

DIVISION 15A – PLUMBING

- 1.1 DESCRIPTION OF THE WORK
A. Work under this section includes, but is not necessarily limited to, furnishing, installing, and/or demo of the following:
1. Plumbing fixtures, water heaters, and any other equipment necessary.
2. Cold and hot water piping and insulation.
3. DWV piping.
4. Connection of all equipment; drain, vent, water.
B. All work under this contract shall be installed in compliance with the latest edition of the following codes and standards insofar as they apply.
1. The National Electrical Code.
2. 2018 N.C. Building Code: Plumbing, and all applicable category codes.
3. American Society of Sanitary Engineering Standard 1010.
4. All local codes and ordinances.
C. These codes are minimum standards. If codes require a more stringent method of construction than the specifications require, the codes shall govern.
D. The Plumbing Contractor shall be licensed in the State of North Carolina and have all local licenses required for the work.
E. Obtain all permits, licenses, inspections, etc., required for the work, and pay for the same.
1.2 INTENT
A. The intent of these specifications and accompanying drawings is to convey as reasonably as possible the requirements for a complete job ready for the building to operate.
1.3 COORDINATION
A. Coordinate work with other contractors.
B. Locations shown are approximate.
C. Coordinate all exterior piping connections w/Architect, site contractor/plans.
1.4 SHOP DRAWINGS
A. Shop drawings shall be submitted for plumbing fixtures and for pipe.
PART 2 – PRODUCTS
2.1 FIXTURES
A. Each fixture shall be properly supported from the building structure as required to the end effect that all fixtures and accessories will be held rigidly in place.
B. Provide loose key angle stops and chrome plated supply pipe water supplies to fixtures.
C. All exposed piping traps and accessories for fixtures shall be chrome plated.
D. Provide shutoff valves for all sinks, water heaters, toilets, washing machines, refrigerator icemaker, exterior hose bibbs and all other plumbing fixtures.
E. Provide trap primers for all floor drains in areas not served by hose bibbs.

- 2.2 PIPING
A. Drain waste: All waste piping shall be Schedule 40 PVC-DWV with the following exceptions:
B. Hot and cold water piping above grade: Type "L" copper w/solder joints (ASTM-B88), hard drawn with wrought copper fittings (ANSI B16.22)
C. Cold water piping below grade: Type "K" copper (ASTM-88A) soft drawn.
D. Hangers: Use pipe hangers where required on 8-foot centers with saddles to avoid crushing insulation.
E. Solder: 95/5. Lead free.
F. Unions: Provide unions where indicated on drawings, in long runs of piping (except drainage) and at equipment to provide convenient disassembly.
2.3 CLEANOUTS
A. Hex plugs in rough areas: Recessed plugs with cover plates in exposed locations.
2.4 SHOCK ARRESTERS
A. Provide shock arresters as required by codes, manufacturer's recommendations and accepted industry standards for quality construction.
PART 3 – EXECUTION
3.1 CONNECTIONS
A. This contract includes complete connection of cold water, hot water, drainage, and vent piping as required.
B. The connection to water closets shall be made watertight with gasket and wax ring.
C. Where water pipes connect to exposed chrome plated trim, use proper chrome plated escutcheons.
3.2 SERVICE ACCESS
A. All valves and accessories shall be insulated so that they can be properly serviced.
3.3 ROUTING OF PIPING
A. Coordinate routing of piping with others, line up work true to or at right angle to adjacent surfaces and in a workmanlike manner.

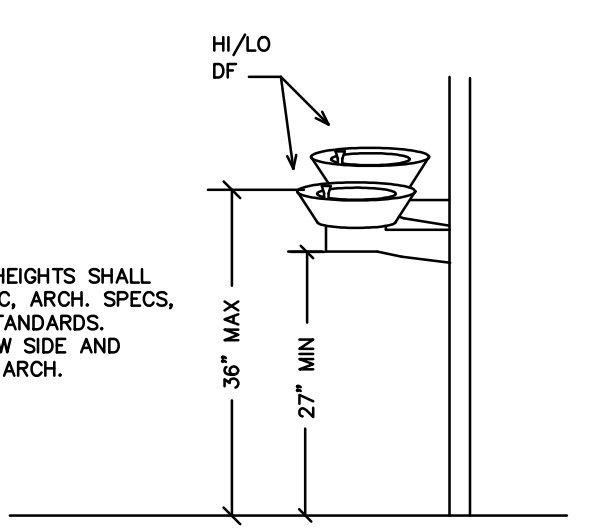
- B. Space pipe hangers 8'-0" on center for one inch and smaller pipe, 4'-0" on center for 1-1/4 inch and larger pipe.
C. Pipe hangers for insulated lines shall have suitable saddles to protect insulation.
3.4 INSULATION
A. All H/W and C/W piping shall be insulated with a min. of 1" inch elastomeric insulation (R=6.5 min.) in unconditioned areas.
3.5 INSPECTIONS AND TESTS
A. Before being concealed, all water, soil and vent piping shall be tested to determine if they are water- and air-tight.
B. Prior to placing into service, entire system shall be tested for leaks in strict accordance with state and local codes.
3.6 STERILIZATION OF PIPING
A. Sterilize the new water piping thoroughly with a solution containing not less than 50 parts per million of available chlorine.
3.7 SERVICE PRESSURE
A. Provide approved water-pressure reducing valve (PRV) if service pressure exceeds 80 psi to reduce pressure to 80 psi static or less and as required per NCSBC-Plumbing Sect. 604.8.
3.8 DRAINDOWN
A. Contractor to provide for complete plumbing system drain down.
3.9 CLEAN UP
A. During construction, keep the site clear of debris and upon completion, and before final inspection, clean up the premises to remove all evidence of his work.
3.10 GUARANTEES
A. Guarantee all materials and labor included in the plumbing work for a period of one year from date of final acceptance by the Owner.
B. Any defects in the system which become evident during the guarantee period shall be corrected without cost to the Owner.

PLUMBING FIXTURE SCHEDULE *
Table with 4 columns: MARK, DESCRIPTION, ALTERNATE MANUFACTURER/MODEL, ALTERNATE MANUFACTURER/MODEL. Rows include DF (Drinking Fountain), PWH (Pressure Water Heater), LAV (Lavatory), MS (Mop Sink), TMV (Thermostatic Mixing Valve), and WC (Water Closet).

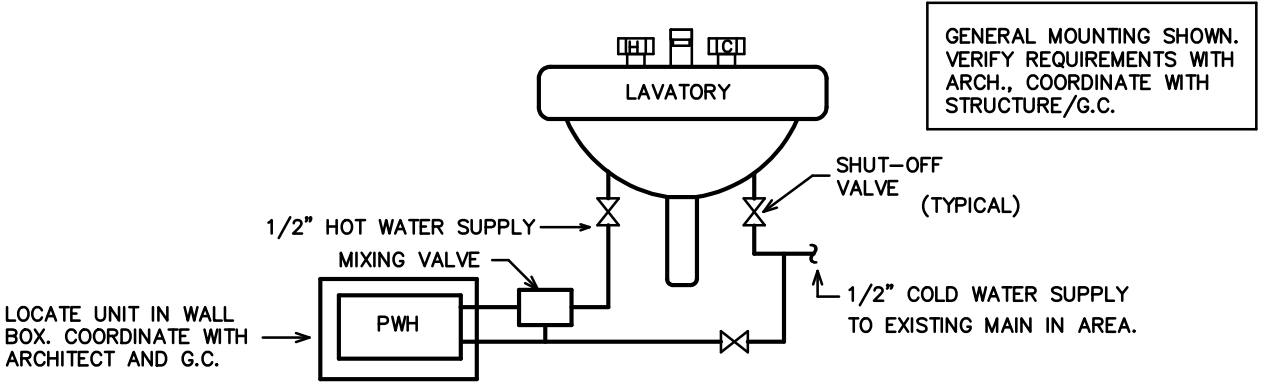
* OR APPROVED EQUAL

SYMBOL LEGEND – PLUMBING

Table with 2 columns: SYMBOL, DESCRIPTION (U.O.N.). Lists symbols for waste piping, vent piping, cold/hot water piping, shut-off valves, dielectric unions, cleanouts, and vent thru roof.



1 DF DETAIL SCALE: NOT TO SCALE

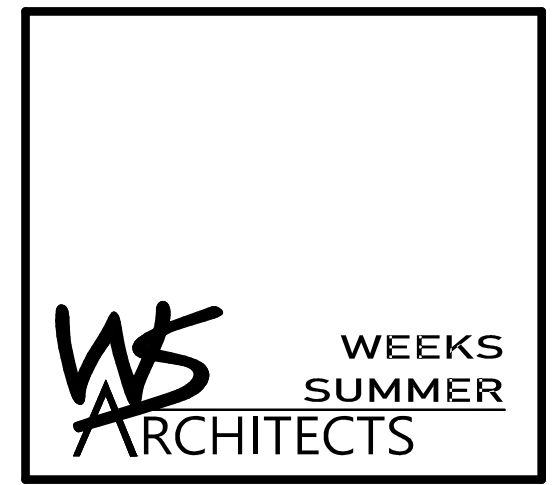


2 PWH DETAIL SCALE: NOT TO SCALE

GENERAL NOTES – PLUMBING

- 1. PREPLAN ALL WORK PRIOR TO ORDERING, PURCHASING, OR FABRICATING ANY PART OF THE WORK DESCRIBED BY THIS DRAWING.
2. IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS WITH EXISTING FIELD CONDITIONS OR THE WORK OF OTHER TRADES.
3. RESOLVE ALL CONFLICTS PRIOR TO INCURRING ANY MATERIAL OR LABOR EXPENSES.
4. COMPLY WITH THE MANUFACTURER'S TECHNICAL INSTRUCTIONS WHEN INSTALLING PLUMBING FIXTURES, MATERIALS, AND DEVICES.
5. LOCATE FIXTURES AND EQUIPMENT GENERALLY AS SHOWN ON THE PLANS; HOWEVER, COORDINATE LOCATIONS WITH ACTUAL FIELD CONDITIONS TO PRESERVE ALL CODE-REQUIRED AND MANUFACTURER-REQUESTED SERVICE CLEARANCES.
6. COORDINATE ROUTING OF ALL PIPING WITH BUILDING STRUCTURE AND WITH THE WORK OF OTHER TRADES.
7. ALL HANDICAP FIXTURES AND INSTALLATION OF HANDICAP FIXTURES SHALL CONFORM TO ADA REQUIREMENTS.
8. AT EXTERIOR WALL, INSTALL WATER PIPING ON HEATED SIDE OF WALL INSULATION.
9. PROVIDE WATER HAMMER ARRESTORS AT THE END OF EACH COLD AND HOT WATER BRANCH RISER.
10. PROVIDE CONCRETE RING FOR ALL EXTERIOR CLEAN-OUTS.
11. REVIEW SITE PLAN FOR UTILITIES AND ORIENTATION PRIOR TO START OF WORK.
12. O.C. TO PROVIDE ROOF PENETRATIONS.
13. PROVIDE/VERIFY HOT WATER TO NEW MOP SINK AT 120 DEGREES F. PROVIDE/VERIFY HOT WATER TO NEW LAVATORY AT 110 DEGREES (MAX.) F. PROVIDE ASSE 1070 THERMOSTATIC MIXING VALVE (TMV) FOR LAV AS REQUIRED.

- NOTES:
1) INSTALL WATER HEATER BELOW LAV, AND/OR CONCEALED IN CABINETRY.
2) PC TO PROVIDE AND INSTALL WATER HEATER. EC TO WIRE.
3) ALL WORK MUST BE DONE IN NEAT MANNER TO BE APPROVED BY ARCHITECT AND OWNER.
4) PROVIDE ASSE 1070 MIXING VALVE AS REQUIRED BY NCP.
GENERAL MOUNTING SHOWN. VERIFY REQUIREMENTS WITH ARCH. COORDINATE WITH STRUCTURE/G.C.C.



