PARCEL NUMBER: 12-3S-17-04927-000

LOCATION MAP

AERIAL MAP

APPROVALS

PENDING APPROVAL OF THE JURISDICTION, THE FOLLOWING PARTIES HAVE REVIEWED THE DESIGN WITHIN THEIR FUNCTIONAL RESPONSIBILITIES AND HAVE APPROVED THIS PROJECT FOR CONSTRUCTION. CONTRACTORS MAY NOT START CONSTRUCTION WITHOUT A NOTICE TO PROCEED (NTP).

	PRINT NAME	SIGNATURE	DATE
LANDLORD			
PRECON. MGR			
DEVELOP. MGR			
CONST. INSP.			
A&E MGR			
RF ENGINEER			
OPERATIONS			
ZONING REP			
UTILITIES			

CITYSWITCH II-A

NEW SITE BUILD

SITE NAME/NUMBER

OTTER BAY / FLC014
COLUMBIA COUNTY

SITE ADDRESS

STILL ROAD
LAKE CITY, FL 32055

FA NUMBER

15123847

PACE JOB NUMBER

MRTFL001205

RFDS NOTES

THESE CONSTRUCTION DRAWINGS ARE BASED ON RF DATA SHEET (RFDS) DATED 03/22/2020. CONTRACTOR SHALL CONFIRM WITH AT&T ON THE LATEST RFDS PRIOR TO CONSTRUCTION.

PROJECT DESCRIPTION

NEW 65'-0" x 65'-0" FENCED COMPOUND WITHIN NEW 100'-0" x 100'-0" LEASE AREA AND NEW 305'-0" SELF SUPPORT TOWER. NO NEW WATER OR SEWER IS REQUIRED AS FACILITY IS UNMANNED.

UTILITIES

ELECTRIC:
CLAY ELECTRIC CO-OP
CONTACT: T.B.D.
TEL: T.B.D.

TELEPHONE:
WINDSTREAM
CONTACT: T.B.D.
TEL: T.B.D.

CONTACTS

PROPERTY OWNER:
CLYDE F. VARNES
535 NE CLYDE VARNES ROAD
LAKE CITY, FL 32055

TOWER OWNER:
CITYSWITCH II-A
1900 CENTURY PLACE NE, SUITE 320
ATLANTA, GA 30345

Sunshine811

*** CAUTION ***

THE UTILITIES SHOWN HEREON ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

FOR EMERGENCIES CALL: 911

SHEET INDEX

PROPERTY SUMMARY

PROJECT DATA:

SITE NAME	: OTTER BAY
SITE NUMBER	: FLC014
SITE ADDRESS	: STILL ROAD LAKE CITY, FL 32055
JURISDICTION	: COLUMBIA COUNTY
PARCEL NUMBER	: 12-3S-17-04927-000

SITE DATA:

LATITUDE	: 30° 14' 26.04" N (30.240567°) (NAD83)
LONGITUDE	: 82° 34' 15.45" W (-82.570958°) (NAD83)
GROUND ELEVATION	: 148.3 FT. (NAVD 88)
PROPOSED TOWER TYPE	: SELF SUPPORT TOWER
PROPOSED TOWER HEIGHT	: 305 FT.
ANTENNA RAD CENTER	: 300 FT.
CONSTRUCTION AREA	: 10,000± SQ. FT.

DESIGN DATA:

NOMINAL WIND SPEED	: 91 (3 SECOND GUST)
ULTIMATE WIND SPEED	: 118 MPH (3 SECOND GUST)
RISK CATEGORY	: II
EXPOSURE CATEGORY	: C

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:

CONSTRUCTION CODES:

1. INTERNATIONAL BUILDING CODE: 2015 EDITION WITH 2017 FLORIDA AMENDMENTS
2. INTERNATIONAL RESIDENTIAL CODE: 2015 EDITION WITH 2017 FLORIDA AMENDMENTS
3. FLORIDA FIRE PREVENTION CODE: SIXTH EDITION, 2017
4. INTERNATIONAL PLUMBING CODE: 2015 EDITION WITH 2017 FLORIDA AMENDMENTS
5. INTERNATIONAL MECHANICAL CODE: 2015 EDITION WITH 2017 FLORIDA AMENDMENTS
6. INTERNATIONAL FUEL GAS CODE: 2015 EDITION WITH 2017 FLORIDA AMENDMENTS
7. NATIONAL ELECTRICAL CODE: 2017 EDITION
8. INTERNATIONAL ENERGY CONSERVATION CODE: 2015 EDITION WITH 2017 FLORIDA AMENDMENTS
9. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES (TIA-222-G)

IgniteWireless

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WT Group
Engineering • Design • Consulting

CITYSWITCH II-A

FLC014
OTTER BAY
STILL ROAD
LAKE CITY, FL 32055

JEFF S. GUTOWSKY LICENSE No 63185 STATE OF FLORIDA PROFESSIONAL ENGINEER

EXPIRES: 02/28/23 SIGNED: 03/31/22

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0	FINAL	02/10/22	KLO
1	REVISION	03/31/22	KLO

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

CHECK: JKR
DRAWN: JTB
JOB: 2001869T

T-1
TITLE SHEET

GENERAL REQUIREMENTS:

1.1 INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. 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.
3. 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.
4. 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.
5. 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

1. 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.
2. 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.
3. 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

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

1.4 STORAGE

1. 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.
2. THE BTS MUST BE STORED INSIDE UNTIL THERE IS POWER ON SITE.

1.5 CLEAN UP

1. 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.
2. EXTERIOR: VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
   A. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   B. IF NECESSARY TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR: VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS/FLOOR/CEILING.
   A. REMOVE ALL TRACES OF SPLASHED MATERIAL FROM ADJACENT SURFACES.
   B. REMOVE PAINT DROPPINGS, SPOTS, STAINS AND DIRT FROM FINISHED SURFACES.

GENERAL REQUIREMENTS (CONT.):

1.6 CHANGE ORDER PROCEDURE

1. 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

1. 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

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

1.9 PRODUCTS AND SUBSTITUTIONS

1. 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.
2. 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

1. 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 LOCAL BUILDING CODE.

1.11 ADMINISTRATION

1. 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.
2. 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.
3. 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).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. 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.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER / PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

GENERAL REQUIREMENTS (CONT.):

1.12 INSURANCE AND BONDS

1. 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.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

TOWER & ANTENNA INSTALLATION:

1.1 WORK INCLUDED

1. IF REQUIRED, ERECT FURNISHED TOWER.
2. GROUND TOWER TEMPORARILY DURING ERECTION. GROUNDING SHALL INCLUDE BASE(S) AND ANCHORS.
3. IF REQUIRED, INSTALL THREE (3) SIDE ARMS, CONSISTING OF THREE (3) 6'-0" AS INDICATED ON DRAWINGS - CONFIRM WITH OWNER REPRESENTATIVE.
4. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND OWNER SPECIFICATIONS.
5. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
6. INSTALL FURNISHED GALVANIZED STEEL WAVEGUIDE LADDER.
7. INSTALL WAVEGUIDE BRIDGE AS INDICATED ON DRAWING.
8. SUPPLY AND INSTALL ONE INSULATED GROUND BAR AT EQUIPMENT CABINET.
9. 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.
10. ASSIST OWNER TECHNICIANS IN PERFORMING SWEEP TEST OF INSTALLED COAX.
11. CONCRETE PIERS FOR FOUNDATIONS SHALL BE DRILLED AND POURED ON THE SAME DAY.

1.2 REQUIREMENTS OF REGULATOR AGENCIES

1. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE, INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.
2. 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:
   A. TIA - TELECOMMUNICATIONS INDUSTRY ASSOCIATION TIA-222-G. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
   B. FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460-IH, OBSTRUCTION MARKING AND LIGHTING.
   C. 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.
   D. AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.
   E. NEC - NATIONAL ELECTRICAL CODE - ON TOWER LIGHTING KITS.
   F. UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
   G. 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.
   H. LIFE SAFETY CODE NFPA -101.

GENERAL ELECTRIC PROVISION:

1. SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
2. 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.
3. HEIGHTS SHALL BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
4. THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
5. ELECTRICAL SERVICE 120 / 240 VAC SINGLE PHASE 3-WIRE 200 AMP SERVICE
6. 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.).
7. 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.
8. 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.
9. ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL CARRY OUT THEIR WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
11. CONTRACTOR TO OBTAIN ALL PERMITS, PAY PERMIT FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS.
12. 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.
13. ALL CONDUIT SHALL HAVE A PULL WIRE OR ROPE.
14. PROVIDE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
15. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC., SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION.
16. USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURES.
17. ALL CONDUCTORS SHALL BE COPPER.
18. 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.
19. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
20. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
21. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH APPLICABLE LOCAL BUILDING CODES.
22. WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
23. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER UNLESS OTHERWISE NOTED.
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.

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CHECK: JKR
DRAWN: JTB
JOB: 2001869T

T-2
GENERAL NOTES

GENERAL ELECTRIC PROVISION (CONT.):

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. PARALLEL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 30" BELOW GRADE - STACKED UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 24" BELOW GRADE.

F. ABOVE GROUND CONDUIT SHALL BE P.V.C. SCHEDULE 80 (UNLESS NOTED OTHERWISE).

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 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 MOISTURE AND HEAT RESISTANT THERMOPLASTIC WITH A MAXIMUM OPERATING TEMPERATURE OF 75 DEGREES CELSIUS OR 167 DEGREES 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.

GROUNDING STANDARDS (CONT.):

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 AN APPROVED EXOTHERMIC WELD 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 HE 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).

GROUNDING STANDARDS (CONT.):

3.4 SURGE ARRESTOR GROUND BAR

THE PURPOSE OF THE SURGE ARRESTOR GROUND BAR IS FOR LIGHTING 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.

GROUNDING STANDARDS (CONT.):

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.

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.

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1	REVISION	03/31/22	KLO

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

CHECK: JKR
DRAWN: JTB
JOB: 2001869T

T-3
GENERAL NOTES

GROUNDING STANDARDS (CONT.):

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 AN 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 MOTOROLA 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.

GROUNDING STANDARDS (CONT.):

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.

3.25 HIGH RISE BUILDING:

A. HIGH RISE BUILDINGS PRESENT A UNIQUE PROBLEM IN GROUNDING. A FACILITY INVESTIGATION SHOULD BE MADE INTO THE STRUCTURE OF THE BUILDING, AND AS TO THE POSSIBLE PRESENCE OF AN EXISTING LIGHTNING PROTECTION SYSTEM. IF ONE IS IN PLACE AND APPEARS ADEQUATE IN DESIGN, IT WILL BE NECESSARY TO CONNECT THE ANTENNA SYSTEM TO THE EXISTING SYSTEM, WITH A TEST TO THE SYSTEM AFTER INSTALLATION TO ENSURE THAT IT HAS NOT CAUSED THE SYSTEM TO EXCEED 5 OHMS.

B. STRUCTURAL STEEL BUILDINGS: IF THE BUILDING IS BUILT OF STRUCTURAL STEEL, IT MAY BE POSSIBLE TO GROUND THE ANTENNAS TO THE BUILDING SITE. IT IS PREFERABLE TO GROUND THE ANTENNAS AND THE SITE TO A DIRECT EARTH CONNECTION, BY USE OF SEPARATE DOWN LEADS OF CONSIDERABLE SIZE (250 MCM OR LARGER) COMING FROM GROUND BUSS BARS TO COLLECT THE GROUND INPUT, AND RUN DOWN A VERTICAL SHAFT OR STAIRWELL TO A PATTERN OF NO LESS THAN FOUR GROUND RODS. WHERE PRACTICAL, THE BUILDING STEEL SHOULD BE BONDED TO THE GROUND RING WITH A SEPARATE LEAD TO THE GROUND ROD FIELD.

C. A SYSTEM STRUCTURAL CONCRETE BUILDINGS ARE MORE DIFFICULT TO GROUND PROPERLY. THE ANTENNAS SHOULD BE GROUNDED TO A SEPARATE BUSS BAR AND DOWN LEAD WHERE THE COAXIAL CABLES ENTER THE BUILDING. THE DOWN LEAD SHOULD BE RUN IN A SIMILAR FASHION AS IN THE STRUCTURAL STEEL EQUIPMENT ROOM. THE DOWN LEADS SHOULD BE PROTECTED IN CONDUIT AND SHOULD BE INSTALLED AS FAR APART AS IS PRACTICAL FROM EACH OTHER. THE SEPARATE DOWN LEADS SHOULD NOT CONTACT EACH OTHER UNTIL CONNECTION WITH THE FIRST GROUND ROD.

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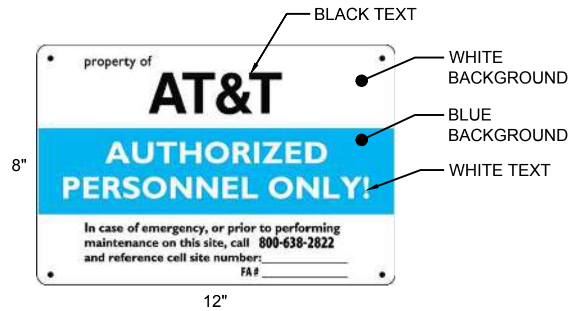
ACCESSIBILITY CONSULTING \ STRUCTURAL

CHECK: JKR
DRAWN: JTB
JOB: 2001869T

T-4
GENERAL NOTES



WHITE/BLUE BACKGROUND, WHITE/BLACK LETTERING
MOUNTING LOCATION: WALK IN CABINET OR TENANT IMPROVEMENT ROOM DOOR. IF OUTDOOR CABINET SITE PLACE ON END CABINET CLOSEST TO SITE ACCESS POINT. PLACE ON GENERATOR
QUANTITY: 1 TO 2

1 PROPERTY OF AT&T

SCALE: NONE

WHITE BACKGROUND, BLACK LETTERING
MOUNTING LOCATION: OUTDOOR EQUIPMENT CABINET AND GENERATOR
QUANTITY: 1 PER CABINET OR GENERATOR

2 AT&T IDENTIFICATION SIGN

SCALE: NONE

WHITE/GREEN BACKGROUND, WHITE/BLACK LETTERING
MOUNTING LOCATION: GATE & BASE OF TOWER
QUANTITY: 2

3 FCC REGISTRATION SIGN

SCALE: NONE

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 TOWER, 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. ADDITIONAL E911 ADDRESS AND FCC REGISTRATION SIGNS SHALL BE MOUNTED AT EACH ACCESS ROAD GATE LEADING TO THE COMPOUND AS WELL AS ON THE COMPOUND GATE ITSELF.
4. AT&T SITE # AND EMERGENCY CONTACT SIGNS SHALL BE MOUNTED ON THE EQUIPMENT CABINET WITH PERMANENT SET ADHESIVE. TWO SIDED TAPE SHALL BE UTILIZED AT EACH CORNER ON THE BACKSIDE TO AID PLACEMENT UNTIL THE ADHESIVE SET
5. SIGNS NEED NOT BE PLACED IF ACCURATE AND APPROPRIATE SIGNAGE ALREADY EXISTS.

WHITE/GREEN BACKGROUND, WHITE/BLACK LETTERING
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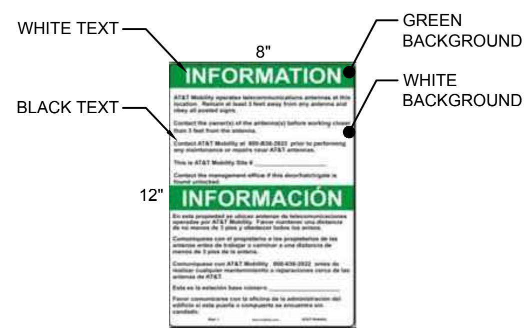
QUANTITY: 2

4 RF EXPOSURE INFORMATION SIGN

SCALE: NONE



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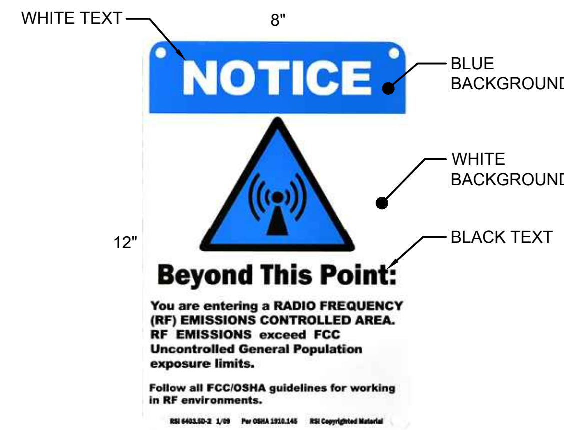
QUANTITY: 2

5 RF EXPOSURE INFORMATION SIGN

SCALE: NONE



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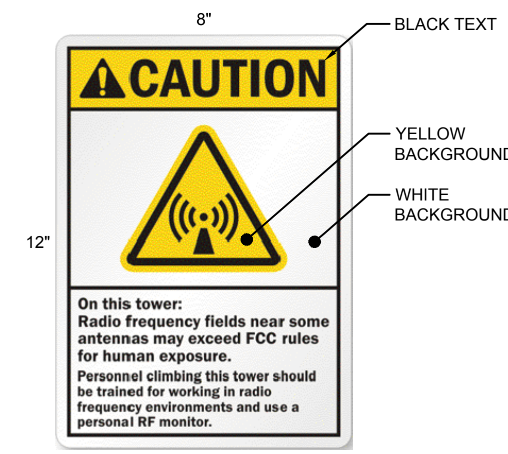
QUANTITY: 2

6 RF EXPOSURE NOTICE SIGN

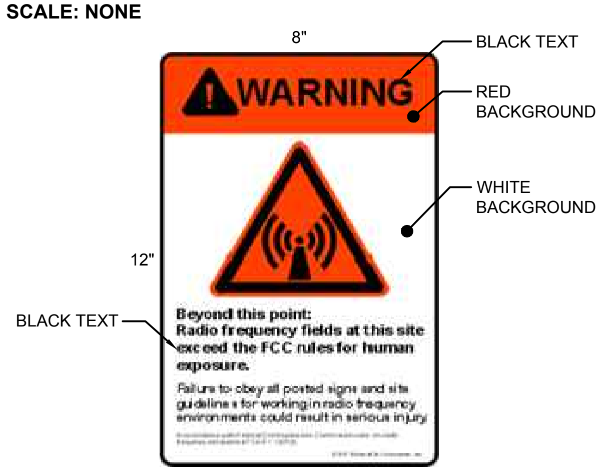
SCALE: NONE



WHITE/YELLOW BACKGROUND, BLACK LETTERING
MOUNTING LOCATION: BASE OF TOWER
QUANTITY: 1

7 RF EXPOSURE CAUTION SIGN

SCALE: NONE



WHITE/RED BACKGROUND, BLACK LETTERING
MOUNTING LOCATION: GATE & BASE OF TOWER
QUANTITY: 2

8 RF EXPOSURE WARNING SIGN

SCALE: NONE

WHITE/BLUE BACKGROUND, WHITE/BLACK/BLUE LETTERING
MOUNTING LOCATION: WALK IN CABINET OR TENANT IMPROVEMENT ROOM
QUANTITY: 1

9 NO TRESPASSING SIGN

SCALE: NONE

WHITE BACKGROUND, BLACK LETTERING
MOUNTING LOCATION: WALK IN CABINET DOOR
QUANTITY: 1 PER CABINET

10 AUTHORIZATION FOR RADIO EQUIPMENT SIGN

SCALE: NONE

SITE SIGNAGE	1
SCALE: NONE	

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LAKE CITY, FL 32055

JEFF S. GUTOWSKY
LICENSE
No 63185
STATE OF FLORIDA
PROFESSIONAL ENGINEER

EXPIRES: 02/28/23 SIGNED: 03/31/22

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D	REVISION	12/17/20	JTB
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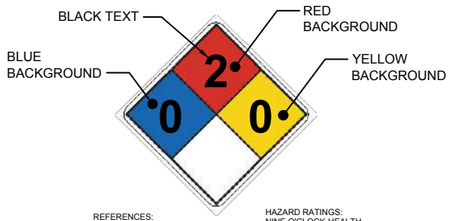
CIVIL \ TELECOMMUNICATION \ MECHANICAL
PLUMBING \ ELECTRICAL \ LAND SURVEYING
ACCESSIBILITY CONSULTING \ STRUCTURAL

CHECK: JKR
DRAWN: JTB
JOB: 2001869T

T-5

SITE SIGNAGE

AT&T ABOVE GROUND FUEL STORAGE SYSTEMS
SIGNS AND LABELING REQUIREMENTS



MOUNTING LOCATION: FUEL STORAGE TANK/GENERATOR
QUANTITY: 1

1 HAZARDOUS MATERIAL

SCALE: NONE

YELLOW BACKGROUND, BLACK LETTERING
MOUNTING LOCATION: GATE & BASE OF TOWER
QUANTITY: 2

2 EMERGENCY SIGN

SCALE: NONE

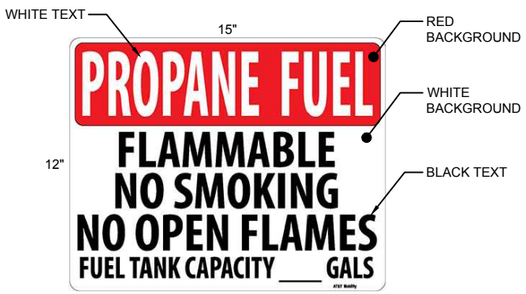
SIGNAGE NOTES:

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 TOWER, 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. ADDITIONAL E911 ADDRESS AND FCC REGISTRATION SIGNS SHALL BE MOUNTED AT EACH ACCESS ROAD GATE LEADING TO THE COMPOUND AS WELL AS ON THE COMPOUND GATE ITSELF.
4. AT&T SITE # AND EMERGENCY CONTACT SIGNS SHALL BE MOUNTED ON THE EQUIPMENT CABINET WITH PERMANENT SET ADHESIVE. TWO SIDED TAPE SHALL BE UTILIZED AT EACH CORNER ON THE BACKSIDE TO AID PLACEMENT UNTIL THE ADHESIVE SET
5. SIGNS NEED NOT BE PLACED IF ACCURATE AND APPROPRIATE SIGNAGE ALREADY EXISTS.

