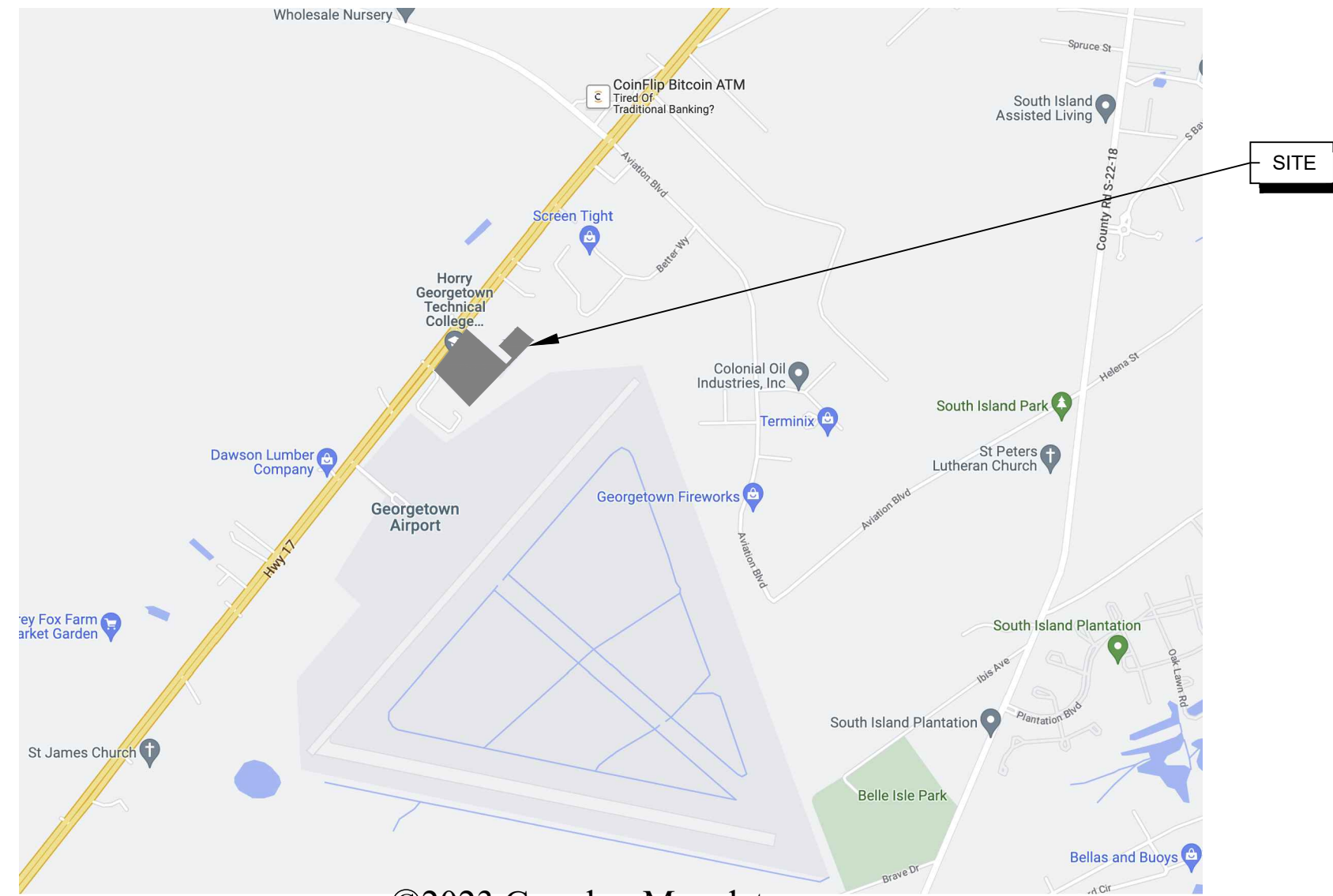


VICINITY MAP - HORRY GEORGETOWN
TECHNICAL COLLEGE



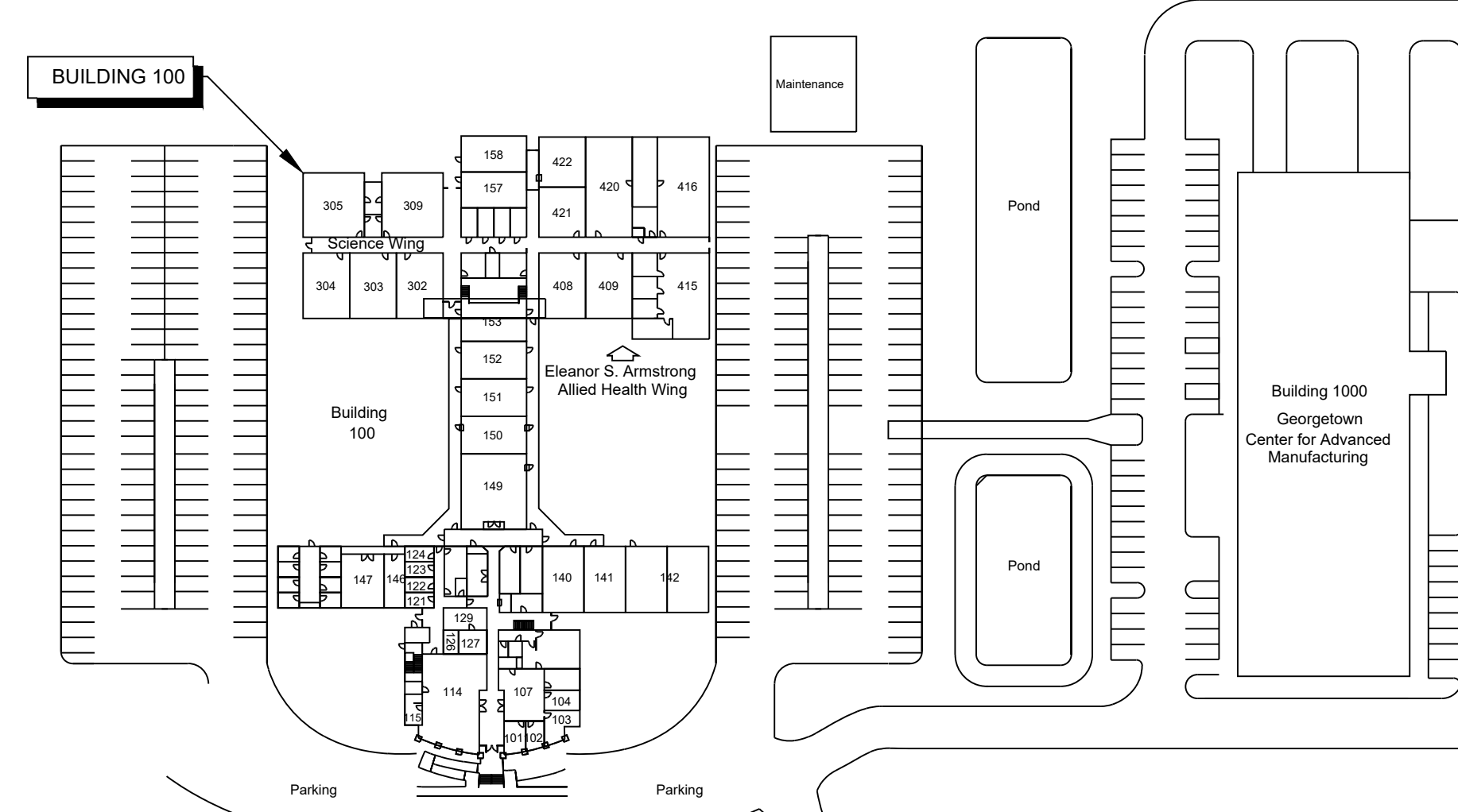
©2023 Google - Map data

CODE INFORMATION

PROJECT DESIGNED IN ACCORDANCE WITH:

- A. International Building Code (IBC), 2021 Edition with SCBC modifications
- B. International Existing Building Code (IEBC), 2021 Edition
- C. International Fire Code (IFC), 2021 Edition with SCBC modifications
- D. International Energy Conservation Code (IECC), 2009 Edition
- E. International Fuel Gas Code (IFGC), 2021 Edition with SCBC modifications
- F. International Mechanical Code (IMC), 2021 Edition with SCBC modifications
- G. International Plumbing Code (IPC), 2021 Edition with SCBC modifications, and the following insertions:
 - 1. Section 305.4.1, insert "18" and insert "18"
 - 2. Section 903.1, insert "8"
- H. International Code Council Performance Code (ICCPC), 2021 Edition, upon State Engineer's approval
- I. National Electrical Code (NEC) (NFPA-70), 2020 Edition with SCBC modifications
- J. Latest edition of the ICC A117.1, American National Standard: Accessible and Usable Buildings and Facilities - 2017 Edition
- K. State Fire Marshal rules, regulations, and policies.
- L. South Carolina Elevator, Code, & Regulations.
- M. ASME A17.1 - 2019 Safety Code for Elevators and Escalators

HORRY GEORGETOWN TECHNICAL
COLLEGE
ENLARGED MAP



DRAWING INDEX

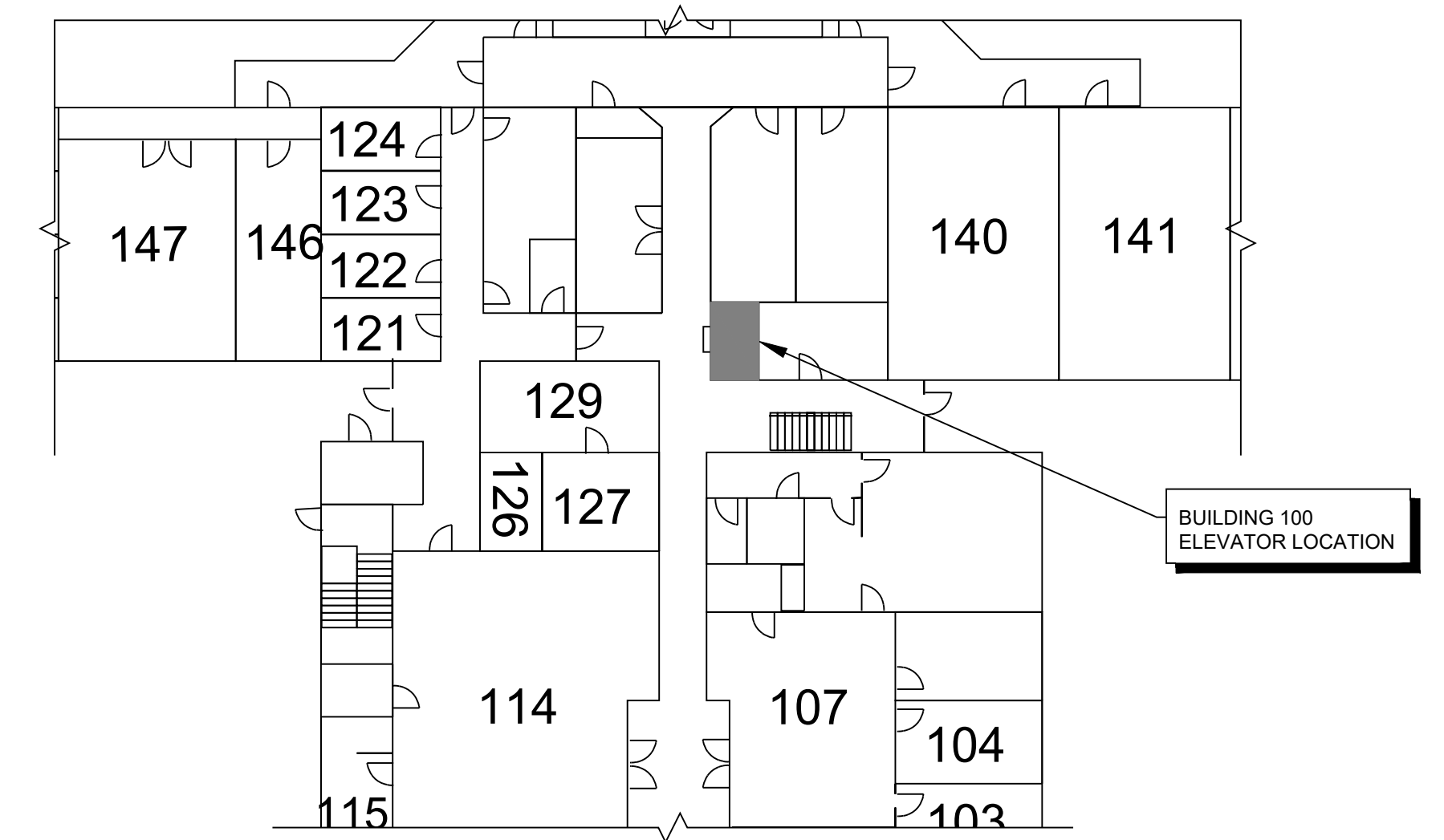
ARCHITECTURAL

- A1.0 FLOOR PLANS AND DETAILS
- A1.1 UL DESIGNS

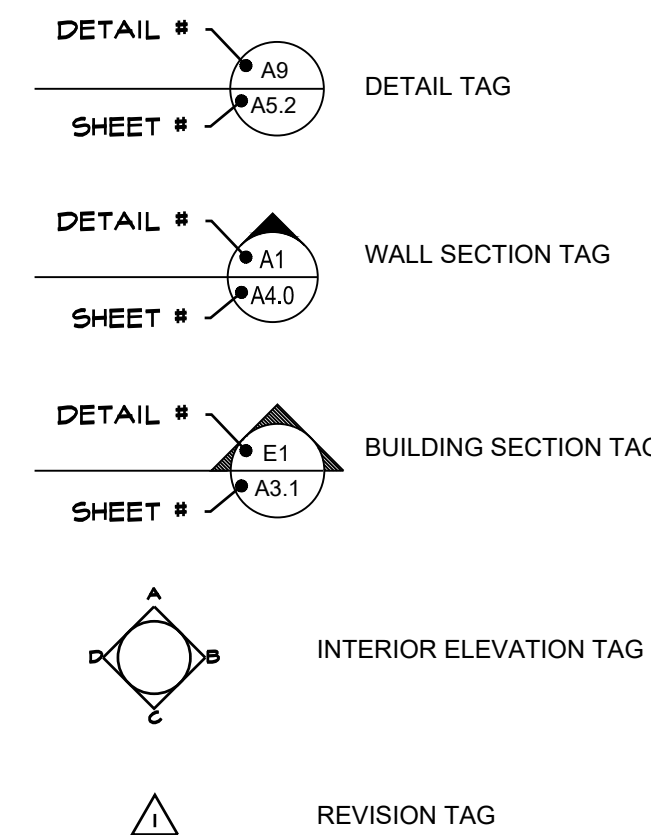
ELECTRICAL

- E1.0 SYMBOLS AND FLOOR PLANS
- E2.0 RISERS AND SCHEDULES
- E3.0 SPECIFICATIONS
- E3.1 SPECIFICATIONS
- E3.2 SPECIFICATIONS

