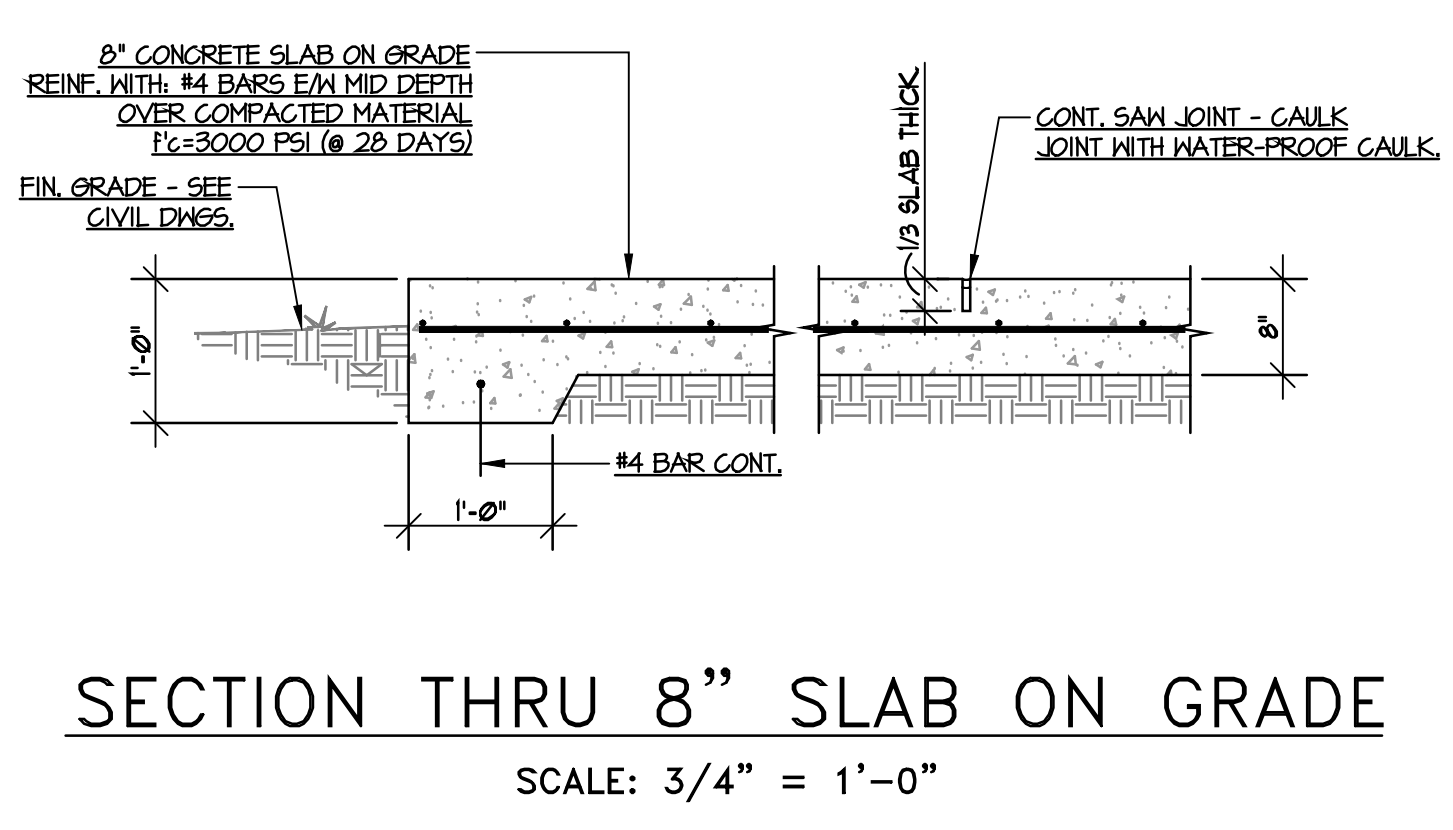
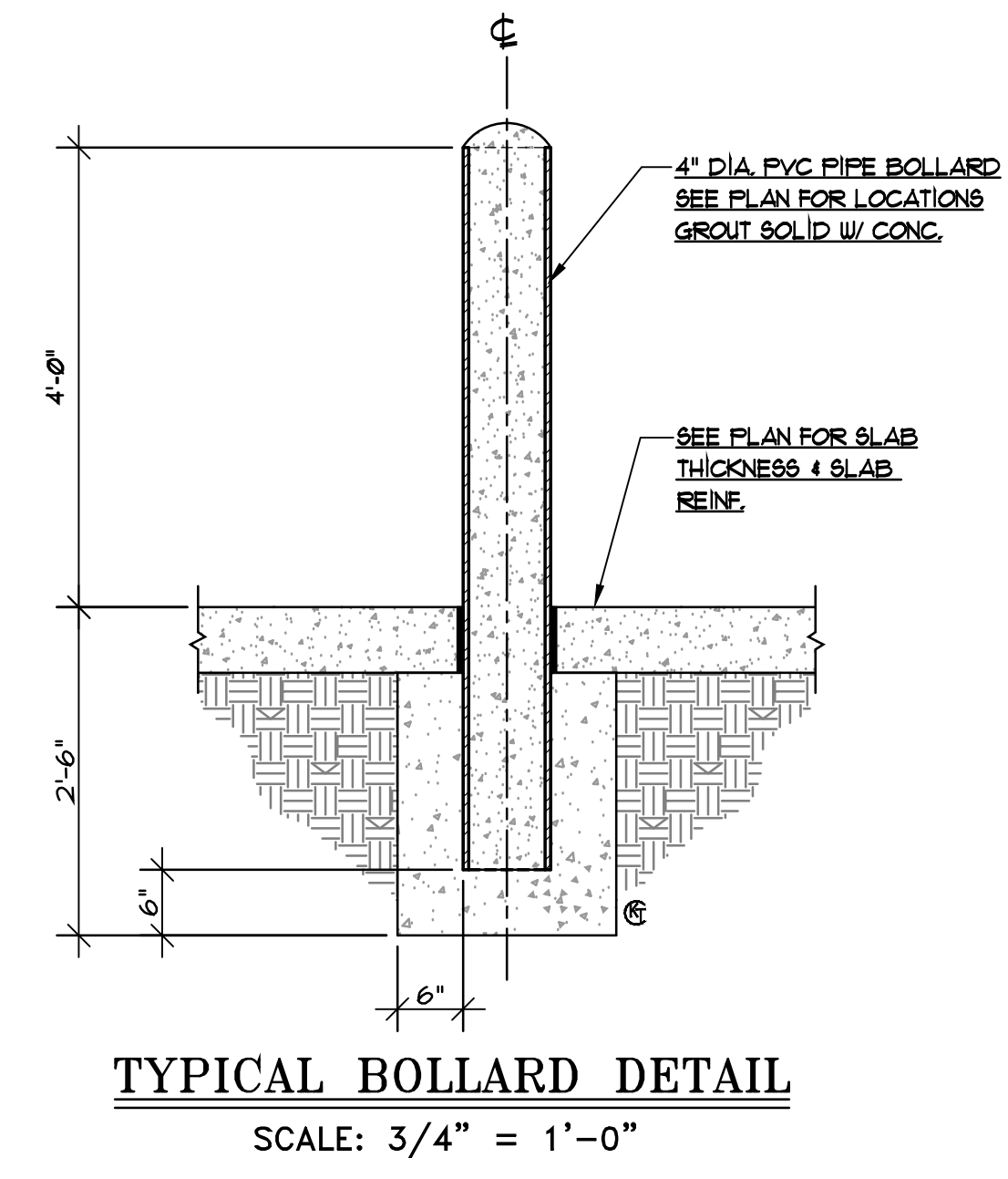


