

PROJECT INFORMATION

SITE NAME: BN138/TWR RD WT RFP
 SITE NUMBER: 4BN0138A
 SITE ADDRESS: 24 TOWER ROAD
 ASHLAND, MA 01721
 COUNTY: MIDDLESEX
 MUNICIPALITY: TOWN OF ASHLAND
 ZONING: RESIDENTIAL A
 LATITUDE: N 42°15'01.52" (42.250422°) (NAD83)
 LONGITUDE: W 71°27'05.75" (-71.451596°) (NAD83)
 TYPE OF SITE: WATER TANK
 STRUCTURE HEIGHT: 62'-0" ± AGL
 ANTENNA CENTER: 86'-6" ± AGL
 GROUND ELEVATION: 298'-0" ± (NAVD 88)
 BUILDING OWNER NAME: TOWN OF ASHLAND
 BUILDING OWNER ADDRESS: 101 MAIN STREET
 ASHLAND, MA 01721
 APPLICANT: T-MOBILE NORTHEAST, LLC,
 15 COMMERCE WAY, SUITE B
 NORTON, MASSACHUSETTS 02766
 APPLICANT PHONE: (508) 286-2700
 APPLICANT FAX: (508) 286-2893

PROJECT DIRECTORY

ENGINEERING FIRM:
 CENTERLINE ENGINEERING SERVICES, PA
 750 WEST CENTER ST, SUITE 301
 WEST BRIDGEWATER, MA 02379
 DEREK CREASER (617) 306-3034
 CARRIER:
 T-MOBILE NORTHEAST, LLC,
 15 COMMERCE WAY, SUITE B
 NORTON, MA 02766
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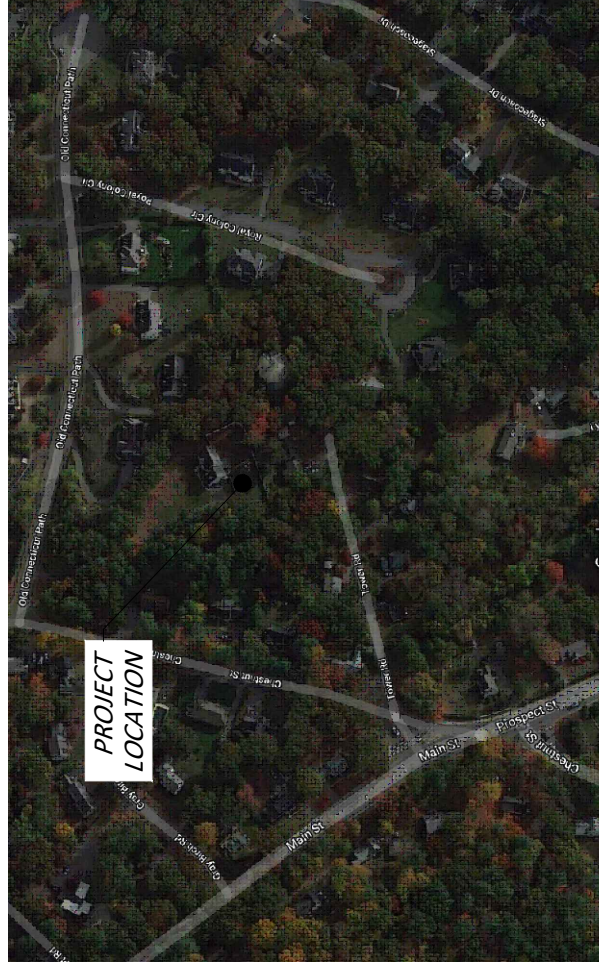
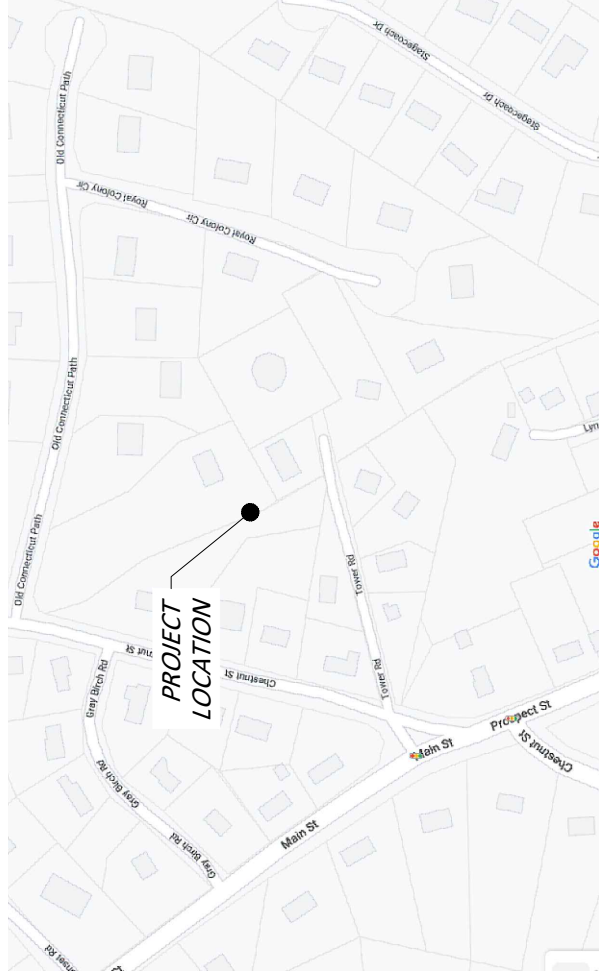
Know what's below.
 Call before you dig.



T-Mobile
 NORTHEAST LLC

SITE NAME: BN138/TWR RD WT RFP
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 ADDRESS: 24 TOWER ROAD
 ASHLAND, MA 01721

TECHNOLOGY: 67E5D998E 6160
 MODIFICATION: ANCHOR_PHASE 3/L600 COVERAGE



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSE OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SCOPE OF WORK

1. REMOVE SIX EXISTING ANTENNAS
2. INSTALL SIX NEW ANTENNAS
3. REMOVE THREE EXISTING RRUS
4. INSTALL SIX NEW RRUS
5. REMOVE THREE EXISTING TMAS
6. REMOVE EXISTING CABLES: ONE HYBRID & TWELVE COAX
7. INSTALL TWO NEW 6x24 HYBRID CABLES
8. REMOVE RBS 2106 EQUIPMENT CABINET
9. REMOVE RBS 6201 EQUIPMENT CABINET
10. INSTALL ONE NEW 6160 EQUIPMENT CABLE
11. INSTALL ONE NEW B160 BATTERY CABLE
12. REMOVE ALL UNUSED CABLES AND EQUIPMENT

DRAWING INDEX

NO.	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES, RF NOTES, CABLING NOTES
A-1	COMPOUND PLAN
A-2	EQUIPMENT LAYOUT
A-3	EQUIPMENT DETAILS
A-4	EAST ELEVATION
A-5	ANTENNA PLAN & SCHEDULE
SN-1	STRUCTURAL NOTES & SPECIAL INSPECTIONS
S-1	ANTENNA & RRU MOUNTING DETAILS
S-2	STRUCTURAL DETAILS
G-1	GROUNDING & ONE LINE DIAGRAM

DRAWING SCALE NOTES:

THESE DRAWINGS ARE FORMATTED TO BE FULL SIZE AT 22"x34". CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

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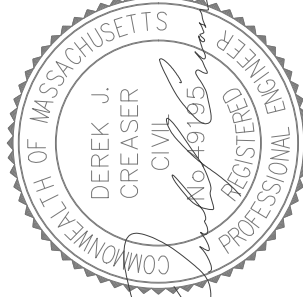


750 W CENTER ST, SUITE 301
 WEST BRIDGEWATER, MA 02379
 PHONE: 781.713.4725

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 ASHLAND, MA 01721
 MIDDLESEX COUNTY

SHEET TITLE: TITLE SHEET

DRAWING: T-1

RF NOTES

- ACTUAL LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR
- THE DESIGN IS BASED ON RF DATA SHEETS, SIGNED AND APPROVED.
- RADIO SIGNAL CABLE AND RACEWAY SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8.
- ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G. OUT DOORS-OCCUPIED, INDOORS-UNOCCUPIED, PLENUMS, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC.
- RADIO SIGNAL CABLE SHALL BE SUPPORTED AT MINIMUM OF EVERY THREE (3) FEET EXCEPT INSIDE MONOPOLES OR MONOPOLES WHERE CABLE AND CONNECTOR MANUFACTURERS SUPPORT RECOMMENDATIONS SHALL BE FOLLOWED. MANUFACTURER RECOMMENDATION CABLES SUPPORT ACCESSORIES SHALL BE USED.
- THE OUTDOOR CABLE SUPPORT SYSTEM SHALL BE PROVIDED WITH AN ICE SHIELD TO SUPPORT AND PROTECT ANTENNA CABLE RUNS.
- DRIP LOOPS SHALL BE REQUIRED ON ALL OUTSIDE CABLES. CABLES SHALL BE SLOPED AWAY FROM BUILDING OR OUTDOOR BTS CABINETS TO PREVENT WATER FROM ENTERING THROUGH THE COAXIAL CABLE PORT.
- ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE 7/16 DIN CABLE CONNECTORS THAT MEET IP68 STANDARDS.
- 7/16 DIN CONNECTORS REQUIRE NO ADDITIONAL WEATHER PROOFING IN INDOOR APPLICATIONS IF INSTALLED AND TORQUED PROPERLY. IN OUTDOOR APPLICATIONS WEATHER PROOFING IS REQUIRED AND THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED.