BUILDING 100 ELEVATOR
LOCATION
ENLARGED MAP



SYMBOLS AND ABBREVIATIONS



THE FOLLOWING IS A LIST OF ABBREVIATIONS (BUT NOT LIMITED TO); FOR USE WITH ALL ARCHITECTURAL DRAWINGS.

- ACMU = ARCHITECTURAL CONCRETE MASONRY UNIT
- ACT = ACOUSTICAL CEILING TILE
- ADA = AMERICAN DISABILITIES ACT
- AFF = ABOVE FINISH FLOOR
- ALUM. = ALUMINUM
- AP = ACCESS PANEL
- BM. = BEAM
- BTM. = BOTTOM
- CLS. = CEILING
- CMU = CONCRETE MASONRY UNIT
- COL. = COLUMN
- COORD. = COORDINATE
- CPT = CARPET
- CT = CERAMIC TILE
- CTB = CERAMIC BASE TILE
- CTM = CERAMIC WALL TILE
- DR = DOOR
- DTL. = DETAIL
- EA. = EACH
- ELEV. = ELEVATION
- EXT. = EXTERIOR
- FD = FLOOR DRAIN
- FEG = FIRE EXTINGUISHER CABINET
- FFE = FINISH FLOOR ELEVATION
- FOM = FACE OF MASONRY
- FRP = FROST PROOF HYDRANT
- FRP = FIBERGLASS REINFORCED PANEL
- GALV. = GALVANIZED
- GYP. BD. = GYPSUM WALL BOARD
- GWB = GYPSUM WALL BOARD
- HWL. = HARDWARE
- HST. = HEIGHT
- HM = HOLLOW METAL
- INFO. = INFORMATION
- INT. = INTERIOR
- LAV. = LAVATORY
- MATL. = MATERIAL
- MANUF. = MANUFACTURER
- MTL. = METAL
- NA = NOT APPLICABLE
- NC = NOT IN CONTRACT
- NL = NARROW LITE
- OC = ON CENTER
- OFCC = OWNER FURNISHED CONTRACTOR INSTALLED
- OFOI = OWNER FURNISHED OWNER INSTALLED
- OPP = OPPOSITE
- ORD. = OVERFLOW ROOF DRAIN
- PLY = PLYWOOD
- PLYND = PLYWOOD
- PT = PRESSURE TREATED
- PTM = PAINTED
- PVD = PLYWOOD
- RCP = REFLECTED CEILING PLAN
- RD = ROOF DRAIN
- RE = REFER TO / REFERENCE SHEET
- RWB = RUBBER WALL BASE
- SAP = SECURITY ACCESS PANEL
- SCHED. = SCHEDULE
- SHLV. = SHELVES
- SHM = SECURITY HOLLOW METAL
- SIM = SIMILAR
- SNL = SECURITY NARROW LITE
- TYP = TYPICAL
- UNO = UNLESS NOTED OTHERWISE
- VGT = VINYL COMPOSITION TILE
- WV = WITH
- WGTS. = WEIGHTS

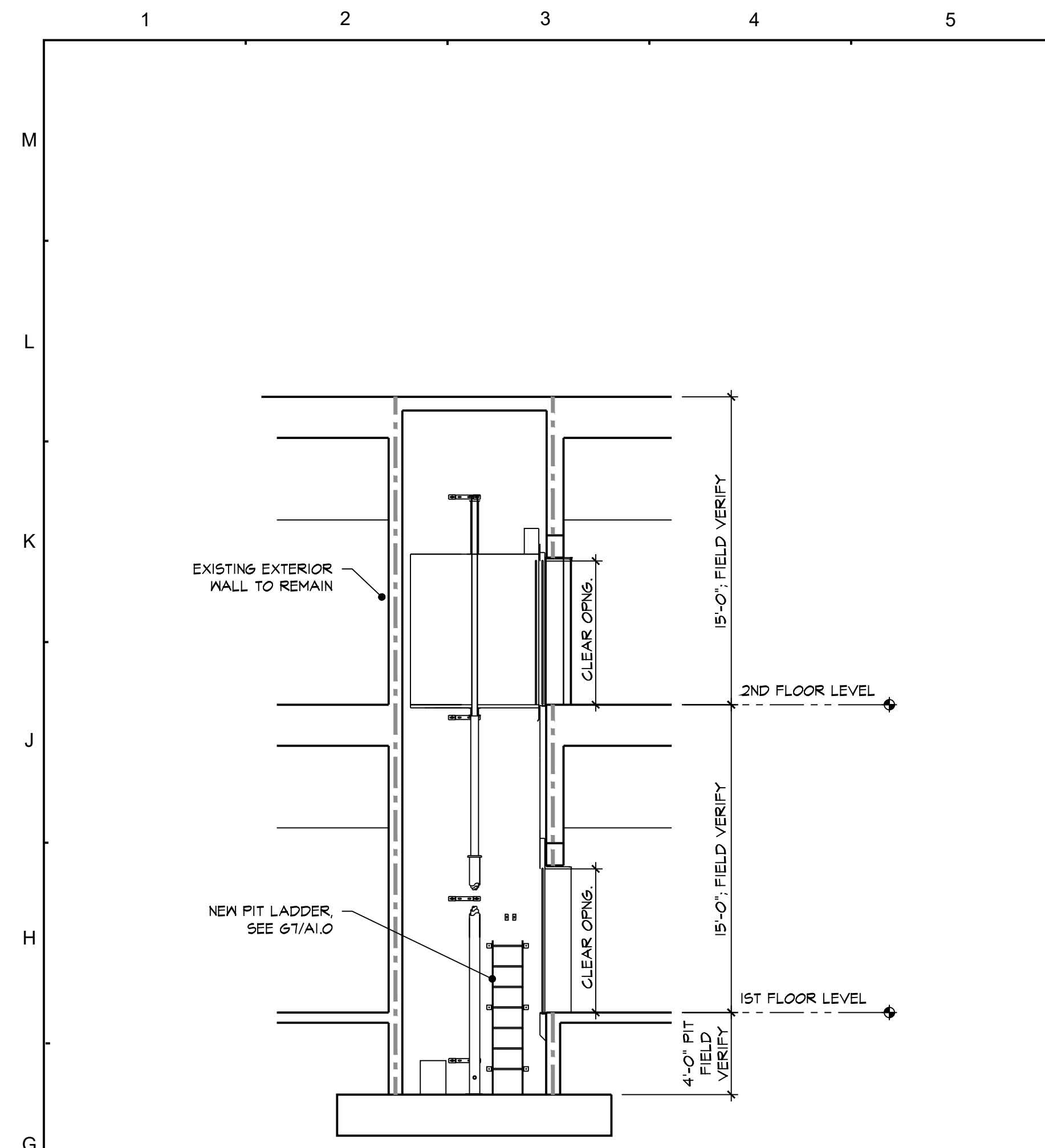
ARCHITECT
TYCH & WALKER ARCHITECTS, L.L.P.
MICHAEL WALKER, AIA
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McKNIGHT SMITH WARD GRIFFITH
ENGINEERS, INC.
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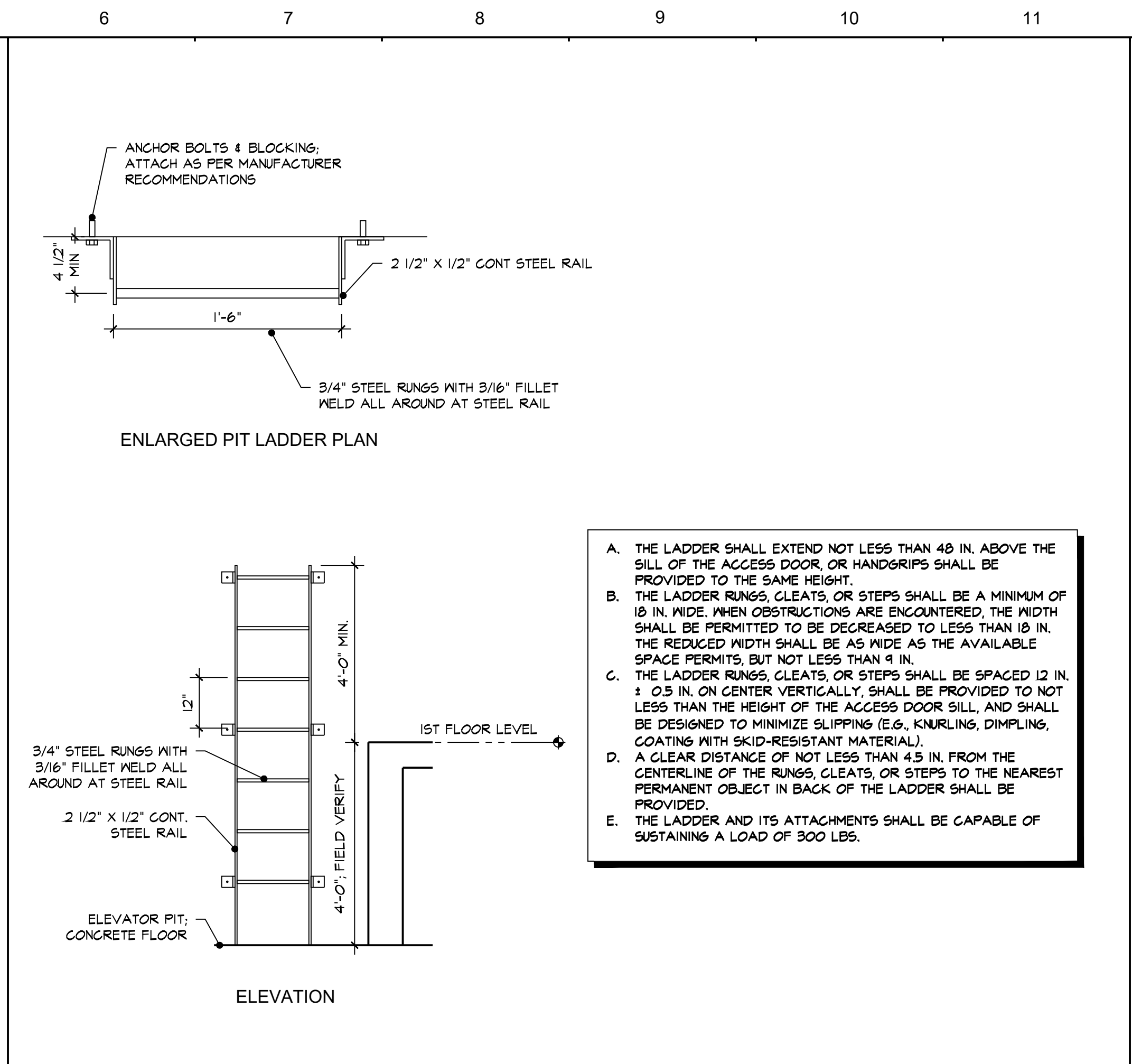
REPAIR & RENOVATE GEORGETOWN BUILDING 100 ELEVATOR