WHITE/RED BACKGROUND, WHITE/BLACK LETTERING
MOUNTING LOCATION: DIESEL GENERATOR
QUANTITY: 1

3 COMBUSTIBLE SIGN

SCALE: NONE



WHITE/RED BACKGROUND, WHITE/BLACK LETTERING
MOUNTING LOCATION: PROPANE GENERATOR
QUANTITY: 1

4 COMBUSTIBLE SIGN

SCALE: NONE

WHITE/RED BACKGROUND, WHITE/BLACK LETTERING
MOUNTING LOCATION: NATURAL GAS GENERATOR
QUANTITY: 1

5 COMBUSTIBLE SIGN

SCALE: NONE

SITE SIGNAGE

SCALE: NONE

1

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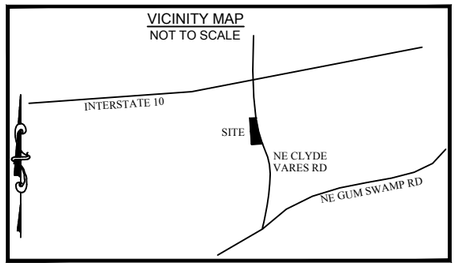
CHECK: JKR
DRAWN: JTB
JOB: 2001869T

T-6
SITE SIGNAGE



PROPOSED TOWER CENTER

LATITUDE	N 030° 14' 26.04" (NAD83)
LONGITUDE	W 082° 34' 15.45" (NAD83)
GROUND ELEVATION	148.3' (NAVD88)

THE GREEN PIECE ENGINEERING + ENVIRONMENT
5001-12 CHANDLERS WHARF
CHRISTIANSTED, VI 00820
LB8296

REPORT OF TITLE
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY
COMMITMENT # 01-20071720-01T
COMMITMENT DATE 06/30/2020 AT 7:00 A.M.
PROPOSED INSURED:

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

THE POLICY WILL NOT INSURE AGAINST LOSS OR DAMAGE RESULTING FROM THE TERMS AND PROVISIONS OF ANY LEASE OR EASEMENT IDENTIFIED IN SCHEDULE A, AND WILL INCLUDE THE FOLLOWING EXCEPTIONS UNLESS CLEARED TO THE SATISFACTION OF THE COMPANY:

1.ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I REQUIREMENTS ARE MET.
(NOT A MATTER OF SURVEY)
2.FACTS WHICH WOULD BE DISCLOSED BY A COMPREHENSIVE SURVEY OF THE PREMISES HEREIN DESCRIBED.
(AS SHOWN ON SURVEY)
3.RIGHTS OR CLAIMS OF PARTIES IN POSSESSION.
(NOT A MATTER OF SURVEY)
4.MECHANICS', CONTRACTORS' OR MATERIAL MEN'S LIENS AND LIEN CLAIMS, IF ANY, WHERE NO NOTICE THEREOF APPEARS OF RECORD.
(NOT A MATTER OF SURVEY)
5.ANY CHANGES IN TITLE OCCURRING SUBSEQUENT TO THE EFFECTIVE DATE OF THIS COMMITMENT AND PRIOR TO THE DATE OF ISSUANCE OF THE TITLE POLICY.
(AS SHOWN ON SURVEY)
6.DELETING ANY COVENANT, CONDITION OR RESTRICTION INDICATING A PREFERENCE, LIMITATION OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, HANDICAP, FAMILIAL STATUS OR NATIONAL ORIGIN TO THE EXTENT SUCH MATTERS VIOLATE 42 USC 3604(C)
(NO A MATTER OF SURVEY)
7.QUANTITY OF ACREAGE/SQUARE FOOTAGE AS SET FORTH IN SCHEDULE A, IF ANY.
(AS SHOWN ON SURVEY)
8.TAXES AND SPECIAL ASSESSMENTS FOR CURRENT TAX YEAR AND ALL SUBSEQUENT YEARS.
(NOT A MATTER OF SURVEY)

GENERAL NOTES

1. THIS SURVEY WAS PREPARED BY BATEMAN CIVIL SURVEY CO., UNDER THE SUPERVISION OF JEFFREY L. BATEMAN, PSM.
2. THIS PLAN HAS BEEN PREPARED FOR LAYOUT AND PERMITTING PURPOSES ONLY.
3. THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES SHOWN WERE TAKEN FROM EXISTING FIELD EVIDENCE, EXISTING DEEDS AND PLATS OF PUBLIC RECORD, AND INFORMATION SUPPLIED TO THE SURVEYOR BY THE CLIENT
4. VERTICAL DATUM IS (NAVD88) , THE LATITUDE, LONGITUDE AND STATE PLANE COORDINATES(FLORIDA NORTH), IF SHOWN, ARE GIVEN IN NORTH AMERICAN DATUM OF 1983 (NAD83).
5. FIELD EQUIPMENT USED: TRIMBLE TOTAL STATION, TRIMBLE VRS.
6. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES AND ALL BEARINGS ARE FLORIDA STATE PLANE COORDINATE SYSTEM (NORTH) UNLESS OTHERWISE SHOWN.
7. PROPERTY OWNER: CLYDE F. VARNES - 535 NE CLYDE VARNES ROAD, LAKE CITY, FLORIDA 32055.
8. ALL EQUIPMENT AND IMPROVEMENTS ARE LOCATED WITHIN THE LEASE AREA.
9. THE PROPERTY LIES IN ZONE "X" AND ZONE "A", PER NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP 12023C0305D , DATED: NOVEMBER 2, 2018.
10. PROPERTY INFORMATION DERIVED FROM COLUMBIA COUNTY GIS.
11. TITLE REPORT PROVIDED BY WT GROUP.
12. DUE TO THE SITE SPECIFIC TERRAIN, THIS SURVEY WAS PERFORMED WITH AN OPEN TRAVERSE AND NO ANGULAR ERROR CAN BE MATHEMATICALLY CALCULATED.
13. THE TITLE COMMITMENT PROVIDED BY WT GROUP HAS BEEN REVIEWED AND SHOWN HEREON.
14. NO WETLANDS ON LEASE AREA PER NATIONAL WETLAND INVENTORY.

SURVEYED LEGAL DESCRIPTIONS

30' WIDE LESSEE NON-EXCLUSIVE ACCESS & UTILITY RIGHTS OF WAY DESCRIPTION

COMMENCING AT THE NORTHWEST CORNER OF THE SE¼ OF THE SW¼ OF SECTION 12, TOWNSHIP 3 SOUTH, RANGE 17 EAST, COLUMBIA COUNTY, FLORIDA, THENCE S 07°34'32" E 156.55' FEET TO A POINT, THENCE S88°52'28"E 100.00 FEET TO A POINT, THENCE S01°07'32"W 35.00 FEET TO A POINT, SAID POINT BEING THE POINT OF BEGINNING OF THE 30' WIDE LESSEE NON-EXCLUSIVE ACCESS & UTILITY RIGHTS OF WAY, THENCE S88°52'28"E 16.07 FEET TO A POINT ON THE WESTERN RIGHT OF WAY OF NE CLYDE VARNES ROAD (60' PUBLIC RIGHT OF WAY), THENCE WITH SAID WESTERN RIGHT OF WAY S01°25'42"W 30.00 FEET TO A POINT, THENCE LEAVING SAID WESTERN RIGHT OF WAY N88°52'28"W 15.91 FEET TO A POINT, THENCE N01°07'32"W 30.00 FEET TO THE POINT AND PLACE OF BEGINNING, SAID 30' WIDE LESSEE NON-EXCLUSIVE ACCESS & UTILITY RIGHTS OF WAY CONTAINS 480 SQUARE FEET, MORE OR LESS.

100' X 100' LESSEE LAND SPACE DESCRIPTION

COMMENCING AT THE NORTHWEST CORNER OF THE SE¼ OF THE SW¼ OF SECTION 12, TOWNSHIP 3 SOUTH, RANGE 17 EAST, COLUMBIA COUNTY, FLORIDA, THENCE S 07°34'32" E 156.55 FEET TO A POINT, SAID POINT BEING THE POINT OF BEGINNING OF THE 100'X100' LESSEE LAND SPACE, THENCE S88°52'28"E 100.00 FEET TO A POINT, THENCE S01°07'32"W 100.00 FEET TO A POINT, THENCE N88°52'28"W 100.00 FEET TO A POINT, THENCE N01°07'32"E 100.00 FEET TO THE POINT AND PLACE OF BEGINNING CONTAINING 10,000 SQUARE FEET, MORE OR LESS.

JEFFREY L BATEMAN
License Number
4884
STATE OF FLORIDA
Professional Surveyor and Mapper

BCSC
BATEMAN CIVIL SURVEY COMPANY
Bateman Civil Survey Co, PC
2524 Reliance Ave. Apex, NC 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBLS FIRM # C-2378

WT Group
2675 Pratum Avenue
Hoffman Estates, IL, 60192
(224) 293-6333

APPLICANT:
CITYSWITCH II-A, LLC
1900 CENTURY PLACE NE, SUITE 320
ATLANTA, GA 30345

LAND OWNER:
CLYDE F. VARNES
535 CLYDE VARNES ROAD
LAKE CITY, FLORIDA32055

DRAWN BY: SF
CHECKED BY:
DRAWING DATE:09-18-2020

I, JEFFREY L. BATEMAN, HEREBY CERTIFY TO WT GROUP & OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY THAT THIS MAP IS A CORRECT REPRESENTATION OF THE LAND PLATTED AND HAS BEEN PREPARED IN CONFORMITY WITH THE MINIMUM STANDARDS AND REQUIREMENTS OF LAW. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 25 DAY OF SEPTEMBER, 2020.

JEFFREY L. BATEMAN
FLORIDA LICENSE # 4884

REVISIONS NO.	DATE	DESCRIPTION
1	10-02-20	CHANGED TOWER HEIGHT TO 305'.

FA NUMBER - 15123847
PACE JOB NUMBER - MRTFL001205
OTTER BAY CELL SITE
535 CLYDE VARNES ROAD
LAKE CITY, FLORIDA 32055

DATE OF SURVEY: 09/18/2020

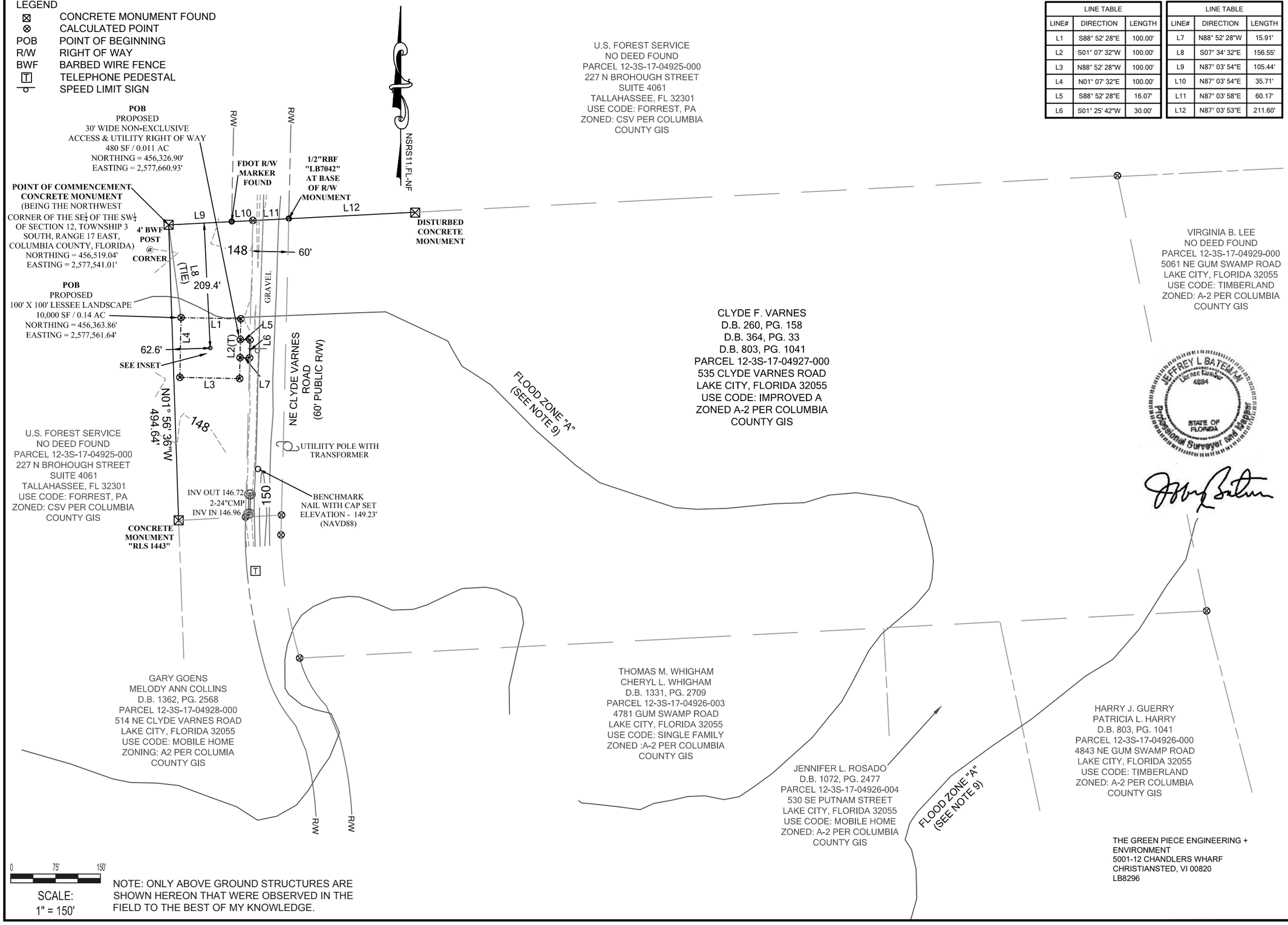
BCSC JOB # 200473

SHEET TITLE: SURVEY

SHEET NUMBER 1 OF 3

LEGEND

⊠	CONCRETE MONUMENT FOUND
⊗	CALCULATED POINT
POB	POINT OF BEGINNING
R/W	RIGHT OF WAY
BWF	BARBED WIRE FENCE
T	TELEPHONE PEDESTAL
	SPEED LIMIT SIGN



LINE TABLE		
LINE#	DIRECTION	LENGTH
L1	S88° 52' 28"E	100.00'
L2	S01° 07' 32"W	100.00'
L3	N88° 52' 28"W	100.00'
L4	N01° 07' 32"E	100.00'
L5	S88° 52' 28"E	16.07'
L6	S01° 25' 42"W	30.00'

LINE TABLE		
LINE#	DIRECTION	LENGTH
L7	N88° 52' 28"W	15.91'
L8	S07° 34' 32"E	156.55'
L9	N87° 03' 54"E	105.44'
L10	N87° 03' 54"E	35.71'
L11	N87° 03' 58"E	60.17'
L12	N87° 03' 53"E	211.60'

0 75' 150'

SCALE: 1" = 150'

NOTE: ONLY ABOVE GROUND STRUCTURES ARE SHOWN HEREON THAT WERE OBSERVED IN THE FIELD TO THE BEST OF MY KNOWLEDGE.

THE GREEN PIECE ENGINEERING + ENVIRONMENT
5001-12 CHANDLERS WHARF
CHRISTIANSTED, VI 00820
LB8296

BCSC BATEMAN CIVIL SURVEY COMPANY

Bateman Civil Survey Co, PC
2524 Reliance Ave. Apex, NC 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBLS FIRM # C-2378

WT Group
2675 Pratum Avenue
Hoffman Estates, IL, 60192
(224) 293-6333

APPLICANT:
CITYSWITCH II-A, LLC
1900 CENTURY PLACE NE, SUITE 320
ATLANTA, GA 30345

LAND OWNER:
CLYDE F. VARNES
535 CLYDE VARES ROAD
LAKE CITY, FLORIDA32055

DRAWN BY: SF
CHECKED BY:
DRAWING DATE:09-18-2020

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JEFFREY L. BATEMAN
FLORIDA LICENSE # 4884

REVISIONS		
NO.	DATE	DESCRIPTION
1	10-02-20	CHANGED TOWER HEIGHT TO 305'.

FA NUMBER - 15123847
PACE JOB NUMBER - MRTFL001205
OTTER BAY CELL SITE
535 CLYDE VARNES ROAD
LAKE CITY, FLORIDA 32055

DATE OF SURVEY: 09/18/2020

BCSC JOB # 200473

SHEET TITLE: SURVEY

SHEET NUMBER 2 OF 3

LEGEND

⊠	CONCRETE MONUMENT FOUND
⊗	CALCULATED POINT
POB	POINT OF BEGINNING
R/W	RIGHT OF WAY
BWF	BARBED WIRE FENCE
T	TELEPHONE PEDESTAL
	SPEED LIMIT SIGN

NSRS11.FL-NF

FLOOD ZONE "A"
(SEE NOTE 9)

L8
(TIE)

L1

POB
PROPOSED
100' X 100' LESSEE LANDSCAPE
10,000 SF / 0.14 AC
NORTHING = 456,363.86'
EASTING = 2,577,561.64'

N01° 56' 36"W
494.64'

L4

CENTER OF 305' SELF
SUPPORT TOWER

POB
PROPOSED
30' WIDE NON-EXCLUSIVE
ACCESS & UTILITY RIGHT OF WAY
480 SF / 0.011 AC
NORTHING = 456,326.90'
EASTING = 2,577,660.93'

L5

35.00'

L2(T)

30.00'

L6

L7

35.00'

L3

148

146

148

GRAVEL

NE CLYDE VARNES ROAD
(60' PUBLIC R/W)

148

0 10' 20'

SCALE:
1" = 20'

NOTE: ONLY ABOVE GROUND STRUCTURES ARE SHOWN HEREON THAT WERE OBSERVED IN THE FIELD TO THE BEST OF MY KNOWLEDGE.

