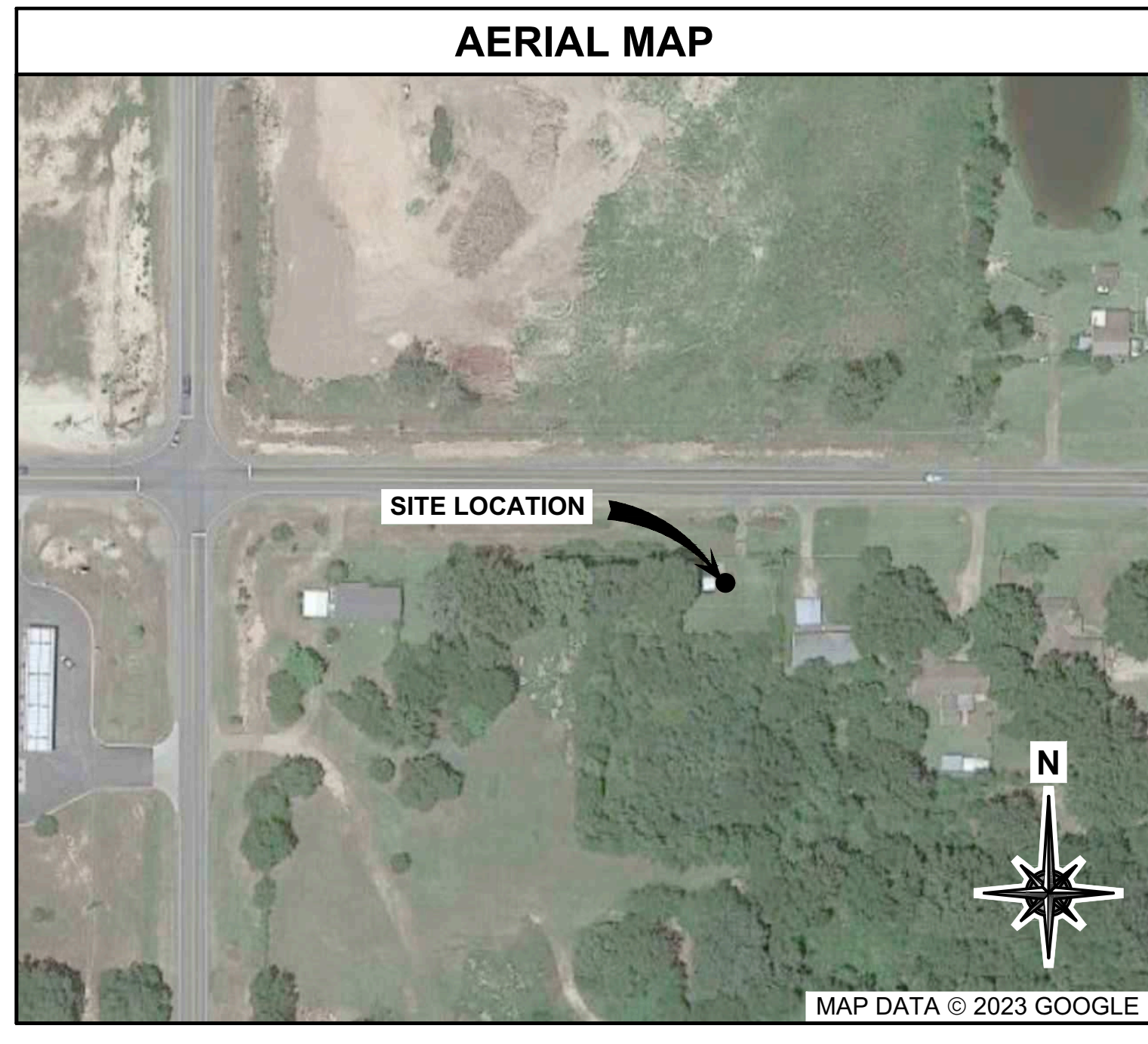
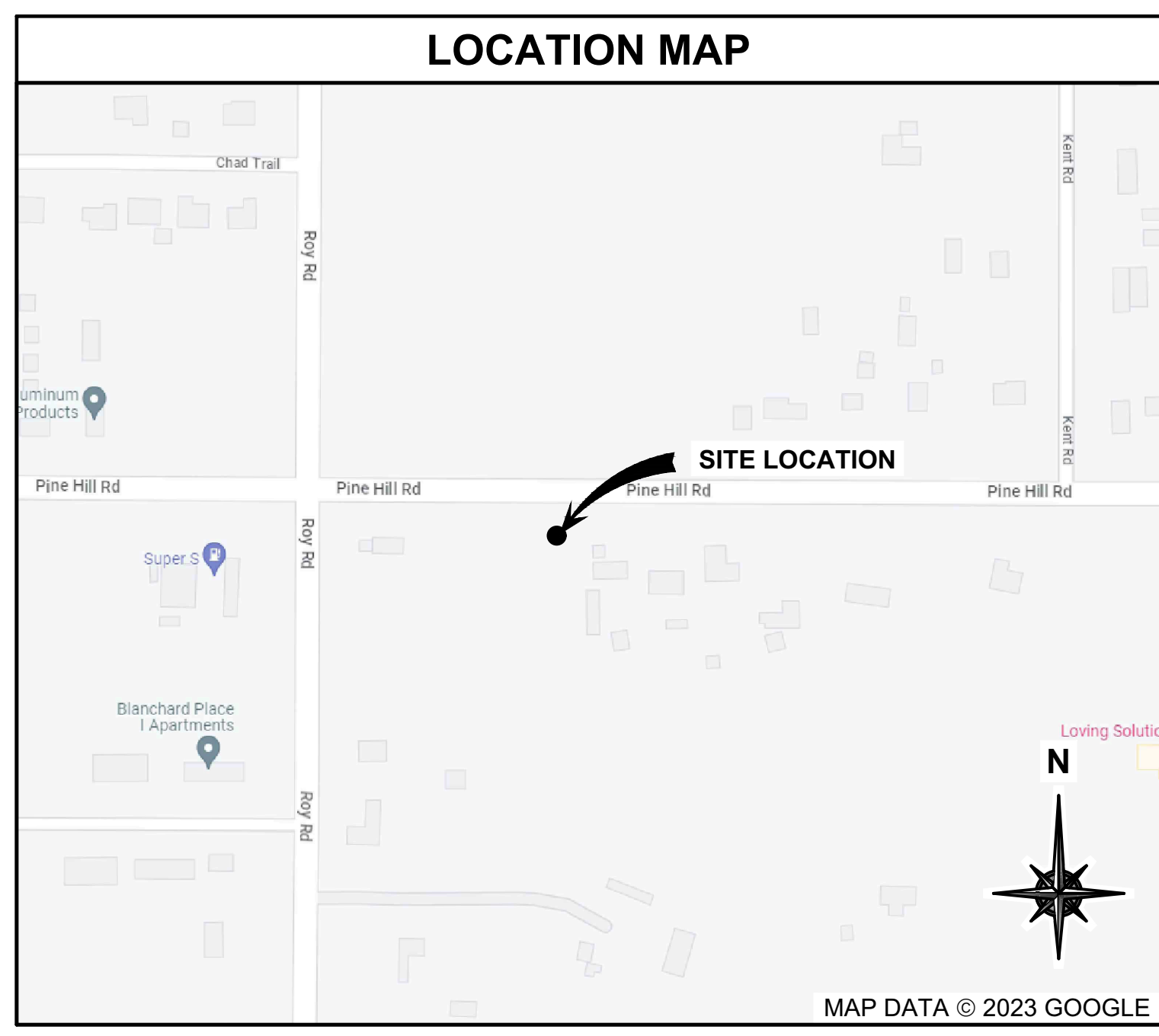




**SITE NAME:** BLANCHARD, LA  
**JURISDICTION:** CADDO PARISH  
**SITE ADDRESS:** 0 PINE HILL ROAD  
 SHREVEPORT, LA 71107  
 CADDO PARISH



**SCOPE OF WORK**

THIS PROJECT CONSISTS OF:

- REMOVE EXISTING 10'-0" X 28'-0" UNUSED EQUIPMENT SHELTER
- INSTALLATION OF IMPROVED GRAVEL DRIVE INTO FENCED COMPOUND
- INSTALLATION OF UTILITIES TO THE SITE (IF REQUIRED)
- INSTALLATION OF H-FRAME FOR ELECTRICAL METER & DISCONNECT
- INSTALLATION OF (2) 48" X 72" PULL BOXES & CONDUITS TO R.O.W.
- INSTALLATION OF 12'-0" X 27'-0" EQUIPMENT SHELTER, GENERATOR AND SUPPORT EQUIPMENT ON 12'-0" X 34'-0" CONCRETE PAD

**SITE INFORMATION**

**SITE ADDRESS**  
 0 PINE HILL ROAD  
 SHREVEPORT, LA 71107

**COORDINATES (NAD83)**  
 LATITUDE: 32.5837° N  
 LONGITUDE: -93.8443° W

**GROUND ELEVATION:**  
 265.0' (PER GOOGLE EARTH 08/03/23)

**SQUARE FOOTAGE**  
 PROPOSED LEASE AREA: 6300 SQ. FT.

**ZONING**  
 R-A

**OCCUPANCY**  
 U-UTILITY

**CONSTRUCTION TYPE**  
 II-B

**CODE COMPLIANCE**

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE FOLLOWING CODES:

**BUILDING CODE:** 2021 INTERNATIONAL BUILDING CODE (2021 IBC)  
**ELECTRICAL CODE:** 2020 NATIONAL ELECTRICAL CODE (2020 NEC)

**PROJECT TEAM**

**A&E:** WT GROUP, LLC.  
 5580 PETERSON LANE, STE. 250  
 DALLAS, TX 75240  
 CONTACT: JR STANFORD  
 TEL: (682) 551-3370

**APPLICANT:** EASTEX TOWER, LLC  
 3537 GUM SPRINGS ROAD  
 LONGVIEW, TX 75602  
 CONTACT: KEITH MATHENY  
 TEL: (903) 932-6503


**SURVEYOR:** POINT TO POINT LAND SURVEYORS  
 100 GOVERNORS TRACE, SUITE 103  
 PEACHTREE CITY, GA 30269  
 TEL: (678) 565-4440  
 www.p2pls.com

**PROPERTY OWNER:** CABLE ONE, INC DBA SPARKLIGHT  
 3759 OLD STERLINGTON ROAD  
 MONROE, LA 71203  
 CONTACT: JOSHUA WILLIAMS  
 TEL: (318) 480-0397

**UTILITIES**

**ELECTRIC:** TBD  
 CONTACT: TBD  
 TEL: TBD

**FIBER:** TBD  
 CONTACT: TBD  
 TEL: TBD



**HANDICAP REQUIREMENTS**

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. ACCESS IS NOT REQUIRED.

**SHEET INDEX**

SHEET NUMBER:	DESCRIPTION:
T-1	TITLE SHEET
GN-1	GENERAL NOTES
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
SG-1	SITE SIGNAGE
SHEET 1 OF 1	SITE SURVEY
C-1	EXISTING OVERALL SITE PLAN
C-2	PROPOSED OVERALL SITE PLAN
C-3	PROPOSED ENLARGED SITE PLAN
C-4	GRADING, SEDIMENT & EROSION CONTROL PLAN
C-5	EROSION CONTROL DETAILS
C-6	SITE DETAILS
S-1	EQUIPMENT SHELTER SPECIFICATIONS
S-2	EQUIPMENT SHELTER SPECIFICATIONS
E-1	ONE-LINE DIAGRAM
E-2	ELECTRICAL PANEL SCHEDULE (BY OTHERS)
E-3	OVERALL UTILITY SITE PLAN
E-4	UTILITY DETAILS
GR-1	PROPOSED COMPOUND GROUNDING PLAN
GR-2	GROUNDING DETAILS

**REFERENCED MATERIALS**

A SITE WALK WAS NOT PERFORMED FOR THIS SITE PER SCOPE OF WORK. COMPOUND AND EQUIPMENT LAYOUT SHOWN WITHIN THIS SET WERE TAKEN FROM AVAILABLE DOCUMENTS/DRAWINGS PROVIDED BY OTHERS.

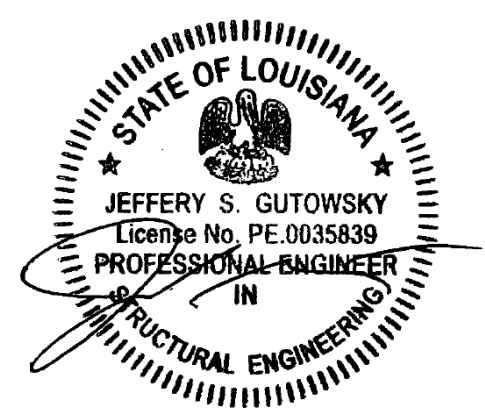
**ET TOWER**

**WT Group**  
 Engineering • Design • Consulting

**WT GROUP**  
 Engineering with Precision, Pace and Passion.  
 5580 PETERSON LANE | DALLAS, TX 75240  
 TEL: (682) 551-3370  
 wtgroup.com

**Sparklight™**

BLANCHARD, LA  
 0 PINE HILL ROAD  
 SHREVEPORT, LA 71107



EXPIRES: 03/31/25 SIGNED: 08/05/24

**REVISIONS**

REV.	ISSUED FOR	DATE	BY
A	FOR CLIENT REVIEW	08/10/23	ATK
B	SURVEY ADDITION	09/22/23	ATK
D	FINALS	08/05/24	JKR

CHECK: JKR  
 DRAWN: ATK  
 JOB: T2300445

**T-1**  
 TITLE SHEET

AQUATIC \ DESIGN & PROGRAM MANAGEMENT  
 CIVIL \ TELECOMMUNICATION \ MECHANICAL  
 PLUMBING \ ELECTRICAL \ LAND SURVEYING  
 ACCESSIBILITY CONSULTING \ STRUCTURAL

**GENERAL REQUIREMENTS:**

**1.1 INTENT**

- THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
- THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH.
- THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
- THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
- MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

**1.2 CONFLICTS**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
- THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING WHICH SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
- NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

**1.3 CONTRACTS AND WARRANTIES**

- CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.

**1.4 STORAGE**

- ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.
- THE BTS MUST BE STORED INSIDE UNTIL THERE IS POWER ON SITE.

**1.5 CLEAN UP**

- THE CONTRACTORS SHALL AT ALL TIMES KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK, THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY FOR USE.
- EXTERIOR: VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
  - REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
  - IF NECESSARY TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
- INTERIOR: VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS/FLOOR/CEILING.
  - REMOVE ALL TRACES OF SPLASHED MATERIAL FROM ADJACENT SURFACES.
  - REMOVE PAINT DROPPINGS, SPOTS, STAINS AND DIRT FROM FINISHED SURFACES.

**1.6 CHANGE ORDER PROCEDURE**

- CHANGE ORDERS MAY BE INITIATED BY THE OWNER AND/OR THE CONTRACTOR INVOLVED. THE CONTRACTOR, UPON VERBAL REQUEST FROM THE OWNER SHALL PREPARE A WRITTEN PROPOSAL DESCRIBING THE CHANGE IN WORK OR MATERIALS AND ANY CHANGES IN THE CONTRACT AMOUNT AND PRESENT TO THE OWNER WITHIN 72 HRS FOR APPROVAL. SUBMIT REQUESTS FOR SUBSTITUTIONS IN THE FORM AND IN ACCORDANCE WITH PROCEDURES REQUIRED FOR CHANGE ORDER PROPOSALS. ANY CHANGES IN SCOPE OF WORK OR MATERIALS WHICH ARE PERFORMED BY THE CONTRACTOR WITHOUT A WRITTEN CHANGE ORDER AS DESCRIBED AND APPROVED BY THE OWNER SHALL PLACE FULL RESPONSIBILITY OF THESE ACTIONS ON THE CONTRACTOR.

**1.7 RELATED DOCUMENTS AND COORDINATION**

- GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

**1.8 SHOP DRAWINGS**

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
- ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

**1.9 PRODUCTS AND SUBSTITUTIONS**

- SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
- SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

**1.10 QUALITY ASSURANCE**

- ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE BUT NOT BE LIMITED TO THE LATEST VERSION OF THE INTERNATIONAL BUILDING CODE.

**1.11 ADMINISTRATION**

- BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
- SUBMIT A BAR TYPE PROGRESS CHART NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
- PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE (THOUGH NOT LIMITED TO) THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
- CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
- DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL SAFETY REQUIREMENTS IN THEIR AGREEMENT.
- PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
- COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
- NOTIFY THE OWNER / PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

**1.12 INSURANCE AND BONDS**

- CONTRACTOR SHALL AT THEIR OWN EXPENSE CARRY AND MAINTAIN FOR THE DURATION OF THE PROJECT ALL INSURANCE AS REQUIRED AND LISTED AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
- THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
- CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

**TOWER & ANTENNA INSTALLATION:**

**1.1 WORK INCLUDED**

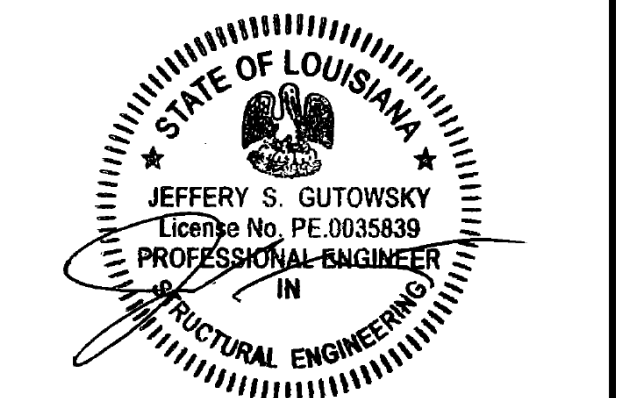
- IF REQUIRED, ERECT FURNISHED TOWER.
- GROUND TOWER TEMPORARILY DURING ERECTION. GROUNDING SHALL INCLUDE BASE(S) AND ANCHORS.
- IF REQUIRED, INSTALL NEW ANTENNA MOUNTS - CONFIRM WITH OWNER REPRESENTATIVE.
- INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND OWNER SPECIFICATIONS.
- INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
- INSTALL FURNISHED GALVANIZED STEEL WAVEGUIDE LADDER.
- INSTALL WAVEGUIDE BRIDGE AS INDICATED ON DRAWING.
- SUPPLY AND INSTALL ONE INSULATED GROUND BAR AT EQUIPMENT CABINET.
- SUPPLY AND INSTALL GROUNDING STRAP KITS WITH LONG BARREL COMPRESSION LUGS (SIM. TO ANDREW-223700TBD OR APPROVED EQUAL) ATOP TOWER BASE BEFORE ENTERING THE EQUIPMENT. GROUNDING STRAPS TO BE CONNECTED TO INSULATED GROUND BAR.
- ASSIST OWNER TECHNICIANS IN PERFORMING SWEEP TEST OF INSTALLED COAX.
- CONCRETE PIERS FOR FOUNDATIONS SHALL BE DRILLED AND POURED ON THE SAME DAY.

**1.2 REQUIREMENTS OF REGULATOR AGENCIES**

- FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE, INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.
- INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
  - TIA - TELECOMMUNICATIONS INDUSTRY ASSOCIATION TIA-222-H. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
  - FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460-IH, OBSTRUCTION MARKING AND LIGHTING.
  - FCC - FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.
  - AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.
  - NEC - NATIONAL ELECTRICAL CODE - ON TOWER LIGHTING KITS.
  - UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
  - IN ALL CASES, PART 77 OR THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
  - LIFE SAFETY CODE NFPA -101.

**GENERAL ELECTRIC PROVISION:**

- SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
- CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATIONS TEST, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
- HEIGHTS SHALL BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
- THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
- ELECTRICAL SERVICE 120 / 240 VAC SINGLE PHASE 3-WIRE 200 AMP SERVICE
- EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULL BOX, J-BOX, SWITCH BOX, ETC., IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.).
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU.
- ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL CARRY OUT THEIR WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
- CONTRACTOR TO OBTAIN ALL PERMITS, PAY PERMIT FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS.
- COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
- ALL CONDUIT SHALL HAVE (2) PULL WIRES.
- PROVIDE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
- ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC., SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION.
- USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURES.
- ALL CONDUCTORS SHALL BE COPPER.
- ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
- PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
- PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH APPLICABLE LOCAL BUILDING CODES.
- WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
- GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER UNLESS OTHERWISE NOTED.



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24. METER SOCKET AMPERES, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS, MANUFACTURED BY "SQUARE D COMPANY", OR APPROVED EQUAL.
25. ALL MATERIALS SHALL BE U.L. LISTED.
26. CONDUIT
- A. RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAPPED WRAPPED WITH HUNTS WRAP PROCESS NO. 3
- B. ELECTRICAL METALLIC TUBING SHALL HAVE U.L. LABEL, FITTING SHALL BE GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
- C. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT SHALL HAVE FULL SIZE EQUIPMENT GROUND WIRE.
- D. CONDUIT RUNS SHALL BE SURFACE MOUNTED IN CEILINGS OR WALLS UNLESS INDICATED OTHERWISE. CONDUIT INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH THE OWNER PRIOR TO INSTALLING. NO HORIZONTAL CONDUITS SHALL BE BELOW 7'-6" A.F.F. NO BX OR ROMEX CABLE IS PERMITTED.
- E. UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 24" BELOW GRADE - ALL STUB-UPS MUST BE RIGID CONDUIT
- F. ABOVE GROUND CONDUIT SHALL BE P.V.C. SCHEDULE 80 (UNLESS NOTED OTHERWISE).
- G. ALL CONDUITS MUST BE SUPPORTED WITHIN 3'-0" COMING OUT OF THE BOX AND SUPPORTED EVER 5'-0" THEREAFTER.
27. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
28. CONTRACTOR TO PROVIDE DAILY UPDATES TO PM UNTIL FINAL ELECTRICAL SERVICE IS EFFECTED.
29. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUND TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
30. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.

## GROUNDING STANDARDS:

### 1.0 DEFINITIONS

AGB:	ANTENNA GROUND BAR
AWG:	AMERICAN WIRE GAUGE
CADWELDING:	AN EXOTHERMIC WELDING PROCESS WHICH CREATES POSITIVE CONTACT OF POSITIVE CONTACT OF GROUNDING CONDUCTORS
EMT:	ELECTRICAL METAL TUBING (LIGHT GAUGE METALLIC CONDUIT)
MGB:	MASTER GROUND BAR
PVC:	POLYVINYL CHLORIDE CONDUIT
RFI:	RADIO FREQUENCY INTERFERENCE
TGB:	TOWER GROUND BAR
THWN:	LETTER TYPE DESIGNATION FOR CONDUCTOR INSULATION THAT IS A MOISTURE AND HEAT RESISTANT THERMOPLASTIC WITH A MAXIMUM OPERATING TEMPERATURE OF 75 DEGREES CELSIUS OR 167 DEGREE FAHRENHEIT
T/I:	TENANT IMPROVEMENT

## 2.0 BACKGROUND

**2.1 AREAS OF CONCERN:** WHEN DESIGNING A GROUNDING SYSTEM FOR A MOBILE RADIO FACILITY THERE ARE FOUR INTERRELATED AREAS OF CONCERN. THE BASIC OBJECTIVE FOR EACH IS:

1. LIGHTNING PROTECTION -TO MAINTAIN ALL EQUIPMENT AT THE SAME POTENTIAL DURING A LIGHTNING IMPULSE.
2. RFI FOR NOISE INDUCTION CONTROL -TO ESTABLISH THE LOWEST POSSIBLE IMPEDANCE AMONG ALL EQUIPMENT.
3. ELECTROSTATIC CONTROL -TO REDUCE ELECTROSTATIC DISCHARGE PROBLEMS.
4. PERSONNEL SAFETY -TO MAINTAIN A MINIMUM VOLTAGE DIFFERENCE BETWEEN ANY TWO METALLIC OBJECTS WHICH PERSONNEL MIGHT CONTACT SIMULTANEOUSLY.

**2.2 A/C GROUNDING:** IN THIS GROUNDING SYSTEM THE A/C SERVICE GROUND SHALL BE KEPT ISOLATED FROM THE EQUIPMENT FRAME WORK AND LIGHTNING PROTECTION GROUND SYSTEMS EXCEPT FOR ONE SPECIFIC POINT. THIS POINT IS THE MAIN GROUNDING POINT OF THE SYSTEM. THIS WOULD TYPICALLY BE CONNECTING THE A/C SERVICE GROUND AT THE COMMERCIAL POWER RISER POLE DISCONNECT/METER BASE TO THE EXTERNAL GROUND RING. ALL GROUNDING CONNECTIONS INSIDE OF CABINETS SHALL BE SCRAPED TO BARE METAL AND COATED WITH NOALOX.