1
S1 SLAB ON GRADE PLAN
SCALE: 1/4" = 1'-0"

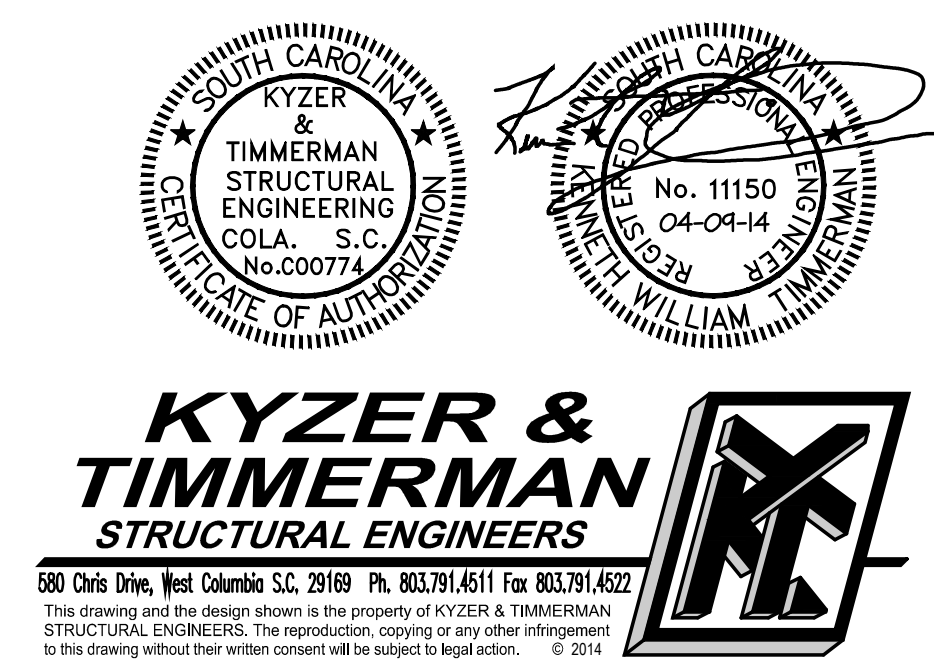
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PROJECT TITLE: SITE PLAN & GENERAL NOTES
COMPUTER SERVICES ANNEX GENERATOR

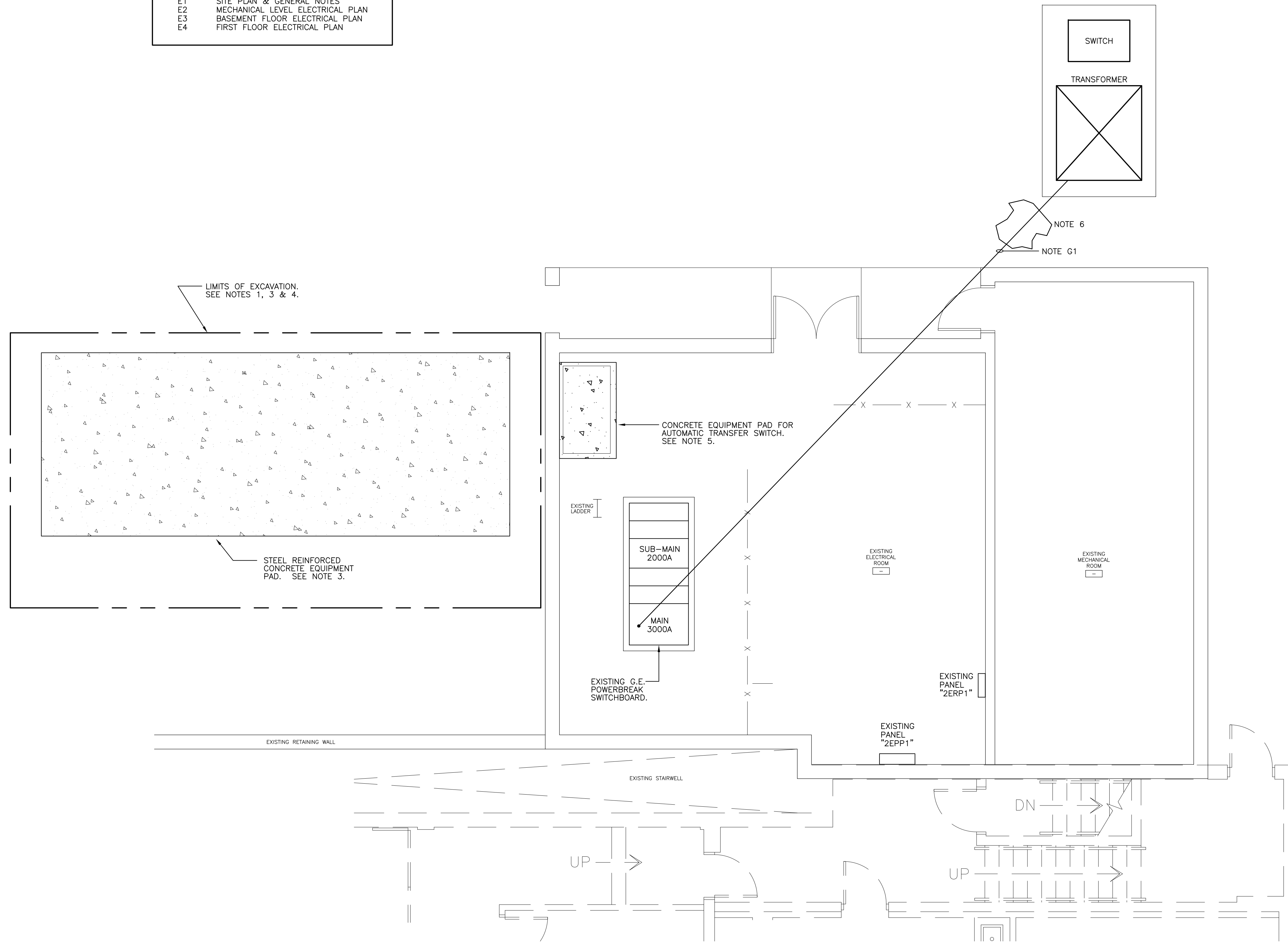
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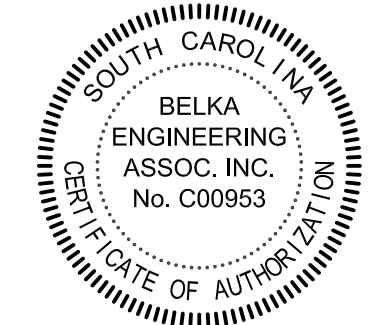
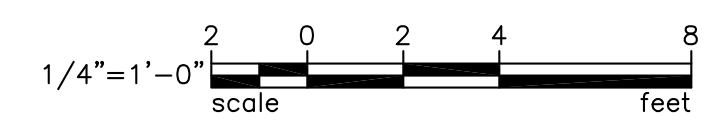
| ELECTRICAL DRAWING INDEX | |
|--------------------------|----------------------------------|
| E1 | SITE PLAN & GENERAL NOTES |
| E2 | MECHANICAL LEVEL ELECTRICAL PLAN |
| E3 | BASEMENT FLOOR ELECTRICAL PLAN |
| E4 | FIRST FLOOR ELECTRICAL PLAN |

