### 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.
- DWV piping.
- 4. Connection of all equipment; drain, vent,
- 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. The Plumbing Contractor shall take this into consideration and include in his base 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 Architect of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Architect for a decision before resuming operations.
- B. Locations shown are approximate. The Plumbing Contractor shall refer to the architectural drawings for placement of equipment, fixtures, etc. Where locations are not clear, the Contractor shall obtain the exact locations from the Architect.
- C. Coordinate all exterior piping connections w/Architect, site contractor/plans. Verify manhole elevations and provide backwater valves as required if flood level rims are below next upstream manhole cover elevation. Fixtures with flood level rims above upstream manhole shall not discharge thru bw valve. Notify engineer of backwater valve requirement, any issue prior to bid.
- 1.4 SHOP DRAWINGS A. Shop drawings shall be submitted for plumbing fixtures and for pipe. These may consist of the manufacturer's standard catalog or

tear sheets and shall have the exact items being offered clearly

#### 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. Water pipes

supplying the fixtures must also 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. Provide chrome plated escutcheon plates
- 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.

- A. Drain waste: All waste piping shall be Schedule 40 PVC-DWV with the following exceptions: Use cast iron piping in all return air plenums and penetrations of rated walls/floors/ceilings. Review Arch. and Mech. drawings. Use ABS or cast iron piping for drainage of fluid temperature greater than 140 deg. F for a minimum distance of 10'-0".
- B. Hot and cold water piping above grade: Type "L" copper w/solder joints 3.4 INSULATION (ASTM-B88), hard drawn with wrought copper fittings (ANSI B16.22) PEX piping with copper fittings may be used with owner/tenant approval. and as allowed per code. 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. Provide dielectric unions when connecting copper tubing to equipment and piping made of ferrous materials.

### 2.3 CLEANOUTS

- A. Hex plugs in rough areas: Recessed plugs with cover plates in
- exposed locations. 2.4 SHOCK ARRESTERS
- Provide shock arresters as required by codes, manufacturer's recommendations and accepted industry standards for auglify construction. Provide for all quick closing valves.

### PART 3 - EXECUTION

### 3.1 CONNECTIONS

- A. This contract includes complete connection of cold water, hot water, drainage, and vent piping as required. All fittings, valves, accessories, cutoffs, drains, etc., required to complete such connections shall be included.
- B. The connection to water closets shall be made watertight with gasket and wax ring. Floor flanges shall be caulked into position. Plastic caps shall be provided on the tie down bolts, and shall be secured in place by screwing down on threaded brass washers.
- 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. In no case shall the Plumbing Contractor install equipment or other components in situations that do not meet code requirements or manufacturer's requirements. Provide access doors as required to access valves, etc.

### 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. Support all interior piping from building structure by means of hanger or inserts to maintain pitch of lines, to prevent vibration, and to secure piping place.

- 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. Provide expansion loops as required.
- Pipe hangers for insulated lines shall have suitable saddles
- 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. See NCSBC-Plumbing Sect. 305 for all protection requirements. All H/W piping of circulating systems shall be insulated with 1" insulation per Sect. C404.4 of the NCSBC 2018 Energy Conservation Code. B. Provide pre-fabricated insulation kits for all sink and lavatory
- exposed drain and supply piping.
- 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, using liquid chlorine, or sodium hydrochloride solution. introduced into the system in an approved manner. The sterilizing solution shall remain in the system in an approved manner. The sterilizing solution shall remain in the system for a period of 24 hours. After sterilization, flush the solution from the system with clean water until the residual chlorine content is not greater than 0.2 parts per million, unless otherwise directed.

### 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.

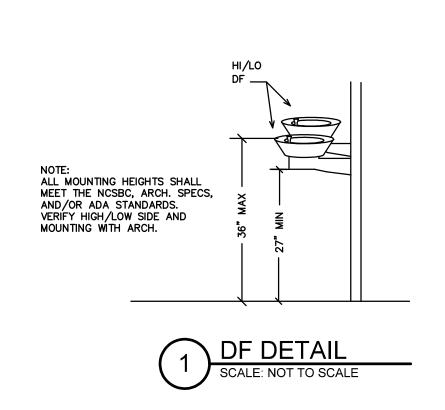
### 3.8 DRAINDOWN

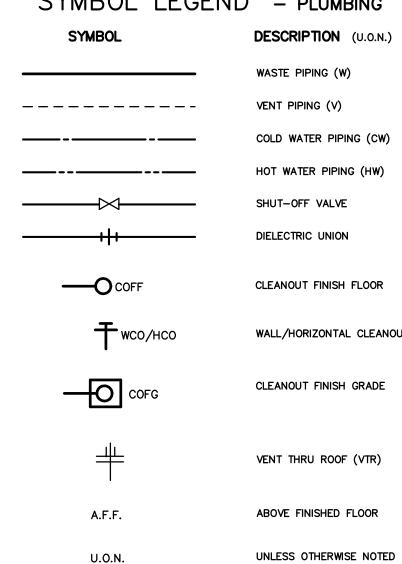
- A. Contractor to provide for complete plumbing system drain down. 3.9 CLEAN UP
- A. During construction, keep the site clear of debris and upon completion, and before final inspection, clean up the premises to remove all evidence of his work. In addition, upon completion of construction, clean, wash, and/or polish all fixtures, equipment and exposed material and leave them bright and clean.

- 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. This shall include the replacing of defective materials where required, and the repair of damage caused by leaking pipes, etc., and damage to building surfaces caused in making repairs.

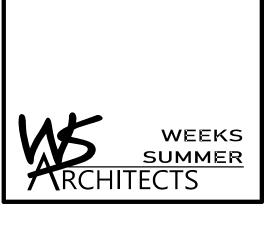
	PLUMBING FIXTURE SCI	HEDULE *	
MARK	DESCRIPTION	ALTERNATE MANUFACTURER/MODEL	ALTERNATE MANUFACTURER/MODEL
DF	DRINKING FOUNTAIN (IN HIGH/LOW INSTALLATION) ELKAY SWRLFLO #EDFPB114C WALL-MOUNT BARRIER FREE FOUNTAIN. VERIFY MODEL/ COORDINATE WITH ARCH. FOR MOUNTING HEIGHTS (1-HIGH, 1-ADA HEIGHT/LOW; LEFT/RIGHT).	HALSEY-TAYLOR MODEL #OVL-II.	OASIS MODEL #F140R.
PWH	THERMOSTATIC POINT OF USE ELECTRIC WATER HEATER  EEMAX TANKLESS WATER HEATER #EX3512T-ML, 120 V, 3,500 W, 29.2 A. 48 DEGREE  TEMPERATURE RISE AT 0.5 GPM. PROVIDE FLEX CONNECTOR BRAIDED STAINLESS STEEL.  ML MODEL IS FACTORY PRESET TO 110 DEG. F MAX. INSTALL UNIT BELOW SINK/LAV.  COORDINATE INSTALATION AND CLEARENCES WITH ARCHITECT AND G.C.	RHEEM RTEX	STIEBL ELTRON MINI-E
LAV	LAVATORY (ACCESSIBLE, WALL HUNG)  AMERICAN STANDARD "LUCERNE" # 0356.421 WHITE WITH CONCEALED ARM CARRIER AND DRAIN ASSEMBLY (7723.018). ADA COMPLIANT. FURNISH WITH SLOAN OPTIMA EAF—275 SOLAR POWERED FAUCET. SINK MODEL FOR SINGLE CENTER HOLE.	KOHLER GREENWICH #K-2032 WITH HYDROTEK 7000SLE SOLAR SENSOR FAUCET.	ELJER MURRAY II #051-0244 WITH TOTO TEL3GS10 SOLAR SENSOR FAUCET.
MS	NEO/CORNER MOP SINK BASIN WITH FAUCET BASIN— FLORESTONE MODEL 96 MOP SINK, 36" X 36", 3" DRAIN SIZE. VERIFY UNIT SIZE, FLANGE/CAP LOCATION REQUIREMENTS. PROVIDE/INSTALL ON PROPER MORTAR BED, LEVEL AS NEEDED, USE WEDGE—LOCK SEAL PER MANUFACTURER'S SPECIFICATIONS. USE WATER TO CHECK FOR PROPER DRAINAGE UPON ATTACHING DRAIN PIPE AND PRIOR TO FINISHING WALLS. FAUCET— SPEAKMAN MODEL SC—5812 FAUCET WITH VACUUM BREAKER. PROVIDE 5' HOSE AND MOP HANGER.	FIAT TSBC1612 BASIN WITH 830AA FAUCET	STERN WILLIAMS SBC-1750 BASIN WITH T-10-VB FAUCET.
тм∨	THERMOSTATIC MIXING VALVE WATTS LFUSG-B 'LEAD FREE' GUARDIAN. INSTALL IN MAINTENANCE ACCESSIBLE LOCATION. SET OUTFLOW TO SPECIFIED TEMPERATURE (LTHW/110 DEG F.).	LEONARD MODEL #170-LF.	TACO 5120 SERIES.
wc	WATER CLOSET (FLOOR MOUNT TOP SPUD)  AMERICAN STANDARD "MADERA FLOWISE" #3461.001, ELONGATED BOWL, 1.28 GPF, VITREOUS CHINA, AND 1 1/2" TOP SPUD, ADA COMPLIANT. PROVIDE OPEN FRONT SEAT, AND SENSOR W/ MANUAL OVERRIDE FLUSH VALVE EQUAL TO SLOAN OPTIMA 111-1.28-ES-S (AC POWERED) FLUSH VALVE.	ZURN #Z5665 FIXTURE. ZURN #ZEMS6000IS FLUSH VALVE.	KOHLER HIGHCREST #K-4302 FIXTURE. HYDROTEK H8-128 VALVE.

