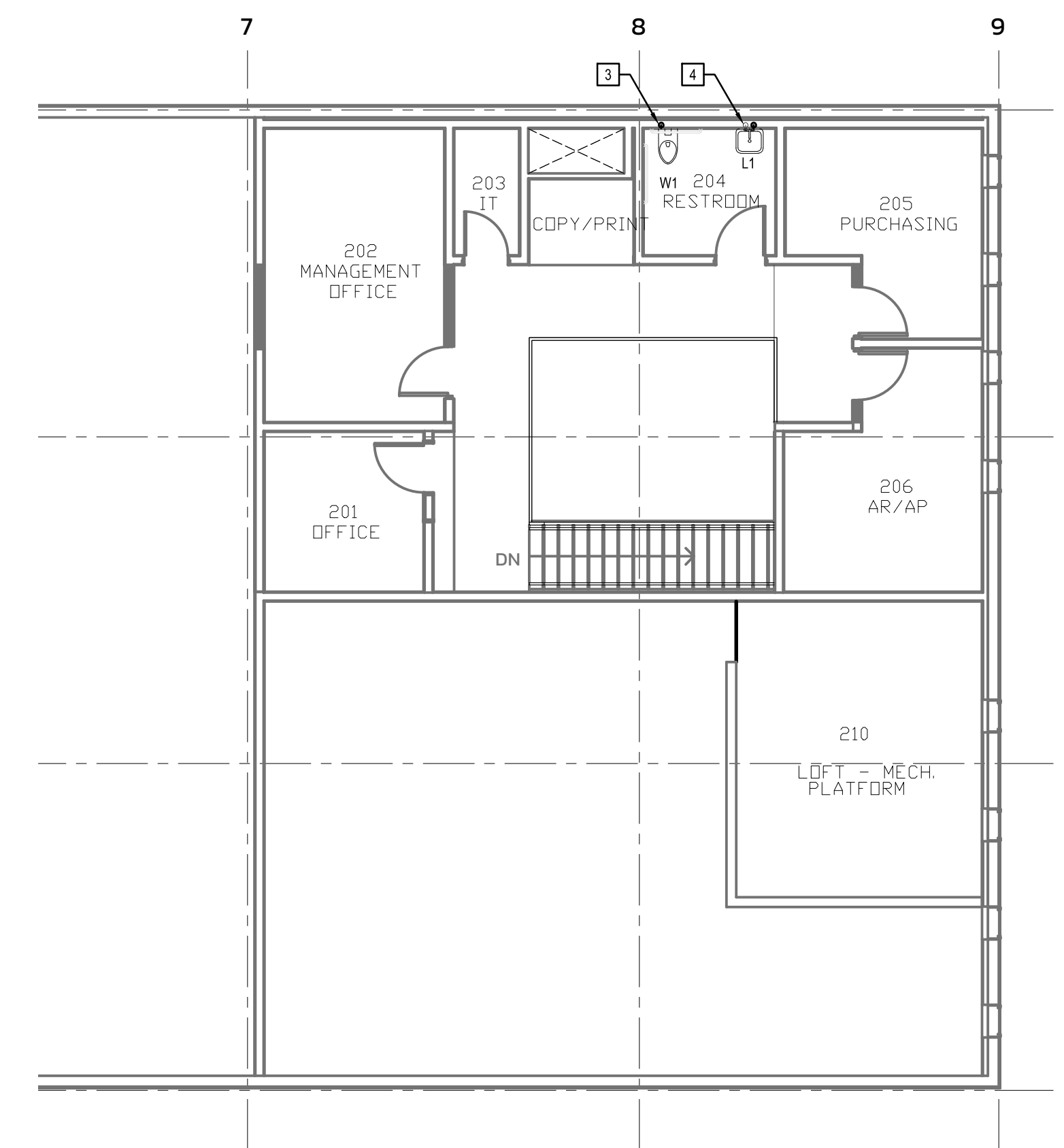
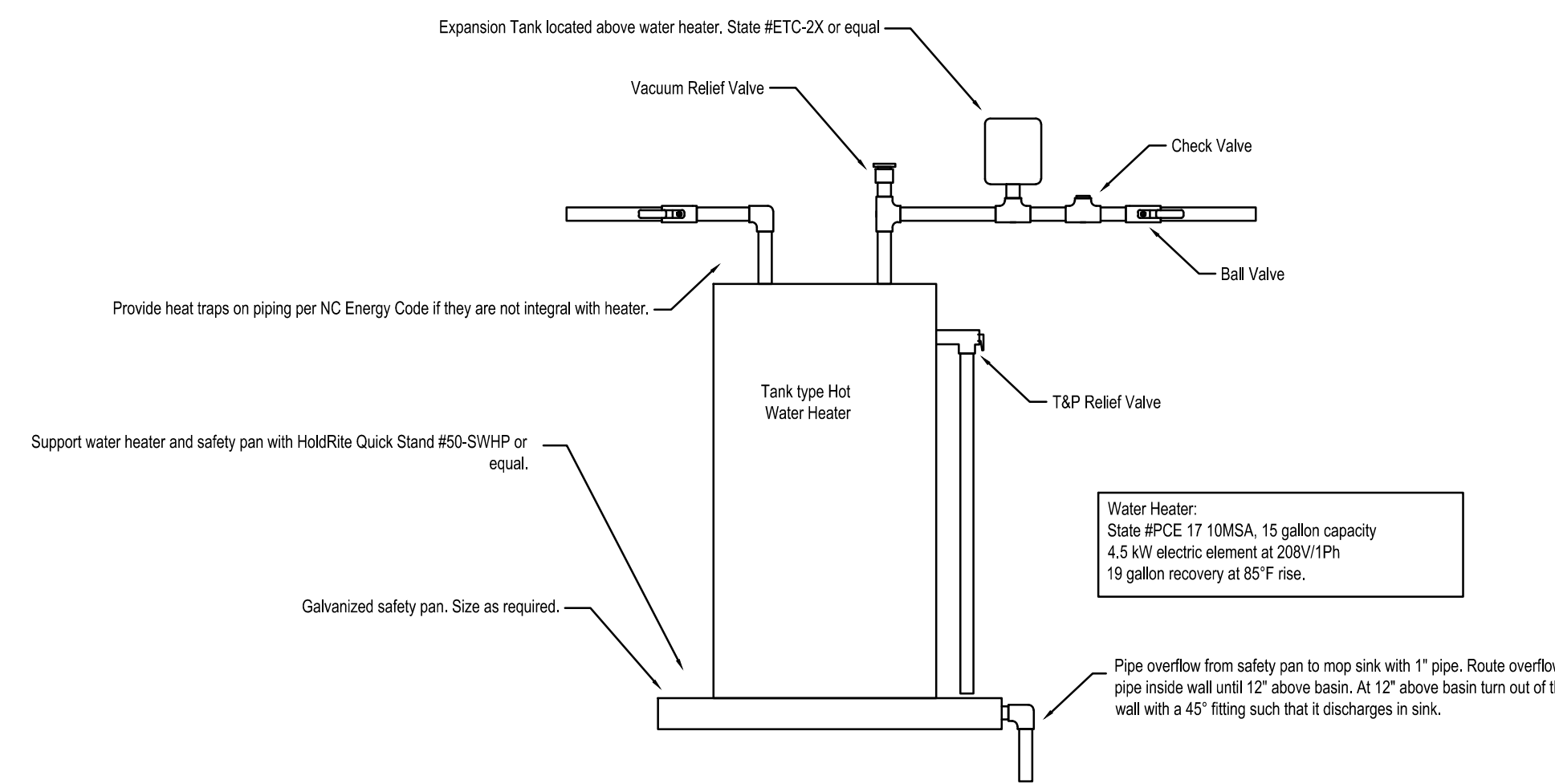


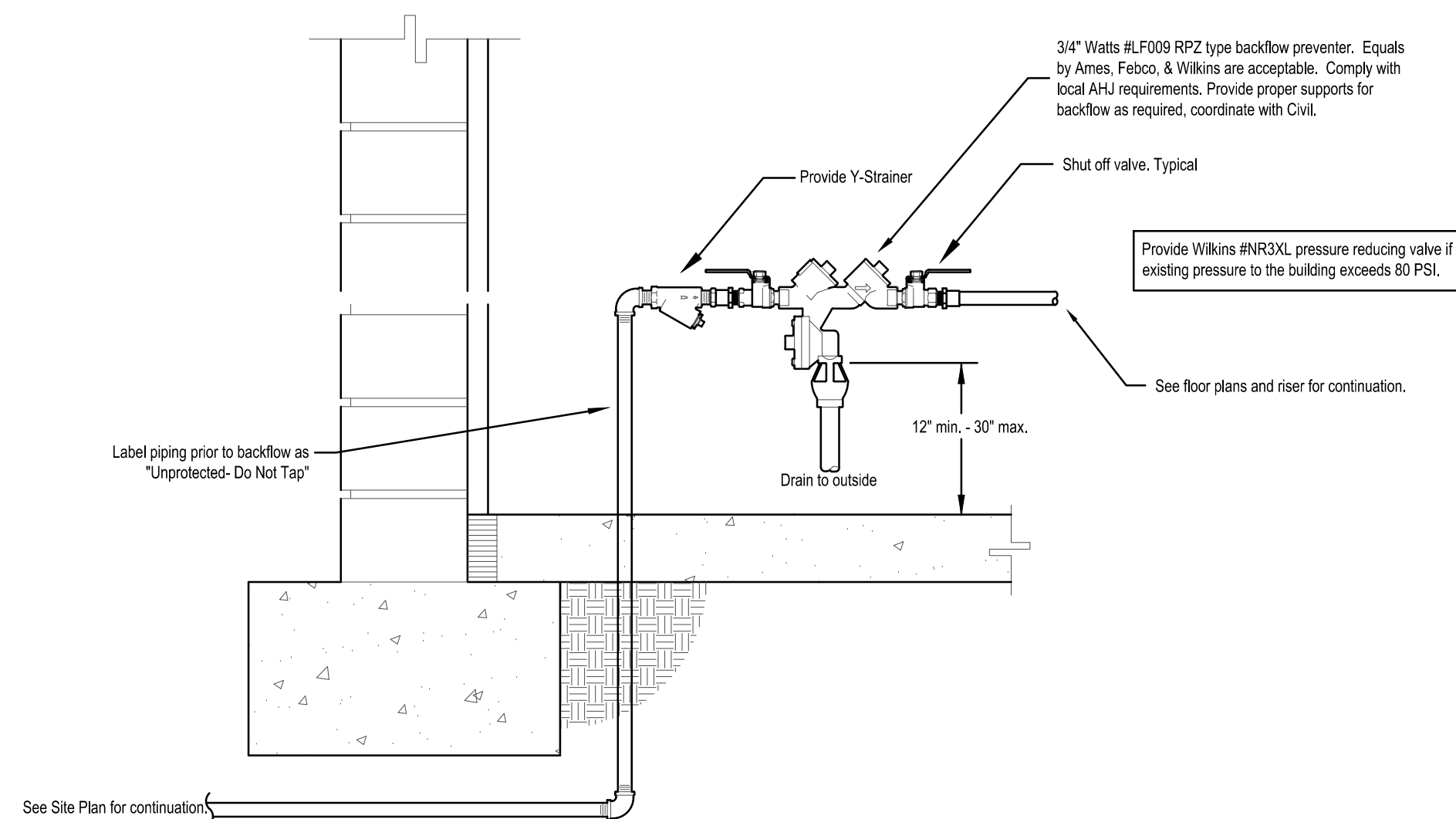
2 First Floor Plan - Water
Scale: 1/8" = 1' - 0"



1 Second Floor Plan - Water
Scale: 1/8" = 1' - 0"



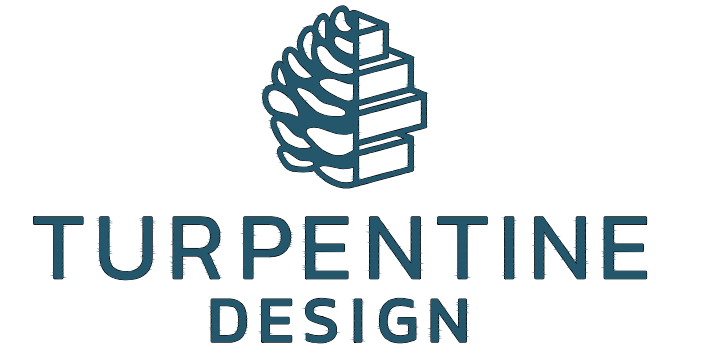
3 Water Heater Detail
Scale: NTS



4 Backflow Preventer Detail
Scale: NTS

Plumbing Fixtures, Equipment, & Accessories				Water Line & Connection Size		
Tag	Description	Fixture Specification	CW	HW	W	
W2	Water Closet Floor Mounted ADA	Toilet: Kohler HighBid Ultra #K-25077 white vitreous china water closet with elongated bowl, tank type flushing, 12" rough-in 16 1/2" high to the seat with 2 bolt caps. Seat: Kohler Lustra #K-4698-SC extra heavy duty white elongated with open front seat.	1/2"	-	4"	
L1	Lavatory Wall Hung ADA	Lavatory Basin: Toto #LT307, Vitreous china, top of rim at 34" AFF for ADA. Faucet: Delta #15769LF-SP, single hole faucet, 0.5 GPM flow rate. Trap & Supplies: McGuire #8902, 1/2" gauge 1 1/4" x 1 1/2" P-trap and nipple, McGuire #LFB02 angle supply stops. Mount P-trap such that ADA clearance requirements are maintained. Accessories: Truebro 82192 Lav Guard 2 molded insulation # 101-EZ, 3 piece interlocking trap assembly and 2 piece interlocking hot water angle valve assembly, with nylon type fasteners.	1/2"	1/2"	2"	
S2	Break Sink, Single Bowl	Sink Basin: Elkay #LRAD25225, 18 ga Stainless steel, drop-in bowl, Dimensions 21"x15-3/4"x5 1/2" deep, 1 hole. Faucet: Moen Align #7595, Stainless, 1 hole faucet, 1.8 GPM flow rate. Trap & Supplies: McGuire #8902, 1/2" gauge 1 1/4" x 1 1/2" P-trap and nipple, McGuire #LFB02 angle supply stops. Mount P-trap such that ADA clearance requirements are maintained. Accessories: Truebro 82192 Lav Guard 2 molded insulation # 101-EZ, 3 piece interlocking trap assembly and 2 piece interlocking hot water angle valve assembly, with nylon type fasteners.	1/2"	1/2"	1 1/2"	
EWC	Electric Water Cooler	Elkay #ZSTL8LC dual level, ADA, wall mounted water cooler; hermetically sealed and air cooled refrigeration unit. Electric push buttons on front and side with vinyl covered steel skirt and stainless steel hood receptor. Mount spout on lower side at 36" AFF and provide cane apron option on higher side of water cooler.	1/2"	-	1 1/2"	
WCO	Wall Clean Out	Zurn #Z1446 wall cleanout tee, dura-coated cast iron body, gas and watertight ABS tapered thread plug, and round, smooth stainless steel wall access cover with securing screw.	-	-	see plans	
TP	Trap Primer	Watts #200 Flow through trap primer	1/2"	-	-	
SA	Shock Absorber	Watts series #15M2 water hammer arrester, sized to match associated line. Shock absorber shall meet all requirements ASSE 1010, ANSI A1 12.261M as well as the 2018 NCSBC and the 2018 NCSPC, section 604.9	see plans	see plans	-	
VB	Vacuum Breaker	Watts #LFT vacuum breaker, sized to match associated line. Vacuum breaker shall meet all requirements ASSE 1024, as well as the 2018 NCSBC.	-	-	-	
IM	Ice Maker Box	Osley #39152 square, 1/4 turn, copper, hammer, low lead, water outlet box. Wall mount at 24" AFF, confirm height with architect. Plumbing to provide necessary lines and fitting for connection to equipment.	1/2"	-	-	
MS	Mop Sink	Mop Sink: Flat #MS2424 molded stone mop service basin, 24" x 24" x 10" tall sides. Faucet: Chicago faucets #44-897SRXXXXP with integral vacuum breaker, lever type ceramic 1/4 turn handles, and adjustable arms. Polished chrome finish. Faucet to have 3/4" hose thread on spout.	1/2"	1/2"	3"	

The intention of the depicted images above are to show the general appearance of the fixtures being specified. Exact representation is not necessarily shown nor are accessories for models or some variation of the model. The fixture specification should take precedent over the photo.



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PHASE PERMIT SET
DATE 03.14.2025
TD PROJECT # 24-024

DRAWING TITLE

FLOOR PLANS - WATER

DRAWING NUMBER
P101

These drawings will be at the scale indicated when plotted at 24" x 36"

Renovation Notes:

- Contractor shall visit site to verify existing conditions.
- See architectural for scope of demolition work. Cap and/or plug all waste/vent lines installed during shell that will not be used for flup. Confirm all capped piping will be concealed and/or will not conflict with new layout. Ensure that all waste lines being removed are plugged such that no sewer or gases will escape sanitary system.
- Contractor shall camera the existing under-slab sewer piping prior to cutting concrete. Engineer shall be contacted if the existing lines are not in the location shown on plans or are not in proper working order.
- All new piping shall be concealed in walls, above ceiling, or below slab unless otherwise noted. Contractor shall verify that there is sufficient space above ceiling for all areas affected by new or demolition work.
- Any slab cutting for plumbing access requires soil compaction, vapor barrier and embedded #4 rebar dowels no less than 18" on center.
- Contractor shall reconnect any existing fixtures/piping to remain where the existing piping or surrounding area is affected by the new or demolition work by other trades.

General Notes:

- Existing building water piping is copper. Contractor shall provide Type L annealed copper piping with 95/5 solder joints.
- Contractor shall provide Schedule 40 PVC-DWV (conforming to ASTM D2665) fittings for S, W, & V indicated on plans.
- Contractor may run 3" waste pipe at 1/8" slope where 2 1/2" or smaller would be acceptable for the DFUs but not allow for the proper code required 1/4" sloping and fit in the given space.

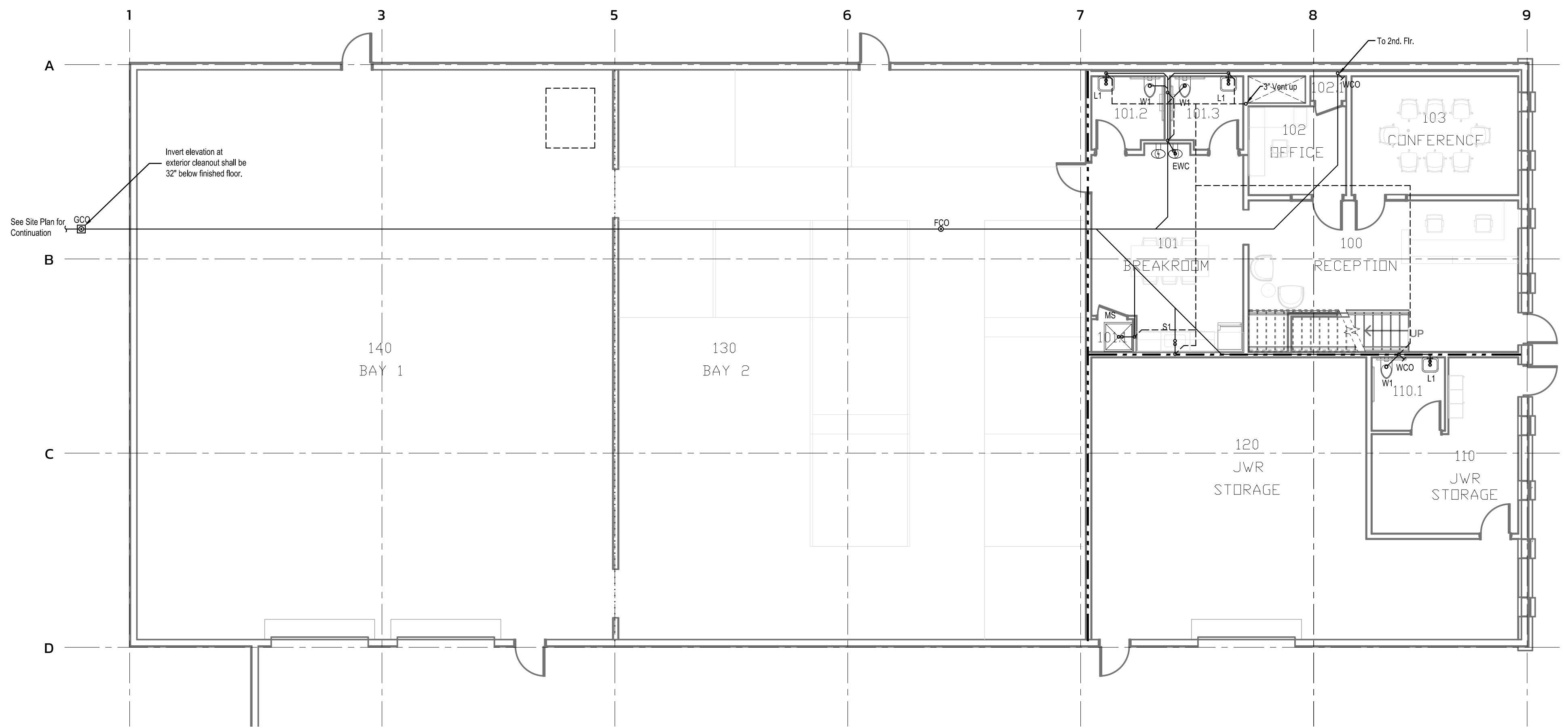
Plan Notes:

- Mount new water heater, safety pan, and expansion tank above ceiling as required. Keep heater as close to demising wall as feasible, coordinate exact location in field with other trades. See riser diagram and "Water Heater Detail" for additional information.
- Route CW & HW through wall to Restroom 100.1. See riser diagram for more information.
- 1/2" CW from 1st floor below.
- 1/2" CW & HW from 1st floor below.
- Install 3/4" RPZ on wall, see backflow preventer detail for more information.

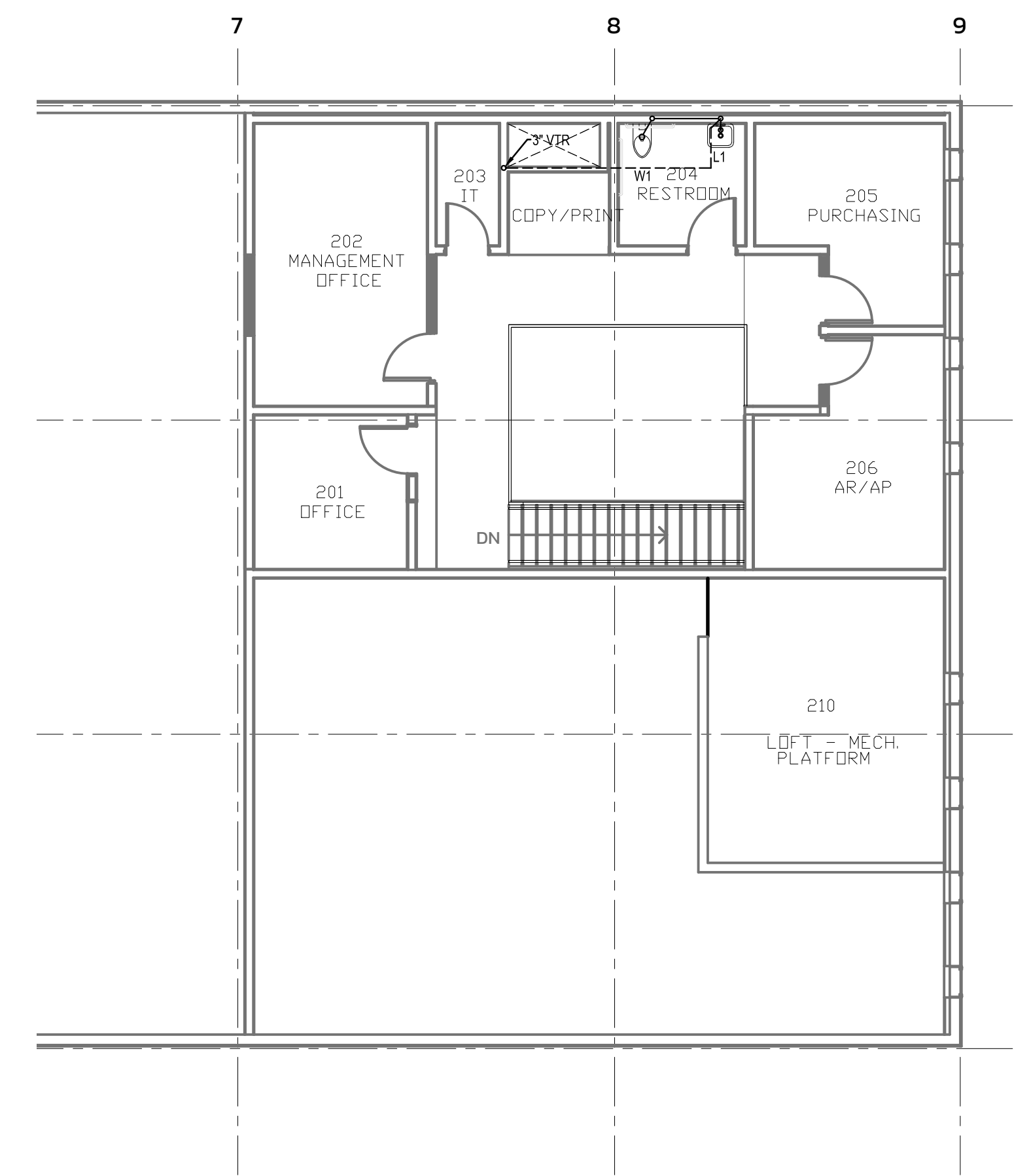
Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

Existing Wall to Remain	_____
New Wall being Constructed	_____
Wall to Deck	_____
Two Hour Fire Barrier	_____
Three Hour Fire Barrier	_____



2 First Floor Plan - S, W, & V
Scale: 1/8" = 1' - 0"



1 Second Floor Plan - S, W, & V
Scale: 1/8" = 1' - 0"



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PHASE	PERMIT SET
DATE	03.14.2025
TD PROJECT #	24-024

DRAWING TITLE

FLOOR PLANS - S, W, & V

DRAWING NUMBER
P102

These drawings will be at the scale indicated when plotted at 24" x 36"

Plumbing Fixtures, Equipment, & Accessories					
Tag	Description	Fixture Specification	Water Line & Connection Size		
			CW	HW	W
W2	Water Cbsset Floor Mounted ADA	<u>Toilet:</u> Kohler HighBid Ultra #K-25077 white vitreous china water closet with elongated bowl, tank type flushing, 12" rough-in 16 1/2" high to the seat with 2 bolt caps. <u>Seat:</u> Kohler Lustra #K-4660-SC extra heavy duty white elongated with open front seat.	1/2"	-	4"
L1	Lavatory Wall Hung ADA	<u>Lavatory Basin:</u> Toto #LT307, Vitreous china, top of rim at 34" AFF for ADA. <u>Faucet:</u> Delta #15769LF-SP, single hole faucet, 0.5 GPM flow rate. <u>Trap & Supplies:</u> McGuire #8902, 1/2 gauge 1 1/4" x 1 1/2" P-trap and nipple, McGuire #LFB02 angle supply stops. Mount P-trap such that ADA clearance requirements are maintained. <u>Accessories:</u> Truebro #2192 Lav Guard 2 molded insulation # 101-EZ, 3 piece interlocking trap assembly and 2 piece interlocking hot water angle valve assembly, with nylon type fasteners.	1/2"	1/2"	2"
S2	Break Sink, Single Bowl	<u>Sink Basin:</u> Elkay #LRAD25225, 18 ga Stainless steel, drop-in bowl, Dimensions 21"x15-3/4"x5 1/2" deep, 1 hole. <u>Faucet:</u> Moen Align #7565, Stainless, 1 hole faucet, 1.8 GPM flow rate. <u>Trap & Supplies:</u> McGuire #8902, 1/2 gauge 1 1/4" x 1 1/2" P-trap and nipple, McGuire #LFB02 angle supply stops. Mount P-trap such that ADA clearance requirements are maintained. <u>Accessories:</u> Truebro #2192 Lav Guard 2 molded insulation # 101-EZ, 3 piece interlocking trap assembly and 2 piece interlocking hot water angle valve assembly, with nylon type fasteners.	1/2"	1/2"	1 1/2"
EWC	Electric Water Cooler	Elkay #ZSTL8LC dual level, ADA, wall mounted water cooler; hermetically sealed and air cooled refrigeration unit. Electric push buttons on front and side with vinyl covered steel skirt and stainless steel hood receptor. Mount spout on lower side at 36" AFF and provide cane apron option on higher side of water cooler.	1/2"	-	1 1/2"
WCO	Wall Clean Out	Zurn #Z1446 wall cleanout tee, dura-coated cast iron body, gas and watertight ABS tapered thread plug, and round, smooth stainless steel wall access cover with securing screw.	-	-	see plans
TP	Trap Primer	Watts #200 Flow through trap primer	1/2"	-	-
SA	Shock Absorber	Watts series #15M2 water hammer arrester, sized to match associated line. Shock absorber shall meet all requirements ASSE 1010, ANSI A1 12.261M as well as the 2018 NCSBC and the 2018 NCSFC, section 604.9	see plans	see plans	-
VB	Vacuum Breaker	Watts #LFT vacuum breaker, sized to match associated line. Vacuum breaker shall meet all requirements ASSE 1024, as well as the 2018 NCSBC.	-	-	-
IM	Ice Maker Box	Osley #39152 square, 1/4 turn, copper, hammer, low lead, water outlet box. Wall mount at 24" AFF, confirm height with architect. Plumbing to provide necessary lines and fitting for connection to equipment.	1/2"	-	-
MS	Mop Sink	<u>Mop Sink:</u> Flat #MS2424 molded stone mop service basin, 24" x 24" x 10" tall sides. <u>Faucet:</u> Chicago faucets #44-897SRXXXXC with integral vacuum breaker, lever type ceramic 1/4 turn handles, and adjustable arms. Polished chrome finish. Faucet to have 3/4" hose thread on spout.	1/2"	1/2"	3"

The intention of the depicted images above are to show the general appearance of the fixtures being specified. Exact representation is not necessarily shown nor are accessories for models or some variation of the model. The fixture specification should take precedent over the photo.