USING WEATHERPROOFING KIT APPROVED BY CABLE MANUFACTURER AND CONTRACTOR START TAPE APPROXIMATELY 5 INCHES FROM THE CONNECTOR, AND WRAP 2 INCHES TOWARD THE CONNECTOR, THEN REVERSE THE TAPE SO THAT THE STICKY SIDE IS UP. TAPE OVER THE CONNECTOR OR SURGE ARRESTOR UNTIL THREE (3) TO FOUR (4) INCHES BEYOND THE CONNECTOR AND REVERSE AGAIN WITH THE STICKY SIDE DOWN FOR ANOTHER INCH OR TWO. PASS THE BUTYL RUBBER AND FINISH WITH A FINAL LAYER OF TAPE.
- ANTENNAS SHALL BE PAINTED WHEN REQUIRED BY THE LANDLORD OR AUTHORITY OF HAVING JURISDICTION IN ACCORDANCE WITH ANTENNA MANUFACTURERS' SURFACES PREPARATION AND PAINTING REQUIREMENTS.
- CABLE SHIELDS AND TOWER CONDUITS SHALL BE GROUNDED AT THE TOP OF THE TOWER WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 6 INCHES BEFORE THEY TURN TOWARD THE FACILITY. THEY SHALL BE GROUNDED AT THE MIDPOINT OF THE TOWERS THAT ARE BETWEEN 60 FEET AND 200 FEET HIGH, AND AT INTERVALS OF 60 FEET OR LESS ON TOWERS THAT ARE HIGHER THAN 200 FEET.

ANTENNA CABLE & SCHEDULING NOTES

- SUBCONTRACTOR SHALL VERIFY THE ACTUAL LENGTH IN THE FIELD BEFORE INSTALLATION.
- TAG AND COLOR CODE ALL MAIN CABLES AT LOCATIONS PER T-MOBILE ANTENNA CABLE MARKING STANDARD.
 - TOP OF TOWER END OF MAIN COAX
 - BOTTOM OF TOWER END OF MAIN COAX
 - DIRECTLY BEFORE AND AFTER RF EQUIPMENT
 - END OF JUMPERS AT BTS EQUIPMENT
- ANTENNAS SHALL BE PROCURED AND INSTALLED WITH DOWN TILT MOUNTING BRACKETS SUPPLIED BY ANTENNA MANUFACTURER.
- PRIOR APPROVAL IS REQUIRED BEFORE PERFORMING ANY WORK ON EXISTING CELL SITE EQUIPMENT.

GENERAL NOTES

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 - CONTRACTOR - CENTERLINE COMMUNICATIONS
 - SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 - OWNER - T-MOBILE MOBILITY
 - PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
 - ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
 - DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
 - UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
 - "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
 - THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
 - IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
 - SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
 - THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
 - SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
 - SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
 - ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
 - ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE MOBILITY SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
- BUILDING CODE: IBC 2015 & MA STATE BUILDING 780 CMR 9TH EDITION
ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE
LIGHTNING CODE: NFPA 780-2020
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G,
STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.
- FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

	AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	MGB	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	MIN	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	PROPOSED	BASE TRANSCIVER STATION	NEW	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING		N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	REF	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	REQ	EQUIPMENT GROUND RING	REQ	REQUIRED		

T-Mobile NORTHEAST LLC

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FAX: (508) 286-2883



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PHONE: 781.713.4725

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APPROVED BY: RC



DATE: 02/29/2024

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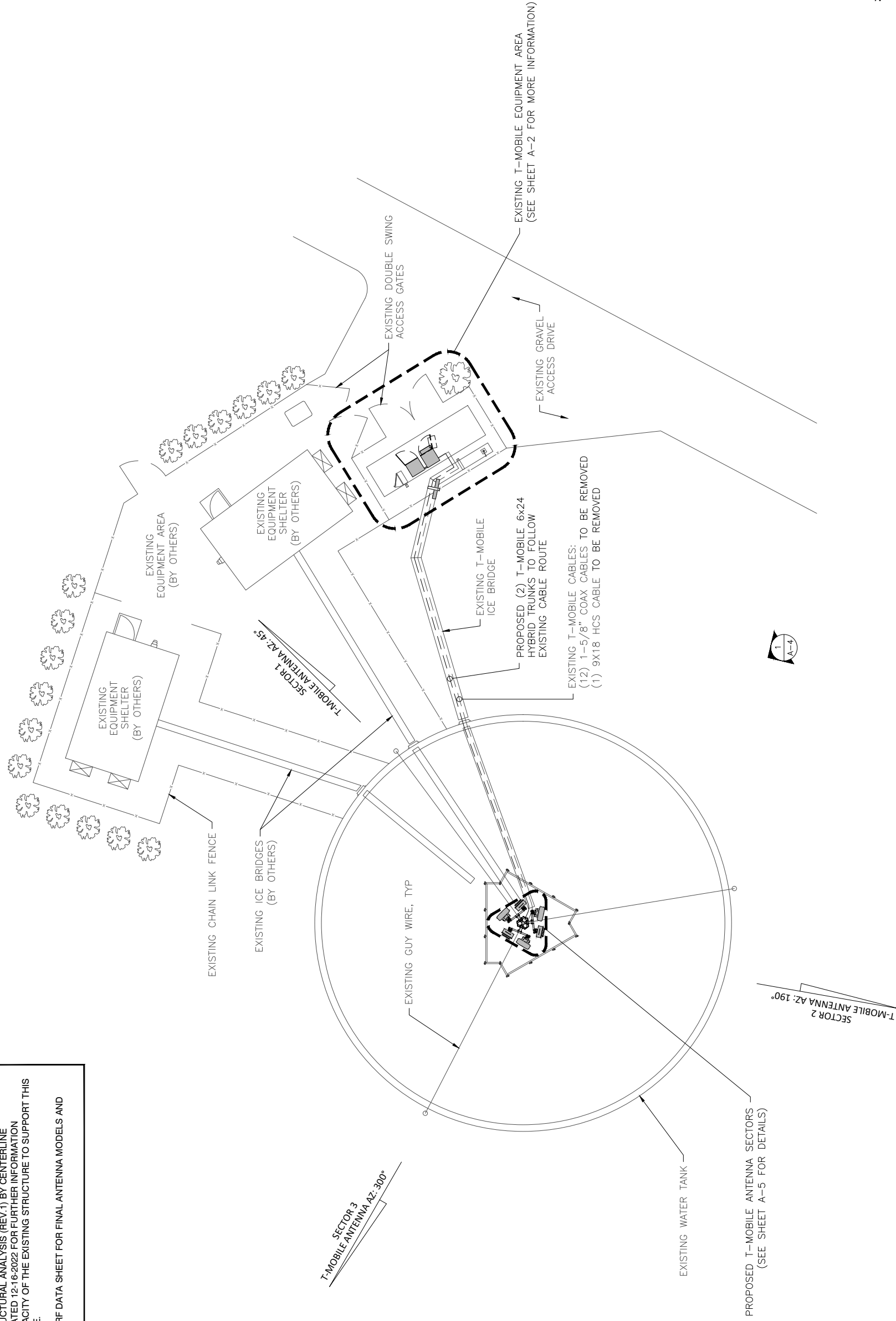
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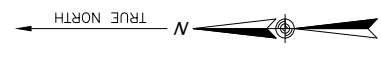
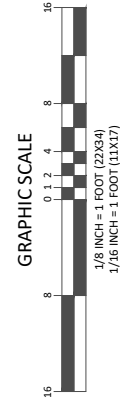
SHEET TITLE:
GENERAL NOTES, RF NOTES,
CABLING NOTES
DRAWING:
GN-1

NOTES

1. CONTRACTOR SHALL MAKE A UTILITY 811 DIG SAFE CALL TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
2. REFERENCE THE STRUCTURAL ANALYSIS (REV.1) BY CENTERLINE COMMUNICATIONS DATED 12-16-2022 FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
3. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA MODELS AND SETTINGS.



