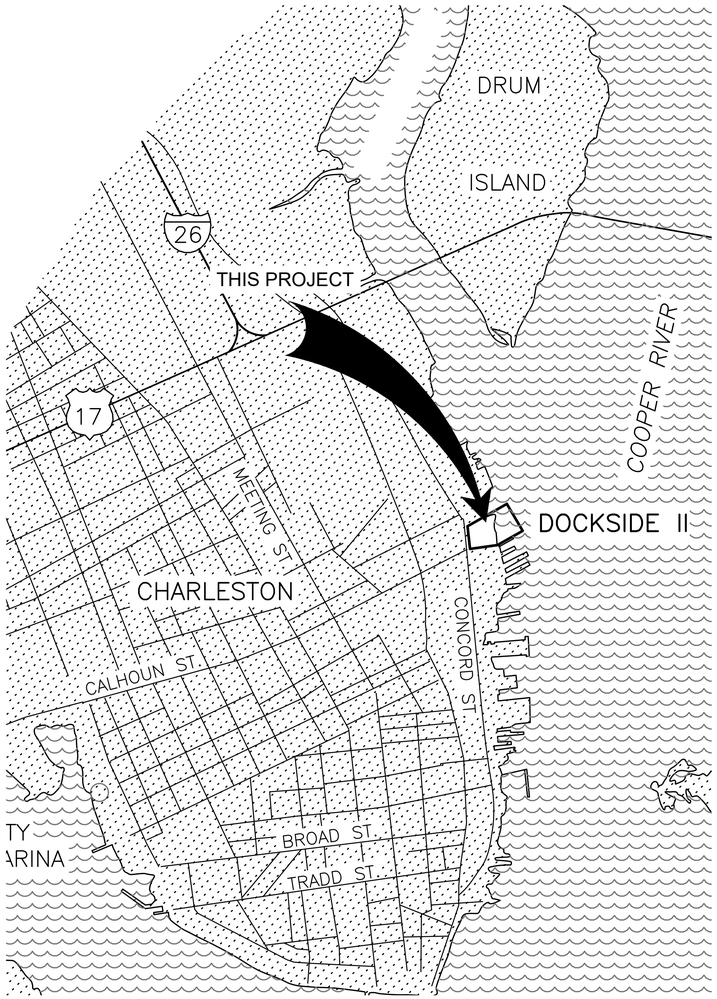

FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK

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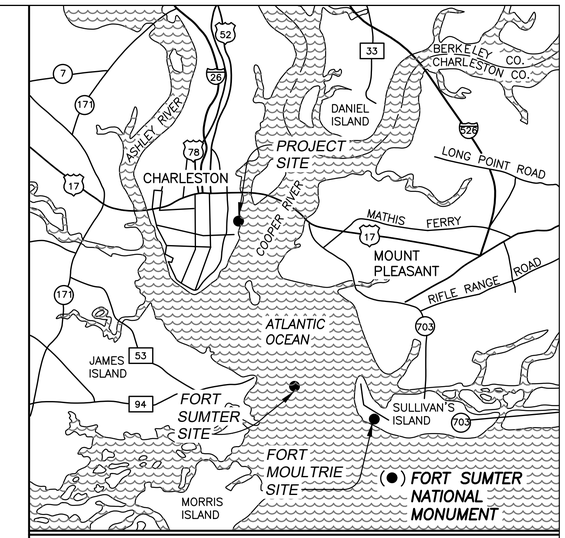


CHARLESTON
SOUTH CAROLINA

1 0 1
SCALE OF MILES

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 42216 CHRISTIAN GRAYSON 6-14-2024

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 39592 JOSEPH EIXENBERGER 6-14-2024

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER 6-17-2024

SCALE OF FEET
2,000 0 2,000 4,000
500 0 500 1,000
SCALE OF METERS

PMIS # 316098B

CONSTRUCTION DOCUMENTS

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SOUTHEAST REGION

TITLE OF DRAWING
REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER
LOCATION WITHIN PARK
LIBERTY SQUARE
NAME OF PARK
FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK

REGION	COUNTY	STATE
SOUTHEAST	CHARLESTON	S. CAROLINA

DRAWING NO. 392 / 192499
PKG. NO. 316 / 098B
SHEET 1 OF 44

392/92,002 6/91; 392/90,027 9/90; REVISED & REDRAWN 6/93. UPDATED 11/98. SGS.

7/16/19 11:00 MTRACY R22 P:\FOSU\FOUNDATION\0.0 PRIMARY DOCUMENT\FOSU 105DB-HVAC RACDS\GEN\01-COVER 105DB HVAC.DWG

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH NPS STANDARDS AND STATE AND LOCAL STANDARDS.
2. SURVEY/ ELEVATIONS SHOWN ON THE PLANS ARE TO BE USED BY THE CONTRACTOR TO DETERMINE APPROXIMATE FIELD CONDITIONS. ACTUAL ELEVATIONS SHALL BE FIELD VERIFIED DURING CONSTRUCTION.
3. IN GENERAL, EXISTING STRUCTURES, EQUIPMENT, AND FACILITIES ARE SHOWN AS A SCREENED BACKGROUND. NEW STRUCTURES, EQUIPMENT, AND FACILITIES ARE SHOWN IN HEAVY LINE WEIGHTS. OTHER DISCIPLINES MAY SCREEN NEW STRUCTURES OUTSIDE THEIR DISCIPLINE TO SHOW THEIR INFORMATION.
4. ALL WORK SHALL BE PERFORMED PER THE APPROVED PLANS, PROJECT SPECIFICATIONS AND GENERAL CONDITIONS OF THE CONTRACT. ANY CHANGES TO THE DESIGN AS SHOWN IN THESE CONSTRUCTION DOCUMENTS MUST BE REVIEWED AND APPROVED BY THE CONTRACTING OFFICER BEFORE CHANGES ARE MADE.
5. BY ACCEPTING AND USING THESE DRAWINGS, CONTRACTOR AGREES THAT HE/SHE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. IN ADDITION, THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE NPS AND THE OWNER'S REPRESENTATIVE HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING THE LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE NPS OR THE OWNER'S REPRESENTATIVE.
6. ANY KNOWN SEWERS, WATER MAINS, TELEPHONE CONDUITS, ELECTRIC CABLES, AND OTHER UNDERGROUND/OVERHEAD ITEMS ARE SHOWN ON THE DRAWINGS ONLY TO THE EXTENT SUCH INFORMATION HAS BEEN MADE AVAILABLE OR DISCOVERED BY THE ENGINEER. IT IS EXPECTED THAT THERE MAY BE DISCREPANCIES AND OMISSIONS IN THE LOCATION AND QUANTITIES OF EXISTING UTILITIES AND STRUCTURES SHOWN. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR BUT IS NOT GUARANTEED TO BE EITHER CORRECT OR COMPLETE AND ALL RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS THEREOF IS EXPRESSLY DISCLAIMED. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING WATER, SEWER, ELECTRIC, PHONE AND ALL OTHER EXISTING UTILITIES IN THE PROJECT LIMITS VIA POT HOLING, 3RD PARTY UTILITY LOCATOR, ETC. AS NECESSARY TO VERIFY LOCATIONS, CORRECTNESS, & COMPLETENESS.
7. THE CONTRACTOR SHALL CONTACT DIG ALERT TO CREATE A CONTRACTOR TICKET FOR THE LOCATION OF EXISTING UTILITIES AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE BEGINNING OF WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING PRE-MARKING OF THE LOCATION LIMITS AS REQUIRED BY DIG ALERT. CONTRACTOR MAY NOT BEGIN EXCAVATION UNTIL ALL UTILITY MEMBERS HAVE RESPONDED TO THEIR TICKET.
8. DIMENSIONS SHOWN ON THE PLANS ARE TO BE USED BY THE CONTRACTOR TO DETERMINE APPROXIMATE FIELD CONDITIONS. PRIOR TO CONSTRUCTION CONTRACTOR SHALL FIELD VERIFY EXISTING LOCATIONS, ELEVATIONS, MATERIAL TYPES, I.D. AND O.D. OF PIPES, ETC. OF ALL UTILITIES AND FEATURES WHERE PROPOSED IMPROVEMENTS CONNECT. NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES IN WRITING IMPACTING NEW WORK SUFFICIENTLY IN ADVANCE OF NEW WORK SO AS TO NOT CAUSE CONSTRUCTION DELAYS. INCLUDE INFORMATION ON LOCATION, ELEVATION , UTILITY TYPE AND SIZE.
9. EXISTING FACILITIES, INCLUDING BUT NOT LIMITED TO ROADS, WALLS, FENCES, STRUCTURES AND UTILITIES, DAMAGED BY CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO MATCH ORIGINAL PRE-CONSTRUCTION CONDITION AND TO THE SATISFACTION OF THE CONTRACTING OFFICER WITHOUT ADDITIONAL COST TO THE GOVERNMENT
10. ALL DISTURBED ASPHALT, GRASS, DRAINAGE PATTERNS, ROADSIDE DITCHES, TRAILS AND GRADE SHALL BE RESTORED TO ITS ORIGINAL CONDITION OR AS CALLED FOR ON THE CONTRACT DOCUMENTS, WHICHEVER IS MORE STRINGENT.
11. CONTRACTOR SHALL FURNISH AND INSTALL EVERYTHING REQUIRED TO PROVIDE COMPLETE AND OPERABLE FACILITIES AS SHOWN HEREIN. IF THERE IS AN OMISSION ON THE CONSTRUCTION DOCUMENTS, SUCH OMISSION SHALL NOT BE CONSTRUED TO MEAN THAT THE CONTRACTOR IS NOT REQUIRED TO FURNISH OR PROVIDE EVERYTHING THAT IS NECESSARY TO PROVIDE COMPLETE AND OPERABLE FACILITIES.
12. ALL CONTRACTORS WORKING WITHIN THE PROJECT BOUNDARIES ARE RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE SAFETY LAWS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL EMPLOYEES AND/OR SUBCONTRACTORS WITH PERSONAL PROTECTIVE EQUIPMENT AND FOLLOWING ALL SAFETY PROTOCOLS, TO INCLUDE WORK IN ATTIC AND CRAWL SPACES IN THE EVENT RODENT DROPPINGS/NESTS ARE PRESENT.
13. ALL EXISTING VALVES AND EQUIPMENT SHALL BE OPERATED BY THE NPS UTILITIES OPERATOR, OR IN THE OBSERVANCE OF THE OPERATOR WITH PRIOR APPROVAL.
14. CONTRACTOR TO SUBMIT SERVICE INTERRUPTION PLAN AND NOTIFY NPS CONTRACTING OFFICER AT LEAST 72 HOURS PRIOR TO ANY UTILITY OR SERVICE INTERRUPTIONS.
15. CONTRACTOR SHALL PROVIDE TRACER WIRE AND LOCATOR TAPE FOR ALL BURIED PIPING AND CONDUITS.
16. ALL COSTS INCURRED IN CORRECTION OF DEFICIENT WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
17. UPON THE COMPLETION OF WORK, THE CONTRACTOR SHALL SUBMIT A SET OF "RED-LINED" RECORD DRAWINGS TO THE CONTRACTING OFFICER SHOWING ALL DEVIATIONS, CHANGES, ADDITIONS, AND DELETIONS MADE DURING CONSTRUCTION. ONE SET SHALL BE MAINTAINED AT THE SITE AND SHALL BE UPDATED DAILY.
18. STAGING AREAS SHALL BE DEFINED BY CONTRACTING OFFICER UNLESS OTHERWISE DELINEATED IN THIS PLAN SET.
19. CONSTRUCTION FENCING OR BARRIERS SHALL BE PROVIDED WHERE NECESSARY TO PREVENT THE PUBLIC OR PARK STAFF FROM ENTERING WORK AREAS.
20. CONTRACTOR SHALL MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC ON ALL EXISTING DRIVEWAYS, ROADS AND PATHS NOT UNDER CONSTRUCTION. ALL DRIVEWAYS AND STREET APPROACHES SHALL BE OPENED TO ALLOW VEHICLE ACCESS AT THE END OF THE WORK DAY. CONTRACTOR SHALL COORDINATE WITH NPS AND PREPARE A TRAFFIC AND PEDESTRIAN CONTROL PLAN FOR ALL AREAS AFFECTED BY CONSTRUCTION.
21. ALL EXISTING TREES TO REMAIN UNLESS OTHERWISE SPECIFIED.
22. ESTABLISHMENT OF A CONSTRUCTION CAMP WILL NOT BE PERMITTED WITHIN PARK BOUNDARIES.
23. THE CONTRACTOR SHALL END PLACEMENT FOR ALL SURFACE CONCRETE WORK AT EITHER EXPANSION OR CONSTRUCTION JOINTS.
24. THE NPS SHALL IMMEDIATELY BE NOTIFIED IN WRITING BY THE CONTRACTOR OF ANY IDENTIFIED CONDITIONS THAT REQUIRE DEVIATIONS FROM THESE PLANS AND/OR SPECIFICATIONS. ANY REVISIONS TO THE IMPROVEMENT PLAN WILL BE PROCESSED IN ACCORDANCE WITH THE SPECIFICATIONS AND CONTRACT DOCUMENTS.
25. ALL EXCAVATIONS 5' IN DEPTH OR GREATER SHALL BE SHORED AND BRACED ACCORDING TO OSHA REGULATIONS.
26. UNLESS OTHERWISE INDICATED, DEMOLISHED MATERIALS BECOME THE PROPERTY OF THE CONTRACTOR. COMPLY WITH EPA REGULATIONS AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION. CONDUCT ANY DEMOLITION DUTIES WITHOUT DISRUPTION OF OCCUPANTS.
27. ALL EXISTING FACILITIES AND UTILITIES SHALL BE PROTECTED UNLESS NOTED TO BE REMOVED ON THE DRAWINGS.
28. PIPE DEFLECTION SHALL BE PER MANUFACTURERS RECOMMENDATION.
29. THRUST BLOCKING SHALL BE PLACED AT ALL BENDS (HORIZONTAL OR VERTICAL) 11.25 DEGREES OR GREATER, AND AS SHOWN IN THE STANDARD DETAILS.
30. PIPE SUPPORTS SHALL BE INSTALLED AS SHOWN ON THE PLANS, AS DEEMED NECESSARY IN THE FIELD, OR AS DIRECTED BY THE CONTRACTING OFFICER FOR SUPPORT OF ALL PIPING BOTH NEW AND EXISTING.
31. ALL VALVE RISERS ON VALVES ABANDONED IN THE CURRENT PROJECT SHALL BE REMOVED UNLESS OTHERWISE NOTED TO RETAIN.
32. ALL MECHANICAL JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE PROJECT SPECIFICATION. MECHANICAL JOINT RESTRAINT SHALL BE UNI-FLANGE 1300 (SERIES) OR APPROVED EQUAL.
33. ALL LABORATORY AND FIELD MATERIALS TESTING SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS.
34. SINCE THIS CONSTRUCTION PROJECT WILL DISTURB LESS THAN ONE-ACRE, THE CONTRACTOR WILL NOT NEED TO FILE AND SUBMIT A NOTICE OF INTENT (NOI) OR A STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR SHALL PREPARE THE UNDER-AN-ACRE POLLUTION PREVENTION PLAN MEETING THE REQUIREMENTS OF THE NATIONAL PARK SERVICE FOR CONSTRUCTION ACTIVITIES.
35. SEE SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS.

EROSION & SEDIMENT CONTROL NOTES

1. ALL EQUIPMENT SHALL BE POWER WASHED BY THE CONTRACTOR AND INSPECTED BY A PARK REPRESENTATIVE PRIOR TO THE EQUIPMENT ENTERING THE PARK TO ENSURE IT IS FREE OF NON-NATIVE WEEDS AND/OR SEEDS AS WELL AS OIL LEAKS (CONTRACTOR IS RESPONSIBLE FOR PREPARATION AND CLEANING OF ALL EQUIPMENT AND FOR COORDINATING THE INSPECTION WITH THE NATIONAL PARK SERVICE AT LEAST 48 HOURS IN ADVANCE). IN ADDITION, SOURCES OF IMPORTED ROCK, SAND, GRAVEL, AND SOIL SHALL BE INSPECTED BY THE NATIONAL PARK SERVICE FOR INVASIVE NON-NATIVE PLANTS, WEEDS AND/OR SEEDS (THE NATIONAL PARK SERVICE SHALL BE NOTIFIED 30 CALENDAR DAYS IN ADVANCE FOR ALL IMPORT SOURCE INSPECTIONS.
2. CONTRACTOR SHALL PROVIDE, MAINTAIN, AND BE RESPONSIBLE FOR ALL EROSION AND SEDIMENT CONTROL STRUCTURES AND PRACTICES IN ACCORDANCE WITH THE PARK'S BEST MANAGEMENT PRACTICES AS WELL AS ANY LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR WATER QUALITY AND EROSION AND SEDIMENT CONTROL. EXCELSIOR OR COIR FIBER PRODUCTS SHALL BE USED IN EROSION CONTROL BLANKETS AND SEDIMENT LOGS. JUTE OR COTTON SHALL BE USED FOR NETTING IN EROSION CONTROL BLANKETS. NO "CERTIFIED WEED FREE" PRODUCTS ARE ALLOWED. NO PLASTIC NETTING PRODUCTS ARE ALLOWED.
3. CONTRACTOR TO PRESERVE EXISTING VEGETATION AND MINIMIZE THE AREAS DISTURBED BY CONSTRUCTION ACTIVITY.
4. CONTRACTOR SHALL PROVIDE INLET PROTECTION TO ALL CULVERTS, INLETS, CANALS, AND SUB-SURFACE DRAINS IN THE PROJECT VICINITY.
5. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

WORK RESTRICTIONS

1. WORK SHALL BE GENERALLY PERFORMED FROM 7:30 A.M. TO 4:00 P.M. MONDAY THROUGH FRIDAY. TEN (10) HOUR WORK DAYS MAY BE ALLOWED WITH WRITTEN APPROVAL FROM THE CONTRACTING OFFICER. WEEKEND AND HOLIDAY WORK SHALL BE AVOIDED AND WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL FROM THE CONTRACTING OFFICER.
2. SEE SPECIFICATIONS FOR ADDITIONAL WORK RESTRICTIONS AND REQUIREMENTS.

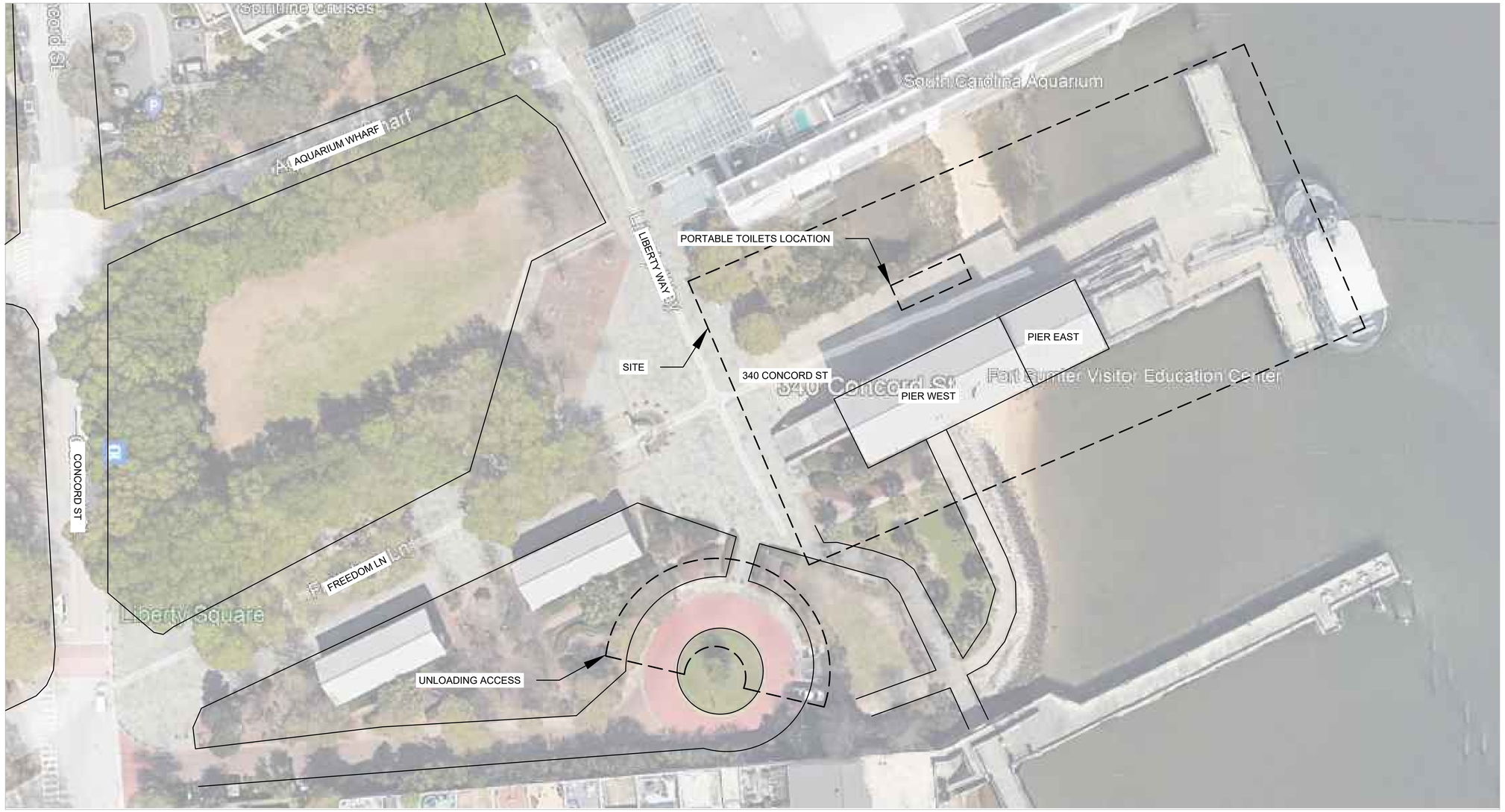
PROJECT STAGING AND COORDINATION

1. CONTRACTOR TO COORDINATE WITH COR FOR FINAL LOCATION OF LAY DOWN AND STAGING YARD. PRIOR TO FENCING AREA OFF.
2. STAGING AREA SHALL BE FENCED AND SECURED AT ALL TIMES.
3. CONTRACTOR IS RESPONSIBLE FOR THE SECURITY OF THE YARD. TO ENSURE THE SAFETY OF THE PUBLIC AND THE SECURITY OF THE SITE THE CONTRACTOR SHALL NOTIFY THE COR IF ANY INCIDENTS OCCUR ON SITE. INCLUDING THEFT AND HEALTH SAFETY.
4. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL TRADES TO PREVENT UNFORESEEN CONFLICTS BEFORE THEY BECOME AN ISSUE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A LAYDOWN YARD TO ALLOW STAGING OF EQUIPMENT PRIOR TO DELIVERY TO SITE.
6. PARKING AT SITE IS LIMITED AND CONTRACTOR TO ACCOUNT FOR ALL OFF SITE PARKING FOR ALL EMPLOYEES DURING CONSTRUCTION PERIOD.

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 42216
CHRISTIAN GENTRY
6-4-2024

DESIGNED: I. BROWN CADD M. NGUY TECH. REVIEW: B. BROOKE DATE: 6/2024	SUB SHEET NO. G0.1	TITLE OF SHEET GENERAL NOTES REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392 / 192499 PMIS/PKG NO. 316098B SHEET 2 OF 44

23/05/2024 12:34 KEVIN FLORES G:\CLIENTS\NPS\FOSJU\LIBERTY SQUARE HVAC\DRAWINGS\GEN\G0.1 GENERAL NOTES.DWG

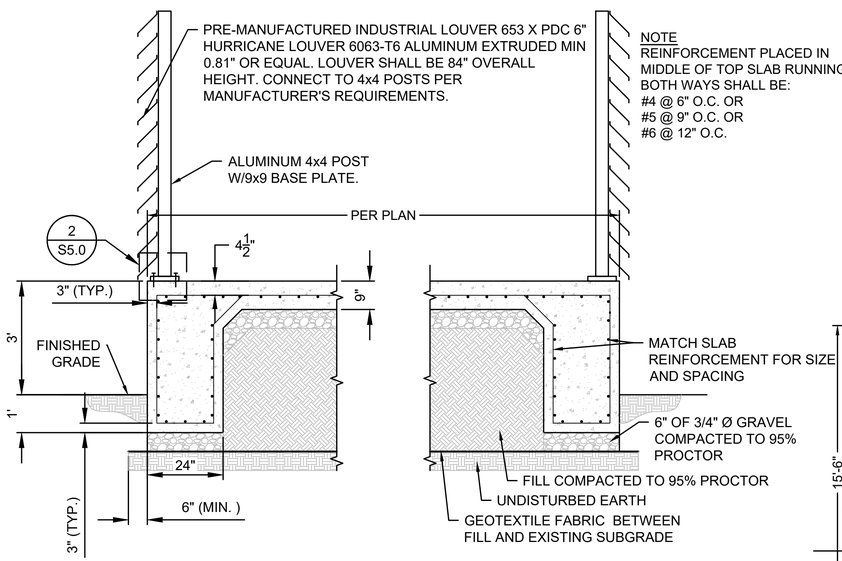


SOUTH CAROLINA
PROFESSIONAL ENGINEER
No. 42216
CHRISTIAN GEDDIE
6-4-2024

30' 0 30' 60'
SCALE OF FEET

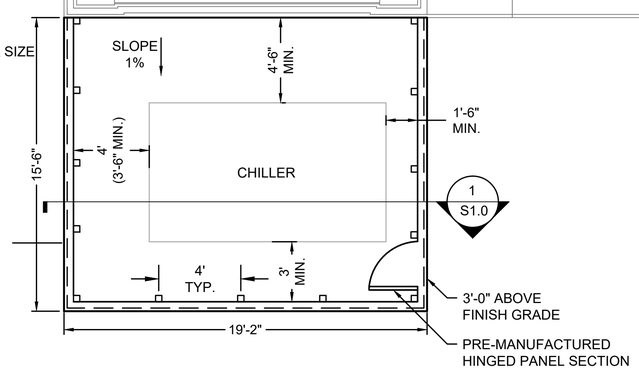
DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	G0.2	SITE MAP	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 3 OF 44

03/06/2024 06:42 KEVIN.FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\GEN\G0.2 SITE MAP - C.DWG

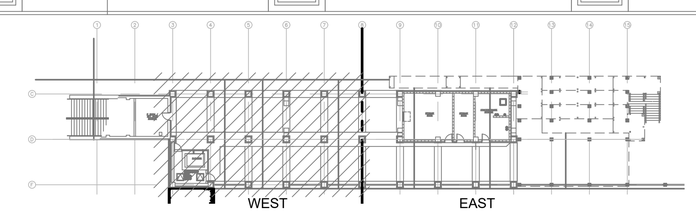


1 S1.0 EQUIPMENT PAD X-SECTION
SCALE: NTS

NOTE
REINFORCEMENT PLACED IN MIDDLE OF TOP SLAB RUNNING BOTH WAYS SHALL BE:
#4 @ 6" O.C. OR
#5 @ 9" O.C. OR
#6 @ 12" O.C.



2 S1.0 PIER WEST STRUCTURAL PLAN
SCALE: 1/4" = 1'



KEY PLAN

SHEET NOTE:

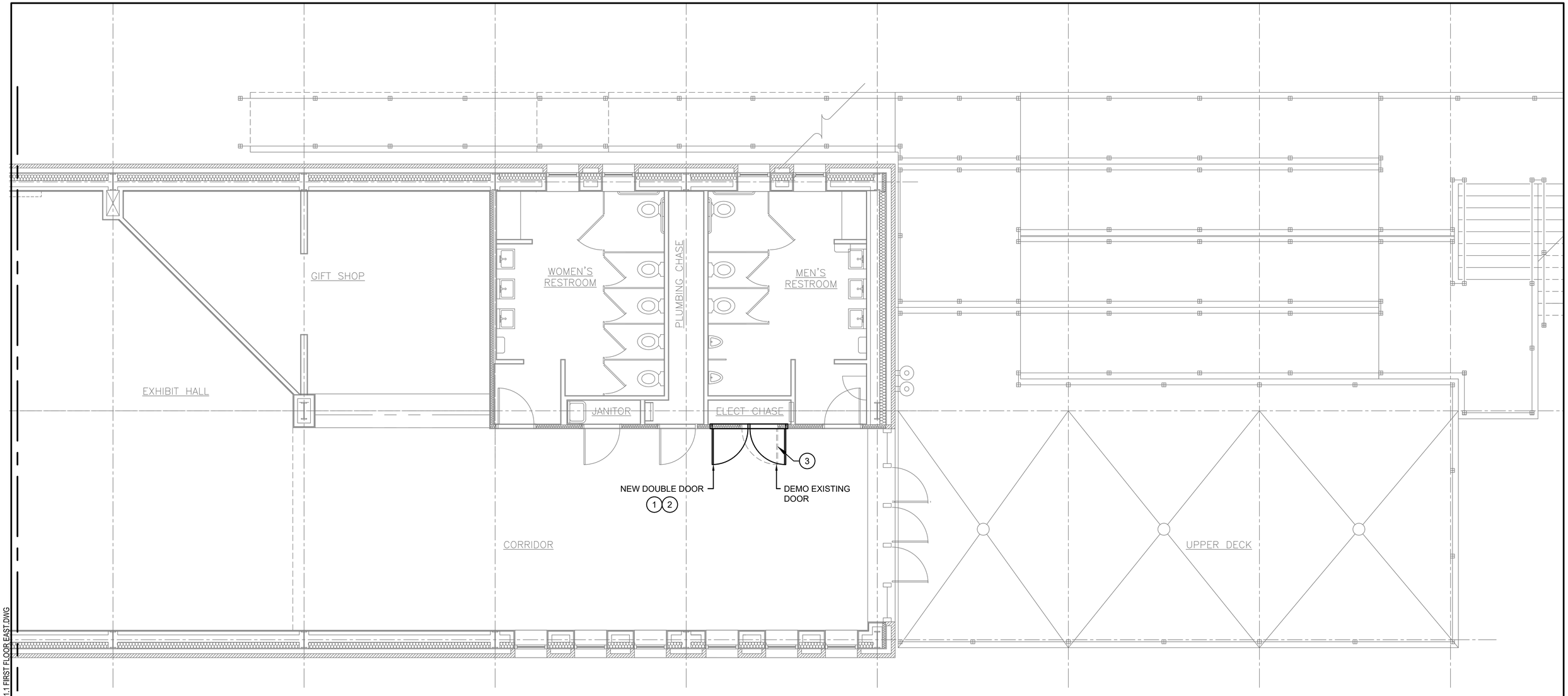
1. IF EXPANSIVE OR INORGANIC MATERIALS ARE ENCOUNTERED DURING EXCAVATION, REPLACE WITH A MINIMUM OF 12 INCHES OF COMPACTIBLE SOIL BELOW FOOTING INSTEAD OF 6 INCHES AS SHOWN. COMPACTIBLE SOIL WILL CONSIST OF 3/4 INCH GRAVEL COMPACTED TO 95%.
2. SEE S5.0 FOR SPECIFICATIONS ON CONCRETE, ALUMINUM, AND REINFORCEMENT.

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 39592 JOSEPH EXENBERGER 6-14-2024

4 0 4 8
SCALE OF INCHES
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	S1.0	PIER WEST STRUCTURAL PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 4 OF 44

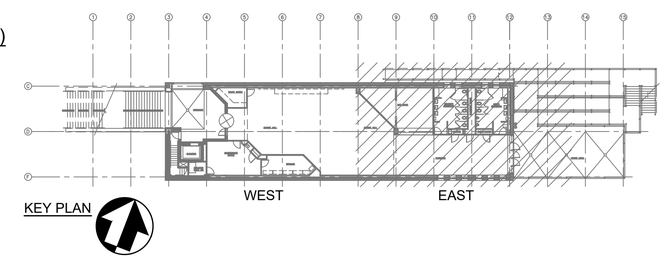
05/06/2024 07:20 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\ARCH\S1.0 PIER WEST AS-BUILT.DWG



1 / S1.1 FIRST FLOOR EAST STRUCTURAL PLAN (PIER EAST)
SCALE: 1/4" = 1'

KEYNOTES: #

1. INSTALL SOLID CORE WOOD DOOR MATCHING EXISTING DOOR. DOOR TO BE PROVIDED WITH DEAD BOLT LATCH ON ONE DOOR AND KEYED OPERATOR MATCHING DOOR HARDWARE IN PLACE ON EXISTING DOOR.
2. POSITION DOOR TO ALLOW CLEAR ACCESS TO ENTIRE ELECTRICAL PANEL.
3. DEMO DOOR AND PORTION OF WALL REQUIRED FOR REPLACEMENT OF NEW DOUBLE DOOR.



