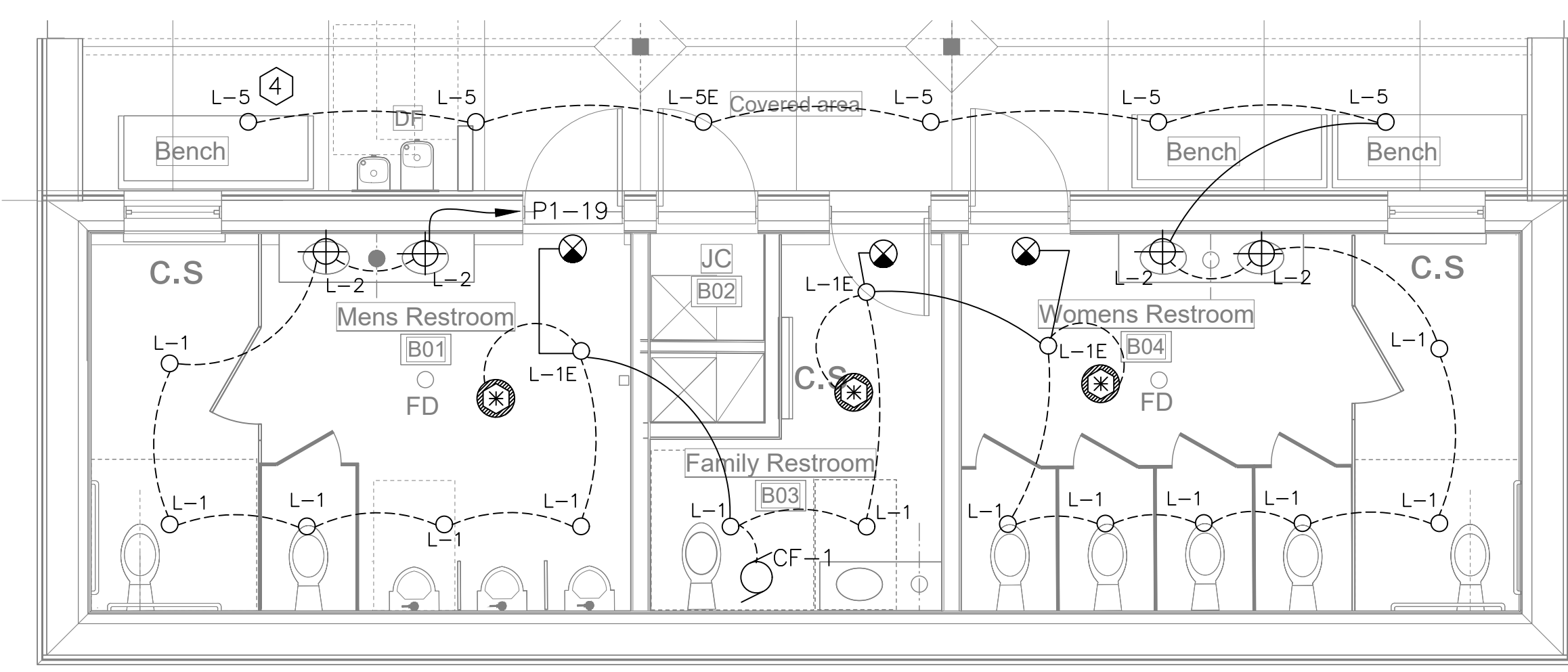
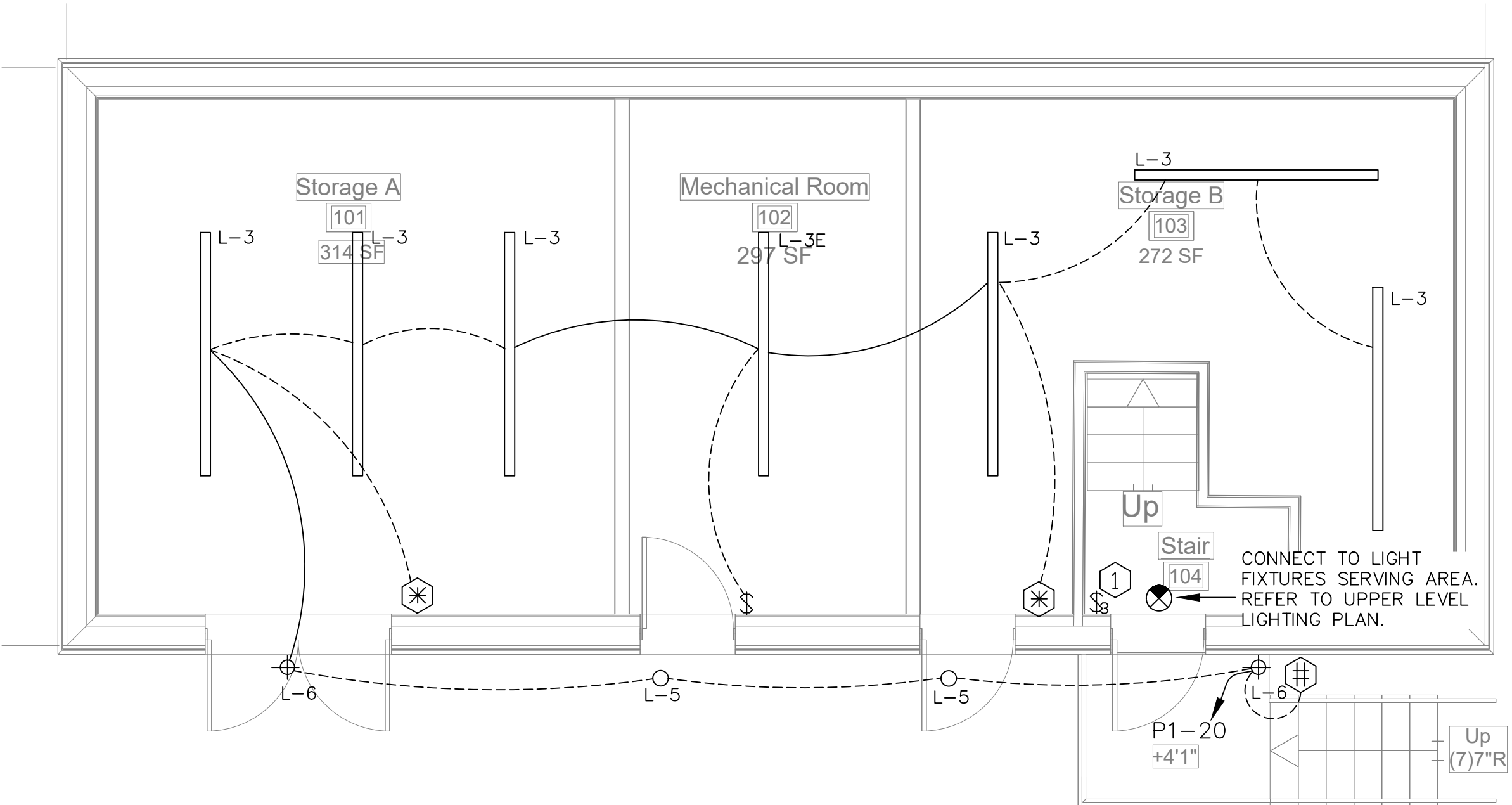


NORTH (building)

