GENERAL ELECTRICAL NOTES & SPECIFICATIONS

1. ALL WORK TO BE IN ACCORDANCE WITH FEDERAL, STATE, LOCAL AND THE 2020 EDITION OF THE NATIONAL ELECTRICAL CODE (NEC).

2. MINIMUM CONDUIT SIZE SHALL BE 3/4" U.N.O.

3. ALL FEEDERS AND BRANCH CIRCUITS (POWER, LIGHTING, SIGNAL, ETC.) SHALL HAVE GREEN INSULATED GROUND WIRE INSTALLED WITH CIRCUIT CONDUCTORS. DO NOT RELY SOLELY ON METAL RACEWAYS FOR EQUIPMENT GROUND.

4. SPLICING: 1) SOLID CONDUCTORS, #10 AWG & SMALLER, SHALL BE SPLICED BY TWISTING SECURELY AND USING IDEAL "WIRENUTS", 3M CO. "SCOTCHLOCK", OR THOMAS & BETTS CONNECTORS FOR BRANCH CIRCUIT SPLICES (#10 & #12) IN JUNCTION BOXES, OUTLET BOXES AND LIGHTING FIXTURES. "STA-KON" OR OTHER PERMANENT TYPE CRIMP CONNECTORS SHALL NOT BE USED FOR BRANCH CIRCUIT CONNECTIONS. 2) STRANDED CONDUCTORS, #8 AWG & LARGER, SHALL BE SPLICED BY APPROVED MECHANICAL CONNECTORS GUM RUBBER TAPE OR FRICTION TAPE. SOLDERLESS MECHANICAL CONNECTORS FOR SPLICES AND TAPS, PROVIDED WITH UL APPROVED INSULATING COVERS, MAY BE USED INSTEAD OF MECHANICAL CONNECTORS PLUS TAPE. CONDUCTORS, IN ALL CASES, SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND NO SPLICING SHALL BE MADE EXCEPT WITHIN OUTLET OR JUNCTION BOXES, TROUGHS AND GUTTERS.

5. DISCONNECTS, MOTOR CONTROLLERS, MOTOR RATED AND MOTOR SENTINEL SWITCHES, ETC. FOR HVAC EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER WIRING TO THE LINE SIDE ONLY. THE MECHANICAL CONTRACTOR SHALL PROVIDE WIRING FROM THE LOAD SIDE OF THE DISCONNECTS, CONTROLLERS, ETC. INTO THE EQUIPMENT. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING TO THEIR EQUIPMENT. DISCONNECTS FOR OTHER EQUIPMENT SHALL BE FURNISHED, INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED. ALL DISCONNECTS SHALL BE RATED AS "HEAVY DUTY" AND FUSED OR NON-FUSED AS REQUIRED.

6. THE USE OF "LB's" SHALL BE LIMITED WHERE POSSIBLE. WHERE NECESSARY TO USE "LB's" IN SIZES ABOVE 2", MOGUL UNITS SHALL BE INSTALLED.

7. E.C. SHALL NOTIFY THE OFFICE OF THE LOCAL ELECTRICAL INSPECTOR TO SCHEDULE REQUIRED INSPECTIONS.

8. INTERIOR WIRING SHALL BE RUN CONCEALED IN RIGID GALVANIZED STEEL CONDUIT (OR INTERMEDIATE METALLIC CONDUIT). IN DRY LOCATIONS, AND WHERE DANGER OF PHYSICAL DAMAGE IS MINIMIZED, ELECTRIC METALLIC TUBING UP TO 2" TRADE SIZE MAY BE USED. RIGID OR IMC SHALL BE INSTALLED WHERE ROUTED IN OR UNDER POURED CONCRETE, IN EXTERIOR MASONRY WALLS, OR IN WET LOCATIONS WHERE SUBJECT TO SEVERE PHYSICAL DAMAGE OR WHERE CONDUIT TRADE SIZE IS 2-1/2 INCHES OR LARGER. CONDUIT TERMINATIONS: (1) IMC (INTERMEDIATE METAL CONDUIT) AND RMC (RIGID METAL CONDUIT) SHALL TERMINATE WITH EITHER A DOUBLE LOCKNUT/BUSHING SET, OR IN A THREADED HUB. (2) WHERE CONCENTRIC, ECCENTRIC OR OVER-SIZED KNOCKOUTS ARE ENCOUNTERED, A GROUNDING-TYPE INSULATED BUSHING SHALL BE PROVIDED. (3) EMT TERMINATIONS SHALL BE MADE UTILIZING STEEL-PLATED HEXAGONAL COMPRESSION CONNECTORS WITH INSULATED THROAT AND COMPRESSION COUPLINGS. NO POT METAL, SET SCREW OR INDENTED TYPE FITTINGS SHALL BE UTILIZED. INSULATED THROAT CONNECTORS WILL BE REQUIRED AT ALL CONDUIT TERMINATIONS OF 1" OR LESS. PLASTIC BUSHINGS ON NON-INSULATED THROAT CONNECTORS MAY BE USED ON SIZES ABOVE 1". (4) EMT TERMINATIONS SHALL BE "CONCRETE TIGHT" WHERE BURIED IN MASONRY OR CONCRETE. EMT FITTINGS, WHERE INSTALLED IN DAMP LOCATIONS, SHALL BE OF THE "RAINTIGHT" TYPE. WHERE CONDUITS OF ANY TYPE PASS OVER A BUILDING EXPANSION JOINT, A STANDARD "EXPANSION JOINT FITTING", COMPATIBLE WITH THE TYPE OF RACEWAY BEING USED, SHALL BE PROVIDED.

9. ALL CONDUCTORS SHALL BE COPPER. #10 AWG AND SMALLER SHALL BE SOLID. #8 AWG AND LARGER SHALL BE CLASS B STRANDED. MINIMUM WIRE SIZE SHALL BE #12. MAXIMUM WIRE SIZE SHALL BE 600KCM.

10. ALL INSULATION SHALL BE DUAL-RATED TYPE THHN/THWN OR TYPE XHHW.

11. OUTLET BOXES FOR LIGHTING AND APPLIANCE CIRCUITS, WHERE CONCEALED, SHALL BE STAMPED STEEL, GALVANIZED OR CADMIUM PLATED. FOR EXPOSED WORK, TYPE 'FS' OR 'FD' CAST BOXES SHALL BE USED. STAINLESS STEEL, BEVELED TYPE 302 COVER PLATES SHALL BE USED FOR ALL INTERIOR FLUSH MOUNTED DEVICES. FOR EXPOSED WORK, DEVICE PLATES SHALL BE MATCHING, OF THE SAME MANUFACTURER AS THE BOX, AND MATCHING THE OUTLINE OF THE BOX.

12. COLOR CODING OF CONDUCTORS SHALL BE BLACK-RED-BLUE FOR PHASES A-B-C RESPECTIVELY ON SYSTEMS OF LESS THAN 150 VOLTS TO GROUND. NEUTRAL SHALL BE WHITE. USE BROWN-ORANGE-YELLOW FOR PHASES A-B-C RESPECTIVELY ON SYSTEMS OF MORE THAN 150 VOLTS, BUT LESS THAN 300 VOLTS TO GROUND. NEUTRAL SHALL BE NATURAL GRAY. GREEN SHALL BE USED FOR THE EQUIPMENT GROUNDING CONDUCTOR ON BOTH SYSTEMS.

13. RECEPTACLE DEVICES SHALL BE 20 AMP, NEMA GROUNDING TYPE. SWITCHES SHALL BE 20 AMP, 120/277 VOLT. ALL DEVICES, SWITCHES AND RECEPTACLES, SHALL BE EQUIPPED WITH GREEN HEX HEAD GROUNDING SCREW. SWITCHES SHALL HAVE QUIET OPERATING MECHANISMS WITHOUT THE USE OF MERCURY. ALL RECEPTACLES SHALL BE PIG-TAILED WIRED SO THAT THE REMOVAL OF A DEVICE WILL NOT DISRUPT THE REMAINING CIRCUIT. SEE DETAIL ON DRAWINGS.

14. EXPOSED AND CONCEALED CONDUIT (EXCEPT IN SLAB) SHALL BE NEATLY INSTALLED PARALLEL TO, OR AT RIGHT ANGLES TO BEAMS, WALLS AND FLOORS OF THE BUILDING. ALL BENDS SHALL BE MADE WITH STANDARD CONDUIT ELBOWS OR CONDUIT BENT TO NOT LESS THAN THE SAME RADIUS THAN A STANDARD CONDUIT ELBOW. CONDUITS SHALL BE SUPPORTED AT INTERVALS NOT GREATER THAN 10 FEET AND WITHIN 3 FEET OF ANY BEND, CABINET, OUTLET OR JUNCTION BOX. CONDUITS SHALL BE SUPPORTED BY APPROVED PIPE STRAPS OR CLAMPS, SECURED BY MEANS OF TOGGLE BOLTS ON HOLLOW MASONRY; EXPANSION SHIELDS AND MACHINE SCREWS OR STANDARD PRE-SET INSERTS ON CONCRETE OR SOLID MASONRY, MACHINE SCREWS OR BOLTS ON METAL SURFACES, AND WOOD SCREWS ON WOOD CONSTRUCTION.