HORRY GEORGETOWN TECHNICAL COLLEGE
GEORGETOWN COUNTY, SOUTH CAROLINA

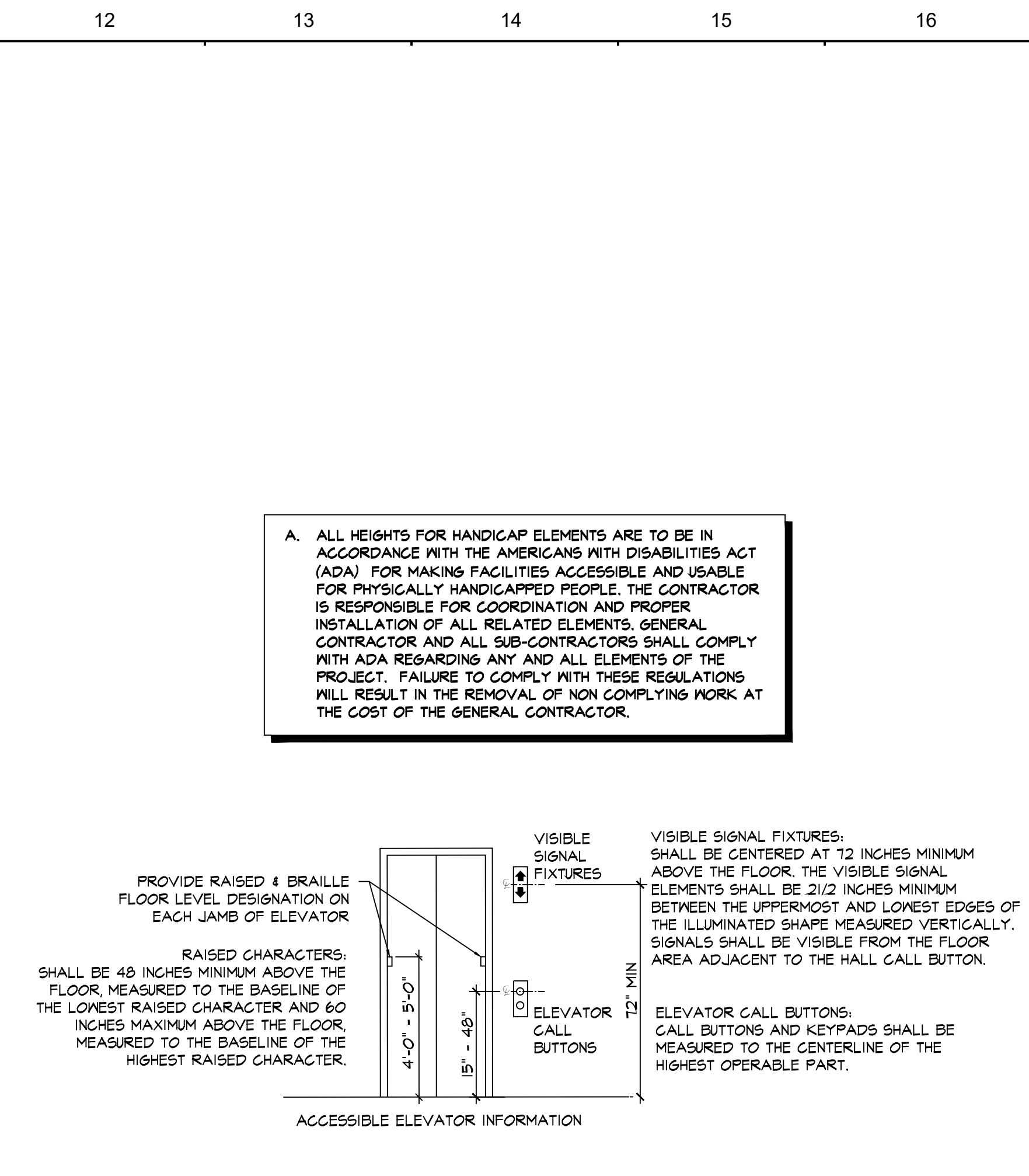
STATE PROJECT
#H59-6219-PG



G1 ELEVATOR SHAFT SECTION
A1.0 SCALE: 3/16"=1'-0"

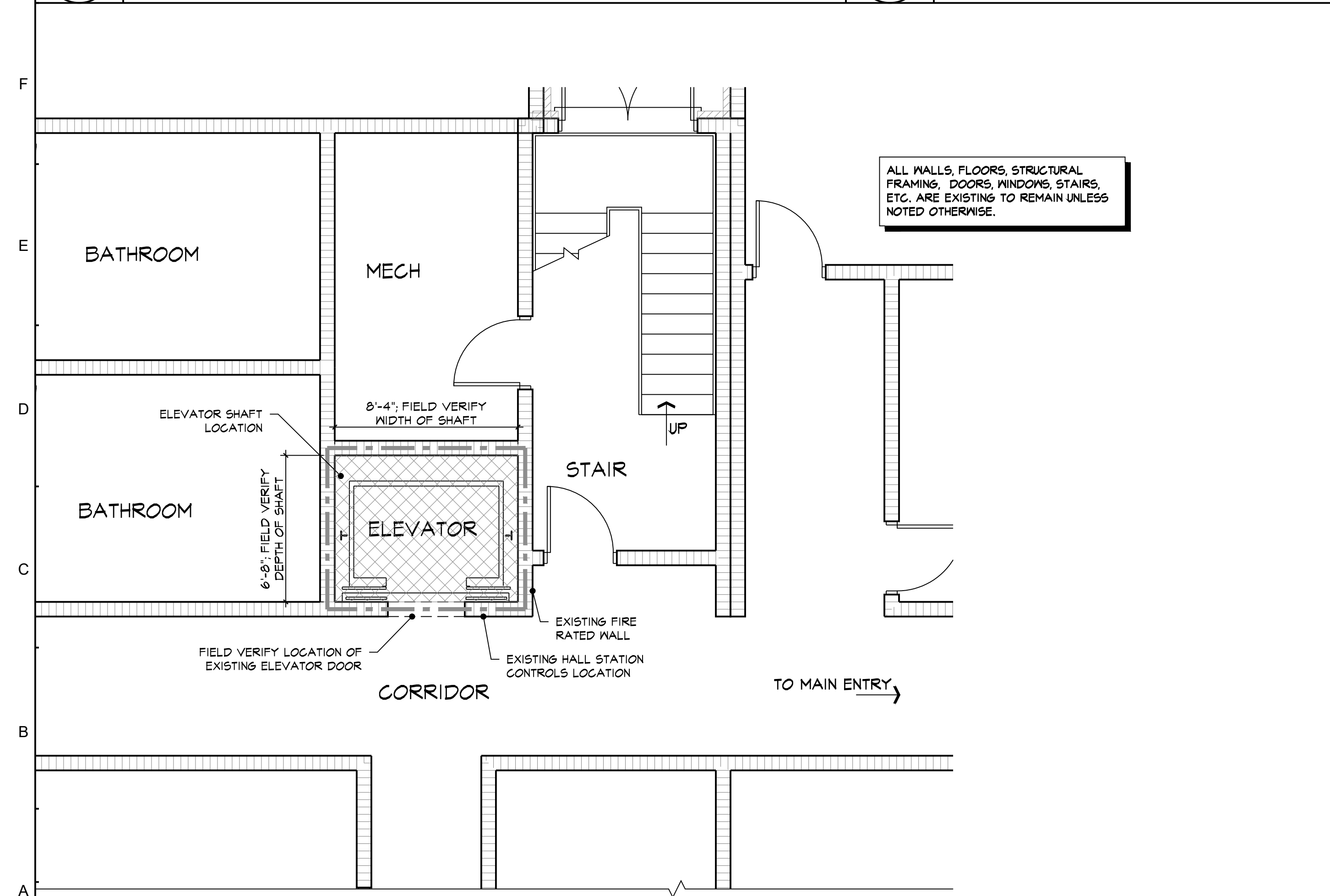


G6 PIT LADDER
A1.0 SCALE: 3/16"=1'-0"

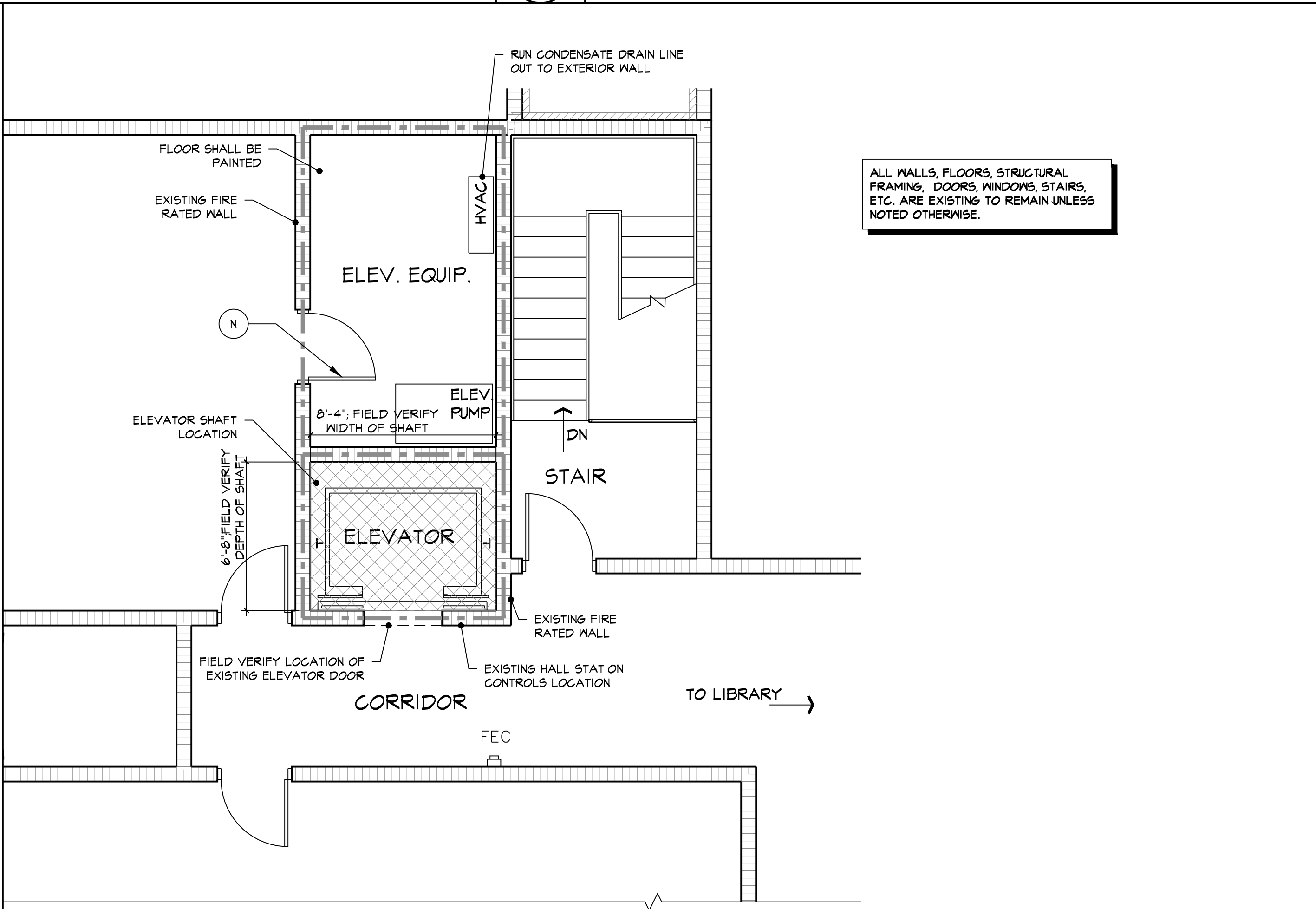


G12 ACCESSIBLE ELEVATOR INFORMATION
A1.0 SCALE: 1/4"=1'-0"

- ### GENERAL NOTES
- NOTIFY ARCHITECT IMMEDIATELY UPON DISCOVERY OF ANY CONDITIONS THAT ARE CONTRARY TO THOSE REPRESENTED WITHIN THE DRAWINGS. THE PLAN CUT IS TAKEN AT 4'-6" AFF.
 - THESE DRAWINGS HAVE BEEN DEVELOPED FROM EXISTING DRAWINGS WHICH MAY NOT REFLECT ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL VERIFY THESE DRAWINGS WITH EXISTING FIELD CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF INCONSISTENCIES BETWEEN THE DRAWINGS AND ACTUAL CONDITIONS BEFORE PROCEEDING WITH CONSTRUCTION.
 - THE CONTRACTOR IS TO VISIT THE SITE AND BECOME FAMILIAR WITH SCOPE AND LIMITS OF DEMOLITION WITH NEW CONSTRUCTION REQUIREMENTS.
 - THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY IF ANY WORK IN THE CONTRACT DOCUMENTS CANNOT BE PERFORMED DUE TO EXISTING FIELD CONDITIONS.
 - IF ANY EXISTING FIREPROOFING OR FIRE ASSEMBLIES THAT IS TO REMAIN, IS MISSING OR DAMAGED DURING DEMOLITION, THEN IT SHALL BE REPAIRED TO CONFORM TO THE ORIGINAL FIRE PROTECTION REQUIREMENTS. REVIEW THE EXISTING DOCUMENTS TO VERIFY THE U.L. ASSEMBLIES TO BE USED FOR REPAIRS.
 - REMOVE EXISTING CONSTRUCTION AS INDICATED. TYPICAL REMOVAL INCLUDES ELEVATOR AND ELECTRICAL SYSTEMS CONTAINED THEREIN. REMOVE DOORS, FINISHES AND OTHER FIXTURES AS REQUIRED.
 - THE CONTRACTOR SHALL VERIFY THAT EXIT EGRESS IS MAINTAINED FOR ALL OCCUPIED AREAS OF THE BUILDING THROUGHOUT ALL PHASES OF CONSTRUCTION.
 - DEMOLITION WORK SHALL BE EXECUTED IN CONFORMANCE WITH ALL APPLICABLE CODES AND ORDINANCES AS SET FORTH BY ALL GOVERNING AUTHORITIES.
 - THE CONTRACTOR SHALL BRACE ALL EXISTING STRUCTURES AND ALL STRUCTURAL ELEMENTS AS NEEDED DURING DEMOLITION OPERATIONS.
 - THE CONTRACTOR SHALL NOT CUT STRUCTURAL WORK IN A MANNER RESULTING IN A REDUCTION OF LOAD CARRYING CAPACITY OR LOAD/DEFLECTION RATIO. THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER OF ALL STRUCTURAL CUTS PRIOR TO EXECUTION SO THAT APPROVAL CAN BE OBTAINED FROM THE ARCHITECT AND STRUCTURAL ENGINEER.
 - TURN OVER TO OWNER ANY ITEMS DEFINED AS REUSABLE BY OWNER THAT IS SCHEDULED TO BE REMOVED.
 - REFER TO THE ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION. THE GENERAL CONTRACTOR SHALL COORDINATE ALL DEMOLITION BETWEEN DIFFERENT TRADES.
 - THE CONTRACTOR SHALL REMOVE FROM SITE PROMPTLY AND LEGALLY ALL ITEMS NOT NOTED FOR REUSE OR REINSTALLATION OR DELIVERY TO THE OWNER.
 - REMOVE EXISTING NON-LABELLED DOOR AND RETAIN ALL HARDWARE AND HINGES FOR LATER USE. EXISTING 1-HOUR FIRE RATED FRAME TO REMAIN. INSTALL NEW 1-HOUR FIRE RATED DOOR WITH LABEL. DOOR SHALL BE 3'-6" WIDE X 7'-0" HIGH AND SHALL BE SELF CLOSING AND SELF LOCKING. REINSTALL ALL EXISTING HARDWARE AND HINGES ON NEW DOOR. PROVIDE NEW DOOR CLOSURE: FALCON SC81AXR/VFAXSLIM.