4 0 4 8
SCALE OF INCHES
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	S1.1	FIRST FLOOR EAST STRUCTURAL PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 5 OF 44

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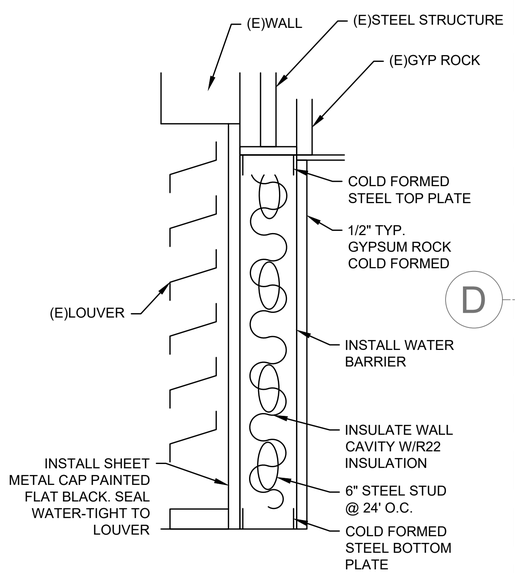
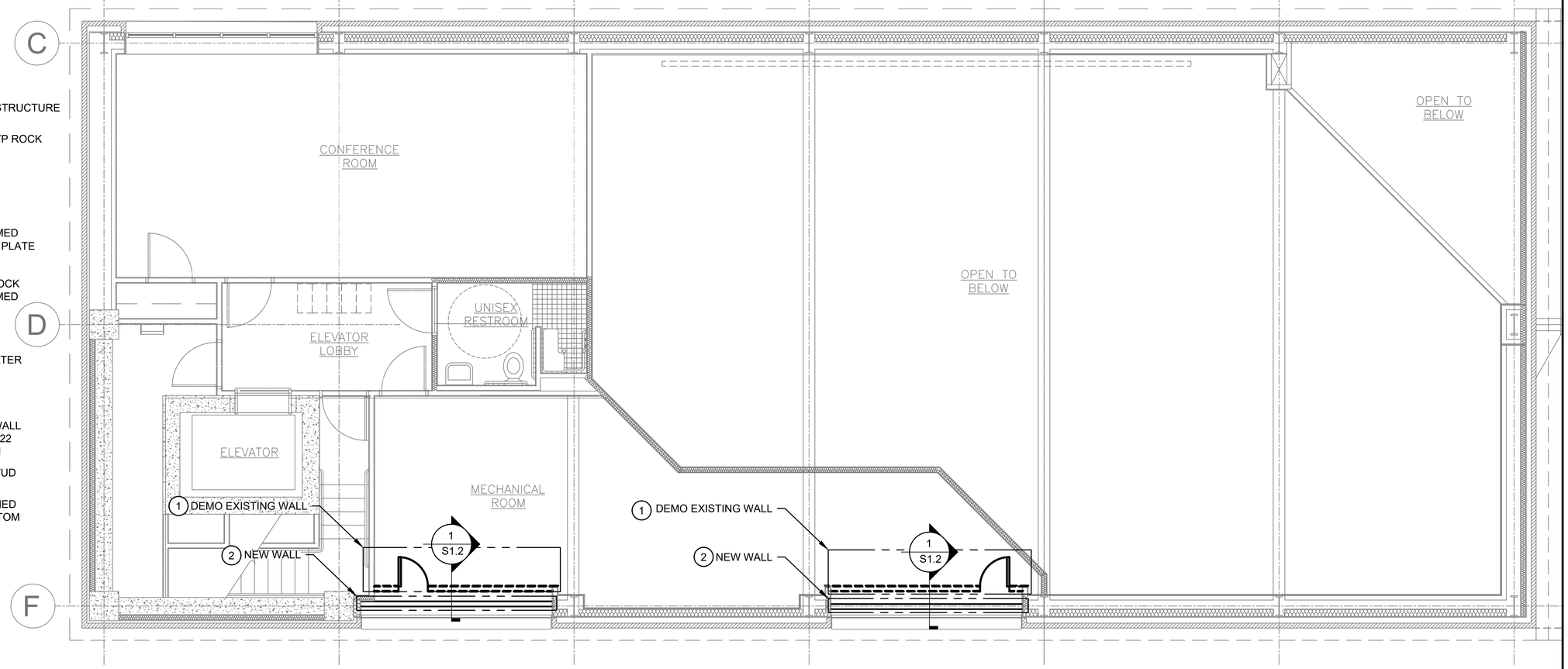
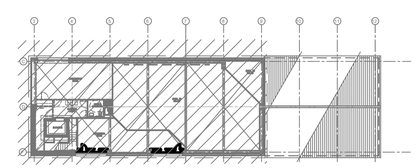


1 / S1.2 WALL SECTION
SCALE: NTS



2 / S1.2 SECOND FLOOR STRUCTURAL PLAN (PIER WEST)
SCALE: 1/4" = 1'



KEY PLAN WEST

KEYNOTES: #

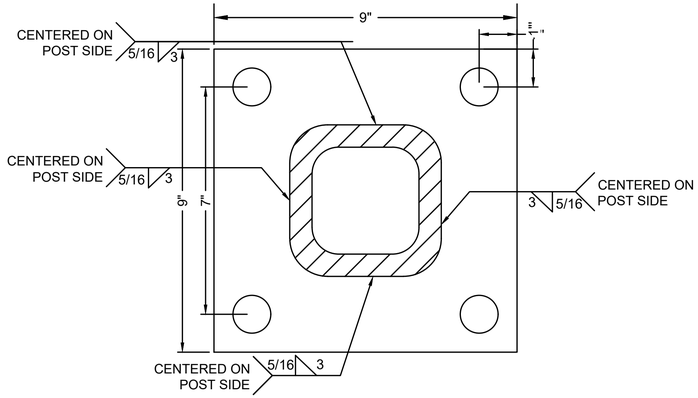
1. DEMO EXISTING PLENUM WALL AND ACCESS DOOR.
2. INSTALL NEW SHEET METAL BLANK OFF PANEL. PAINT OUTSIDE FLAT BLACK AND INSTALL 2x6 METAL STUD WALL WITH R22 INSULATION PER DETAIL 1/S1.2.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 39592 JOSEPH EIXENBERGER 6-14-2024

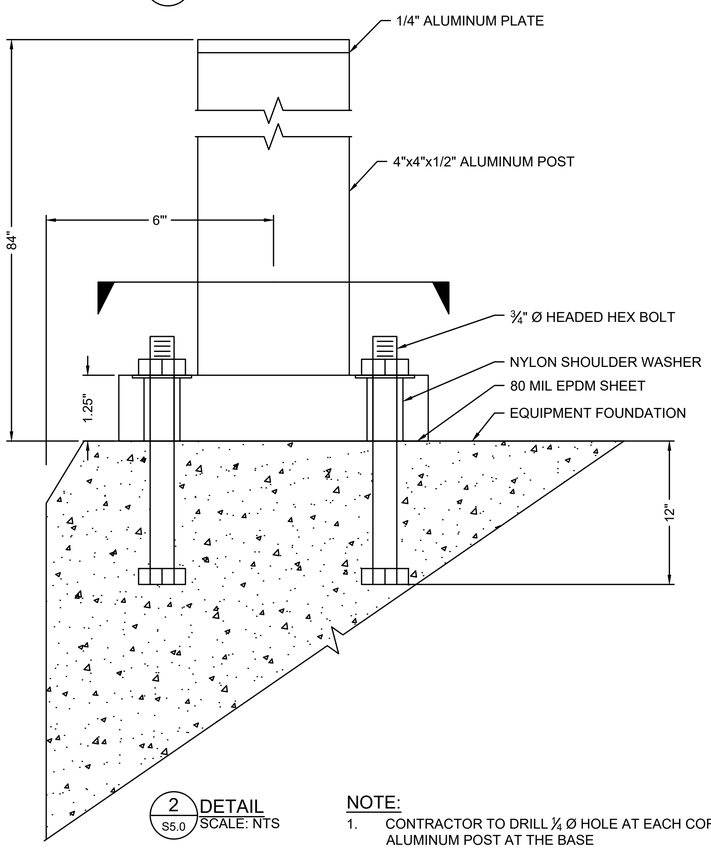
4 0 4 8
SCALE OF INCHES
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	S1.2	SECOND FLOOR STRUCTURAL PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 6 OF 44

30/05/2024 13:27 KEVIN FLORES G:\CLIENTS\NPS\FOSJ\LIBERTY SQUARE HVAC\DRAWINGS\ARCH\S1.2 SECOND FLOOR.DWG



1 S5.0 DETAIL
SCALE: NTS



2 S5.0 DETAIL
SCALE: NTS

NOTE:

1. CONTRACTOR TO DRILL ¼ Ø HOLE AT EACH CORNER OF THE ALUMINUM POST AT THE BASE
2. TOP OF POST WILL BE CAPPED WITH ¼" ALUMINUM PLATE WELDED TO THE TOP OF POST WITH 3/16" FILLED WELD ALL AROUND.

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE STANDARDS OF THE AMERIAN CONCRETE INSTITUTE, ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE" AND ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", WITH MODIFICATIONS AS NOTED IN THE CONTRACT DOCUMENTS.
2. CONCRETE SHALL ATTAIN THE FOLLWING MINIMUM COMPRESSIVE STRENGTH AT 28-DAY (f'_c) UNLESSS NOTED OTHERWISE:
   A. CHILLER PAD: 5000 PSI, NORMALWEIGHT.
3. UNLESS NOTED OTHERWISE HEREIN, CONCRETE IS ASSIGNED TO EXPOSRE CLASSES F0, SO, PO, AND C2, AS DEFINIED IN ACI 318.
4. PORTLAND CEMENT SHALL CONFORM TO ASTM C150, TYPE I OR TYPE II.
5. AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. NORMAL WEIGHT CONCRETE SHALL HAVE A DRY UNIT WEIGHT OF 150 +/- PCF.
6. MAXIMUM AGGREGATE SIZE SHALL BE 3/4 INCHES, BUT NO LARGER THAN (A) 1/5 THE NARROWEST DIMENSION BETWEEN SIDES OF FORMS, (B) 1/3 THE DEPTH OF SLABS, OR (C) ¾ THE MINIMUM CLEAR SPACING BETWEEN INDIVIDUAL REINFORCING BARS OR WIRES, BUNDLES OF BARS, INDIVIDUAL TENDONS, BUNDLED TENDONS, OR DUCTS.
7. MAXIMUM SLUMP SHALL BE 4 INCHES TYPICALLY, UNLESS A HIGH-RANGE WATER REDUCING ADMIXTURE (SUPERPLASTICIZER) IS USED IN THE CONCRETE MIX PROPORTIONS THEN SLUMP WILL BE LIMITED TO 6 INCHES.
8. WATER CEMENT RATIO SHALL NOT EXCEED 0.4.
9. CONCRETE MIX PROPORTIONING SHALL BE BASED ON FIELD EXPERIENCE AND/OR TRIAL MIXTURES. SUBMIT CONCRETE MIX PROPORTIONING DATA, INCLUDING HISTORICAL STRENGTH RECORDS AND/OR RESULTS OF TRIAL MIXTURES, FOR EACH TYPE AND COMPRESSIVE STRENGTH OF CONCRETE. CONCRETE MIX PROPORTIONING SHALL BE SIGNED AND SEALED BY A PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE OF SOUTH CAROLINA AND SHALL BE SUBMITTED TO CONTRACTING OFFICER REPRESENTATIVE FOR REVIEW AND APPROVAL.
10. CONCRETE MIXING SHALL CONFORM TO ASTM C94.
11. PRIOR TO PLACING CONCRETE, REINFORCING BARS, EMBEDDED PLATES, ANCHOR BOLTS, AND OTHER CONCRETE EMBEDMENTS SHALL BE WELL SECURED IN POSITION.
12. CONCRETE PLACEMENT SHALL CONFORM TO ACI 304 AND CONTRACT DOCUMENTS. INTENTIONALLY ROUGHEN ALL PREVIOUSLY HARDENED CONCRETE SURFACES TO A FULL AMPLITUDED OF 1/4 -INCH AGAINST WHICH FRESH CONCRETE IS PLACED.
13. FORM EXPOSED CORNER OF COLUMNS, BEAMS AND WALLS WITH ¾ INCH CHAMFER, UNLESS NOTED OTHERWISE.
14. CONCRETE SHALL BE MAINTAINED ABOVE 50 FAHRENHEIT AND IN A MOIST CONDITION FOR A MINIMUM OF 7 DAYS AFTER PLACEMENET.
15. GROUT SHALL BE NON-SHRINK, NON-METALLIC, SHALL NOT CONTAIN CHLORIDES, AND SHALL ATTAIN A 28-DAY COMPRESSIVE STRENTH OF 6,000 PSI.
16. HOT WEATHER PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 305R.
17. COLD WEATHER PLACEMENT SHALL BE INACCORDANCE WITH ACI 306R.
18. AT LOCATIONS WHERE BASEPLATES ARE TO BE PLACED THE CONCRETE WILL TROWEL FINISHED.
19. AN 80 MIL EPDM SHEET SHALL BE PLACED BETWEEN THE ALUMINUM BASEPLATE AND THE CONCRETE.

REINFORCING STELL

1. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE".
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE. BARS TO BE WELDED SHALL CONFORM TO LOW ALLOY ASTM A706.
3. BASEPLATE ANCHORS SHALL CONFORM TO ASTM F1554 GRADE 55. ANCHORS SHALL BE HOT DIPPED GALVANIZED. A NYLON SHOULDER WASHER SHALL BE PLACED BETWEEN THE STEEL WASHER FOR THE ANCHOR BOLT AND THE ALUMINUM BASEPLATE INSERTED INTO THE BASEPLATE ANCHOR HOLE. THE NYLON WASHER WILL HAVE A MINIMUM WASHER THICKNESS OF ¼ INCH AND A BUSH LENGTH EQUAL TO THE BASEPLATE THICKNESS.
4. REINFORCING STEEL SHALL BE SPLICED AS SHOWN ON THE DRAWINGS. IF NOT SHOWN, LOCATE SPLICES IN AREAS OF MINIMUM STRESS. LAP (SPLICE LENGTHS ARE AS INDICATED ON THE DRAWINGS.
5. PROVIDE THE FOLLOWING CONRETE COVERAGE FOR REINFORCING STEEL PLACED IN CAST IN-PLACE CONCRETE:
   A. CONCRETE CAST AGAINST AND PERMANETLY EXPOSED TO EARTH: 3 INCHES
   B. CONCRETE EXPOSED TO EARTH OR WEATHER: NO. 6-NO. 18: 2 INCHES. NO. 5 BARS, W31 OR D31 WIRE, AND SMALLER 1.5 INCHES.
   C. CONCRETE NOT EXPOSED TO WEATHR OR IN CONTACT WITH GROUND: NO. 14 AND NO 18 BARS: 1.5 INCHES. NO. 11 BARS AND SMALLER: 1 INCH.
   D. SLAB ON GRADE: MID-HEIGHT OF SLABS.
6. USE PLASTIC OR PLASTIC COATED SPACERS AND CHAIRS IF RESTING ON EXPOSED CONCRETE SURFACES.
7. REINFORCING STEEL BENDS SHALL BE MADE COLD. RE-BENDING OF PREVIUOLSY BENT REINFORCING IS NOT PERMITTED.
8. ALL REINFORCING STEEL SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS OR STIRRUPS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL REINFORCING.
9. ALL REINFORCING STEEL SHALL BE MARKED SO THEIR IDENTIFICAITON CAN BE MADE WHEN FINAL INSPECTION IS CONDUCTED.
10. NUTS SHALL CONFORM TO ASTM A 563 GRADE A. WASHERS SHALL CONFORM TO ASTM 436. BOLT HOLE DIAMETER SHALL CONFORM TO AISC TABLE 14-2. BOLTS WILL BE SNUG TIGHTENED.

ALUMINUM

1. ALUMINUM TUBING AND PLATES SHALL CONFORM TO 5083 O ALLOY.
2. Aluminum tubing and plates shall conform to 5083 O Alloy.
3. WELDING SHALL CONFORM TO LATEST EDITION OF ANSI/AWS D1.1
   A. WELDING PROCESS SHALL BE ARC WELDING USING 5356 FILLER.
   B. WELDERS SHALL BE CERTIFIED TO CONFORM WITH AWS STANDARDS AND APPROVED BY THE GOVERNING CODE AUTHORITY.
   C. SHOP WELDING SHALL BE PERFORMED ON THE PREMISES OF AN APPROVED FABRICATOR.
   D. FIELD WELD SYMBOLS NOTED ON THE DRAWINGS SHOW ENGINEERING INTENT, BUT NO ATTEMPT HAS BEEN MADE TO CLASSIFY ALL WELDS. AT FABRICATOR'S OPTION, ANY WELD INDICATED AS A FIELD WELD MAY BE SHOP WELDED AND ANY WELD INDICATES AS SHOP WELD MAY BE FIELD WELDED.
4. WELDS SHALL BE PREQUALIFIED PER AWS D1.1. NON-PREQUALIFIED WELDED JOINTS SHALL BE QUALIFIED BY TEST PER AWS D1.1.

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	S5.0	DETAILS	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 7 OF 44

03/06/2024 06:20 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\ARCH\S5.0 DETAILS.DWG

ABBREVIATIONS

@	AT
Ø	DIAMETER/PHASE
<L	ANGLE
#	NUMBER/POUND
°	DEGREE
(D)	DEPTH
(E)	EXISTING
(F)	FUTURE
(L)	LENGTH
(N)	NEW
(W)	WIDTH
ABS	ACRYLONITRILE BUTADIENE STYRENE
ABV	ABOVE
ACCU	AIR COOLED CONDENSING UNIT
ACOUST	ACOUSTICAL
ACP	ACOUSTICAL PANEL
ACT	ACOUSTICAL TILE
AD	AIR DROP
ADA	AMERICAN DISABILITIES ACT
ADJ	ADJUSTABLE
AF	AIR FOIL
AFC	BOVE FINISHED CEILING
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AFS	ABOVE FINISH SLAB
AFUE	AMERICAN FUEL UTILIZATION EFFICIENCY
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AL	ALUMINUM
AMB	AMBIENT
AMP	AMPERES
ANOD	ANODIZED
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	AIR PRESSURE
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASHRAE	AMERICAN SOCIETY OF HEATING REFRIGERATION, AND AIR CONDITIONING ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
AUTO	AUTOMATIC
AUX	AUXILIARY
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
AUTO	AUTOMATIC
AUX	AUXILIARY
BDD	BACK DRAFT DAMPER
BFF	BELOW FINISH FLOOR
BFS	BELOW FINISH SLAB
BG	BELOW GRADE
BHP	BRAKE HORSEPOWER
BI	BACKWARD INCLINED
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BRD	BOARD
BRG	BEARING
BTU	BRITISH THERMAL UNIT
CA	COMBUSTION AIR
CB	CATCH BASIN
CAP	CAPACITY
CD	CONDENSATE DRAIN
CDA	CLEAN DRY AIR
CF	CUBIC FEET
CFF	CAP FOR FUTURE
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFF	CAP FOR FUTURE
CFM	CUBIC FEET PER MINUTE
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
CLK	CAULK(ING)
CLR	CLEAR
CNT	CENTER
CO	CLEAN OUT
COL	COLUMN
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS/CONTINUATION
CONTR	CONTRACTOR
COTG	CLEANOUT TO GRADE
CTC	CENTER TO CENTER
CFF	CAP FOR FUTURE
CLK	CAULK(ING)
CLR	CLEAR
CV	VALVE COEFFICIENT
CW	DOMESTIC COLD WATER
CWFR	CHEMICAL WATER FEED RETURN
CWFS	CHEMICAL WATER FEED SUPPLY
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CW/	COORDINATE WITH
CX	CONNECT TO EXISTING
DB	DECIBEL
DBL	DOUBLE
DB	DRY BULB TEMPERATURE
DEPT	DEPARTMENT
DET	DETAIL
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
DS	DOWNSPOUT
DSN	DOWNSPOUT NOZZLE
DSP	DRY STANDPIPE
DWG	DRAWING
DEG	DEGREE
E	EAST
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE
ELECT	ELECTRICAL
ELEV	ELEVATION
EMERG	EMERGENCY
ENCL	ENCLOSED/ENCLOSURE
ENT	ENTERING
EQ	EQUAL
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERIOR
EXIST	EXISTING
F	FIRE SERVICE
FA	FIRE ALARM
FAU	FURNACE AIR UNIT
FC	FORWARD CURVED
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FIN	FINISH
FINS/IN	FINS PER INCH
FLA	FULL LOAD AMPS
FLASH	FLASHING
FLR	FLOOR(ING)
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FRPF	FIREPROOF
FS	FLOOR SINK
FT	FEET/FOOT
FURR	FURRING
F	FIRE SERVICE
FDC	FIRE DEPARTMENT CONNECTION
FS	FLOOR SINK
FUT	FUTURE
GA	GAUGE OR GAGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GCO	GRADE CLEANOUT
GE	GENERAL EXHAUST
GND	GROUND
GPM	GALLONS PER MINUTE
GSM	GALVANIZED SHEET METAL
GW	GREASE WASTE
H	HUMIDIFIER
H20	WATER
HB	HOSE BIB
HCP	HANDICAP
HD	HEAD
HDWR	HARDWARE
HGR	HOT GLYCOL RETURN
HGS	HOT GLYCOL SUPPLY
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPC	HIGH PRESSURE CONDENSATE
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HTG	HEATING
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HW	POTABLE HOT WATER SUPPLY
HWC	DOMESTIC HOT WATER RECIRC.
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IA	INSTRUMENT AIR
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IDW	INDIRECT WASTE
IE	INVERT ELEVATION
IGV	INLET GUIDE VANE(S)
IMC	INTERNATIONAL MECHANICAL CODE
IN	INCH
IND	INDIRECT
INSUL	INSULATION
INT	INTERIOR
IPC	INTERNATIONAL PLUMBING CODE
J-BOX	JUNCTION BOX
JST	JOIST
KW	KILOWATT
KWH	KILOWATT HOUR
L/S	LITERS PER SECOND
L	LINED
LA	LAVATORY
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LF	LINEAL FEET/FOOT
LPC	LOW PRESSURE CONDENSATE
LPG	LIQUEFIED PETROLEUM GAS
LRA	LOCKED ROTOR AMP
LWT	LEAVING WATER TEMPERATURE
M	METER
MAT	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFG	MANUFACTURER
MHT	MALE HOSE THREAD
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
MO	MOTOR OPERATED
MOCP	MAX OVERLOAD CURRENT PROTECTION
MPC	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MUA	MAKE-UP AIR/ MAKE-UP AIR UNIT
MC	MECHANICAL CONTRACTOR
MSG	MANUFACTURED STANDARD GAUGE
N	NORTH
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NG	NATURAL GAS
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
NUM	NUMBER
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OVERHEAD
OSA	OUTSIDE AIR
OS&Y	OUTSIDE STEM & YOKE
OZ	OUNCE
ODL	OVERFLOW DRAIN LEADER
P	PRESSURE
PD	PRESSURE DROP OR DIFFERENCE
PH	PHASE(S)
PHWR	POTABLE HOT WATER RETURN
PHWS	POTABLE HOT WATER SUPPLY
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
P/T	PRESSURE/TEMPERATURE
R	RISER
RA	RETURN AIR
RAD	RADIUS
RBI	RE-HEAT BOX
RD	ROOF DRAIN
RDL	ROOF DRAIN LEADER
RE:	REFERENCE
REFL	REFLECTED
REL	RELOCATE
REM	REMOVE
REINF	REINFORCE
RET	RETURN
RF	RECIRCULATION FAN
RG	RETURN GRILLE
RH	RELATIVE HUMIDITY
RO	REVERSE OSMOSIS
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
REFG	REFRIGERATION/REFRIGERANT
REQD	REQUIRED
RFLD	REFLECTED
RIO	ROUGH IN ONLY
RPM	REVOLUTIONS PER MINUTE
S	SOUTH
SA	SUPPLY AIR
SCHED	SCHEDULE
SD	SUPPLY DIFFUSER
SECT	SECTION
SEER	SEASONAL ENGINEERING EFFICIENCY RATING
SEN	SENSIBLE
SER	SERIES
SF	SQUARE FOOT
SH	SENSIBLE HEAT
SIM	SIMILAR
SL	SUPPLY LOUVER
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SOV	SHUT OFF VALVE
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SUP	SUPPLY
SUSP	SUSPENDED
SYS	SYSTEM
SHT	SHEET
TA	TRANSFER AIR
TD	TEMPERATURE DIFFERENCE
TEMP	TEMPERATURE/TEMPERED/ TEMPORARY
TOD	TOP OF DUCT
TOS	TOP OF STEEL
TPW	TEMPERED POTABLE WATER
TSP	TOTAL STATIC PRESSURE
T-STAT	TEMPERATURE STAT
TV	TURNING VANE(S)
TWR	TEMPERED WATER RETURN
TWS	TEMPERED WATER SUPPLY
TYP	TYPICAL
U	URINAL
UBC	UNIFORM BUILDING CODE
UFC	UNIFORM FIRE CODE
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UMC	UNIFORM MECHANICAL CODE
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UPC	UNIFORM PLUMBING CODE
V	VOLT
VA	VALVE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VENT	VENTILATION
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VRV	VACUUM RELIEF VALVE
VTR	VENT THROUGH ROOF
VVT	VARIABLE VOLUME TERMINAL
VIF	VERIFY IN FIELD
W	WEST
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WCO	WALL CLEANOUT
WH	WATER HEATER
WP	WATERPROOF
WT	WEIGHT
ZD	ZONE DAMPER

HVAC LEGEND

SYMBOL	DESCRIPTION
CAP (DOUBLE LINE) / CAP (SINGLE LINE)	DUCT CAP
24"x16" (DOUBLE LINE) / 8"Ø (SINGLE LINE)	DUCT SIZES - FIRST DIMENSION LISTED IS VIEW DIMENSION
L24"x16" (DOUBLE LINE) / L8"Ø (SINGLE LINE)	INTERNALLY LINED DUCT - SEE NOTES OR SPECIFICATION FOR TYPE OF LINING TO BE USED. DIMENSIONS DENOTE INTERNAL FREE AREA.
24"x16" (DOUBLE LINE) / 8"Ø (SINGLE LINE)	DIRECTION OF AIRFLOW
24"x16" (DOUBLE LINE) / 8"Ø (SINGLE LINE)	DUCTWORK OR EQUIPMENT TO BE DEMOLISHED
FOT (DOUBLE LINE) / FOB (SINGLE LINE)	ECCENTRIC TRANSITION - (FOT = FLAT ON TOP, FOB = FLAT ON BOTTOM)
(DOUBLE LINE) / (SINGLE LINE)	CONCENTRIC TRANSITION
RISE (DOUBLE LINE) / DROP (SINGLE LINE)	RISE OR DROP ARROW IN THE DIRECTION OF AIRFLOW
	SUPPLY DUCT (RISE)
	RETURN DUCT (RISE)
	EXHAUST DUCT (RISE)
	FLEX DUCT
24"x16" (DOUBLE LINE) / (SINGLE LINE)	SPIN-IN FITTING SUPPLY
24"x16" (DOUBLE LINE) / (SINGLE LINE)	SPIN-IN FITTING RETURN
(DOUBLE LINE) / (SINGLE LINE)	VOLUME DAMPER
M M / M M (DOUBLE LINE) / (SINGLE LINE)	AUTOMATIC MOTOR OPERATED DAMPER PARALLEL AND OPPOSED BLADE
BDD (DOUBLE LINE) / BDD (SINGLE LINE)	BACKDRAFT DAMPER
(DOUBLE LINE) / (SINGLE LINE)	CONTROL AIR OR ZONE DAMPER
SD (DOUBLE LINE) / SD (SINGLE LINE)	DUCT MOUNTED SMOKE DETECTOR
(DOUBLE LINE) / (SINGLE LINE)	ACCESS DOOR (AD) ACCESS PANEL (AP)

SYMBOL	DESCRIPTION
RECTANGLE 24"x12" / ROUND 24"Ø (DOUBLE LINE); FLAT OVAL 24"x12" / RECTANGLE 10"x6" / ROUND 8" (SINGLE LINE); TURN UP / TURN DOWN	TURN DOWN/UP FOR VARIOUS STYLES OF DUCTWORK
(DOUBLE LINE) / (SINGLE LINE)	45° ENTRY TRANSITION
TAG NUMBER; NECK/THROAT SIZE; SD-1 12"Ø; 500 CFM (4 TYP); NUMBER OF DIFFUSERS; CFM TO BALANCE TO	GRILLES, REGISTERS, DIFFUSERS - CALLOUT
H DH-01; T AHU-01	HUMIDISTAT, THERMOSTAT - CALLOUT REFERENCES DEVICE, SEE SCHEDULES. MOUNT ALL DEVICES PER ARCHITECTURAL GUIDELINES.
	POWER OR GRAVITY ROOF INTAKE/EXHAUST
AHU 01; EQUIPMENT TAG NAME; SEQUENTIAL EQUIPMENT NUMBER	EQUIPMENT TAG SYMBOL; SEE EQUIPMENT SCHEDULES FOR THE CAPACITY, TYPE, AND QUANTITY.
4-WAY; 3-WAY; 2-WAY (CORNER); 2-WAY (OPPOSED THROW)	CEILING SUPPLY DIFFUSERS, SOLID FILL REPRESENTS BLANKED OFF AREAS.
	CEILING RETURN GRILLE
	CEILING EXHAUST GRILLE
	SIDEWALL SUPPLY/RETURN REGISTER, DIFFUSER, GRILLE.
	LINEAR SUPPLY / RETURN
	POINT OF CONNECTION
	FIRE DETECTOR
F S; F S (DOUBLE LINE) & (SINGLE LINE)	F = FIRE DAMPER S = SMOKE DAMPER F & S = FIRE AND SMOKE DAMPER SEE NOTES AND/OR SPECIFICATION FOR EXACT RATING AND MODEL NUMBERS
(DOUBLE LINE) (SINGLE LINE)	TURNING VANES IN DUCTWORK

PLUMBING/PIPE LEGEND

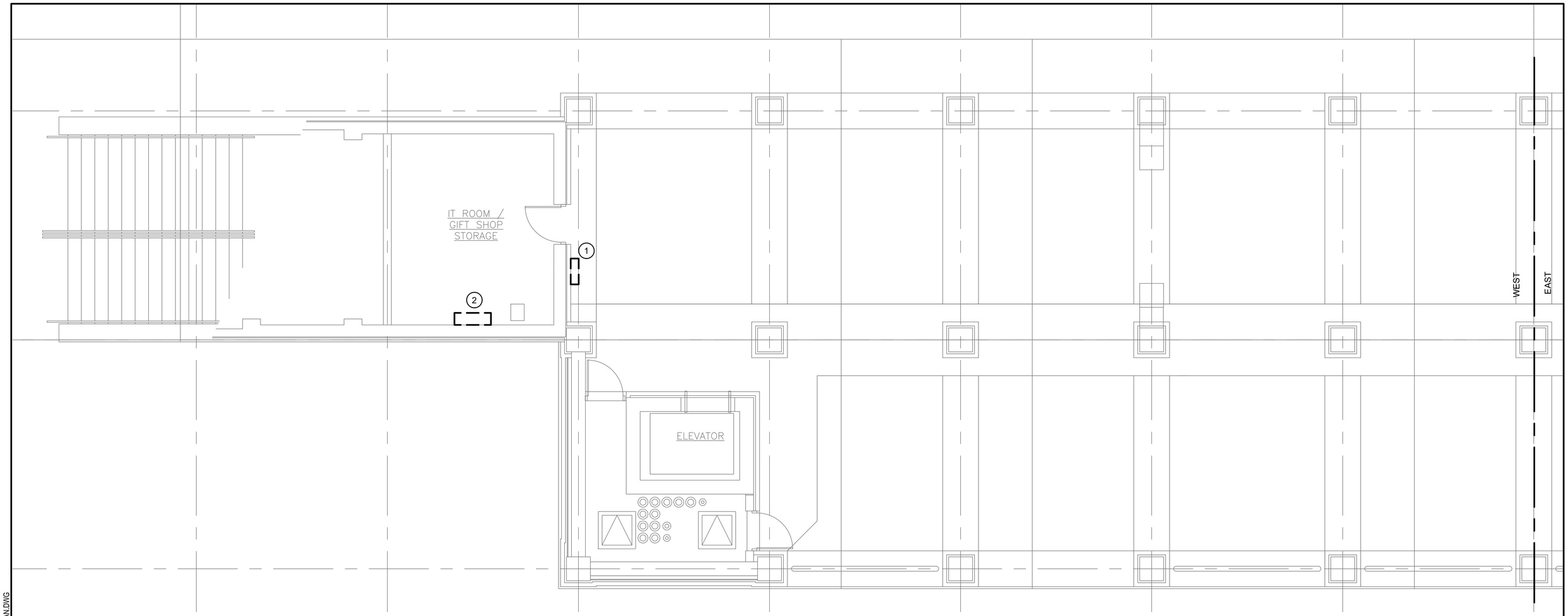
SYMBOL	DESCRIPTION
CA	COMPRESSED AIR
COND	CONDENSATE DRAIN
CDA	CLEAN DRY AIR
CO2	CARBON DIOXIDE
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CW	DOMESTIC COLD WATER
	DEMO ITEMS
GW	GREASE WASTE
HE	HELIUM
HGR	HOT GLYCOL RETURN
HGS	HOT GLYCOL SUPPLY
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HW	DOMESTIC HOT WATER
HWC	DOMESTIC HOT WATER RECIRC.
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
IA	INSTRUMENT AIR
IDW	INDIRECT WASTE
LPG	LIQUEFIED PETROLEUM GAS
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
MA	MEDICAL AIR
MPC	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM
MV	MEDICAL VACUUM
N2	NITROGEN
N20	NITROUS OXIDE
NG	NATURAL GAS
	DIRECTION OF FLOW
	REDUCER
	PIPE DROP
	PIPE DROP
	PIPE RISE
	PIPE RISE
	VENT THRU ROOF
	WALL CLEAN-OUT
	FLOOR CLEAN-OUT
	GRADE CLEAN-OUT
	PIPE CAP
	CHECK VALVE
	DOUBLE CHECK ASSEMBLY
	REDUCED PRESSURE BACK FLOW ASSY.
	CONTROL VALVE
	PRESSURE REDUCING VALVE
	PRESSURE REGULATOR
N.C.	BALL VALVE (NORMALLY CLOSED)
	BALL VALVE (NORMALLY OPEN)
	GATE VALVE
	AGA RATED GAS VALVE
	THREE WAY CONTROL VALVE
	FLEXIBLE PUMP CONNECTOR
	UNION
	SOLENOID VALVE
	STRAINER