- Renovation Notes:**
- Contractor shall visit site to verify existing conditions.
 - See architectural for scope of demolition work. Cap and/or plug all waste/vent lines installed during shell that will not be used for flup. Confirm all capped piping will be concealed and/or will not conflict with new layout. Ensure that all waste lines being removed are plugged such that no sewer or gases will escape sanitary system.
 - Contractor shall camera the existing under slab sewer piping prior to cutting concrete. Engineer shall be contacted if the existing lines are not in the location shown on plans or are not in proper working order.
 - All new piping shall be concealed in walls, above ceiling, or below slab unless otherwise noted. Contractor shall verify that there is sufficient space above ceiling for all areas affected by new or demolition work.
 - Any slab cutting for plumbing access requires soil compaction, vapor barrier and embedded #4 rebar dowels no less than 16" on center.
 - Contractor shall reconnect any existing fixtures/piping to remain where the existing piping or surrounding area is affected by the new or demolition work by other trades.

General Notes:

- Existing building water piping is copper. Contractor shall provide Type L annealed copper piping with 95/5 solder joints.
- Contractor shall provide Schedule 40 PVC-DWV (conforming to ASTM D2685) fittings for S,W, & V indicated on plans.
- Contractor may run 3" waste pipe at 1/8" slope where 2 1/2" or smaller would be acceptable for the DFUs but not allow for the proper code required 1/4" sloping and fit in the given space.

Wall Ratings and Types Legend

Existing Wall to Remain	_____
New Wall being Constructed	_____
Wall to Deck	_____
Two Hour Fire Barrier	_____
Three Hour Fire Barrier	_____

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.



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PHASE	PERMIT SET
DATE	03.14.2025
TD PROJECT #	24-024

DRAWING TITLE

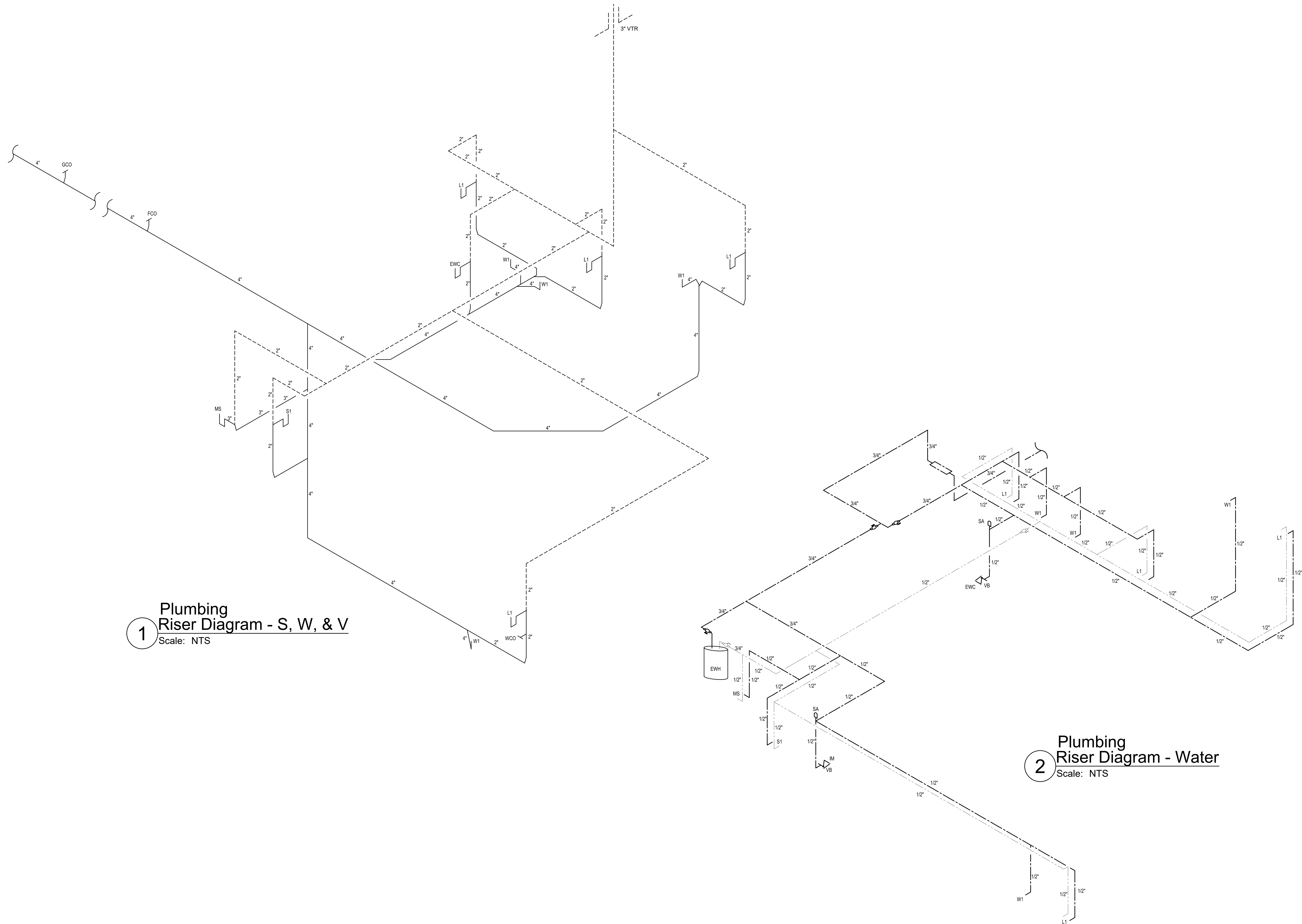
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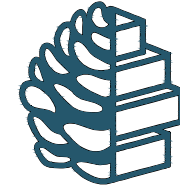
P201

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Plumbing
Riser Diagram - S, W, & V
Scale: NTS

2 Plumbing
Riser Diagram - Water
Scale: NTS



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DRAWING TITLE

MECHANICAL COVER SHEET

DRAWING NUMBER

M-001

These drawings will be at the scale indicated when plotted at 24" x 36"

Mechanical Notes and Specifications

General Requirements:

- The heating and air conditioning contractor (the contractor) shall provide all specified and miscellaneous material and labor as required for a complete and operating system as described by these plans and specifications.
- All equipment and materials shall be installed in accordance with all local, state, and national codes and recommendations of the manufacturers. If there is a conflict in the above requirements, the more stringent shall be used.
- The contractor shall obtain and pay for all permits, fees, and inspections necessary to complete their work under this contract.
- Prior to bidding, the contractor shall visit the site to familiarize themselves with existing conditions and resolve any conflicts between existing conditions and these plans with the engineer.
- All ductwork and equipment shown on these drawings is strictly diagrammatic. All ductwork sizes shown are free area sizes. It shall be the responsibility of the contractor to ensure that items furnished under this contract will fit in the space available. The contractor shall make necessary field measurements to ascertain space requirements, including those for connections, and shall provide such sizes and shapes of equipment that are the true intent and meaning of these drawings and specifications. Any conflicts shall be resolved with the engineer.
- Prior to construction, the contractor shall coordinate their work with all other trades. All drawings indicate the general arrangement desired. The exact locations and details of construction may be such that variances are required. The drawings do not show all bends, offsets, and fittings that may be required for the complete execution of this contract. Such variances and contingencies shall be allowed for in the contractor's bid and shall be accomplished without additional cost to the owner. Prior to ordering equipment, the contractor shall prepare coordination drawings showing how their equipment is to be located in the space indicated. This drawing shall show the new and existing work of all other trades. The contractor shall contact the other contractors involved for dimensions, locations, and required clearances of the equipment they intend to provide for this job. The aforementioned coordination drawings shall be submitted to the engineer for approval.
- Do not scale these drawings. Refer to the architectural plans for dimensions.
- All equipment shall be located and installed to provide maximum space for maintenance and service.
- All materials used shall be new and free of defects. Where trade names are mentioned, they are given as a reference to the quality of the apparatus required. All materials and equipment shall bear the UL label or equivalent where applicable. Other makes may be used if approved in writing by the engineer. Provide a complete list of materials and equipment proposed for use in this contract to the engineer within ten days following the award of contract. If such list is not submitted, the contractor shall supply the materials and equipment specified or as directed by the engineer. The contractor shall provide digital copies of submittals to the engineer for review and approval prior to ordering equipment.
- Workmanship shall be first-class and performed by experienced and skilled craftsmen.
- Coordinate exact location of all diffusers/grilles with lights, sprinkler heads, and other ceiling mounted devices. See the reflected ceiling plan.
- Upon completion of the work, a certified test and balance shall be performed in accordance with "AABC" requirements. Furnish a final copy of all testing, adjusting, and balancing reports as a part of the operating and maintenance manuals. Indicate deficiencies preventing proper testing, adjusting, and balancing of systems and equipment to achieve specified performance. Adjust air handling systems to within plus or minus 10 percent of design. Adjust total air to all air outlets and inlets to within plus 10 percent and minus 5 percent of design to space. Adjust individual outlets and inlets in space to within plus or minus 10 percent of design. Adjust air handling and distribution systems to obtain required or design supply, return, and exhaust air quantities. Measure air quantities at air inlets and outlets. Vary total system air quantities by adjustment of fan speeds. Provide shaver drive changes to vary fan speed if required. Vary branch air quantities by damper regulation. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Make allowances for 50 percent loading of filters. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions. At modulating damper locations, take measurements and balance at extreme conditions.
- As applicable, the contractor shall verify the operation of all existing mechanical equipment in the area of work. All measurements shall be recorded necessarily to ascertain the proper operation of the equipment including, but not limited to, amperage, gpm flow, inlet and outlet temperatures, airflow, and inlet and outlet static pressures. Any deficiency in the rated output of the equipment shall be reported to the engineer. In any case, said report shall be submitted to the engineer upon request.
- All equipment shall be provided with permanent labels for identification. All pipe shall be labeled to indicate pipe function and direction of flow. Provide valve tags for all valves. Coordinate nomenclature and numbering with owner prior to installation.
- The contractor shall furnish a bound set of operating and maintenance instructions for all equipment to the owner upon completion of project.
- The contractor shall, at the completion of the work, clean, polish, and/or wash all exposed items of materials, equipment, and fixtures in their contract to leave such items bright and clean. The contractor shall keep the premises clear of debris from their work during construction and leave the area and building clean at completion of the contract.
- Mechanical and electrical equipment shall operate without objectionable noise or vibration, as determined by the engineer. If such objectionable noise or vibration should be produced and transmitted to occupied portions of the building, the contractor shall make the necessary changes to correct the noise or vibration without additional cost to the owner.
- The contractor shall provide a complete 1-year warranty on all labor and materials under this contract. Refrigeration compressors provided under this contract shall carry the manufacturer's published 5-year non-prorated warranty.
- The electrical contractor shall be responsible for all power connections to the equipment provided under this contract.
- The mechanical contractor shall be responsible for all control wiring for their equipment.
- Outside air intakes shall be located a minimum of 10 feet from all exhaust discharge and plumbing vents.
- Replace all filters just prior to acceptance by the owner.
- Contractors and sub-contractors shall carefully review the construction documents. Information regarding the complete work is dispersed throughout the document set and cannot be accurately determined without reference to the complete document sets.
- Route refrigerant lines from outdoor condensing units in the most direct path to the air handler. Insulate with foam insulation. Provide long line refrigeration kit as required.
- Provide an auxiliary drain pan for any air conditioning equipment. Provide the auxiliary drain pan with a float switch that stops the fan upon accumulation of condensate in the pan. Locate all equipment above the ceiling so that adequate slope is provided for all drain lines. If a condensate pump is specified, extend the auxiliary drain pan under the condensate pump. Condensate drain lines in return air plenums shall be made of type "K" copper pipe. Insulate drain lines to prevent sweating. Route condensate drains as directed on plans.

Materials and Equipment:

Ductwork:

- All sheet metal ductwork, unless otherwise specified, shall be constructed of galvanized steel sheets in accordance with SMACNA gages and standards. Duct shall be constructed for 1" static pressure and sealed to SMACNA Classification "B". Insulate all ductwork, unless otherwise noted, with foil-faced 1 pcf density fiberglass duct wrap. Insulation R-value shall be per the 2018 NC Energy Conservation Code. For rooftop equipment, line the supply and return duct to five feet beyond first elbow downstream of the discharge and intake of the unit. Duct liner shall be 1" thick, 1.5 pound density acoustical liner.

Exterior Ductwork (Outside Building Thermal Envelope):

- All exposed ductwork shall be constructed for 2" static pressure and sealed to SMACNA Classification "A". Insulate all rectangular exposed ductwork with foil-faced, 2" thick, 1.6 pcf density fiberglass duct board and wrap with a G-90 sheet metal shroud. Insulation R-value shall be per the 2018 NC Energy Conservation Code.

Single Wall Round and Flat Oval Duct:

- All spiral and flat oval duct in exposed locations shall be of single wall construction. Construction shall be of ASTM A527 galvanized steel with 4-ply spiral lock seam. Provide with factory made fittings. Sheet metal gauges shall be per ASHRAE and SMACNA specifications. Fasten all exposed connections with pop-rivets and provide with gasketed joints to eliminate duct sealer. All ductwork in exposed locations shall be furnished with a paint grip finish.

Flexible Duct:

- Shall be insulated, sound attenuating, low velocity type, and shall comply with NFPA 90A and 90B. Flexible duct shall bear the UL Class 1 air duct label as tested under UL 181. Flexible duct shall be factory-formed, composed of spiral wound corrosion resistant wire bonded to an inner fabric liner. Duct shall be factory insulated with a foil vapor barrier jacket. Insulation R-value shall be per 2018 NC Energy Conservation Code.

- The installation of flex duct shall conform to the requirements of Chapter 3 of the SMACNA HVAC Duct Construction Standards, (latest edition). Bends in flexible duct shall not be less than two duct diameters centerline radius and bends shall not begin within three inches of a sheet metal connection. Duct shall not be compressed. Support duct from the structure at intervals not to exceed ten feet. Maximum permissible sag is 1/2 inch per foot of spacing between supports. Hanger or saddle material in contact with the duct shall be wide enough so that it does not reduce the internal diameter of the duct when the supported section rests on the support and in no case shall be less than 1" wide.

Duct Elbows:

- Use full-radius elbows or square bends with turning vanes.

System Balancing:

- Provide locking quadrant type manual volume damper at each flexible duct runout. Provide splitter dampers at supply tees and extractors at all supply air branches. Provide balancing dampers in all ducts where required for system balancing as shown or as required.

Air Distribution:

- Provide all grilles, registers, and diffusers per the schedule on the drawings. Provide support from the structure for each diffuser and damper installed in a lay-in ceiling. Linear slot diffusers shall be constructed so that each slot may be independently configured to insure a full 180° air control pattern. The contractor shall coordinate finish styles and colors with the architect prior to ordering equipment. The backs of all air distribution shall be insulated from unconditioned space.

Fire Dampers:

- The contractor shall provide fire dampers at all duct penetrations of rated walls as indicated on the drawings or where required by the authority having jurisdiction. Fire dampers shall be UL labeled, Style "B" curtain type, and dynamically rated with integral factory sleeve. Blades shall be located out of the airstream for minimum airflow restriction. Installation shall be in accordance with the SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC, (latest edition). Provide suitable access door for testing and servicing damper mechanism. Prior to completion of job, the contractor shall test each damper for proper operation and make adjustments as necessary.

Flexible Duct Connections:

- Furnish and install flexible duct connectors on supply and return connectors of all air handling units.

Escutcheons:

- Furnish and install escutcheons in all places where piping or mechanical equipment penetrates a finished wall or ceiling in an exposed location.

Smoke Detectors:

- The Mechanical Contractor shall provide smoke detectors per the 2018 NC Mechanical Code, Section 606.2.1. Smoke detectors shall be UL listed for duct installation and be located in the return airstream to shut down the supply air fan upon activation. The system shall be wired so that the fan immediately shuts down upon a signal from the detector and bypasses any built-in time delays. The mechanical contractor shall furnish, install, and wire all smoke detectors per the manufacturer's recommendations. The smoke detectors shall be capable of interconnectability for multi-fan shut down and shall be wired so that activation of any detector will shut down all supply air fans on the project. Each detector shall be provided with a visible and audible signal located to indicate general location of smoke origins per the NC Mechanical Code, Section 606. Each detector shall also be provided with a trouble signal and shall be labeled.

Access Panels:

- The Mechanical Contractor shall provide access panels as required for access to valves, dampers, controls, or any other item installed under this contract where such item is concealed behind construction which renders the item inaccessible for service or adjustment. Said access panels or doors shall be fire rated as necessary to maintain the integrity of the construction wherein the panel or door is installed.

HVAC Equipment:

- All equipment shall bear the UL, CSA, met or other accredited testing laboratory label where appropriate. All equipment shall conform to the type, size, rating, and performance of that listed on the drawings under this contract. Submit shop drawings per the specifications.

Control Wiring:

- All control wiring shall be run in a metallic raceway. Raceway shall be routed parallel and perpendicular with the building structure. The metallic raceway may be omitted where plenum-rated cable is installed above an accessible ceiling within the building envelope. There shall be no splices in the control system wiring other than at terminal blocks. Wire nuts and crimp splices are not permitted.

Refrigerant Piping:

- All refrigerant piping shall be copper, sized per HVAC equipment manufacturer's recommendations, all piping shall be insulated per 2018 NC Energy Conservation Code. All insulated piping exposed to weather shall be coated with Armalex "WB" finish or equivalent. Piping installed subject to being damaged shall be provided with UV-resistant PVC jacket.

Outside Air Calculation

Unit Identification	Space Classification	Floor Area (SF)	People per 1000 SF	Total People	CFM per Person	CFM per SF	Zone Air Dist. Eff.	Required CFM	Design CFM	Remarks
PAC-1	Office Space	1010	5	6	5	0.06	0.8	113	275	1
	Conference Room	208	50	11	5	0.06	1.0	84		1
	Main Entry lobby	359	10	4	5	0.06	0.8	52		1
	Storage	54	NA	NA	NA	0.12	0.8	8		1
PAC-2	Corridor	211	NA	NA	NA	0.06	0.8	16	215	1
	Warehouse	2824	NA	NA	NA	0.06	0.8	212		1
PAC-3	Warehouse	2871	NA	NA	NA	0.06	0.8	215	215	1
	Storage	1463	NA	NA	NA	0.12	0.8	219		220

- Per 2018 NC Mechanical Code, Table 403.3.1.1.

Drawing Legend

	Ceiling Supply Diffuser
	Sidewall Supply Diffuser
	Ceiling Return Grille
	Ceiling Exhaust Grille
	Sidewall Return/Exhaust Grille
	Rectangular Duct (W = Width, H = Height)
	Round Duct (D = Diameter)
	Duct Tap with Transition from Hard to Flexible Duct
	Manual Volume Damper
	Rectangular Duct Turns Down
	Rectangular Duct Turns Up
	Round Duct Turns Down
	Round Duct Turns Up
	Fire Damper
	Connect to Existing
	Duct Mounted Smoke Detector
	Diffuser Tag <u>Diffuser Type</u> CFM
	Wall Mounted Thermostat

Marks

AHU	Air Handling Unit
EF	Exhaust Fan
HP	Heat Pump
PAC	Packaged Unit
V	Gravity Ventilator

Mechanical Systems and Equipment:

Method of Compliance: Prescriptive

Climate Zone: 4A

Exterior Design Conditions:

Winter Dry Bulb: 16°F

Summer Dry Bulb: 93°F

Interior Design Conditions:

Winter Dry Bulb: 70°F

Summer Dry Bulb: 75°F

Relative Humidity: 50%

Calculated Space Loads:

Heating Load: 126,300 BTUH

Cooling Load: 200,800 BTUH

Space Conditioning System:

Unitary: The space is served by three cooling only packaged units with auxiliary electric heat and one split-system heat pump with auxiliary electric heat.

Boiler: Not applicable to this project.

Chiller: Not applicable to this project.

Equipment Efficiencies:

Refer to mechanical schedules within drawings for efficiencies.

Equipment Schedules with Motors:

Multi-speed motors are used on this project and are included in the efficiency rating of the equipment. See drawings for efficiencies.

Designer Statement:

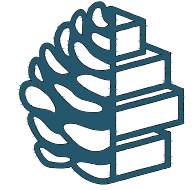
To the best of my knowledge and belief, the design of this project complies with the mechanical system and equipment requirements of the 2018 NC Mechanical Code.

HVAC Controls System Overview:

Provide PAC-1 with HVAC zoning system by "Honeywell" or equivalent. Each zone damper shall be provided with a wall-mounted temperature sensor for adjustment. The system shall be provided with motorized zone dampers capable of modulating open/closed based upon space temperature setting and cooling/heating requirements. The system shall be provided with a motorized bypass damper that opens/closes based upon the supply duct static pressure. The system shall pole the zone temperature sensors to determine mode of operation (cool/heating) and changeover between cooling/heating mode as the zone temperatures are satisfied.

General Notes:

- The contractor shall comply with all requirements of the 2018 NC Mechanical Code with regards to all mechanical work.
- The Mechanical Contractor shall coordinate the installation of all equipment, piping, and ductwork under this contract with the building structure. Contractor shall make adjustments where necessary without additional cost to owner.
- Coordinate all supply, return, and exhaust grille locations with architectural reflected ceiling plan.
- Where ducts and/or equipment are shown crossing, the larger duct or equipment shall take precedence. The contractor must provide transitions so that the smaller of the ducts is routed up and over the top of larger ducts.
- Locate thermostat and/or temperature sensor devices as shown on mechanical plans. Verify that all device locations are acceptable to owner/tenant prior to construction.
- Insulate all new rectangular supply and return air ductwork in exposed to deck ceilings with interior duct liner insulation.
- Insulate all new supply air ductwork concealed above ceilings with exterior duct wrap.
- All exposed round supply duct shall be single-wall spiral construction with a paint grip finish.
- Ductwork shall be installed tight to the underside of the roof structure unless otherwise noted.
- All exposed ductwork and hangers shall be installed straight and level and shall be supported by the structure above with a common centerline unless otherwise noted.
- All painting of exposed ductwork and diffusers/grilles shall be completed by the general contractor.



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Fan Schedule												
Mark	Manufacturer	Model	Service	Type	Airflow (CFM)	ESP (in. W.G.)	Motor Size	RPM	Drive	Volt/Ph	Weight (LBS)	Remarks
EF-1	Loren Cook	GC-128	Restroom	Ceiling Cabinet	70	0.25	29 W	750	Direct	120/1	11	1,2
EF-2	Loren Cook	GC-128	Restroom	Ceiling Cabinet	70	0.25	29 W	750	Direct	120/1	11	1,2
EF-3	Loren Cook	GC-128	Restroom	Ceiling Cabinet	70	0.25	29 W	750	Direct	120/1	11	1,2
EF-4	Loren Cook	GC-128	Restroom	Ceiling Cabinet	70	0.25	29 W	750	Direct	120/1	11	1,2

- Provide fan with backdraft damper, polystyrene grille, and hanging isolator kit to support fan from structure.
- Fan to be controlled by wall switch provided by Electrical Contractor.

Louver Schedule											
Mark	Manufacturer	Model	Service	Type	Airflow (CFM)	Size, WxH (in.)	Depth (in.)	Min. Free Area (SF)	Max. P.D. (in. W.G.)	Damper Type	Remarks
L-1	Pottorff	EFD-437	Intake	Fixed	190	12x12	4	0.3	0.1	Barometric	1,2,3

- Provide color selection chart with submittals. Final color selection shall be made by architect during submittal review.
- Louver shall be extruded aluminum with drainable blades. Provide with flanged frame and bird screen.
- Provide barometric damper with counterbalance.

Packaged Rooftop Heat Pump Schedule																	
Mark	Manufacturer	Tonnage	Model	ARI Cooling (MBH)	SEER	Supply Air (CFM)	Outside Air (CFM)	ESP (in. W.G.)	Fan (HP)	Drive	Electric Heat (KW)	Heat Stages	Volt/Ph	MCA	MOCP	Weight (LBS)	Remarks
PAC-1	Trane	5.0	TSK060	59.5	14.0	1750	275	0.6	1.0	Direct	12.0	2	208/3	42.0	45	859	1,2,3,5,7
PAC-2	Trane	5.0	TSK060	59.5	14.0	1750	215	0.6	1.0	Direct	12.0	2	208/3	42.0	45	859	1,2,3,4,5,6
PAC-3	Trane	5.0	TSK060	59.5	14.0	1750	215	0.6	1.0	Direct	12.0	2	208/3	42.0	45	859	1,2,3,4,5,6

- Cooling capacity based on indoor entering air condition of 80°F dry bulb, 67°F wet bulb and outdoor air condition of 95°F dry bulb. Heating capacity based on indoor entering air condition of 70°F dry bulb and outdoor air condition of 47°F dry bulb.
- Unit shall utilize R454B. Provide unit with anti-short cycle timer, standard condenser coil with hail guard, 2" MERV 8 pleated filters, condensate drain pan overflow switch, and refrigerant detector. Unit shall be configured for horizontal airflow.
- Provide unit with manufacturer's 14" roof curb.
- Provide unit with manufacturer's touchscreen display, 7-day programmable thermostat.
- Provide unit with 100% outdoor air, comparative enthalpy, fully modulating economizer. Provide with field installed duct mounted barometric relief for building pressure relief.
- Fan shall shut down upon smoke alarm. Mechanical contractor shall provide duct mounted smoke detector. Controls, including audible and visible alarms, shall be provided by the mechanical contractor.
- The system shall be provided with a zone control system with bypass for space temperature control. Refer to "HVAC Controls System Overview" and "Zone Damper Schedule" for additional information.

Zone Damper Schedule							
Mark	System	Service	Size (in.)	Type	Max. Airflow (CFM)	Min. Airflow (CFM)	Remarks
ZD1.1	PAC-1	Zone Supply	16x10	Opposed Blade	950	190	1,2
ZD1.2	PAC-1	Zone Supply	10x10	Opposed Blade	430	90	1,2
ZD1.3	PAC-1	Zone Supply	8x10	Opposed Blade	370	75	1,2
BP1.1	PAC-1	Bypass	12x12	Opposed Blade	1400	0	1,3

- Damper to be used in conjunction with HVAC zoning system. Provide damper with electric actuator and 120V/24V step down transformer.
- Provide zone supply damper with wall mounted temperature sensor/controller for zone supply setpoint. Connect sensor through central front end HVAC zoning system control panel.
- Provide bypass damper with communicating bypass controller. Bypass damper shall modulate open/closed to maintain proper duct static pressure.

Split System Heat Pump Schedule												
Mark	Manufacturer	Tonnage	Model	ARI Cooling (MBH)	ARI Heating (MBH)	SEER2	HSPF2	Volt/Ph	MCA	MOCP	Weight (LBS)	Remarks
HP-1	Trane	3.0	5TWA4036	33.6	32.0	14.3	8.0	208/3	19.0	30	222	1,2,3,4

- Cooling capacity based on indoor entering air condition of 80°F dry bulb, 67°F wet bulb and outdoor air condition of 95°F dry bulb. Heating capacity based on indoor entering air condition of 70°F dry bulb and outdoor air condition of 47°F dry bulb.
- Standard unit features shall include filter drier, front seating service valves, internal pressure relief valve, internal thermal overload, suction line accumulator, high pressure switch, and loss of charge switch.
- Accessory unit features shall include: compressor start assist, crankcase heater, thermostatic expansion valve, and time delay relay.
- Refrigerant lines shall be sized and approved by the equipment manufacturer based upon field measured piping lengths. Mechanical contractor shall provide lengths, bends, and routing to manufacturer for proper pipe sizing. Provide all of the manufacturer's recommended components. Piping shall be sized so that maximum capacity loss due to line length is 3%. All piping shall be hard copper pipe.