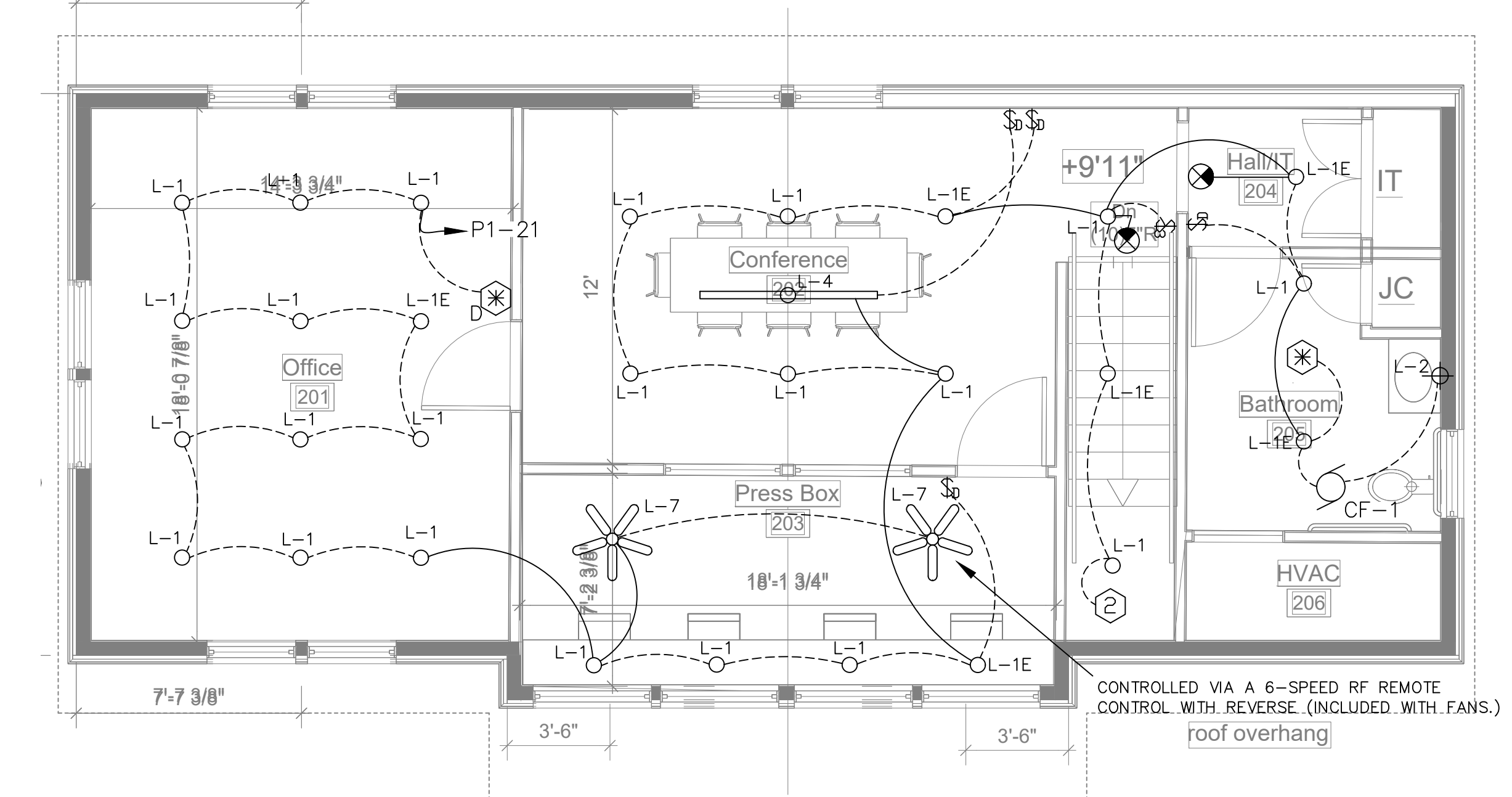
Preston Fields
Pressbox and
Bathroom
Building
Jim Barnett Park
Winchester, VA 22601



1 LOWER LEVEL LIGHTING PLAN
E1.1 1/4" = 1'-0"



2 MID LEVEL LIGHTING PLAN
E1.1 1/4" = 1'-0"



3 UPPER LEVEL LIGHTING PLAN
E1.1 1/4" = 1'-0"

| KEY | NOTE |
|-----|---|
| ① | REFER TO UPPER LEVEL LIGHTING PLAN FOR LOCATION OF LIGHT FIXTURES TO BE CONNECTED TO MANUAL SWITCH. |
| ② | REFER TO MID LEVEL LIGHTING PLAN FOR LOCATION OF MANUAL SWITCH TO BE CONNECTED TO LIGHT FIXTURE ABOVE STAIRS. |
| ③ | INDOOR INTERLOCKS WITH OUTDOOR UNIT FOR POWER SOURCE. COORDINATE WITH MECHANICAL. |
| ④ | VIA 7-DAY, MULTIPLE PROGRAM, ASTRONOMICAL TIMER. TIMER LOCATION PER OWNER. |
| ⑤ | PROVIDE (3) 2 INCH PVC CONDUITS STUBBED OUT TO 5 FEET FROM FOUNDATION (FOR FUTURE USE BY OWNER). |

| FIXTURE SCHEDULE | | |
|------------------|------|--|
| SYMBOL | TYPE | DESCRIPTION/MODEL |
| ○ | L-1 | LED SHALLOW CAN LIGHT- BASIS OF DESIGN: HE WILLIAMS: 6PR-TL-L10/830-DIM-UNV-LW-OF-WH-N-F1 |
| ○ | L-1E | LED SHALLOW CAN LIGHT WITH EMERGENCY BATTERY BACKUP- BASIS OF DESIGN: HE WILLIAMS: 6PR-TL-L10/830-EM/10W-DIM-UNV-LW-OF-WH-N-F1 |
| ⊕ | L-2 | WALL SCONCE- WAC LIGHTING: MODEL# WS-180120-30-CH |
| — | L-3 | 8' LED SURFACE MOUNT STRIP LIGHT BASIS OF DESIGN: HE WILLIAMS: 76-8-L64/830-DIM-UNV |
| — | L-3E | 8' LED SURFACE MOUNT STRIP LIGHT WITH EMERGENCY BATTERY BACKUP-BASIS OF DESIGN: HE WILLIAMS: 76-8-L64/830-EM/10W-DIM-UNV |
| — | L-4 | PENDANT- EUROFASE INC.: ITEM# 37059-019 BLACK/GOLD |
| ○ | L-5 | EXTERIOR RATED SHALLOW CAN LIGHT-BASIS OF DESIGN: RAB: C6R 12/18/24 9FA UNV W |
| ○ | L-5E | EXTERIOR RATED SHALLOW CAN LIGHT WITH EMERGENCY BATTERY BACKUP-BASIS OF DESIGN: RAB: C6R 12/18/24 9FA UNV W WITH (EMBB-12-1248-CD) BATTERY BACK UP INCLUDED. |
| ⊕ | L-6 | EXTERIOR SCONCE WITH EMERGENCY BACKUP- BARNLIGHT ORIGINAL WAREHOUSE: MODEL# BLE-G-WHS12-150-G-NA-NA-NA-NA-NA-E26 |
| ✱ | L-7 | NAN 42" CEILING FAN 5" DOWNROD, MODEL# NK-MWH-MWH-42 WITH WHITE WIRELESS DECORA-STYLE 6-SPEED, WALL CONTROL. |
| ⊗ | | LED EXIT SIGN- BASIS OF DESIGN- HE WILLIAMS: EXIT-R-WHT-AC-SDT-D |

| LIGHTING SYMBOL LIST | |
|----------------------|---|
| SYMBOL | DESCRIPTION |
| ⊕ | WALL SWITCH, 3 DENOTES 3-WAY OPERATION, 4 DENOTES 4-WAY OPERATION, D DENOTES FUTURE COMPATIBLE DIMMER SWITCH, FAN DENOTES FAN COMPATIBLE SWITCH. ADA MOUNTING HEIGHT. |
| ⊗ | WALL SWITCH DUAL TECHNOLOGY OCCUPANCY SENSOR WITH PROGRAMMABLE DELAY. ADA MOUNTING HEIGHT. |
| ⊕ | CEILING MOUNTED OCCUPANCY SENSOR. |
| ⊕ | PHOTOCELL SENSOR |
| --- | DASHED LINE REPRESENTS SWITCHED WIRING BETWEEN FIXTURES IN A SWITCHED GROUP. CONTAINS SWITCHED CONDUCTORS AND DIMMING CONTROL WIRES (0-10V) FOR DIMMING CIRCUITS. MAY ALSO CONTAIN UN-SWITCHED CONDUCTORS FOR CIRCUIT CONTINUATION OR EMERGENCY LIGHTING. |
| --- | UN-SWITCHED WIRING. |