SYMBOL	DESCRIPTION
	PRESSURE RELIEF VALVE
	WATER HAMMER ARRESTOR
NPW	NON POTABLE WATER
ODL	OVERFLOW DRAIN LEADER
PHWR	POTABLE HOT WATER RETURN
PHWS	POTABLE HOT WATER SUPPLY
PW	POTABLE WATER
RDL	ROOF DRAIN LEADER
SD	STORM DRAIN
SS	SANITARY SEWER
TPW	TEMPERED POTABLE WATER
TWR	TEMPERED WATER RETURN
TWS	TEMPERED WATER SUPPLY
V	VENT
	THERMOMETER
	CIRCUIT SETTER
	PRESSURE GAUGE
	HOSE BIB
	IN-LINE PUMP
	IN-LINE PUMP
	QUICK DISCONNECT
	BREAK LINE
	STEAM VALVE
	BUTTERFLY VALVE
	BALANCE VALVE
	DIAPHRAGM VALVE
	DOWNSPOUT NOZZLE
	FLOOR DRAIN ROUND OR SQUARE
FM	FLOW METER
	FLOW SWITCH
	FLOOR SINK
	FLOW VALVE
	GAS METER
	GLOBE VALVE
	INLINE TEMPERATURE GAUGE
	PLUG VALVE
	OUTSIDE STEM AND YOKE
	RECIRC PUMP
	TEMPERATURE CONTROL VALVE
	THERMO WELL
	EXPANSION TANK
	ROOF DRAIN
	OVERFLOW DRAIN
	VERTICAL VALVE
	VACUUM RELIEF VALVE
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	POINT OF CONNECTION TO EXISTING

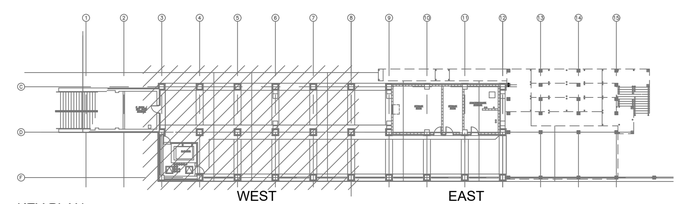
SOUTH CAROLINA PROFESSIONAL ENGINEER LICENSED No. 42216 CHRISTIAN GRAY
6-4-2024

DESIGNED: I. BROWN CADD M. NGUY TECH. REVIEW: B. BROOKE DATE: 6/2024	SUB SHEET NO. M0.0	TITLE OF SHEET MECHANICAL LEGEND & ABBREVIATIONS REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392/192499 PMIS/PKG NO. 316098B SHEET 8 OF 44

03/06/2024 07:28 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M0.0 MECHANICAL LEGEND.DWG



1 M1.0 PIER WEST HVAC DEMO PLAN
SCALE: 1/4" = 1'



KEY PLAN

KEYNOTES: #

1. DEMO MINI SPLIT CONDENSING UNIT MOUNTED HIGH ON WALL (LEAVE BRACKETS AND SUPPORTING HARDWARE FOR REMOUNTING).

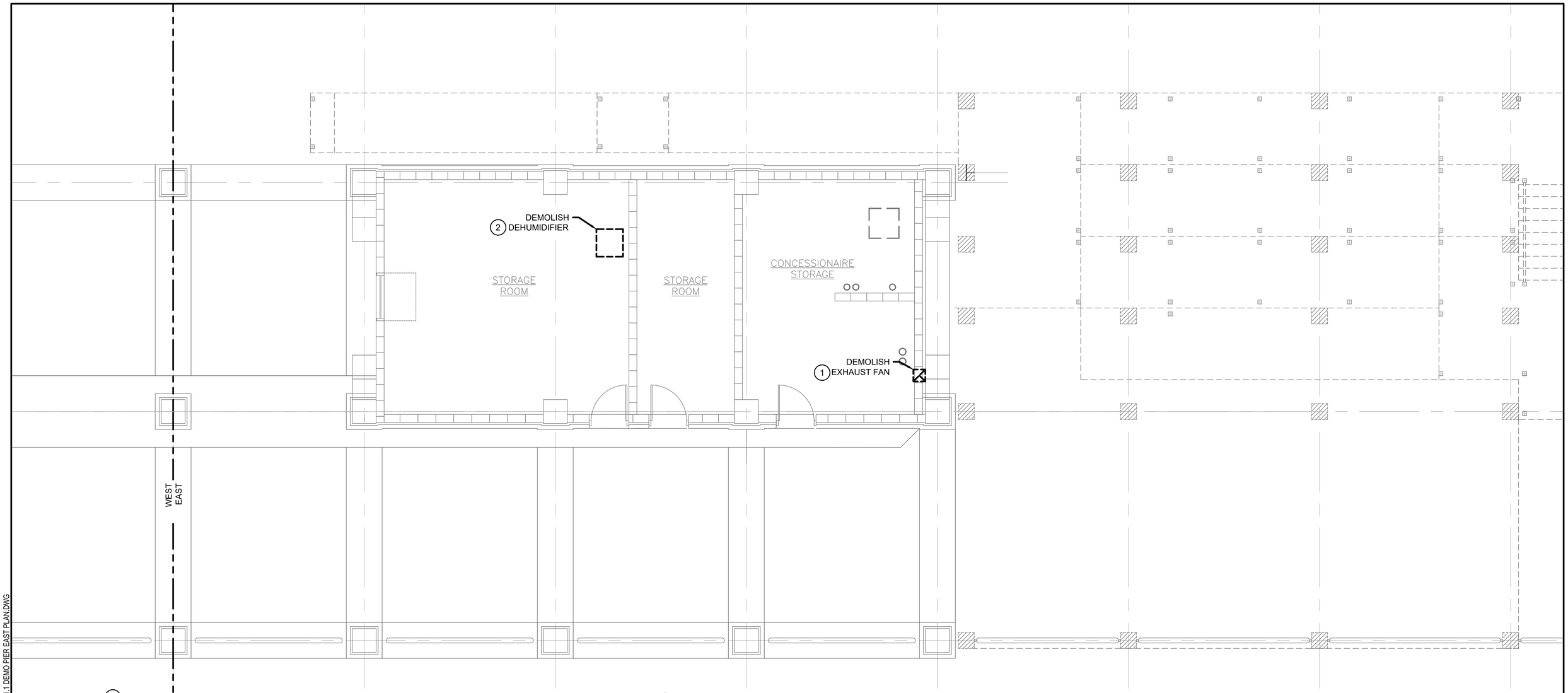
2. DEMO MINI SPLIT WALL CASSETTE (LEAVE BRACKET AND NON PROPRIETARY MOUNTING HARDWARE IN PLACE).

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 42216
CHRISTIAN GEORGE
6-4-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.0	PIER WEST HVAC DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 9 OF 44

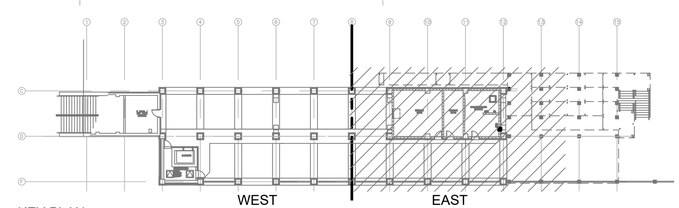
23/05/2024 12:49 KEVIN FLORES G:\CLIENTS\NPS\FOS\JULIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.0 DEMO PIER WEST PLAN.DWG



1 M1.1 PIER EAST HVAC DEMO PLAN
SCALE: 1/4" = 1'

KEYNOTES: #

1. DEMOLISH EXHAUST FAN AND MAINTAIN MOUNTING HARDWARE IN PLACE.
2. DEMOLISH DEHUMIDIFICATION UNIT AND MAINTAIN MOUNTING HARDWARE IN PLACE.



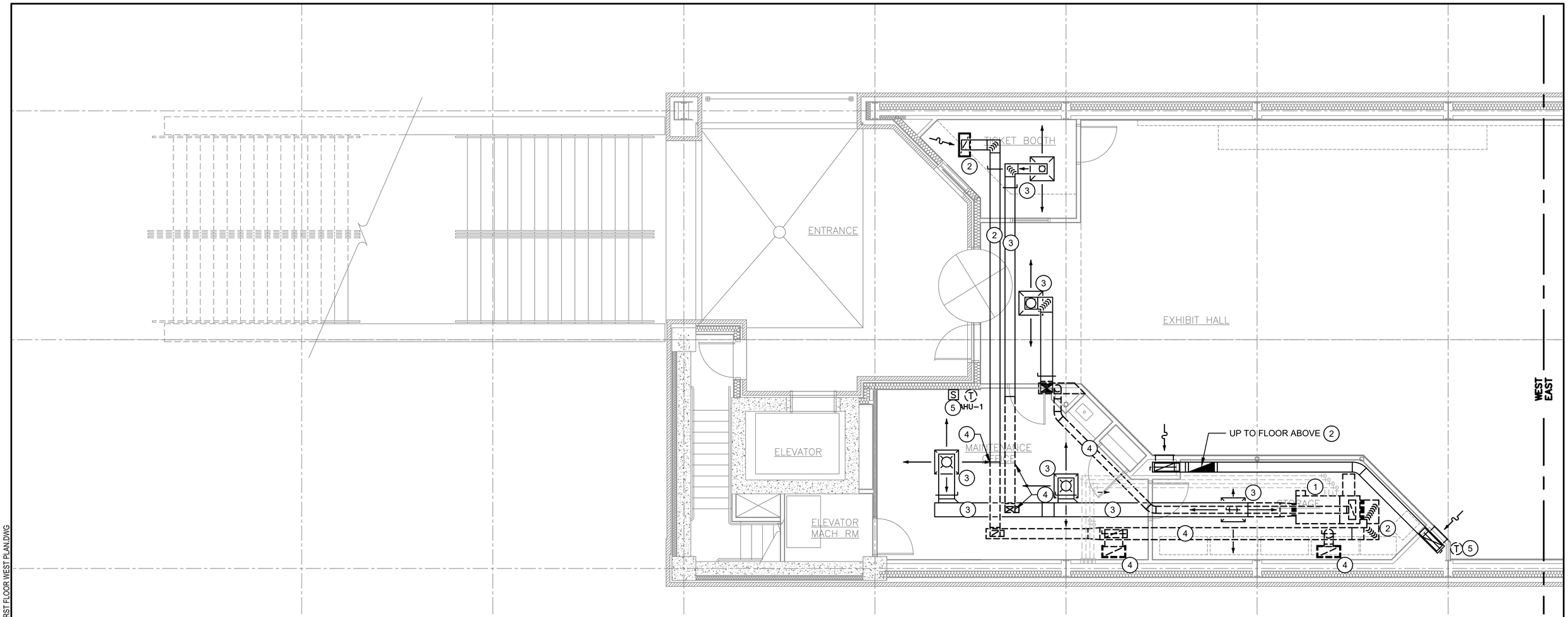
KEY PLAN

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 42216 CHRISTIAN GEORGE
6-4-2024

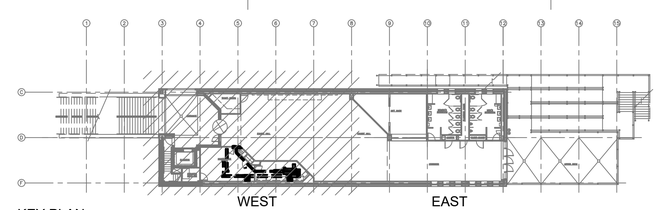
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.1	PIER EAST HVAC DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 10 OF 44

23/05/2024 12:49 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.1 DEMO PIER EAST PLAN.DWG



1 / M1.2 1ST FLOOR WEST HVAC DEMO PLAN
SCALE: 1/4" = 1'



KEY PLAN

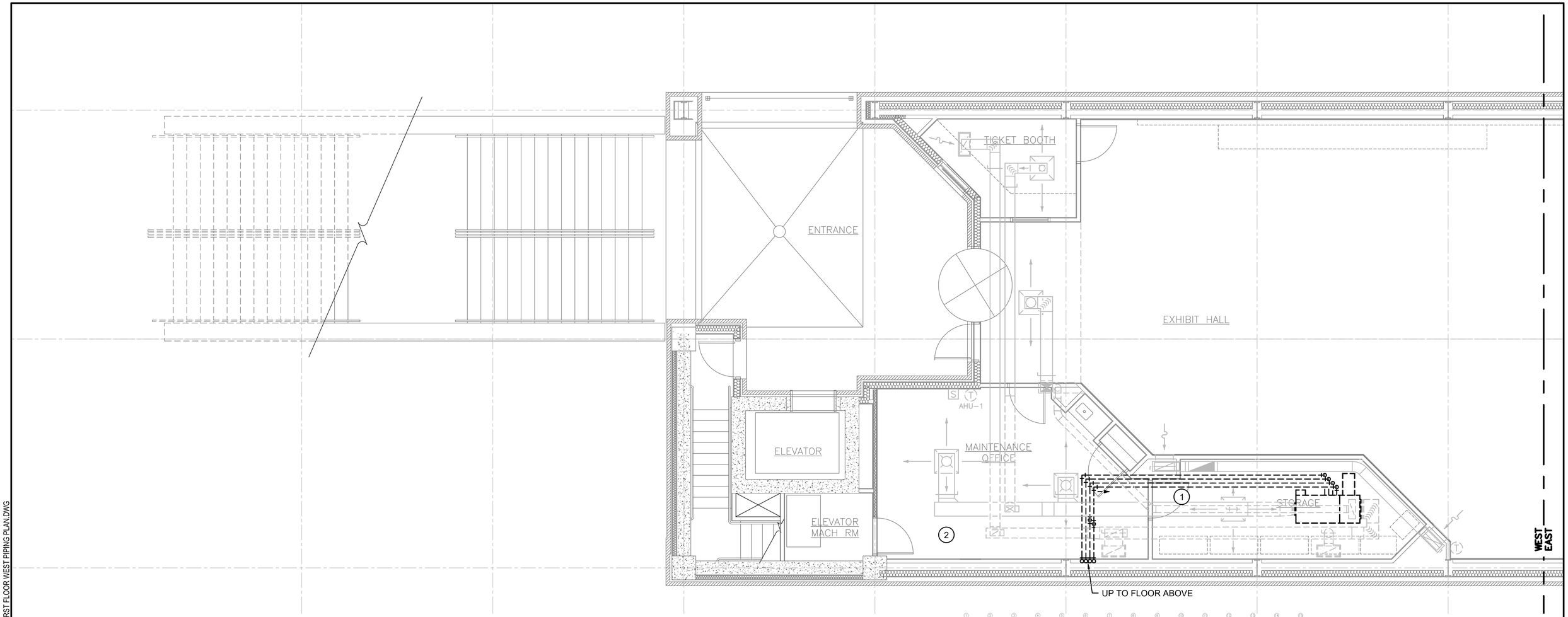
KEYNOTES: (#)

1. DEMOLISH FAN COIL UNIT INCLUDING ALL DUCTWORK, GRILLES, AND REGISTERS. RETAIN ALL MOUNTING HANGERS, POINTS AND COMPONENTS REQUIRED FOR THE REPLACEMENT OF DUCTWORK.
2. RETAIN AND PROTECT RETURN DUCT IN PLACE. CLEAN ALL DUCTWORK GRILLES AND REGISTERS.
3. RETAIN AND PROTECT SUPPLY DUCTWORK IN PLACE. CLEAN ALL DUCT GRILLES AND REGISTERS. CONTRACTOR TO EVALUATE EXISTING DUCTWORK TO REMAIN FOR RUST OR DAMAGE, AND NOTIFY COR IF THE DUCTWORK SHOWS ANY DAMAGE. COR TO DETERMINE IF DAMAGED DUCTWORK IS TO BE REMOVED.
4. DEMOLISH THIS SECTION OF DUCT AND CAP TAKE-OFF ACTIVE DUCT. PROVIDE 18 GAUGE SHEET METAL CAP, FASTENED TO EXISTING DUCT AND REPAIR INSULATION TO SEAL UNPROTECTED DUCT.
5. REMOVE THERMOSTAT AND PREPARE FOR NEW THERMOSTAT MATCHING NEW CONTROL SYSTEM.

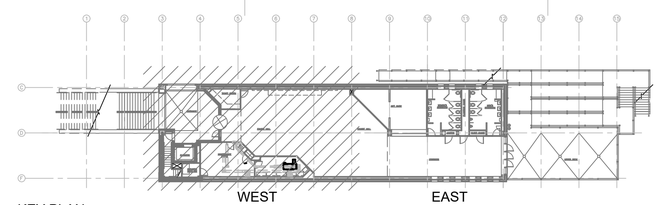
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.2	FIRST FLOOR WEST HVAC DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 11 OF 44

03/06/2024 06:20 KEVIN FLORES G:\CLIENTS\NPS\FOSJ\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.2 DEMO LIBERTY SQ FIRST FLOOR WEST PLAN.DWG



1 / M1.3 1ST FLOOR WEST PIPING DEMO PLAN
SCALE: 1/4" = 1'



KEY PLAN

KEYNOTES: #

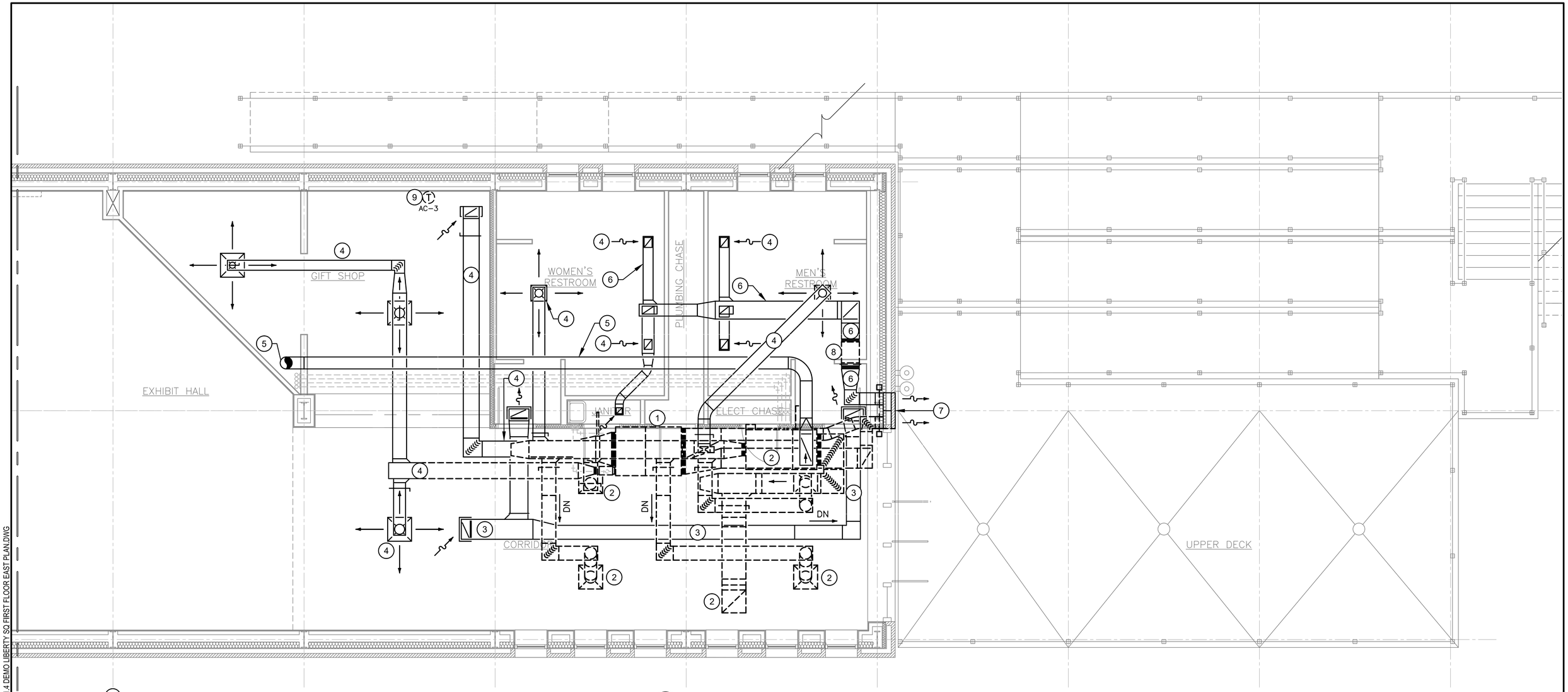
1. DEMOLISH EXISTING PIPING HANGERS AND MOUNTING POINTS FOR PIPING SERVING ALL FAN COILS IN THIS FLOOR.
2. DEMOLISH ANY ABANDONED PIPING FROM PREVIOUS PROJECTS. CONTRACTOR TO VERIFY THAT PIPING AND EQUIPMENT IS NO LONGER IN USE PRIOR TO DEMOLITION.

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 42216 CHRISTIAN GEDEON 6-4-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.3	FIRST FLOOR WEST PIPING DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 12 OF 44

23/05/2024 12:49 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.3 DEMO LIBERTY SQ FIRST FLOOR WEST PIPING PLAN.DWG



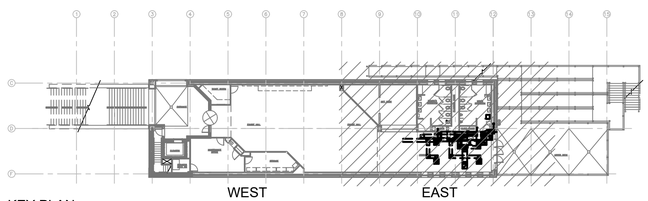
1 M1.4 1ST FLOOR EAST HVAC DEMO PLAN
SCALE: 1/4" = 1'

KEYNOTES: #

1. DEMOLISH DEHUMIDIFICATION UNIT INCLUDING ALL DUCTWORK, RETAINING ALL MOUNTING POINTS AND HANGER SYSTEMS REQUIRED FOR THE NEW WORK.
2. DEMOLISH FAN COIL, DUCTWORK AND ASSOCIATED COMPONENTS, RETAINING ALL MOUNTING COMPONENTS REQUIRED FOR THE NEW WORK.
3. RETAIN AND PROTECT TRANSFER DUCT SYSTEM IN PLACE.
4. CLEAN AND PROTECT DUCT GRILLES AND REGISTERS ASSOCIATED WITH THIS DUCTWORK AS SHOWN.
5. RETAIN OSA DUCT IN PLACE.
6. RETAIN AND PROTECT EXHAUST DUCT SYSTEM IN PLACE
7. RETAIN AND PROTECT LOUVER IN PLACE

KEYNOTES (CONTINUED):

8. DEMOLISH EXHAUST FAN. PREPARE FOR REPLACEMENT OF NEW FAN.
9. REMOVE THERMOSTAT AND PREPARE FOR NEW THERMOSTAT MATCHING NEW CONTROL SYSTEM.



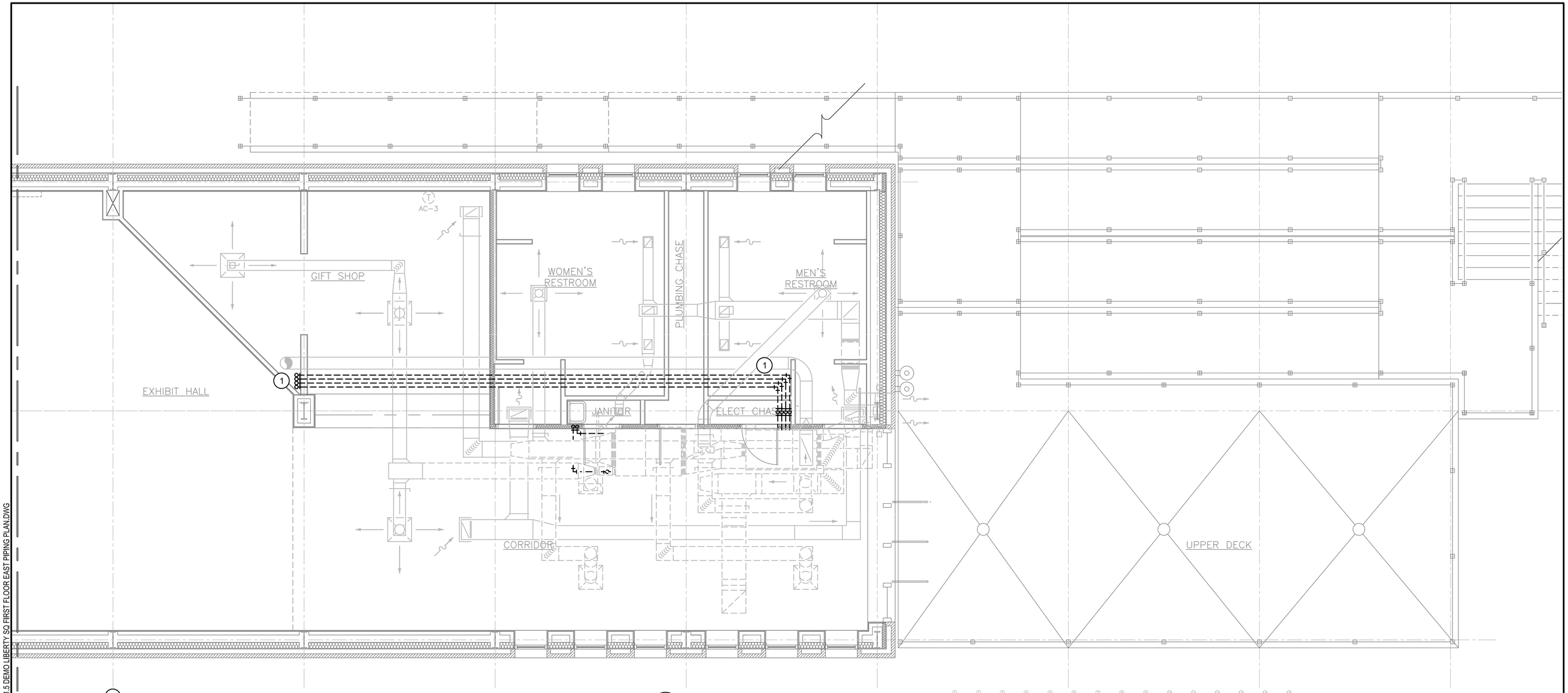
KEY PLAN

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 42216
CHRISTIAN GEORGE
6-4-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.4	FIRST FLOOR EAST HVAC DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 13 OF 44

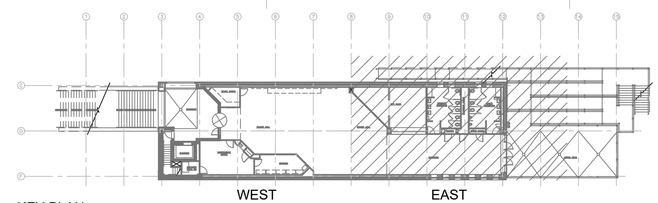
03/06/2024 06:22 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.4 DEMO LIBERTY SQ FIRST FLOOR EAST PLAN.DWG



KEYNOTES: #

1. DEMOLISH HEATING & CHILLED WATERLINES AS SHOWN FROM THIS POINT TO UNIT. RETAIN MOUNTING AND SUPPORT SYSTEMS IN PLACE FOR REPLACEMENT SYSTEM.

1 / M1.5 1ST FLOOR EAST PIPING DEMO PLAN
SCALE: 1/4" = 1'

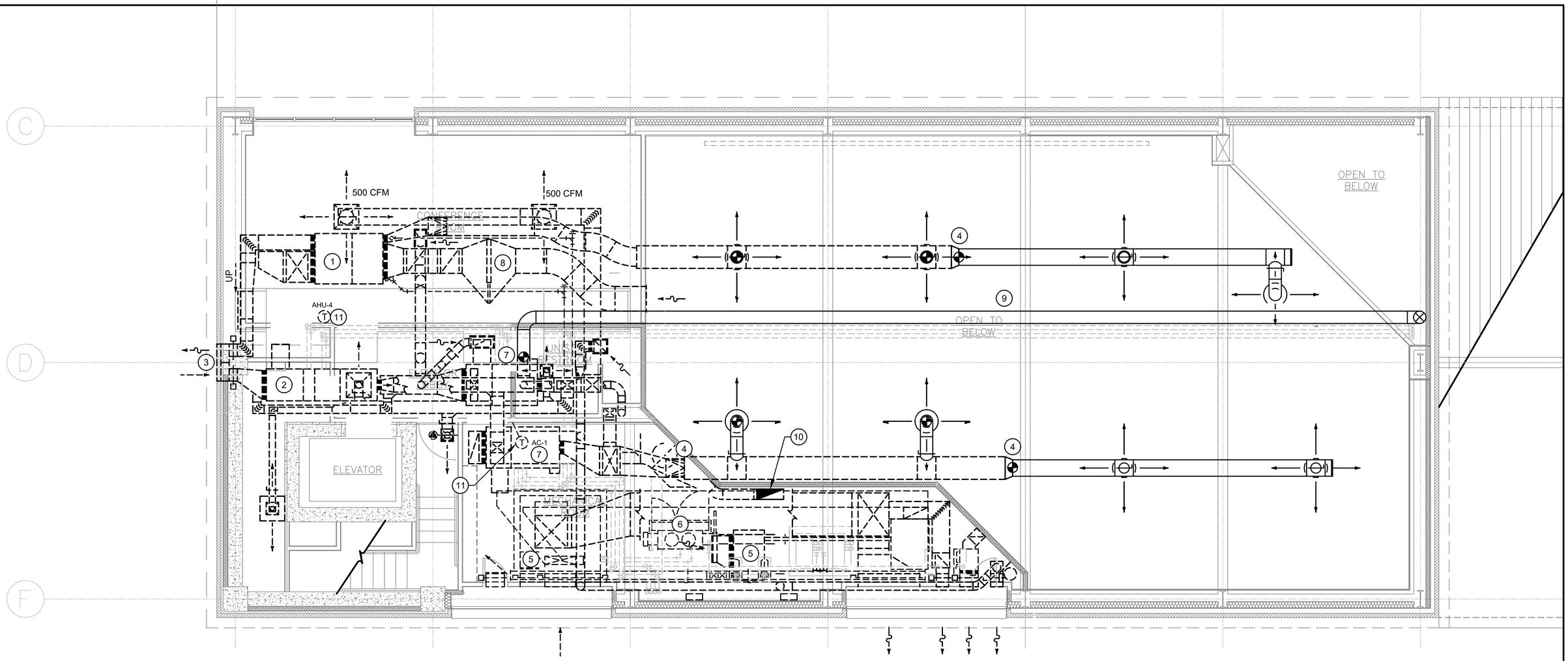


KEY PLAN

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.5	FIRST FLOOR EAST PIPING DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 14 OF 44

23/05/2024 12:48 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.5 DEMO LIBERTY SQ FIRST FLOOR EAST PIPING PLAN.DWG



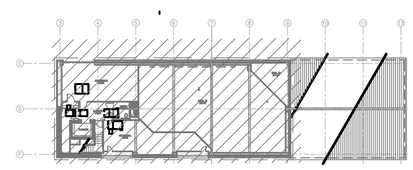
KEYNOTES: (#)

1. DEMOLISH ENERGY RECOVERY DEHUMIDIFIER SYSTEM INCLUDING ALL DUCTWORK SUPPORTING POINTS AND HARDWARE.
2. DEMOLISH OSA SYSTEM INCLUDING EQUIPMENT AND DUCTWORK LEAVING MOUNTING HARDWARE, MOUNTING POINTS, AND LOUVER FOR NEW INSTALLATION..
3. RETAIN AND PROTECT LOUVER. DEMO ALL CONNECTED DUCTWORK.
4. RETAIN EXISTING DUCTWORK FROM THIS POINT ON.
5. DEMOLISH CONDENSING UNIT AND ASSOCIATED DUCTWORK FROM EQUIPMENT TO LOUVER.
6. DEMOLISH CHILLER TO PIPE CONNECTIONS.
7. DEMOLISH AHU AND ASSOCIATED DUCTWORK, GRILLS, AND REGISTERS. RETAIN ALL MOUNTING HARDWARE HANGERS.
8. DEMOLISH FILTER AND MOUNTING EQUIPMENT.
9. RETAIN OSA DUCT.
10. RETAIN AND PROTECT FLOOR PENETRATION AND DUCT AT THIS POINT.