A1 FIRST FLOOR / LOWER PLAZA PLAN
A1.0 SCALE: 1/4"=1'-0"



A9 SECOND FLOOR PLAN - PARTIAL
A1.0 SCALE: 1/4"=1'-0"

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 843-653-7151
 mwalker@tychwalker.com

REPAIR & RENOVATE GEORGETOWN BUILDING 100 ELEVATOR
 STATE PROJECT # H59-6219-PG
 HORRY GEORGETOWN TECHNICAL COLLEGE
 GEORGETOWN, SOUTH CAROLINA

REVISION	DATE

2023
 04/21/2023
 FLOOR PLANS AND DETAILS

A1.0

GENERAL NOTES

A. NOTIFY ARCHITECT IMMEDIATELY UPON DISCOVERY OF ANY CONDITIONS THAT ARE CONTRARY TO THOSE REPRESENTED WITHIN THE DRAWINGS. THE PLAN CUT IS TAKEN AT 4'-6" AFF.

UL/cUL SYSTEM NO. W-J-0022
BLANK OPENING THROUGH CONCRETE WALL OR BLOCK WALL ASSEMBLY
F-RATING = 2-HR.
T-RATING = 1 3/4-HR.

FRONT VIEW

SECTION A-A

WJ0022b.010815

1. CONCRETE WALL ASSEMBLY (2-HR. FIRE-RATING) :
 A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL (MINIMUM 6" THICK).
 B. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL.
 2. MINIMUM 5/8" DEPTH HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT.

NOTE : MAXIMUM DIAMETER OF OPENING = 2-1/2" OR A MAXIMUM AREA OF 4" WITH A MAXIMUM DIMENSION OF 2".

Hilti Firestop Systems
Saving Lives through Innovation and Education

HILTI, Inc.
 Tulsa, Oklahoma USA (800) 879-8000
 Sheet 1 of 1
 Scale 3/16" = 1"
 Date Jan. 08, 2015
WJ 0022b

UL/cUL SYSTEM NO. W-J-0015
BLANK OPENING THROUGH CONCRETE OR BLOCK WALL ASSEMBLY
F-RATING = 2-HR.
T-RATING = 2-HR.

FRONT VIEW

SECTION A-A

WJ0015b.010815

1. CONCRETE WALL ASSEMBLY (2-HR. FIRE-RATING) :
 A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL (MINIMUM 6" THICK).
 B. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL.
 2. MINIMUM 4-3/4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
 3. MINIMUM 5/8" DEPTH HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT.

NOTE : MAXIMUM AREA OF SQUARE, RECTANGULAR, OR CIRCULAR OPENING IS 240 SQ. IN. WITH A MAXIMUM DIMENSION OF 20".

Hilti Firestop Systems
Saving Lives through Innovation and Education

HILTI, Inc.
 Tulsa, Oklahoma USA (800) 879-8000
 Sheet 1 of 1
 Scale 9/64" = 1"
 Date Jan. 08, 2015
WJ 0015b

UL/cUL SYSTEM NO. W-J-0006
BLANK OPENING THROUGH CONCRETE WALL OR CONCRETE BLOCK WALL
F-RATING = 1-HR. OR 2-HR.
T-RATING = 1-HR. OR 2-HR.

FRONT VIEW

SECTION A-A

WJ0006a.071602

1. CONCRETE WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
 A. LIGHT WEIGHT OR NORMAL WEIGHT CONCRETE WALL (MIN. 4-3/4" THICK, FOR A 1-HR. FIRE-RATING).
 B. LIGHT WEIGHT OR NORMAL WEIGHT CONCRETE WALL (MIN. 6" THICK, FOR A 2-HR. FIRE-RATING).
 C. ANY UL/cUL CLASSIFIED SOLID OR FILLED CONCRETE BLOCK WALL.
 2. HILTI CP 620 FIRE FOAM INSTALLED FLUSH WITH BOTH SURFACES OF THE WALL :
 A. MINIMUM 4-3/4" THICKNESS, FOR A 1-HR. FIRE-RATING.
 B. MINIMUM 6" THICKNESS, FOR A 2-HR. FIRE-RATING.

NOTE : MAXIMUM SIZE OF OPENING = 30" x 15".

HILTI FIRESTOP SYSTEMS
Saving Lives through Innovation and Education

HILTI, Inc.
 Tulsa, Oklahoma USA (918) 252-6000
 Sheet 1 of 1
 Scale 9/64" = 1"
 Date July 16, 2002
WJ 0006a

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REVISION	DATE

REPAIR & RENOVATE GEORGETOWN BUILDING 100 ELEVATOR
 STATE PROJECT # H59-6219-PG
 HORRY GEORGETOWN TECHNICAL COLLEGE
 GEORGETOWN, SOUTH CAROLINA

2023
 04/21/2023
 UL DESIGNS

A1.1

SYMBOL SCHEDULE	
GENERAL SYMBOLS	
SYMBOL	DESCRIPTION
—	CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALLS.
----	CONDUIT RUN CONCEALED IN OR BELOW FLOORS OR UNDERGROUND.
- - - -	CONDUIT RUN EXPOSED.
→	CONDUIT TURNING UP
↘	CONDUIT TURNING DOWN
—■—	SQUARE ON CONDUIT SYMBOL INDICATES THAT CIRCUIT CONTINUES BUT NOT SWITCHED.
→→→	HOMERUN TO PANEL AND CIRCUIT(S) DESIGNATED. ARROW(S) INDICATE QUANTITY OF CIRCUITS.
⊙	JUNCTION BOX PER N.E.C.
◇	SPECIAL NOTE, NUMERALS IDENTIFY, SEE SCHEDULE.
①	SPECIAL CONNECTION TO A SPECIFIC ITEM OF EQUIPMENT. SEE CONNECTION SCHEDULE.
⊗	MOTOR CONNECTION. RATING AS NOTED.

LIGHTING	
SYMBOL	DESCRIPTION
○	LED LIGHTING FIXTURE, WALL MOUNTED.

DISTRIBUTION	
SYMBOL	DESCRIPTION
□	CONTROL CABINET, FLUSH OR SURFACE MOUNTED.
□	DISCONNECT SWITCH, NON-FUSIBLE.
□	DISCONNECT SWITCH, FUSIBLE.
—	GROUND CONNECTION.

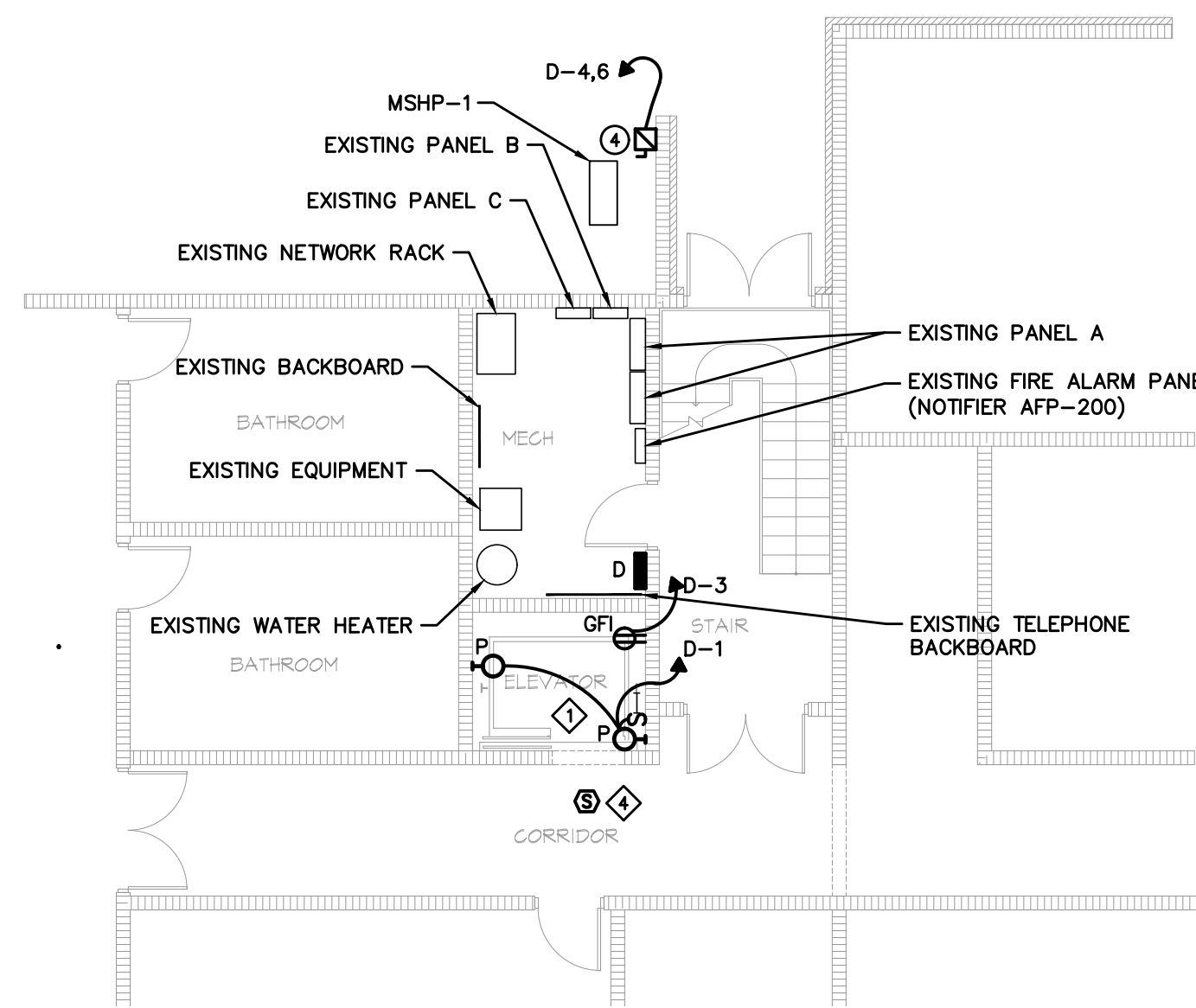
WIRING DEVICES	
SYMBOL	DESCRIPTION
⊕	DUPLEX RECEPTACLE, 125V, 3-WIRE GROUNDING TYPE.
⊕GFI	DUPLEX RECEPTACLE, GROUND FAULT CIRCUIT INTERRUPTING.
⊕GFI WP	DUPLEX GFCI RECEPTACLE. PROVIDE WITH OPERABLE, IN-USE WEATHERPROOF COVER.
▽	WALL OUTLET FOR TELECOMMUNICATIONS. SEE SPECIFICATIONS AND/OR DRAWINGS FOR CONDUIT REQUIREMENTS.
S	LIGHT SWITCH, SINGLE-POLE.

FIRE ALARM SYSTEM	
SYMBOL	DESCRIPTION
⊙	FIRE ALARM SYSTEM CEILING MOUNTED PHOTOELECTRIC TYPE SMOKE DETECTOR.