Split System Air Handling Unit Schedule													
Mark	Manufacturer	Model	SA (CFM)	OA (CFM)	ESP (in. W.G.)	Fan (HP)	Heat (KW)	Heat Stages	Volt/Ph	MCA	MOCP	Weight (LBS)	Remarks
AHU-1	Trane	5TEM4D04AC31	1050	220	0.5	1/2	7.2	1	208/3	29.0	30	110	1,2,3

- Provide air handling unit with factory installed electric heater, filter rack, disconnect switch, and single point wiring connection.
- Provide unit with manufacturer's touchscreen display, 7-day programmable thermostat.
- Provide unit with 120 Volt, hardwired, plenum rated condensate pump, auxiliary drain pan, and float switch.

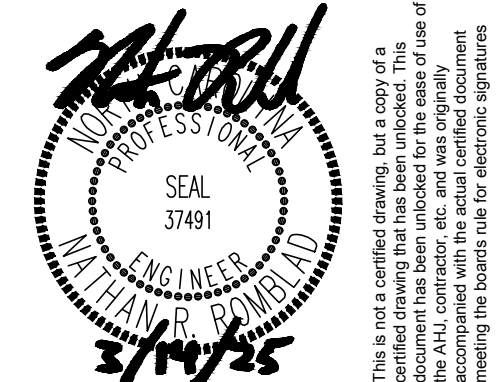
Air Distribution Schedule							
Mark	Manufacturer	Model	Description	Panel Size	Type	Neck Size	Remarks
SA1	Titus	TMS	Steel, High Performance, Full Face, Stamped Square, 4-Way	24x24	Lay-In	6"Ø	1,6
SA2	Titus	TMS	Steel, High Performance, Full Face, Stamped Square, 4-Way	24x24	Lay-In	10"Ø	1,6
SB1	Titus	300RS	Steel, Double Deflection, Short Front Blades, 3/4" Blade Spacing	NA	Surface Mount	10x6	1,3,5
SB2	Titus	300RS	Steel, Double Deflection, Short Front Blades, 3/4" Blade Spacing	NA	Surface Mount	16x6	1,3,5
SB3	Titus	300RS	Steel, Double Deflection, Short Front Blades, 3/4" Blade Spacing	NA	Surface Mount	20x6	1,3,5
SC1	Titus	S300FS	Aluminum, Double Deflection, Short Front Blades, 3/4" Blade Spacing	NA	Spiral Duct Mount	10x6	1,4,5
SD1	Titus	TDC	Steel, Louvered, Beveled Drop Face, 4-Way	12x12	Surface Mount	8"Ø	1,6
RA1	Titus	PAR	Steel, Perforated, Duct Collar	24x24	Lay-In	8"Ø	1,6
RA2	Titus	PAR	Steel, Perforated, Duct Collar	24x24	Lay-In	10"Ø	1,6
RB1	Titus	350RL	Steel, 35° Deflection, 3/4" Blade Spacing, Parallel to Long Dimension	NA	Surface Mount	18x8	1,2,5
RB2	Titus	350RL	Steel, 35° Deflection, 3/4" Blade Spacing, Parallel to Long Dimension	NA	Surface Mount	18x14	1,2,5
RB3	Titus	350RL	Steel, 35° Deflection, 3/4" Blade Spacing, Parallel to Long Dimension	NA	Surface Mount	16x16	1,2,5

- Verify all ceiling and wall types with architectural plans. Coordinate color with Architect.
- Provide with square-to-round transition as required.
- Provide with integral opposed blade balancing damper.
- Provide with integral balancing damper extractor. Duct sizes listed on mechanical drawings are inside clear dimension of single-wall spiral duct.
- All surface & duct mounted diffusers/grilles shall be painted to match surrounding surface. Coordinate painting with General Contractor.
- Provide with manufacturer's foil-faced backpan insulation.

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DRAWING TITLE

MECHANICAL SCHEDULES

DRAWING NUMBER

M-002

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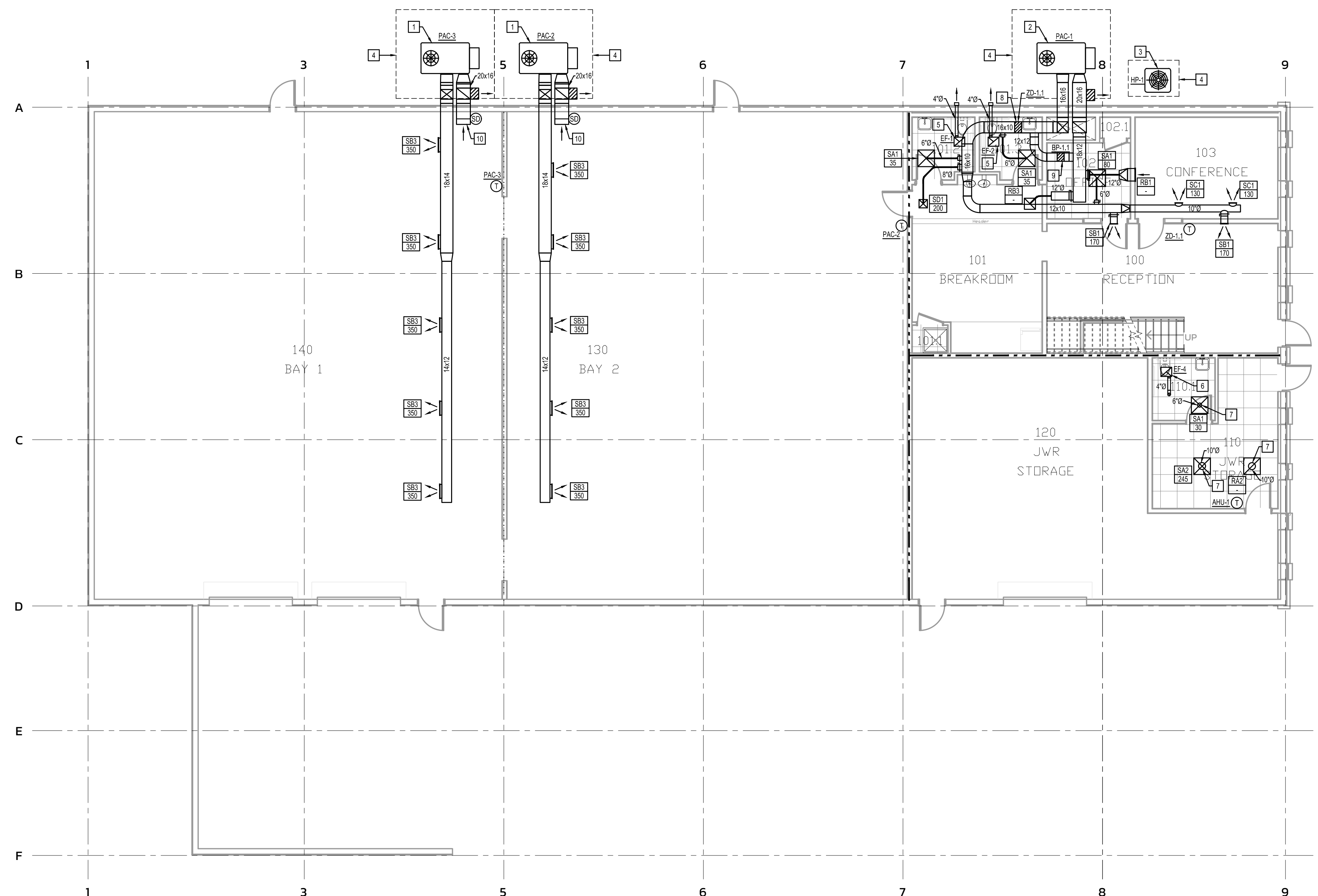
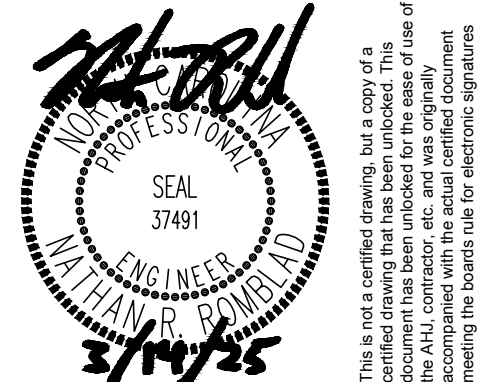


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1 First Floor Plan - Mechanical
Scale: 1/8" = 1' - 0"

Plan Notes:

1. Install packaged HVAC unit per manufacturer's installation instructions and clearances at grade level on concrete housekeeping pad provided by General Contractor. Coordinate exact pad size and location requirements with General Contractor at beginning of construction. Spill condensate into landscaping, so as not to cause a nuisance. Maintain 10'-0" between outside air intakes and any exhaust or plumbing vent terminations. Refer to "HVAC Equipment Pad Mounting Detail" for additional mounting information. Route supply and return air ducts horizontally. Provide duct supports by "MIRO Industries, Inc." or equivalent. Barometric relief shall be field mounted to the return duct as indicated. Turn supply and return air duct up wall and into building tight to underside of structure. Refer to "Mechanical Notes and Specifications" for exterior ductwork requirements.
2. Install packaged HVAC unit per manufacturer's installation instructions and clearances at grade level on concrete housekeeping pad provided by General Contractor. Coordinate exact pad size and location requirements with General Contractor at beginning of construction. Spill condensate into landscaping, so as not to cause a nuisance. Maintain 10'-0" between outside air intakes and any exhaust or plumbing vent terminations. Refer to "HVAC Equipment Pad Mounting Detail" for additional mounting information. Route supply and return air ducts into building low and turn up within duct chase as indicated and continue into second floor ceiling space. Provide duct supports by "MIRO Industries, Inc." or equivalent. Barometric relief shall be field mounted to the return duct as indicated. Provide outdoor enclosure for return air smoke detector. Route supply and return air duct into building low and turn up within chase. Refer to "Mechanical Notes and Specifications" for exterior ductwork requirements.
3. Install new heat pump on concrete housekeeping pad per manufacturer's installation instructions and clearances. Refer to "HVAC Equipment Pad Mounting Detail" for additional information.
4. Manufacturer's required installation clearances.
5. Install ceiling mounted exhaust fan per manufacturer's installation instructions and clearances. Route exhaust duct through ceiling space as indicated and terminate with wall cap. Maintain 10'-0" from any outside air intakes.
6. Install ceiling mounted exhaust fan per manufacturer's installation instructions and clearances. Route exhaust duct up through mezzanine floor. Refer to "Second Floor Plan - Mechanical" for continuation. Continue through ceiling space as indicated and terminate with wall cap.
7. Route supply/return duct down through floor of mezzanine to diffuser/grille within ceiling below.
8. Install new zone damper per manufacturer's installation instructions and clearances.
9. Install new bypass damper per manufacturer's installation instructions and clearances.
10. End of return duct shall be open to warehouse, provide with bird screen.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

Existing Wall to Remain	_____
New Wall being Constructed	_____
Wall to Deck	_____
Two Hour Fire Barrier	_____
Three Hour Fire Barrier	_____

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**FIRST
FLOOR PLAN -
MECHANICAL**

DRAWING NUMBER

M-101

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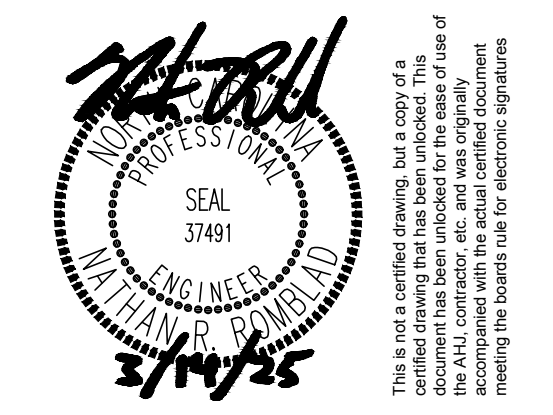
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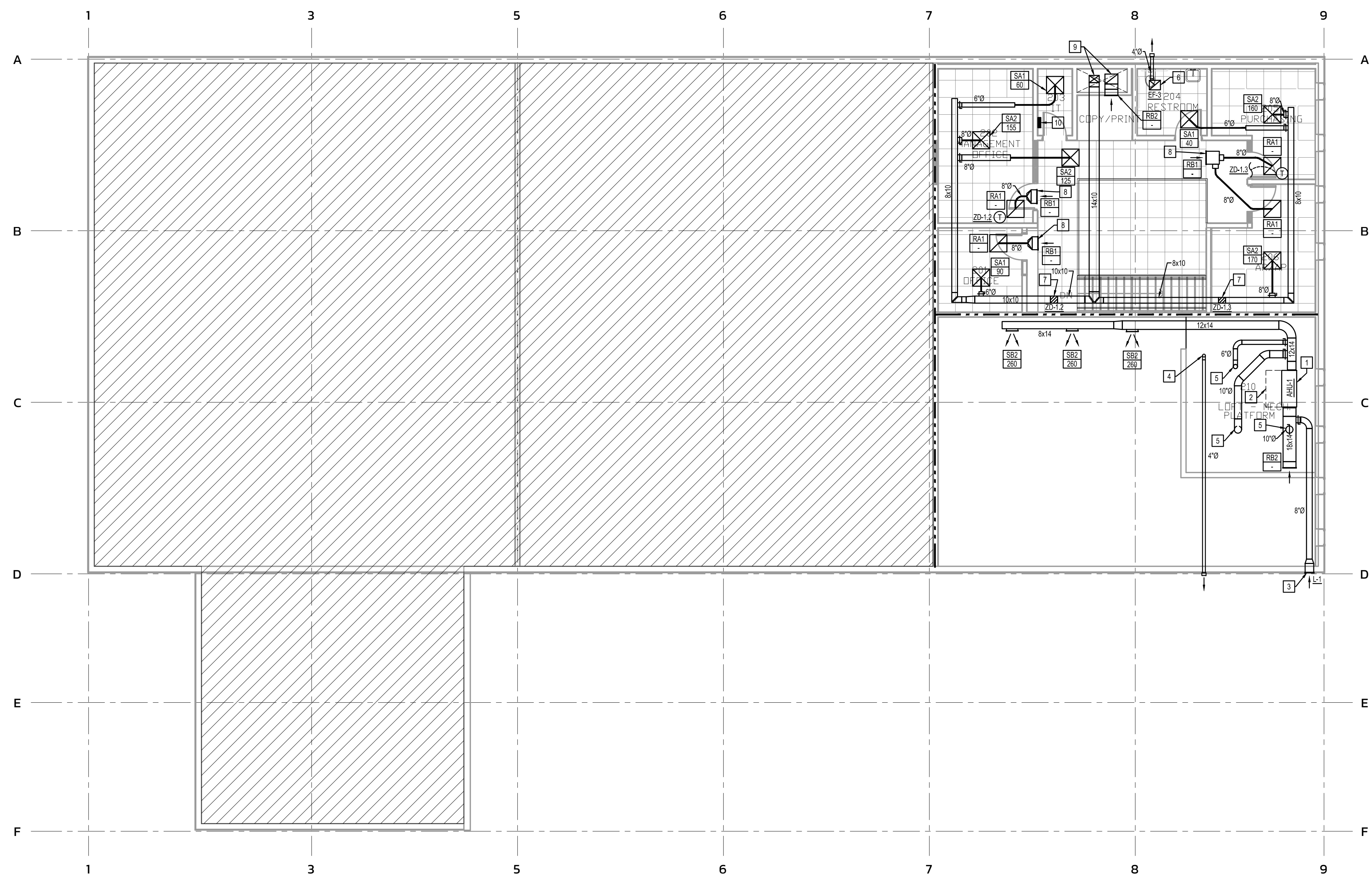
DRAWING TITLE

SECOND
FLOOR PLAN -
MECHANICAL

DRAWING NUMBER

M-102

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Second Floor Plan - Mechanical
Scale: 1/8" = 1' - 0"

- Plan Notes:**
1. Install air handling unit horizontally on floor of mezzanine per manufacturer's installation instructions and clearances. Route outside air duct through ceiling space to lower high in exterior wall. Route refrigerant piping through ceiling and turn down within exterior wall to heat pump. Pump condensate adjacent to refrigerant piping and spill into landscaping. Refer to "Air Handling Unit Hanging Detail" for additional information or support from mezzanine floor.
 2. Manufacturer's required installation clearances.
 3. Install lower high in exterior wall per manufacturer's installation instructions and clearances. Maintain 10'-0" between outside air intakes and exhaust outlets.
 4. Continue exhaust duct up through mezzanine floor and route high through warehouse ceiling space. Terminate with wall cap.
 5. Continue supply/return up through mezzanine floor from diffuser/grille below and connect to main supply/return duct as indicated.
 6. Install ceiling mounted exhaust fan per manufacturer's installation instructions and clearances. Route exhaust duct through ceiling space as indicated and terminate with wall cap. Maintain 10'-0" from any outside air intakes.
 7. Install new zone damper per manufacturer's installation instructions and clearances.
 8. Install return air transfer grille in header below lay-in ceiling.
 9. Route supply and return duct up from floor below. Install return grille high in wall, below ceiling. Route supply through ceiling space, sloping with angle of roof in order to maintain lay-in ceiling height as high as possible.
 10. Install HVAC control panel for zone damper system within IT Room. Coordinate exact location with General Contractor, Electrical Contractor, and tenant.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

Existing Wall to Remain	—————
New Wall being Constructed	—————
Wall to Deck
Two Hour Fire Barrier	—————
Three Hour Fire Barrier	—————



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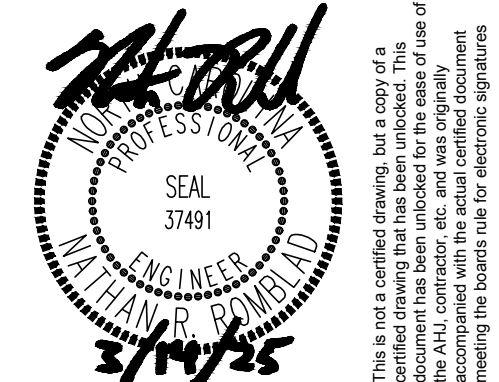
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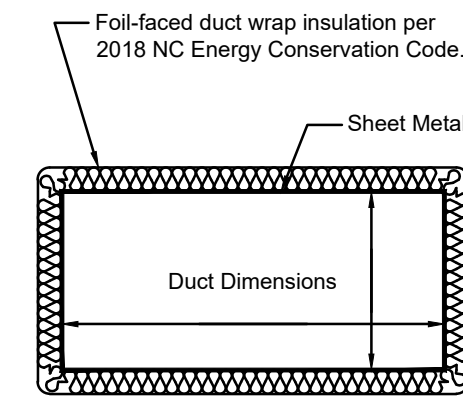
DRAWING TITLE

MECHANICAL DETAILS

DRAWING NUMBER

M-201

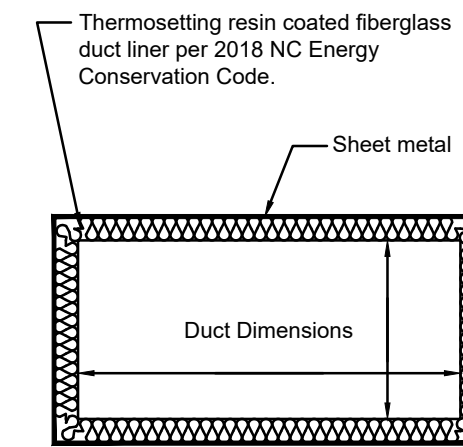
These drawings will be at the scale indicated when plotted at 24" x 36"



- Notes:
- All duct dimensions shown on these drawings are inside clear.
 - Provide a minimum of R-6 insulation when duct is located in unconditioned space.
 - Provide a minimum of R-8 insulation when duct is located outside the building envelope.

2 Concealed Rectangular Duct Fabrication Detail

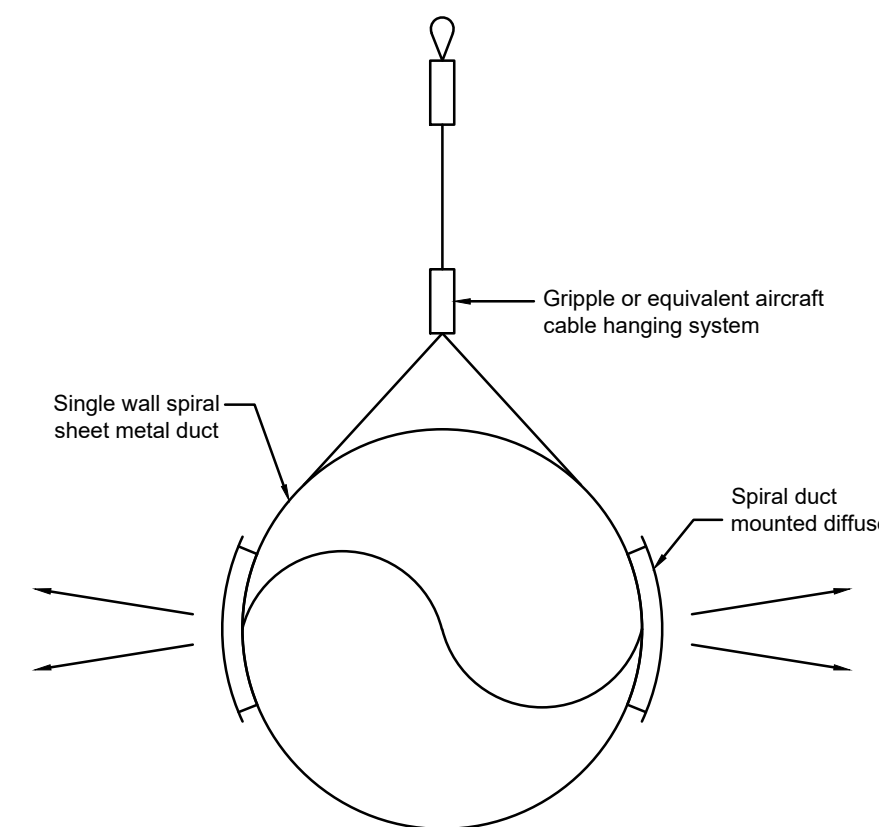
Scale: None



- Notes:
- All duct dimensions shown on these drawings are inside clear.
 - Provide a minimum of R-6 insulation when duct is located in unconditioned space.
 - Provide a minimum of R-8 insulation when duct is located outside the building envelope.

5 Exposed Rectangular Duct Fabrication Detail

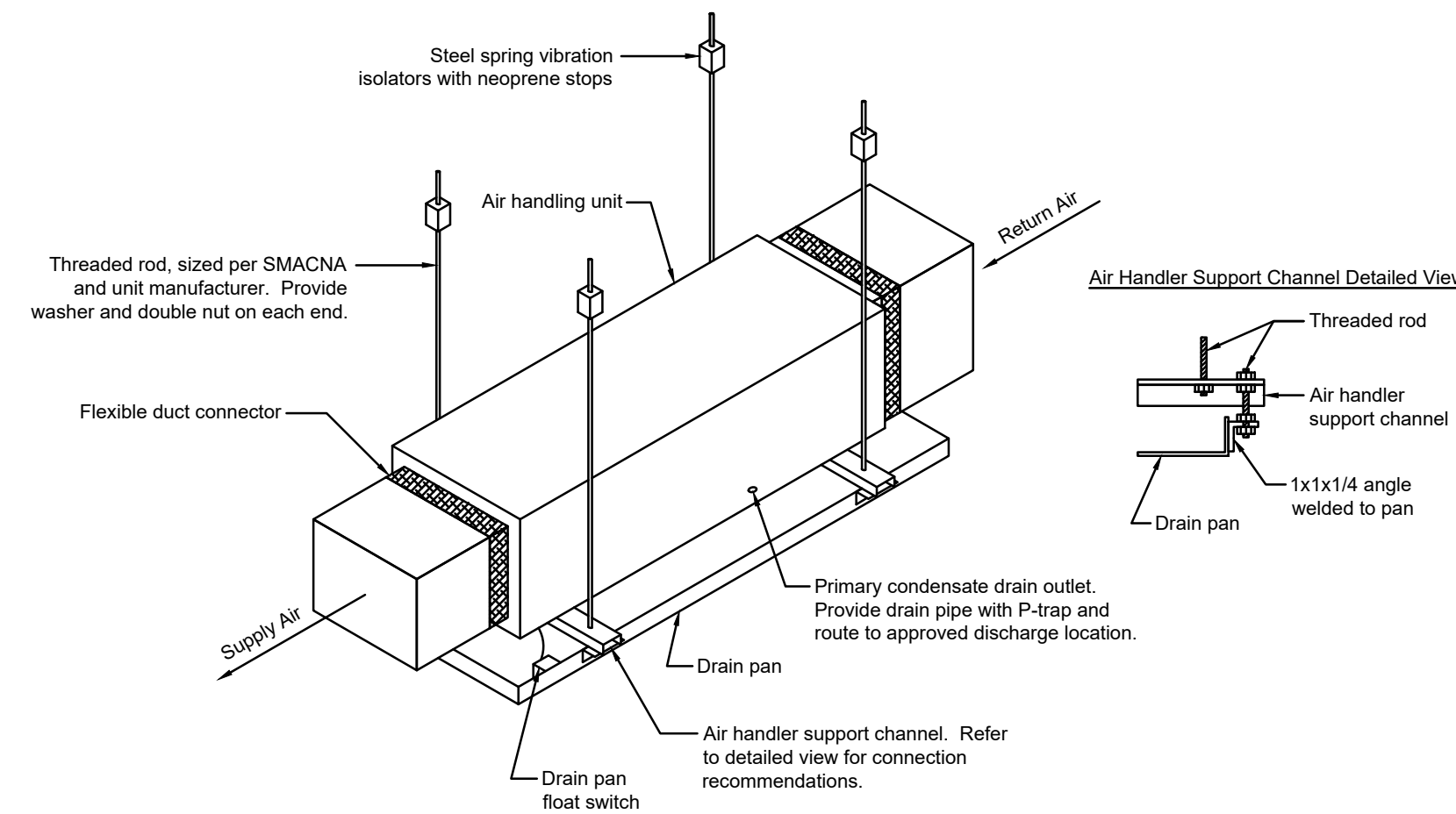
Scale: None



- Notes:
- All duct dimensions shown on these drawings are inside clear.
 - Refer to specifications for duct finish.
 - Route all duct level and parallel to the floor.
 - Space and install duct hangers per latest edition of SMACNA.