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BID SET 4.28.22

WVS: 15RE.13.3

SCO ID# 21-24079-01A

PROJECT TITLE
BRUNSWICK CTY
VISITOR'S CENTER
394 WHITEVILLE ROAD NW
SHALLOTTE, NORTH CAROLINA

PROJECT NO.
2104A

DRAWING TITLE
PLUMBING SPECIFICATIONS

PLOT DATE 1/07/2022

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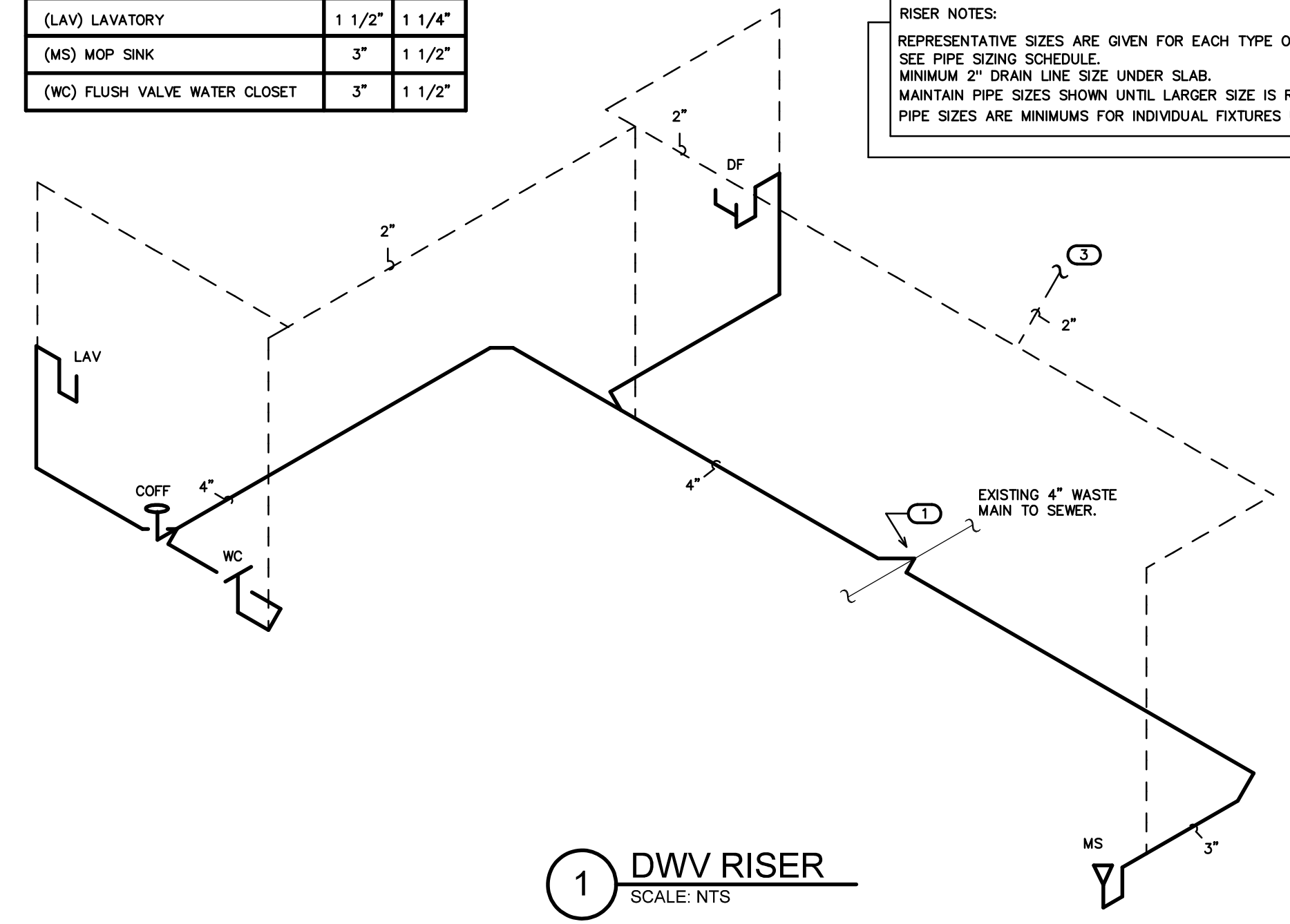
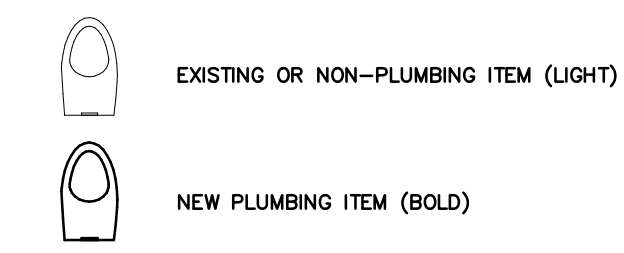
P1

(VERIFY ALL EQUIPMENT REQUIREMENTS PRIOR TO ROUGH-IN)

PIPE SIZING SCHEDULE		
FIXTURE TYPE	DRAIN	VENT
(DF) DRINKING FOUNTAIN	1 1/4"	1 1/4"
(LAV) LAVATORY	1 1/2"	1 1/4"
(MS) MOP SINK	3"	1 1/2"
(WC) FLUSH VALVE WATER CLOSET	3"	1 1/2"

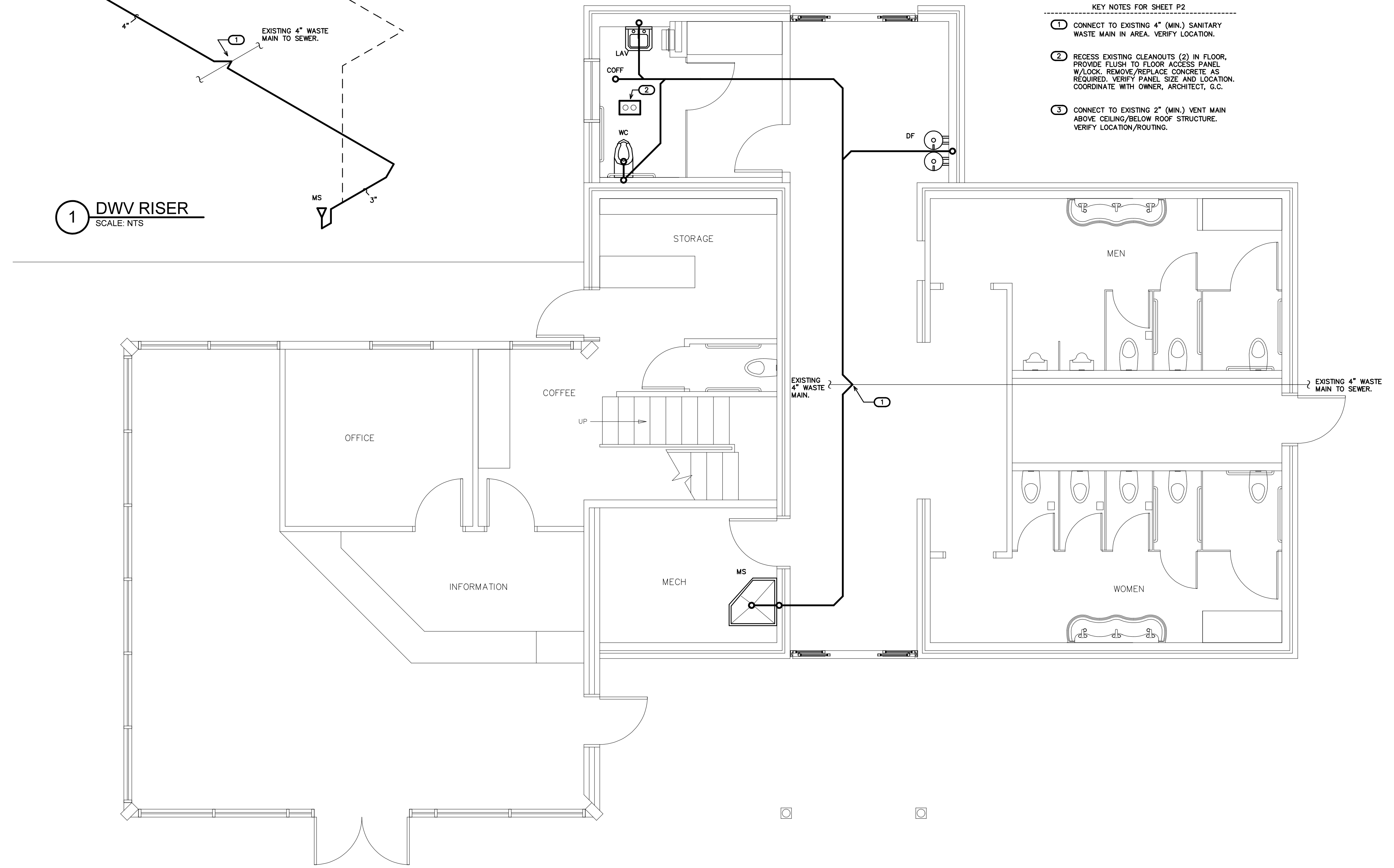
RISER NOTES:
 REPRESENTATIVE SIZES ARE GIVEN FOR EACH TYPE OF FIXTURE. SEE PIPE SIZING SCHEDULE.
 MINIMUM 2" DRAIN LINE SIZE UNDER SLAB.
 MAINTAIN PIPE SIZES SHOWN UNTIL LARGER SIZE IS REACHED.
 PIPE SIZES ARE MINIMUMS FOR INDIVIDUAL FIXTURES U.O.N.

NOTE:
 THE EXISTING INFORMATION SHOWN ON THIS SHEET IS FROM PREVIOUS PERMIT DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND FIELD VERIFYING ALL RELEVANT INFORMATION. THE SUBMISSION OF A BID INDICATES ACCEPTANCE OF EXISTING CONDITIONS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES NOTED.
 REMOVE AND REPLACE ALL CONCRETE, ASPHALT, WALL MATERIAL, CEILINGS, ETC., AS REQUIRED TO LOCATE EXISTING LINES AND INSTALL NEW LINES.
 THE PLUMBING CONTRACTOR SHALL LOCATE, TRACE, AND INSPECT FOR PROPER DRAINAGE AND CONDITION, ANY/ALL EXISTING BUILDING DRAINAGE LINES AND SYSTEMS (SANITARY, GREASE, ETC.) THAT ARE TO BE UTILIZED BY THE OCCUPANT/NEW CONNECTIONS PER DESIGN DRAWINGS THROUGH USE OF CAMERA, DYES, AND/OR ANY MEANS NECESSARY-- PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL REMEDY ANY ISSUES IN ORDER TO ENSURE A PROPER FUNCTIONING, CODE COMPLIANT SYSTEM, WHICH INCLUDES BUT IS NOT LIMITED TO, SETTING OF LINES, REMOVAL OF DEBRIS, REPLACEMENT OF ANY IMPROPER OR DAMAGED PIPING, VERIFY AVAILABLE DEPTH/INVERT REQUIREMENTS, FLOW DIRECTION OF EXISTING LINES, PROVIDE DOCUMENTATION TO THE ENGINEER FOR REVIEW. THE EXISTING AND NEW DRAINAGE SYSTEMS/CONNECTIONS SHALL BE TESTED FOR PROPER OPERATION UPON COMPLETION OF WORK. ALL ISSUES AND SOLUTION OPTIONS ARE TO BE COORDINATED WITH THE DRAINAGE SYSTEM/BUILDING OWNER, G.C., ARCHITECT, AND ENGINEER. PROVIDE AS-BUILT DRAWINGS FOR ENGINEER REVIEW.
 COORDINATE WORK WITH BUILDING OWNER SO AS NOT TO IMPACT OPERATION OF ANY ADJACENT SPACES/LEVELS. NIGHT AND WEEKEND WORK MAY BE REQUIRED.

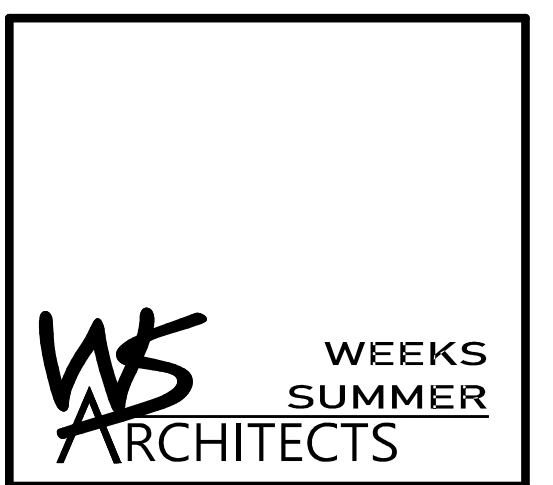


1 DWV RISER
 SCALE: NTS

- KEY NOTES FOR SHEET P2**
- CONNECT TO EXISTING 4" (MIN.) SANITARY WASTE MAIN IN AREA. VERIFY LOCATION.
 - RECESS EXISTING CLEANOUTS (2) IN FLOOR, PROVIDE FLUSH TO FLOOR ACCESS PANEL W/LOCK. REMOVE/REPLACE CONCRETE AS REQUIRED. VERIFY PANEL SIZE AND LOCATION. COORDINATE WITH OWNER, ARCHITECT, G.C.
 - CONNECT TO EXISTING 2" (MIN.) VENT MAIN ABOVE CEILING/BELOW ROOF STRUCTURE. VERIFY LOCATION/ROUTING.

