

GENERAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, WHICH INCLUDE THE DRAWINGS, SPECIFICATIONS, PRE-BID AND PRE-CONSTRUCTION MEETING MINUTES. NO DEVIATIONS FROM THE CONTRACT DOCUMENTS ARE PERMITTED WITHOUT WRITTEN APPROVAL OF THE ENGINEER. ALL PROPOSED "OR EQUAL" SUBSTITUTIONS SHALL CONTAIN A LINE-BY-LINE COMPARISON OF COMPONENTS, FEATURES, ETC.
2. CONTRACTOR SHALL OBSERVE NORFOLK SOUTHERN SAFETY REQUIREMENTS AT ALL TIMES WHILE WORKING ON NORFOLK SOUTHERN PROPERTY.
3. CONTRACTOR SHALL NOTIFY NORFOLK SOUTHERN OF THE TIME AND DURATION OF THE PROJECT PRIOR TO MOBILIZING ONTO THE JOBSITE. NORFOLK SOUTHERN CONTACT: MS. THERESA MCGRATH AT 217-620-1035 (CELL).
4. PROJECT SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, THE CONTRACTOR SHALL COMPLY WITH ALL THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND GUIDELINES. CONTRACTOR SHALL CONDUCT SAFETY MEETINGS PRIOR TO BEGINNING WORK FOR THE DAY AND CONDUCT SUCH MEETINGS AS DIFFERENT JOB TASKS WARRANT. CONTRACTOR SHALL FOLLOW ALL LOCAL, STATE AND FEDERAL RULES AND REGULATIONS REGARDING SAFETY AS THEY RELATE TO THE CONSTRUCTION ACTIVITIES AS PRESENTED ON THESE CONSTRUCTION DRAWINGS.
5. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS NECESSARY FOR COMPLETION OF THE PROJECT. CONTRACTOR SHALL CONFORM TO ALL APPLICABLE CODES AND RECEIVE APPROVAL/PERMITS WHERE NECESSARY BEFORE START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE COPIES OF APPROVAL/PERMITS TO OWNER'S REPRESENTATIVE.
6. THE EXISTING FEATURES SHOWN ON THE PLANS REPRESENT THE FIELD CONDITIONS THAT EXISTED AT THE SITE AT THE TIME OF SURVEY. HOWEVER, THESE FIELD CONDITIONS MAY OR MAY NOT REFLECT WHAT MAY HAVE OCCURRED SINCE THE DATE OF SURVEY.
7. THE EXISTENCE AND LOCATION OF THE UNDERGROUND PIPING AND OTHER UTILITIES HAVE BEEN INDICATED FROM ON SITE RECONNAISSANCE AND INFORMATION FROM NORFOLK SOUTHERN PERSONNEL, THE LOCATION IS NOT GUARANTEED AND SHALL BE INVESTIGATED AND FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL CALL NORFOLK SOUTHERN COMMUNICATION'S UTILITY LOCATOR SERVICE AT 404-529-1244 AT LEAST THREE (3) WORKING DAYS PRIOR TO BEGINNING EXCAVATION WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK AFFECTING ALL UTILITIES. ANY DAMAGE TO EXISTING PIPING, UTILITIES AND/OR OTHER FACILITIES SHALL BE REPAIRED AND RESTORED TO AT LEAST THEIR ORIGINAL CONDITION AND/OR FUNCTION BY THE CONTRACTOR AT HIS OWN EXPENSE.
8. CONTRACTOR SHALL PERIODICALLY CLEAN AND UPON FINAL COMPLETION OF THE PROJECT, CLEAR THE CONSTRUCTION SITE OF ALL WASTE, RUBBISH, AND GENERAL DEBRIS. DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN SURROUNDING CONCRETE PAVEMENT AREAS FREE OF FOREIGN OBJECTS THAT MIGHT RESTRICT EQUIPMENT MOVEMENT, AND/OR CAUSE A SAFETY HAZARD.
9. CONTRACTOR SHALL PROVIDE AND MAINTAIN ANY BARRICADES, SIGNS, WARNING DEVICES OR FLAGMAN NECESSARY FOR SAFE OPERATIONS AROUND THE CONSTRUCTION AREA.
10. CONTRACTOR SHALL NOT PERMIT THE USE OF DEFECTIVE OR IMPROVISED TOOLS AND EQUIPMENT FOR THE WORK BEING PERFORMED.
11. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE CONSTRUCTION SEQUENCE IN ACCORDANCE WITH LOCAL AND/OR STATE REQUIREMENTS.
12. THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED BY L.A. GATES COMPANY AS AN INSTRUMENT OF PROFESSIONAL SERVICES. THE DESIGNS INCORPORATED HEREIN ARE INTENDED FOR USE AT THIS SITE SPECIFICALLY AND SHOULD NOT BE USED FOR ANY OTHER PROJECT.
13. ANY CONTAMINATED SOIL ENCOUNTERED SHALL BE PLACED ON 6 MIL PLASTIC SHEETING FOR DISPOSAL BY THE OWNER. SURPLUS NON-CONTAMINATED SOIL SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED LANDFILL WASTE FACILITY.
14. SHOULD CONFLICTS EXIST BETWEEN ANY OF THE CONTRACT DOCUMENTS, THE MORE STRINGENT SHALL APPLY UNLESS WRITTEN CLARIFICATION IS ISSUED BY THE ENGINEER.
15. CONTRACTOR TO DISPOSE OF ALL WASTE MATERIAL AND DEBRIS OFF SITE IN AN APPROVED MANNER.
16. ALL OBSTRUCTIONS ADJACENT TO TRACKS SHALL BE AT LEAST 9 FT FROM CENTER LINE OF TRACK PER AREMA STANDARDS.
17. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES OR CONFLICTS TO THE ENGINEER FOR CLARIFICATION AND RESOLUTION PRIOR TO COMMENCING WORK.
18. CONTRACTOR SHALL FIELD ADJUST PIPE LENGTHS AND BEND ANGLES FOR PROPER ALIGNMENT AND FIT.
19. ALL PETROLEUM WASTE LIQUIDS REMOVED FROM PIPELINE PURGING AND CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR IN AN APPROVED MANNER.
20. CONTRACTOR TO PROVIDE RED-LINE MARKUPS OF AS-BUILT CONDITIONS. RETAINAGE WILL NOT BE RELEASED UNTIL THESE ARE RECEIVED.
21. CONTRACTOR SHALL TRANSPORT OWNER SUPPLIED DAIKIN MODEL #AGZ004F CHILLER FROM THE NORFOLK SOUTHERN STORAGE YARD IN YADKINVILLE, NORTH CAROLINA TO THE JOB SITE.



NOT TO BE USED FOR CONSTRUCTION

NO.	REVISION	BY	DATE



DESIGNED:	CMA
DRAWN:	GEI
CHECKED:	TBC
DATE:	4-17-2026
PROJECT NO:	26.015

**NORFOLK SOUTHERN CORPORATION
SHAFFERS CROSSING RAILYARD
ROANOKE, VA**

GENERAL NOTES

SHEET NO.
G-100

DEMOLITION KEYNOTES

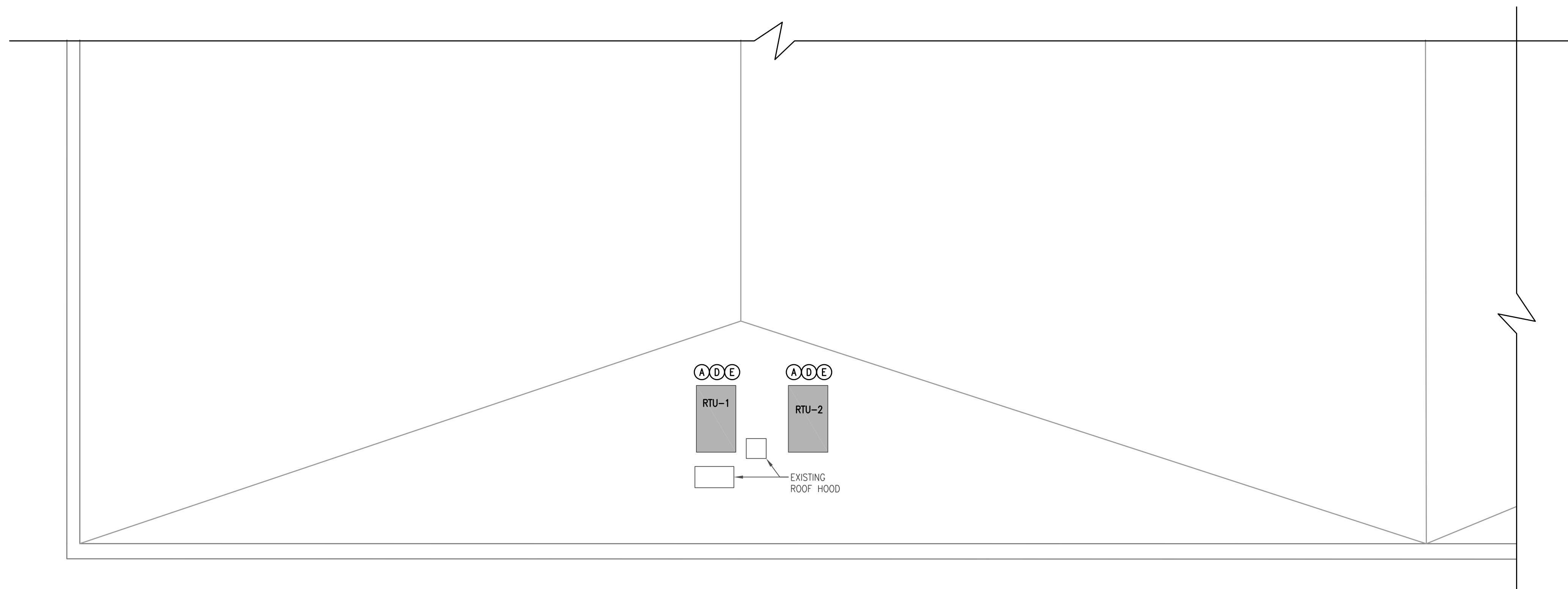
- A. DEMOLISH EXISTING ROOF-MOUNTED AIR-COOLED CONDENSING UNITS, INCLUDING ALL ASSOCIATED REFRIGERANT PIPING, ELECTRICAL CONNECTIONS, CONTROLS, AND SUPPORTS. CAP AND MAKE SAFE ALL UTILITIES. COORDINATE WITH OWNER PRIOR TO REMOVAL.
- B. DEMOLISH EXISTING DIRECT EXPANSION (DX) COOLING COILS IN EXISTING AIR HANDLING UNITS. REMOVE ASSOCIATED REFRIGERANT PIPING, THERMAL EXPANSION VALVES, DISTRIBUTORS, AND CONTROLS. PREPARE UNITS FOR INSTALLATION OF NEW CHILLED WATER COILS.
- C. RECOVER REFRIGERANT FROM EXISTING SYSTEMS IN ACCORDANCE WITH EPA REGULATIONS PRIOR TO DEMOLITION. DISPOSE OF REFRIGERANT AND EQUIPMENT IN COMPLIANCE WITH ALL APPLICABLE CODES.
- D. REMOVE EXISTING REFRIGERANT PIPING FROM ROOF TO AIR HANDLING UNITS. PATCH AND SEAL ALL ROOF AND WALL PENETRATIONS TO MATCH EXISTING CONSTRUCTION AND MAINTAIN WEATHER-TIGHT INTEGRITY.
- E. REMOVE EXISTING ROOF CURBS AND SUPPORTS NOT REQUIRED FOR NEW EQUIPMENT. PATCH AND REPAIR ROOF IN COORDINATION WITH ARCHITECTURAL AND ROOFING CONTRACTOR.
- F. DISCONNECT AND REMOVE ASSOCIATED CONTROLS, SENSORS, AND ACCESSORIES RELATED TO THE EXISTING DX SYSTEMS. COORDINATE WITH ELECTRICAL AND CONTROLS CONTRACTORS.
- G. ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER TO MINIMIZE DISRUPTION TO FACILITY OPERATIONS.