KEYNOTES (CONTINUED):

11. REMOVE THERMOSTAT AND PREPARE FOR NEW THERMOSTAT MATCHING NEW CONTROL SYSTEM.

1 / M1.6 2ND FLOOR HVAC DEMO PLAN
SCALE: 1/4" = 1'



KEY PLAN WEST

SHEET NOTE:

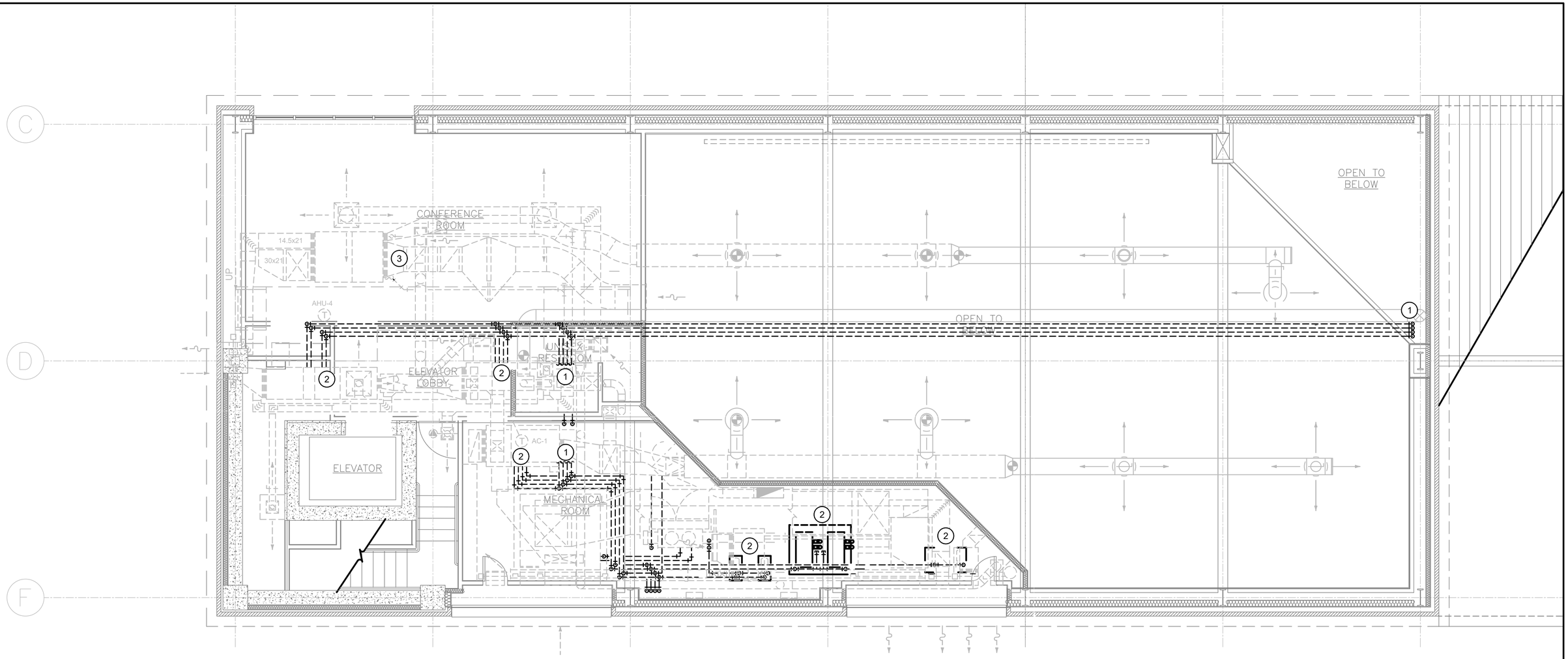
1. EXISTING DUCT IS ROUTED WITHIN THE STEEL TRUSS AND BRACING. SOME OF THE EXISTING DUCTWORK ENCAPSULATES STEEL.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 42216 CHRISTIAN GRUBER 6-4-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.6	SECOND FLOOR HVAC DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 15 OF 44

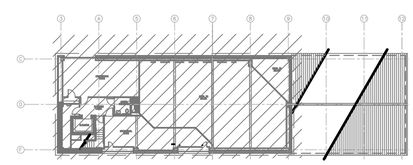
03/06/2024 06:26 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.6 DEMO LIBERTY SQ SECOND FLOOR PLAN.DWG



KEYNOTES: (#)

1. DEMOLISH PIPING BACK TO EQUIPMENT AS SHOWN, RETAINING SUPPORTS.
2. DEMOLISH EQUIPMENT AND ASSOCIATED ITEMS AS NOTED.
3. DEMOLISH CONDENSATE PIPING ASSOCIATED WITH THIS UNIT.

1 / M1.7 2ND FLOOR PIPING DEMO PLAN
SCALE: 1/4" = 1'

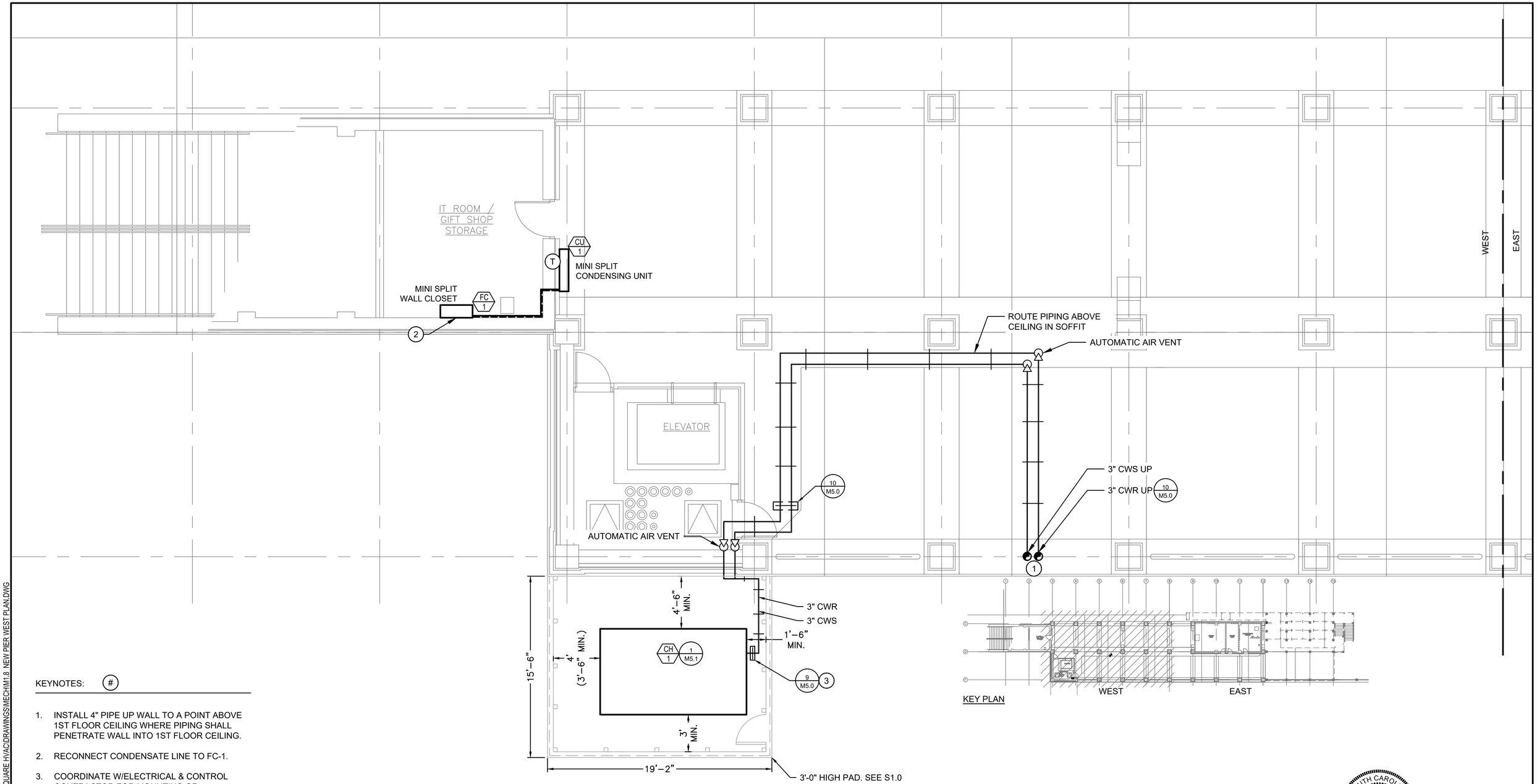


KEY PLAN WEST

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.7	SECOND FLOOR PIPING DEMO PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 16 OF 44

23/05/2024 12:48 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.7 DEMO LIBERTY SQ SECOND FLOOR PIPING PLAN.DWG



KEYNOTES: (#)

1. INSTALL 4" PIPE UP WALL TO A POINT ABOVE 1ST FLOOR CEILING WHERE PIPING SHALL PENETRATE WALL INTO 1ST FLOOR CEILING.
2. RECONNECT CONDENSATE LINE TO FC-1.
3. COORDINATE W/ELECTRICAL & CONTROL CONTRACTOR FOR MOUNTING OF ELECTRICAL AND CONTROL CONDUIT ON SAME RACK WITH CHILLED WATER PIPE.

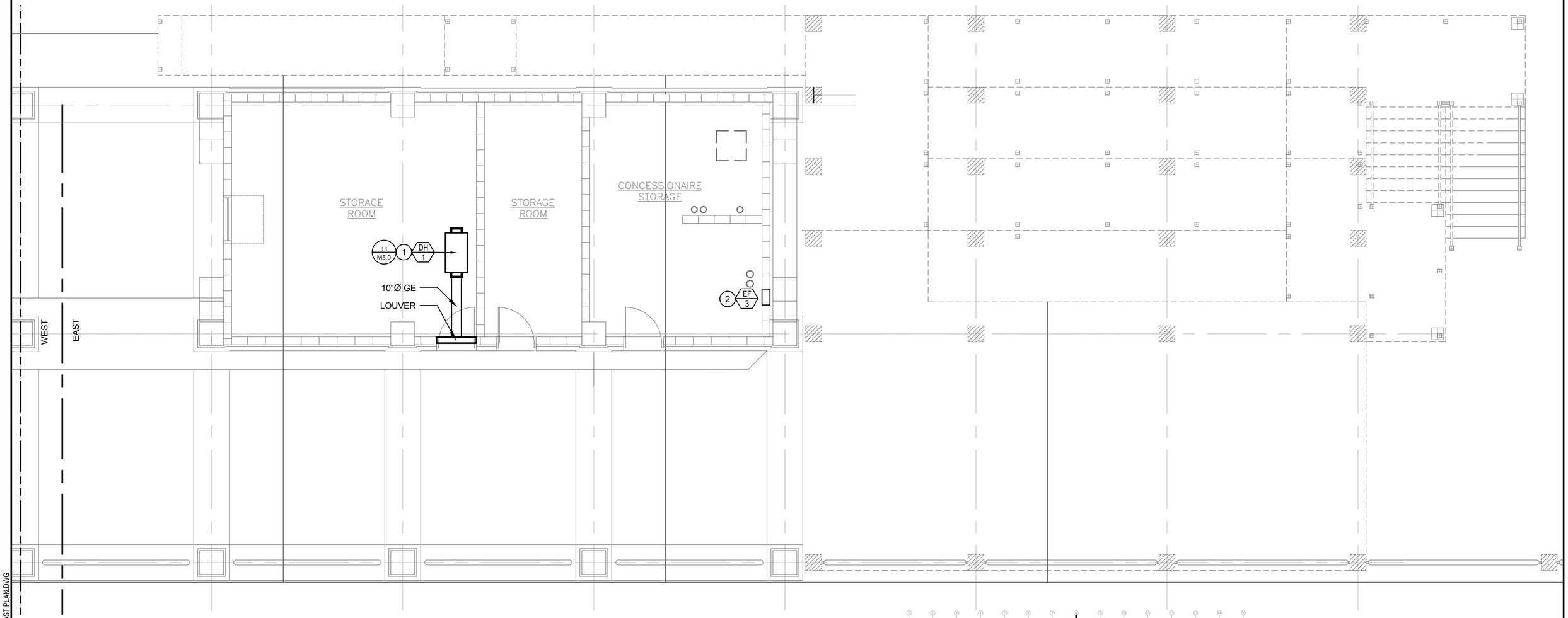
1 / M1.8 PIER WEST HVAC NEW PLAN
SCALE: 1/4" = 1'

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 42216 CHRISTIAN GEORGE 6-4-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.8	PIER WEST HVAC NEW PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 17 OF 44

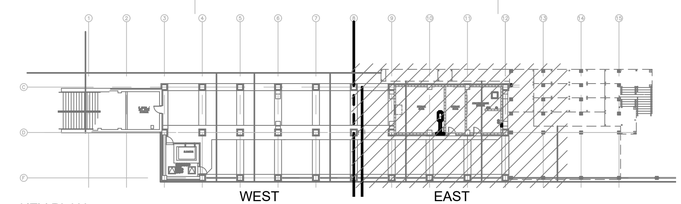
23/05/2024 12:48 KEVIN FLORES G:\CLIENTS\NPS\FOSJ\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.8 NEW PIER WEST PLAN.DWG



KEYNOTES: #

1. SUPPORT UNIT FROM ROOF @ 10"-0" ABOVE FINISHED FLOOR.
2. INSTALL NEW EXHAUST FAN IN EXISTING OPENING.

1 / M1.9 PIER EAST HVAC NEW PLAN
SCALE: 1/4" = 1'

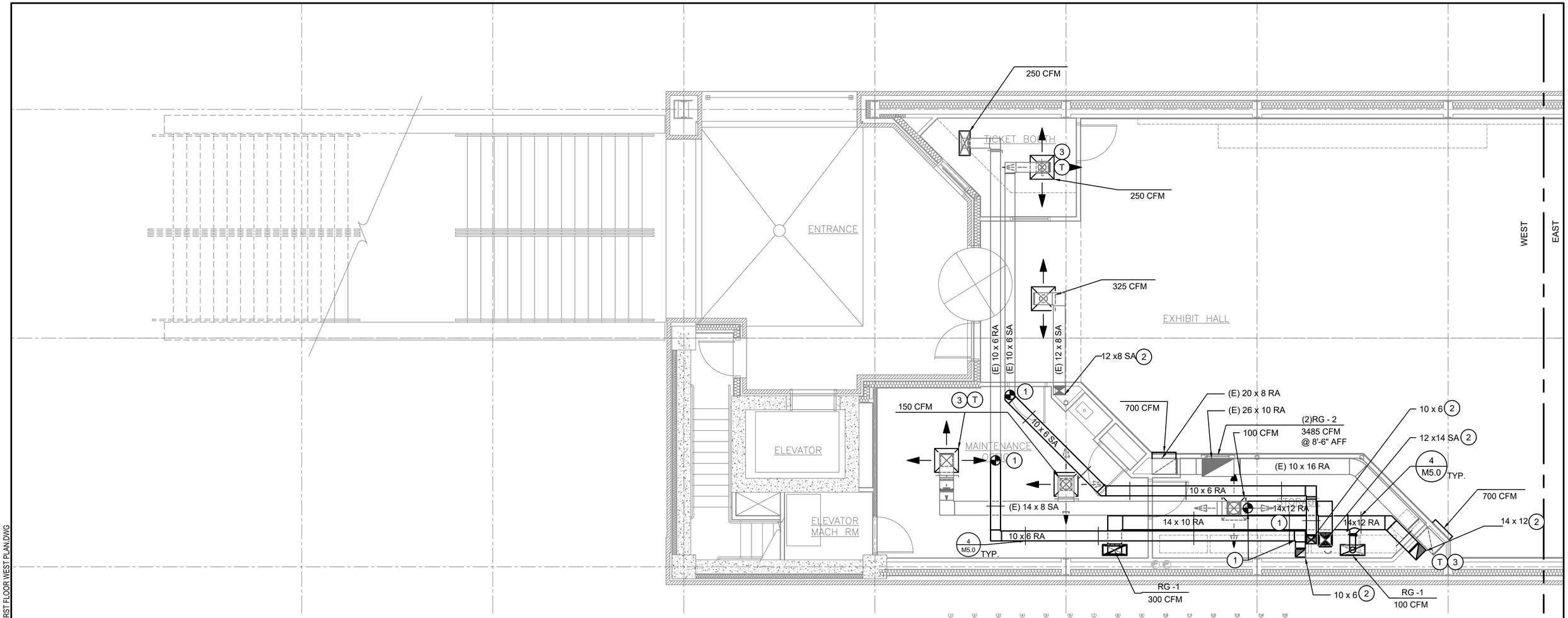


KEY PLAN

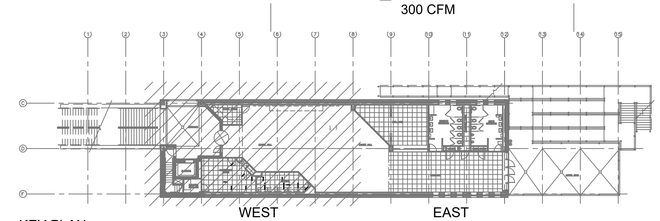
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.9	PIER EAST HVAC NEW PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 18 OF 44

23/05/2024 12:48 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.9 NEW PIER EAST PLAN.DWG



1 M1.10 1ST FLOOR WEST HVAC NEW PLAN
SCALE: 1/4" = 1'



KEY PLAN

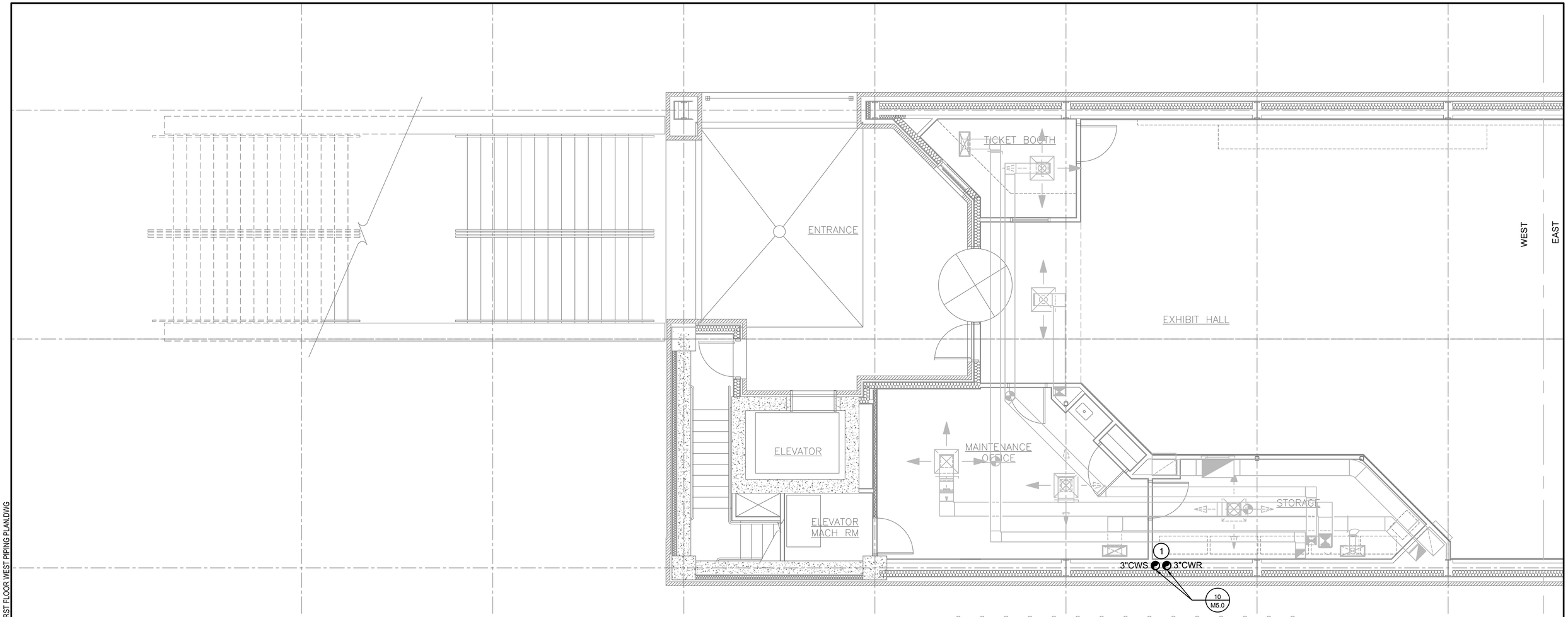
KEYNOTES: #

1. CONNECT TO EXISTING DUCT WORK AND EXTEND AS SHOWN.
2. INSTALL SUPPLY AND RETURN DUCT UP TO FLOOR ABOVE.
3. REPLACE EXISTING T-STAT, MATCHING UP WITH NEW CONTROL SYSTEM.

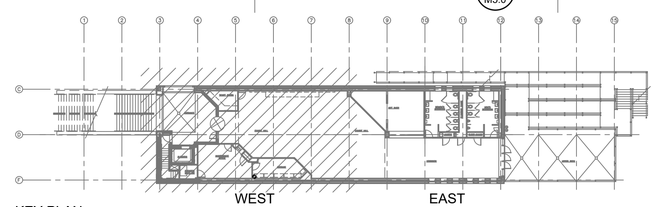
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN CADD M. NGUY TECH. REVIEW: B. BROOKE DATE: 6/2024	SUB SHEET NO. M1.10	TITLE OF SHEET FIRST FLOOR WEST HVAC NEW PLAN REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392 / 192499 PMIS/PKG NO. 316098B SHEET 19 OF 44

23/05/2024 12:48 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.10 NEW LIBERTY SQ FIRST FLOOR WEST PLAN.DWG



1 / M1.11 1ST FLOOR WEST PIPING NEW PLAN
SCALE: 1/4" = 1'



KEY PLAN

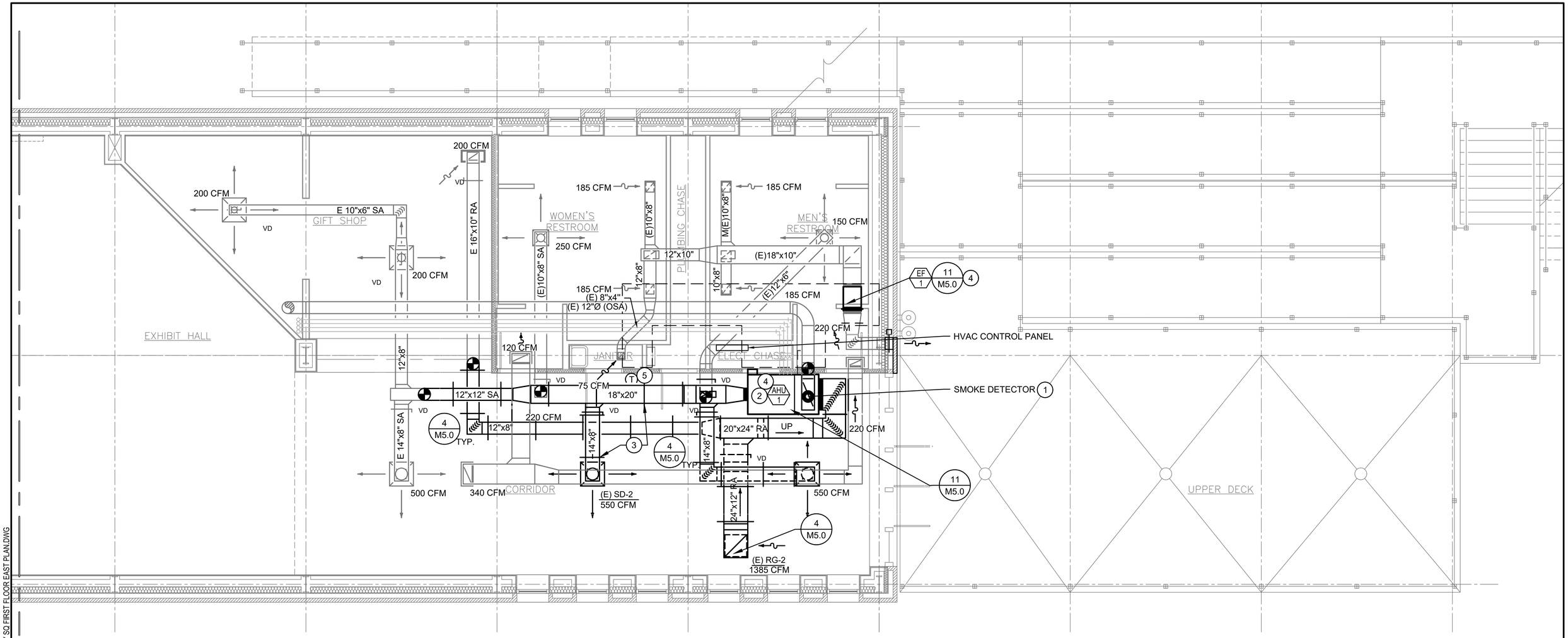
KEYNOTES: (#)

1. RUN PIPE TO ENTER BUILDING ABOVE CEILING SPACE OF 1ST FLOOR RISE UP IN WALL TO CEILING SPACE OF 2ND FLOOR AT WHICH POINT THE PIPE SHALL ENTER INTO CEILING OF 2ND FLOOR AND UP INTO THE MECHANICAL ROOM FLOOR AS CLOSE TO THE WALL AS POSSIBLE.

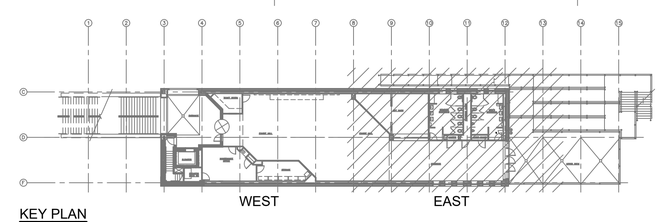
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN CADD M. NGUY TECH. REVIEW: B. BROOKE DATE: 6/2024	SUB SHEET NO. M1.11	TITLE OF SHEET FIRST FLOOR WEST PIPING NEW PLAN REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392 / 192499 PMIS/PKG NO. 316098B SHEET 20 OF 44

23/05/2024 12:48 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.11 NEW LIBERTY SQ FIRST FLOOR WEST PIPING PLAN.DWG



1 M1.12 1ST FLOOR EAST HVAC NEW PLAN
SCALE: 1/4" = 1'



KEY PLAN

KEYNOTES: (#)

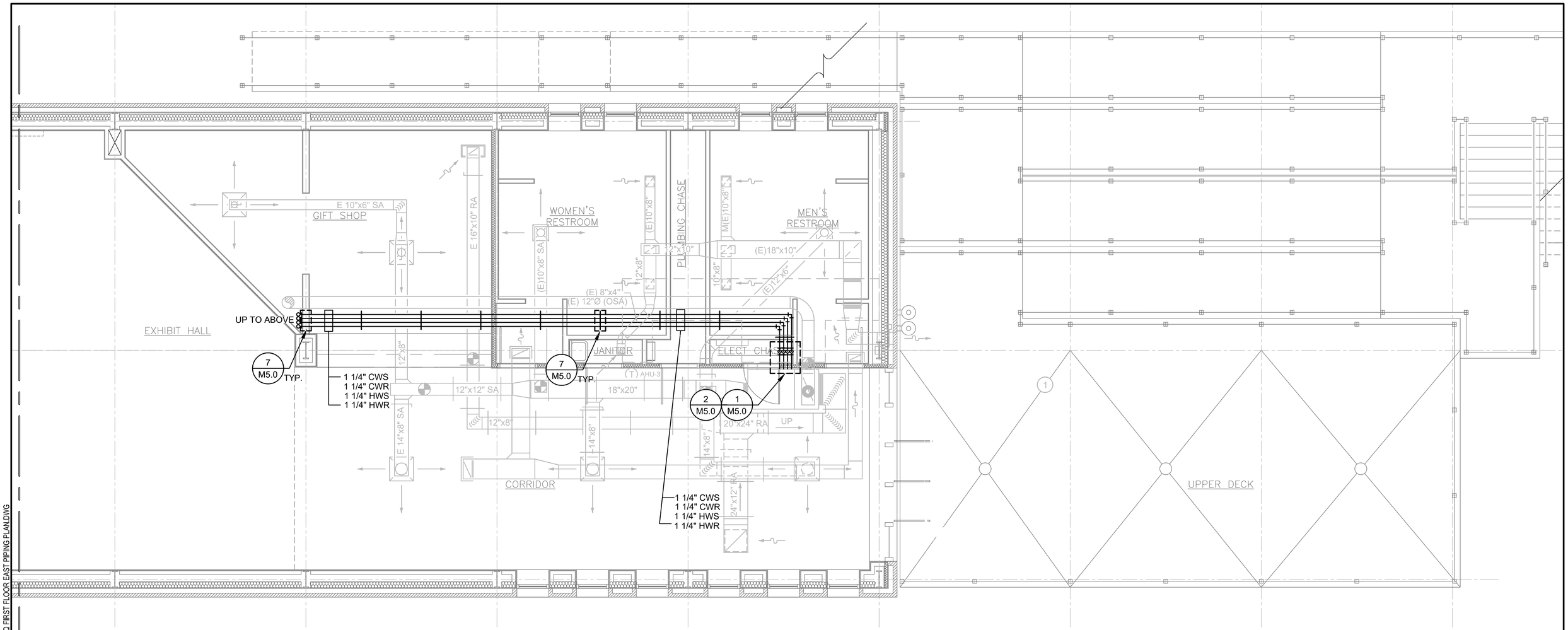
1. INSTALL NEW SMOKE DETECTOR IN RETURN AIR PLENUM AND INTERLOCK WITH UNIT TO SHUT UNIT DOWN ON DETECTION OF SMOKE. CONNECT TO FIRE CONTROL ALARM PANEL.
2. RECONNECT CONDENSATE LINE TO UNIT.
3. DUCT SUPPORT PER SMACNA STANDARDS.
4. SUPPORT UNIT FROM EXISTING SUPPORT. REPLACE SPRING ISOLATORS AT ALL LOCATIONS OF EXISTING UNIT.
5. REPLACE EXISTING T-STAT, MATCHING UP WITH NEW CONTROL SYSTEM.