Site Engineer
Painter-Lewis PLC
817 Cedar Creek Grade #120
Winchester, VA 22601
540-662-5792

Mech/Elect Engineer
Comfort Designs
620 Pennsylvania Avenue
Winchester, VA 22601
540-665-2846

COMcheck Software Version 4.1.5.0
Interior Lighting Compliance Certificate

Project Information
Energy Code: 2018 IECC
Project Title: PRESTON FIELD PRESSBOX
Project Type: New Construction

Construction Site: JIM BARNETT PARK WINCHESTER, VA 22601
Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)
Unspecified

| Area Category | B Floor Area (ft²) | C Allowed Watts / ft² | D Allowed Watts (B X C) |
|----------------------------|--------------------|-----------------------|-------------------------|
| 1-Office | 2080 | 0.79 | 1643 |
| Total Allowed Watts = 1643 | | | |

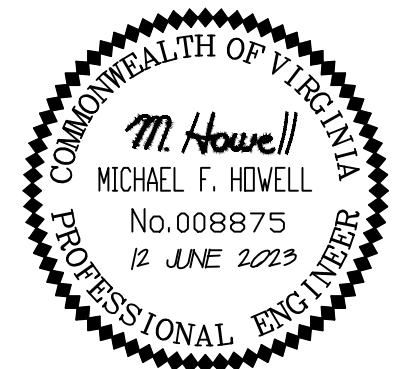
| Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast | A | B Lamps/ Fixture | C # of Fixtures | D Watt. (C X D) | E (C X D) |
|--|---|------------------|-----------------|-----------------|-----------|
| 1-Office | | | | | |
| LED 1: L-1A-1E; Other: | | 1 | 44 | 11 | 471 |
| LED 2: L-2; Other: | | 1 | 5 | 16 | 80 |
| LED 3: L-3A-1E; Other: | | 1 | 7 | 42 | 296 |
| LED 4: L-4; Other: | | 1 | 1 | 34 | 34 |
| LED 5: L-5; Other: | | 1 | 8 | 16 | 144 |
| LED 6: L-6; Other: | | 1 | 2 | 60 | 120 |
| Total Proposed Watts = 1145 | | | | | |

Interior Lighting PASSES: Design 30% better than code

Interior Lighting Compliance Statement
Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Heather Bowers
Name - Title: Signature: Date: 05-25-23

CDi Comfort Design
Mechanical &
Electrical
Engineers
620 Pennsylvania Ave
Winchester, VA 22601
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Fax 540-667-3284 JOB # E2331

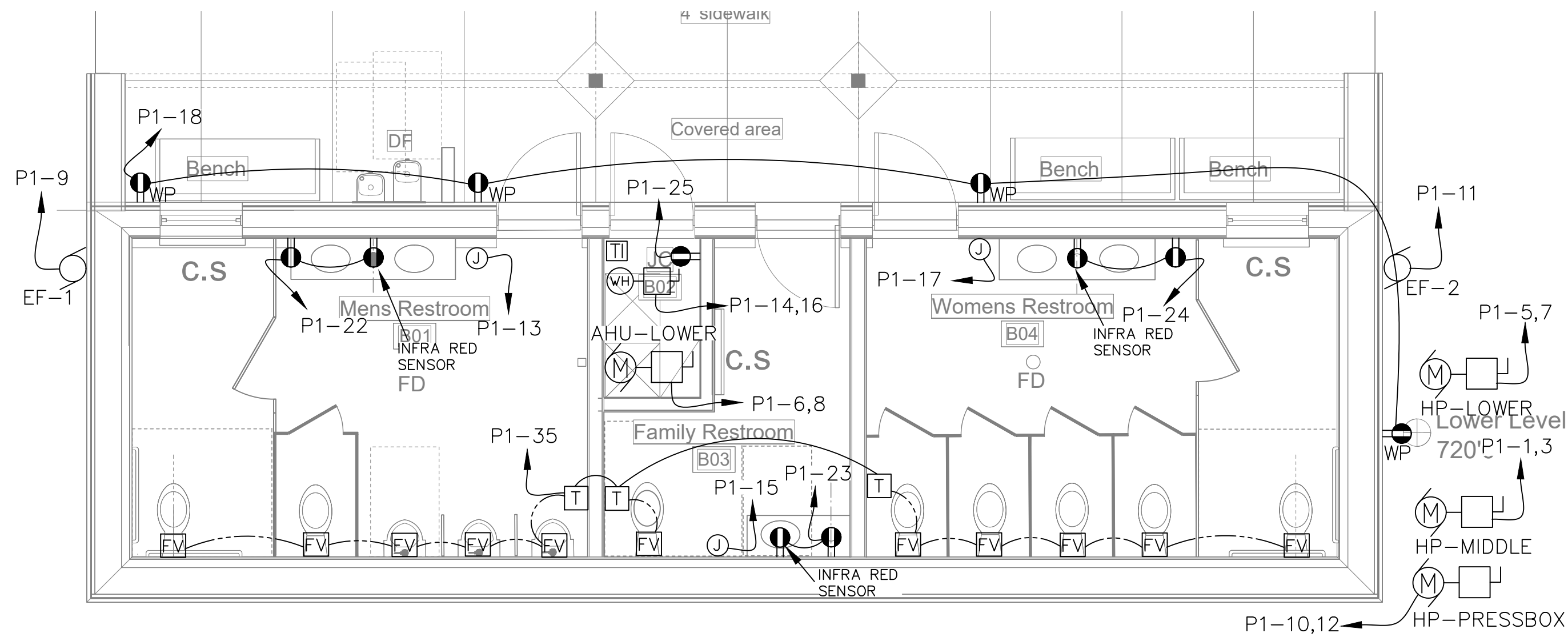


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AIA, LEED AP
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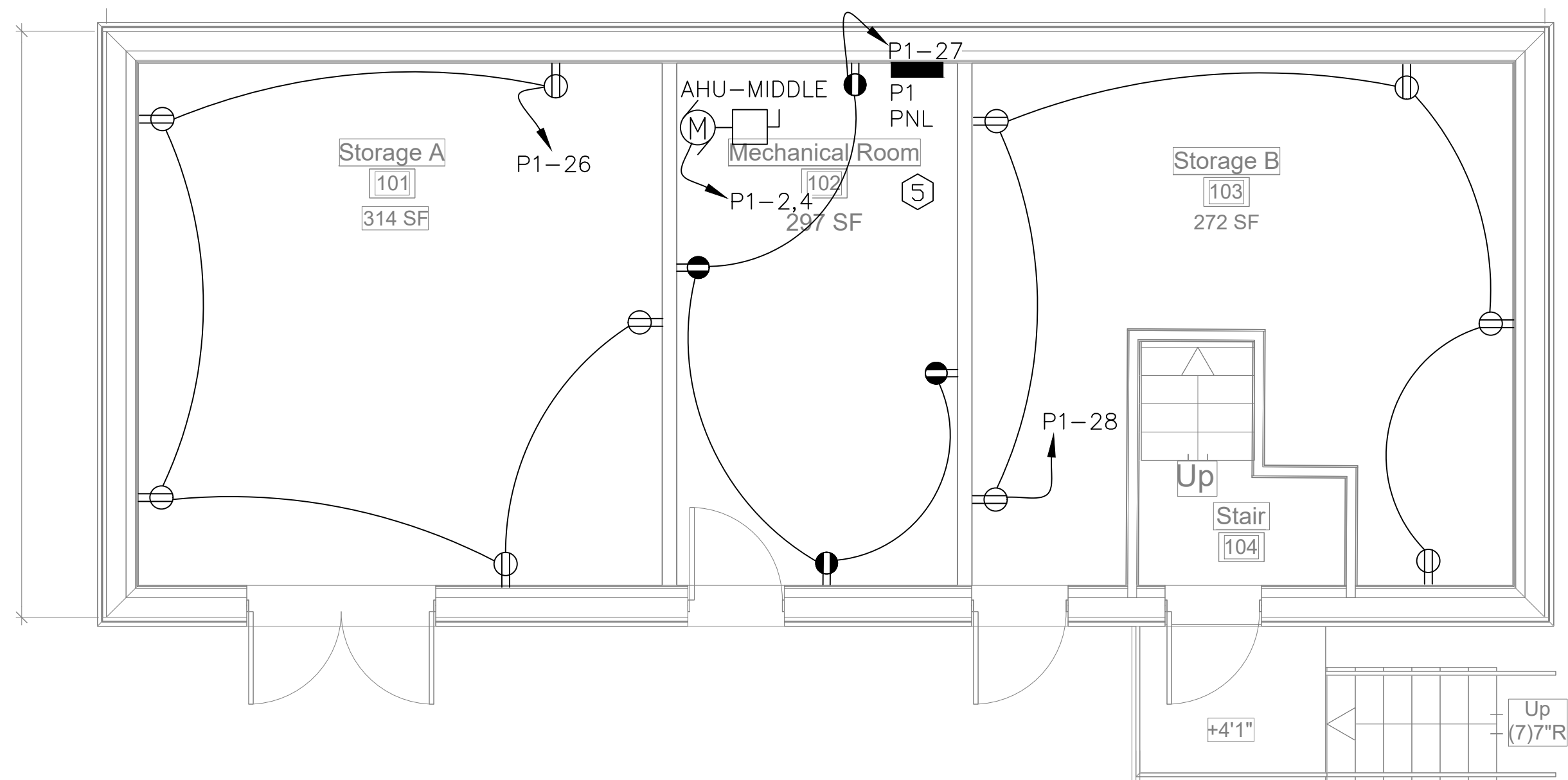
Issue/Revision: _____ Seal: _____