THE GREEN PIECE ENGINEERING
+ ENVIRONMENT
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JEFFREY L. BATEMAN
FLORIDA LICENSE # 4884

REVISIONS		
NO.	DATE	DESCRIPTION
1	10-02-20	ADJUSTED TOWER HEIGHT TO 305'.

FA NUMBER - 15123847
PACE JOB NUMBER -
MRTFL001205
OTTER BAY CELL SITE
535 CLYDE VARNES ROAD
LAKE CITY, FLORIDA
32055

DATE OF SURVEY: 09/18/2020

BCSC JOB # 200473

SHEET TITLE: SURVEY

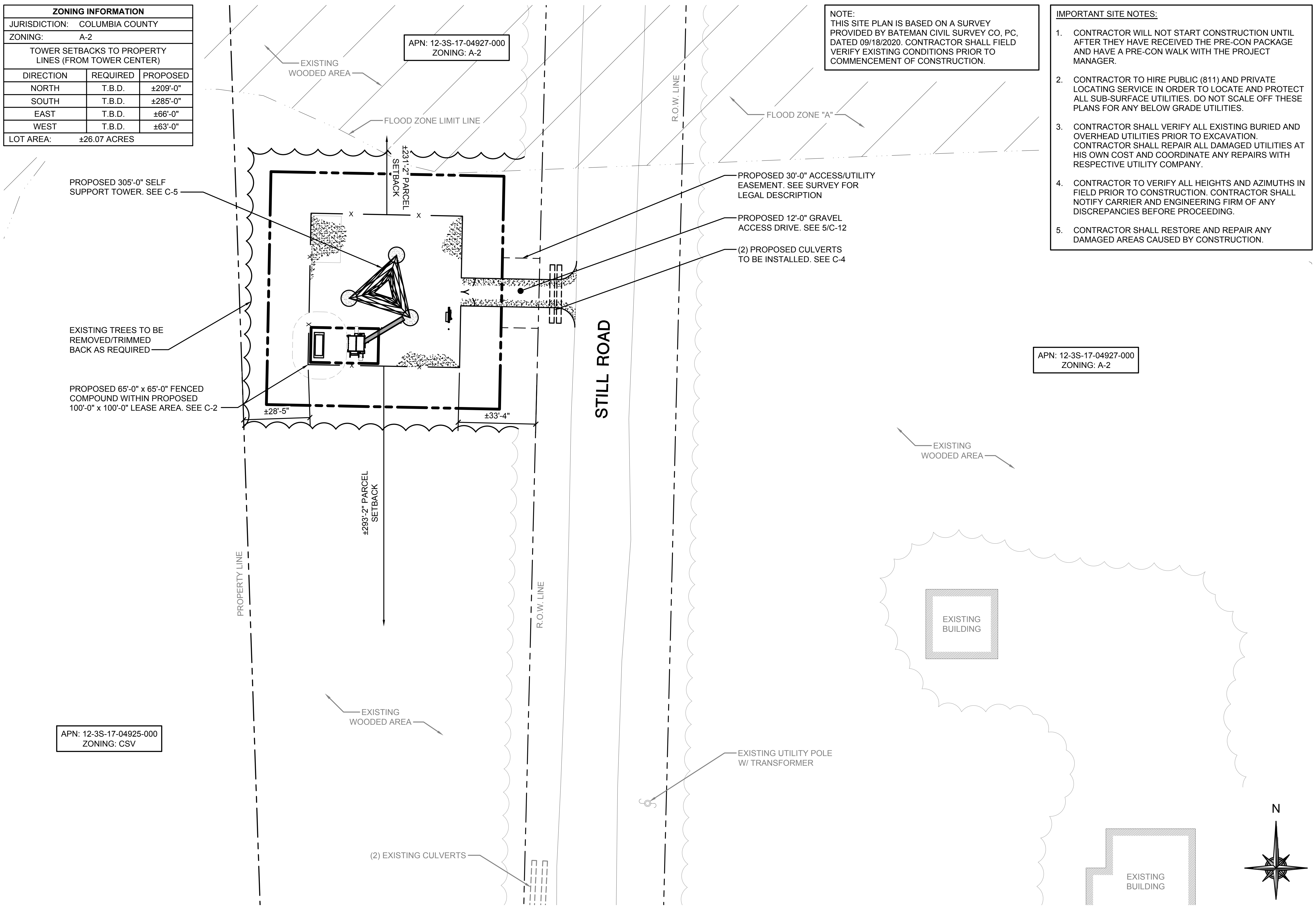
SHEET NUMBER 3 OF 3

ZONING INFORMATION		
JURISDICTION: COLUMBIA COUNTY		
ZONING: A-2		
TOWER SETBACKS TO PROPERTY LINES (FROM TOWER CENTER)		
DIRECTION	REQUIRED	PROPOSED
NORTH	T.B.D.	±209'-0"
SOUTH	T.B.D.	±285'-0"
EAST	T.B.D.	±66'-0"
WEST	T.B.D.	±63'-0"
LOT AREA: ±26.07 ACRES		

NOTE:
THIS SITE PLAN IS BASED ON A SURVEY PROVIDED BY BATEMAN CIVIL SURVEY CO, PC, DATED 09/18/2020. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

IMPORTANT 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 SUB-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 TO VERIFY ALL HEIGHTS AND AZIMUTHS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY CARRIER AND ENGINEERING FIRM OF ANY DISCREPANCIES BEFORE PROCEEDING.
5. CONTRACTOR SHALL RESTORE AND REPAIR ANY DAMAGED AREAS CAUSED BY CONSTRUCTION.



0' 20' 40' 80'
GRAPHIC SCALE: 1" = 40'

OVERALL SITE PLAN

SCALE: 1" = 40'-0"

1

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CITYSWITCH II-A

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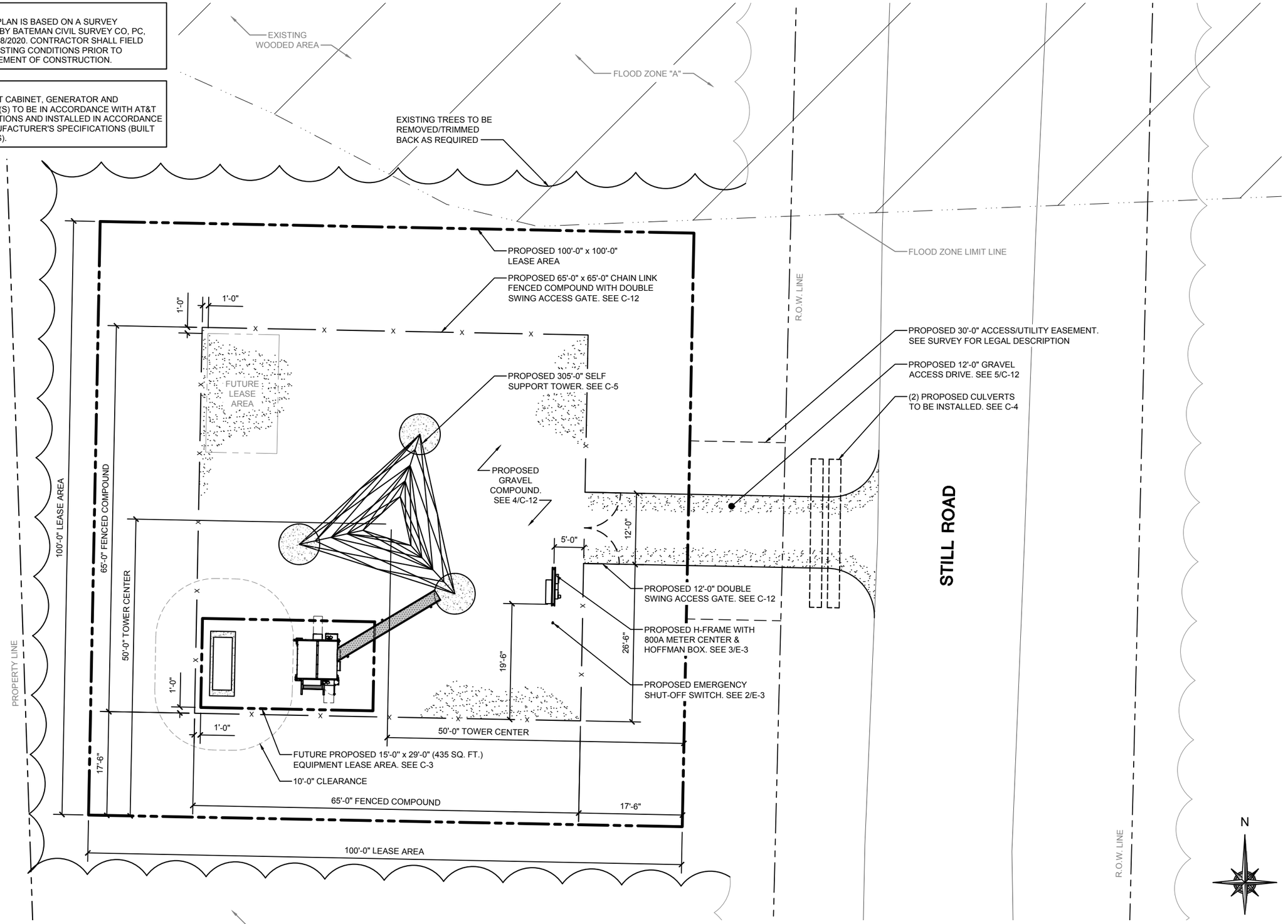
CHECK: JKR
DRAWN: JTB
JOB: 2001869T

C-1
OVERALL SITE PLAN

NOTE:
THIS SITE PLAN IS BASED ON A SURVEY PROVIDED BY BATEMAN CIVIL SURVEY CO, PC, DATED 09/18/2020. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

NOTE:
EQUIPMENT CABINET, GENERATOR AND PLATFORM(S) TO BE IN ACCORDANCE WITH AT&T SPECIFICATIONS AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS (BUILT BY OTHERS).



0' 8' 16' 32'
GRAPHIC SCALE: 1/16" = 1'

ENLARGED SITE PLAN

SCALE: 1/16" = 1'-0"

1

IgniteWireless

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EXPIRES: 02/28/23 SIGNED: 03/31/22

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E	REVISION	01/26/22	JTB
0	FINAL	02/10/22	KLO
1	REVISION	03/31/22	KLO

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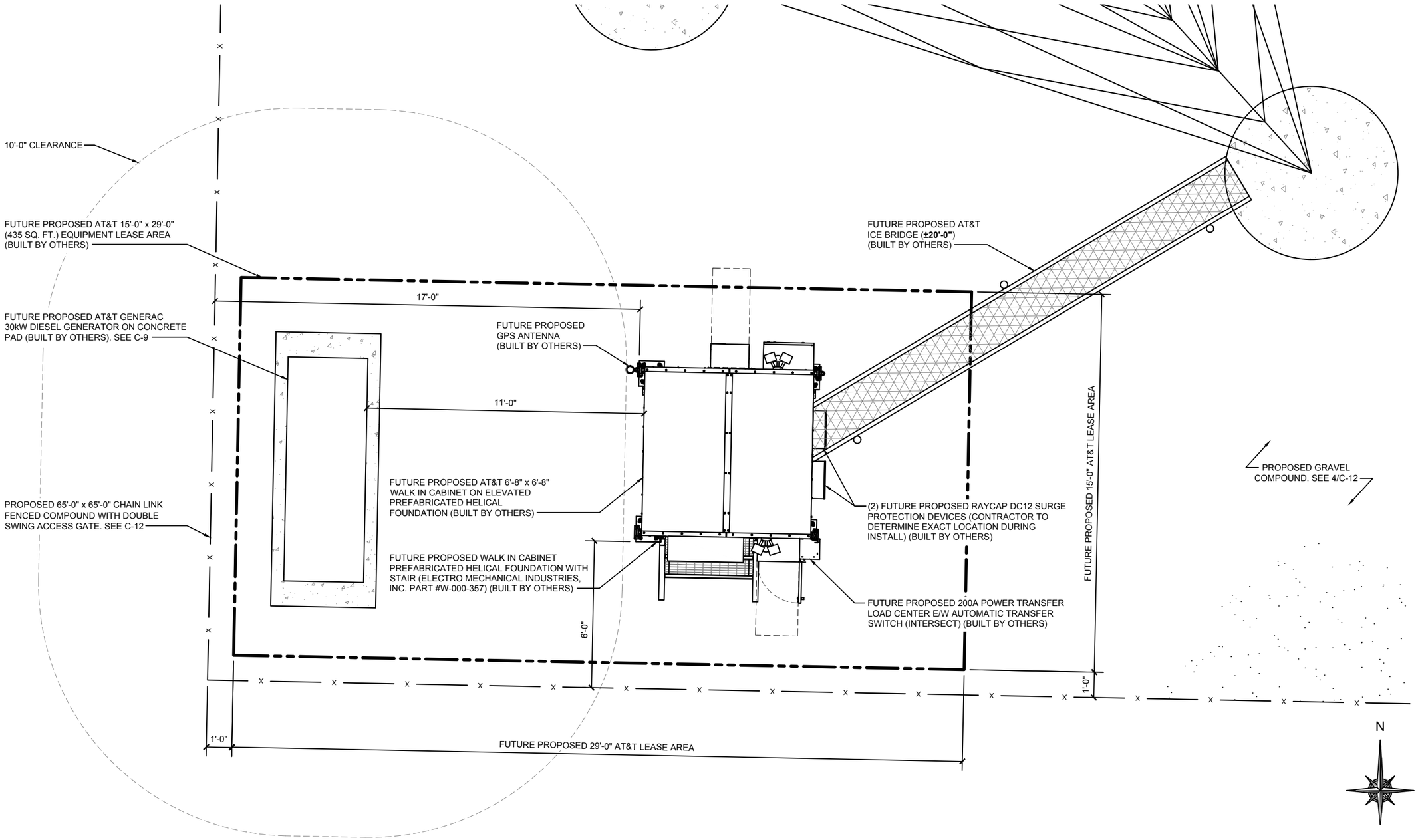
CHECK: JKR
DRAWN: JTB
JOB: 2001869T

C-2
ENLARGED SITE PLAN

NOTE:
W-T'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THE EQUIPMENT PLATFORM(S). NEW EQUIPMENT SHOWN ON THIS PLAN HAVE NOT BEEN EVALUATED TO VERIFY THE PLATFORM(S) HAVE THE CAPACITY TO ADEQUATELY SUPPORT THE CABINETS/EQUIPMENT/SHELTER. PRIOR TO ANY EQUIPMENT INSTALLATION, A STRUCTURAL EVALUATION OF THE EQUIPMENT PLATFORM(S), INCLUDING ALL EQUIPMENT CABINET SUPPORT BRACING & HARDWARE SHALL BE PERFORMED.

NOTE:
EQUIPMENT CABINET, GENERATOR AND PLATFORM(S) TO BE IN ACCORDANCE WITH AT&T SPECIFICATIONS AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS (BUILT BY OTHERS).



0' 2' 4' 8'
GRAPHIC SCALE: 1/4" = 1'

EQUIPMENT PLAN

SCALE: 1/4" = 1'-0"

1

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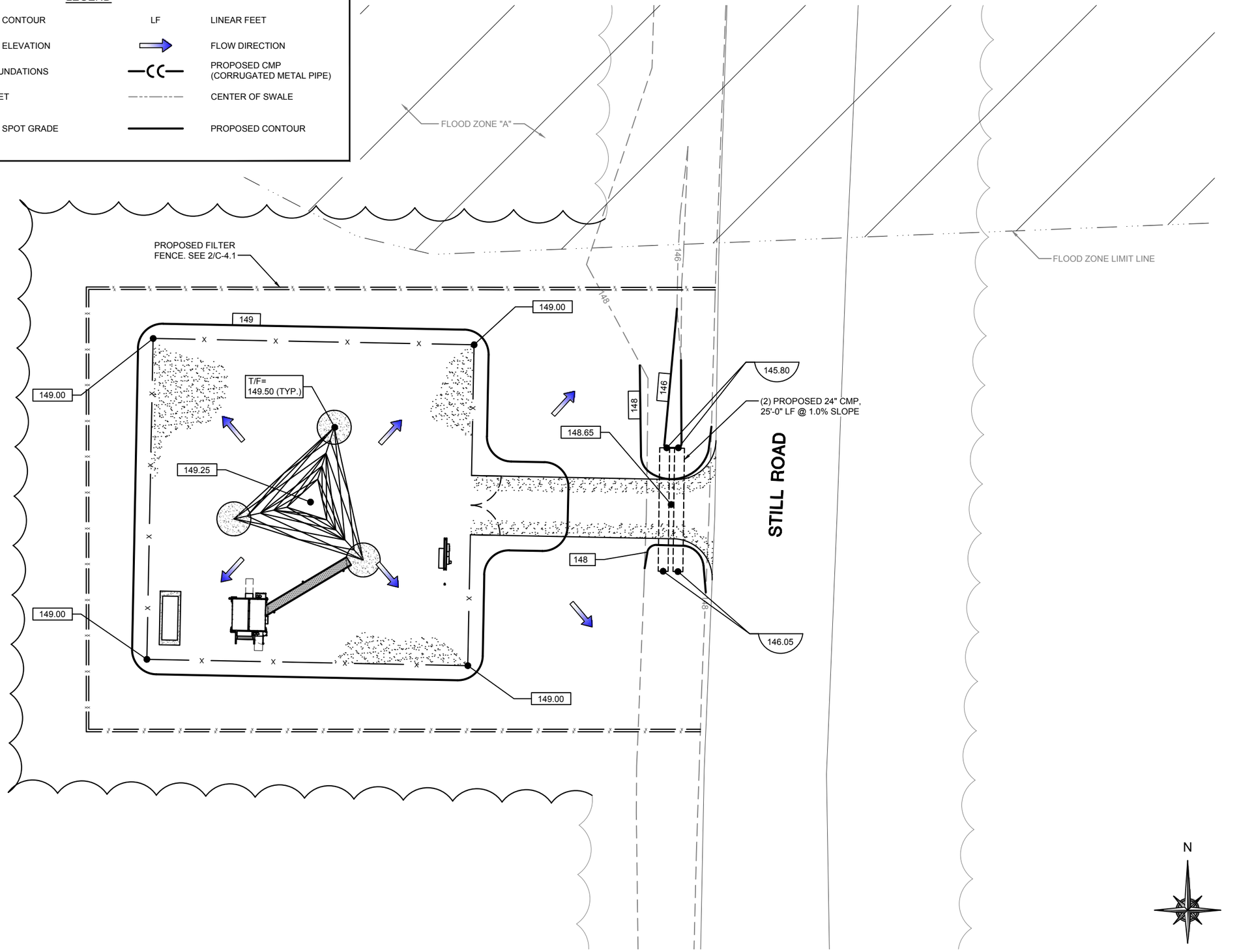
C-3
EQUIPMENT PLAN

LEGEND

XXX.XX	PROPOSED CONTOUR	LF	LINEAR FEET
XXX.XX	PROPOSED ELEVATION		FLOW DIRECTION
T/F=XXX.XX	TOP OF FOUNDATIONS		PROPOSED CMP (CORRUGATED METAL PIPE)
XXX.XX	INVERT/INLET		CENTER OF SWALE
XXX.XX	PROPOSED SPOT GRADE		PROPOSED CONTOUR



N

0' 10' 20' 40'

GRAPHIC SCALE: 1" = 20'

GRADING PLAN | 1

SCALE: 1" = 20'-0"

