Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
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July 8, 2016

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

T-Mobile Northeast LLC – CT11451G
Tower Share Application
27 Maynard Road, Salem, CT 06420
Latitude- 41.46303056
Longitude- -72.24659723

Dear Ms. Bachman,

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC ("T-Mobile"). T-Mobile plans to install antennas and related equipment at the tower site located at 27 Maynard Road in Salem, Connecticut.

T-Mobile will install six (6) 700/1900 MHz antennas and nine (9) RRHs at the 82' level of the existing 100' lattice tower. One (1) hybrid cable will also be installed. T-Mobile's equipment cabinets will be placed on a 10' X 15' concrete pad within the existing ground facility. Included are plans by Hudson Design Group, dated June 20, 2016, depicting the planned changes and attached as **Exhibit A**. Also included is a structural analysis prepared by Hudson Design Group, dated July 5, 2016, confirming that the existing tower is structurally capable of supporting the proposed equipment. This is attached as **Exhibit B**.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of T-Mobile's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Kevin T. Lyden, First Selectman of the Town of Salem, as well as the tower and property owner, Salem Telecom LLC. Please see the attached letter from Salem Telecom LLC authorizing the proposed shared use of this facility attached as **Exhibit C**.

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the lattice tower is 100'; T-Mobile's proposed antennas will be located at a center line height of 82'.

2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligee.

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 17.47%, as evidenced by **Exhibit D**.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, T-Mobile respectfully that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing lattice tower has been deemed structurally capable of supporting T-Mobile's proposed loading. The structural analysis is included as Exhibit B.
B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this lattice tower in Salem. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit T-Mobile to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit C, authorizing T-Mobile to file this application for shared use.
C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of T-Mobile equipment at the 82' level of the existing 100' tower would have an insignificant visual impact on the area around the tower. T-Mobile's ground equipment would be installed within the existing facility compound. T-Mobile's shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit D, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.
D. Economic Feasibility. T-Mobile will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist T-Mobile with this tower sharing application.
E. Public Safety Concerns. As discussed above, the lattice tower is structurally capable of supporting T-Mobile's proposed loading. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing lattice tower. T-Mobile's intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Salem.

Sincerely,

Kyle Richers

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey
krichers@transcendwireless.com
908-447-4716

cc: Kevin T. Lyden- First Selectman, Town of Salem
Salem Telecom LLC

SITE NUMBER: CT11451G

27 MAYNARD ROAD
SALEM, CT 06420
NEW LONDON COUNTY

SITE NAME: CT11451G

RF DESIGN GUIDELINE: 707C

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED CAUTION: OSHA–APPROVED PORTABLE 8' STEP–LADDER REQUIRED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

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 PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

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.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T–MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE–BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN ON BEHALF OF T–MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T–MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.

HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

PROJECT SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T–MOBILE EQUIPMENT INSTALLATION
ZONING JURISDICTION: (TOWN OF SALEM)	BASED ON INFORMATION PROVIDED BY T–MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE–EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	27 MAYNARD ROAD SALEM, CT 06420
LATITUDE:	41° 27' 47.00" N
LONGITUDE:	72° 14' 47.75" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER:	SALEM TELECOM LLC. 226 LAMBTOWN ROAD LEDYARD, CT 06339 PHONE: 860–536–1118 EMAIL: JOHN@SPIGEL.NET

APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

DRIVING DIRECTIONS:

HEAD NORTHEAST ON GRIFFIN RD S AND TURN RIGHT ONTO DAY HILL RD. USE THE RIGHT LANE TO MERGE ONTO I–91 S. CONTINUE ON I–91 S THEN USE THE LEFT LANE TO TAKE EXIT 30 FOR I–84 E. TAKE EXIT 55 OFF I–84 E FOR CT–2 E. CONTINUE ONTO CT–2 E. KEEP RIGHT AT THE FORK TO CONTINUE ONTO CT–11 S. CONTINUE ONTO EXIT 4. TURN LEFT ONTO CT–82 E. AT THE TRAFFIC CIRCLE, TAKE THE 1ST EXIT ONTO CT–85 S. TURN LEFT ONTO HORSE POND RD. TURN RIGHT ONTO MAYNARD RD. DESTINATION WILL BE ON THE RIGHT.

ARRIVE AT 27 MAYNARD ROAD SALEM, CT 06420.

CALL BEFORE YOU DIG
CALL TOLL FREE 888–DIG–SAFE OR CALL 811
UNDERGROUND SERVICE ALERT

DRAWING INDEX

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Hudson Design Group LLC
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STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DPH

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CT11451G

SITE NAME:
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SITE ADDRESS:
27 MAYNARD ROAD
SALEM, CT 06420
NEW LONDON COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

13. NO EXOTHERMIC WELDING OR DRILLING TO TOWER MEMBERS.

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – TRANSCEND WIRELESS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

2. 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.

3. 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.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "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.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. 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.

9. 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.

10. 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.

11. 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.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. 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 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: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 CT AMENDMENTS
   ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
   LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

   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-F, STRUCTURAL STANDARDS FOR STEEL

   EQUIPMENT 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.