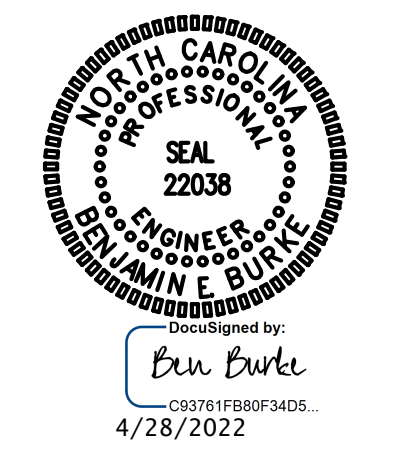


1 DWV PLAN
 SCALE: 1/4" = 1'-0"



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PROJECT NO.
2104A
DRAWING TITLE
DWV PLAN

P2

PLOT DATE 1/07/2022

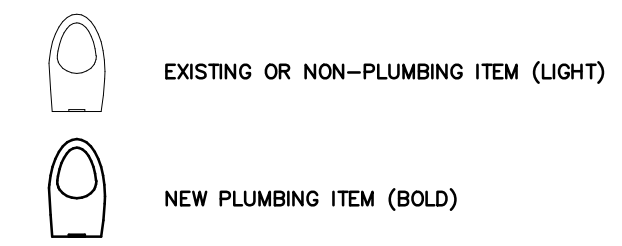
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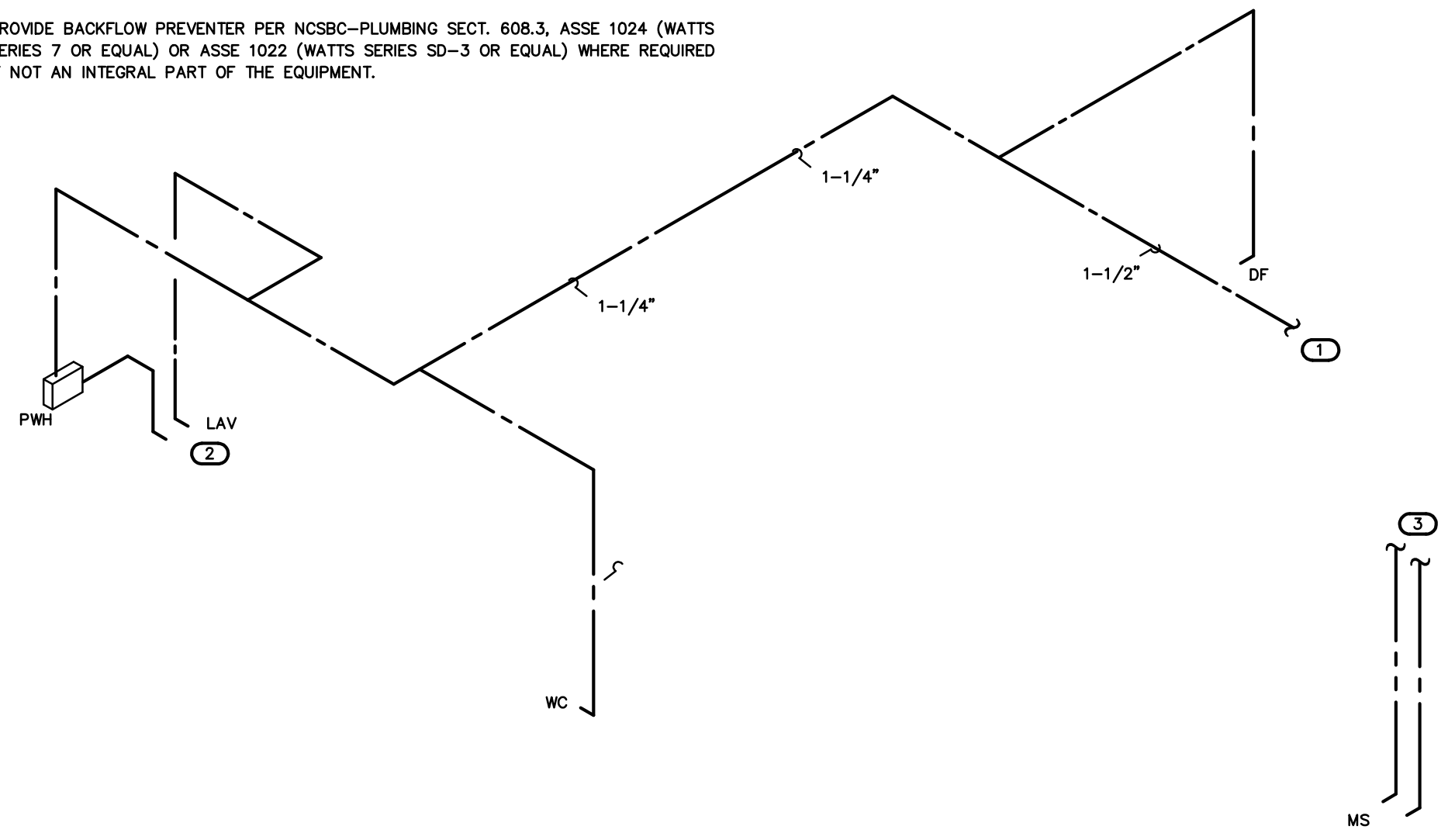
PIPE SIZING SCHEDULE		
FIXTURE TYPE	CW	HW
(DF) DRINKING FOUNTAIN	1/2" *	-
(LAV) LAVATORY	1/2"	1/2"
(MS) MOP SINK	1/2"	1/2"
(WC) FLUSH VALVE WATER CLOSET	1"	-

DWV/WATER RISER NOTES:
 REPRESENTATIVE SIZES ARE GIVEN FOR EACH TYPE OF FIXTURE. SEE PIPE SIZING SCHEDULE.
 MINIMUM 2" DRAIN LINE SIZE UNDER SLAB.
 MAINTAIN PIPE SIZES SHOWN UNTIL LARGER SIZE IS REACHED.
 PIPE SIZES ARE MINIMUMS FOR INDIVIDUAL FIXTURES U.O.M.

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 COORDINATE WORK WITH BUILDING OWNER SO AS NOT TO IMPACT OPERATION OF ANY ADJACENT SPACES/LEVELS. NIGHT AND WEEKEND WORK MAY BE REQUIRED.

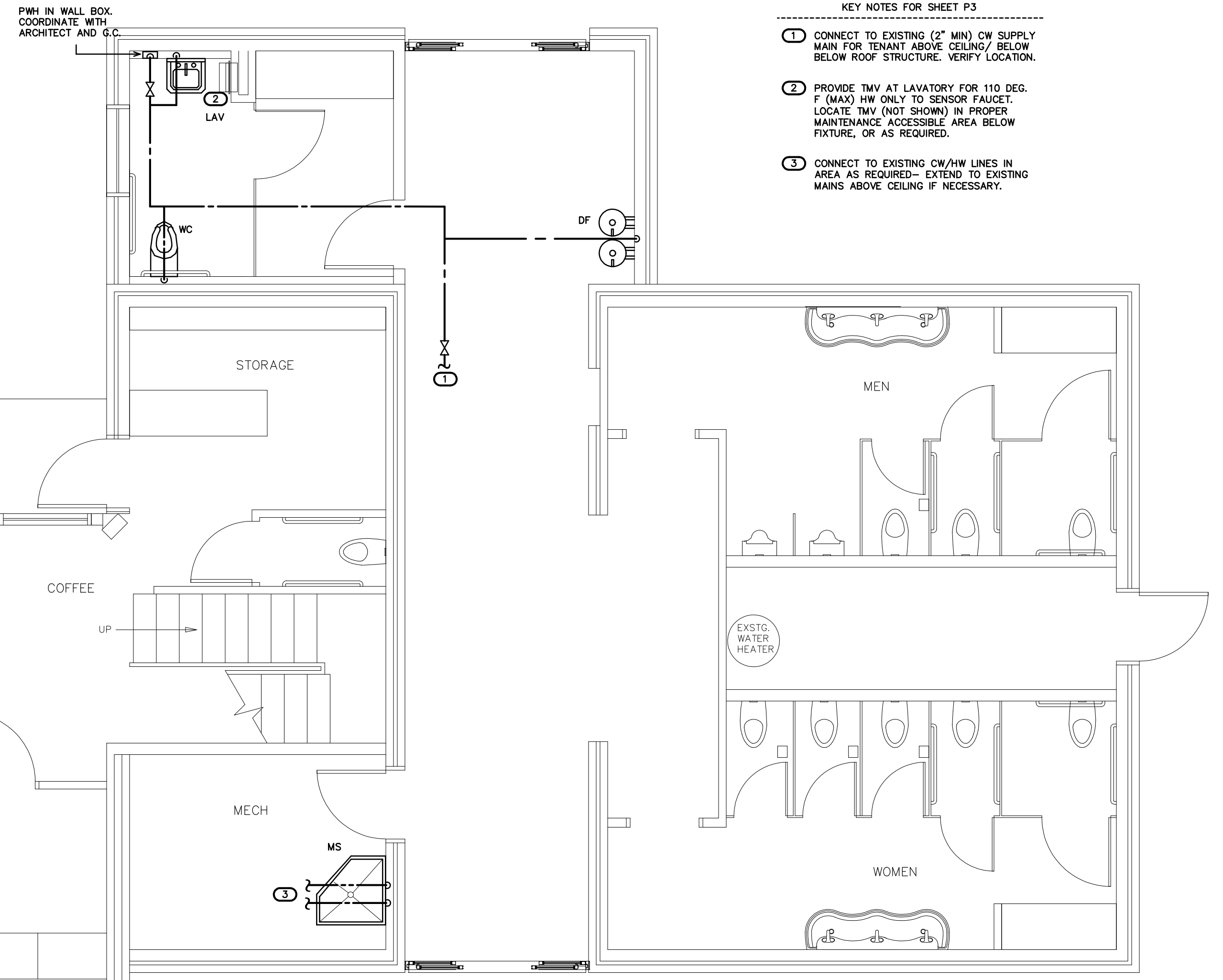


* PROVIDE BACKFLOW PREVENTER PER NCSBC-PLUMBING SECT. 608.3, ASSE 1024 (WATTS SERIES 7 OR EQUAL) OR ASSE 1022 (WATTS SERIES SD-3 OR EQUAL) WHERE REQUIRED IF NOT AN INTEGRAL PART OF THE EQUIPMENT.

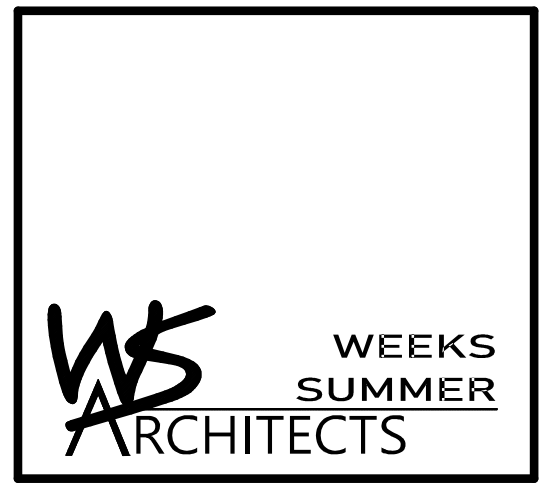


2 WATER RISER
 SCALE: NTS

- KEY NOTES FOR SHEET P3
- CONNECT TO EXISTING (2" MIN) CW SUPPLY MAIN FOR TENANT ABOVE CEILING/ BELOW BELOW ROOF STRUCTURE. VERIFY LOCATION.
 - PROVIDE TMV AT LAVATORY FOR 110 DEG. F (MAX) HW ONLY TO SENSOR FAUCET. LOCATE TMV (NOT SHOWN) IN PROPER MAINTENANCE ACCESSIBLE AREA BELOW FIXTURE, OR AS REQUIRED.
 - CONNECT TO EXISTING CW/HW LINES IN AREA AS REQUIRED- EXTEND TO EXISTING MAINS ABOVE CEILING IF NECESSARY.