Drawing Title: **LIGHTING PLAN**

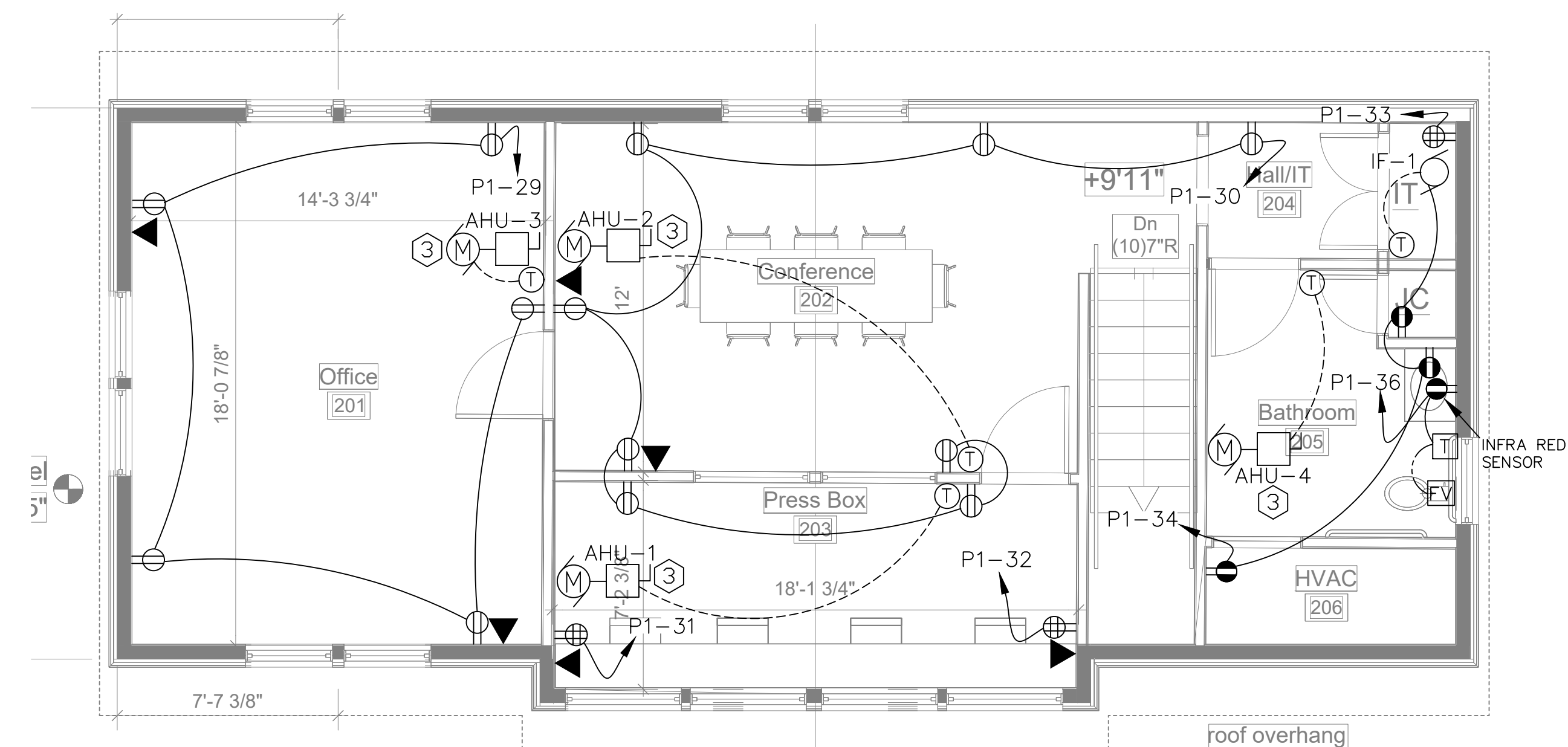
Date: 5/16/23
Scale: Noted Project Number: 21005-E2331
Drawing Number: **E1.1**



1 LOWER LEVEL POWER PLAN
E2.1 1/4" = 1'-0"



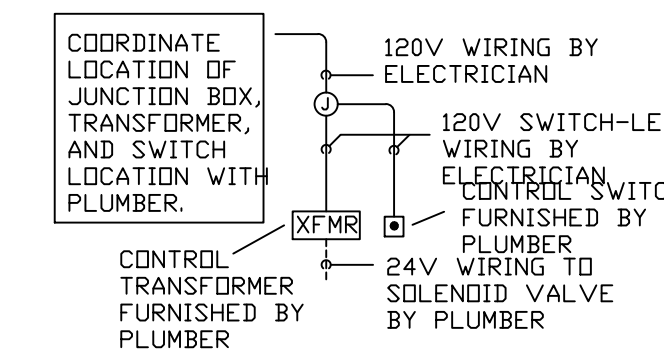
2 MID LEVEL POWER PLAN
E2.1 1/4" = 1'-0"



3 UPPER LEVEL POWER PLAN
E2.1 1/4" = 1'-0"

| POWER SYMBOL LIST | |
|---|---|
| ALL JUNCTION BOXES AND OUTLETS SHALL HAVE A MECHANICALLY PRINTED PERMANENT LABEL ATTACHED INDICATING WHICH CIRCUIT AND PANEL SERVES THE JUNCTION BOX OR OUTLET. PRINTING MINIMUM HEIGHT 3/16" | |
| OUTLET AND SWITCH COLOR SHALL BE AS DIRECTED BY THE ARCHITECT. OUTLET AND SWITCH PLATES SHALL BE STAINLESS STEEL. | |
| SYMBOL | DESCRIPTION |
| | DUPLEX RECEPTACLE |
| | GFCI RECEPTACLE. WP DENOTES WEATHERPROOF COVER. COORDINATE MOUNTING HEIGHT AT COUNTERS AND CASEWORK |
| | QUAD RECEPTACLE |
| | JUNCTION BOX EQUIPMENT CONNECTION |
| | FUSED DISCONNECT SWITCH AND MOTOR CONNECTION. PROVIDE FUSES PER NAMEPLATE DATA. |
| | NFSS DISCONNECT AND WATER HEATER CONNECTION. |
| | MOTOR CONNECTION (EXHAUST FAN, DISPOSER, ETC.) |
| | EL-154 STEP DOWN TRANSFORMER FOR SOLENOID FLUSH VALVES |
| | 24V WIRING FROM TRANSFORMER TO FLUSH VALVE. |
| | SOLENOID FLUSH VALVE. REFER TO DIAGRAM FOR MORE INFORMATION. |