**2.3 LIGHTNING CONSIDERATIONS:** LIGHTNING DAMAGE OCCURS FROM EITHER INDUCTION OR FROM AN ACTUAL DIRECT STRIKE TO THE BUILDING, USUALLY TAKEN THROUGH THE TOWER AND/OR ANTENNAS. STRIKES TO OTHER NEARBY OBJECTS INDUCE HIGH ENERGY INTO POWER OR TELEPHONE CABLES ENTERING THE BUILDING. THIS TYPE OF EFFECT HISTORICALLY CAUSES MOST OF THE DAMAGE TO THE BUILDING AND ITS CONTENTS.

### 3.0 STATION GROUNDING SYSTEM

#### 3.1 MATERIALS:

1. #2 AWG, BARE SOLID TINNED COPPER WIRE, FOR ALL EXTERIOR CONDUCTORS AND TOWER GROUND BAR CONDUCTORS OR AS OTHERWISE SPECIFIED. GROUNDS TO THE LNAs SHALL BE NO. 6 STANDARD GREEN INSULATED JUMPERS. THE GROUND WIRE TO THE MGB SHALL BE GREEN JACKETED STRANDED #2 TINNED WIRE BURNDY CONNECTED TO THE BUSS BAR AND CONNECTED TO THE GROUND RING ON A GROUND ROD.
2. #2 AWG, INSULATED STRANDED COPPER CABLE IS ACCEPTABLE FOR INTERIOR GROUND BAR CONDUCTORS ON TENANT IMPROVEMENT SITES.
3. 5/8" X 10' GROUND RODS OF SOLID COPPER, STAINLESS STEEL OR COPPER CLAD HIGH STRENGTH STEEL.
4. ABOVE GRADE CONNECTIONS SHALL BE BURNDY HYGROUND COMPRESSION. BELOW GRADE CONNECTIONS SHALL BE EXOTHERMIC WELD OR OTHER APPROVED EXOTHERMIC WELDING SYSTEM FOR BONDING AS SPECIFIED.
5. XIT OR ADVANCED GROUNDING ELECTRODE (AGE), ALL CHEMICAL GROUND RODS SHALL BE UL APPROVED.
6. SOLID COPPER PLATES OF MINIMUM 3'X3'X1/4" SIZE AS SPECIFIED.
7. NOALOX OR APPROVED EQUAL CONDUCTIVE MEDIUM MATERIAL SHALL BE USED IN ALL MECHANICAL CONNECTIONS.
8. #2 AWG STRANDED INSULATED (GREEN) FOR ALL INTERNAL EQUIPMENT GROUNDING.
9. MECHANICAL FASTENERS (I.E., DOUBLE LUGS, SPLIT BOLTS PARALLEL CONNECTORS) SHALL BE BRONZE, BRASS, COPPER OR STAINLESS STEEL AND HAVE NOALOX BETWEEN CONDUCTOR AND CONNECTION.
10. BOLTS, NUTS AND SCREWS USED TO FASTEN MECHANICAL CONNECTORS SHALL BE STAINLESS STEEL WITH STAR TYPE STAINLESS STEEL LOCK WASHERS.
11. ALL LUG TUBE FASTENERS SHALL PROVIDE TWO HOLES TO ALLOW A DOUBLE BOLT CONNECTION.

**3.2 MASTER GROUND BAR (MGB):** THE PURPOSE OF THE MASTER GROUND BAR IS TO GROUND THE BTS AND ANY OTHER METALLIC OBJECTS AROUND THE BTS. IF AN MGB IS NOT PROVIDED WITH THE BTS, THE MGB SHALL BE AS FOLLOWS: THE MGB IS A COPPER BAR MEASURING 4"W X 24"L X 1/4" LOCATED AS CLOSE TO THE BTS AS POSSIBLE. THE MGB SHALL HAVE A MINIMUM NUMBER OF (28) 3/8" HOLES. GROUND BAR SHALL BE SUPPORTED BY MOUNTING BRACKETS WITH INSULATOR STANDOFFS. (2) #2 TINNED SHALL BE MECHANICALLY ATTACHED (2-HOLE COMPRESSION LUG 3/8" HOLES, 1" CENTER TO CENTER SPACING) TO THE MGB AND DOWN LEADS THEN TAKEN THROUGH CONDUIT TO THE GROUND RING. THIS CONDUCTOR SHALL BE KEPT SEPARATE AND ISOLATED UNTIL TERMINATING AT THE MAIN GROUNDING POINT, (I.E. EXTERIOR GROUND RING OR BUILDING STEEL).

**3.3 ANTENNA GROUND BAR (AGB):** THE PURPOSE OF THE ANTENNA GROUND BAR IS PRIMARILY FOR LIGHTNING PROTECTION. COAXIAL CABLE IS USUALLY THE ONLY ITEM GROUNDED TO THIS BAR. HOWEVER IT IS ACCEPTABLE TO BOND EXTERIOR, CABLE TRAY, WAVE GUIDE PORTS AND CANTILEVERED WAVE GUIDE BRIDGES TO THE AGB. THE AGB IS A COPPER BAR MEASURING 4"W X 24"L X 1/4". THERE SHALL BE TWO AGBS, ONE LOCATED AT THE TOP OF THE TOWER AT THE START OF THE VERTICAL RUN OF COAX, THE OTHER AT THE BOTTOM OF THE VERTICAL RUN OF COAX BEFORE IT MAKES ITS BEND. (IF THE TOWER IS OVER 200' THERE SHALL BE A THIRD AGB LOCATED AT THE MIDDLE OF THE TOWER).THE AGB SHALL HAVE A MINIMUM OF (28) 3/8" HOLES. GROUND BARS SHALL BE SUPPORTED BY MOUNTING BRACKETS WITH INSULATOR STANDOFFS. USE #2 AWG SOLID TINNED WIRE W/ 2-HOLE SHORT BARREL COMPRESSION LUGS 3/8" HOLES, 1" CENTER TO CENTER SPACING). THIS CONDUCTOR SHALL BE KEPT SEPARATE AND ISOLATED UNTIL TERMINATING AT THE MAIN GROUNDING POINT (I.E. EXTERIOR GROUND RING, OR BUILDING STEEL.)

**3.4 SURGE ARRESTOR GROUND BAR:** THE PURPOSE OF THE SURGE ARRESTOR GROUND BAR IS FOR LIGHTNING PROTECTION. THE SURGE ARRESTOR GROUND BAR IS A BENT (3" X 3" ) X 1/4" X 24" COPPER BAR. IT IS LOCATED ON THE WAVEGUIDE BRIDGE SUPPORT CLOSEST TO THE EQUIPMENT. ONE FACE OF THE BAR SHALL HAVE A MINIMUM OF (28) 3/8" DIA. HOLES. HOLES SHALL BE IN PAIRS THAT ARE 1" CENTER TO CENTER. THE OTHER FACE SHALL HAVE 3/8" DIA. HOLES AS REQUIRED TO ATTACH AND GROUND COAXIAL SURGE ARRESTORS. THE GROUND BAR SHALL BE SUPPORTED BY MOUNTING BRACKETS WITH INSULATOR STANDOFFS.

**3.5 GROUND ROD AND GROUND RING PLACEMENT:** THE OUTSIDE GROUND RING SHALL BE PLACED AROUND THE BTS AT A DISTANCE OF TWO (2) FEET FROM THE BTS AT A DEPTH OF 2'-6" OR 6" BELOW THE FROST LINE, WHICHEVER IS DEEPER. RODS SHALL BE DRIVEN TO A DEPTH SUCH THAT THE TOP OF THE RODS IS AT THE LEVEL OF THE GROUND RING CONDUCTOR. THE RODS SHALL BE PLACED MINIMALLY ALONG THE RING AT THE FOLLOWING LOCATIONS:

- A. BELOW THE AREA OF THE INTERNAL MASTER GROUND BAR FOR CONNECTION TO THE MGB.
- B. BELOW THE UTILITY RACK FOR CONNECTION TO THE MAIN BUILDING COMMERCIAL POWER DISCONNECT.
- C. BELOW THE CORNERS OF THE BTS.
- D. AS REQUIRED TO ACHIEVE A RECOMMENDED SPACING OF TWENTY (20) FEET BETWEEN GROUND RODS ALONG THE RING PERIMETER.
- E. AS REQUIRED ALONG THE RING PERIMETER TO ACHIEVE 5 OHMS OR LESS RESISTANCE WHEN TESTED.
- F. TWO RODS LOCATED ON OPPOSITE SIDES AT EACH TOWER LEG OR MONOPOLE.
- G. ONE ROD LOCATED BENEATH EACH END OF THE WAVE GUIDE BRIDGE OR CABLE TRAY.
- H. ONE ROD LOCATED ADJACENT TO THE STANDBY GENERATOR, AND IF SEPARATED BY MORE THAN TEN (10) FEET, ONE LOCATED ADJACENT TO THE FUEL TANK.
- I. ONE ROD LOCATED AT THE BASE OF THE TOWER FOR THE TGB.

**3.6 TOWER GROUNDING:** ALL MONOPOLES SHALL HAVE TWO GROUND RODS (MINIMUM). ALL OTHER TOWERS SHALL HAVE TWO GROUND RODS PLACED AT THE BASE OF EACH TOWER LEG. EACH MONOPOLE OR TOWER LEG SHALL BE BONDED TO THE SYSTEM VIA TWO #2 BARE TINNED SOLID COPPER CONDUCTORS. BURNDY CONNECT THE CONDUCTORS TO ONLY STRUCTURAL BASE PLATES OR LUGS OR EARS AS MAY BE PROVIDED. NO BURNDY CONNECTIONS SHALL BE MADE TO THE VERTICAL WALLS OF THE STRUCTURE. NEVER GROUND TO HOLLOW LEG MEMBERS.

**3.7 ANTENNA GROUNDING:** EACH ANTENNA COAXIAL CABLE SHALL TYPICALLY BE GROUNDED AT THREE POINTS USING A HARD-SHELL COAXIAL CABLE KIT FROM THE MANUFACTURER OF THE ANTENNA CABLE. A TYPICAL INSTALLATION SHALL BE AS FOLLOWS:

- A. THE FIRST GROUND CONNECTION SHALL OCCUR AS CLOSE TO THE ANTENNA AS POSSIBLE, BELOW THE FIRST POINT THE COAX CABLE BEGINS TO RUN VERTICAL DOWN THE TOWER. THIS GROUND SHALL TERMINATE DIRECT TO THE TOP AGB. ON A T/I, GROUND TO THE AGB AT THE ANTENNA MOUNTS.
- B. THE SECOND GROUND SHALL BE MADE AT THE BOTTOM OF THE VERTICAL RUN OF THE COAXIAL CABLE AS IT TURNS OUT AWAY FROM THE TOWER TOWARDS THE BTS. THIS GROUND SHALL BE TERMINATED AT THE TGB. THE TGB SHALL HAVE TWO (2) LEADS OF #2 AWG BARE TINNED SOLID COPPER WIRE, AND SHALL TERMINATE AT THE TOWER GROUND RING. THESE SHALL BE ENCASED IN PVC PIPE.
- C. THE THIRD GROUND SHALL BE ON THE SURGE ARRESTOR. GROUND TO BE ATTACHED TO THE CABLE ON STRAIGHT RUNS (NOT WITHIN BENDS) AND BE WEATHERPROOFED PER THE MANUFACTURER'S SPECIFICATIONS. THE SURGE ARRESTORS SHALL BE GROUNDED TO THE GROUND BAR. THE SAGB SHALL HAVE TWO (2) LEADS OF #2 AWG BARE TINNED SOLID COPPER WIRE, AND SHALL TERMINATE AT THE TOWER GROUND RING. THESE SHALL BE ENCASED IN PVC PIPE.

### 3.8 PERIMETER FENCE GROUNDING:

- A. ALL FENCE CORNER AND END POSTS (MINIMUM OF TWO) SHALL HAVE ONE #2 SOLID TINNED COPPER GROUND WIRE CONNECTED TO A 5/8" X 10' SOLID COPPER CLAD GROUND ROD NEXT TO THE POST. THESE POSTS SHALL BE CONNECTED TO THE GROUND RING WITH A #2 SOLID TINNED COPPER GROUND WIRE AND INTERMEDIATE GROUND RODS IF THE DISTANCE FROM THE POST TO THE GROUND RING EXCEEDS 10 FEET. IN NO CASE SHALL ANY PORTION OF THE SAME FENCE REMAIN DISCONNECTED FROM THE GROUND RING.
- B. GATE POSTS SHALL BE GROUNDED TO EACH OTHER TO ENSURE THE ENTIRE FENCE HAS ELECTRICAL CONTINUITY. CONNECTIONS SHALL BE DRILL AND TAP WITH BURNDY TYPE KC22 TO THE POST WITH A #2 AWG BARE SOLID TINNED COPPER WIRE.
- C. GATES SHALL BE BONDED TO GATE POSTS WITH A 18" BRAIDED STRAP TYPE BD18G92. THE CONNECTIONS SHALL BE BURNDY 2-HOLE LUGS (3/8" HOLES, 1" CENTER TO CENTER) BOLTED THROUGH EACH POST.
- D. ALL DOWN LEADS TO EARTH WILL BE ENCASED IN 3/4 INCH PVC NON-METALLIC AND SEALED WITH SILICONE.

**3.9 GENERATOR FUEL TANK GROUNDING:** THE GENERATOR FUEL TANK, IF REQUIRED, SHALL BE CONNECTED IN AT LEAST ONE PLACE TO THE MAIN EXTERIOR GROUND RING. #2 AWG BARE SOLID TINNED COPPER WIRE SHALL BE BURNDY CONNECTED TO ONE SUPPORT LEG OF THE FUEL TANK AND EXOTHERMIC WELD TO THE NEAREST EXTERIOR GROUND RING/GROUND ROD.

**3.10 EQUIPMENT ROOM GROUNDING:** THE MASTER GROUND BAR (MGB) SERVES AS THE COLLECTION POINT FOR THE BTS AS WELL AS ALL INTERIOR NON-ELECTRICAL GROUNDED METAL MATERIALS (HVAC GRILLS, DOOR FRAMES/DOORS, TELCO BOARD, UNISTRUTS, CABLE TRAYS, ALARM JUNCTION BOX, ETC.) SHALL BE GROUNDED WITH #6 AWG STRANDED (GREEN) GROUND WIRES WITH INDIVIDUAL RUNS BACK TO THE MGB. (THE CABLE TRAY, DOOR/FRAME AND UNISTRUT MAY BE JUMPERED TOGETHER AND HAVE A SINGLE GROUND WIRE CONNECTION TO THE MGB.)

**3.11 WALL PENETRATIONS SLEEVES:** INSTALL PER CONSTRUCTION DRAWINGS.

**3.12 A/C COMMERCIAL POWER GROUNDING CONNECTIONS:** AT THE ON-SITE RISER POLE LOCATION OR UNDERGROUND SERVICE ENTRANCE LOCATION, THE A/C SERVICE SHALL BE MECHANICALLY BONDED TO THE A/C SERVICE ENTRANCE GROUND AS SPECIFIED BY THE NATIONAL ELECTRIC CODE, ARTICLE 250, AND/OR APPROPRIATE LOCAL CODES. A SEPARATE GROUND ROD SHALL BE PROVIDED AT THIS POINT, AND SHALL BE CONNECTED TO THE EXTERIOR GROUND RING. A SEPARATE A/C SERVICE GROUND AND NEUTRAL SHALL THEN BE ROUTED TO AND CONNECTED TO THE MAIN DISCONNECT INSIDE THE BUILDING OR AS REQUIRED BY LOCAL AUTHORITY.

**3.13 GENERATOR RECEPTACLE GROUNDING:** THE GENERATOR RECEPTACLE (HUBBLE PLUG) SHALL BE GROUNDED TO THE EGR.



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**ET TOWER**



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CHECK: JKR  
DRAWN: ATK  
JOB: T2300445

**GN-2**  
GENERAL NOTES

AQUATIC \ DESIGN & PROGRAM MANAGEMENT  
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 PLUMBING \ ELECTRICAL \ LAND SURVEYING  
 ACCESSIBILITY CONSULTING \ STRUCTURAL



**3.14 COAX BRIDGE / CABLE TRAY GROUNDING :** BOND THE COAX BRIDGE OR CABLE TRAY TO THE AGB WITH #2 SOLID TINNED GROUND WIRE. THESE CONNECTIONS SHALL BE DOUBLE LUG BOLTED / SCREWED MECHANICAL CONNECTIONS WITH STAR LOCK WASHERS AND NOALOX. ALL BRIDGE SPLICES SHALL HAVE JUMPERS OF #2 SOLID WITH COMPRESSION LUGS.

**3.15 EXOTHERMIC WELD & BURNDY CONNECTION:** EXOTHERMIC WELDS AND BURNDY CONNECTIONS SHALL BOND ALL UNDERGROUND AND DAMP LOCATION CONNECTIONS, SHELTER SKID GROUNDS, TOWER OR MONOPOLE GROUNDS, FENCING CORNER AND GATE POSTS, ANTENNA GROUND BARS, (AGB) SURGE ARRESTER GROUND BAR, AND THE MASTER GROUND BAR (MGB). MECHANICAL CONNECTIONS SHALL BE TYPICALLY USED TO BOND ALL INTERIOR EQUIPMENT, COAX CABLE BRIDGES AND COAXIAL CABLE GROUND KITS. ALL LUG TYPE MECHANICAL CONNECTORS TO THE MGB OR AGB SHALL BE TWO HOLE TYPE CONNECTED WITH STAINLESS STEEL BOLTS AND NUTS WITH STAINLESS STEEL LOCK WASHERS AND NOALOX ON EITHER SIDE OF THE BUSS BAR.

**3.16 CHEMICAL GROUND RODS:** CHEMICAL GROUND RODS SHALL NOT BE INSTALLED ON GROUND RING INSTALLATIONS WITH NORMAL SOIL. CHEMICAL GROUND RODS SHALL BE INSTALLED ONLY FOR SPECIAL DESIGN APPLICATIONS THAT REQUIRE SINGLE POINT GROUNDING DUE TO SPECIFIC SITE CONDITIONS.

**3.17 TENANT IMPROVEMENT SITE GROUNDING:** FOR ROOF TOP ANTENNA INSTALLATIONS ADDITIONAL ANTENNA GROUND BARS MAY HAVE TO BE INSTALLED AT EACH ANTENNA MOUNT LOCATION. ALL ANTENNA MOUNTS SHALL BE GROUNDED WITH A #2 AWG CONDUCTOR CONNECTED TO THE NEAREST BUILDING STEEL OR THE AGB INSTALLED AT THE MOUNT. ALL BUSS BARS, BOTH MGB AND AGB(S), SHALL BE INDEPENDENTLY TIED TO THE NEAREST BUILDING STEEL OR DESIGNATED GROUNDING SYSTEM. NO GROUND WIRE IS TO CONNECT THE BUSS BARS TOGETHER. AGB(S) MAY BE HOME RUN BACK TO THE MGB WHERE NO BUILDING STEEL IS AVAILABLE.

**3.18 LIMITS OF BEND RADIUS:** IT IS IMPORTANT THAT THE GROUNDING CONDUCTOR CONNECTING THE INSIDE AND OUTSIDE GROUND SYSTEMS BE AS STRAIGHT AS POSSIBLE, WITH NO TURN OR BEND SHORTER THAN ONE FOOT RADIUS WITH A THREE FOOT RADIUS PREFERRED. NO RIGHT ANGLE OR SHARP BENDS SHALL BE ALLOWED.

**3.19 BONDING PREPARATION & FINISH:** ALL SURFACES REQUIRE PREPARATION PRIOR TO BONDING OF EITHER EXOTHERMIC WELD OR BURNDY FASTENERS. GALVANIZED SURFACES SHALL BE GROUND OR SANDED TO THE POINT OF EXPOSING THE STEEL SURFACE BELOW, PRIOR TO BONDING THE GROUND CONDUCTOR. FOR OTHER SURFACES INCLUDING COPPER BUSS BARS ALL PAINT, RUST TARNISH AND GREASE SHALL BE REMOVED PRIOR TO BONDING THE GROUND CONDUCTOR. EXOTHERMIC WELD TYPE BONDS SHALL BE FINISHED WITH THE APPLICATION OF COLD GALVANIZATION AND WHEN APPLICABLE, FINISH PAINTED WITH AN APPROPRIATE COLOR AS REQUIRED. MECHANICAL TYPE BONDS ON BUSS BARS SHALL BE FINISHED WITH THE APPLICATION OF NOALOX OR OTHER APPROVED CONDUCTIVE MEDIUM MATERIAL BETWEEN CONNECTOR AND BUSS BAR. MECHANICAL TYPE BONDS ON ALL OTHER SURFACES SHALL BE FINISHED WITH THE APPLICATION OF COLD GALVANIZATION AND/OR THE APPROPRIATE PAINT TO MATCH AS REQUIRED.

**3.20 TESTING:** THE OUTSIDE GROUND RING SHALL BE TESTED AFTER INSTALLATION BUT PRIOR TO BACKFILLING THE GROUND RING TRENCH. THE GROUND FIELD RESISTANCE SHALL MEASURE 5 OHMS OR LESS TO GROUND. ANY DIFFICULTY IN ACHIEVING THIS LEVEL OF RESISTANCE MUST BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER. THE RESISTANCE TO GROUND SHALL BE MEASURED USING THE FALL OF POTENTIAL METHOD. TESTING SHALL BE PERFORMED BY AN OWNER PROVIDED INDEPENDENT TESTING LABORATORY FROM WHICH A WRITTEN REPORT SHALL BE PRODUCED FOR REVIEW BY THE PROJECT MANAGER.

**3.21 SPECIAL CONDITIONS:** WHEN SOIL CONDITIONS EXIST (I.E., NON-COMPACTABLE ROCK, GRAVEL, SHALE, ETC.) THAT PREVENTS THE INSTALLATION OF THE STANDARD GROUNDING SYSTEM AND PROCEDURES, THEN VERBAL PROCEDURES SHALL BE REQUESTED BY THE PM.

**3.22 EXTERNAL GROUND RING:** THE EXTERNAL GROUND RING SHALL EXTEND TO THE MAXIMUM ALLOWABLE DEPTH IN 95% COMPACTED SOIL

**3.23 GROUND RODS (REPLACEMENT):** WHEN GROUND RODS CANNOT BE DRIVEN INTO THE SOIL VERTICALLY TO A DEPTH DESCRIBED IN PARAGRAPH 3.5, AND REMAIN IN 95% COMPACTED SOIL, THEN THE FOLLOWING METHODS OF SUBSTITUTION MAY BE USED. THESE ARE SUGGESTED METHODS ONLY, AND EACH CASE SHOULD BE REVIEWED BY THE T-MOBILE PROJECT MANAGER. THE PURPOSE IS TO ACHIEVE THE LOWEST IMPEDANCE TO GROUND, IN ANY CASE, EQUAL TO OR LESS THAN 5 OHMS.

**3.24 ROCK WITH SOME OR NO SOIL COVER:** FOR SITES WHICH HAVE SOIL CONDITIONS WHICH CONSIST OF SOLID OR SEMI SOLID ROCK BELOW ABOUT THREE FEET OF COMPATIBLE SOIL, A COMBINATION OF METHODS MAY BE USED:

- A. A COMBINATION OF SHORT GROUND RODS MAY BE USED WITH 3' SQUARE 1/4" COPPER PLATES. A MINIMUM OF TWO PLATES SHOULD BE USED AND SHOULD REPLACE GROUND RODS ON AN EQUIVALENCY OF TWO GROUND ROD LENGTHS PER COPPER PLATE. THE COPPER PLATE SHOULD BE PLACED IN A MINIMUM 3" BENTONITE BASE AND COVERED WITH 3" OF BENTONITE FILL PRIOR TO BACKFILL.
- B. AN ACTIVE TYPE CHEMICAL ROD SYSTEM MAY BE USED. THIS IS AN ENGINEERING JUDGMENT AND SHOULD BE USED ONLY WHERE NECESSARY, DUE TO EXPENSE. IN ALL CASES, THE STANDARD PRACTICES OUTLINED IN THIS DOCUMENT SHOULD BE FOLLOWED TO THE EXTENT THAT IS APPLICABLE, AND SHOULD BE MODIFIED AS TO THE QUANTITY OF GROUND RODS AND CONDUCTOR SIZE ONLY AS RECOMMENDED BY THE MANUFACTURER OF THE GROUND ROD SYSTEM.
- C. A SYSTEM UTILIZING CORED SHAFTS, STANDARD GROUND RODS ON A TYPICAL LAYOUT, WITH A BENTONITE (CLAY) BACKFILL. IN THIS CASE EACH GROUND ROD SHOULD BE TESTED INDIVIDUALLY, AND EACH ROD SHOULD HAVE AN ACCESS BOX PLACED FOR FUTURE TESTING.