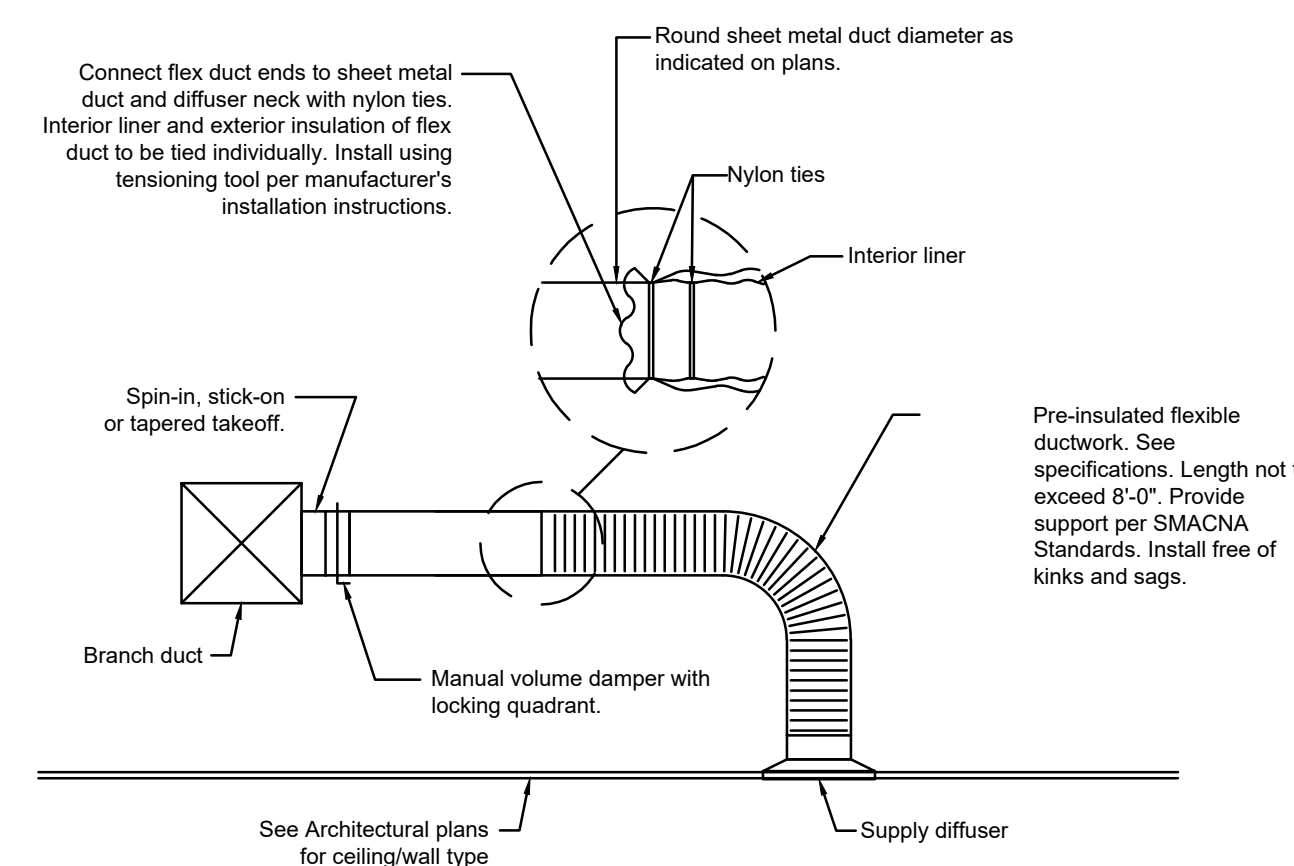
3 Exposed Spiral Duct and Diffuser Detail

Scale: None



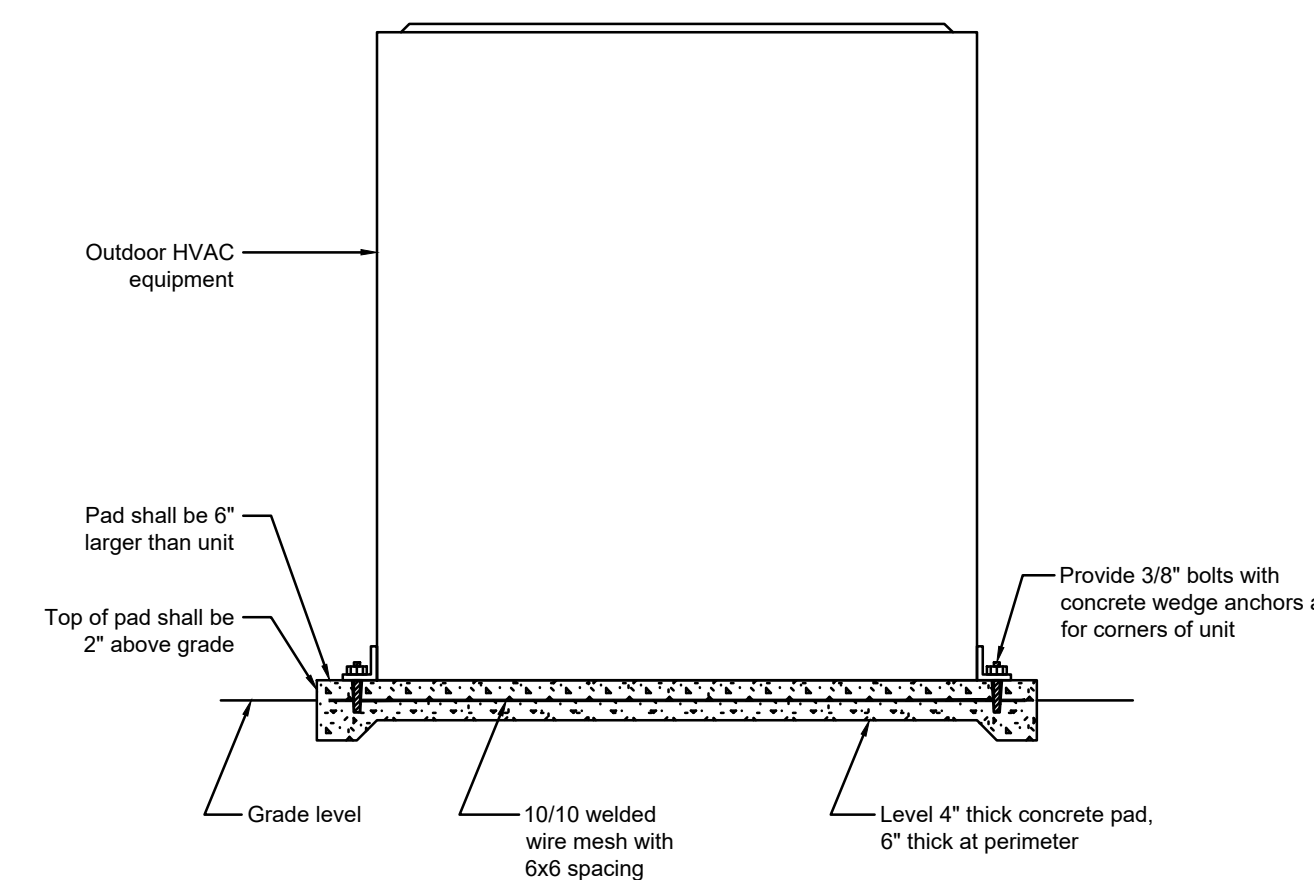
6 Air Handling Unit Hanging Detail

Scale: None



4 Flexible Duct Installation Detail

Scale: None



7 HVAC Equipment Pad Mounting Detail

Scale: None

Classified by Underwriters Laboratories, Inc. to UL 1479 and CANULC S115

System No. W-L-1252

ANSI/UL1479 (ASTM E814)	CANULC S115
F Ratings — 1, 2, 3 and 4 Hr (See Items 1 and 3)	F Ratings — 1, 2, 3 and 4 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft	FH Ratings — 1, 2, 3 and 4 Hr (See Items 1 and 3)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Rating — 0 Hr
	L Rating At Ambient — Less Than 1 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft

W-L-1252

SECTION A-A

1. Wall Assembly — The 1, 2, 3 or 4 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

- Studs — Wall framing shall consist of steel channel studs. Steel studs to be min 3-1/2 in. (89 mm) wide spaced max 24 in. (610 mm) OC.
- Gypsum Board — Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall or Partition Design. Max diam of opening is 5-3/4 in. (146 mm).

The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant — One metallic pipe, conduit or tube to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tube and periphery of opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm). Pipe, conduit or tube to be rigidly supported on both sides of wall assembly.

- Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
- Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
- Conduit — Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit.
- Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic conduit.
- Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
- Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. Fill, Void or Cavity Material — Sealant — Fill material applied within annulus. Flush with both surfaces of wall. Type and thickness of sealant is dependent on F and FH Ratings as indicated in Table below. An additional 1/2 in. (13 mm) diameter bead of sealant applied at penetrant/gypsum board interface at point contact location on both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE MAX Intumescent Sealant or CP 606 Sealant

F, FH Ratings hr	Sealant Type	Sealant Thickness, In. (mm)
1, 2	FS-ONE, FS-ONE MAX or CP 606	5/8 (16)
3	FS-ONE, FS-ONE MAX or CP 606	1 (25)
4	FS-ONE, FS-ONE MAX	1 (25)

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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Gypsum Framed Walls

1, 2, 3, or 4 Hour Penetration Firestop

1 Metallic Pipe, Conduit, or Tubing

Scale: None

4 Flexible Duct Installation Detail

Scale: None

7 HVAC Equipment Pad Mounting Detail

Scale: None

GENERAL NOTES AND REQUIREMENTS.

- Workmanship shall conform to NECA installation standards including NECA 1.
- Installation shall comply with National Electrical Code (NEC/NFPA 70), state building code, and all requirements of the local inspector (furnish inspection certificate). All work shall be by licensed electrical contractor.
- The contractor shall refer to the architectural plans for floor plan dimensions and not scale these drawings. The location of all wall mounted devices, including mounting heights, shall be field verified with the architect prior to rough-in. Coordinate locations of all light fixtures with reflected ceiling plans. Light fixtures installed in mechanical areas shall avoid mechanical piping, equipment, ductwork, etc.
- Contractor shall comply with all requirements of the 2018 NC Building Code and Accessibility Code which are applicable to this project regardless of whether all details are indicated on plans. All receptacles, switches, and other electrical devices required to be ADA accessible shall be mounted per ANSI 117.1 sections 308 AND 309.
- All electrical equipment shall be installed so that all code required and manufacturer recommended working/ servicing clearances are maintained. Installation shall fully comply with NEC 110.26 and NEC 408.18 for clearance requirements.
- All wall outlet boxes, receptacles, switches, cover plates, etc. shall be commercial grade, standard or heavy duty except where specified. Verify color/ material for all devices and cover plates prior to order. Provide label for each device identifying the circuit serving the device. Verify if label should be on inside or outside face of cover plate with building management/ tenant. All 15 and 20 amp, 125V and 250V non-locking receptacles shall be listed as tamper resistant, in all locations outlined per NEC 408.12.
- The electrical contractor shall coordinate any and all work with other trades involved in the project, prior to installation of electrical equipment, so as to avoid conflicts during construction and to allow for optimum maintenance and working space.
- All branch circuits shall be in 3/4" minimum zinc-coated EMT, IMC, or RMC as permitted or required by the NEC. LPMC (or FMC as permitted) shall be used for final connections to equipment subject to vibration. A deduct price for MC cable may be offered for approval, where permitted by owner and NEC and conduits completely concealed from view. Schedule 40 PVC conduit may be used for underground feeders/ branch circuits or underground low voltage system conduits located below slab on grade or buried outside of the building, or in concrete block walls. PVC schedule 80 conduit may be used on the building exterior (expansion fittings may be used above grade) where permitted by code. Contractor shall include cost of painting all exposed conduits subject to public view. Conduit sizes noted on these plans are based on EMT conduit. Where other permitted raceway types are used, contractor shall adjust conduit sizes as necessary based on type of raceway used and allowable fill. Provide pull wire in all empty conduit. Junction box covers shall be permanently labeled and conduit shall be labeled every 10'. All labels shall be machine generated onto adhesive labels or tags, or engraved on plastic laminated placards or brass tags.
- All wire and conduit sizes are based on 75°C THHN/THHW copper conductors unless otherwise noted. All conductors, terminations larger than 50A & devices shall be rated for minimum 75°C. All conductor and conduit sizes are calculated based on installation of no more than 3 current carrying conductors per conduit, neutral(s) included. Unless otherwise noted, contractor shall not install more than 3 current carrying conductors per conduit with the following exception: up to 9 current carrying conductors may be used in a single raceway where permitted by the NEC when minimum #12 AVGH (THHN 90°C) is used and when all included circuits are protected upstream by 20 amp overcurrent devices and no other derating conditions exist.
- All conductors shall be copper type THHN, or XHHW, solid for #10 AWG or #12 AWG, and stranded for all larger sizes. Minimum conductor size shall be #12.
- Conduits and cables shall be concealed wherever possible by either routing above ceiling, in interstitial spaces or running exposed in unfinished spaces where possible. Conduits may be run exposed in mechanical areas or other areas not subject to public view where approved by the owner. Wherever conduits or cables are approved to be exposed, conduits and cables shall be run parallel or perpendicular to structural elements and shall be run and bundled in groups, and the installation shall be neat and orderly. Even when exposed, conduits and cables shall be routed to minimize view from personnel. Seal all penetrations air tight around all conduits passing through walls or floors. Escutcheon plates shall be used when passing through walls that are visible to the public. Use appropriate penetration protection when conduit passes into or through rated assemblies.
- Where branch circuit total length is greater than sixty five (65') feet from the panel, see voltage drop schedule for wire size adjustment.
- All mounting heights indicated are given to the bottom of the device, unless noted otherwise.
- Where used in these documents, the word "provide" shall mean to furnish and install the item or equipment as well as make the final connection required.
- All light fixtures shall be supported independently of the suspended ceiling system.
- The electrical contractor shall provide all necessary disconnects, switches, receptacles, etc. under the electrical bid and shall include all necessary circuit and make final connections to the equipment furnish by all suppliers. Coordinate closely with other trades.
- All breakers, disconnect switches, and fuses sizes, indicated for mechanical equipment, shall be verified with equipment supplier and mechanical contractor, before the purchase or installation of that equipment.
- All disconnect switches are to be fusible type. Fuses shall be the appropriate type for the load served by Bussmann or equal. Unless unsuitable, fuses rated 1200A or higher shall be Class L, fast-acting, and shall have a clearing time of 0.07 seconds at the available fault current per NEC 240.67. Submit fuse trip curves along with available fault current at the service entrance for engineer verification prior to beginning work or ordering equipment. The contractor shall compare all installed equipment nameplate information with the electrical plans/ schedules and notify the engineer immediately of any discrepancies. The contractor shall coordinate all fuse sizes with actual installed equipment nameplate information prior to purchasing or installing fuses. Where the nameplate information does not indicate an overcurrent protection size or maximum ampacity rating, fuses shall be installed per the electrical plans assuming other equipment parameters are in agreement with nameplate data.
- Provide grounding conductor for all circuits per NEC. Building ground shall meet all requirements of NEC 250.
- Ground telephone equipment per NEC. If telephone service is not located within 20' of electrical service, then provide separate grounding electrode as required per NEC 800.
- All multiwire branch circuits shall have multiple breakers as required by NEC 210.7.
- All new circuits 100 amps and larger shall be megger tested prior to energizing. All other circuits shall be tested for continuity prior to energizing.

- Dielectric absorption tests shall be performed with a 2,500 volt DC megger.
- Megger tests shall be performed at a DC voltage of 1,000 volts for 600 volt rated equipment, and at a DC voltage of 500 volts for 120-300 volt rated equipment.
- The megger test shall be performed between each pair of conductors and from each conductor to ground. Each test shall be performed for 15 seconds or until the insulation resistance value stabilizes. The insulation resistance between conductors, and from each conductor to ground, shall be 25 megohms (120-300V) or 100 megohms (600V) minimum in one minute or less. In addition, the lowest insulation resistance value shall not differ from the highest value by more than 20 percent. If all megger readings for a given circuit or feeder are above 1000-megohms, the 20% balance requirement may be waived.
- Continuity checks shall be performed with a low voltage DC meter, light or bell.
- The resistance to ground shall be measured using either the three point method or the fall-of-potential method.
- Test instruments shall be calibrated to national standards to insure accuracy of tests. These calibration reports shall be made available to the Owner when requested. Depending upon frequency of use, the instruments shall be calibrated at least every 12-months.

- The electrical contractor shall patch any wall, ceiling, or floor opening (or penetration) resulting from demolition or new work in existing areas. Any rated constructions or assemblies affected shall be patched, protected and refinished as necessary to maintain the original appearance as well as the rating.
- The contractor is responsible for proper disposal of all waste materials, demo materials and other trash. This includes but is not limited to proper disposal of mercury containing lamps, batteries, recyclable materials.
- Contractor shall provide the engineer with shop drawings/submittal data for lights, switches, switchgear/panels, floor boxes, fire alarm devices, and any other products deemed necessary for review. These shall be provided in editable PDF format via email through project manager, general contractor, architect, or other proper channel. Expected review duration, and industry standard, is ten business days from date of receipt by engineer. Similarly, RFI response duration, and industry standard, is five business days from date of receipt by engineer. All submissions should include and acknowledge this review duration unless otherwise specifically discussed and agreed upon in advance.
- It is the sole responsibility of the contractor to coordinate w/ all other trades regarding voltages, loads, circuit breakers, etc. prior to beginning any work.
- All switchgear/ panels shall be commercial grade from a reputable national manufacturer such as Square D, Eaton, Siemens and ABB. Panels shall be rated as indicated on panel schedule/ electrical riser diagram. If discrepancies are found, contact engineer immediately.
- Engineer has reserved the right to choose the software package(s) deemed most efficient to deliver these plans for permitting, bid, and construction. Engineer considers any other digital files created during this process as instruments of service, and as such remain the property of the engineer. The contractor should not assume that digital files in any format will be made available during bidding or after award other than PDFs. If digital files are requested, engineer reserves the right to selectively provide them when available and/or may request additional considerations for the time incurred to prepare the files.
- Contractor shall verify all areas that are used as a return plenum with mechanical contractor and provide plenum rated cable for all cables not run in metal conduit. PVC is not allowed in plenum space. This "cable" includes all telecommunications, fire alarm, or control wiring above ceiling.
- Contractor shall complete seismic requirements of the area.
- All underground raceway entering the building, (i.e. through a foundation wall or through the floor) shall be sealed in accordance with NEC 225.27 and 300.5(F). Raceway seals and sealants shall be approved and listed for the specific application and materials.
- Contractor shall provide support bushings/conduit stops for vertical branch circuits and feeders where required per NEC 300.19(A).
- Bi-Directional Antenna system (BDA) could be required for this facility. Contractor shall test the site before and after construction activities per NC Fire Code section 510.4. If it is deemed that a BDA system is necessary based on these tests, a full BDA system shall be installed that meets all requirements of NC Fire Code section 510.
- Electrical boxes, conduit, and wiring shall not be recessed into or penetrate structural members. Boxes/conduits shall be surface mounted to structural member and/or recessed in stud wall where possible. Coordinate with architect.
- All equipment associated with or connected to the electrical, fire alarm or data systems or otherwise included in the drawings/ scope of work shall be listed and labeled by a third party that is acceptable to the AHJ.
- All non-locking type 125 volt, 15 and 20 amp receptacles that are controlled by an automatic control device or that incorporate control features that remove power from the outlet for the purpose of energy management or building automation shall be labeled per NEC 406.3(E).

Electrical Abbreviations

A	above- indicates a device is to be mounted with the bottom of box 2" above back splash unless noted otherwise.
AFF	above finished floor
AG	combination of 'A' and 'GFCI' (above counter and ground fault circuit interrupter)
ARCH	architect
C	ceiling- indicates a device is to be mounted in flush ceiling tile.
EC	electrical contractor
EX	existing
EXT	exterior
FA	fire alarm
FURN	furniture
G	GFCI- indicates a device with integral ground fault circuit interrupter (GFCI) protection and/or protected by upstream GFCI outlet.
GFI/ GFCI	same as 'G'
H	horizontal orientation of device
HG	hospital grade
IG	device shall have isolated ground and will require isolated ground circuitry back to an isolated ground bar in panelboard.
JB	junction box
MC	MC cable (when referring to NEC wiring methods, or wiring type)
MC	mechanical contractor (when not referring to NEC wiring methods or type)
MECH	mechanical contractor
NTS	not to scale
OC	on center
PC	plumbing contractor
PLUMB	plumbing contractor
S	surface- indicates device is to be surface mounted.
TP	tamper proof device per NEC 406.12
WI	with
WP	indicates a device rated for exterior use and is weatherproof or weather resistant with an approved weatherproof in-use cover.

Voltage Drop Schedule

120 V branch circuits up to 8 amps (1.0 kVA)		
Distance of run, in feet		Wire size
1'	- 120'	#12
121'	- 190'	#10
191'	- 300'	#8
301'	- 470'	#6

120 V branch circuits from 8 to 14 amps (1.7 kVA)		
Distance of run, in feet		Wire size
1'	- 65'	#12
66'	- 110'	#10
111'	- 170'	#8
171'	- 270'	#6

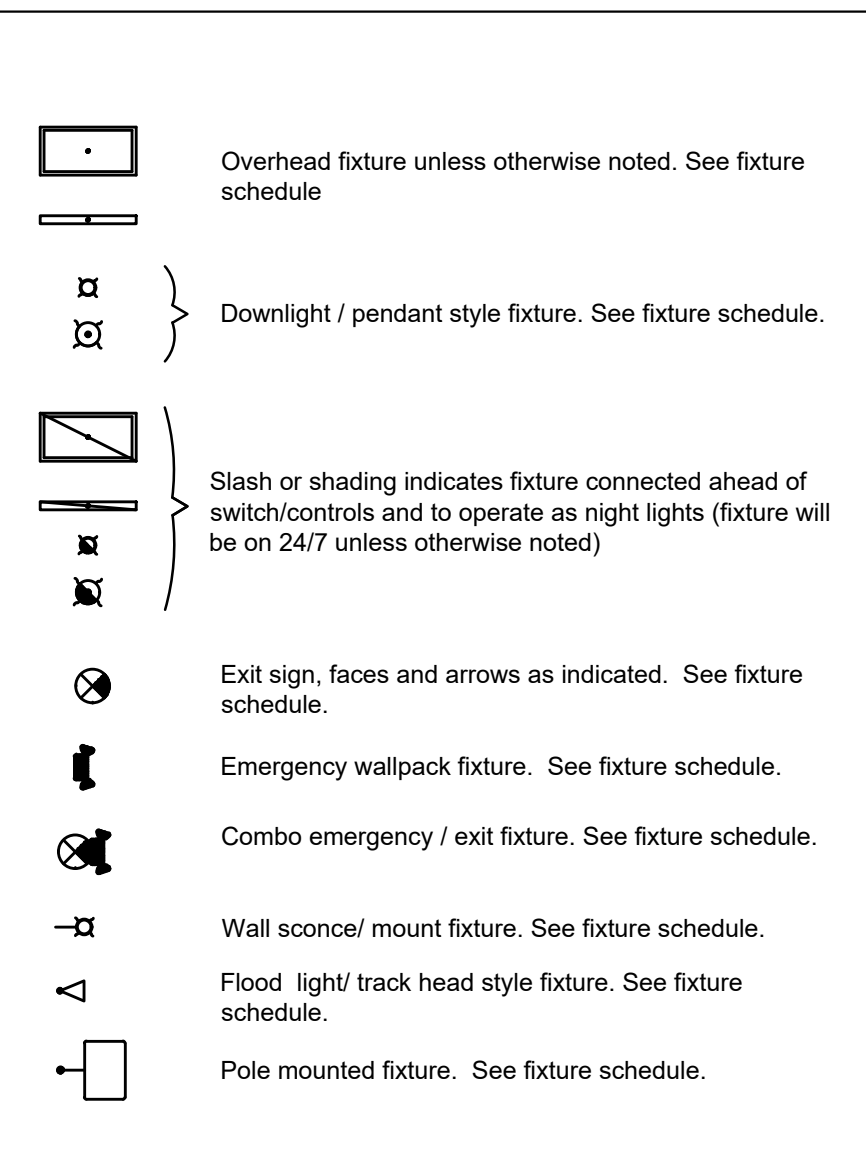
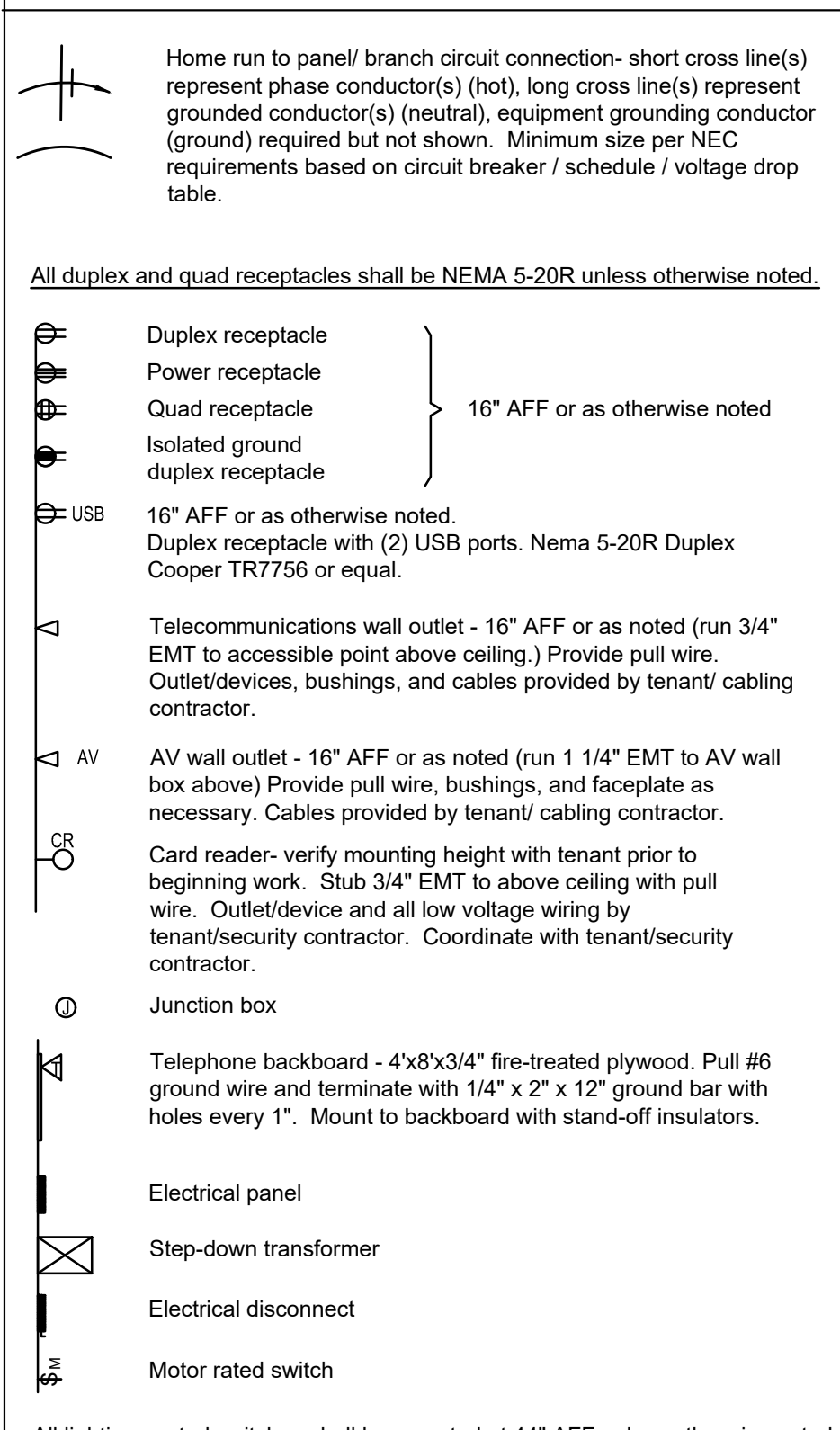
277 V branch circuits up to 14 amps (3.9 kVA)		
Distance of run, in feet		Wire size
1'	- 160'	#12
161'	- 250'	#10
251'	- 390'	#8
391'	- 620'	#6

Contractor shall upsized branch circuit conductors based on load and length as indicated in schedule above. Wire sizes indicated in general notes and schedules are minimum wire sizes and shall be adjusted for length.

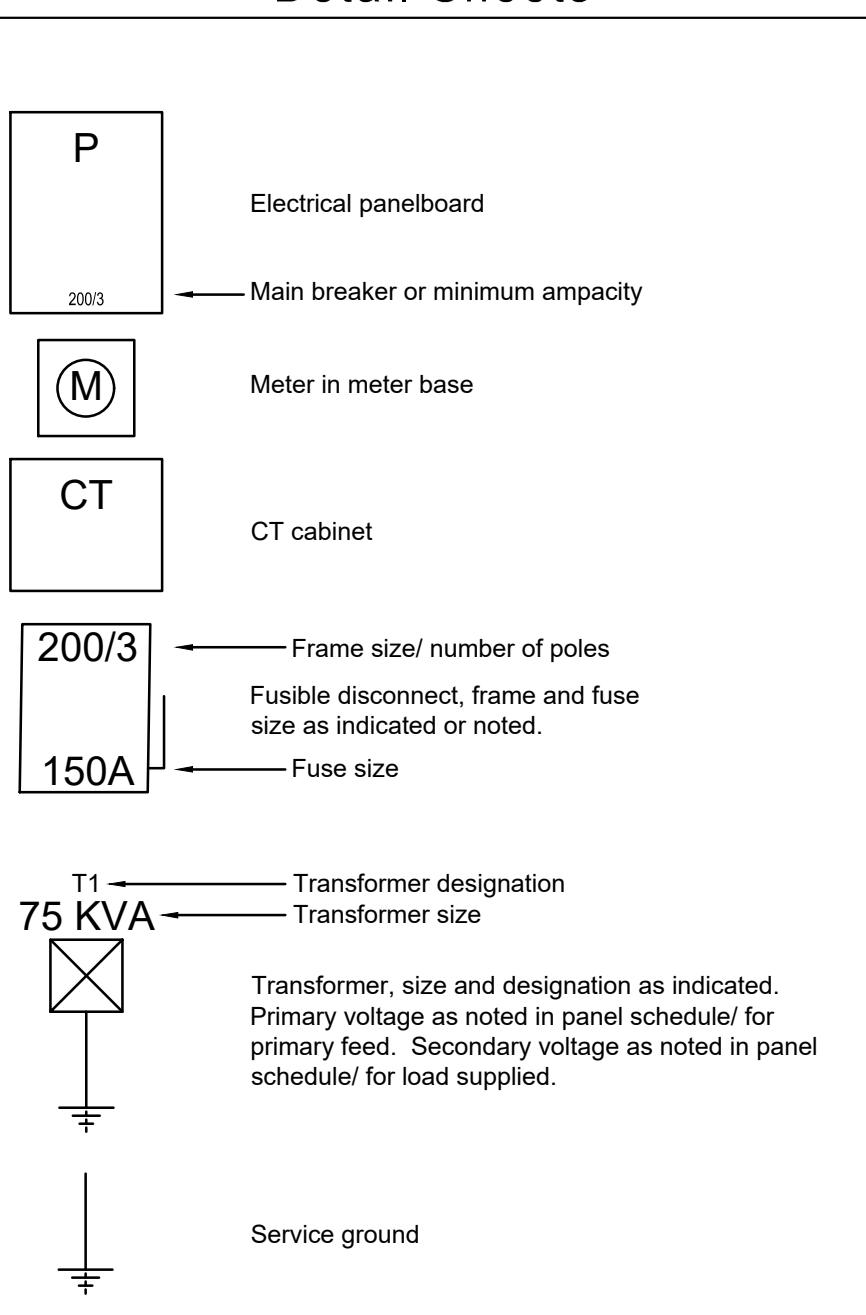
Electrical Legend

Symbols shown below are indicative of new devices. See Linetype Legend for distinction of existing and demolition devices.