| NOTES | |
|-------|---|
| KEY | NOTE |
| ① | REFER TO UPPER LEVEL LIGHTING PLAN FOR LOCATION OF LIGHT FIXTURES TO BE CONNECTED TO MANUAL SWITCH. |
| ② | REFER TO MID LEVEL LIGHTING PLAN FOR LOCATION OF MANUAL SWITCH TO BE CONNECTED TO LIGHT FIXTURE ABOVE STAIRS. |
| ③ | INDOOR INTERLOCKS WITH OUTDOOR UNIT FOR POWER SOURCE. COORDINATE WITH MECHANICAL. |
| ④ | VIA 7-DAY, MULTIPLE PROGRAM, ASTRONOMICAL TIMER. TIMER LOCATION PER OWNER. |
| ⑤ | PROVIDE (3) 2 INCH PVC CONDUITS STUBBED OUT TO 5 FEET FROM FOUNDATION (FOR FUTURE USE BY OWNER). |



REMOTE SWITCH SOLENOID VALVE WIRING DETAIL

NORTH (building)

Preston Fields
Pressbox and
Bathroom
Building
Jim Barnett Park
Winchester, VA 22601

Site Engineer

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Architect

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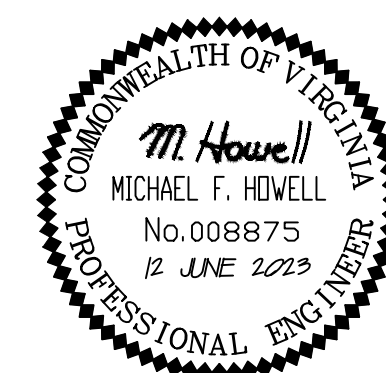
Issue/Revision

Seal

Drawing Title

POWER PLAN

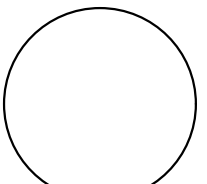
CDi Comfort Design
Mechanical &
Electrical
Engineers
620 Pennsylvania Ave
Winchester, VA 22601
Phone 540-665-2846
Fax 540-667-3284 JOB # E2331



Date 5/16/23
Scale Noted
Drawing Number

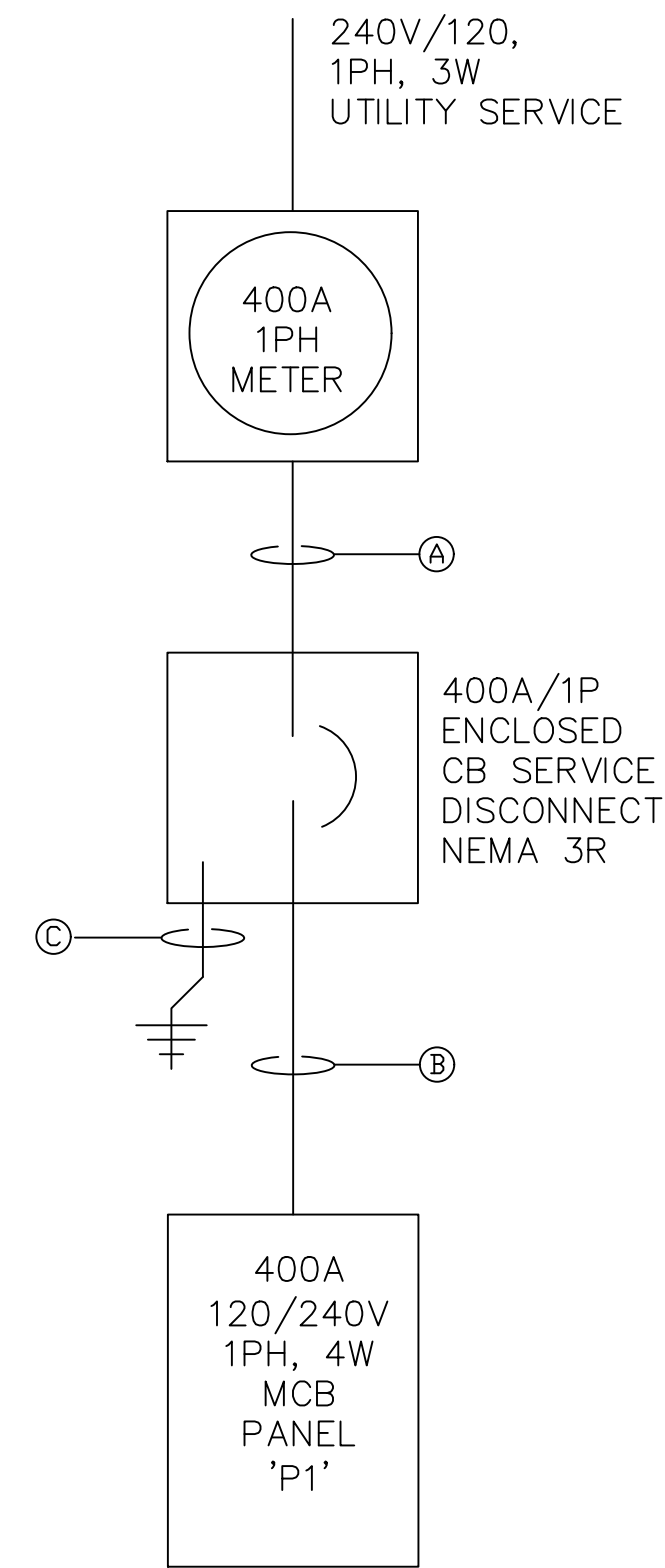
Project Number 21005-E2331

E2.1



NORTH (building)

NOTE: CITY TO PROVIDE ELECTRICAL SERVICE AND METERING TO THE BUILDING AND COORDINATE LIGHTING TO BALL FIELDS.



| FEEDER SCHEDULE | |
|-----------------|---|
| KEY | DESCRIPTION |
| Ⓐ | 400A, 1PH, 3W FEEDER (2) SETS OF 3 X 250 AL THHN/THWN EACH IN 3" EMT |
| Ⓑ | 400A, 1PH, 3W FEEDER (2) SETS OF 3 X 250 AL THHN/THWN & #1 AL EGC EACH IN 3" EMT |
| Ⓒ | GEC #6 CU |