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**GN-2**  
GENERAL NOTES

**SIGNAGE NOTES:**

1. SIGNS SHALL BE FABRICATED FROM CORROSION RESISTANT PRESSED METAL AND PAINTED WITH LONG LASTING UV RESISTANT COATING.
2. SIGNS (EXCEPT WHERE NOTED OTHERWISE) SHALL BE MOUNTED TO THE GATE AND FENCE USING A MINIMUM OF 9 GAUGE ALUMINUM WIRE, HOG RINGS (FENCE) OR BRACKETS, WHERE NECESSARY. BRACKETS SHALL BE OF SIMILAR METAL AS THE STRUCTURE TO AVOID GALVANIC CORROSION.
3. SIGNS NEED NOT BE PLACED IF ACCURATE AND APPROPRIATE SIGNAGE ALREADY EXISTS.

<b>NOT USED</b>	<b>1</b>
SCALE: NONE	

<b>NOT USED</b>	<b>2</b>
SCALE: NONE	



WHITE/BLUE BACKGROUND, WHITE/BLACK LETTERING MOUNTING  
LOCATION: ACCESS GATE  
QUANTITY: 1

<b>AUTHORIZED PERSONNEL SIGN</b>	<b>3</b>
SCALE: NONE	



RED/WHITE/BLACK BACKGROUND, BLACK/WHITE LETTERING  
MOUNTING LOCATION: ACCESS GATE  
QUANTITY: 1

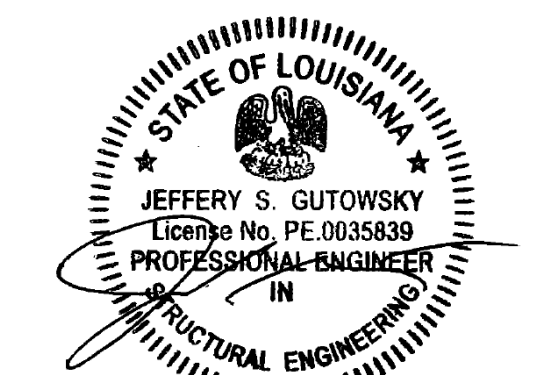
<b>NO TRESPASSING SIGN</b>	<b>4</b>
SCALE: NONE	



**Sparklight**



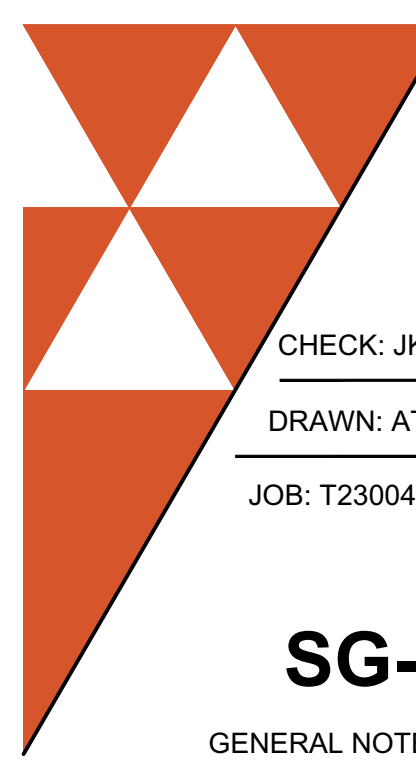
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ACCESSIBILITY CONSULTING \ STRUCTURAL



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**SG-1**  
GENERAL NOTES

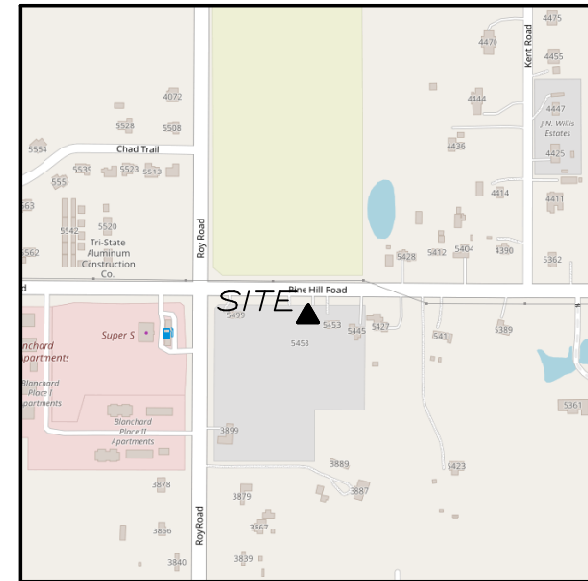
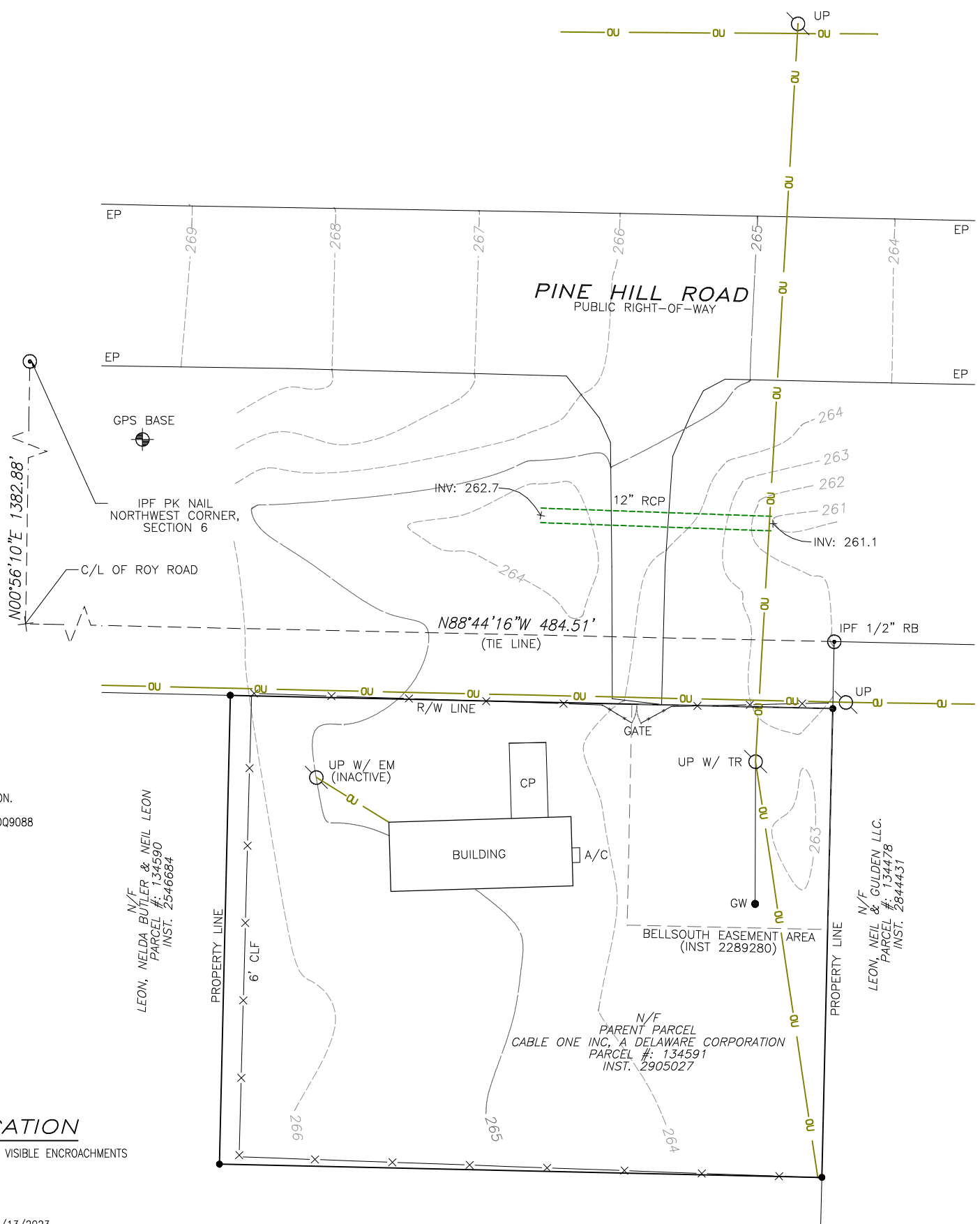
**PARENT PARCEL**

OWNER: CABLE ONE INC, A DELAWARE CORPORATION  
 SITE ADDRESS: 5453 PINE HILL ROAD, SHREVEPORT, LA 71107  
 PARCEL ID: 134591  
 AREA: 0.140 ACRES (PER TAX ASSESSOR)  
 ALL ZONING INFORMATION SHOULD BE VERIFIED WITH THE PROPER ZONING OFFICIALS  
 REFERENCE: INST. 2905027



**GPS NOTES**

THE FOLLOWING GPS STATISTICS UPON WHICH THIS SURVEY IS BASED HAVE BEEN PRODUCED AT THE 95% CONFIDENCE LEVEL:  
 POSITIONAL ACCURACY: 0.04 FEET (HORZ) 0.17 FEET (VERT)  
 TYPE OF EQUIPMENT: GEOMAX ZENITH35 PRO BASE AND ROVER, DUAL FREQUENCY  
 TYPE OF GPS FIELD PROCEDURE: ONLINE POSITION USER INTERFACE  
 DATE OF SURVEY: 8/17/2023  
 DATUM / EPOCH: NAD\_83(2011)(EPOCH:2010.0000)  
 PUBLISHED / FIXED CONTROL USE: N/A  
 GEOID MODEL: 18  
 COMBINED GRID FACTOR(S): 0.99997341 CENTERED ON THE GPS BASE POINT AS SHOWN HEREON.  
 CONVERGENCE ANGLE: -0.71084167  
 BENCHMARKS USED: DH7103, DL8637, DN4504, DP0856, DH7101, DG5396, DN5862, DL3492, DQ9088



**VICINITY MAP**  
NOT TO SCALE

**GENERAL NOTES**

\* THIS SPECIFIC PURPOSE SURVEY IS FOR THE LEASED PREMISES AND EASEMENTS ONLY. THIS SPECIFIC PURPOSE SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF SPARKLIGHT AND EXCLUSIVELY FOR THE TRANSFER OF THE LEASED PREMISES AND THE RIGHTS OF EASEMENT SHOWN HEREON AND SHALL NOT BE USED AS AN EXHIBIT OR EVIDENCE IN THE FEE SIMPLE TRANSFER OF THE PARENT PARCEL NOR ANY PORTION OR PORTIONS THEREOF. BOUNDARY INFORMATION SHOWN HEREON HAS BEEN COMPILED FROM TAX MAPS AND DEED DESCRIPTIONS ONLY. NO BOUNDARY SURVEY OF THE PARENT PARCEL WAS PERFORMED.

THIS IS NOT A PROPERTY BOUNDARY SURVEY.  
 THIS SPECIFIC PURPOSE SURVEY WAS PREPARED WITHOUT BENEFIT OF A TITLE REPORT WHICH MAY REVEAL ADDITIONAL CONVEYANCES, EASEMENTS, OR RIGHTS-OF-WAY NOT SHOWN HEREON.

EQUIPMENT USED FOR ANGULAR & LINEAR MEASUREMENTS: GEOMAX ZOOM ROBOTIC AND/OR LEICA TS12 [DATE OF LAST FIELD VISIT: 8/17/2023]. SEE GPS NOTES FOR GPS EQUIPMENT.

THE 1' CONTOURS AND SPOT ELEVATIONS SHOWN ON THIS SPECIFIC PURPOSE SURVEY ARE ADJUSTED TO NAVD 88 DATUM (COMPUTED USING GEOID18) AND HAVE A VERTICAL ACCURACY OF ± 0.5'. CONTOURS OUTSIDE THE IMMEDIATE SITE AREA ARE APPROXIMATE.

BEARINGS SHOWN ON THIS SPECIFIC PURPOSE SURVEY ARE BASED ON LOUISIANA GRID NORTH (NAD 83) NORTH ZONE.

PER THE FEMA FLOODPLAIN MAPS, THE SITE IS LOCATED IN AN AREA DESIGNATED AS ZONE X (AREA OF MINIMAL FLOOD HAZARD). COMMUNITY PANEL NO. : 22017C0355H DATED: 5/19/2014

NO WETLAND AREAS HAVE BEEN INVESTIGATED BY THIS SPECIFIC PURPOSE SURVEY.

ALL ZONING INFORMATION SHOULD BE VERIFIED WITH THE PROPER ZONING OFFICIALS.

ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM ABOVE GROUND FIELD SURVEY INFORMATION. THE SURVEYOR MAKES NO GUARANTEES THAT ANY UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT ANY UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED ANY UNDERGROUND UTILITIES.

**LEGEND**

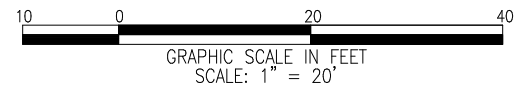
POB	POINT OF BEGINNING
POC	POINT OF COMMENCEMENT
IPS	IRON PIN SET
IPF	IRON PIN FOUND
CMF	CONCRETE MONUMENT FOUND
CRB	CAPPED REBAR
RB	REBAR
OTP	OPEN TOP PIPE
UP	UTILITY POLE
INV	INVERT
EP	EDGE OF PAVEMENT
OU	OVERHEAD UTILITY
RCP	REINFORCED CONCRETE PIPE
GW	GUY WIRE ANCHOR
TR	TRANSFORMER
EM	ELECTRIC METER
CLF	CHAIN LINK FENCE
CP	CONCRETE PAD
N/F	NOW OR FORMERLY
R/W	RIGHT-OF-WAY

**SURVEYOR'S CERTIFICATION**

I HEREBY CERTIFY THAT THIS MAP IS CORRECT AND THAT ANY VISIBLE ENCROACHMENTS ARE SHOWN HEREON.

*[Signature]* DATE: 9/13/2023  
 G. DARRELL TAYLOR  
 LOUISIANA PROFESSIONAL LAND SURVEYOR LICENSE NO. 05199

THIS MAP IS NOT A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS. THIS MAP IS ONLY INTENDED FOR THE PARTIES AND PURPOSES SHOWN. THIS MAP IS NOT FOR RECORDATION.



Know what's below.  
Call before you dig.



NO.	DATE	REVISION

\* SPECIFIC PURPOSE SURVEY PREPARED BY:  
**POINT TO POINT LAND SURVEYORS**  
 Firm License Number: 2017036700  
 100 Governors Trace, Suite 103  
 Peachtree City, GA 30269  
 (p) 678.565.4440 (f) 678.565.4497  
 (w) p2pls.com



SPECIFIC PURPOSE SURVEY PREPARED FOR:



333 W. MAIN STREET, STE 130,  
 ARDMORE, OK 73401

BLANCHARD, LA

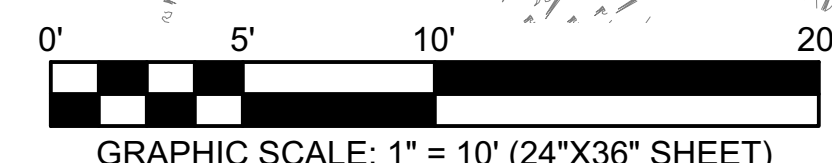
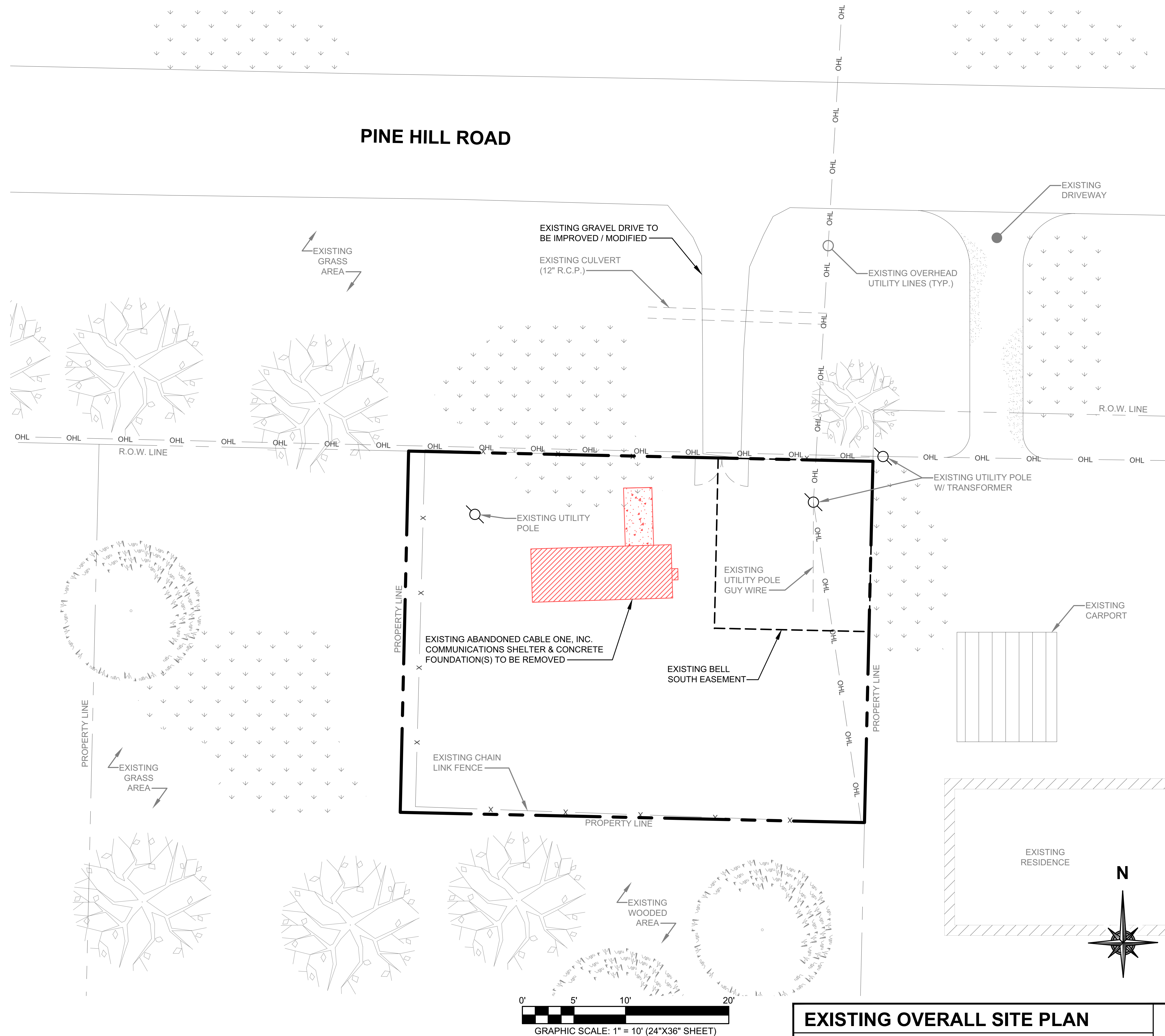
SECTION 6,  
 TOWNSHIP 18 NORTH, RANGE 14 WEST,  
 CADDO PARISH, LOUISIANA

DRAWN BY: RJH	SHEET:
CHECKED BY: JKL	<b>1</b>
APPROVED: D. MILLER	OF 1
DATE: SEPT. 13, 2023	
P2P JOB #: 231080LA	

**GENERAL SITE NOTES:**

1. CONTRACTOR WILL NOT START CONSTRUCTION UNTIL AFTER THEY HAVE RECEIVED THE PRE-CON PACKAGE AND HAVE A PRE-CON WALK WITH THE PROJECT MANAGER.
2. CONTRACTOR TO HIRE PUBLIC (811) AND PRIVATE LOCATING SERVICE IN ORDER TO LOCATE AND PROTECT ALL SURFACE UTILITIES. DO NOT SCALE OFF THESE PLANS FOR ANY BELOW GRADE UTILITIES
3. CONTRACTOR SHALL VERIFY ALL EXISTING BURIED AND OVERHEAD UTILITIES PRIOR TO EXCAVATION. CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES AT HIS OWN COST AND COORDINATE ANY REPAIRS WITH RESPECTIVE UTILITY COMPANY.
4. CONTRACTOR SHALL RESTORE AND REPAIR ANY DAMAGED AREAS CAUSED BY CONSTRUCTION.
5. DIGGING AND/OR TRENCHING INSIDE THE COMPOUND MUST BE DONE BY HAND.

**FLOOD NOTE**  
 PER THE FEMA FLOODPLAIN MAPS, THE SITE IS LOCATED IN AN AREA DESIGNATED AS ZONE X (AREAS OF MINIMAL FLOOD HAZARD), COMMUNITY PANEL NO.: 22017C0355H DATED: 05/19/2014



**EXISTING OVERALL SITE PLAN**  
 SCALE: 1" = 20'-0" (1" = 10'-0" ON 24"X36" SHEET)

1



**Sparklight**



**ET TOWER**

BLANCHARD, LA

0 PINE HILL ROAD

SHREVEPORT, LA 71107



JEFFERY S. GUTOWSKY  
 License No. PE.0035839  
 PROFESSIONAL ENGINEER  
 IN  
 STRUCTURAL ENGINEERING

EXPIRES: 03/31/25 SIGNED: 08/05/24

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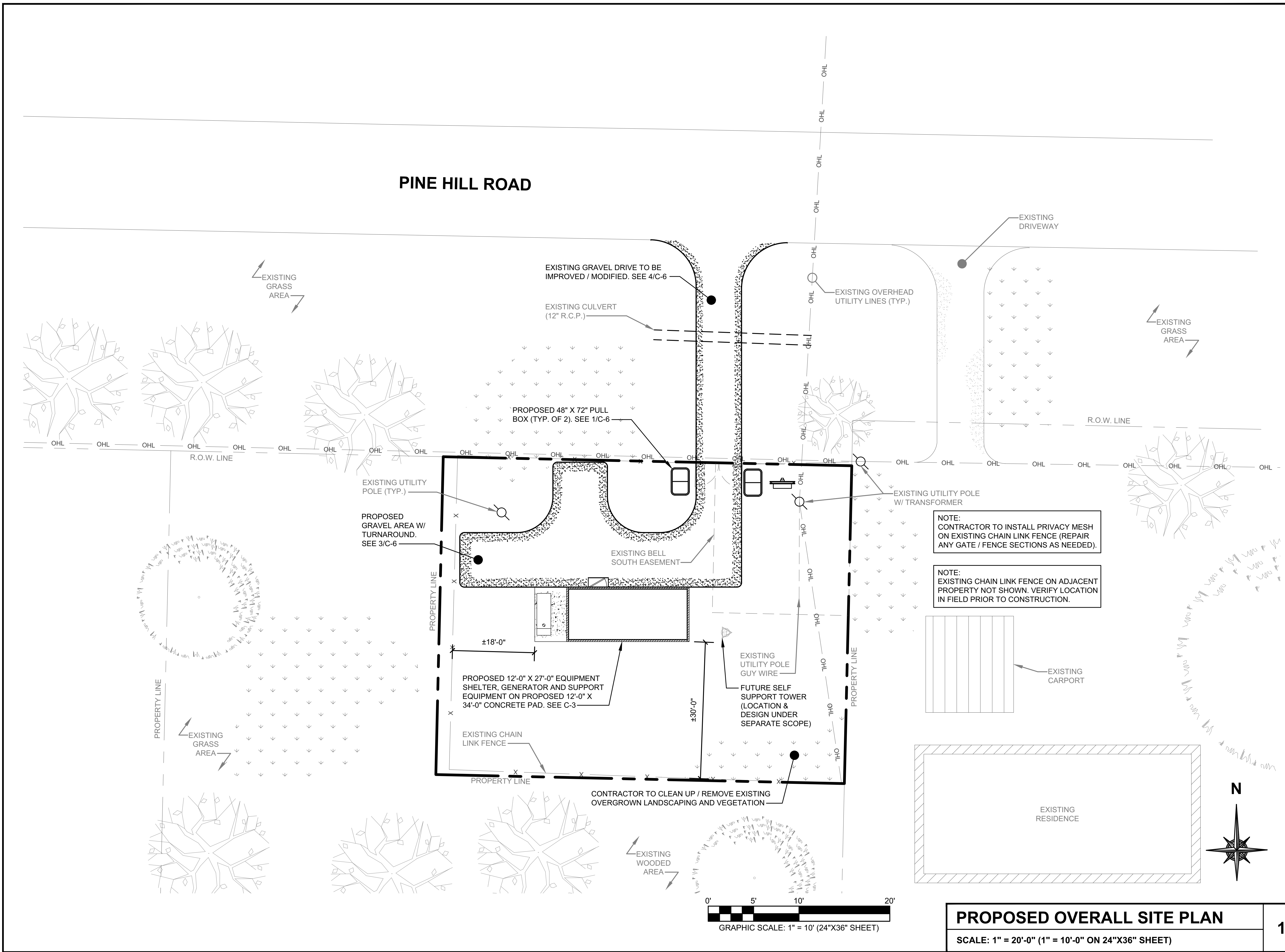
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0	FINALS	08/05/24	JKR