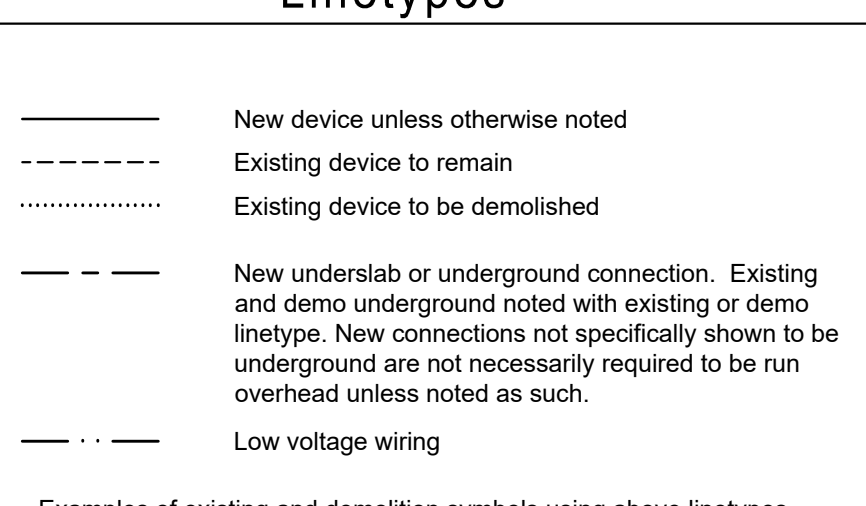
Floor Plans



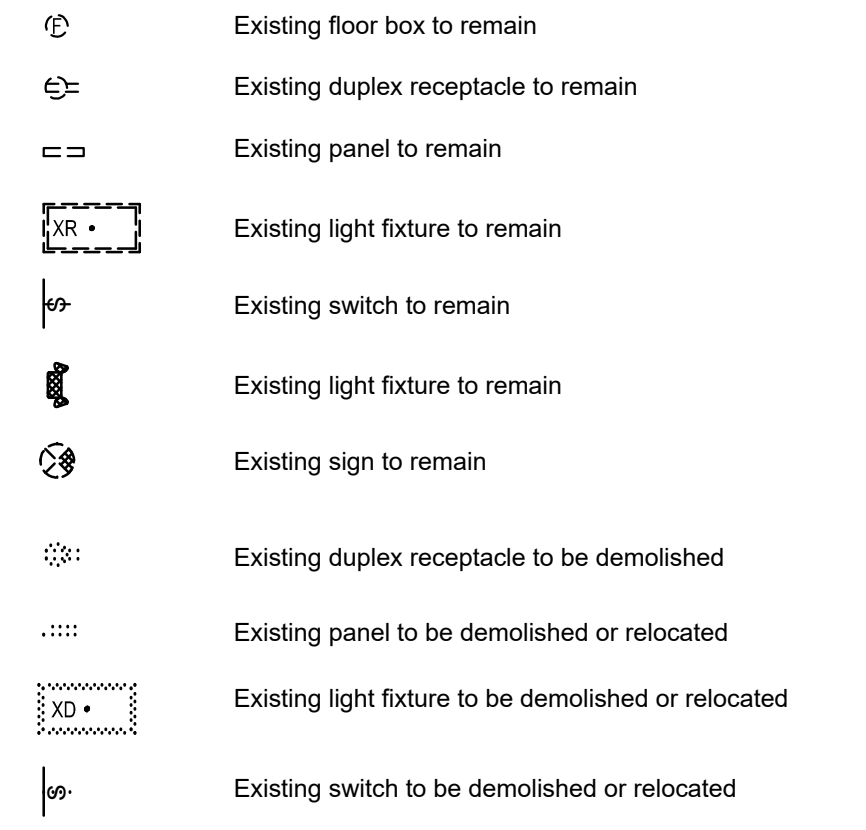
Detail Sheets



Linetypes



Examples of existing and demolition symbols using above linetypes.



See fire alarm legend for fire alarm symbols & specifications

See wall rating legend for wall types and symbols

System No. W-L-1252

ANSIUL1475 (ASTM E814)	CANULC S115
F Ratings — 1, 2, 3 and 4 Hr (See Items 1 and 3)	F Ratings — 1, 2, 3 and 4 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 HR
L Rating At Ambient — Less Than 1 CFMSq Ft	FH Ratings — 1, 2, 3 and 4 Hr (See Items 1 and 3)
L Rating At 400 F — Less Than 1 CFMSq Ft	FTH Rating — 0 HR
	L Rating At Ambient — Less Than 1 CFMSq Ft
	L Rating At 400 F — Less Than 1 CFMSq Ft

SECTION A-A

- Wall Assembly — The 1, 2, 3 or 4 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual I400, V400 or W400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
 - Studs — Wall framing shall consist of steel channel studs. Steel studs to be min 3-1/2 in. (89 mm) wide spaced max 24 in. (610 mm) OC.
 - Gypsum Board — Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall or Partition Design. Max diam of opening is 5-3/4 in. (146 mm).
- The hourly F and FH Ratings of the freestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
- Through Penetrant — One metallic pipe, conduit or tube to be installed either concentrically or eccentrically within the freestop system. The annular space between the pipe, conduit or tube and periphery of opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm). Pipe, conduit or tube to be rigidly supported on both sides of wall assembly.
 - Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
 - Conduit — Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit.
 - Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic conduit.
 - Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
 - Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
- Fill, Void or Cavity Material — Sealant — Fill material applied within annulus. Flush with both surfaces of wall. Type and thickness of sealant is dependent on F and FH Ratings as indicated in Table below. An additional 1/2 in. (13 mm) diameter bead of sealant applied at penetrant/gypsum board interface at point contact location on both surfaces of wall.

F, FH Ratings hr	Sealant Type	Sealant Thickness, in. (mm)
1, 2	FS-ONE, FS-ONE MAX or CP 606	5/8 (16)
3	FS-ONE, FS-ONE MAX or CP 606	1 (25)
4	FS-ONE, FS-ONE MAX	1 (25)

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE MAX Intumescent Sealant or CP 606 Sealant

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Gypsum Framed Walls

3 or 4 Hour Penetration Firestop

Metallic Pipe, Conduit, or Tubing

1

Scale: None

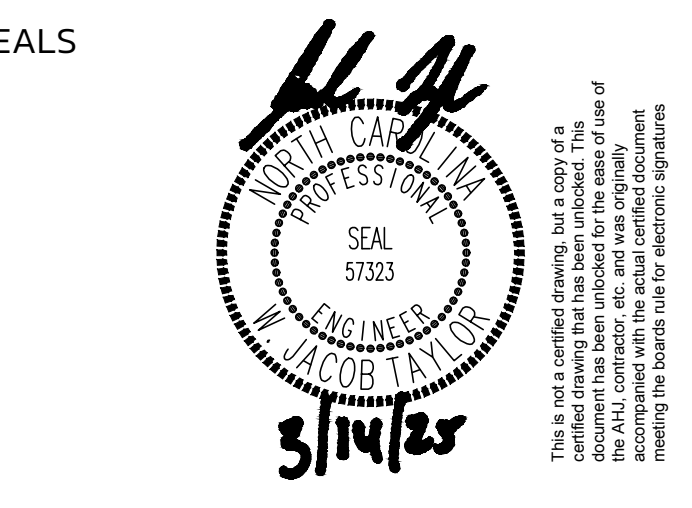


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REVISIONS

No.	Description	Date



JWR VENTURES

NEW BUILDING

JWR VENTURES
192 JARCO DRIVE
FUQUAY-VARINA, NC 27526

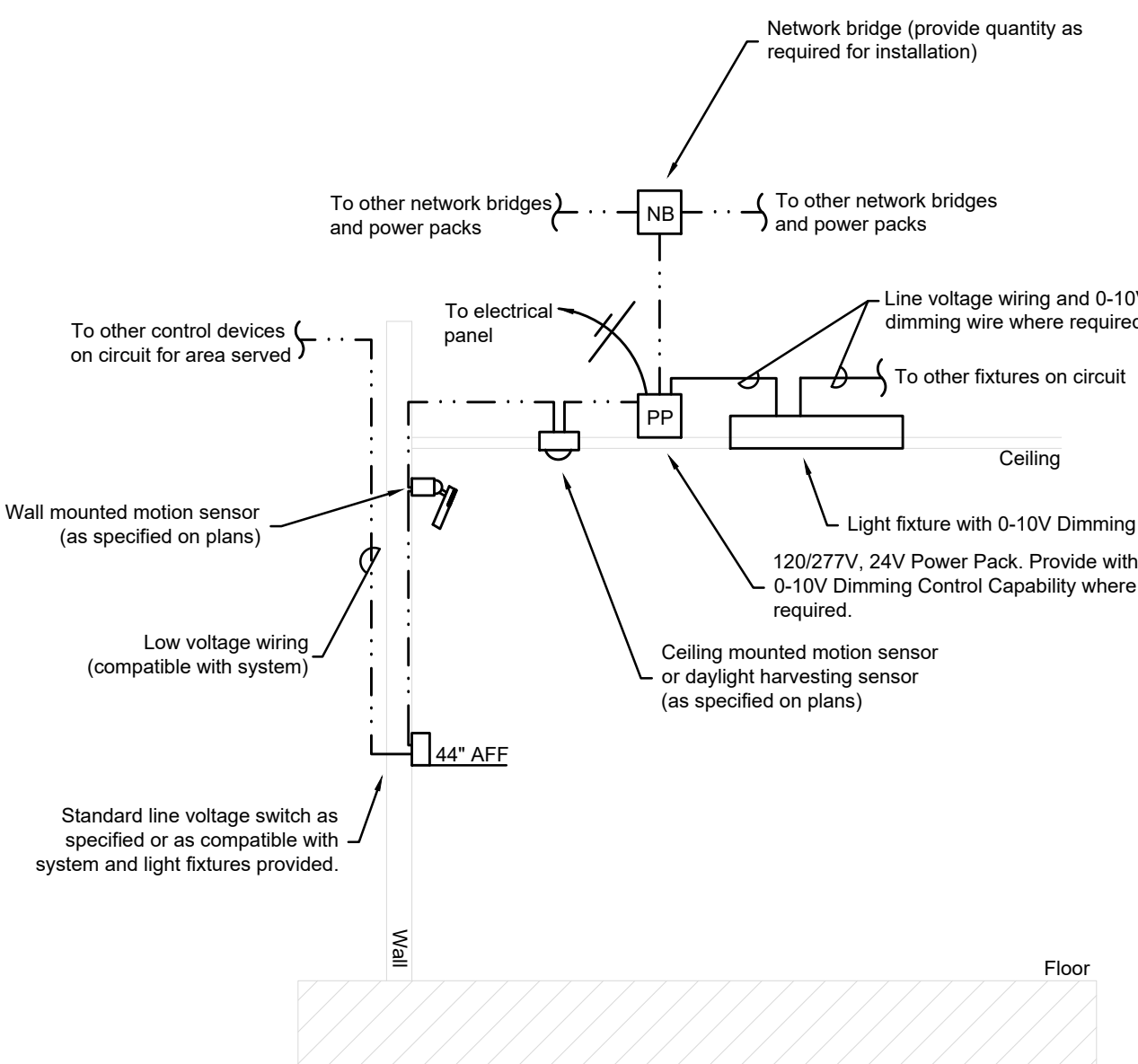
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PHASE	PERMIT SET
DATE	03.14.2025
TD PROJECT #	24-024

DRAWING TITLE

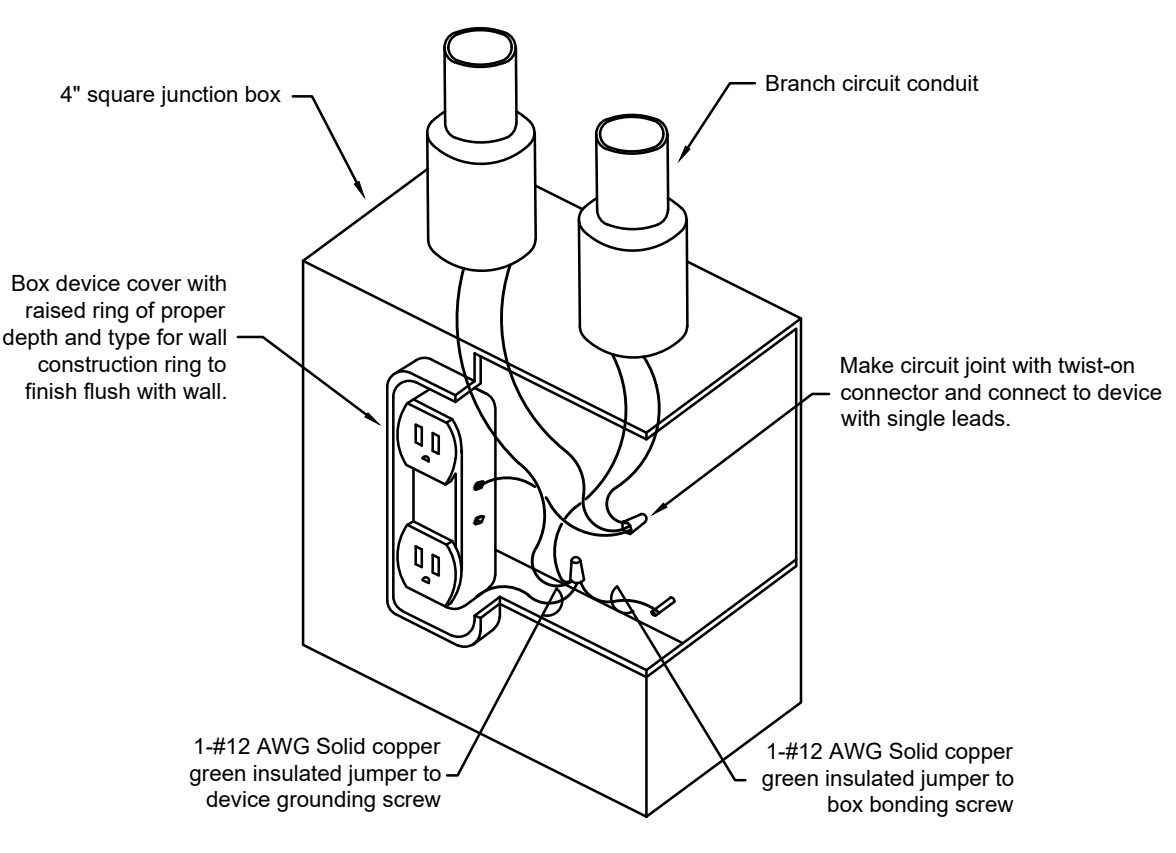
ELECTRICAL COVER SHEET

DRAWING NUMBER
E-001

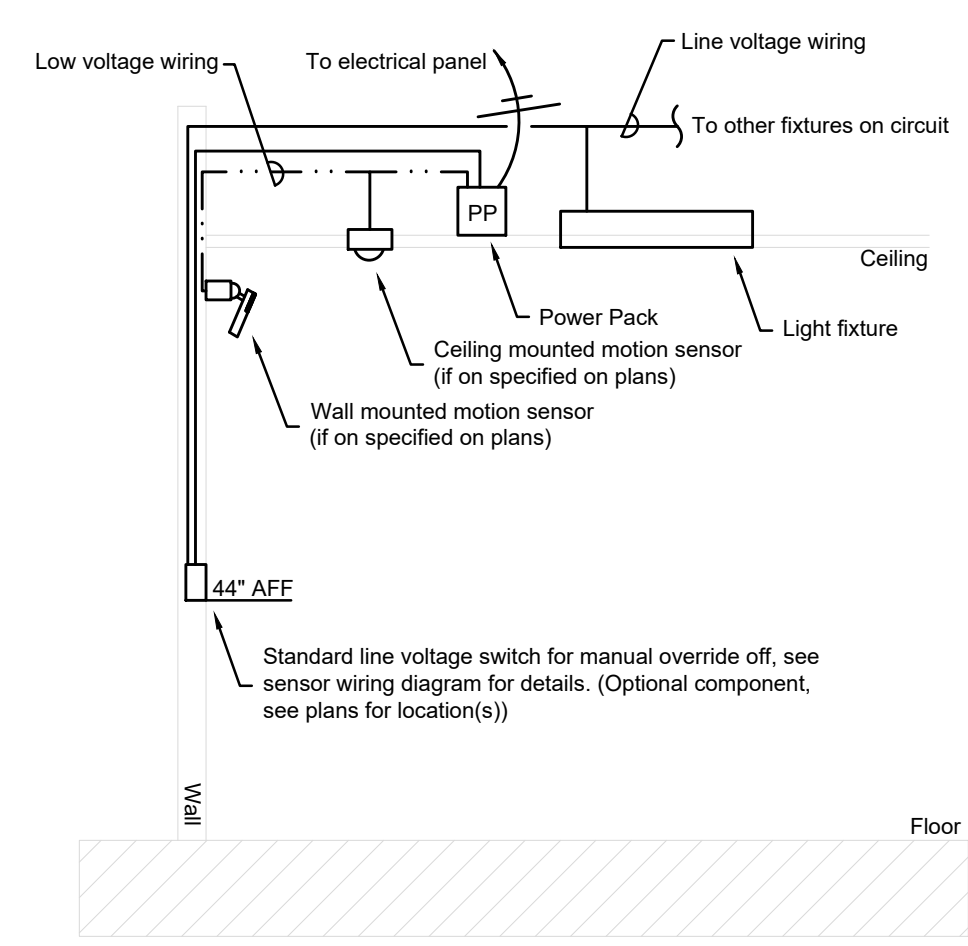


- Notes:**
1. A maximum of two motion sensors shall be connected to each power pack.
 2. Ceiling-mounted motion sensors shall be installed at least 6 feet away from any diffuser.
 3. Motion sensors and motion sensor switches shall be set to a 30-minute time delay. The contractor shall adjust the sensor's sensitivity as required to suit room conditions and size.
 4. The contractor shall provide the appropriate quantity of power packs as per the design requirements. In rooms utilizing both 277-volt and 120-volt lighting, a minimum of two power packs shall be provided (one for each voltage).
 5. Dual-technology sensors shall be programmed so that both technologies are required to turn the lights on initially, but only one technology is necessary to keep the lights on.

1 Typical Motion Sensor with Low Voltage Switch Connection Detail
Scale: None

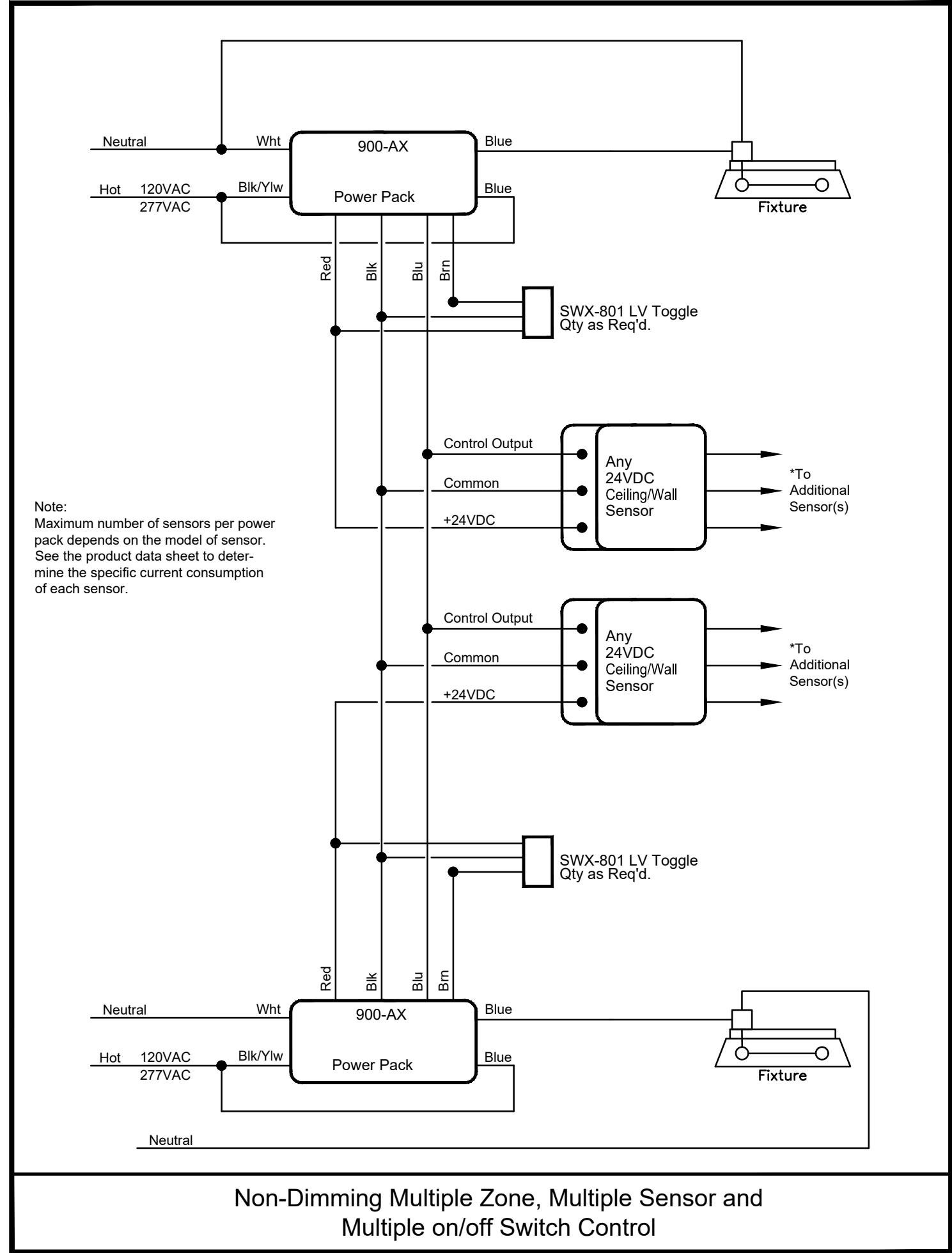


2 Receptacle Grounding Detail
Scale: None

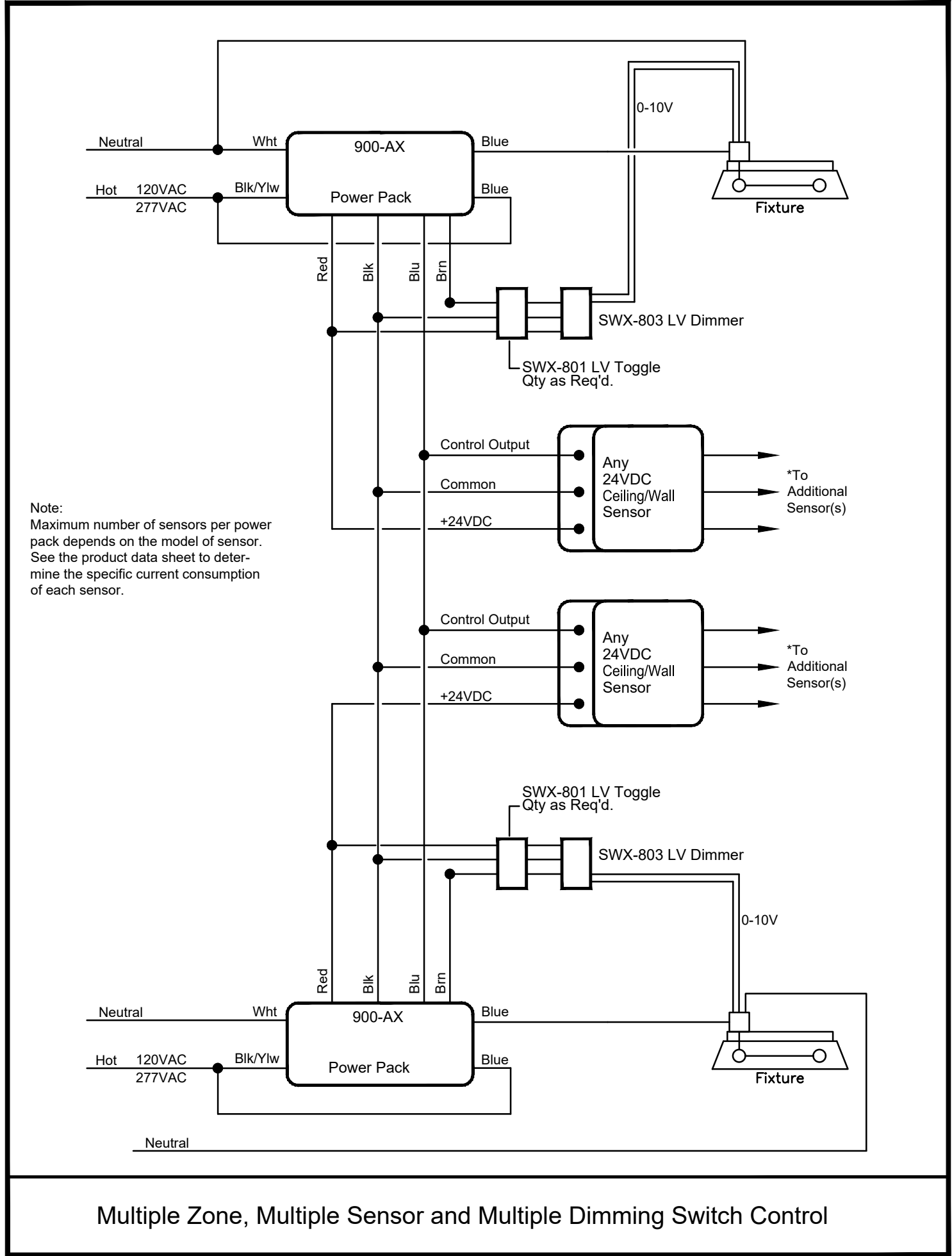


- Notes:**
1. A maximum of two motion sensors shall be connected to each power pack.
 2. Ceiling-mounted motion sensors shall be installed at least 6 feet away from any diffuser.
 3. Motion sensors and motion sensor switches shall be set to a 30-minute time delay. The contractor shall adjust the sensor's sensitivity as required to suit room conditions and size.
 4. The contractor shall provide the appropriate quantity of power packs as per the design requirements. In rooms utilizing both 277-volt and 120-volt lighting, a minimum of two power packs shall be provided (one for each voltage).
 5. Dual-technology sensors shall be programmed so that both technologies are required to turn the lights on initially, but only one technology is necessary to keep the lights on.