ABBREVIATIONS			
A	AMPERES	KW	KILOWATTS
ACC	ARMORED CLAD CABLE	LFNC	LIQUIDTIGHT FLEXIBLE NON-METALLIC CONDUIT
AF	ABOVE FINISHED FLOOR	LFMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
AFG	ABOVE FINISHED GRADE	LVC	LOW VOLTAGE CONTROL CABINET
ANN	FIRE ALARM ANNUNCIATOR CABINET	MCB	MAIN CIRCUIT BREAKER
C	CONDUIT	MCC	METAL CLAD CABLE
CB	CIRCUIT BREAKER	MLO	MAIN LUGS ONLY
CKT	CIRCUIT	MTD	MOUNTED
CLG	CEILING	NMC	NON-METALLIC CLAD CABLE
DN	DOWN	PB	PULLBOX
DW	DISHWASHER	PNL	PANELBOARD
EC	EMPTY CONDUIT	PRS	PROGRAM RAPID START
EMT	ELECTRICAL METALLIC TUBING	PS	PROGRAM START
ENT	ELECTRICAL NON-METALLIC TUBING	PWR	POWER
EWC	ELECTRIC WATER COOLER	REC	RECEPTACLE
FACP	FIRE ALARM CONTROL PANEL	RMC	RIGID METAL CONDUIT
FMC	FLEXIBLE METAL CONDUIT	RS	RAPID START
G	GROUND	SW	SWITCH
GFI	GROUND FAULT INTERRUPTER	SWBD	SWITCHBOARD
HOA	HAND OFF AUTOMATIC	TTB	TELEPHONE TERMINAL BOARD
HP	HORSEPOWER	TEL	TELEPHONE
HPF	HIGH POWER FACTOR	TV	TELEVISION
HX	HIGH REACTANCE	TYP	TYPICAL
IG	ISOLATED GROUND	V	VOLTS
IMC	INTERMEDIATE METAL CONDUIT	VP	VAPOR PROOF
IS	INSTANT START	W	WALL MOUNTED
JB	JUNCTION BOX	WG	WIRE GUARD
KVA	KILOVOLT-AMPERES	WP	WEATHER PROOF
FPN	FUSE PRE NAMEPLATE	XFMR	TRANSFORMER

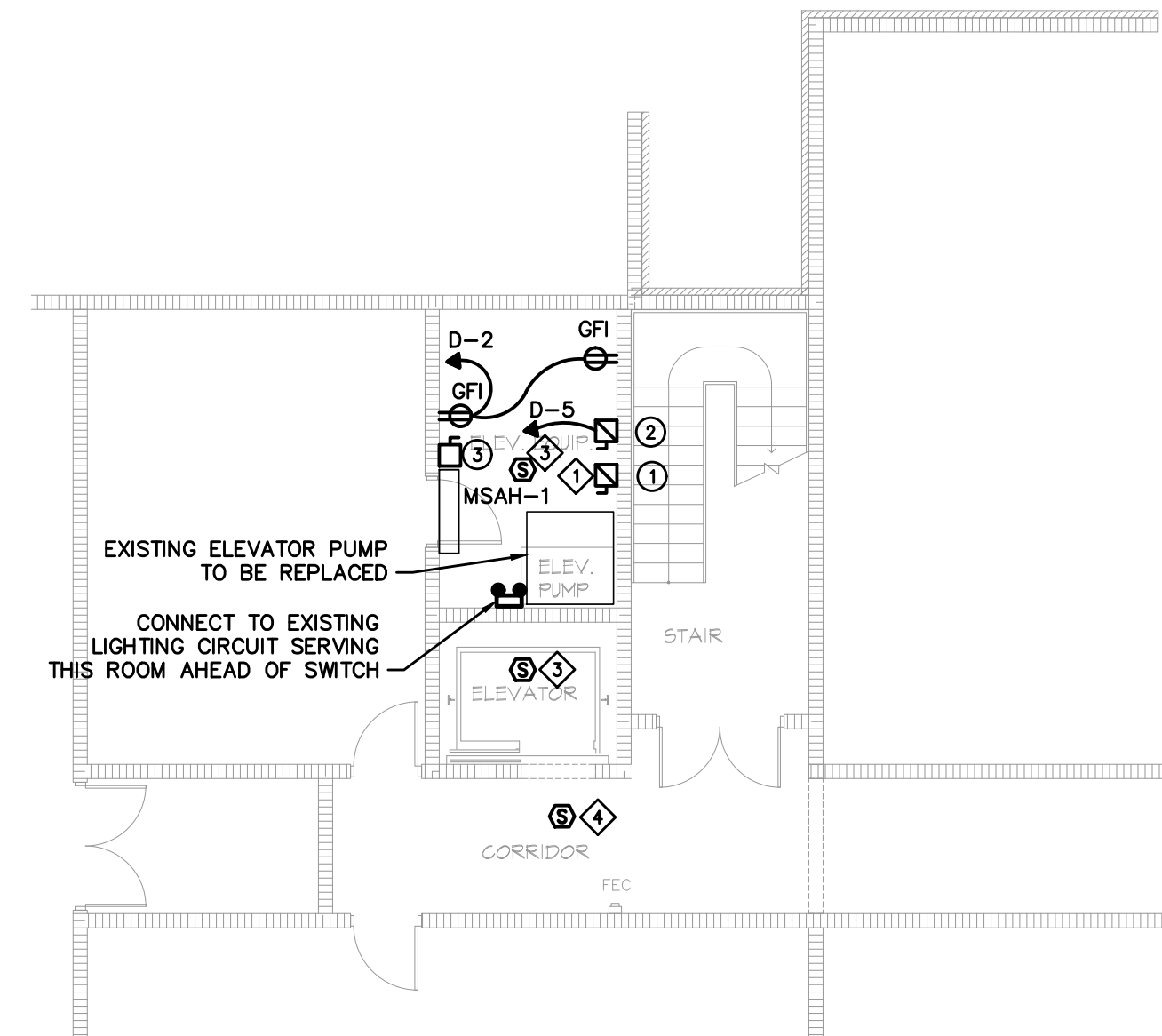
MOUNTING HEIGHTS	
(DISTANCE FROM FINISHED FLOOR TO CENTER OF DEVICE UNLESS OTHERWISE NOTED)	
RECEPTACLE	
GENERAL	18" AFF. (UNLESS OTHERWISE NOTED)
ABOVE COUNTER TOP	46" AFF. (UNLESS OTHERWISE NOTED)
LIGHT SWITCH	
GENERAL	46" AFF. (UNLESS OTHERWISE NOTED)
TELECOMMUNICATIONS	
GENERAL	18" AFF. (UNLESS OTHERWISE NOTED)
ABOVE COUNTER TOP	46" AFF. (UNLESS OTHERWISE NOTED)
WALL	46" AFF.
TELEVISION	
GENERAL	18" AFF. (UNLESS OTHERWISE NOTED)
FIRE ALARM	
PULL STATION	46" AFF.
AUDIBLE/STROBE COMBINATION OR STROBE DEVICE ONLY	THE BOTTOM OF THE APPLIANCE SHALL BE: 80" ABOVE THE FINISHED FLOOR.

LIGHTING FIXTURE SCHEDULE — LITHONIA VOLUMETRIC													
TYPE	DESCRIPTION	VOLT	LAMPS					DRIVER	WATTS	MOUNTING	MANUF. CATALOG NO.		
			QTY	TYPE	BULB	BASE	TEMP					CRI	LUMENS
P	LED ENCLOSED AND GASKETED, 24 INCH NOMINAL LENGTH, FIBERGLASS HOUSING, INTEGRAL PERIMETER CHANNEL, INJECTION-MOLDED ACRYLIC LENS, WET LOCATION, 2000 NOMINAL LUMEN PACKAGE, MEDIUM DISTRIBUTION.	MVOLT	1	LED	—	—	4000 K	80	2612	0-10V DIMMING	18	WALL, SURFACE	LITHONIA #DMW2 SERIES OR APPROVED EQUAL
⊕	LED EMERGENCY LIGHTING UNIT, WITH SELF-CONTAINED NI-CAD BATTERY RESERVE, WHITE THERMOPLASTIC HOUSING, FOR WALL OR CEILING MOUNTING, CONNECT FIXTURE AHEAD OF ALL LOCAL AREA SWITCHING. FIXTURE SHALL NOT BE SWITCHED.	120	2	LED	LED	—	—	—	—	—	3	WALL, 1 FT. BELOW CEILING EXCEPT 8 FT. AFF. MAX.	LITHONIA #ELM2L LED SERIES EXITRONIX #LED-90 SERIES LSI #LTEM LED SERIES WILLIAMS #EMER/LED SERIES



1 FLOOR PLAN — FIRST FLOOR
SCALE: 1/8" = 1'-0"

- NOTES:**
- REFER TO DIAGRAM "ELEVATOR CONTROL" FOR ADDITIONAL INFORMATION.
 - UTILIZE EXISTING 150/3 ELEVATOR CIRCUIT BREAKER IN PANEL "A" AND FEEDER FOR NEW ELEVATOR PUMP CONNECTION. REPLACE EXISTING DISCONNECT SWITCH WITH NEW FUSED DISCONNECT SWITCH AS INDICATED IN EQUIPMENT CONNECTION SCHEDULE. CONNECT TO ELEVATOR CONTROLLER WITH 3#3.1#6G.1-1/4" C.
 - PROVIDE NEW SMOKE DETECTOR WHERE INDICATED FOR ELEVATOR CONTROLS. CONNECT TO EXISTING FIRE ALARM SYSTEM AS REQUIRED.
 - UTILIZE EXISTING SMOKE DETECTOR FOR CONTROL OF NEW ELEVATOR SYSTEM. REFER TO ELEVATOR CONTROL DIAGRAM FOR ADDITIONAL INFORMATION.



2 FLOOR PLAN — SECOND FLOOR
SCALE: 1/8" = 1'-0"

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MSWG Project
23-035

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REVISION	DATE
04-21-2023	

ELEVATOR RENOVATIONS

HORRY GEORGETOWN
TECHNICAL COLLEGE
GEORGETOWN, SOUTH CAROLINA

2023
04/21/2023
SYMBOLS, SCHEDULES AND FLOOR PLANS

E1.0

ELECTRICAL GENERAL REQUIREMENTS

1.1 SCOPE

a. Applicable requirements of the General Conditions of the Contract, Amendments, Supplementary General Conditions, and Special Conditions govern work under this Division.

b. Work covered by this Division consists of providing all labor, equipment, supplies, and materials; and performing all operations, including trenching, backfilling, cutting, patching, and chasing necessary for the installation of complete electrical systems in strict accordance with these specifications and the applicable drawings.

c. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

d. This Contractor is referred to the General and Special Conditions of the contract which shall form a part and be included in this section of the specification and shall be binding on this Contractor.

e. Some items of equipment are specified in the singular; however, the Contractor shall provide and install the number of items or equipment as indicated on the drawings, and as required for complete systems.

1.2 DEFINITION

a. The word "Contractor" as used in this section of the specification refers to the Electrical Contractor unless specifically noted otherwise. The word "provide" means furnish, fabricated, complete, install, erect, including labor and incidental materials necessary to complete in place and ready for operation or use the item referred to or described herein and/or referred to on the Contract Drawings.

1.3 CONTRACTOR'S QUALIFICATIONS

a. It is assumed that the Contractor has had sufficient general knowledge and experience to anticipate the needs of a construction of this nature. The Contractor shall furnish all items required to complete the construction in accordance with reasonable interpretation of the intent of the Drawings and Specifications. Any minor items required by code, law or regulations shall be provided even if not specified or specifically shown, where it is part of a major system.

1.4 CONTRACT DOCUMENTS

a. The contract drawings are diagrammatic and are not intended to indicate every detail of construction, or every item of material or equipment required, or exact locations. Indicated locations of outlets, equipment, and connections are approximate and shall be verified by reference to related documents.

b. The Contractor shall procure complete drawings and specifications on all coincident construction and fit the Electrical work in with it. He shall cooperate with other trades to achieve well-coordinated progress and result; and avoid conflicts with other trades. He shall make minor moves and changes necessary to accommodate other equipment and/or preserve symmetry without claim for extra payment. Should there be any doubt as to the spacing intent, or location of equipment, the Contractor shall have the point clarified by the Architect/Engineer before proceeding with the installation.

1.5 RECORD DRAWINGS

a. During construction of this project, the Contractor shall maintain one complete set of electrical contract drawings, on which shall be recorded all significant changes. This set of drawings shall be used for no other purpose. Upon completion of the work, the Contractor shall submit these drawings to the Architect/Engineer for approval and presentation to the Owner.

b. Upon completion of the project, the Contractor shall prepare an Operation and Maintenance Manual, which shall include catalog data, equipment information, wiring diagrams, and warranty information for the electrical installation. Submit in three copies to the Architect/Engineer for approval and presentation to the Owner.

1.6 REGULATIONS AND COMPLIANCE

a. The requirements of the South Carolina State Building Code, the National Electrical Code, and of all other State and Local codes, ordinances, regulations, and interpretations by authorities having jurisdiction are binding upon this Contractor, and nothing contained in, or inferred by, these specifications or the applicable drawings may be construed as waiving those requirements. The latest edition of the National Electrical Code, referred to herein and on the drawings as "N.E.C.", forms a part of these specifications; and under no circumstances may the installation fail to meet the minimum requirements therein.

b. This Contractor shall secure and pay for all permits, fees, inspections, and licenses required. Upon completion of the project and prior to his request for final payment he shall present to the Architect/Engineer a certificate of inspection and approval from the inspection authorities.

c. The Contractor shall include in his work, without extra cost to the Owner, any labor, materials, service, apparatus, drawings, to comply with all applicable laws, ordinances, rules, and regulations, whether shown on drawings and/or specified.

d. All materials furnished, and all work installed shall comply with the National Fire Codes of the National Fire Protection Association, and with the requirements of all governmental departments having jurisdiction.

e. All materials and equipment shall bear the approval label, and shall be listed by the Underwriters' Laboratories, Inc., or any other third-party listing organization acceptable to the South Carolina State Building Code Council. Refer to the list of acceptable testing agencies on the NC OSFM website under "Code Enforcement Resources".

f. It is the responsibility of the Contractor to notify the local electrical inspector to schedule the required inspections.