\* OR APPROVED EQUAL





SYMBOL LEGEND - PLUMBING WALL/HORIZONTAL CLEANOUT



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C93761FB80F34D5 4/28/2022

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

indicate it has been altered.

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This original sheet is 24" x 36"; other dimensions

1/07/2022

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

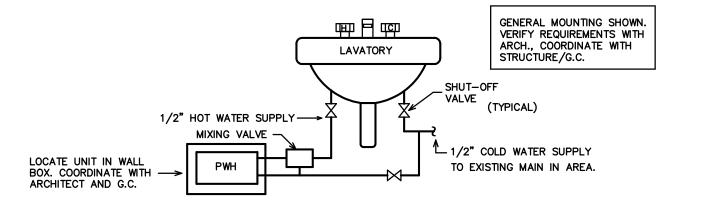
4. COMPLY WITH THE MANUFACTURER'S TECHNICAL INSTRUCTIONS WHEN INSTALLING PLUMBING FIXTURES, MATERIALS, AND DEVICES. 5. LOCATE FIXTURES AND EQUIPMENT GENERALLY AS SHOWN ON THE PLANS; HOWEVER, COORDINATE LOCATIONS WITH ACTUAL FIELD CONDITIONS TO PRESERVE ALL CODE—REQUIRED AND MANUFACTURER—REQUESTED SERVICE CLEARANCES. 6. COORDINATE ROUTING OF ALL PIPING WITH BUILDING STRUCTURE AND WITH THE WORK OF OTHER TRADES. OFFSET VENT PIPING AROUND BEAMS AND JOISTS AS NECESSARY.

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.

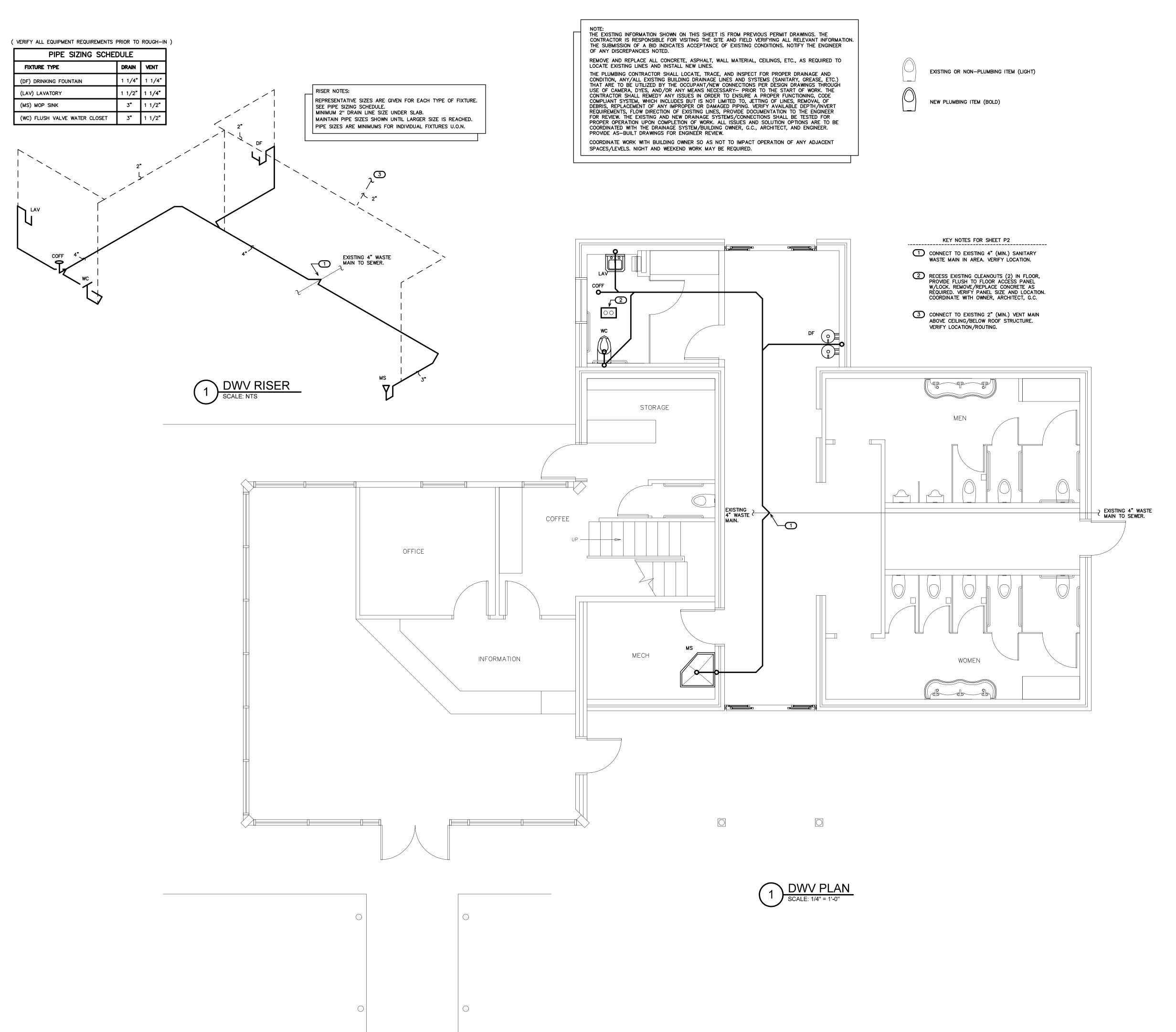
9. PROVIDE WATER HAMMER ARRESTORS AT THE END OF EACH COLD AND HOT WATER BRANCH RISER. SIZE ARRESTOR APPROPRIATELY. 10. PROVIDE CONCRETE RING FOR ALL EXTERIOR CLEAN-OUTS. 11. REVIEW SITE PLAN FOR UTILITIES AND ORIENTATION PRIOR TO START OF WORK.

12. G.C. TO PROVIDE ROOF PENETRATIONS.

13. PROVIDE/VERIFYHOT 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.



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 NCPC.





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4/28/2022

BID SET 4.28.22 WVS: 15RE.13.3

SCO ID# 21-24079-01A

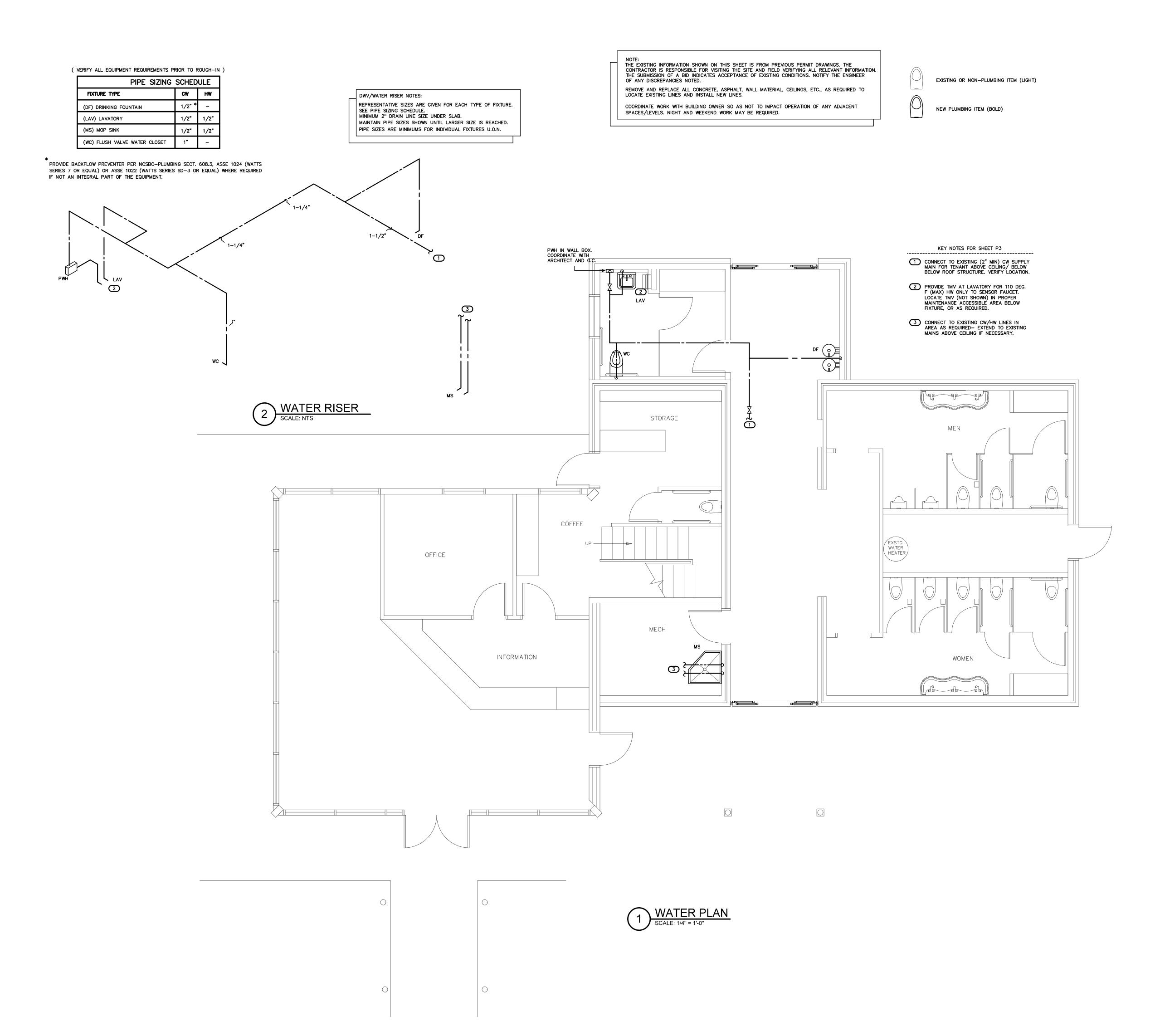
PROJECT TITLE BRUNSWICK CTY VISITOR'S CENTER 394 WHITEVILLE ROAD NW SHALLOTTE, NORTH CAROLINA