21. ORIGINAL CERTIFICATES OF INSURANCE FOR GENERAL CONTRACTORS AND SUBCONTRACTORS TO BE FURNISHED TO AND CONFIRMED RECEIVED BY SALEM TELECOM LLC PRIOR TO STARTING WORK. SALEM TELECOM LLC TO BE LISTED AS ADDITIONALLY INSURED ON ALL CERTIFICATES.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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35 GRIFFIN ROAD SOUTH
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STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DPH

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SHEET TITLE
GENERAL NOTES

SHEET NUMBER
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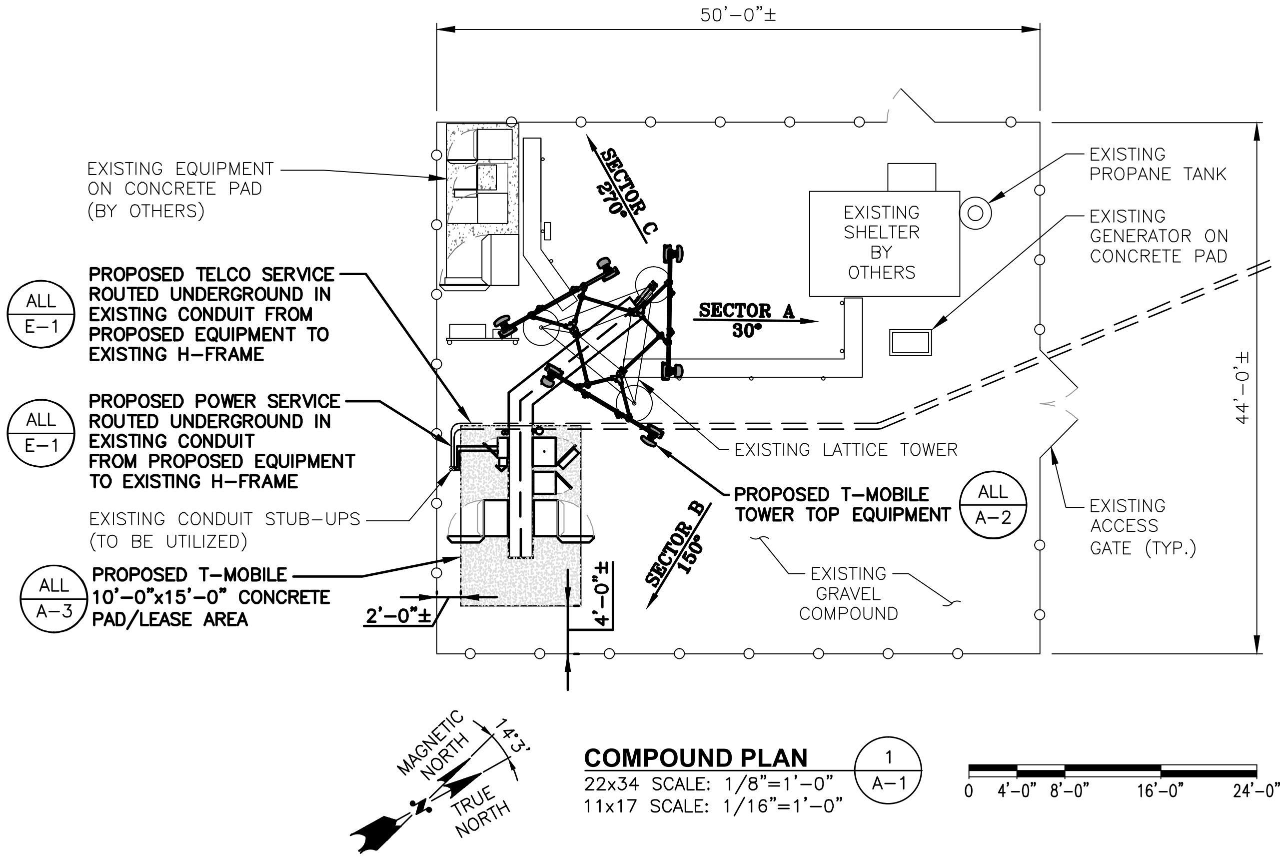
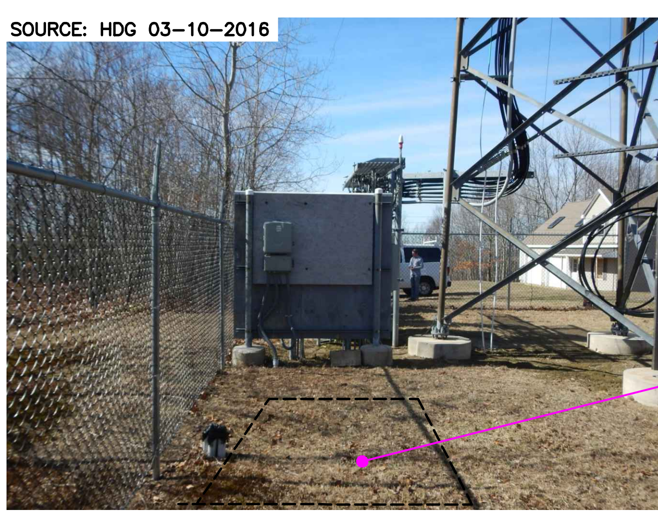
STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY HDG DATED: MAY 04, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

