323.
 - b. **REVISE** "Gary Ven Wattering" to read "Gary Van Wattering, Director of Facilities"
- ITEM 6 SECTION 00 21 13- INSTRUCTIONS TO BIDDERS
 - a. **REVISE** the address in 2.01-A to 2301 US-71, Spirit Lake, IA 51360 instead of 2323.
- ITEM 7 SECTION 00 41 00 – BID FORM
 - a. **REVISE** the address in 1.01-A to 2301 US-71, Spirit Lake, IA 51360 instead of 2323.

- ITEM 8 SECTION 08 71 00 – DOOR HARDWARE
 - a. **ADD** section in its entirety.
- ITEM 9 SECTION 23 34 25 – HVAC POWER VENTILATORS
 - a. **ADD** section in its entirety.
- ITEM 10 SECTION 23 82 00 – TERMINAL HEATING EQUIPMENT
 - a. **REMOVE** "both" and "and propane" from section 2.3.A.7.c.
 - b. **REMOVE** "(opt) The gas shall be 11-14" W.C. for propane gas." from section 2.3.A.7.d.
- ITEM 11 SECTION 23 00 00 – HVAC TABLE OF CONTENTS
 - a. **ADD** section in its entirety.

Changes to Drawings:

- ITEM 12 SHEET A101 – FLOOR PLAN, WALL TYPES, ASSEMBLIES AND OPENING SCHEDULES
 - a. **ADD** text note "3/4" FRT PLYWOOD" to wall types "X" and "W".
- ITEM 13 SHEET A311, A312, & A501
 - a. **REVISE** all notes on associated details from "WATERPROOFING" TO "BITUMINOUS DAMPPROOFING".
- ITEM 14 SHEET E101 – ELECTRICAL PLANS
 - a. **REVISE** mounting of CO detectors and added notes for clarity.
- ITEM 15 SHEET E601 – Electrical Schedules
 - a. **REVISE** description and manufacturer information of 'HH-1' in General Electrical Schedule.
 - b. **REVISE** description of CO detector.

Substitutions Requests:

HVAC PRODUCT APPROVALS

The following materials or equipment furnished by the manufacturer listed may be substituted as equivalent, provided that each item and piece of equipment conforms to the design, size, weight, quality and requirements of the specifications and drawings. The contractor will be responsible for any modifications to utility connections resulting from alternate equipment manufacturers being used.

Section	Item	Submitted Manufacturer
23 37 00	Air Inlets and Outlets	Raymon
23 72 00	Energy Recovery Vent	JencoFan
23 34 25	Exhaust Fan	JencoFan
23 82 00	Terminal Heat	Neptronic

ELECTRICAL PRODUCT APPROVALS

The following materials or equipment furnished by the manufacturer listed may be substituted as equivalent, provided that each item and piece of equipment conforms to the design, size, weight, quality and requirements of the specifications and drawings. The contractor will be responsible for any modifications to utility connections resulting from alternate equipment manufacturers being used.

Section	Item	Submitted Manufacturer
265113	F1	Day-Brite, Lithonia, Metalux
265113	F2	Day-Brite
265629	S1	Gardco
260943	Lighting Controls	Sensorworx

Issued by



Heidi Willis, AIA
Unison Design Studio

**SECTION 00 41 00
BID FORM**

THE PROJECT AND THE PARTIES

1.01 TO:

- A. Lakes Regional Healthcare (Owner)
2301 Hwy 71
Spirit Lake, IA 51360

1.02 RECEIVED BY:

- A. Gary Van Wettering
Lakes Regional Healthcare
2301 Hwy 71
Spirit Lake, IA 51360
Phone: 712-336-8782
Email: Gary.vanwettering@lakeshealth.org

1.03 FOR:

- A. Project: LRH - Pre-Engineered Building
B. Unison Design Studio Project No. 26022

1.04 DATE: _____ (BIDDER TO ENTER DATE)

1.05 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

- A. Bidder's Full Name _____
1. Address _____
2. City, State, Zip: _____
3. Phone: _____

1.06 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Unison Design Studio and their subconsultants for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:
- B. _____ dollars
(\$ _____), in lawful money of the United States of America.
- C. We have included the required security deposit as required by the Instruction to Bidders.
- D. We have included the required performance assurance bonds in the Bid Amount as required by the Instructions to Bidders.
1. The cost of the required performance assurance bonds is _____ dollars
(\$ _____), in lawful money of the United States of America.
- E. All applicable federal taxes are included and State of Iowa taxes are excluded from the Bid Sum.

1.07 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for thirty (30) days from the bid closing date.
- B. If this bid is accepted by Owner within the time period stated above, we will:
1. Commence work as agreed upon with the Owner after written Notice to Proceed of this bid, estimated to be on or near June 24, 2026.

- C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.
- D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.08 CONTRACT TIME

- A. If this Bid is accepted, we will:
- B. Commence work on or around June 24, 2026, 2026.
- C. Substantially complete the Work on or before September 30, 2026.

1.09 ALTERNATES - SEE SECTION 01 23 00

- A. Alternates are identified by number and describe the basic changes to be incorporated into the Work only when that Alternate is made a part of the Work by specific provisions in the Owner-Contractor Agreement. Bidder, in submitting his bid proposal, shall include, in addition to his base bid, the following alternates. The numerical order of listing these alternates does not necessarily imply their priority. The Owner may decide to use any one or more of all the items. Coordinate pertinent related work and modify surrounding work as required to properly integrate the work under each Alternate and to provide the complete construction required by the Contract Documents.
- B. Alternates identified on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement.
- C. Bidder, in submitting his bid proposal, shall include, in addition to his base bid, the following alternates:
 - 1. **ALTERNATE NO. 01:** Ceiling Fans
ADD or DEDUCT the Sum of : _____ DOLLARS
(\$ _____)
 - 2. **ALTERNATE NO. 02:** East Parking Expansion
ADD or DEDUCT the Sum of : _____ DOLLARS
(\$ _____)

1.10 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
 - 1. Addendum # ___ Dated _____
 - 2. Addendum # ___ Dated _____
 - 3. Addendum # ___ Dated _____

1.11 BID FORM SUPPLEMENTS

- A. The following Supplements are attached to this Bid Form and are considered an integral part of this Bid Form:
 - 1. Document 00 43 36 - Proposed Subcontractors Form: Include the names of Subcontractors and the portions of the Work they will perform.

1.12 BID FORM SIGNATURE(S)

- A. _____
(Bidder - print the full name of your firm)
- B. _____

(Authorized signing officer, Title)

END OF SECTION

**SECTION 01 23 00
DOOR HARDWARE**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 01 Section "General Conditions".
 - 2. Division 06 Section "Rough Carpentry".
 - 3. Division 06 Section "Finish Carpentry".
 - 4. Division 08 Section "Operations and Maintenance".
 - 5. Division 08 Section "Hollow Metal Doors and Frames".
 - 6. Division 08 Section "Flush Wood Doors".
 - 7. Division 26 Section "Electrical".
- D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
 - 8. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series.
 - 2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
 - 3. ANSI/UL 294 - Access Control System Units.
 - 4. UL 305 - Panic Hardware.
 - 5. ANSI/UL 437- Key Locks.

1.03 SUBMITTALS

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

- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- D. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.04 CLOSEOUT SUBMITTALS

- A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.
- B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.05 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 - 3. Review sequence of operation narratives for each unique access controlled opening.
 - 4. Review and finalize construction schedule and verify availability of materials.
 - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.06 DELIVERY, STORAGE AND HANDLING

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

1.07 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.08 WARRANTY

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

PART 2 PRODUCTS

4.01 MATERIALS

- A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

4.02 BUTT HINGES

- A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity:
 - a. Three Hinges: For doors with heights 61 to 90 inches.
 - b. Four Hinges: For doors with heights 91 to 120 inches.

- B. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - 1. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - 2. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
- C. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - 1. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - 2. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
- D. Hinge Options: Comply with the following:
 - 1. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.
- E. Manufacturers:
 - 1. McKinney (MK) - TA/T4A Series, 5-knuckle.

4.03 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Manufacturers:
 - 1. Sargent Manufacturing (SA).
 - 2. No Substitution.
- C. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
 - 1. Threaded mortise cylinders with rings and cams to suit hardware application.
 - 2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - 3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
 - 4. Tubular deadlocks and other auxiliary locks.
 - 5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 - 6. Keyway: Match Facility Standard.
- D. Keying System: Each type of lock and cylinders to be factory keyed.
 - 1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
 - 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 - 3. Existing System: Field verify and key cylinders to match Owner's existing system.
- E. Key Quantity: Provide the following minimum number of keys:
 - 1. Change Keys per Cylinder: Two (2)
 - 2. Master Keys (per Master Key Level/Group): Five (5).
 - 3. Construction Keys (where required): Ten (10).
- F. Construction Keying: Provide construction master keyed cylinders.
- G. Key Registration List (Bitting List):
 - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 - 2. Provide transcript list in writing or electronic file as directed by the Owner.

4.04 MORTISE LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.
- B. Manufacturers:
 - 1. Sargent Manufacturing (SA) - 8200 Series.
 - 2. No Substitution.

4.05 MULTI-POINT LOCKS AND LATCHING DEVICES

- A. Provide locksets with functions and features as follows:
 - 1. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
 - 2. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
 - 3. Five-year limited warranty for mechanical functions.
- B. Electromechanical locksets shall have the following functions and features:
 - 1. Motor driven electric latch retraction that supports electrified dogging.
 - 2. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable to fail safe or fail secure and operate from 12vdc to 24vdc regulated.
 - 3. Uses standard electric hinge; no special power transfer required.
 - 4. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
- C. Manufacturers:
 - 1. Sargent Manufacturing (SA) - 7000 Series.
 - 2. No Substitution.

4.06 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
 - 4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
 - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 - 2. Strikes for Bored Locks and Latches: BHMA A156.2.
 - 3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
 - 4. Dustproof Strikes: BHMA A156.16.

4.07 ARCHITECTURAL TRIM AND ACCESSORIES

- A. Door, Frame and Wall Protective Trim: ANSI/BHMA A156.6, protective products as specified in the hardware sets. Door protection plates shall be not more than 2" less than door width on stop side and 1" less door width on the pull side or on stop side of pairs of doors. Listed manufacturers shall meet all functions and features as specified herein.

- B. Provide protective trim with functions and features as follows:
 - 1. Meets ADA requirements for smooth bottom door surfaces.
 - 2. UL Classified options for use on fire-rated doors up to 3 hours.
 - 3. Fabricated from stainless steel, brass, bronze, aluminum, or high-impact plastic.
 - 4. Available in a variety of sizes, finishes, and profiles to suit aesthetic and functional requirements.
 - 5. Designed to protect doors, frames, and adjacent walls from damage due to impact, abrasion, or traffic.
 - 6. Fasteners included; adhesive-backed options available for select models.
 - 7. Ten-year limited warranty.
- C. Manufacturers:
 - 1. Rockwood (RO).