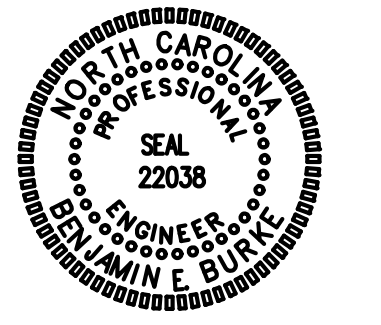


1 WATER PLAN
 SCALE: 1/4" = 1'-0"



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Decommissioned by
Ben Burke
 4/28/2022

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 WVS: 15RE.13.3
 SCO ID# 21-24079-01A

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BRUNSWICK CTY VISITOR'S CENTER
 394 WHITEVILLE ROAD NW
 SHALLOTTE, NORTH CAROLINA

PROJECT NO.
2104A
 DRAWING TITLE
WATER PLAN



PLOT DATE 1/07/2022

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AIR DISTRIBUTION SCHEDULE							
MARK	* MANUFACTURER	MODEL NO.	NECK SIZE	FACE SIZE	MATERIAL	SERVICE	NOTES
A	CARNES	RTDBH	9" X 4"	11" X 6"	STEEL	SUPPLY	** SIDE WALL, OR CEILING MOUNTED, WHITE

* OTHER ACCEPTABLE MODELS ARE E.H. PRICE #520 D, AND TITUS #300 RL.

** PROVIDE INSULATED DUCT BOOT FOR DIFFUSER WITH ROUND CONNECTION FOR FLEXIBLE DUCT.
COORDINATE BORDER TYPE WITH THE CEILING TYPE. SEE ARCH SHEETS
PROVIDE CUT SHEETS TO OWNER/ARCH. PRIOR TO ORDERING.

Brunswick City Visitor Center-M1

EXHAUST FAN SCHEDULE	
EXHAUST FAN #X (EF-X)	* CARNES MODEL# VCD0010C EXHAUST FAN. 93 CFM @ 1/4" SP. 640 RPM. 1.1 AMPS. 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO WALL CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.

* OTHER ACCEPTABLE MODELS ARE LOREN COOK #GC-240, AND GREENHECK #SP-A110.

FLEXIBLE DUCTWORK SIZES		
MAXIMUM CFM'S		
SIZES	SUPPLY	RETURN
4"	100	100
6"	175	175
10"	250	250
12"	400	350
14"	550	500
16"	NA	900

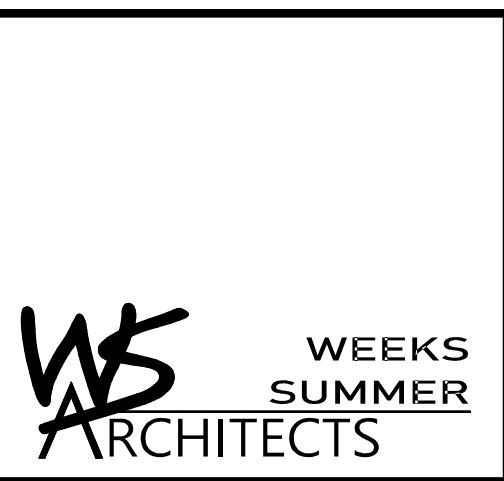
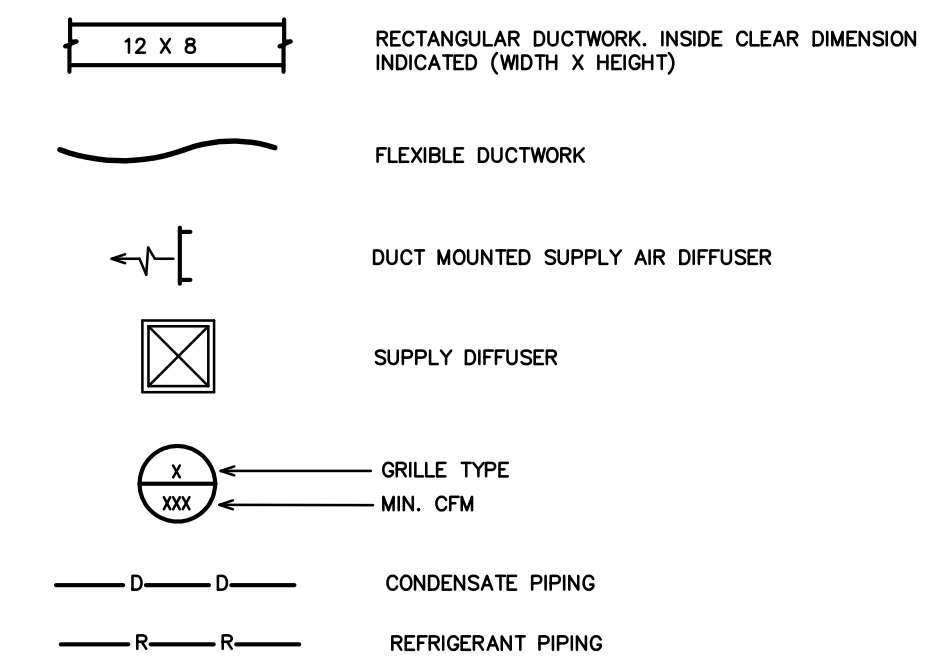
(CHANGE OUT EXISTING FLEX DUCTS AND COLLARS AS REQUIRED TO GET NEW CFM'S SHOWN)

FLEXIBLE DUCTWORK NOTES
<ol style="list-style-type: none"> INSTALL FLEXIBLE DUCTWORK RUNS AS STRAIGHT AS POSSIBLE. DO NOT ALLOW FLEXIBLE DUCT TO SAG BETWEEN SUPPORTS. DO NOT STRETCH A SHORT SECTION TO FIT A SLIGHTLY LONGER SECTION. THIS DISTORTS THE DUCT SHAPE AND IMPEDES AIR FLOW. DO NOT CRUSH DUCTWORK TO FIT IN A SPACE SMALLER THAN ITS ORIGINAL OUTSIDE DIAMETER. MAXIMUM ALLOWABLE DEFORMATION IS 15% OF ORIGINAL VOLUME. USE RIGID 90 DEGREE ELBOWS AT ANY LOCATION WHERE THE DUCTWORK BECOMES DISTORTED. EXTREME CARE SHALL BE TAKEN TO ELIMINATE ANY REDUCTION IN FLOW WITHIN THE FLEXIBLE DUCTS. THE MECH. CONTRACTOR WILL BE REQUIRED TO REPLACE THE FLEXIBLE DUCT WITH RIGID IF PROPER FLOW IS NOT OBTAINED. SIZE ALL FLEXIBLE DUCT SO AS NOT TO EXCEED MAXIMUM CFM'S GIVEN IN TABLE.

GENERAL NOTES - MECHANICAL

- ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE AND ALL LOCAL AND OTHER APPLICABLE CODES.
- ANY PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR (MC).
- ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMEN. THE MC SHALL COORDINATE ALL OF HIS WORK WITH THE GENERAL CONTRACTOR (GC) AND OTHER TRADES.
- THE LOCATION OF ALL DUCT, PIPING AND EQUIPMENT SHALL BE ADJUSTED TO ACCOMMODATE ANTICIPATED OR ENCOUNTERED INTERFERENCES.
- THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS REFER TO THE ARCHITECTURAL PLANS.
- THE MC SHALL BE RESPONSIBLE FOR ALL ELECTRICAL STARTERS INTERLOCKS, CONTROL WIRING CONDUIT AND POWER WIRING FROM DISCONNECTS TO HIS EQUIPMENT, USING A LICENSED ELECTRICIAN.
- THE MC SHALL USE FIRE DAMPERS FOR PROTECTION OF THE OPENING IN ACCORDANCE WITH STATE AND LOCAL CODES IN ALL LOCATIONS WHERE PENETRATIONS OF RATED WALLS AND FLOORS OCCUR. SEE ARCHITECTURAL PLANS FOR RATED WALL AND FLOOR LOCATIONS. PROVIDE ACCESS DOORS AT ALL DAMPER LOCATIONS. LOCATE DOORS FOR EASY ACCESS.
- INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AHJ. ALL MECHANICAL EQUIPMENT SHALL OPERATE FREE OF OBJECTIONAL NOISE AND VIBRATION.
- INSTALL TURNING VANES IN SUPPLY DUCTS AT ALL ELBOWS AND SPLITTER DAMPERS. PROVIDE BALANCING DAMPERS IN ALL DUCTS WHERE SHOWN OR REQUIRED FOR SYSTEM BALANCING.
- DUCT DIMENSIONS ARE SHOWN INSIDE CLEAR.
- THE MC SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM HIS WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF HIS WORK. HE SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN HIS CONTRACT.
- PROVIDE ALL REQUIRED ROOF PENETRATIONS FOR THE INSTALLATION OF THE NEW EQUIPMENT. ALL FLASHINGS ARE BY THE MECHANICAL CONTRACTOR. ALL ROOFING WORK SHALL BE DONE BY A LICENSED ROOFING CONTRACTOR SO AS TO MAINTAIN ORIGINAL WARRANTY.
- THE M.C. SHALL COORDINATE WITH AND PROVIDE EQUIPMENT SPEC. SHEETS TO THE GENERAL AND ELECTRICAL CONTRACTORS FOR REVIEW PRIOR TO ORDERING EQUIPMENT.
- PROPERLY SUPPORT ALL DUCT WORK, AND EQUIP FROM STRUCTURE. PROVIDE ALL STRUCTURAL SUPPORTS FOR THE LOADS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.

LEGEND - MECHANICAL



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DocuSigned by:
Ben Burke
CS3761E80F3405
4/28/2022

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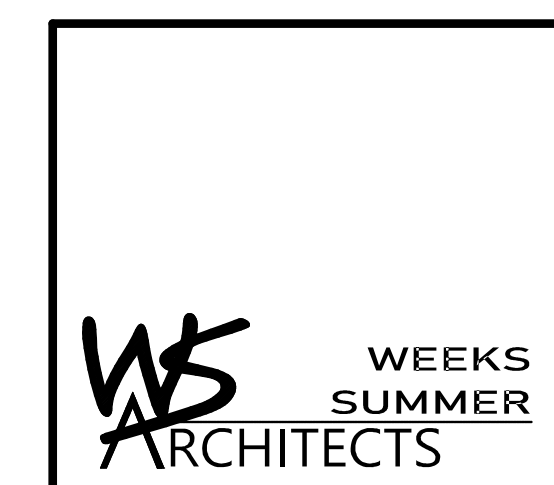
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DRAWING TITLE
HVAC NOTES, SCHED,
LEGENDS