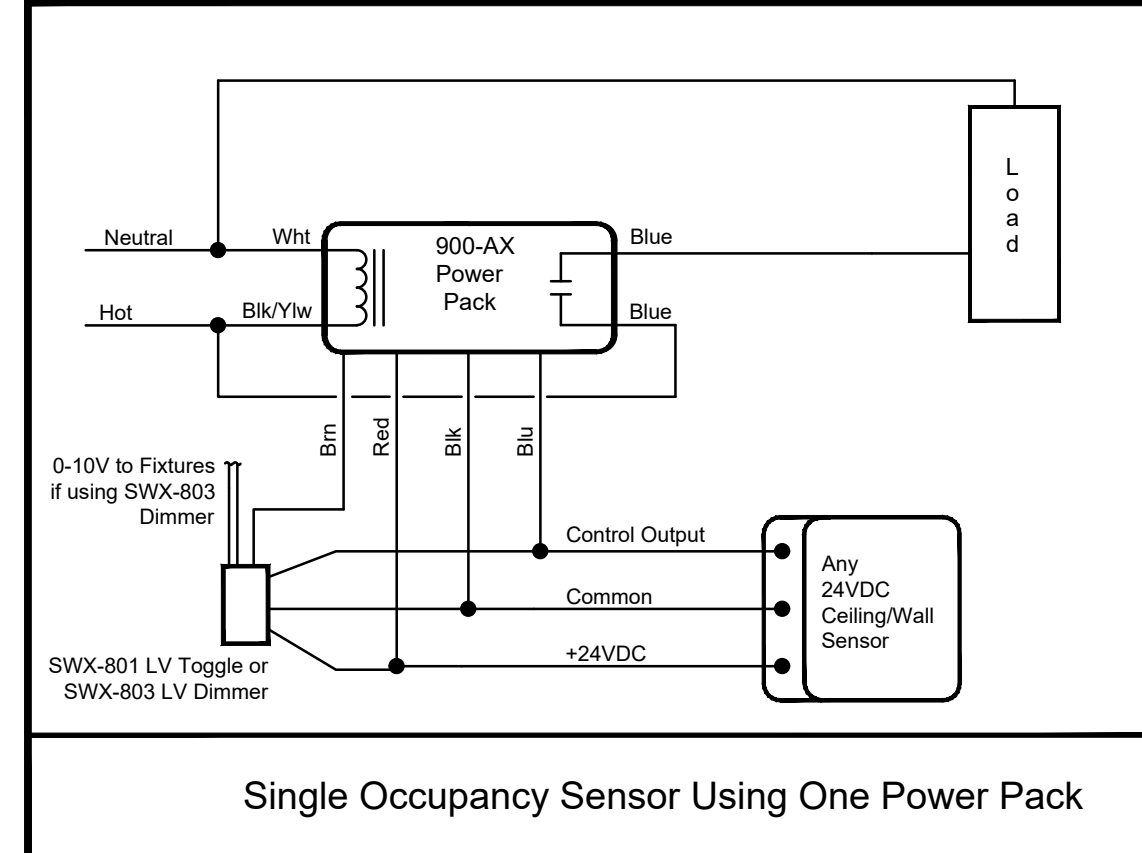
3 Typical Motion Sensor with Line Voltage Switch Connection Detail
Scale: None



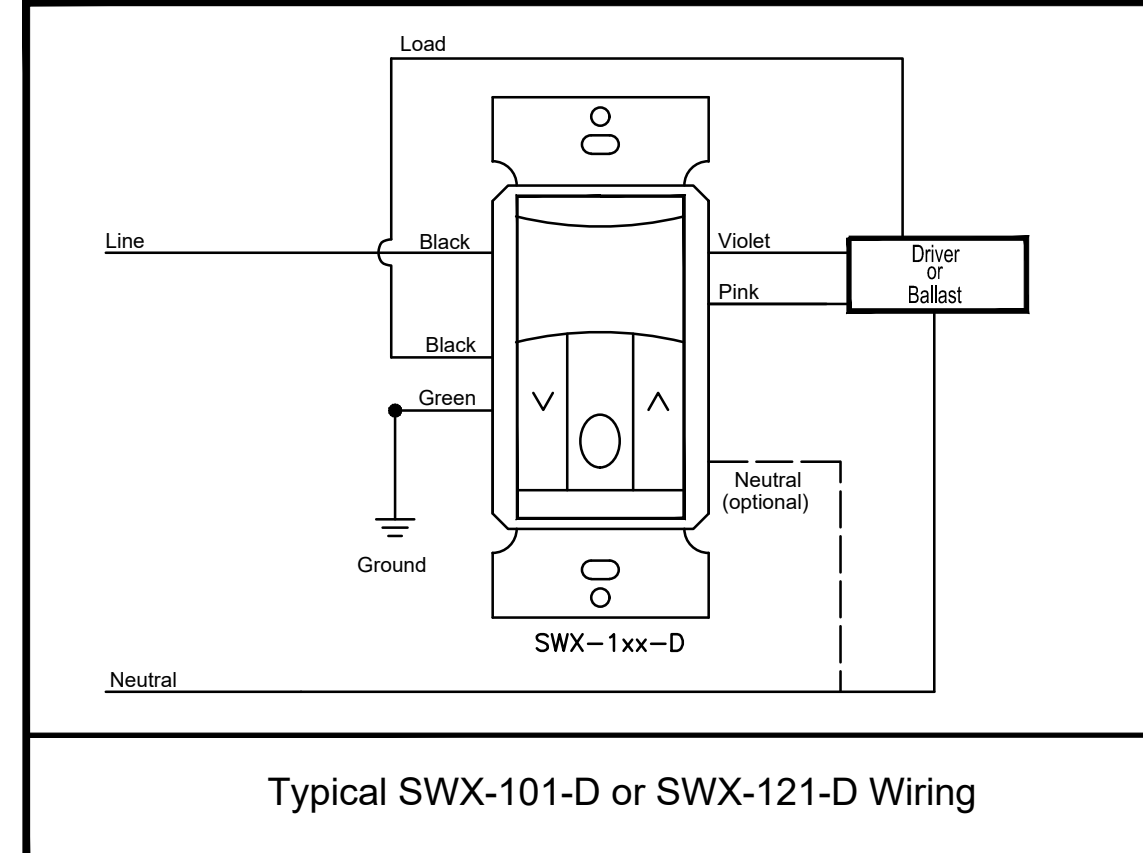
Non-Dimming Multiple Zone, Multiple Sensor and Multiple on/off Switch Control



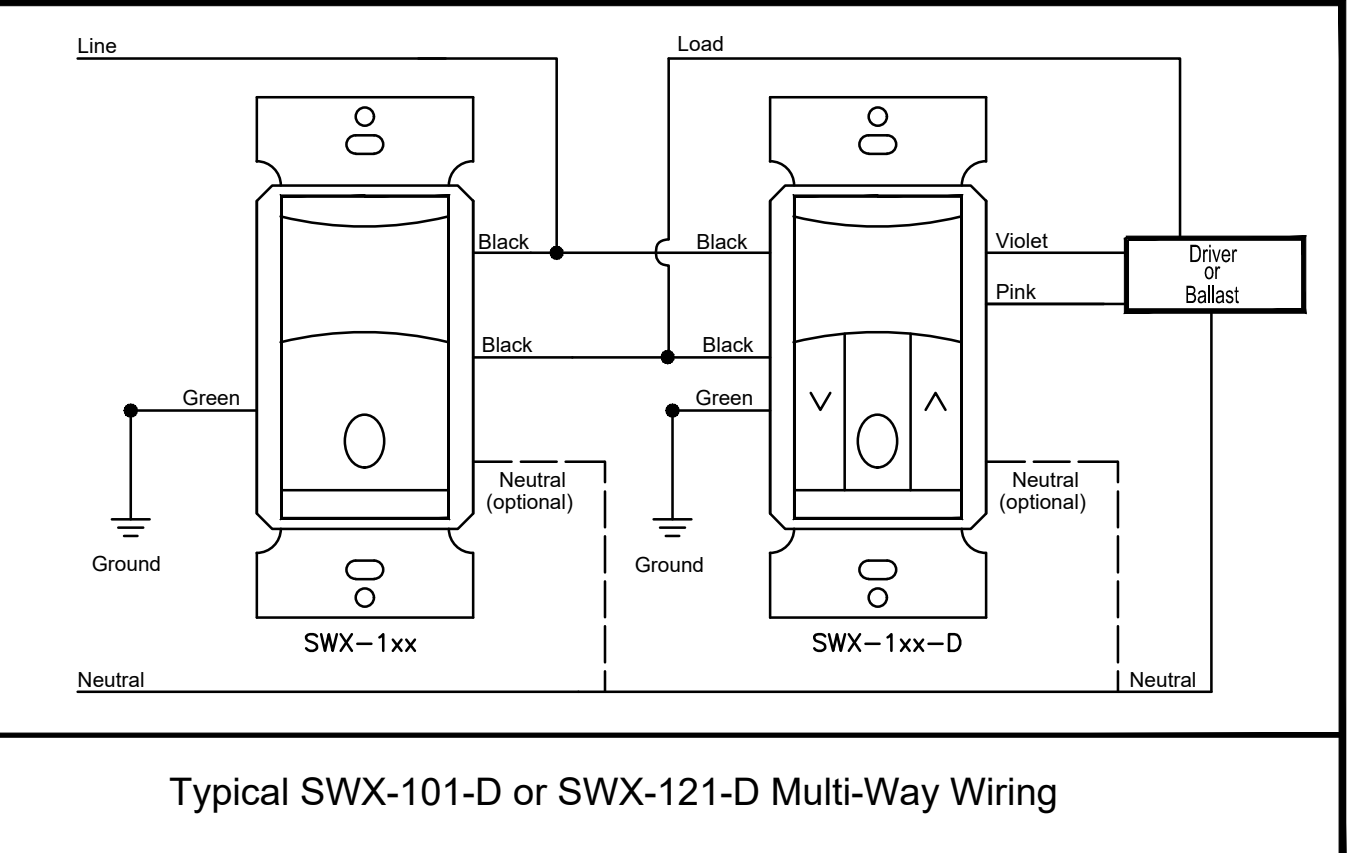
Multiple Zone, Multiple Sensor and Multiple Dimming Switch Control



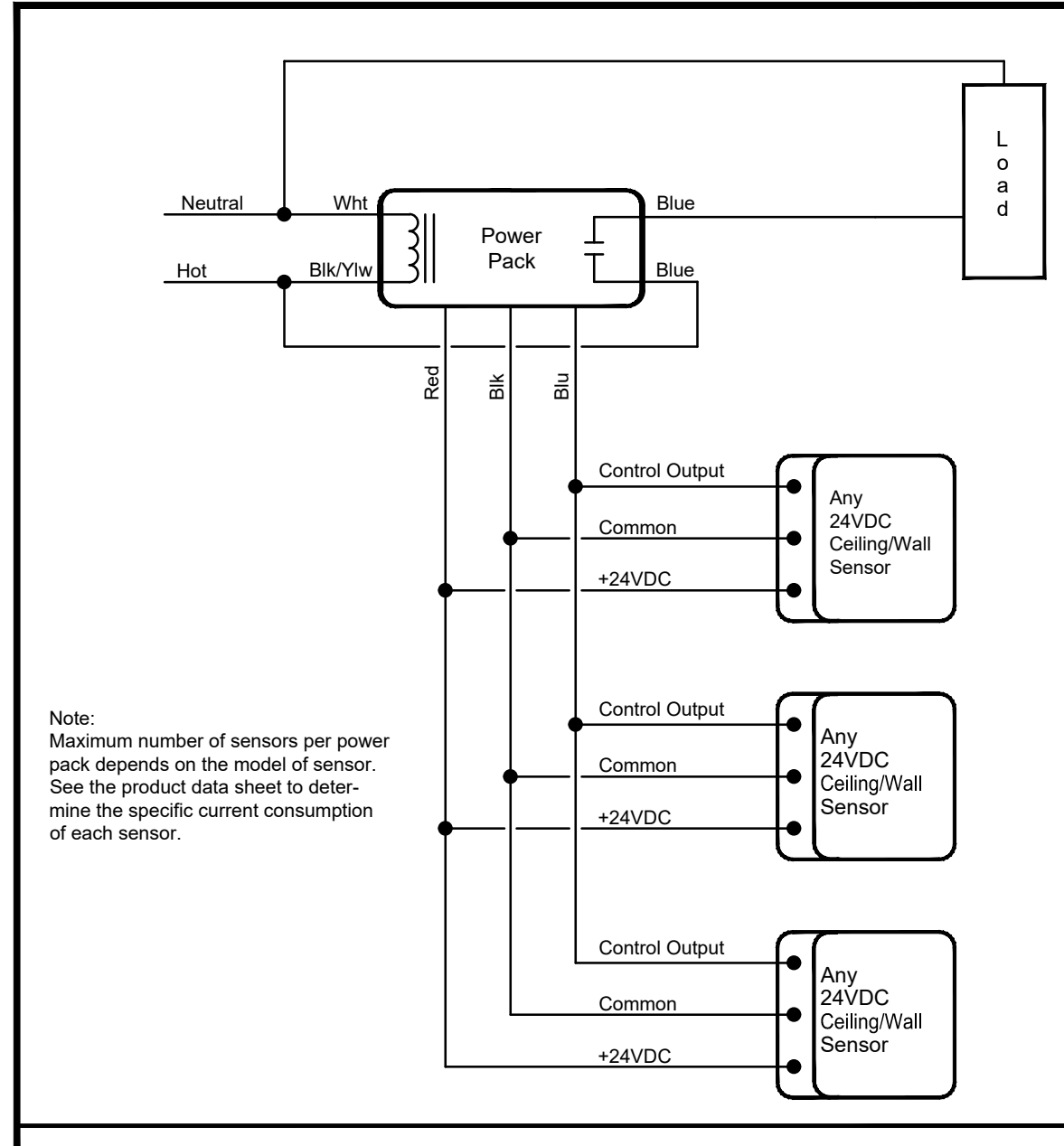
Single Occupancy Sensor Using One Power Pack



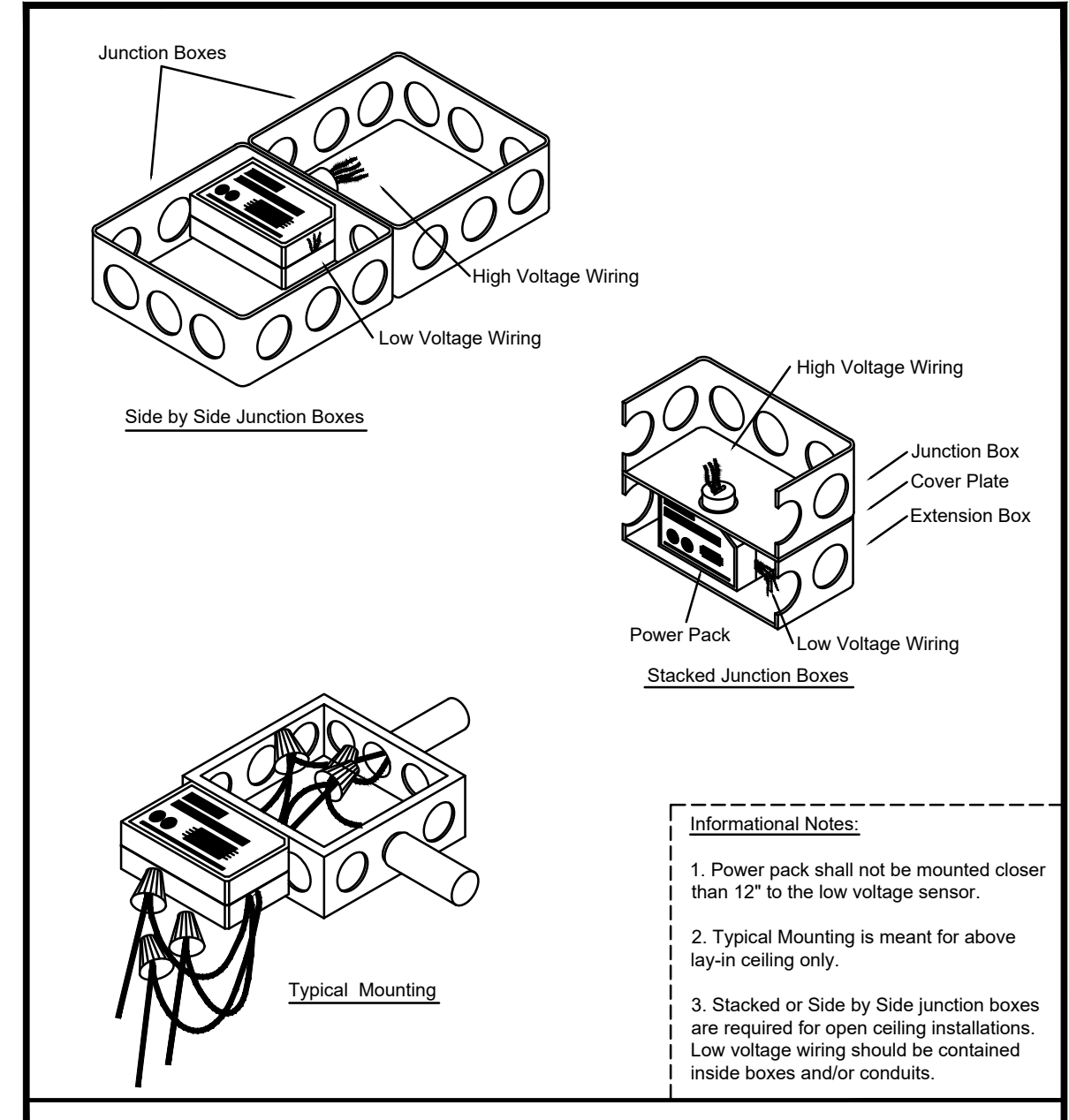
Typical SWX-101-D or SWX-121-D Wiring



Typical SWX-101-D or SWX-121-D Multi-Way Wiring



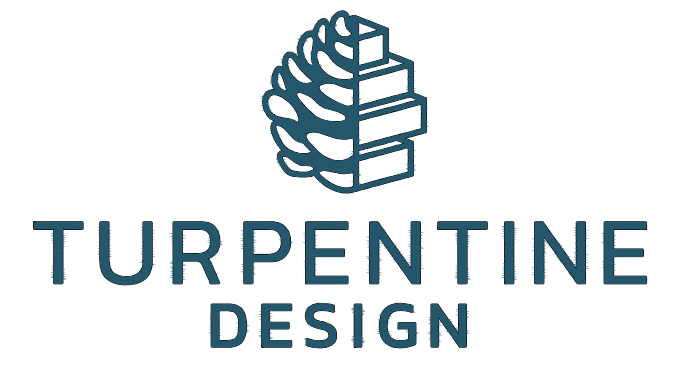
Multiple Occupancy Sensors Using One Power Pack



Power Pack Installation

- Informational Notes:**
1. Power pack shall not be mounted closer than 12\"/>

* Wiring diagrams/part numbers are based on Sensorwrx. Manufacturers or models may be substituted for those indicated where specifications, functions, and configurations are equivalent to the basis-of-design manufacturer. Refer to manufacturer wiring diagrams and instructions for connecting system components and loads. Requirements of Division 26 specifications shall supercede requirements suggested by these details.

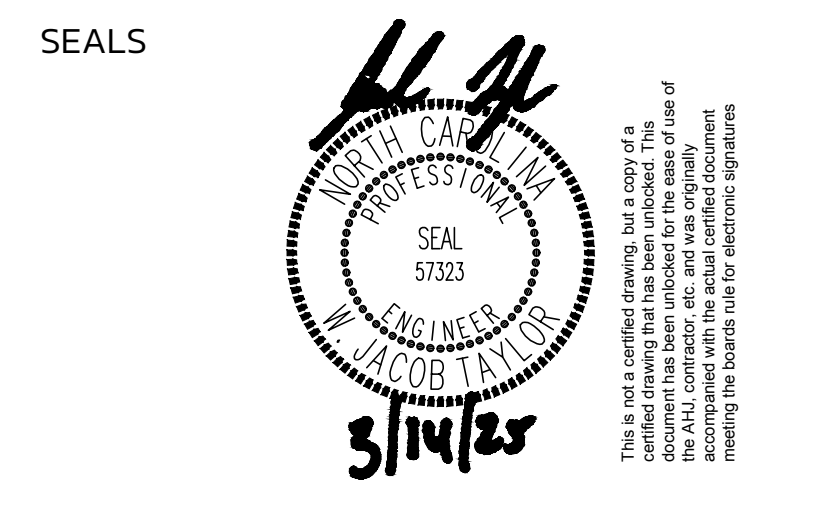


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REVISIONS

NO.	DESCRIPTION



JWR VENTURES
NEW BUILDING

JWR VENTURES
192 JARCO DRIVE
FUQUAY-VARINA, NC 27526

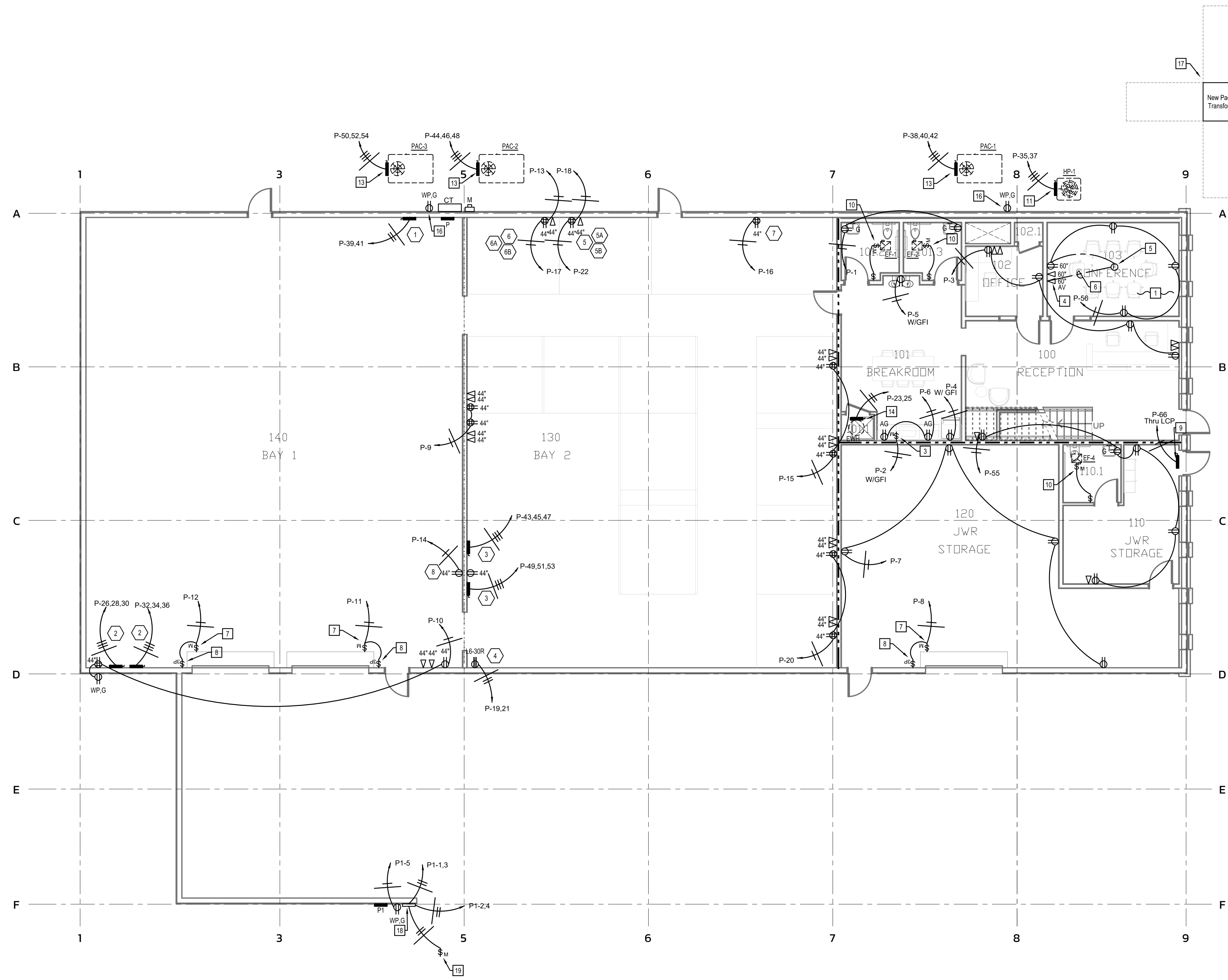
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PHASE
DATE
TD PROJECT #

PERMIT SET
03.14.2025
24-024

DRAWING TITLE
STANDARD ELECTRICAL DETAILS

DRAWING NUMBER
E-002



1 First Floor Plan - Power
Scale: 1/8" = 1' - 0"

- Sheet Notes:**
- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
 - Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
 - See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
 - All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
 - Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/ parallel to and at the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

- Plan Notes:**
- Conference room is less than 215 square foot. Therefore, the requirements of NEC 210.65 (B)(2) do not apply.
 - Stub a 2" conduit to the main building telephone backboard for tenant's future telephone service. Provide pull wire.
 - Provide motor switch for dishwasher connection in adjacent base cabinet under sink. Coordinate exact requirements with equipment supplier.
 - Provide sufficient sized junction box capable of accepting 1 1/4" conduit from floor box for AV connections. Provide pull wire.
 - Flush floor box for power, data, and AV. Verify exact location with architect/furniture vendor prior to rough-in. See legend for specification. Typical for all floor boxes.
 - Stub 1 1/4" conduit from floor box to AV junction box behind TV for AV connections. Provide pull wire. Connect as required.
 - Power for overhead door. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
 - Provide three position switch and 3/4" conduit for overhead door controls. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
 - Provide lockable 30/1 disconnect fused at 20 amps above ceiling/up high on wall for sign circuit per NEC 600.5. Connect as required.
 - Connect exhaust fan controlled by wall switch to circuit 'P-24' as required. Coordinate with mechanical.
 - Connect heat pump as required. Coordinate with mechanical.
 - Connect air handler unit as required. Coordinate with mechanical.
 - Connect packaged air conditioning unit as required. Coordinate with mechanical.
 - Connect electric water heater as required. Coordinate with plumbing.
 - Connect condensate pump to circuit 'P-24' as required. Coordinate with mechanical.
 - WP GFI receptacle on exterior wall for maintenance. Connect to circuit 'P-10' as required. Coordinate exact locations with mechanical.
 - Approximate location of new pad mounted transformer by power company. Coordinate exact location and requirements with civil and power company.
 - Connect sump pump control panel as required. Provide connections for sump pump and alarm circuit at thru control panel. Coordinate exact location and requirements with civil.
 - Connect sump pump through control panel as required. Coordinate exact location and requirements with civil.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

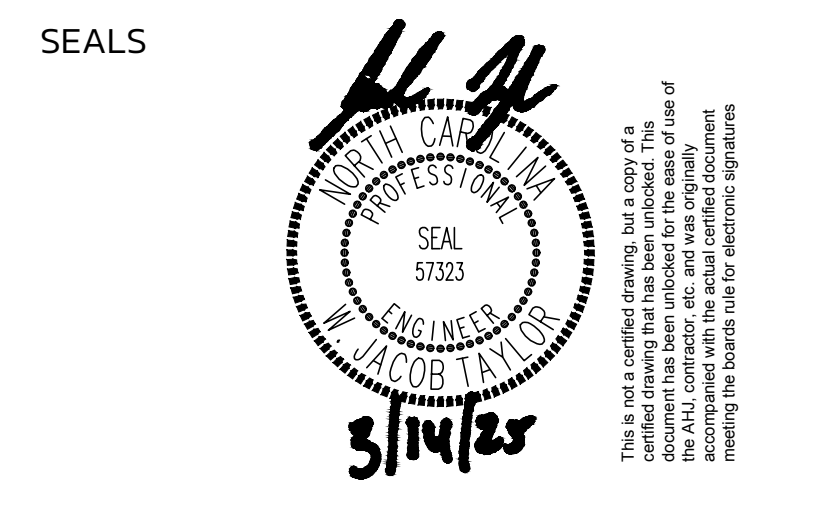
Existing Wall to Remain	_____
New Wall being Constructed	_____
Wall to Deck	_____
Two Hour Fire Barrier	_____
Three Hour Fire Barrier	_____



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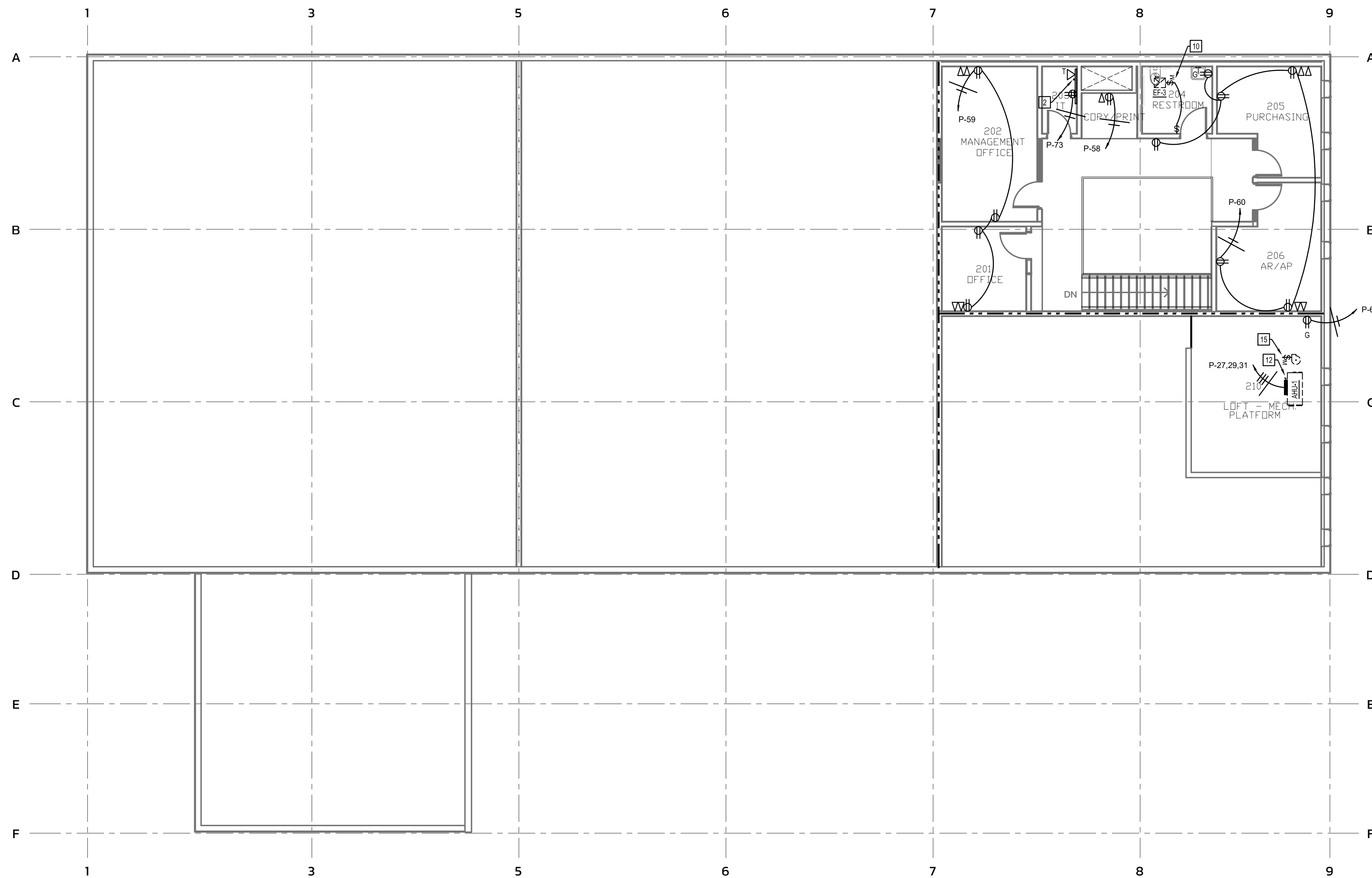
PHASE	PERMIT SET
DATE	03.14.2025
TD PROJECT #	24-024

DRAWING TITLE

**FIRST FLOOR PLAN
- POWER**

DRAWING NUMBER
E-101

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Second Floor Plan - Power
Scale: 1/8" = 1' - 0"

- Sheet Notes:**
- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSBC, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSBC, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
 - Individual branch circuits are shown with a dedicated neutral unless otherwise noted. When multi-wire branch circuits are to be installed, provide multi-pole circuit breakers as required. NEC 210.7
 - See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
 - All receptacles within 6 feet from the outside edge of any sink shall be GFCI. NEC 210.8(B)(5). All GFCI trip-reset receptacles shall be readily accessible. NEC 210.8. If an outlet is shown as GFCI protected and would be installed behind a piece of equipment (IE a dishwasher), a remote trip unit shall be installed and/or the outlet should be protected by a GFCI breaker. Where a remote trip unit is used, it should be located above the equipment (IE dishwasher) and in line with other above counter outlets. The trip unit shall be the type that indicates on/off (basis of design is the Legrand #2087WCCD4).
 - Contractor shall use rigid conduit/wire mold to neatly route the conductors between devices in all exposed areas. The general intent is that the exposed conduit runs would be as short as possible. Switches for lights and outlets on one side of beam would be switched from one location and the other side of the beam switched from another location to reduce exposed conduit. Conduit shall not cross the beam in unit if at all possible. Conduits shall be installed perpendicular/parallel to and in the structure. Typical for all. All other conduits shall be concealed in walls and/or above ceiling wherever possible.