1 ONE LINE DIAGRAM
E3.1 N.T.S.

| P1 | | | | | | | | | | | | 400 MAIN CB PANELBOARD | | | | | | | | | | | | AIR: 10KA | |
|--------------------|---------------|----|----|-----|-----|------|--------|----|------|------------------------|-------------------------------|------------------------|----|----|----|-----------------|----|--|--|--|--|--|--|-----------|--|
| Q# | DESCRIPTION | CB | PH | NEU | EGC | COND | VA | PH | VA | COND | EGC | NEU | PH | PH | CB | DESCRIPTION | Q# | | | | | | | | |
| 1 | HP MIDDLE | 20 | 2 | 12 | 12 | 3/4 | 1608 | A | 3444 | 3/4 | 10 | | 10 | 2 | 30 | AHU MIDDLE | 2 | | | | | | | | |
| 3 | " | | | 12 | | | 1608 | B | 3444 | | | | 10 | | | " | 4 | | | | | | | | |
| 5 | HP LOWER | 45 | 2 | 8 | | 10 | 3132 | C | 9420 | 1-1/4 | 8 | | 4 | 2 | 80 | AHU LOWER | 6 | | | | | | | | |
| 7 | " | | | 8 | | | 3132 | A | 9420 | | | | 4 | | | " | 8 | | | | | | | | |
| 9 | EF-1 | 15 | 1 | 12 | 12 | 3/4 | 528 | B | 3924 | 1 | 10 | | 8 | 2 | 40 | HP-PRESSBOX | 10 | | | | | | | | |
| 11 | EF-2 | 15 | 1 | 12 | 12 | 3/4 | 528 | C | 3924 | | | | 8 | | | " | 12 | | | | | | | | |
| 13 | HAND DRYER | 20 | 1 | 12 | 12 | 3/4 | 1464 | A | 1500 | 3/4 | 12 | | 12 | 2 | 20 | ELECTRIC | 14 | | | | | | | | |
| 15 | HAND DRYER | 20 | 1 | 12 | 12 | 3/4 | 1464 | B | 1500 | | | | 12 | | | WATER HEATER | 16 | | | | | | | | |
| 17 | HAND DRYER | 20 | 1 | 12 | 12 | 3/4 | 1464 | C | 720 | 3/4 | 12 | 12 | 12 | 1 | 20 | EXTERIOR GFIS | 18 | | | | | | | | |
| 19 | LOWER LVL LTS | 15 | 1 | 14 | 14 | 3/4 | 400 | A | 454 | 3/4 | 14 | 14 | 14 | 1 | 15 | MID LVL LTS | 20 | | | | | | | | |
| 21 | UPPER LVL LTS | 15 | 1 | 14 | 14 | 3/4 | 421 | B | 360 | 3/4 | 12 | 12 | 12 | 1 | 20 | MENS GF/SENSOR | 22 | | | | | | | | |
| 23 | RRM GF/SENSOR | 20 | 1 | 12 | 12 | 3/4 | 360 | C | 360 | 3/4 | 12 | 12 | 12 | 1 | 20 | WMNS GF/SENSOR | 24 | | | | | | | | |
| 25 | JANITOR GFI | 20 | 1 | 12 | 12 | 3/4 | 180 | A | 900 | 3/4 | 12 | 12 | 12 | 1 | 20 | 101 STORAGE REC | 26 | | | | | | | | |
| 27 | MECH GFIS | 20 | 1 | 12 | 12 | 3/4 | 720 | B | 900 | 3/4 | 12 | 12 | 12 | 1 | 20 | 103 STORAGE REC | 28 | | | | | | | | |
| 29 | OFFICE REC | 20 | 1 | 12 | 12 | 3/4 | 900 | C | 1260 | 3/4 | 12 | 12 | 12 | 1 | 20 | CONFERENCE REC | 30 | | | | | | | | |
| 31 | PRESSBOX QUAD | 20 | 1 | 12 | 12 | 3/4 | 360 | A | 360 | 3/4 | 12 | 12 | 12 | 1 | 20 | PRESSBOX QUAD | 32 | | | | | | | | |
| 33 | IT QUAD | 20 | 1 | 12 | 12 | 3/4 | 360 | B | 575 | 3/4 | 12 | 12 | 12 | 1 | 20 | RESTROOM GFI | 34 | | | | | | | | |
| 35 | FLUSH VALVES | 20 | 1 | 12 | 12 | 3/4 | 1320 | C | 360 | 3/4 | 14 | 14 | 14 | 1 | 15 | FV AND SENSOR | 36 | | | | | | | | |
| 37 | SPACE | | | | | | | A | | | | | | | | SPACE | 38 | | | | | | | | |
| 39 | SPACE | | | | | | | B | | | | | | | | SPACE | 40 | | | | | | | | |
| 41 | SPACE | | | | | | | C | | | | | | | | SPACE | 42 | | | | | | | | |
| CONNECTED VA | | | | | | | 23,222 | A | 194 | CONNECTED AMPS | WIRES BASED ON 75° C RATED CU | | | | | | | | | | | | | | |
| CONNECTED VA | | | | | | | 15,804 | B | 132 | CONNECTED AMPS | WITH 75° C RATED TERMINALS | | | | | | | | | | | | | | |
| CONNECTED VA | | | | | | | 23,748 | C | 198 | CONNECTED AMPS | | | | | | | | | | | | | | | |
| TOTAL CONNECTED VA | | | | | | | 62,774 | | 262 | AVERAGE CONNECTED AMPS | | | | | | | | | | | | | | | |
| DEMAND VA | | | | | | | 70,641 | | 294 | NEC DEMAND AMPS | | | | | | | | | | | | | | | |

#N/A

6/9/2023 10:12

Preston Fields
Pressbox and
Bathroom
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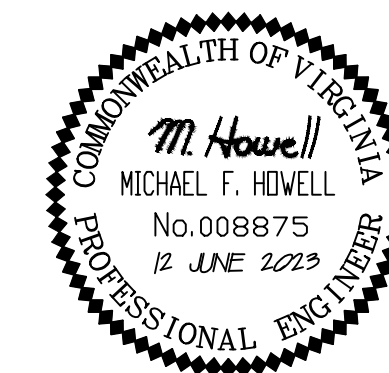
Issue/Revision

Seal

Drawing Title

ELECTRICAL
DETAILS

CDi Comfort Design
Mechanical &
Electrical
Engineers
620 Pennsylvania Ave
Winchester, VA 22601
Phone 540-665-2846
Fax 540-667-3284 JOB # E2331



Date 5/16/23

Scale Noted

Project Number 21005-E2331

Drawing Number

E3.1

ELECTRICAL NOTES:

BASIC METHODS AND REQUIREMENTS:

- The Electrical Contractor shall provide all labor, material, equipment, tools and services required to construct, install, complete, test, and commission the operation of the electrical systems identified within the construction documents. It is the intent of these contract documents to call for finished work, tested, and ready for operation.
- Wherever the work "provide" is used it shall mean to furnish and install complete and ready for use.
 - Provide all materials, bracing, hangers, connectors, and components as required to provide a complete operational electrical system.
 - All items not specifically shown in the design documents, but which are necessary for a complete working installation in compliance with code requirements shall be provided at no additional cost.
- The installation shall comply with applicable requirements of the International Building Code (IBC), NFPA 70 (NEC), NFPA 101 (Life Safety Code), ADA, and all local codes in effect at the project location at the time of contract award.
- FAULT CURRENT AND ARC FLASH PROTECTION BOUNDARY:** Service equipment in other than dwelling units shall be legibly marked in the field with the maximum available fault current. The contractor shall coordinate with the serving utility to obtain the fault current at the serving transformer and perform a fault current calculation that includes the service entrance conductors as routed in the field. This calculation shall be done prior to ordering service equipment, panelboards, etc. to confirm estimated values shown in the design prior to ordering. The markings shall include the date the fault current calculation was made and be of sufficient durability to withstand the environment of the installation. For projects that involve a modification to the electrical installation that will affect the available fault current, the contractor shall recalculate the available fault current based upon the components selected for the modification. The contractor shall coordinate with the supplier of the service equipment to determine the arc-flash protection boundary and required PPE in compliance with the requirements of NFPA 70E. The arc flash protection boundary shall be based upon the available fault current at the service equipment and the protective device response times being provided at the service disconnect. The equipment shall be marked with the incident energy or required level of PPE per NFPA 70E.
- The drawings indicate the extent, general location and arrangement of equipment, components, and wiring. The contractor shall review all project requirements and coordinate the electrical installation with all trades.
 - The Contractor shall become familiar with the work and verify all dimensions and locations so that the outlets, devices, raceways and equipment will be properly located and accessible. Actual field measurements shall prevail over any scaled measurements taken from these drawings.
 - The Contractor shall confirm the location of all equipment that requires electrical connections with the trade installing the equipment prior to rough in of the associated electrical devices, disconnects, raceways, and wiring.
 - The contractor shall confirm the electrical requirements and configuration (including overcurrent protective device ratings and conductor sizing) of circuits required for all equipment that requires electrical connection with the installer of such equipment prior to rough-in or installation of related electrical items.
 - Rework required that results from failure to coordinate shall be done at the contractor's expense.
- The drawings are diagrammatic only, intending to show general location of circuits, equipment, fixtures, and devices; and do not show all required details. All work shall be accurately laid out with reference to the drawings and in cooperation with other trades to avoid conflicts and to obtain a neat and workable installation which will afford maximum accessibility for operation, maintenance, and headroom. The electrical contractor is responsible for determining optimal routing of circuits and field investigations required to complete the installation in a professional workmanship manner. Refer to architectural drawings for exact dimensions and to mechanical drawings for locations of mechanical equipment. The contractor shall field determine final locations for outlets to comply with distance and spacing requirements of the NEC.
- The drawings are not intended to be rigid in specific details. In the event they are in conflict with requirements of other drawings, codes, or recommendations of the manufacturers of equipment furnished, the Electrical Contractor shall inform the General Contractor and make recommendations as required to insure that equipment is installed and connected in conformance with codes and manufacturer's recommendations for safe, proper, and efficient operation. The General Contractor shall issue a Request for Information with the proposed recommendation to the Architect.
- The contractor, by accepting the work, represents that it is qualified to successfully accomplish the work without additional direction by the design engineer. The design engineer is not responsible for means, methods, techniques, or procedures used by the contractor during construction.
- By submitting a proposal, contractor agrees it is satisfied from its own investigation of the conditions and requirements to be met, that it fully understands its obligation, and that it will not make any claim for or have the right to cancellation of or relief from the Contract because of any misunderstanding or lack of information. A submission of a bid for this work acknowledges that the contractor has read all terms and conditions for the work and that all terms and conditions are acceptable.
- In the event of conflict between various parts of the contract documents, including but not limited to drawings and general conditions, the more stringent (more costly) of the conditions shall apply for bidding purposes. The contractor shall request clarification for all conflicts prior to construction. The contractor shall make a thorough examination of the site and the contract documents. No claim for extra compensation