RENOVATION KEYNOTES

- 1. PROVIDE AND INSTALL NEW AIR-COOLED CHILLER ON ROOF.
- 2. PROVIDE AND INSTALL NEW ROOF EQUIPMENT PAD OR STRUCTURAL STEEL SUPPORTS AS REQUIRED. VERIFY LOAD CAPACITY AND COORDINATE WITH STRUCTURAL ENGINEER.
- 3. PROVIDE AND INSTALL NEW CHILLED WATER SUPPLY AND RETURN PIPING, INCLUDING FITTINGS, VALVES, STRAINERS, THERMOMETERS, PRESSURE GAUGES, AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
- 4. INSULATE CHILLED WATER PIPING WITH CLOSED-CELL INSULATION AND PROVIDE ALUMINUM OR PVC JACKETING WHERE EXPOSED TO WEATHER OR MECHANICAL DAMAGE.
- 5. PROVIDE AND INSTALL PIPE SUPPORTS, GUIDES, AND ANCHORS IN ACCORDANCE WITH MSS SP-58 AND PROJECT SPECIFICATIONS.
- 6. PROVIDE AND INSTALL NEW CHILLED WATER PUMPS COMPLETE WITH MOTORS, BASES, FLEXIBLE CONNECTORS, SUCTION DIFFUSERS, TRIPLE DUTY VALVES, AND ALL REQUIRED ACCESSORIES.
- 7. PROVIDE AND INSTALL AIR SEPARATOR AT THE POINT OF NO PRESSURE CHANGE WITH AUTOMATIC AIR VENT AND SERVICEABLE ISOLATION VALVES.
- 8. PROVIDE AND INSTALL DIAPHRAGM-TYPE EXPANSION TANK WITH SUPPORTS AND ISOLATION VALVE. INSTALL AT THE SUCTION SIDE OF THE PUMP.
- 9. PROVIDE AND INSTALL AUTOMATIC MAKE-UP WATER ASSEMBLY INCLUDING PRESSURE REDUCING VALVE, BACKFLOW PREVENTER, SHUT-OFF VALVES, STRAINER, AND PRESSURE GAUGE IN ACCORDANCE WITH PLUMBING CODES.
- 10. PROVIDE AND INSTALL NEW CHILLED WATER COOLING COILS IN EXISTING AIR HANDLING UNITS. COORDINATE DIMENSIONS AND CONNECTION LOCATIONS WITH FIELD CONDITIONS.
- 11. PROVIDE AND INSTALL MODULATING THREE-WAY CONTROL VALVES, BALANCING VALVES, AND TEMPERATURE SENSORS AT EACH CHILLED WATER COIL.
- 12. MODIFY EXISTING AIR HANDLING UNITS AS REQUIRED TO ACCOMMODATE NEW COILS, INCLUDING CASING MODIFICATIONS, DRAIN PAN ADJUSTMENTS, AND SEALING TO PREVENT AIR BYPASS.
- 13. PROVIDE NEW CONDENSATE DRAIN PIPING, TRAPS, AND INSULATION AS REQUIRED. CONNECT TO EXISTING APPROVED DRAIN LOCATIONS.

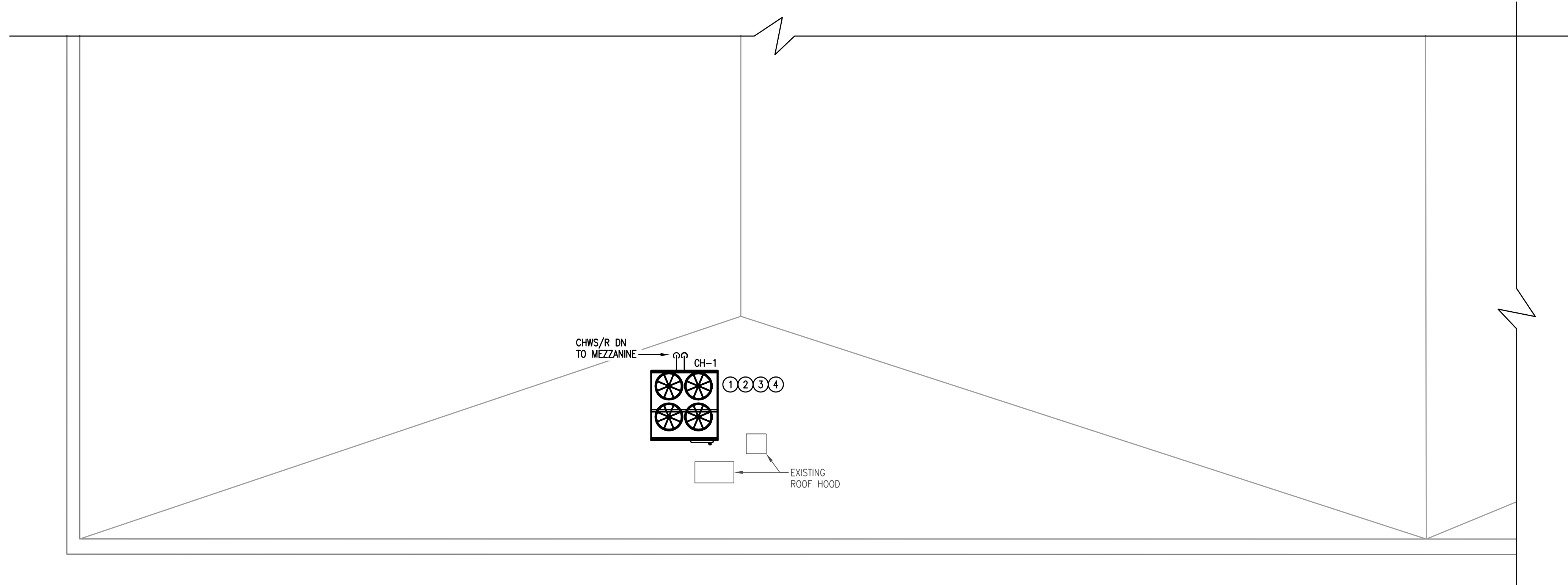
MECHANICAL GENERAL NOTES

- PROVIDE CONTROL SYSTEMS FOR CHILLER, PUMPS, AND COILS. INTERLOCK EQUIPMENT FOR SAFE AND EFFICIENT OPERATION. REFER TO SEQUENCE OF OPERATION.
- PROVIDE TESTING, ADJUSTING, AND BALANCING (TAB) OF THE CHILLED WATER SYSTEM. SUBMIT FINAL REPORT. PROVIDE STARTUP SERVICES AND OWNER TRAINING. SUBMIT OPERATION AND MAINTENANCE MANUALS.
- PROVIDE ALL REQUIRED ROOF CURBS, FLASHING, AND WEATHERPROOFING. MAINTAIN ROOF WARRANTY. COORDINATE ALL WORK WITH STRUCTURAL, ELECTRICAL, PLUMBING, AND ARCHITECTURAL DRAWINGS.
- ALL WORK SHALL COMPLY WITH APPLICABLE LOCAL, STATE, AND NATIONAL CODES AND STANDARDS.
- PROVIDE SYSTEM FLUSHING, CLEANING, AND CHEMICAL TREATMENT PRIOR TO FINAL STARTUP. AIR AND HYDROSTATICALLY TEST PIPING SYSTEM IN ACCORDANCE WITH SPECIFICATIONS AND LOCAL CODE REQUIREMENTS.
- PROVIDE CHILLER STARTUP BY MANUFACTURER'S AUTHORIZED REPRESENTATIVE. SUBMIT STARTUP REPORT AND VERIFY PROPER OPERATION, FLOW RATES, LEAVING WATER TEMPERATURES, AND CONTROL SEQUENCES.
- COORDINATE ALL WORK WITH ELECTRICAL, ROOFING, AND CONTROLS CONTRACTORS. VERIFY CLEARANCES, ACCESS REQUIREMENTS, AND SERVICE SPACE FOR ALL NEW EQUIPMENT.