4.08 DOOR STOPS AND HOLDERS

- A. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
- B. Manufacturers:
 - 1. Rockwood (RO).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
- D. Manufacturers:
 - 1. Norton Rixson (NO).
 - 2. Sargent Manufacturing (SA).

4.09 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

- F. Manufacturers:
 - 1. Pemko (PE).

4.10 FABRICATION

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

4.11 FINISHES

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

PART 3 EXECUTION

5.01 EXAMINATION

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

5.02 PREPARATION

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

5.03 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9

Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

- D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

5.04 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
 - 1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

5.05 ADJUSTING

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

5.06 CLEANING AND PROTECTION

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

5.07 DEMONSTRATION

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

5.08 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 - 1. Quantities listed are for each pair of doors, or for each single door.
 - 2. The supplier is responsible for handling and sizing all products.
 - 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. SA - SARGENT
3. RO - Rockwood
4. PE - Pemko
5. NO - Norton Rixson
6. DK – Dorma Kaba
7. OT – Other

Hardware Sets

Set: 1.0

Doors: 100 (Entry)

3 Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D MK
1 Mechanical Pushbutton Lockset	SIMPLEX L1000 L102X	US26D DK
1 Sweep	3452CNB TKSP8	PE
1 Threshold	253X3AFG	PE
1 Closer	7500	US26D NO
1 Overhead Stop	9ADJ SERIES	US26D NO
1 Gasketing	303AS	PE

Notes: Key override on pushbutton lockset to be keyed to hospital's master.

Set: 2.0

Doors: 101 (Office)

3 Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D MK
1 Passage	8215 LL	US26D SA
1 Closer	7500	US26D NO
1 Gasketing	S88BL	PE
1 Wall Stop	400	US26D RO
3 Silencer	608/609 RKW	RO

Set: 3.0

Doors: 102 (Restroom)

3 Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D MK
1 Privacy Lock	8265 LNL	US26D SA
1 Closer	7500	US26D NO
1 Gasketing	S88BL	PE
1 Wall Stop	400	US26D RO
3 Silencer	608/609 RKW	RO

Notes: Free single-action egress at all times.

Set: 4.0

Doors: 100A, 100B, 100C

1 All Hardware

PROVIDED BY DOOR
SUPPLIER

OT

END OF SECTION 08 71 00

SECTION 233425 - HVAC POWER VENTILATORS

PART 1 - GENERAL

1.1 SCOPE

- A. Perform all work required to provide and install the Power Ventilators indicated by the Contract Documents with supplementary items necessary for proper installation.
- B. Equipment Included in This Section:
 - 1. Utility set fans.
 - 2. Fiberglass roof exhaust fan.
 - 3. Centrifugal roof ventilators.
 - 4. Axial roof ventilators.
 - 5. Upblast propeller roof exhaust fans.
 - 6. Centrifugal wall ventilators.
 - 7. Ceiling-mounting ventilators.
 - 8. In-line centrifugal fans.
 - 9. Propeller fans.
 - 10. Dryer Exhaust Fan
 - 11. Dryer Makeup Air Fan

1.2 REFERENCES

- A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
- B. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.
- C. All materials, installation and workmanship shall comply with the applicable requirements and standards addressed within the following references:
 - 1. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings
 - 2. AFBMA 11 - Load Ratings and Fatigue Life for Roller Bearings
 - 3. AMCA 99 - Standards Handbook
 - 4. ACMA 203 - Fan Application Manual - Field Performance Measurements

5. AMCA 204 - Balance Quality and Vibration Levels For Fans
6. AMCA 210 - Laboratory Methods of Testing Fans for Aerodynamic Performance Rating
7. AMCA 300 - Reverberant Room Method for Sound Testing of Fans
8. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data
9. NEMA MG1 - Motors and Generators
10. NFPA 70 - National Electrical Code
11. SMACNA - HVAC Duct Construction Standards - Metal and Flexible
12. UL 705 – Power Ventilators

1.3 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated and include the following:
 1. Certified fan performance curves with system operating conditions indicated
 2. Certified fan sound-power ratings
 3. Motor ratings and electrical characteristics, plus motor and electrical accessories
 4. Material thickness and finishes, including color charts
 5. Dampers, including housings, linkages, and operators
 6. Roof curbs
 7. Fan speed controllers
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 1. Wiring Diagrams: Power, signal, and control wiring.
 2. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 3. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, and base weights.
- C. Coordination Drawings: Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 1. Roof framing and support members relative to duct penetrations.

- 2. Ceiling suspension assembly members.
- 3. Size and location of initial access modules for acoustical tile.
- 4. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For power ventilators to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Performance Ratings: Conform to AMCA 210 and bear the AMCA Certified Rating Seal.
- C. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal. The sound power levels must not exceed those indicated on Drawings.
- D. Fabrication: Conform to AMCA 99.
- E. Performance Base: 50 feet above sea level.
- F. Fans shall be capable of operating stably at reduced loads imposed by means of variable speed drives.
- G. NEMA Compliance: Motors and electrical accessories shall comply with NEMA standards.
- H. UL Standard: Power ventilators shall comply with UL 705.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fans as factory-assembled unit, to the extent allowable by shipping limitations, with protective crating and covering.
- B. Disassemble and reassemble units, as required for moving to final location, according to manufacturer's written instructions.
- C. Lift and support units with manufacturer's designated lifting or supporting points.

1.6 COORDINATION

- A. Coordinate size and location of structural-steel support members.
- B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

- C. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Belts: Two (2) sets for each belt-driven unit.

PART 2 - PRODUCTS

2.1 PROPELLER FANS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Acme Engineering & Mfg. Corp.
 - 2. Twin City
 - 3. Loren Cook Company
 - 4. Pennbarry
 - 5. Greenheck
- C. Description: Direct- or belt-driven propeller fans consisting of fan blades, hub, housing, orifice ring, motor, drive assembly, and accessories.
- D. Housing: Galvanized-steel sheet with flanged edges and integral orifice ring with baked-enamel finish coat applied after assembly.
- E. Steel Fan Wheels: Formed-steel blades riveted to heavy-gauge steel spider bolted to cast-iron hub.
- F. Belt-Driven Drive Assembly: Resiliently mounted to housing, statically and dynamically balanced and selected for continuous operation at maximum rated fan speed and motor horsepower, with final alignment and belt adjustment made after installation.
 - 1. Service Factor Based on Fan Motor Size: 1.4.
 - 2. Fan Shaft: Turned, ground, and polished steel; keyed to wheel hub.
 - 3. Shaft Bearings: Permanently lubricated, permanently sealed, self-aligning ball bearings.
 - a. Ball-Bearing Rating Life: ABMA 9, L₁₀ of 100,000 hours

4. Pulleys: Cast iron with split, tapered bushing; dynamically balanced at factory.
5. Motor Pulleys: Adjustable pitch for use with motors through five (5) hp; fixed pitch for use with larger motors. Select pulley so pitch adjustment is at the middle of adjustment range at fan design conditions.
6. Belts: Oil resistant, nonsparking, and nonstatic; matched sets for multiple belt drives.
7. Belt Guards: Fabricate of steel for motors mounted on outside of fan cabinet.

G. Accessories

1. Gravity Shutters: Aluminum blades in aluminum frame; interlocked blades with nylon bearings.
2. Motor-Side Back Guard: Galvanized steel, complying with OSHA specifications, removable for maintenance.
3. Wall Sleeve: Galvanized steel to match fan and accessory size.
4. Weathershield Hood: Galvanized steel to match fan and accessory size.
5. Weathershield Front Guard: Galvanized steel with expanded metal screen.
6. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
7. Disconnect Switch: Nonfusible type, with thermal-overload protection mounted inside fan housing, factory wired through an internal aluminum conduit.

H. Capacities and Characteristics

1. As scheduled on Drawings
2. Vibration Isolators:
 - a. As scheduled on Drawings
3. Spark Arrestance Class A

2.2 MOTORS

- A. Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
- B. Enclosure Type: Totally enclosed, fan cooled.

2.3 SOURCE QUALITY CONTROL

- A. Sound-Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Factory test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA-Certified Ratings Seal.

- B. Fan Performance Ratings: Establish flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests and ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install power ventilators level and plumb.
- B. Support units using mounts and isolators as scheduled on drawings having a static deflection as scheduled. Vibration- and seismic-control devices are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
 - 1. Secure vibration and seismic controls to concrete bases using anchor bolts cast in concrete base.
- C. Install floor-mounting units on concrete bases. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- D. Install floor-mounting units on concrete bases designed to withstand, without damage to equipment, the seismic force required by code. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- E. Secure roof-mounting fans to roof curbs with cadmium-plated hardware. Refer to Division 07 Section "Roof Accessories" for installation of roof curbs.
- F. Ceiling Units: Suspend units from structure; use steel wire or metal straps.
- G. Support suspended units from structure using threaded steel rods and hangers/supports having a static deflection as scheduled on Drawings. Vibration-control devices are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- H. Install units with clearances for service and maintenance.
- I. Label units according to requirements specified in Division 23 Section "Identification for HVAC Piping and Equipment."

3.2 CONNECTIONS

- A. Duct installation and connection requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors. Flexible connectors are specified in Division 23 Section "Air Duct Accessories."
- B. Install ducts adjacent to power ventilators to allow service and maintenance.
- C. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

- D. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Verify that shipping, blocking, and bracing are removed.
 - 2. Verify that unit is secure on mountings and supporting devices and verify connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
 - 3. Verify that cleaning and adjusting are complete.
 - 4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
 - 5. Adjust belt tension.
 - 6. Adjust damper linkages for proper damper operation.
 - 7. Verify lubrication for bearings and other moving parts.
 - 8. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
 - 9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
 - 10. Shut unit down and reconnect automatic temperature-control operators.
 - 11. Remove and replace malfunctioning units and retest as specified above.
- B. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.4 ADJUSTING

- A. Adjust damper linkages for proper damper operation.
- B. Adjust belt tension.
- C. Refer to Division 23 Section "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing procedures.
- D. Replace fan and motor pulleys as required to achieve design airflow.
- E. Lubricate bearings.

END OF SECTION 233425

**SECTION 23 82 00
TERMINAL HEATING EQUIPMENT**

PART 1 - GENERAL

1.1 SCOPE

- A. Perform all work required to provide and install the following Terminal Heating Devices indicated by the Contract Documents with supplementary items necessary for proper installation.
- B. Equipment Included in This Section
 - 1. Electric Terminal Heat
 - a. Unit Heaters
 - b. Cabinet Unit Heaters
 - c. Duct Mounted Heating Coils
 - 2. Gas Fired Terminal Heat
 - a. Unit Heaters
 - b. Radiant Tube Heaters

1.2 SUBMITTALS

- A. Product Data: Catalog cuts, specifications, installation and maintenance instructions for each type of heater specified.
- B. Schedule: List manufacturer, unit type, model number, and performance data for each unit heater.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Heaters shall be UL listed.
- B. Certification: Affidavit from finned tube radiation manufacturer certifying that element has been tested in accordance with the requirements of IBR Testing and Rating Standard for finned tube radiation.