1.7 ELECTRICAL TESTING

a. Conduct full-scale tests with all lights, equipment and appliances in operation and prove the electrical system satisfactory for operation and free from defects. Pay attention to the balancing of the single-phase loads on the three-phase system. Promptly remedy all defects.

b. All current phase conductors and neutrals shall be tested as installed, and before connections are made, for insulation resistance, continuity, and accidental grounds. This shall be done with a 500-volt megger. The procedures listed below shall be followed:

1. Minimum readings shall be one million or more ohms for #6 AWG wire and smaller, 250,000 ohms or more for #4 AWG wire or larger, between conductors and between conductor and the grounding conductor.

2. After all fixtures, devices and equipment are installed and all connections completed to each panel, the contractor shall disconnect the neutral feeder conductor from the neutral bar and take a megger reading between the neutral bar and the grounded enclosure. If this reading is less than 250,000 ohms, the contractor shall disconnect the branch circuit neutral wires from this neutral bar. He shall then test each one separately to the panel and until the low reading is found. The contractor shall correct troubles, reconnect, and retest until at least 250,000 ohms from the neutral bar to the grounded panel can be achieved with only the neutral feeder disconnected.

3. At final inspection, the contractor shall furnish a megger and show that the panels comply with the above requirements. He shall also furnish an ammeter (hook-on type) and voltmeter to take current and voltage readings as directed.

c. All tests specified shall be completely documented indicating time of day, date, temperature, and all pertinent test information.

d. All required documentation of readings indicated above shall be submitted to Engineer prior to, and as one of the prerequisites for, final acceptance of the project.

e. All elements of the electrical system provided, furnished, installed, or otherwise altered under this contract shall be subjected to testing required under this contract. Where test results indicate failure, the contractor shall repair, adjust, or replace as required and repeat the testing at no extra cost.

f. Testing shall be performed by qualified testing agencies and field services companies as necessary to augment the contractor's own capabilities. Testing and reporting methods shall comply with published standards. All test results shall be published on the Contractor's or testing company's letterhead or test forms bearing the legal name and address of the company.

1.8 GUARANTEE

a. The Contractor shall guarantee that the work done has been done in accordance with the Contract Documents, free of imperfect materials and defective workmanship. For a period of one year after acceptance by the Owner, the Contractor shall repair or replace, at no additional expense to the Owner, any imperfect materials or defective workmanship.

2.1 GENERAL

a. Except where reuse of existing items is specifically indicated or permitted, all materials and equipment shall be new and shall conform to the standards of the National Electrical Manufacturers Association and Underwriter's Laboratories,

Inc. in every instance where such a standard has been established for the item involved.

b. Catalog numbers and trade names in these specifications and drawings are intended only to set forth and convey to bidders the general style, type, character, and quality of product desired. Similar products of other manufacturers of equal quality, size, capacity, character, and appearance may be substituted on the written approval of the Architect/Engineer. Requests for approval of substitutions shall be made after the award of the contract in accordance with the bidding requirements of these specifications.

c. It is the intent of the drawings and specifications that the installation be complete, of finished appearance, and ready for operation. Manufacturers' catalog numbers as used herein and on the drawings are indicative of the type of product to be installed, and do not necessarily identify all parts and accessories required for the proper assembly, installation, and utilization of the product. All required parts and accessories shall be provided.

d. Materials shall be inspected by the Contractor upon their arrival at the site to be sure they are correct. Material and equipment stored on the site shall be protected against physical damage, dirt and damage caused by precipitation, wind, condensation, excessive humidity, and extremes of temperature. Materials shall be stored in their original cartons within substantial, clean, and dry storage facilities provided under this Contract. Conduit, large, galvanized boxes, and lighting poles may be stored outdoors on suitable blocks or racks clear of the earth and undergrowth and pitched to drain. Large electrical equipment intended for ultimate installation outdoors may be stored in the weather on suitable blocks or platforms clear of the earth and undergrowth, and with interior lamps or space heaters continuously energized to prevent condensation. Alternate storage provisions may be submitted to the Architect/Engineer for approval prior to the arrival of the material. Under no circumstances shall equipment be stored in the weather under a cover of polyethylene or tarpaulin. The Architect/Engineer will be the sole judge as to the acceptability of storage facilities, and when directed by the Architect/Engineer, improperly stored or damaged material shall be removed from the site and replaced with new material.

2.2 SUBMITTALS

a. Submittal data shall be thoroughly reviewed and approved by the Contractor prior to being forwarded to the Architect/Engineer. Submittal data received from the Contractor will be considered to have been reviewed and approved by the Contractor as suitable for the application and for installation in the space allotted.

b. The submittal of shop drawings shall be with the Contractor stamp affixed. This stamp indicates that the Contractor, by approving and submitting shop drawings, represents that he has determined and verified all field measurements and quantities, field construction criteria, material, catalog material, and similar data that he has reviewed and coordinated information in the shop drawings with the requirements of the work and the Contract Documents. It also indicates that any deviation from the Contract Documents has been shown on the submittal and clearly defines the deviations from the specifications.

c. Approval rendered on shop drawings shall not be considered as a guarantee of quantities, measurements, or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail. Said approval does not in any way relieve the Contractor from his responsibilities or necessity of furnishing material or performing work as required by the contract drawings and specifications.

d. Failure of the Contractor to submit shop drawings in ample time for checking shall not entitle him to an extension of Contract time, and no claim for extension by reason of default will be allowed.

e. Contractor shall keep on the job at all times copies of all approved shop drawings.

2.3 EQUIPMENT DEVIATIONS

a. Where the Contractor proposes to use an item of equipment other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundations, piping, wiring or any other part of the mechanical, electrical, or architectural layout, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the Contractor at his own expense and submitted for approval by the Architect/Engineer.

b. Where such approved deviation requires a different quantity and arrangement of wiring, conduit, and equipment from that specified or indicated on the drawings, the Contractor shall furnish and install any such structural supports, electrical wiring and conduit, and any other additional equipment required by the system, at no additional cost to the Owner.

3.1 GENERAL

a. The Contractor shall coordinate the work and equipment of this Division with the work and equipment specified elsewhere to assure a complete and satisfactory installation. Work such as excavation, backfill, concrete, flashing, wiring, etc., which is required by the work of this section shall be performed in accordance with the requirements of the applicable section of the specifications.

b. It is the intention of these specifications and drawings to call for finished work, tested and ready for operation. Whenever the work "provide" is used, it shall mean "furnish and install complete and ready for use".

3.2 DUTIES OF CONTRACTOR

a. Contractor shall furnish and install all materials called for in these Specifications and accompanying drawings and must furnish the apparatus complete in every respect. Anything called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications must be furnished by the Contractor.

b. Contractor is responsible for familiarizing himself with the details of the construction of the building. Work under these specifications installed improperly or which requires changing due to improper reading or interpretation of building plans shall be corrected and changed as directed by the Architect/Engineer without additional cost to the Owner.

c. The Contractor shall follow drawings in laying out work and check drawings or other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. Where headroom or space conditions appear inadequate, Architect/Engineer shall be notified before proceeding with installation.

d. While every effort has been made to accommodate the equipment necessary for the work of this contract, it is the responsibility of the Contractor to ensure that equipment supplied as a part of this contract will fit in the spaces provided for by the drawings. Any concern by the contractor regarding the adequacy of a space for the equipment supplied, shall be brought to the attention of the Architect/Engineer in a written form prior to the approval of the related equipment submittals and prior to any rough-in associated with this equipment.

e. The plans are diagrammatic and are not intended to show each fitting or a complete detail of all the work to be done; but are for illustrating the type of system, etc., and special conditions considered necessary for the experienced mechanic to take off his materials and lay out his work. This Contractor shall be responsible for taking such measurements as may be necessary at the job and adapting his work to local conditions.

f. Conditions sometimes occur which require certain changes in drawings and specifications. If such changes in drawing and specifications are necessary, the same are to be made by the Contractor without expense to the Owner, providing such changes do not require furnishing more materials, or performing more labor than the true intent of the drawings and specifications demands. It is understood that while the drawings are to be followed as closely as circumstances will permit, the Contractor is held responsible for the installation of the system according to the true intent and meaning of the drawings. Anything not entirely clear in the drawings and specification will be fully explained if application is made to the Architect/Engineer. Should, however, conditions arise where in the judgment of the Contractor certain changes will be advisable, the Contractor will communicate with the Architect/Engineer and secure his approval of these changes before going ahead with the work.

g. The right to make any responsible change in location of apparatus, equipment, routing of conduit up to the time of roughing in, is reserved by the Architect without involving any additional expense to the Owner.

h. It shall be the duty of prospective Contractors to visit the job site and familiarize themselves with job conditions. No extras will be allowed because of additional work necessitated by, or changes in plans required because of evident job conditions, that are not indicated on the drawings.

i. Contractor shall leave the premises in a clean and orderly manner upon completion of the work and shall remove from the premises all debris that has accumulated during the progress of the work.

3.3 COORDINATION

a. This Contractor shall coordinate the work of all subs and shall furnish any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

b. Where the work will be installed near, or may interfere with the work of other trades, the Contractor shall assist in working out space conditions to make a satisfactory adjustment. If directed by the Engineer, the Contractor shall prepare composite working drawings and sections at a suitable scale not less than 3/8" = 1'-0", clearly showing how his work is to be installed in relation to the work of other trades. If the Contractor installs his work before coordination, or to cause any interference with work of any subs, he shall make the necessary changes in his work to correct the condition without extra charge.

c. The Contractor shall furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for coordinating adjacent work.

3.4 SLEEVES, CUTTING, AND PATCHING

a. Contractor shall place his own sleeves and advise other trades of required chases and openings, so they can be properly built in. Sleeves provided under this division shall be formed out of no less than schedule 40 galvanized rigid steel conduits. Where any raceway supports installed under this Contract pierce the roof, suitable pith pockets shall be provided and coordinated with the roofing contractor as necessary to be acceptable to the Architect/Engineer. Provide suitable fittings where any raceways or equipment cross expansion joints.

b. Permitted cutting or patching necessary shall be done by Contractor. Structural members shall not be cut except by written permission of Architect/Engineer.

3.5 PROTECTION AND CLEAN-UP

a. Protect all material and work from damage during construction. Equipment installed in the building prior to its being closed in and dried out shall be protected from the elements in the same manner as previously specified for stored materials. Protect finished surfaces from splattering of mortar, paint, dirt, plaster, etc. Do not install device plates, face plates, canopies, flush cabinet trims, or fixtures on walls or ceilings until after painting or cleaning of the surface has been completed and arrange for such items that are required to be field painted to be painted before being mounted. Repair, clean and touch-up or replace all damaged material. At the completion of the project, remove all dust from finished surfaces, including lighting fixtures, lenses and lamps.

b. The Contractor shall keep premises free of debris resulting from his work.

3.6 PAINTING AND FINISHING

a. Suitable finishes shall be provided on all items of electrical equipment and materials which are exposed. This shall consist of either an acceptable finish as manufactured and supplied to the job or application of suitable finishes after installation.

b. When installed in finished areas, exposed equipment and materials shall be supplied with prime coat and shall be professionally painted or enameled as directed to match or blend with adjacent surfaces.

c. In unfinished areas such as equipment rooms, exposed equipment shall be furnished with suitable factory applied finishes (e.g., standard gray enamel finish for panelboards, etc.).

d. Equipment furnished in finishes such as stainless steel and brushed aluminum shall not be painted.

e. All finishing shall be as directed by, and shall be satisfactory to, the Architect/Engineer.

f. Paint material shall be selected from the products listed below and, insofar as practical, products of only one manufacturer shall be used. Contractor shall submit to the Architect/Engineer the listed manufacturer he proposes to use in the work. Should the Contractor desire to use products of a manufacturer not listed below, or products made by a listed manufacturer but not scheduled herein, Contractor shall submit complete technical information on the proposed products to the Architect/Engineer for approval. Only products approved by the Architect/Engineer shall be used.

3.7 OBSERVATION

a. The project will be observed periodically as construction progresses. The Contractor will be responsible for notifying the Architect/Engineer at least 72 hours in advance when any work to be covered up is ready for inspection. No work shall be covered up until after observation has been completed.

EQUIPMENT CONNECTIONS AND COORDINATION

1.1 SCOPE

a. The connection of all equipment provided under any Division of these specifications or by the owner requiring electrical connection shall be provided as part of this Division, unless otherwise indicated or specified. A special outlet, where indicated, is the electrical connection to the equipment.

b. Drawings indicate approximate equipment capacity (including motor horsepower) and approximate location of connection. It is the responsibility of this Contractor to determine the exact characteristics of equipment being supplied; and to provide proper branch circuit connections, conductor protection, and grounding.