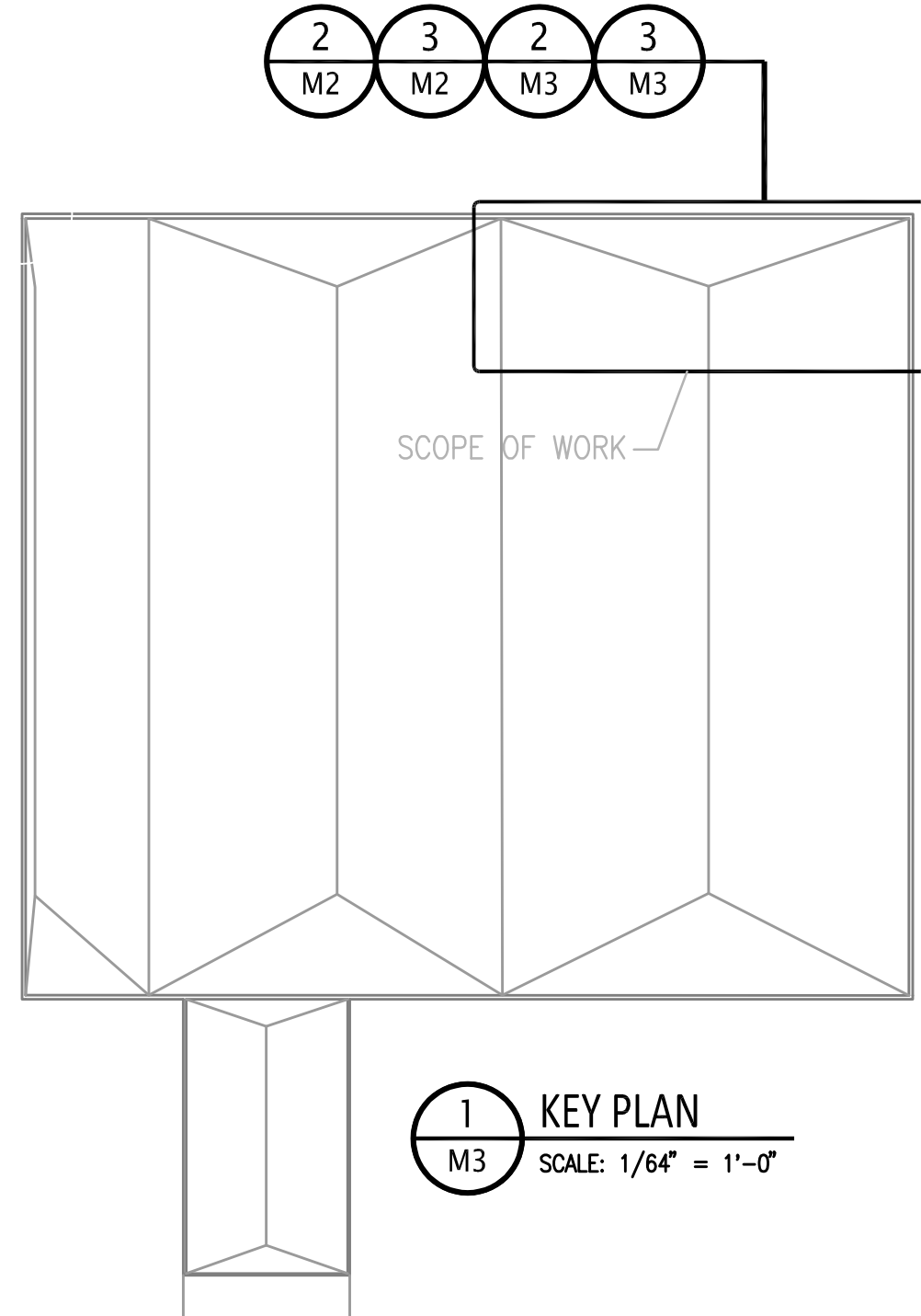


2 MECHANICAL ROOF DEMOLITION PLAN
M3 SCALE: 1/8" = 1'-0"

FREEZE PROTECTION NOTE
PROVIDE ELECTRIC HEAT TRACE ON ALL CHILLED WATER SUPPLY AND RETURN PIPING, VALVES, FITTINGS, AND APPURTENANCES EXPOSED TO EXTERIOR CONDITIONS. HEAT TRACE SYSTEM SHALL BE SELF-REGULATING TYPE, SUITABLE FOR WET LOCATION AND UV EXPOSURE, AND INSTALLED PER MANUFACTURER REQUIREMENTS. PROVIDE CONTINUOUS HEAT TRACE COVERAGE PRIOR TO PIPE INSULATION INSTALLATION. COORDINATE WITH ELECTRICAL CONTRACTOR TO PROVIDE (3) DEDICATED 120V, 20A, GFCI-PROTECTED CIRCUITS FOR HEAT TRACE POWER SUPPLY. PROVIDE LOCAL DISCONNECTS AND WEATHERPROOF CONTROL PANELS AS REQUIRED. TEST AND COMMISSION HEAT TRACE SYSTEM PRIOR TO SYSTEM STARTUP.

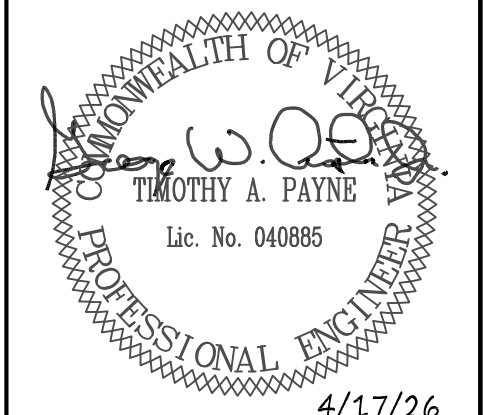


3 MECHANICAL ROOF NEW CONSTRUCTION PLAN
M3 SCALE: 1/8" = 1'-0"



1 KEY PLAN
M3 SCALE: 1/64" = 1'-0"

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908 Applegate Parkway
Waxhaw, NC 28173
(704) 618-1599
PROJECT # 26-189



CONSTRUCTION DOCUMENT

ISSUE DATE
APRIL 17, 2026

DRAWN BY
GWA

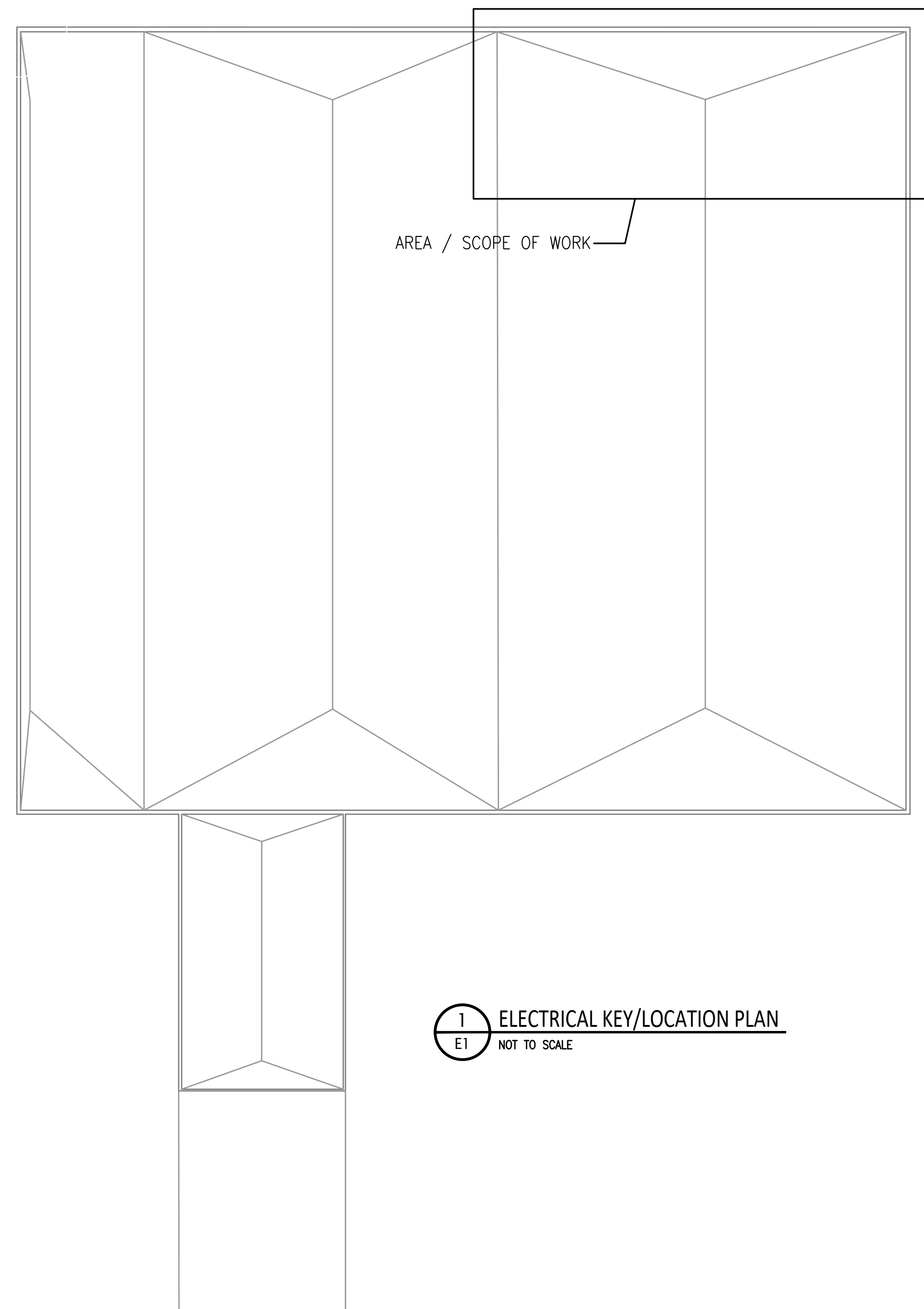
REVISIONS		
NO.	REASON	DATE

PROJECT NAME
SCX LOCOMOTIVE SHOP
ROANOKE, VA

PROJECT NO.
26-189

SHEET TITLE
MECHANICAL ROOF PLAN AND NOTES

SHEET NUMBER
M3

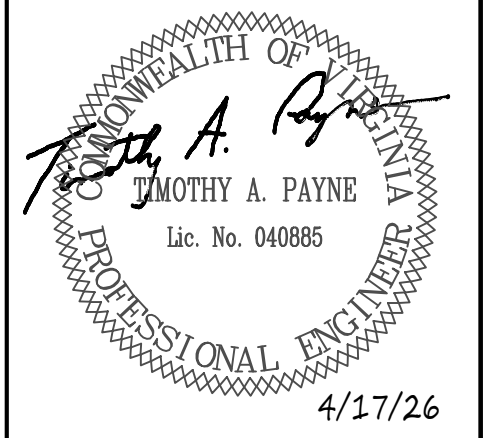


1
E1
ELECTRICAL KEY/LOCATION PLAN
NOT TO SCALE

ELECTRICAL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
GENERAL	
	CONDUIT RUN CONCEALED IN CEILING OR IN WALL.
	CONDUIT RUN CONCEALED IN FLOOR OR BELOW SLAB/GRADE.
	CONDUIT RUN EXPOSED ON SURFACE.
	CIRCUIT HOME RUN. NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS.
	120/208 VOLT DISTRIBUTION OR BRANCH CIRCUIT PANELBOARD.
	277/480 VOLT DISTRIBUTION OR BRANCH CIRCUIT PANELBOARD.
	FLUSH OR SURFACE-MOUNTED JUNCTION BOX.
	TRANSFORMER. SIZE AS INDICATED ON DRAWINGS.
POWER	
	DUPLEX, GROUNDING TYPE, 120 VOLT, 20 AMP, RECEPTACLE WITH COVERPLATE. PROVIDE #12 GREEN GROUND JUMPER. MOUNT 18" A.F.F. TO CENTER UNLESS OTHERWISE SHOWN.
	SAME AS DUPLEX RECEPTACLE ABOVE EXCEPT MOUNTED ABOVE COUNTERTOP BACKSPASH, OR AT 46" A.F.F. TO CENTER WHERE THERE IS NO ASSOCIATED CASEWORK.
	SAME AS DUPLEX RECEPTACLE ABOVE EXCEPT MOUNTED IN WEATHERPROOF ENCLOSURE WITH COVER THAT IS WEATHER-RESISTANT WHILE RECEPTACLE IS IN USE.
	SAME AS DUPLEX RECEPTACLE ABOVE EXCEPT GROUND-FAULT INTERRUPTING TYPE.
	NON-FUSED DISCONNECT SWITCH. SUBSCRIPT INDICATES AMPERAGE AND NUMBER OF POLES.
	FUSED DISCONNECT SWITCH. SUBSCRIPT INDICATES AMPERAGE, NUMBER OF POLES, AND AMPERAGE OF FUSES. ("FPN" - PROVIDE FUSES SIZED PER EQUIPMENT NAMEPLATE)
	COMBINATION MOTOR STARTER/FUSED DISCONNECT SWITCH. SUBSCRIPT INDICATES AMPERAGE/NO. OF POLES/FUSE RATING/NEMA SIZE OF STARTER. ("FPN" - PROVIDE FUSES SIZED PER EQUIPMENT NAMEPLATE)
CONTROLS	
	WHERE USED TO CONTROL FRACTIONAL HORSEPOWER MOTOR, PROVIDE SINGLE-POLE, MOTOR-RATED TOGGLE SWITCH. WHERE USED AS A LOCAL DISCONNECT SWITCH FOR A MOTOR WHICH DOES NOT HAVE INTEGRAL OVERLOAD PROTECTION, PROVIDE A MANUALLY OPERATED MOTOR STARTER WITH BUILT-IN OVERLOAD PROTECTION.
FIRE ALARM SYSTEM	
	FIRE ALARM SYSTEM PHOTOELECTRIC TYPE AUTOMATIC SMOKE DETECTOR.
	FIRE ALARM SYSTEM PHOTOELECTRIC TYPE DUCT-MOUNTED SMOKE DETECTOR.
	FIRE ALARM SYSTEM DUCT-MOUNTED SMOKE DETECTOR REMOTE INDICATING LIGHT. TO BE MOUNTED IN CORRIDOR CEILING ADJACENT TO LOCATION OF DETECTOR.