1.4 MAINTENANCE

- A. Special Tools: One (1) tool for each type and size vandal resistant fastener.

PART 2 - PRODUCTS

2.1 CONFIGURATION AND PERFORMANCE

- A. Refer to the equipment schedules for additional configuration and performance requirements.

2.2 ELECTRIC TERMINAL HEAT

- A. Electric Unit Heaters

- 1. Acceptable Manufacturers

- a. Berko
- b. Brasch
- c. Indeeco
- d. King Electric
- e. Markel
- f. Modine
- g. Q-Mark
- h. Raywall
- i. Redd-I
- j. Stelpro
- k. Trane
- l. TPI Corp

- 2. Unit Casing: Constructed of steel sheet formed, reinforced, and braced for rigidity, with steel louvers or deflectors with sufficient rigidity to prevent vibration at all fan speeds.

- a. Materials:

- 1) Galvanized Steel Sheet: ASTM A 653, coating designation G90.
- 2) Cold-Rolled Steel Sheet: ASTM A 366, cleaned, degreased and phosphatized.

- b. Factory Finish: Minimum two (2) coat baked enamel finish on exposed surfaces, color as directed.

- 3. Provide with discharge nozzle for units to throw air from the specified mounting height to the floor or as specified on the drawings. At a minimum, units shall include the following:

- a. Horizontal Delivery Units: Adjustable horizontal and vertical louvers.
- b. Vertical Delivery Units: Louvered deflector mounted outside fan orifice.

- 4. Provide all necessary mounting hardware to support the heater.

- B. Electric-Resistance Heating Elements: Nickel-chromium heating wire, free from expansion noise and 60-Hz hum, embedded in magnesium oxide refractory and sealed in steel or corrosion-resistant metallic sheath with fins no closer than 0.16 inch. Element ends shall be enclosed in terminal box. Fin surface temperature shall not exceed 550° F at any point during normal operation.

- C. Circuit Protection: One (1)-time fuses in terminal box for overcurrent protection and limit controls for high-temperature protection of heaters.

- D. Wiring Terminations: Stainless-steel or corrosion-resistant material.

- 1. Fan Assembly (Refer to schedule for fan type)

- a. Fan (Propeller): Multiple blade propeller type, statically and dynamically balanced, and directly connected to electric motor.

- b. Fan (Blower): Double width, double inlet (DWDI), forward curved, belt driven, assembly with spider ball bearings.
 - 2. Motor: Single phase, totally enclosed electric motor of the permanent split capacitor or shaded pole type, with resilient mounting, terminal box for wiring connections, built-in overload protection, and ball or sleeve bearings with oilers, or permanently lubricated bearings.
 - 3. Refer to schedule for control type and electrical requirements for the unit.
- E. Electric Cabinet Unit Heaters
- 1. Acceptable Manufacturers
 - a. Berko
 - b. Brasch
 - c. Indeeco
 - d. King Electric
 - e. Markel
 - f. Q-Mark
 - g. Raywall
 - h. Redd-I
 - i. Stelpro
 - j. Trane
 - k. TPI Corp
 - 2. Unit Casing: Constructed of steel sheet formed, reinforced and braced for rigidity, with stamped grilles.
 - a. Materials:
 - 1) Galvanized Steel Sheet: ASTM A 653, coating designation G90.
 - 2) Cold-Rolled Steel Sheet: ASTM A 366, cleaned, degreased and phosphatized.
 - b. Factory Finish: Minimum two (2) coat baked enamel finish on exposed surfaces, color as directed.
 - c. Insulation: Insulate interior surfaces of casing panels with 1/2 inch glass fiber meeting NFPA 90A requirements.
 - d. Vertical Units: Minimum 18 gauge construction with removable front panel.
 - e. Horizontal Units: Minimum 18 gauge construction with hinged bottom panel.
 - 3. Electric-Resistance Heating Elements: Nickel-chromium heating wire, free from expansion noise and 60-Hz hum, embedded in magnesium oxide refractory and sealed in steel or corrosion-resistant metallic sheath with fins no closer than 0.16 inch. Element ends shall be enclosed in terminal box. Fin surface temperature shall not exceed 550° F at any point during normal operation.
 - a. Circuit Protection: One (1)-time fuses in terminal box for overcurrent protection and limit controls for high-temperature protection of heaters.
 - b. Wiring Terminations: Stainless-steel or corrosion-resistant material.
 - 4. Fan Assembly: Blow thru design.
 - a. Fans: Forward curved centrifugal type, double width, statically and dynamically balanced, and directly connected to electric motor.

5. Motors: Three (3) speed, single phase electric motors of the permanent split capacitor or shaded pole type, with resilient mounting, built-in overload protection with automatic reset, and ball or sleeve bearings with accessible oilers, or permanently lubricated bearings.
6. Filter Section: Built-in filter frame mounted at air inlet with disposable air filters.
 - a. Vertical Units: Filters removable without removing front panel for cabinet type units.
 - b. Horizontal Units: Filters removed by pivoting hinged bottom panel.
- F. Refer to schedule for cabinet style, control type and electrical requirements for the unit.
- G. Electric heating coil
 1. Acceptable Manufacturers
 - a. Brasch
 - b. Chromalox
 - c. Indeeco
 - d. Thermolec
 - e. Stelpro
- H. Heater shall be duct mounted and open element or finned tubular construction. Heater to be flanged or slip-in style. Provide all necessary mounting hardware for installation.
- I. Voltage, physical size, wattage, number of steps and with accessories as noted on the drawings or specified. Heater shall be of design for mounting in a horizontal air flow through heater.
- J. Resistance coils shall be fabricated of 80 percent nickel and 20 percent chromium wire, insulated by means of best quality ceramic terminal insulators and bushings from rigid, reinforced aluminized steel frame. Provide coil support brackets, reinforced with stiffening ribs and gussets, on maximum 4 inch centers. All coil terminals and fasteners shall be stainless steel.
- K. Provide heaters with an automatic reset thermal cutout for primary protection installed in the control circuit and heat limiters installed in the power legs for secondary protection. Protection devices shall be serviceable through heater terminal box, without removing heater from duct.
- L. Provide heater with integral terminal box, for making connections and enclosing accessories. Fabricate box from heavy gage aluminized steel, with a dust tight cover. Furnish continuous hinged type door, when fuses are installed in box. Provide insulated terminal boxes for installation in air-conditioning ducts running through warm, humid, non-conditioned spaces. All exposed surfaces shall be given a factory applied two coat baked enamel finish.
- M. Air flow switch: Provide a remote airflow switch located downstream from heater, in the positive pressure ductwork, with an adjustable pressure range from 0.07 inch to 5.0 inch W.C. Switch shall be of the combined static and velocity pressure type.
- N. Refer to schedule for element type, duct installation type and control type for the unit.

2.3 GAS FIRED TERMINAL HEAT

A. Gas Fired Unit Heaters

1. Acceptable Manufacturers
 - a. Detroit Radiant
 - b. Lennox
 - c. Modine
 - d. Reznor
 - e. Sterling
 - f. Trane
2. Unit Casing: Constructed of steel sheet formed, reinforced, and braced for rigidity, with steel louvers or deflectors with sufficient rigidity to prevent vibration at all fan speeds.
3. Materials:
 - a. Galvanized Steel Sheet: ASTM A 653, coating designation G90.
 - b. Cold-Rolled Steel Sheet: ASTM A 366, cleaned, degreased and phosphatized.
4. Factory Finish: Minimum two (2) coat baked enamel finish on exposed surfaces, color as directed.
5. Provide with discharge nozzle for units to throw air from the specified mounting height to the floor or as specified on the drawings. At a minimum units shall include the following:
 - a. Horizontal Delivery Units: Adjustable horizontal and vertical louvers.
 - b. Vertical Delivery Units: Louvered deflector mounted outside fan orifice.
6. Provide all necessary mounting hardware to support the heater.
7. Gas Fired Heat Exchanger:
 - a. The heat exchanger(s) shall be made of 18 gauge aluminized steel tubes and headers (opt 409 stainless steel). The thermal efficiency of the unit(s) shall be a minimum of 80% efficient for all air flow ranges. Each heat exchanger tube shall be individually and directly flame-fired. The heat exchanger tube shall be crimped to allow for thermal expansion and contraction. The flue collector box shall be made of 20 gauge aluminized steel.
 - b. The heat exchanger(s) seams and duct connections shall be certified to withstand 0.9" W.C. external static pressure without burner flame disturbance.
 - c. The burner(s) shall be in-shot type, directly firing each heat exchanger tube individually and is (are) designed for good lighting characteristics without noise of extinction for natural gas.
 - d. The ignition controller(s) shall be 100% shut-off with continuous retry. The gas pressure shall be between 6-7" W.C for natural gas.
 - e. The solid state ignition system shall directly light the gas by means of a direct spark igniter each time the system is energized.
 - f. The unit gas controls shall be provided with the following:
 - 1) (option) Single-stage gas controls with a single-stage combination gas control, an ignition control, and a single-stage low voltage thermostat. The unit fires at 100% full fire based on a call for heat from a room thermostat.
 - 2) (option) Two-stage gas controls with a two-stage combination gas control, an ignition control, and a two-stage low voltage thermostat. The unit fires at 50% fire on low stage or 100% fire on high stage of the unit based on the call for heat from either a room or duct thermostat.
 - g. An automatic reset high limit switch mounted in the air stream to shut off the gas

- supply in the event of overheating.
 - h. A time delay relay that delays the start of the air mover to allow the heat exchanger a warm-up period after a call for heat. The time delay relay shall also continue the air mover operation after the thermostat has been satisfied to remove any residual heat in the heat exchanger.
 - i. The unit shall be orificed for up to 2000' elevation above sea level.
- 8. Fan Assembly (Refer to schedule for fan type)
 - a. Fan (Propeller): Multiple blade propeller type, statically and dynamically balanced, and directly connected to electric motor.
 - b. Fan (Blower): Double width, double inlet (DWDI), forward curved, belt driven, assembly with spider ball bearings.
- 9. Motor: Single phase, totally enclosed electric motor of the permanent split capacitor or shaded pole type, with resilient mounting, terminal box for wiring connections, built-in overload protection, and ball or sleeve bearings with oilers, or permanently lubricated bearings.
- 10. Refer to schedule for control type and electrical requirements for the unit.