- ### GENERAL CONSTRUCTION NOTES
- G1. RACEWAY LOCATIONS INDICATED ON PLAN ARE DIAGRAMMATIC ONLY. THE CONTRACTOR SHALL LOCATE/ROUTE RACEWAYS SO AS NOT TO CONFLICT WITH EXISTING BUILDING COMPONENTS, EQUIPMENT, FIXTURES, AND DEVICES. FIELD VERIFY LOCATION OF EXISTING RACEWAYS.
 - G2. EMT FITTINGS SHALL BE OF THE COMPRESSION TYPE. SET-SCREW AND INDENTOR TYPE FITTINGS SHALL NOT BE USED.
 - G3. PROVIDE A GREEN INSULATED GROUND WIRE IN ALL RACEWAYS OTHER THAN THE SERVICE LATERAL FROM THE TRANSFORMER TO THE 3000A MAIN.
 - G4. EQUIPMENT AND DEVICE LOCATIONS INDICATED ON PLAN ARE APPROXIMATE. LOCATE EQUIPMENT AND DEVICES SO AS NOT TO CONFLICT WITH EXISTING CEILING AND WALL MOUNTED EQUIPMENT, FIXTURES, AND DEVICES.
 - G5. CUTTING, DRILLING AND PATCHING: PROVIDE CHASES, SLOTS, AND OPENINGS IN EXISTING BUILDING COMPONENTS TO ALLOW FOR ELECTRICAL INSTALLATIONS. PERFORM CUTTING, FITTING, AND PATCHING REQUIRED TO:
 - A) INSTALL EQUIPMENT, MATERIALS, AND RACEWAYS IN EXISTING STRUCTURES.
 - B) REMOVE AND REPLACE DEFECTIVE WORK THAT DOES NOT CONFORM TO REQUIREMENTS OF THE CONTRACT DOCUMENTS.
 - C) UPON WRITTEN INSTRUCTIONS FROM THE ENGINEER, UNCOVER AND RESTORE WORK TO PROVIDE FOR ENGINEER'S OBSERVATION OF CONCEALED WORK.
 PROTECT EXISTING STRUCTURES, FURNISHINGS, FINISHES, MECHANICAL SYSTEMS, AND ELECTRICAL SYSTEMS WHILE PERFORMING CUTTING, DRILLING, AND PATCHING.
 PATCH EXISTING SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS THAT MATCH EXISTING MATERIALS. PATCHING SHALL BE PERFORMED BY EXPERIENCED INSTALLERS.
 - G6. COORDINATE ALL REQUIRED OUTAGES TO EXISTING ELECTRICAL SERVICES WITH DENNIS GALLAGHER OF USC MAINTENANCE (PHONE NUMBER 917-0340) AND TODD GRIFFIN OF USC HEALTH & SAFETY (PHONE NUMBER 212-8775).

- ### SITE PLAN NOTES
1. EXCAVATE AND REMOVE EXISTING PAVEMENT WITHIN BOUNDARY SHOWN ON PLAN AND REFERENCED TO THIS NOTE. PROVIDE ADDITIONAL EXCAVATION AS REQUIRED TO INSTALL UNDERGROUND RACEWAYS, BOLLARDS, AND TO ESTABLISH A BEARING AREA FOR THE GENERATOR SET CONCRETE PAD. SEE PAD DETAIL FROM STRUCTURAL ENGINEER. FIELD VERIFY EXISTING UNDERGROUND INFRASTRUCTURE UNDER THE AREA OF EXCAVATION.
 2. EXCAVATE AND LOCATE FEEDER RACEWAYS TO BUILDING. EXISTING FEEDERS TO BUILDING FROM TRANSFORMER INCLUDES 10 SETS OF PHASE CONDUCTORS AND ONE SET OF 50% REDUCED NEUTRALS. ALL EXISTING CONDUCTORS IN THOSE FEEDERS SHALL BE REMOVED. EXISTING FEEDERS HAVE COMPRESSION LUGS. PORTIONS OF THE EXISTING RACEWAYS FROM THE TRANSFORMER TO THE 3000A MAIN MAY BE REUSED IN RENOVATION AT CONTRACTOR'S DISCRETION.
 3. THE CONCRETE EQUIPMENT PAD FOR THE GENERATOR SET/TANK/ENCLOSURE SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATION SECTION 03300. PAD SHALL OVERLAP BEARING FOOTPRINT OF TANK/SKID AT LEAST 6 INCHES ON ALL SIDES. TOP OF CONCRETE PAD SHALL PROTRUDE ABOVE THE EXISTING PAVEMENT LEVEL 3 INCHES. VERIFY DIMENSIONS OF CONCRETE PAD WITH THE EQUIPMENT MANUFACTURER PRIOR TO ERECTING CONCRETE FORMS. PROVIDE ANCHOR BOLTS IN CONCRETE PAD - INSTALL PRIOR TO POURING CONCRETE (EXPANSION ANCHORS INSTALLED AFTER PAD IS POURED ARE NOT ACCEPTABLE).
 4. BACKFILL AND RE-PAVE (ASPHALT) EXCAVATED AREAS AROUND CONCRETE PAD TO THE LIMITS OF THE EXCAVATION BOUNDARY.
 5. PROVIDE A 4" HIGH CONCRETE EQUIPMENT PAD FOR THE AUTOMATIC TRANSFER SWITCH. PAD SHALL BE CUSTOM FORMED SO THAT IT OVERLAPS THE FOOTPRINT OF THE SWITCH 4 INCHES ON ALL SIDES. CONCRETE SHALL BE 3,000 PSI (MINIMUM). HOLES SHALL BE DRILLED INTO THE EXISTING CONCRETE FLOOR AND STEEL DOWELS SHALL BE PROVIDED TO HELP BOND PAD TO EXISTING FLOOR. STEEL MESH SHALL BE PROVIDED IN PAD, SUSPENDED AT 2 INCHES ABOVE EXISTING FLOOR. VERIFY DIMENSIONS OF CONCRETE PAD WITH THE EQUIPMENT MANUFACTURER PRIOR TO ERECTING CONCRETE FORMS. PROVIDE ANCHOR BOLTS IN CONCRETE PAD - INSTALL PRIOR TO POURING CONCRETE (EXPANSION ANCHORS INSTALLED AFTER PAD IS POURED ARE NOT ACCEPTABLE).