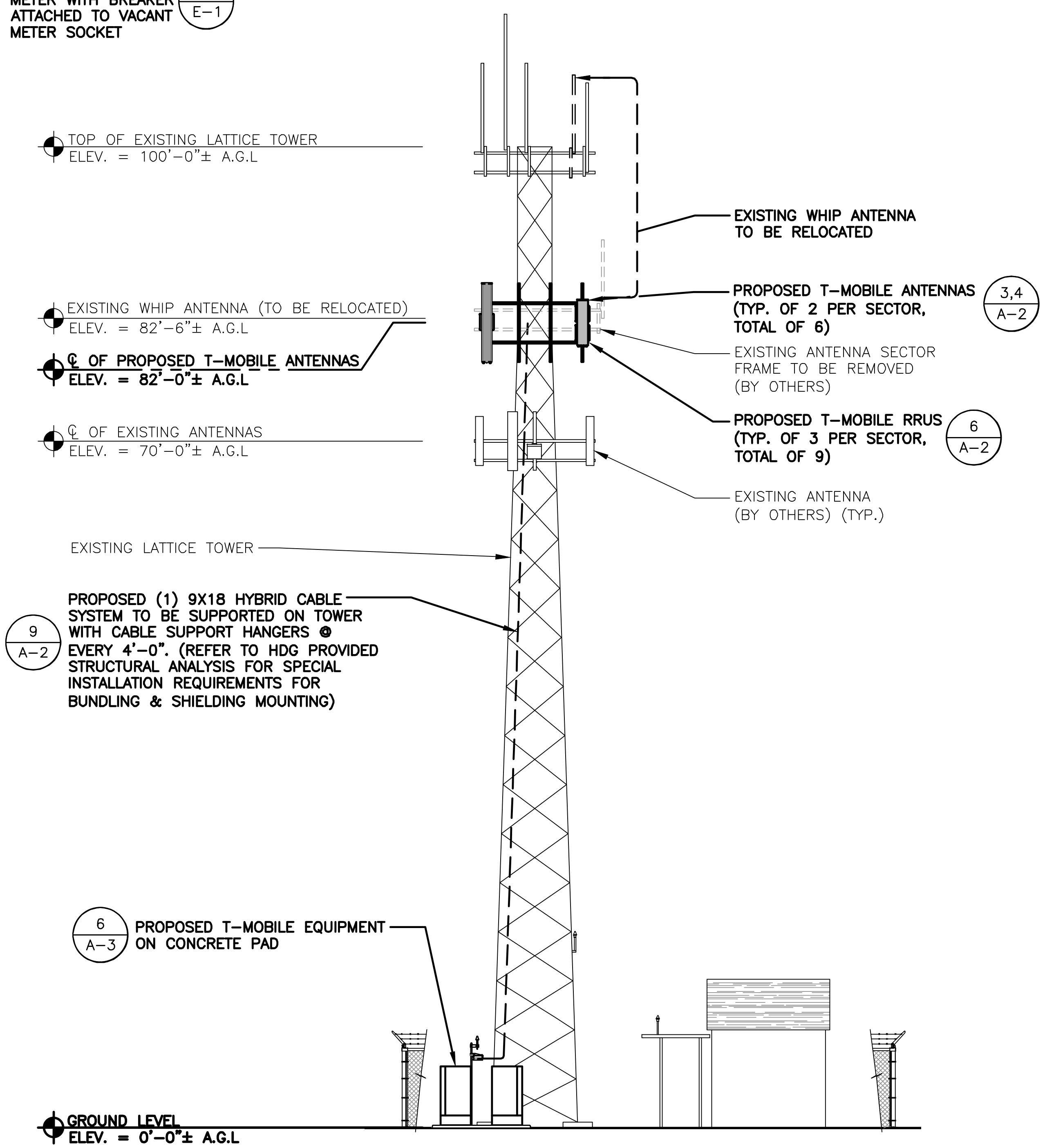


COMPOUND PLAN 1 A-1
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"