will be recognized if difficulties are encountered which an examination of site conditions and contract documents prior to executing the contract would have revealed. Failure to request clarification shall not relieve the contractor of the requirement to provide the more costly implementation. If any conflicts occur necessitating departures from the drawings, details of and reasons for departures shall be submitted and approved prior to implementing any change.

- All wiring not furnished and installed by others but which is required to provide a complete and operational system for equipment indicated on the drawings shall be furnished and installed by the electrical contractor. Except as otherwise noted, automatic control wiring, signaling, and protective devices for mechanical equipment shall be furnished and installed by the mechanical contractor. Each motor or group of motors requiring a single control shall be provided by others with a suitable controller. The electrical contractor shall install and connect the motor controllers furnished by others. Low voltage control devices (thermostats, limit switches, etc.) and wiring (24 Volts max.) will be installed by others. Control devices and wiring above 24 Volts shall be installed by the electrical contractor. Each motor shall be provided with a disconnecting means where required by NFPA 70, even if not shown on the drawings.
- Procure and pay for all permits and certificates necessary to construct and place in operation all electrical work. Pay for all legally imposed charges made by the local authorities for full inspection and approval services of the bureau administering applicable codes and regulations. This shall include the cost and back charge of installing any portion of the work where performed by utility departments, and utility companies such as for trenching and installation on conduit. Capital improvement costs that may be imposed by the utility for new or upgraded service (such as extending primary wiring to transformers or upgrading transformers) shall be paid by the owner.

MATERIALS

- Material and equipment shall be new and shall be the standard specification grade products of established manufacturers. Materials, equipment, and installation shall conform to the requirements of ANSI, IEEE, NEMA, and UL as applicable
- Submit for approval catalog information for: Lighting Fixtures, Lighting Controls, Panelboards, and Fire Alarm System (when shown on drawings).
- Equipment and material shall be protected during shipment and storage against physical damage, dirt, moisture, cold and rain.
- Unless otherwise indicated, wiring shall consist of insulated conductors installed in conduit or tubing. Unless shown otherwise, minimum conduit size shall be 3/4". All conductors shall be copper with type THWN/THHN insulation rated 90C. Conductor sizing is based upon use of terminals rated 75C. Aluminum conductors of equivalent ampacity may be used for circuits 100 Amps or larger. The Contractor shall make all required changes to conduit sizes, terminals, and sizing for voltage drop for conductor substitutions at no additional cost. Conductors shall be color coded: Black (A), Red (B), Blue (C), White (neutral), for 208/120 and Brown (A), Orange (B), Yellow(C), Gray (Neutral) for 480/277. Ground (EGC) conductors shall be Green or Green/Yellow striped.
- Where wiring type is shown as MC, NEC compliant installation of MC cable will be permitted. For projects that include patient care areas, exam rooms, and medical equipment circuits, cable shown as MC for these areas shall be type HCF-MC-AP and the installation shall comply with NEC 517.
- Where wiring type is shown as NM, NEC compliant installation of type NM cable will be permitted.
- Wire sizes, including equipment grounding conductors, shall be adjusted for voltage drop based upon actual circuit lengths of installed wiring to achieve 3% voltage drop for branch circuits and 2% voltage drop for feeders. Raceway sizes shall be revised as needed for upsized conductors.
- Nonmetallic conduit and tubing shall be used in damp, wet, or corrosive locations. EMT may be installed only within buildings. EMT may be installed in concrete and grout in dry locations. EMT shall not be installed in damp or wet locations, or in the air space of exterior masonry cavity walls. Aluminum conduit may be used only where installed exposed in dry locations. Non-aluminum sleeves shall be used where aluminum conduit passes through concrete floors and fire walls. Conduit used in areas subject to damage shall be rigid steel up to a height of 10 ft. above finished floor. Flexible metallic cable (Type MC) may be used where allowed by NFPA 70. Non-metallic cable (Type NM-B) may only be used where allowed by NFPA 70 and when wiring type is shown as NM in panel schedules Bushings shall be of the insulating type
- Panelboards shall be completely factory assembled with molded case circuit breakers. Short circuit interrupting ratings (AIR) of all provided components shall be coordinated with the ratings of all new and any existing electrical gear. Series rated assemblies are not permitted. Panelboards and loadcenters shall be equipped with arc fault circuit interrupter, combination type, circuit breakers to provide AFCI protection per NEC requirements.
- Lighting controls shall be provided in accordance with IECC or ASHRAE requirements as enforced by state building codes. Control schemes shown on the drawings are diagrammatical only and the contractor shall finalize design details and component selection to achieve the required operational performance. Refer to functional testing requirements later in these notes.
- Receptacles and switches shall be specification grade. Standard duplex receptacles shall be single phase, 15 Ampere, 120 volts, 2 pole, 3 wire, and conform to the NEMA 5-15R in dwellings and 5-20R in commercial applications. GFCI outlets shall be provided in all locations required by the NEC whether noted on plans or not. AFCI protection is required per the NEC. Devices and cover-plates shall be of the color and material determined by the architect. Outlets shall be hospital grade in patient bed areas of health care facilities per NEC. Dimmer switches shall be specification grade and be matched to the load being served (incandescent, fluorescent, LED, or 0-10V)