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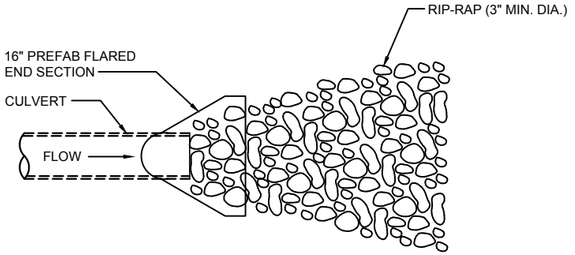
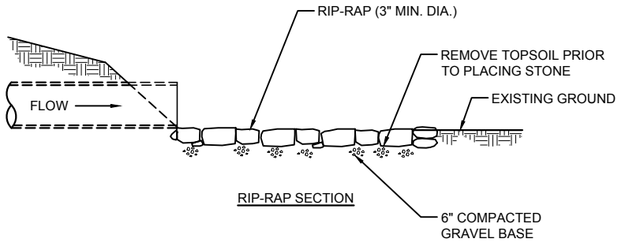
C-4
GRADING PLAN



RIP-RAP PLAN



RIP-RAP SECTION

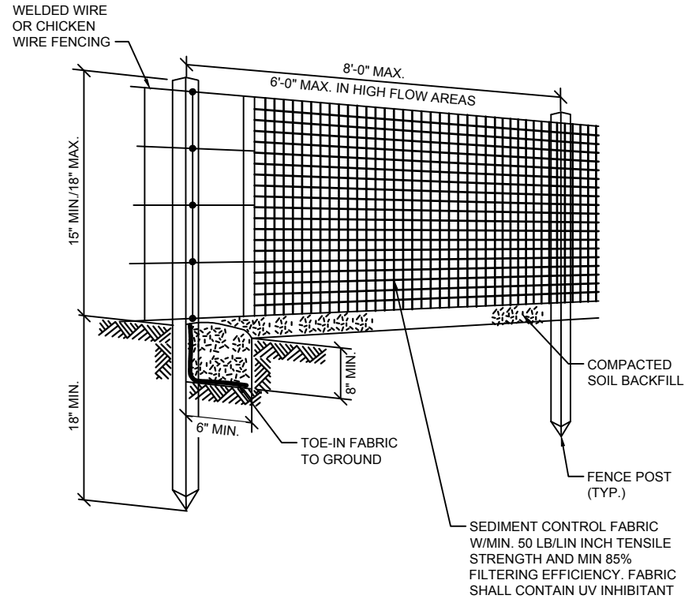
RIP-RAP DETAIL

SCALE: NONE

1

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

2

NOT USED

SCALE: NONE

3

NOT USED

SCALE: NONE

4

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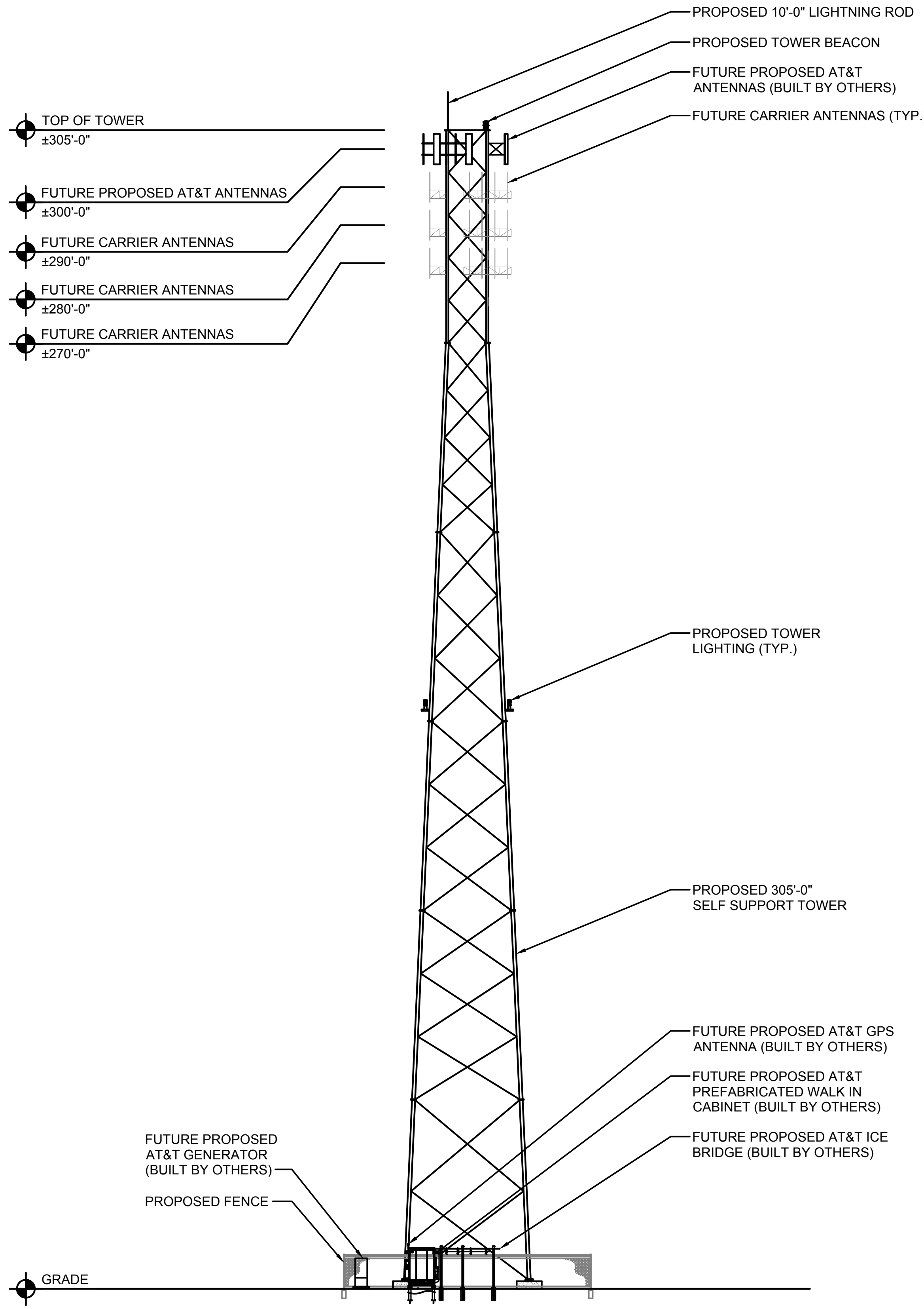
C-4.1
GRADING DETAILS

NOTES:

1. AZIMUTHS SHOWN ARE MEASURED CLOCKWISE FROM TRUE NORTH.
2. ANTENNA MOUNTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. STRUCTURE SHOWN IS SCHEMATIC IN NATURE. INSTALL SECTOR MOUNTS WITH ENOUGH STAND-OFF FROM TOWER SO THAT SECTORS DO NOT OVERLAP.
4. RF DATA SHOWN IN THESE PLANS WAS WAS ACCURATE AT THE TIME OF ISSUE, DATED 07/09/2019. IN THE EVENT THE DATA SHOWN IN THESE PLANS IS IN CONFLICT WITH THE CURRENT RF DESIGN PLAN (RFDS), THE RFDS WILL SUPERCEDE THESE PLANS.
5. THE CONTRACTOR IS TO VERIFY THAT THE CURRENT RFDS IS USED FOR ALL ANTENNA TYPES AND ALIGNMENT INFORMATION.

NOTE:
W-T'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THIS TOWER OR STRUCTURE. NEW ANTENNAS AND EQUIPMENT SHOWN ON THIS PLAN HAVE NOT BEEN EVALUATED TO VERIFY THE TOWER OR STRUCTURE HAS THE CAPACITY TO ADEQUATELY SUPPORT THESE ANTENNAS. PRIOR TO ANY ANTENNA OR EQUIPMENT INSTALLATION, A STRUCTURAL EVALUATION OF THE TOWER OR STRUCTURE, INCLUDING ALL ANTENNA MOUNTING SYSTEMS & HARDWARE SHALL BE PERFORMED.

NOTE:
A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNT HAS BEEN COMPLETED BY GEOSTRUCTURAL ON 10/09/2020. THE LOCATION AND MOUNTING OF THE ANTENNAS SHOWN IN THE STRUCTURAL ANALYSIS SHALL SUPERSEDE THESE DRAWINGS.



0' 20' 40' 80'
GRAPHIC SCALE: 1" = 40'

TOWER ELEVATION

SCALE: 1" = 40'-0"

1

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JOB: 2001869T

C-5

TOWER ELEVATION

NOTE:
W-T'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THIS TOWER OR STRUCTURE. NEW ANTENNAS AND EQUIPMENT SHOWN ON THIS PLAN HAVE NOT BEEN EVALUATED TO VERIFY THE TOWER OR STRUCTURE HAS THE CAPACITY TO ADEQUATELY SUPPORT THESE ANTENNAS. PRIOR TO ANY ANTENNA OR EQUIPMENT INSTALLATION, A STRUCTURAL EVALUATION OF THE TOWER OR STRUCTURE, INCLUDING ALL ANTENNA MOUNTING SYSTEMS & HARDWARE SHALL BE PERFORMED.

NOTE:
A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNT HAS BEEN COMPLETED BY GEOSTRUCTURAL ON 10/09/2020. THE LOCATION AND MOUNTING OF THE ANTENNAS SHOWN IN THE STRUCTURAL ANALYSIS SHALL SUPERSEDE THESE DRAWINGS.

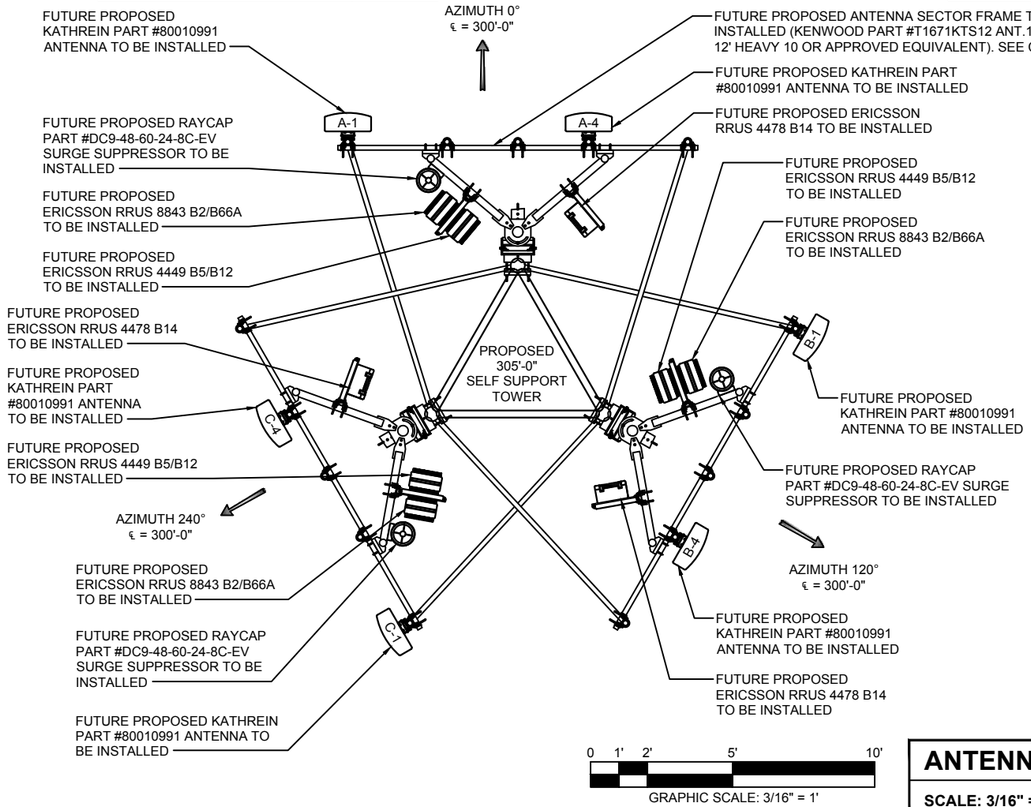
NOTE:
CABLE COUNTS ARE TOTALS AND NOT INDICATIVE OF SPECIFIC POSITIONS. CONTRACTOR TO FIELD VERIFY QUANTITIES AND SIZES OF EXISTING CABLES.

NOTE:
ANTENNAS & RRU'S TO BE CENTERED VERTICALLY ON MOUNT FACE.

NOTE:
RAYCAP SURGE SUPPRESSOR CAN BE MOUNTED TO THE TOWER LEG, ANTENNA FRAME, OR ANTENNA PIPE. EXACT MOUNTING LOCATION TO BE DETERMINED BY THE CONSTRUCTION MANAGER.

ANTENNA & CABLE SCHEDULE

ANTENNA POSITION	SECTOR	RAD CENTER		ANTENNA MAKE/MODEL	QUANTITY	PORT NUMBER	ELECTRICAL TILT	AZIMUTH	RRU MAKE/MODEL	QUANTITY	SURGE PROTECTION	QUANTITY	COAX/ CABLE	QUANTITY
A-1	ALPHA	±300'-0"	LTE 1900 LTE 700-850	KATHREIN 80010991	1	1/2/3/4 5/6/7/8 9/10/11/12	2/2/2/2 4/4/4/4 -/-/-/-	0°	ERICSSON RRUS 4449 B5/B12 ERICSSON RRUS 8843 B2/B66A	2	RAYCAP DC9-48-60-24-8C-EV	1	4 AWG DC POWER 24 PR .39" FIBER	6 3
A-2			-	-	-	-	-		-	-				
A-3			-	-	-	-	-		-	-				
A-4			LTE AWS LTE 700	KATHREIN 80010991	1	1/2/3/4 5/6/7/8 9/10/11/12	2/2/2/2 4/4/4/4 -/-/-/-		ERICSSON RRUS 4478 B14	1				
A-5			-	-	-	-	-		-	-				
B-1	BETA	±300'-0"	LTE 1900 LTE 700-850	KATHREIN 80010991	1	1/2/3/4 5/6/7/8 9/10/11/12	2/2/2/2 4/4/4/4 -/-/-/-	120°	ERICSSON RRUS 4449 B5/B12 ERICSSON RRUS 8843 B2/B66A	2	RAYCAP DC9-48-60-24-8C-EV	1		
B-2			-	-	-	-	-		-	-				
B-3			-	-	-	-	-		-	-				
B-4			LTE AWS LTE 700	KATHREIN 80010991	1	1/2/3/4 5/6/7/8 9/10/11/12	2/2/2/2 4/4/4/4 -/-/-/-		ERICSSON RRUS 4478 B14	1				
B-5			-	-	-	-	-		-	-				
C-1	GAMMA	±300'-0"	LTE 1900 LTE 700-850	KATHREIN 80010991	1	1/2/3/4 5/6/7/8 9/10/11/12	2/2/2/2 4/4/4/4 -/-/-/-	240°	ERICSSON RRUS 4449 B5/B12 ERICSSON RRUS 8843 B2/B66A	2	RAYCAP DC9-48-60-24-8C-EV	1		
C-2			-	-	-	-	-		-	-				
C-3			-	-	-	-	-		-	-				
C-4			LTE AWS LTE 700	KATHREIN 80010991	1	1/2/3/4 5/6/7/8 9/10/11/12	2/2/2/2 4/4/4/4 -/-/-/-		ERICSSON RRUS 4478 B14	1				
C-5			-	-	-	-	-		-	-				
				TOTAL	6					9		3		9



ANTENNA CONFIGURATION

SCALE: 3/16" = 1'-0"

1

N

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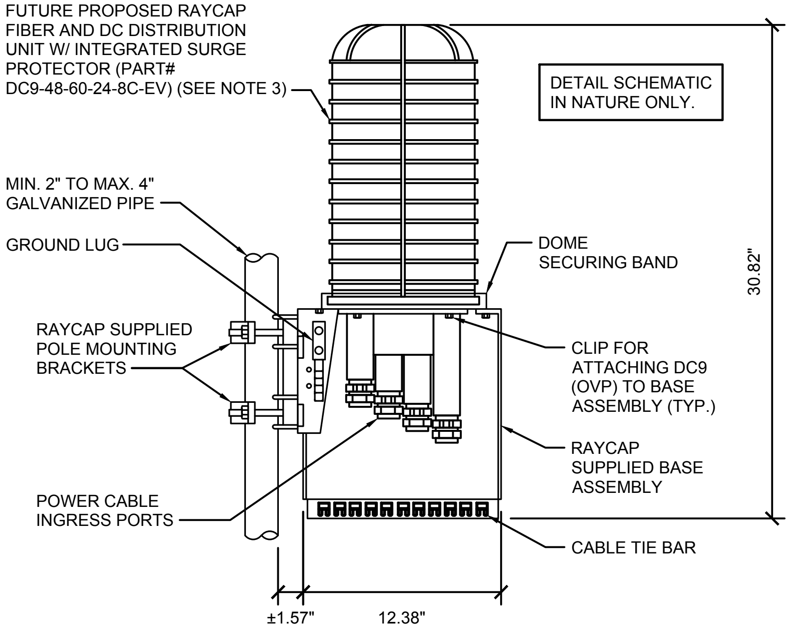
C-6
ANTENNA CONFIGURATION & SCHEDULE



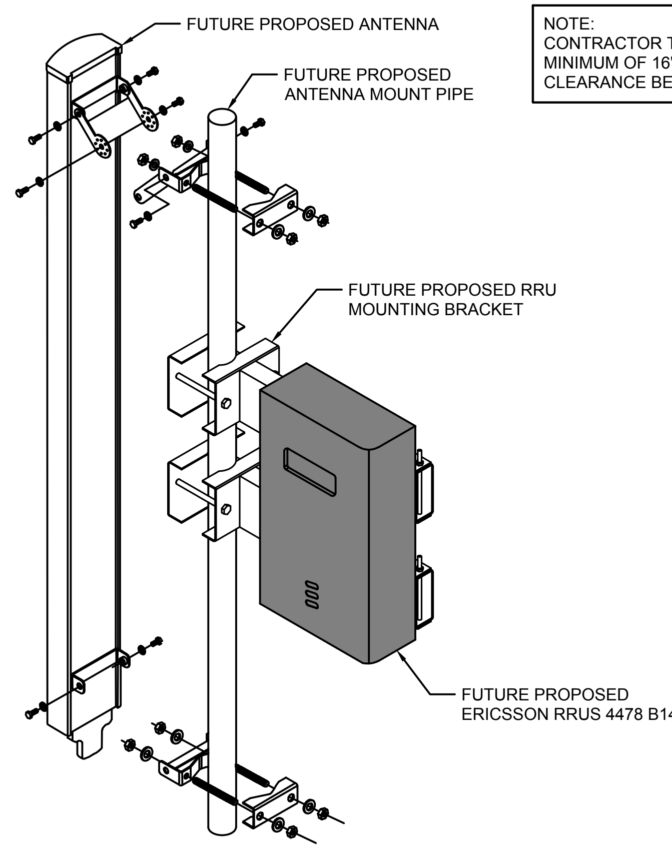
NOTES:

1. UNIT SHALL BE MOUNTED AS PER MANUFACTURER'S RECOMMENDATIONS.
2. CONTRACTOR SHALL TIGHTEN ALL BOLTS TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
3. CONTRACTOR SHALL INSTALL RAYCAP DISTRIBUTION UNIT WITHIN 15 FEET FROM ALL RRU'S

DC9 MOUNTING DETAIL — 1

SCALE: NONE

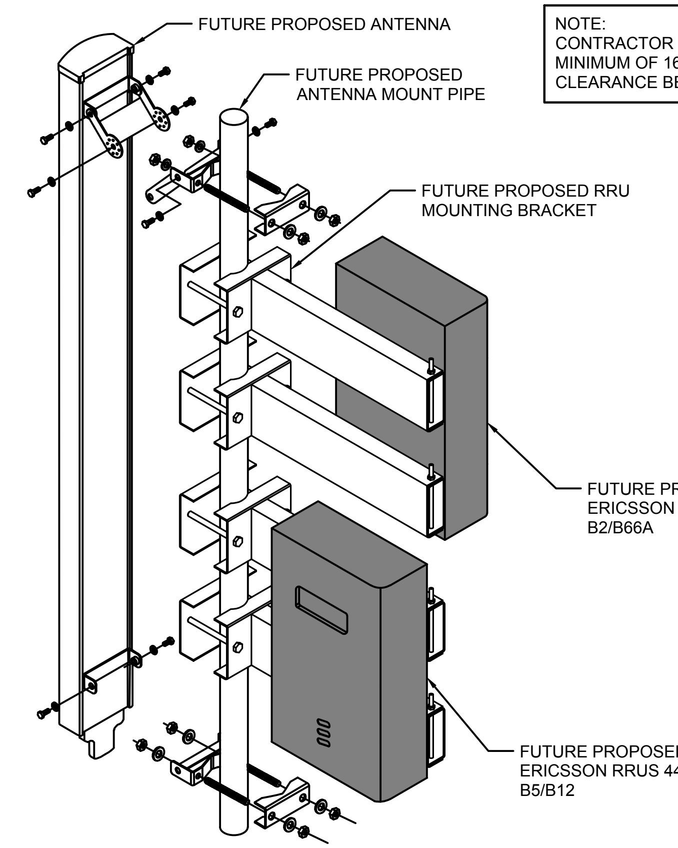
NOTE:
CONTRACTOR TO MAINTAIN A MINIMUM OF 16" VERTICAL CLEARANCE BELOW EACH RRU.