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CHECK: JKR  
 DRAWN: ATK  
 JOB: T2300445



**C-1**  
 EXISTING  
 OVERALL SITE PLAN



**PROPOSED OVERALL SITE PLAN**  
 SCALE: 1" = 20'-0" (1" = 10'-0" ON 24"X36" SHEET)

**ET TOWER**

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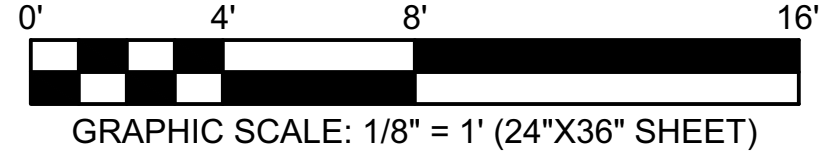
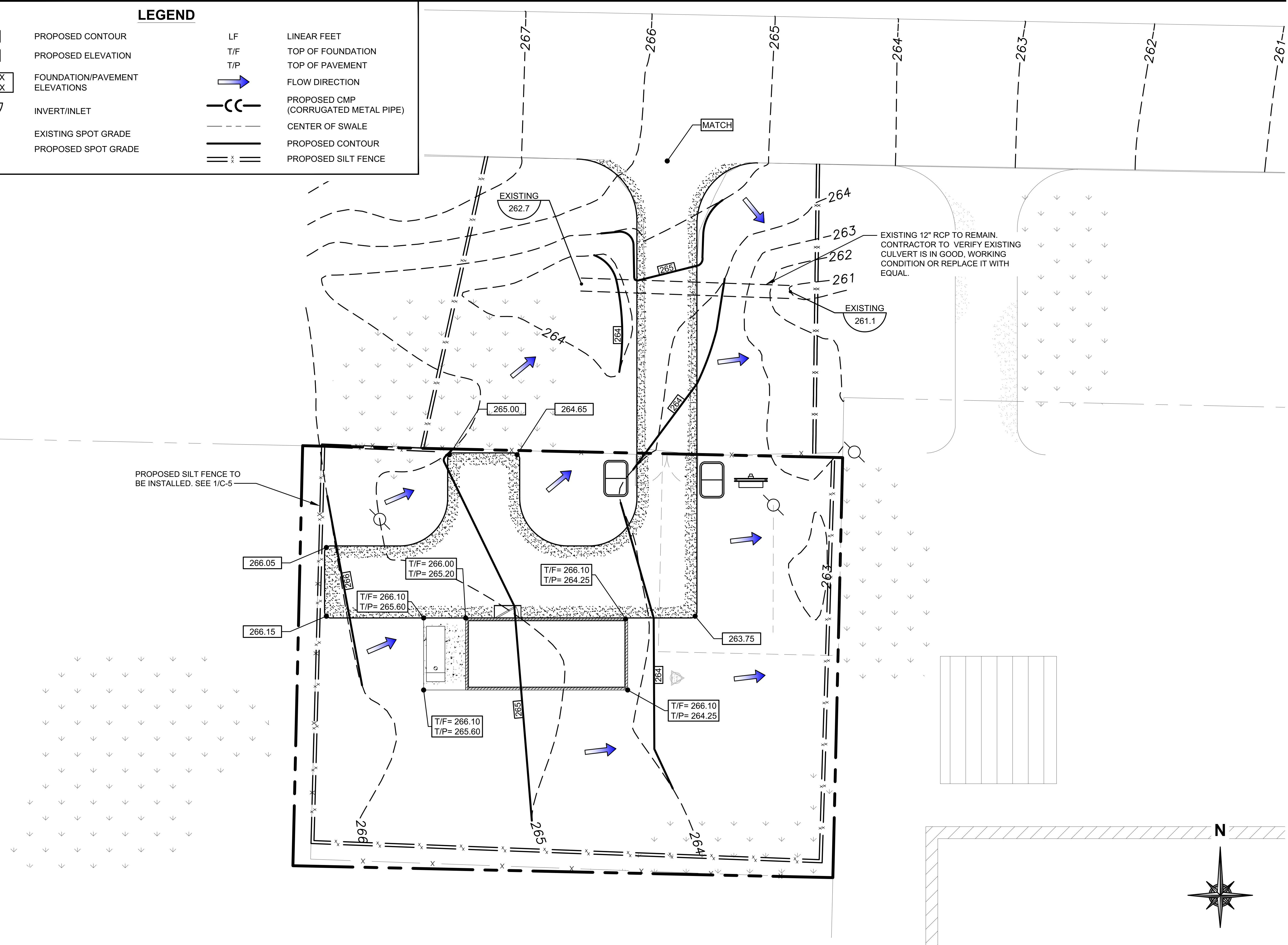
CHECK: JKR  
 DRAWN: ATK  
 JOB: T2300445

**C-2**  
 PROPOSED  
 OVERALL SITE PLAN



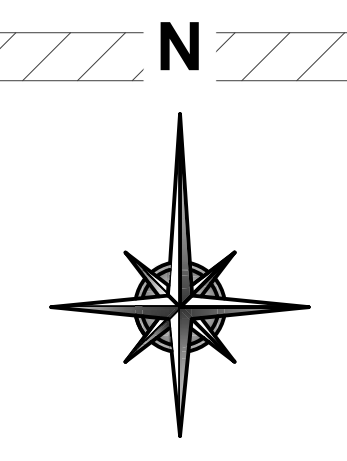
**LEGEND**

	PROPOSED CONTOUR	LF	LINEAR FEET
	PROPOSED ELEVATION	T/F	TOP OF FOUNDATION
	FOUNDATION/PAVEMENT ELEVATIONS	T/P	TOP OF PAVEMENT
	INVERT/INLET		FLOW DIRECTION
	EXISTING SPOT GRADE		PROPOSED CMP (CORRUGATED METAL PIPE)
	PROPOSED SPOT GRADE		CENTER OF SWALE
			PROPOSED CONTOUR
			PROPOSED SILT FENCE



**GRADING, SEDIMENT & EROSION CONTROL PLAN**

SCALE: 1/16" = 1'-0" (1/8" = 1'-0" ON 24"X36" SHEET)



**ET TOWER**

**Sparklight**

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PROFESSIONAL ENGINEER  
IN  
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D	FINALS	08/05/24	JKR

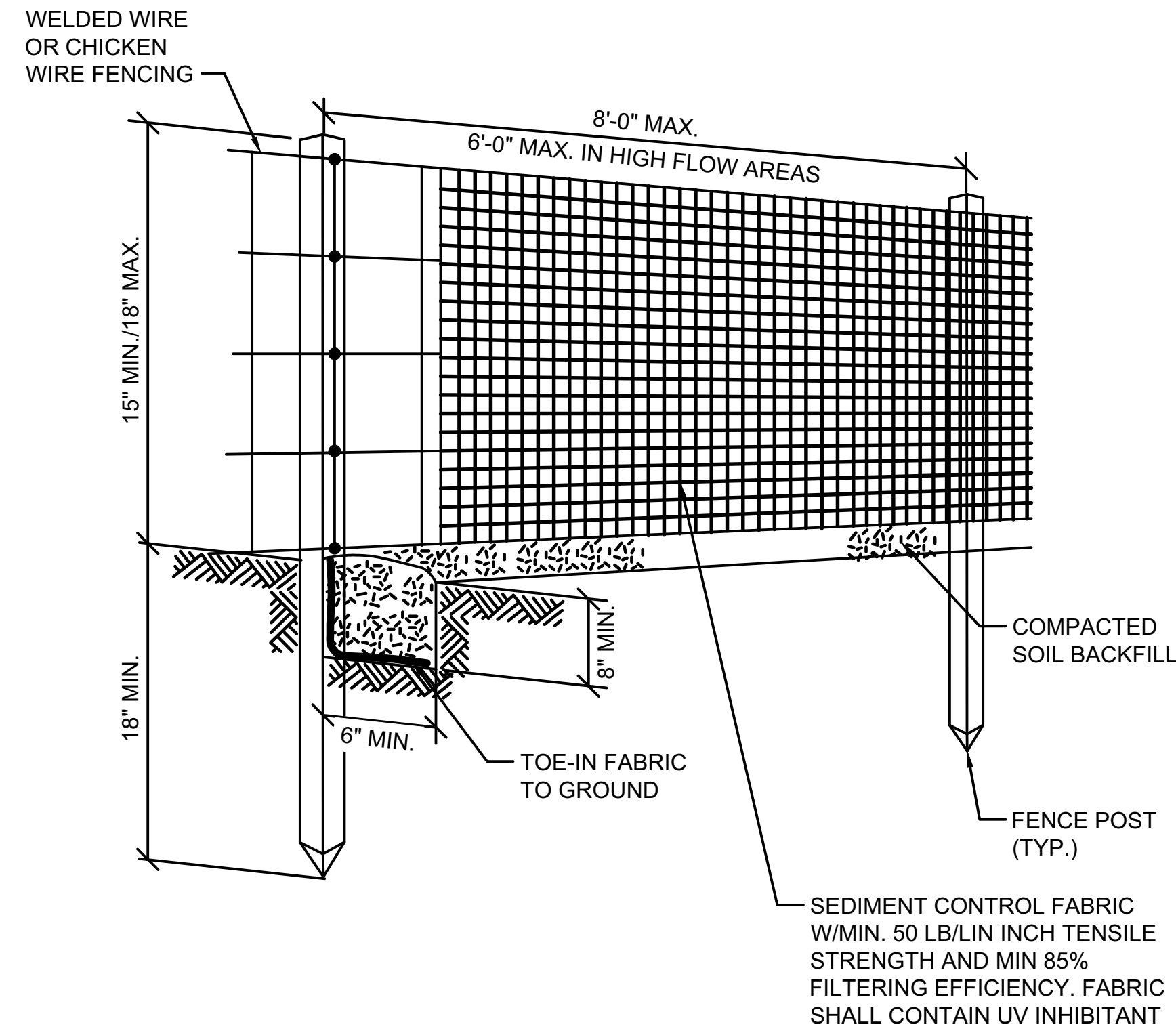
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PLUMBING \ ELECTRICAL \ LAND SURVEYING  
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CHECK: JKR  
DRAWN: ATK  
JOB: T2300445

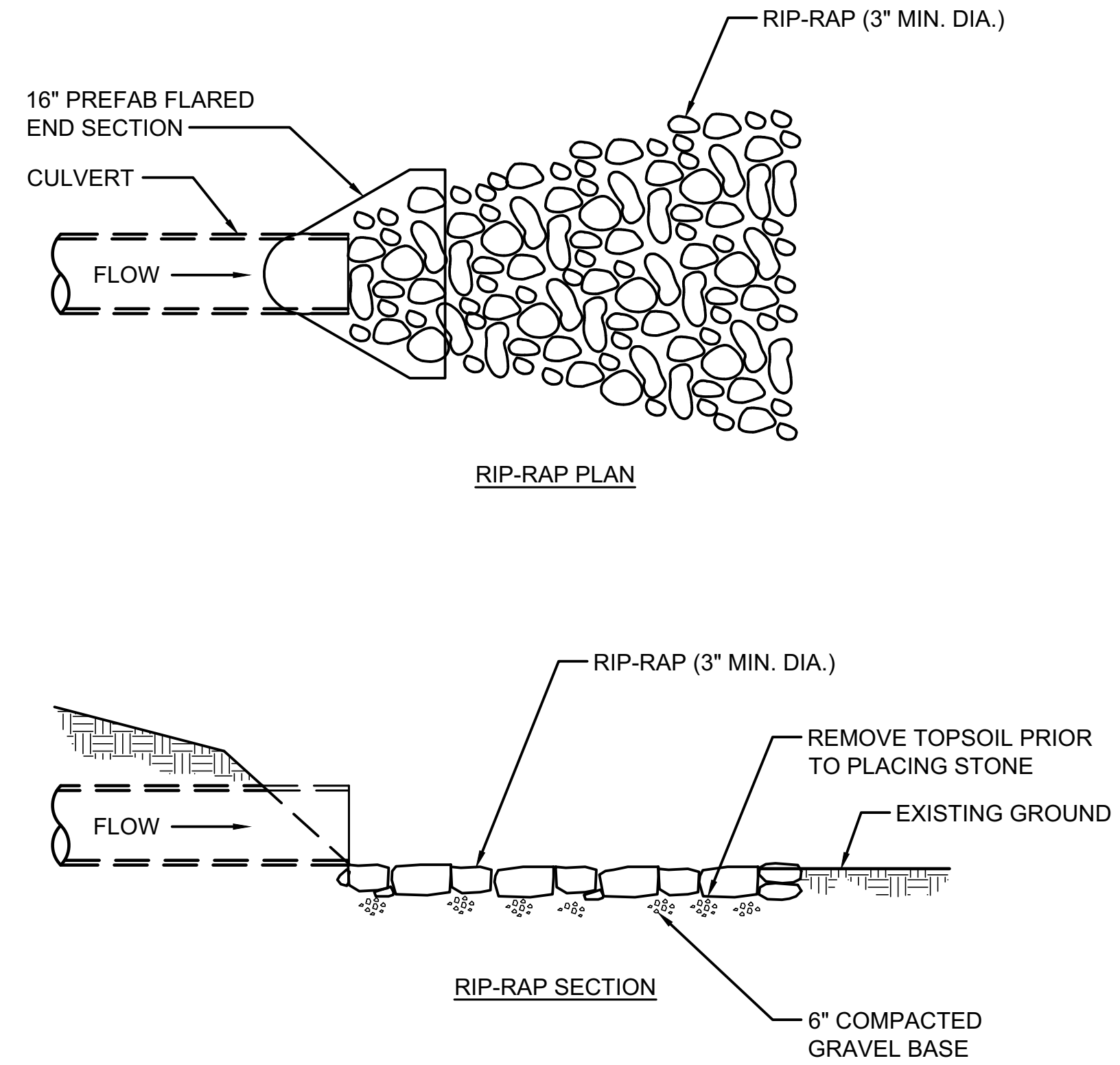
**C-4**  
GRADING, SEDIMENT & EROSION CONTROL PLAN

**SILT FENCE NOTES:**

1. CONSTRUCT THE SILT FENCE OF FILTER CLOTH WITH A MINIMUM TENSILE STRENGTH OF 50 LB/LIN INCH.
2. SILT FENCE HEIGHT SHALL BE A MINIMUM OF 15 INCHES ABOVE GROUND HEIGHT, BUT SHALL NOT EXCEED 18 INCHES.
3. CONSTRUCT SILT FENCE OF A CONTINUOUS ROLL CUT THE LENGTH OF THE BARRIER TO AVOID JOINTS. FABRIC TO BE FASTENED SECURELY TO FENCE POSTS WITH 1 INCH STAPLES OR TIE WIRES.
4. SUPPORT FABRIC WITH WOVEN WIRE MESH 14.5 GAUGE, 6" MAX. MESH OPENING. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH 1 INCH STAPLES OR TIE WIRES.
5. POSTS FOR SEDIMENT FENCES SHALL BE 4 INCH DIAMETER PINE, 2 INCH DIAMETER OAK OR 1.33 LB/LINEAR FOOT STEEL. MINIMUM LENGTH SHALL BE 4 FEET. POSTS SHALL BE SPACED NO MORE THAN 8 FEET APART AND THEY SHALL BE DRIVEN INTO THE GROUND A MINIMUM OF 18 INCHES.
6. EXCAVATE A TRENCH APPROXIMATELY 6 INCHES WIDE AND 8 INCHES DEEP ALONG THE PROPOSED LINE OF POSTS AND UP SLOPE FROM THE BARRIER. BACKFILL THE TRENCH WITH COMPACTED SOIL OR GRAVEL PLACED OVER THE FILTER FABRIC.
7. DO NOT ATTACH FILTER FABRIC TO EXISTING FENCES, TREES, ETC.
8. REMOVE FENCING FOLLOWING STABILIZATION OF SLOPES AND ALL DISTURBED AREAS.



**SILT FENCE DETAIL**  
SCALE: NONE 1



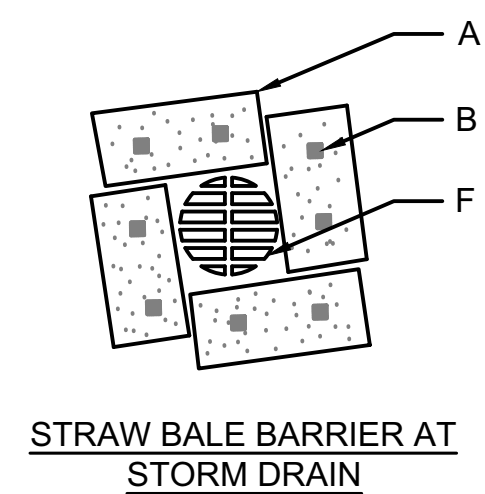
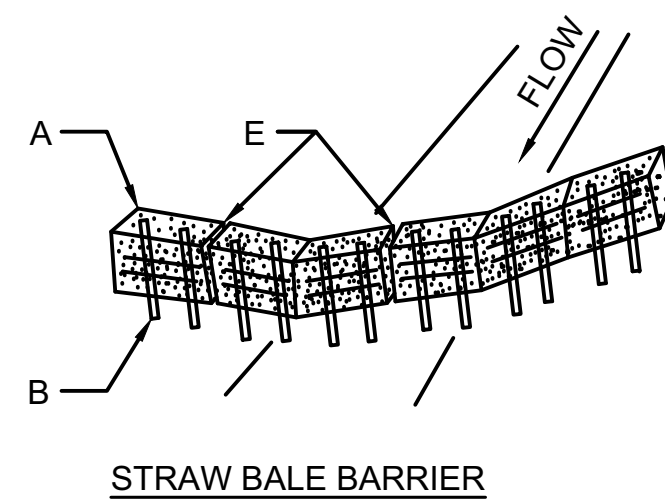
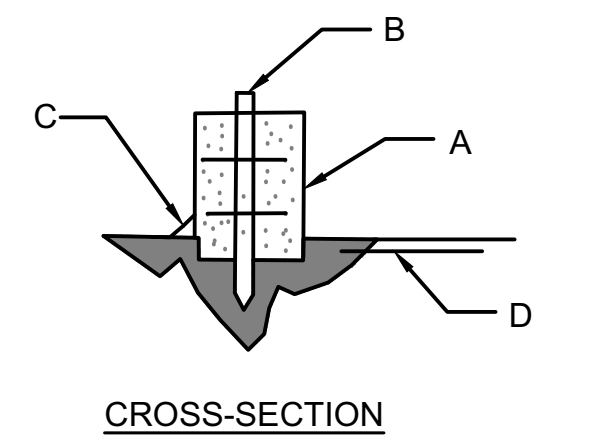
**RIP-RAP DETAIL**  
SCALE: NONE 2

**CONSTRUCTION NOTES:**

- A. STRAW BALES, SEE NOTE 2
- B. 2" X 2" HARDWOOD STAKES OR 3' LONG REBAR
- C. COMPACTED BACKFILL
- D. 4" MIN DEPTH OF TRENCH
- E. PACKED STRAW
- F. STORM DRAIN GRATE

**GENERAL NOTES:**

1. STRAW BALES SHALL BE PLACED IN A SINGLE ROW AND STAKED WITH MIN. (2) STAKES PER BALE. GAPS BETWEEN BALES SHALL BE CHINKED WITH STRAW. BACKFILL SOIL SHALL BE BUILT UP TO 4" AGAINST UPHILL SIDE OF BARRIER.
2. OTHER ACCEPTABLE EROSION CONTROL MEASURE ARE THE USE OF BERMS, SEDIMENT BASINS, FIBER MATS, NETTING, ETC. AS APPROVED BY JURISDICTION'S ENGINEER.
3. EROSION CONTROL MEASURES SHALL BE CONTINUOUSLY MAINTAINED UNTIL PERMANENT EROSION CONTROL FEATURES ARE COMPLETED.
4. IF AFTER REPEATED FAILURE OF THE PART OF THE CONTRACTOR TO PROPERLY CONTROL EROSION, POLLUTION, AND/OR SILTATION, THE JURISDICTION RESERVES THE RIGHT TO EFFECT NECESSARY CORRECTIVE MEASURES AND CHARGE ANY COSTS TO THE CONTRACTOR.