15. EMT MAY BE UTILIZED AS PERMITTED BY THE NEC, WITH THE FOLLOWING RESTRICTIONS. EMT SHALL NOT BE INSTALLED: (A) WHERE TUBING, COUPLINGS, ELBOWS AND FITTINGS WOULD BE IN DIRECT CONTACT WITH THE EARTH OR UNDERGROUND (IN/BELOW SLAB-ON-GRADE OR IN EARTH), (B) ANY LOCATION OUTDOORS. (C) WHERE EXPOSED TO SEVERE CORROSIVE INFLUENCE AND/OR SEVERE PHYSICAL DAMAGE. EMT FITTINGS SHALL BE ALL PLATED STEEL HEXAGONAL THREADED COMPRESSION TYPE. NO POT METAL, SET SCREW, OR INDENTER FITTINGS SHALL BE USED.

16. SEAL AROUND ALL CONDUIT PENETRATIONS THROUGH WALLS, FLOORS AND CEILINGS. USE U.L. LISTED AND APPROVED FIRE RATED MATERIAL FOR SEALING AROUND PENETRATIONS THROUGH RATED WALLS, FLOORS AND CEILINGS. REFER TO PENETRATION DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

17. AT COMPLETION OF PROJECT, PROVIDE THE FOLLOWING: 1. INSTRUCT OWNER IN OPERATION OF ALL ELECTRICAL SYSTEMS. 2. ONE SET OF "AS-BUILT" DRAWINGS; 3. TURN OVER ALL OPERATION AND MAINTENANCE MANUALS FOR ELECTRICAL SYSTEMS AND EQUIPMENT TO THE ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO SUBMISSION TO THE OWNER.

18. SCHEDULE 40 PVC SHALL NOT BE USED EXPOSED OR CONCEALED IN GYPSUM WALLS, BUT MAY BE USED IN CMU WALLS. SCHEDULE 40 PVC MAY BE USED IN ELEVATED FLOOR SLABS AND FOUNDATION SLABS. MINIMUM CONCRETE COVER SHALL BE 3/4-INCH AT FINISHED OR FORMED SURFACE AND SHALL BE 3-INCHES AT CONCRETE SURFACE CAST AGAINST EARTH OR FOR SLABS PLACED ON-GRADE. GREATER AMOUNTS OF CONCRETE COVER SHALL BE USED IN AREAS SUBJECT TO DAMAGE. THE PLACEMENT OF CONDUIT IN THE FLOOR SLABS MUST BE THOROUGHLY COORDINATED WITH THE GENERAL CONTRACTOR SO AS NOT TO AFFECT THE STRUCTURAL INTEGRITY OF THE BUILDING.

19. UNDERGROUND RACEWAYS:
(1) RACEWAYS RUN EXTERNAL TO BUILDING FOUNDATION WALLS, WITH THE EXCEPTION OF BRANCH CIRCUIT RACEWAYS, SHALL BE ENCASED WITH A MINIMUM OF THREE (3) INCHES OF CONCRETE ON ALL SIDES.
A. ENCASED RACEWAYS MUST HAVE A MINIMUM COVER OF TWENTY-FOUR (24) INCHES.
B. ENCASED RACEWAYS SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR CONCRETE ENCASEMENT."
(2) BRANCH CIRCUIT RACEWAYS RUN UNDERGROUND EXTERNAL TO BUILDING FOUNDATION WALLS SHALL BE RUN IN RACEWAYS INSTALLED IN ACCORDANCE WITH THE NEC, AND SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR DIRECT BURIAL." MINIMUM RACEWAY SIZE SHALL BE 3/4 INCH.
(3) ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED BY UNDERGROUND LINE MARKING TAPE LOCATED DIRECTLY ABOVE THE RACEWAY AT 6 TO 8 INCHES BELOW FINISHED GRADE. TAPE SHALL BE PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED, PLASTIC TAPE COMPOUNDED FOR DIRECT BURIAL NOT LESS THAN 6 INCHES WIDE AND 4 MILS THICK. PRINTED LEGEND SHALL BE
INDICATIVE OF GENERAL TYPE OF UNDERGROUND LINE BELOW.
(4) RACEWAYS RUN UNDERGROUND INTERNAL TO BUILDING FOUNDATION WALLS SHALL BE OF A TYPE AND INSTALLED BY A METHOD APPROVED BY THE NEC.
(5) WHERE UNDERGROUND RACEWAYS ARE REQUIRED TO TURN UP INTO CABINETS, EQUIPMENT, ETC., AND ON TO POLES, THE ELBOW REQUIRED AND THE STUB-UP OUT OF THE SLAB OR EARTH SHALL BE OF RIGID STEEL.
(6) THE RACEWAY SYSTEM SHALL NOT BE RELIED ON FOR GROUNDING CONTINUITY.
(7) WHERE PASSING THROUGH A "BELOW GRADE" WALL FROM A CONDITIONED INTERIOR BUILDING SPACE, RACEWAYS SHALL BE SEALED UTILIZING FITTINGS SIMILAR AND EQUAL TO OZ/GEDNEY TYPE "FSK" THRU-WALL FITTING WITH "FSKA" MEMBRANE CLAMP ADAPTER IF REQUIRED.

20. DEMOLITION: THE ELECTRICAL CONTRACTOR SHALL PROVIDE DEMOLITION (REMOVAL AND ABANDONMENT OF ALL EXISTING ELECTRICAL ITEMS). THIS INCLUDES REMOVING, BOXES, CONDUIT, WIREMOLD, WIRING, LIGHTING FIXTURES, DEVICES, ETC. TO ACCOMMODATE NEW OR RENOVATED CONSTRUCTION. CONDUIT AND BOXES SHALL BE REMOVED WHERE PRACTICAL WITHOUT CREATING ADDITIONAL DEMOLITION/RESTITUTION WORK FOR OTHER TRADES. PROVIDE BLANK COVERS ON ALL UNUSED JUNCTION AND/OR OUTLET BOXES. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL FOR ALL ITEMS THAT ARE REMOVED FROM THE BUILDING. ANY ITEMS THAT THE OWNER DOES NOT WISH TO KEEP SHALL BE COMPLETELY REMOVED FROM THE JOB SITE AND PROPERLY DISPOSED OF BY THE ELECTRICAL CONTRACTOR. COMPLY WITH THE MOST RECENT POLICES RELATED TO RECYCLING AND/OR DISPOSAL OF HAZARDOUS WASTES AS SET FORTH IN ENVIRONMENTAL PROTECTION AGENCY (EPA) FOR RESOURCE CONSERVATION AND RECOVERY ACT (RCRA).

ALL UNUSED CONDUITS, BOXES, BRACKETS, HANGERS, ETC. SHALL BE COMPLETELY REMOVED IN ALL AREAS. SOME CONDUITS MAY BE REUSED IF: A. IN WORKING CONDITION (NOT KINKED OR OTHERWISE DAMAGED). B. PROPERLY SIZED TO ACCOMMODATE NEW CONDUCTORS. C. LOCATED SO THEY WILL NOT INTERFERE WITH NEW CONSTRUCTION AND/OR EQUIPMENT/ITEMS OF OTHER TRADES.

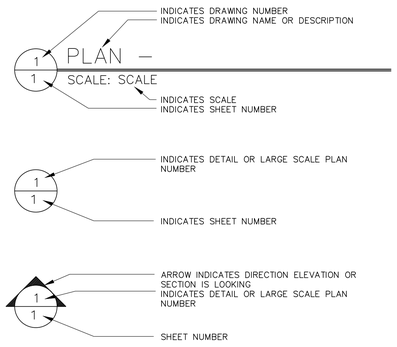
WHERE CONDUITS ARE REMOVED BACK TO WALLS, AND NO FURTHER REMOVAL CAN BE PERFORMED, THE CONDUITS SHALL BE FITTED WITH A CAP OR PLUG TO SEAL THE ENDS.

WHERE CONDUITS ARE REMOVED TO THE CONCRETE FLOOR, AND NO FURTHER REMOVAL CAN BE PERFORMED, THE CONDUIT SHALL BE REMOVED TO A POINT THAT IS A MINIMUM OF 2" BELOW FINISH FLOOR LEVEL AND PLUGGED OR SEALED TO PREVENT ENTRY OF FOREIGN MATTER. THIS WILL ALLOW THE FLOOR TO BE PATCHED BACK TO ORIGINAL CONDITION (AS MUCH AS POSSIBLE). COORDINATE THIS WORK WITH THE GENERAL CONTRACTOR TO VERIFY EXACTLY HOW FAR CONDUITS WILL NEED TO BE CUT BELOW THE FINISH FLOOR IN ORDER FOR THE GENERAL CONTRACTOR TO PROPERLY PATCH THE FLOOR.

21. EACH 120-VOLT BRANCH CIRCUIT SHALL BE EQUIPPED WITH A SEPARATE NEUTRAL. NO MULTI-WIRE BRANCH CIRCUITS (SHARED NEUTRALS) WILL BE ALLOWED.

22. IT IS THE INTENT THAT THE WORK SPECIFIED HEREIN SHALL BE COMPLETE IN EVERY RESPECT AND THAT ANY MATERIAL OR WORK NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS, BUT NECESSARY TO FULLY COMPLETE THE WORK, SHALL BE PROVIDED TO MAKE ALL SYSTEMS FULLY OPERATIONAL.

23. <u>ALL EXTERIOR CONDUIT SHALL BE IMC.</u>



1. LINK TRADE PERMITS WITH THE BUILDING PERMIT.
2. ALL PRE-WIRED EQUIPMENT SHALL BE LISTED BY STATE OF NC APPROVED 3RD PARTY AGENCY, [NEC 90.7;110.3(B)]
3. CLEARANCE REQUIRED AT ELECTRICAL EQUIPMENT, (NEC 110.26)
4. ALL GROUNDING AND BONDING REQUIRED TO COMPLY WITH NEC ARTICLE 250, (NEC 250.1)
5. FLEXIBLE CORDS SHALL NOT PASS THROUGH CEILINGS, WALLS OR FLOORS, (NEC 400.8)
6. ALL WIRING, INCLUDING LOW VOLTAGE, DATA, PHONE, FIRE ALARM, SECURITY, HVAC CONTROLS, AND POWER SHALL BE PERMITTED AND INSPECTED PER NC GENERAL STATUTES PER COUNTY, AND CITY ORDINANCE.
7. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE LABEL LISTED BY A NORTH CAROLINA APPROVED THIRD PARTY TESTING AGENCY.