ANTENNA AND RRU MOUNTING DETAILS — 2

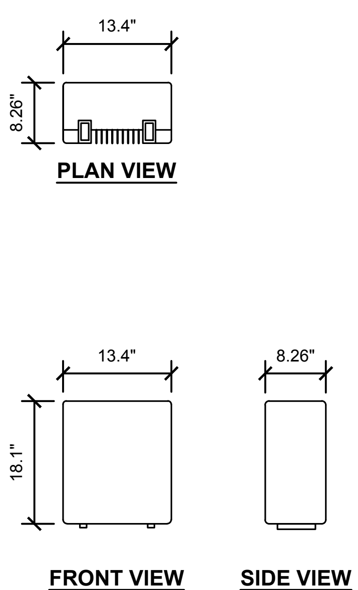
SCALE: NONE

NOTE:
CONTRACTOR TO MAINTAIN A MINIMUM OF 16" VERTICAL CLEARANCE BELOW EACH RRU.



ANTENNA AND RRU MOUNTING DETAILS — 3

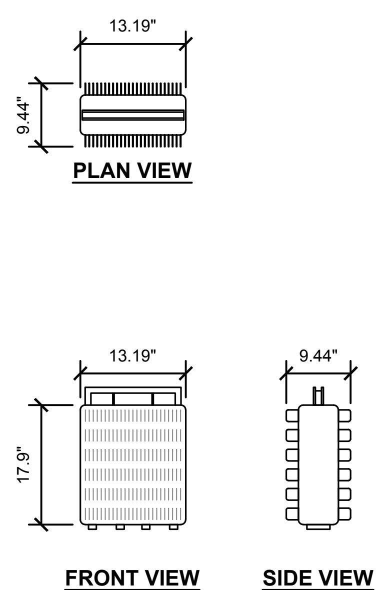
SCALE: NONE



MANUFACTURER:	ERICSSON
MODEL #:	RRUS 4478 B14
DIMENSIONS (WxDxH):	13.4"x8.26"x18.1"
RRU WEIGHT:	59.4 lbs

RRUS 4478 B14 SPECS — 4

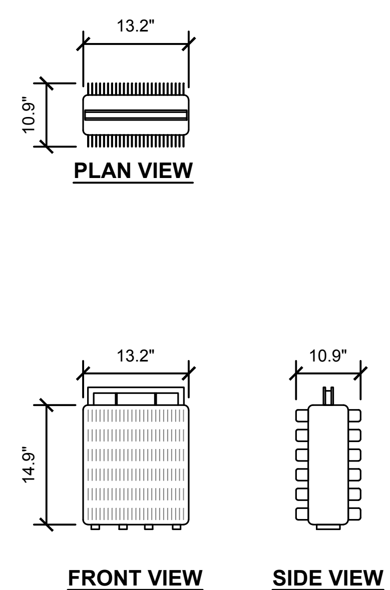
SCALE: NONE



MANUFACTURER:	ERICSSON
MODEL #:	RRUS 4449 B2/B12
DIMENSIONS (WxDxH):	13.19"x9.44"x17.9"
RRU WEIGHT:	71.0 lbs

RRUS 4449 B5/B12 SPECS — 5

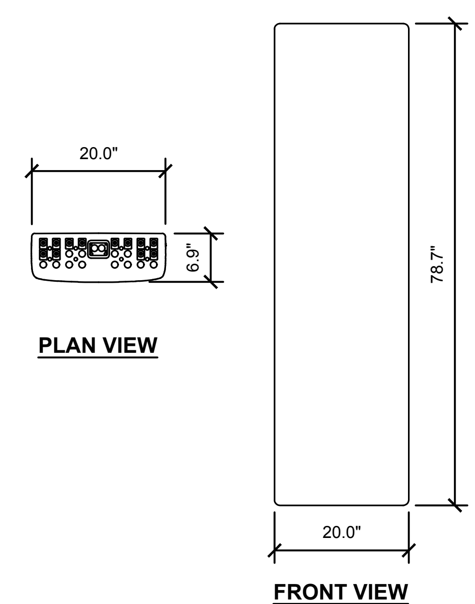
SCALE: NONE



MANUFACTURER:	ERICSSON
MODEL #:	8843 B2/B66A
DIMENSIONS (WxDxH):	13.2"x10.9"x14.9"
RRU WEIGHT:	72.0 lbs

RADIO 8843 B2/B66A — 6

SCALE: NONE



MANUFACTURER:	KATHREIN
MODEL #:	80010991
DIMENSIONS (WxDxH):	20.0"x6.9"x78.7"
ANTENNA WEIGHT:	100.9 lbs

ANTENNA SPECS — 7

SCALE: NONE

NOT USED — 8

SCALE: NONE

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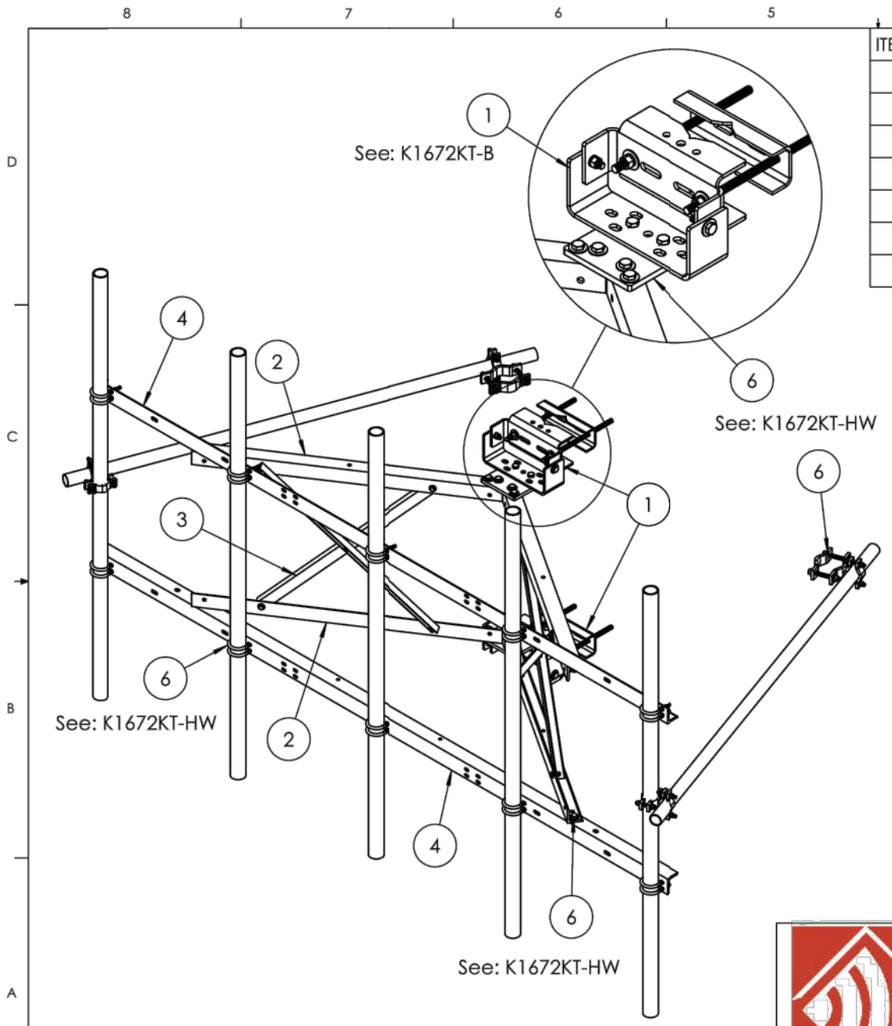
C-7
EQUIPMENT DETAILS



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	K1672KT-B	Sector Frame Leg Clamp Assembly, Non-Tapered connection	2
2	K0082KT	Standoff Angle, 58.75" (WLL)	4
3	K0030KT4B	Brace Angle, 48" Long	4
4	K0072KT12W	Face angle, 12.5' (WLL)	2
5	K1672KTP-HW	Hardware Kit for Pipeface Heavy 10 & WLL	1
6	K7940KT14-1		10
7	P1000KT10.5	2-3/8" OD Pipe, 126" Long	2

NOTES:
Antenna Pipes should be centered and evenly spaced.

Fits Leg: Round 1-1/2" OD to 8-1/2" OD
60 Degree Angle 2" to 8-1/2"
90 Degree Angle 2" to 6"

Confirm with EOR when mounting on a leg less than 1-1/2" solid diameter or less than P2.5STD tower leg.

Position mount or adjust safety climb cable so not to hinder or damage or obstruct the safety climb. Safety cable routing bracket may be purchased separately.

All fasteners should be tightened to "snug tight" per AISC 6.5.2.

This mount is rated and approved for
M1400R(1500)-4(24)
Mount Design Criteria ANSI/TIA-222-H-2017 and TIA-5053 sec 2.3

T1671KTS12 Mount Area [EPA] Bare 90 deg wind Single Sector (sq. ft.)		NO ICE	with 1/2" ICE
	Dead Load	509.12	780.94
	(EPA)N	20.16	27.04
	(EPA)T	15.11	20.9

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(770) 975-0500 office (770) 974-5100 fax

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± 1/32 ANGULAR: ± 2° ONE PLACE DECIMAL: ± .06 TWO PLACE DECIMAL: ± .03 THREE PLACE DECIMAL: ± .010	DRAWN	KAR	5/19/20
	CHECKED		
	ENG APPR.		
	MFG APPR.		
INTERPRET GEOMETRIC TOLERANCING PER:	PROPRIETARY AND CONFIDENTIAL		
MATERIAL	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF KENWOOD TELECOM. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF KENWOOD TELECOM IS PROHIBITED.		
FINISH			
DO NOT SCALE DRAWING			

KENWOOD TELECOM

TITLE:
Sector Frame, 12ft Angle Face Straight Leg Connection

SIZE	DWG. NO.	REV
	T1671KTS12	B
SCALE: 1:20	FINISHED WEIGHT: 553.35 lbs	SHEET 1 OF 1

ANTENNA MOUNT DETAIL — SCALE: NONE — 1

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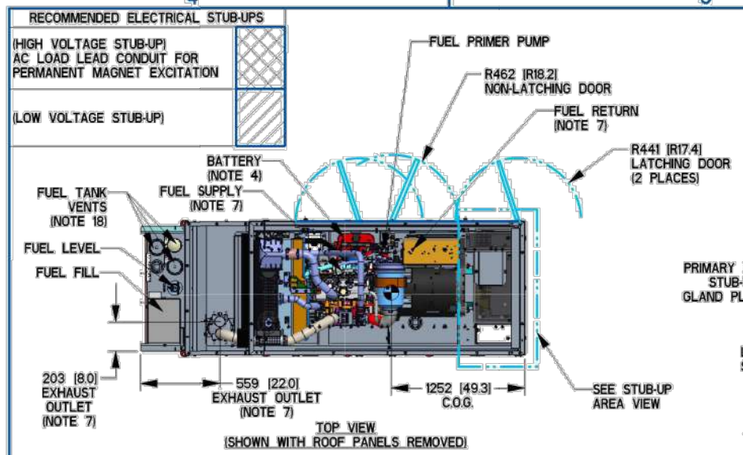
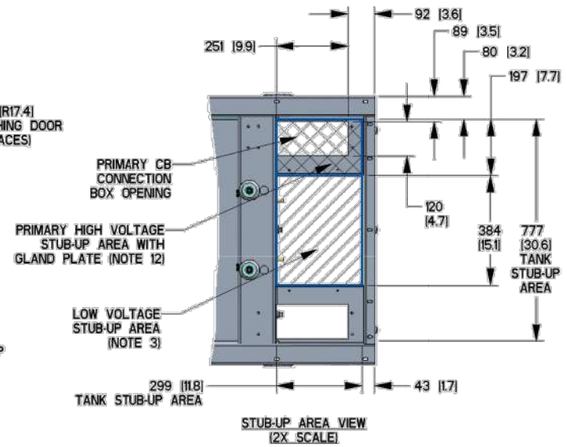
CHECK: JKR
DRAWN: JTB
JOB: 2001869T

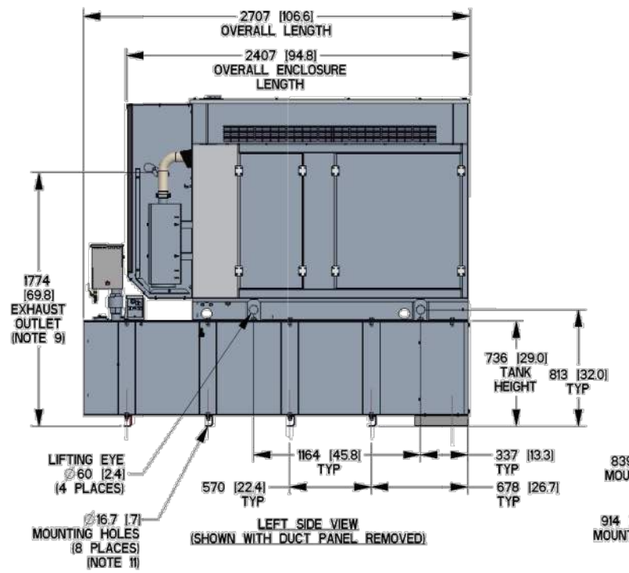
C-8
EQUIPMENT DETAILS

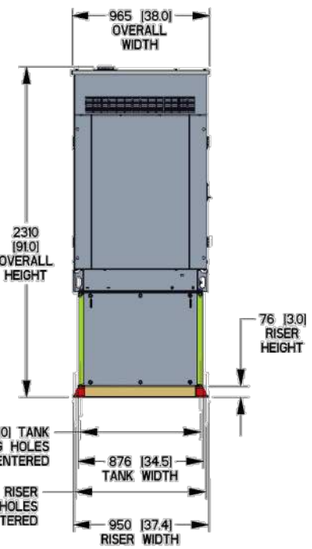
SH 1/1 | REV B | WINDCHILL VERSION B.4

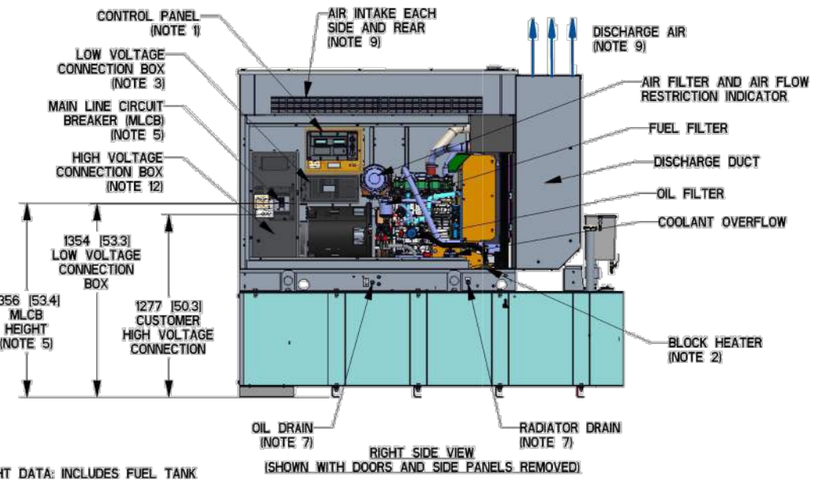




NOTES:
1. CONTROL PANEL (10A BATTERY CHARGER INSIDE)
2. 120V, 20A GFCI & 250V, 15A OUTLET
3. CONNECTION POINTS FOR CONTROL WIRES PROVIDED IN THE LOW VOLTAGE CONNECTION BOX (USE LOW VOLTAGE STUB-UP AREA)
4. BATTERY (12 VOLT NEGATIVE GROUND SYSTEM).
5. MAIN LINE CIRCUIT BREAKER (MLCB) (MLCB HEIGHT MAY VARY WITH CB SELECTION). AC LOAD LEADS CONNECT DIRECTLY TO BOTTOM OF BREAKER.
6. CENTER OF GRAVITY AND WEIGHT MAY SHIFT SLIGHTLY DUE TO UNIT OPTIONS
7. ENGINE SERVICE CONNECTIONS:
   FUEL SUPPLY = 3/8" NPT
   FUEL RETURN = 3/8" NPT
   OIL DRAIN = 1/2" NPT
   RADIATOR DRAIN = 1/2" NPT
   EXHAUST OUTLET = 2.5" I.D.
8. STUB-UPS: BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB-UP AREA.
9. GENERATOR SET MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND DISCHARGE AIR IS NOT RECIRCULATED. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
10. BOTTOM OF GENERATOR SET MUST BE CLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
11. BOLTS OR STUDS USED TO MOUNT UNIT TO PAD SHALL BE 5/8-11 GRADE 5. USE STANDARD SAE TORQUE SPECS.
12. HIGH VOLTAGE STUB-UP AREA INCLUDES THE AC LOAD LEAD CONNECTIONS TO MLCB, NEUTRAL CONNECTION AND AUXILIARY 120/240V CONNECTION.
13. 190 GALLON USEABLE CAPACITY BASETANK STANDARD WITH GENERATOR
14. 1500W 120 VAC ENGINE BLOCK HEATER WITH THREE PRONG CORD.
15. FUEL LINES ARE PLUMBED DIRECTLY TO BASE TANK
16. DOORS MUST BE ABLE TO OPEN AT LEAST 90° TO BE REMOVED.
17. GENERATOR MUST BE GROUNDED
18. 12 FOOT VENT IS OPTIONAL







WEIGHT DATA: INCLUDES FUEL TANK
GENERATOR: 1358 [2995]
GENERATOR WITH SHIPPING SKID: 1424 [3139]

ENCLOSURES:
STEEL L2A: 231 [509]
ALUMINUM L2A: 77 [170]

WEIGHT: KG [LBS]
DIMENSIONS: MM [INCHES]

DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

INSTALLATION DRAWING

ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

TITLE
INSTALL D2.2L G22
30KW SSS L2A Y01 EXT

ISSUE DATE:	12/18/17		
SIZE B	CAGE NO N/A	DWG NO 10000019290	REV B
SCALE 0.030	WT-KG SEE ABOVE	SHEET 1 of 1	

GENERATOR SPECIFICATIONS

SCALE: NONE

1

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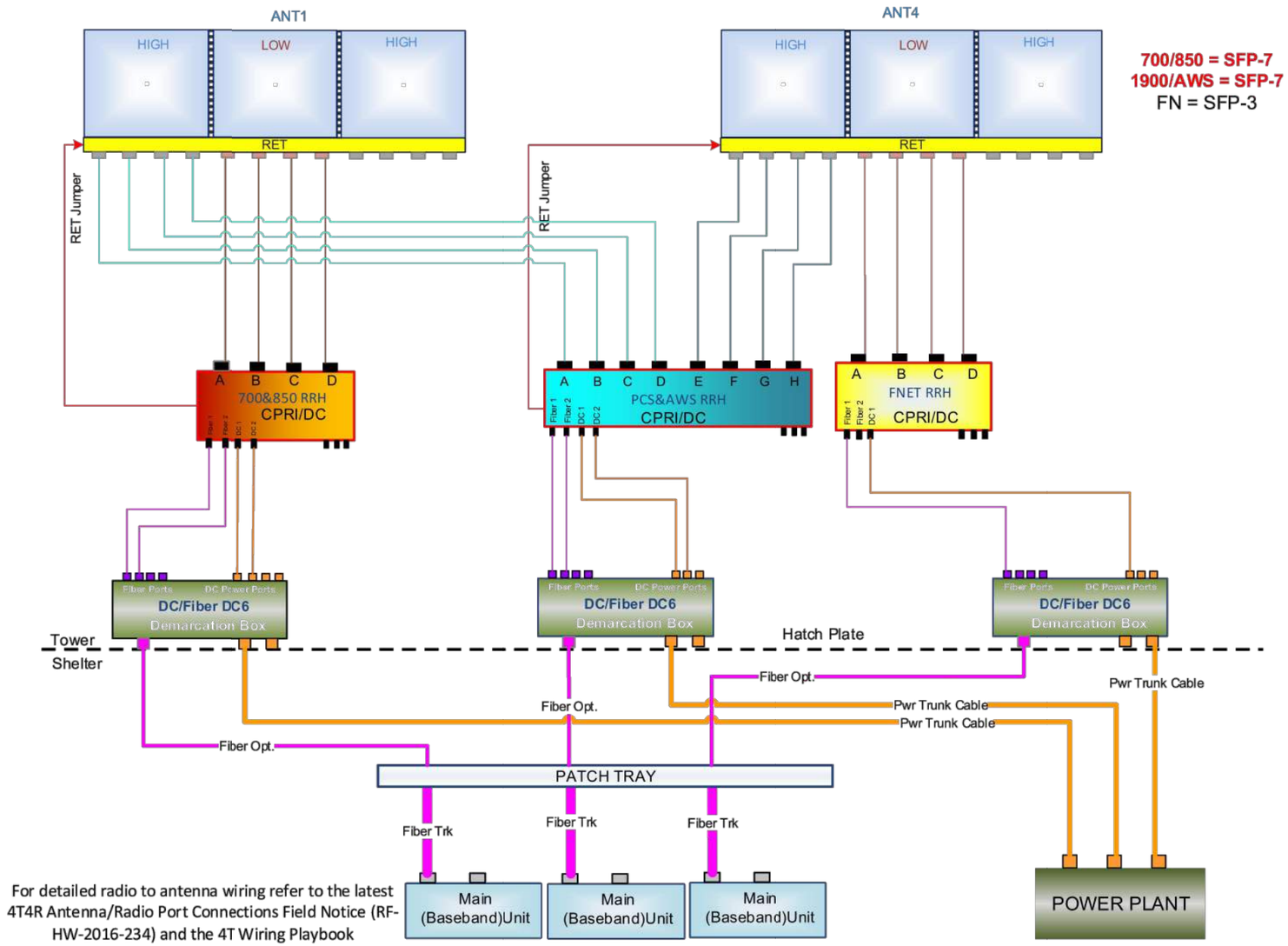
CHECK: JKR
DRAWN: JTB
JOB: 2001869T

C-9
EQUIPMENT DETAILS

NOTES:

1. PLUMBING DIAGRAM IS TYPICAL FOR ALL SECTORS.
2. VERIFY CONFIGURATION AT PRE-CONSTRUCTION MEETING WITH TURFING VENDOR. RFDS ALWAYS TAKES PRECEDENCE BUT CONFIRM WITH TURFING VENDOR AND END USER PRIOR TO INSTALLATION IF DISCREPANCY EXISTS.

Diagram - Sector	A	Diagram File Name - NFL_LTE 5C_2x12PORTS KATHRIEN_2xDB 5G NR RRU_NO WCS.vsd					
Atoll Site Name -	FNL03179	Location Name -	FNL03179 OTTER BAY	Market -	JACKSONVILLE-PANHANDLE	Market Cluster -	NORTH FLORIDA
Comments:							



For detailed radio to antenna wiring refer to the latest 4T4R Antenna/Radio Port Connections Field Notice (RF-HW-2016-234) and the 4T Wiring Playbook

Horizontal > 3' separation for B14 antenna from B17 or B29 (700MHz ANT)

PLUMBING DIAGRAM — 1

SCALE: NONE

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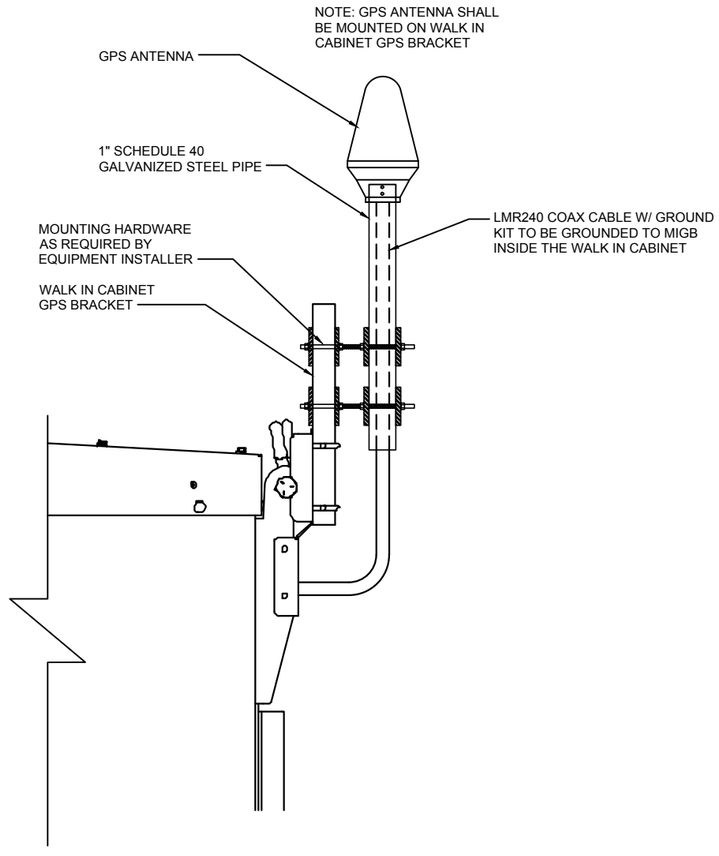
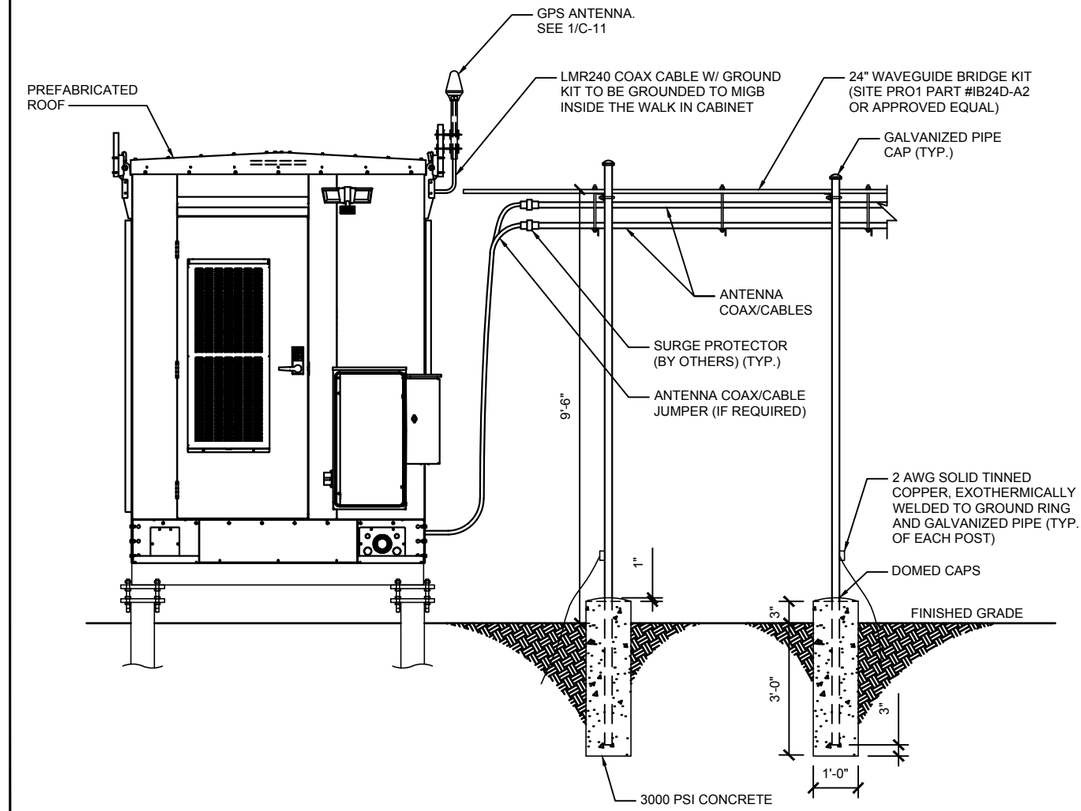
C-10
PLUMBING DIAGRAM



GPS MOUNTING DETAIL

SCALE: NONE

1



ICE BRIDGE ELEVATION

SCALE: NONE

2

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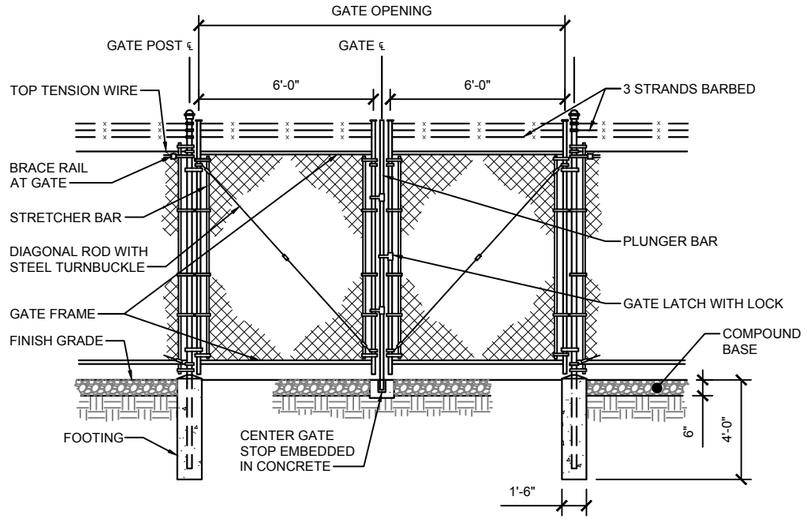
C-11
ICE BRIDGE DETAILS

FENCE NOTES:

(INSTALL FENCING PER ASTM F-567, SWING GATES PER ASTM F- 900)

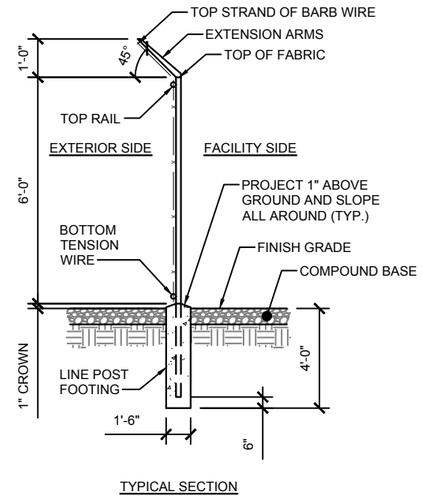
1. GATE POST: 3-1/2" DIA. SCHEDULE 40 PER ASTM-F 1083
2. CORNER AND TERMINAL OR PULL POST: 3" DIA. SCHEDULE 40 PER ASTM-F 1083
3. LINE POST: 2" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083
4. GATE FRAME: 1-1/2" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083
5. TOP RAIL AND BRACE RAIL: 1-1/2" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083
6. FABRIC: 9 GA. CORE WIRE SIZE 2" MESH, CONFORMING TO ASTM-A392
7. TIE WIRE: MINIMUM 9 GA. GALVANIZED STEEL AT POSTS AND RAILS A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAXIMUM 24" INTERVALS
8. TENSION WIRE: 6 GA. GALVANIZED STEEL
9. BARBED WIRE DOUBLE STRAND 12-1/2" GA. TWISTED WIRE TO MATCH WITH FABRIC 14 GA., 4 PT. BARBS SPACED ON APPROXIMATELY 5" CENTERS
10. GATE LATCH: 1-3/8" O.D. PLUNGER ROD WITH MUSHROOM TYPE CATCH AND LOCK, KEYED ALIKE FOR ALL SITES IN A GIVEN MTA
11. COMPLY WITH ANY LOCAL ORDINANCES REQUIRING PERMITS FOR PLACEMENT OF BARBED WIRE
12. HEIGHT = 6' VERTICAL AND 1' BARBED WIRE VERTICAL DIMENSION
13. WARNING SIGNS USING THE INTERNATIONAL SYMBOL OF ELECTRICAL SHOCK HAZARD SHALL BE FURNISHED AND INSTALLED ON THE EXTERIOR OF ALL SIDES OF THE MAIN PERIMETER FENCE AND THE GATE. ADDITIONALLY, SIGNS SHALL BE FURNISHED AND INSTALLED THAT STATE "NO TRESPASSING" IN ENGLISH. THE SIGNS SHALL BE IMPERVIOUS TO WEATHERING AND BE MOUNTED TO AVOID EASE OF REMOVAL BY VANDALS.



DOUBLE SWING GATE DETAIL

SCALE: NONE

1

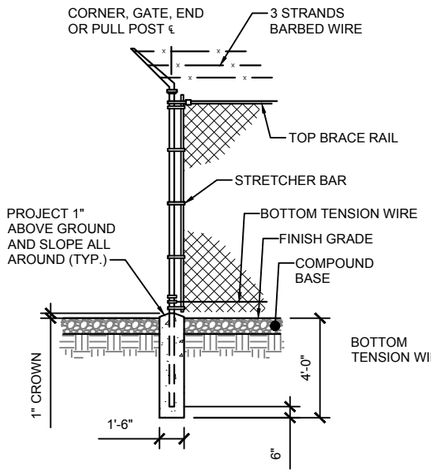


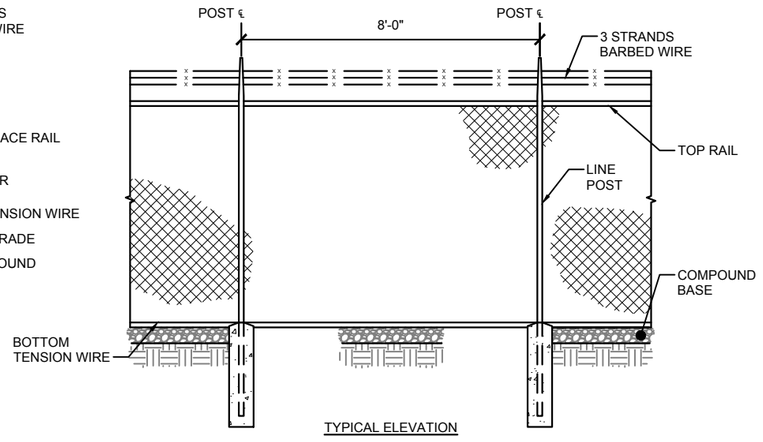
TYPICAL SECTION

WOVEN WIRE FENCE DETAIL

SCALE: NONE

2



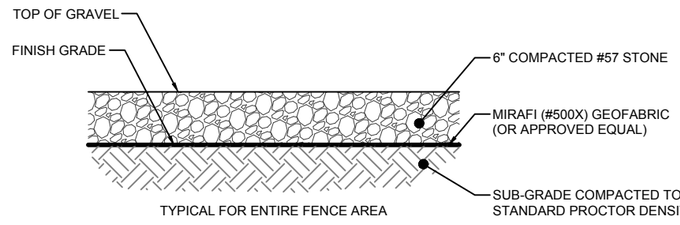


TYPICAL ELEVATION

WOVEN WIRE CORNER, GATE, END OR PULL POST DETAIL

SCALE: NONE

3

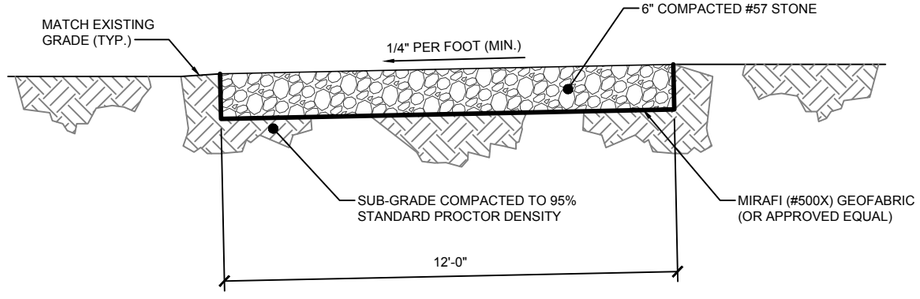


TYPICAL FOR ENTIRE FENCE AREA

COMPOUND BASE DETAIL

SCALE: NONE

4



ACCESS DRIVE DETAIL

SCALE: NONE

5

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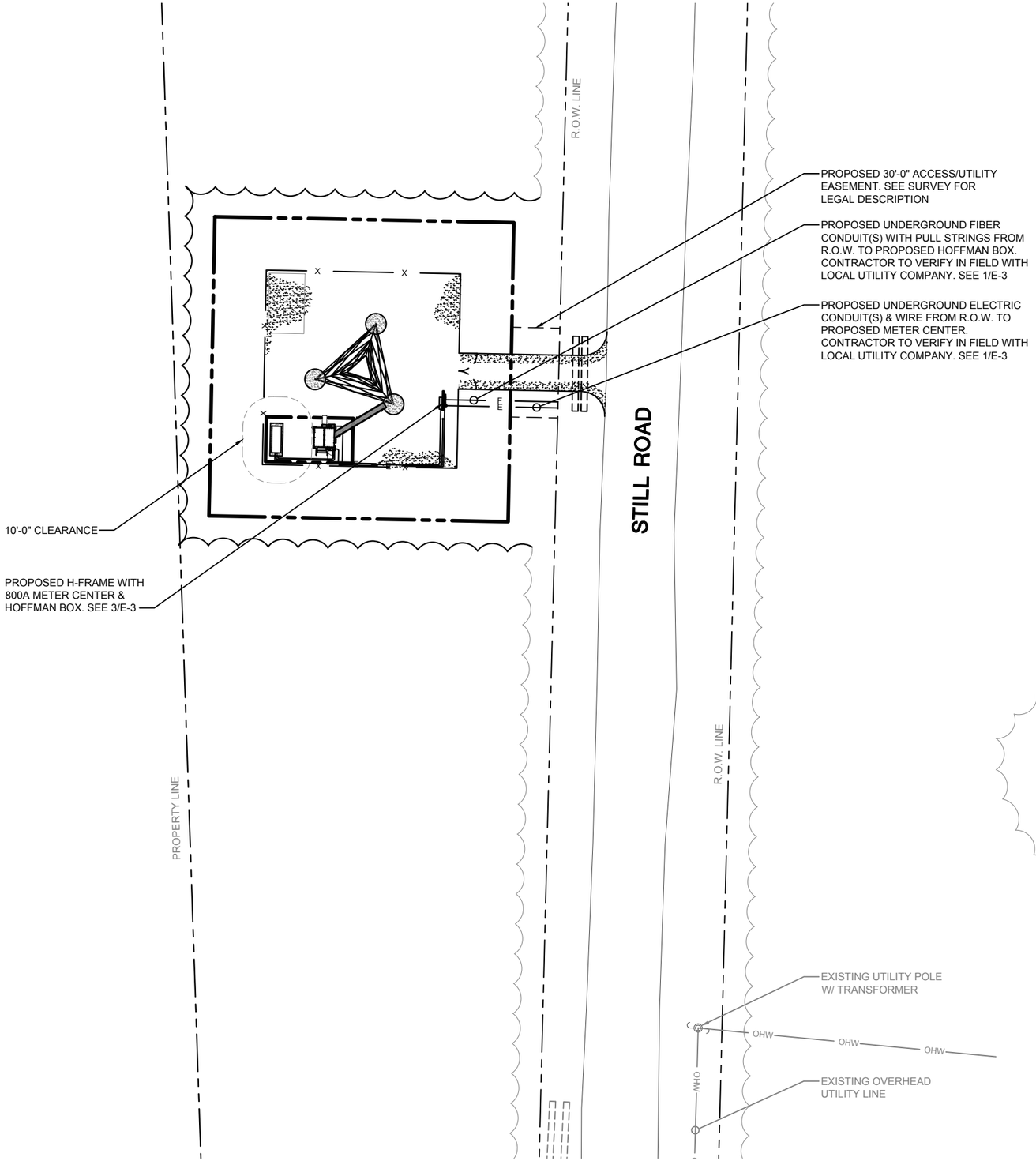
JOB: 2001869T