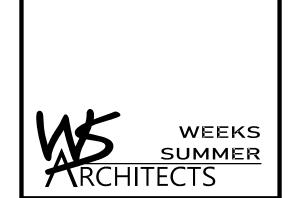
PROJECT NO. 2104A DRAWING TITLE DWV PLAN



PLOT DATE

1/07/2022





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Ben Burke C93761FB80F34D5... 4/28/2022

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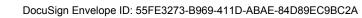
SCO ID# 21-24079-01A

PROJECT NO. 2104A DRAWING TITLE WATER PLAN



PLOT DATE

1/07/2022



A	IR DIST	RIBUTIO	ON SCI	HEDUL	E		
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 MODLES 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 Cty Visitor Center- MT		
EXHAUST	FAN	SCHEDULE

EXHAUST FAN #X (EF-X) \* CARNES MODEL# VCDD010C 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 MODLES ARE LOREN COOK #GC-240, AND GREENHECK #SP-A110.

FLEXIB	BLE DUCTWOR	RK SIZES
SIZES	SUPPLY	RETURN
6"	100	100
8"	175	175
10"	250	250
12"	400	350
14"	55 <i>O</i>	500
16"	NA	900

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

# FLEXIBLE DUCTWORK NOTES

- D INSTALL FLEXIBLE DUCTWORK RUNS AS STRAIGHT AS POSSIBLE.
- 2) DO NOT ALLOW FLEXIBLE DUCT TO SAG BETWEEN SUPPORTS.

  3) DO NOT STRETCH A SHORT SECTION TO FIT A SLIGHTLY LONGER
- 3) DO NOT STRETCH A SHORT SECTION TO FIT A SLIGHTLY LONGER SECTION. THIS DISTORTS THE DUCT SHAPE AND IMPEDES AIR FLOW.
- 4) DO NOT CRUSH DUCTWORK TO FIT IN A SPACE SMALLER THAN ITS ORIGINAL OUTSIDE DIAMETER. MAXIMUM ALLOWABLE DEFORMATION IS
- 5) USE RIGID 90 DEGREE ELBOWS AT ANY LOCATION WHERE THE DUCTWORK BECOMES DISTORTED.
- 6) 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.
- T) SIZE ALL FLEXIBLE DUCT SO AS NOT TO EXCEED MAXIMUM CFM'S GIVEN IN TABLE.

# GENERAL NOTES - MECHANICAL

- 1. 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).
- 3. 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.
- 4. 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.

  6. THE MC SHALL BE RESPONSIBLE FOR ALL ELECTRICAL STARTERS INTERLOCKS, CONTROL WIRING CONDUIT AND POWER WIRING FROM DISCONNECTS TO HIS EQUIPMENT, USING A LICENSED
- 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.

- 8. INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AHU. ALL MECHANICAL EQUIPMENT SHALL OPERATE FREE OF OBJECTIONAL NOISE AND VIBRATION.
- 9. 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.
- 10. DUCT DIMENSIONS ARE SHOWN INSIDE CLEAR.
- 11. 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.
- 13. THE M.C. SHALL COORDINATE WITH AND PROVIDE EQUIPMENT SPEC. SHEETS TO THE GENERAL AND ELECTRICAL CONTRACTORS FOR REVIEW PRIOR TO ORDERING EQUIPMENT.
- 14. 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

\_\_\_\_ D\_\_\_\_ D\_\_\_\_

RECTANGULAR DUCTWORK. INSIDE CLEAR DIMENSION INDICATED (WIDTH X HEIGHT)

FLEXIBLE DUCTWORK

DUCT MOUNTED SUPPLY AIR DIFFUSER

SUPPLY DIFFUSER

GRILLE TYPE
MIN. CFM

CONDENSATE PIPING

REFRIGERANT PIPING



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Bun Burke C93761FB80F34D5... 4/28/2022

BID SET 4.28.22

WVS: 15RE.13.3

PROJECT TITLE

BRUNSWICK CTY

VISITOR'S CENTER

394 WHITEVILLE ROAD NW

SHALLOTE, NORTH CAROLINA

SCO ID# 21-24079-01A

PROJECT NO.
2104A

DRAWING TITLE
HVAC NOTES, SCHED,



PLOT DATE

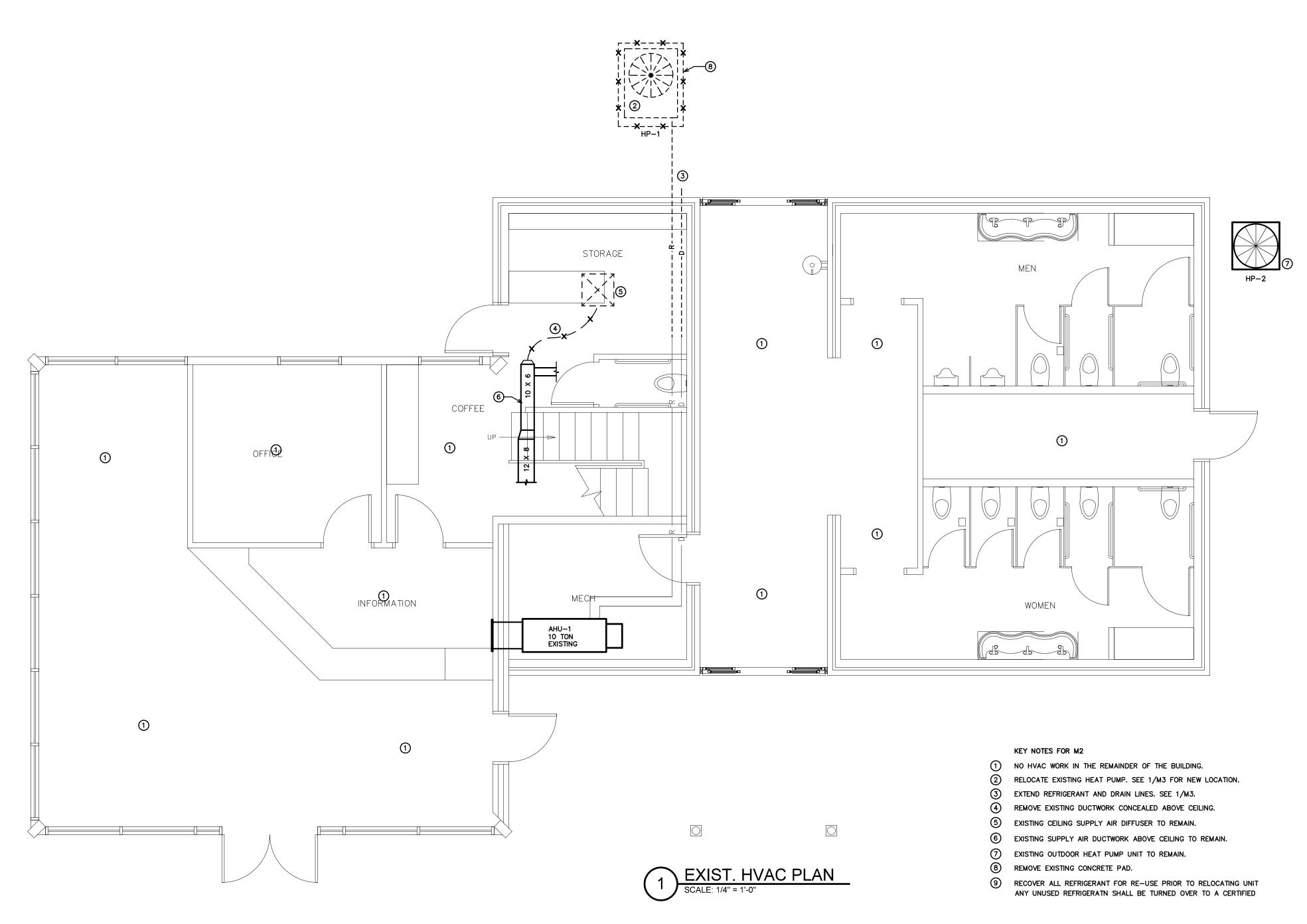
1/07/2022

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NOTE:
THE INFORMATION SHOWN ON THIS DRAWING IS FROM PREVIOUS PERMIT DRAWINGS AND FIELD INVESTIGATION.
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.

NEW WORK NOTES:

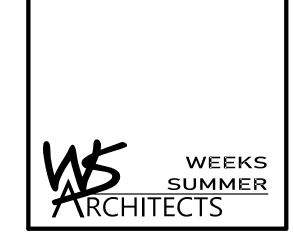
1. ALL EXISTING HVAC SYSTEMS SHALL REMAIN "AS-IS" UNLESS OTHERWISE NOTED.