ELECTRICAL DRAWING INDEX

SHEET #	DESCRIPTION
E0.0	ELECTRICAL COVER SHEET
E0.1	ELECTRICAL ABBREVIATIONS AND SYMBOL LEGEND
ED1.1	ELECTRICAL DEMOLITION PLAN
E1.1	ELECTRICAL REVISED PLAN
E2.1	ELECTRICAL PANEL SCHEDULES
E3.1	ELECTRICAL DETAILS

CONSULTANT ENGINEERING SERVICE, INC.
PLUMBING • MECHANICAL • ELECTRICAL
Phone: 336.724.0139 • 1111 S Marshall Street, Suite 250, Winston Salem, NC 27101
A Woman Owned Business
est. 1964

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15886 05/12/26 CHRISTOPHER R. STROPE

FTCC FORSYTH BLDG
HVAC RENOVATION
2100 SILAS CREEK PKWY, WINSTON-SALEM, NC 27103

DATE
05/12/2026

CES LICENSE NO. F-0238

SHEET TITLE
ELECTRICAL COVER SHEET

PROJECT NO.
4011

DRAWN BY
JREH

APPROVED BY
CES

REVISION

REVISION

REVISION

SHEET NUMBER
E0.0

Electrical Abbreviations

1P	1 Pole (2P, 3P, 4P, ETC.)	MCB	Main Circuit Breaker
A, Amp	Ampere	MCC	Motor Control Center
AC	Above Counter	MDC	Main Distribution Center
ACLG	Above Ceiling	MDP	Main Distribution Panel
ADO	Automatic Door Opener	MFR	Manufacturer
AF	Amp Frame	MFS	Main Fused Disconnect Switch
AFF	Above Finished Floor	MH	Manhole
AFG	Above Finished Grade	MIC	Microphone
AFI	Arc Fault Circuit Interrupter	MIN	Minimum
AHU	Air Handling Unit	MISC	Miscellaneous
AL	Aluminum	MLO	Main Lugs Only
ALT	Alternate	MMS	Manual Motor Starter
AMP	Ampere	MOA	Multioutlet Assembly
AMPL	Amplifier	MSP	Motor Starter Panelboard
ANNUN	Annunciator	MSBD	Main Switchboard
APPROX	Approximately	MSS	Motor Starter Switch
AQ-STAT	Aquastat	MT	Mount
ARCH	Architect, Architectural	MT.C	Empty Conduit
AS	Amp Switch	MTS	Manual Transfer Switch
AT	Amp Trip	MTR	Motor, Motorized
ATS	Automatic Transfer Switch	N.C.	Normally Closed
AUTO	Automatic	NEC	National Electrical Code
AUX	Auxiliary	NEMA	National Electrical Manufacturer's Association
AV	Audio Visual	NFDS	Non-Fused Safety Disconnect Switch
AWG	American Wire Gauge	NIC	Not In Contract
BATT	Battery	NL	Night Light
BD	Board	N.O.	Normally Open
BLDG	Building	NPF	Normal Power Factor
BMS	Building Management System	NTS	Not To Scale
C	Conduit	OC	On Center
CAB	Cabinet	OH	Overhead
CAT	Catalog	OL	Overloads
CATV	Cable Television	PA	Public Address
CB	Circuit Breaker	PB	Pull Box Or Pushbutton
CCTV	Closed Circuit Television	PE	Pneumatic Electric
CKT	Circuit	PED	Pedestal
CLG	Ceiling	PF	Power Factor
COMB	Combination	PH	Phase
CMPR	Compressor	PIV	Post Indicating Valve
CONN	Connection	PNL	Panel
CONST	Construction	PP	Power Pole
CONT	Continuation Or Continuous	PR	Pair
CONTR	Contractor	PRI	Primary
CONV	Convector	PROJ	Projection
CP	Circulating Pump	PRV	Power Roof Ventilator
CRT	Cathode-Ray Tube	PT	Potential Transformer
CT	Current Transformer	PVC	Polyvinyl Chloride (Conduit)
CTR	Center	PWR	Power
CU	Copper	QUAN	Quantity
DCP	Domestic Water Circulating Pump	RCPT	Receptacle
DEPT	Department	REQD	Required
DET	Detail	RM	Room
DIA	Diameter	RSC	Rigid Steel Conduit
DISC	Disconnect	RTU	Roof Top Unit
DIST	Distribution	SC	Surface Conduit
DN	Down	SEC	Secondary
DPR	Damper	SHT	Sheet
DS	Safety Disconnect Switch	SIM	Similar
DT	Double Throw	SLD	Single-Line Diagram
DWG	Drawing	S/N	Solid Neutral
EC	Electrical Contractor	SPEC	Specification
ELEC	Electric, Electrical	SPKR	Speaker
ELEV	Elevator	SP	Spare
ELU	Emergency Lighting Unit	SPP	Single-Point Power
EM	Emergency	SR	Surface Raceway
EMS	Energy Management System	SS	Stainless Steel
EMT	Electrical Metallic Tubing	SSW	Selector Switch
EP	Electric Pneumatic	S/S	Stop/Start Pushbuttons
EQUIP	Equipment	STA	Station
EWC	Electric Water Cooler	STD	Standard
EX.	Existing	SURF	Surface Mounted
EXH	Exhaust	SW	Switch
EXP	Explosion Proof	SWBD	Switchboard
FA	Fire Alarm	SYM	Symmetrical
FABP	Fire Alarm Booster Power Supply Panel	SYS	System
FACP	Fire Alarm Control Panel	TEL	Telephone
FCU	Fan Coil Unit	TERM	Terminal
FIXT	Fixture	TL	Twist Lock
FLR	Floor	TR	Tamper Resistant
FLUOR	Fluorescent	T-STAT	Thermostat
FU	Fuse	TTC	Telephone Terminal Cabinet
FUDS	Fused Safety Disconnect Switch	TV	Television
GA	Gauge	TVTC	Television Terminal Cabinet
GAL	Gallon	TYP	Typical
GALV	Galvanized	UC	Under Counter
GC	General Contractor	UE	Underground Electrical
GEN	Generator	UG	Underground
GFI	Ground Fault Circuit Interrupter	UH	Unit Heater
GFP	Ground Fault Protector	UT	Underground Telephone
GND	Ground	UTIL	Utility
GRS	Galvanized Rigid Steel (Conduit)	UV	Ultraviolet
GYP BD	Gypsum Board	V	Volt
HOA	Hands-Off-Automatic Switch	VA	Volt-Amperes
HORIZ	Horizontal	VDT	Video Display Terminal
HP	Horsepower	VERT	Vertical
HPF	High Power Factor	VFD	Variable Frequency Drive
HT	Height	VOL	Volume
HTG	Heating	W	Watt
HTR	Heater	W/	With
HV	High Voltage	WG	Wire Guard
HVAC	Heating, Ventilating And Air Conditioning	WH	Water Heater
IC	Interrupting Capacity	W/O	Without
IG	Isolated Ground	WP	Weatherproof
IMC	Intermediate Metal Conduit	XFMR	Transformer
INCAND	Incandescent	XFR	Transfer
IR	Infrared		
I/W	Interlock With	∠	Angle
J-BOX	Junction Box	@	At
KV	Kilovolt	▲	Delta
KVA	Kilovolt-Ampere	'	Feet
KVAR	Kilovolt-Ampere Reactive	"	Inches
KW	Kilowatt	#	Number
KWH	Kilowatt Hour	Ø	Phase
LOC	Locate Or Location	C	Centerline
LT	Light	P	Plate
LTG	Lighting		
LTNG	Lightning		
LV	Low Voltage		
MAX	Maximum		
MAG.S	Magnetic Starter		
M/C	Momentary Contact		
MC	Mechanical Contractor		

***ALL SYMBOLS MAY NOT APPLY TO THESE DRAWINGS.**

*Electrical Symbol Legend

Lighting Symbols

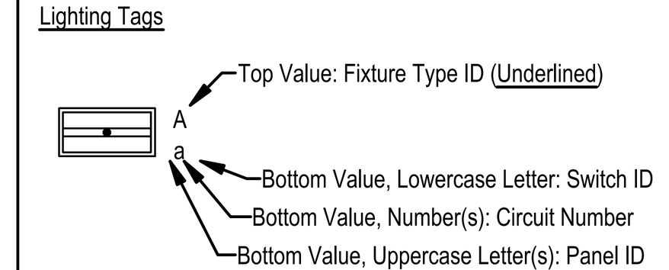
- Lighting Fixtures, Typical, Rectangular (Various Symbols)
  Filled circles indicate recessed.
  Open circles indicate surface-mounted.
  Diagonal line indicates lensed.
  Outer dots indicate suspended.
- Lighting Fixtures, Typical, Round (Various Symbols)
  Center dot indicates pendant.
  Diagonal line indicates lensed.
  Chevron indicates wall wash.
- Wall-mounted fixtures, Typical (Various Symbols)
- Strip Fixture
- Directional Light, Track Light, Flood Light
- Linear Light, Tape Light
- Emergency Lighting Unit, Ceiling-Mounted, Integral Battery
- Emergency Lighting Unit, Ceiling-Mounted, Remote Battery
- Emergency Lighting Unit, Wall-Mounted, Integral Battery
- Emergency Lighting Unit, Wall-Mounted, Remote Battery
- Exit Light, Ceiling-Mounted. Shading and arrows indicate faces and directional chevrons.
- Exit Light, Wall-Mounted. Shading and arrows indicate faces and directional chevrons.
- Exit/ELU Combo
- Pole/Area Lights
- Post-Top Area Light
- Bollard Light
- Diagonal hatch indicates light on a critical circuit.
- Solid hatch indicates light on an emergency or life safety circuit.
- $ Single-Pole Switch
- $ Two-Pole Switch
- $ Three-Pole Switch

Switch Modifiers:

3: 3-Way	OS: Occupancy Sensor
4: 4-Way	VS: Vacancy Sensor
K: Keyed	AC: Above-Counter
D: Dimming	LV: Low-Voltage
T: Timer	M: Motor-Rated

- Lighting Contactor
- LC Lighting Control Panel
- OS Occupancy Sensor
- DL Daylight Harvesting Sensor

Lighting Tags



Absence of a switch designation on a lighting fixture indicates fixture is controlled by the only switch in the space. An "x" in place of the switch designation indicates unswitched.