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 42216 CHRISTIAN GEISLER 6-4-2024

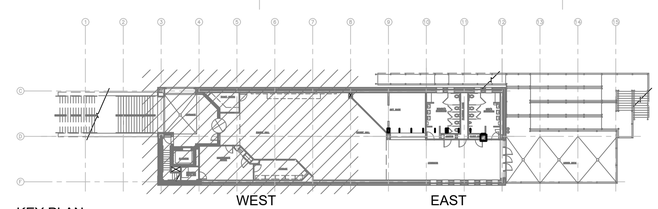
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.12	FIRST FLOOR EAST HVAC NEW PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 21 OF 44

23/05/2024 12:48 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.12 NEW LIBERTY SQ FIRST FLOOR EAST PLAN.DWG



1 M1.13 1ST FLOOR EAST PIPING NEW PLAN
SCALE: 1/4" = 1'



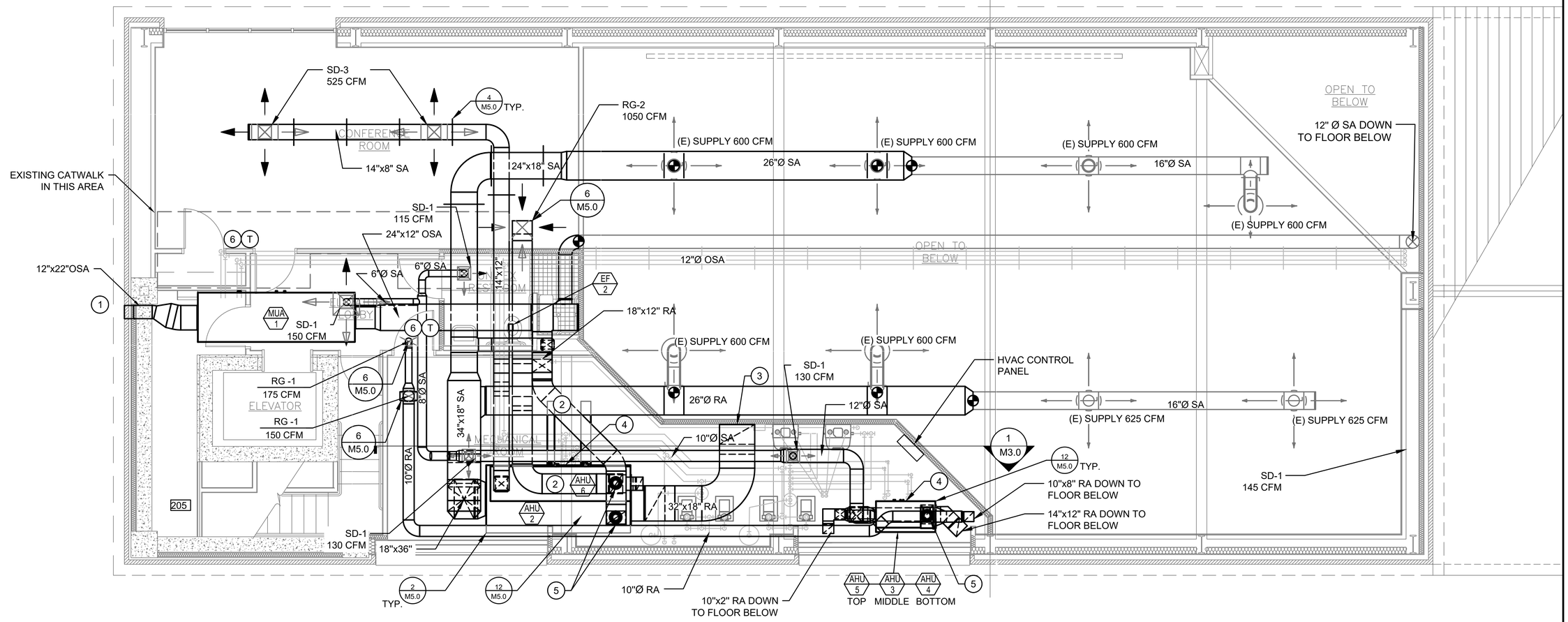
KEY PLAN

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 42216
CHRISTIAN GEORGE
6-4-2024

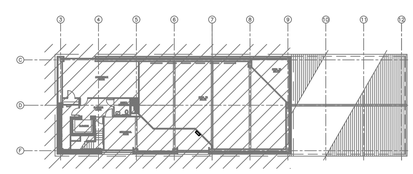
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.13	FIRST FLOOR EAST PIPING NEW PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 22 OF 44

23/05/2024 12:47 KEVIN FLORES G:\CLIENTS\NPS\FOSJ\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.13 NEW LIBERTY SQ FIRST FLOOR EAST PIPING PLAN.DWG



1 M1.14 2ND FLOOR HVAC NEW PLAN
SCALE: 1/4" = 1'



KEY PLAN

WEST

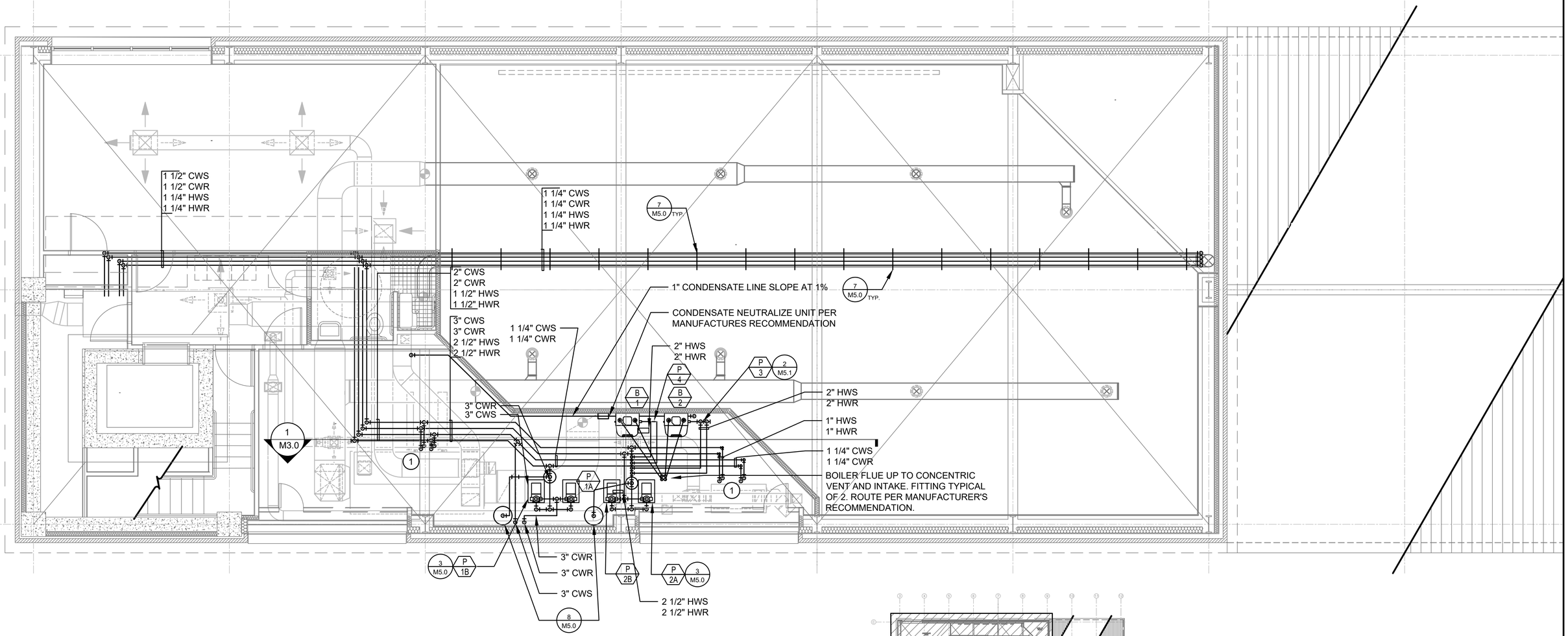
KEYNOTES: #

1. CONNECT 12"x22" OSA DUCT TO EXISTING LOUVER.
2. CONTRACTOR TO BE AWARE OF AND COORDINATE AROUND EXISTING STEEL BRACING AND STEEL BEAMS.
3. AT FLOOR LINE CONNECT NEW DUCTWORK TO EXISTING DUCTWORK.
4. CONNECT CONDENSATE LINE TO DRAIN AND ROUTE TO APPROVED RECEPTACLE.
5. RECONNECT CONDENSATE LINE TO UNIT.
6. REPLACE EXISTING T-STAT, MATCHING UP WITH NEW CONTROL SYSTEM.

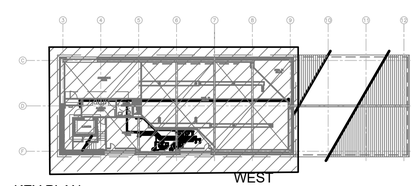
4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M1.14	SECOND FLOOR HVAC NEW PLAN	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 23 OF 43

23/05/2024 12:47 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.14 NEW LIBERTY SQ SECOND FLOOR PLAN.DWG



1 M1.15 2ND FLOOR PIPING NEW PLAN
SCALE: 1/4" = 1'



KEY PLAN

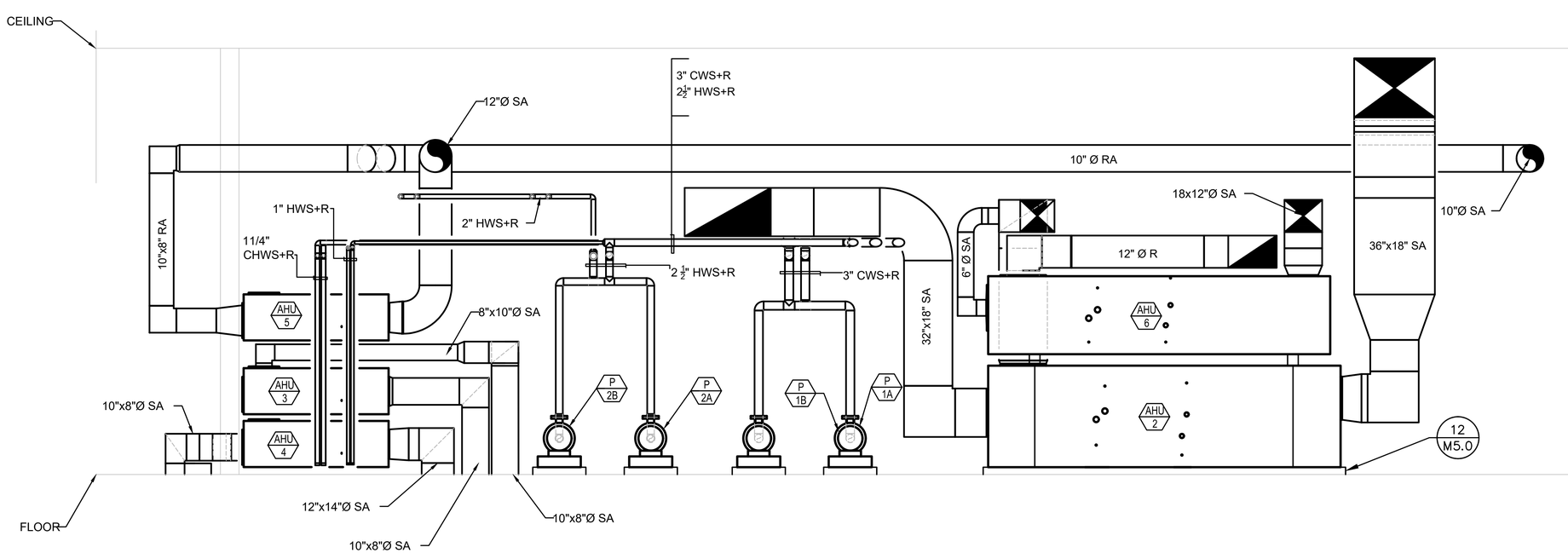
KEYNOTES: #

1. CONNECT TO COIL. SEE DETAILS 1 AND 2 ON SHEET M5.0.

SCALE OF FEET
1/4" = 1'-0"

DESIGNED: I. BROWN CADD M. NGUY TECH. REVIEW: B. BROOKE DATE: 6/2024	SUB SHEET NO. M1.15	TITLE OF SHEET SECOND FLOOR PIPING NEW PLAN REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392 192499 PMIS/PKG NO. 316098B SHEET 24 OF 44

23/05/2024 12:47 KEVIN FLORES G:\CLIENTS\NPS\FOSJ\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M1.15 NEW LIBERTY SQ SECOND FLOOR PIPING PLAN.DWG



SHEET NOTE:

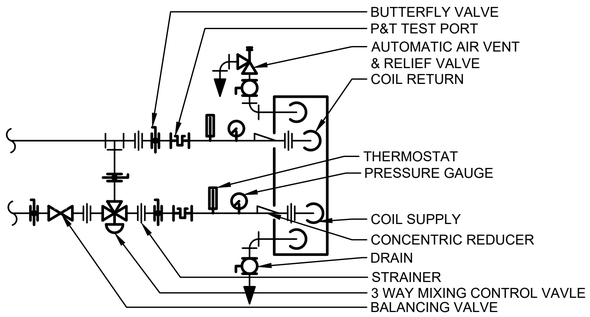
1. EXISTING DUCT IS ROUTED WITHIN THE STEEL TRUSS AND BRACING. SOME OF THE EXISTING DUCTWORK ENCAPSULATES STEEL.

1 M3.0 SECTIONS
SCALE: NTS

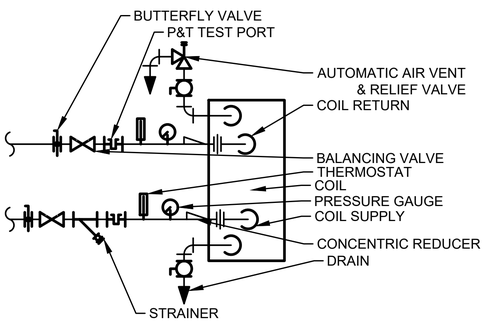
SEE SHEETS M1.14 AND M1.15.

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M3.0	SECTIONS	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 25 OF 44

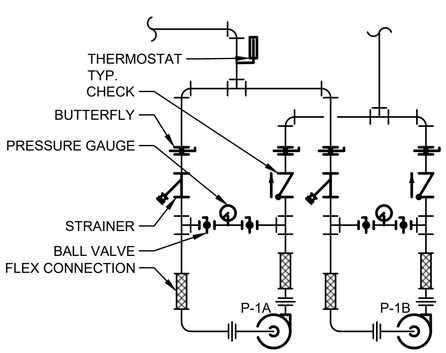
23/05/2024 12:47 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M3.0 SECTIONS.DWG



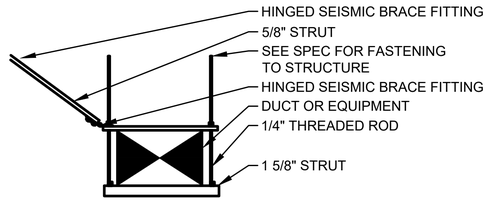
1 M5.0 HEATING WATER COIL DETAIL
SCALE: NTS



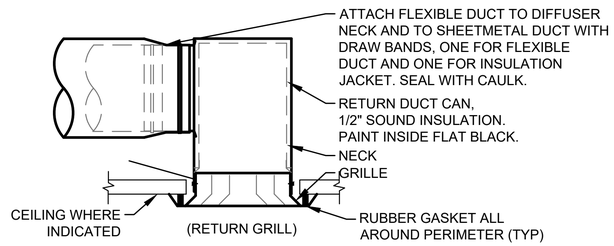
2 M5.0 CHILLED WATER COOLING COIL DETAIL
SCALE: NTS



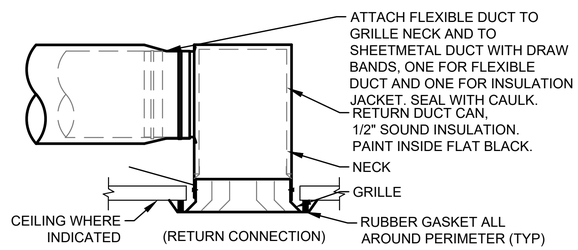
3 M5.0 HEATING WATER PUMP DETAIL
SCALE: NTS



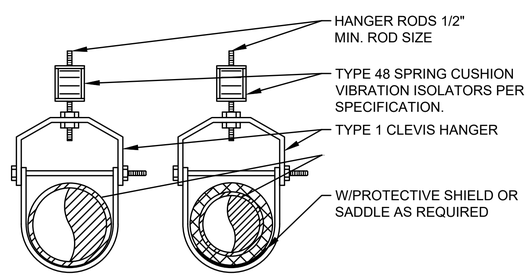
4 M5.0 DUCT SUPPORT DETAIL
NTS



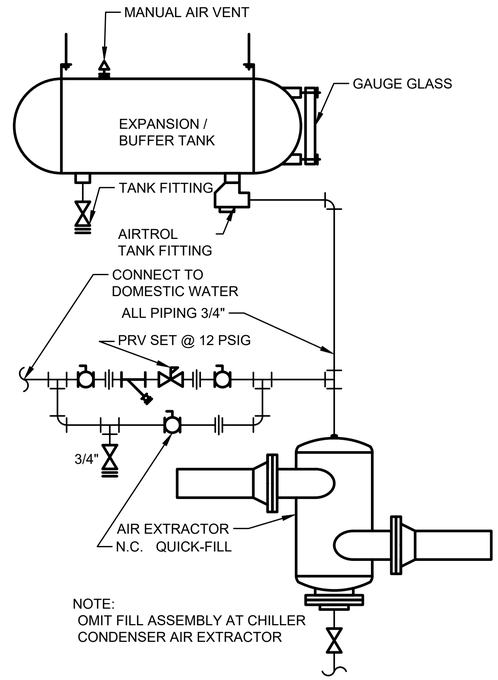
5 M5.0 SUPPLY DIFFUSER CONNECTION DETAIL
NTS



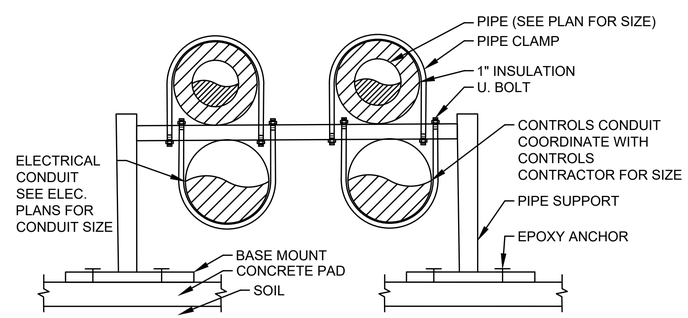
6 M5.0 RETURN GRILLE CONNECTION DETAIL
NTS



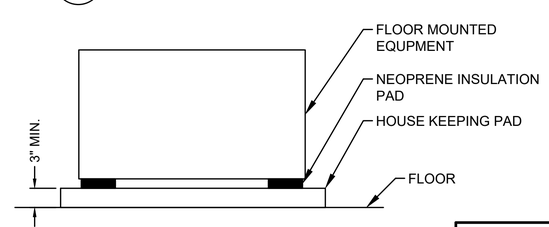
7 M5.0 SINGLE PIPE CLEVIS HANGER DETAIL
NTS



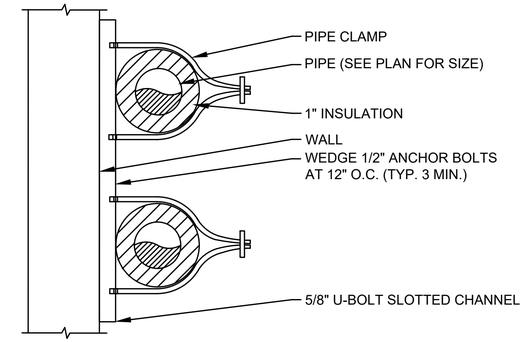
8 M5.0 EXPANSION TANK DETAIL
SCALE: NTS



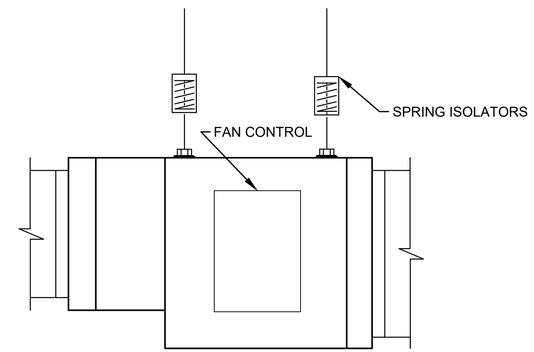
9 M5.0 GROUND PIPE SUPPORT
SCALE: NTS



12 M5.0 EQUIPMENT PAD FOUNDATION
SCALE: NTS



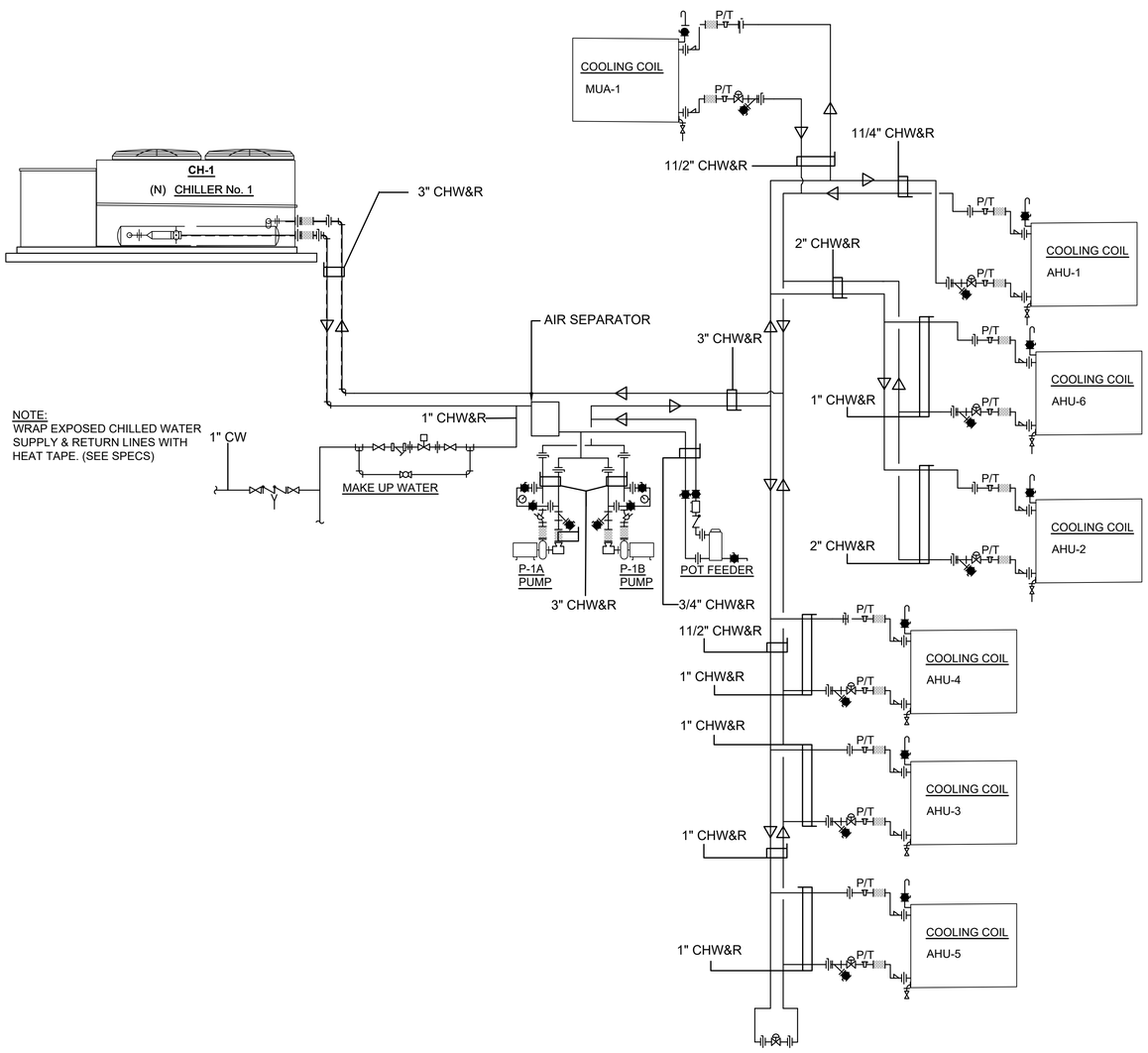
10 M5.0 WALL PIPING SUPPORT
SCALE: NTS



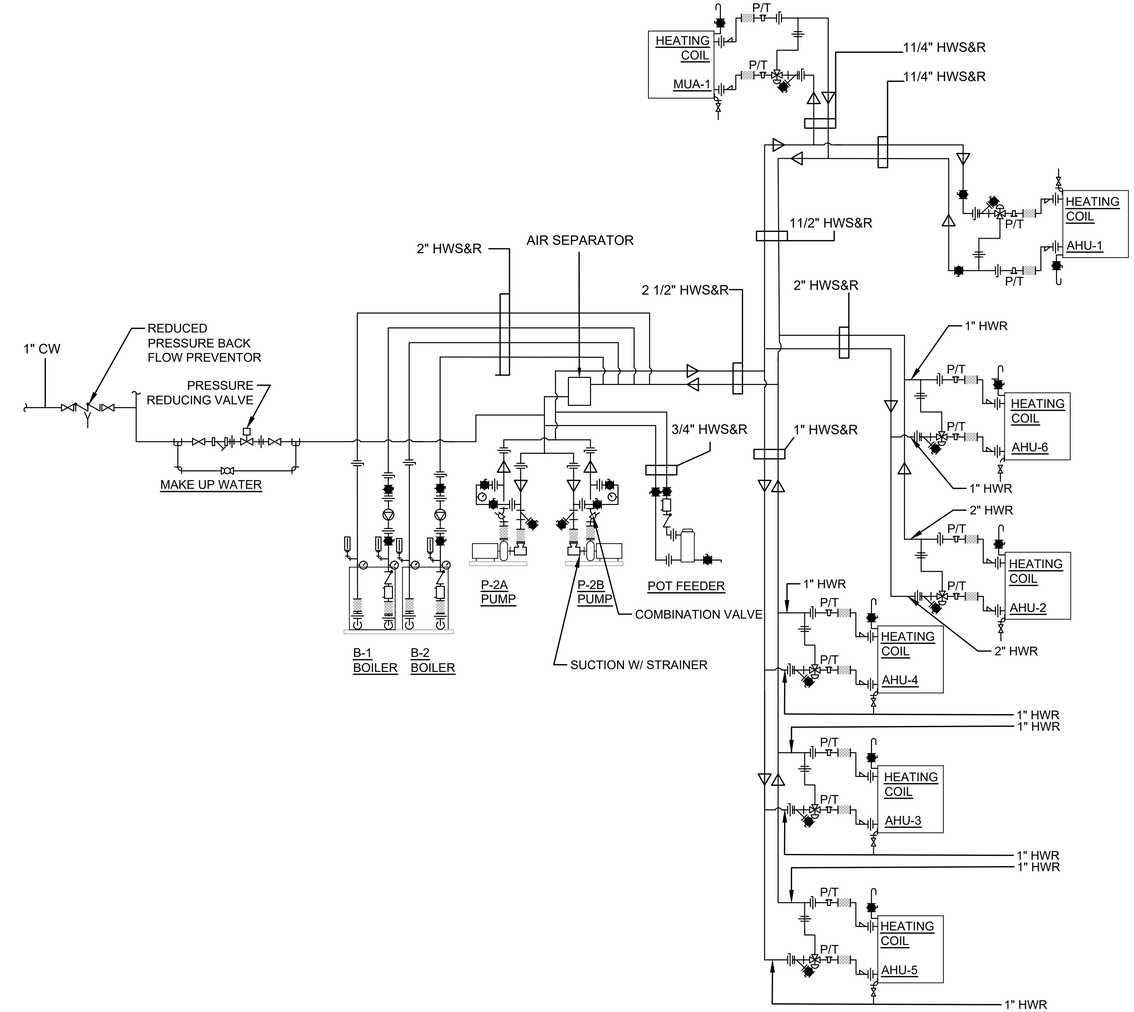
11 M5.0 EQUIPMENT DETAIL
SCALE: NTS

DESIGNED: I. BROWN CADD M. NGUY TECH. REVIEW: B. BROOKE DATE: 6/2024	SUB SHEET NO. M5.0	TITLE OF SHEET DETAILS REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392 / 192499 PMIS/PKG NO. 316098B SHEET 26 OF 44

28/05/2024 08:18 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M5.0 DETAILS.DWG



1 M5.1 CHILLED WATER PIPING DETAIL
SCALE: NTS



2 M5.1 HEATING WATER PIPING DETAIL
SCALE: NTS

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M5.1	DETAILS	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 27 OF 44

23/05/2024 12:47 KEVIN FLORES G:\CLIENTS\NPS\FOS\ULIBERTY SQUARE HVAC\DRAWINGS\MECH\M5.1 DETAILS.DWG

SEQUENCE OF OPERATIONS:

THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR MODIFYING THE EXISTING CONTROL SYSTEM TO INTERFACING WITH THE NEW EQUIPMENT, BOTH REPLACED AND ADDED EQUIPMENT IN THIS CONTRACT. THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING ALL COMPONENTS AND THE DESIGNING FOR AN OPERATIONAL CONTROL SYSTEM FULLY CAPABLE OF MEETING THE REQUIREMENTS AND FUNCTIONALITY OF THE EXISTING SYSTEM AND ITS INTENTS, PLUS THE FUNCTIONALITY OF THOSE LAID OUT IN THIS SEQUENCE OF OPERATION FOR THE UPDATED EQUIPMENT OPERATION.

THE CONTROL SYSTEM SHALL MONITOR EACH OF THE FOLLOWING EQUIPMENT ITEMS:

- •CHILLER
  - ••CHILLER STATUS
  - ••START / STOP
  - ••SET POINT AJUSTMENT
  - ••CHILLER FLOW STATUS
  - ••CHILLER ALARMS
- •CHILLER PUMP
  - ••PUMP POWER DRAW
  - ••PUMP ON / OFF
  - ••PUMP STATUS
  - ••PUMP PRESSURE
- •BOILER
  - ••STATUS
  - ••BOILER ON / OFF
  - ••ENTERING WATER
  - ••LEAVING WATER
- •BOILER PUMP
  - ••PUMP POWER DRAW
  - ••PUMP ON / OFF
  - ••PUMP STATUS
  - ••PUMP PRESSURE
- •MULTI-ZONE
  - ••SUPPLY TEMP
  - ••ZONE CONTROL POSITION
  - ••HEATING WATER SUPPLY TEMP
  - ••COLD WATER SUPPLY TEMP
  - ••AIR FLOW STATUS
  - ••UNIT DIFFERENTIAL PRESSURE
  - ••FILTER DIFFERENTIAL PRESSURE
- •RTU UNIT
  - ••STATUS
  - ••START ON / OFF
  - ••SET POINT AJUSTMENT
  - ••SUPPLY AIR FLOW TEMP
- •TEMPERATURE STAT
  - ••ROOM TEMP
  - ••SET POINT
- •OUTSIDE AIR DAMPER
  - ••POSITION STATUS
  - ••POSITIONING
- •AIR MONITORING STATION
  - ••AIR FLOW
  - ••AIR TEMP
- •WEATHER STATION
  - ••OUTSIDE AIR STATION
  - ••WIND DIRECTION
  - ••WIND SPEED

AIR HANDLER START-UP:

THE AIR HANDLER UNIT (AHU) FAN WILL BE STARTED AND STOPPED REMOTELY VIA THE BMS. THE FAN WILL BE CONTROLLED VIA THE OCCUPIED SCHEDULE, THE SYSTEM TEMP SETTINGS OR THE OVERRIDE SWITCH. ONCE THE SYSTEM HAS BEEN RESET, THE AIR HANDLER UNIT WILL RESTART NORMALLY.

FAN START-UP:

AN AIR FLOW SWITCH ACROSS THE SUPPLY FAN WILL MONITOR THE FAN STATUS. AN ALARM WILL SOUND IF THE AIR FLOW SWITCH FAILS TO DETECT FLOW AFTER 3 MIN (ADJUSTABLE). THE ALARM WILL BE DISPLAYED AT THE DDC AND BMS DISPLAYS. PROVIDE A RESET IN THE BMS TO RESET THE AIR FLOW MONITOR CONTROL SEQUENCE AND ALARM.

TEMPERATURE CONTROL:

FC-1,2,3,4,5,6 ONCE THE FAN IS UP AND OPERATIONAL THE TEMPERATURE CONTROL SYSTEM SHALL BRING THE RETURN AIR TEMP UP TO SET POINT (60 F ADJUSTABLE WITHOUT DOOR RESET) BY ADJUSTING THE HEATING WATER VALVE OR THE CHILLED WATER VALVE. THE RETURN AIR SET POINT SHALL BE ADJUSTED BY AN ALGORITHM THAT DETERMINES THE RETURN AIR TEMP BASED ON THE OUTDOOR TEMP AND THE AVERAGE OF ALL ROOM SET POINTS.

THE CHILLED WATER CONTROL VALVE SHALL CONTROL THE SUPPLY AIR TEMP TO ENSURE THAT THE HUMIDITY LEVELS IN THE BUILDING ARE WITHIN SET POINTS. THE CHILLED WATER COIL WILL OVER COOL THE AIR TO MEET THE HUMIDITY SET POINT AND THE HEATING WATER VALVE WILL REHEAT OR TRIM THE AIR TO BEST MEET THE ROOM SET POINT. (THE HEATING AND COOLING WILL BE HAPPENING SIMULTANEOUSLY THROUGH MOST SEASONS TO PROVIDE BOTH TEMPERATURE CONTROL AND HUMIDITY CONTROL).

OUTSIDE AIR AND ECONOMIZER (ENTHALPY) CONTROL:

MUA -1 SHALL OPERATE DURING OCCUPIED HOURS TO CONDITION THE SYSTEM OUTSIDE AIR. THIS UNIT SHALL OPERATE TO MAINTAIN THE HUMIDITY SET POINT. THE CHILLED WATER CONTROL VALVE SHALL COOL THE AIR STREAM TO REMOVE THE HUMIDITY IN THE OUTSIDE AIR STREAM, AND THE HEATING COIL SHALL OPERATE AS A REHEAT COIL TO REHEAT THE AIR STREAM TO MEET THE BUILDING RESET TEMPERATURE. THE RESET TEMPERATURE SHALL BE CONTROLLED BASED ON THE WORST CASE OF ALL ZONE'S SUPPLY DELIVERY TEMP.

FIRE ALARM SIGNAL:

THE BMS WILL MONITOR THE RETURN AND SUPPLY AIR SMOKE DETECTORS. IF SMOKE IS DETECTED, THE UNIT WILL SHUT DOWN AND THE RELIEF DAMPER AND OUTSIDE AIR DAMPERS WILL CLOSE.

HEATING SYSTEM:

THE BOILER SYSTEM WILL BE ENABLED WHEN OUTDOOR TEMPERATURES ARE BELOW 65 F (ADJUSTABLE) OR THE WET BULB TEMPERATURE IS ABOVE 55 F (ADJUSTABLE). THE BOILER PUMPS SHALL CIRCULATE THE WATER ONCE THE HEATING SYSTEM IS ENABLED.