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

EXISTING MECHANICAL ITEMS TO BE REMOVED AND DISCARDED, PATCH OPENING IN CEILING, WALL OR FLOOR TO MATCH ADJACENT SURFACE

E室式 ALL EXISTING MECHANICAL ITEMS TO BE RELOCATED SEE SHEET M3 FOR ADDITIONAL INFORMATION.



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BID SET 4.28.22

WVS: 15RE.13.3

PROJECT TITLE BRUNSWICK CTY VISITOR'S CENTER 394 WHITEVILLE ROAD NW

SHALLOTE, NORTH CAROLINA

SCO ID# 21-24079-01A

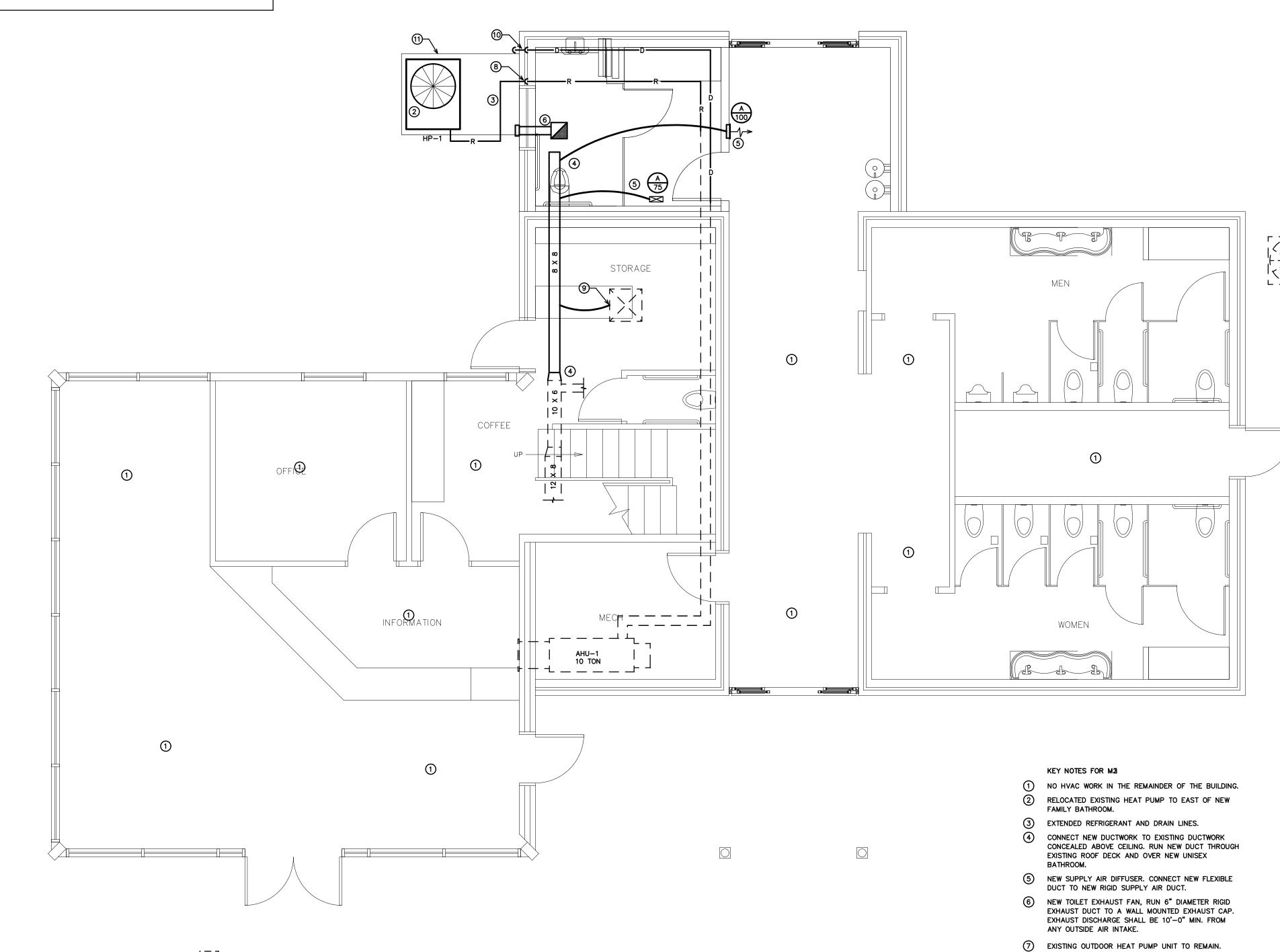
PROJECT NO. 2104A

DRAWING TITLE **EXISTING HVAC PLAN** 

1/07/2022 PLOT DATE

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.





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ENGINEER

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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
SHALLOTE, NORTH CAROLINA

PROJECT NO.

2104A

DRAWING TITLE

NEW HVAC PLAN



PLOT DATE

8 RUN REFRIGERANT PIPING DOWN CONCEALED IN WALL. PAINT ALL EXPOSED EXTERIOR REFRIGERANT PIPING WITH UV RESISTANT PAIN.

10 (1) UN 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.

CONNECT NEW 6" DIA. FLEXIBLE DUCT TO EXISTING SUPPLY AIR DIFFUSER.

1/07/2022

#### 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:
- Heating, ventilation, and air conditioning equipment.
- Ductwork. Grilles and diffusers.
- 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:
- ASHRAE Guide
   National Electric Code. 5. 2018 NC State Building Code: Mech Code.

the codes shall govern.

- 4. The Electrical Specifications for this project.
- 5. SMACNA HVAC Duct Construction Standards. 6. All local codes and ordinances.
- ARI rating.
   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,
- 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
- 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
- 1. All equipment and accessories. . 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 INL-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
- F. Exhaust air duct does not require insulation, unless otherwise noted on the plans.
- G. Insulation shall be held inplace 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.
- A. Provide pre-manufactured roof flashings compatible with equipment served. B. Coordinate roof work with roof system used. Provide proper flashing as required.

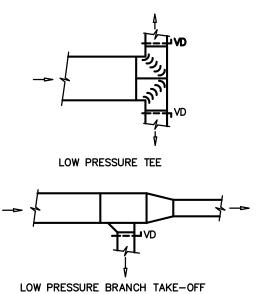
C. Provide 1 year warranty on all roof work performed.

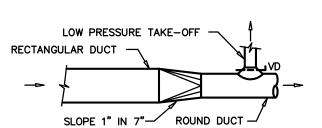
- 2.7 DUCT SMOKE DETECTORS
- A. Duct detectors are not required since units air flows are 2000 cfm or less per NCSBC: Mechanical Code, Section 606.2.

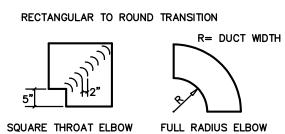
# PART 3 - EXECUTION

the Engineer.

- 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
- B. The HVAC Contractor shall paint all exterior refrigerant piping. with UV resistant paint as recommended by the closed cell insulation
- . 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
- 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
- B. All air flows must be measured and balanced to within 10% of design airflows. 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 themostats if required for occupancy comfort.







LOW PRESSURE DUCT ELBOWS

**DUCT CONSTRUCTION DETAIL** 



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**ENGINEER** 

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Corp. License # C-2652



4/28/2022

BID SET 4.28.22 WVS: 15RE.13.3

PROJECT TITLE BRUNSWICK CTY

VISITOR'S CENTER

394 WHITEVILLE ROAD NW

SHALLOTE, NORTH CAROLINA

SCO ID# 21-24079-01A

PROJECT NO. 2104A DRAWING TITLE

HVAC SPEC, DETAILS



PLOT DATE

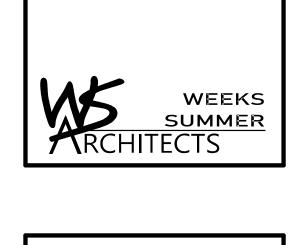
1/07/2022

# GENERAL NOTES

- 1 ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES HAVING JURISDICTION.
- 2 ALL BRANCH CIRCUIT CONDUCTORS TO BE COPPER. SERVICE CONDUCTORS TO BE COPPER UNLESS OTHERWISE SPECIFIED. ALUMINUM CONDUCTORS ARE NOT ALLOWED.
- 3 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.
- 4 ALL EMPTY CONDUIT RUNS IN EXCESS OF 10 FEET SHALL BE PROVIDED WITH A PULL WIRE OR FISH TAPE/CORD.
- 5 CONTRACTOR SHALL VERIFY THAT ALL DOOR SWINGS ARE CORRECT BEFORE INSTALLING LIGHT SWITCH OUTLETS.
- 6 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.
- 7 THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.
- 8 THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY PHASING THE CIRCUITS IN THE PANELBOARDS.
- 9 SCHEDULE ELECTRICAL INSPECTIONS WITH THE STATE ELECTRICAL INSPECTOR FOR MONDAY THROUGH FRIDAY
- 10 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.
- 11 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.
- 12 PROVIDE BOXES, JACKS, WIRING AND CONDUIT FROM LOCATIONS SHOWN TO MTP LOCATION. VERIFY EXACT REQUIREMENTS WITH OWNER.
- 13 ELECTRICAL CONTRACTOR SHALL PROVIDE ALL DISCONNECTS FOR MECHANICAL & PLUMBING EQUIPMENT. DISCONNECTS SHALL BE PER MANUFACTURES RECOMMENDATIONS AND FUSED PER NAME PLATE. PROVIDE NEMA 3R ENCLOSURES ON EXTERIOR. COORDINATE FUSE SIZES.