Switch ID indicated by a lowercase letter. Switch IDs are unique per space. A switch with an ID "a" controls all devices within the space in which it is located tagged with "a". A switch without a tagged ID controls all lighting fixtures within a space. ID tags may be used on control devices other than switches, such as occupancy sensors or contactors.

Grounding and Lightning Protection Symbols

- Ground Rod
- Ground Rod with Test Well
- Static Ground Receptacle
- Lightning Protection Air Terminal
- Lightning Protection Conductor Splice

Power Symbols

Wall / Ceiling / Floor

- Simplex Receptacle
- Duplex Receptacle
- Quadruplex Receptacle
- Special Receptacle, Type as Indicated

Receptacle Modifiers:
- ##": Height AFF OC
- AC: Above Counter
- GFI: Ground-Fault Circuit Interrupter
- WP: Weatherproof In-Use Cover

- Half shading indicates split (typically switched)
- Outside shading indicates emergency circuit
- Center shading indicates isolated ground
- $ Single-Pole Switch
- $ Two-Pole Switch
- $ Three-Pole Switch

Switch Modifiers:
- K: Keyed
- T: Timer
- AC: Above-Counter
- M: Motor-Rated

- Multioutlet Assembly
  Filled squares indicate 120V outlet
  Open squares indicate with USB
- Cord Reel, Device Varies
- Drop Cord, Device Varies
- J Junction Box
- F1 Floor Box, see schedule for type
- Emergency Power Off
- DO Door Opener Push Plate
- M Power Meter
- Safety Switch, Fused
- Safety Switch, Unfused
- Motor Starter
- Combination Starter/Disconnect
- Contactor

Power Device and Equipment Tags

Electrical DeviceTags: Uppercase letter(s) indicates Panel ID and circuit number. Lowercase letter indicates designation of controlling switch (where applicable).

XX-1 Equipment Tags: Equipment ID is indicated by an underlined tag adjacent to the equipment. See the equipment connection schedule for description, electrical requirements, and panel and circuit number. Symbols/graphic appearance of equipment varies.

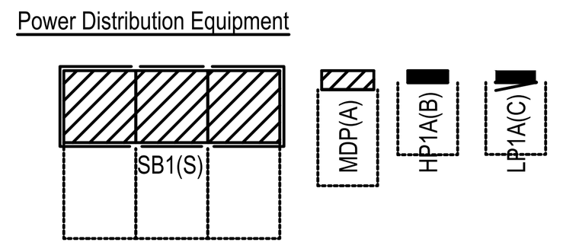
Wiring

Solid, arced lines connecting equipment, devices, or fixtures indicate unswitched power circuiting. Wires are only intended to indicate to what circuit devices are connected. Actual connections, circuit routing, installation, junction boxes, etc. shall be field-determined by the contractor.

Dashed, arced lines connecting equipment, devices, or fixtures indicate switched power.

Home run to branch circuit panelboard. The equipment name and circuit number(s) are indicated, separated by a hyphen. Homeruns are only intended to indicate panel and circuit number. Actual homerun location shall be field-determined by the contractor.

Power Distribution Equipment



Hatched fill indicates distribution panel or switchboard.
Solid fill indicates branch panel or load center.
Dashed box indicates code-required clearance (width and depth).
Door indicates front of recessed panel.

Panelboards are assigned an abbreviated indicator (or Panel ID) for use with circuit numbers. Panel ID is listed within the panel schedule and in the panel abbreviation schedule.

Equipment is tagged with Panel Name and with Panel ID in parentheses. Panel ID is intended as a design documentation aid only. Do not include Panel ID in field-applied circuit directories or labels.

Devices and fixtures are tagged with Panel ID and circuit number. For example, a device tagged with "A1" indicates the device is circuited to panel designated "A," circuit number 1. The panel schedule circuit number contains both the panel abbreviation and the circuit number.

T1 Transformer: Typically transformer names begin with or contain the letter "T". See Single-Line Diagram for description and requirements.

Telecom Symbols

Wall / Ceiling / Floor

- Data Outlet
- Telephone Outlet
- Data/Telephone Outlet

Outlet Modifiers (above data symbol):
- ##": Height AFF OC
- AC: Above Counter

W: Wireless Access Point
M: TV Outlet/Media
CB: Call Button
TB: Phone Wall

Nurse Call Symbols

- N Nurse Call Corridor Light
  Number of lights as indicated
- X Nurse Call Device
  - B: Code Blue
  - D: Duty Station
  - E: Emergency
  - P: Patient Call
  - S: Staff
- XXXX Nurse Call Control Unit
  - NCAP: Nurse Call Annunciator Panel
  - NCHS: Nurse Call Host Controller
  - NCPA: Nurse Call Power Supply
  - NCTC: Nurse Call Terminal Cabinet
  - NCUPS: Uninterruptable Power Supply

Security Symbols

- SC Security Camera
- CR Card Reader
- CK Card Reader with Keypad
- TV CC Closed Circuit TV Outlet
- DC Door Contact
- ES Electric Strike
- IC Intercom
- ML Magnetic Lock
- RX Request to Exit Button
- REX Request to Exit Sensor
- SM Motion Detector
- XXX Security Control Unit
  - SCP: Security Control Panel
  - SPS: Security Power Supply Unit
  - SA: Access Control
  - SK: Keypad
  - SP: Panic Button

Construction Phasing

(Typical All Symbols and Equipment)

- Existing to Remain
- Existing to Be Demolished
- New
- Existing to Be Demolished

Miscellaneous

- Area Not in Contract
- # Keynote
- ELECTRICAL 111 Room Name and Number

Fire Alarm Symbols

- F Manual Pull Station
- F WP Horn, Wall
- F Horn, Ceiling
- Strobe, Wall, Candela as indicated
- Strobe, Ceiling, Candela as indicated
- Horn/Strobe, Wall, Candela as indicated
- Horn/Strobe, Ceiling, Candela as indicated
- Remote Indicator w/ Test Switch, Wall
- Remote Indicate w/ Test Switch, Ceiling
- Smoke Detector
- Heat Detector
- CO Carbon Monoxide Detector
- T Beam Detector T: Transmitter R: Receiver
- CO Combination Detector (Up to Three)
- Duct Smoke Detector
- Smoke Damper
- DH Door Holder
- DCL Door Closer
- Fire Service Phone
- XXX Addressable Module
  - AIM: Addressable Input Module
  - AOM:Addressable Output Control Module
  - AIO: Addressable Input/Output Module
- XXXX Fire Alarm Control Unit
  - EVAC: Voice Evacuation Control Panel
  - FAA: Fire Alarm Annunciator
  - FACP: Fire Alarm Control Panel
  - FATC: Fire Alarm Terminal Cabinet
  - NACP: Notification Appliance Circuit Panel
  - FAMN: Fire Alarm Mass Notification Control Panel
- XX Supervisory or Interface Device
  - PIV: Post Indicator Valve Supervisory
  - PS: Pressure Switch
  - R: Non-Addressable Relay
  - VS: Valve Supervisory Switch
  - WF: Water Flow Switch

CONSULTANT ENGINEERING SERVICE, INC.
PLUMBING ▪ MECHANICAL ▪ ELECTRICAL
Phone: 336.724.0139 ▪ 1111 S Marshall Street, Suite 250, Winston Salem, NC 27101
CES
A Woman Owned Business est. 1964