2.1 GENERAL

a. Heating, Ventilating, Air Conditioning, Refrigeration and Plumbing Equipment: Unless otherwise indicated, provide all power wiring, including feeders and branch circuits, to the terminals of the equipment, including mounting of motor starters; feeder and branch circuit over-current protection; disconnecting means within sight of each motor and each starter, whether specifically indicated on drawings. Motor Control Centers indicated, complete as scheduled and specified.

b. Elevator Equipment:

- 1. Provide an elevator equipment power circuit, including a mounted shut-trip circuit breaker, a fused disconnect switch with fuses as sized by Elevator Manufacturer, and connection to the elevator controller.
2. Provide elevator fused disconnect switch with two sets of Form C auxiliary contacts for use by the elevator installer to disconnect the elevator controller internal battery from the power supply when the elevator disconnect switch is opened.
3. Provide a duplex NEMA 5-20R receptacle adjacent to the disconnect switch (or switches where there is more than one controller in the machine room) connected to a dedicated circuit. Provide a 20-amp, 120-volt dedicated circuit with 30-amp, heavy duty, fused disconnect switch (from emergency source when available) for car lighting. Terminate circuit on controller as directed by elevator installer. Provide a 20-amp, 120-volt dedicated circuit with 30-amp heavy duty, fused disconnect switch for control power. Terminate circuit on controller as directed by elevator installer.
4. Provide telephone raceway to the elevator controller from the nearest telephone bulkhead or cable tray. The raceway shall consist of a 3/4" concealed conduit complete with nylon pull cord. Terminate at the controller as directed by elevator installer.
5. Provide pit lighting fixtures and switch and pit receptacles (5-20R GFCI).
6. Provide fire alarm system relay contacts to signal each elevator controller that shall be activated whenever smoke or by-products of combustion are detected in any of the elevator lobbies served by the elevator, in the elevator hoist way or in elevator machine room. Run No. 14 AWG conductors in raceway from relay contacts to the applicable elevator controller. Terminate as directed by elevator installer.
7. Contractor shall locate electrical equipment, including lighting fixtures, in elevator equipment room and elevator pit, and shall make all connections to elevator equipment, as directed by elevator installer.

BASIC MATERIALS AND METHODS

1.1 WIRING METHODS

a. Unless otherwise indicated or specified, the Wiring Method for this project shall consist of copper conductors with 600-volt insulation installed in metal raceways.

b. The word "Raceway" and the word "Conduit" (or abbreviation "C") used herein or on the drawings indicate Rigid Metal Conduit, and where permitted, Intermediate Metal Conduit, Electrical Metallic Tubing, Rigid Nonmetallic Conduit, Flexible Metal Conduit, or Liquidtight Flexible Metal Conduit.

c. Reference to "Rigid Conduit" or "RMC" indicates heavy-wall Rigid Metal Conduit only.

d. Reference to "IMC" indicates Intermediate Metal Conduit.

e. Reference to "PVC" indicates Rigid Nonmetallic Conduit.

f. Reference to "EMT" or "Tubing" indicates Electrical Metallic Tubing.

g. Reference to "Flex" or "Flexible Conduit" indicates Flexible Metal Conduit, or, where required, Liquidtight Flexible Metal Conduit.

1.2 FASTENING METHODS

a. Acceptable fastening methods include wood screws and nails on wood construction, toggle bolts on hollow masonry, expansion bolts and lead anchors on brick and concrete, and machine screws on metal surfaces.

b. Explosive fasteners may be used in steel and concrete in accordance with the manufacturer's recommendations.

c. Wire, perforated metal strap, and wooden plugs are not acceptable as fastening material.

d. Materials used shall be good quality, made of zinc or cadmium coated steel or other non-corroding material.

e. Materials, whether exposed or concealed, shall be firmly and adequately held in place. Fastening and support shall afford safety factor of three or higher and shall be in full compliance with the seismic protection requirements of the South Carolina State Building Code.

f. Fixtures, raceways, and equipment shall be supported from the structure. Nothing may be supported on suspended ceiling unless noted so on the Drawings or specifically permitted by the Architect/Engineer.

g. Equipment and raceways attached to outside walls, or interior walls subject to permanent moisture, shall be shimmied out with non-corrodible material to provide 1/4" air space between wall and equipment or raceway.

1.3 EQUIPMENT IDENTIFICATION

a. Suitable nameplates shall be provided for the identification of electrical equipment including switchboards, panelboards, dry-type transformers, motor starters, safety switches and circuit breakers.

b. Nameplates shall be of engraved white core plastic laminate, not less than 1/16" thick. Nameplate identification shall include equipment name, source of power supply and voltage.

c. Nameplate engraving shall be of professional quality, with block style letters, minimum 1/4" high.

d. Nameplates shall be attached with sheet metal screws. They shall be sized to allow for installation of screws without obscuring text.

e. All empty conduit runs and conduit with conductors for future use shall be identified for use and shall indicate where they terminate. Identification shall be by tags with string or wire attached to conduit or outlet.

1.4 SLEEVES AND PENETRATIONS

a. The Electrical Contractor shall provide sleeves and openings for his penetrations through exterior walls, interior walls and partitions, floors, and roofs. Provisions for all such penetrations shall be as approved by the Architect/Engineer.

b. For any raceway passing through an exterior wall, above or below grade, provide appropriate sleeve and water proofing. Center the conduit in the sleeve and fill the space between conduit and sleeve with appropriate compound such as lead and oakum, and then apply caulking compound - Thiocaulk or approved equal - flush with the wall surfaces.

c. For raceways penetrating floor slabs, smoke partitions, and fire-rated walls, provide steel pipe sleeves and seal with high-temperature non-shrink grout or other material as approved by the Architect/Engineer. Materials and installation methods shall be UL listed as a Through-Penetration Firestop System suitable for use with the UL Fire Resistance Design enclosure. Refer to the UL fire protection details shown on the drawings. Refer to the UL fire penetration details shown on the drawings.

d. Conduits penetrating roof surfaces for purpose of connecting to roof-top mechanical equipment shall utilize openings and curbs provided for the equipment where possible.

e. For other raceway penetrations through the roof the Contractor shall provide appropriate prefabricated roof curb assemblies - "Pipe Portal System" as manufactured by Roof Products and System Corp., Addison, Illinois, or equal method as approved by Architect/Engineer and Roofing Subcontractor.

1.5 SUBMITTALS

a. Submit for approval manufacturer's data sheets for all basic materials.

RACEWAYS AND FITTINGS

1.1 SCOPE

a. Provide complete raceway systems as indicated on the drawings, as herein specified, and as required by applicable codes.

b. All wiring shall be installed in raceways unless specifically noted otherwise.

1.2 SUBMITTALS

a. Submit for approval manufacturer's data sheets for all raceway system components.

2.1 MANUFACTURERS

a. Metal raceway and components shall be as manufactured by Allied, Triangle, Wheatland, Thomas & Betts, or other approved manufacturers.

b. Non-metallic raceway system components shall be as manufactured by Carlon, Queen City Plastics, Ipex or other approved manufacturers.

2.2 MATERIALS AND APPLICATIONS

a. Rigid Metal Conduit shall be zinc-coated Schedule 40 steel or alloy 6063-T42 aluminum with threaded couplings and fittings. Termination at sheet metal enclosures shall consist of double locknuts and insulating bushings. Rigid Steel conduit shall be used for all exposed and concealed work except where other raceways are indicated or permitted. Aluminum conduit complete with aluminum fittings may be used in lieu of steel conduit except in wet locations, underground, or in poured concrete. Steel and aluminum shall not be mixed in the same run of conduit. Where using aluminum conduit, Contractor shall use couplings, fittings, boxes and supports with appropriate dielectric means to prevent corrosion with dissimilar metals.

b. Intermediate Metal Conduit (IMC) with threaded couplings and fittings may be used for exposed and concealed work in lieu of rigid metal conduit except underground outside the building foundation, or where supporting lighting fixtures, or in hazardous locations, or when exposed to severe impact or injury. Termination at sheet metal enclosures shall consist of double locknuts and insulating bushings.

c. Electrical Metallic Tubing (EMT) may be used for concealed work in lieu of Rigid Metal Conduit except underground or in poured concrete. EMT may be used for exposed work in lieu of Rigid Metal Conduit except outdoors, or above a roof, or where supporting lighting fixtures, or when exposed to severe impact or injury, or in hazardous locations, or less than 10 feet above a floor or platform in other than in electrical, mechanical, or communications closets or equipment rooms.

d. Rigid PVC Conduit shall be Schedule 40, UL listed for use with 90°C. Conduit run underground or run in or under a poured concrete slab shall be rigid PVC. Vertical elbows and vertical extensions from underground or concrete embedded PVC conduits smaller than 3" trade size may also be of PVC if they remain concealed or otherwise protected but shall be of Rigid Steel Conduit (or IMC where permitted) where they stub up into exposed locations or trade size is 3" or larger. An insulating bushing or end bell shall be provided at each termination. Conduit run underground and not under a poured concrete slab shall have installed continuously above it a warning tape. Tape shall be 12 inches wide, centered on conduit and located 12 inches below finished grade.

e. Flexible Metal Conduit shall be of zinc coated steel of minimum length and shall be used in lieu of Rigid Metal Conduit for connections to moving or vibrating apparatus, recessed lighting fixtures, dry-type transformers, and motors. Flexible Metal Conduit may be used where rigid connections are impractical due to obstructions or space limitations. Flexible Metal Conduit used in wet, damp, or corrosive location shall be PVC jacketed liquid-tight complete with liquid-tight connectors.

f. Fittings for steel conduit and tubing shall be of zinc coated steel or malleable iron. Insulating bushings of plastic provided for Rigid and Intermediate Metal Conduits shall be rated for 150°C. Bonding bushings shall be steel or malleable iron with non-removable plastic throats rated 150°C. EMT fittings shall be of the compression type and concrete tight or rain tight as applicable. Setscrew, indenter, pressure cast and die cast fittings are not acceptable. Connectors for EMT, Flexible Metal Conduit and Liquid-tight Flexible Metal Conduit shall be the insulated throat type. Connectors for Flexible Metal Conduits shall be of the "Tite-Bite" design.

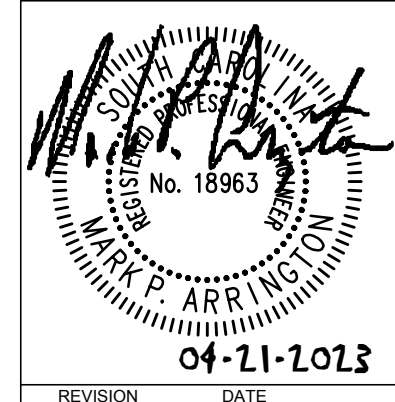
g. Conduit expansion fittings shall be of zinc coated cast or malleable iron and steel conduit, complete with flexible bonding straps. Expansion fittings shall allow longitudinal conduit movement of 4 inches.

h. Minimum raceway size shall be 1/2", except Flexible Metal Conduit connections to individual lighting fixtures may be 3/8". Other raceway sizes, unless indicated on the drawings, shall be determined by the Contractor in accordance with NEC requirements for type THW insulated conductors, or the actual insulation used if it is thicker than type THW.

i. Raceway in patient care areas (as defined by NEC 517) shall comply with the requirements of NEC 517.13(A).

3.1 INSTALLATION

mswg engineers logo and contact information: PO Box 787492, Charlotte, NC 28271, 704.527.2112, mswg.com, MSWG Project 23-035



TYCH & WALKER ARCHITECTS, LLP logo

38 BLACKGUM ROAD, UNIT B, PO BOX 509, PAWLEY ISLAND, SC 29585, 843-651-7151, rwalker@tychwalker.com

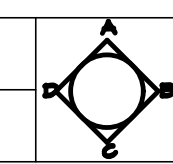
ELEVATOR RENOVATIONS

HORRY GEORGETOWN TECHNICAL COLLEGE GEORGETOWN, SOUTH CAROLINA

Professional Engineer Seal for McKnight-Smith Ward-Griffin Engineers, Inc., No. C00926, State of South Carolina, dated 04/21/2023.

2023, 04/21/2023, SPECIFICATIONS, E3.0

A1 E3.0 NO SCALE

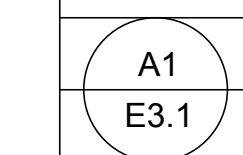


a. Rigid and Intermediate Metal Conduits shall be made up with full threads, to which a conductive pipe compound (T & B Kopr-Shield or equal) has been applied and butted in coupling. Terminations at sheet metal enclosures in indoor dry locations shall be made with double locknuts and an insulating bushing. Terminations at sheet metal enclosures in outdoor, damp, and wet locations shall be made with threaded conduit hubs of zinc coated malleable iron.

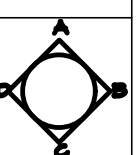
c. Insulation for grounding conductors on all systems shall be Green.
d. Conductors #4 AWG and larger may be identified with two or more bands of appropriate color plastic tape applied near each splice and termination. Painting of wire will not be acceptable.

3.3 SEPARATELY DERIVED SYSTEMS:
a. The secondary of a Dry-Type Transformer, and the output of a Generator or UPS with a neutral that is not solidly connected to the service neutral is a Separately Derived System and must be grounded per NEC 250.

c. Switches shall be listed to meet the requirements of Fed Spec W-5-896E.
d. Unless otherwise indicated or directed, wiring devices shall be gray in color.