CHILLED WATER SYSTEM:

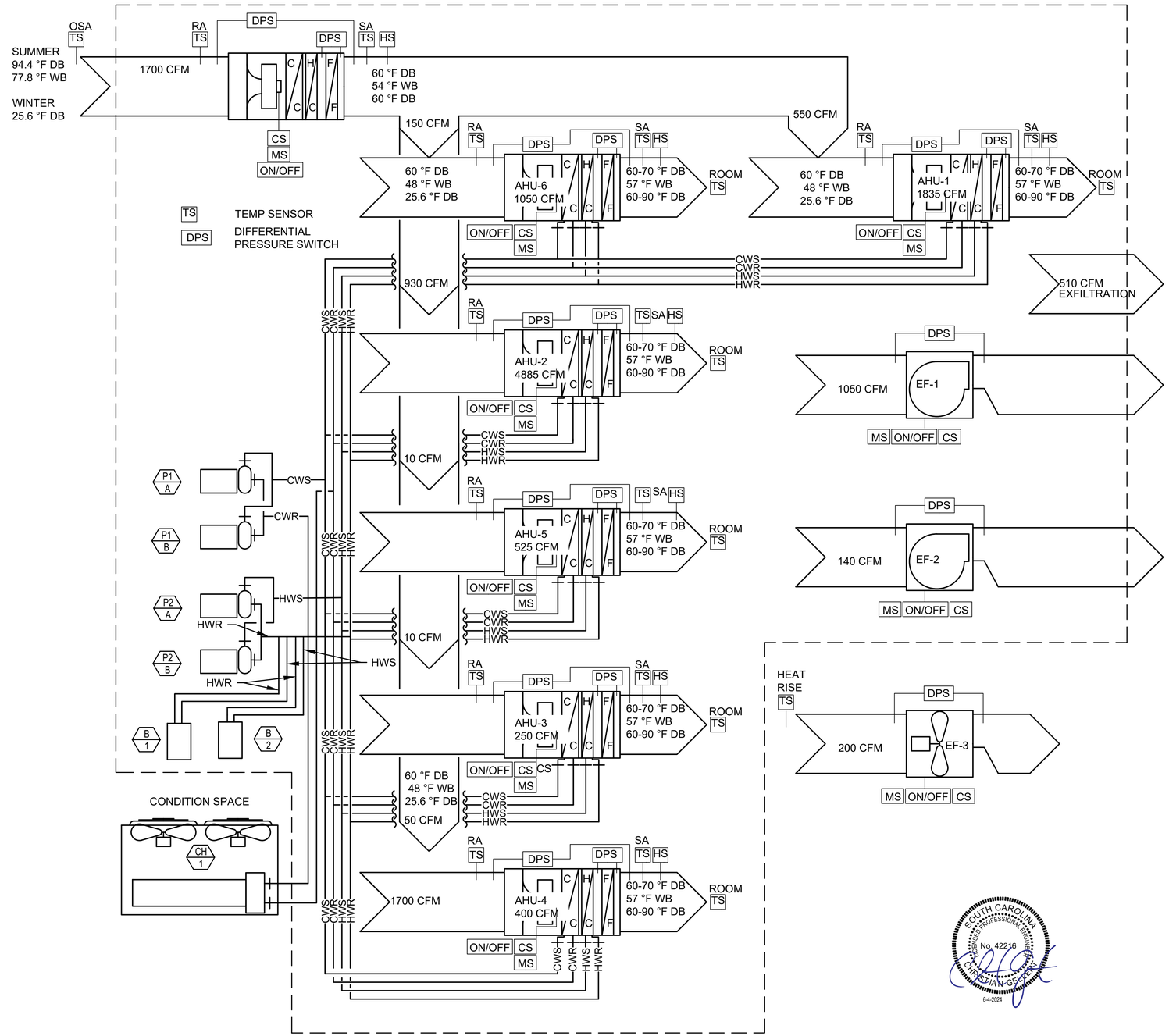
THE CHILLER WILL BE ENABLED WHEN THE OUTSIDE AIR IS BELOW 65 F, OR THE WET BULB TEMP IS ABOVE 55 F. THE CHILLED WATER PUMP SHALL OPERATE CONTINUOUSLY ONCE THE CHILLED WATER SYSTEM IS ENABLED.

BUILDING EXHAUST FAN:

EF-1 RESTROOM EXHAUST FAN SHALL OPERATE CONTINUOSLY WHILE THE RESTROOM IS OCCUPIED AND SHALL BE CONTROLLED BY BOTH RESTROOM OCCUPANCY SENSORS WITH A SYSTEM DELAY OF 10 MINUTES ONCE THERE IS NO LONGER A CALL FROM EITHER OF THE OCCUPANCY SENSORS.

EF-2 RESTROOM EXHAUST FAN SHALL OPERATE CONTINUOSLY WHILE THE RESTROOM IS OCCUPIED AND SHALL BE CONTROLLED BY AN OCCUPANCY SENSOR WITH A SYSTEM DELAY OF 10 MINUTES ONCE THERE IS NO LONGER A CALL FROM THE OCCUPANCY SENSOR.

EF-3 VENTILATION FAN SHALL OPERATE OFF A HEAT RISE STATE.



1 / M5.2 AIR FLOW AND CONTROLS DIAGRAM
SCALE: NTS

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M5.2	DETAILS	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 28 OF 44

23/05/2024 12:47 KEVIN.FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\MECH\M5.2 DETAILS.DWG

MINI SPLIT

INDOOR																				OUTDOOR UNIT									
TAG	LOCATION	TYPE	DRIVE	GENRAL			OSA	COILING			HEATING			POWER			PHYSICAL INFO.	ACOUSTICS	MAKE	MODEL	TAG	LOCATION	REF. TYPE	DRIVE	POWER			MAKE	MODEL	COMMENTS
				CFM	TON	SEER/EER		TC MBH	SHC MBH	STATE	TOTAL HEAT MBH	STATE	HSPF	CHAR	MCA	MOCP	OPERATING WEIGHT	SOUND POWER dB(A)							CHAR	MCA	MOCP			
FC-1	IT ROOM/GIFT SHOP STORAGE	WALL UNIT	DIRECT	400	2	20.5/12.5	-	22.4	-	80/67	16.0	17/ 15	10	208/1/60	[1]	[1]	42	53-49-45-41-34	MITSUBISHI	MSZ-GL24NA	CU-1	BACK WALL	410A	-	208/1/60	17.1	20	MITSUBISHI	MUZ-GL24NA-U1	[1][2]

[1] INDOOR UNIT IS POWERED THROUGH THE OUTDOOR UNIT.
[2] PROVIDE WITH THE FOLLOWING OPTIONS: SIMPLE MANUAL CONTROLLER, BACnet INTERFACE, CONDENSING PUMP WITH RESERVOIR.

CHILLER SCHEDULE

TAG	LOCATION	NOMINAL TONAGE	SEER/ EER	TYPE REF.	EVAPORATOR INFORMATION						CONDENSER INFO.			POWER			PHYSICAL INFO.	ACOUSTICS	MAKE	MODEL	COMMENTS
					LWT	EWT	DESIGN FLOW GPM	MIN FLOW GPM	FLUID (PROPYLENE GLYCOL)	FLUID PRESSURE DROP	AMBIENT AIR TEMP	AIR FLOW	NUMBER OF FANS	CHAR	MCA	MOCP	OPERATING WEIGHT LB	SOUND POWER			
CH-1	SOUTH SIDE OF BUILDING WEST END	40	/16.26	454B	43 F	53 F	91.12	55.5	20 %	18.1	95 F	36175 CFM	4	208/3/60	195 A	250 A	3843	A-WEIGHTRF 89 dBA	TRANE	CGAM040A2**3EXD2A1A3A1AX*A1A2B4XXX8B1A1A3A1D1XXFXX	[1][2]
																				CGAM040A2**3EXD2A1A3A1AX* A1A2B4XXX8B1A1A3A1D1XXFXX	

[1] PROVIDE UNIT WITH AN INSULATED BUFFER TANK.
[2] PROVIDE WITH THE FOLLOWING OPTIONS: PROVIDE WITH A BACNET INTERFACE, PROVIDE WITH (TM) 800 UNIT MODULE, PROVIDE WITH CONVENIENT CIRCLET WITH OUTLET AND RATED AT 5 KA.

AIR HANDLER SCHEDULE

TAG	LOCATION	AIR FLOW	TSP/ ESP	FILTER			COOLING COIL										REHEATING COIL											FAN			POWER				PHYSICAL INFO.	ACOUSTICS	MAKE	MODEL	COMMENTS
				FRAM	MERV	#	TMBH	SMBH	GPM	ROW	EWT	LWT	WPD FT WATER	EAT DB/WB	LAT DB/WB	APD IN H2O	TYPE	TMBH	GPM	ROW	EWT	LWT	WPD	EAT DB/WB	LAT DB/WB	APD IN H2O	FLUID	#	RPM	HP	CHAR	FLA	MCA	MOCP	OPERATING WEIGHT LBS	SOUND POWER			
AHU-1	GIFT SHOP/ RESTROOM	2400	1.0	2"	8	4	72.00	66.62	14.34	4	43	53	3.5	78.6/64.0	48/47.9	.281	REHEAT	79.19	7.91	1	180	160	1.1	48/47.9	72/57	.086	10% GLICAL	1	3378	2.0	208/3/60	7.06	8.70 A	15	1101	-	TRANE	CSAA004	[1]
AHU-2	EXHIBIT HALL	4885	1.0	2"	8	4	130	127.68	26	4	43	53	1.8	78.6/64	48/47.9	0.4	REHEAT	210	21	1	180	160	2	48/47.9	72/57	.086	10% GLICAL	2	3471	5.0	208/3/60	30.4	34.2	45.0	1606	-	TRANE	CSAA010	[1]
AHU-3	TICKET OFFICE	250	0.5	2"	8	1	9	7.89	3	1	43	53	4.5	78.6/64	48/47.9	0.4	REHEAT	9.8	0.4	1	181	161	0.1	48/47.9	72/57	.044	10% GLICAL	1.0	1066	0.5	208/3/60	2.4	3.0	15.0	180	-	TRANE	BCHE012	[1]
AHU-4	OFFICE SPACE	400	0.5	2"	8	1	12.4	11.22	4.3	1	43	53	4.5	78.6/64	48/47.9	0.4	REHEAT	15.6	0.9	1	182	162	0.5	48/47.9	72/57	0.09	10% GLICAL	1.0	1257	0.5	208/3/60	1.3	1.6	15.0	180	-	TRANE	BCHE012	[1]
AHU-5	MECH/HALL/RESTROOM	525	0.5	2"	8	1	15.6	14.50	4.3	1	43	53	4.8	78.6/64	48/47.9	0.4	REHEAT	21.8	1.4	1	183	163	1.1	48/47.9	72/57	0.10	10% GLICAL	1.0	1441	0.5	208/3/60	1.3	1.6	15.0	190	-	TRANE	BCHE018	[1]
AHU-6	CONFERENCE	1050	1.0	2"	8	2	27.8	27.29	5.6	4	43	53	0.6	78.6/64	48/47.9	0.2	REHEAT	44.1	4.4	1	184	164	0.5	48/47.9	72/57	0.07	10% GLICAL	1.0	3415	1.5	208/3/60	4.1	5.0	15.0	925	-	TRANE	CSAA003	[1]
MUA-1	OUTSIDE AIR	1700	1.5	2"	8	4	164.2	69.45	18.0	8	43	53	14.4	78.6/64	48/47.9	0.8	PREHEAT	58.6	10.0	1	185	165	0.3	48/47.9	72/57	0.05	10% GLICAL	1.0	3383	2.0	208/3/60	7.1	8.7	15.0	1215	-	TRANE	CSAA004	[1]

[1] PROVIDE WITH THE FOLLOWING OPTIONS: PROVIDE WITH A BACNET INTERFACE.

PUMPS

TAG	SYSTEM	TYPE	FLUID	TEMP	FLOW	HEAD	INLET	OUTLET			POWER				PHYSICAL INFO.	ACOUSTICS	MAKE	MODEL	COMMENTS
									RPM	HP/W	CHAR	FLA	MCA	MOCP	OPERATING WEIGHT	SOUND POWER			
P-1A	CHILLED WATER	END SUCTION	10% PROPYLENE	43-53	100 GPM	35	2.5"	1.5	1750	1.5 HP	208/3/60	--	--	--	160 LB	--	WILO	SCOT 324-6.65-2.5-1.5	[1]
P-1B	CHILLED WATER	END SUCTION	10% PROPYLENE	43-53	100 GPM	35	2.5"	1.5	1750	1.5 HP	208/3/60	--	--	--	160 LB	--	WILO	SCOT 324-6.65-2.5-1.5	[1]
P-2A	HEATING WATER	INLINE	10% PROPYLENE	180-160	50 GPM	20	1.5"	1.5"	1750	0.75 HP	208/3/60	--	--	--	31.1 LB	--	WILO	SCOT 321-6.5-2x1.25	[2]
P-2B	HEATING WATER	INLINE	10% PROPYLENE	180-160	50 GPM	20	1.5"	1.5"	1750	0.75 HP	208/3/60	--	--	--	31.1 LB	--	WILO	SCOT 321-6.5-2x1.25	[2]
P-3	B-1 CIRCULATOR	IN LINE	10% PROPYLENE	180-160	32 GPM	10	1.5"	1.5"	3310	0.67 HP	115/1/60	--	--	--	20 LB	--	WILO	TOPS 1.25 x 35.3	[3]
P-4	B-2 CIRCULATOR	IN LINE	10% PROPYLENE	180-160	32 GPM	10	1.5"	1.5"	3310	0.67 HP	115/1/60	--	--	--	20 LB	--	WILO	TOPS 1.25 x 35.3	[3]

[1] PROVIDE WITH THE FOLLOWING ACCESSORY: 1 VFD TO OPERATE BOTH PUMPS IN A LEAD/LAG CONFIGURATION OPERATING THE PUMP BASED ON A RETURN WATER TEMP OF 43 F
[2] PROVIDE WITH THE FOLLOWING ACCESSORY: 1 VFD TO OPERATE BOTH PUMPS IN A LEAD/LAG CONFIGURATION OPERATING THE PUMP BASED ON A RETURN WATER TEMP OF 180 F
[3] PROVIDE WITH THE FOLLOWING ACCESSORY: INTERLOCK WITH BOILER CONTROLLED BY SYSTEM WATER TEMP OF 180 F.

SUPPLY AND RETURN GRILLES

TAG	DESCRIPTION	NECK/ NOMINAL DUCT SIZE	PANEL SIZE	CFM RANGE	STA.	MAKE	MODEL	COMMENTS
SD-1	LAY IN CEILING	6"x10"	8"x12"	0-200		TITUS		[1][2]
SD-2	LAY IN CEILING	12"x10"	14"x12"	200-400		TITUS		[1][2]
SD-3	LAY IN CEILING	18"x10"	20"x12"	400-600		TITUS		[1][2]
RG-1	RETURN GRILL	22"x10"		0-800	0.02	TITUS	55FL	[1][2]
RG-2	RETURN GRILL	22"x24"		800-2000	0.02	TITUS	55FL	[1][2]
[1]	PROVIDE WITH DIT PAN FOR REGISTERS SMALLER THAN 24x24 WHERE APPLICABLE							
[2]	PROVIDE APPROPRIATE ACCESSORIES TO FIT WITHIN CEILING SYSTEM							
*	COLOR SHALL BE SELECTED BY OWNER							

BOILERS

TAG	LOCATION	TYPE	GAS			WATER						FLUE		POWER		PHYSICAL INFO.	ACOUSTICS	MAKE	MODEL	COMMENTS
			FUEL TYPE	MBH IN	MBH OUT	CAPACITY	WATER CONNECTION	MAX FLOW RATE	MIN FLOW RATE	HEAD LOSS @ 20 DT	MAX WORKING PRESSURE	VENT SIZE	COMBUSTION AIR SIZE	CHAR	MCA	OPERATING WEIGHT	SOUND POWER			
B-1	MECHANICAL ROOM	CONDENSING BOILER	GAS	299	280	7 GAL	1 1/2"	30	13	1.2	30 PSI	4" PVC	4" PVC	120/1/60	2A	555 LB	--	WEIL-MCLAIN	EVERGREEN PRO 299	[1]
B-2	MECHANICAL ROOM	CONDENSING BOILER	GAS	299	280	7 GAL	1 1/2"	30	13	1.2	30 PSI	4" PVC	4" PVC	120/1/60	2A	555 LB	--	WEIL-MCLAIN	EVERGREEN PRO 299	[1]

[1] PROVIDE WITH THE FOLLOWING ACCESSORY: WALL MOUNTING KIT, CONCENTRIC VENT KIT, CONDENSATE NEUTRALIZER KIT, SIDEWALL VENT AND AIR TERMINATION KIT, MAINTENANCE KIT, WATER TREATMENT-INHIBITOR KIT, MODBUS TO BacNet,

EXHAUST FAN

TAG	LOCATION	TYPE	DRIVE	CFM	ESP	POWER			PHYSICAL INFO.	ACOUSTICS	MAKE	MODEL	COMMENTS
						CHAR	HP	FLA	OPERATING WEIGHT	SOUND POWER			
EF-1	MAIN REST ROOM	INLINE	DIRECT	1050	.25	120/1/60	1/4	-	137 LB	3.2	COOK	165SQN17D	[1]
EF-2	2ND FLOOR REST ROOM	INLINE	DIRECT	140	.25	120/1/60	150W	-	16 LB	2.5	COOK	GC-148	[1]
EF-3	CONCESSIONAIRE STORAGE	PROPELLER	DIRECT	230	.125	120/1/60	1/6	-	37 LB	7.6	COOK	12XWHD26D11	[1]

[1] PROVIDE WITH THE FOLLOWING ACCESSORY: PROVIDE WITH IN-SHEAR ISOLATION, BACK DRAFT DAMPERS

DEHUMIDIFIERS

TAG	LOCATION	TYPE	PROCESS AIR			REACTIVE			PERFORMANCE			ELECTRICAL		WEIGHT	SOUND	MAKE	MODEL	ACCESSORIES/ NOTES
			(CFM)	IN	OUT	(CFM)	IN	OUT	MOISTURE REMOVAL	PRESSURE DROP PROCESS	PRESSURE DROP REACT	V/PH/Hz	FLA	(LBS)	dBa			
DH-1	STORAGE ROOM	DESICCANT	300	10"	10"	12"	12"	12"	4.9 LB/ HR	.5 IN WC	.5 IN WC	208/1/60	8.3	220	-	NOVEL AIRE	300 DES/DX	[1]
[1] PROVIDE THE FOLLOWING ACCESSORIES: CONDENSING AIR DUCTED AIR KIT.																		

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 42216 CHRISTIAN GRUBER
6-4-2024

DESIGNED: I. BROWN	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	M6.0	SCHEDULES	392 / 192499
TECH. REVIEW: B. BROOKE		REPLACE HVAC SYSTEMS AT LIBERTY SQUARE VISITOR EDUCATION CENTER	PMIS/PKG NO. 316098B
DATE: 6/2024		FORT SUMTER AND FORT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 29 OF 44

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ELECTRICAL LEGEND

POWER SYSTEM DEVICE SYMBOLS

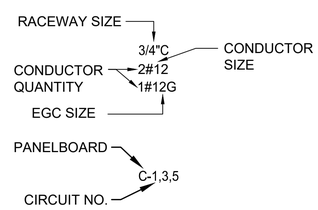
- DUPLEX OUTLET. +18" AFF UNO.
- FOURPLEX OUTLET. +18" AFF UNO.
- GFI OUTLET. +18" AFF UNO.
- GFI OUTLET. ABOVE COUNTER
- FOURPLEX GFI OUTLET. +18" AFF UNO.
- DEDICATED SIMPLEX GFCI OUTLET. +18" AFF UNO.
- EQUIPMENT CONNECTION
- MOTOR CONNECTION.
- T — TRANSFORMER.
- J — JUNCTION BOX.
- FLUSH MOUNTED PANELBOARD/ENCLOSURE. SEE E5.0 PANEL SCHEDULE FOR TYPE.
- F — FUSED DISCONNECT SWITCH. SIZE AS INDICATED, NEMA 1 UNO, 3 POLE UNO.
- NON-FUSED DISCONNECT SWITCH. SIZE AS INDICATED, NEMA 1 UNO, 3 POLE UNO.
- COMBINATION STARTER - SEE DRAWINGS FOR SIZE AND ENCLOSURE RATINGS.
- #### / #### — MECHANICAL EQUIPMENT CALLOUT. SEE SHEET E6.3 FOR EQUIPMENT SCHEDULE.
- VFD — VARIABLE FREQUENCY DRIVE

ONE-LINE DIAGRAM SYMBOLS

- PANEL ****** — BRANCH PANEL.
- A — CIRCUIT BREAKER. SIZE AND TYPE AS SPECIFIED.
- M — METER AND BASE.
- SERVICE GROUND. GROUND PER NEC ARTICLE 250
- SPD — SURGE PROTECTION DEVICE
- TRANSFORMER
- FUSED DISCONNECT
- UNFUSED DISCONNECT

CIRCUIT WIRING SYMBOLS

- CONDUIT STUBBED OR SLEEVE, CAPPED, AND MARKED WITH PULL CORD
- CIRCUIT CONCEALED IN CEILING OR WALL. 3/4"C-2#12,1#12G UNO.
- CIRCUIT CONCEALED IN FLOOR OR UNDERGROUND. 3/4"C-2#10,1#10G UNO.



— CONDUIT AND WIRE SIZE CALLOUT. SEE SHEET E6.3 FOR CONDUIT/WIRE SCHEDULE.

ABBREVIATIONS & DESCRIPTIONS

A	AMPERES
AC	ABOVE COUNTER; REFER TO ARCHITECTURAL ELEVATIONS FOR REQUIRED HEIGHT.
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AF	AMPERE FRAME
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AT	AMP TRIP
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CH	CHILLER
CKT	CIRCUIT
CO	CONDUIT ONLY, PROVIDE PULL-LINE
CT	CURRENT TRANSFORMER
Cu	COPPER
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
(E)	EXISTING
EF	EXHAUST FAN
EMT	ELECTRICAL MAGNETIC TUBING
F	FUSE
FVNR	FULL VOLTAGE NON-REVERSING
G/GND	GROUND
GFCI	GROUND FAULT CURRENT INTERRUPTION
GFI	GROUND FAULT INTERRUPTION
GFP	GROUND FAULT PROTECTION
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTO
HP	HORSE POWER
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
J/JB	JUNCTION BOX
KAIC	KILO-AMP INTERRUPTING CURRENT
KW	KILO-WATT
KVA	KILO-VOLT AMPERE
LCP	LIGHTING CONTROL PANEL
LVR	LOUVER
MB	MAIN BREAKER
MCC	MOTOR CONTROL CENTER
MCM	THOUSANDS OF CIRCULAR MILS
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MS	MOTOR STARTER
(N)	NEW
N	NEUTRAL
NC	NORMALLY CLOSED
NCL	NON CRITICAL LOAD
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OL	OVERLOAD
OS	OCCUPANCY SENSOR
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
P	PHASE
PC	PHOTOCELL
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWTS	PUBLIC WATER TREATMENT SYSTEM
RCPT	RECEPTACLE
(R)	RELOCATED
RE:	REFER TO
RGS	RIGID GALVANIZED STEEL
RPVC	RIGID PVC (SCHEDULE 80)
SER	SERVICE ENTRANCE RATED
SPST	SINGLE POLE SINGLE THROW
TC	TIME CLOCK
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TSP	TWISTED SHIELDED PAIR
TTB	TELEPHONE TERMINAL BOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT AMPERE
VFD	VARIABLE FREQUENCY DRIVE
WG	PROVIDE PROTECTIVE WIRE GUARD
WP	WEATHER PROOF/NEMA 3R
XFMR	TRANSFORMER

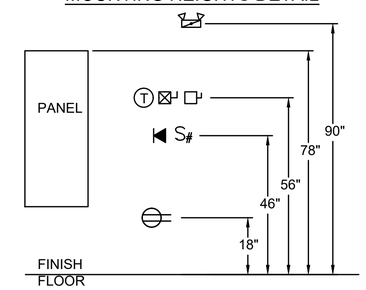
GENERAL NOTES

1. COLOR CODE WIRES AS FOLLOWS:

CONDUCTORS	120/208V	480/277V
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW
NEUTRAL	WHITE	GRAY
GROUND	GREEN	GREEN

2. ELECTRICAL DEVICES AND LINEWORK ARE SHOWN BOLD FOR NEW, BOLD/DASHED FOR DEMO & RELOCATED AND MEDIUM/DASHED FOR EXISTING.
3. DIMENSIONED LENGTHS SHALL TAKE PRECEDENCE OVER SCALED LENGTHS.
4. FURNISH AND INSTALL A COMPLETE ELECTRICAL SYSTEM AS DEPICTED FROM THE PLANS AND SPECIFICATIONS. COMPLETE AS NOTED OR IMPLIED, NOT LIMITED TO WHAT IS SHOWN.
5. COORDINATE ALL DEVICE/EQUIPMENT LOCATIONS AND SPECIFIC REQUIREMENTS WITH MECHANICAL TRADE PRIOR TO ROUGH-IN.
6. ALL ELECTRICAL EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, INTERNATIONAL FIRE CODE, AND ALL OTHER STATE AND LOCAL CODES. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER IN WRITING IF PORTIONS OF THE DESIGN SET OR FIELD CONDITIONS DO NOT MEET REQUIRED CODES.
7. COORDINATE FUSE SIZES WITH MANUFACTURER'S REQUIREMENTS. SEE ALSO SHEET E6.3 "EQUIPMENT SCHEDULE."

MOUNTING HEIGHTS DETAIL



1 / E0.0 ELECTRICAL STANDARD ELEVATIONS

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E0.0	ELECTRICAL LEGEND AND ABBREVIATIONS	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 30 OF 44

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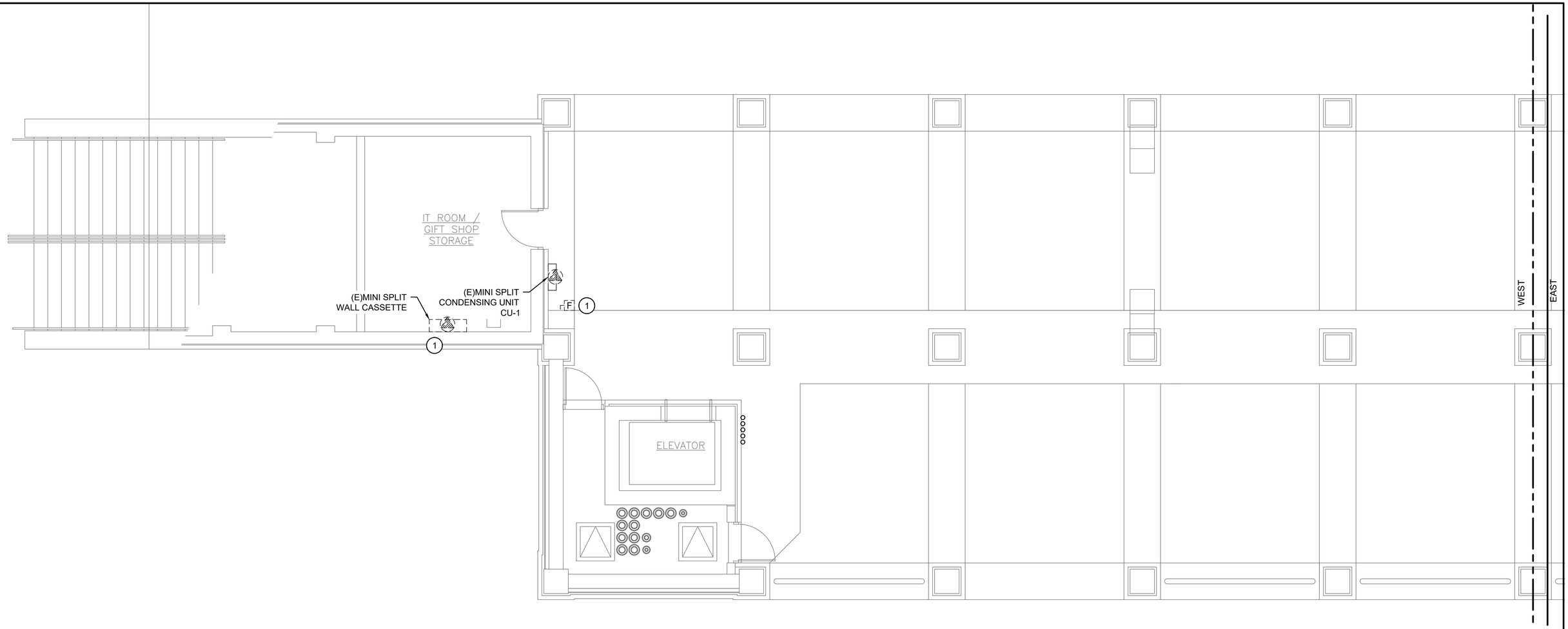
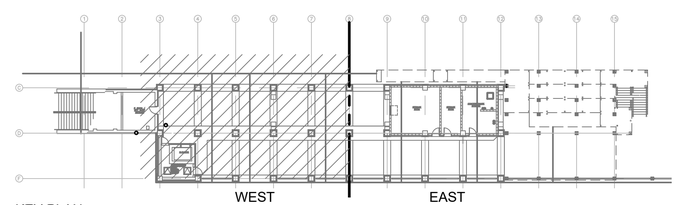


1 / E1.0 ELECTRICAL DEMO PIER WEST PLAN
SCALE: 1/4" = 1'



KEY PLAN

SHEETNOTES:

A. MAINTAIN EXISTING CIRCUITING TO ALL REUSED EXISTING DEVICE BOXES.

B. COORDINATE DISCONNECTION OF THE HVAC EQUIPMENT WITH THE NPS COR AND HVAC CONTRACTOR. DISCONNECT EQUIPMENT AND MAKE SAFE BY FOLLOWING PROPER LOCK OUT/TAG OUT PROCEDURES.

C. HVAC EQUIPMENT IS TO BE DEMOLISHED BY MECHANICAL CONTRACTOR.

KEYNOTES: (#)

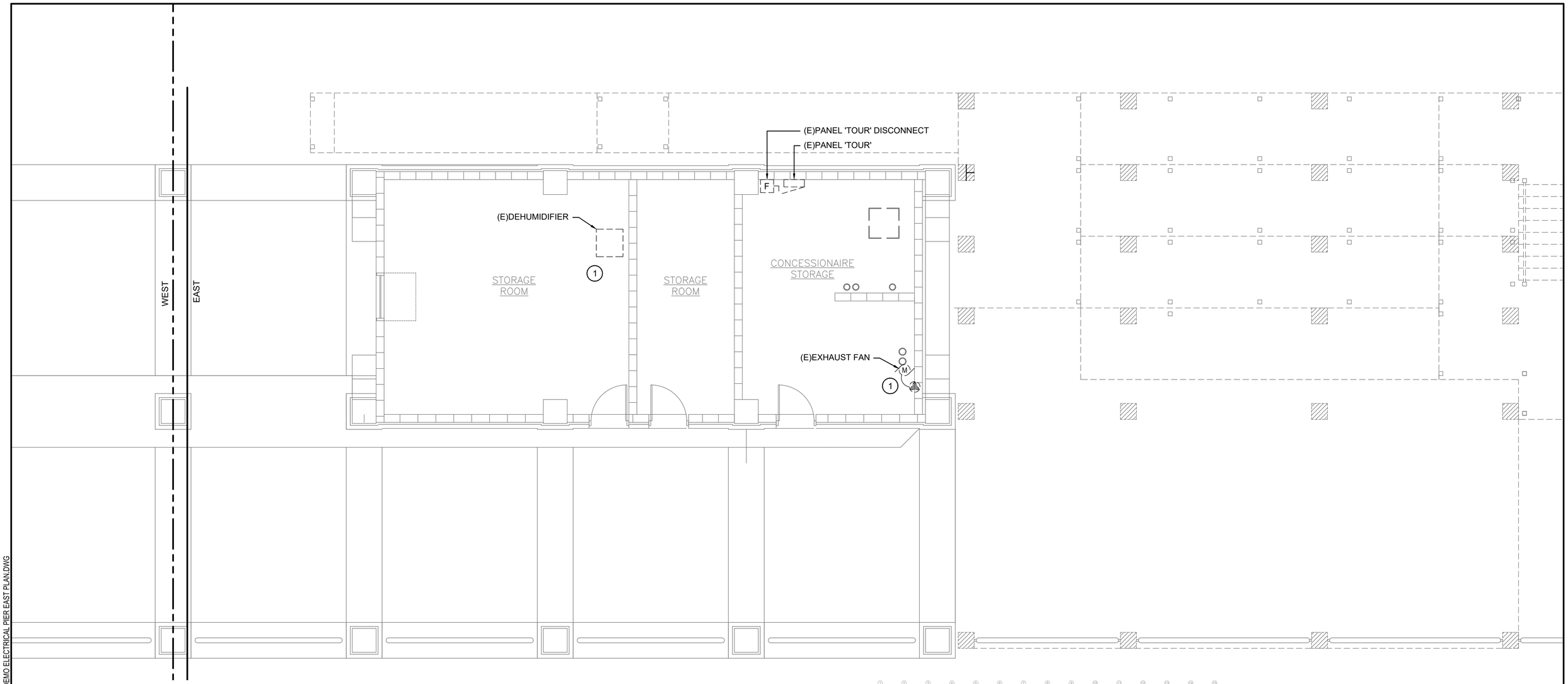
1. DISCONNECT UNIT FOR REMOVAL. DEMOLISH ANY DISCONNECTS. RETAIN AND PROTECT CONDUIT AND CONDUCTORS.