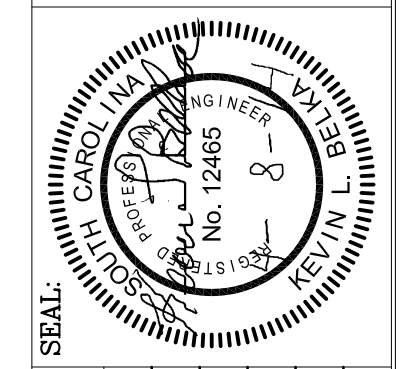
1 **SITE PLAN**
 SCALE: 1/4" = 1'-0"



US21309

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PROJECT TITLE: SITE PLAN & GENERAL NOTES
 514 MAIN - OBTAIN & INSTALL A BACKUP GENERATOR

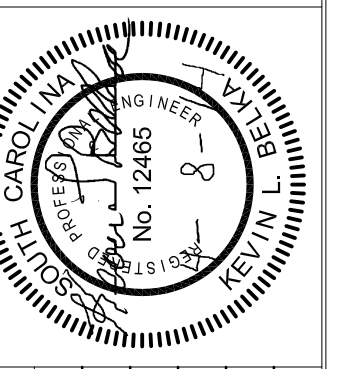


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 COLUMBIA, SC 29208

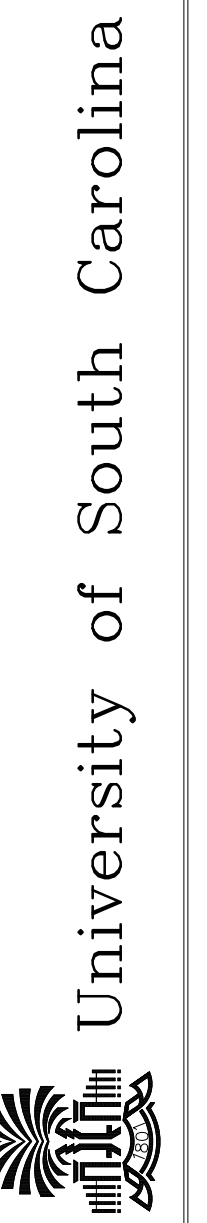
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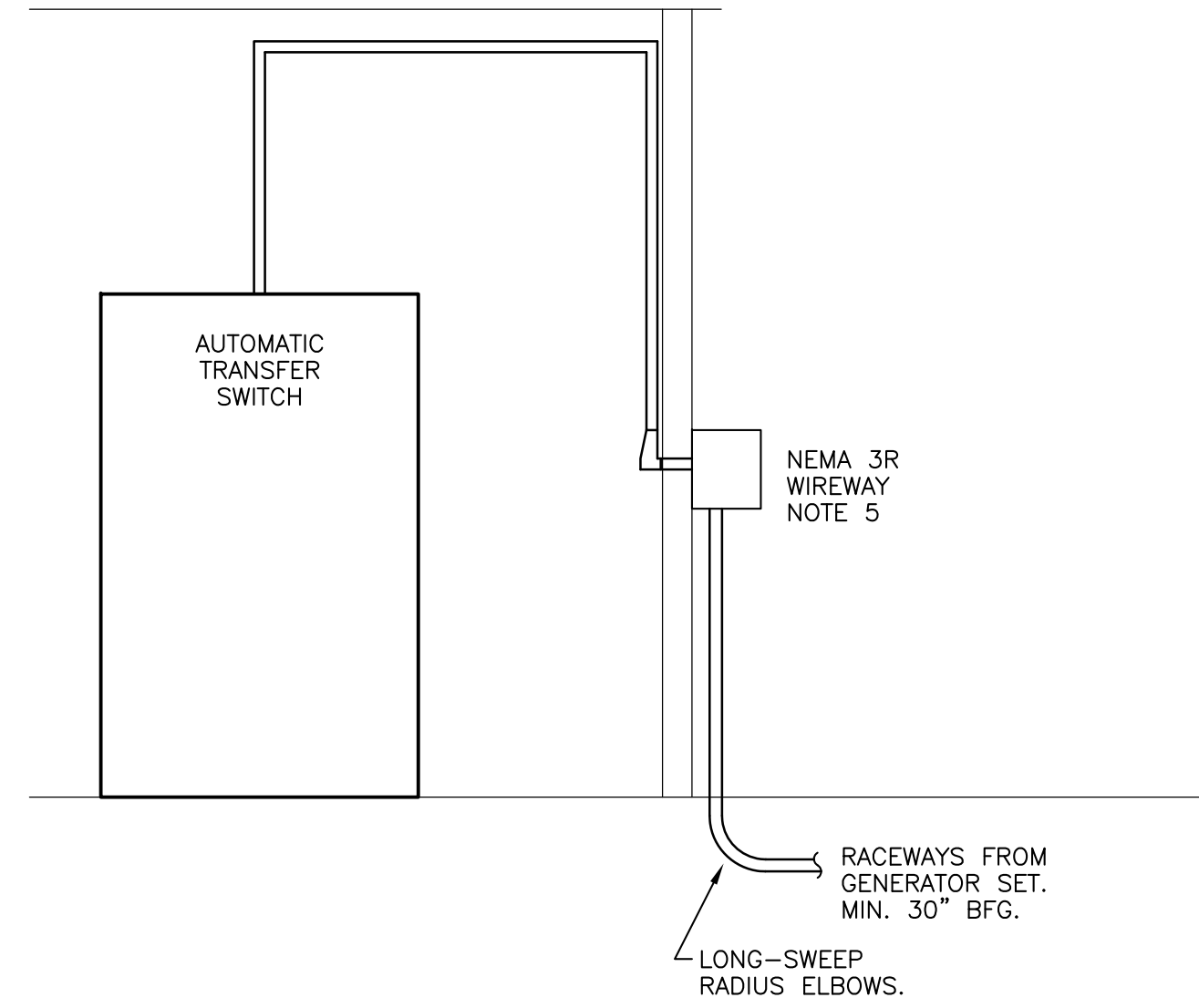
PROJECT TITLE: MECHANICAL LEVEL ELECTRICAL PLAN
514 MAIN - OBTAIN & INSTALL A BACKUP GENERATOR