Timothy A. Payne, PE
1005 Thorndale Rd
Indian Trail, NC 28079
(770) 651-3425
PROJECT # 26-189



4/17/26

CONSTRUCTION DOCUMENT

ISSUE DATE
APRIL 17, 2026

DRAWN BY
GWA

REVISIONS		
NO.	REASON	DATE

PROJECT NAME
**SCX LOCOMOTIVE SHOP
ROANOKE, VA**

PROJECT NO.
26-189

SHEET TITLE
**ELECTRICAL SCHEDULES
AND NOTES**

SHEET NUMBER
E1

ELECTRICAL SHEET INDEX

E1	ELECTRICAL SCHEDULES AND NOTES
E2	ELECTRICAL SPECIFICATIONS
E3	ELECTRICAL RISER DIAGRAMS AND PANEL SCHEDULES
E4	ELECTRICAL MEZZANINE POWER PLAN AND NOTES
E5	ELECTRICAL ROOF PLAN AND NOTES

ELECTRICAL SPECIFICATIONS

SECTION 260010 ELECTRICAL SYSTEMS DESCRIPTIONS

- A. PROJECT INCLUDES
1. ELECTRICAL SYSTEMS FOR THE FOLLOWING APPLICATIONS: REFER TO INDIVIDUAL SPECIFICATION SECTIONS FOLLOWING FOR DETAILED REQUIREMENTS.
a. POWER AND DISTRIBUTION
b. FIRE ALARM
c. POWER CONNECTIONS FOR HVAC EQUIPMENT.

- B. PRODUCTS
1. SYSTEMS, PRODUCTS, AND STANDARDS ARE LISTED IN INDIVIDUAL SPECIFICATION SECTIONS WHICH FOLLOW.

- 2. ALL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE NEW AND LABEL LISTED BY AN APPROVED THIRD PARTY TESTING AGENCY APPROVED BY THIS STATE.

- C. GENERAL PROJECT REQUIREMENTS
1. PROVIDE ALL WORK AND MATERIALS FOR THE INSTALLATION OF COMPLETE WIRING SYSTEMS AS SPECIFIED HEREIN AND SHOWN ON THE DRAWINGS.

- 2. ALL ELECTRICAL PERMITS AND INSPECTION FEES SHALL BE OBTAINED AND PAID FOR BY THE ELECTRICAL CONTRACTOR.

- 3. ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR EFFECTIVE THE DAY THE PROJECT IS ACCEPTED BY THE OWNER.

- 4. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2013 N.F.P.A., 2020 NATIONAL ELECTRICAL CODE (N.E.C.), AND ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.

- 5. THE REQUIREMENTS OF THE ARCHITECT'S DIVISION 1, GENERAL AND SPECIAL CONDITIONS, AND THE CONTRACT SHALL APPLY TO THIS WORK.

- 6. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL CUTTING, FIRE SEALING, PATCHING, TRENCHING, AND BACKFILLING FOR INSTALLATION OF ELECTRICAL WORK AND REPAIR ANY DAMAGE DONE.

- 7. THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FABRICATE, ERECT, CONNECT AND COMPLETELY INSTALL SYSTEMS PLACED IN PROPER AND COMPLIANT OPERATING CONDITION. THIS SHALL INCLUDE ALL LABOR, EQUIPMENT OPTIONS, ACCESSORIES, AND INCIDENTAL MATERIALS REQUIRED FOR A COMPLETE INSTALLATION.

- 8. THE CONTRACTOR SHALL NOT SCALE THESE DRAWINGS AS DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL REFER TO ARCHITECTURAL AND/OR CIVIL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS NOTED OTHERWISE. IT SHALL NOT BE THE INTENT OF THESE DOCUMENTS TO SHOW EVERY MINOR DETAIL OR EVERY ITEM OF MATERIAL OR EQUIPMENT REQUIRED FOR CONSTRUCTION. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM. ALL CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY, EXACT ROUTING SHALL BE DETERMINED IN THE FIELD UNLESS NOTED OTHERWISE.

- 9. SHOP DRAWINGS AND CATALOG DATA SHALL BE SUBMITTED FOR ANY NEW DISCONNECT SWITCHES, WIRING DEVICES, AND MISCELLANEOUS MATERIALS. SHOP DRAWINGS SHALL BE SUBMITTED AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS, OR AT A MINIMUM PROVIDE AN ELECTRONIC "PDF" FILE OF ALL SUBMITTAL MATERIALS. ENGINEERING REVIEW OF SUBMITTALS WILL NOT BE CONDUCTED UNTIL SUBMITTALS ARE REVIEWED/ACCEPTED/STAMPED BY CONTRACTOR. A MINIMUM OF SEVEN (7) BUSINESS DAYS WILL BE REQUIRED FOR ENGINEERING REVIEW. A SUBMITTAL WILL BE REVIEWED A MAXIMUM OF TWO OCCURRENCES; ANY ADDITIONAL SUBMISSIONS MAY BE REVIEWED AT ADDITIONAL COST TO THE CONTRACTOR.

- 10. ELECTRICAL CONTRACTOR SHALL PROVIDE LOAD DATA SHEET TO THE POWER COMPANY AT THE BEGINNING OF THE PROJECT AS PER LOAD BREAKDOWN SHOWN ON THE PLANS.

- 11. ELECTRICAL CONTRACTOR SHALL TEST ALL WIRING FOR CONTINUITY AND GROUNDS PRIOR TO WIRING BEING ENERGIZED. FAULTY WIRING SHALL BE REPLACED.

- 12. ELECTRICAL CONTRACTOR SHALL CONNECT ALL NEW HVAC, PLUMBING, AND OTHER CONTRACTOR OR OWNER FURNISHED EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (UNLESS OTHERWISE NOTED). CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR SHALL BE PROVIDED BY THE RESPECTIVE CONTRACTOR. COORDINATE WITH EQUIPMENT SHOP DRAWINGS AND EQUIPMENT CONTRACTOR FOR DISCONNECT SWITCH, CONDUIT, WIRING REQUIREMENTS, FUSE AND BREAKER SIZES, AND VOLTAGE REQUIREMENTS PRIOR TO ORDERING ANY ELECTRICAL EQUIPMENT. ALL FINAL CONNECTIONS TO JUNCTION BOXES SHALL BE BY THE ELECTRICAL CONTRACTOR. MAKE ALL NECESSARY REVISIONS TO THESE ITEMS AT NO ADDITIONAL COST TO THE OWNER.

- 13. ALL ELECTRICAL SYSTEMS AND EQUIPMENT SHALL COMPLY WITH ARTICLE 1613 OF THE INTERNATIONAL BUILDING CODE.

- 14. CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BIDDING TO FAMILIARIZE HIMSELF/HERSELF WITH EXISTING CONDITIONS. FAILURE TO VISIT SITE SHALL NOT EXCUSE CONTRACTOR FROM PERFORMING REQUIRED WORK, NOR SHALL IT BE AN ACCEPTABLE REASON FOR REQUESTING ADDITIONS TO THE CONTRACT.

- 15. THE EXISTING PORTIONS OF THIS FACILITY WILL REMAIN IN OPERATION DURING THIS CONSTRUCTION. ELECTRICAL CONTRACTOR SHALL CAUSE AS LITTLE DISRUPTION AS POSSIBLE TO THE FUNCTIONING OF THE FACILITY IN ORDER TO MAINTAIN THE COMFORT AND SAFETY OF THE OCCUPANTS.

- 16. THIS PROJECT INVOLVES SOME WORK ON EXISTING ELECTRICAL FACILITIES. EXISTING FEEDER, BRANCH CIRCUITS, COMMUNICATIONS, RACEWAYS, ETC. WHICH ARE DISRUPTED BY THIS PROJECT SHALL BE RE-ROUTED AND/OR RE-FED FROM A NEW SOURCE AS REQUIRED TO MAINTAIN THEM IN FULL AND PERMANENT SERVICE.

- 17. THIS PROJECT INVOLVES SOME DEMOLITION WORK. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER REMOVAL OF WIRING, RACEWAY, FITTINGS, OUTLETS, ETC. AS NECESSARY TO ACCOMPLISH THE DEMOLITION WORK.

- 18. IF APPLICABLE, PROVIDE MIN. 24" HORIZONTAL SEPARATION BETWEEN BOXES INSTALLED IN OPPOSITE SIDES OF THE SAME FIRE-RATED WALL AS REQUIRED BY N.E.C. ART. 300.21

- 19. IF APPLICABLE, FIRE-STOPPING OF PENETRATIONS IN RATED WALLS AND FLOORS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF THE STATE BUILDING CODE USING APPROVED ASSEMBLIES SUCH AS THE FOLLOWING:

- CONDUIT PENETRATIONS OF 1, 2 OR 4 HOUR OYBOARD WALLS - UL #W-1-1080.

- CONDUIT PENETRATIONS OF 1 OR 2 HOUR CONCRETE WALLS OR FLOORS, OR BLOCK WALLS - UL #C-AJ-1044.

- CONDUIT PENETRATIONS OF 4 HOUR CONCRETE WALLS OR FLOORS, OR BLOCK WALLS - UL #C-AJ-1044.

- 20. IF APPLICABLE, IN REQUIRED FIRE-RATED WALLS AND PARTITIONS, OPENINGS FOR INSTALLATION OF BOXES THAT ARE GREATER THAN 16 SQUARE INCHES SHALL BE PROTECTED AS REQUIRED BY A THIRD PARTY TESTING AGENCY APPROVED BY THIS STATE. COORDINATE CLOSELY WITH THE GENERAL CONTRACTOR TO INSURE THAT THE INTEGRITY OF THE RATING IS MAINTAINED

- 21. IT IS THE RESPONSIBILITY OF ALL CONTRACTORS AND TRADES TO COORDINATE THE INSTALLATION OF THEIR WORK WITH THE INSTALLATION OF WORK BY ALL OTHER CONTRACTORS AND TRADES. THE REQUIREMENTS OF THESE DRAWINGS, GENERAL REQUIREMENTS AND ALL ITEMS OF THE CONTRACT DOCUMENTS ARE EQUALLY BINDING ON ALL CONTRACTORS AND TRADES. EACH CONTRACTOR IS REQUIRED TO MAINTAIN FULL SETS OF THE CONTRACT DOCUMENTS FOR HIS EMPLOYEES' USE, ON THE PROJECT, TO ASSURE THAT ALL WORK IS PROPERLY COORDINATED AND INSTALLED WITH THE WORK OF OTHER CONTRACTORS AND TRADES.