**DITCH CONTROL DETAIL**  
SCALE: NONE 3

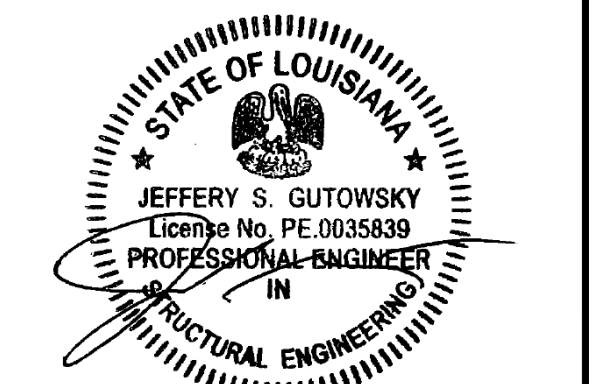
**NOT USED**  
SCALE: NONE 4

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**C-5**  
EROSION CONTROL DETAILS

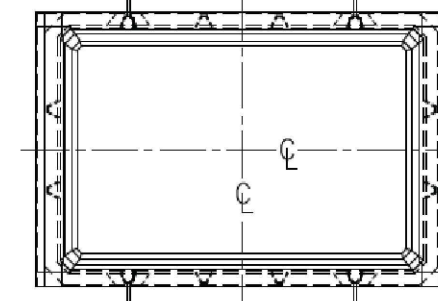
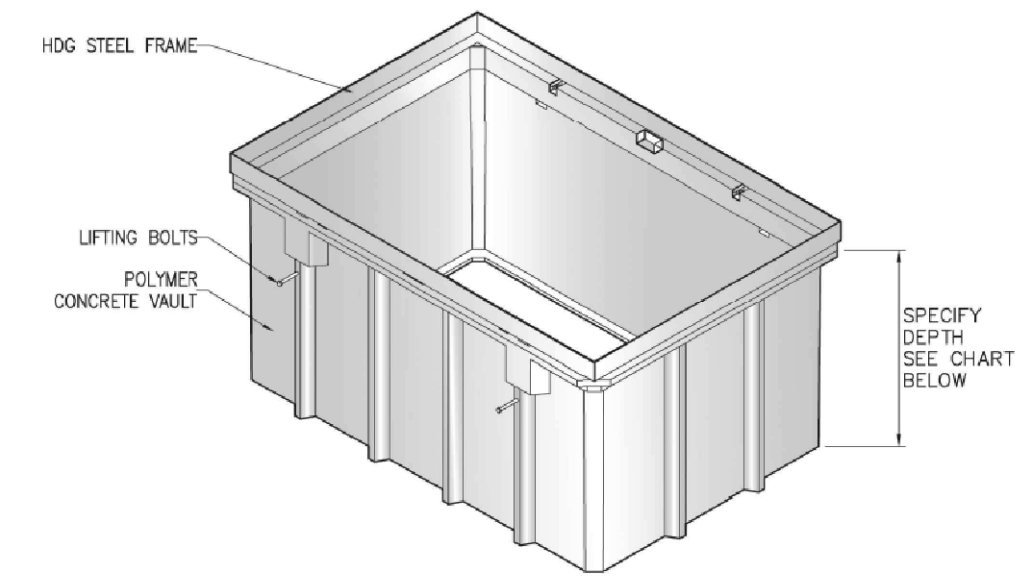
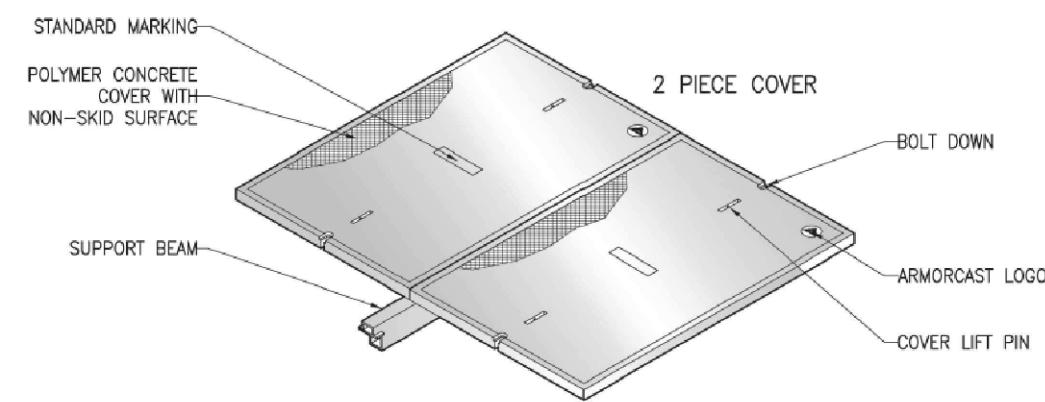
**48"W x 72"L VAULT ASSEMBLY** Specify Depth Below

DESCRIPTION	NOMINAL SIZE W x L x D	LOAD RATING	ANSI TIER	PART NUMBER	APPROX. WEIGHT	PALLET QTY.
Vault & Cover Assembly	48" x 72" x 36"	10K	8	A6001506APCX36	1230 lbs.	1
Vault & Cover Assembly	48" x 72" x 36"	20K	15/22	A6001506TAPCX36/A6001506HDAPCX36	1230 lbs.	1
Vault & Cover Assembly	48" x 72" x 48"	10K	8	A6001506APCX48	1450 lbs.	1
Vault & Cover Assembly	48" x 72" x 48"	20K	15/22	A6001506TAPCX48/A6001506HDAPCX48	1450 lbs.	1

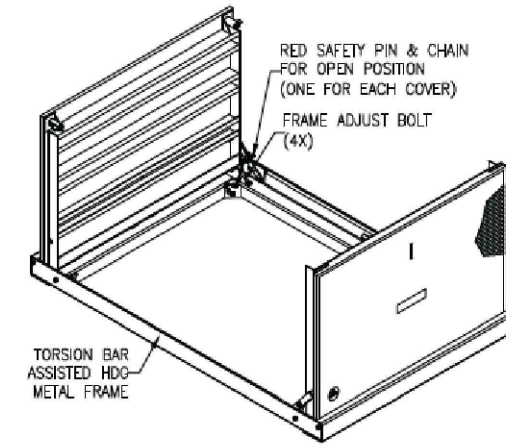
**COMPONENTS**

DESCRIPTION	NOMINAL SIZE W x L x D	LOAD RATING	ANSI TIER	PART NUMBER	APPROX. WEIGHT	PALLET QTY.
Replacement Covers	48" x 72" 2 pc.	10K	8	A6001458	255 lbs.	10
Replacement Covers	48" x 72" 2 pc.	20K	15	A6001458T/A6001458HD	255 lbs.	10
Replacement Vaults	48" x 72" x 36"	10K / 20K	22	A6001506PCX36	640 lbs.	1
Replacement Vaults	48" x 72" x 48"	10K / 20K	22	A6001506PCX48	860 lbs.	1
Extension	48" x 72" x 12"	10K / 20K	22	A6001506PCX12	415 lbs.	5

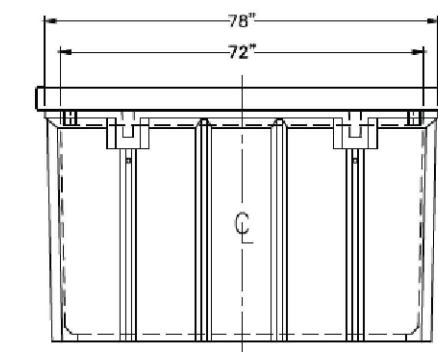
- Vaults are Open Bottom, also available with Split Base or Solid Bottoms.
- For sizes not shown please contact Armorcast Products for more information.



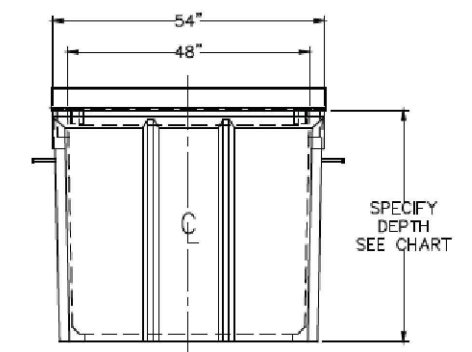
TOP VIEW



TORSION ASSIST COVER



SIDE VIEW



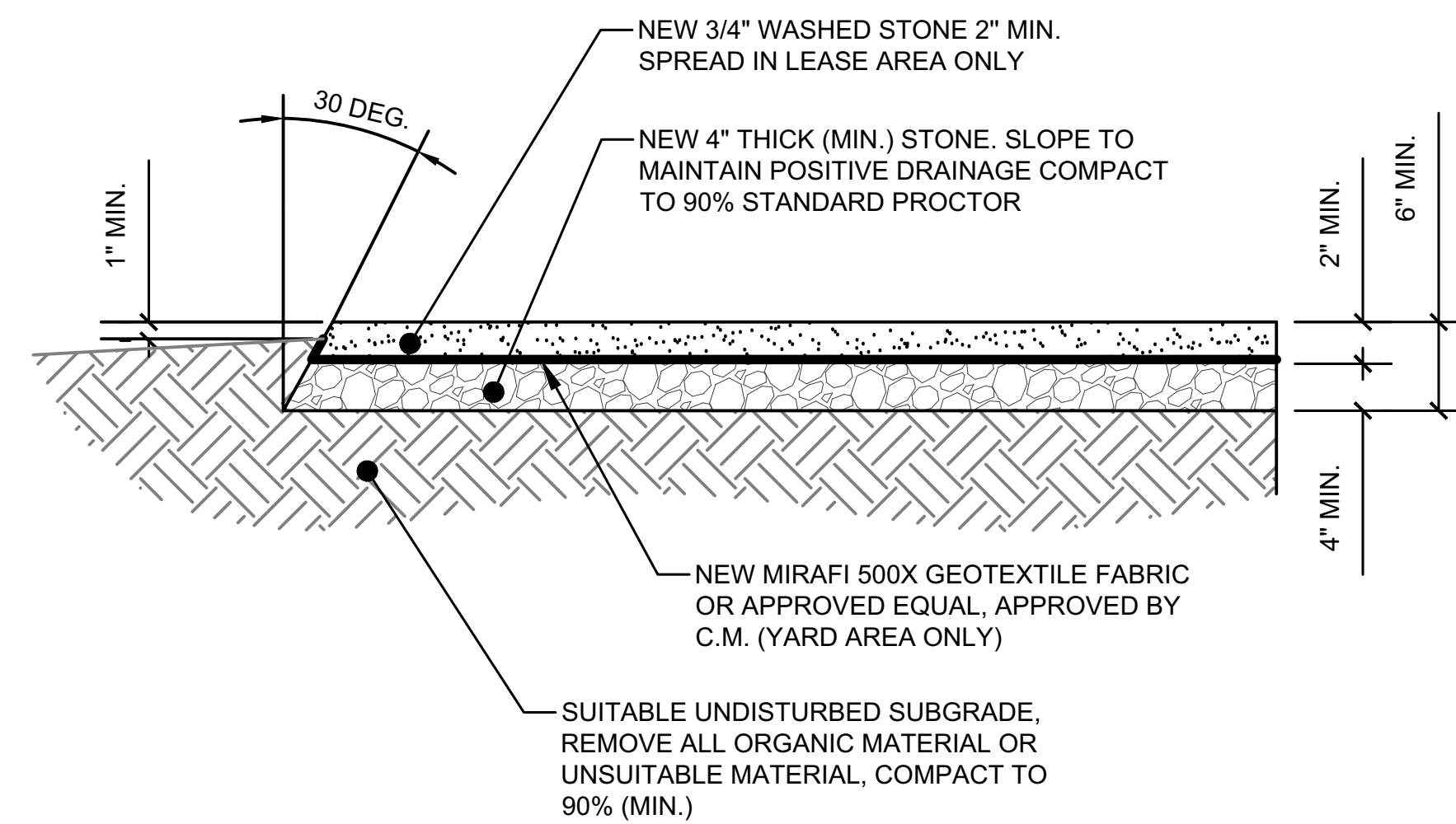
END VIEW

<b>HANDHOLE DETAIL</b>	<b>1</b>
SCALE: NONE	

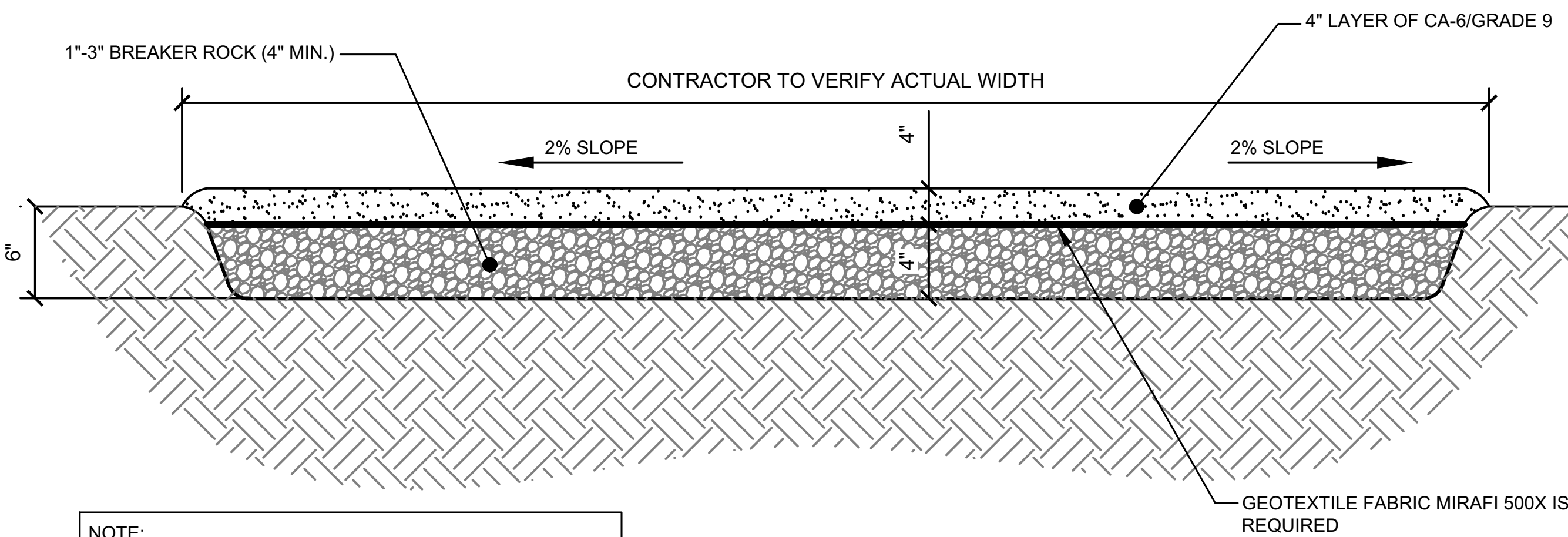
<b>NOT USED</b>	<b>2</b>
SCALE: NONE	

NOTE:  
WEED CONTROL FABRIC SHALL BE USED UNDER ALL AREAS OF THE YARD.

NOTE:  
CONTRACTOR TO ENSURE PROPER DRAINAGE FROM EQUIPMENT.



<b>GRAVEL COMPOUND DETAIL</b>	<b>3</b>
SCALE: NONE	

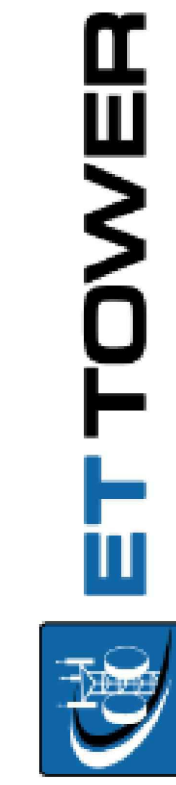


NOTE:  
ALL SELECT GRANULAR FILL SHALL BE COMPACTED TO A 95% COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 OR WITHIN PLUS OR MINUS 3% OF OPTIMUM MOISTURE CONTENT.

NOTE:  
CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING & GRUBBING THE CONSTRUCTION SITE AND ROADWAY AREAS WHERE APPLICABLE.

- INSTALLATION PROCEDURE:
1. EXCAVATE TO 6" BELOW GRADE AND INSTALL 4" OF 1-3" BREAKER ROCK AND PROOF ROLL.
  2. INSTALL 4" OF CA-6/GRADE 9 AND PROOF ROLL.

<b>ACCESS DRIVE DETAIL</b>	<b>4</b>
SCALE: NONE	

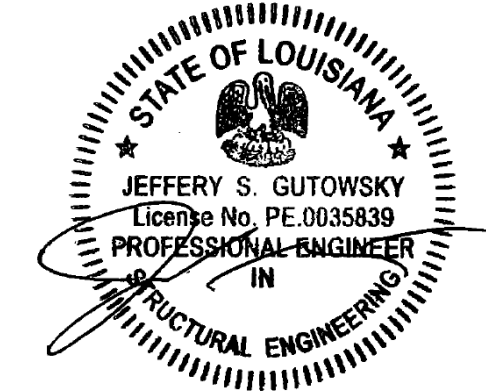


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DRAWN: ATK  
JOB: T2300445

**C-6**  
SITE DETAILS

TOTAL WEIGHT OF THE BUILDING : 96,600 lbs (ESTIMATED)  
 WEIGHT OF THE BUILDING WITHOUT EQUIPMENT: 78,900 lbs (ESTIMATED)  
 MAXIMUM LOAD AT LIFTING LUG : 14,700 lbs  
 SHIPPING WEIGHT OF BUILDING: 96,600 lbs (ESTIMATED)  
 BUILDING MUST BE LIFTED USING ALL LIFTING POINTS

**SINGLE BUILDING SET UP PROCEDURE:**

1. INSPECT BUILDING UPON DELIVERY FOR DAMAGE DURING TRANSPORTATION.
2. REMOVE LIFTING BRACKETS FROM SHELTER.
3. CAULK AND GROUT BUILDING.
4. ATTACH TIE DOWN BRACKETS (SHIPPED LOOSE INSIDE SHELTER) TO SHELTER AND FOUNDATION USING ANCHOR BOLTS.
5. INSTALL AND CAULK ALL ACCESSORIES(EXTERIOR LIGHT, CANOPY, ICE SHEILD, VENT HOODS, GROUND BARS, ETC.)
6. INSPECT ROOF AND ROOF EDGE FOR DAMAGE CAUSED BY OFFLOAD AND REPAIR IF NEEDED.
7. CLEAN INTERIOR AND COMPLETE ANY TOUCH UP PAINTING AS NEEDED.
8. CHECK DOOR ALARM (IF APPLICABLE) FOR PROPER OPERATION.
9. CHECK LIGHTING AND AIR CONDITIONING FOR PROPER OPERATION.
10. INSPECT COMPLETE BUILDING FOR COSMETICS & FUNCTION.

**OFFLOAD NOTES:**

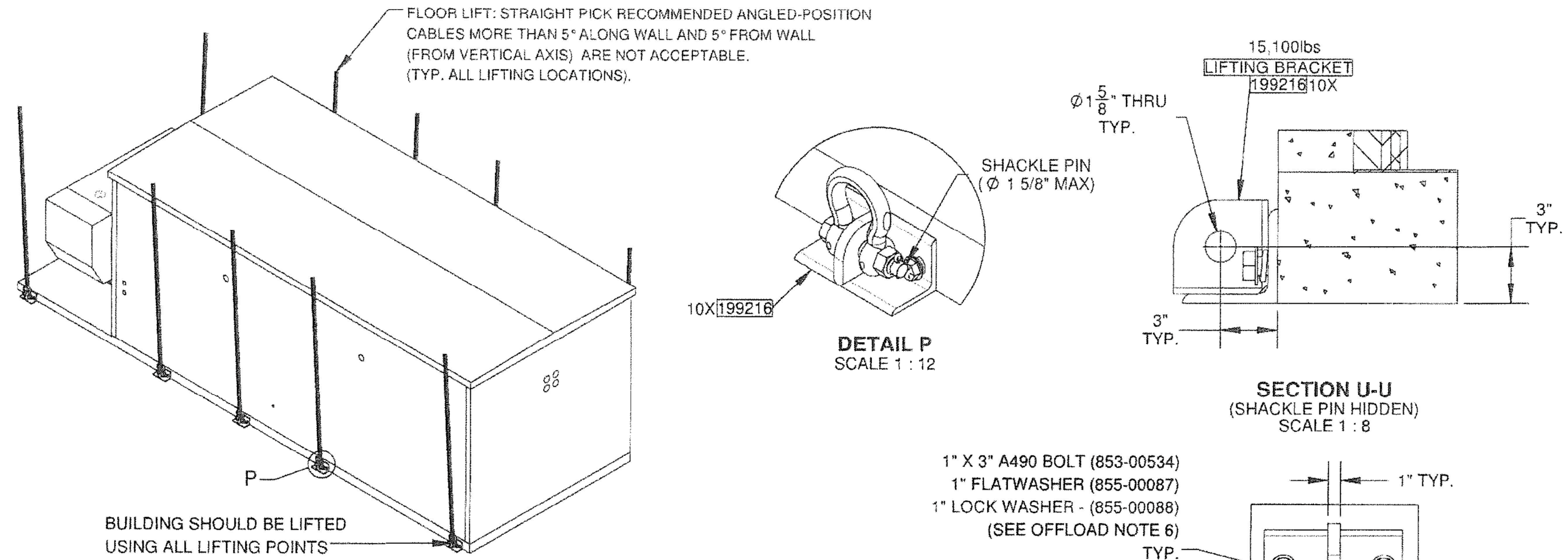
1. BUILDING SHALL BE OFFLOADED IN LEVEL.
2. ALL CABLES, SHACKLING, SPREADER BARS, ETC. SHALL BE DESIGNED AND SUPPLIED BY OWNER'S CONTRACTOR.
3. ALL LIFTING POINTS SHALL BE USED. REFER TO VIEW "ELEVATION-A" FOR EXACT LIFTING POINT LOCATIONS.
4. 1 5/8" MAXIMUM DIAMETER FOR SHACKLE PIN.
5. OFFLOAD SKID WITH CABLES IN VERTICAL POSITION.
  - a. FLOOR LIFT: STRAIGHT PICK RECOMMENDED ANGLED POSITION CABLES MORE THAN 5° ALONG WALL AND 5° FROM WALL (FROM VERTICAL AXIS) ARE NOT ACCEPTABLE.
6. LIFTING BRACKETS WILL BE REMOVED FOR TRANSPORT. LIFTING BRACKETS WILL NEED TO BE REINSTALLED AT SITE BY OTHERS AND ALL MOUNTING HARDWARE TORQUED TO 140 ft-lbs PRIOR TO LIFTING.

**FIBREBOND NOT RESPONSIBLE FOR RIGGING**

THESE ILLUSTRATIONS ARE FOR REFERENCE ONLY. ALL RIGGING EQUIPMENT AND POINTS OF CONNECTION ARE THE RESPONSIBILITY OF THE RIGGER.

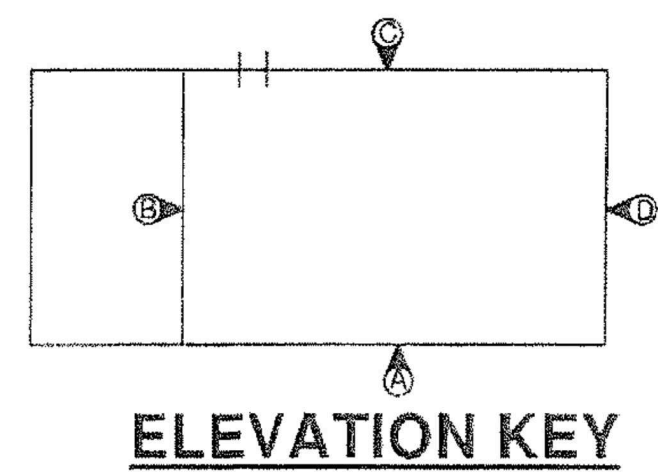
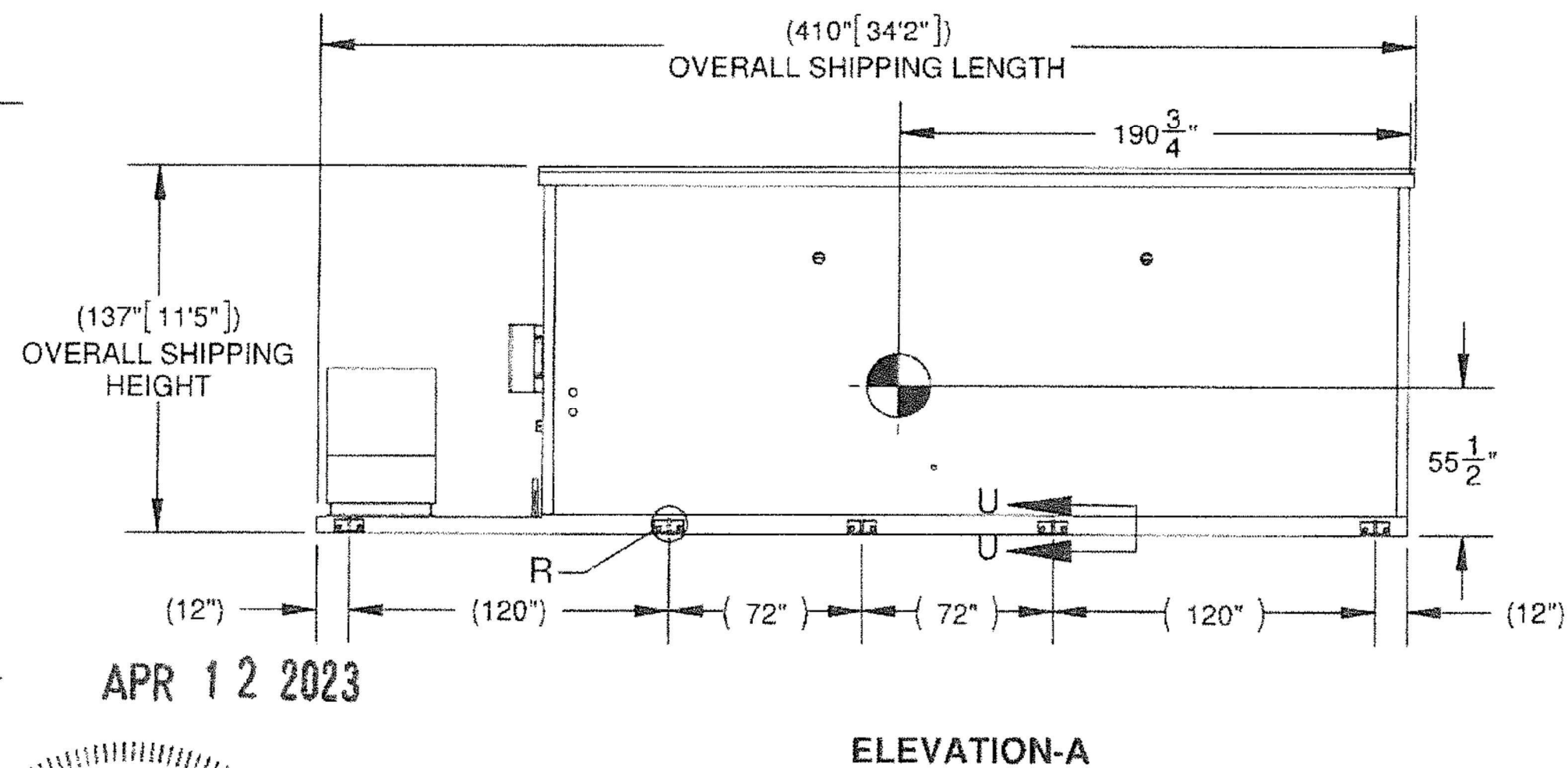
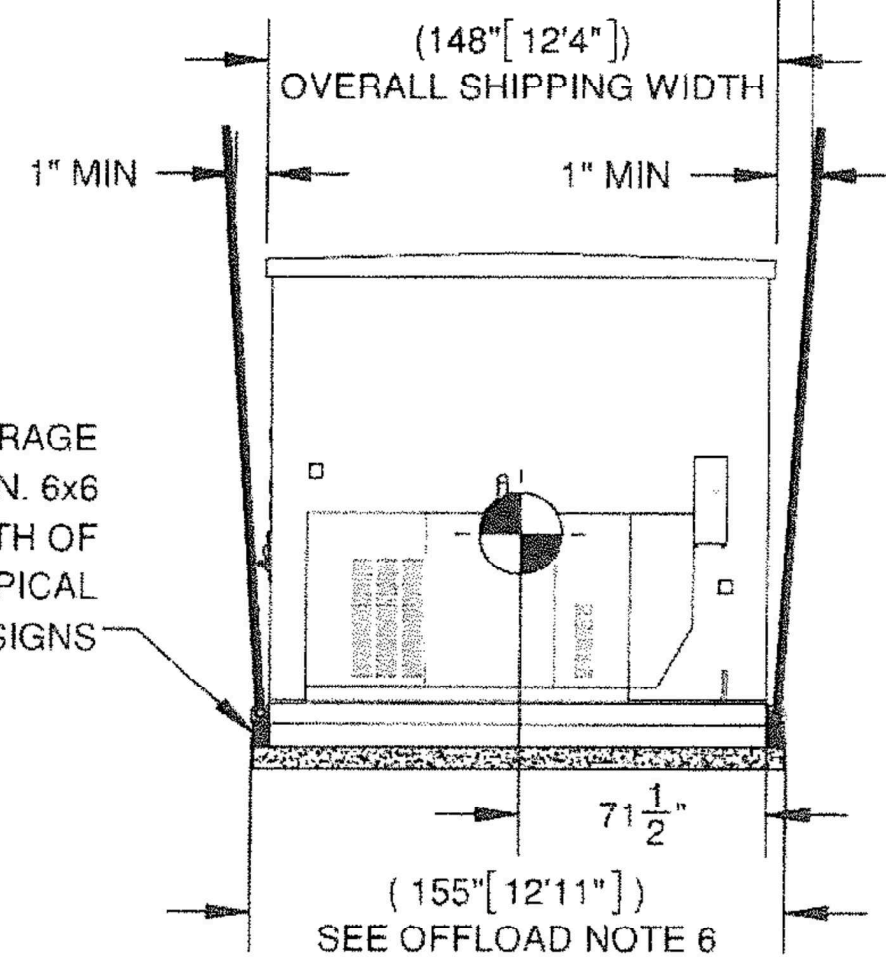
ALL WEIGHTS ARE ESTIMATED

RECOMMENDED THAT THE SPREADER BAR BE 2R WIDER THAN THE COMPONENT BEING LIFTED AND MINIMUM 4R ABOVE.