A1 E3.1 SPECIFICATIONS NO SCALE



mswg engineers logo, Tych & Walker Architects, LLP logo, ELEVATOR RENOVATIONS title block, Horry Georgetown Technical College logo, and E3.1 project number.

M
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Transformers".

- b. The rated primary voltage of the transformer shall be not less than the rated voltage of the controller. The rated secondary current of the transformer shall be not less than continuous duty current of the control circuit.
- c. The voltage regulation of the transformer shall be such that with rated primary voltage and frequency the secondary voltage will not be less than 95% or more than 105% of rated secondary voltage.
- d. The source of supply for control circuit transformers shall be taken from the load side of the main disconnecting device. The primary and secondary windings of the transformer and control circuit wiring shall be protected against overloads and short circuits with properly selected fuses. The secondary winding of the control circuit transformer shall be grounded.

PART 3: EXECUTION

3.1 INSTALLATION:

- a. Devices specified by this section shall be installed such that only one wire is terminated on any given screw.

3.2 COMMISSIONING:

- a. For all lighting control devices specified in this section, provide a factory-certified field service engineer to make a site visit to ensure proper system installation and operation under following parameters:
 - 1. Qualifications for factory-certified field service engineer:
 - (a) Minimum experience of 2 years training in the electrical/electronic field.
 - (b) Certified by the equipment manufacturer on the system installed.
 - 2. Make a visit upon completion of installation of lighting control device:
 - (a) Verify connection of power feeds and load circuits.
 - (b) Verify connection and location of controls.
 - (c) Program system data.
 - (d) Verify proper operation of manufacturers interfacing equipment.
 - (e) Obtain sign-off on system functions.
 - (f) User to be trained on system operation.

PANELBOARDS

1.1 SCOPE:

- a. Furnish and install Lighting, Power, and Distribution Panelboards as indicated on the drawings and as herein specified.

1.2 SUBMITTALS:

- a. Submit for approval panelboard shop drawings which include as a minimum the following information:
 - 1. Cabinet dimensions.
 - 2. Mounting requirements.
 - 3. Bussing arrangement.
 - 4. Circuit breaker arrangement.
 - 5. Accessories.

2.1 BRANCH CIRCUIT PANELBOARDS:

- a. Panelboard types, ratings, and contents shall be as shown on the Drawings.
- b. Equipment shall be built to NEMA Standard PB-1, UL Standards UL50 and UL67, and NEC requirements.
- c. Panelboard back-boxes shall be constructed of galvanized sheet steel and shall be securely fabricated with screws, bolts, rivets, or by welding. Back-boxes shall be a minimum 20" wide and 5-3/4" deep, unless noted otherwise, and heights shall not exceed 72" overall. Top or bottom gutter space shall be increased 6" where feeder loops through panel. End plates shall be supplied without knockouts.
- d. Covers shall be constructed of high-grade flat sheet steel with:
 - 1. Door-in-door construction shall be provided. The inside hinge door shall allow access to device handles only. Door shall close flush with cover and against a full inside trim stop. Hinges shall be inside type. The outer hinged door shall allow access to wiring gutter.
 - 2. A flush latch and tumbler type lock, so panel door may be held closed without being locked. All such locks shall be keyed alike. Furnish to the Owner two keys with each lock, or a total of 10 keys for the project.
 - 3. Four or more cover fasteners of a type which will permit mounting plumb on box. Cover shall also have inside support studs to rest on lower edge of back-box while being fastened. For flush mounted panelboards, cover fastening hardware shall be concealed behind the hinged door.
- e. A means shall be provided for readily adjusting projection of panel interior assembly with all connections in place. A method requiring stacking of washers is not acceptable. Interior trim shall fit neatly between interior assembly and cover leaving no gaps between the two.
- f. Panelboard phase and neutral bus bus-work shall be copper. A copper ground bus shall be provided in each panel.
- g. Minimum short circuit rating of any panelboard assembly shall be 10,000A. Furnish panelboards with higher rating where so noted or where evidently intended by specification of circuit breakers with higher interrupting capacity.
- h. Ampacity of mains shall be equal to, or greater than, the ampacity of the feeder unless otherwise indicated.
- i. Where drawing schedules indicate spaces for addition of future circuit breakers; furnish all necessary bus-work, strap, brackets, hardware, and removable blank covers.
- j. Breakers in panelboards shall be physically arranged in locations shown in panel schedules on the drawings where possible. They shall be connected to the phases as shown.
- k. Unless otherwise indicated and where available for the panelboard type specified, circuit breakers shall be of the bolt-on type.
- l. Provide surge suppressor external to panelboard as indicated on the drawings and by Section 16401 of the specifications for limiting surge voltages and to prevent continued flow of follow current while remaining capable of repeating these functions.

3.1 INSTALLATION:

- a. Equipment shall be perfectly plumb and level.
- b. Openings in back-boxes shall be cut or sawed with tools made for that purpose. Burning of openings is unacceptable.
- c. Unused openings shall be closed.
- d. Only one solid wire is allowable under a screw. Provide approved lugs for connecting stranded wire or more than one solid conductor.
- e. Centered above the breakers in each panelboard attach a nameplate indicating panel designation - for example "PANEL A", or "PANEL MDP". Nameplates shall comply with SECTION 16100 BASIC MATERIALS AND METHODS.
- f. Panelboard back-boxes shall be mounted with their tops 6'-8" above the floor.

LIGHTING FIXTURES AND ACCESSORIES

1.1 SCOPE:

- a. The Contractor shall furnish and completely install Lighting Fixtures and Accessories as indicated on the

drawings and as herein specified.

- b. A lighting fixture shall be provided for each lighting outlet indicated. Outlets lacking fixture designations shall be brought to the attention of the Architect/Engineer before submitting proposal; otherwise, units selected by the Architect/Engineer shall be furnished and installed at no additional charge.

1.2 SUBMITTALS:

- a. Submit for approval complete manufacturer's data sheets for all fixtures. Indicate all components, characteristics, and options.
- b. Submit for approval Lighting Fixture samples as requested by the Architect/Engineer. Samples shall be equipped with lamps, cords, plugs, and ballasts for 120-volt operation.

2.1 LIGHTING FIXTURES:

- a. All fixtures shall be labeled by Underwriters' Laboratories, Inc.
- b. Fixture designations on the drawings generally consist of a letter indicating the fixture type. Fixture types are identified in the Lighting Fixture Schedule or Symbol Schedule; however, the Schedule does not necessarily list all accessories and hardware necessary for the complete installation, nor does it detail the construction to be encountered at the fixture locations. It is the Contractor's responsibility to properly determine and provide correct components, accessories, and hardware required for the installation.
- e. Plastic materials indicated to be "acrylic" shall be of 100% virgin methyl methacrylate produced by Rohm and Haas, Dupont, or Cyanamid.

2.2 LED DRIVERS:

- a. General
 - 1. Provide with ten-year operational life while operating at maximum case temperature and 90 percent non-condensing relative humidity.
 - 2. Drivers shall be designed and tested to withstand electrostatic discharges up to 15,000 V without impairment per IEC801-2.
 - 3. Electrolytic capacitors shall operate at least 20 degrees C below the capacitor's maximum temperature rating when the driver is under fully loaded conditions and under maximum case temperature.
 - 4. Provide with a maximum inrush current of 2 amperes for 120V and 277V drivers.
 - 5. Drivers shall withstand up to a 4,000-volt surge without impairment of performance as defined by ANSI C62.41 Category A.
 - 6. Drivers shall be manufactured in a facility that employ ESD reduction practices in compliance with ANSI/ESD S20.20.
 - 7. Drivers shall have a Class A Sound Rating - Inaudible in a 27-dBA ambient.
 - 8. Drivers shall have no visible change in light output with a variation of plus/minus 10 percent line voltage input.
 - 9. Drivers shall have Total Harmonic Distortion less than 20 percent and meet ANSI C82.11 maximum allowable THD requirements.
 - 10. Drivers shall track evenly across:
 - a. Multiple fixtures.
 - b. All light levels.
 - 11. Constant current drivers shall:
 - a. Support from 200mA to 2.1 Amps (in 10mA steps) to ensure a compatible driver exists.
 - b. Support LED arrays up to 40W or 50W (710mA to 1.05A in 10mA steps).
 - 12. Constant voltage drivers shall:
 - a. Support from 10V to 40V (in 0.5V steps) to ensure a compatible driver exists.
 - b. Support LED arrays up to 40W.
 - 13. Drivers shall operate properly from a supply voltage of 120 through 277VAC at 60Hz.

2.3 EMERGENCY EGRESS LUMINAIRE:

- a. Shall be completely self-contained, provided with maintenance-free 12-volt battery, automatic charger, two lamps, and other features. Luminaire shall be third-party listed as emergency lighting equipment, and meet or exceed the following standards: NEC, South Carolina State Building Code, Volume X Energy Code, NFPA-101, and NEMA Standards.
- b. Pilot light shall indicate the unit is connected to A.C. power. The battery shall have high-rate charge pilot light, unless self-diagnostic type. A test switch shall simulate the operation of the unit upon loss of A.C. power by energizing the lamps from the battery. This simulation must also exercise the transfer relay. An LED charging indicator light must be easily visible after installation and a remote test switch shall be installed adjacent to the fixture.
- c. Battery shall be sealed, maintenance free type, with minimum of 90 minutes operating endurance. Battery shall have a normal life expectancy of 10 years. Batteries shall be a high temperature type with an operating range of 0-degree C to 60 degrees C and contain a resealable pressure vent, a sintered + positive terminal and - negative terminal.
- d. Charger shall be fully automatic solid-state type, full wave rectifying, with current limiting. Charger shall restore the battery to its full charge within 24 hours after a discharge of 90 minutes under full rated load. The unit shall be activated when the voltage drops below 80%. A low voltage disconnect switch shall be included if LEAD battery is used, to disconnect the battery from the load and prevent damage from a deep discharge during extended power outage.
- e. The entire unit shall be warranted for three years. The battery must have an additional two more years' pro-rated warranty. Warranty shall start from the date of project final acceptance. Warranty shall be included in the contract document.
- f. Contractor shall perform a test on each unit after it is permanently installed and charged for a minimum of 24 hours. Battery shall be tested for 90 minutes. The battery test shall be done 10 days prior to final inspection. Any unit which fails the test must be repaired or replaced and tested again. The test shall demonstrate that the batteries conform to the requirements of NEC 700.12 (F).

PART 3: EXECUTION

3.1 COORDINATION:

- a. Contractor shall verify ceiling or wall type in or on which each fixture is to be mounted, and shall furnish unit with appropriate trim type, mounting hardware, and accessories to fit the construction; and feed through junction boxes as required to maintain proper access to system wiring.

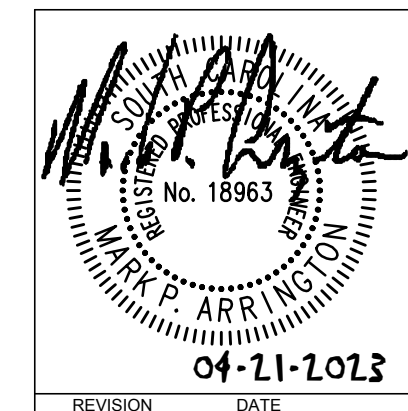
3.2 INSTALLATION:

- a. Lighting fixtures shall be installed in accordance with the manufacturer's instructions.
- b. Lighting fixtures shall be supported from the building structure using corrosion resistant steel hardware in compliance with Section 16100, Basic Materials and Methods.
- c. A minimum of two No. 12 gauge wire supports attached to the structure shall be provided for each lighting fixture unless otherwise indicated or approved by the Architect/Engineer. The supports shall be located at diagonal corners of rectangular fixtures and angled away from fixture. A minimum of three full twists shall be made at each end to secure wire.
- d. In addition to the supports from the structure, fixtures shall also be secured to suspended ceilings on which they are mounted, or in which they are recessed. Where fixtures are secured to suspended ceilings, the primary supports from the building structure shall be slack.
- e. Where installed recessed in grid type ceilings, the fixtures shall be attached to the main runners of the suspended ceiling at all four corners using sheet metal screws.
- f. Conductors in fixture taps shall be #16 AWG minimum, type TFN, in 3/8" flexible metal conduit of 72" maximum length. A green insulated equipment grounding conductor shall be included.
- g. Mount fixtures plumb and square. Keep rows in perfect line.
- g. At time of project completion, fixtures shall be clean and fully operational.



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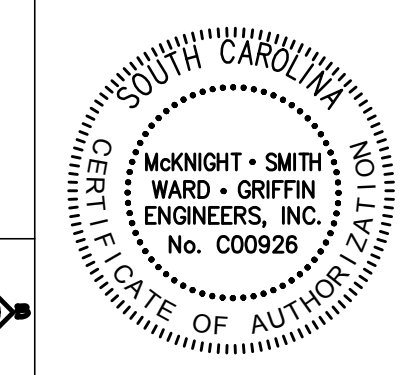


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ELEVATOR RENOVATIONS

HORRY GEORGETOWN
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GEORGETOWN, SOUTH CAROLINA



2023
04/21/2023
SPECIFICATIONS

E3.2

A1
E3.2
SPECIFICATIONS
NO SCALE