SOUTH CAROLINA
No. 40622
VINSON CARTER
6-17-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: M. SMITH CADD M. NGUY TECH. REVIEW: V. CARTER DATE: 6/2024	SUB SHEET NO. E1.0	TITLE OF SHEET ELECTRICAL DEMO PIER WEST PLAN HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392 / 192499 PMIS/PKG NO. 316098B SHEET 31 OF 44

03/06/2024 09:28 KEVIN FLORES G:\CLIENTS\NPS\FOS\JULIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.0 DEMO ELECTRICAL PIER WEST PLAN.DWG



SHEETNOTES:

A. MAINTAIN EXISTING CIRCUITING TO ALL REUSED EXISTING DEVICE BOXES.

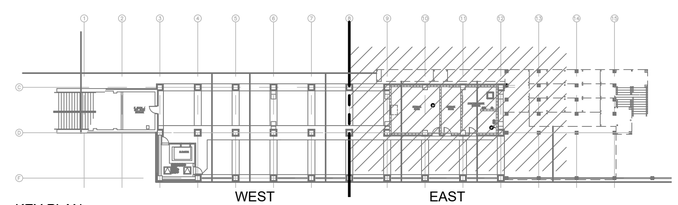
B. COORDINATE DISCONNECTION OF THE HVAC EQUIPMENT WITH THE NPS COR AND HVAC CONTRACTOR. DISCONNECT EQUIPMENT AND MAKE SAFE BY FOLLOWING PROPER LOCK OUT/TAG OUT PROCEDURES.

C. HVAC EQUIPMENT IS TO BE DEMOLISHED BY MECHANICAL CONTRACTOR.

KEYNOTES: (#)

1. DISCONNECT UNIT FOR REMOVAL. DEMOLISH ANY DISCONNECTS. RETAIN AND PROTECT CONDUIT AND CONDUCTORS.

1 / E1.1 ELECTRICAL DEMO PIER EAST PLAN
SCALE: 1/4" = 1'

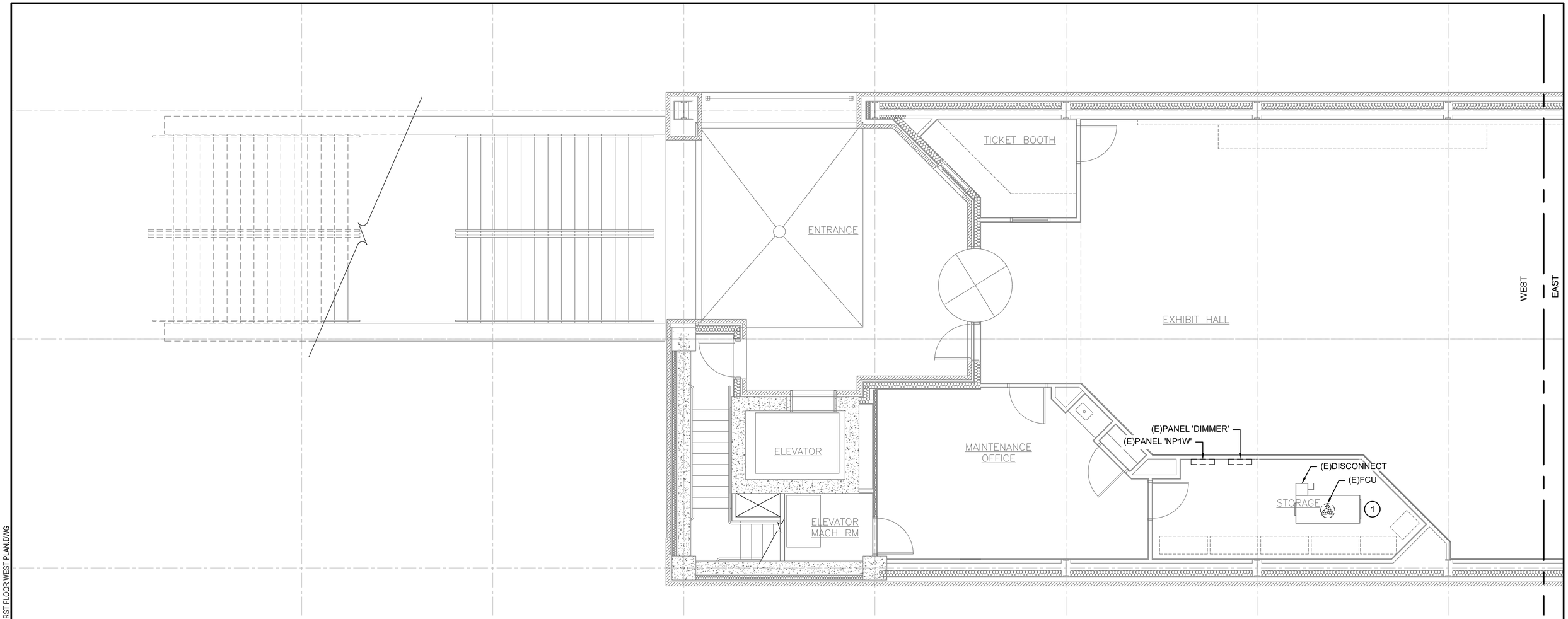


KEY PLAN

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.1	ELECTRICAL DEMO PIER EAST PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 32 OF 44

03/06/2024 09:28 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.1 DEMO ELECTRICAL PIER EAST PLAN.DWG



SHEETNOTES:

A. MAINTAIN EXISTING CIRCUITING TO ALL REUSED EXISTING DEVICE BOXES.

B. COORDINATE DISCONNECTION OF THE HVAC EQUIPMENT WITH THE NPS COR AND HVAC CONTRACTOR. DISCONNECT EQUIPMENT AND MAKE SAFE BY FOLLOWING PROPER LOCK OUT/TAG OUT PROCEDURES.

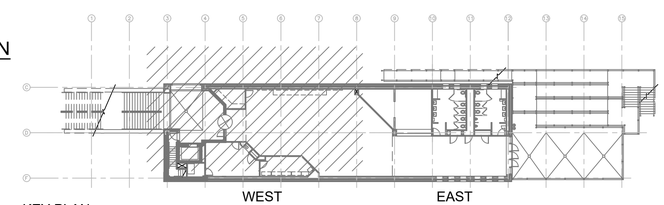
C. HVAC EQUIPMENT IS TO BE DEMOLISHED BY MECHANICAL CONTRACTOR.

KEYNOTES: (#)

1. DISCONNECT UNIT FOR REMOVAL. DEMOLISH DISCONNECT, CONDUCTORS AND CONDUIT BACK TO NEAREST JUNCTION BOX.

1 / E1.2 ELECTRICAL DEMO 1ST FLOOR WEST PLAN

SCALE: 1/4" = 1'



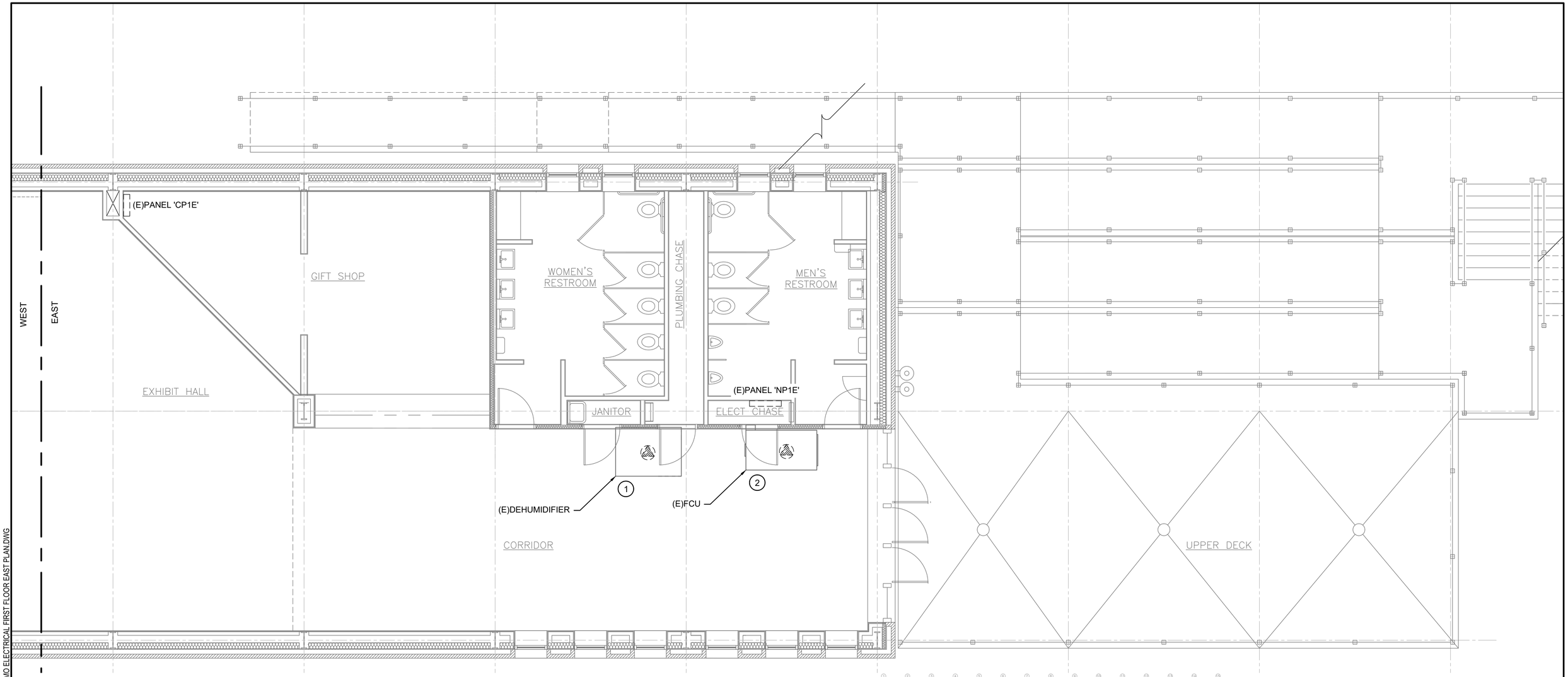
KEY PLAN

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER 6-17-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.2	ELECTRICAL DEMO FIRST FLOOR WEST PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT	PMIS/PKG NO. 316098B
DATE: 6/2024		LIBERTY SQUARE VISITOR EDUCATION CENTER	SHEET 33 OF 44
		FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	

03/06/2024 09:29 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.2 DEMO ELECTRICAL FIRST FLOOR WEST PLAN.DWG



SHEETNOTES:

A. MAINTAIN EXISTING CIRCUITING TO ALL REUSED EXISTING DEVICE BOXES.

B. COORDINATE DISCONNECTION OF THE HVAC EQUIPMENT WITH THE NPS COR AND HVAC CONTRACTOR. DISCONNECT EQUIPMENT AND MAKE SAFE BY FOLLOWING PROPER LOCK OUT/TAG OUT PROCEDURES.

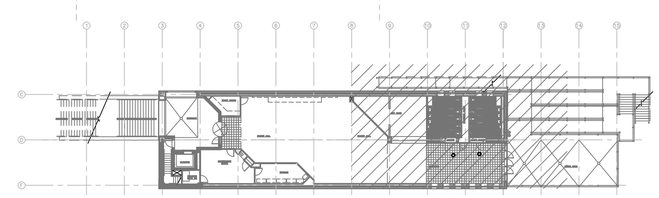
C. HVAC EQUIPMENT IS TO BE DEMOLISHED BY MECHANICAL CONTRACTOR.

KEYNOTES: (#)

1. DISCONNECT UNIT FOR REMOVAL. DEMOLISH DISCONNECT, CONDUCTORS AND CONDUIT BACK TO NEAREST JUNCTION BOX.

2. DISCONNECT UNIT FOR REMOVAL. DEMOLISH ANY DISCONNECTS. RETAIN AND PROTECT CONDUCTORS AND CONDUIT.

1 / E1.3 ELECTRICAL DEMO 1ST FLOOR EAST PLAN
SCALE: 1/4" = 1'



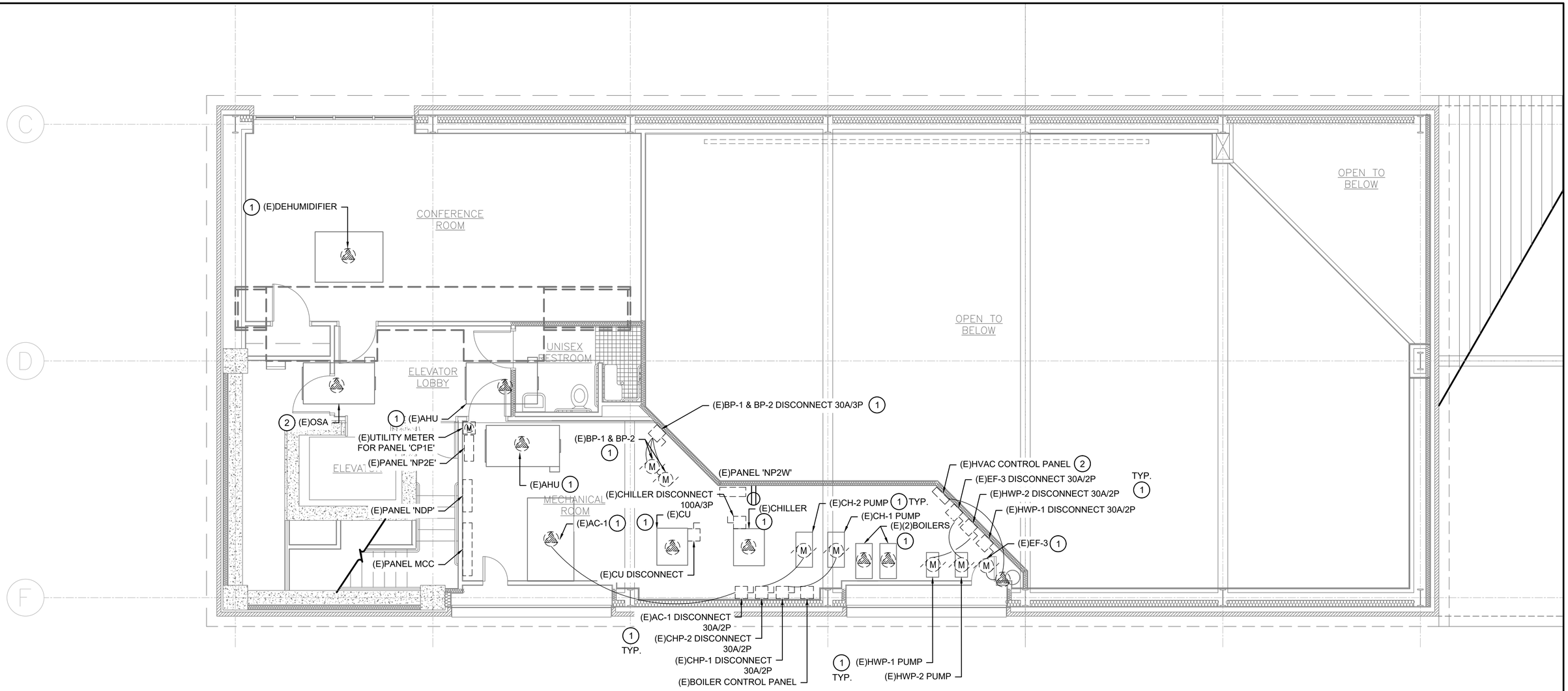
KEY PLAN

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 40622
VINSON CARTER
6-17-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.3	ELECTRICAL DEMO FIRST FLOOR EAST PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 34 OF 44

03/06/2024 09:29 KEVIN FLORES G:\CLIENTS\NPS\FOS\JULIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.3 DEMO ELECTRICAL FIRST FLOOR EAST PLAN.DWG



SHEETNOTES:

A. MAINTAIN EXISTING CIRCUITING TO ALL REUSED EXISTING DEVICE BOXES.

B. COORDINATE DISCONNECTION OF THE HVAC EQUIPMENT WITH THE NPS COR AND HVAC CONTRACTOR. DISCONNECT EQUIPMENT AND MAKE SAFE BY FOLLOWING PROPER LOCK OUT/TAG OUT PROCEDURES.

C. HVAC EQUIPMENT IS TO BE DEMOLISHED BY MECHANICAL CONTRACTOR.

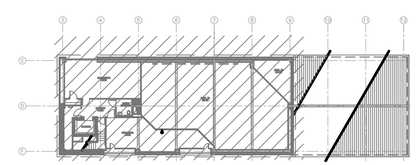
KEYNOTES: (#)

1. DISCONNECT UNIT FOR REMOVAL. DEMOLISH ALL UNUSED, EXPOSED ELECTRICAL BOXES, CONDUIT, CONDUCTORS, ETC.

2. DISCONNECT UNIT FOR REMOVAL. DEMOLISH ANY DISCONNECTS. RETAIN AND PROTECT CONDUCTORS AND CONDUIT.

1 / E1.4 ELECTRICAL DEMO 2ND FLOOR PLAN

SCALE: 1/4" = 1'



KEY PLAN

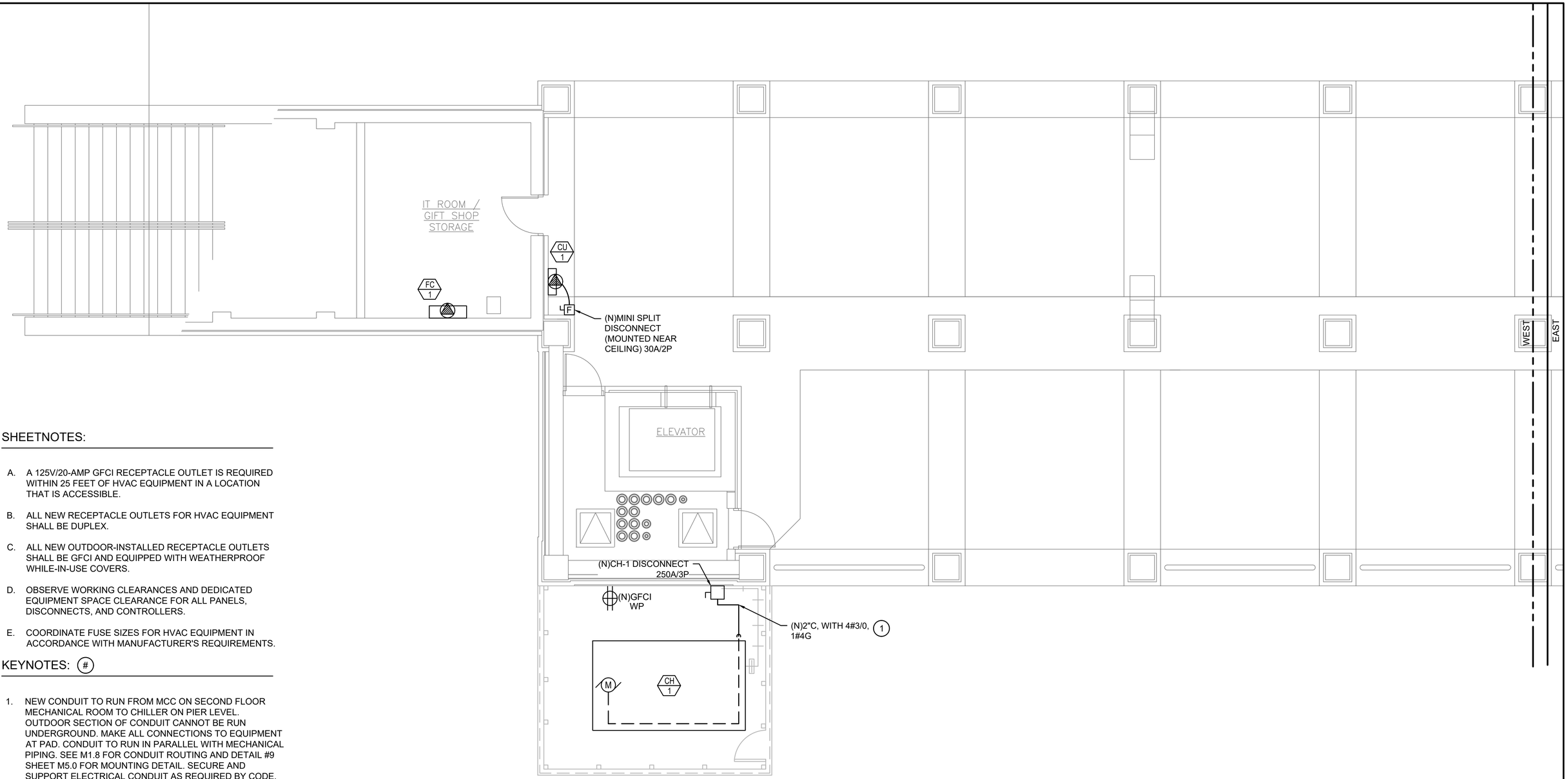
WEST

SCALE OF FEET
1/4" = 1'-0"

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 40622 VINSON CARTER 6-17-2024

DESIGNED: M. SMITH CADD M. NGUY TECH. REVIEW: V. CARTER DATE: 6/2024	SUB SHEET NO. E1.4	TITLE OF SHEET ELECTRICAL DEMO SECOND FLOOR PLAN HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	DRAWING NO. 392 / 192499 PMIS/PKG NO. 316098B SHEET 35 OF 44

11/06/2024 11:54 KEVIN FLORES G:\CLIENTS\NPS\FOS\ULIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.4 DEMO ELECTRICAL SECOND FLOOR PLAN.DWG



SHEETNOTES:

A. A 125V/20-AMP GFCI RECEPTACLE OUTLET IS REQUIRED WITHIN 25 FEET OF HVAC EQUIPMENT IN A LOCATION THAT IS ACCESSIBLE.

B. ALL NEW RECEPTACLE OUTLETS FOR HVAC EQUIPMENT SHALL BE DUPLEX.

C. ALL NEW OUTDOOR-INSTALLED RECEPTACLE OUTLETS SHALL BE GFCI AND EQUIPPED WITH WEATHERPROOF WHILE-IN-USE COVERS.

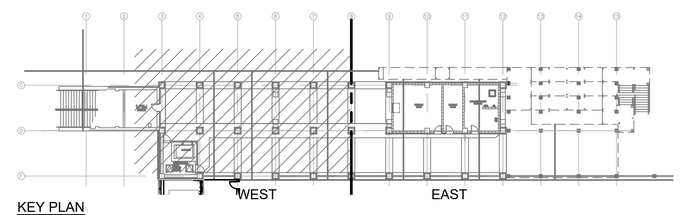
D. OBSERVE WORKING CLEARANCES AND DEDICATED EQUIPMENT SPACE CLEARANCE FOR ALL PANELS, DISCONNECTS, AND CONTROLLERS.

E. COORDINATE FUSE SIZES FOR HVAC EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

KEYNOTES: (#)

1. NEW CONDUIT TO RUN FROM MCC ON SECOND FLOOR MECHANICAL ROOM TO CHILLER ON PIER LEVEL. OUTDOOR SECTION OF CONDUIT CANNOT BE RUN UNDERGROUND. MAKE ALL CONNECTIONS TO EQUIPMENT AT PAD. CONDUIT TO RUN IN PARALLEL WITH MECHANICAL PIPING. SEE M1.8 FOR CONDUIT ROUTING AND DETAIL #9 SHEET M5.0 FOR MOUNTING DETAIL. SECURE AND SUPPORT ELECTRICAL CONDUIT AS REQUIRED BY CODE.

1 / E1.5 ELECTRICAL NEW PIER WEST PLAN
SCALE: 1/4" = 1'



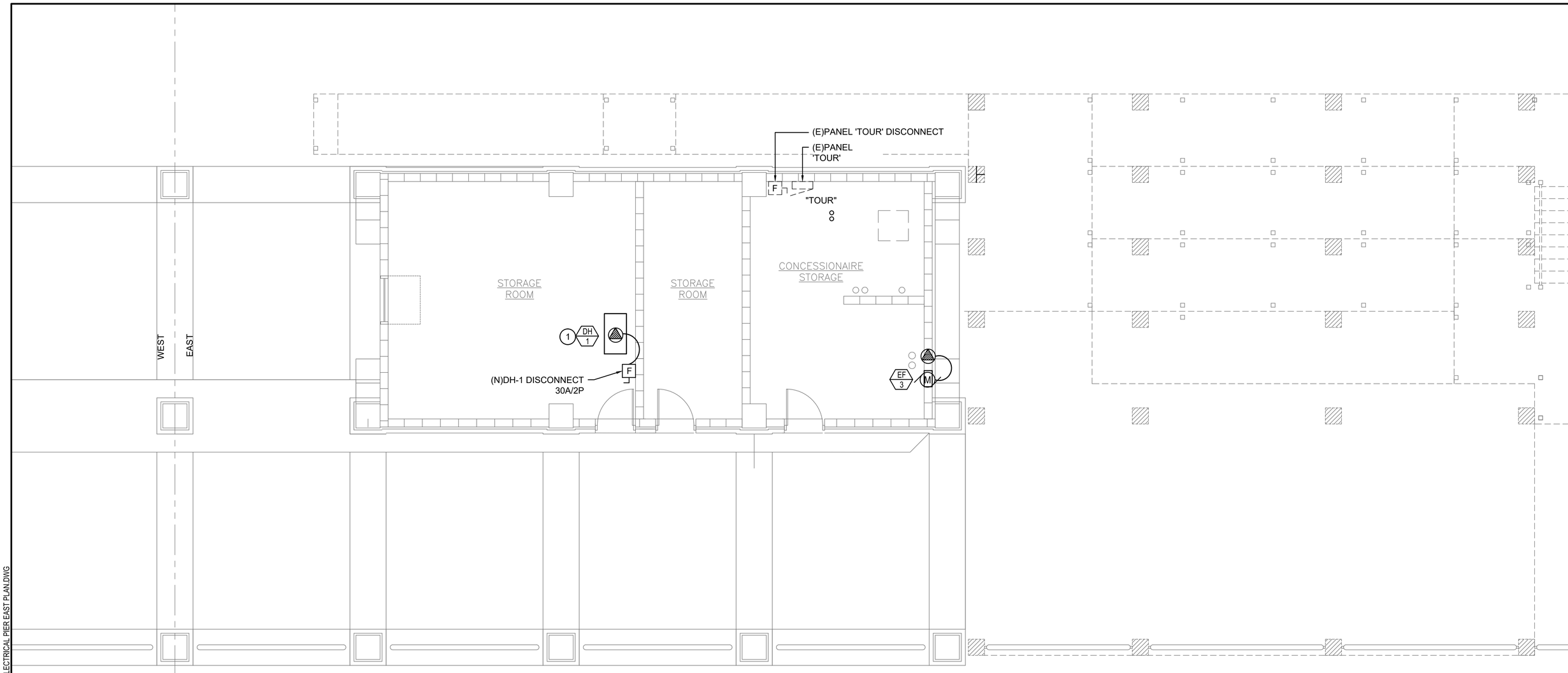
KEY PLAN

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER 6-17-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.5	ELECTRICAL NEW PIER WEST PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT	PMIS/PKG NO. 316098B
DATE: 6/2024		LIBERTY SQUARE VISITOR EDUCATION CENTER	SHEET 36 OF 44
		FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	

14/06/2024 07:15 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.5 NEW ELECTRICAL PIER WEST PLAN.DWG



SHEETNOTES:

A. A 125V/20-AMP GFCI RECEPTACLE OUTLET IS REQUIRED WITHIN 25 FEET OF HVAC EQUIPMENT IN A LOCATION THAT IS ACCESSIBLE.

B. ALL NEW RECEPTACLE OUTLETS FOR HVAC EQUIPMENT SHALL BE DUPLEX.

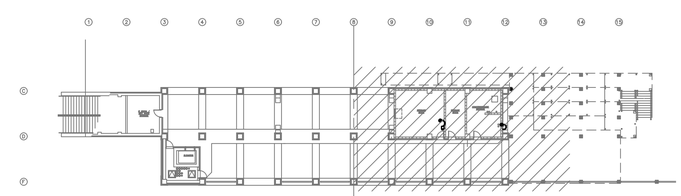
C. OBSERVE WORKING CLEARANCES AND DEDICATED EQUIPMENT SPACE CLEARANCE FOR ALL PANELS, DISCONNECTS, AND CONTROLLERS.

D. COORDINATE FUSE SIZES FOR HVAC EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

KEYNOTES:

1. CONTRACTOR FIELD VERIFY SERVICE RECEPTACLE WITHIN 25 FEET OF DH-1. INSTALL IF NECESSARY.

1 / E1.6 NEW ELECTRICAL PIER EAST PLAN
SCALE: 1/4" = 1'



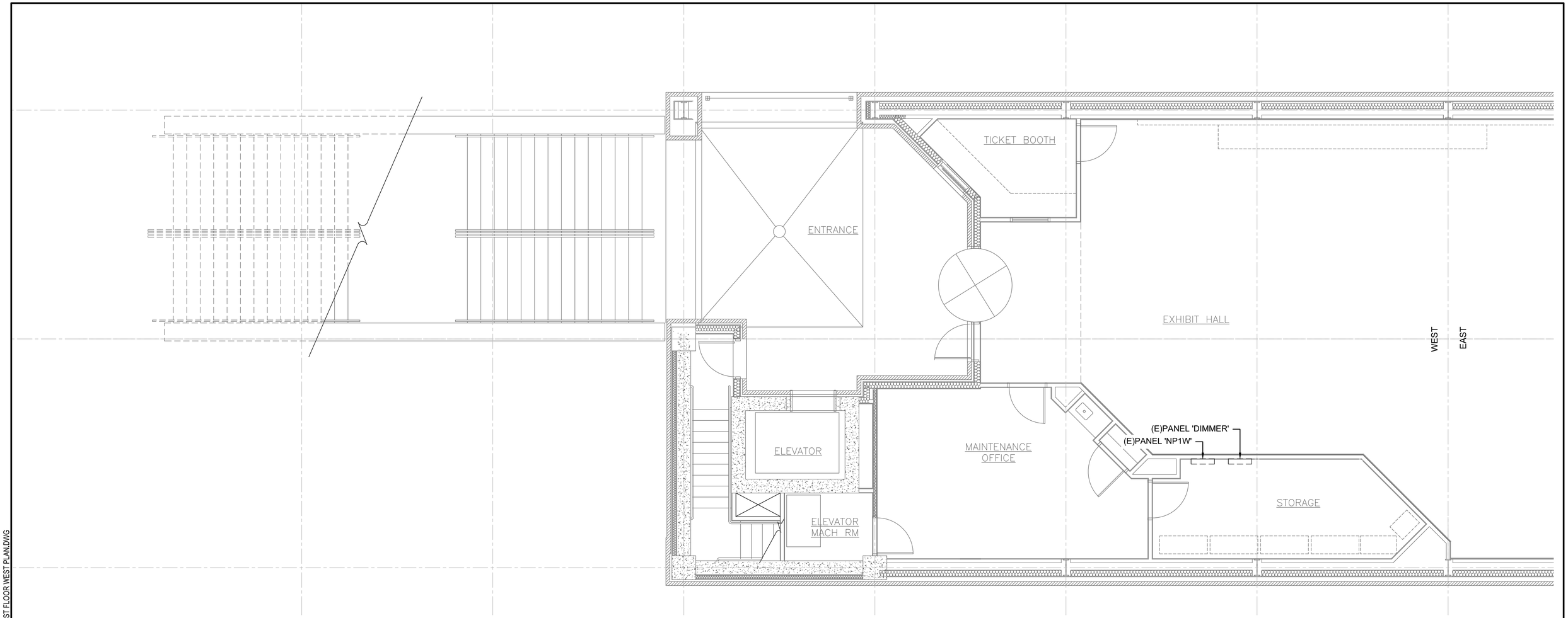
KEY PLAN

SCALE OF FEET
4 0 4 8
1/4" = 1'-0"

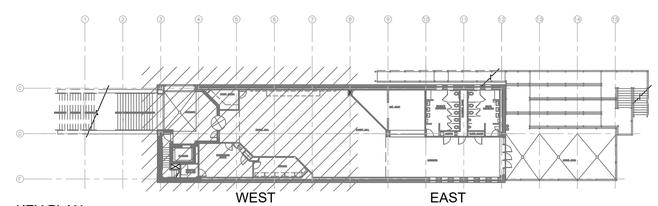
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER
6-17-2024

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.6	ELECTRICAL NEW PIER EAST PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 37 OF 44

14/06/2024 07:19 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.6 NEW ELECTRICAL PIER EAST PLAN.DWG



1 E1.7 ELECTRICAL NEW 1ST FLOOR WEST PLAN
SCALE: 1/4" = 1'



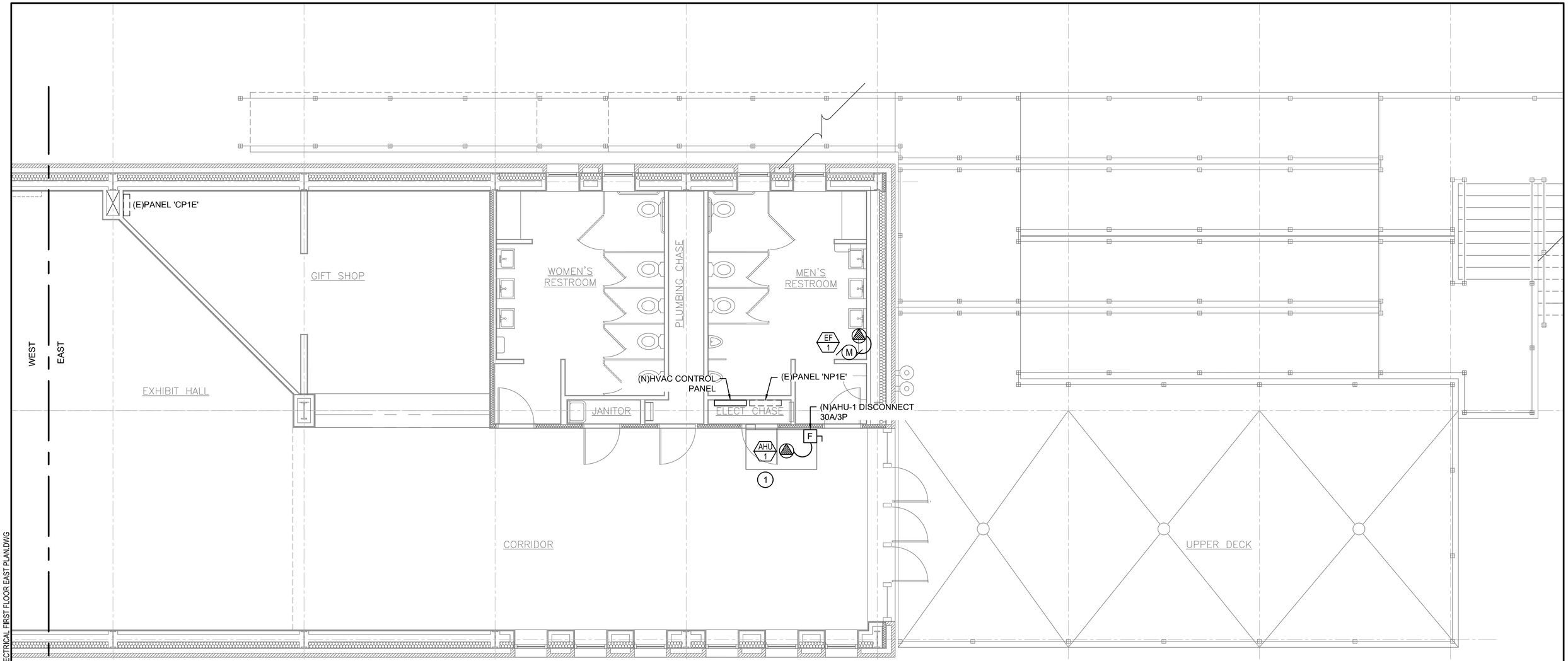
KEY PLAN

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 40622
VINSON CARTER
6-17-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.7	ELECTRICAL NEW FIRST FLOOR WEST PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT	PMIS/PKG NO. 316098B
DATE: 6/2024		LIBERTY SQUARE VISITOR EDUCATION CENTER	SHEET 38 OF 44
		FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	

10/08/2024 12:51 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.7 NEW ELECTRICAL FIRST FLOOR WEST PLAN.DWG



SHEETNOTES:

A. A 125V/20-AMP GFCI RECEPTACLE OUTLET IS REQUIRED WITHIN 25 FEET OF HVAC EQUIPMENT IN A LOCATION THAT IS ACCESSIBLE.

B. ALL NEW RECEPTACLE OUTLETS FOR HVAC EQUIPMENT SHALL BE DUPLEX.

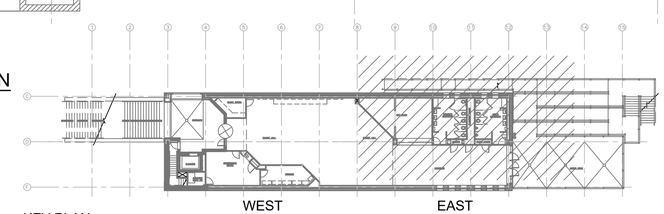
C. OBSERVE WORKING CLEARANCES AND DEDICATED EQUIPMENT SPACE CLEARANCE FOR ALL PANELS, DISCONNECTS, AND CONTROLLERS.