### 14 -- OMIT --

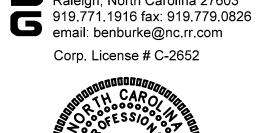
ELECTRICAL LEGEND LIGHT FIXTURE: LETTER DENOTES FIXTURE TYPE (REFER TO LIGHTING PLAN AND FIXTURE SCHEDULE). NL = NIGHT LIGHT (NOT SWITCHED/ALWAYS ON) DUPLEX RECEPTACLE - 120V; MOUNT 18" TO CENTER AFF UNLESS NOTED OTHERWISE; 'WP' INDICATES WEATHER PROOF, PROVIDE IN-USE COVER. 'GFI' INDICATES GROUND FAULT CURRENT INTERRUPT PROTECTED. 'U' INDICATES RECEPTACLE WITH (2) USB PORTS. QUADRAPLEX RECEPTACLE - 120V FLOOR OR CEILING OUTLET (AS NOTED) - 120V SPECIAL PURPOSE RECEPTACLE - REFER TO POWER PLAN AND PANEL SCHEDULE LIGHT SWITCH SWITCH WITH INTEGRAL PIR/US MOTION SENSOR FOR AUTOMATIC SHUT-OFF WITH UP TO 2 HOUR ADJUSTABLE DELAY. 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 PHOTOCELL (LED COMPLIANT) BRANCH CIRCUIT WIRING ---- SWITCH LEG GROUND CONNECTION DISTRIBUTION PANELBOARD



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**ENGINEER** 

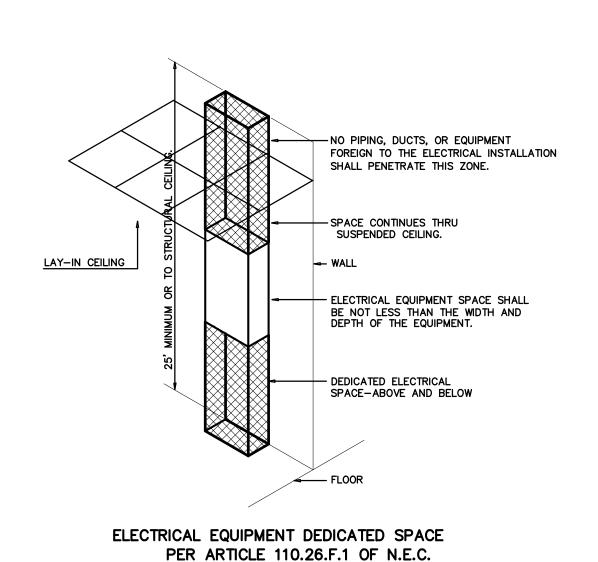
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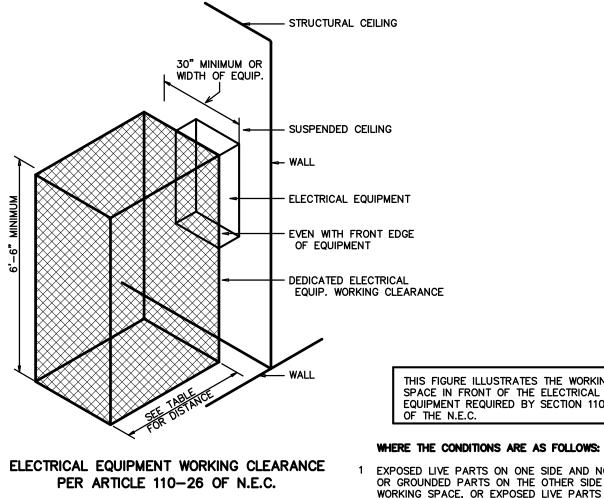
— DocuSigned by: Ben Burke

22038

4/28/2022







	-	110-26 OF N.E.C.
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	WORKING	CLEARANCES
VOLTAGE TO	MIN	CLEAR DISTANCE IN FEET

GROUND NOMINAL CONDITION: 1 3-1/2

THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110-16

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. 3 EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

ELECTRICAL CLEARANCES

### 2018 APPENDIX B BUILDING CODE SUMMARYFOR ALL COMMERCIAL PROJECTS ELECTRICALDESIGN (PROVIDE ON THE ELECTRICALSHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

DISCONNECTING MEANS AS REQUIRED BY CODE

PANEL A 

> 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 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 SHALLOTE, NORTH CAROLINA

PROJECT NO. 2104A

DRAWING TITLE ELEC. SPECS & DETAILS

PLOT DATE

1/13/2022



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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 SHALLOTE, NORTH CAROLINA