M1

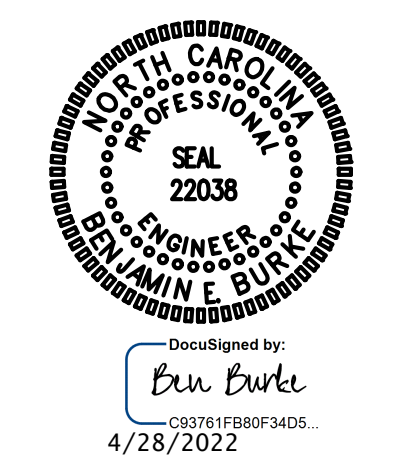
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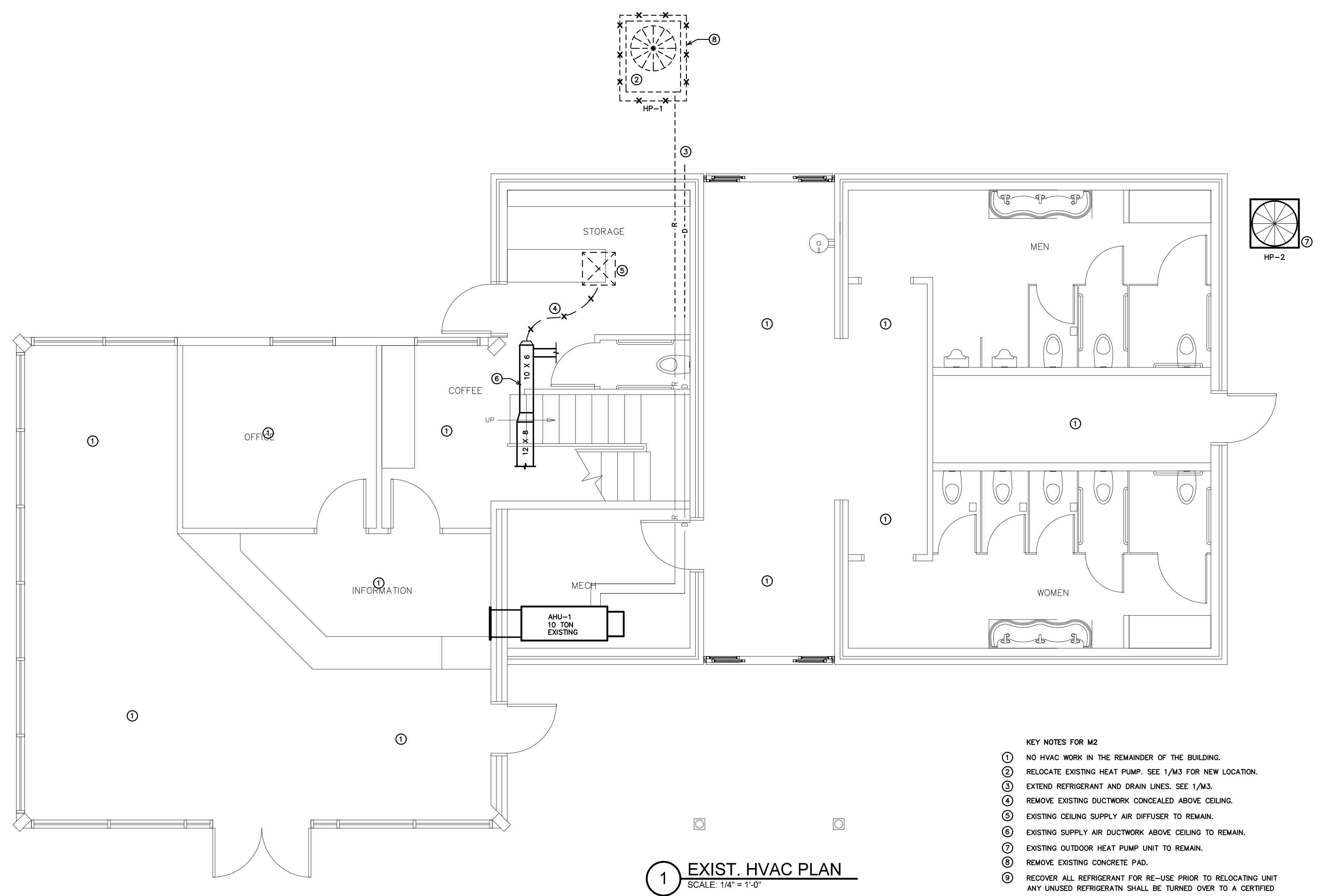
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NEW WORK NOTES:
1. ALL EXISTING HVAC SYSTEMS SHALL REMAIN "AS-IS" UNLESS OTHERWISE NOTED.



1 EXIST. HVAC PLAN
SCALE: 1/4" = 1'-0"

- ALL EXISTING MECHANICAL ITEMS TO REMAIN IN PLACE AND BE RECONNECTED AS SHOWN OR CLOSED OFF AND ABANDONED.
- EXISTING MECHANICAL ITEMS TO BE REMOVED AND DISCARDED, PATCH OPENING IN CEILING, WALL OR FLOOR TO MATCH ADJACENT SURFACE
- ALL EXISTING MECHANICAL ITEMS TO BE RELOCATED SEE SHEET M3 FOR ADDITIONAL INFORMATION.

- KEY NOTES FOR M2
- 1 NO HVAC WORK IN THE REMAINDER OF THE BUILDING.
 - 2 RELOCATE EXISTING HEAT PUMP. SEE 1/M3 FOR NEW LOCATION.
 - 3 EXTEND REFRIGERANT AND DRAIN LINES. SEE 1/M3.
 - 4 REMOVE EXISTING DUCTWORK CONCEALED ABOVE CEILING.
 - 5 EXISTING CEILING SUPPLY AIR DIFFUSER TO REMAIN.
 - 6 EXISTING SUPPLY AIR DUCTWORK ABOVE CEILING TO REMAIN.
 - 7 EXISTING OUTDOOR HEAT PUMP UNIT TO REMAIN.
 - 8 REMOVE EXISTING CONCRETE PAD.
 - 9 RECOVER ALL REFRIGERANT FOR RE-USE PRIOR TO RELOCATING UNIT ANY UNUSED REFRIGERANT SHALL BE TURNED OVER TO A CERTIFIED

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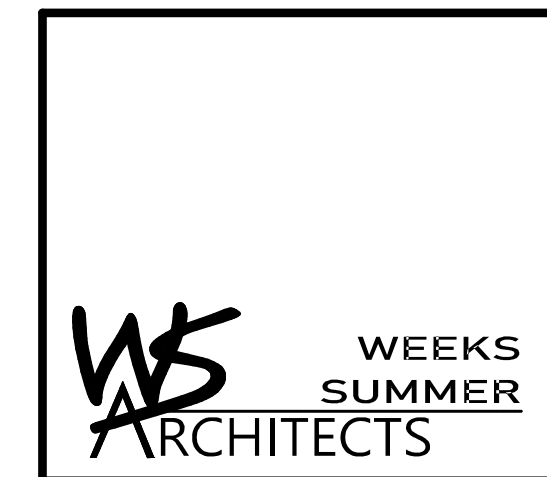
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PROJECT NO.
2104A
DRAWING TITLE
EXISTING HVAC PLAN

M2

PLOT DATE 1/07/2022

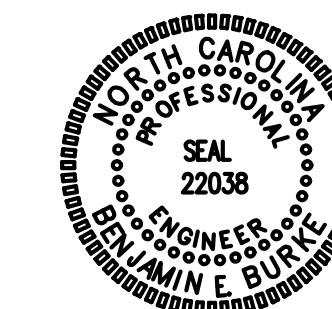
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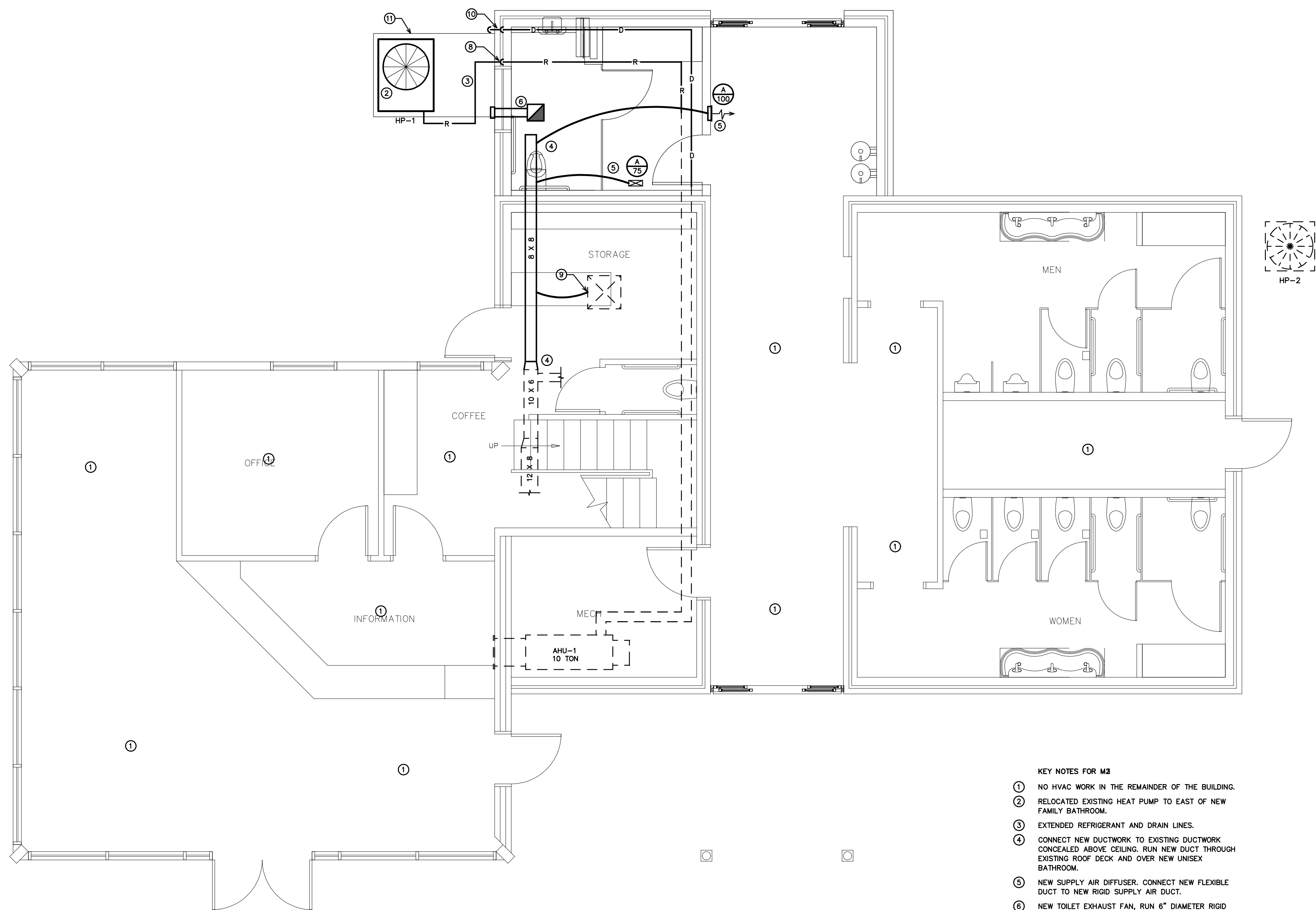
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NEW WORK NOTES:
 1. ALL EXISTING HVAC SYSTEMS SHALL REMAIN "AS-IS" UNLESS OTHERWISE NOTED.



ALL EXISTING MECHANICAL ITEMS TO REMAIN IN PLACE AND BE RECONNECTED AS SHOWN OR CLOSED OFF AND ABANDONED.
 ALL NEW MECHANICAL ITEMS TO BE CONNECTED TO EXISTING AND/OR RELOCATED EXISTING ITEMS AS SHOWN.

1 HVAC PLAN
 SCALE: 1/4" = 1'-0"

- KEY NOTES FOR M3**
- ① NO HVAC WORK IN THE REMAINDER OF THE BUILDING.
 - ② RELOCATED EXISTING HEAT PUMP TO EAST OF NEW FAMILY BATHROOM.
 - ③ EXTENDED REFRIGERANT AND DRAIN LINES.
 - ④ CONNECT NEW DUCTWORK TO EXISTING DUCTWORK CONCEALED ABOVE CEILING. RUN NEW DUCT THROUGH EXISTING ROOF DECK AND OVER NEW UNISEX BATHROOM.
 - ⑤ NEW SUPPLY AIR DIFFUSER. CONNECT NEW FLEXIBLE DUCT TO NEW RIGID SUPPLY AIR DUCT.
 - ⑥ NEW TOILET EXHAUST FAN. RUN 6" DIAMETER RIGID EXHAUST DUCT TO A WALL MOUNTED EXHAUST CAP. EXHAUST DISCHARGE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
 - ⑦ EXISTING OUTDOOR HEAT PUMP UNIT TO REMAIN.
 - ⑧ RUN REFRIGERANT PIPING DOWN CONCEALED IN WALL. PAINT ALL EXPOSED EXTERIOR REFRIGERANT PIPING WITH UV RESISTANT PAINT.
 - ⑨ CONNECT NEW 6" DIA. FLEXIBLE DUCT TO EXISTING SUPPLY AIR DIFFUSER.
 - ⑩ RUN CONDENSATE PIPING DOWN CONCEALED IN WALL. STUB-OUT AT 6" ABOVE FINISH GRADE WITH ELBOW TURN DOWN IN PLANTED AREA.
 - ⑪ NEW 4" THICK CONCRETE PAD FOR OUTDOOR HEAT PUMP UNIT.