C-12
FENCE & SITE DETAILS



UTILITY ROUTING PENDING UTILITY WALK

VOLTAGE DROP FROM EXISTING R.O.W. TO METER CENTER (800A)			
LENGTH OF RUN	WIRE SIZE	VOLTAGE DROP (VOLTS)	PERCENTAGE OF VOLTAGE
±50'-0"	(2) RUNS OF (3) 600 MCM	1.02 V	0.43%

0' 20' 40' 80'

GRAPHIC SCALE: 1" = 40'

UTILITY PLAN

SCALE: 1" = 40'-0"

1

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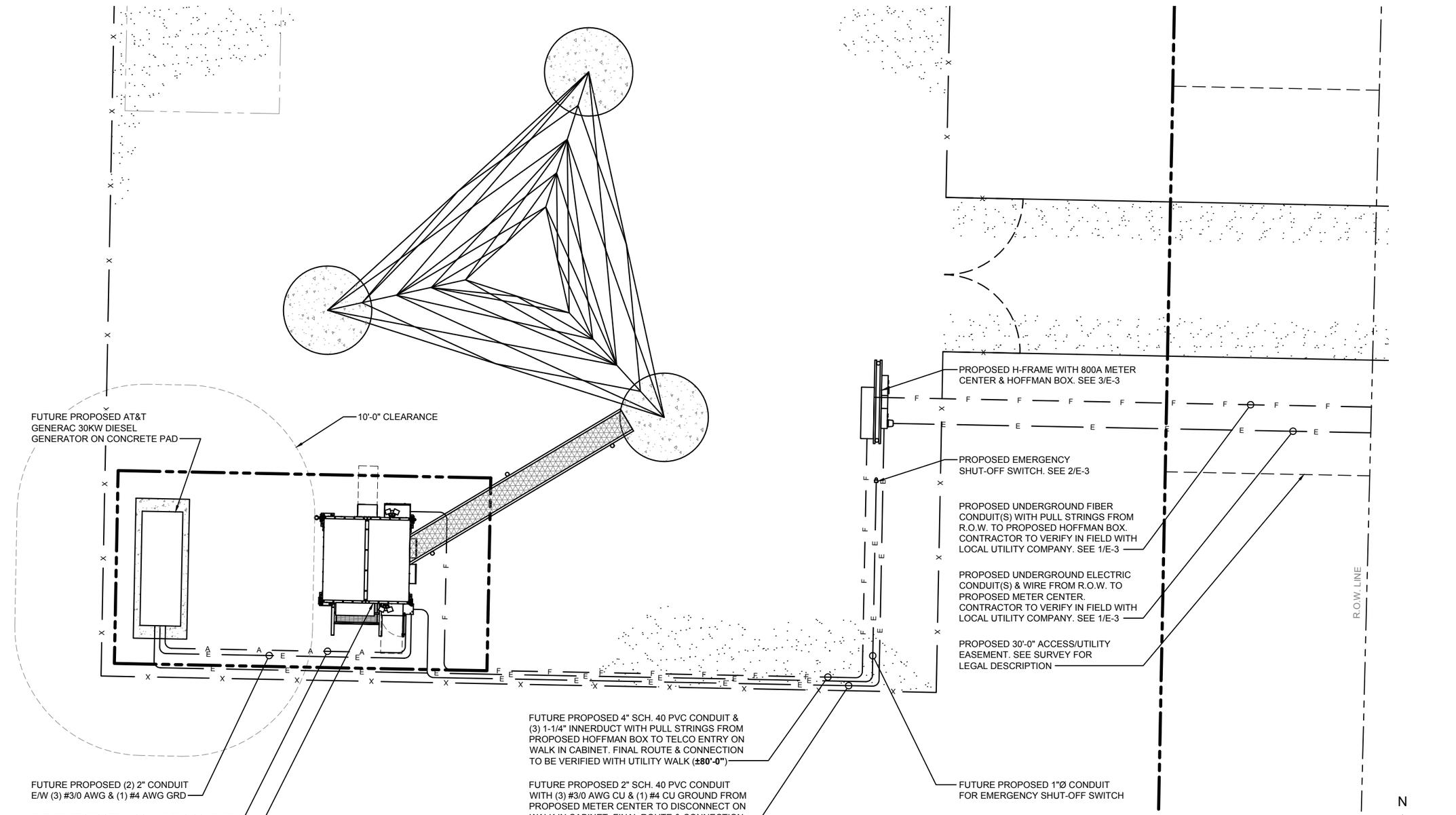
E-1
UTILITY PLAN

NOTE:
UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC UNLESS NOTED OTHERWISE. USE RGS FOR ELBOWS AND RISERS



0' 4' 8' 16'
GRAPHIC SCALE: 1/8" = 1'

ENLARGED UTILITY PLAN

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

1

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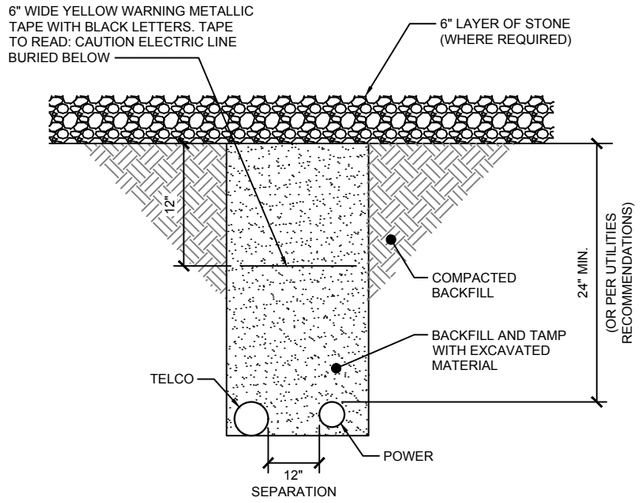
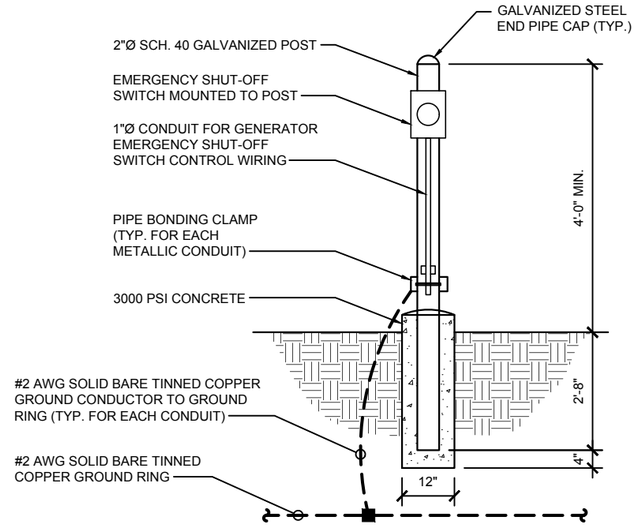
E-2
ENLARGED UTILITY PLAN



UTILITY TRENCH DETAIL

SCALE: NONE

1



EMERGENCY SHUT-OFF SWITCH DETAIL

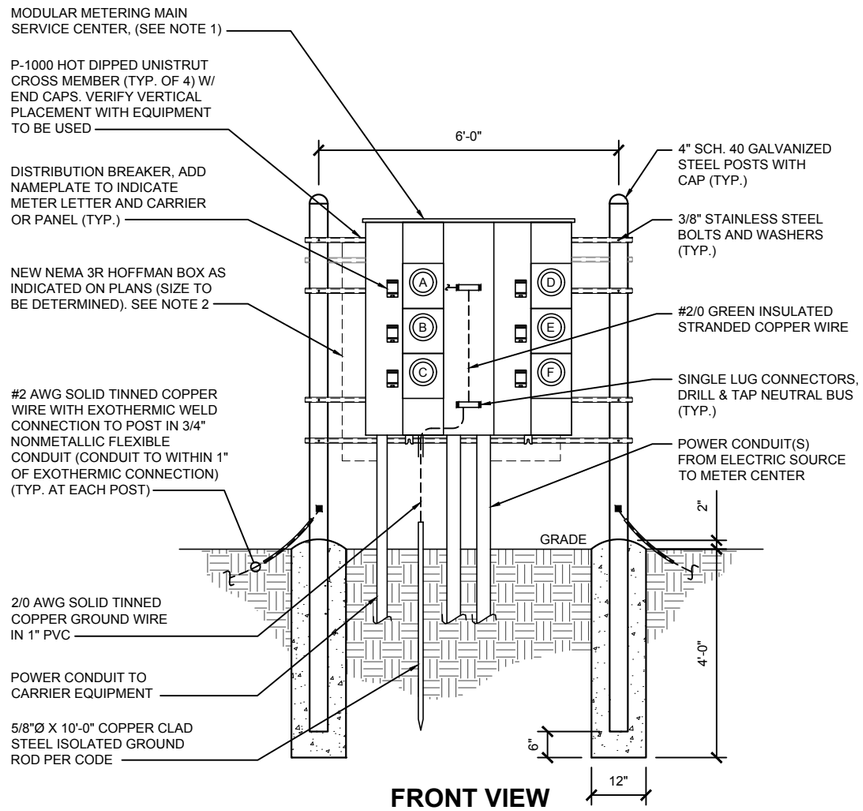
SCALE: NONE

2

NOTES:

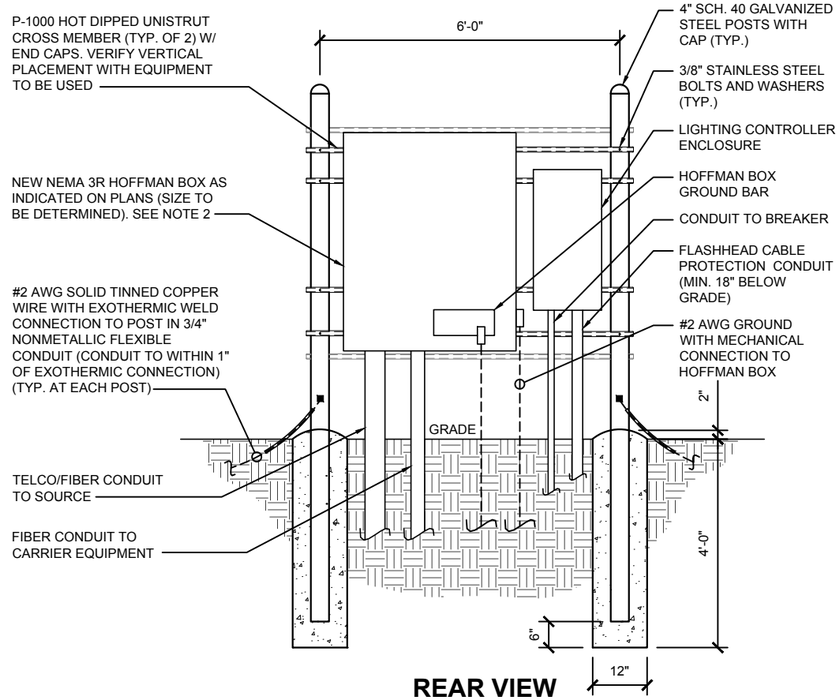
1. CONTRACTOR SHALL PROVIDE AND INSTALL MODULAR METERING MAIN SERVICE CENTER, 120/240, 1Ø, 800AMP, NEMA 3R WITH (6) METER SOCKETS (SQUARE D OR EQUAL). METER CENTER SHALL BE FURNISHED WITH (1) 200 AMP CIRCUIT BREAKER TO FEED CARRIER EQUIPMENT. OTHER METERS AND BREAKERS SHALL BE COVERED WITH LEXAN METER COVER.
2. WHERE INDICATED ON PLANS, PROVIDE A FIBER/TELCO DEMARCATION BOX TO INCLUDE NEMA 3R ENCLOSURE WITH BACKPLATE (HOFFMAN OR APPROVED EQUAL), SURGE SUPPRESSION, AND 2"X12"X1/4" COPPER TIN-PLATED BUSS BAR. USE DOUBLE LOCKING RINGS W/ WASHERS & RUBBER GROMMETS ON BOTH SIDES OF ALL CONDUIT PENETRATIONS INTO THE BOX.
3. CONTRACTOR TO PROVIDE LOCKING PROTECTION FOR UTILITY EQUIPMENT LOCATED OUTSIDE OF FENCED COMPOUND AREA.

NOTE:
UTILITY METER ENCLOSURE INSTALLATION TO BE COORDINATED WITH THE LOCAL ELECTRICAL PROVIDER.



FRONT VIEW

NOTE:
ALL EXTERIOR GROUNDING WIRE IS #2 SOLID BARE TINNED COPPER.



REAR VIEW

H-FRAME DETAIL

SCALE: NONE

3

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CHECK: JKR
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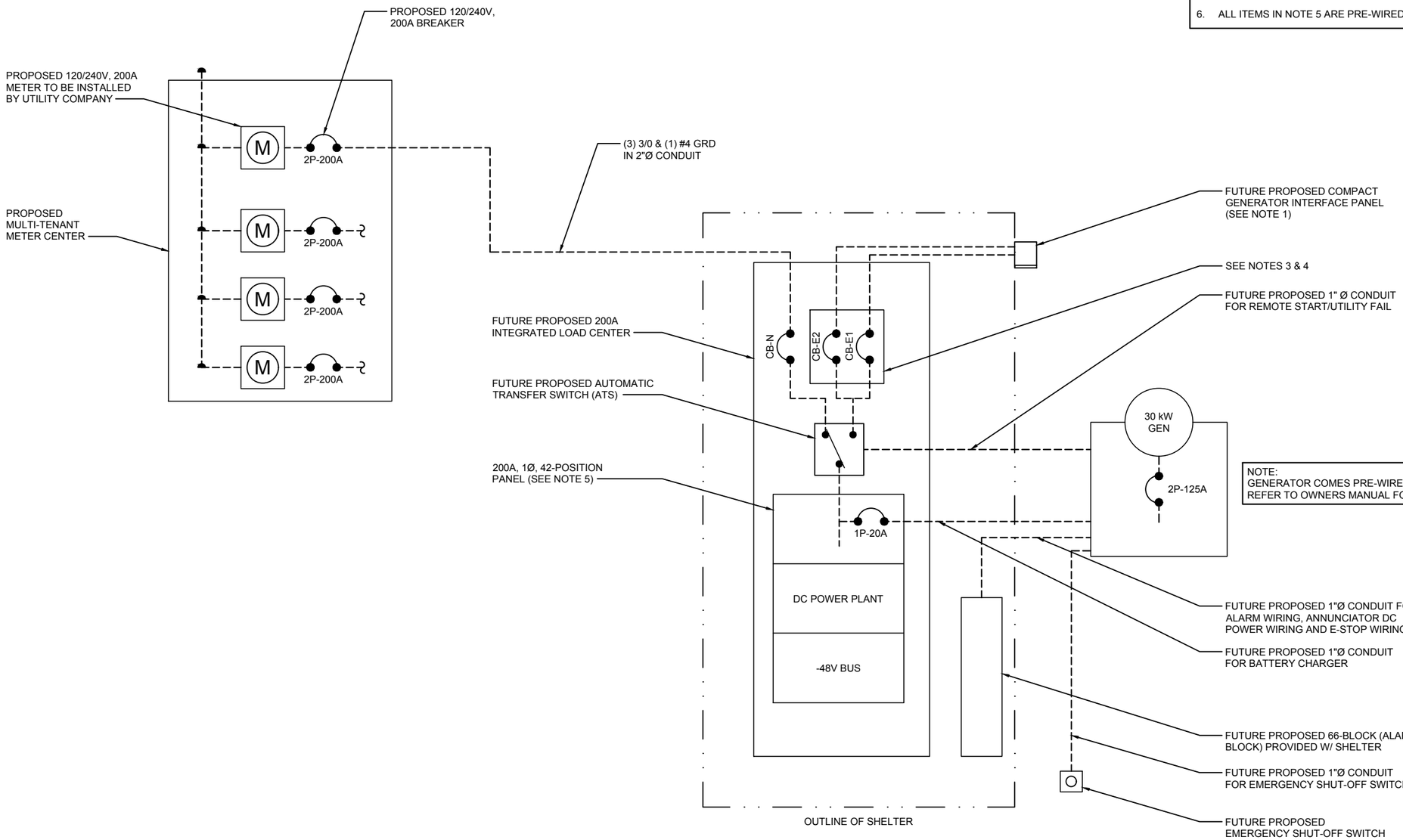
JOB: 2001869T

E-3
UTILITY DETAILS

NOTES:

1. PROVIDE ARC FLASH WARNING LABELS ON ALL PANELS PER NEC 110.16.
2. PROVIDE EQUIPMENT IDENTIFICATION LABELS PER NEC 225.37.
3. CB-N AND CB-E1 ARE 2P-200A MAIN BREAKERS.
4. CB-E1 IS MECHANICALLY INTERLOCKED.
5. POWER TRANSFER LOAD CENTER (PTLC) INCLUDES A CAM-LOC GENERATOR CONNECTION PANEL, AND MTS, A MECHANICALLY INTERLOCKED TRANSFER SWITCH, A 200A 42-POS PANEL AND SURGE SUPPRESSION.
6. ALL ITEMS IN NOTE 5 ARE PRE-WIRED BY MANUFACTURER.