- 22. WHENEVER THERE ARE DISCREPANCIES BETWEEN DRAWINGS, OR BETWEEN THE DRAWINGS AND SPECIFICATIONS, OR CONFLICTS WITH THE SPECIFICATIONS AND/OR DRAWINGS, AND SUCH DISCREPANCY IS NOT CALLED TO THE ENGINEER'S ATTENTION IN TIME TO PERMIT CLARIFICATION BY ADDENDUM, THE CONTRACTOR SHALL BASE HIS BID UPON PROVIDING THE BETTER QUALITY OR GREATER OF WORK OR MATERIAL CALLED FOR, SHALL SUBMIT A WRITTEN STATEMENT WITH HIS PROPOSAL NOTING SUCH DISCREPANCIES, AND SHALL SO FURNISH AND INSTALL SUCH BETTER QUALITY OR GREATER QUANTITY UNLESS OTHERWISE ORDERED IN WRITING.

- 23. CONTRACTOR SHALL ASSUME FULL LIABILITY FOR ANY WORK, EQUIPMENT AND MATERIALS PURCHASED AND/OR INSTALLED THAT ARE IN DISCREPANCY, IF IT IS NOT FIRST BROUGHT TO THE ATTENTION OF THE ENGINEER, IN WRITING, FOR CLARIFICATION. ANY WORK DONE IN DISCREPANCY PRIOR TO BRINGING TO THE ENGINEER'S ATTENTION, CONTRACTOR SHALL PAY FOR ANY EQUIPMENT, MATERIALS AND WORK THAT MUST BE ALTERED AND/OR REPLACED.

SECTION 260500 ELECTRICAL DEMOLITION

- A. EXECUTION
1. THE EXTENT OF THE ELECTRICAL DEMOLITION WORK IS INDICATED ON THE ELECTRICAL AND ARCHITECTURAL DRAWINGS AND SPECIFIED HEREIN.

- 2. WHILE DEMOLISHING THE EXISTING ELECTRICAL SYSTEMS, ALL NECESSARY MODIFICATIONS TO THE PORTIONS OF THE EXISTING SYSTEMS, WHICH ARE TO REMAIN, SHALL BE MADE SO THAT THE ENTIRE SYSTEM(S) CONTINUES TO FUNCTION AS INTENDED, EVEN AFTER DEMOLITION AND ASSOCIATED NEW CONSTRUCTION.

- 3. ELECTRICAL DEMOLITION, RELOCATION OF EXISTING EQUIPMENT, AND ANY CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF THIS NEW ELECTRICAL WORK IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

- 4. THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE EXISTING BUILDING AND WITH THE WORK OF ALL OTHER TRADES AND INCLUDE ALL WORK NECESSARY TO COMPLY WITH THE INTENT OF THE DEMOLITION.

- 5. IT SHALL BE UNDERSTOOD THAT FIELD CONDITIONS MAY BE ENCOUNTERED DURING THE EXECUTION OF THIS CONTRACT, WHICH WILL REQUIRE EXTENSION OR RELOCATION OF EXISTING SYSTEMS OR EQUIPMENT WHICH ARE NOT SPECIFICALLY SHOWN ON THE DRAWINGS, BUT WHICH ARE REQUIRED TO MEET THE STATED INTENT THAT THE BUILDING CONTINUES TO FUNCTION UNIMPEDED BY THE DEMOLITION AND ASSOCIATED NEW CONSTRUCTION. THIS CONTRACT SHALL INCLUDE SUCH WORK AS WOULD NORMALLY BE EXPECTED IN AN EXISTING BUILDING OF THIS AGE AND TYPE.

- 6. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR, REGARDING DEMOLITION OF THE EXISTING ELECTRICAL SYSTEMS, AS IS NECESSARY, SO THAT THE DEMOLITION OF THE GENERAL CONTRACTOR SHALL NOT DAMAGE THOSE PORTIONS OF THE ELECTRICAL SYSTEMS THAT ARE TO REMAIN IN SERVICE, ARE TO BE REUSED, OR ARE TO BECOME THE PROPERTY OF THE OWNER.

- 7. ALL SALVAGEABLE MATERIALS RESULTING FROM DEMOLITION SHALL REMAIN THE PROPERTY OF THE OWNER. THE OWNER SHALL DETERMINE WHAT IS SALVAGEABLE. SALVAGEABLE ITEMS SHALL BE TURNED OVER TO THE OWNER. NON-SALVAGEABLE ITEMS SHALL BE PROPERLY DISPOSED OF BY THE ELECTRICAL CONTRACTOR.

- 8. EQUIPMENT OR MATERIALS WHICH ARE TO BE REUSED OR TURNED OVER TO THE OWNER SHALL BE CAREFULLY REMOVED AND STORED IN A CLEAN, DRY AREA. SHOULD THE CONTRACTOR ENCOUNTER SUCH EQUIPMENT WHICH IS NOT IN SATISFACTORY CONDITION FOR REUSE AND NOT IN WORKING ORDER, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY.

- 9. ELECTRICAL CONTRACTOR SHALL DISCONNECT ELECTRICAL SERVICES TO ALL EQUIPMENT REQUIRING REMOVAL, AND SHALL DISCONNECT AND REMOVE ALL RECEPTACLES AND TELEPHONE OUTLETS FROM PARTITIONS TO BE DEMOLISHED. CONDUIT SHALL BE REMOVED BACK TO THE POINT WHERE IT WILL BE CONCEALED AT THE COMPLETION OF THIS CONTRACT. WIRE AND CABLE SHALL BE REMOVED BACK TO THE FIRST OUTLET BOX, PANELBOARD, CABINET OR TERMINATION POINT WHICH IS TO REMAIN.

- 10. WHERE NEW WALL OR FLOOR FINISHES CONFLICT WITH EXISTING ELECTRICAL WORK THAT IS TO REMAIN, RELOCATE THE ELECTRICAL WORK INVOLVED OR PROVIDE BOX EXTENSIONS OR SIMILAR DEVICES AND REINSTALL ON THE NEW FINISH.

- 11. REMOVE ANY ABANDONED CONDUITS, WIRING AND BOXES ENCOUNTERED WITHIN THE PROJECT EXTENTS.

SECTION 260533 RACEWAYS AND BOXES

- A. PROJECT INCLUDES
1. ELECTRICAL CONDUIT, TUBING, SURFACE RACEWAYS, BOXES, AND CABINETS FOR ELECTRICAL POWER AND SIGNAL DISTRIBUTION.

- B. PRODUCTS
1. WIRING METHODS:
a. CONCEALED OR EXPOSED INDOOR WIRING: ZINC-COATED ELECTRICAL METALLIC TUBING FOR SIZES 1/2" THROUGH 4", INTERMEDIATE STEEL CONDUIT FOR SIZES LARGER THAN 4".
b. EXPOSED OUTDOOR WIRING: RIGID OR INTERMEDIATE STEEL CONDUIT.
c. CONCEALED OUTDOOR WIRING: INTERMEDIATE STEEL CONDUIT OR SCHEDULE 80 OR 40 PVC.
d. UNDERGROUND WIRING, SINGLE RUN: SCHEDULE 80 OR 40 PVC.
e. UNDERGROUND WIRING, GROUDED: SCHEDULE 80 OR 40 PVC.
f. CONNECTION TO EQUIPMENT: FLEXIBLE METAL CONDUIT, LIQUDTIGHT AT EXTERIOR OR IN DAMP LOCATIONS.

- 2. FITTINGS FOR ELECTRICAL METALLIC TUBING SHALL BE HEXAGONAL, GALVANIZED STEEL, GLAND TYPE, COMPRESSION TYPE AND THROUGHLESS.

- 3. RACEWAY ACCESSORY MATERIALS:
a. CONDUIT BODIES: SHALL COMPLY WITH N.E.C. REQUIREMENTS.
b. SURFACE RACEWAYS, METALLIC: GALVANIZED STEEL, WITH SNAP-ON COVERS AND IVORY ENAMEL FINISH. SURFACE RACEWAY MAY ONLY BE USED WITH PROPER, WRITTEN APPROVAL FROM OWNER, ARCHITECT AND ENGINEER.
c. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULL WIRES AND NYLON BUSHINGS AT BOTH ENDS.

- 4. BOXES AND FITTINGS:
a. CABINET BOXES: CODE GAUGE GALVANIZED SHEET METAL, NEMA 1 -INDOORS, NEMA 3R -OUTDOORS OR IN DAMP LOCATIONS.
b. PULL AND JUNCTION BOXES: CODE GAUGE GALVANIZED SHEET METAL, NEMA 1 -INDOORS, NEMA 3R -OUTDOORS OR IN DAMP LOCATIONS.
c. METAL OUTLET, DEVICE AND SMALL WIRING BOXES: SHALL COMPLY WITH UL 514A.
d. CONDUIT RUN THROUGH BUILDING EXPANSION JOINTS SHALL HAVE APPROPRIATE CONDUIT EXPANSION FITTINGS.

- C. EXECUTION
1. PROPERLY SUPPORT ALL CONDUITS WITH STRAPS AND CLAMPS PER THE MOST RECENT, ADOPTED EDITIONS OF THE N.E.C. AND STATE BUILDING CODE. RUN

- ALL CONDUITS PARALLEL OR TO BUILDING WALLS/SURFACES.

- 2. MINIMUM CONDUIT SIZE ABOVE SLAB/GRADE SHALL BE 1/2", MINIMUM CONDUIT SIZE IN OR BELOW FLOOR SLAB SHALL BE 3/4".

- 3. RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, FIRE, WATER, AND DUST. ROOF PENETRATIONS SHALL BE WITHIN THE EQUIPMENT CURB.

- 4. CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATER-TIGHT BY USING A POLYTETRA-FLUOROETHYLENE TAPE. ALL METALLIC UNDERGROUND CONDUITS SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTUM OR BITUMASTIC.

- 5. PROVIDE PULLWIRE IN ALL EMPTY CONDUITS.

- 6. OPEN FLAME DEVICES SHALL NOT BE UTILIZED TO BEND PVC CONDUIT. ALL HEATING DEVICES MUST BE ENCLOSED FLAME (HEAT GUN OR HEAT ROLLER). ALL HEATING METHODS MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ANY CONDUIT THAT HAS BEEN HEATED TO WHERE PVC IS DAMAGED OR DISCOLORED SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST.

SECTION 260519 WIRES AND CABLES

- A. PROJECT INCLUDES
1. WIRES, CABLES, AND CONNECTORS FOR POWER, LIGHTING, SIGNAL, CONTROL AND RELATED SYSTEMS RATED 600 VOLTS AND LESS.