SOURCE: HDG 03-10-2016



EQUIPMENT LOCATION PHOTO DETAIL 2 A-1
SCALE: N.T.S



SOUTHWEST ELEVATION 3 A-1
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
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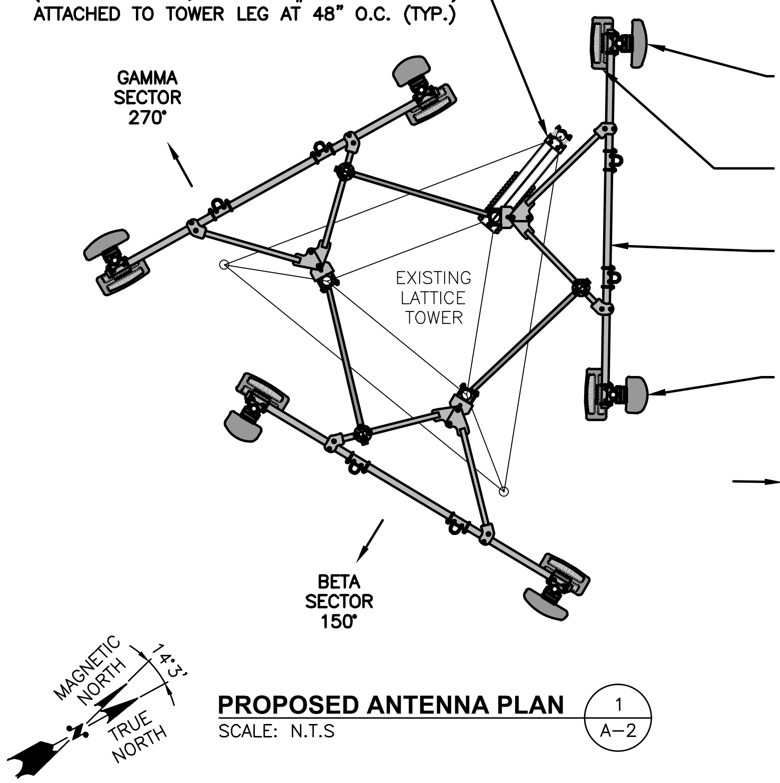
SHEET TITLE
COMPOUND PLAN, EQUIPMENT PLAN & ELEVATION

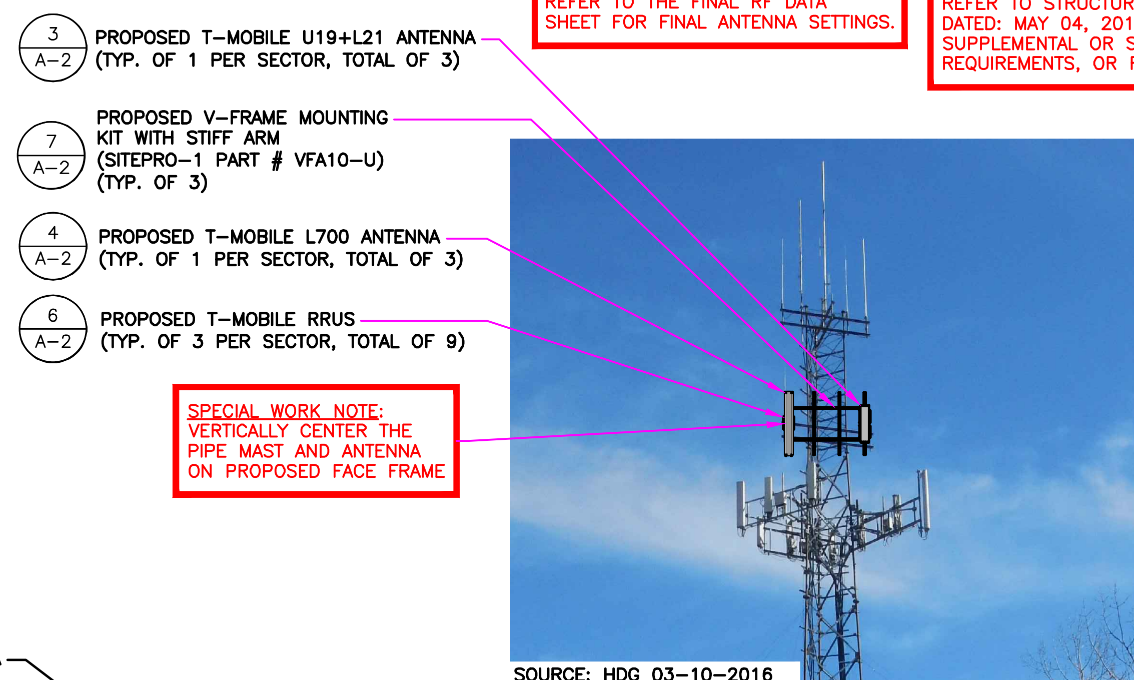
SHEET NUMBER
A-1



PROPOSED ANTENNA PLAN (1 / A-2)
SCALE: N.T.S

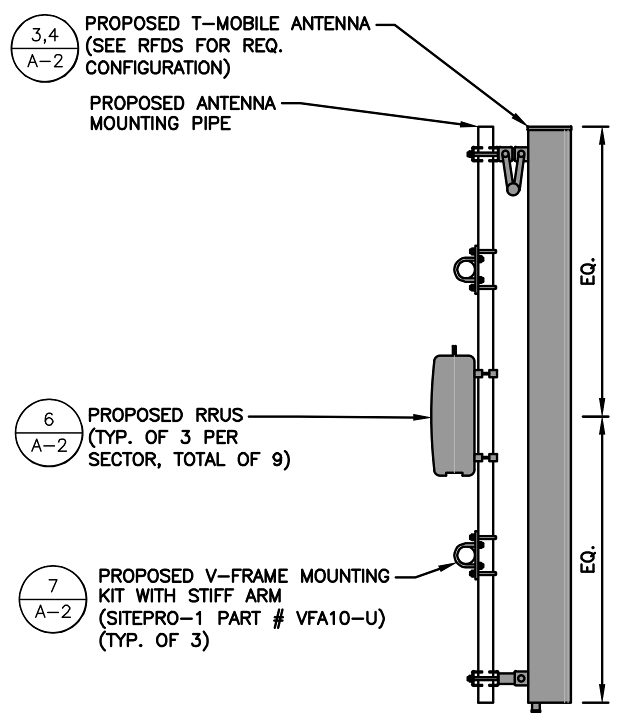
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY HDG DATED: MAY 04, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