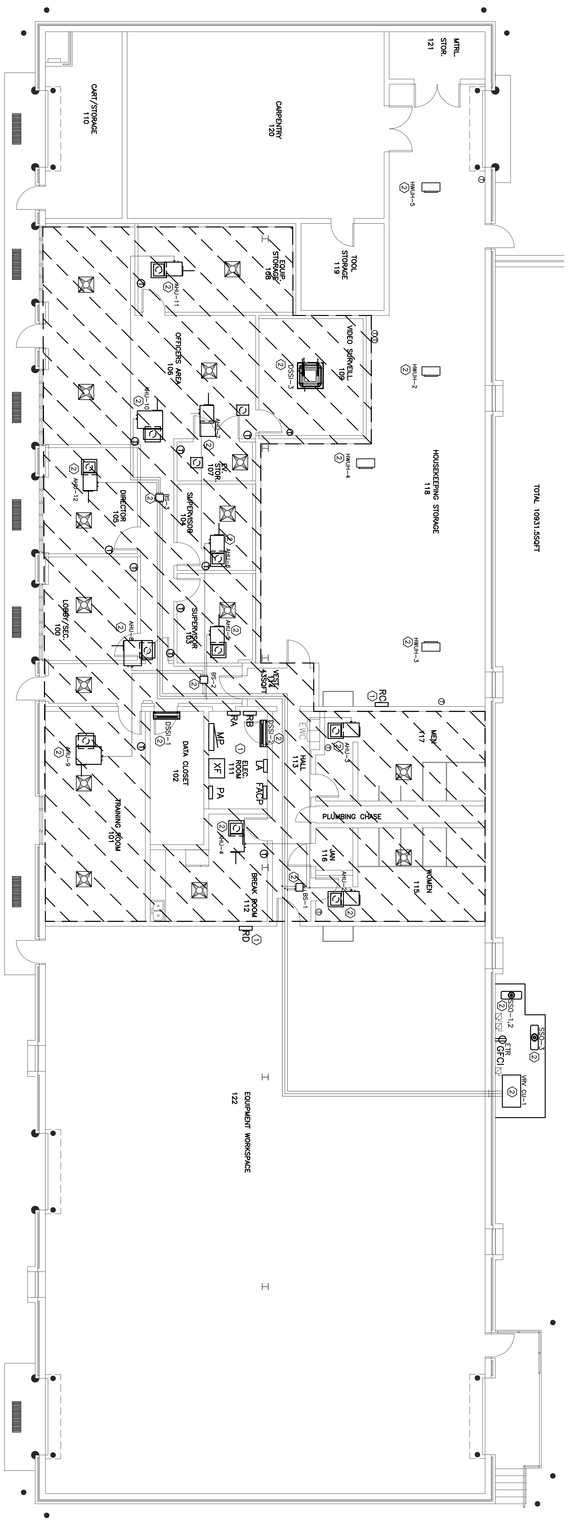
NORTH CAROLINA PROFESSIONAL SEAL 15886 05/12/2026 ENGINEER CHRISTOPHER R. STROUPE

FTCC FORSYTH BLDG
HVAC RENOVATION
2100 SILAS CREEK PKWY, WINSTON-SALEM, NC 27103

DATE 05/12/2026
CES LICENSE NO. F-0238

SHEET TITLE: ELECTRICAL ABBREVIATIONS AND SYMBOL LEGEND
DRAWN BY: /REH
APPROVED BY: CRS
PROJECT NO.: 4611
REVISION
REVISION
REVISION

SHEET NUMBER: E0.1



1 ED1.1 PLAN — ELECTRICAL DEMOLITION FLOOR PLAN
SCALE: 1/8"=1'-0"

KEY NOTES

1. EXISTING POWER DISTRIBUTION EQUIPMENT TO REMAIN.
2. DISCONNECT POWER FROM EXISTING MECHANICAL EQUIPMENT TO BE REPLACED. REMOVE EXISTING DISCONNECT ASSOCIATED WITH EQUIPMENT TO BE REMOVED. COORDINATE WORK WITH MECHANICAL CONTRACTOR.

SHEET NUMBER: ED1.1

SHEET TITLE: ELECTRICAL DEMOLITION PLAN

DRAWN BY	APPROVED BY	PROJECT NO.
/REH	CRS	4611

REVISION

REVISION

REVISION

DATE: 05/12/2026

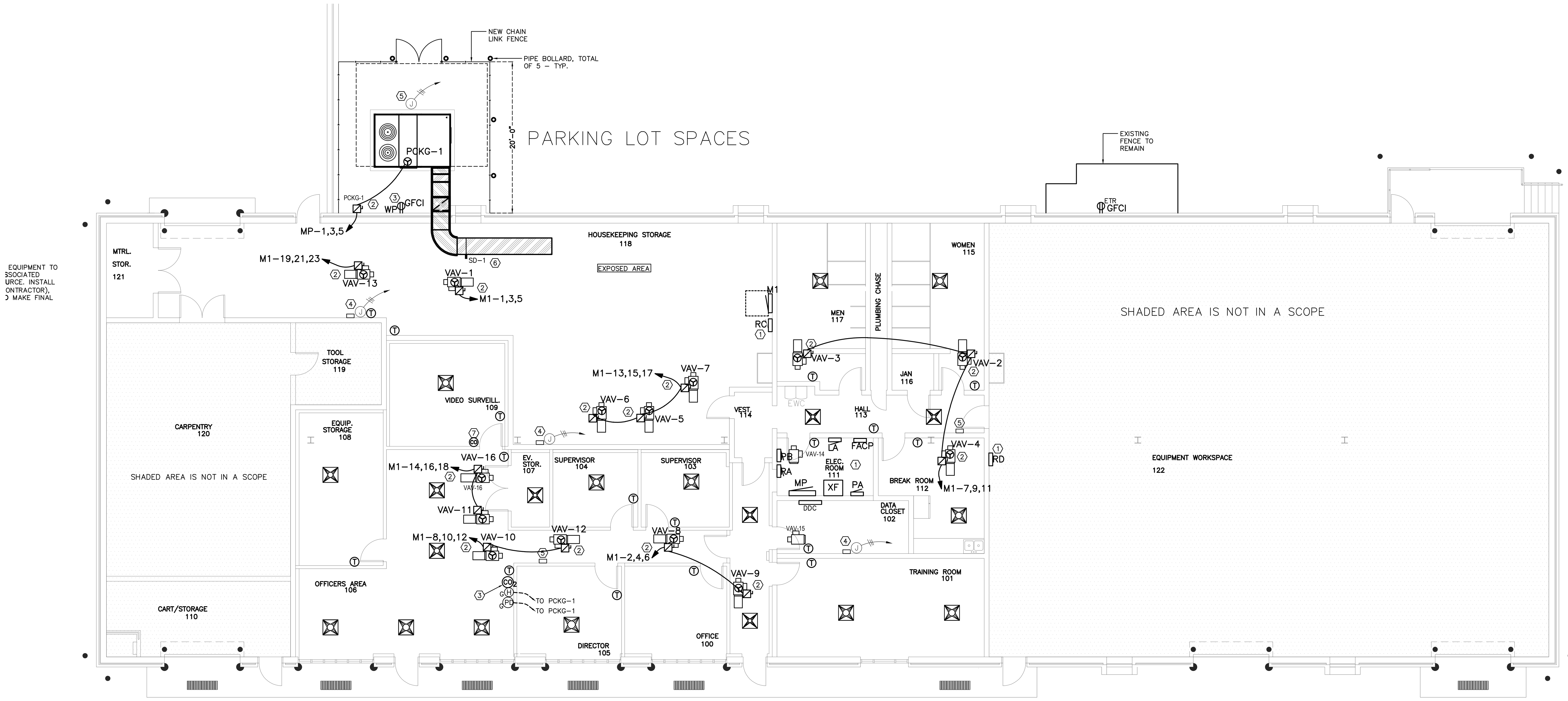
CES LICENSE NO. F-0238

FTCC FORSYTH BLDG
HVAC RENOVATION

2100 SILAS CREEK PKWY, WINSTON-SALEM, NC 27103

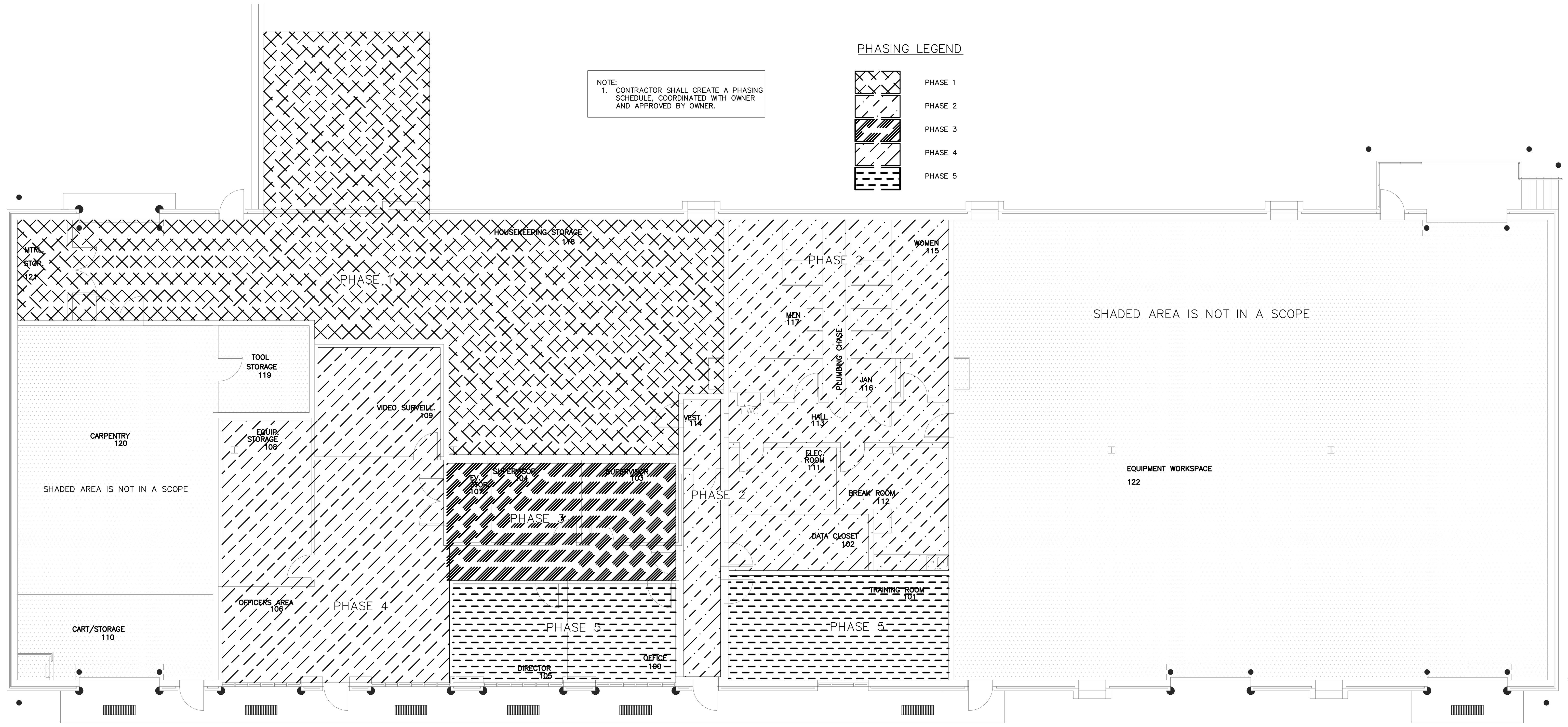
NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 050122006 ROGER R. STROUPE, III