ONE LINE DIAGRAM

SCALE: NONE

1

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CHECK: JKR
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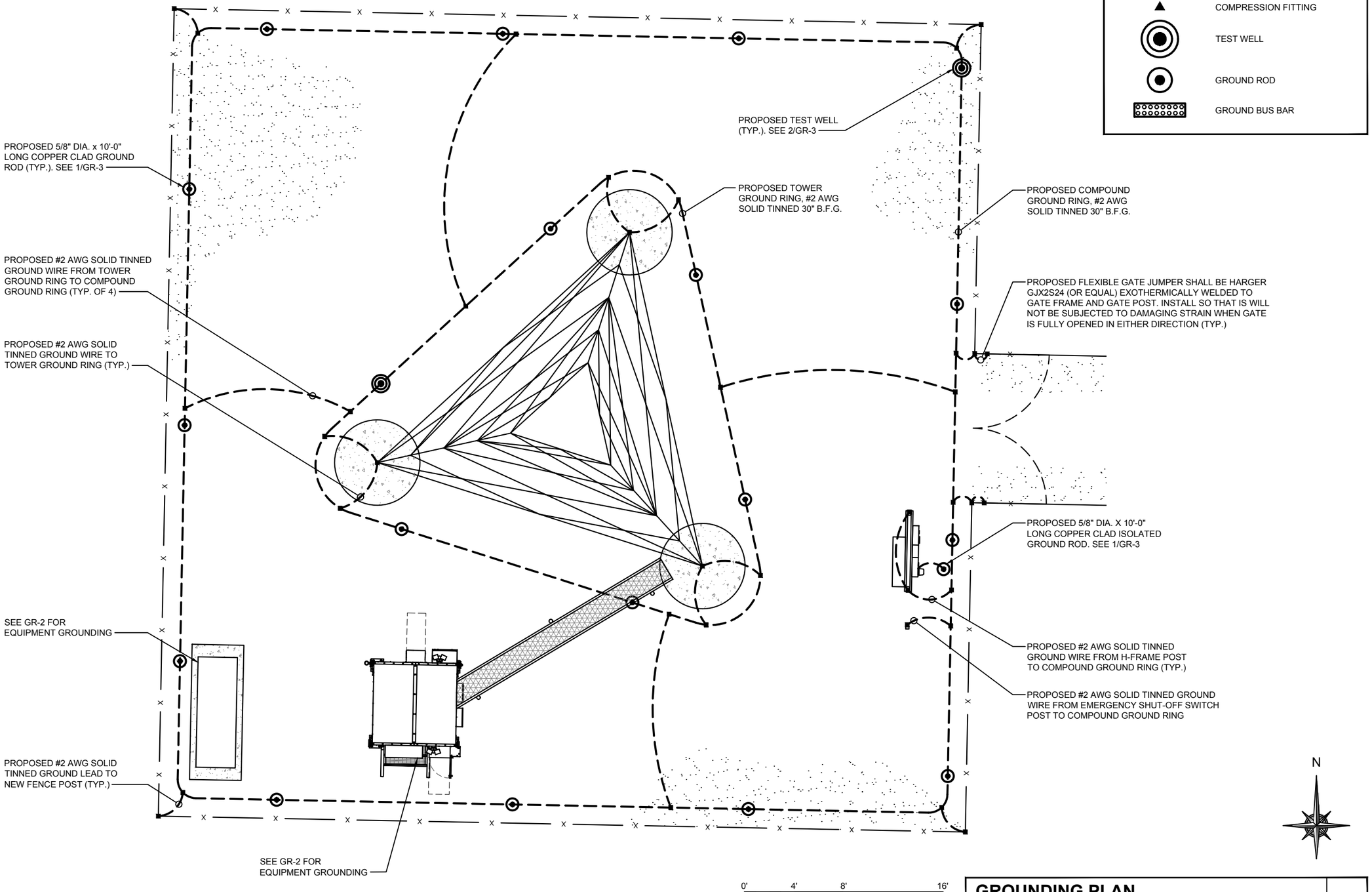
E-4
ONE LINE DIAGRAM

NOTE:
GROUNDING IS FOR REFERENCE ONLY. SOIL CONDITIONS SPECIFIED IN GEOTECHNICAL REPORT SHALL BE REFERRED TO PRIOR TO CONSTRUCTION & MATERIAL ORDER. FINAL GROUNDING SYSTEM RESISTANCE TO BE UNDER 5 OHM'S.



LEGEND

- GROUNDING WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- COMPRESSION FITTING
- TEST WELL
- GROUND ROD
- GROUND BUS BAR

N

0' 4' 8' 16'
GRAPHIC SCALE: 1/8" = 1'

GROUNDING PLAN — **SCALE: 1/8" = 1'-0"** — 1

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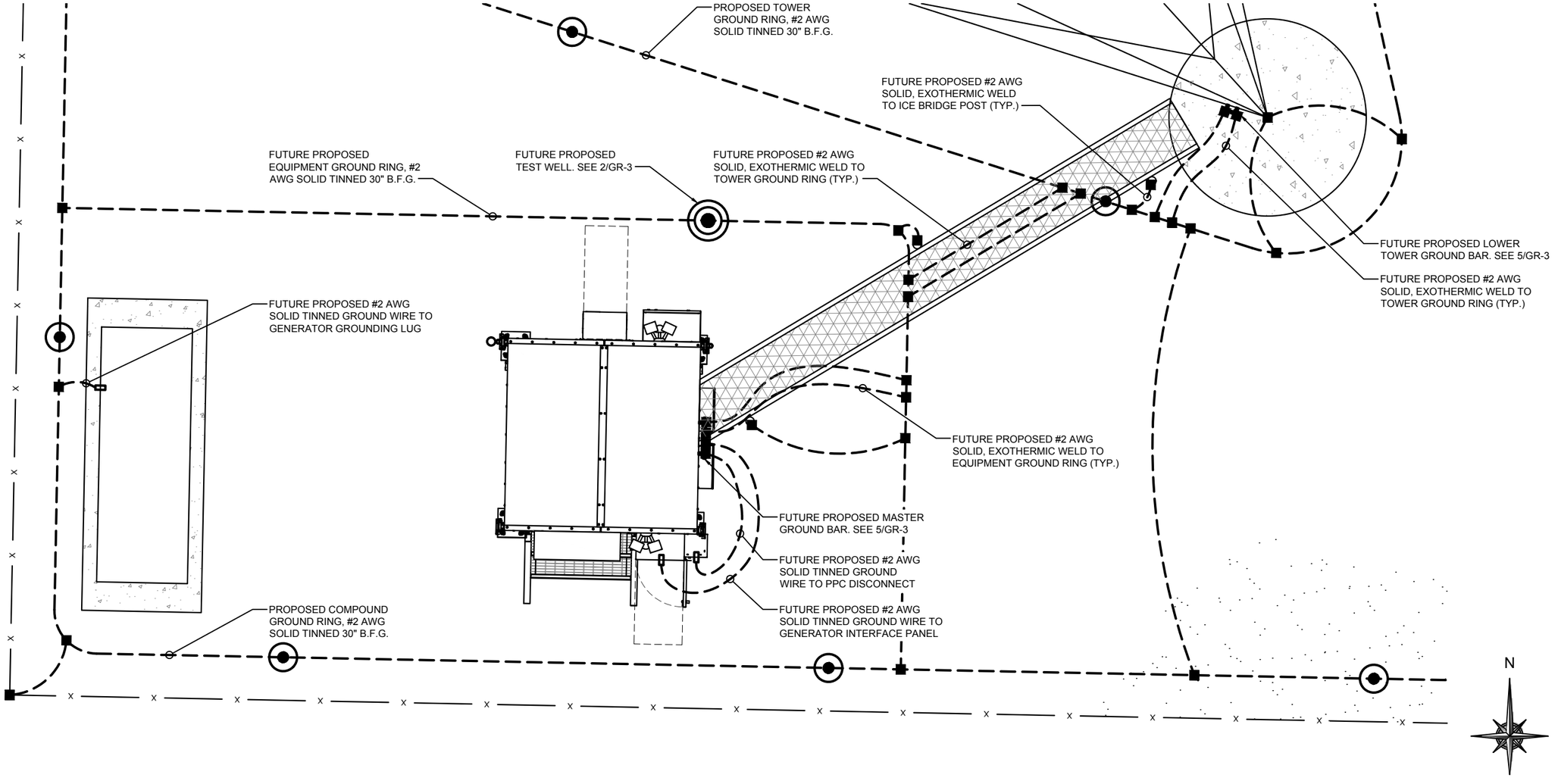
GR-1
GROUNDING PLAN

NOTE:
GROUNDING IS FOR REFERENCE ONLY. SOIL CONDITIONS SPECIFIED IN GEOTECHNICAL REPORT SHALL BE REFERRED TO PRIOR TO CONSTRUCTION & MATERIAL ORDER. FINAL GROUNDING SYSTEM RESISTANCE TO BE UNDER 5 OHM'S.

LEGEND

- GROUNDING WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- COMPRESSION FITTING
- TEST WELL
- GROUND ROD
- GROUND BUS BAR



0' 2' 4' 8'
GRAPHIC SCALE: 1/4" = 1'

EQUIPMENT GROUNDING PLAN

SCALE: 1/4" = 1'-0"

1

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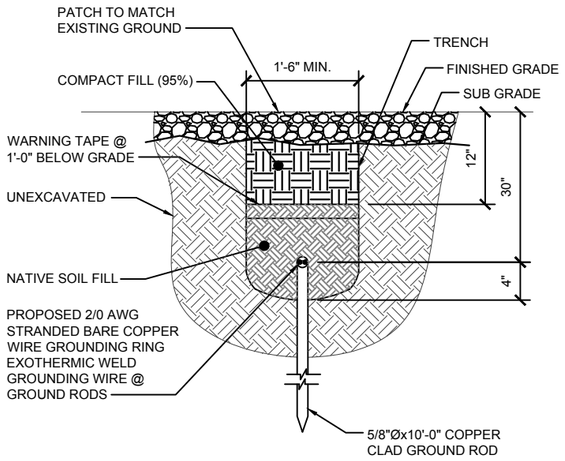
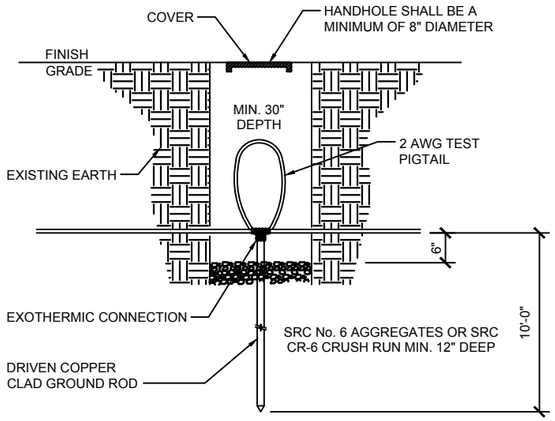
GR-2
EQUIPMENT GROUNDING PLAN



GROUND ROD DETAIL

SCALE: NONE

1



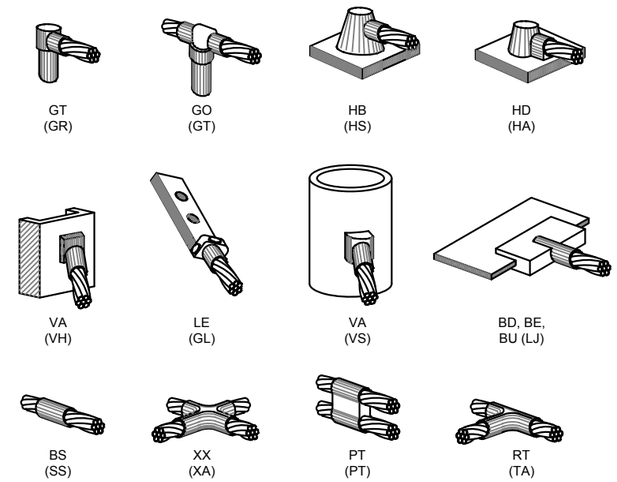
WELL SIZE OF 8" DIAMETER WITH 6" CLEARANCE BELOW EXOTHERMIC WELD CONNECTION ALLOWS FOR USE OF CLAMP-ON GROUND METERS FOR TESTING GROUND SYSTEM.

TEST WELL DETAIL

SCALE: NONE

2

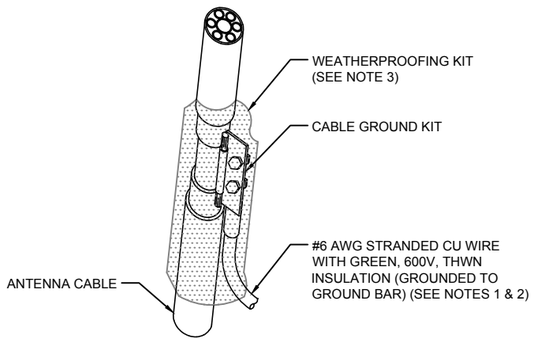
NOTE:
THE FOLLOWING SYMBOLS SHOWN ARE HARGER ULTRAWELD EXOTHERMIC CONNECTIONS WITH PART NUMBERS BELOW. THESE CONNECTIONS MAY BE CROSS-REFERENCED WITH CADWELD CONNECTIONS WHICH ARE SHOWN IN PARENTHESIS



EXOTHERMIC WELD TYPES

SCALE: NONE

3



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

CONNECTION OF GROUND KIT TO ANTENNA CABLE

SCALE: NONE

4

NOTE:
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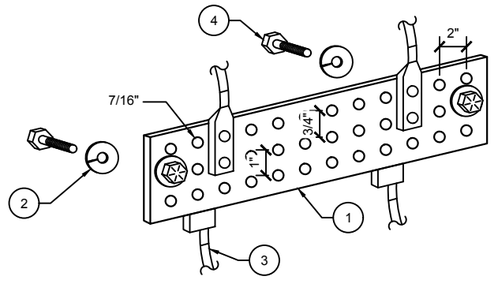

LEGEND:
1. COPPER GROUND BAR (TINNED), 1/4"X 4"X 20"
2. 5/8" LOCKWASHERS, H.K. PORTER OR APPROVED EQUIVALENT.
3. #2 TWO HOLE LONG BARREL COMPRESSION LUG BY BURNDY OR APPROVED EQUIVALENT. CONTRACTOR SHALL EXOTHERMICALLY WELD ALL CONNECTIONS TO EXTERIOR GROUND BARS. MECHANICAL CONNECTIONS WILL ONLY BE ALLOWED INSIDE WALK IN CABINET AND FOR COAX GROUNDING CONNECTIONS.
4. 5/8-11 X 1" HHCS BOLTS, H.K. PORTER OR APPROVED EQUIVALENT.

* APPLY A NO-OXIDATION COMPOUND BEHIND AND ON ALL CONNECTIONS TO GROUND BUSS BAR.

GROUND BAR DETAIL

SCALE: NONE

5

NOT USED

SCALE: NONE

6

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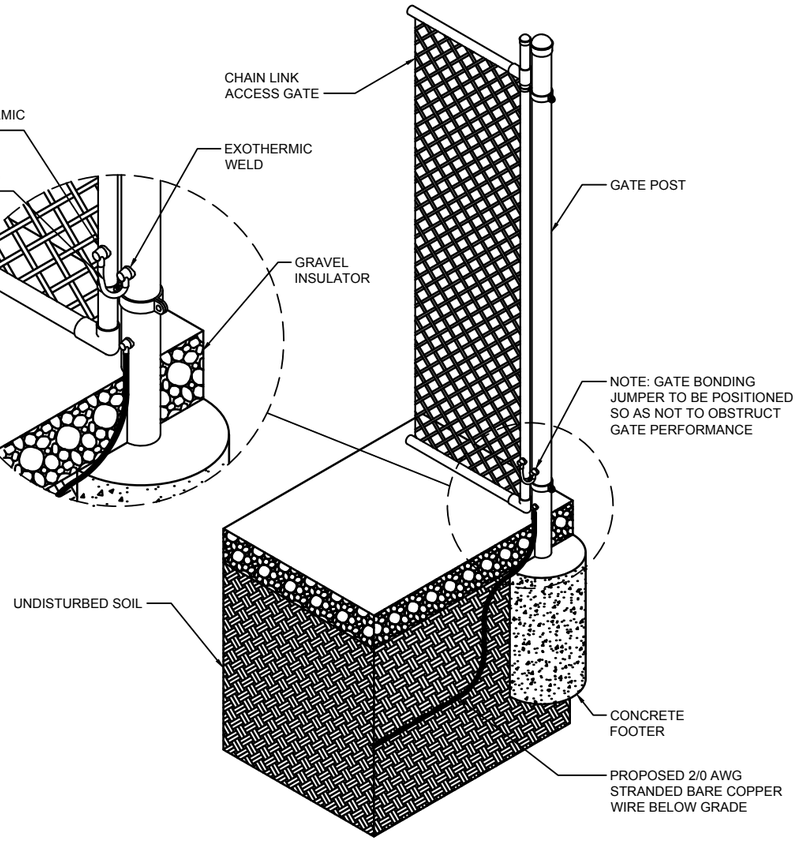
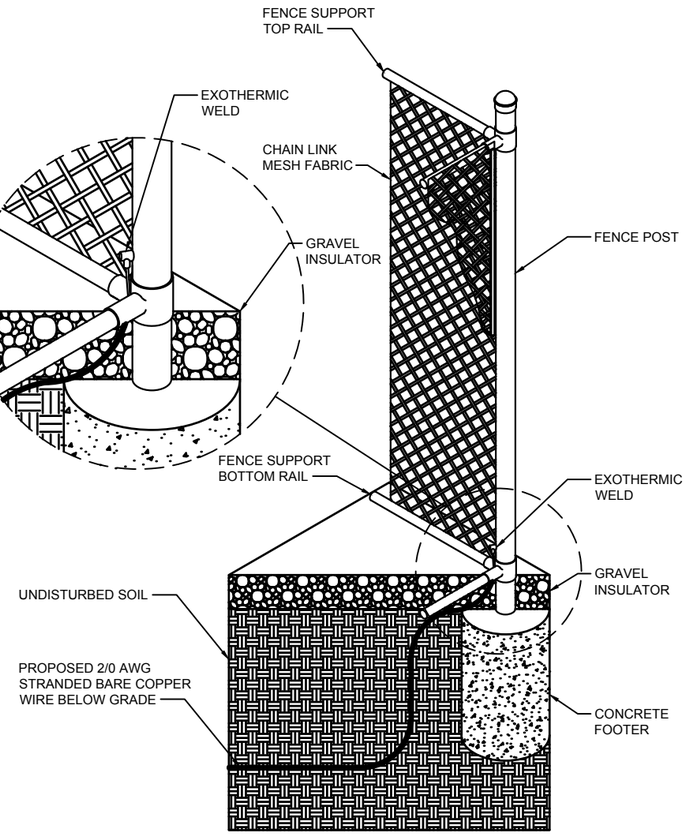
GR-3
GROUNDING DETAILS

NOTE:
ALL EXTERIOR GROUNDING WIRE IS
#2 SOLID BARE TINNED COPPER.





FENCE AND GATE GROUNDING DETAIL

SCALE: NONE

1

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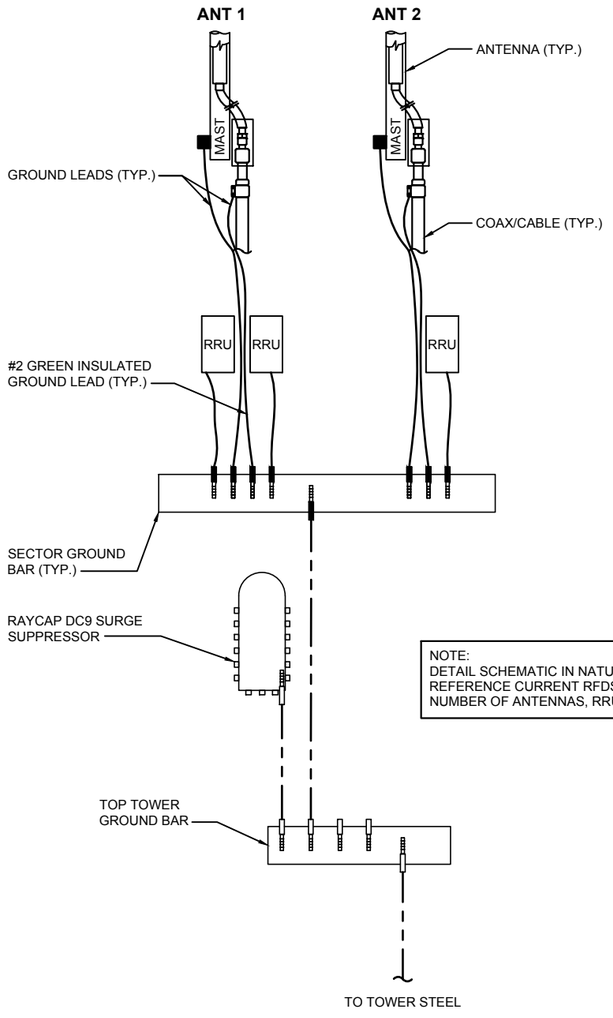
GR-4
GROUNDING DETAILS



NOTE:
DETAIL SCHEMATIC IN NATURE ONLY.
REFERENCE CURRENT RFDS FOR EXACT
NUMBER OF ANTENNAS, RRU'S, ETC.

ANTENNA GROUNDING DIAGRAM

SCALE: NONE

1

NOT USED

SCALE: NONE

2

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GR-5
GROUNDING DETAILS