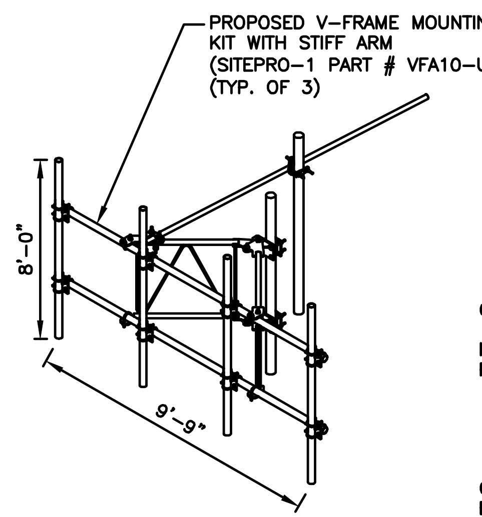


SOURCE: HDG 03-10-2016

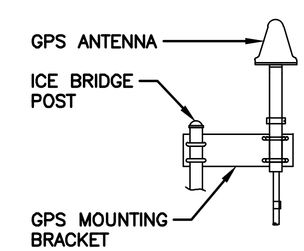
PROPOSED ANTENNA MOUNT PHOTO DETAIL (2 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA & RRU MOUNTING DETAIL (5 / A-2)
SCALE: N.T.S



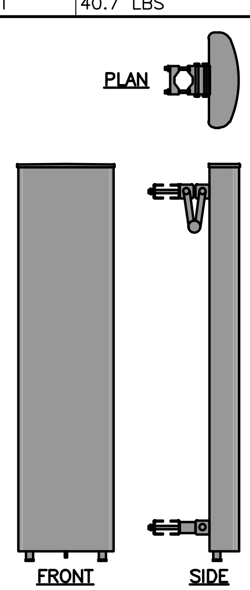
ANTENNA MOUNTING KIT (7 / A-2)
SCALE: N.T.S



GPS DIMENSIONS	
MODEL #	CCAH32ST03
MANUF.	NAIS
HEIGHT	3.9"
WIDTH	3.5"

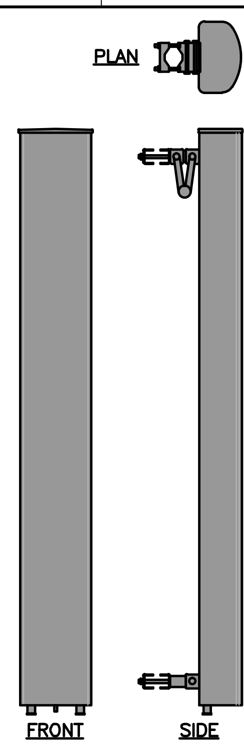
GPS ANTENNA MOUNTING DETAIL (8 / A-2)
SCALE: N.T.S

U19+L21 ANTENNA DIMENSIONS	
MODEL #	APX16DWV-16DWV-S-E-A20
MANUF.	RFS
WIDTH	13"
DEPTH	3.15"
HEIGHT	55.9"
WEIGHT	40.7 LBS



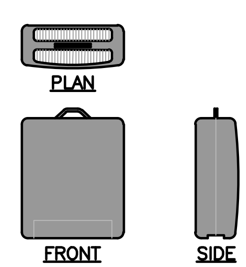
U19+L19 ANTENNA DETAIL (3 / A-2)
SCALE: N.T.S

L700 ANTENNA DIMENSIONS	
MODEL #	LNX-6515DS-A1M
MANUF.	COMMSCOPE
WIDTH	11.9"
DEPTH	7.1"
HEIGHT	96.6"
WEIGHT	43.7 LBS

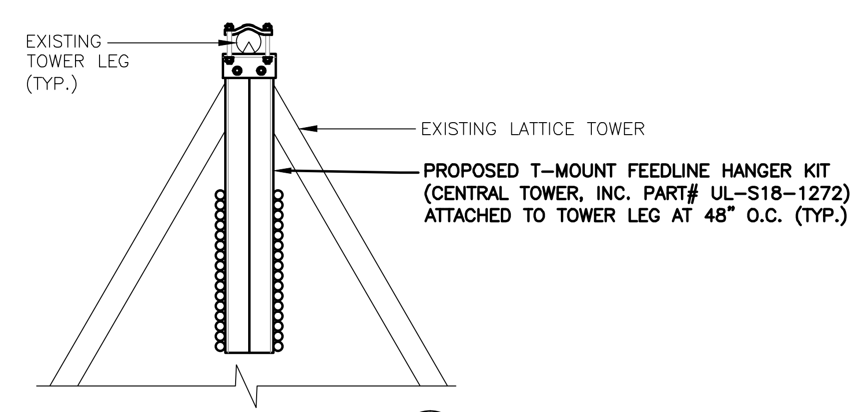


L700 ANTENNA DETAIL (4 / A-2)
SCALE: N.T.S

RRU DIMENSIONS	
MODEL #	RRUS B2
MODEL #	RRUS B12
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