CONSULTANT ENGINEERING SERVICE, INC.
PLUMBING ▪ MECHANICAL ▪ ELECTRICAL
A Woman Owned Business est. 1964
Phone: 336.724.0139 ▪ 1111 S Marshall Street, Suite 250, Winston Salem, NC 27101



PLAN – ELECTRICAL RENOVATION FLOOR PLAN

SCALE: 1/8"=1'-0"



PLAN – PHASING PLAN

SCALE: 1/8"=1'-0"

KEY NOTES

1. EXISTING POWER DISTRIBUTION EQUIPMENT TO REMAIN. ADD BREAKER AS NEEDED. UPDATE PANEL SCHEDULE.
2. E.C. TO INSTALL NEW CONDUIT, WIRING AND DISCONNECT. (DISCONNECT AND FUSES PROVIDED BY MECHANICAL CONTRACTOR), MAKE FINAL CONNECTION AT UNITS.
3. PROVIDE NEW OUTDOOR 120V SERVICE GFCI RECEPTACLE, 20AMP, WR RATED, WITH HEAVY DUTY INUSE COVERAND WEATHERPROOF JUNCTION BOX. CONNECT POWER FROM PANEL RC. PROVIDE NEW 20 AMP SINGLE POLE BREAKER IN PANEL. E.C. SHALL PROVIDE WIRE AND CONDUIT (2#12 & #12 GRD IN 3/4"). CONDUIT SHALL BE CONCEAL ON WALL MUCH AS POSSIBLE. COORDINATE WITH MECHANICAL CONTRACTOR AND OWNER.
4. E.C. PROVIDE NEW 120V, 20AMP, CIRCUIT. CONNECT POWER FROM PANEL RC. PROVIDE NEW 20 AMP SINGLE POLE BREAKER IN PANEL. E.C. SHALL PROVIDE WIRE AND CONDUIT (2#12 & #12 GRD IN 3/4"). CONDUIT SHALL BE CONCEAL ON WALL MUCH AS POSSIBLE. COORDINATE WITH MECHANICAL CONTRACTOR AND OWNER.
5. PROVIDE NEW OUTDOOR 120V CIRCUIT FOR HEAT TAPE, 20AMP, RATED, WITH WEATHERPROOF JUNCTION BOX AND COVER. PROVIDE POWER FROM PANEL RC. PROVIDE NEW 20 AMP SINGLE POLE GFPE BREAKER IN PANEL RC. E.C. SHALL PROVIDE WIRE AND CONDUIT (2#12 & #12 GRD IN 3/4"). MAKE CONNECTION ON HEAT TAPE. CONDUIT SHALL BE CONCEAL ON WALL MUCH AS POSSIBLE. IMC CONDUIT WHERE EXPOSED. COORDINATE WITH MECHANICAL CONTRACTOR AND OWNER.
6. E.C. TO PROVIDE NEW DUCT DETECTOR AND CONNECTION TO EXISTING FIRE ALARM PANEL. E.C. TO PROVIDE AND INSTALL A 3/4" CONDUIT AND WIRING TO FIRE ALARM EQUIPMENT AS NEEDED. E.C. SHALL ADD ADDITIONAL EQUIPMENT AND PROGRAMMING AS NEEDED. ALL NEW WORK SHOULD BE TESTED AND A LETTER OF CERTIFICATION PROVIDED TO FIRE MARSHALL AND OWNER. EXISTING FIRE ALARM PANEL IS (EDWARDS) AND IS LOCATED IN CONTROL. VERIFY EXISTING EQUIPMENT. SHUT DOWN RELAY TO BE PROVIDED BY EDWARDS AND WIRED BY THE ELECTRICAL CONTRACTOR. UNIT TO SHUT DOWN UPON ACTIVATION OF FIRE ALARM. RELAY TO BE CONNECTED TO EXISTING DDC TO ALARM UNIT STATUS. COORDINATE ALL WORK WITH M.C. AND OWNER. NOTIFY OWNER 24HRS IN ADVANCE OF ANY WORK.
7. E.C. TO PROVIDE NEW CARBON MONOXIDE SENSOR, W/AUDIO ALARM AND CONNECTION TO EXISTING FIRE ALARM PANEL. E.C. TO PROVIDE AND INSTALL A 3/4" CONDUIT AND WIRING TO FIRE ALARM EQUIPMENT AS NEEDED. E.C. SHALL ADD ADDITIONAL EQUIPMENT AND PROGRAMMING AS NEEDED. ALL NEW WORK SHOULD BE TESTED AND A LETTER OF CERTIFICATION PROVIDED TO FIRE MARSHALL AND OWNER. EXISTING FIRE ALARM PANEL IS (EDWARDS) AND IS LOCATED IN CONTROL. VERIFY EXISTING EQUIPMENT. SHUT DOWN RELAY TO BE PROVIDED BY EDWARDS AND WIRED BY THE ELECTRICAL CONTRACTOR. UNIT TO SHUT DOWN UPON ACTIVATION OF FIRE ALARM. RELAY TO BE CONNECTED TO EXISTING DDC TO ALARM UNIT STATUS. COORDINATE ALL WORK WITH M.C. AND OWNER. NOTIFY OWNER 24HRS IN ADVANCE OF ANY WORK.

ELECTRICAL GENERAL NOTES

A. ACCESS AND WORKING SPACE SHALL BE PROVIDED AND MAINTAINED FOR ALL ELECTRICAL EQUIPMENT TO PERMIT READY AND SAFE OPERATION AND MAINTENANCE (NEC 110.26).

B. ELECTRICAL WORK HAS BEEN SHOWN BASED ON EXISTING FIELD OBSERVATIONS.

C. COORDINATE LOCATION OF RECEPTACLES WITH OWNER.

D. ALL WIRES AT OPEN CEILING ARE TO BE CONCEALED AND INSTALLED ALONG THE STRUCTURAL BEAMS IN A NEAT WAY AND HIDDEN AS MUCH AS POSSIBLE.

E. MODIFICATIONS TO THE EXISTING FIRE ALARM SYSTEM (EDWARDS FACP) MUST BE DOCUMENTED AND COMPLIANT WITH THE MINIMUM REQUIREMENT FOR ALTERATIONS (72:7.1.2 AND 7.2) (NOTE THAT 72:7.2 REFERS TO NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE SECTION 7.2) THEREFORE, COMPLY WITH SECTION 907.8 OF THE 2018 NC FIRE CODE INCLUDING REQUIREMENTS FOR RECEPTACLE TESTING AND DOCUMENTATION REQUIREMENTS INCLUDING: (1) ALTERATIONS TO EXISTING FIRE ALARM SYSTEMS SHALL BE RECORDED ON THE ORIGINAL RECORD DOCUMENT INCLUSIVE OF THE RECORD OF COMPLETION FORM; (72:7.5.6.6.3) (2) 100% FIELD TESTING OF THE DIRECT CHANGES AS WELL AS "...10 PERCENT OF INITIATING DEVICES THAT ARE NOT DIRECTLY AFFECTED BY THE CHANGE, UP TO A MAXIMUM OF 50 DEVICES." (72:14.4.2.4)

CONSULTANT ENGINEERING SERVICE, INC.
PLUMBING • MECHANICAL • ELECTRICAL
Phone: 336.724.0139 • 1111 S Marshall Street, Suite 250, Winston Salem, NC 27101
A Woman Owned Business est. 1964

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15886 05/12/2026 CHRISTOPHER R. STROUPE, III