- Plan Notes:**
- Conference room is less than 215 square foot. Therefore, the requirements of NEC 210.85 (B)(2) do not apply.
 - Stub a 2" conduit to the main building telephone backboard for tenant's future telephone service. Provide pull wire.
 - Provide motor switch for dishwasher connection in adjacent base cabinet under sink. Coordinate exact requirements with equipment supplier.
 - Provide sufficient sized junction box capable of accepting 1 1/4" conduit from floor box for AV connections. Provide pull wire.
 - Flush floor box for power, data, and AV. Verify exact location with architect/furniture vendor prior to rough-in. See legend for specification. Typical for all floor boxes.
 - Stub 1 1/4" conduit from floor box to AV junction box behind TV for AV connections. Provide pull wire. Connect as required.
 - Power for overhead door. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
 - Provide three position switch and 3/4" conduit for overhead door controls. Connect as required. Coordinate exact location with equipment supplier and owner prior to beginning work.
 - Provide lockable 30/1 disconnect fused at 20 amps above ceiling/up high on wall for sign circuit per NEC 600.5. Connect as required.
 - Connect exhaust fan controlled by wall switch to circuit "P-24" as required. Coordinate with mechanical.
 - Connect heat pump as required. Coordinate with mechanical.
 - Connect air handler unit as required. Coordinate with mechanical.
 - Connect packaged air conditioning unit as required. Coordinate with mechanical.
 - Connect electric water heater as required. Coordinate with plumbing.
 - Connect condensate pump to circuit "P-24" as required. Coordinate with mechanical.
 - WP GFI receptacle on exterior wall for maintenance. Connect to circuit "P-10" as required. Coordinate exact locations with mechanical.
 - Approximate location of new pad mounted transformer by power company. Coordinate exact location and requirements with civil and power company.
 - Connect sump pump control panel as required. Provide connections for sump pump and alarm circuit at/thru control panel. Coordinate exact location and requirements with civil.
 - Connect sump pump through control panel as required. Coordinate exact location and requirements with civil.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

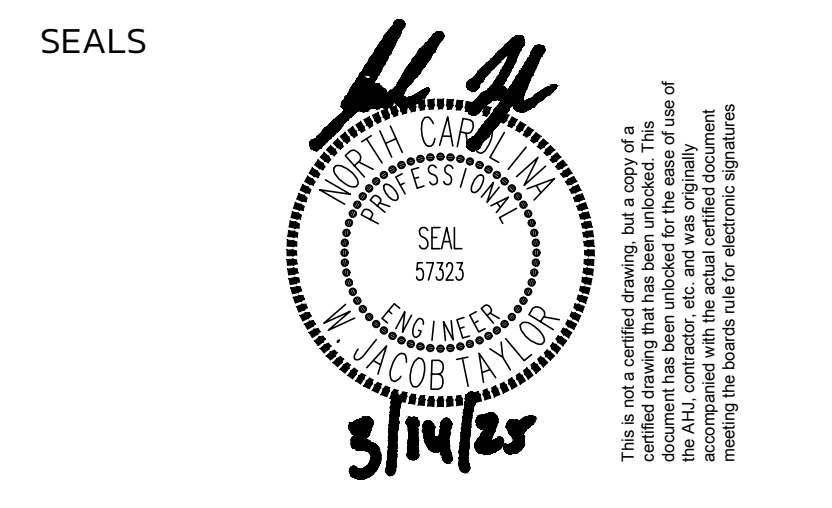
Existing Wall to Remain	_____
New Wall being Constructed	_____
Wall to Deck	_____
Two Hour Fire Barrier	_____
Three Hour Fire Barrier	_____



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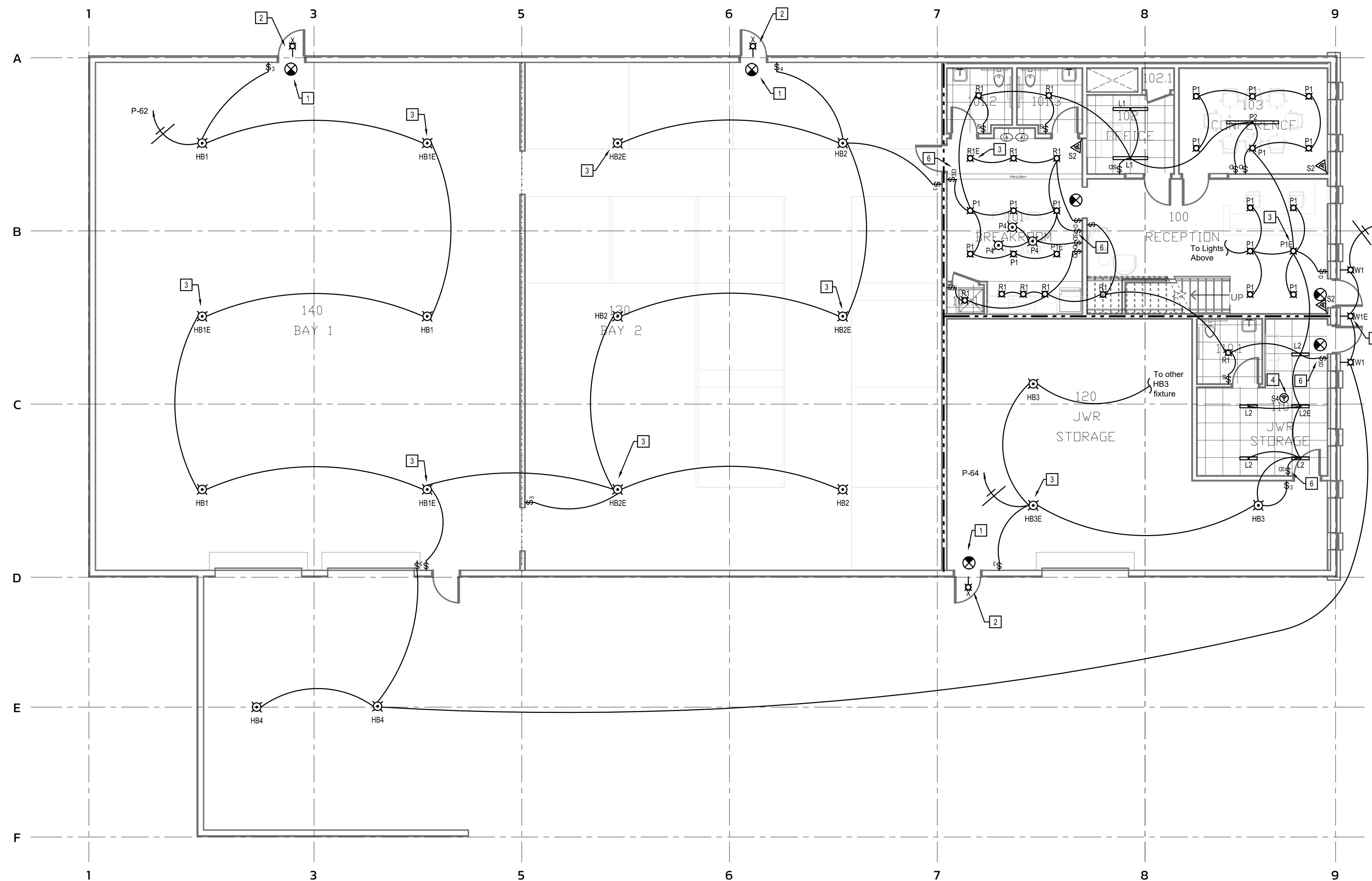
PHASE	PERMIT SET
DATE	03.14.2025
TD PROJECT #	24-024

DRAWING TITLE

**SECOND FLOOR
PLAN - POWER**

DRAWING NUMBER
E-102

These drawings will be at the scale indicated when plotted at 24" x 36"



1 First Floor Plan - Lighting
Scale: 1/8" = 1' - 0"

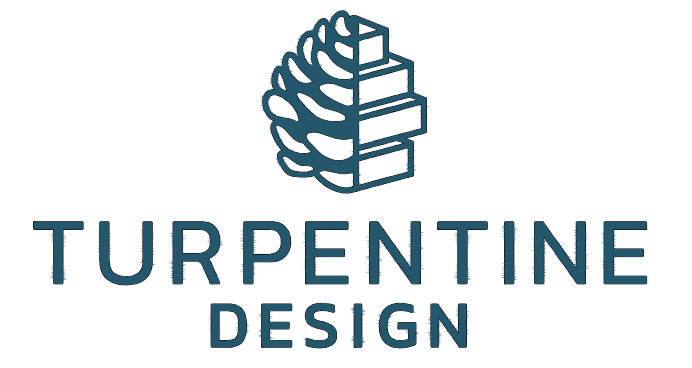
- Sheet Notes:**
- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSCB, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSCB, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
 - Connect wall packs or other normally off emergency lights, exit signs and night lights ahead of local switches and/or controls. (total fixture unswitched). Where lights are not indicated as night lights, fixtures with emergency batteries shall be connected with the battery ahead of switch so that the emergency battery comes on only in the event of power loss. Fixture is normally controlled with the other lights under normal conditions.
 - See motion sensor details for specifications and wiring details. All motion sensors, new and existing, shall be set to a 30 minute time delay.
 - Lighting controls including occupancy sensors, automatic time switches, automatic shut-off controls, or daylight/occupant sensing automatic controls, the electrical contractor shall be responsible for testing the lighting controls per section C408.3 of the 2018 NC Energy Conservation Code. Ensure that control devices, components, and systems are calibrated, adjusted and operate in accordance with the approved plans and/or specifications. Sequences of operation shall be functionally tested to ensure they operate in accordance with the approved plans and/or specifications.
 - See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
 - Contractor shall combine all switches under common cover plate with all other switches in area if possible. Switches throughout the facility should be the same or appear as close to the same as possible.

- Plan Notes: Not all notes used on all Sheets**
- Connect emergency and exit lights ahead of local switch/controls so that total fixture is unswitched. Connect as required. Typical.
 - Contractor shall connect battery in/for light fixture ahead of switch/controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is switched with other normal lights under normal conditions.
 - Contractor shall connect battery in/for light fixture ahead of switch/controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is switched with other normal lights under normal conditions. Typical.
 - Motion sensor to control all lights in this room. See motion sensor wiring diagrams. Provide required power packs to control all lights with override off switches as shown. Typical.
 - Contractor shall connect battery in/for light fixture ahead of exterior controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is controlled with other normal lights under normal conditions.
 - This denotes a 3-way on/off and a dimming control of the connected zone. Confirm location of dimmer with tenant and install 3-way in other location. Connect as required.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

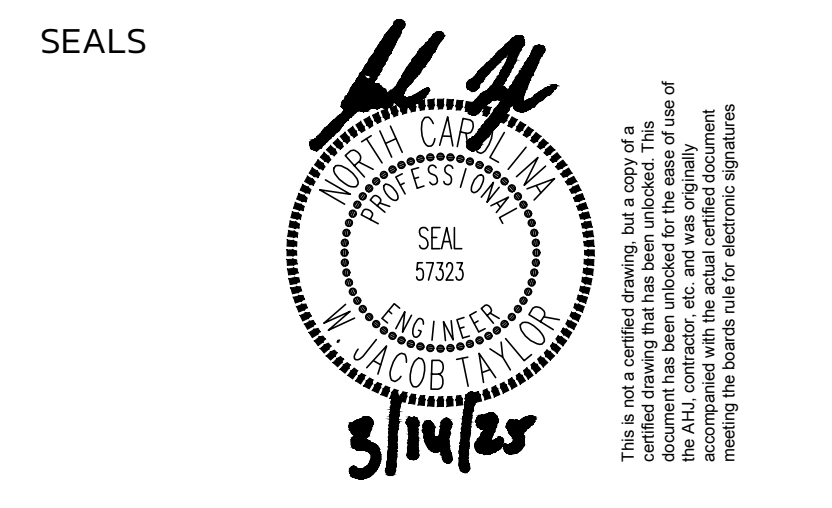
Existing Wall to Remain	_____
New Wall being Constructed	_____
Wall to Deck
Two Hour Fire Barrier	-----
Three Hour Fire Barrier	-----



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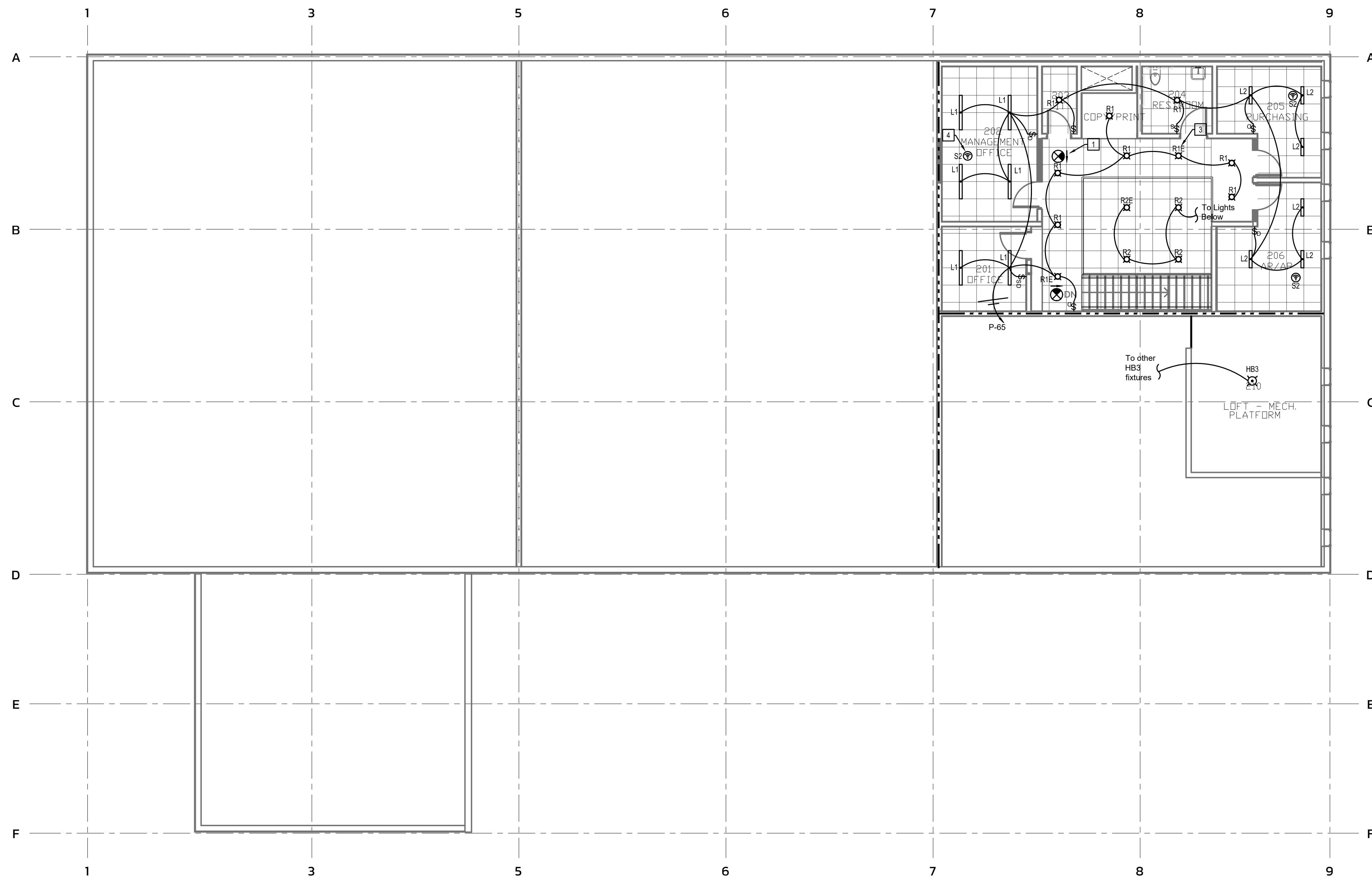
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DATE	03.14.2025
TD PROJECT #	24-024

DRAWING TITLE

**FIRST FLOOR PLAN
- LIGHTING**

DRAWING NUMBER
E-201

These drawings will be at the scale indicated when plotted at 24" x 36"



1 Second Floor Plan - Lighting
Scale: 1/8" = 1' - 0"

- Sheet Notes:**
- All electrical boxes mounted in rated walls shall comply with all requirements of the 2018 NCSCB, section 714.3.2. All electrical boxes mounted in rated ceilings/horizontal assemblies shall comply with all requirements of the 2018 NCSCB, section 714.4.2. Devices shown in rated assemblies shall be flush with conduit concealed, unless otherwise indicated. Provide rated boxes, horizontal separation, putty pads, etc. as required for proper installation. Low voltage electrical devices mounted in rated assemblies shall be protected in accordance with the sections listed above as well.
 - Connect wall packs or other normally off emergency lights, exit signs and night lights ahead of local switches and/or controls. (total fixture unswitched). Where lights are not indicated as night lights, fixtures with emergency batteries shall be connected with the battery ahead of switch so that the emergency battery comes on only in the event of power loss. Fixture is normally controlled with the other lights under normal conditions.
 - See motion sensor details for specifications and wiring details. All motion sensors, new and existing, shall be set to a 30 minute time delay.
 - Lighting controls including occupancy sensors, automatic time switches, automatic shut-off controls, or daylight/occupant sensing automatic controls, the electrical contractor shall be responsible for testing the lighting controls per section C408.3 of the 2018 NC Energy Conservation Code. Ensure that control devices, components, and systems are calibrated, adjusted and operate in accordance with the approved plans and/or specifications. Sequences of operation shall be functionally tested to ensure they operate in accordance with the approved plans and/or specifications.
 - See voltage drop schedule for wire sizing information for all branch circuits over 65' in length.
 - Contractor shall combine all switches under common cover plate with all other switches in area if possible. Switches throughout the facility should be the same or appear as close to the same as possible.

- Plan Notes: Not all notes used on all Sheets**
- Connect emergency and exit lights ahead of local switch/controls so that total fixture is unswitched. Connect as required. Typical.
 - Contractor shall connect battery in/for light fixture ahead of switch/controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is switched with other normal lights under normal conditions.
 - Contractor shall connect battery in/for light fixture ahead of switch/controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is switched with other normal lights under normal conditions. Typical.
 - Motion sensor to control all lights in this room. See motion sensor wiring diagrams. Provide required power packs to control all lights with override off switches as shown. Typical.
 - Contractor shall connect battery in/for light fixture ahead of exterior controls so that emergency ballast/inverter comes on only in the event of power loss. Fixture is controlled with other normal lights under normal conditions.
 - This denotes a 3-way on/off and a dimming control of the connected zone. Confirm location of dimmer with tenant and install 3-way in other location. Connect as required.

Wall Ratings and Types Legend

See architectural sheets for more information on ratings and additional rated constructions including structure where applicable. Protect all rated constructions as required.

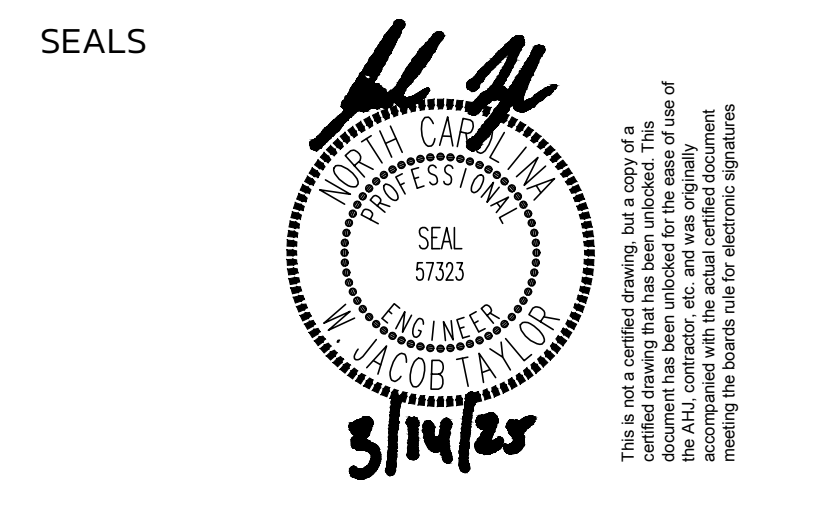
Existing Wall to Remain	_____
New Wall being Constructed	_____
Wall to Deck
Two Hour Fire Barrier	-----
Three Hour Fire Barrier	-----



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DATE 03.14.2025
TD PROJECT # 24-024

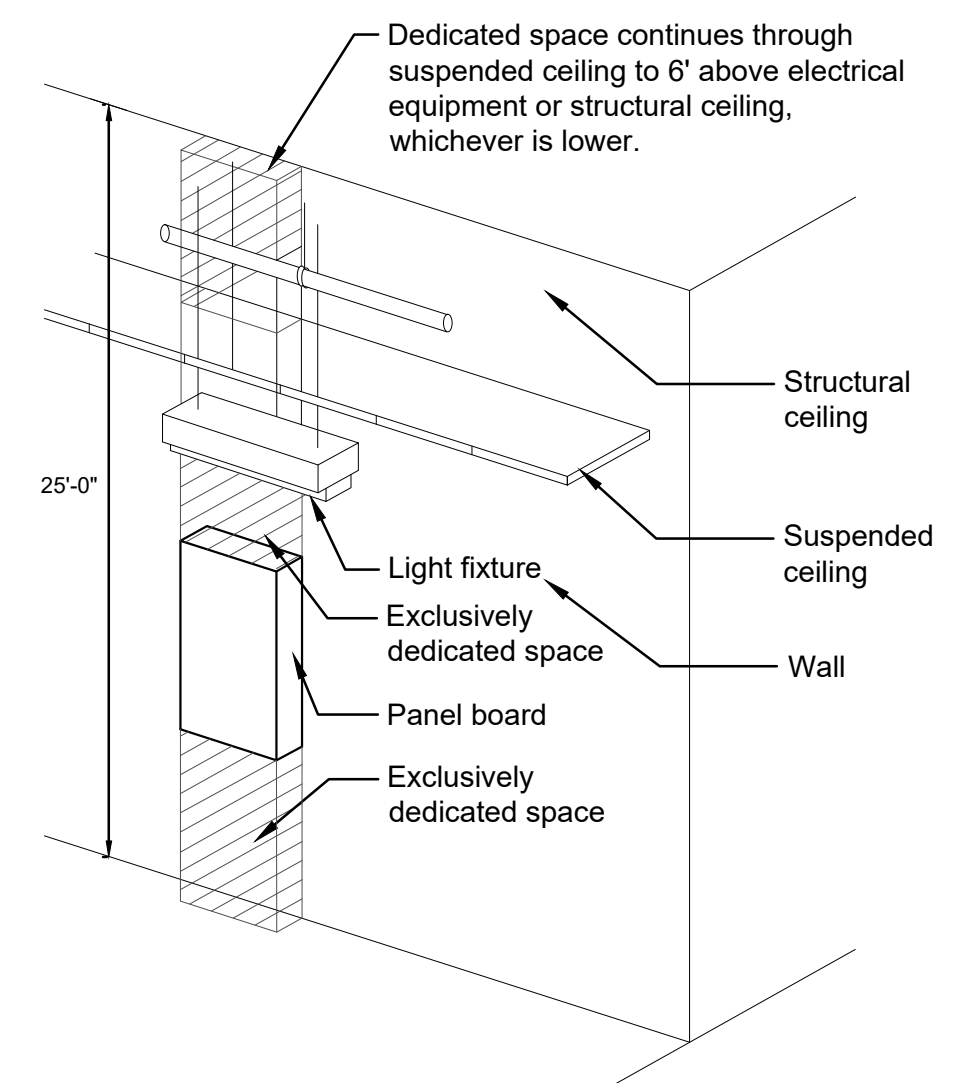
DRAWING TITLE

**SECOND FLOOR
PLAN - LIGHTING**

DRAWING NUMBER
E-202

These drawings will be at the scale indicated when plotted at 24" x 36"

- Panel Schedule Notes (All Panels, All Sheets):**
- All panel directories shall be completed in accordance with NEC 408.4.
 - Values for demand loads include all code factors such as 125% for continuous loads, 125% largest motor, etc.
 - Breaker sizes shown in panel schedules for new equipment are for reference only. See equipment connection schedule for additional information. Where breaker / fuse size between schedules conflict, the equipment connection schedule shall take precedence. Contractor shall ultimately confirm breaker size with equipment provider.
 - Circuit breakers used as overcurrent protection for HVAC equipment shall be "HACR" type.
 - Contractor shall provide identification for new feeders and any new branch circuits per NEC 200.6, 210.5, and 215.12.
 - Contractor shall label breakers feeding emergency and exit lighting per NEC 700.12(F).
 - Provide arc flash hazard warning labels as required on all panels affected by this work to comply with NEC 110.16.
 - Where circuit breakers or fuses are noted to be series rated, the equipment shall be listed per NEC 110.22 as applicable. Tested series combination systems, the placard shall state the following "Caution - Series Combination System Rated _____ Amperes. Identified Replacement Components Required." See NEC 110.22(b) for engineered series combination systems placarding language.
 - Bolded text indicates a new or changed breaker, label, load on an existing panel. Bolded breakers are new or relocated breakers to location shown.
 - Breakers indicated as (L) shall have a breaker lock provided. 201(L) means a 20 amp single pole breaker with lock. Breaker lock shall be accessible from outside of panel and shall not require the removal of panel cover in order to reset the breaker.
 - Breakers indicated as (G) shall have GFCI protection provided. 201(G) means a 20 amp single pole breaker with GFCI protection.