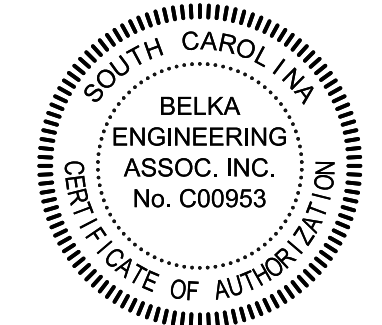
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NOTES

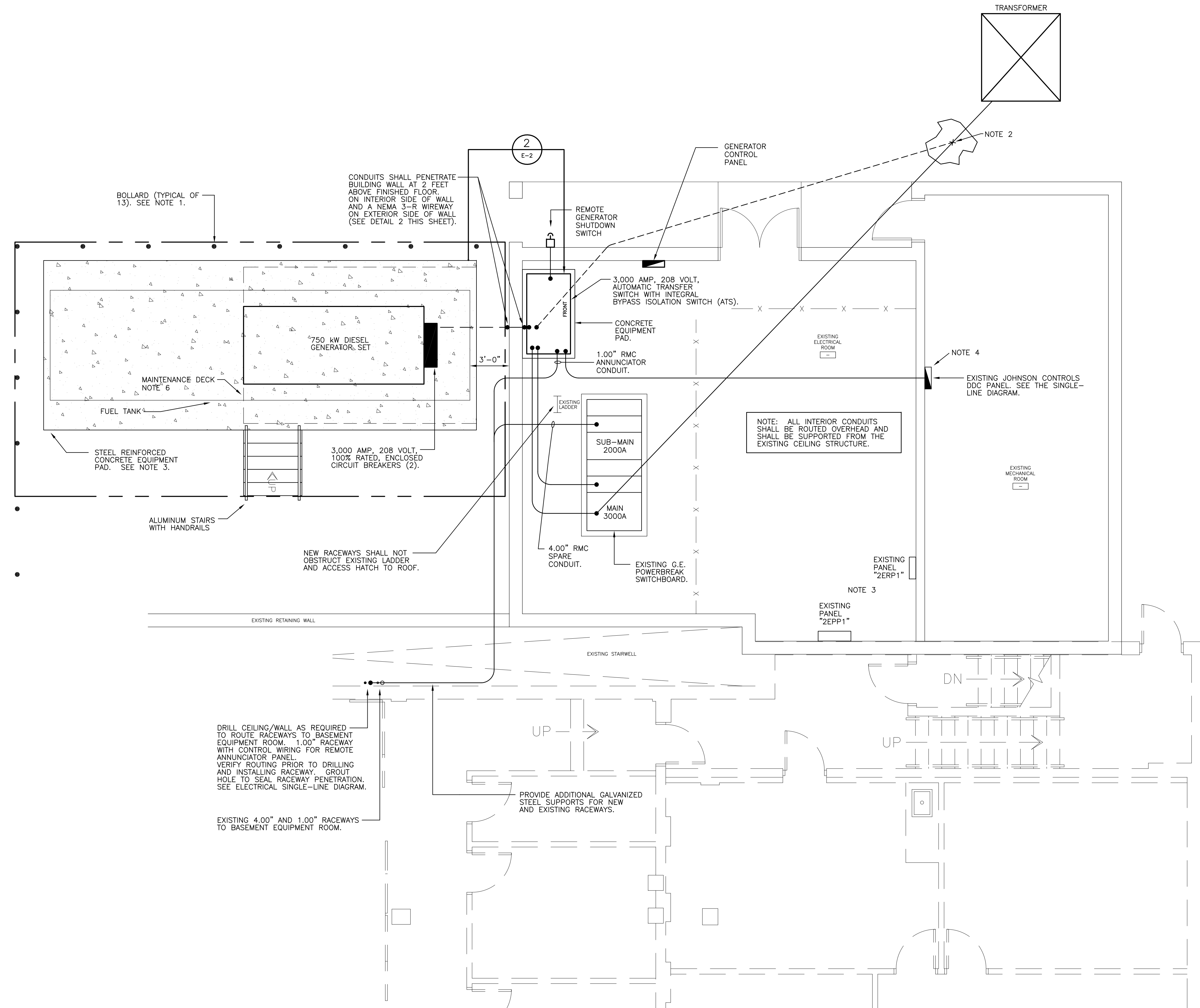
1. PROVIDE BOLLARDS USING 4" PVC CONDUIT. EACH BOLLARD SHALL BE BURIED AT LEAST 36" AND SHALL EXTEND TO 48" AFG. EACH BOLLARD SHALL HAVE TWO #5 REBARS AND SHALL BE CONCRETE FILLED WITH CONCRETE MOUNDED AT THE TOP OF THE BOLLARD IN A SEMI-SPHERICAL FASHION TO FACILITATE WATER DRAINAGE.
2. FIELD VERIFY NUMBER AND TYPE OF RACEWAYS AND CONDUCTORS FEEDING EXISTING BUILDING. AFTER TEMPORARY POWER HAS BEEN ESTABLISHED TO THE DATACENTER REMOVE THE EXISTING UNDERGROUND FEEDERS. PORTIONS OF THE RACEWAYS MAY BE RE-USED AT CONTRACTOR'S DISCRETION. FROM TRANSFORMER PROVIDE NEW SET OF 3000A FEEDERS TO NEW ATS USING 9 SETS OF 4 - 500 KCMIL CONDUCTORS AND ONE SPARE RACEWAY WITH A PULL CORD.
3. FROM EXISTING PANEL 2EPP1 FIELD VERIFY CIRCUIT AVAILABILITY AND PROVIDE TWO 120V CIRCUITS TO THE GENERATOR. ONE CIRCUIT SHALL BE PROVIDED FOR A TANK HEATER, THE OTHER FOR A BATTERY CHARGER. PROVIDE BREAKERS IN EXISTING PANEL AS NECESSARY.
4. THIS JOHNSON CONTROL PANEL IS FED FROM EXISTING PANEL "2ERP1". PANEL "2EPP1" SHALL BE BACKED BY A TEMPORARY GENERATOR FOR THIS PROJECT. PROVIDE A TEMPORARY FEED FROM THAT PANEL TO THE JOHNSON CONTROL PANEL AND REPLACE THE CIRCUIT FROM "2ERP1" AT THE COMPLETION OF THE PROJECT.
5. SIZE AND ORIENTATION OF NEMA 3R RACEWAY SHALL BE AT CONTRACTOR'S OPTION TO SUPPORT HIS CONDUIT ROUTING CHOICES.
6. PROVIDE GENERATOR MAINTENANCE DECK. WIDTH OF DECK BETWEEN GENERATOR AND RAILING MUST ALLOW FOR GENERATOR DOORS TO OPEN FULLY 180°. DECK SHALL BE NO LESS THAN 3' IN WIDTH.