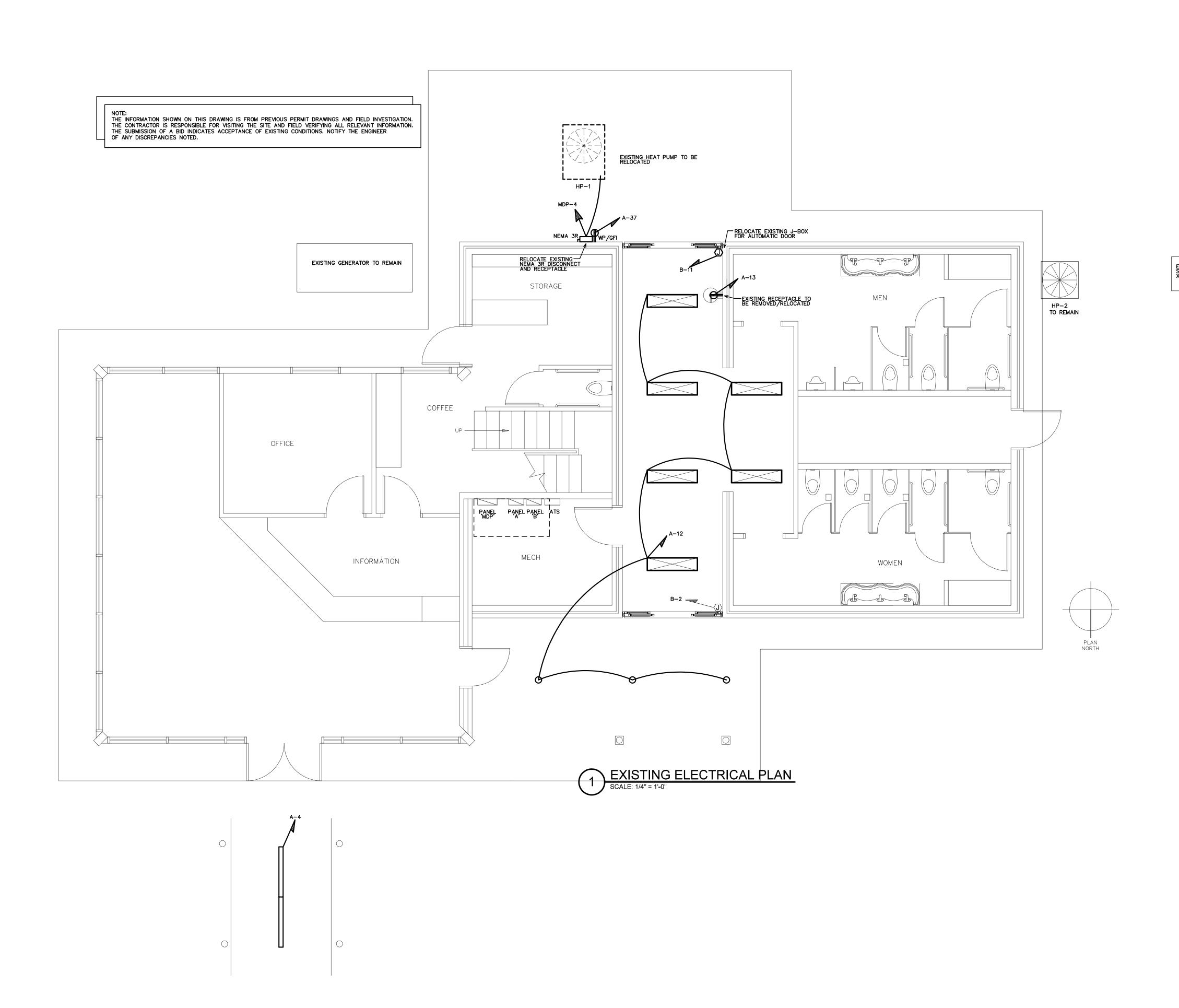
PROJECT NO. 2104A

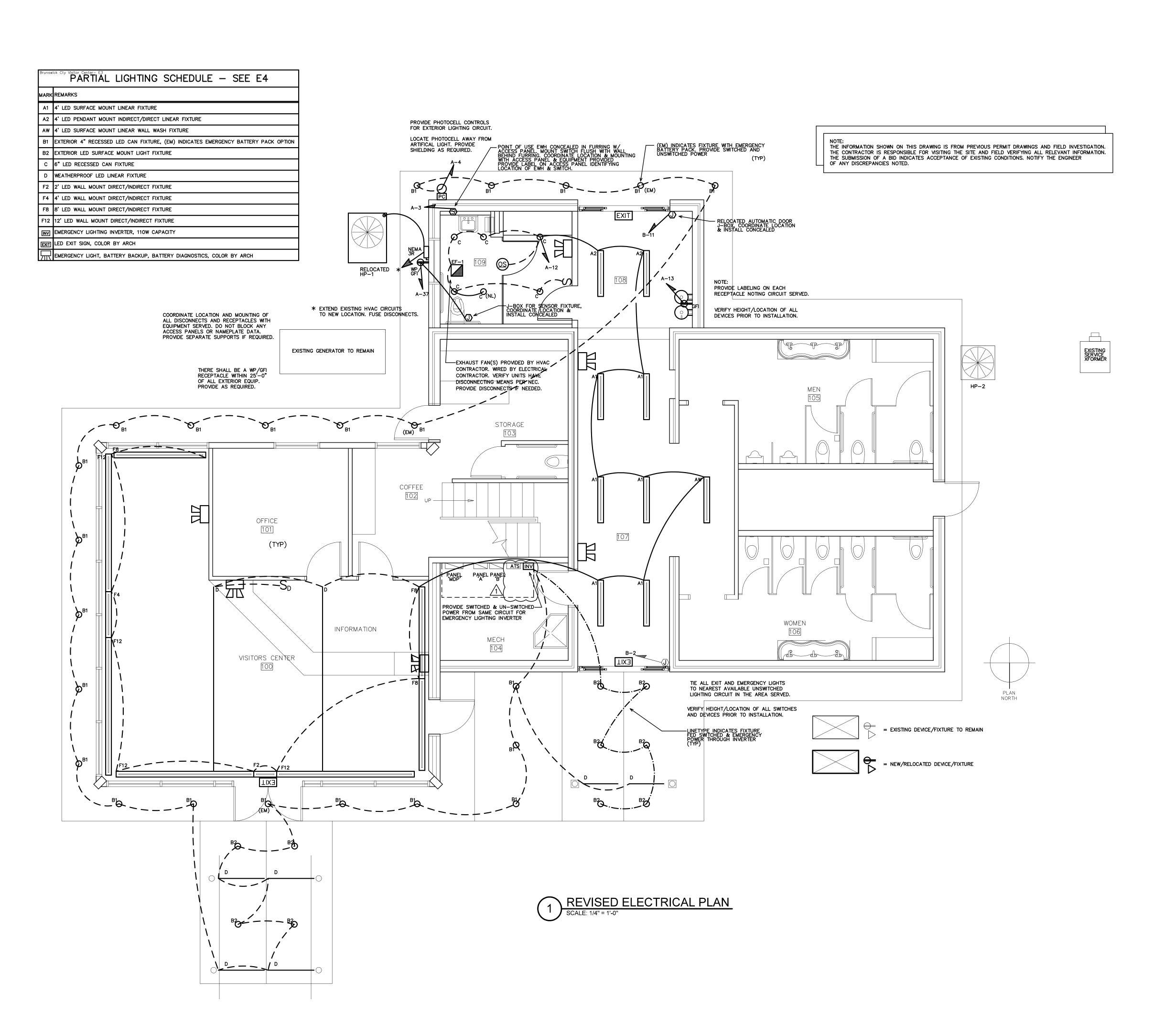
DRAWING TITLE
EXISTING ELEC PLAN

PLOT DATE

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1/13/2022







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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
SHALLOTE, NORTH CAROLINA

PROJECT NO.
2104A

DRAWING TITLE
NEW ELEC PLAN

E3

PLOT DATE

1/13/2022

Brunswick Cty Visitor Center- E4 <b>EXISTING PANEL-</b>	'MDP'	MAKE: _	CUTLER PRL1a	HAMM	MC	OUNTING	208/120V G: SURFAC AIC: 10.0	Œ	SE <u>4</u> WIRI	_ EQI		GROUN	UIT BREAKE ID BUS ATED	
LOAD SERVICE		CKT BRKR	WATTS A	PER F	PHASE C	CKT NO	NEUTRA A B C	CKT NO	WATTS	S PER B	PHASE C	CKT BRKR		LOAD SERVICE
VENDING BLD .		125A				1 3 5		2 1 6					SPACE	
AHU-1		80A				7 9 11		8 10				100A	HP-1	
PANEL 'A'		225A				13 15 17		14 16 18				100A	SPARE	
<u>NOTES</u>	SUB-TOT	ALS 'B'					_400A _400A _400A _VERIFY	BUS LUGS FEED SIZE	  A	  A	  A	SUB- GRANI	TOTALS 'A' TOTALS 'B' D TOTAL /PHASE	TOTAL CONNECTED LOAD

Brunswick Cty Visitor Center- E4 REVISED PANEL-	'MDP'	MAKE: _ TYPE: _		HAMM			208/120 G: SURF/		PHAS	E <u>4</u> WIR				UIT BREAKE ND BUS	R ⊠(YES	□NO
					М	INIMUM	AIC: 10	.00	0A		_ SER	RVICE EN	NTRY R	ated	XYES	□N0
LOAD		CKT	WATTS	PER F	HASE	CKT	NEUTR	AL	CKT	WATT	s per	PHASE	CKT		LOAD	
SERVICE		BRKR	Α	В	С	NO.	A B (	2	NO	Α	В	С	BRKR		SERVICE	
VENDING BLD						1			2					SPACE		
		125A				3			4							
						5		$\overline{}$	6				1			
AHU-1			8880			7			8	5520				HP-1		
		80A		8880		9		$\overline{}$	10		5520		100A			
		00,1			8880	11			12		-	5520	1			
PANEL 'A'			16124			13			14					SPARE		
FANLL A		225A	10124	15525		15			16				100A			
		ZZJA		13323	13354	17			18				TOUA			
NOTEC	CUD TOT	[ALC 'D'											CUID	TOTAL C 'A'		
<u>NOTES</u>	SUB-T01	IALS B	25004	24405	22234	$\times\!\!\!\times\!\!\!\times$	_4004		BUS	5520	5520	5520		TOTALS 'A'		
EXISTING CIRCUIT/BREAKE NEW/REVISED CIRCUIT/BR	R TO REM. FAKER	AIN					_4004		LUGS	25004		22234		TOTALS 'B'	TOTAL CO	NNECTED LOA
NEW/NEWSED GROOTI/DIG							_400A	<u> </u>	FEED	30524	29925	27754	<del>                                     </del>	D TOTAL		
							<u>VERIF</u>	Υ	SIZE	254A	249A	231A	AMPS	/PHASE		
NEC ALLOWABLE D	EMAND	FACTO	RS	DI	VERSI	IFIED I	LOAD S	UMN	MARY							
① DEMAND FACTORS					LOAD	TYPE			EMAND ACTOR①	Α	В	С	TOTAL	DIVERSIFIE	D LOAD	
(2) LARGEST OF: NEC	TABLE 220	0.12 OR				JGHTING	Q	_	25%	8450	5464	4220		18134		
CONNECTED LOAD  (3) NEC TABLE 220.56					CK LIGI IERAL U				25% KVA <b>©</b> 100%	1080	1980			 3960		
					EPTACL			_	KVA <b>©</b> 50%		1980	900		<del></del>		
(4) NEC 220.51				МО	TORS A	ND LA	RGEST	1	25%	11100	11100	11100		33300		
⑤ NEC 220.43A, 200	•				IPMENT	- 1	l others		00%	7644	9444	6756		23844		
6 NON-COINCIDENT LO					TER HEA	ATERS QUIPMEN	IT G		25% 00%		6563	2813		9376		
OF THE TWO LOADS	S IS COUN	TED				SPACE		,	00%	4992		4992		9984		
						DOW LIG			25%							
				SIGI			<u> </u>		25%							
				MIS	C		DILAGE		00%	1168	74554	600		1768		
							PHASE	•	AL VA) TOTAL AMPS	34434 287A	34551 288A	31381 262A		100366 XLT AMPS TS X 1.732	<b>=</b> 279A	TOTAL AMPS

Brunswick Cty Visitor Center— E4  EXISTING PANEL— 'A'	MAKE: _ TYPE: _		HAMM			208/120V G: SURFACE		E <u>4</u> Wir				UIT BREAKE ID BUS	
	1176	INLIG				AIC: <u>10,00</u>						ATED	
LOAD SERVICE	CKT BRKR	WATTS	S PER F	PHASE C	CKT NO	NEUTRAL A B C	CKT NO	WATT	S PER B	PHASE C	CKT BRKR		LOAD SERVICE
LTS: FLOOD	20A				1		2				20A	LTS: OFFIC	E, RM 102, 103
SPARE	20A				3		4				20A	LTS: ENTR	ANCE
REC: RR & STORAGE	20A				5		6				20A	LTS: VISITO	OR CENTER
SPARE	20A				7		8				20A	LTS: STAIR	WAY, STORE, 203, 204
REC: 102	20A				9		10				20A	LTS: BREE	ZEWAY
REC: 102	20A				11		12				20A	LTS: BREE	ZEWAY, PHOTOCELL
HAND DRYER & EWC	20A				13		14					PANEL 'B'	
HAND DRYER	20A				15		16				40A		
SPARE	20A				17		18						
TELEPHONE, CAR PARKING	20A				19		20				20A	REC: OUTD	OOR & STORAGE
EWH	704				21		22				20A	SPARE	
	30A				23		24				20A	LTS: FLAG	
HEAT PUMP	204				25		26				20A	SPARE	
	20A				27		28				20A	LTS: EMER	GENCY
HEAT STRIPS	CO.4				29		30				20A	FACP	
	60A				31		32				20A	REC: EXTE	RIOR
BACK AUTO DOOR	20A				33		34				20A	REC: MEZZ	FLOOR
FRONT AUTO DOOR	20A				35		36				20A	RR SENSOF	RS
REC: AC	20A				37		38					AHU	
SPARE	20A				39		40				15A		
•	ZUA				41		42						
NOTES SUB-1	OTALS 'B'				$\bowtie$	_225A_	BUS				SUB-	TOTALS 'A'	
						_225A_	LUGS				SUB-	TOTALS 'B'	TOTAL CONNECTED LOA
						_225A_	FEED				GRANI	TOTAL	I TOTAL COMMECTED LOW
						VERIFY	SIZE	A	A	A	AMPS	/PHASE	