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PROJECT NO.
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NEW HVAC PLAN

M3

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DIVISION 15 B – HEATING, VENTILATING AND AIR CONDITIONING

1.1 DESCRIPTION OF THE WORK

- A. Work under this section includes, but is not necessarily limited to, furnishing and installing the following:
 1. Heating, ventilation, and air conditioning equipment.
 2. Ductwork.
 3. Grilles and diffusers.
 4. Controls and control wiring.
 5. Condensate piping.
- B. All work under this contract shall be installed in compliance with the latest edition of the following codes and standards insofar as they apply:
 1. ASHRAE Guide
 2. National Electric Code.
 3. 2018 NC State Building Code: Mech Code.
 4. The Electrical Specifications for this project.
 5. SMACNA HVAC Duct Construction Standards.
 6. All local codes and ordinances.
 7. ARI rating.
 8. 2018 NC State Building Code: Energy Conservation Code.
- C. These codes are minimum standards. If codes require a more stringent method of construction than the specifications require, codes shall govern.
- D. The HVAC Contractor shall be licensed in North Carolina and have all local licenses required for the work.

1.2 INTENT

- A. The intent of these specification and the accompanying drawing is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The HVAC Contractor shall take this into consideration and include in his bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner.

1.3 COORDINATION

- A. Coordinate work with other contractors. Notify Owner of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Owner for a decision before resuming operations.
- B. Locations shown are approximate. The HVAC Contractor shall verify with owner, the placement of equipment, fixtures, outlets, etc. The drawings do not give exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details which may be required.
- C. Changes in duct or piping design caused by obstructions shall be submitted to Engineer in sketch form for study and comment prior to execution. Additional cost will not be allowed for this type of work.

1.4 SHOP DRAWINGS

- A. Shop drawings shall be submitted for all major items of equipment. These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact items being offered clearly identified. Shop drawings shall include but are not limited to the following:
 1. All equipment and accessories.
 2. Grilles and diffusers.
 3. Unit sizes and requirements.

PART 2 –PRODUCTS

2.1 EQUIPMENT

- A. All air handling devices must have the manufacturer's recommended filter rack, for 1" thick filters.

2.2 PIPING

- A. Condensate drain piping shall be PVC pipe. Provide tee and plug at changes in direction. Route pipe to proper termination point. All condensate piping shall be insulated with flexible elastomeric insulation. Provide copper piping in plenum areas.

2.3 DUCTWORK

- A. Ductwork shall be built in accordance with SMACNA HVAC Duct construction standards. Furnish and install all supply, return, and ventilation ductwork shown, together with splitters, deflectors, dampers, etc. This work shall be constructed of new galvanized prime grade steel sheets. The gauges of metal to be used and the construction and bracing of joints shall be in accordance with the SMACNA recommendations.
- B. Seal all sheet metal joints with fiber impregnated mastic.
- C. Support from building structure on strap hangers not over 8 feet apart.
- D. Use manufactured turning vanes in each elbow where required or where indicated on drawings.
- E. Flexible connectors shall be 3 inches wide, of fireproof material and used to isolate noise between equipment and ductwork on supply and return side of all units.
- F. Round runouts, where used, shall be built in accordance with the above standards, and each runout shall also have manufactured side take off, adjustable quadrant damper at all accessible locations and shall be of Owens Corning HL-25 flexible duct with UL label. Flex duct lengths allowed up to 14 feet. Duct must be supported with sufficient hangers in order to prevent sags. Serpentine routing will not be permitted. Quadrant damper to be 22 gauge easily adjustable manually with exterior handle (similar to H&C Kwik-set) and is not to be mounted in side take-off.

2.4 DUCT INSULATION (LOW PRESSURE)

- A. All insulation, linings, coverings and adhesives shall have a flame spread classification of 25 or less and a smoke developed rating of not more than 50, exposed exterior piping.
- B. All duct insulation shall comply with Section 604, of the N. C. Building Code: Mechanical Code
- C. All supply and return ductwork shall be completely insulated, either internally or externally.
- D. Rectangular ductwork shall be lined with two-inch thick, 1.5 lb. per cubic foot density, duct liner, Armstrong, CSG Ultraliner, Johns Manville or approved equal.
- E. As an alternative to duct liner rectangular duct may be wrapped with Class I – 2", 3/4 lb. density (R-6.5) thick reinforced foil back fiberglass insulation, Owens-corning Series ED or equal. Tape shall be Kraft reinforced foil tape or equal.
- F. Exhaust air duct does not require insulation, unless otherwise noted on the plans.
- G. Insulation shall be held in place with adhesive and welding pins 16" on center.
- H. Duct dimensions shown on the drawings are Net Inside Dimensions

2.5 THERMOSTATS

- A. Provide programmable electronic thermostats.
- B. Submit proposed thermostats for approval.

2.6 ROOF PENETRATIONS

- A. Provide pre-manufactured roof flashings compatible with equipment served.
- B. Coordinate roof work with roof system used. Provide proper flashing as required.
- C. Provide 1 year warranty on all roof work performed.

2.7 DUCT SMOKE DETECTORS

- A. Duct detectors are not required since units air flows are 2000 cfm or less per NCSBC: Mechanical Code, Section 606.2.

PART 3 – EXECUTION

3.1 PIPING

- A. The HVAC Contractor shall coordinate such routing with others, to line his work true to adjacent spaces and in a workmanlike manner and to use only short radius 90 degree elbows. Where required, piping to be sturdily supported and separated in a manner satisfactory to the Engineer.
- B. The HVAC Contractor shall paint all exterior refrigerant piping with UV resistant paint as recommended by the closed cell insulation manufacturer.
- C. Insulate all condensate lines for their entire length with 1/2" closed cell insulation. Install insulation per the manufacturers recommendations.

3.2 ELECTRICAL WORK

- A. The electrical contractor shall provide all switches, starters, wire conduit for the air conditioning, heating and ventilation equipment. Control wiring shall be by the heating and air conditioning contractor.
- B. HVAC Contractor is responsible for verifying that power terminals have been properly grounded prior to operating equipment and must find connections to all equipment including control wiring.
- C. All materials and workmanship shall be in accordance with the electrical specifications for the project. All wiring shall be color coded, and as-built wiring diagram prepared showing all connections and colors of wiring and delivered to the Owner.
- D. Furnish certification for acceptance of control wiring from local electrical inspector prior to acceptance.

3.3 CLEAN UP

- A. During construction, keep the site clean of debris. Upon completion, and before final inspection, clean up the premises to remove all evidence of work. In addition upon completion of construction leave equipment clean.
- B. Furnish one box of clean filters, for each size required, at the time of final inspection to the owner.

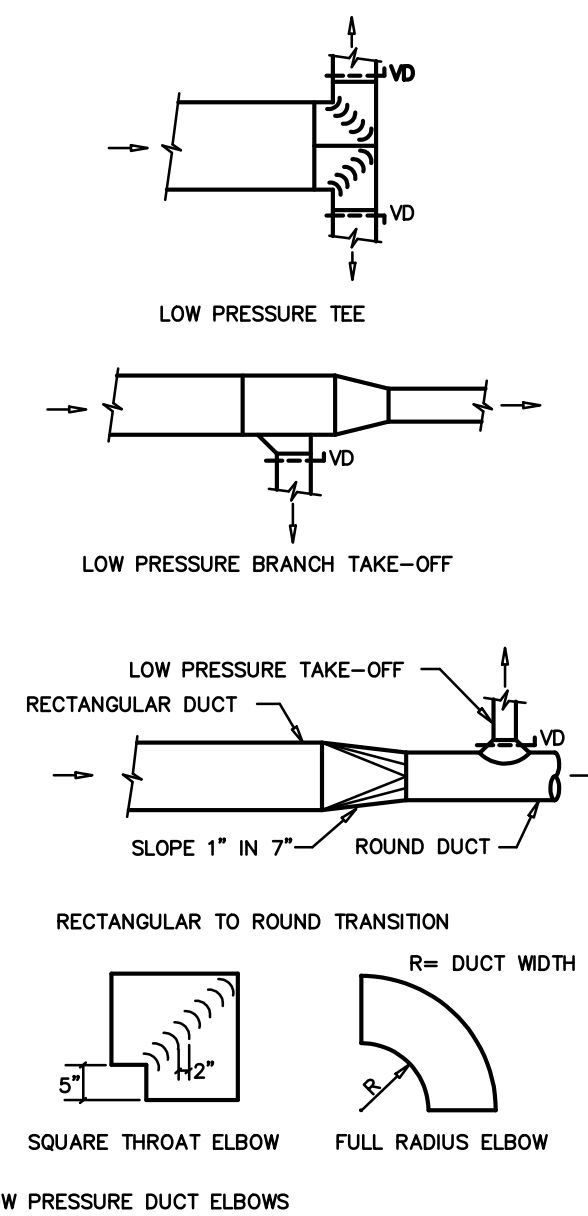
3.4 OPERATOR'S MANUAL AND DIAGRAM

- A. The HVAC Contractor shall prepare in one copy a manual describing the proper maintenance and operation of the systems. This manual shall not consist of standard factory instructions (although these may be included) but shall be prepared to describe this particular job.
- B. The manual shall be bound, indexed, dated and signed by the HVAC Contractor.

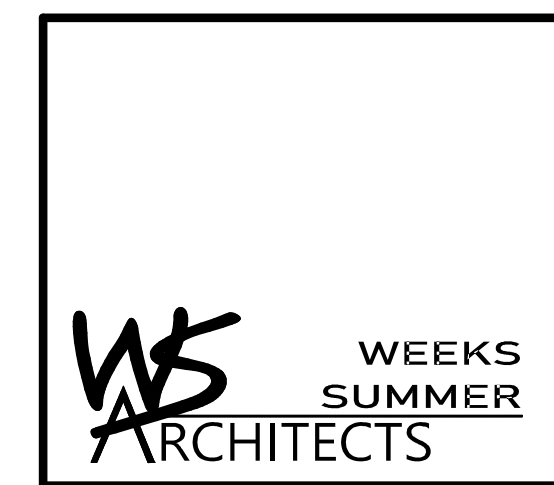
- C. Qualified representative of the HVAC contractor shall meet with the designated representatives of the Owner and the Owner's representative shall be instructed in the proper operation and maintenance of the control system and other systems.

3.5 GUARANTEE

- A. Guarantee all materials and labor included in the HVAC work for a period of one year from date of final acceptance by the owner. In addition, motor compressors shall be a nonprorated five year warranty. Any part or parts of the work or equipment which prove to be defective during the guarantee period shall be replaced at no additional cost to the owner or tenant.
- B. All air flows must be measured and balanced to within 10% of design airflow. All equipment used must have a current certification. Provide two copies of the balance report to the owner at closeout. The HVAC contractor shall return and re-balance to occupant comfort after 90 days from close-out. Provide all balance dampers needed for satisfactory operation regardless if shown on the drawings or not, and shift location of thermostats thermostats if required for occupancy comfort.