2.4 GAS FIRED RADIANT TUBE HEATERS

1. Acceptable Manufacturers
 - a. Detroit Radiant
 - b. Roberts Gordan
 - c. Schwank
2. Low intensity infrared heating system consisting of burner, controls, heating elements, and heat reflectors. Burner shall be sealed combustion type designed for ducted combustion air and exhaust.
3. Casing: The controls, combustion air blower and burner shall be housed in a water-resistant casing, providing weatherproof protection. The burner and control box casing shall be constructed of minimum 20 gauge aluminized steel with a baked enamel finish.
4. Heat Exchanger: The heat exchanger tubes and combustion chamber shall be constructed of minimum 16 gauge, 4" O. D. aluminized steel. The first combustion tube for gas inputs 150,000 Btuh and greater shall be 16 gauge 4" O.D. titanium aluminized steel. The heat exchanger tubes must be used in conjunction with reflectors. The reflector can be adjusted from 0° to 45° from the horizontal plane. Reflectors shall be of bright polished aluminum.
5. Controls: Input power to the infrared heater(s) shall be 115V/60Hz/1ph. Heater(s) shall be equipped with a direct four (4) trial (three (3) retrial), 100% shut-off hot surface ignition control system with a separate flame sensor. Infrared heater(s) shall be equipped with a 115V/25V control transformer. Provide with low voltage thermostat. Thermostat shall operate on 25V. Heater(s) will be equipped with a pre-purge mode, a differential pressure switch, and an indicator light to prove proper operation of the combustion air blower. All controls shall be rated for a maximum inlet pressure of 1/2 PSI gas pressure.

6. Motor: Each heater shall have a single motor. The combustion air blower motor shall be totally enclosed in the control box and the motor shall be protected by a thermal overload switch.

B. Gas Fired Duct Furnace

1. Acceptable Manufacturers
 - a. Lennox
 - b. Modine
 - c. Reznor
 - d. Sterling
 - e. Thermotek
 - f. Trane
2. Furnace section with 80% minimum efficiency provided by an indirect-fired heat exchanger with dimpled tube pattern for efficient heat transfer.
3. The unit casing shall be designed for the venting/ combustion air arrangement to be separated from the room atmosphere. The unit shall have a factory mounted power exhauster enclosed in the unit casing to prevent the motor from being subjected to the room atmosphere. The unit shall also include a factory mounted differential pressure switch designed to prevent pilot and main burner ignition until positive venting has been proven. All duct furnaces doors shall be fully gasketed to prevent infiltration of the room air into the combustion process. A removable gasketed door shall contain both the vent and combustion air connection collars to allow for servicing of the power exhauster.
4. The unit shall include a factory supplied dual or concentric vent kit with caps.
5. The heat exchanger(s) shall be made of 20 gauge 409 stainless steel tubes and headers. The flue collector box shall be made of 20 gauge aluminized steel.
6. The bottom of the unit shall be angled for draining any condensation to the corners of the unit. The condensation shall be removed through openings in the bottom pan. The drain pan shall be constructed of 20 gauge aluminized steel.
7. The unit gas controls shall be provided with the following:
 - a. Single-stage gas controls with ignition control.
 - b. Interface with the building automation system to allow for the unit to be enabled / disabled, setpoint adjusted, discharge air temperature monitoring and alarm monitoring.
 - c. Stand-alone control with a low voltage thermostat.
8. The unit shall be supplied with a disconnect switch to disconnect power to the unit for servicing. A single step down transformer shall be provided for all unit controls.

PART 3 - EXECUTION

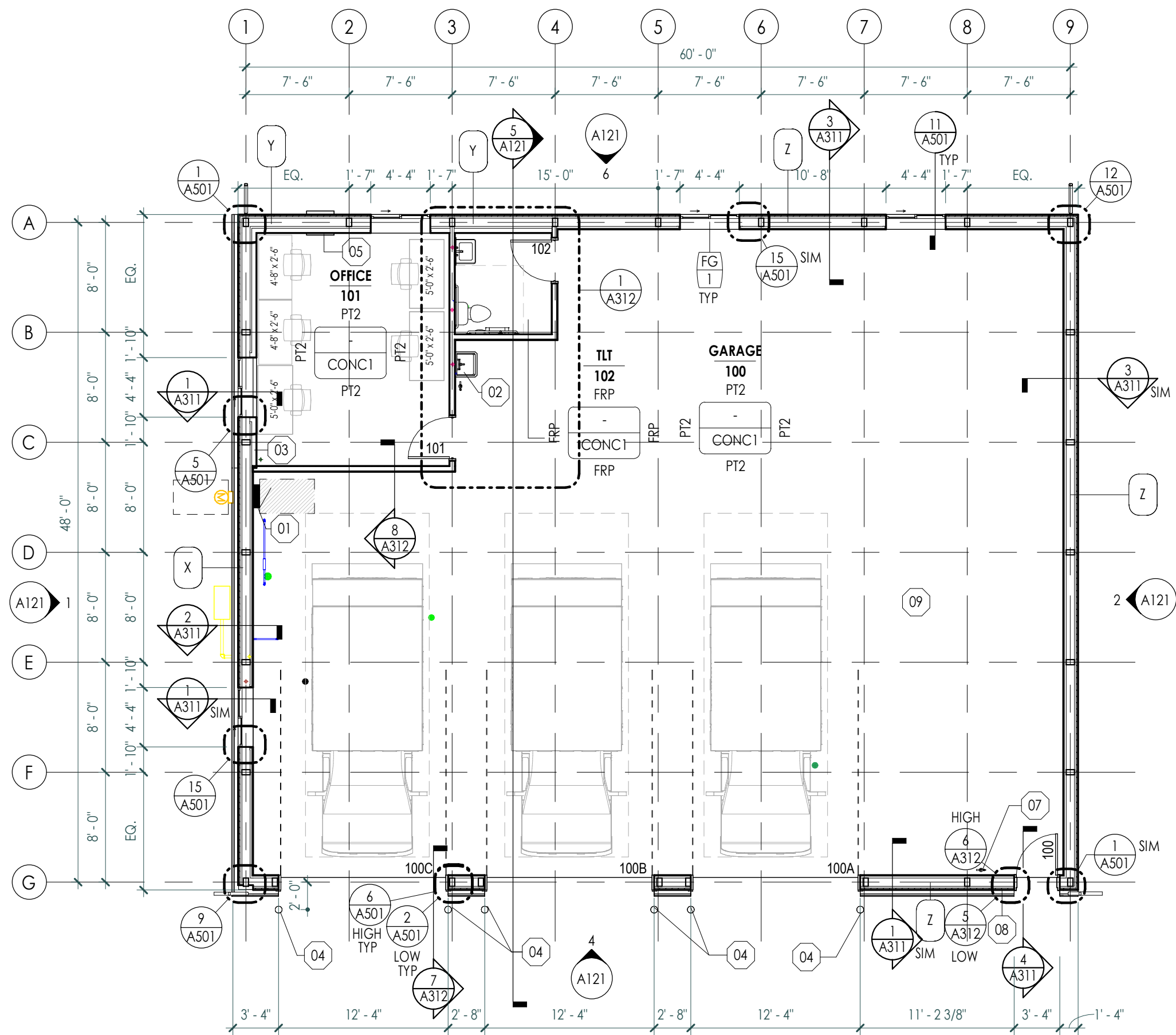
3.1 INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Finned Tube Radiation
 - 1. Enclosure Panel Lengths for Wall-to-Wall, Wall-to-Column, and Column-to-Column Installations:
 - a. Left and right end panels shall be equal in length.
 - b. Intermediate panels between left and right and panels shall be equal in length.
 - c. Intermediate panels shall be longer in length than end panels.
 - d. Intermediate panel lengths shall be consistent throughout an entire room and entire building.
 - e. Front and back panels for elements mounted in front of glass where back of radiant will be exposed.
 - 2. Secure finned tube radiation wall mounting strips, backplates, and brackets to wall construction with fasteners on maximum 2'-0" centers.
 - 3. Enclosures: Install access panels for each control, shutoff and balancing valve installed in enclosure.
 - 4. Enclosure accessories and access panels which attach to enclosure panel by means of slip joints only require vandal resistant fasteners to be installed in end caps.
 - 5. Pitch elements in direction of flow.
- C. Gas Fired Radiant Tube Heaters
 - 1. Install units per manufacturer's instructions. Maintain required clearance to combustibles.
- D. Gas Fired Terminal Heat
- E. Install gas vent piping per the requirements in Division 23 Section "Chimneys, Breechings and Stacks".

END OF SECTION

DIVISION 23 – HVAC TABLE OF CONTENTS

SECTION	TITLE	PAGES
230500	HVAC Common Work Results	18
230513	Motors	6
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230553	Mechanical Identification	6
230593	Cleaning and Testing	4
230594	Testing Adjusting and Balancing	10
230713	Ductwork Insulation	6
231126	Natural Gas Piping	12
233113	Metal Ductwork	12
233300	Ductwork Accessories	10
233425	HVAC Power Ventilators	7
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233700	Air Inlets and Outlets	8
237200	Energy Recovery Ventilation Units	6
238113	Packaged Terminal Air Conditioners	6
238200	Terminal Heating Equipment	8