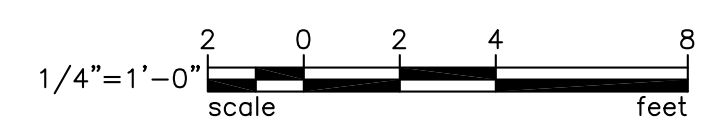
2 E-2 GENERATOR RACEWAY ROUTING DETAIL
NOT TO SCALE.

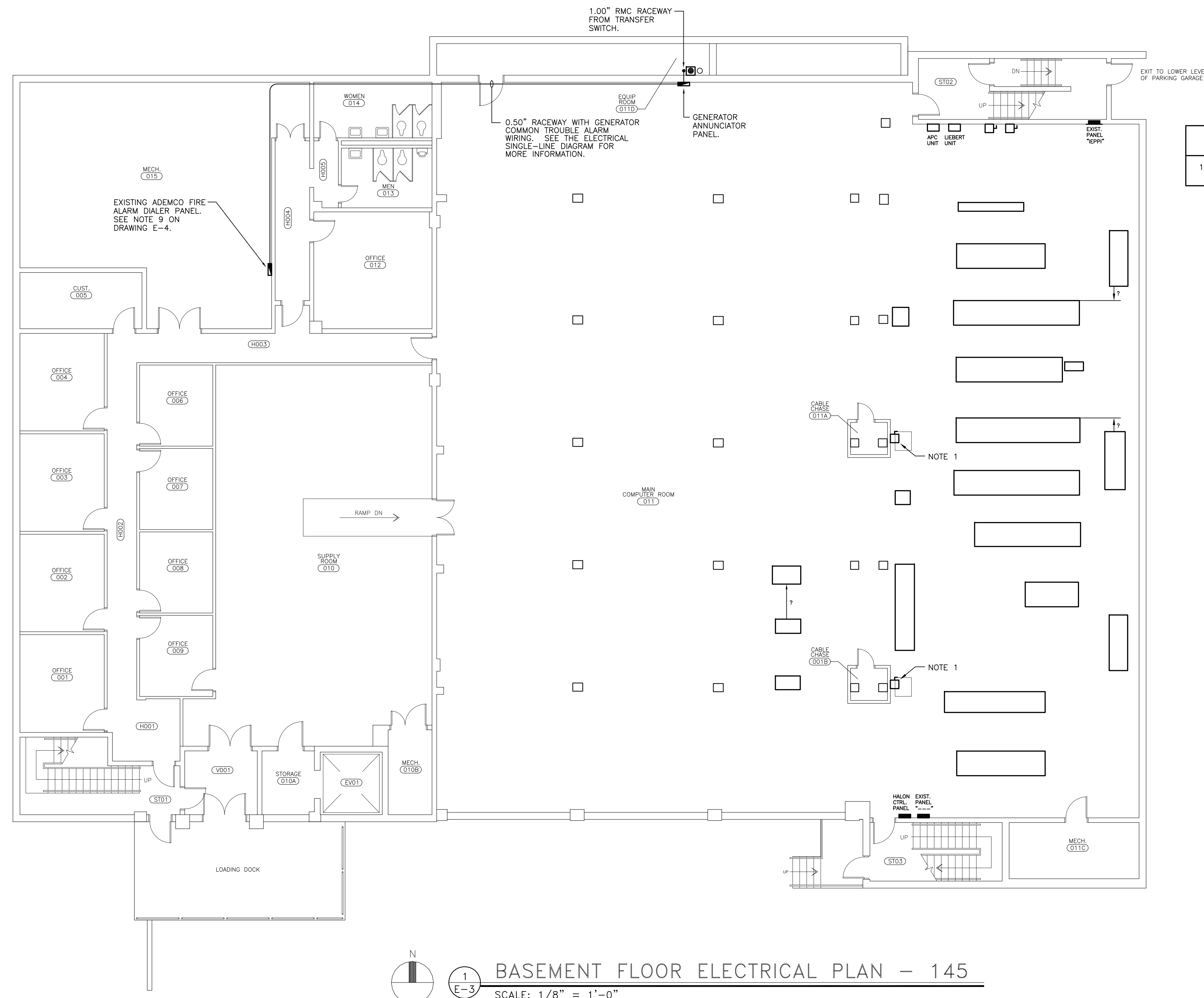


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1 E-2 MECHANICAL LEVEL ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

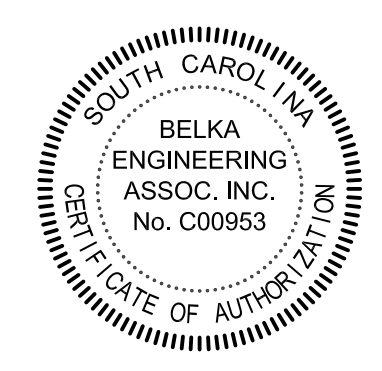
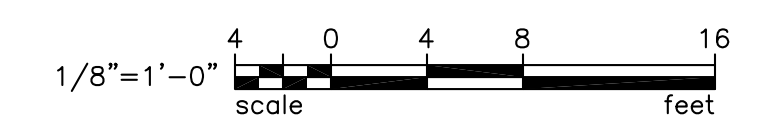




NOTES

1. 400 AMP SWITCH FOR LINE CONDITIONER FUSED 350 AMP.