1 DUCT CONSTRUCTION DETAIL
SCALE: NOT TO SCALE



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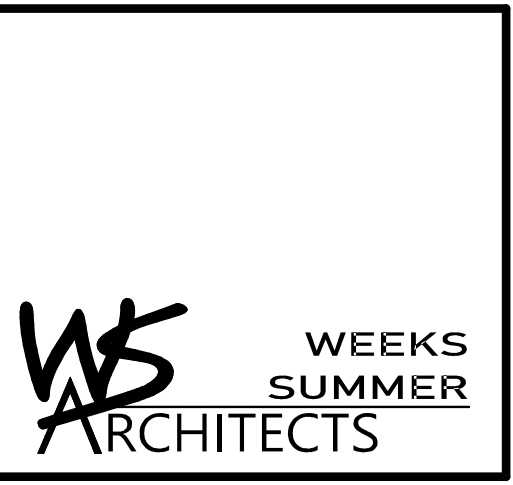
PROJECT TITLE
**BRUNSWICK CTY
VISITOR'S CENTER**
394 WHITEVILLE ROAD NW
SHALLOTE, NORTH CAROLINA

PROJECT NO.
2104A
DRAWING TITLE
HVAC SPEC, DETAILS



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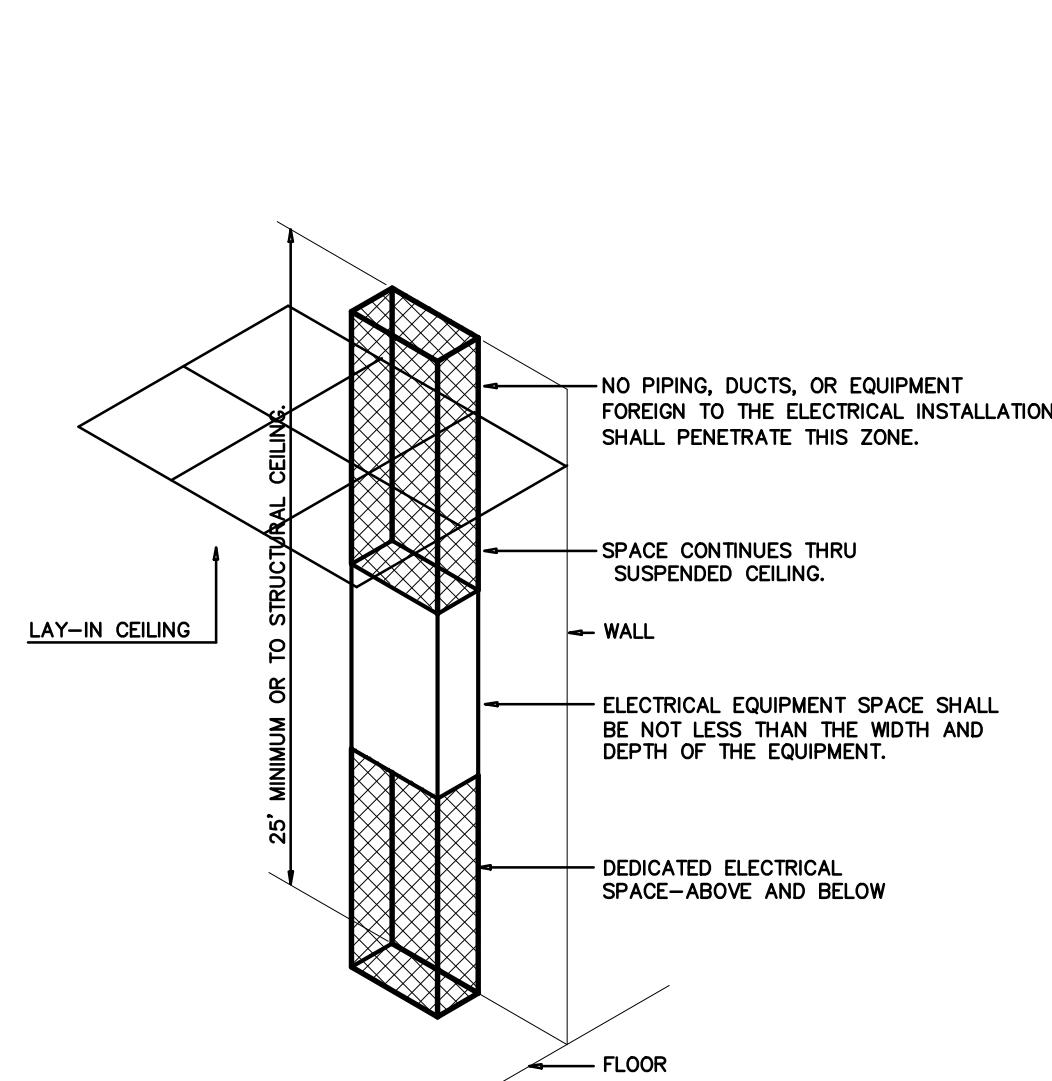
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—CA01189073405—
4/28/2022

GENERAL NOTES

- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES HAVING JURISDICTION.
- ALL BRANCH CIRCUIT CONDUCTORS TO BE COPPER. SERVICE CONDUCTORS TO BE COPPER UNLESS OTHERWISE SPECIFIED. ALUMINUM CONDUCTORS ARE NOT ALLOWED.
- ALL CIRCUITS TO BE 2 #12, 1 #12 GND IN 1/2" EMT CONDUIT AS A MINIMUM. PROVIDE WIRING FOR LARGER CIRCUITS AS REQUIRED BY NEC. RIGID CONDUIT IS REQUIRED WHERE EXPOSED BELOW 8'-0" A.F.F.
- ALL EMPTY CONDUIT RUNS IN EXCESS OF 10 FEET SHALL BE PROVIDED WITH A PULL WIRE OR FISH TAPE/CORD.
- CONTRACTOR SHALL VERIFY THAT ALL DOOR SWINGS ARE CORRECT BEFORE INSTALLING LIGHT SWITCH OUTLETS.
- ALL BRANCH CIRCUIT CONDUCTORS FROM THE PANEL TO THE FIRST OUTLET SHALL BE INCREASED TO THE NEXT LARGER SIZE WHERE THE LENGTH OF THE HOME RUN EXCEEDS 120 FEET ON 120V AND 208V CIRCUITS.
- THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY PHASING THE CIRCUITS IN THE PANELBOARDS.
- SCHEDULE ELECTRICAL INSPECTIONS WITH THE STATE ELECTRICAL INSPECTOR FOR MONDAY THROUGH FRIDAY
- ELECTRICAL REQUIREMENTS INDICATED ON DRAWINGS MAY DIFFER FROM ACTUAL EQUIPMENT FURNISHED. IF FURNISHED EQUIPMENT DIFFERS FROM RATINGS ON DRAWINGS CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER FOR APPROPRIATE ACTION TO BE TAKEN.
- IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE EXACT BREAKER REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO ORDERING PANEL. ADJUST BREAKER AND WIRE SIZES AS REQUIRED.
- PROVIDE BOXES, JACKS, WIRING AND CONDUIT FROM LOCATIONS SHOWN TO MTP LOCATION. VERIFY EXACT REQUIREMENTS WITH OWNER.
- ELECTRICAL CONTRACTOR SHALL PROVIDE ALL DISCONNECTS FOR MECHANICAL & PLUMBING EQUIPMENT. DISCONNECTS SHALL BE PER MANUFACTURERS RECOMMENDATIONS AND FUSED PER NAME PLATE. PROVIDE NEMA 3R ENCLOSURES ON EXTERIOR. COORDINATE FUSE SIZES.
- OMIT ---

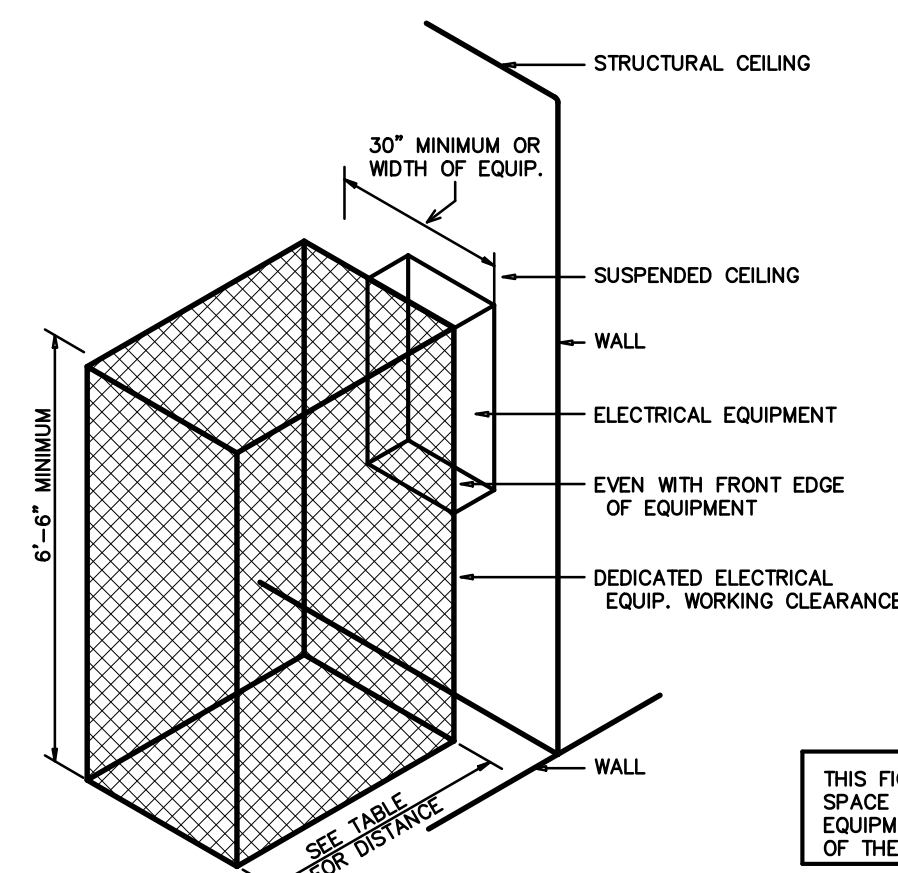
ELECTRICAL LEGEND

- X LIGHT FIXTURE: LETTER DENOTES FIXTURE TYPE (REFER TO LIGHTING PLAN AND FIXTURE SCHEDULE). NL = NIGHT LIGHT (NOT SWITCHED/ALWAYS ON)
- U WP/GFI DUPLEX RECEPTACLE - 120V; MOUNT 18" TO CENTER AFF UNLESS NOTED OTHERWISE; "WP" INDICATES WEATHER PROOF; PROVIDE IN-USE COVER. "GFI" INDICATES GROUND FAULT CURRENT INTERRUPT PROTECTED. "U" INDICATES RECEPTACLE WITH (2) USB PORTS.
- QUADRUPLEX RECEPTACLE - 120V
- FLOOR OR CEILING OUTLET (AS NOTED) - 120V
- SPECIAL PURPOSE RECEPTACLE - REFER TO POWER PLAN AND PANEL SCHEDULE
- S LIGHT SWITCH
- S_M SWITCH WITH INTEGRAL PIR/US MOTION SENSOR FOR AUTOMATIC SHUT-OFF WITH UP TO 2 HOUR ADJUSTABLE DELAY.
- S_D DIMMABLE LIGHT SWITCH
- MOTOR RATED SWITCH
- JUNCTION BOX
- TELE/DATA OUTLET - PROVIDE JUNCTION BOX WITH CONDUIT BACK TO MTP, PROVIDE (1) TELEPHONE JACK AND (1) CAT 5 DATA JACK
- SINGLE-POLE HOMERUN TO PANELBOARD
- TWO-POLE OR 3-POLE HOMERUN TO PANELBOARD
- EXIT EXIT LIGHT
- EMERGENCY EGRESS FIXTURE
- PC PHOTOCCELL (LED COMPLIANT)
- BRANCH CIRCUIT WIRING
- SWITCH LEG
- GROUND CONNECTION
- PANEL A DISTRIBUTION PANELBOARD
- DISCONNECTING MEANS AS REQUIRED BY CODE



ELECTRICAL EQUIPMENT DEDICATED SPACE PER ARTICLE 110.26.F.1 OF N.E.C.

1 DEDICATED SPACE
SCALE: NTS



ELECTRICAL EQUIPMENT WORKING CLEARANCE PER ARTICLE 110-26 OF N.E.C.

VOLTAGE TO GROUND NOMINAL	WORKING CLEARANCES			
	MIN. CLEAR DISTANCE IN FEET	1	2	3
0-150	3	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 INSULATED BUSBARS OPERATING AT NOT OVER 300V 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.