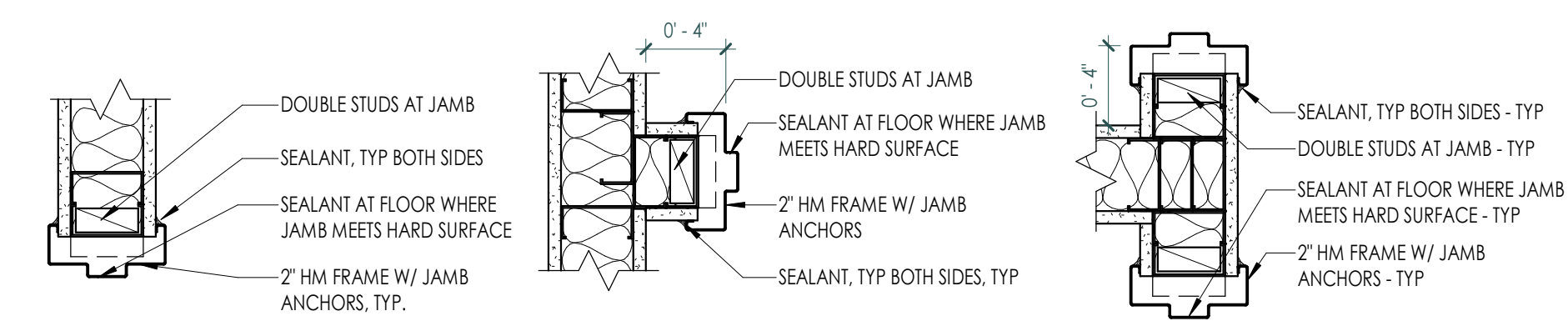


1 FIRST FLOOR PLAN
1/8" = 1'-0"

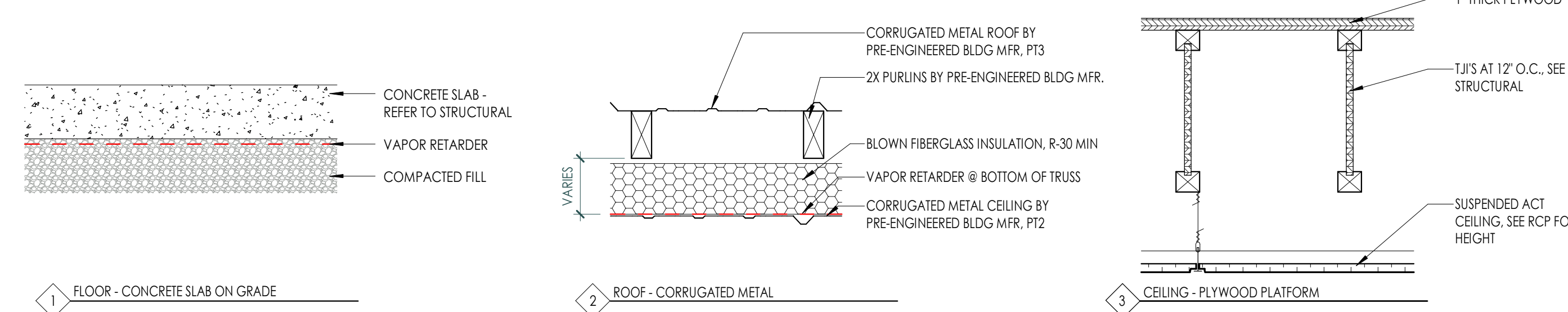
KEYNOTES - FLOOR PLAN	
#	DESCRIPTION
01	PROVIDE BACKING FOR ELECTRIC PANEL.
02	PROVIDE BACKING FOR SINK AS REQUIRED. SEE PLUMBING DWGS.
03	PROVIDE BACKING FOR WALL MOUNTED SHELF. SEE TECHNOLOGY DWGS.
04	4-1/2" DIA., 48" H BOLLARD, SEE SPECS.
05	WALL MOUNTED AIR CONDITIONER [TEMPORARY USE DURING CONSTRUCTION AT MAIN HOSPITAL BY EMS STAFF]. SEE MEPT. FOLLOW PRE-ENGINEERED BLDG MFR STANDARDS FOR INSTALLATION REQUIREMENTS OF ALL PENETRATIONS.
07	SURFACE MOUNTED FIRE EXTINGUISHER.
08	WALL MOUNTED KNOX BOX.
09	ALIGN LOCATION OF CONCRETE SAW CUT JOINTS WITH OVERHEAD DOOR JAMBS WHERE APPROPRIATE. PROVIDE SHOP DRAWING INDICATING PROPOSED CONSTRUCTION JOINT LAYOUT.

INTERIOR MATERIAL LEGEND	
MATERIAL LABEL	MATERIAL DESCRIPTION
ACT	ACOUSTICAL CEILING TILE AND GRID
CONC	CONCRETE
EX	EXISTING
GYP	GYPSUM WALL BOARD
IMP	METAL PANEL
PT	PAINT
RB	RESILIENT BASE
SST	STAINLESS STEEL
STO	STONE
WB	WOOD BASE
WD	WOOD
WT	WINDOW TREATMENT

INTERIOR FINISH LEGEND				
TAG	MANUFACTURER	STYLE	COLOR	SIZE
CEILING				
ACT1	ARMSTRONG CEILINGS	CALLA TEGULAR, 15/16" GRID	TILES: WHITE; GRID // TRIM: WHITE	24"w X 24"h
FLOOR				
CONC1	-	SEALED CONCRETE	-	-
WALL				
FRP	-	FIBER REINFORCED PANELS	WHITE, FROM MANF. OPTIONS	-
PT1	PPG	SEMI-GLOSS	ALDABRA PPG-14-28	-
PT2	BY PRE-ENG. BLDG MFR.	PVDF	WHITE OR IVORY (TBD)	-
PT3	BY PRE-ENG. BLDG MFR.	PVDF	BLACK	-



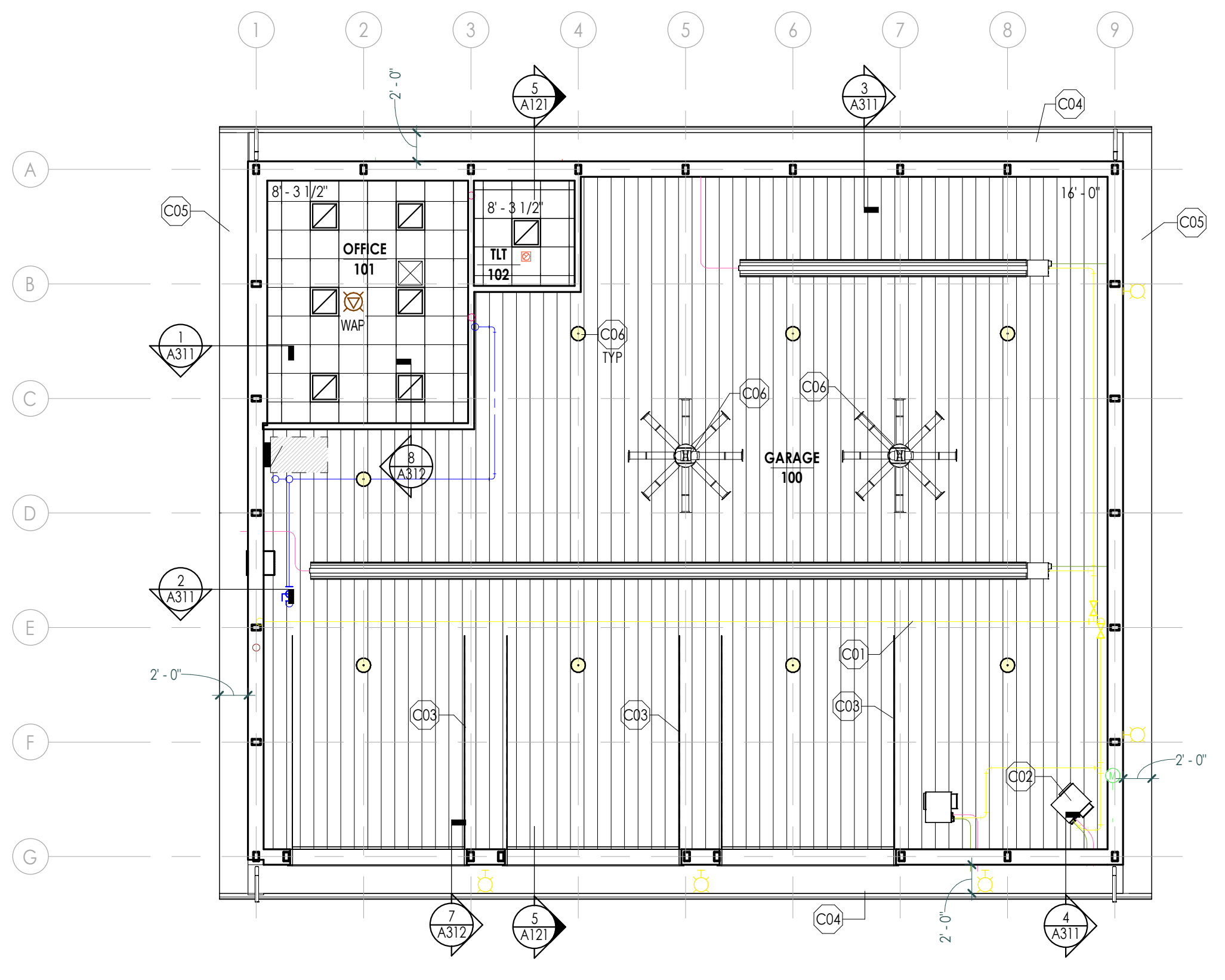
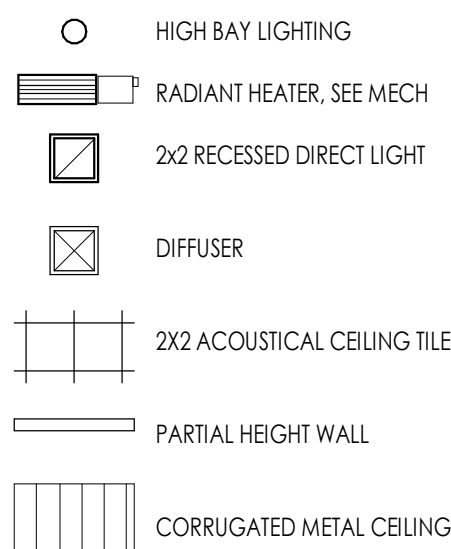
TYP STUD WALL - HOLLOW METAL FRAME DETAILS
1 1/2" = 1'-0"



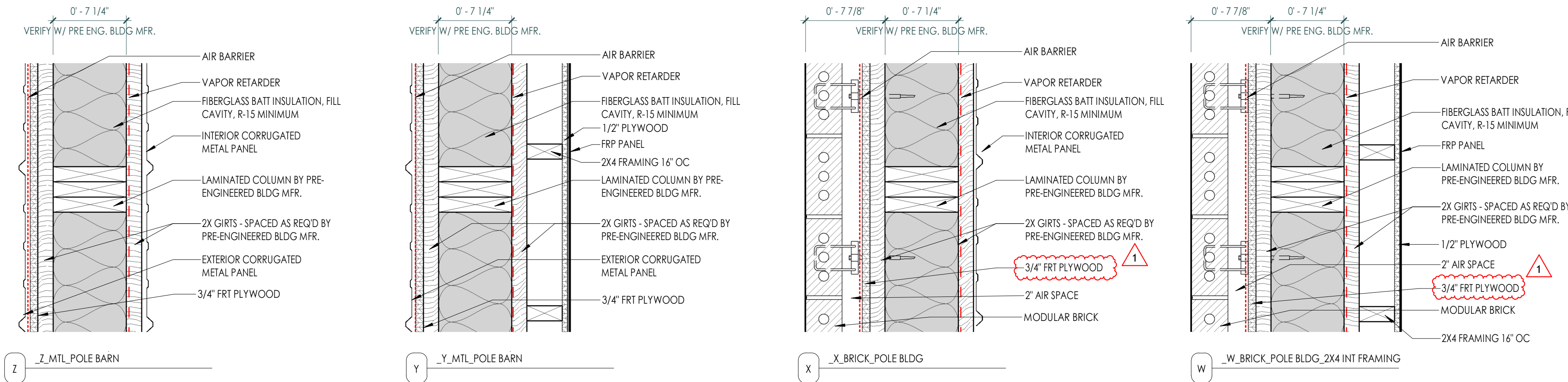
HORIZONTAL ASSEMBLIES
1 1/2" = 1'-0"

KEYNOTES - CEILING	
#	DESCRIPTION
C01	PIPING FOR RADIANT HEATERS. SEE MECH. PROVIDE BACKING AS REQUIRED.
C02	UNIT HEATER. SEE MECH. PROVIDE BACKING AS REQUIRED.
C03	OVERHEAD DOOR TRACK. PROVIDE BACKING AS REQUIRED.
C04	PRE-FINISHED SOFFIT PANEL BY PRE-ENG BLDG MFR. PT2. PROVIDE PRE-ENGINEERED BLDG MFR STANDARDS FOR VENTING + TRIM.
C05	PRE-FINISHED SLOPED SOFFIT PANEL BY PRE-ENG BLDG MFR. PT2. PROVIDE PRE-ENGINEERED BLDG MFR STANDARDS FOR VENTING + TRIM.
C06	PROVIDE BLOCKING/BACKING AS REQUIRED FOR CEILING MOUNTED LIGHT FIXTURES + CEILING FANS.