ISO VIEW

CABLE ANGLE SHOULD NOT EXCEED 5° (TYP. ALL LIFTING LOCATIONS)



REV.	BY	DATE	REVISION	APP.

STATE OF LOUISIANA

BRIAN S. CARLISLE

License No. 42886

PROFESSIONAL ENGINEER

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**F FIBREBOND**

ISSUED FOR: \*APPROVAL A.00\*

APPROVALS IN PDM DATABASE

THIRD ANGLE PROJECTION

SCALE: 1:96 SHEET NO. 1-2

SIZE: DWG NO. B D11546

**EQUIPMENT SHELTER SPECIFICATIONS (REFERENCE ONLY)** 1

SCALE: NONE

BLANCHARD, LA  
 0 PINE HILL ROAD  
 SHREVEPORT, LA 71107

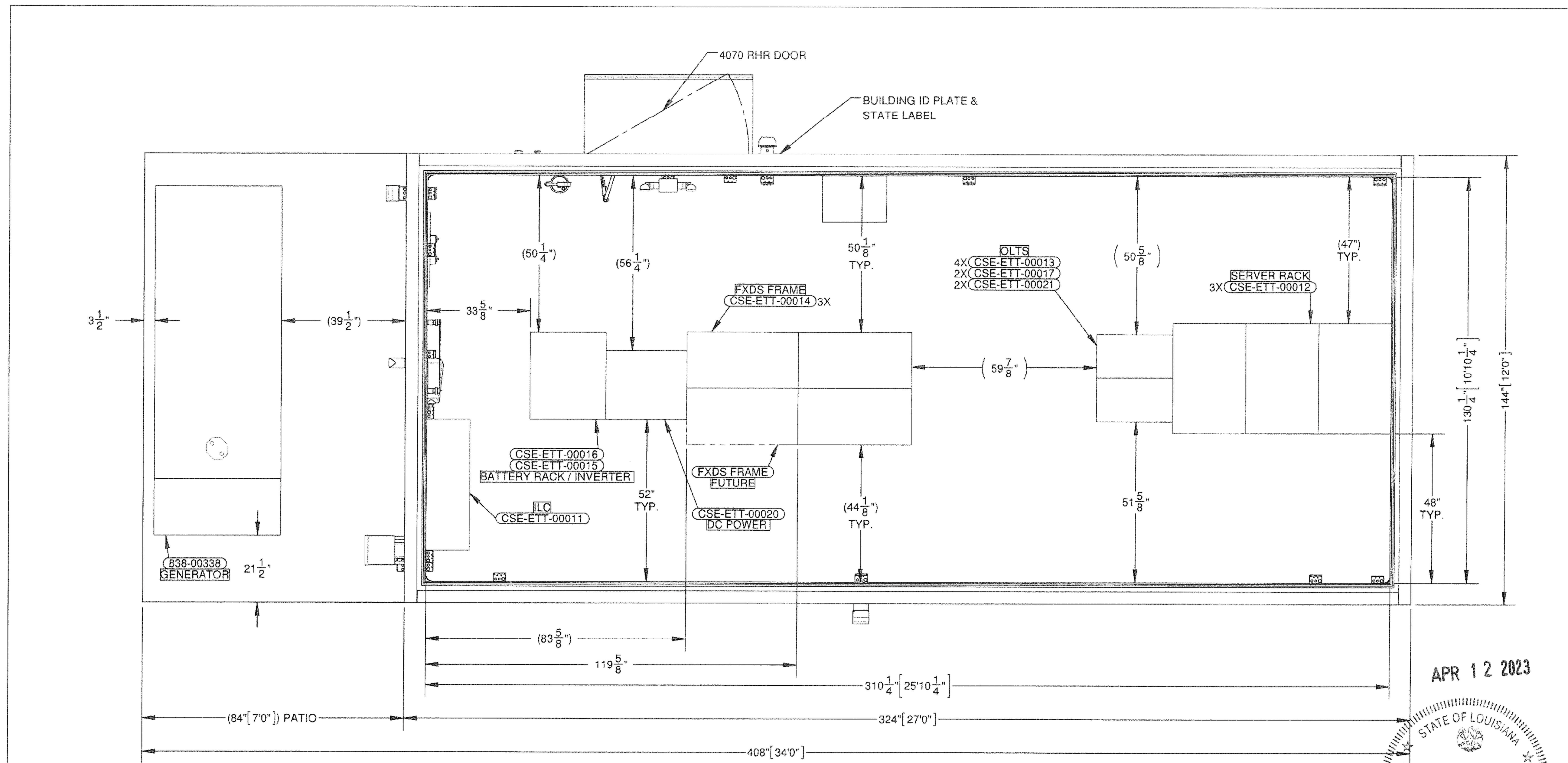
**REVISIONS**

REV.	ISSUED FOR	DATE	BY
A	FOR CLIENT REVIEW	08/10/23	ATK
B	SURVEY ADDITION	09/22/23	ATK
0	FINALS	08/05/24	JKR

CHECK: JKR  
 DRAWN: ATK  
 JOB: T2300445

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 PLUMBING \ ELECTRICAL \ LAND SURVEYING  
 ACCESSIBILITY CONSULTING \ STRUCTURAL

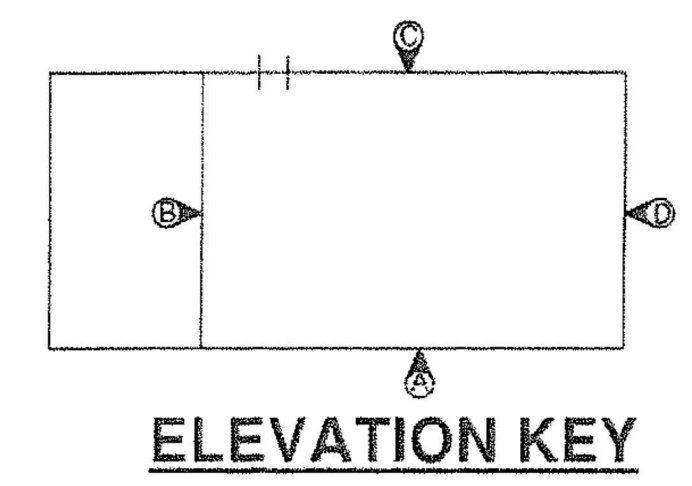
**S-1**  
 EQUIPMENT  
 SHELTER SPECIFICATIONS



**FLOOR PLAN**  
(408 SQ.FT)

APR 12 2023  
 STATE OF LOUISIANA  
 BRIAN S. CARLISLE  
 License No. 42368  
 PROFESSIONAL ENGINEER

**NOTE:**  
 1. SEE SHEET 1-3 FOR BUILDING NOTES



REV.		BY	DATE	REVISION	APP.

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EASTEX TOWERS				ISSUED FOR: <b>*APPROVAL A.00*</b>	
12' - 0" x 34' - 0" PATIO SHELTER				APPROVALS IN PDM DATABASE	
FLOOR PLAN				THIRD ANGLE PROJECTION	
DRN. BY: GD	DATE: 27-OCT-2022	APP. BY: PM	DATE:	SCALE: 1:32	SHEET NO. 2-1
CHK. BY: SR	DATE:	APP. BY:	DATE:	SIZE: B	DWG NO. D11546

**EQUIPMENT SHELTER SPECIFICATIONS (REFERENCE ONLY)**  
 SCALE: NONE

1

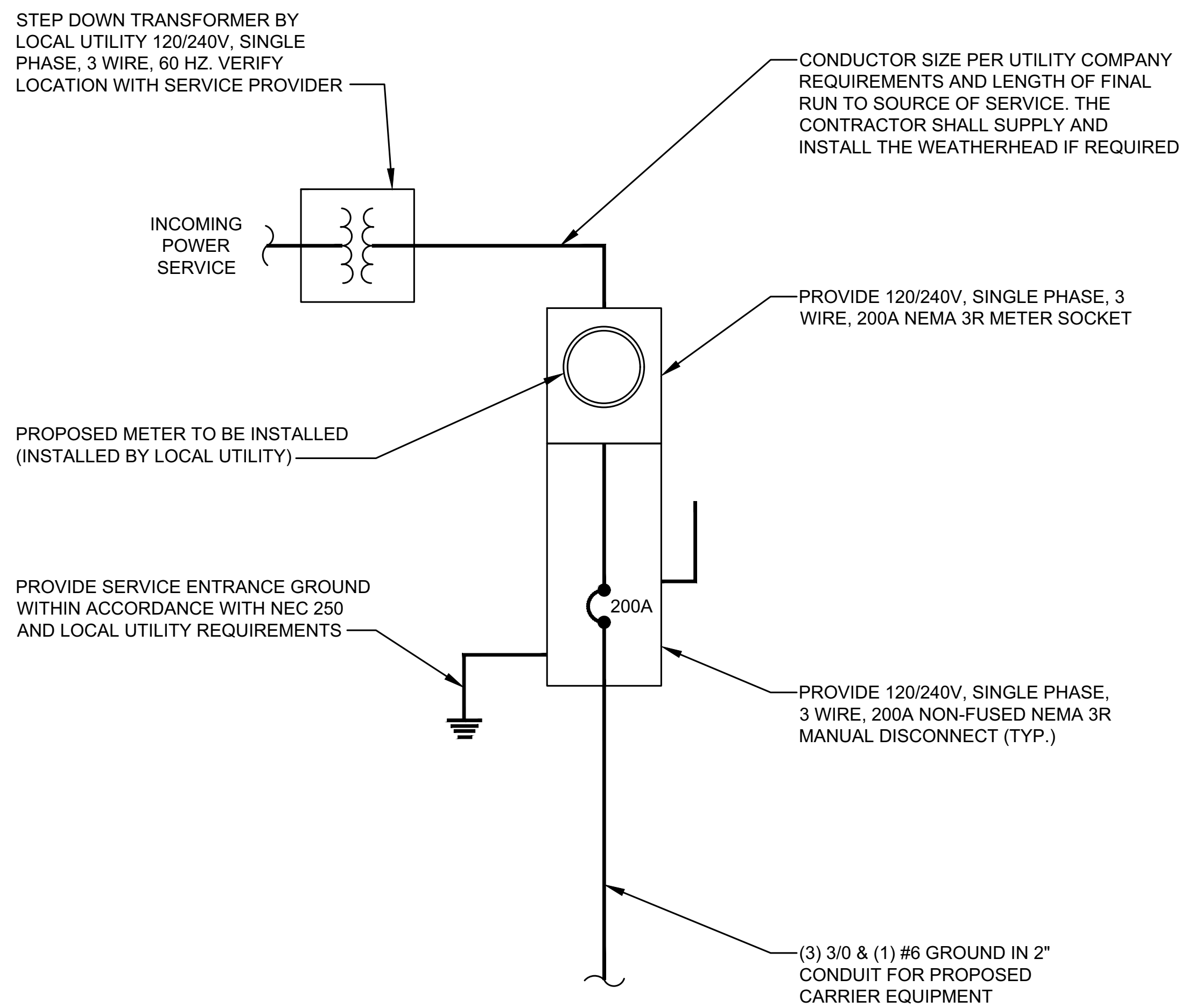
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CHECK: JKR  
 DRAWN: ATK  
 JOB: T2300445

**S-2**  
 EQUIPMENT  
 SHELTER SPECIFICATIONS

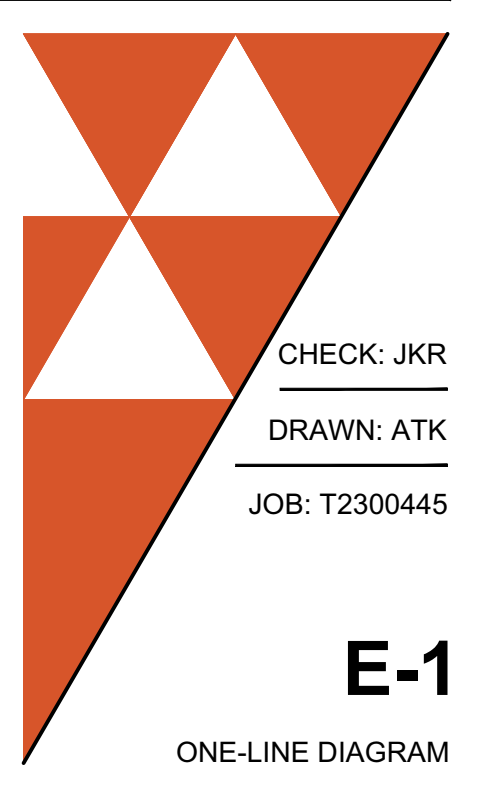


**ONE-LINE DIAGRAM**

SCALE: NONE

1

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CHECK: JKR  
 DRAWN: ATK  
 JOB: T2300445

**E-1**

ONE-LINE DIAGRAM



EXPIRES: 03/31/25 SIGNED: 08/05/24

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A	FOR CLIENT REVIEW	08/10/23	ATK
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**Sparklight**  
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LOAD				LOAD PER PHASE (VA)				WIRE COLOR	LOADS CONTINUOUS	LOADS NON-CONTINUOUS	LOADS SUB-PANEL	WIRE SIZE	GROUNDING WIRE SIZE	TRIP	TRIP	GROUNDING WIRE SIZE	WIRE SIZE	LOADS SUB-PANEL	LOADS NON-CONTINUOUS	LOADS CONTINUOUS	WIRE COLOR	LOAD															
DESCRIPTION	QTY.	UNIT V.A.	PHASE		WIRE COLOR	LOADS CONTINUOUS	LOADS NON-CONTINUOUS															LOADS SUB-PANEL	WIRE SIZE	GROUNDING WIRE SIZE	TRIP	TRIP	GROUNDING WIRE SIZE	WIRE SIZE	LOADS SUB-PANEL	LOADS NON-CONTINUOUS	LOADS CONTINUOUS	WIRE COLOR	PHASE		UNIT V.A.	QTY.	DESCRIPTION
			A	B																													A	B			
1	LIGHTING	6/1/1	36/15/6	237		BLK	X				12	12	20	20	12	12				X	BLK	540		180	3	DUPLEX RECEPTACLES	2	827-00071(A)									
3	SMOKE DETECTOR	2	12		24	RED	X				12	12	20	20	12	12				X	RED		720	160	4	DUPLEX RECEPTACLES	4	827-00071(B)									
5	BLOCK HEATER	1	1500	1500		BLK	X				12	12	20	20	(12)	12				X	BLK	360		180	2	GFCI RECEPTACLES	6	827-00085									
7	BATTERY CHARGER	1	180	180		RED	X				12	12	20	20	(12)	12				X	RED		180	180	1	TWIST-LOCK RECEPTACLES	8	827-13663(A)									
9	RECTIFIER #1	1	1200	1200		BLK	X						30	20	(12)	12				X	BLK	180		180	1	TWIST-LOCK RECEPTACLES	10	827-13663(B)									
11		1	1200	1200		RED	X							30	20	(12)	12				X	RED		180	180	1	TWIST-LOCK RECEPTACLES	12	827-13663(C)								
13	RECTIFIER #2	1	1200	1200		BLK	X						30	20	(12)	12				X	BLK	180		180	1	TWIST-LOCK RECEPTACLES	14	827-13663(D)									
15		1	1200	1200		RED	X							30	20	(12)	12				X	RED		180	180	1	TWIST-LOCK RECEPTACLES	16	827-13663(E)								
17	RECTIFIER #3	1	1200	1200		BLK	X						30	20	(12)	12				X	BLK	180		180	1	TWIST-LOCK RECEPTACLES	18	827-13663(F)									
19		1	1200	1200		RED	X							30	20	(12)	12				X	RED		180	180	1	TWIST-LOCK RECEPTACLES	20	827-13663(G)								
21	RECTIFIER #4	1	1200	1200		BLK	X						30	30	10	10				X	BLK	1200		1200	1	RECTIFIER #9	22										
23		1	1200	1200		RED	X							30	30	10	10				X	RED	1200		1200	1	RECTIFIER #9	24									
25	RECTIFIER #5	1	1200	1200		BLK	X						30	30	10	10				X	BLK	1200		1200	1	RECTIFIER #10	26										
27		1	1200	1200		RED	X							30	30	10	10				X	RED	1200		1200	1	RECTIFIER #10	28									
29	RECTIFIER #6	1	1200	1200		BLK	X						30	30	10	10				X	BLK	1200		1200	1	RECTIFIER #11	30										
31		1	1200	1200		RED	X							30	30	10	10				X	RED	1200		1200	1	RECTIFIER #11	32									
33	RECTIFIER #7	1	1200	1200		BLK	X						30	30	10	10				X	BLK	1200		1200	1	RECTIFIER #12	34										
35		1	1200	1200		RED	X							30	30	10	10				X	RED	1200		1200	1	RECTIFIER #12	36									
37	RECTIFIER #8	1	1200	1200		BLK	X						30	30	10	10				X	BLK				1	SURGE ARRESTOR	38										
39		1	1200	1200		RED	X							30	30	10	10				X	RED				1	SURGE ARRESTOR	40	825-00053								
41	SPACE					BLK							30	30												SPACE	42										
SUBTOTAL CONTINUOUS				11,337	9,804																6,240	6,240	SUBTOTAL CONTINUOUS	TOTAL KVA CONTINUOUS x 1.25	42.03												
SUBTOTAL NON-CONTINUOUS				0	0																	0	0	SUBTOTAL NON-CONTINUOUS	TOTAL KVA NON-CONTINUOUS	0											
SUBTOTAL SUB-PANEL				0	0																	0	0	SUBTOTAL SUB-PANEL	TOTAL KVA SUB-PANEL	0											
TOTAL KVA																											42.03										
TOTAL AMPS																											175.13										

- NOTES:
- ALL WIRE TO BE #12 THHN/THWN UNLESS NOTED OTHERWISE. COLOR CODE:
    - AØ = BLACK
    - BØ = RED
    - NEUTRAL = WHITE
    - GROUND = GREEN
  - ALL WORK TO CONFORM TO N.E.C. LATEST STATE ADOPTED EDITION.
  - LABEL SERVICE DISCONNECT WITH A RED TAG.
  - SWITCH LEG CONDUCTORS SHALL BE THE SAME COLOR AS CIRCUIT CONDUCTORS.
  - INSTALL 1/2" CHASE NIPPLE. COIL 10'-0" OF WIRE & TAG.
  - ALL GFCI RECEPTACLES TO HAVE A DEDICATED GROUND WIRE.
  - SEE ELECTRICAL SCHEMATIC #2 SHEET FOR MORE DETAILS.
  - PULL SEPARATE GROUND CONDUCTOR FOR EACH CIRCUIT.
  - EQUIPMENT TERMINATION LUGS & CONDUCTORS ARE RATED AT A MINIMUM OF 75° C.
  - MOUNT 1-GANG JUNCTION BOX/DUPLEX RECEPTACLE ON GENERATOR. CKT#10 BLOCK HEATER & BATTERY WARMER CORDS PLUG INTO THIS RECEPTACLE.
  - GENERATOR: BATTERY CHARGER CORD SHALL BE PLUGGED INTO FACTORY SUPPLIED BATTERY CHARGER RECEPTACLE(CLOSEST RECEPTACLE TO GENERATOR).