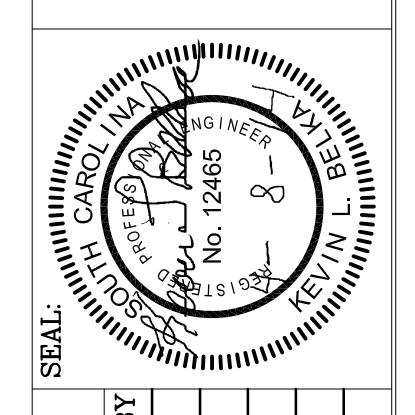
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E-3
BASEMENT FLOOR ELECTRICAL PLAN - 145
SCALE: 1/8" = 1'-0"



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PROJECT TITLE: BASEMENT FLOOR ELECTRICAL PLAN
 514 MAIN - OBTAIN & INSTALL A BACKUP GENERATOR

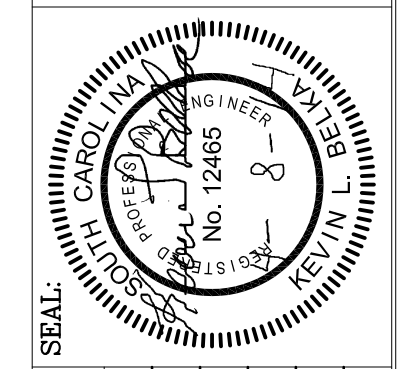
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CAMPUS PLANNING AND CONSTRUCTION
 COLUMBIA, SC 29208

University of South Carolina

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PROJECT TITLE: FIRST FLOOR ELECTRICAL PLAN
514 MAIN - OBTAIN & INSTALL A BACKUP GENERATOR

NOTES

- THE EXISTING SWITCHBOARD IS A GENERAL ELECTRIC "POWERBREAK" SERIES, 120/208VOLT, 3 PHASE, 4 WIRE SWITCHBOARD. (JOB NO. 57849, PLANT H). THAT SWITCHBOARD HAS BEEN RENOVATED BY THE OWNER TO HAVE VERSATRIP 3000 AMP AND 2000 AMP BREAKERS. FIELD VERIFY EXISTING CONDITIONS. THE SCOPE OF WORK FOR THIS PROJECT SHALL DISCONNECT THE EXISTING NEUTRAL TO GROUND BOND MAKING THIS A SUB PANEL. THE RENOVATION SHALL REMOVE THE EXISTING CABLING FEEDING THE SWITCHBOARD AND RE-FEED THE SWITCHBOARD FROM THE NEW ATS. PROVIDE COMPRESSION CONNECTORS ON CABLES TO MATE AND MATCH EXISTING LUG PADS. DRILL/MODIFY EXISTING NEUTRAL AND GROUND BARS AS REQUIRED TO CONNECT THE NEW FEEDERS.
- PANEL "2EPP1" SHALL BE TEMPORARILY GENERATOR BACKED DURING THIS RENOVATION TO PROVIDE DATA CENTER COOLING. PROVIDE TEMPORARY BRANCH CIRCUITS FROM THIS PANEL TO JOHNSON CONTROLS DDC PANEL. PROVIDE TEMPORARY 100 AMP PANEL FED BY THE TEMPORARY GENERATOR FOR CONSTRUCTION LIGHTING AND CONSTRUCTION POWER IN THIS AREA.
- PERFORM A SHORT CIRCUIT AND LOAD STUDY OF THE EXISTING SERVICE INSTALLATION AND THE ADDED GENERATOR SET INSTALLATION. SEE SPECIFICATION SECTION 26 32 14. GROUND AND NEUTRAL AT NEW SERVICE ENTRANCE POINT SHALL BE BONDED. GROUND SHALL BE CONNECTED TO BUILDING STRUCTURE, TO BUILDING METAL WATER PIPING, TO PAD REINFORCING UNDER NEW GENERATOR AND TO 3 - 10' COPPER CLAD STEEL GROUND RODS SEPARATED 20' BY NEC APPROVED METHOD.
- PROVIDE TWO OUTPUT CIRCUIT BREAKERS IN A NEMA 3R ENCLOSURE FOR THE GENERATOR SET WITH FEATURES AS FOLLOWS:
 - A) BREAKER #1: 3,000 AMP, 100% RATED @ 208V WITH SHUNT-TRIP AND A DIGITAL TRIP UNIT TO INCLUDE LONG-TIME, SHORT-TIME, AND INSTANTANEOUS TRIP (LIS) SETTINGS - FOR CONNECTION TO TRANSFER SWITCH.
 - B) BREAKER #2: 3,000 AMP, 100% RATED @ 208V, WITH SHUNT-TRIP AND A DIGITAL TRIP UNIT TO INCLUDE LONG-TIME AND INSTANTANEOUS TRIP (LI) SETTINGS - FOR CONNECTION TO BYPASS ISOLATION. INCLUDE ACCESSIBLE BUSBAR CONNECTIONS FOR LOAD BANK CABLES (BUSBARS SHALL BE PRE-DRILLED TO TERMINATE EIGHT 500 KCMIL CABLES PER PHASE).
 - C) BREAKER TRIP SETTINGS SHALL BE PER COORDINATION STUDIES.

ENCLOSURE SHALL ALSO INCLUDE A 3,000 AMP RATED COPPER NEUTRAL BUS (ISOLATED FROM ENCLOSURE/GROUND) AND A 500 AMP (MINIMUM) RATED COPPER GROUND BUS. GROUND BUS SHALL BE BONDED TO GENERATOR SET FRAME, ENCLOSURE, AND TANK WITH 400 KCMIL COPPER CABLES.
- PROCURE, COMPLETE, AND SUBMIT ALL PAPERWORK REQUIRED FOR GENERATOR LICENSING/PERMITTING IN ACCORDANCE WITH REQUIREMENTS OF THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL - BUREAU OF AIR QUALITY CONTROL.
- PROVIDE AN ENGRAVED PLASTIC LAMINATED SIGN ON THE EXISTING SWITCHBOARD TO READ AS FOLLOWS:

"CAUTION - AN ELECTRIC GENERATOR SET SUPPLIES BACKUP POWER TO THIS SWITCHBOARD (ENTIRE SERVICE). THIS SWITCHBOARD IS ONE OF TWO SWITCHBOARDS THAT SERVE THE COMPUTER ANNEX BUILDING. THE ADJACENT AUTOMATIC TRANSFER SWITCH HAS AN INTEGRAL BYPASS ISOLATION SWITCH."