D. COORDINATE FUSE SIZES FOR HVAC EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

KEYNOTES:

1. CONTRACTOR FIELD VERIFY SERVICE RECEPTACLE IN MEZZANINE WITHIN 25 FEET OF AHU-1. INSTALL IF NECESSARY.

1 / E1.8 ELECTRICAL NEW 1ST FLOOR EAST PLAN
SCALE: 1/4" = 1'



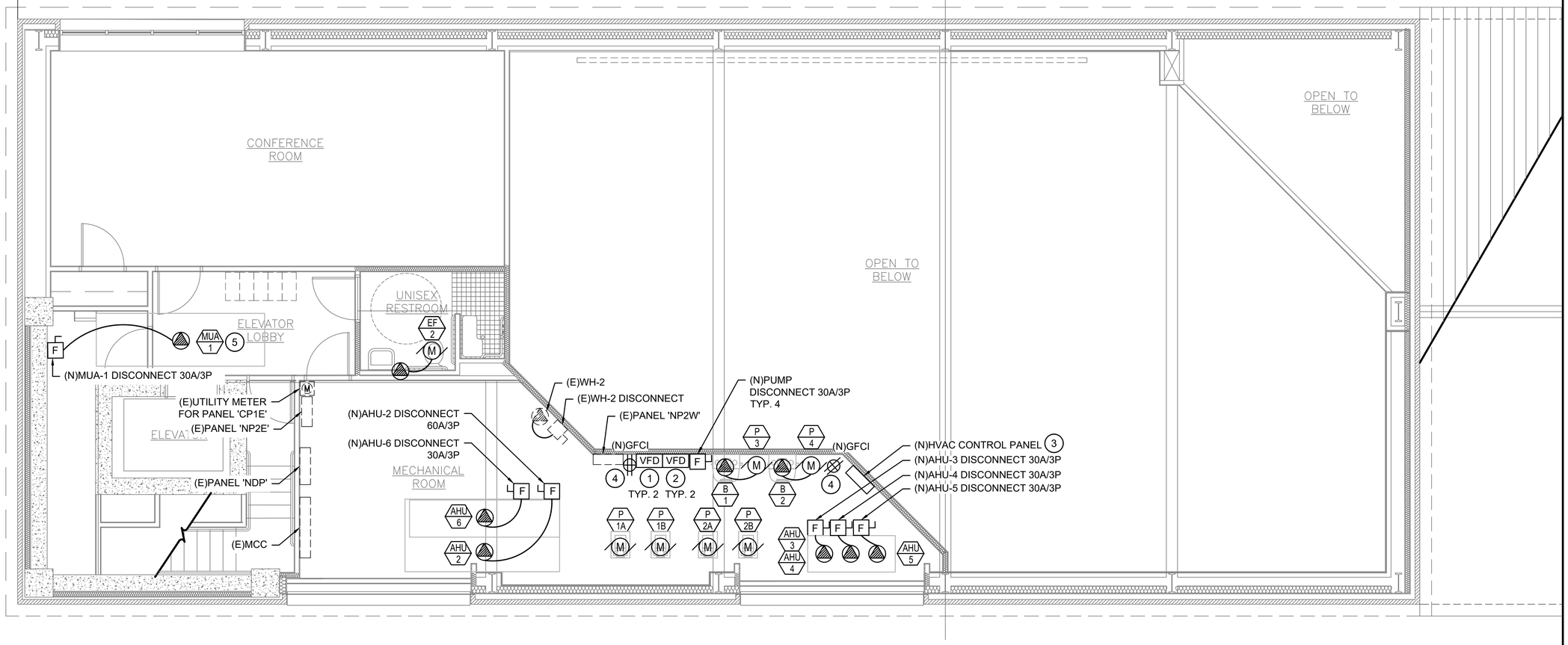
KEY PLAN

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 40622 VINSON CARTER 6-17-2024

4 0 4 8
SCALE OF FEET
1/4" = 1'-0"

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.8	ELECTRICAL NEW FIRST FLOOR EAST PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 39 OF 44

14/06/2024 07:21 KEVIN FLORES G:\CLIENTS\NPS\FOS\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.8 NEW ELECTRICAL FIRST FLOOR EAST PLAN.DWG



SHEETNOTES:

A. A 125V/20-AMP GFCI RECEPTACLE OUTLET IS REQUIRED WITHIN 25 FEET OF HVAC EQUIPMENT IN A LOCATION THAT IS ACCESSIBLE.

B. ALL NEW RECEPTACLE OUTLETS FOR HVAC EQUIPMENT SHALL BE DUPLEX.

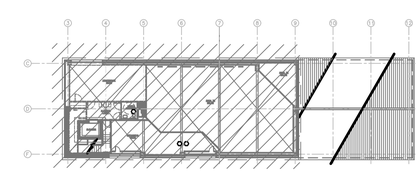
C. OBSERVE WORKING CLEARANCES AND DEDICATED EQUIPMENT SPACE CLEARANCE FOR ALL PANELS, DISCONNECTS, AND CONTROLLERS.

D. COORDINATE FUSE SIZES FOR HVAC EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

KEYNOTES: (#)

1. (N)(2)1.5 HP, 208V, 3Ø, 4W VFD WITH INTEGRAL DISCONNECT FOR CHILLER PUMPS. INSTALL VFD AND ASSOCIATED PUMP DISCONNECT SO AS TO MEET WORKING CLEARANCE.
2. (N)(2)0.75 HP, 208V, 3Ø, 4W VFD WITH INTEGRAL DISCONNECT FOR BOILER PUMPS. INSTALL VFD AND ASSOCIATED PUMP DISCONNECT SO AS TO MEET WORKING CLEARANCE.
3. USE EXISTING CIRCUIT TO POWER (N)HVAC CONTROL PANEL.
4. CONTRACTOR FIELD VERIFY GFCI-PROTECTED SERVICE RECEPTACLES ARE PRESENT IN THE SECOND FLOOR MECHANICAL ROOM. INSTALL IF NECESSARY.
5. CONTRACTOR FIELD VERIFY SERVICE RECEPTACLE WITHIN 25 FEET OF MUA-1. INSTALL IF NECESSARY.

1 / E1.9 ELECTRICAL NEW 2ND FLOOR PLAN
SCALE: 1/4" = 1'

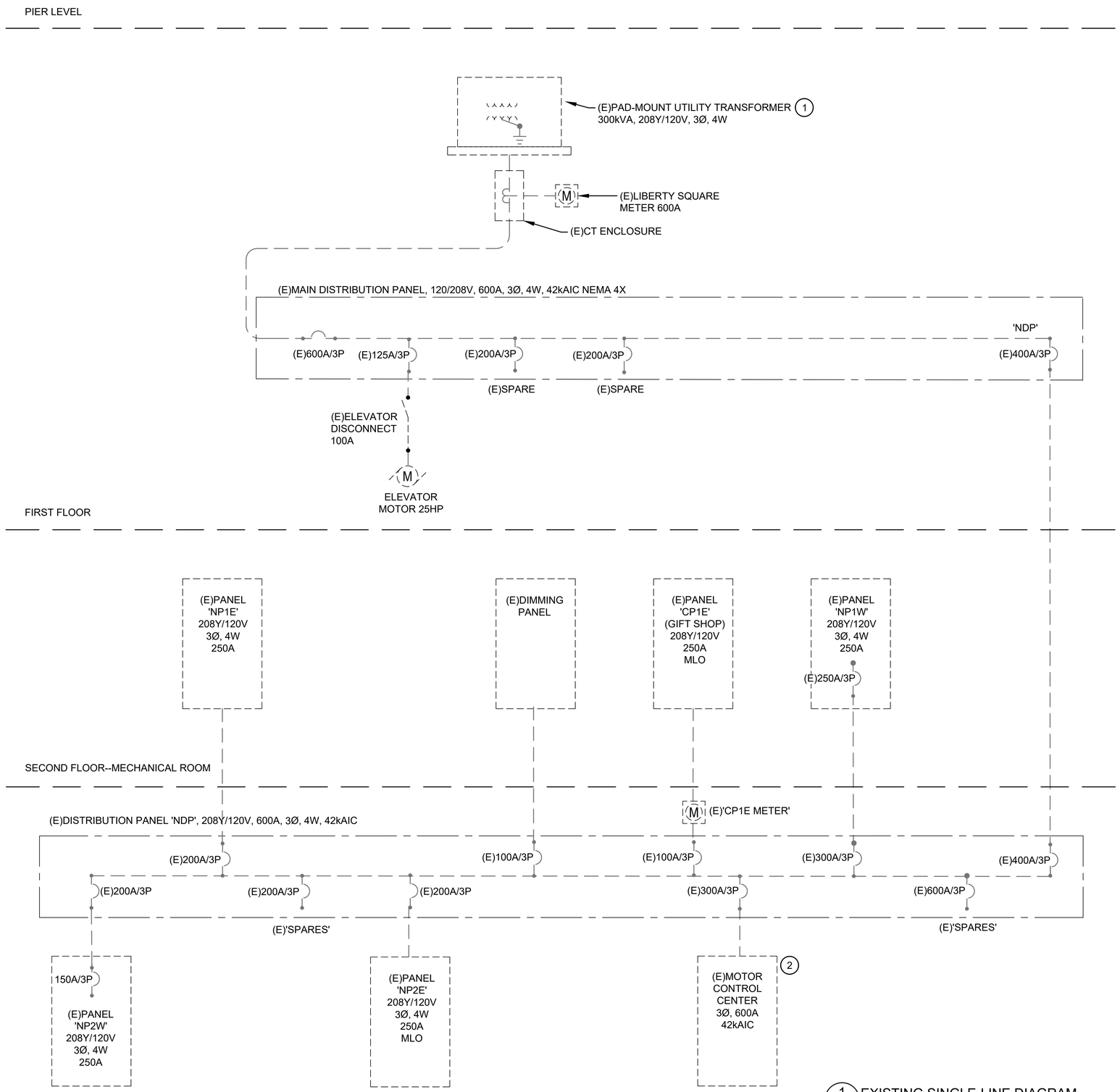


SCALE OF FEET
1/4" = 1'-0"

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER 6-17-2024

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E1.9	ELECTRICAL NEW SECOND FLOOR PLAN	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 40 OF 44

14/06/2024 07:25 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E1.9 NEW ELECTRICAL SECOND FLOOR PLAN.DWG



1 E6.0 EXISTING SINGLE-LINE DIAGRAM
SCALE: NTS

SHEET NOTES:

A. CONTRACTOR VERIFY PANEL AND BREAKER FOR EACH HVAC CIRCUIT.

B. CONTRACTOR PROVIDE AND COORDINATE CIRCUIT BREAKER SIZES TO MATCH EQUIPMENT SCHEDULES ON SHEET M6.3.

KEYNOTES: (#)

1. TRANSFORMER IS SHARED WITH THE FORT SUMTER TOURS CONCESSIONAIRE AND WITH THE CITY OF CHARLESTON, S.C.

2. EXISTING MCC TO BE REFURBISHED. SEE SHEET E6.1.

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E6.0	SINGLE LINE DIAGRAM	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 41 OF 44

10/06/2024 14:35 KEVIN FLORES G:\CLIENTS\NPS\FOSU\LIBERTY SQUARE HVAC\DRAWINGS\ELEC\E6.0 SINGLE LINE DIAGRAM.DWG

PANELBOARD SCHEDULE

PANEL: NP2W | **PROJECT:** FOSU LIBERTY SQUARE
VOLTAGE: 208/120V | **PHASE:** 3 | **WIRE:** 4 | **AMPERE RATING:** 250A | **SC RATING:** UNKNOWN | **MAIN:** MAIN LUG OR MAIN BREAKER
ENTRY: TOP | **MOUNTING:** SURFACE

LOADS:

	Amps	VA
PHASE A:	0	0
PHASE B:	0	0
PHASE C:	0	0
TOTAL:		0

LOAD TYPES:
1 = LIGHTING
2 = RECEPTACLES
3 = MISC
4 = MOTOR
5 = KITCHEN

REMARKS:
MAIN BREAKER
EXISTING THREE-PHASE ELECTRICAL PANEL
LOADS NOT SHOWN

LOAD (VA)	LOAD SERVED	NOTE	LOAD TYPE	AMPS/ POLES		CKT NO	PHASE	CKT NO	AMPS/ POLES		LOAD TYPE	NOTE	LOAD SERVED	LOAD (VA)
	UNKNOWN			20	1	1	A	2	30	1	1		HOUSEKEEPING LIGHTS	
	LOBBY & RESTROOM LIGHTING + EF		1	20	1	3	B	4	20	1			SPARE	
	HWP CONTROLS		3	20	1	5	C	6	20	1			SPARE	
	BOILER		3	30	1	7	A	8	20	1	1		MECH. RM. LIGHTING	
	LIGHTS & REC. ON CATWALK + DAMPER		1	20	1	9	B	10	20	1	2		MECH. RM. REC.	
	EF-3		4	20	1	11	C	12	20	1	3		LEAK DETECTION	
	SPARE			20	1	13	A	14	20	1	3		LED SCREEN	
	STAIRWELL LIGHTING		1	20	1	15	B	16	20	1	3		CONTROLS	
	DEDICATED FIRE ALARM 205		3	20	1	17	C	18	20	1	3		CAMERA CONTROL	
	DEDICATED A/V REC. 205		2	20	1	19	A	20	20	1	4		DAMPER MOTORS	
	DEDICATED PHONE REC. 205		2	20	1	21	B	22	30	2	3		A/C 1	
	DEDICATED DATA REC. 205		2	20	1	23	C	24	-	-	3		A/C 1	
	SPARE			20	1	25	A	26	40	3	3		A/C 2	
	SPARE			20	1	27	B	28	-	-			---	
	SPARE			20	1	29	C	30	-	-			---	
	WH-1		3	30	2	31	A	32					SPACE	
	WH-1		3	-	-	33	B	34					SPACE	
	SPARE			20	1	35	C	36					SPACE	
	AHU-3		3	20	3	37	A	38					SPACE	
	---		3	-	-	39	B	40	30	2	3		WH-2	
	---		3	-	-	41	C	42	-	-	3		---	

LOADING BY TYPE		CONNECTED	NEC CODE	DEMAND FACTOR	DEMAND
LIGHTING		0 VA	210-19	125%	0 VA
RECEPTACLES		0 VA	220-44	10kVA @ 100%, ELSE @ 50%	0 VA
MISC.		0 VA	220-60	100%	0 VA
MOTOR	LARGEST MOT.:	0 VA	220-50	100% + LARGEST x 25%	0 VA
KITCHEN	# OF KIT. UNITS:	0 VA	220-56		0 VA
TOTAL		0 A			0 A

NOTES:
E - DENOTES EXISTING BREAKER TO REMAIN.
N - DENOTES NEW BREAKER REQUIRED.
R - DENOTES TO REUSE EXISTING BREAKER.

1 / E6.1 (E)'NP2W' EXISTING SCHEDULE
SCALE: NTS

LOAD SCHEDULE

GEAR NAME: MCC | **PROJECT:** FOSU LIBERY SQUARE
VOLTAGE: 208V | **PHASE:** 3 | **WIRE:** 4 | **AMPERE RATING:** 600 | **SC RATING:** 42kVA | **MAIN:**
ENTRY: | **MOUNTING:** FLOOR

LOADS:

	Amps	VA
PHASE A:	0	0
PHASE B:	0	0
PHASE C:	0	0
TOTAL:		0

LOAD TYPES:
1 = LIGHTING
2 = RECEPTACLES
3 = MISC
4 = MOTOR
5 = KITCHEN

REMARKS:
EXISTING MOTOR CONTROL CENTER (MCC)
SOME OF THE MCC DOORS ARE BROKEN AND REQUIRE REPAIR

LOAD (VA)	LOAD SERVED	NOTE	LOAD TYPE	AMPS/ POLES		BUCKET NO		PHASE	BUCKET NO		AMPS/ POLES		LOAD TYPE	NOTE	LOAD SERVED	LOAD (VA)
	AHU-2					3	1	A	8		3				AHU-4	
								B								
								C								
	BP-1 & BP-2 DUPLEX					3	2	A	9		3				CU-1	
								B								
								C								
	HWP-2					3	3	A	10		3				AHU-1	
								B								
								C								
	HWP-1					3	4	A	11		3				CH-1	
								B								
								C								
	CHP-2					3	5	A								
								B								
								C								
	CHP-1					3	6	A								
								B								
								C								
	OAU-1					3	7	A								
								B								
								C								

LOADING BY TYPE		CONNECTED	NEC CODE	DEMAND FACTOR	DEMAND
		0 VA	210-19	125%	0 VA
		0 VA	220-44	10kVA @ 100%, ELSE @ 50%	0 VA
MISC.		0 VA	220-60	100%	0 VA
MOTOR	LARGEST MOT.:	0 VA	220-50	100% + LARGEST x 25%	0 VA
TOTAL		0 A			0 A

NOTES:
E - DENOTES EXISTING BREAKER TO REMAIN.
N - DENOTES NEW BREAKER REQUIRED.
R - DENOTES TO REUSE EXISTING BREAKER.

2 / E6.1 (E)PANEL MCC EXISTING SCHEDULE
SCALE: NTS

SHEET NOTES:

A. SCHEDULES SHOW EXISTING PANELS.

B. REPLACE BROKEN HANDLES AND REPAIR MCC TO THE SATISFACTION OF THE NPS COR.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER 6-17-2024

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 392 / 192499
CADD M. NGUY	E6.1	EXISTING SCHEDULES A	PMIS/PKG NO. 316098B
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	SHEET 42 OF 44
DATE: 6/2024			

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PANELBOARD SCHEDULE

PANEL: NP2W | **PROJECT:** FOSU LIBERTY SQUARE
VOLTAGE: 208/120V | **PHASE:** 3 | **WIRE:** 4 | **AMPERE RATING:** 250A | **SC RATING:** UNKNOWN | **MAIN:** MAIN LUG OR MAIN BREAKER
ENTRY: TOP | **MOUNTING:** SURFACE

LOADS:

	Amps	VA
PHASE A:	23	2724
PHASE B:	28	3395
PHASE C:	19	2272
TOTAL:		8391

LOAD TYPES:
1 = LIGHTING
2 = RECEPTACLES
3 = MISC
4 = MOTOR
5 = KITCHEN

REMARKS:
MAIN BREAKER
EXISTING THREE-PHASE ELECTRICAL PANEL
LOADS NOT SHOWN

LOAD (VA)	LOAD SERVED	NOTE	LOAD TYPE	AMPS/ POLES		CKT NO	PHASE	CKT NO	AMPS/ POLES		LOAD TYPE	NOTE	LOAD SERVED	LOAD (VA)
	(E)UNKNOWN			20	1	1	A	2	30	1	1		(E)HOUSEKEEPING LIGHTS	
	(N)LOBBY & RESTROOM LIGHTING + EF-1	**R**	**1**	**20**	**1**	3	B	4	**15**	**2**	**3**	**N**	**(N)DH-1**	863
192	**(N)B-2**	**N**	**3**	**15**	**1**	5	C	6	**-**	**-**	**3**	**-**	---	863
192	**(N)B-1**	**N**	**3**	**15**	**1**	7	A	8	20	1	1		(E)MECH. RM. LIGHTING	
	(E)LIGHTS & REC. ON CATWALK + DAMPER		1	20	1	9	B	10	20	1	2		(E)MECH. RM. REC.	
125	**(N)EF-3**	**N**	**4**	**20**	**1**	11	C	12	20	1	3		(E)LEAK DETECTION	
	SPARE			20	1	13	A	14	20	1	3		(E)LED SCREEN	
	(E)STAIRWELL LIGHTING		1	20	1	15	B	16	20	1	3		(E)CONTROLS	
	(E)DEDICATED FIRE ALARM 205		3	20	1	17	C	18	20	1	3		(E)CAMERA CONTROL	
	(E)DEDICATED A/V REC. 205		2	20	1	19	A	20	20	1	4		(E)DAMPER MOTORS	
	(E)DEDICATED PHONE REC. 205		2	20	1	21	B	22	**15**	**1**	**4**	**N**	**(N)P-3 (B-1 CIRCULATOR)**	1440
	(E)DEDICATED DATA REC. 205		2	20	1	23	C	24					SPACE	
156	**(N)AHU-5**	**N**	**3**	**15**	**3**	25	A	26	**15**	**3**	**3**	**N**	**(N)AHU-4**	156
156	---	**-**	**3**	**-**	**-**	27	B	28	-	-	3	--	---	156
156	---	**-**	**3**	**-**	**-**	29	C	30	-	-	3	--	---	156
	(E)WH-1		3	30	2	31	A	32	**15**	**3**	**3**	**N**	**(N)AHU-6**	492
	---		3	-	-	33	B	34	-	-	3	--	---	492
	SPARE			20	1	35	C	36	-	-	3	--	---	492
288	**(N)AHU-3**	**N**	**3**	**15**	**3**	37	A	38	15	**1**	**4**	**N**	**(N)P-4 (B-2 CIRCULATOR)**	1440
288	---	**-**	**3**	**-**	**-**	39	B	40	30	2	3		(E)WH-2	
288	---	**-**	**3**	**-**	**-**	41	C	42	-	-	3		---	

LOADING BY TYPE			CONNECTED	NEC CODE	DEMAND FACTOR	DEMAND
LIGHTING			0 VA	210-19	125%	0 VA
RECEPTACLES			0 VA	220-44	10kVA @ 100%, ELSE @ 50%	0 VA
MISC.			5386 VA	220-60	100%	5386 VA
MOTOR	LARGEST MOT.:	1440	3005 VA	220-50	100% + LARGEST x 25%	3365 VA
KITCHEN	# OF KIT. UNITS:	0	0 VA	220-56		0 VA
TOTAL			23 A			24 A

NOTES:
E - DENOTES EXISTING BREAKER TO REMAIN.
N - DENOTES NEW BREAKER REQUIRED.
R - DENOTES TO REUSE EXISTING BREAKER.

1 E6.2 PANEL 'NP2W' REVISED SCHEDULE
SCALE: NTS

LOAD SCHEDULE

GEAR NAME: MCC | **PROJECT:** FOSU LIBERY SQUARE
VOLTAGE: 208V | **PHASE:** 3 | **WIRE:** 4 | **AMPERE RATING:** 600 | **SC RATING:** 42kVA | **MAIN:**
ENTRY: | **MOUNTING:** FLOOR

LOADS:

	Amps	VA
PHASE A:	235	28245
PHASE B:	235	28245
PHASE C:	235	28245
TOTAL:		84735

LOAD TYPES:
3 = MISC
4 = MOTOR

REMARKS:
EXISTING MOTOR CONTROL CENTER (MCC)

LOAD (VA)	LOAD SERVED	NOTE	LOAD TYPE	AMPS/ POLES		BUCKET NO	PHASE	BUCKET NO	AMPS/ POLES		LOAD TYPE	NOTE	LOAD SERVED	LOAD (VA)
3648	**(N)AHU-2**	N					A					N.	**(N)CH-1**	18712
3648		-	3	40	3	1	B	8	250	3	3	-		18712
3648		-					C					-		18712
852	**(N)MUA-1**	N					A					N	**(N)CU-1**	1642
852		-	3	15	3	2	B	9	20	3	3	-		1642
852		-					C					-		1642
828	**(N)VFD (P-1A)**	N					A					N	**(N)AHU-1**	847
828		-	3	15	3	3	B	10	15	3	3	-		847
828		-					C					-		847
828	**(N)VFD (P-1B)**	N					A							
828		-	3	15	3	4	B	11						
828		-					C							
444	**(N)VFD (P-2A)**	N					A							
444		-	3	15		5	B							
444		-					C							
444	**(N)VFD (P-2B)**	N					A							
444		-	3	15		6	B							
444		-					C							
							A							
						7	B							
							C							

LOADING BY TYPE			CONNECTED	NEC CODE	DEMAND FACTOR	DEMAND
			0 VA	210-19	125%	0 VA
			0 VA	220-44	10kVA @ 100%, ELSE @ 50%	0 VA
MISC.			28245 VA	220-60	100%	28245 VA
MOTOR	LARGEST MOT.:	1	0 VA	220-50	100% + LARGEST x 25%	0 VA
TOTAL			**118 A**			**118 A**

NOTES:
E - DENOTES EXISTING BREAKER TO REMAIN.
N - DENOTES NEW BREAKER REQUIRED.
R - DENOTES TO REUSE EXISTING BREAKER.

2 E6.2 MCC REVISED SCHEDULE
SCALE: NTS

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER
6-17-2024

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E6.2	NEW SCHEDULES B	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 43 OF 44

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SHEET NOTES:

A. CONDUIT AND CONDUCTOR SCHEDULE SHOWS CONDUIT AND CONDUCTOR SIZES UNDER OPTIMUM CONDITIONS.

MECHANICAL EQUIPMENT ELECTRICAL SCHEDULE - NPS22-0361 FOSU LIBERTY SQUARE

EQUIPMENT TAG	EQUIPMENT	RATED HP	RATED KW	FLA	MCA	MOCP	VOLTS	PHASE	BREAKER	LOCATION	PANEL/CIRCUIT	CONDUIT/WIRE TAG NUMBER	NOTES
FC-1 / CU-1	MINI SPLIT	-	-	13.68	17.1	20 A	208	1	20A/2P		MCC: 9	20	
CH-1	CHILLER	-	-	156	195	250 A	208	3	250A/3P		MCC: 8	200	
AHU-1	AIR HANDLER UNIT	2 HP	-	7.06	8.7	15 A	208	3	15A/3P		MCC: 10	15	
AHU-2	AIR HANDLER UNIT	5 HP	-	30.4	34.2	45 A	208	3	40A/3P		MCC: 1	45	
AHU-3	AIR HANDLER UNIT	0.5 HP	-	2.4	3	15 A	208	3	15A/3P		NP2W: 37,39,41	15	
AHU-4	AIR HANDLER UNIT	0.5 HP	-	1.3	1.6	15 A	208	3	15A/3P		NP2W: 26,28,30	15	
AHU-5	AIR HANDLER UNIT	0.5 HP	-	1.3	1.6	15 A	208	3	15A/3P		NP2W: 25,27,29	15	
AHU-6	AIR HANDLER UNIT	1.5 HP	-	4.1	5	15 A	208	3	15A/3P		NPW2: 32,34,36	15	
MUA-1	MAKE-UP AIR UNIT	2.0 HP	-	7.1	8.7	15 A	208	3	15A/3P		MCC: 2	15	
P-1A	CHILLER PUMP	1.5 HP	-	6.9	-	15 A	208	3	15A/3P		*	15	FED FROM VFD: MCC 3
P-1B	CHILLER PUMP	1.5 HP	-	6.9	-	15 A	208	3	15A/3P		*	15	FED FROM VFD: MCC 4
P-2A	HEATING PUMP	0.75 HP	-	3.7	-	15 A	208	3	15A/3P		*	15	FED FROM VFD: MCC 5
P-2B	HEATING PUMP	0.75 HP	-	3.7	-	15 A	208	3	15A/3P		*	15	FED FROM VFD: MCC 6
P-3	B-1 RE-CIRC PUMP	0.67 HP	-	12	-	-	120	1	15A/1P		NP2W: 22	20	
P-4	B-2 RE-CIRC PUMP	0.67 HP	-	12	-	-	120	1	15A/1P		NP2W: 38	20	
B-1	BOILER	-	-	1.6	2	-	120	1	15A/1P		NP2W: 7	20	
B-2	BOILER	-	-	1.6	2	-	120	1	15A/1P		NP2W: 5	20	
DH-1	DEHUMIDIFIER	-	-	8.3	-	15 A	208	1	15A/2P		NP2W: 4,6	20	
EF-1	EXHAUST FAN	1/4 HP	-				120	1					USE EXISTING CIRCUIT
EF-2	EXHAUST FAN	150 W	-				120	1					USE EXISTING CIRCUIT
EF-3	EXHAUST FAN	1/6 HP	-				120	1					USE EXISTING CIRCUIT

1 / E6.3 EQUIPMENT SCHEDULE
SCALE: NTS

CONDUIT AND WIRE SCHEDULE - LIBERTY SQUARE

TAG	CONDUIT	CONDUCTORS	EGC	REMARKS
15	3/4"	(3) #12	(1) #12	CONTRACTOR TO VERIFY CONDUCTORS AND WIRING WITH MANUFACTURER'S MANUAL
20	3/4"	(2) #12	(1) #12	"
45	3/4"	(3) #10	(1) #10	"
200	2"	(4) #2/0	(1) #6	"

2 / E6.3 CONDUIT AND WIRE SCHEDULE
SCALE: NTS

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 40622 VINSON CARTER
6-17-2024

DESIGNED: M. SMITH	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD M. NGUY	E6.3	SCHEDULES C	392 / 192499
TECH. REVIEW: V. CARTER		HVAC CONDITION ASSESSMENT LIBERTY SQUARE VISITOR EDUCATION CENTER FT SUMTER & FT MOULTRIE NATIONAL HISTORICAL PARK	PMIS/PKG NO. 316098B
DATE: 6/2024			SHEET 44 OF 44

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