FTCC FORSYTH BLDG
HVAC RENOVATION

2100 SILAS CREEK PKWY, WINSTON-SALEM, NC 27103

DATE 05/12/2026

CES LICENSE NO. F-0238

SHEET TITLE: ELECTRICAL REVISED PLAN

DRAWN BY /REH

APPROVED BY CRS

PROJECT NO. 4611

REVISION

REVISION

REVISION

SHEET NUMBER E1.1

GENERAL SCHEDULE

CALLOUT	SYMBOL	NEMA	VOLTS	AMPS	KVA	CIRCUIT	DISCONNECT
PCKG-1		NEMA 3R	480V 3P 4W	58	48.22	MP-1,3,5	FUSED 100A/3P 4W
VAV-1		NEMA 1	480V 3P 4W	3.76	3.13	M1-1,3,5	FUSED 30A/3P 4W
VAV-2		NEMA 1	480V 3P 4W	3.76	3.13	M1-7,9,11	FUSED 30A/3P 4W
VAV-3		NEMA 1	480V 3P 4W	3.76	3.13	M1-7,9,11	FUSED 30A/3P 4W
VAV-4		NEMA 1	480V 3P 4W	3.76	3.13	M1-7,9,11	FUSED 30A/3P 4W
VAV-5		NEMA 1	480V 3P 4W	3.76	3.13	M1-13,15,17	FUSED 30A/3P 4W
VAV-6		NEMA 1	480V 3P 4W	3.76	3.13	M1-13,15,17	FUSED 30A/3P 4W
VAV-7		NEMA 1	480V 3P 4W	4.51	3.75	M1-13,15,17	FUSED 30A/3P 4W
VAV-8		NEMA 1	480V 3P 4W	4.51	3.75	M1-2,4,6	FUSED 30A/3P 4W
VAV-9		NEMA 1	480V 3P 4W	7.52	6.25	M1-2,4,6	FUSED 30A/3P 4W
VAV-10		NEMA 1	480V 3P 4W	8.27	6.88	M1-8,10,12	FUSED 30A/3P 4W
VAV-11		NEMA 1	480V 3P 4W	7.52	6.25	M1-14,16,18	FUSED 30A/3P 4W
VAV-12		NEMA 1	480V 3P 4W	3.76	3.13	M1-8,10,12	FUSED 30A/3P 4W
VAV-13		NEMA 1	480V 3P 4W	8.27	6.88	M1-19,21,23	FUSED 30A/3P 4W
VAV-16		NEMA 1	480V 3P 4W	3.76	3.13	M1-14,16,18	FUSED 30A/3P 4W

M1 NEW PANEL

ROOM
MOUNTING SURFACE
FED FROM MP
NOTE

VOLTS 480Y/277V 3P 4W
BUS AMPS 225
NEUTRAL 100%

AIC 65,000
MAIN BKR 225
LUGS DOUBLE

ENCLOSURE TYPE NEMA 1
PANEL TYPE BREAKER

CKT #	CKT BKR	CIRCUIT DESCRIPTION	CONDUCTORS/CONDUIT	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	CONDUCTORS/CONDUIT	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	15/3	VAV-1	4#12,#12G,3/4"C	1			2	15/3	VAV-8, VAV-9	4#10,#10G,3/4"C	3.3		
3	|				1		4	|				3.3	
5	|					1	6	|					3.3
7	20/3	VAV-2, VAV-3, VAV-4	4#10,#10G,3/4"C	3.1			8	15/3	VAV-10, VAV-12	4#10,#10G,3/4"C	3.3		
9	|				3.1		10	|				3.3	
11	|					3.1	12	|					3.3
13	20/3	VAV-5, VAV-6, VAV-7	4#10,#10G,3/4"C	3.3			14	15/3	VAV-11, VAV-16	4#10,#10G,3/4"C	3.1		
15	|				3.3		16	|				3.1	
17	|					3.3	18	|					3.1
19	15/3	VAV-13	4#12,#12G,3/4"C	2.3			20	20/1	SPACE		0		
21	|				2.3		22	20/1	SPACE			0	
23	|					2.3	24	20/1	SPACE				0
25	20/1	SPACE		0			26	20/1	SPACE		0		
27	20/1	SPACE			0		28	20/1	SPACE			0	
29	20/1	SPACE				0	30	20/1	SPACE				0
31	20/1	SPACE		0			32	20/1	SPACE		0		
33	20/1	SPACE			0		34	20/1	SPACE			0	
35	20/1	SPACE				0	36	20/1	SPACE				0
37	20/1	SPACE		0			38	20/1	SPACE		0		
39	20/1	SPACE			0		40	20/1	SPACE			0	
41	20/1	SPACE				0	42	20/1	SPACE				0
									TOTAL CONNECTED KVA BY PHASE		20	20	20
									TOTAL CONNECTED AMPS BY PHASE		71	71	71

	CONN KVA	CALC KVA			CALC KVA
LARGEST MOTOR	6.9	1.7	(25%)	TOTAL LOAD	60
MOTORS	59	59	(100%)	BALANCED 3-PHASE LOAD	73 A

ELECTRICAL LOAD SUMMARY FOR SWB-1 (NEW LOAD)

LOAD DESCRIPTION	CONNECTED LOAD KVA	DEMAND FACTOR	DEMAND LOAD KVA
DELETE HVAC	20.00	100%	20.00
ADD HVAC	36.00	100%	36.00
TOTAL NEW LOAD	16.00	100%	16.00

EXISTING LOAD (ESTIMATED) = 729.00 KVA
EXISTING SWB-1 SERVICE IS 480/277 VOLT, 3-PHASE, 4-WIRE, 2000 AMP

MP EXISTING PANEL

ROOM
MOUNTING SURFACE
FED FROM SWB-1
NOTE

VOLTS 480Y/277V 3P 4W
BUS AMPS 400
NEUTRAL 100%

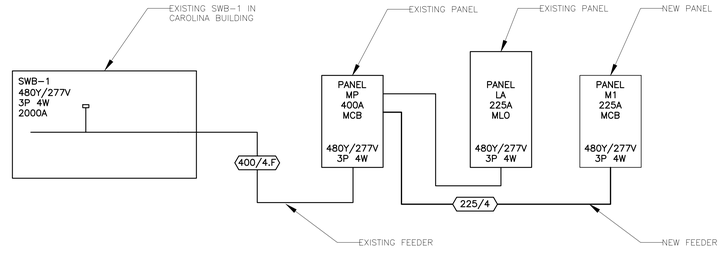
AIC 65,000
MAIN BKR 400
LUGS STANDARD

ENCLOSURE TYPE NEMA 1
PANEL TYPE BREAKER

CKT #	CKT BKR	CIRCUIT DESCRIPTION	CONDUCTORS/CONDUIT	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	CONDUCTORS/CONDUIT	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	80/3	PCKG-1 NEW BREAKER	4#4,#8G,1-1/4"C	16			2	-/1	SPACE		0		
3	|				16		4	-/1	SPACE			0	
5	|					16	6	-/1	SPACE				0
7	225/3	PANEL M1 NEW BREAKER	4#4/0,#4G,2-1/2"C	20			8	30/3	PHASE LOSS *	-	0		
9	|				20		10	|			0		
11	|					20	12	|					0
13	20/1	SPACE		0			14	30/3	TVSS *	-	0		
15	20/1	SPACE			0		16	|				0	
17	20/1	SPACE				0	18	|					0
19	20/1	SPACE		0			20	175/3	T-1 *	-	0		
21	20/1	SPACE			0		22	|				0	
23	400/3	MAIN BREAKER *	-			0	24	|					0
25	|			0			26	225/3	PANEL LA	N/A	0		
27	|				0		28	|				0	
29	-/1	MAIN BREAKER *	-			0	30	|					0
									TOTAL CONNECTED KVA BY PHASE		36	36	36
									TOTAL CONNECTED AMPS BY PHASE		130	130	130

	CONN KVA	CALC KVA			CALC KVA
LARGEST MOTOR	48	12	(25%)	TOTAL LOAD	120
MOTORS	110	110	(100%)	BALANCED 3-PHASE LOAD	140 A

* EXISTING BREAKER



1 / E2.1 DETAIL - PARTIAL ELECTRICAL RISER
SCALE: NTS

ELECTRICAL GENERAL NOTES

A. ELECTRICAL PANEL MP IS EXISTING TO REMAIN. SQD ILINE
B. ALL NEW CIRCUIT BREAKER SHALL HAVE SAME AIC RATING AS ASSOCIATED PANEL.
C. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AN ARC FLASH LABEL ON ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NFPA 70E.
D. SHARED NEUTRALS ARE NOT ALLOWED FOR NEW WORK. PROVIDE SEPARATE NEUTRALS. PROVIDE TIE BREAKERS AS NEEDED ON EXISTING CIRCUITS
E. ALL NEW FEEDERS SHALL BE COPPER.
F. ALL NEW ABOVE GROUND FEEDER AND BRANCH CIRCUITS CONDUITS INSTALLED INSIDE THE BUILDING SHALL BE EMT.
G. ELECTRICAL CONTRACTOR SHALL VERIFY NEW CIRCUIT BREAKERS SIZE PER MECHANICAL EQUIPMENT SCHEDULES. NEW CIRCUIT BREAKER'S BRAND AND TYPE SHALL BE SIMILAR AS EXISTING CIRCUIT BREAKER FEEDING THE EXISTING LOADS. CIRCUIT BREAKERS SHALL BE BOLT IN. EXISTING LOADS AND CIRCUIT BREAKER SHOWN HERE ARE BASED ON EXISTING DRAWINGS. ELECTRICAL CONTRACTOR SHALL NOTIFY TO THE ENGINEER FOR ANY DISCREPANCY PRIOR TO ROUGH-IN.
H. EXISTING LOAD DESCRIPTION IN THE NEW PANEL SCHEDULES ARE SHOWN AS PER EXISTING DRAWING. E.C. SHALL RETYPE LOAD DESCRIPTION IN THE EXISTING PANEL DIRECTORY AFTER ADDITIONAL NEW LOADS. LABEL ALL RECEPTACLES AND SAFETY DISCONNECTS.
I. PROVIDE AND INSTALL PHENOLIC NAMEPLATES WITH STAINLESS STEEL SCREWS.
J. ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL EXISTING BRANCH CIRCUITS AND RECONNECT THEM TO NEW CIRCUIT BREAKERS IN EXISTING PANELS. EXISTING PANEL'S NAME SHALL BE PRESERVED.
K. ALL EXTERIOR CONDUIT TO BE IMC.
L. ELECTRICAL CONTRACTOR SHALL PROVIDE NEUTRAL WIRE WHEN REQUIRED. COORDINATE WITH MECHANICAL CONTRACTOR.