1
A-1
COMPOUND PLAN



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NORTHEAST LLC

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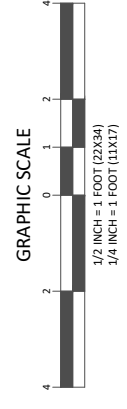
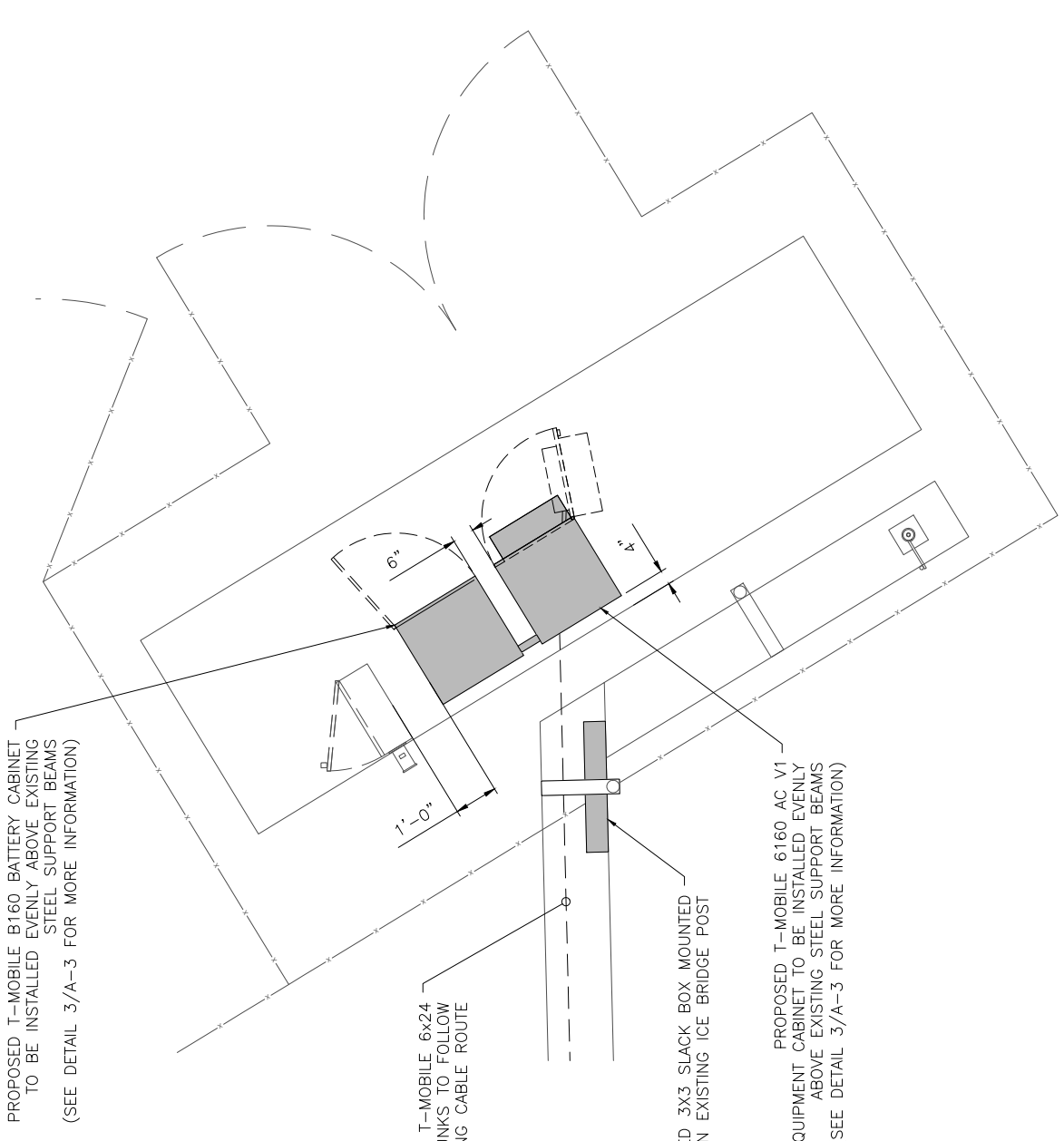
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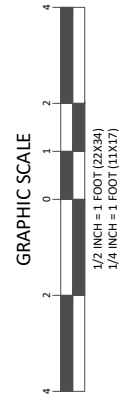
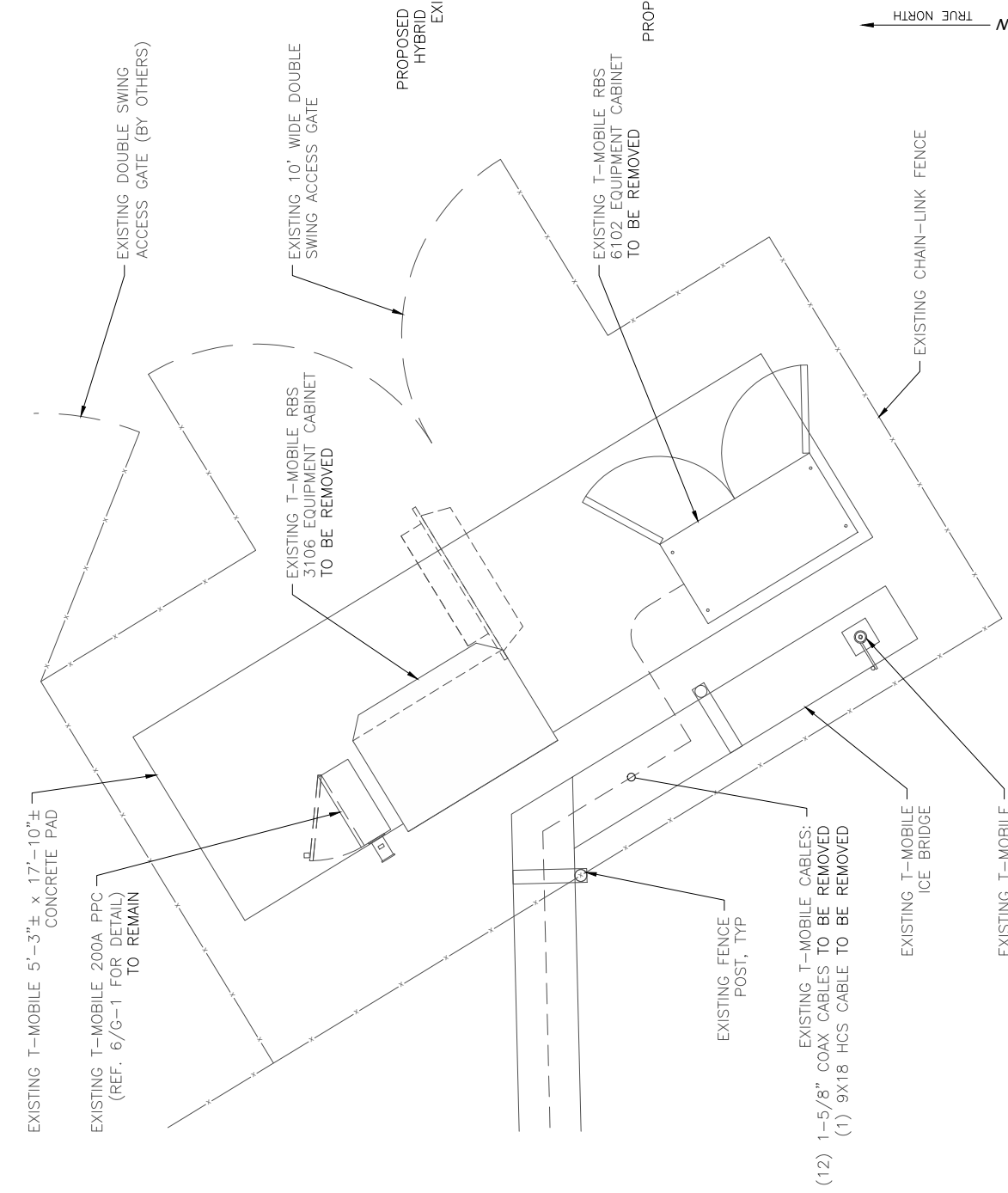
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SHEET TITLE:	EQUIPMENT LAYOUT
DRAWING:	A-2

RAN EQUIPMENT		
CABINET	EXISTING	PROPOSED
200A PPC	1	N/A
6160 AC V1	N/A	(2) RP 6651 (1) CSR IXRe V2 (1) XMU
B160	N/A	(1) RBS6601 (1) DUG20

NOTE:
RAN EQUIPMENT IS BASED ON RFDS REV 8 DATED 09/13/2022



2 PROPOSED EQUIPMENT PLAN
A-2



1 EXISTING EQUIPMENT PLAN
A-2

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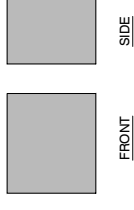
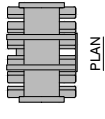
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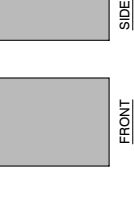
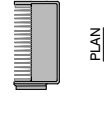
RADIO DIMENSIONS

MODEL #	RADIO 4460 B25_B66
MANUF.	ERICSSON
HEIGHT	15.1"
WIDTH	17.0"
DEPTH	11.9"
WEIGHT	108 LBS
FRONT EPA:	
SIDE EPA:	

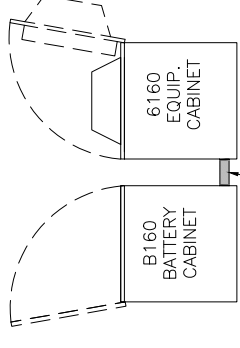


RADIO DIMENSIONS

MODEL #	RADIO 4480 B71+B85
MANUF.	ERICSSON
HEIGHT	19.5"
WIDTH	15.1"
DEPTH	7.8"
WEIGHT	87 LBS
FRONT EPA:	
SIDE EPA:	



2 RADIO DETAILS
A-3

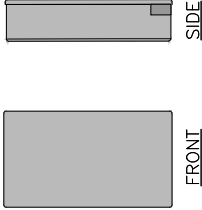


(2) PROPOSED 2"Øx 8" GALV. NIPPLE,
(4) 2"Ø LOCK RINGS. & (2) 2"Ø
PLASTIC BUSHING (NOT SHOWN)

4 PROPOSED EQUIPMENT CONDUIT DETAIL
A-3

ERICSSON AIR 6419 B41

MODEL #	AIR 6419 B41
MANUF.	ERICSSON
HEIGHT	36.3"
WIDTH	20.9"
DEPTH	9.0"
WEIGHT	83.3 LBS
FRONT EPA:	5.27 FT ²
SIDE EPA:	2.27 FT ²



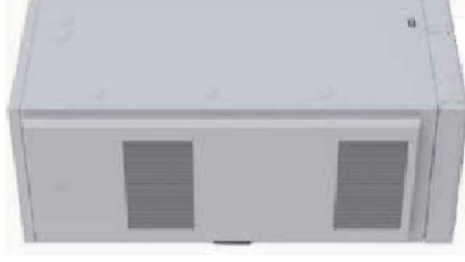
COMMSCOPE FFV-65A-R2-V1

MODEL #	FFV-65A-R2-V1
MANUF.	COMMSCOPE
HEIGHT	48.2"
WIDTH	25.2"
DEPTH	9.3"
WEIGHT	73.2 LBS
FRONT EPA:	8.44 FT ²
SIDE EPA:	3.11 FT ²