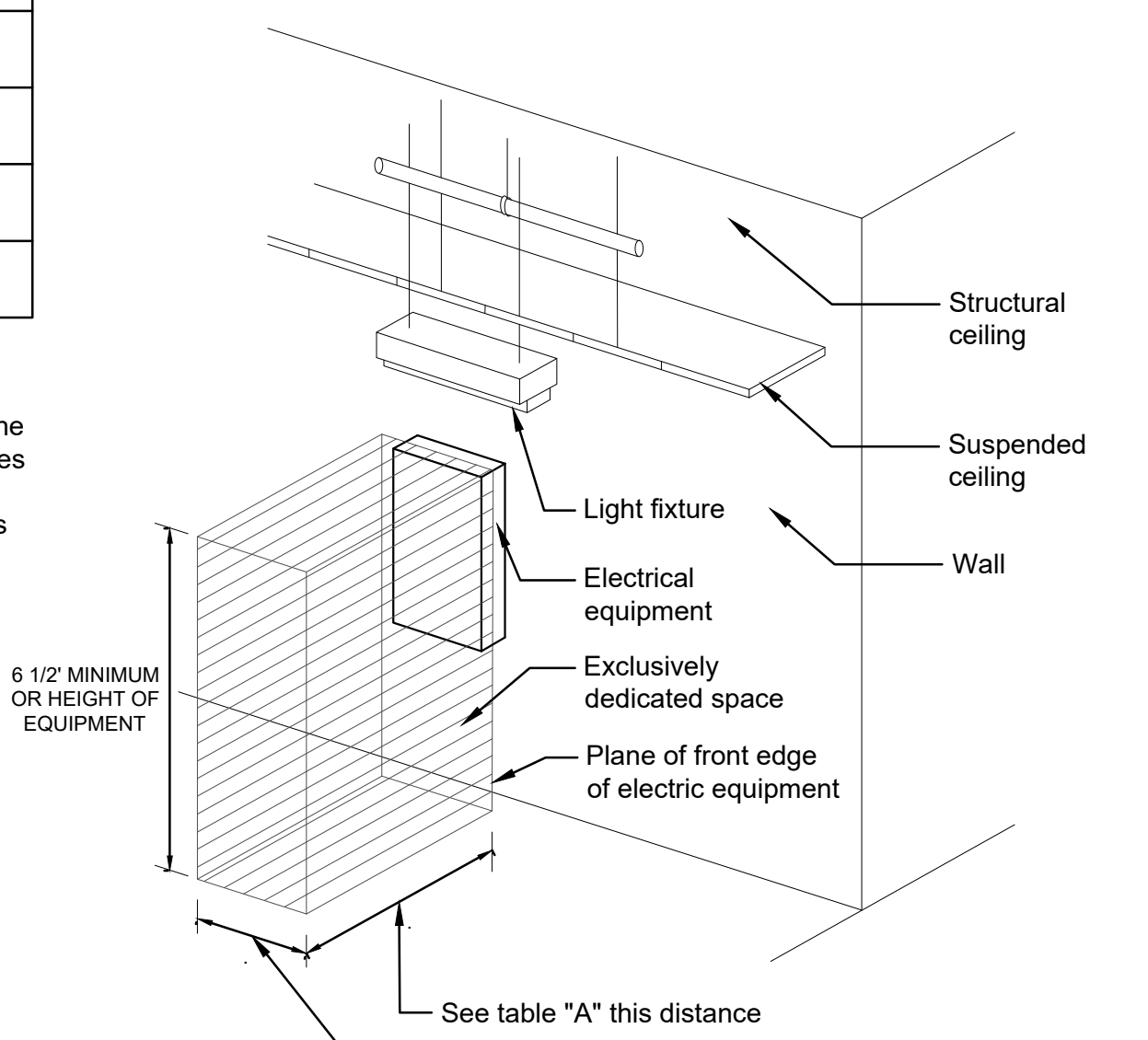
- NOTES:**
- This figure illustrates the additional exclusively dedicated space required over and under panel boards for cables, raceways, etc. to and from panel boards required by NEC section 110-26.
 - No piping ductwork or equipment foreign to the electrical equipment or architectural appurtenances shall be permitted to be installed in, enter or pass through the dedicated spaces shown. For exceptions see NEC section 110-26(E).

2 NEC Article 110.26 (E) Dedicated Equipment Space For Electrical Equipment
Scale: None

VOLTAGE TO GROUND	CONDITION:		
	1	2	3
(Normal)	(MINIMUM CLEAR DISTANCE)		
0-150	3'	3'	3'
151-600	3'	3 1/2'	4'

Where the "conditions" are as follows:

- Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating materials. Insulated wire or insulated busbars operating at not over 300 volts shall not be considered live parts.
- Exposed live parts on one side and grounded parts on the other side.
- Exposed live parts on both sides of the work space (Not guarded as provided in condition 1) with the operator between.



- NOTES:**
- This figure illustrates the working space in front of electrical equipment required by NEC section 110-26.
 - This includes but is not limited to panel boards, safety switches, motor starters, junction boxes and other electrical equipment.

3 NEC Article 110.26 Working Clearance For Electrical Equipment
Scale: None

Panel: P Voltage: 120/208 Main Rating: 400 Amp Bus Poles: 84 Main Rating: 400/3 Main Breaker Phase: 3 Fed From: Utility Wires: 4 Manufacturer: Square D NQ

Load Type	kVA	Breaker Size	ø	Breaker Size	kVA	Load Type		
Restroom Recs	0.4	20/1	1	A	2	201(G)	0.7	Dishwasher
Recpt. 100 and Office 102 Recs	0.7	20/1	3	B	4	201(G)	1.0	Refrigerator
EWC	0.7	201(G)	5	C	6	201	0.4	Breakroom Counter Recs
Convenience Recs 120 Storage	0.7	20/1	7	A	8	20/1	0.7	Door Opener
Assembly 130 Recs	0.7	20/1	9	B	10	20/1	1.1	Convenience Recs
Door Opener	0.7	20/1	11	C	12	20/1	0.7	Door Opener
Wire Straightener	1.2	20/1	13	A	14	20/1	0.1	Scale
Assembly 130 Recs	0.7	20/1	15	B	16	20/1	0.3	Tie Wrap Machine
Wire Cutter & Labeler	0.5	20/1	17	C	18	20/1	1.0	Wire Straightener
Foam Packaging	2.5	30/2	19	A	20	20/1	0.7	Assembly 130 Recs
	2.5	30/2	21	B	22	20/1	0.7	Wire Cutter & Labeler
EWH	2.3	30/2	23	C	24	20/1	0.5	EF1-4, Condensate Pump
	2.2	30/2	25	A	26		3.4	
	2.9	30/2	27	B	28	35/3	3.4	Forklift Charger
AHU-1	2.8	30/3	29	C	30		3.3	
	2.9	30/3	31	A	32		3.4	
	1.8	30/3	33	B	34	35/3	3.4	Forklift Charger
HP-1	1.7	30/3	35	C	36		3.3	
	1.8	30/3	37	A	38		5.0	
Air Compressor	2.7	35/2	39	B	40	45/3	5.0	PAC-1
	2.6	35/2	41	C	42		5.1	
	1.9	35/2	43	A	44		5.0	
Test Cart	2.0	20/3	45	B	46	45/3	5.1	PAC-2
	1.9	20/3	47	C	48		5.0	
	1.9	20/3	49	A	50		5.1	
Test Cart	1.9	20/3	51	B	52	45/3	5.0	PAC-3
	2.0	20/3	53	C	54		5.0	
JWR Office Recs	0.9	20/1	55	A	56	20/1	0.9	Conference 103 Recs
Spare	0.0	20/1	57	B	58	20/1	1.0	Copy/Print
Office 201 & 202 Recs	0.8	20/1	59	C	60	20/1	1.1	RR 204, 205, and 206 Recs
Rec 210	0.2	20/1	61	A	62	20/1	1.9	Storage 140 & 130 Lights
Exterior Lights	0.5	20/1	63	B	64	20/1	1.3	120 JWR Lights
Second Floor Lights	0.5	20/1	65	C	66	20/1	1.5	Sign Circuit
SPD	0.0	60/3	67	A	68	20/1	0.5	Lighting Control Panel
	0.0	60/3	69	B	70	20/2	1.2	Panel P1
	0.0	60/3	71	C	72		1.1	
203 IT Ded Quad	1.0	20/1	73	A	74	20/1		Spare
Spare	2.0	20/1	75	B	76	20/1		Spare
Spare	2.0	20/1	77	C	78	20/1		Spare
Spare	2.0	20/1	79	A	80	20/1		Spare
Spare	2.0	20/1	81	B	82	20/1		Spare
Spare	2.0	20/1	83	C	84	20/1		Spare

Demand Load Summary:

Lighting: 4.0 kVA @ 125% 5.0 kVA Phase A: 45.4 kVA 378.1 Amps
Largest Motor: kVA @ 125% kVA Phase B: 45.3 kVA 377.8 Amps
Gen Receptacles: 9.3 kVA Diversified 9.3 kVA Phase C: 44.7 kVA 372.4 Amps
Kitchen Equipment: kVA Diversified kVA Total Panel Load: 135.4 kVA 375.7 Amps
All Other: 121.0 kVA @ 100% 121.0 kVA

UL SE rated Feed thru lugs
 Separate Neutral Bar Existing Panel
 Ground bar

1. All breakers shall be 10,000 AIC and series rated to 42,000 AIC with breaker feeding this panel.

Panel: P1 Voltage: 120/208 Main Rating: 60 Amp Bus Poles: 6 Main Rating: 20A Main Lugs Only Phase: 3 Fed From: Panel P Wires: 1 Manufacturer: Square D NQ

Load Type	kVA	Breaker Size	ø	Breaker Size	kVA	Load Type		
Sump Pump Control Panel	0.5	20/2	1	A	2	20/2	0.5	Alarm Circuit
GFI Rec.	0.2	20/1	5	A	6	20/1		

Demand Load Summary:

Lighting: kVA @ 125% kVA Phase A: 1.2 kVA 10.0 Amps
Largest Motor: kVA @ 125% kVA Phase B: 1.1 kVA 9.2 Amps
Gen Receptacles: 0.2 kVA @ 100% 0.2 kVA
Kitchen Equipment: kVA Diversified kVA Total Panel Load: 2.3 kVA 11.1 Amps
All Other: 2.1 kVA @ 100% 2.1 kVA

UL SE rated Feed thru lugs
 Separate Neutral Bar Existing Panel
 Ground bar

1. All breakers shall be 10,000 AIC.

Demand Loads

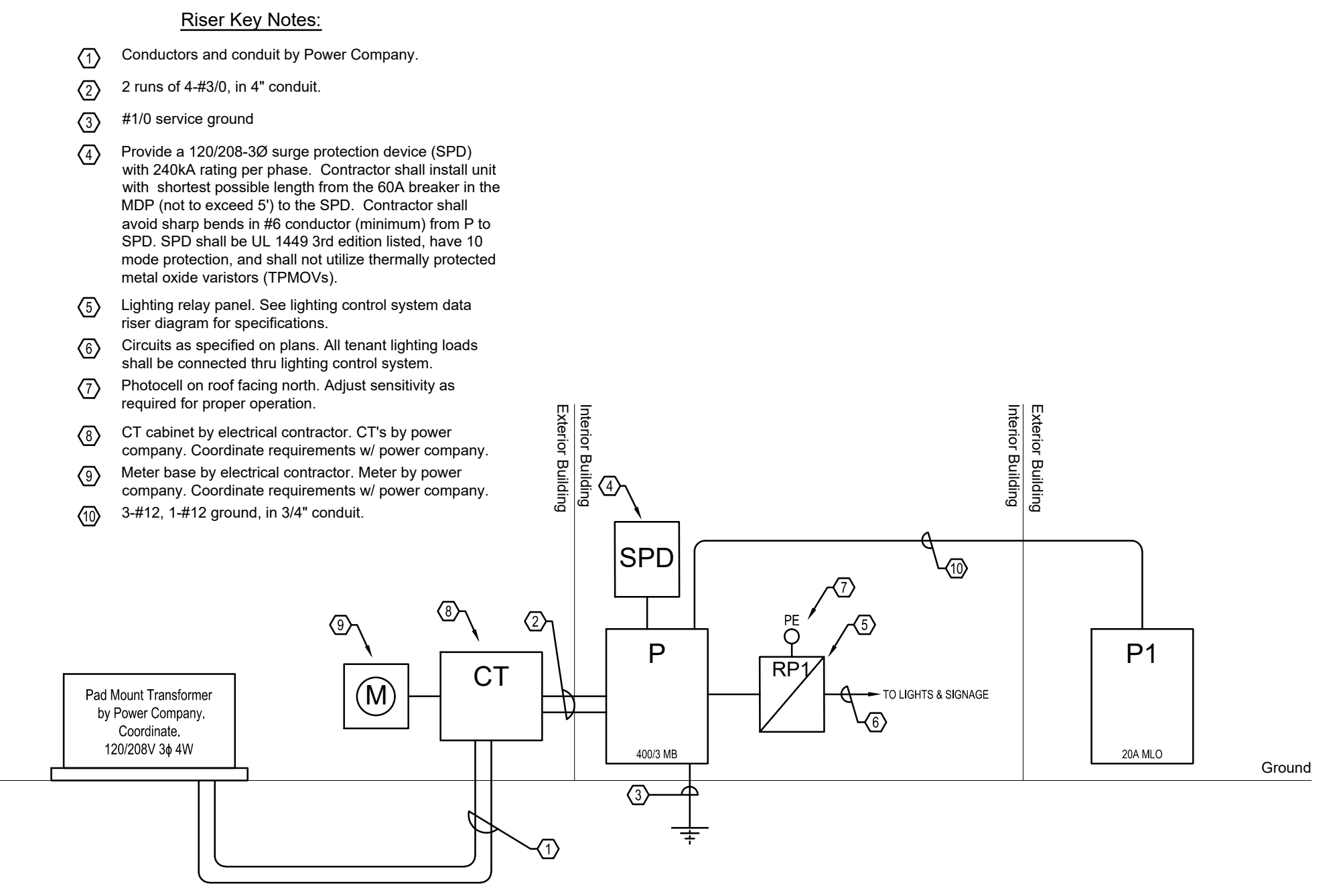
Load Type	Load
Lights (@ 125%)	5.0 KVA
Receptacles and Miscellaneous	19.4 KVA
Packaged Units (w/ elec heat)	45.3 KVA
Heat Pumps (includes 125% factor for largest motor)	5.3 KVA
Electric Water Heater	4.5 KVA
Air Handling Units	8.6 KVA
Fans	0.4 KVA
Sign Circuit	1.5 KVA
Equipment	45.4 KVA
Total:	135.4 KVA

375.8 AMPS @ 208V/3Ø

.. All code factors, including 125% factor, are included in existing loads per previous engineering drawings.

- Electrical Riser Notes**
- Grounds for all services shall be bonded together per NEC 250.58 and shall meet all requirements of NEC 250.104.
 - The design is based on an estimated fault current of 42,000. The contractor shall coordinate with the utility power company to confirm the available fault current at the transformer and service entrance conductor length. This information shall be submitted to engineer as part of the gear submittal, prior to beginning work.
 - The service equipment enclosure(s) and new panelboards shall be legibly marked in the field to indicate the available fault current prior to final inspection. NEC 110.24 and 408.6 The electrical contractor shall contact the power company and obtain the actual available fault current at the transformer. The contractor shall contact the engineer with this value, the conductor type, the verified length of conductors from the transformer to the service enclosure, as well as any and all feeders serving the new panel. With this information, the engineer can calculate the available fault current. The resulting calculated value shall be placarded on the exterior of the service enclosure/new panel and shall read as follows:

AVAILABLE FAULT CURRENT: _____
CALCULATED DATE: _____
 - Provide plaques per NEC 230.2(E) and graphic key plans for each service and service disconnecting means for each building service. All disconnecting means for each service shall be grouped. Label each disconnecting means for each service as disconnect # 1 of 1 for service number # 1 of 1. Provide labeling and graphic key plan at main electrical panel (or panels) showing the location and identification of their disconnecting means.
 - Where circuit breakers or fuses are applied in compliance with the series combination ratings marked on the equipment by the manufacturer, the equipment enclosure(s) shall be legibly marked in the field to indicate the equipment has been applied with a series combination rating. The placard shall be readily visible and state the following "CAUTION - SERIES COMBINATION SYSTEM RATED _____ AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED." NEC 110.22
 - New service entrance conductors for panel "P" shall not be more than twice the nominal width of the service enclosure routed horizontally and shall not be more than the greater of 5' or twice the nominal height of the service enclosure routed vertically inside the building ahead of the main breaker. Service disconnect in panel "P" shall be labeled on site as service disconnect per NEC 230.70(B).
 - Contractor shall meet all requirements of NEC 250.50 for service grounding. Connect to structural steel, rebar, metal water piping and any other available at the structured served. See service ground detail for more information.
 - It is the sole responsibility of the contractor to confirm exact responsibilities with the utility company prior to installation. This includes but is not limited to: who furnishes equipment, underground service cable/conduit, pit pad, metering scheme, lighting pole bases, etc.



1 Electrical Riser Diagram
Scale: None

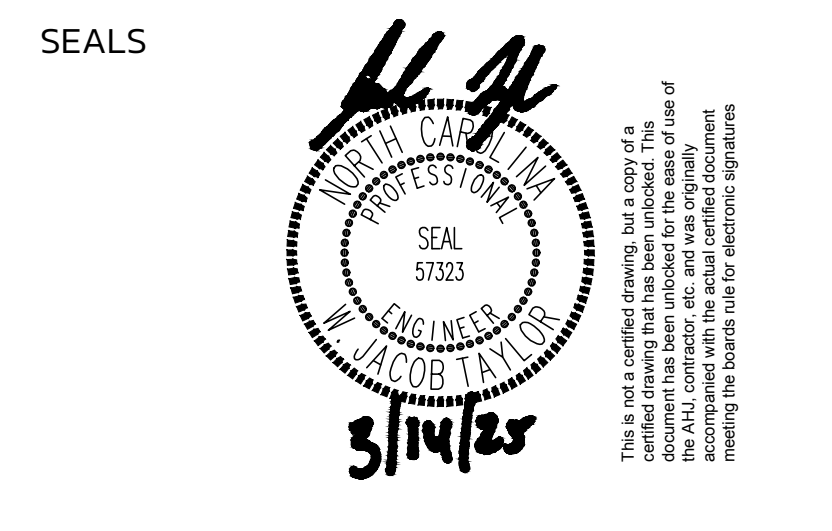


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REVISIONS

NO.	DESCRIPTION



JWR VENTURES

NEW BUILDING

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192 JARCO DRIVE
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PHASE PERMIT SET
DATE 03.14.2025
TD PROJECT # 24-024

DRAWING TITLE

ELECTRICAL DETAILS

DRAWING NUMBER
E-301

These drawings will be at the scale indicated when plotted at 24" x 36"

Equipment Connection Schedule																
Tag	Qty	Callout	Furnished By	KVA	HP	Voltage	FLA	MCA	Disconnect Size	Provided By	Nema Configuration	Fuse/Breaker Size	Feeder Size	Ground Size	Conduit Size	Note
1	1	Air Compressor	Others	5.3	-	208/1	25.5	-	60/2	Electrical	1	35/2	3 - #8	#10	3/4"	-
2	2	Forklift Charger	Others	10.1	-	208/3	28.0	-	60/3	Electrical	1	35/3	4 - #8	#10	3/4"	-
3	2	Test Cart	Others	5.8	-	208/3	16.0	-	30/3	Electrical	1	20/3	4 - #12	#12	3/4"	-
4	1	Foam Packaging	Others	5.0	-	208/1	24.0	-	NEMA LG-30R	Electrical	1	30/2	3 - #10	#10	3/4"	-
5	1	Wire cutter	Others	0.5	-	120/1	4.3	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
5A	1	Wire Labeler	Others	0.2	-	120/1	2.0	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
5B	1	Wire Straightener	Others	1.0	-	120/1	8.0	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
6	1	Wire cutter	Others	0.3	-	120/1	2.5	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
6A	1	Wire Labeler	Others	0.2	-	120/1	2.0	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
6B	1	Wire Straightener	Others	1.2	-	120/1	10.0	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
7	1	Tie Wrap Machine	Others	0.3	-	120/1	2.5	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-
8	1	Scale	Others	0.1	-	120/1	1.0	-	5-20R	Electrical	1	20/1	2 - #12	#12	3/4"	-

Electrical contractor shall verify all requirements, mounting height, voltage, load, connection type, etc. with equipment supplier.

Equipment Connection Schedule														
Tag	Callout	Furnished By	kVA	HP	Voltage	FLA	MCA	Disconnect Size	Provided By	Nema Configuration	Fuse/Breaker Size	Feeder Size	Ground Size	Conduit Size
PAC-1	Roof Top Unit	Mechanical	15.1	-	208/3	-	42.0	60/3	Elec	3R	45/3	4-#8	1-#10	3/4"
PAC-2	Roof Top Unit	Mechanical	15.1	-	208/3	-	42.0	60/3	Elec	3R	45/3	4-#8	1-#10	3/4"
PAC-3	Roof Top Unit	Mechanical	15.1	-	208/3	-	42.0	60/3	Elec	3R	45/3	4-#8	1-#10	3/4"
HP-1	Heat Pump	Mechanical	5.3	-	208/3	14.8	-	30/3	Elec	3R	30/3	4-#10	1-#10	3/4"
AHU-1	Air Handler	Mechanical	8.6	-	208/3	23.9	-	30/3	Elec	1	30/3	4-#10	1-#10	3/4"
EF-1	Exhaust Fan	Mechanical	0.1	-	120/1	0.8	-	3/4"	Elec	1	20/1	2-#12	1-#12	3/4"
EF-2	Exhaust Fan	Mechanical	0.1	-	120/1	0.8	-	3/4"	Elec	1	20/1	2-#12	1-#12	3/4"
EF-3	Exhaust Fan	Mechanical	0.1	-	120/1	0.8	-	3/4"	Elec	1	20/1	2-#12	1-#12	3/4"
EF-4	Exhaust Fan	Mechanical	0.1	-	120/1	0.8	-	3/4"	Elec	1	20/1	2-#12	1-#12	3/4"
EWH	Electric Water Heater	Plumbing	4.5	-	208/1	21.6	-	30/2	Elec	1	30/2	3-#10	1-#10	3/4"
-	Condensate Pump	Plumbing	0.1	-	120/1	0.8	-	3/4"	Elec	1	20/1	2-#12	1-#12	3/4"

Breaker sizes for all equipment sized at MOCP where applicable.
All disconnects for equipment shall be of fusible type and shall be fused as indicated.

Light Fixture Schedule							
Mark	Manufacturer	Fixture Description	Voltage	Driver Type	Lamp Type/Quantity	Total Wattage	
HB1	Orion Energy Systems #HHSL2218LUNVFD840LAFGWS20B	LED High Bay	120/1	1-LED Driver	1-LED	123	
HB1E	Same as 'HB1' with battery	LED High Bay	120/1	1-LED Driver	1-LED	123	
HB2	Orion Energy Systems #HHSL2230LUNVFD840LAFGWS20B	LED High Bay	120/1	1-LED Driver	1-LED	174	
HB2E	Same as 'HB2' with with battery	LED High Bay	120/1	1-LED Driver	1-LED	174	
HB3	Orion Energy Systems #HHSL2212LUNVFD840LAFGWS20B	LED High Bay	120/1	1-LED Driver	1-LED	68	
HB3E	Same as 'HB3' with with battery	LED High Bay	120/1	1-LED Driver	1-LED	68	
HB4	Orion Energy Systems #HHSL2230LUNVFD840LAFG	LED High Bay	120/1	1-LED Driver	1-LED	174	
L1	Coronet #LSR2-4-40-HIGH-UNV-DB-* -T15-FL-NA-NA-NA	4' Linear	120/1	1-LED Driver	1-LED	30	
L2	Coronet #LSR2-2-40-HIGH-UNV-DB-* -T15-FL-NA-NA-NA	2' Linear	120/1	1-LED Driver	1-LED	15	
L2E	Same as 'L2' with with battery	2' Linear	120/1	1-LED Driver	1-LED	15	
P1	Elite Lighting #SCH6-LED-SM-PM12-2000L-DIM10-MVOLT-WD-40K-90-WH-* -HH6-6501-W	6" Suspended LED Cylinder	120/1	1-LED Driver	1-LED	20	
P1E	Same as 'P1' with with battery	6" Suspended LED Cylinder	120/1	1-LED Driver	1-LED	20	
P2	Elite Lighting #OPR3-LED-5000L-DIM10-MVOLT-40K-WH	6' Linear	120/1	1-LED Driver	5000 Lumen LED Light Engine	66	
P4	Coronet #ORBSTFU-CAP-40-MED-UNV-DB-DG-PS-X-NA-STD	Large Chandelier	120/1	1-LED Driver	453 Lumen LED Light Engine	9	
R1	Elite Lighting #HH6-LED-1000L/1500L/2000L-DIM10-MVOLT-WD-27K/30K/35K/40K/50K-90-HH6-6501-W-WH	6" LED Can Light	120/1	1-LED Driver	2000 Lumen LED Light Engine	25	
R1E	Same as 'R1' with with battery	6" LED Can Light	120/1	1-LED Driver	2000 Lumen LED Light Engine	25	
R2	Elite Lighting #HH6-LED-2000L/2500L/3000L-DIM10-MVOLT-WD-27K/30K/35K/40K/50K-90-HH6-6501-W-WH	6" LED Can Light	120/1	1-LED Driver	3000 Lumen LED Light Engine	37	
R2E	Same as 'R2' with with battery	6" LED Can Light	120/1	1-LED Driver	3000 Lumen LED Light Engine	37	
W1	ILP #UC6UD-26L/32L39L-U-CCTS-M-M-WM-BLK	Exterior Cylinder Wall Sconce Downlight	120/1	1-LED Driver	2-LED	35	
W1E	Same as 'W1' with with battery	Exterior Cylinder Wall Sconce Downlight	120/1	1-LED Driver	2-LED	35	
X	Isolite #ELED-EM-BZ-MB	Emergency Egress (Battery) Wet location	120/1				
⊗	Isolite #RL-EM-R-U-WH (1 Face)	Emergency Exit Light (w/ Battery)	120/1				
⊗	Isolite #RL-EM-R-U-WH (2 Face)	Emergency Exit Light (w/ Battery)	120/1				

General Notes:

- All fixtures and components shall comply with NC Building Code, 2018 North Carolina Energy Conservation Code and shall be UL listed. All led drivers shall comply with NEMA 410.
- All new, relocated, or reswitched fixtures that utilize ballasts shall be provided with a luminaire disconnect where required per NEC section 410.130(G). Use Ideal PowerPlug or equal inside fixture.
- All fixtures noted as emergency shall have emergency illumination functionality as described below. Batteries must be rated for the environment in which they are installed, in all cases.
 - Interior linear LED and fluorescent fixtures shall have 1,100 lumen (minimum) output, 90 minute battery. LED and fluorescent downlights shall have a 500 lumen (minimum) output, 90 minute battery. Otherwise fixture shall be provided with a full output inverter.
 - Exterior emergency fixtures shall have an integral exterior rated (0° F) or remotely mounted 1,100 lumen (minimum) output, 90 minute battery.
 - Test switches for emergency batteries/inverter shall be integral to the fixture/device served, unless otherwise noted.
 - Emergency fixtures shall operate at least one lamp where multiple emergency fixtures are to be installed in that area, and shall operate at least two lamps where the loss of a single lamp would leave the space in total darkness during emergency operation.
 - Emergency lighting design is based on fixtures lumen outputs as described above. Contractor shall verify all existing emergency batteries to ensure lumen outputs are as indicated and shall replace any batteries rated less outlined above.
 - Emergency lighting units with dedicated emergency heads are spaced based on their unique output. If contractor selects an alternate fixture, they are responsible for ensuring an average of 1 foot candle is provided along the paths of egress for at least 90 minutes.
- Lamp color temperature for new lamps shall match existing to remain lamps, and all lamp colors for different fixture types and sources shall be consistent throughout the space or area unless specifically noted otherwise. Contractor shall ensure that all interior and exterior lamps are the same color temperature.
- Light fixtures indicated as dimmable shall be provide with all necessary components (driver, switch etc.) necessary to achieve 5% minimum dimming unless another specific minimum dimming level is noted.

Electrical System and Equipment Energy Code Compliance

Compliance Method: Prescriptive
Total Exterior Wattage Calculation per table C405.5.1(2)
Specified vs Allowed: 453 vs 1,527.6

Base Site Allowance Zone 3 750 W
Building Entrances and Exits:
Main Entries 30 WLF for 6 LF of door width
Other Doors 20 WLF for 12 LF of door width
Entry Canopies 0.40 W/SF for - 894 SF

See Light Fixtures Schedule for fixture lamp type, quantity, driver, total fixture wattage and additional information.

Engineer Statement:
To the best of my belief, understanding, and knowledge; the design of electrical system of this building complies with NC State Building Code and the 2018 NC Energy Conservation Code.
Name: W. Jacob Taylor, PE

Electrical System and Equipment Energy Code Compliance

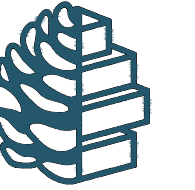
Compliance Method: Prescriptive
Total Interior Wattage Specified vs Allowed: 3,585 vs 11,667.7

See Exterior Lighting Summary for exterior lighting energy code calculations (if required)
See Light Fixtures Schedule for interior fixture lamp type, quantity, driver, total fixture wattage and additional information.

Engineer Statement:
To the best of my belief, understanding, and knowledge; the design of electrical system of this building complies with the NC State Building Code and the 2018 NC Energy Conservation Code.
Name: W. Jacob Taylor, PE

Energy Code Section C406 Compliance:

This project is complying with section C406 for the energy code under the provisions of C406.3 (Reduced lighting power density). The remaining provisions are therefore not required and have not been included in this design.



TURPENTINE DESIGN

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REVISIONS

No.	Description

SEALS



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DRAWING TITLE

ELECTRICAL DETAILS

DRAWING NUMBER

E-302