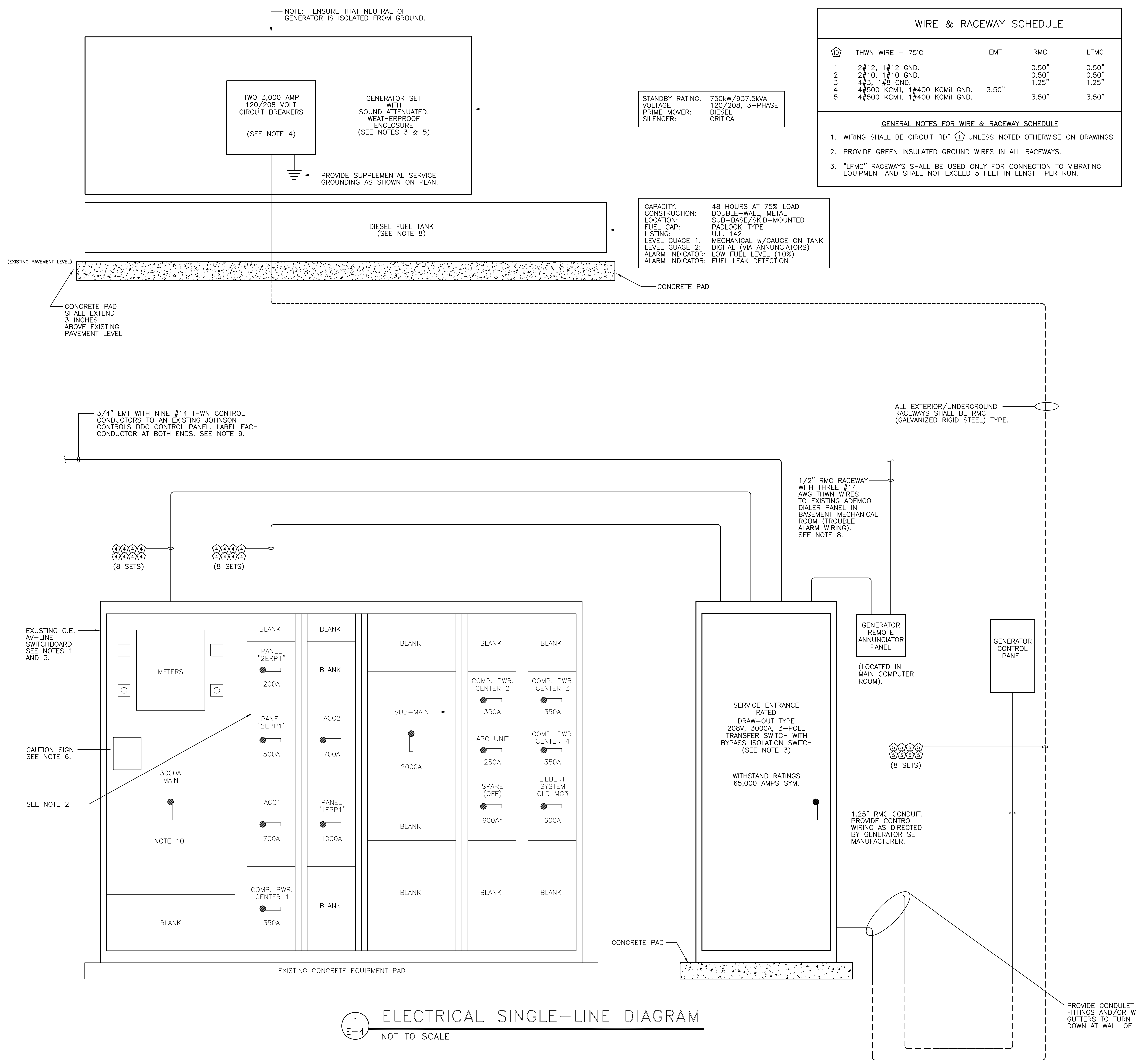
SIZE OF LETTERS SHALL BE 1/4-INCH HIGH, COLOR OF SIGN SHALL BE RED WITH WHITE LETTERS. SIGN SHALL BE BOLTED TO THE FRONT OF THE MAIN BREAKER SECTION OF THE SWITCHBOARD.
- PROVIDE ALL REQUIRED FUEL FOR STARTUP AND TESTING OF THE GENERATOR SET. PROVIDE A FULL TANK OF DIESEL FUEL AT CLOSE-OUT OF PROJECT.
- COORDINATE CONNECTION OF GENERATOR SET TROUBLE ALARM WIRING TO AN EXISTING ADEMCO FIRE REPORTING DIALER PANEL WITH TODD GRIFFIN, PHONE NUMBER 212-8775. CONNECT WIRING SUCH THAT A TROUBLE SIGNAL FROM THE GENERATOR SET WILL TRANSMIT A ZONED TROUBLE SIGNAL TO USC'S POLICE DEPARTMENT VIA THE ADEMCO DIALER. CONNECT WIRING TO ONE OF THE SPARE HARDWIRE ZONES IN THE DIALER. WIRING SHALL BE SUPERVISED (PROVIDE END-OF-LINE RESISTOR).
- PROVIDE CONTROL WIRING FROM TRANSFER SWITCH TO AN EXISTING JOHNSON CONTROLS DDC PANEL. PROVIDE AUXILIARY CONTACTS (FORM "C" TYPE) TO INDICATE POWER LOSS (NORMAL/UTILITY) AND TO INDICATE WHEN LOAD IS BEING SUPPLIED BY THE GENERATOR SET (TRANSFER SWITCH IN EMERGENCY POSITION). SPARE CONTROL CONDUCTORS ARE INCLUDED TO BE USED AS DIRECTED BY JOHNSON CONTROLS.
- GROUND AND NEUTRAL IN EXISTING SWITCHBOARD SHALL BE ISOLATED.

WIRE & RACEWAY SCHEDULE

| ID | THWN WIRE - 75°C | EMT | RMC | LFMC |
|----|-------------------------------|-------|-------|-------|
| 1 | 2#12, 1#12 GND. | | 0.50" | 0.50" |
| 2 | 2#10, 1#10 GND. | | 0.50" | 0.50" |
| 3 | 4#3, 1#8 GND. | | 1.25" | 1.25" |
| 4 | 4#500 KCMIL, 1#400 KCMIL GND. | 3.50" | 3.50" | 3.50" |
| 5 | 4#500 KCMIL, 1#400 KCMIL GND. | | 3.50" | 3.50" |

GENERAL NOTES FOR WIRE & RACEWAY SCHEDULE

- WIRING SHALL BE CIRCUIT "D" UNLESS NOTED OTHERWISE ON DRAWINGS.
- PROVIDE GREEN INSULATED GROUND WIRES IN ALL RACEWAYS.
- "LFMC" RACEWAYS SHALL BE USED ONLY FOR CONNECTION TO VIBRATING EQUIPMENT AND SHALL NOT EXCEED 5 FEET IN LENGTH PER RUN.



1 E-4 ELECTRICAL SINGLE-LINE DIAGRAM
NOT TO SCALE

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