1 ANTENNA DETAILS
A-3

6160 AC ENCLOSURE	B160 BATTERY ENCLOSURE
<p>CAPACITY RACK SPACE USER EQUIP. HARDWARE CAPABILITIES</p> <p>19U(19" RACK) POWER AND CPRI SUPPORT FOR MULTI-STANDARD REMOTE RADIOS (RRU OR AIR) ERS BASEBAND AND TRANSPORT UNITS LI-ION BATTERIES 3PP EQUIPMENT ADDITIONAL POWER FEED OPTIONS AVAILABLE</p> <p>MECHANICAL SPECIFICATIONS</p> <p>WEIGHT DIMENSIONS (HWD) BASE FRAME HEIGHT MOUNTING POSITION ENCLOSURE MATERIAL COLOR RACK TYPE LOCK TYPE LOCK SYSTEM INPUT VOLTAGE</p>	<p>CAPACITY VRLA12V: Li-ION SODIUM-NICKEL ELECTRICAL SPECIFICATIONS DC OUTPUT BATTERY BREAKERS ALARMS MECHANICAL SPECIFICATIONS WEIGHT DIMENSIONS (HWD) BASE FRAME HEIGHT MATERIAL COLOR LOCKING TYPE</p>
<p>320lbs (INCLUDING ACTIVE EQUIPMENT) 63"x26"x26" (INCLUDING BASE FRAME) 6" GROUND ALUMINUM POWDER PAINT NCS 2002-B FRONT ACCESS 19" (IEC 60297-3-100) CYLINDER/PAD LOCK 3P+N+PE 346/200-415/240 VAC 2P+N+PE 208/120-220/127 VAC 1P+N+PE 200-250 VAC</p>	<p>100Ah/150Ah/170Ah/190Ah/210Ah 24U 19"/23" 3XFAMM -48VDC/200A 2x125/2P DOOR OPEN, CLIMATE FAILURE, MCB CONNECTION 295 lbs (PLUS 3 STRINGS OF RECOMMENDED 190 cHR FOR ADDITIONAL 1588LBS) 63"x26"x26" (INCLUDING BASE FRAME) 6" GALVANIZED STEEL (180g/m²) POWDER PAINT NCS 2002-B CYLINDER/PAD LOCK</p>



3 PROPOSED EQUIPMENT CABINET SPECIFICATIONS
A-3

NOTES

1. CONTRACTOR SHALL MAKE A UTILITY 811 DIG SAFE CALL TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
2. REFERENCE THE STRUCTURAL ANALYSIS DATED 12/16/2022 BY CENTERLINE COMMUNICATIONS FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
3. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA MODELS AND SETTINGS.

TOP OF CENTRAL PIPE_MAST
89'-0"± AGL

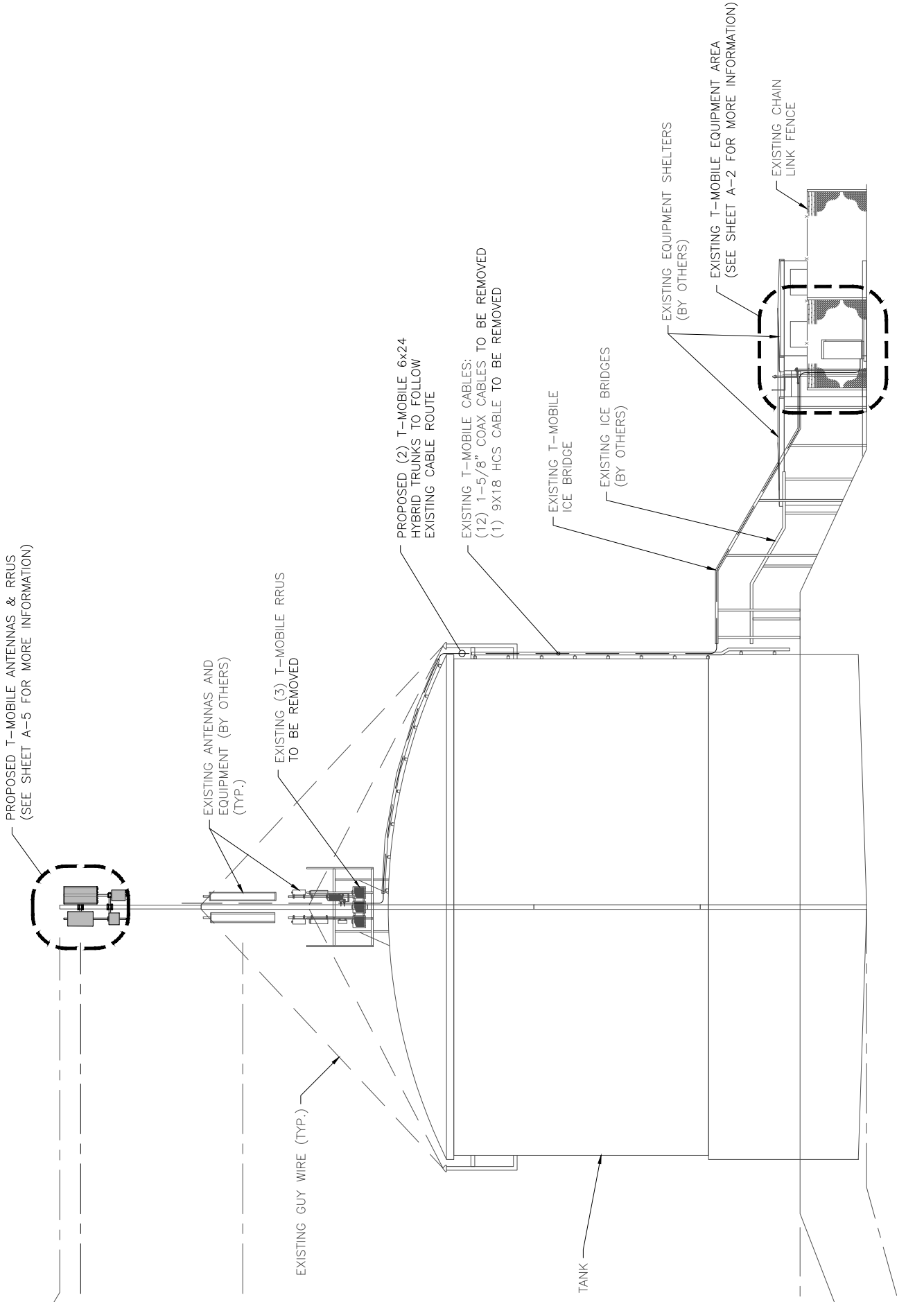
PROPOSED T-MOBILE_RAD_CENTER
86'-6"± AGL

EXISTING ANTENNA_RAD_CENTER (BY OTHERS)
75'-0"± AGL

GRADE AT TANK_BASE
0'-0"±

BOTTOM OF GRADE
-7'-0"± AGL

BOTTOM_OF_EXISTING_WATER_TANK_BASEPLATE
-8'-0" AGL



1 EAST ELEVATION
A-4



T-Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC
15 COMMERCE WAY, SUITE B
NORFOLK, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893



750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
3	02/29/24	REVISED CLIENT COMMENTS	RC
2	01/06/23	REVISED RF COMMENTS	AB
1	01/04/23	ISSUED FOR CONSTRUCTION	RL
0	10/05/22	ISSUED FOR CONSTRUCTION	AB
A	04/27/22	ISSUE FOR REVIEW	AB

DESIGNED BY: AB APPROVED BY: RC



DATE: 02/29/2024

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SITE NAME: BN138/TWR RD WT RFP
SITE ID: 4BN0138A

SITE ADDRESS: 24 TOWER ROAD
ASHLAND, MA 01721
MIDDLESEX COUNTY

SHEET TITLE: EAST ELEVATION
DRAWING: A-4



ANTENNA & CABLE NOTES:

1. REFERENCE THE STRUCTURAL ANALYSIS (REV.1) DATED 12/16/2022 BY CENTERLINE COMMUNICATIONS FOR FURTHER INFORMATION. REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
2. REFERENCE THE MOUNT ANALYSIS (REV.1) DATED 12/16/2022 BY CENTERLINE COMMUNICATIONS FOR FURTHER INFORMATION.
3. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.
4. REMOVE ALL UNUSED CABLE, RRUS AND TMAS.