- B. PRODUCTS
1. WIRE COMPONENTS:
a. CONDUCTORS FOR POWER AND LIGHTING CIRCUITS: SOLID CONDUCTORS FOR SIZES #14 AWG THROUGH #8 AWG, STRANDED CONDUCTORS FOR #6 AWG AND LARGER.
b. CONDUCTOR MATERIAL: COPPER.
c. INSULATION: THHN/THWN.
d. JACKETS: FACTORY-APPLIED NYLON OR PVC, COLOR CODED: "BLACK/RED/BLUE/WHITE" FOR "A", "B" AND "C" PHASES, NEUTRAL, RESPECTIVELY FOR 120/208-VOLT SYSTEM. "BROWN/ORANGE/YELLOW/LIGHT GRAY" FOR "A", "B" AND "C" PHASES, NEUTRAL, RESPECTIVELY FOR 277/480-VOLT SYSTEM.
e. BRANCH CIRCUIT CONDUCTORS: SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING MAY BE #14 AWG.
f. NEUTRAL CONDUCTORS: #10 AWG MINIMUM FOR ALL MULTIRIE BRANCH CIRCUITS.
g. "MC" TYPE CABLE SHALL NOT BE USED.

- 2. CABLES:
a. PORTABLE CORD FOR FLEXIBLE PENDANT LEADS TO OUTLETS AND EQUIPMENT: UL TYPE 5.
b. CONTROL/SIGNAL TRANSMISSION MEDIA: TWISTED PAIR TYPE.
c. PLENUM RATED CABLES SHALL BE PROVIDED WHERE INSTALLED IN PLENUM AIR SPACES AND/OR AIR DUCTS.

- 3. CONNECTORS: UL LISTED SOLDERLESS METAL CONNECTORS WITH APPROPRIATE TEMPERATURE RATINGS.

- 4. CABLES AND CONDUCTORS OF CLASS 1 CIRCUITS SHALL BE KEPT SEPARATED FROM CLASS 2 AND 3 CIRCUITS, AND SHALL BE IN COMPLIANCE WITH NEC 725.136.

SECTION 262726 WIRING DEVICES

- A. PROJECT INCLUDES
1. WIRING DEVICES FOR ELECTRICAL SERVICE.

- B. PRODUCTS
1. WIRING DEVICES AND COMPONENTS:
a. RECEPTACLES: 15-AMP DUPLEX (HUBBELL #2552, OR APPROVED EQUIVALENT), 20-AMP DUPLEX (HUBBELL #5362, OR APPROVED EQUIVALENT).
b. GROUND-FAULT INTERRUPTER (GFI) RECEPTACLES: FEED-THRU TYPE GROUND-FAULT CIRCUIT INTERRUPTER WITH INTEGRAL DUPLEX RECEPTACLES (HUBBELL #GF-5362, OR APPROVED EQUIVALENT).
c. ISOLATED GROUND RECEPTACLES: LISTED AND LABELED, EQUIPMENT GROUNDING CONTACTS INTEGRAL TO RECEPTACLE CONSTRUCTION.
d. PLUGS AND PLUG CONNECTOR: AS SPECIFIED ON DRAWINGS.
e. SNAP SWITCHES: SINGLE-POLE, 20 AMPERE (HUBBELL #1221, OR APPROVED EQUIVALENT), THREE-WAY, 20 AMPERE (HUBBELL #1223, OR APPROVED EQUIVALENT).
f. WALL PLATES: SINGLE AND COMBINATION TYPES, MATCHING EXISTING BUILDING STANDARD, UNLESS OTHERWISE NOTED ON DRAWINGS.
g. TELEPHONE/POWER SERVICE POLES: IF REQUIRED, UTILIZE COMBINATION TELEPHONE AND POWER POLES WITH APPROPRIATE CEILING AND FLOOR TRIM PLATES AND METAL DIVIDER BETWEEN POWER AND TELE/DATA COMPARTMENTS.
h. COLOR OF ALL DEVICES AND COVERPLATES TO MATCH EXISTING BUILDING STANDARD, UNLESS OTHERWISE NOTED ON DRAWINGS.
i. ALL 125V AND 250V NON-LOCKING TYPE RECEPTACLES SHALL BE TAMPER RESISTANT TYPE UNLESS PERMITTED OTHERWISE BY NEC 406.12.
j. ALL 125V AND 250V RECEPTACLES LOCATED WITHIN 6' OF WATER SOURCES AND OUTDOORS SHALL BE WEATHER RESISTANT TYPE WITH THE LISTING "WR" ON FACE OF RECEPTACLE.

SECTION 284621 FIRE ALARM SYSTEMS

- A. PROJECT INCLUDES
1. EXISTING ADDRESSABLE, MICROPROCESSOR-BASED FIRE DETECTION ALARM SYSTEM WITH MANUAL AND AUTOMATIC ALARM INITIATION.

- B. QUALITY ASSURANCE
1. COMPLIANCE: NFPA 70, 71, 72.

- C. PRODUCTS
1. FIRE ALARM SYSTEM CHARACTERISTICS:
a. SIGNAL TRANSMISSION: DEDICATED MULTIPLEX SIGNAL TRANSMISSION.
b. AUDIBLE ALARM INDICATION: ELECTRONIC HORNS/SPEAKERS.
c. PHOTOELECTRIC-TYPE.
d. DETECTOR TYPES: PROVIDED AND WIRED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR.
e. THERMAL DETECTORS: FIXED-TEMPERATURE AND RATE-OF-RISE TYPE.
f. FIRE ALARM HORNS: ELECTRONIC TYPE WITH FIELD SELECTABLE PATTERN.
g. VISUAL ALARM DEVICES: DUAL-VOLTAGE STROBE LIGHTS, ALFA COMPLIANT, 45° SOLID ANGLE, 110 CANDELA, UNLESS NOTED OTHERWISE ON DRAWINGS.
h. DEVICE LOCATION-INDICATING LIGHTS: SYSTEM-VOLTAGE INDICATING LIGHT.
i. MAGNETIC DOOR HOLDERS: WALL MOUNTED TYPE. UPON FIRE ALARM SYSTEM GOING INTO ALARM, ALL DOOR HOLDERS SHALL BE RELEASED ALLOWING ASSOCIATED DOOR TO BE CLOSED.
j. FIRE ALARM CONTROL PANEL: UL 864 WITH LOCKABLE STEEL ENCLOSURE AND ALPHANUMERIC DISPLAY AND SYSTEM CONTROLS.
k. TRANSMITTER: DIGITAL AUTO-DIALER TYPE. PROVIDE TWO (2)-DEDICATED TELEPHONE LINES FOR USE BY TRANSMITTER. IF REQUIRED BY LOCAL AHA, PROVIDE ADDITIONAL TRANSMITTER TYPES TO CELLULAR, VOIP, OR RADIO COMMUNICATIONS.
l. EMERGENCY POWER SUPPLY: INTEGRAL BATTERY OPERATED, 24-HOUR OPERATION CAPACITY.

- WIRING CUTTERS AT TOP, SIDES, AND BOTTOM), COPPER BUS, MECHANICAL TYPE MAIN AND NEUTRAL LUGS.
b. PANELBOARD TYPE: LIGHTING AND APPLIANCE BRANCH CIRCUIT PANELBOARDS, BOLT ON CIRCUIT BREAKERS.
c. SERIES RATING IS NOT ALLOWED FOR ALL NEW PANELBOARDS, CIRCUIT BREAKERS AND DEVICES.
d. ACCEPTABLE MANUFACTURERS: SCHNEIDER/SQUARE D, SIEMENS, ABB OR EATON.

- 3. DISCONNECT SWITCHES:
a. HEAVY-DUTY TYPE WITH PADLOCKING PROVISIONS.
b. FUSED OR NON-FUSED AS INDICATED ON DRAWINGS.
c. FUSED SWITCHES SHALL HAVE REACTION-TYPE FUSE CLIPS.
d. ALL DISCONNECTS SHALL BE HEAVY-DUTY RATED, AND SHALL HAVE A MECHANICAL INTERLOCK TO PREVENT THE DOOR FROM BEING OPENED, WITHOUT DEFEATING THE INTERLOCK. THE MECHANICAL INTERLOCK SHALL ALSO PREVENT ACTUATING THE SWITCH WHEN THE DOOR IS OPEN. THE MECHANICAL INTERLOCK SHALL BE DEFEATABLE BY A SPECIAL TOOL, AND SHALL BE UL LISTED AS PART OF THE DISCONNECT.
e. ACCEPTABLE MANUFACTURERS: SCHNEIDER/SQUARE D, SIEMENS, ABB OR EATON.

- 4. OVERCURRENT PROTECTIVE DEVICES:
a. OVERCURRENT PROTECTIVE DEVICES: INTEGRAL TO PANELBOARDS OR SWITCHBOARDS.
b. FUSIBLE SWITCHES: RATING AS INDICATED ON DRAWINGS AND SUITABLE FOR USE.
c. MOLDED CASE CIRCUIT BREAKERS: BOLT-ON TYPE, AUTOMATIC THERMAL MAGNETIC TYPE CALIBRATED FOR 40-DEGREES C, OR AMBIENT COMPENSATION.
d. ALL CIRCUIT BREAKERS RATED 1200A OR HIGHER SHALL BE EQUIPPED WITH ARC ENERGY REDUCTION MAINTENANCE SWITCH WITH STATUS INDICATOR.
e. ACCEPTABLE MANUFACTURERS: SCHNEIDER/SQUARE D, SIEMENS, ABB OR EATON.

- 5. FUSES:
a. SIZES INDICATED ON DRAWINGS.
b. CLASS R-5, TIME DELAY, UNLESS OTHERWISE NOTED.
c. A SET OF 3 SPARE FUSES OF EACH SIZE AND TYPE SHALL BE FURNISHED TO THE OWNER.
d. ACCEPTABLE MANUFACTURERS: BUSSMAN, FERRAZ SHIMMUT OR LITTLE FUSE.
6. TRANSFORMERS:
a. DRY TYPE TRANSFORMERS: COPPER WINDINGS, 2-WINDING TYPE, ENCLOSURE TYPE, 115-DEGREE C, RISE, INSULATION CLASS, INSULATION TEMPERATURE RISE SUITABLE FOR USE, K4 RATED.
b. CONTROL AND SIGNAL TRANSFORMERS: SELF-COOLED, TWO-WINDING DRY TYPE, CONTINUOUS DUTY RATING.
c. ACCEPTABLE MANUFACTURERS: SCHNEIDER, SIEMENS, ABB OR EATON.

- C. EXECUTION
1. ALL NEW MULTI-CIRCUIT HOURGLASS SHALL BE PROTECTED WITH A MULTI-POLE, SIMULTANEOUS-TRIP CIRCUIT BREAKER PER N.E.C. 210-4B.
2. ALL MOTORS SHALL BE PROVIDED WITH OVERLOAD PROTECTION IN COMPLIANCE WITH PART III OF NEC 430. PROVIDE A SEPARATE OVERLOAD DEVICE FOR MOTORS NOT ALREADY EQUIPPED WITH THERMAL PROTECTION OR INTEGRAL PROTECTIVE DEVICE. THE OVERLOAD DEVICE RATING SHALL BE SELECTED BASED ON THE NAMEPLATE RATING.
3. ALL TERMINATIONS ON NEW ELECTRICAL GEAR/EQUIPMENT (I.E. PANELBOARDS, DISCONNECT SWITCHES, ETC) SHALL HAVE DUAL RATED 60-DEGREE / 75-DEGREE LUGS/TERMINALS.