Brunswick Cty Visitor Center- E4	MAKE: _		HAMM	ER R	ATING: _	208/12	.0V	3 PHAS	E <u>4</u> WIR					UIT BREAKE	4
REVISED PANEL— 'A'	TYPE: _	PRL1a		MC	OUNTIN	G: <u>SUR</u>	<u>FACE</u>							ID BUS	
				MI	NIMUM	AIC: 1	0,00	00A		_]	SER	VICE EN	NTRY R	ATED	□YES ⊠NO
LOAD	CKT	WATTS	S PER F	PHASE	СКТ	NEUT	RAL	CKT	WATT	S P	ER F	PHASE	CKT		LOAD
SERVICE	BRKR	Α	В	С	NO	A B	C	NO	Α	E	3	С	BRKR		SERVICE
LTS: FLOOD	20A	1920			1		+	2	1920				20A	LTS: OFFIC	E, RM 102, 103
EWH	30A		3000		3		+	4		9	51		20A	LTS: ENTR	ANCE, EXTERIOR
REC: RR & STORAGE	20A			360	5		<b>→</b>	6				1920	20A	LTS: VISITO	OR CENTER
SPARE	20A	i			7		4	8	1920				20A	LTS: STAIR	WAY, STORE, 203, 204
REC: 102	20A		540		9		+	10		19	20		20A	LTS: BREE	ZEWAY
REC: 102	20A			540	11		_	12				956	20A	LTS: BREE	ZEWAY, RR, PHOTOCELL
EWC	20A	888			13		+	14	1460					PANEL 'B'	
HAND DRYER	20A		1800		15		1	16		19	00		40A		
SPARE	20A				17		<del></del>	18				860			
TELEPHONE, CAR PARKING	20A	180			19	$\cap$		20	360				20A	REC: OUTD	OOR & STORAGE
EWH	704		2250		21		1	22					20A	SPARE	
	30A			2250	23		1	24				500	20A	LTS: FLAG	
HEAT PUMP	004	1248			25			26					20A	SPARE	
	20A		1248		27			28		50	00		20A	LTS: EMER	GENCY
HEAT STRIPS	00.			4992	29			30					20A	FACP	
	60A	4992			31	$\overline{}$		32	360				20A	REC: EXTE	RIOR
BACK AUTO DOOR	20A		360		33		1	34		54	40		20A	REC: MEZZ	FLOOR
FRONT AUTO DOOR	20A			360	35			36				100	20A	RR SENSOF	RS
REC: AC & TOILET SENSOR	20A	360			37			38	516					AHU	
SPARE	22.				39			40		51	16		15A		
	20A				41			42				516		<b>.</b>	
NOTES SUB-	TOTALS 'B'	9588	9198	8502	$\times\!\!\times\!\!\times$	225	5.4	BUS	6536	63	27	4852	SUB-	TOTALS 'A'	
EXISTING CIRCUIT/BREAKER TO F		0000	1 0,00	0002		225		LUGS	9588	91	$\neg$	8502		TOTALS 'B'	1
NEW/REVISED CIRCUIT/BREAKER	(LIWI/ (III)					225		FEED	16124	-	$\overline{}$	13354		D TOTAL	TOTAL CONNECTED LOAD
						VER		SIZE	135A	-	OA	112A		/PHASE	1
NEC ALLOWABLE DEMAN	ID EACTO	DC DC		VEDCI		LOAD							7	7.1	
NEC ALLOWABLE DEMAN	ID PACIO	<u> </u>	10		====								ı		
① DEMAND FACTORS PER NE				LOAD	TYPI	E		EMAND FACTOR ①		E	3	С	TOTAL	. DIVERSIFIE	TD LOAD
(2) LARGEST OF: NEC TABLE CONNECTED LOAD	220.12 OR			IERAL L		;		125%	8450	_	64	4220		18134	
(3) NEC TABLE 220.56				NCK LIGH NERAL U				125% 0kva <b>@</b> 100%	1080	19	 80	900		3960	
(4) NEC 220.51			REC	EPTACL	ES		_	0KVA@50%							
(4) NEC 220.31				TORS AN JIPMENT	_	ARGEST		125 <b>%</b> 100 <b>%</b>	1560 876		250 24	645 720		4455 3720	
6 NEC 220 434 200 VA /IIN	JEAR ET				IAI	I UTITEDS		100%						9376	
5 NEC 220.43A, 200 VA/LIN				TER HEA		L OHILKS		125%		65	100 J	2813		00,0	
5 NEC 220.43A, 200 VA/LIN 6 NON-COINCIDENT LOADS, OF THE TWO LOADS IS CO	LARGEST		WA.	TER HEA	TERS QUIPMEI	NT	<u> </u>	100%		Ξ					
6 NON-COINCIDENT LOADS,	LARGEST		WA KIT FIX.	TER HEA CHEN EC ELEC.	TERS QUIPMEN SPACE	NT HEAT.	③ ④			_					
6 NON-COINCIDENT LOADS,	LARGEST		WA KITO FIX. SHO SIG	TER HEACHEN EC. ELEC. DW WIND	TERS QUIPMEN SPACE	NT HEAT.	③ ④ ⑤	100% 100% 125% 125%	 4992 	 	  	4992 		9984 	
6 NON-COINCIDENT LOADS,	LARGEST		WA KITO FIX. SHO	TER HEACHEN EC. ELEC. DW WIND	TERS QUIPMEN SPACE	NT HEAT. HTS	③ ④ ⑤	100% 100% 125% 125% 100%	 4992  1168		  	4992  600		9984  1768	
6 NON-COINCIDENT LOADS,	LARGEST		WA KITO FIX. SHO SIG	TER HEACHEN EC. ELEC. DW WIND	TERS QUIPMEN SPACE	NT HEAT.	③ ④ ⑤	100% 100% 125% 125%	 4992  1168	   183	  	4992 		9984  1768 51397	= 143A TOTAL

EXISTING PANEL— 'B'	MAKE: _ Type: _		HAMM	м	OUNTING	208/120V 3 G: SURFACE AIC: 10,00		E <u>4</u> Wire	. EQ	UIPMENT	GROUN	uit breaker ID busXyes □no Ated□yes ⊠no
LOAD SERVICE	CKT BRKR	WATTS A	S PER F		CKT N0	NEUTRAL A B C	CKT NO	WATTS	PER B	PHASE C	CKT BRKR	LOAD SERVICE
MAIN	100A				1 3		2					FRONT AUTO DOOR LTS: BATHROOM
					5		6					FLUSH CIR
URINAL JANITOR ROOM	20A 20A				7 9		8 10					LTS: ENTRANCE SPACE
BACK AUTO DOOR	20A				11		12					SPACE
SPACE					13		14 16					SPACE
SPACE SPACE					17		18					SPACE SPACE
SPACE					19		20					SPACE
SPACE SPACE					21		22 24			<del> </del>		SPACE SPACE
SPACE					25		26					SPACE
SPACE					27		28					SPACE
SPACE					29		30					SPACE
NOTES SUB-TO	TALS 'B'				$\bowtie$		BUS					TOTALS 'A'
							LUGS FEED					TOTALS 'B' TOTAL CONNECTED LO
						<del>- 1</del> 0A	SIZE		A		<b>-</b>	/PHASE