PROPOSED RRU DETAIL (6 / A-2)
SCALE: N.T.S



CABLE SUPPORT DETAIL (9 / A-2)
SCALE: N.T.S

T-MOBILE NORTHEAST LLC
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APPROVED BY: DPH

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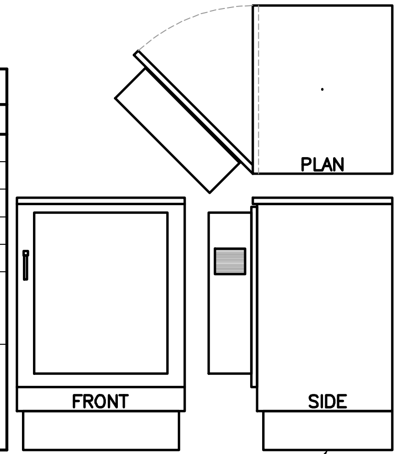
NEW LONDON COUNTY

SHEET TITLE
TOWER EQUIPMENT DETAILS

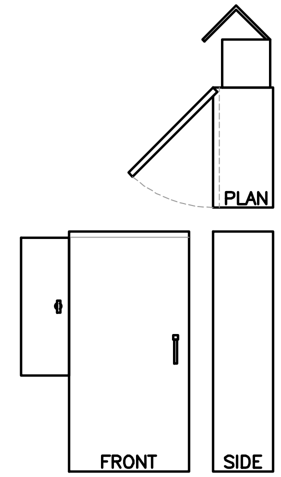
SHEET NUMBER
A-2

SSC DIMENSIONS	
MODEL #	SXF17-2824
MANUF.	PURCELL
WIDTH	28"
DEPTH	23.5"
HEIGHT	35.5"
PLINTH	6.5"
WEIGHT (BASE CONFIGURATION)	70 LBS
NOTE: INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	



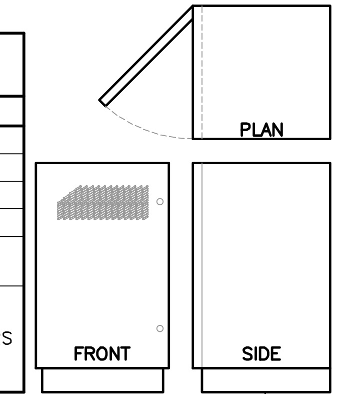
SITE SUPPORT CABINET (SSC) 1 A-3
SCALE: N.T.S

PPC DIMENSIONS	
MODEL #	3799340400
MANUF.	DELTA
WIDTH	20"
DEPTH	10"
HEIGHT	40"
WEIGHT	75 LBS
NOTE: INSTALL CABINET ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	

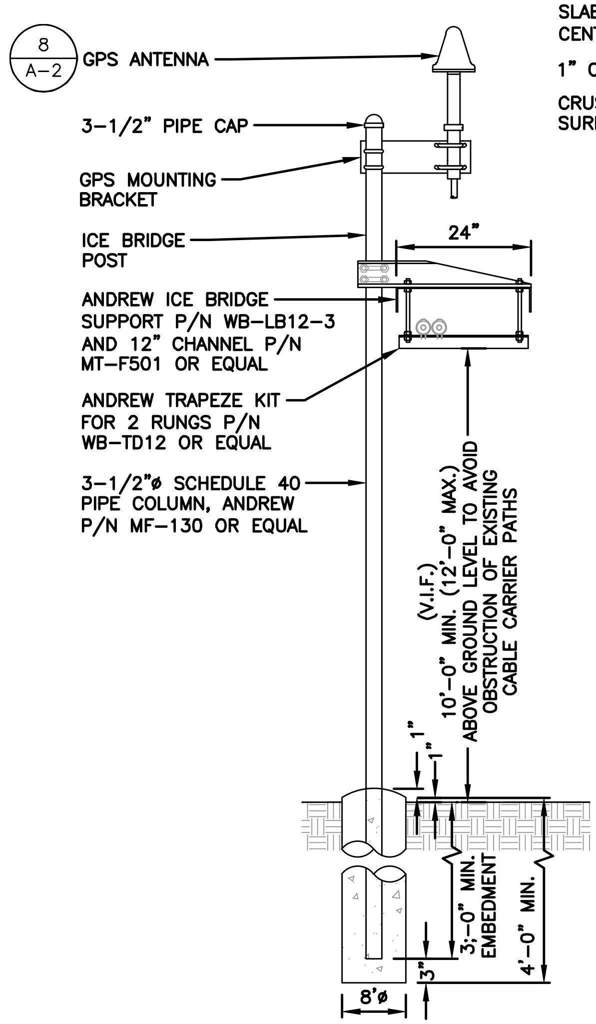


POWER PROTECTION CABINET (PPC) 2 A-3
SCALE: N.T.S

PBC DIMENSIONS	
MODEL #	PBC-05
MANUF.	ERICSSON
WIDTH	22.2"
DEPTH	22.8"
HEIGHT	34.1"
WEIGHT W/O BATTERIES	194 LBS
NOTE: 1. INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	