ANTENNA & CABLE SCHEDULE:

LOCATION	AZIMUTH	RAD. CENTER	STATUS	TECHNOLOGY	ANTENNA MODEL NO.	MECH. DOWNTILT	ELEC. DOWNTILT	CABLES	DIPLEXERS	TMA/RRU	CABLE SIZE	CABLE LENGTH
ALPHA	A-1	45°	PROPOSED	L1900, G1900	FRV-65A-R2-V1	N/A	4°/4°/2°/2°	(4) COAX JUMPER(X2)	-	RRUS 4480 B71+B85 RRUS 4460 B25+B66	6x24 HYBRID	127'
	A-2	45°	PROPOSED	L2100, L700	AIR 6419 B41	N/A	2°/2°	-	-	-	SHARED	-
BETA	B-1	190°	PROPOSED	L1900, G1900	FRV-65A-R2-V1	N/A	4°/4°/2°/2°	(4) COAX JUMPER(X2)	-	RRUS 4480 B71+B85 RRUS 4460 B25+B66	6x24 HYBRID	127'
	B-2	190°	PROPOSED	L2100, L700	AIR 6419 B41	N/A	2°/2°	-	-	-	SHARED	-
GAMMA	C-1	300°	PROPOSED	L1900, G1900	FRV-65A-R2-V1	N/A	4°/4°/2°/2°	(4) COAX JUMPER(X2)	-	RRUS 4480 B71+B85 RRUS 4460 B25+B66	SHARED	-
	C-2	300°	PROPOSED	L2100, L700	AIR 6419 B41	N/A	2°/2°	-	-	-	SHARED	-
NOTE: DARK TEXT IN TABLE ABOVE DENOTES PROPOSED EQUIPMENT											(2) TOTAL 6x24 HYBRID CABLES	300'

INSTALL (2) NEW SITE PRO1 UGLM RING MOUNTS SPACED 42" VERTICALLY WITH SMALL POLE ADAPTER PLATES

PROPOSED T-MOBILE CUSTOM POLE ADAPTER PLATE MOUNTED TO EXISTING PIPE MAST (SEE DETAIL 3/S-2 FOR MORE INFORMATION)

PROPOSED T-MOBILE AIR6419 B41 ANTENNA ON PROPOSED PIPE (TYP 1 PER SECTOR, 3 TOTAL) (SEE SHEET 1/A-3 FOR MORE INFORMATION)

PROPOSED T-MOBILE FFV-65A-R2-V1 ANTENNA ON PROPOSED PIPE (TYP 1 PER SECTOR, 3 TOTAL) (SEE SHEET 1/A-3 FOR MORE INFORMATION)

EXISTING T-MOBILE RRUS11 B12 TO BE REMOVED (TYP 1 PER SECTOR, 3 TOTAL)

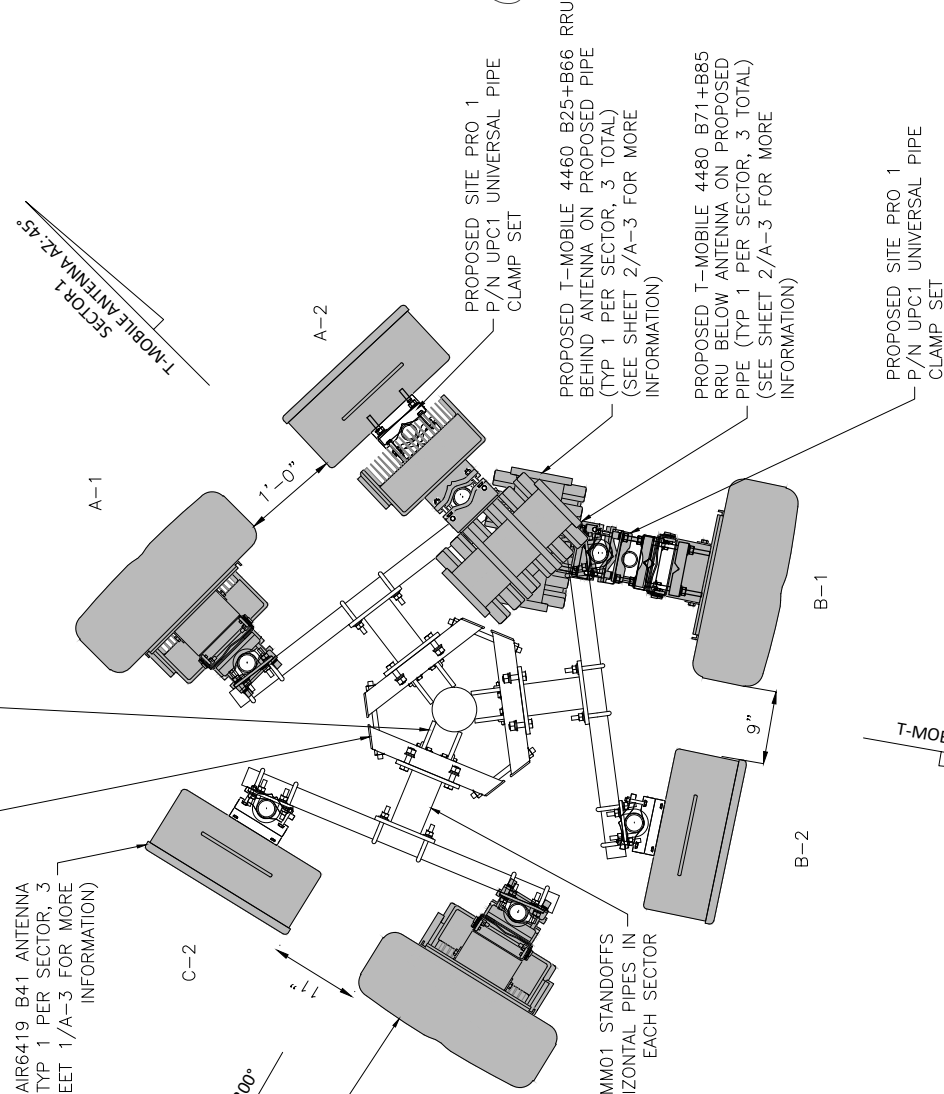
EXISTING T-MOBILE AIR21 B2A/B4P ANTENNA TO BE REMOVED (TYP 1 PER SECTOR, 3 TOTAL)

EXISTING T-MOBILE AIR21 B4A/B12P 8FT ANTENNA TO BE REMOVED (TYP 1 PER SECTOR, 3 TOTAL)

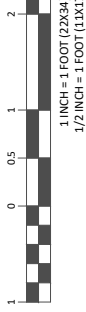
EXISTING T-MOBILE TMA TO BE REMOVED (TYP 1 PER SECTOR, 3 TOTAL)

EXISTING T-MOBILE PIPE TO PIPE CLAMPS TO BE REMOVED (TYP 2 PER SECTOR, 6 TOTAL)

EXISTING T-MOBILE PIPE TO PIPE CLAMPS TO BE REMOVED (TYP 4 PER SECTOR, 12 TOTAL)

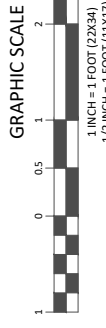


1 EXISTING ANTENNA PLAN



A-5

2 PROPOSED ANTENNA PLAN

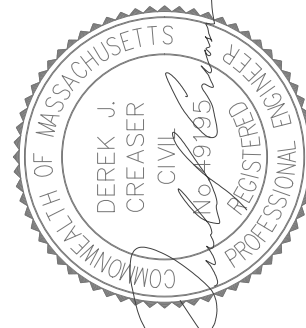


A-5

REVISIONS

REV	DATE	DESCRIPTION	BY
3	02/29/24	REVISED CLIENT COMMENTS	RC
2	01/06/23	REVISED RF COMMENTS	AB
1	01/04/23	ISSUED FOR CONSTRUCTION	RL
0	10/05/22	ISSUED FOR CONSTRUCTION	AB
A	04/27/22	ISSUE FOR REVIEW	AB

DESIGNED BY: AB APPROVED BY: RC



DATE: 02/29/2024

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SITE NAME:	BN138/TWR RD WT RFP
SITE ID:	4BN0138A
SITE ADDRESS:	24 TOWER ROAD ASHLAND, MA 01721 MIDDLESEX COUNTY
SHEET TITLE:	ANTENNA PLAN & SCHEDULE
DRAWING:	A-5

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER MASSACHUSETTS BUILDING CODE 9TH EDITION AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, STATE BUILDING CODE, EIA/71A-222-G, STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- THE AMERICAN INSTITUTE OF STRUCTURAL STEEL SHALL CONFORM TO THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", ASC 360-10.
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X, "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL", 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1.5/8"x1.5/8"x12GA. UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND AN EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HIT-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS
N/A	MATERIAL SPECIFICATIONS REPORT 2
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS 3
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS 4
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION 5
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS 6
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 308.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 308.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.11 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

REQUIRED INSPECTIONS AND SITE REVIEW DOCUMENT AS A CONDITION OF THE BUILDING PERMIT IDENTIFIED BY THE FOLLOWING OFFICIAL ARE REQUIRED FOR WORK PER THE 9TH EDITION OF THE MASSACHUSETTS STATE BUILDING CODE, 780 CMR, SECTION 10 AND CHAPTER 17	
SITE REVIEW AND DOCUMENTATION	SITE REVIEW AND DOCUMENTATION
SOIL CONDITION/ANALYSIS/REPORT	ENERGY EFFICIENCY REQUIREMENTS
FOOTING AND FOUNDATION (INCLUDING REINFORCEMENT AND FOUNDATION ATTACHMENT)	FIRE ALARM INSTALLATION 2
CONCRETE FLOOR AND UNDER FLOOR	FIRE SUPPRESSION AND INSTALLATION 3
LOWEST FLOOR FLOOD ELEVATION	FIELD REPORTS 5
STRUCTURAL FRAME-WALL/FLOOR/ROOF	CARBON MONOXIDE DETECTION SYSTEM 4
LATH AND PLASTER/GYPSUM	SEISMIC REINFORCEMENT
FIRE RESISTANT WALL/PARTITIONS FINISH ATTACHMENTS	SMOKE CONTROL SYSTEMS
FIRE RESISTANT WALL/PARTITIONS FINISH ATTACHMENTS	SMOKE AND HEAT VENTS
ABOVE CEILING INSPECTION	ACCESSIBILITY (521 CMR)
FIRE BLOCKING/STOPPING SYSTEM	OTHER
EMERGENCY LIGHTING/EXIT SIGNAGE	SPECIAL INSPECTIONS (SECTION 1704):
MEANS OF EGRESS COMPONENTS	X
ROOFING, COPING/SYSTEM	
VENTING SYSTEMS (KITCHEN, CHEMICAL, FUME)	
MECHANICAL SYSTEMS	

(TO BE PERFORMED BY THE APPROPRIATE REGISTERED DESIGN PROFESSIONAL OF HIS/HER DESIGNER OR M.G.L.C 112 §81F CONTRACTOR)

MASSACHUSETTS AMENDMENTS TO THE IBC (REFERENCE 780 CMR):

107.6 CONSTRUCTION CONTROL. THIS SECTION SHALL APPLY TO THE CONSTRUCTION CONTROLS, PROFESSIONAL SERVICES AND CONTRACTOR SERVICES REQUIRED FOR BUILDINGS AND STRUCTURES NEEDING REGISTERED DESIGN PROFESSIONAL SERVICES.