Brunswick Cty Visitor Ce REVISED PA	NEL— 'B'	MAKE: _ TYPE: _		HAMM	мо	OUNTING	208/120V G: <u>SURFAC</u> AIC: <u>10.</u> 0	Œ	\SE <u>4</u>	_WIRE	EQU	IIPMENT	GROUN		_\XYES □N	
LOAD SERVICE	-	CKT BRKR	WATTS	S PER F	PHASE C	CKT NO	NEUTRAL A B C	_ CK <sup>-</sup>			PER I	PHASE C	CKT BRKR		LOAD SERVICE	
MAIN		- Brance	- ''		<del>                                     </del>	1		$\frac{1}{2}$	36	-		_		FRONT AUT		
MAIN		100A				3		7 4	+ = =		000		20A	LTS: BATH		
		TOUA				5		$\frac{4}{6}$		<del>-   '</del>	000	500		FLUSH CIR	KOOM	
URINAL		20A	100			7		$\frac{8}{8}$	100	00		300	20A	LTS: ENTRA	ANCE	
JANITOR ROOM		20A	100	900		9							20/1	SPACE	TIVOL	
BACK AUTO DOOR		20A			360	11		$\overline{}$ 12						SPACE		
SPACE		2011				13		$\frac{1}{14}$						SPACE		
SPACE						15		16		<u> </u>				SPACE		
SPACE						17		18						SPACE		
SPACE						19		$\frac{1}{2}$						SPACE		
SPACE						21		$\frac{1}{2}$						SPACE		
SPACE						23		$\frac{2}{2}$						SPACE		
SPACE						25		$\frac{26}{26}$						SPACE		
SPACE						27		${}$ 28		<del> </del>				SPACE		
SPACE						29		$\overline{}$ 30						SPACE		
NOTES	SUB-TOT	ALS 'B'	100	900	360	$\times\!\!\times\!\!\times$	100A	BUS	136	60 1	000	500		TOTALS 'A'		
EXISTING CIRCUIT	/BREAKER TO REM.				•		100A	LUGS	_		900	360	SUB-	TOTALS 'B'	TOTAL CONNEC	OTED 1
NEW/REVISED CIR	CUIT/BREAKER						40A	FEED	_		900	860		TOTAL	TOTAL CONNEC	CIED LO
							VERIFY	SIZE	12	2A .	16A	7A		/PHASE		
NEC ALLOWA	BLE DEMAND	FACTO	RS	DI	IVERSI	FIED	LOAD SU	MMAR	Y				, , , , ,			
$\simeq$	ACTORS PER NEC 2				LOAD	TYPI	<b>E</b>	DEMANE		\ \ \	В	С	TOTAL	. DIVERSIFIE	D LOAD	
	F: NEC TABLE 220	0.12 OR			NERAL L		2	125%	125		250			2500		
CONNECTED  (3) NEC TABLE					NCK LIGH NERAL U			125% ≤10KVA <b>©</b> 10	0%		900			900		
_					EPTACL			> 10KVA@50								
4 NEC 220.51		. <b>.</b>		MO.	TORS AN	1D L	RGEST	125%	45			450		900		
_	3A, 200 VA/LINEAF				JIPMENT TER HEA		l others	100% 125%	<del> </del>							
	CIDENT LOADS, LAR O LOADS IS COUN				CHEN E		NT ③		+==							
5. IIIE IW	2 20,000 10 00014				ELEC.		HEAT. ④	100%								
					OW WIND	OW LIG	HTS 📵									
				SIG				125% 100%	10			500		600		
				IWIIS			PHASE (1	TOTAL V			2150	950		4900		
								TOTA	L 15		18A	8A		S X 1.732	= 14A TO	TAL IPS

Brunswick Cty Visitor C EQUIF			VIRIN	IG	SCHEDULE
EQUIPMENT	МСА	МОСР	VOLTS	PH	WIRE SIZE
EWH	(3.0KW)	30A	120V	1	2-#10, 1-#10 GND IN 1/2" CONDUIT

NOTE: THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO ROUGH—IN AND RELEASING GEAR. ADJUST BREAKER, WIRE SIZES, ETC. AS REQUIRED.

$\bigcap$	EXISTING SERVICE RISER
( '	SCALE: NOT TO SCALE

PAD MOUNTED TRANSFORMER BY LOCAL POWER

VERIFY AVAILABLE FAULT CURRENT AT SERVICE LOCATION WITH LOCAL POWER COMPANY. PROVIDE INFORMATION TO ENGINEER TO CALCULATE MINIMUM PANEL AIC RATING.

NOTE: THE ELECTRICAL SERVICE IS EXISTING AND SHOWN FOR REFERENCE ONLY. NO NEW WORK IS REQUIRED.

AREA OF NEW WORK

EXISTING EMERGENCY DIESEL GENERATOR

EC SHALL PROVIDE LABELING INDICATING FAULT CURRENT AT SERVICE ENTRY AND ON ALL PANELS PRIOR TO ENERGIZING.

Brunswick Cty Visitor Center- E4 LIGHTING SCHEDULE *									ALTERN	ALTERNATE 1			ALTERNATE 2	
ARK MAN	NUFACTURER	CATALOG NO.	VOLT.	NO. <sup>-</sup>	LAMPS TYPE W	BALLA <sup>®</sup> TYPE	ST W/ E FIXTUR	REMARKS	MANUF	ACTURER	CATALOG NO.	MANUFACTURER	CATALOG NO.	
A1 FINE	ELITE	HP4-SM-D-4-B	120	[-]	LED -	_	18	4' LED SURFACE MOUNT LINEAR FIXTURE	* MARK A	ARCH. LTG.	S4LS 4FT MSL4 90CRI 35K 800LMF	PEERLESS	OPMS S 4FT 90CRI 35K 810LMF DARK ZT	
A2 FINE	ELITE	HP4-P-ID-4-B	120	-	LED -	_	36	4' LED PENDANT MOUNT INDIRECT/DIRECT LINEAR FIXTURE	* MARK A	ARCH. LTG.	S4LID 4FT MSL4 90CRI 35K 800LMF 190CRI 135K 1600LMF	PEERLESS	OPM4 LCB 4FT MSL4 90CRI 35K I610LMF 810LFM DARK ZT	
AW FINE	ELITE	HP4-SM-WW-D-8-B	120	-	LED -	T -	37	4' LED SURFACE MOUNT LINEAR WALL WASH FIXTURE	* MARK A	ARCH. LTG.	S4LS 4FT MSL4 90CRI 35K 800LMF WW	PEERLESS	OPMW S 4FT 90CRI 35K 810LMF DARK ZT	
B1 PRE	SCOLITE	LF4ML(EM)-4LFML30L35K8	120	-	LED -	_	33	EXTERIOR 4" RECESSED LED CAN FIXTURE, (EM) INDICATES EMERGENCY BATTERY PACK OPTION	* LITHONIA	A	LDN4 35/10 L04AR (EL)	GOTHAM	EVO4SH 35/10 (ELR)	
32 PRE	SCOLITE	LBSE-6RD-35K8	120	-	LED -	-	13	EXTERIOR LED SURFACE MOUNT LIGHT FIXTURE	* JUNO		6RLS G2 07LM 30K 90 CRI 120 FRPC WH	LITON	LCMPD5RW-T35	
C JUN	10	IC22LED-G4-14LM-35K	120	_	LED -	_	30	6" LED RECESSED CAN FIXTURE	* LITHONIA	A	LDN6 35/10 L06AR	GOTHAM	ICO 35/20 6AR	
D KKD	С	KKSL-SA-X-N-504-34-148	120	_	LED -	-	3.81/F	WEATHERPROOF LED LINEAR FIXTURE	* JESCO		DL-FLEX2-LNSB-RGB	GVA LIGHTING	HL-1200-3500DWT	
72 FINE	ELITE	HP4-WM-ID-2-B	120	_	LED -	_	18	2' LED WALL MOUNT DIRECT/INDIRECT FIXTURE **	* MARK A	ARCH. LTG.	S4LWID 2FT MSL8 90CRI 35K 800LFM	COLUMBIA	CWM2-35MWSM-DIS	
4 FINE	ELITE	HP4-WM-ID-4-B	120	_	LED -	-	36	4' LED WALL MOUNT DIRECT/INDIRECT FIXTURE **	* MARK A	ARCH. LTG.	S4LWID 4FT MSL8 90CRI 35K 800LFM	COLUMBIA	CWM4-35MWSM-DIS	
8 FINE	ELITE	HP4-WM-ID-8-B	120	_	LED -	_	72	8' LED WALL MOUNT DIRECT/INDIRECT FIXTURE **	* MARK A	ARCH. LTG.	S4LWID 8FT MSL8 90CRI 35K 800LFM	COLUMBIA	(2) CWM4-35MWSM-DIS	
12 FINE	ELITE	HP4-WM-ID-12-B	120	_	LED -	_	108	12' LED WALL MOUNT DIRECT/INDIRECT FIXTURE **	* MARK A	ARCH. LTG.	S4LWID 12FT MSL8 90CRI 35K 800LFM	COLUMBIA	(3) CWM4-35MWSM-DIS	
NV DUA	AL-LITE	LG125-S	120	-		-	_	EMERGENCY LIGHTING INVERTER, 110W CAPACITY	* IOTA		IIS 125 SM	EMERGI-LITE	EMIU-125	
XIT MUL	.E	PVT-1-B-R-U-BA-SD	120	-	LED -	-	2	LED EXIT SIGN, COLOR BY ARCH	* EXITRON	NIX	S902-WB-SR-RC-AG-G2	COMPASS	CELCR1RN	
R MUL	.E	ELW-BB-10L3-DG	120	-	LED -	_	10	EMERGENCY LIGHT, BATTERY BACKUP, BATTERY DIAGNOSTICS, COLOR BY ARCH	* EXITRON	NIX XII	NF2-WB-10L-WH-DR	LITHONIA	AFF-OEL	

OR APPROVED EQUAL. PROVIDE CUT SHEETS FOR OWNER APPROVAL PRIOR TO ORDERING FIXTURES. CATALOG NUMBERS ARE FOR REFERENCE ONLY, ACTUAL NUMBERS MAY VARY. 'EB' DENOTES ELECTRONIC BALLAST. 'EDB' DENOTES ELECTRONIC DIMMING BALLAST.



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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 SHALLOTE, NORTH CAROLINA

PROJECT NO. 2104A

DRAWING TITLE **ELEC. PANELS & RISER** 

PLOT DATE

1/13/2022

<sup>\*\* &#</sup>x27;F' FIXTURES MAY BE ORDERED IN CONTINUOUS LENGTHS IF AVAILABLE FROM MANUFACTURER THE EMERGENCY LIGHTS AND EXIT SIGNS MUST HAVE INTEGRAL BATTERIES, CHARGERS AND TEST SWITCHES.