2 ELECTRICAL CLEARANCES
SCALE: NTS

**2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS**
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: ENERGY CODE-PRESCRIPTIVE

Lighting schedule (each fixture type)

- lamp type required in fixture
- number of lamps in fixture
- ballast type used in the fixture
- number of ballasts in fixture
- total wattage per fixture
- total interior wattage specified vs. allowed 1015VA / 1109VA
- total exterior wattage specified vs. allowed 973VA / 1060VA

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)

- C406.2 More Efficient HVAC Equipment Performance
- C406.3 Reduced Lighting Power Density
- C406.4 Enhanced Digital Lighting Controls
- C406.5 On-Site Renewable Energy
- C406.6 Dedicated Outdoor Air System
- C406.7 Reduced Energy Use in Service Water Heating

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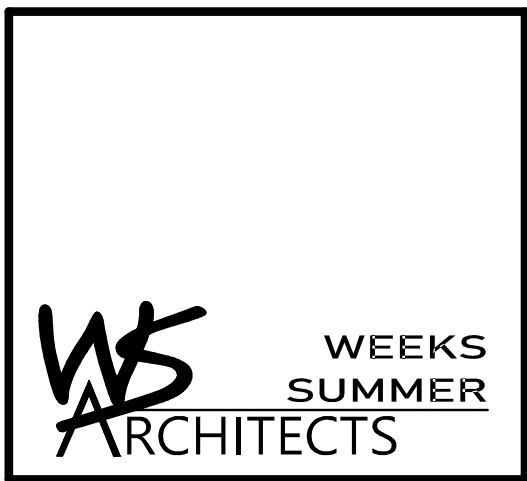
PROJECT NO.
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DRAWING TITLE
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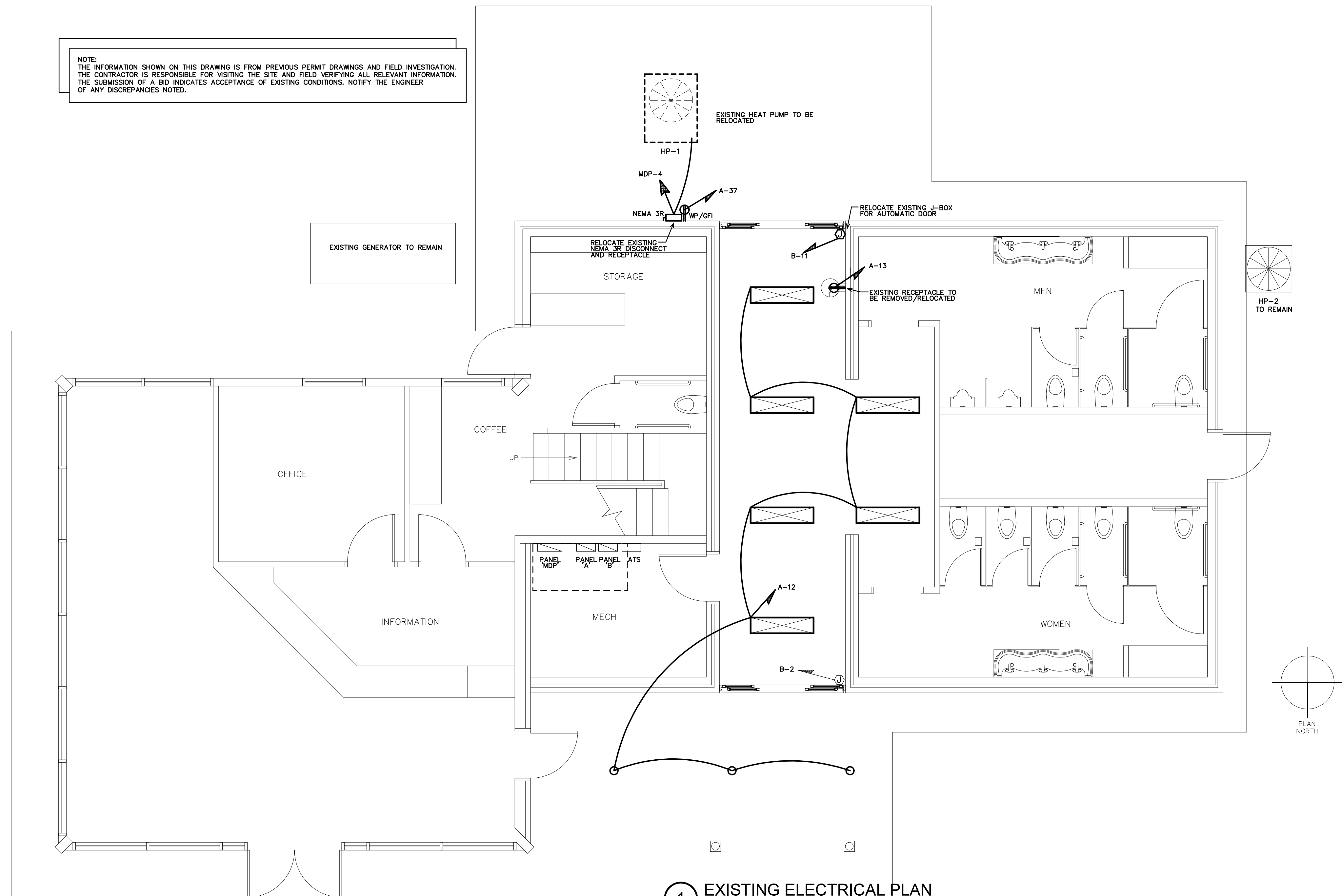
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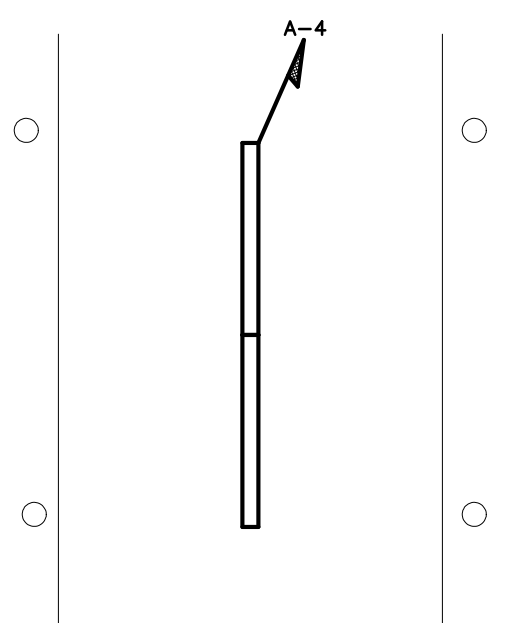
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1 EXISTING ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"



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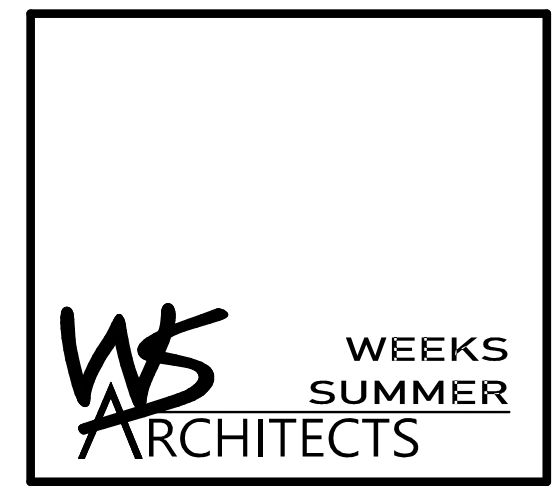
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DRAWING TITLE
EXISTING ELEC PLAN



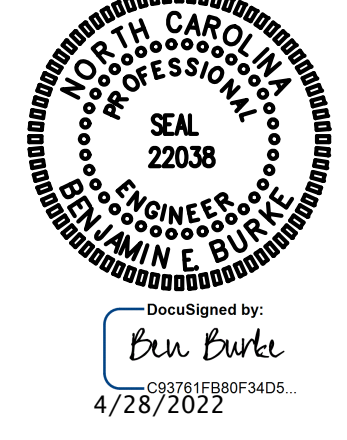
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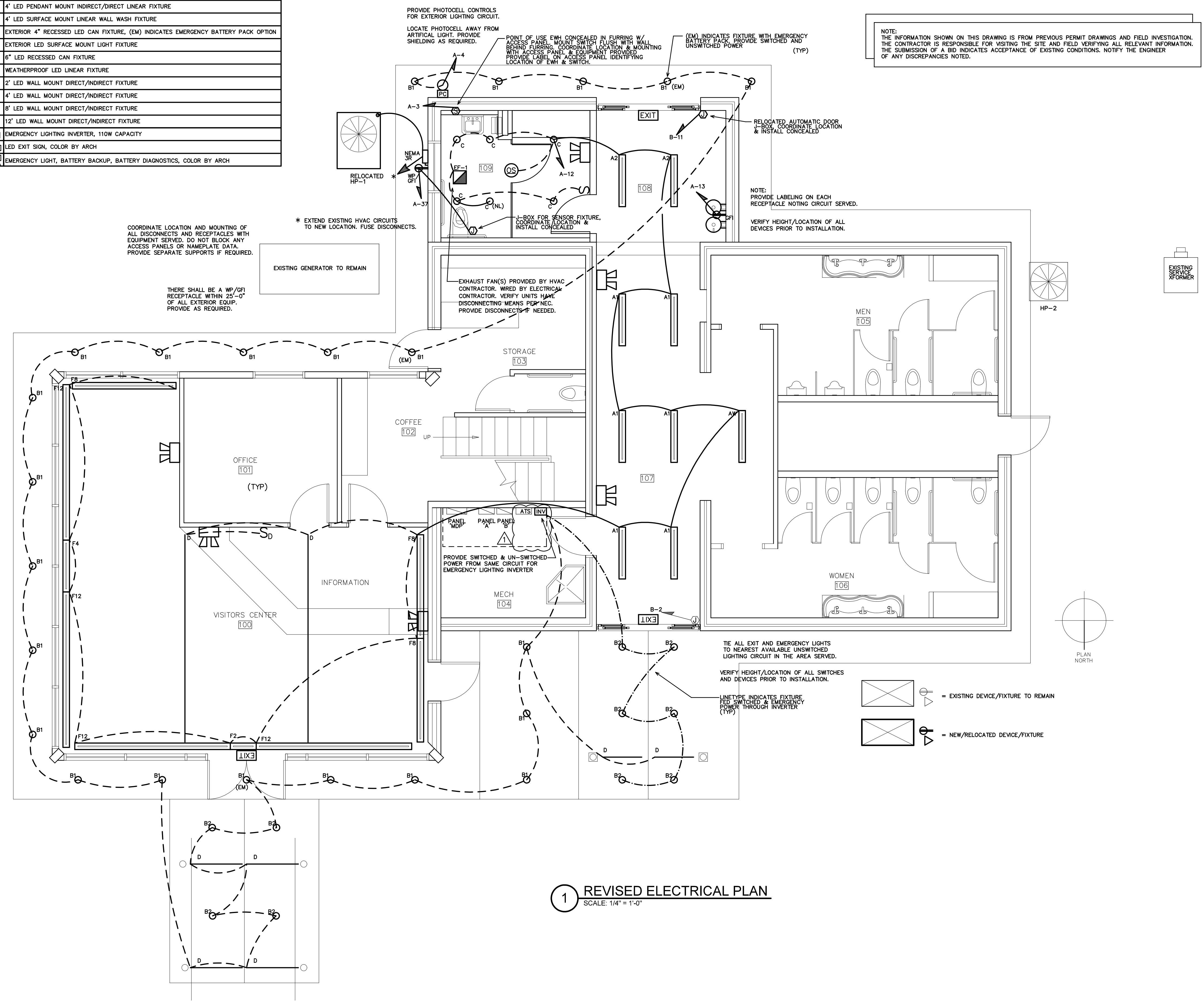


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PARTIAL LIGHTING SCHEDULE - SEE E4	
MARK	REMARKS
A1	4' LED SURFACE MOUNT LINEAR FIXTURE
A2	4' LED PENDANT MOUNT INDIRECT/DIRECT LINEAR FIXTURE
AW	4' LED SURFACE MOUNT LINEAR WALL WASH FIXTURE
B1	EXTERIOR 4" RECESSED LED CAN FIXTURE, (EM) INDICATES EMERGENCY BATTERY PACK OPTION
B2	EXTERIOR LED SURFACE MOUNT LIGHT FIXTURE
C	6" LED RECESSED CAN FIXTURE
D	WEATHERPROOF LED LINEAR FIXTURE
F2	2' LED WALL MOUNT DIRECT/INDIRECT FIXTURE
F4	4' LED WALL MOUNT DIRECT/INDIRECT FIXTURE
FB	8' LED WALL MOUNT DIRECT/INDIRECT FIXTURE
F12	12' LED WALL MOUNT DIRECT/INDIRECT FIXTURE
EWI	EMERGENCY LIGHTING INVERTER, 110W CAPACITY
ES1	LED EXIT SIGN, COLOR BY ARCH
EL	EMERGENCY LIGHT, BATTERY BACKUP, BATTERY DIAGNOSTICS, COLOR BY ARCH



1 REVISED ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

BID SET 4.28.22
WVS: 15RE.13.3
SCO ID# 21-24079-01A

PROJECT TITLE
BRUNSWICK CITY VISITOR'S CENTER
394 WHITEVILLE ROAD NW
SHALLOTE, NORTH CAROLINA

PROJECT NO.
2104A
DRAWING TITLE
NEW ELEC PLAN



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