107.6.1.1 SPECIALIZED STRUCTURES. TELECOMMUNICATION TOWERS, WIND TURBINE TOWERS, AND SIMILAR STRUCTURES ARE ENGINEERED STRUCTURES AND SHALL BE SUBJECT TO THE REQUIREMENTS OF SECTION 107.6.

107.6.2.2 CONSTRUCTION. THE REGISTERED DESIGN PROFESSIONALS WHO ARE RESPONSIBLE FOR THE DESIGN, PLAN, CALCULATIONS, AND SPECIFICATIONS, THEIR DESIGNER OR THE REGISTERED DESIGN PROFESSIONALS WHO HAVE BEEN RETAINED FOR CONSTRUCTION PHASE SERVICES, SHALL PERFORM THE FOLLOWING TASKS:

- REVIEW, FOR CONFORMANCE TO 780 CMR AND THE DESIGN CONCEPT, SHOP DRAWINGS, SAMPLES AND OTHER SUBMITTALS BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS.
- PERFORM THE DUTIES FOR REGISTERED DESIGN PROFESSIONALS IN 780 CMR 17.00 SPECIAL INSPECTIONS AND TESTS.
- BE PRESENT AT INTERVALS APPROPRIATE TO THE STAGE OF CONSTRUCTION TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF THE WORK AND TO DETERMINE IF THE WORK IS BEING PERFORMED IN A MANNER CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND 780 CMR.

THE PERMIT APPLICATION SHALL NOT BE DEEMED COMPLETED UNTIL ALL OF THE CONSTRUCTION DOCUMENTS REQUIRED BY 780 CMR HAVE BEEN SUBMITTED. DOCUMENTATION INDICATING THAT WORK COMPLETES WITH THE PLANS AND SPECIFICATIONS SHALL BE PROVIDED AT THE COMPLETION OF EACH PHASE WHEN REQUIRED BY THE BUILDING OFFICIAL. UPON COMPLETION OF THE WORK, THE REGISTERED DESIGN PROFESSIONAL SHALL FILE A FINAL DOCUMENT TO THE BUILDING OFFICIAL INDICATING THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPROVED PLANS AND 780 CMR FORMS FOR CONSTRUCTION CONTROL WHEN REQUIRED BY THE BUILDING OFFICIAL SHALL BE THOSE FOUND AT <http://www.mcg.gov/government/occa-agencies/dpi-ip/ops/>.

107.6.2.3 SPECIAL INSPECTIONS AND TESTS. SPECIAL INSPECTIONS AND TESTS. SHALL BE PROVIDED IN ACCORDANCE WITH 780 CMR 17.00 SPECIAL INSPECTIONS AND TESTS.

107.6.2.3 NON STRUCTURAL SYSTEM TEST AND INSPECTIONS. TESTS AND INSPECTIONS OF NON-STRUCTURAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE ENGINEERING PRACTICE STANDARDS, REFERENCED STANDARDS LISTED IN 780 CMR 35.00: REFERENCED STANDARDS, OR AS OTHERWISE SPECIFIED IN 780 CMR.

107.6.3 CONSTRUCTION CONTRACTOR SERVICES. THE ACTUAL CONSTRUCTION OF THE WORK SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AS IDENTIFIED ON THE APPROVAL PERMIT AND INVOLVE THE FOLLOWING:

- EXECUTION OF ALL WORK IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
- EXECUTION AND CONTROL OF ALL METHODS OF CONSTRUCTION IN A SAFE AND SATISFACTORY MANNER IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL STATUTES AND REGULATIONS.
- UPON COMPLETION OF THE CONSTRUCTION, CERTIFICATION IN WRITING TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE THAT, TO THE BEST OF THE CONTRACTOR'S KNOWLEDGE AND BELIEF, CONSTRUCTION HAS BEEN DONE IN SUBSTANTIAL ACCORD WITH SECTION 107.6 AND WITH ALL PERTINENT DEVIATIONS SPECIFICALLY NOTED. THE BUILDING OFFICIAL MAY REQUIRE A COPY OF THIS CERTIFICATION.

107.6.4 PROJECT REPRESENTATION. A PROJECT REPRESENTATIVE MAY BE REQUIRED BY THE BUILDING OFFICIAL. THIS REPRESENTATIVE SHALL KEEP DAILY RECORDS AND SUBMIT REPORTS AS MAY BE REQUIRED BY THE BUILDING OFFICIAL. THIS PROJECT REPRESENTATION REQUIREMENT SHALL BE DETERMINED PRIOR TO THE ISSUANCE OF THE PERMIT AND MAY BE A PREREQUISITE FOR PERMIT ISSUANCE. REFUSAL BY THE APPLICANT TO PROVIDE SUCH SERVICE IF REQUIRED BY THE BUILDING OFFICIAL SHALL RESULT IN THE DENIAL OF THE PERMIT. ALL FEES AND COSTS RELATED TO THE PERFORMANCE OF PROJECT REPRESENTATION SHALL BE BORNE BY THE OWNER. WHEN APPLICATIONS FOR UNUSUAL DESIGNS OR MAGNITUDE OF CONSTRUCTION ARE FILED, OR WHERE REFERENCE STANDARDS REQUIRE SPECIAL ARCHITECTURAL OR ENGINEERING INSPECTIONS, THE BUILDING OFFICIAL MAY REQUIRE THAT THE PROJECT REPRESENTATIVE BE A REGISTERED DESIGN PROFESSIONAL IN ADDITION TO THOSE REGISTERED DESIGN PROFESSIONALS REQUIRED ELSEWHERE IN ACCORDANCE WITH SECTION 107.6.

107.6.5 BUILDING OFFICIAL RESPONSIBILITY. NOTHING CONTAINED IN SECTION 107.6 SHALL HAVE THE EFFECT OF WAIVING OR LIMITING THE BUILDING OFFICIAL'S AUTHORITY TO ENFORCE 780 CMR WITH RESPECT TO EXAMINATION OF THE CONTRACT DOCUMENTS, INCLUDING PLANS, COMPUTATIONS AND SPECIFICATIONS, AND FIELD INSPECTIONS.

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CENTERLINE
ENGINEERING SERVICES, PA

760 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REV	DATE	DESCRIPTION	BY
3	02/29/24	REVISED CLIENT COMMENTS	RC
2	01/06/23	REVISED RF COMMENTS	AB
1	01/04/23	ISSUED FOR CONSTRUCTION	RL
0	10/05/22	ISSUED FOR CONSTRUCTION	AB
A	04/27/22	ISSUE FOR REVIEW	AB