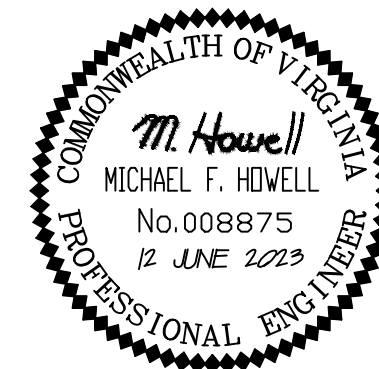
INSTALLATION

- The work shall be laid out in advance, and where cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, or other surfaces is necessary for the proper installation, support, or anchorage of the conduit, raceways, or other electrical work, this work shall be done and any damage to building, piping, or equipment shall be repaired by skilled tradesmen of the trades involved at no additional cost to the owner.
- During installation, enclosures, equipment, controls, controllers, circuit protective devices, and other like items, shall be protected against entry of foreign matter; and be vacuum cleaned both inside and outside before testing, operating and painting.
 - Damaged equipment shall be placed in first class operating condition or be returned to the source of supply for repair or replacement
 - Painted surfaces shall be protected with factory installed removable heavy protective paper, sheet vinyl, or equivalent covering.
 - Damaged paint on equipment and materials shall be refinished with the same quality of paint and workmanship as used by the manufacturer so that repaired areas are not obvious.
- The contractor shall perform all temporary work necessary to maintain continuity of electrical service when connection is made to existing systems and facilities. Existing services shall not be interrupted without prior consent of the owner's authorized representative and may be interrupted only at and for the specified time designated by the owner's representative.
- Electrical service entrance equipment, including arrangements for temporary power, shall conform to the serving power company's requirements. Coordinate routing, trenching, and conduit requirements with the power company.
- The electrical contractor shall obtain available short circuit information from the supplying utility and perform a short circuit analysis of the available short circuit at the service equipment using the information obtained from the utility. The analysis shall include the impact of the service entrance conductors (size, material, distance) either installed by the utility or installed as part of the project. Based upon this information, the electrical contractor shall install a NEC compliant label on the service equipment stating:
 - The available fault current at the service equipment.
 - The nominal system voltage of the service equipment.
 - The clearing time of the service protection device (based upon manufacturer's date for the actual equipment installed).
 - Date that the label was installed.
- The contractor shall provide product finishes and constructions compatible with wall and ceiling types based upon the contractor's review of all project requirements.
- Penetrations of above grade floor slabs, time-rated partitions, and fire walls shall be fire stopped. Penetrations of fire rated floors, walls, and ceilings shall be installed in accordance with listed UL applications. See architectural drawings for location of fire rated assemblies. Materials and equipment shall be installed in accordance with recommendations of the manufacturer. At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight
- Raceways shall be kept 6 inches away from parallel runs of flues and hot-water pipes. Raceways shall be concealed within finished walls, ceilings, and floors of finished areas. Raceways may be run exposed in non-finished areas, such as utility rooms. Install conduit in complete runs before pulling in cables or wires. Independently support conduit. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, mechanical piping, or mechanical ducts).
- All electrical wiring below slab on grade shall be protected by a PVC conduit system. Raceways crossing structural expansion joints shall have expansion fittings. Changes in direction of runs shall be made with symmetrical bends or fittings. Crushed or deformed raceways shall not be installed. Trapped raceways in damp and wet locations shall not be installed. Clogged raceways shall be entirely free of obstructions or shall be replaced.
- Panelboards shall be flush when installed on finished wall surfaces. Panelboards shall be surface mount when installed in unfinished rooms. Where designated on panel schedule as "space" or "spare", include all necessary bussing, device support and connections. Provide blank cover for each space.
- Placement of lighting fixtures, outlets, panelboards, transformers, disconnect switches and other items shall be located to avoid interference with mechanical or structural features.
- Lighting fixtures shall be symmetrically placed in rooms.
 - Lighting fixtures that are non-IC rated shall be installed such that no insulation is within 3 inches of the fixture and none on top so as to trap heat. Non-IC lighting fixtures shall not be installed within 1/2 inch of combustible material.
 - Lighting fixtures installed in fire rated ceilings shall be rated for equivalent fire resistance, or equipped with a boot or box-out to maintain the ceiling system fire rating.
 - The contractor shall field confirm all new and existing ceiling types to identify mounting requirements prior to order of lighting fixtures. All accessories and options required to successfully install the fixtures in the ceilings shall be provided, including those needed for fire rated applications.
 - All open bay and similar lighting fixtures shall be supported by unistrut that spans structural joists. Unistrut shall be supported by the top cord of the structural joists only. Alternative supporting schemes must be approved.

- Connect recessed lighting fixtures to conduit runs with maximum six feet of flexible metal conduit extending from a junction box to the fixture.
- At completion of project, re-lamp/re-ballast fixtures which have failed lamps/ballasts. Clean fixtures, lenses, diffusers and louvers that have accumulated dust/dirt/fingerprints during construction. Replace damaged lenses, diffusers and louvers with new.
- Where light switches are shown grouped together they shall be mounted under a multi-gang cover-plate. Where dimmer switches are used, the mounting box size shall be based upon thermal de-rating requirements of the dimmers.
- Outlets shall be mounted not less than 15" above finished floor per ADA guidelines. Switches shall be mounted not more than 48" above finished floor per ADA guidelines. Outlets and switches at counter top locations shall be mounted not more than 44"-46" above finished floor per ADA guidelines. Field coordinate location of counter mounted devices with counter installer.
- The Electrical contractor shall coordinate with the Mechanical contractor for the installation of electrical components required to serve mechanical equipment. The contractor shall confirm equipment circuit requirements with the Mechanical contractor prior to rough-in of electrical circuits. Any re-work required to provide the electrical installation needed for compliance with actual nameplate requirements for equipment shall be accomplished at no additional cost. Nameplate data of actual equipment supplied shall be used for final circuit configurations. Adjustments from values shown on panel schedules shall be made as part of the contract.
- The electrical contractor shall review the hardware schedule and coordinate with the door hardware installer and provide 120V electrical power at locations required for proper operation of door openers, power supplies, and controls. Low voltage wiring by door installers.
- Make final connections to equipment supplied by others. Controls and starters related to mechanical equipment shall be supplied by the mechanical contractor. Controls and starters for owner furnished equipment shall be supplied by others. Electrical contractor shall make electrical connections to equipment from point of electrical circuit shown on drawings for equipment. Electrical contractor shall make connections to owner furnished equipment serviced by either hard wiring or service cord drops. Electrical contractor shall provide means of disconnection of equipment from electrical circuit if starter or controller supplied with equipment does not meet NEC requirements for disconnect.
- Install green grounding conductors with feeders and branch circuits as indicated in panel schedules and one line diagram. Bond the grounding wires to each pullbox, junction box, outlet box, cabinets, and other enclosures through which the ground wires pass. Bond all conductive piping systems in the building to the electrical system ground. Bonding connections shall be made as close as practical to the water pipe ground or service equipment ground bus.
- Major pieces of electrical equipment shall be permanently marked with an identification nameplate. All panelboards shall have removable typewritten panel directories inserted into plastic sleeves mounted on the inside face of the panelboard door. The directory shall describe the as-built circuit configurations of the panel per NEC requirements. Marking directly on the panelboard is not permitted. All junction boxes and outlets shall have a mechanically printed permanent label attached indicating which circuit and panel serves the junction box or outlet.
- Duct smoke detector requirements shall be installed per local code requirements. The Electrical contractor shall coordinate with the Mechanical contractor for control interface requirements.
- After the electrical installation is completed, the Electrical Contractor shall conduct a safety and an operating test of the electrical system. The electrical contractor shall furnish all instruments and personnel required for the tests. No part of the electrical distribution system shall be energized prior to the testing of the grounding system. Resistance tests shall be made for service entrances and feeders installed as part of this project. Proper phase rotation shall be confirmed for all 3 phase motors.
- Functional testing of lighting controls shall be performed in accordance with IECC or ASHRAE requirements locally enforced. The testing shall demonstrate controls are calibrated, adjusted, programmed and in proper working condition. Testing shall confirm proper operation of occupancy sensors, photo sensors, and time switches. The contractor shall instruct the client as to the proper operation and programming requirements of the system. The functional testing must be made by an independent party, such as a representative of the lighting control manufacturer, who is not part of the building design engineering firm or a member of the construction contractor's team. The testing party shall provide documentation certifying operational compliance with energy code requirements.
- All work shall pass inspection by proper authorities prior to acceptance by the owner. Costs for permits, certificates, and inspections required for completion of the work shall be paid by the Electrical Contractor.
- The contractor shall warrant the complete electrical installation at the time of completion for a period of one year. During the warranty period the contractor shall replace or repair any components or work which develop defects beyond normal wear and tear. The electrical contractor shall be responsible for, and shall incur financial responsibility for any damages caused by or resulting from defects in his work.
- The contractor shall provide as-built and record drawings indicating all changes in equipment, devices, and conduit locations to the general contractor for delivery to the owner as part of the project close-out

END OF NOTES

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ELECTRICAL NOTES

Date 5/16/23
Scale Noted Project Number 21005-E2331
Drawing Number

E4.1