FEEDER SCHEDULE

ID	FEEDER AMPS	CONDUIT AND FEEDER	
225/4	225	4#4/0,#4G,2-1/2"C	NEW FEEFER
400/4.F	400	(2)4#3/0,#2G,2"C	EXISTING FEEFER

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C 1/0 AND ABOVE

CONSULTANT ENGINEERING SERVICE, INC.
PLUMBING • MECHANICAL • ELECTRICAL
Phone: 336.724.0139 • 1111 S Marshall Street, Suite 250, Winston Salem, NC 27101
A Woman Owned Business
est. 1964

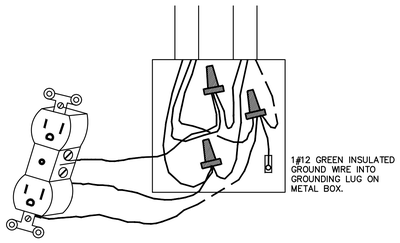
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15886 05/12/26 CHRISTOPHER R. STROUPE III

FTCC FORSYTH BLDG
HVAC RENOVATION
2100 SILAS CREEK PKWY, WINSTON-SALEM, NC 27103

DATE 05/12/2026
CES LICENSE NO. F-0238

SHEET TITLE: ELECTRICAL SCHEDULES
DRAWN BY: REH
APPROVED BY: CES
PROJECT NO. 4011
REVISION
REVISION
REVISION

SHEET NUMBER E2.1



NOTE: ALL DEVICES SHALL BE PIGTAILED. DO NOT FEED THROUGH DEVICES UNLESS OTHERWISE NOTED OR APPROVED.

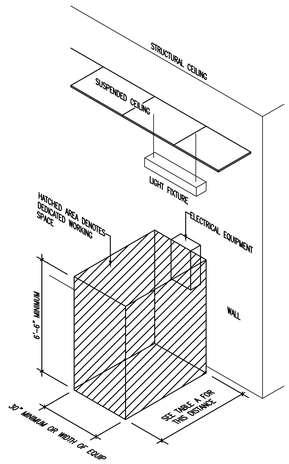
1 E3.1 **DETAIL** - TYPICAL BOX RECEPTACLE CONNECTION
SCALE: N.T.S.

TABLE A – WORKING SPACE REQUIREMENTS				
VOLTAGE TO GROUND (NOMINAL)	CONDITION	MINIMUM CLEAR DISTANCE (INCHES) 1	2	3
0–150 VOLTS		36	36	36
151–600 VOLTS		36	42	48

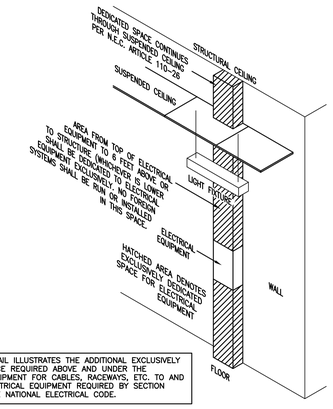
WHERE "CONDITIONS" ARE AS FOLLOWS:

1. EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS. INSULATED WIRE OR INSULATED BUS BARS OPERATING AT NOT OVER 300 VOLTS SHALL NOT BE CONSIDERED LIVE PARTS.
2. EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.
3. EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

NOTE: THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110-26 OF THE NATIONAL ELECTRICAL CODE.



2 E3.1 **DETAIL** - ELECTRICAL EQUIPMENT MINIMUM WORKING
SCALE: N.T.S.



NOTE: THIS DETAIL ILLUSTRATES THE ADDITIONAL EXCLUSIVELY DEDICATED SPACE REQUIRED ABOVE AND UNDER THE ELECTRICAL EQUIPMENT FOR CABLES, RACEWAYS, ETC. TO AND FROM THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110-26 OF THE NATIONAL ELECTRICAL CODE.

3 E3.1 **DETAIL** - ELECTRICAL RACEWAY MINIMUM WORKING SPACE
SCALE: N.T.S.

SAFETY DISCONNECT

HP–3 208V MP–20,22,24 FED BY MP

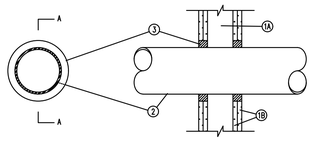
LINE 1: EQUIP. TAG/NAME
LINE 2: SYSTEM VOLTAGE
LINE 3: FEEDER SOURCE
LINE 4: FEEDER SOURCE (IF NEEDED)

DISCONNECT NAMEPLATE NOTES:

1. MATERIAL SHALL BE CORE–ENGRAVED BAKELITE
2. COLOR SCHEME:
   120/208 VOLT SYSTEMS – BLUE SURFACE WITH WHITE CORE
   277/480 VOLT SYSTEMS – BLACK SURFACE WITH WHITE CORE
   EMERGENCY SYSTEMS – RED SURFACE WITH WHITE CORE
3. LETTERING SHALL BE 1/4" HIGH.
4. FASTEN WITH STAINLESS STEEL SCREWS OR POP RIVETS.

4 E3.1 **DETAIL** - TYPICAL ELECTRICAL EQUIPMENT LABEL
SCALE: N.T.S.

System No. W–L–1054
F Ratings – 1 and 2 Hr (See Items 1 and 3)
T Rating – 0 Hr
L Rating At Ambient – Less Than 1 CFM/Sq Ft
L Rating At 400 F – 4 CFM/Sq Ft

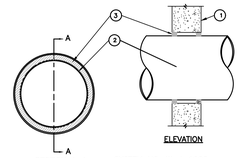


SECTION A–A

1. WALL ASSEMBLY – THE 1 OR 2 HR FIRE–RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2–1/2 IN. WIDE AND SPACED MAX 24 IN. OC. WHEN STEEL STUDS ARE USED AND THE DIAM OF OPENING EXCEEDS THE WIDTH OF STUD CAVITY, THE OPENING SHALL BE FRAMED ON ALL SIDES USING LENGTHS OF STEEL STUD INSTALLED BETWEEN THE VERTICAL STUDS AND SCREW–ATTACHED TO THE STEEL STUDS AT EACH END. THE FRAMED OPENING IN THE WALL SHALL BE 4 TO 6 IN. WIDER AND 4 TO 6 IN. HIGHER THAN THE DIAM OF THE PENETRATING ITEM SUCH THAT, WHEN THE PENETRATING ITEM IS INSTALLED IN THE OPENING, A 2 TO 3 IN. CLEARANCE IS PRESENT BETWEEN THE PENETRATING ITEM AND THE FRAMING ON ALL FOUR SIDES.
   B. GYPSUM BOARD* – 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 32–1/4 IN. FOR STEEL STUD WALLS. MAX DIAM OF OPENING IS 14–1/2 IN. FOR WOOD STUD WALLS. THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY.

2. THROUGH–PENETRANTS – ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 2–1/4 IN. PIPE MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PIPE, CONDUIT OR TUBING MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45 DEGREES FROM PERPENDICULAR. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
   A. STEEL PIPE – NOM 30 IN DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. IRON PIPE – NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
   C. CONDUIT – NOM 4 IN DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. DIAM STEEL CONDUIT.
   D. COPPER TUBING – NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
   E. COPPER PIPE – NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. FILL, VOID OR CAVITY MATERIAL* – SEALANT – MIN 5/8 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PIPE AND WALL, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE WALL INTERFACE ON BOTH SURFACES OF WALL.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC – FS–ONE SEALANT
   *BEARING THE UL CLASSIFICATION MARK

TYPICAL GYPSUM WALL BOARD PENETRATION
5 E3.1 **DETAIL** - WITH CONDUIT (1 AND 2–HOUR)
SCALE: N.T.S.



SECTION A–A

ELEVATION

SYSTEM NO. W–J–1028
F RATINGS – 1 AND 2 HR (SEE ITEMS 3) T RATING – 0 HR.

1. WALL ASSEMBLY – MIN. 2–1/2" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF) CONCRETE. WALL ASSEMBLY MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX. DIAMETER OF OPENING IS 12–1/2" SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. THROUGH PENETRANTS – ONE METALLIC PIPE, CONDUIT OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPES, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN. 1/2" TO MAX. 7/8". PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED: A. STEEL PIPE – NOM. 10" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. B. CONDUIT – NOM. 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR NOM. 6" (OR SMALLER) STEEL CONDUIT. C. COPPER TUBING – NOM. 4" DIAMETER (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. D. COPPER PIPE – NOM. 4" DIAMETER (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. FILL, VOID OR CAVITY MATERIAL* – SEALANT – MIN. 5/8" OR 1–1/4" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL FOR 1 HR AND 2 HR. FIRE–RATED WALLS, RESPECTIVELY.

HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI, INC. – FS601 OR FS–ONE SEALANT

*BEARING THE UL CLASSIFICATION MARK.

TYPICAL CMU WALL PENETRATION
6 E3.1 **DETAIL** - WITH CONDUIT (1 AND 2–HOUR)
SCALE: N.T.S.

CONSULTANT ENGINEERING SERVICE, INC.
PLUMBING ▪ MECHANICAL ▪ ELECTRICAL
Phone: 336.724.0139 ▪ 1111 S Marshall Street, Suite 250, Winston Salem, NC 27101
A Woman Owned Business
est. 1964

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15886 05/12/2026 CHRISTOPHER R. STROUPE, III

FTCC FORSYTH BLDG
HVAC RENOVATION
2100 SILAS CREEK PKWY, WINSTON–SALEM, NC 27103

DATE 05/12/2026
CES LICENSE NO. F–0238

SHEET TITLE: ELECTRICAL DETAILS
DRAWN BY: JTECH
APPROVED BY: CES
PROJECT NO. 4611
REVISION
REVISION
REVISION

SHEET NUMBER E3.1