CEILING LEGEND:



2 FIRST FLOOR REFLECTED CEILING PLAN
1/8" = 1'-0"

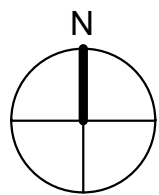
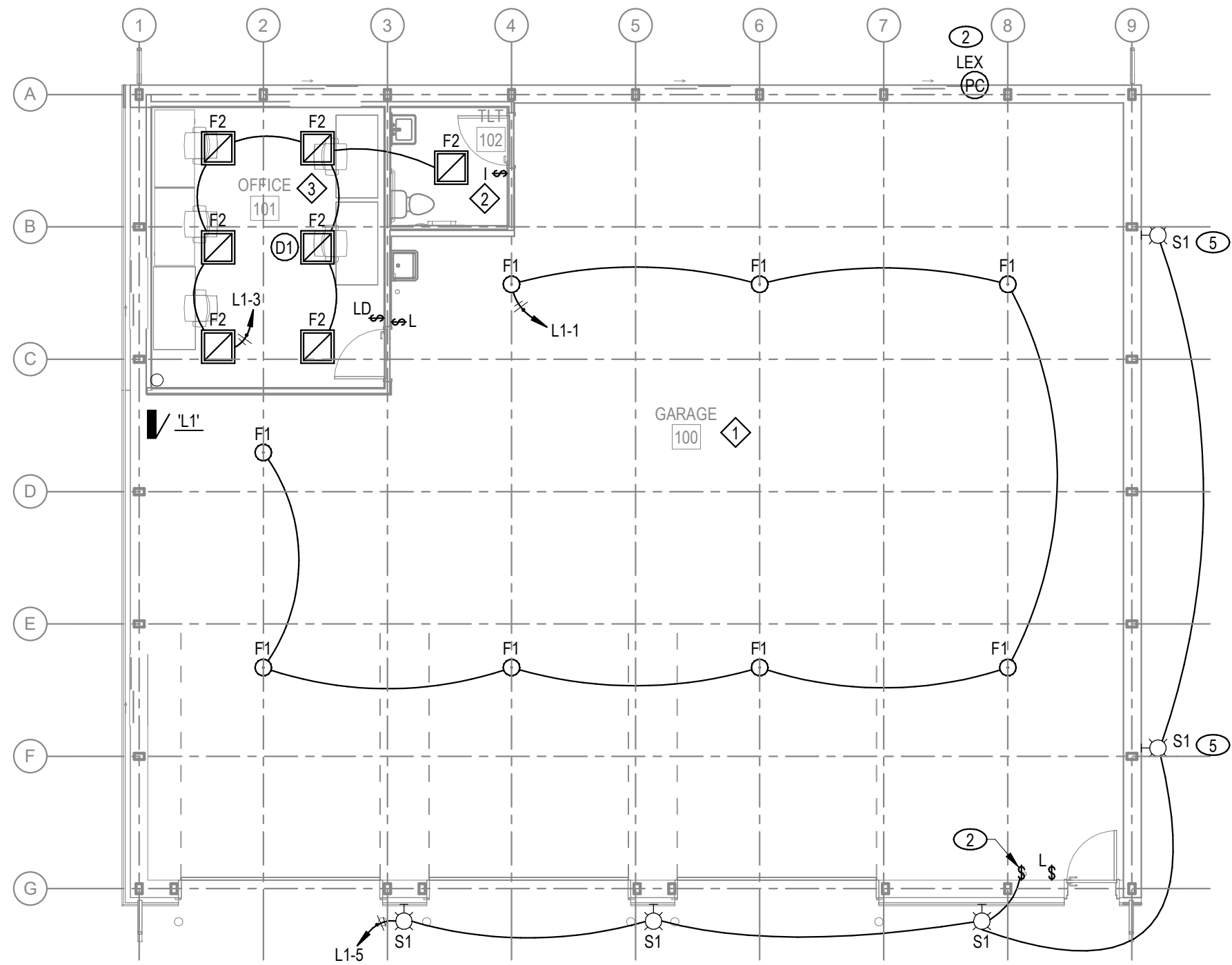


EXTERIOR WALLS
1 1/2" = 1'-0"

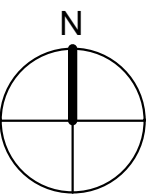
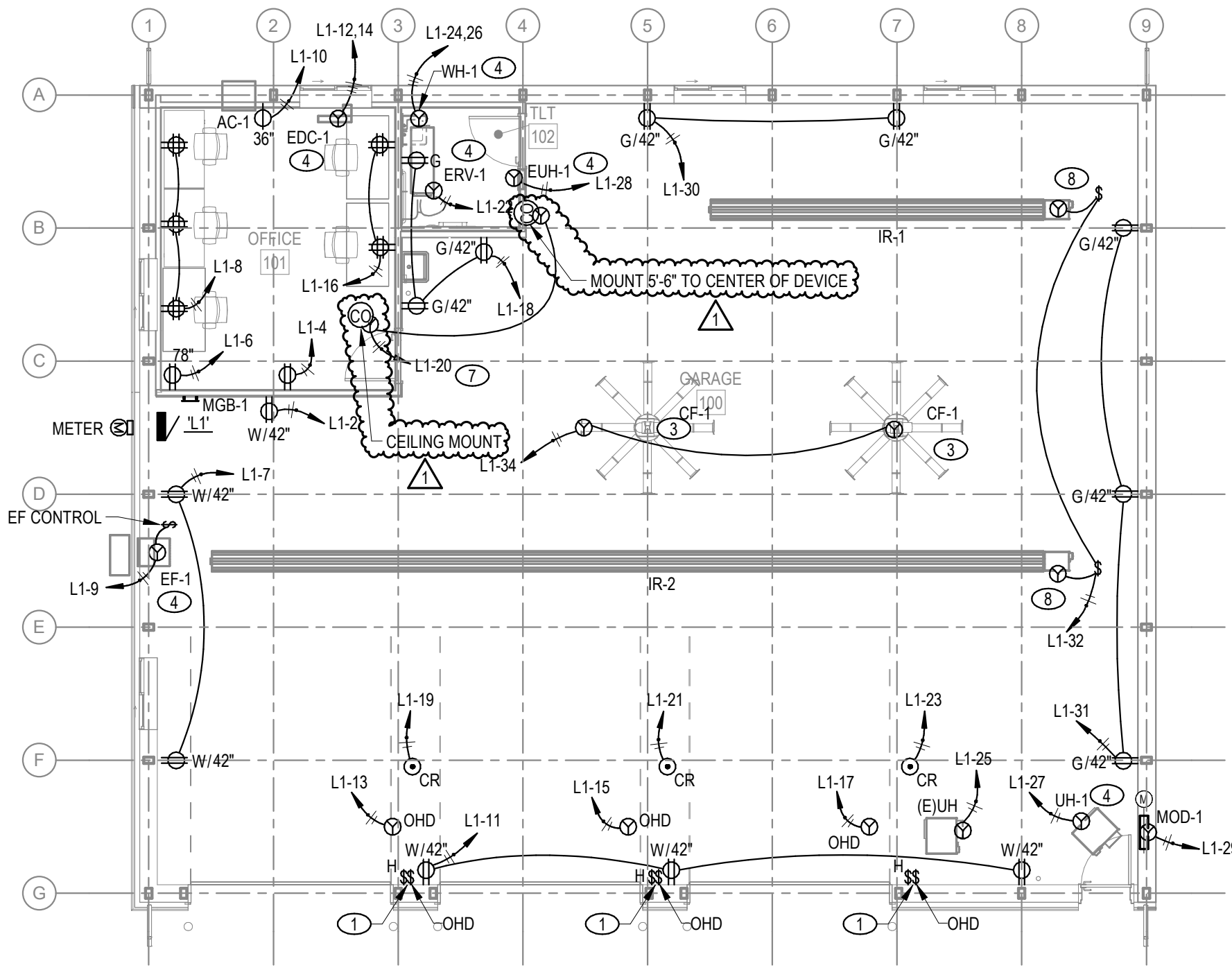
LIGHTING CONTROLS	
TYPE	DESCRIPTION
1	MANUAL ON/OFF
2	AUTO ON TO 100% BY OCCUPANCY SENSOR WITH MANUAL OVERRIDE. AUTO OFF AFTER 15 MINUTES OF BEING UNOCCUPIED
3	AUTO ON TO 25% BY OCCUPANCY SENSOR WITH MANUAL OVERRIDE TO 100%. AUTO OFF AFTER 15 MINUTES OF BEING UNOCCUPIED

- GENERAL NOTES:**
- ROUGH-IN FOR RECEPTACLES IN OFFICE 101 AND TL1 102 TO BE RECESSED TO ALLOW FOR FLUSH DEVICE PLATES ON FINISHED WALL SURFACE. HOME RUN CONDUIT FROM PANEL TO FIRST JUNCTION BOX TO BE INSTALLED WITH EMT CONDUIT. MC CABLING IS ACCEPTABLE FOR REMAINING RECEPTACLE DEVICES AS AN ALTERNATE TO EMT CONDUIT.
 - CONDUIT AND BOXES FOR RECEPTACLES, EQUIPMENT POWER CONNECTIONS, LIGHTING FIXTURES, AND CONTROLS IN GARAGE 100 MAY BE SURFACE MOUNTED. ALL CONDUIT FITTINGS IN GARAGE 100 SHALL BE "RAIN-TIGHT" STEEL COMPRESSION.
 - RECEPTACLES WITH SUBSCRIPT "W" SHALL BE INSTALLED IN GRAY OR WHITE CAST BOXES WITH CAST WHILE-IN-USE COVER. REFER TO RECEPTACLE SCHEDULE FOR ADDITIONAL INFORMATION.

- KEYED NOTES:**
- OVERHEAD DOOR CONTROL STATION AND DISCONNECT SWITCH. OVERHEAD DOOR CONTROL STATION FURNISHED BY DOOR VENDOR. ROUGH-IN AND WIRING BY E.C. CONFIRM FINAL LOCATIONS WITH OWNER PRIOR TO INSTALLATION.
 - CONTROL EXTERIOR WALL MOUNT FIXTURES VIA PHOTOCELL WITH MANUAL OVERRIDE SWITCH TO OVERRIDE PHOTOCELL. INSTALL PHOTOCELL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 - INSTALLATION OF CEILING FANS AND ANY ASSOCIATED POWER BRANCH CIRCUIT CONDUIT AND WIRING SHALL BE PART OF ALTERNATE #01. COORDINATE LOCATION OF CONTROL SWITCHES. COORDINATE INSTALLATION OF M.C. PROVIDED UNIT DISCONNECT SWITCH NEXT TO CONTROL SWITCHES.
 - DISCONNECT PROVIDED FACTORY INSTALLED ON EQUIPMENT BY MANUFACTURER. E.C. TO PROVIDE EQUIPMENT BRANCH FEEDER CONDUIT AND WIRING FROM INDICATED POWER SOURCE.
 - EXTERIOR LIGHTING FIXTURE AND ASSOCIATED LIGHTING BRANCH CIRCUIT CONDUIT AND WIRING SHALL BE PART OF ALTERNATE #02.
 - SECURE CORD REEL TO STRUCTURAL FRAMING MEMBER. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR MOUNTING REQUIREMENTS. COORDINATE BACKING WITH GENERAL CONTRACTOR.
 - INSTALL CO DETECTOR ON DEDICATED 120V CIRCUIT.
 - MOUNT DISCONNECT SWITCH FOR TUBE HEATER IN ACCESSIBLE LOCATION ON CEILING.