DESIGNED BY: AB APPROVED BY: RC



DATE: 02/29/2024

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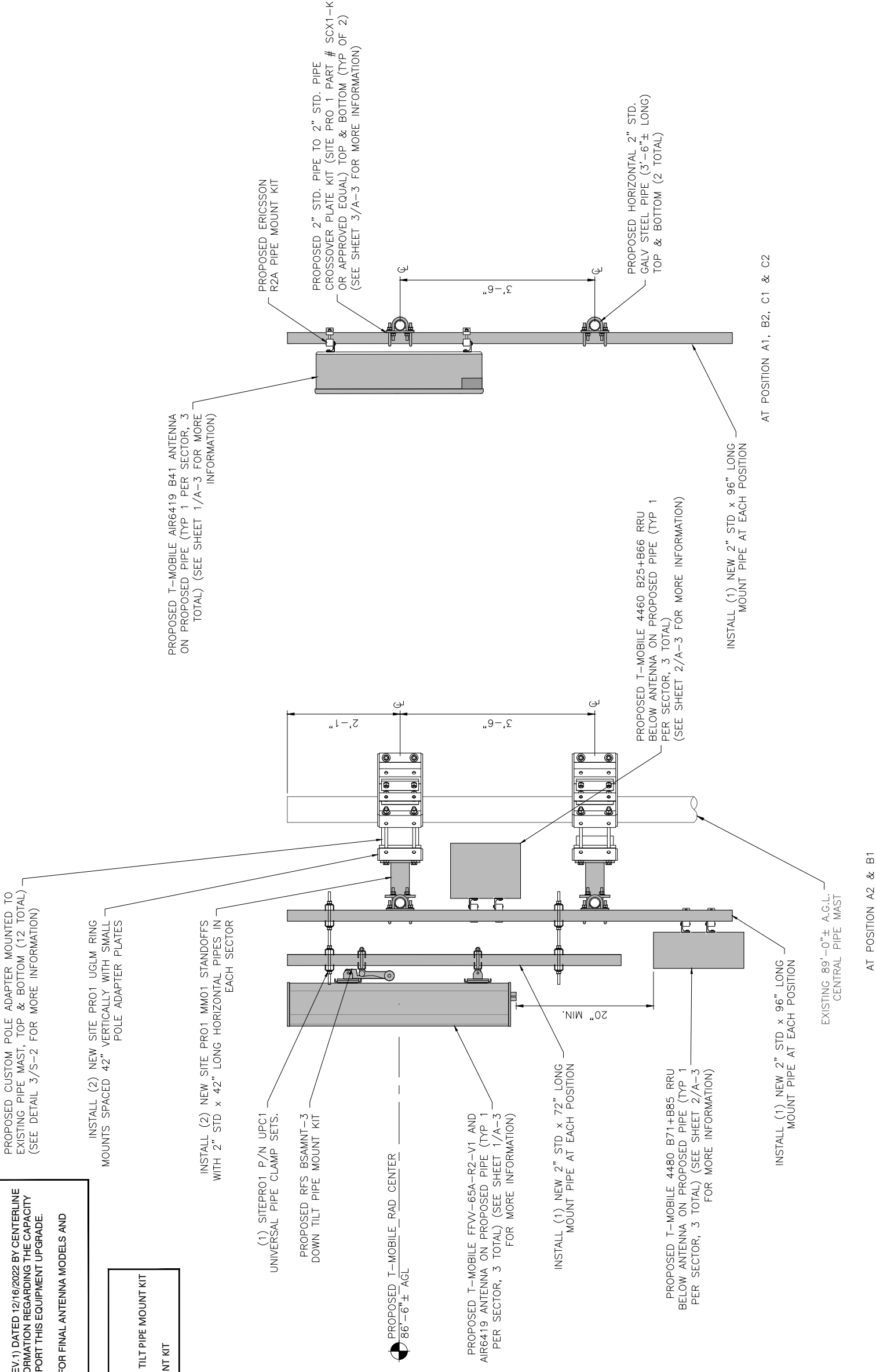
SITE NAME:	BN138/TWR RD WT RFP
SITE ID:	4BN0138A
SITE ADDRESS:	24 TOWER ROAD ASHLAND, MA 01721 MIDDLESEX COUNTY
SHEET TITLE:	STRUCTURAL NOTES & SPECIAL INSPECTIONS
DRAWING:	SN-1

NOTES

- CONTRACTOR SHALL MAKE A UTILITY 811 DIG SAFE CALL TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
- REFERENCE THE MOUNT ANALYSIS (REV.1) DATED 12/16/2022 BY CENTERLINE COMMUNICATIONS FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
- REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA MODELS AND SETTINGS.

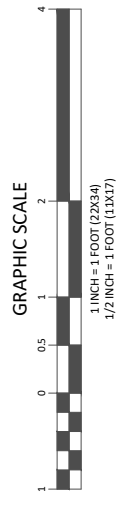
NOTES FOR ANTENNA MOUNTS:

- FFVV-65A-R2-V1: RES BSAMNT-3 DOWN TILT PIPE MOUNT KIT
- AIR 6419 B41: ERICSSON R2A PIPE MOUNT KIT



1 ANTENNA & RRU MOUNTING DETAILS

S-1



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SITE NAME:	BN138/TWR RD WT RFP
SITE ID:	4BN0138A
SITE ADDRESS:	24 TOWER ROAD ASHLAND, MA 01721 MIDDLESEX COUNTY
SHEET TITLE:	ANTENNA & RRU MOUNTING DETAILS
DRAWING:	S-1

NOTES

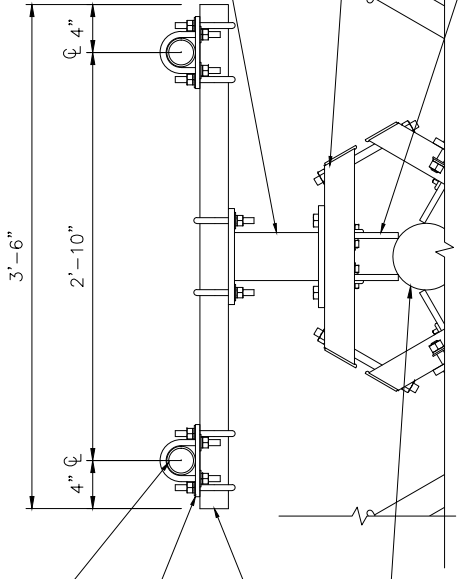
1. CONTRACTOR SHALL MAKE A UTILITY 811 DIG SAFE CALL TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
2. REFERENCE THE STRUCTURAL ANALYSIS (REV.1) DATED 12/16/2022 BY CENTERLINE COMMUNICATIONS FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
3. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA MODELS AND SETTINGS.

PROPOSED 2" STD. GALV. STEEL PIPE (8'-0"± LONG) (TYP OF 2 PER SECTOR, 6 TOTAL)

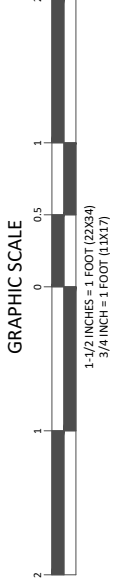
PROPOSED 2" STD. PIPE TO 2" STD. PIPE CROSSOVER PLATE KIT (SITE PRO 1 PART # SCX1-K OR APPROVED EQUAL) TOP & BOTTOM (TYP OF 2) (SEE DETAIL 2/S-2 FOR MORE INFORMATION)

PROPOSED HORIZONTAL 2" STD. GALV. STEEL PIPE (3'-6"± LONG) TOP & BOTTOM (2 TOTAL)

EXISTING 89'-0"± A.G.L. CENTRAL PIPE MAST



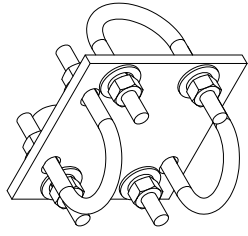
1 TYPICAL MOUNT ASSEMBLY PLAN DETAIL



PROPOSED 8" STAND OFF MOUNT (SITE PRO 1 PART # MM01 OR APPROVED EQUAL) BOLTED TO PROPOSED MINI RING MOUNT ASSEMBLY, TOP & BOTTOM (TYP OF 2 PER SECTOR)

PROPOSED MINI RING MOUNT ASSEMBLY (SITE PRO 1 PART # UGLM OR APPROVED EQUAL) MOUNTED TO PROPOSED CUSTOM POLE ADAPTER, TOP & BOTTOM (2 TOTAL) (SEE DETAIL 2/S-2 FOR MORE INFORMATION)

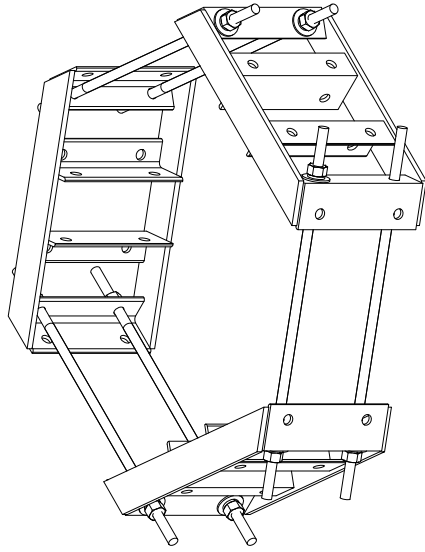
PROPOSED CUSTOM POLE ADAPTER MOUNTED TO EXISTING PIPE MAST, TOP & BOTTOM (12 TOTAL) (SEE DETAIL 3/S-2 FOR MORE INFORMATION)



CROSSOVER PLATE KIT

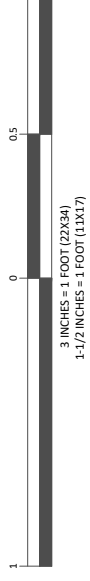
MANUFACTURER: SITE PRO 1
PART NO: SCX1-K
APPLICATION: 2" STD PIPE TO 2" STD PIPE

2 MOUNT DETAILS

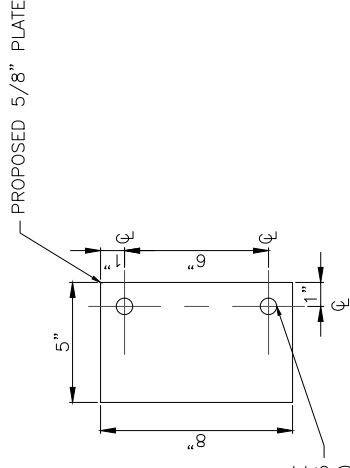


MINI RING MOUNT ASSEMBLY

MANUFACTURER: SITE PRO 1
PART NO: UGLM



3 CUSTOM POLE ADAPTER PLATE



PROPOSED 11/16" BOLT HOLE FOR PROPOSED 5/8" A325 BOLTS (TYP.)