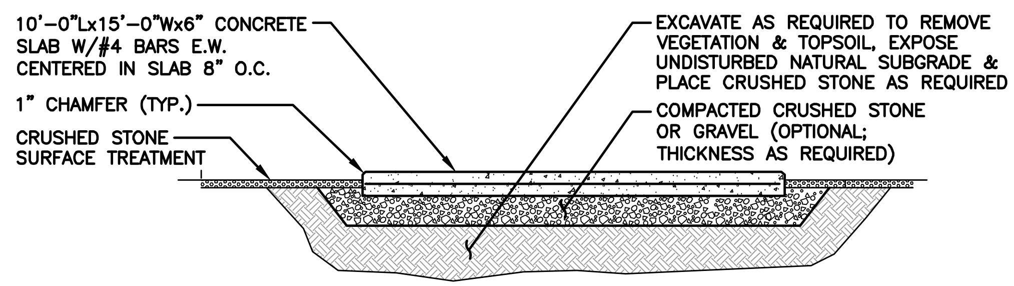


POWER AND BATTERY CABINET (PBC) 3 A-3
SCALE: N.T.S



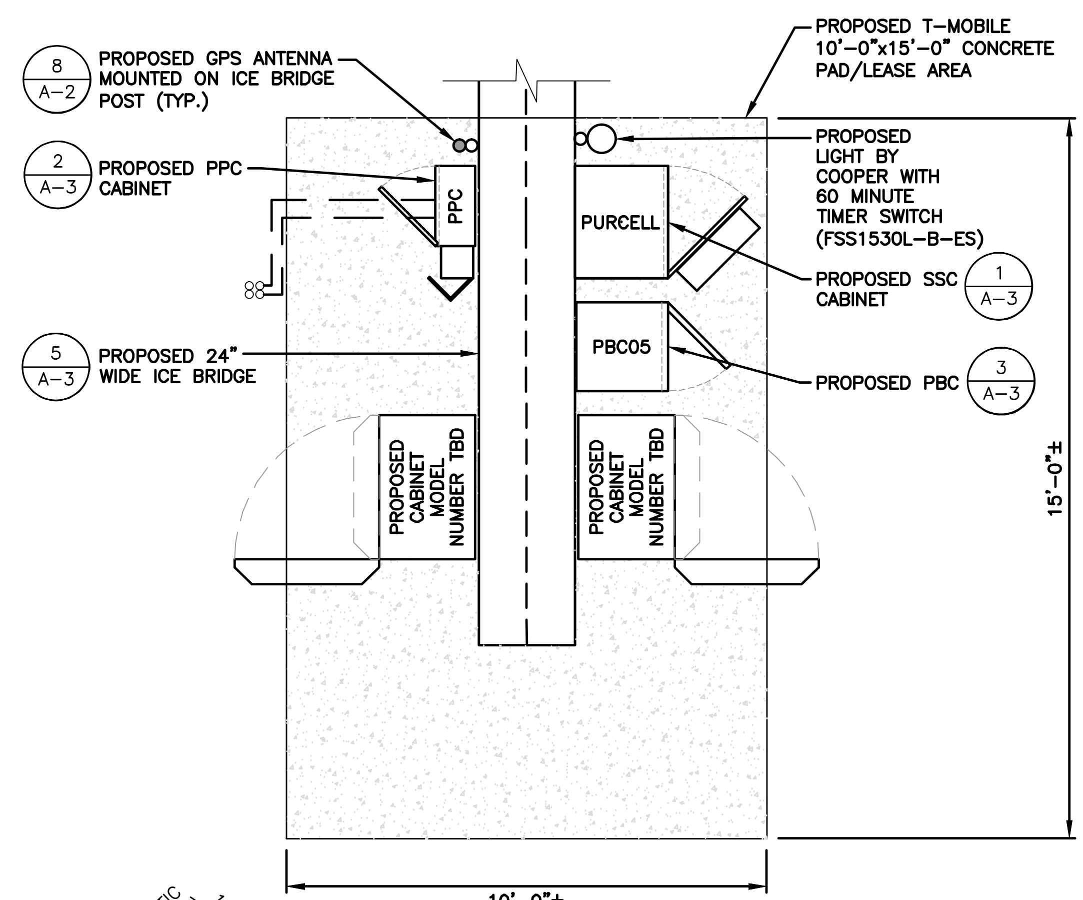
NOTE:
ALL STEEL IS GALVANIZED. ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.