2 FIRST FLOOR - LIGHTING PLAN
1/8" = 1'-0"



1 FIRST FLOOR - POWER & SYSTEMS PLAN
1/8" = 1'-0"

LUMINAIRE SCHEDULE													
TYPE	DESCRIPTION	MANUFACTURER/MODEL	FINISHES	LIGHT SOURCE	MOUNTING	DELIVERED LUMENS	CRI	CCT	DIMMING	DISTRIBUTION	WATTS	VOLTAGE	EMERGENCY BACK-UP
F1	ROUND LED HIGH BAY, FROSTED HIGH IMPACT LENS, LUMEN SELECTABLE, SET AT 15000 LUMENS, MOUNT FIXTURE 14'-0" AFF	COLUMBIA CRN2	WHITE	LED	SUSPENDED	15000/18000/22000	80	3500 K	0-10V, 10% DIM	LAMBERTIAN	100 W	120 V	N/A
F2	2'X2' LED FLAT PANEL, BACK LIT	COLUMBIA CBT LITHONIA CPX METALUX CGTS	WHITE	LED	RECESSED - GRID	3300	80	3500 K	0-10V, 10% DIM	LAMBERTIAN	30 W	120 V	N/A
S1	EXTERIOR WALL PACK, ALUMINUM CONSTRUCTION, UL WET LOCATION LISTED, MOUNT AT 14'-0" ABOVE GRADE UNLESS NOTED OTHERWISE	BEACON TRP2 LITHONIA WDG2 MCGRAW-EDISON IST	BLACK	LED	WALL	5700	70	4000 K	N/A	IESNA TYPE 4W	45 W	120 V	BATTERY

ELECTRICAL CONNECTION SCHEDULE									
CALLOUT	LOAD CHARACTERISTICS				PANEL AND CIRCUIT INFORMATION				
	VOLTAGE	PHASE	VA	AMPS	LOAD CLASS	FED FROM	CIRCUIT	MOCP	CONDUIT & WIRE
(E)UH	120 V	1	900 VA	7.5 A	Heating	L1	25	20/1	3/4"C, 1#12, #12N, #12G
CF-1	120 V	1	180 VA	1.5 A	HVAC	L1	34	20/1	3/4"C, 1#12, #12N, #12G
CF-1	120 V	1	180 VA	1.5 A	HVAC	L1	34	20/1	3/4"C, 1#12, #12N, #12G
CO DETECTOR	120 V	1	180 VA	1.5 A	Continuous	L1	20	20/1	3/4"C, 1#12, #12N, #12G
CO DETECTOR	120 V	1	180 VA	1.5 A	Continuous	L1	20	20/1	3/4"C, 1#12, #12N, #12G
EDC-1	240 V	1	1500 VA	6.3 A	HVAC	L1	12,14	20/2	3/4"C, 2#12, #12N, #12G
EF-1	120 V	1	1200 VA	10.0 A	HVAC	L1	9	20/1	3/4"C, 1#12, #12N, #12G
ERV-1	120 V	1	300 VA	2.5 A	HVAC	L1	22	15/1	3/4"C, 1#12, #12N, #12G
EUH-1	120 V	1	1500 VA	12.5 A	HVAC	L1	28	20/1	3/4"C, 1#10, #10N, #12G
IR-1	120 V	1	360 VA	3.0 A	Heating	L1	32	20/1	3/4"C, 1#12, #12N, #12G
IR-2	120 V	1	360 VA	3.0 A	Heating	L1	32	20/1	3/4"C, 1#12, #12N, #12G
MOD-1	120 V	1	180 VA	1.5 A	HVAC	L1	29	20/1	3/4"C, 1#12, #12N, #12G
OHD	120 V	1	1700 VA	14.2 A	Motor	L1	17	20/1	3/4"C, 1#12, #12N, #12G
OHD	120 V	1	1700 VA	14.2 A	Motor	L1	15	20/1	3/4"C, 1#12, #12N, #12G
OHD	120 V	1	1700 VA	14.2 A	Motor	L1	13	20/1	3/4"C, 1#12, #12N, #12G
UH-1	120 V	1	900 VA	7.5 A	Heating	L1	27	20/1	3/4"C, 1#12, #12N, #12G
WH-1	240 V	1	7200 VA	30.0 A	Non-Continuous	L1	24,26	40/2	3/4"C, 2#8, #8N, #10G

MINIMUM BRANCH CIRCUIT FEEDER SIZE (RHW, THHW, THW, THWN, XHHW, XHWN, USE, ZE) BASED ON NEC 2023 AT 75°C			
BREAKER SIZE	PHASE/NEUTRAL	GRD	CONDUIT
20A	#12	#12	3/4"
25A	#10	#10	3/4"
30A	#10	#10	3/4"
35A	#8	#10	1"
40A	#8	#10	1"
50A	#6	#10	1"
60A	#4	#10	1-1/4"
70A	#4	#8	1-1/4"
80A	#3	#8	1-1/2"
100A	#1	#8	2"

SWITCH SUBSCRIPT SCHEDULE		
SUBSCRIPT	DESCRIPTION	MODEL
I	OCCUPANCY SENSOR WALL SWITCH, PASSIVE INFRARED, 180 DEGREE COVERAGE, 120/277V	CURRENT NX WATTSTOPPER DLM ACUITY NLIGHT
L	DIGITAL LOW VOLTAGE WALL STATION, SINGLE ZONE ON/OFF MANUAL CONTROL, LED STATUS LIGHT	CURRENT NX WATTSTOPPER DLM ACUITY NLIGHT
LD	DIGITAL LOW VOLTAGE WALL STATION, SINGLE ZONE ON/OFF AND RAISE/LOWER MANUAL CONTROL, LED STATUS LIGHT	CURRENT NX WATTSTOPPER DLM ACUITY NLIGHT
NO SUBSCRIPT	SINGLE POLE SWITCH, COMMERCIAL GRADE, 20 AMP	COOPER HUBBELL LEVITON PASS & SEYMOUR

CEILING MOUNTED OCCUPANCY SENSOR SCHEDULE		
SUBSCRIPT	DESCRIPTION	MODEL
D1	DIGITAL OCCUPANCY SENSOR, DUAL SENSING TECHNOLOGIES (PASSIVE INFRARED AND ULTRASONIC OR MICROCOPHONIC), LOW VOLTAGE, CEILING MOUNT, 360 DEGREE COVERAGE, UP TO 1000 SF COVERAGE	CURRENT NX WATTSTOPPER DLM ACUITY NLIGHT

NEMA 5-20R RECEPTACLE SUBSCRIPT SCHEDULE		
SUBSCRIPT	DESCRIPTION	MODEL
W	DUPLEX GROUND FAULT TAMPER RESISTANT RECEPTACLE, SPECIFICATION GRADE WITH DIE-CAST WEATHERPROOF COVER (WHILE IN USE), NEMA 5-20R	HUBBELL GFRTW20/WP26E LEVITON PASS & SEYMOUR COOPER
NO SUBSCRIPT	DOUBLE DUPLEX TAMPER RESISTANT RECEPTACLE, HEAVY DUTY SPECIFICATION GRADE, NEMA 5-20R	HUBBELL (2) HBL5362TR LEVITON PASS & SEYMOUR COOPER
NO SUBSCRIPT	DUPLEX TAMPER RESISTANT RECEPTACLE, HEAVY DUTY SPECIFICATION GRADE, NEMA 5-20R	HUBBELL HBL5362TR LEVITON PASS & SEYMOUR COOPER
NO SUBSCRIPT	SIMPLEX RECEPTACLE, HEAVY DUTY SPECIFICATION GRADE, NEMA 5-20R	HUBBELL HBL5361 LEVITON PASS & SEYMOUR COOPER
G	DUPLEX GROUND FAULT TAMPER RESISTANT RECEPTACLE, SPECIFICATION GRADE, NEMA 5-20R	HUBBELL GFRTR20 LEVITON PASS & SEYMOUR COOPER

POWER SWITCH SCHEDULE		
SUBSCRIPT	DESCRIPTION	MODEL
H	MANUAL MOTOR STARTER, SURFACE MOUNT, NEMA 1 ENCLOSURE, SINGLE POLE, 30A RATED, PADLOCK HASP	SQUARE D CLASS 2510 SIEMENS EATON
NO SUBSCRIPT	SINGLE POLE TOGGLE SWITCH, COMMERCIAL GRADE, 20 AMP	COOPER HUBBELL LEVITON PASS & SEYMOUR
OHD	OVERHEAD DOOR OPENER	PROVIDED BY MFR, WIRED BY E.C.

CORD DROP / CORD REEL SCHEDULE		
SUBSCRIPT	DESCRIPTION	MODEL
CR	CORD REEL, STEEL HOUSING AND CORD REEL, SPRING TENSION TYPE, 30-AMPERE RATED, SINGLE NEMA 5-20R RECEPTACLE OUTLET, MINIMUM 45' 12/3 CORD	REELCRAFT L-4545-123-3A OR APPROVED EQUAL

FIRE ALARM DEVICE SCHEDULE		
SYMBOL	DESCRIPTION	MODEL
	120V HARDWIRED CO DETECTOR, 9V BATTERY BACKUP, REFER TO PLANS FOR MOUNTING LOCATION	KIDDE KN-COB-IC OR APPROVED EQUAL

GENERAL ELECTRICAL SCHEDULE		
SYMBOL	DESCRIPTION	MANUFACTURER
	CONNECTION TO MECHANICAL EQUIPMENT	MOTOR/EQUIPMENT FURNISHED AND INSTALLED BY MECHANICAL OR PLUMBING CONTRACTOR
	ELECTRICAL CONNECTION TO MISC. EQUIPMENT	EQUIPMENT FURNISHED AND INSTALLED BY OTHERS
PANEL L	BRANCH CIRCUIT LOADCENTER, 120/240V, 1-PHASE, 3-WIRE, NEMA 1 HOUSING, SERVICE ENTRANCE RATED, REFER TO PANEL SCHEDULE FOR DETAILS	SQUARE D NQ EATON SIEMENS
SPD-1	SURGE PROTECTION DEVICE, EXTERNALLY MOUNTED, 120/240V, 1-PHASE, 3-WIRE + GRD SERVICE, 80 KAIC SURGE CURRENT RATING PER PHASE, 25K SCCR, SUITABLE FOR SERVICE ENTRANCE DOWNSTREAM OF SERVICE DISCONNECT	SQUARE D HEPD80 EATON SIEMENS
METER	300 AMP METER SOCKET, 120/240V, 1-PHASE, 4-TERMINAL, LEVER BYPASS, 10KA RATING MINIMUM. COORDINATE SELECTION WITH UTILITY COMPANY	MILBANK U1797-O-K3L-K2L-ALT SQUARE D EATON SIEMENS MIDWEST ELECTRIC PRODUCTS
DS-XXX A/B/C	DISCONNECT SWITCH, HEAVY DUTY, SIZE INDICATED ON PLANS (A/B/C) WHERE A = RATING IN AMPS, B = NUMBER OF POLES, C = NEMA RATING (E.G. 1 = NEMA 1), XXX = NAME OF LOAD SERVED	SQUARE D CLASS 3110 EATON SIEMENS
HH-1	HANDHOLE 17" X 30" X 18" DEEP STACKABLE ASSEMBLY, REFER TO DRAWING SHEET ES101 FOR ADDITIONAL INFORMATION. COVER TO INCORPORATE 'TELECOM' LOGO / MARKING.	QUAZITE BOX: PG1730BA18 COVER: PG1730CA0042 OR APPROVED EQUAL
MGB-1	MAIN GROUND BAR, WALL MOUNTED	REFER TO SPECIFICATION 260526