- 4. PROVIDE A COMPLETE PANEL DIRECTORY FOR EACH PANEL. DIRECTORY SHALL BE TYPE WRITTEN FOR ALL CIRCUITS.

- 5. NEMA 1 ENCLOSURE - - INDOORS, NEMA 3R ENCLOSURE - OUTDOORS AND WET AREAS, NEMA 4X - CORROSIVE ENVIRONMENTS.

- 6. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL MOTOR STARTERS, AND DISCONNECT SWITCHES. LABELS SHALL BE WHITE LETTERS ON BLACK FIELD. NAMEPLATE SHALL INDICATE EQUIPMENT NAME, VOLTAGE, AND CIRCUIT/FEEDER SERVING EQUIPMENT PER NEC 408.4(B) (WHERE APPLICABLE).

- 7. ALL SPARE BREAKER HANDLES SHALL BE IN THE OFF POSITION.

- 8. PROVIDE REINFORCED CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT. PAD SHALL BE CONSTRUCTED OF CONCRETE WITH REINFORCEMENT. PAD SHALL BE 4" THICK WITH CHAMFERED EDGES EXTENDED TO A MINIMUM OF 3" ON ALL SIDES OF THE EQUIPMENT.

- 9. ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE INTERIORS OF ALL PANELS AND SWITCHGEAR IN WHICH BREAKERS ARE BEING INSTALLED, VERIFY THAT ALL INTERIOR SPACING AND BUSSING IS AVAILABLE PRIOR TO SUBMISSION OF BID. ANY ADDITIONAL BUSSING REQUIRED WITHIN SUCH EQUIPMENT SHALL BE INCLUDED IN THE BID.

- 10. CONNECT IRRIGATION SYSTEM CONTROLLER AS REQUIRED. COORDINATE ALL POWER AND CONDUIT REQUIREMENTS, LOCATION AS REQUIRED IN THE FIELD.

- l. LINE-VOLTAGE AND LOW-VOLTAGE CIRCUITS: SOLID COPPER CONDUCTORS WITH RATED INSULATION, COLOR CODED, PER MANUFACTURER'S RECOMMENDATIONS.
m. CONDUIT: SEE SECTION 260533 FOR APPROPRIATE TYPE.

- D. EXECUTION
o. FIRE MARSHALL APPROVAL OF FIRE ALARM AND SPRINKLER SYSTEM SHOP DRAWINGS SHALL BE ON SITE BEFORE ABOVE CEILING INSPECTIONS ARE PERFORMED. PROJECTS WITHOUT APPROVED SHOP DRAWINGS ON SITE WILL HAVE ABOVE CEILING INSPECTIONS WITHHELD.
p. PROVIDE A DEDICATED CIRCUIT FOR FIRE ALARM EQUIPMENT WHETHER SHOWN ON THE DRAWINGS OR NOT. BREAKER SHALL BE EQUIPPED WITH HANDLE LOCK-ON ATTACHMENT. QUANTITY OF CIRCUITS AS REQUIRED BY FIRE ALARM INSTALLER, COORDINATE, WITHOUT DEFEATING THE INTERLOCK. THE MECHANICAL INTERLOCK SHALL ALSO PREVENT ACTUATING THE SWITCH WHEN THE DOOR IS OPEN. THE MECHANICAL INTERLOCK SHALL BE DEFEATABLE BY A SPECIAL TOOL, AND SHALL BE UL LISTED AS PART OF THE DISCONNECT.
q. WHEN A FIRE PUMP IS INSTALLED WITHIN THE SCOPE OF PROJECT, CONNECT FIRE PUMP CONTROLLER TO FIRE ALARM CONTROL PANEL TO MONITOR FIRE PUMP AND JOCKEY PUMP STATUS.
r. WHEN A ERRC/BDA SYSTEM IS INSTALLED WITHIN THE SCOPE OF PROJECT, CONNECT BDA SYSTEM CONTROL PANEL TO FIRE ALARM CONTROL PANEL TO MONITOR SYSTEM STATUS.
s. IN HIGH RISE FACILITIES, FIRE FLOOR DEVICES ACTIVE, AND DEVICES ON TWO FLOORS ABOVE FIRE FLOOR, AND DEVICES ON TWO FLOORS BELOW FIRE FLOOR.
t. PROJECTS IN HIGH RISE FACILITIES, LARGE ASSEMBLY OCCUPANCY (>1000 OCCUPANTS), AND EDUCATIONAL OCCUPANCY (>100 OCCUPANTS), VOICE EVACUATION TYPE SYSTEM SHALL BE PROVIDED.
u. ALL NEW DEVICES, CABLING, ETC. SHALL MATCH EXISTING SYSTEM.
v. CONTRACTOR SHALL PROVIDE NEW CONTROL CARDS, BATTERIES, POWER SUPPLIES, UPGRADES AS NECESSARY ETC. TO EXISTING SYSTEM, AS NEEDED TO ACCOMMODATE NEW DEVICES.

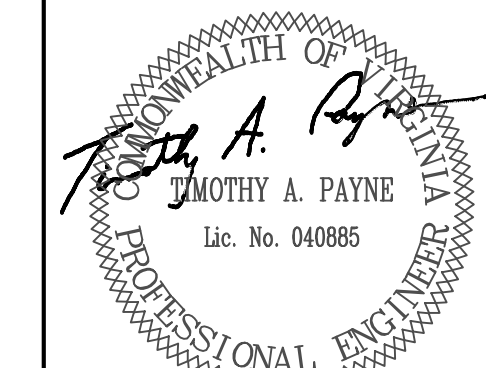
SECTION 220528 TELEPHONE/DATA/CATV SYSTEMS

- A. PROJECT INCLUDES
1. SYSTEM REQUIREMENTS: EMPTY CONDUIT SYSTEM WITH OUTLET BOXES.

- B. PRODUCTS
1. TELEPHONE/DATA/CATV DISTRIBUTION SYSTEM COMPONENTS:
a. CABLE TRAYS, RACEWAYS, BOXES, CABINETS: COMPLY WITH PROJECT STANDARDS.
b. BACKBOARD: INTERIOR GRADE, FIRE-RETARDANT PLYWOOD, 3/4-INCH THICK, WITH TWO COATS OF GRAY, FIRE-RETARDANT ENAMEL PAINT.
c. OUTLET: EMPTY 4" SQUARE DEVICE BOX WITH SINGLE-GANG TRIM RING. BOX MOUNTED AT 18" AFF. TO CENTER, UNLESS NOTED OTHERWISE. PROVIDE WITH BLANK COVERPLATE TO MATCH PROJECT/BUILDING STANDARD COVERPLATES.
d. EXTEND EMPTY CONDUIT FROM EACH DEVICE BOX AND STUB TO 6" ABOVE NEAREST ACCESSIBLE CEILING SPACE. IF ACCESSIBLE CEILING SPACE IS NOT AVAILABLE, EXTEND CONDUIT BACK TO NEAREST TELE/DATA/CATV TERMINAL BOARD, MINIMUM 3/4" OR AS INDICATED. LEAVE PULLSTRING IN CONDUIT.
2. ALL TELECOMMUNICATIONS CONDUIT, SLEEVES, OR PATHWAYS ARE TO BE LONG SWEEPING TYPE. ALL CONDUITS (BENDING RADII) ARE TO BE INSTALLED PER MANUFACTURER'S AND TELECOM CONTRACTOR'S RECOMMENDATIONS.

END OF SPECIFICATIONS

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1005 Thorndale Rd
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PROJECT # 26-189



4/17/26

CONSTRUCTION DOCUMENT

ISSUE DATE: APRIL 17, 2026

DRAWN BY: GWA

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PROJECT NAME

SCX LOCOMOTIVE SHOP
ROANOKE, VA

PROJECT NO.