APR 12 2023

STATE OF LOUISIANA

BRIAN S. CARLISLE  
License No. 42008

PROFESSIONAL ENGINEER

KEY:  
 (PC) = PHOTOCCELL  
 (M) = MOTION DETECTOR  
 - = CONDUIT GROUND  
 # = NON-DEDICATED GROUND  
 (#) = DEDICATED GROUND  
 <#> = ISOLATED GROUND

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**ELECTRICAL PANEL SCHEDULE (REFERENCE ONLY)**

SCALE: NONE

1

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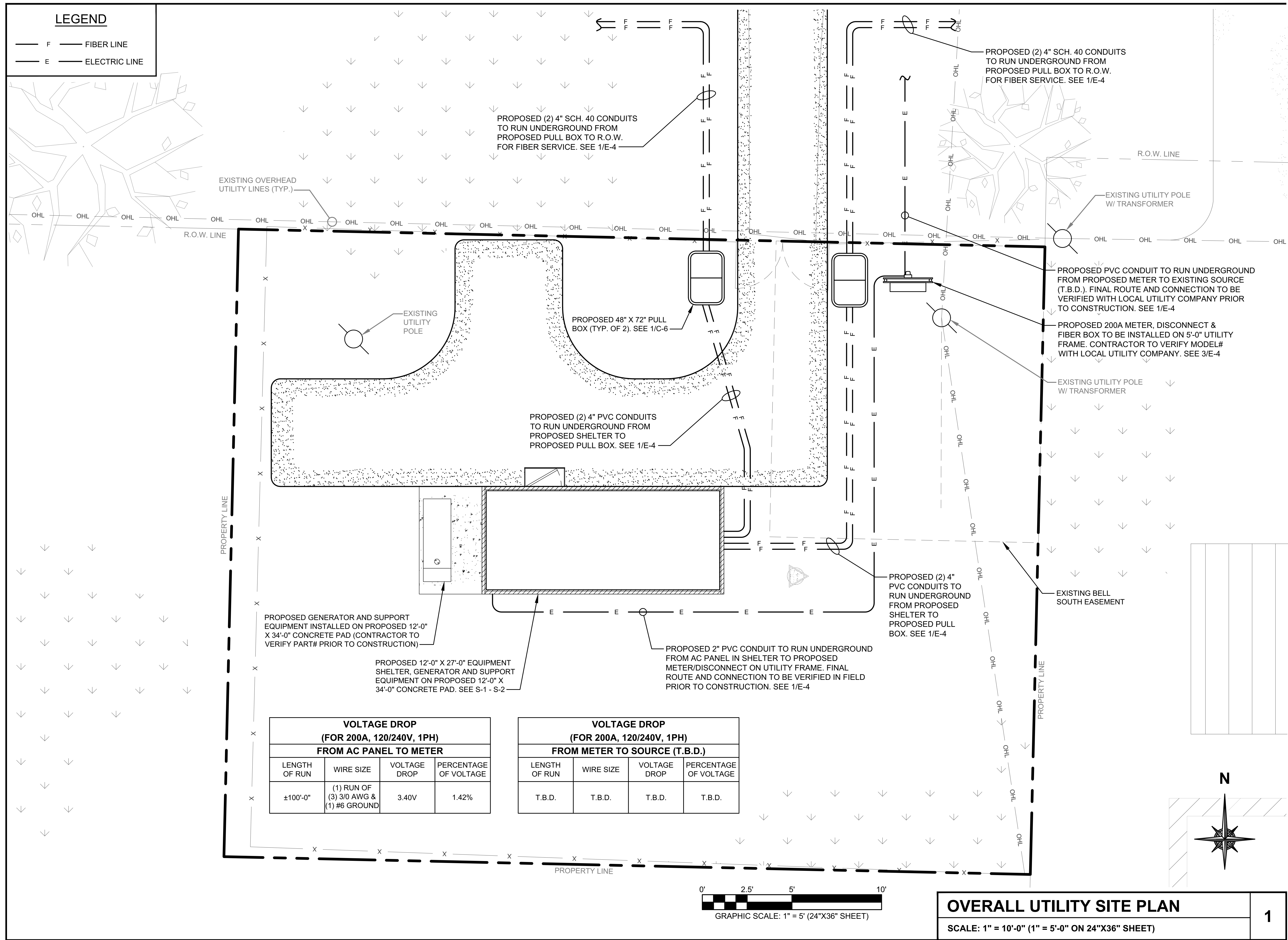
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DRAWN: ATK  
JOB: T2300445

**E-2**  
ELECTRICAL  
PANEL SCHEDULE

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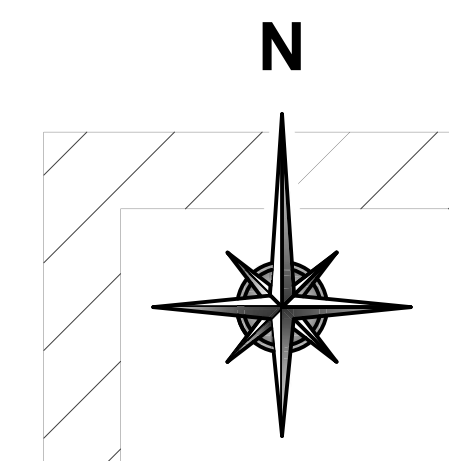
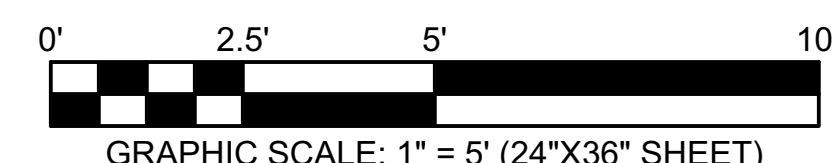
**LEGEND**

- F — FIBER LINE
- E — ELECTRIC LINE



VOLTAGE DROP (FOR 200A, 120/240V, 1PH) FROM AC PANEL TO METER			
LENGTH OF RUN	WIRE SIZE	VOLTAGE DROP	PERCENTAGE OF VOLTAGE
±100'-0"	(1) RUN OF (3) 3/0 AWG & (1) #6 GROUND	3.40V	1.42%

VOLTAGE DROP (FOR 200A, 120/240V, 1PH) FROM METER TO SOURCE (T.B.D.)			
LENGTH OF RUN	WIRE SIZE	VOLTAGE DROP	PERCENTAGE OF VOLTAGE
T.B.D.	T.B.D.	T.B.D.	T.B.D.



**OVERALL UTILITY SITE PLAN**  
SCALE: 1" = 10'-0" (1" = 5'-0" ON 24"X36" SHEET)

1

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EXPIRES: 03/31/25    SIGNED: 08/05/24

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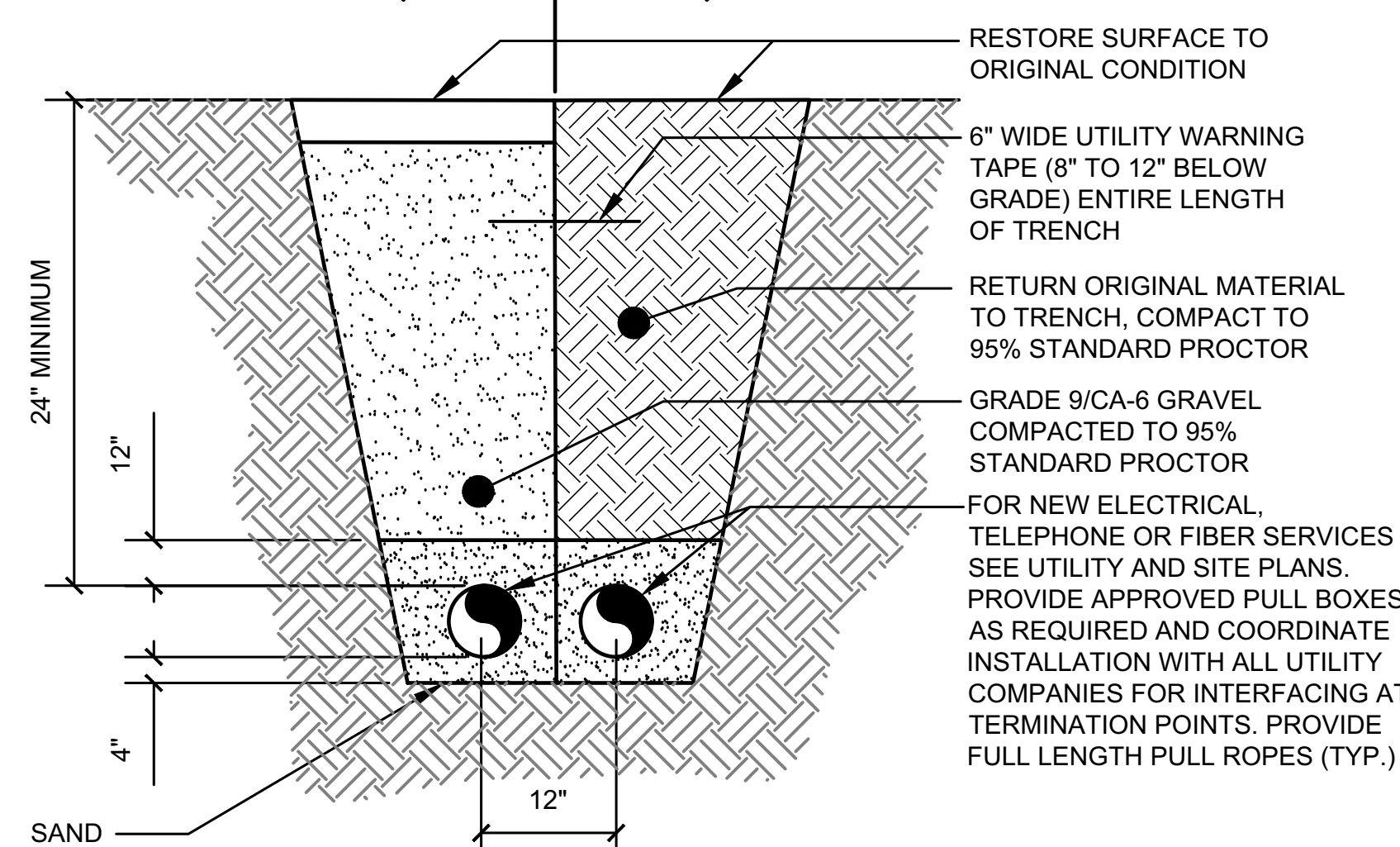
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DRAWN: ATK  
JOB: T2300445

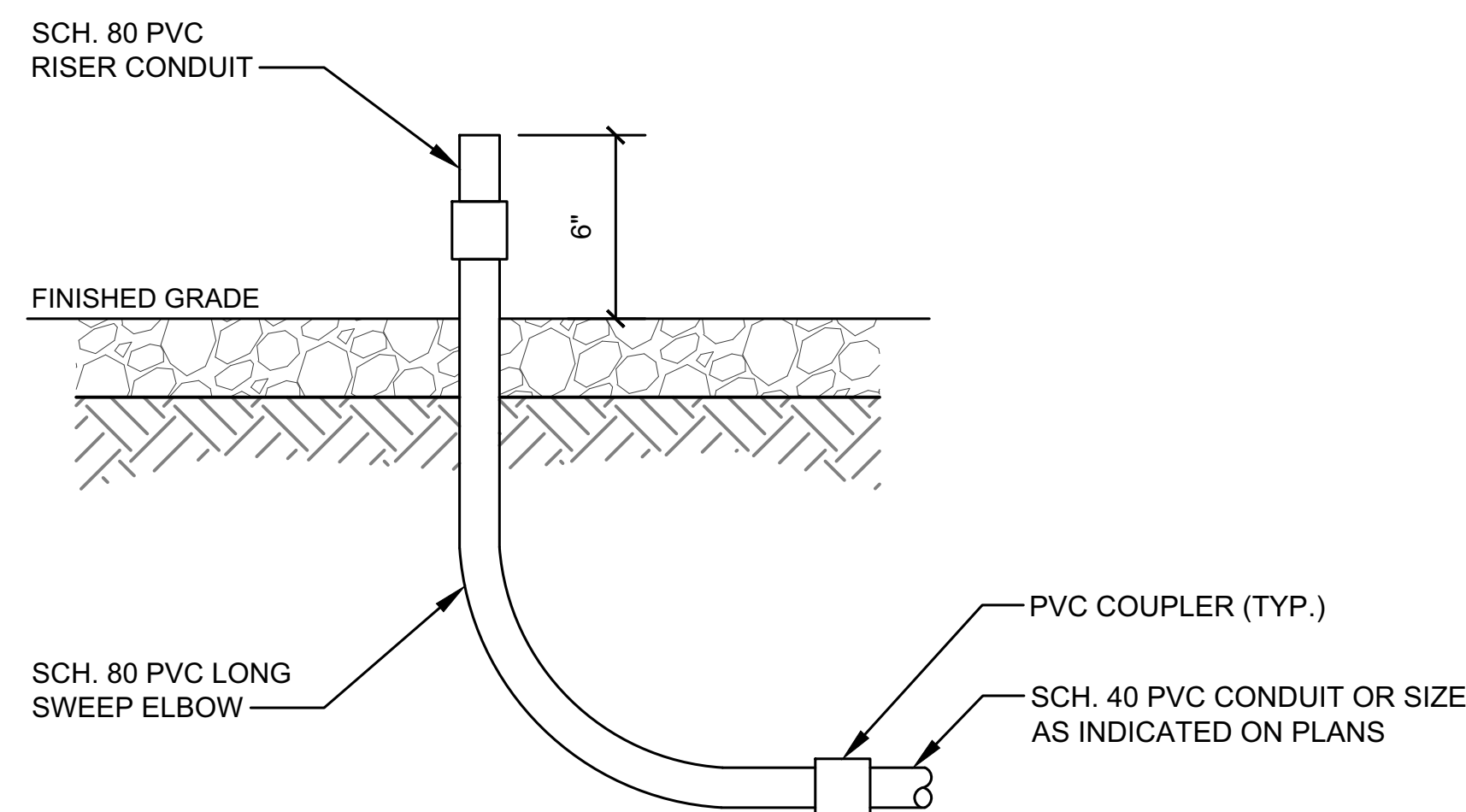
**E-3**  
OVERALL  
UTILITY SITE PLAN

USE THIS SECTION UNDER PAVEMENT OR VEHICLE TRAFFIC AREA

USE THIS SECTION UNDER GRASS OR LAWN AREA

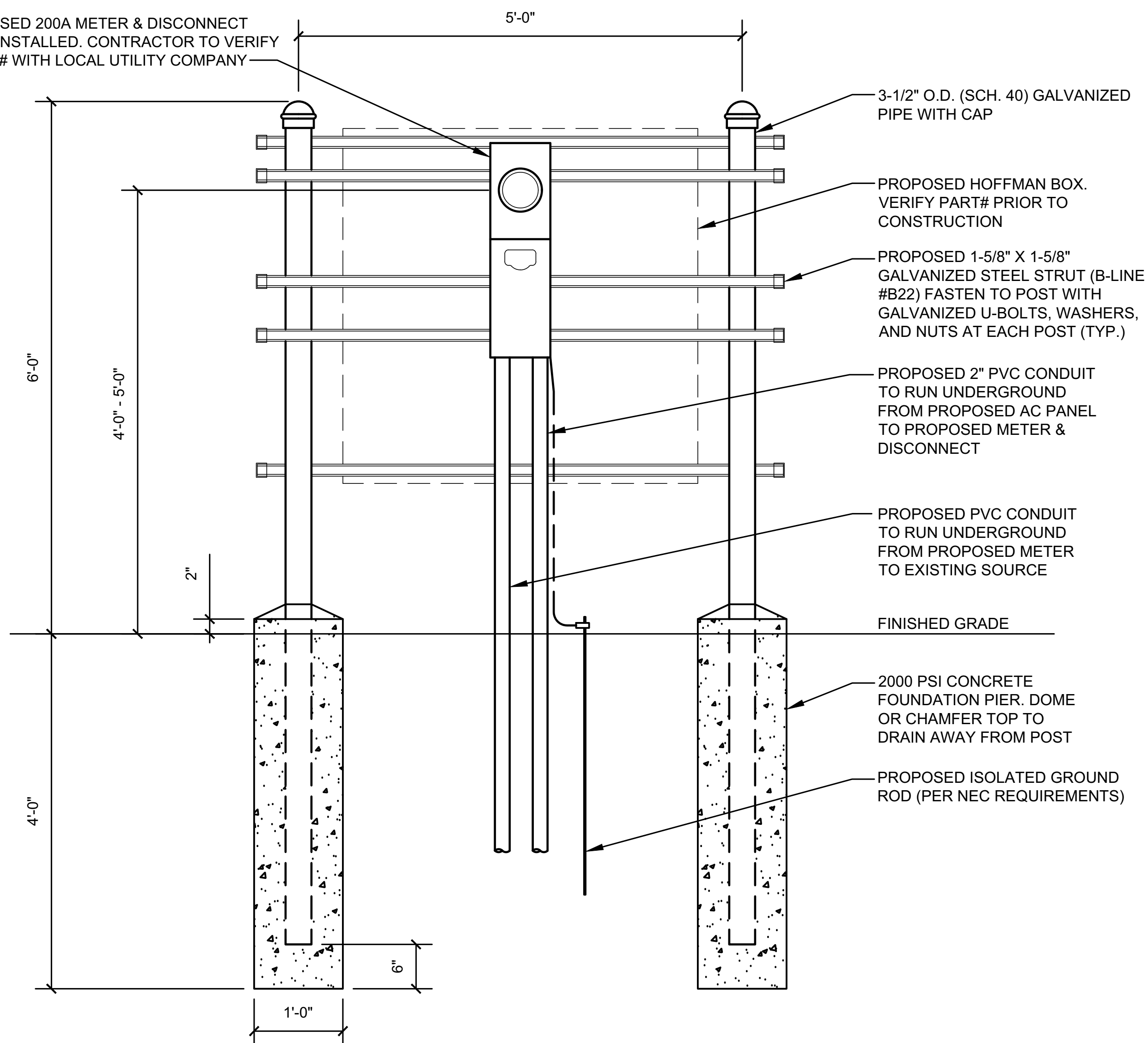


**UTILITY TRENCH DETAIL**  
SCALE: NONE **1**



**SCH 40 TO SCH 80 PVC TRANSITION DETAIL**  
SCALE: NONE **2**

PROPOSED 200A METER & DISCONNECT TO BE INSTALLED. CONTRACTOR TO VERIFY MODEL# WITH LOCAL UTILITY COMPANY



**H-FRAME DETAIL**  
SCALE: NONE **3**

**NOT USED**  
SCALE: NONE **4**

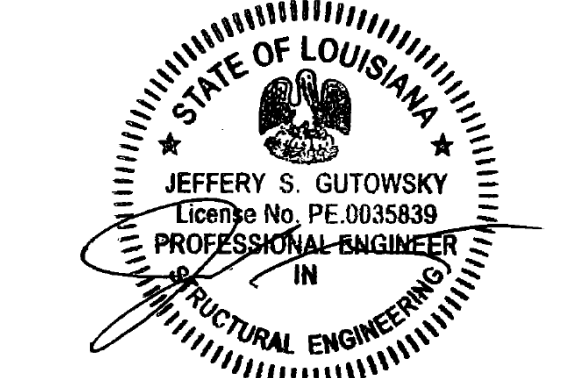
**ET TOWER**

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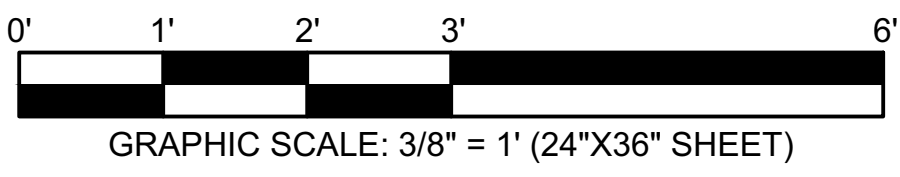
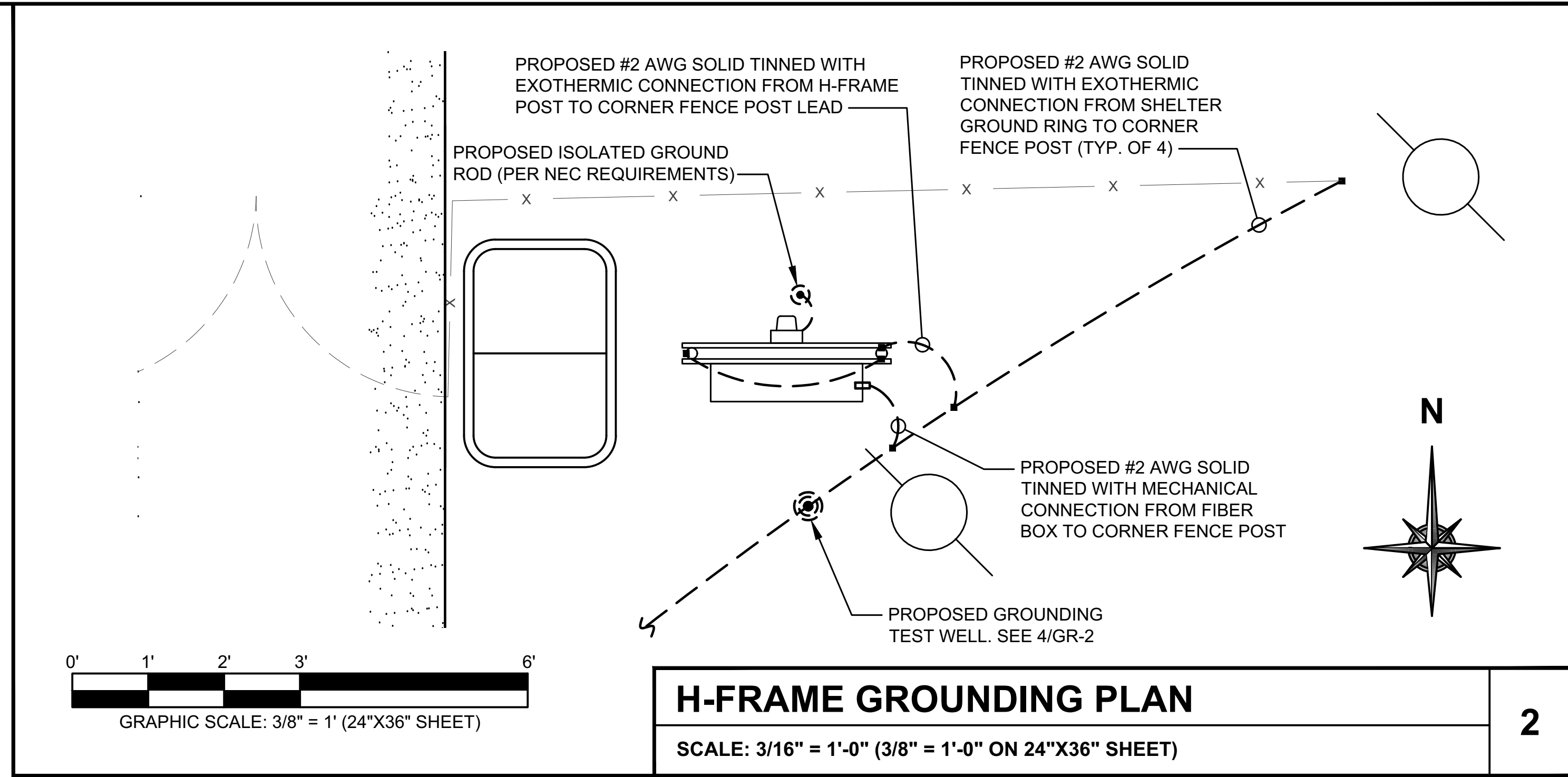
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DRAWN: ATK  
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**E-4**  
UTILITY DETAILS

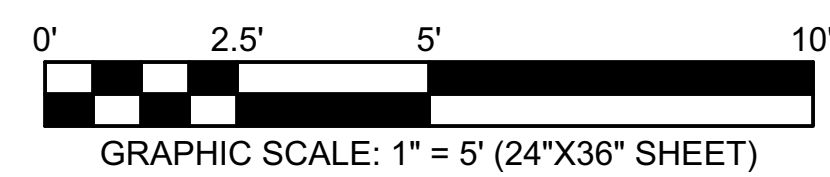
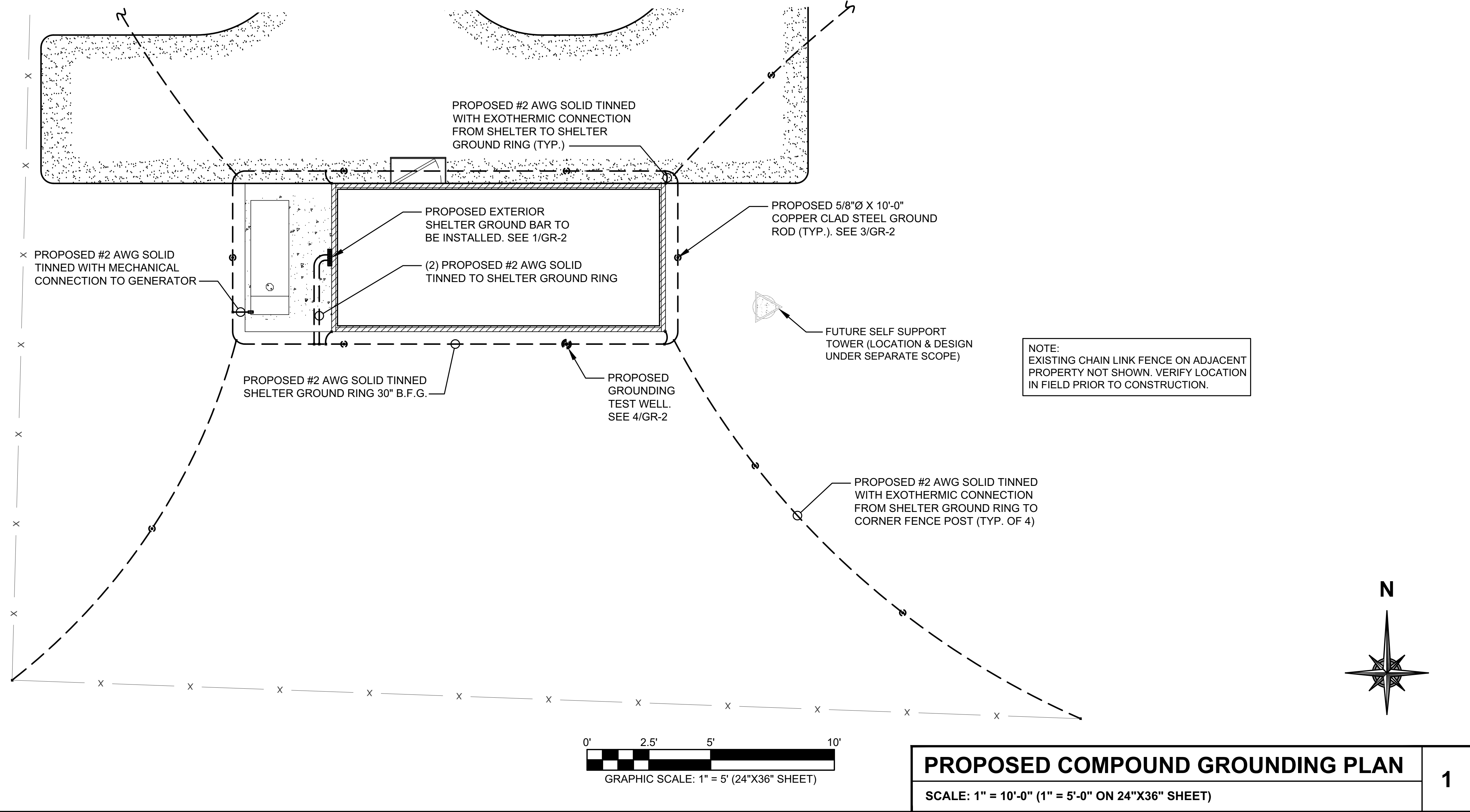
**LEGEND**

-  EXOTHERMIC WELD
-  MECHANICAL CONNECTION
-  TEST WELL
-  GROUND ROD
-  #2 AWG SOLID TINNED COPPER

NOTE:  
CONTRACTOR TO VERIFY FINAL  
GROUNDING SYSTEM RESISTANCE  
TO BE UNDER 5 OHMS.