BRANCH PANELBOARD: L1											
LOCATION: GARAGE 100				VOLTAGE: 240/120 Single				MAIN DEVICE: MCB 225A			
MOUNTING: SURFACE				PHASE: 1				BUS RATING: 225			
ENCLOSURE: NEMA 1				WIRE: 3				NEUTRAL RATING: 100%			
FED FROM:				LUGS: Standard				A.I.C. RATING: 10,000			
CKT #	CKT BKR A / P	NOTES	CIRCUIT DESCRIPTION	KVA LOAD 'PHASE A'		KVA LOAD 'PHASE B'	CIRCUIT DESCRIPTION	NOTES	CKT BKR P / A	CKT #	
1	20 A	1	LIGHTING - GARAGE	0.9	0.2		RECEPTACLE		1	20 A	2
3	20 A	1	LIGHTING - OFFICE/RR			0.2	0.2 RECEPTACLE		1	20 A	4
5	20 A	1	LIGHTING - EXTERIOR	0.2	0.2		IT RACK		1	20 A	6
7	20 A	1	RECEPTACLE			0.4	1.1 RECEPTACLE		1	20 A	8
9	20 A	1	EF-1	1.2	1.5		AC-1		1	20 A	10
11	20 A	1	RECEPTACLE			0.5	0.8				12
13	20 A	1	OHD	1.7	0.8		EDC-1		2	20 A	14
15	20 A	1	OHD			1.7	0.7 RECEPTACLE		1	20 A	16
17	20 A	1	OHD	1.7	0.5		RECEPTACLE		1	20 A	18
19	20 A	1	CORD REEL			0	0.4 CO DETECTOR		1	20 A	20
21	20 A	1	CORD REEL	0	0.3		ERV-1		1	15 A	22
23	20 A	1	CORD REEL			0	3.6				24
25	20 A	1	(E)UH	0.9	3.6		WH-1		2	40 A	26
27	20 A	1	UH-1			0.9	1.5 EUH-1		1	20 A	28
29	20 A	1	MOD-1	0.2	0.4		RECEPTACLE		1	20 A	30
31	20 A	1	RECEPTACLE			0.5	0.7 IR-1, IR-2		1	20 A	32
33	20 A	1	SPARE	0	0.4		CF-1		1	20 A	34
35	20 A	1	SPARE			0	0 SPARE		1	20 A	36
37	20 A	1	SPARE	0	0		SPARE		1	20 A	38
39						0	0				40
41	20 A	2	SPARE	0	0		SPD-1		2	20 A	42
TOTAL CONNECTED KVA BY PHASE				14.5 kVA		13.2 kVA					
TOTAL CONNECTED AMPS BY PHASE				120.4 A		109.7 A					
LOAD CLASSIFICATION			CONNECTED LOAD	DEMAND FACTOR		CALCULATED LOAD		PANELBOARD TOTALS			
Continuous			360 VA	125.00%		450 VA					
HVAC			5040 VA	100.00%		5040 VA		TOTAL CONNECTED KVA 27.6 kVA			
Lighting - Exterior			225 VA	100.00%		225 VA		TOTAL CALCULATED KVA 28.4 kVA			
Motor			5100 VA	108.33%		5525 VA					
Receptacle			6150 VA	100.00%		6150 VA		TOTAL CONNECTED AMPS 115.0 A			
Power			0 VA	0.00%		0 VA		TOTAL CALCULATED AMPS 118.2 A			
Lighting - Interior			1122 VA	125.00%		1403 VA					
Heating			2520 VA	100.00%		2520 VA					
NOTES:											
SERVICE ENTRANCE RATED											



LAKES REGIONAL HEALTHCARE
PRE-ENGINEERED BUILDING
2323 US-71, SPIRIT LAKE, IA 52506



UNISON DESIGN STUDIO
HEIDI WILLIS
heidw@unisonds.com

BID DOCUMENTS
6/1/2026

REVISIONS: DATE:
ADD 01 6/16/2026

PROJECT NO: 26022

ELECTRICAL SCHEDULES

E601

Agenda

Project | No. LRH Pre-engineered Building | 26022

Location Zoom

Date | Time 06/11/2026 | 2:00p

Type ☐ Physical ☒ Digital ☐ Mixed

Meeting No. Pre-Bid Meeting

Topic Pre-Bid Meeting

Planned Attendance

Gary Van Wettering – LRH Director of Facilities
Scott Fredin – Morten Buildings
Corey Freebo – Seedorff Masonry
Donavan Wunschel – Midwestern Mechanical
Nick - Newport Electric
Jacob Kirchmeier - Thompson Solutions Group Mechanical
Matt Lawson – Morten Buildings
Nick Grothe – Kingland Construction
Eric Phillips – Phillips Electric
Dan Graves – Graves Construction

Heidi Willis – Unison Design Studio
Matt Cramer – Unison Design Studio
Vinnie Mendez – KEDbluestone
Zach Arneson – BECK Engineering

Introductions

1. Lakes Regional Healthcare
 - a. Contact: Gary Van Wettering
 - i. gary.vanwettering@lakeshealth.org
2. Design Professionals
 - a. Unison Design Studio
 - i. Contact: Heidi Willis
 1. heidiw@unisonsds.com
 - b. BECK Engineering
 - i. Contact: Zach Arneson
 1. zarneson@beck-engineering.net
 - c. Raker Rhodes
 - i. Contact: John Rhodes
 1. jrhodes@rakerrhodes.com
 - d. KEDbluestone
 - i. Contact: Vinnie Mendez
 1. vinnie.mendez@kedbluestone.com

Bids

1. Bids signed, executed, and dated will be received at the Big Spirit Conference room of Lakes Regional Healthcare at 2301 Hwy 71, Spirit Lake, IA 51360 before 2:00 PM local standard time on June 23, 2026. The bids will be opened at 2:05 PM in the same location and publicly read aloud.

- e. Access: Use the East Entrance L and then use the elevator to go to Level B and the Big Spirit Conference Room.

Bid Form Completion

1. See Specifications 00 41 00 BID FORM.
2. Deletions, additions, or changes to the Bid Form will disqualify the bidder.

Bid Security

1. See specification section 00 21 13 INSTRUCTIONS TO BIDDERS
2. Each bid shall be accompanied by a bid bond sum no less than 5% of the Bid Amount on AIA A310 Bid Bond Form.
3. Please provide your bid security in a separate envelope than the bid form envelope but placed in the same single large envelope. One envelope with multiple envelopes inside.

Sales Tax

1. This project is sales tax exempt. All applicable federal taxes are included and State of Iowa taxes are excluded from the Bid Sum.
2. Tax exemption certificates along with authorization letter shall be issued by the Owner.

Bid Alternates

1. There are two (2) alternates listed on the project. Refer to mechanical + Civil drawings for more information on the alternates shown on G000.

Unit Prices

1. No unit prices identified at this time.

Allowances & Estimated Quantities

1. No allowances at this time.
2. An estimated value of construction will be shared in an upcoming addendum anticipated on June 16th (Date subject to change).

Temporary Facilities

1. See specification Section 01 50 00 TEMPORARY FACILITIES AND CONTROLS.
2. Contractor shall provide portable toilets for use throughout construction and schedule regular and frequent cleanings. Restroom facilities within the construction areas are not to be utilized by the contractors once installed and operational.

Permits

1. Contractor provided – pay for required applications, permits, and inspections.
2. The drawings and specifications have already been shared with the City of Spirit Lake and the State of Iowa Fire Marshall. No comments have been received.

Submittals

1. See specifications Section 01 30 00 ADMINISTRATIVE REQUIREMENTS.
2. All documents transmitted for purposes of administration of the contract are to be in electronic format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and store documents, provides electronic stamping and signatures, and notifies via email.
3. Contractor to provide a submittal schedule for all submittals within the first 15 days from receiving the awarded contract for the project.

Clean-up

1. Clean-up is part of your work.
2. See Specifications Section 01 50 00 TEMPORARY FACILITIES AND CONTROLS.

Building Permits

1. 2012 Life Safety Code
2. 2024 International Building Code
3. 2024 International Mechanical Code
4. 2024 Uniform Plumbing Code
5. 2012 International Energy Conservation Code
6. 2023 National Electrical Code
7. 2024 International Fire Code

Site Usage and Safety

1. See Specifications Section 01 50 00 TEMPORARY FACILITIES AND CONTROLS.
2. Arrange use of site and premises to allow work by others and by owner.
3. Pursuant to Iowa State Law, the site is tobacco-free. This must be observed by all parties while on site.
4. It is the contractor's responsibility to meet or exceed OSHA safety standards.
5. The cost of barricades, warning lights, etc. as deemed necessary for the safety of the owner and other trades is the responsibility of the contractor.
6. The Owner, Architect, and Engineer are not responsible for meeting or exceeding OSHA standards and accept no liability for any fines that may occur.

Meetings

1. See Specifications Section 01 30 00 ADMINISTRATIVE REQUIREMENTS.
2. Bi-monthly (every two weeks) meetings will occur with the owner and architect to review construction progress.

Copies of Plans / Specifications

1. Bidding documents can be obtained from Iowa Reprographics via their website at www.iowarepo.com, 515-244-5705.

Addendum Items

1. Clarifications requested by bidders must be in writing not less than 7 days before date set for receipt of bids. The reply will be in the form of an Addendum.
2. No addenda have been issued thus far. Addenda will be issued through the plan rooms not later than 48 hours before bid opening.
3. The last day for questions and or substitution requests is June 16th.
4. Each bidder shall indicate receipt of addendum on bid form.
5. Addendum 01 is anticipated on June 16th.

Site Tour

1. A formal site tour is not available. The project site can be visited at the bidders availability.

Questions

1. Start of construction is synonymous with the Notice to Proceed.
2. Are there liquidated damages on this project?
 - a. Will be addressed in a future addendum
3. Natural Gas is to be utilized over LP.