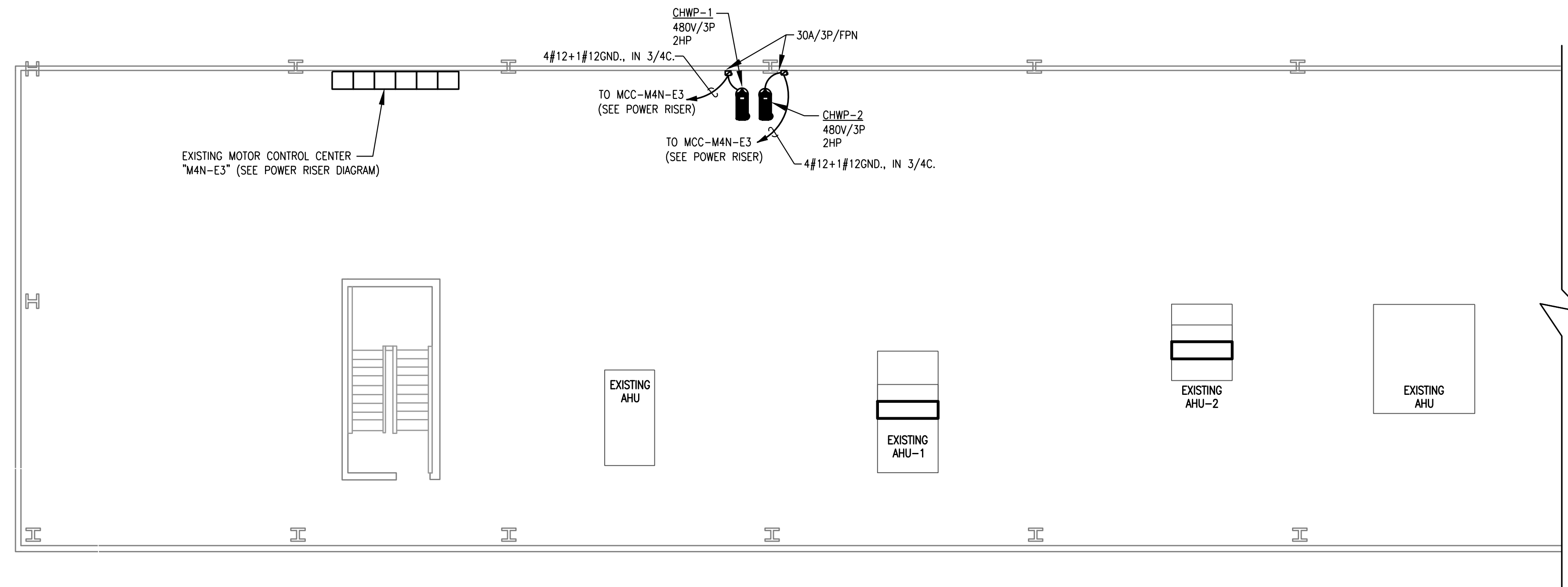
26-189

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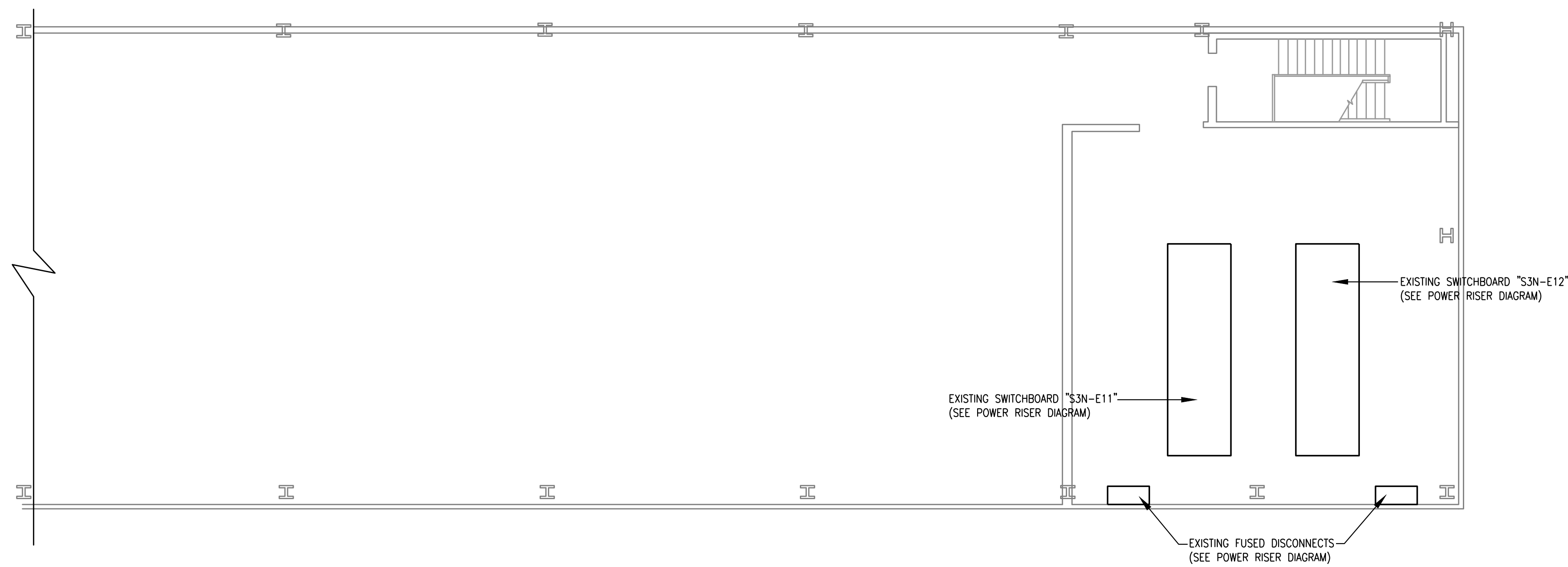
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SHEET NUMBER

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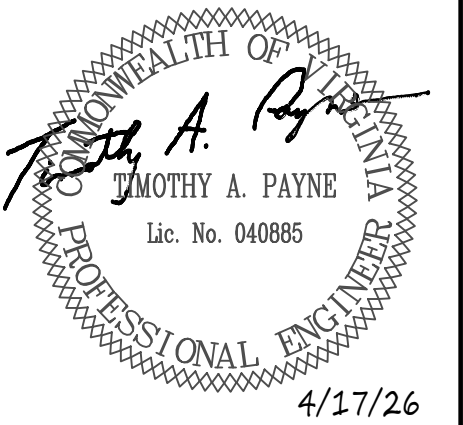


1 ELECTRICAL MEZZANINE POWER PLAN
E4 SCALE: 1/8" = 1'-0"



2 ELECTRICAL MEZZANINE POWER PLAN
E4 SCALE: 1/8" = 1'-0"

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CONSTRUCTION DOCUMENT

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REVISIONS		
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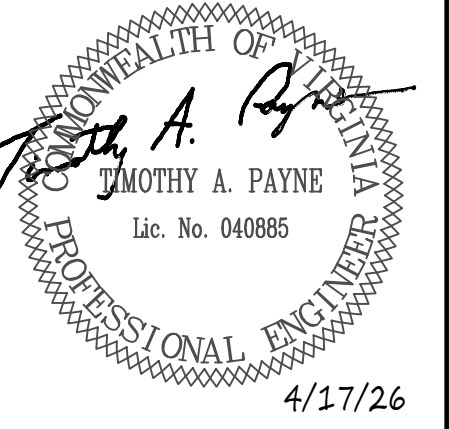
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ROANOKE, VA

PROJECT NO.
26-189
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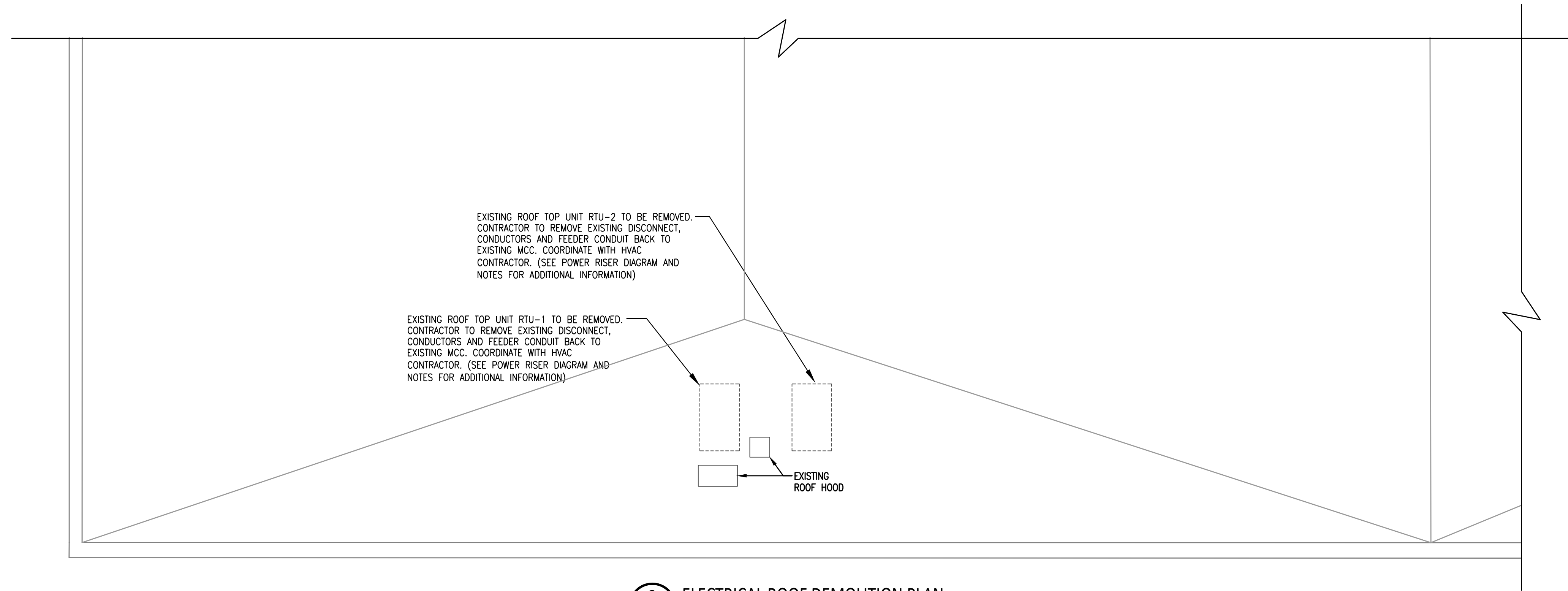
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POWER PLAN AND
NOTES

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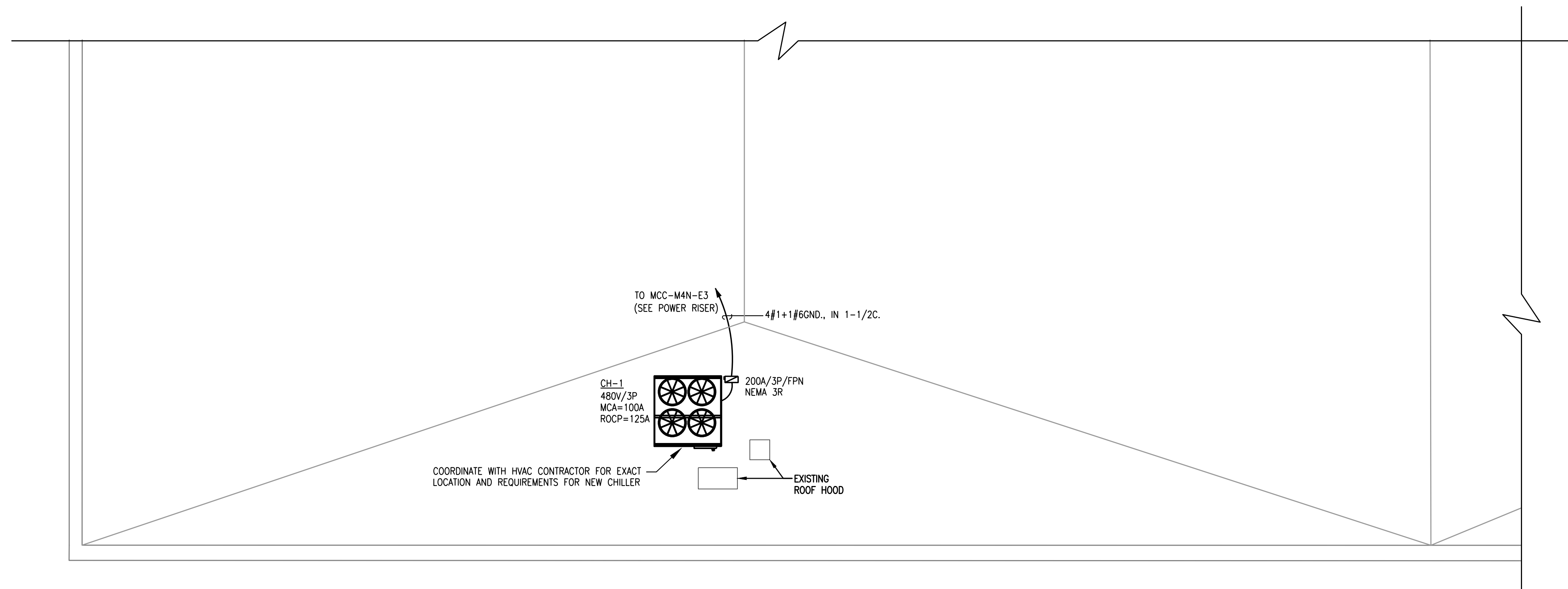
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 PROJECT # 26-189



4/17/26



2 ELECTRICAL ROOF DEMOLITION PLAN
 E5 SCALE: 1/8" = 1'-0"



1 ELECTRICAL ROOF POWER PLAN
 E5 SCALE: 1/8" = 1'-0"

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 GWA

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SHEET TITLE
 ELECTRICAL ROOF PLAN
 AND NOTES

SHEET NUMBER
E5