**H-FRAME GROUNDING PLAN**  
SCALE: 3/16" = 1'-0" (3/8" = 1'-0" ON 24"X36" SHEET) 2



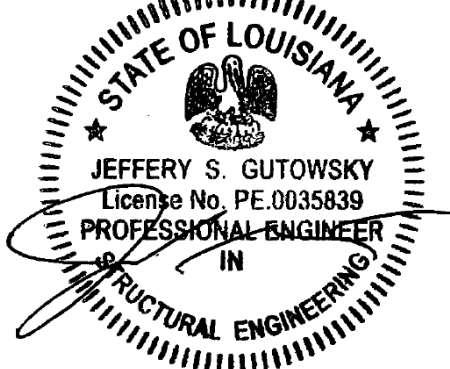
**PROPOSED COMPOUND GROUNDING PLAN**  
SCALE: 1" = 10'-0" (1" = 5'-0" ON 24"X36" SHEET) 1





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PROFESSIONAL ENGINEER  
IN  
STRUCTURAL ENGINEERING

EXPIRES: 03/31/25    SIGNED: 08/05/24

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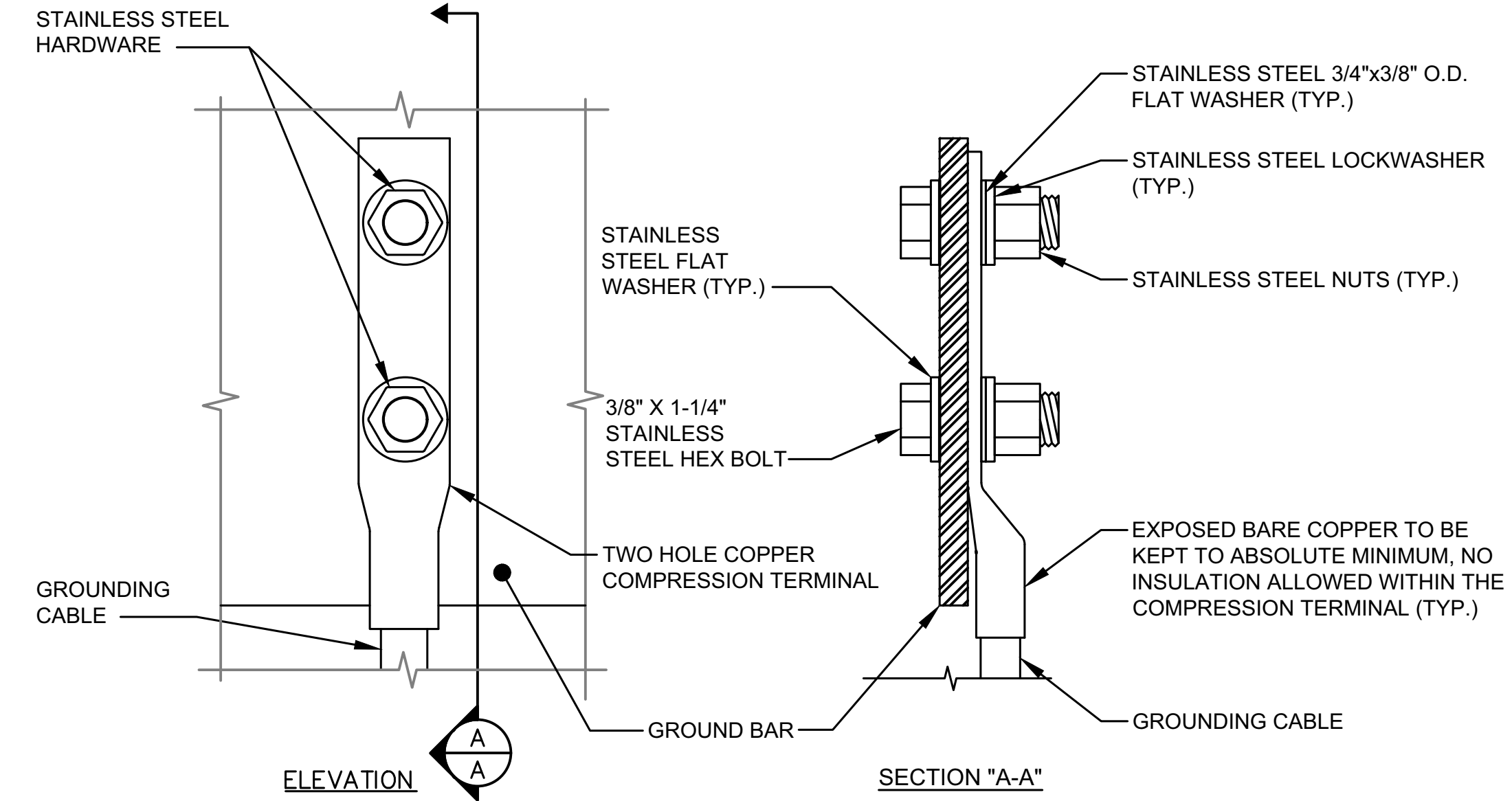
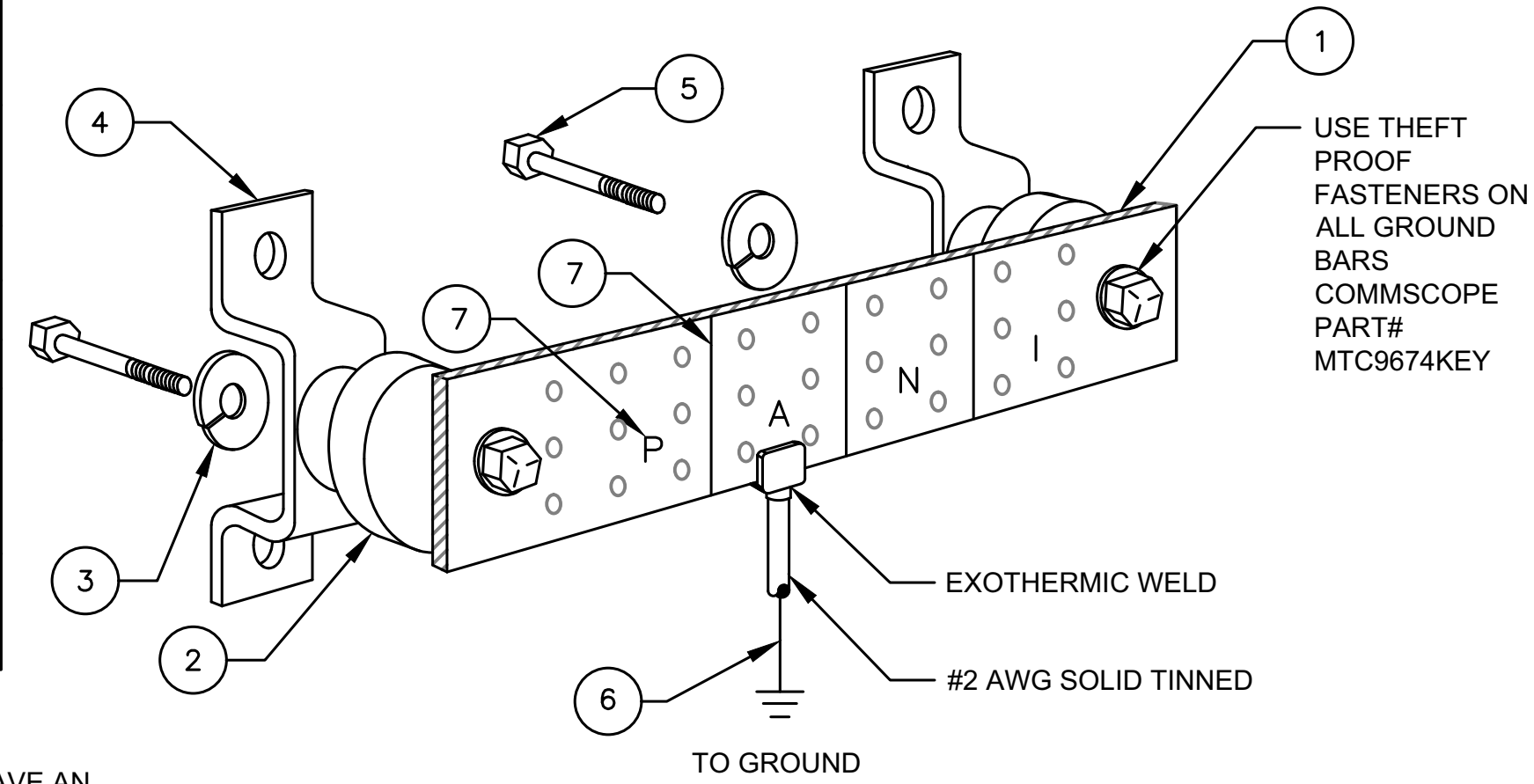
DRAWN: ATK

JOB: T2300445

**GR-1**  
PROPOSED COMPOUND  
GROUNDING PLAN

**KEY NOTES:**

1.	1/4" THK ELECTRICAL TINNED GROUND BAR HARGER OR APPROVED EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2.	INSULATORS (UNLESS NOTED OTHERWISE)
3.	3/8" STAINLESS STEEL LOCKWASHERS
4.	WALL MOUNTING BRACKET
5.	3/8" STAINLESS STEEL BNLF BOLTS
6.	EXOTHERMICALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD
7.	CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS



- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS
- NO CRIMPING OF SOLID #2. USE EXOTHERMIC WELD ONLY

NOTES:  
 -EXTERIOR GROUND BARS TO BE TIN PLATED  
 -HARDWARE SHALL BE STAINLESS STEEL  
 -CONTRACTOR SHALL GROUP INCOMING WIRES  
 -CONTRACTOR TO APPLY 'KOPR-SHIELD' TO ALL CONNECTIONS

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

**SECTION "P" - SURGE PRODUCERS**

- COLLECTOR GROUND BAR
- GENERATOR FRAMEWORK (IF AVAILABLE)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND
- FIBER GROUND BAR
- EQUIPMENT ROOM COLLECTOR GROUND BAR
- HVAC
- RECTIFIER FRAMES

**SECTION "N" - NON-ISOLATED GROUND ZONE EQUIPMENT**

- MISCELLANEOUS NON-ISOLATED GROUND ZONE EQUIPMENT
- CABLE TRAY SYSTEM
- EQUIPMENT FRAMES
- BATTERY RACKS
- DC POWER

**SECTION "I" - ISOLATED GROUND ZONE**

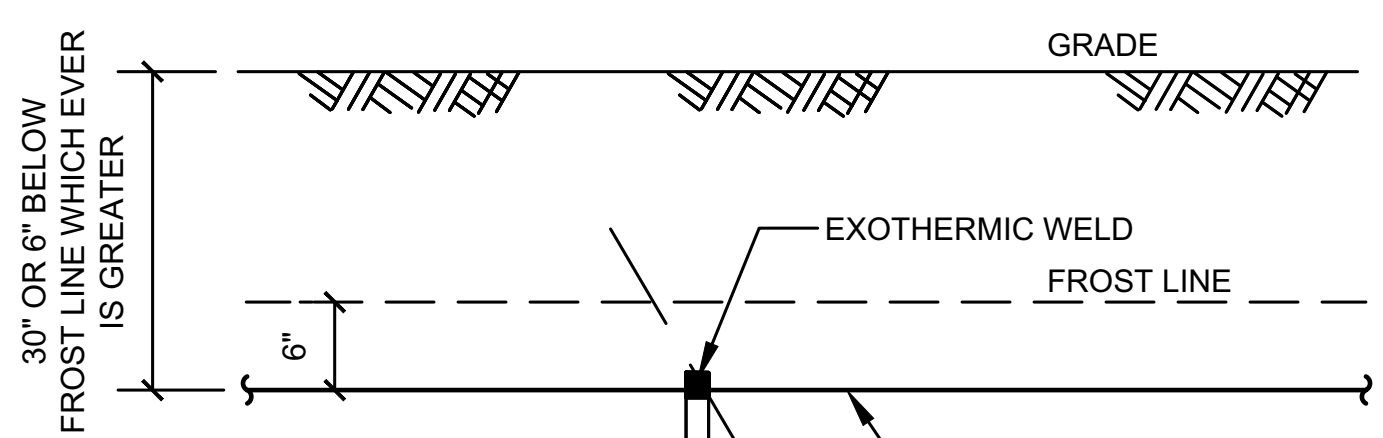
- ISOLATED EQUIPMENT FRAMES
- ISOLATED GROUND BAR - IGB

**SECTION "A" - SURGE ABSORBERS**

- INTERIOR GROUND RING
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING)
- METALLIC COLD WATER PIPE (IF AVAILABLE)
- BUILDING STEEL (IF AVAILABLE)
- AC POWER

**GROUND BAR DETAIL**  
SCALE: NONE 1

**GROUND BAR CONNECTION DETAIL**  
SCALE: NONE 2

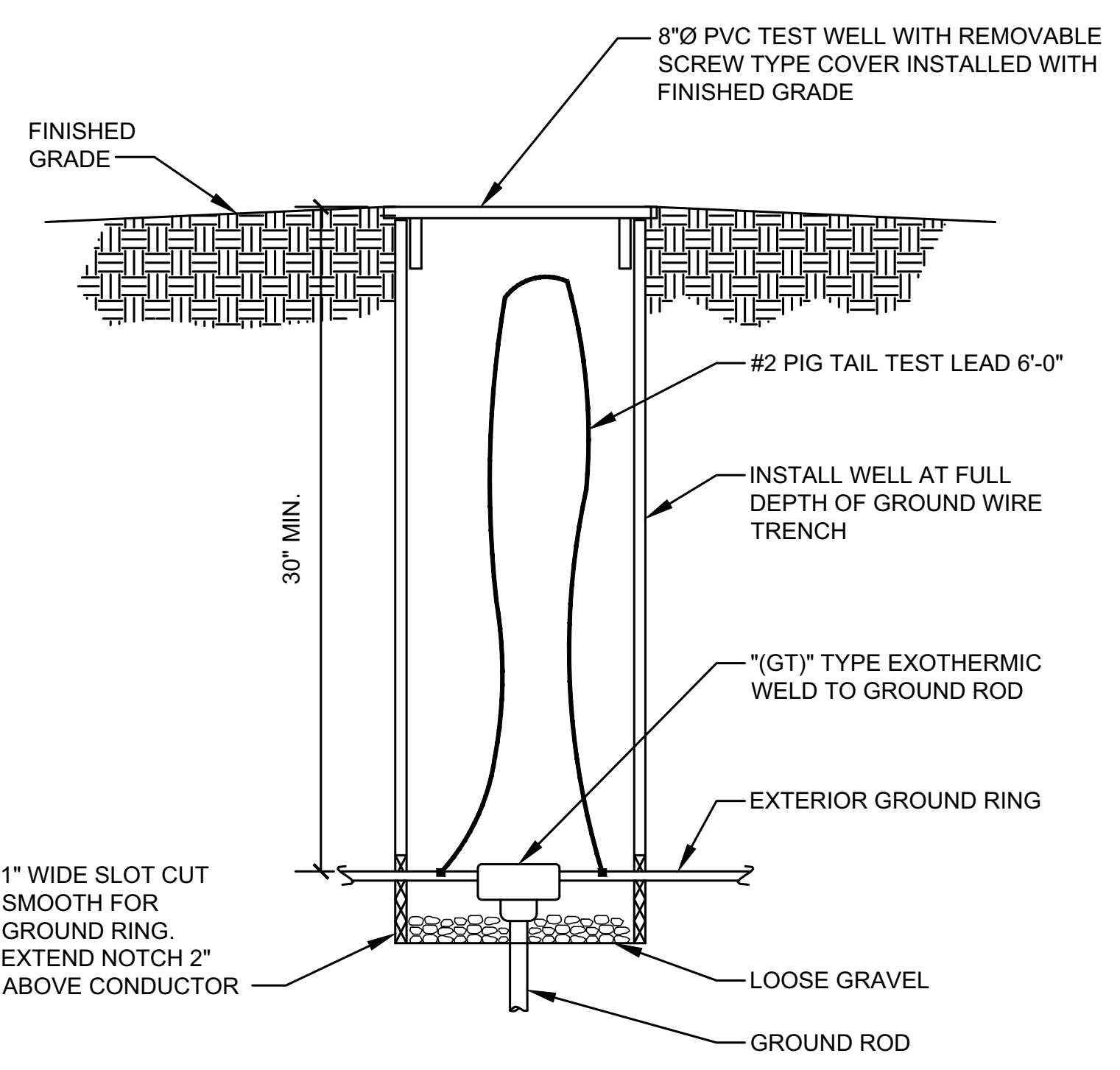


- NOTES:
- GROUND RODS INSTALLED WITHIN CLOSE PROXIMITY TO TOWER OR WHEN SOIL IS AT OR BELOW 2,000 OHM-CM, SHALL BE GALVANIZED TO PREVENT GALVANIC CORROSION OF TOWER, (SEE ANSI/ITA-222)
  - SEE RESISTIVITY REPORT FOR VERIFICATION AS AVAILABLE
  - GROUND RODS SHALL HAVE A MAXIMUM SPACING TWICE THE LENGTH OF THE ROD
  - GROUND RODS MAY BE:  
 -COPPER CLAD STEEL  
 -SOLID COPPER
  - A LARGER CONDUCTOR SHALL BE REQUIRED IN AREAS HIGHLY PRONE TO LIGHTNING AND/OR AREAS WITH HIGHLY ACIDIC SOIL
  - GROUND RING SHALL BE INSTALLED AT GREATEST DEPTH POSSIBLE AND BELOW PERMANENT MOISTURE LEVEL

#2 BARE SOLID TINNED OR LARGER GROUND RING PER NFPA 70, ARTICLE 250-66. GROUND RING SHALL BE INSTALLED AT GREATEST DEPTH POSSIBLE AND BELOW PERMANENT MOISTURE LEVEL

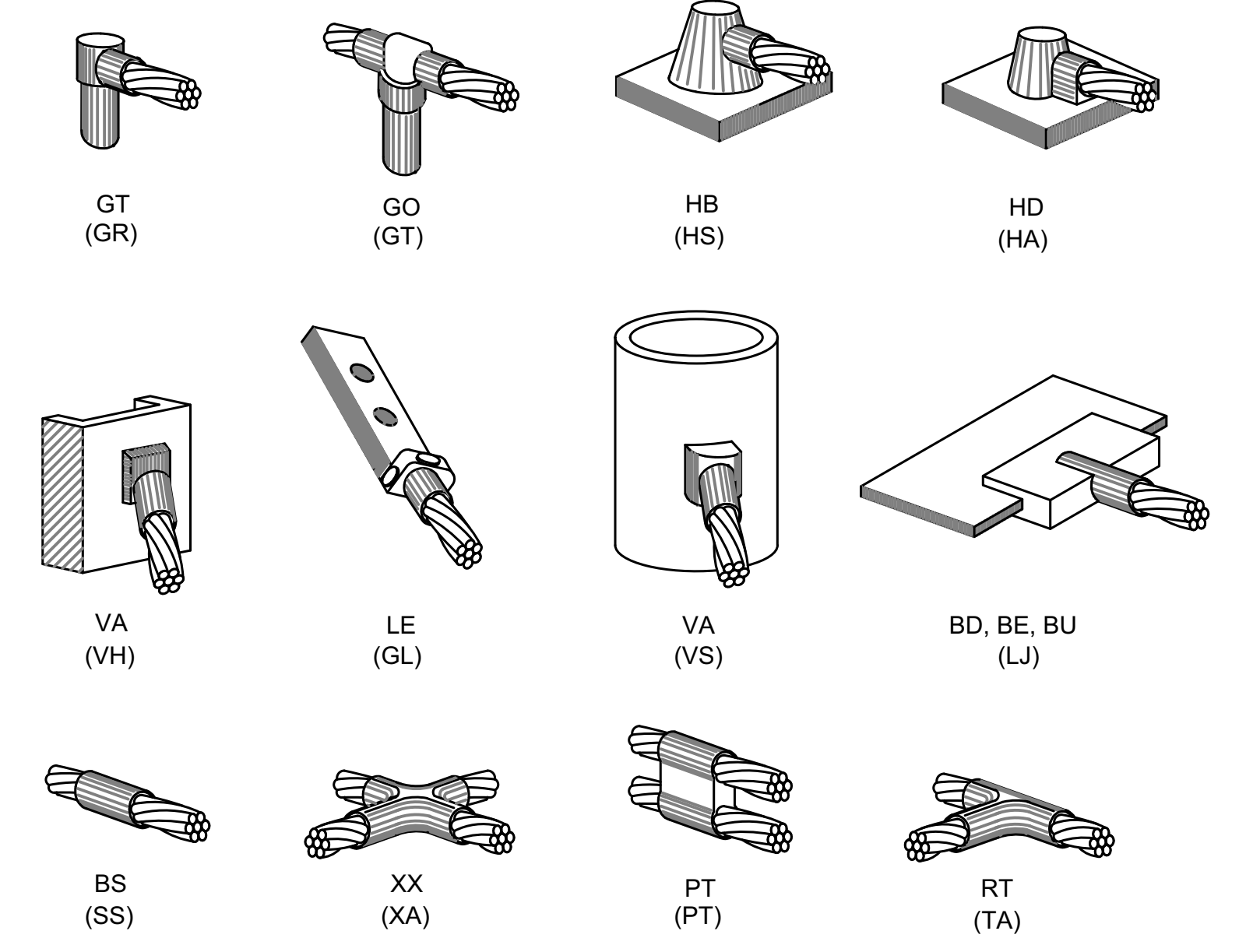
ANGLE OF GROUND ROD SHALL NOT EXCEED 45°

GROUND ROD: HARGER 5810 OR EQUAL 5/8" DIA. X 10'-0" LONG, MIN. CONTRACTOR SHALL VERIFY WITH OWNER SPECIFICATION FOR MINIMUM SIZE OF GROUND ROD TO BE INSTALLED



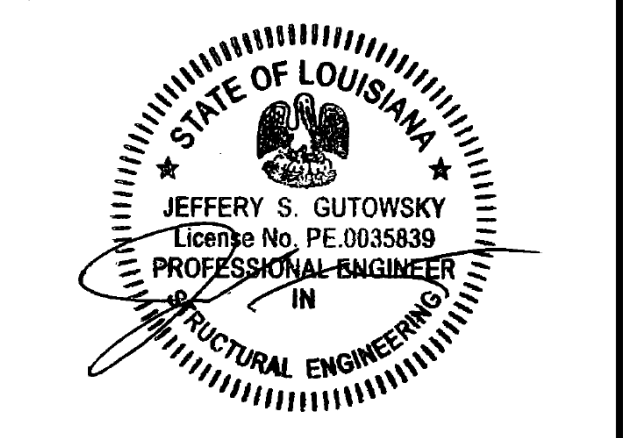
**TEST WELL DETAIL**  
SCALE: NONE 4

NOTE:  
 THE FOLLOWING SYMBOLS SHOWN ARE HARGER ULTRAWELD EXOTHERMIC CONNECTIONS WITH PART NUMBERS BELOW. THESE CONNECTIONS MAY BE CROSS-REFERENCED WITH CADWELD CONNECTIONS WHICH ARE SHOWN IN PARENTHESIS.



**EXOTHERMIC WELD TYPES**  
SCALE: NONE 5

**GROUND ROD DETAIL**  
SCALE: NONE 3



EXPIRES: 03/31/25 SIGNED: 08/05/24

REV.	ISSUED FOR	DATE	BY
A	FOR CLIENT REVIEW	08/10/23	ATK
B	SURVEY ADDITION	09/22/23	ATK
0	FINALS	08/05/24	JKR

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CHECK: JKR  
 DRAWN: ATK  
 JOB: T2300445

**GR-2**  
 GROUNDING DETAILS

**Sparklight**



**ET TOWER**

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