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SITE ID: 4BN0138A

SITE ADDRESS:
24 TOWER ROAD
ASHLAND, MA 01721
MIDDLESEX COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

DRAWING: S-2

REVISIONS

REV	DATE	DESCRIPTION	BY
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SITE NAME:	BN138/TWR RD WT RFP
SITE ID:	4BN0138A
SITE ADDRESS:	24 TOWER ROAD ASHLAND, MA 01721 MIDDLESEX COUNTY
SHEET TITLE:	GROUNDING & ONE LINE DIAGRAM
DRAWING:	G-1

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

- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

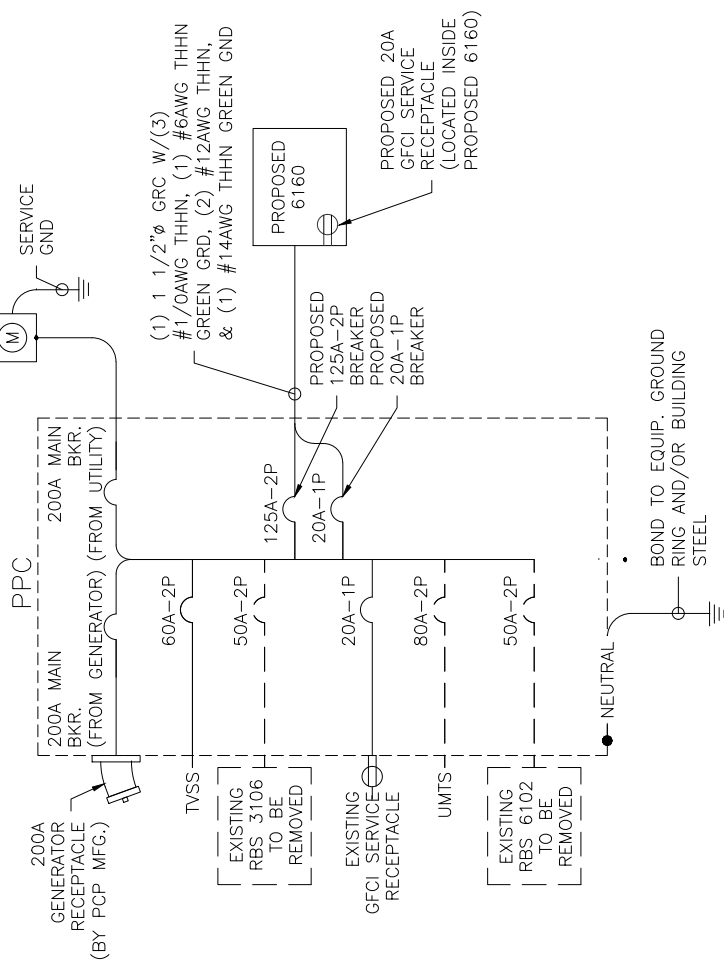
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND WIRE SCHEDULE

3 G-1

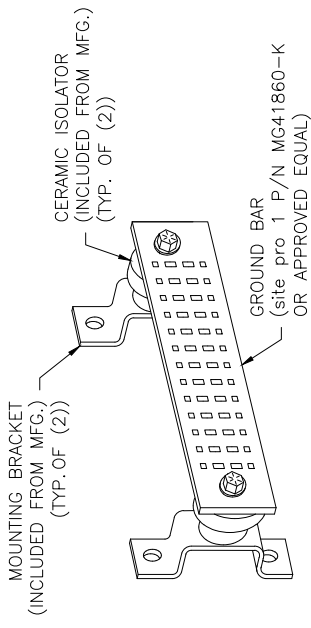
ELECTRIC PANEL NOTES:

- TOTAL BREAKER POSITION: 24, EXISTING EMPTY BREAKER POSITIONS: 15, UNUSED BREAKER POSITIONS TO BE REMOVED: 6, PROPOSED BREAKER POSITIONS TO UTILIZE FOR T-MOBILE ANCHOR INSTALLATION: 9, EXISTING ACTIVE BREAKER POSITIONS TO REMAIN: 3, EXISTING EMPTY BREAKER POSITIONS AFTER T-MOBILE ANCHOR INSTALLATION: 12



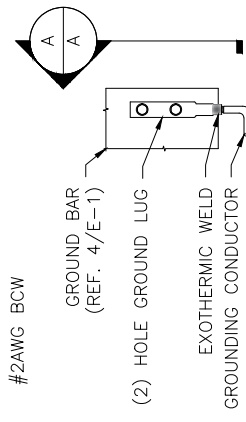
ONE LINE DIAGRAM

6 G-1

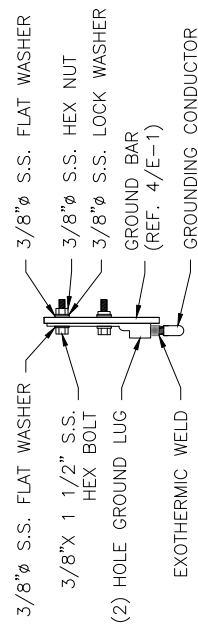


GROUND BAR DETAIL

2 G-1



SECTION "A-A"

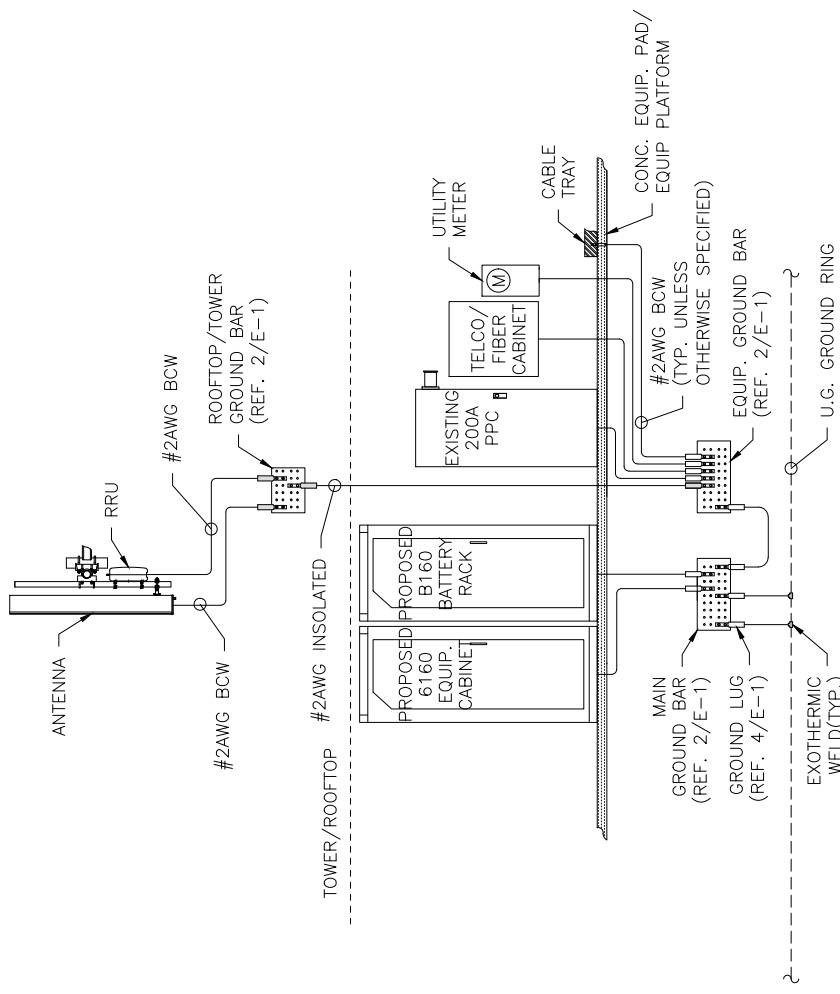


GROUNDING LUG NOTES:

- DO NOT DOUBLE UP OR STACK LUGS.
- OXIDE INHIBITING COMPOUND TO BE APPLIED TO ALL LUGS.
- ALL LUGS ARE TO BE EXOTHERMIC WELDED TO GROUNDING CONDUCTORS.
- FOR INSULATED GROUNDING CONDUCTORS, EXPOSED BARE COPPER TO BE KEPT TO ABSOLUTE MINIMUM.
- NO INSULATION IS ALLOWED WITHIN THE BARREL OF THE COMPRESSION TERMINAL.

GROUND LUG DETAIL

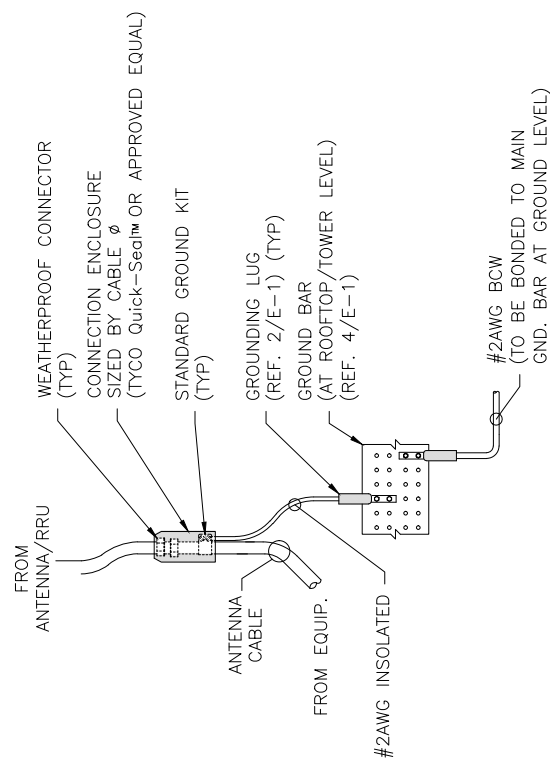
5 G-1



GROUNDING RISER NOTE:
UNLESS OTHERWISE SPECIFIED ALL GROUNDING CONDUCTORS ARE TO BE #2AWG BCW

GROUNDING RISER DIAGRAM

1 G-1



- NOTES:
- DO NOT INSTALL CABLE GROUND KIT AT BEND IN CABLE.
 - GROUND CABLES DIRECTLY TO CIGBE
 - JUMPER REQUIRED ONLY WHEN CABLE IS 1 1/4" OR LARGER

ANTENNA/RRU GROUNDING DETAIL

4 G-1