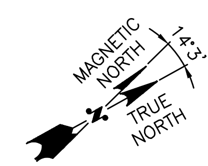
COAX ICE BRIDGE DETAIL 5 A-3
SCALE: N.T.S



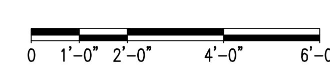
NEW CONC. PAD NOTES:
- REINF. SHALL BE ASTM A615-GRADE 60. SECURE IN PLACE.
- REINFORCEMENT IN EQUIPMENT SLAB TO BE WELDED AND BONDED TO GROUND RING

CONCRETE PAD DETAIL 4 A-3
SCALE: N.T.S





EQUIPMENT PLAN 6 A-3
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"



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STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER

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SALEM, CT 06420
NEW LONDON COUNTY

SHEET TITLE
GROUND EQUIPMENT DETAILS

SHEET NUMBER
A-3

ELECTRICAL NOTES

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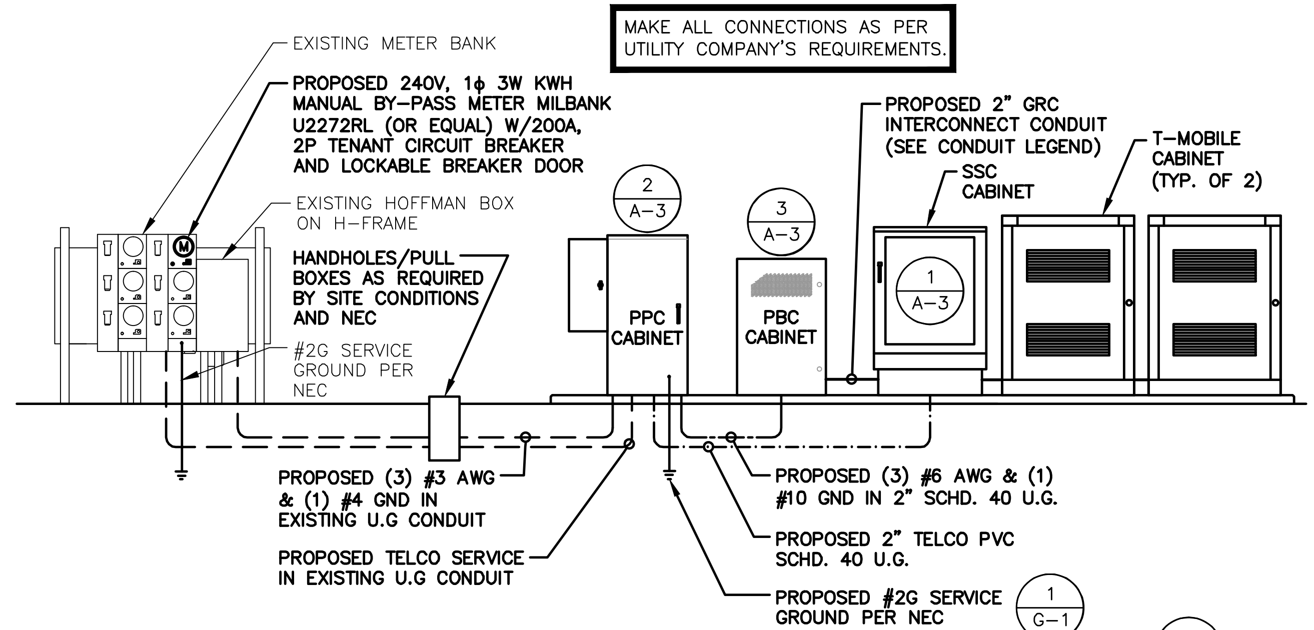
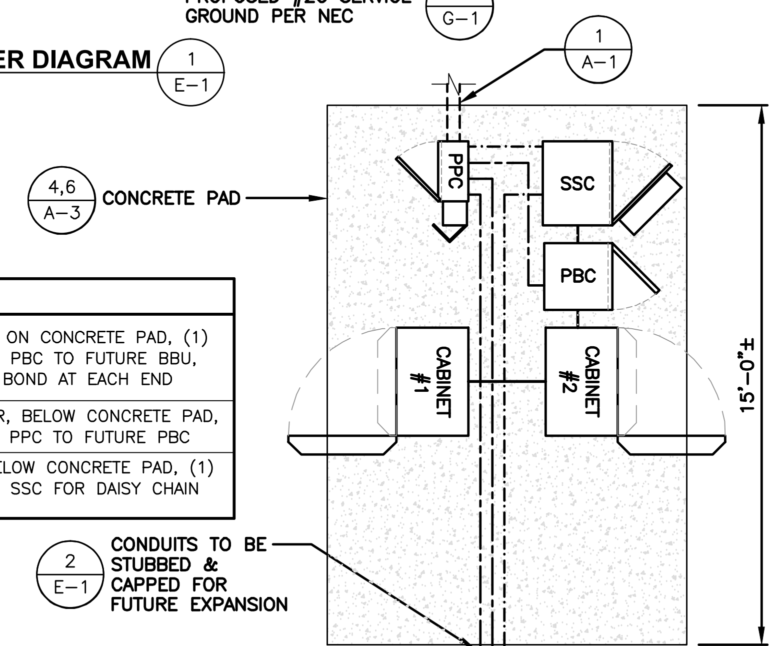
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A–3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. FURNISH COPIES OF ALL PERMITS AND INSPECTIONS AND FINAL CERTIFICATE OF OCCUPANCY TO SALEM TELECOM LLC.

LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	#6G AWG INSULATED STRANDED
	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊛	GROUND ROD WITH TEST WELL
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI–DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL
U.G	UNDERGROUND



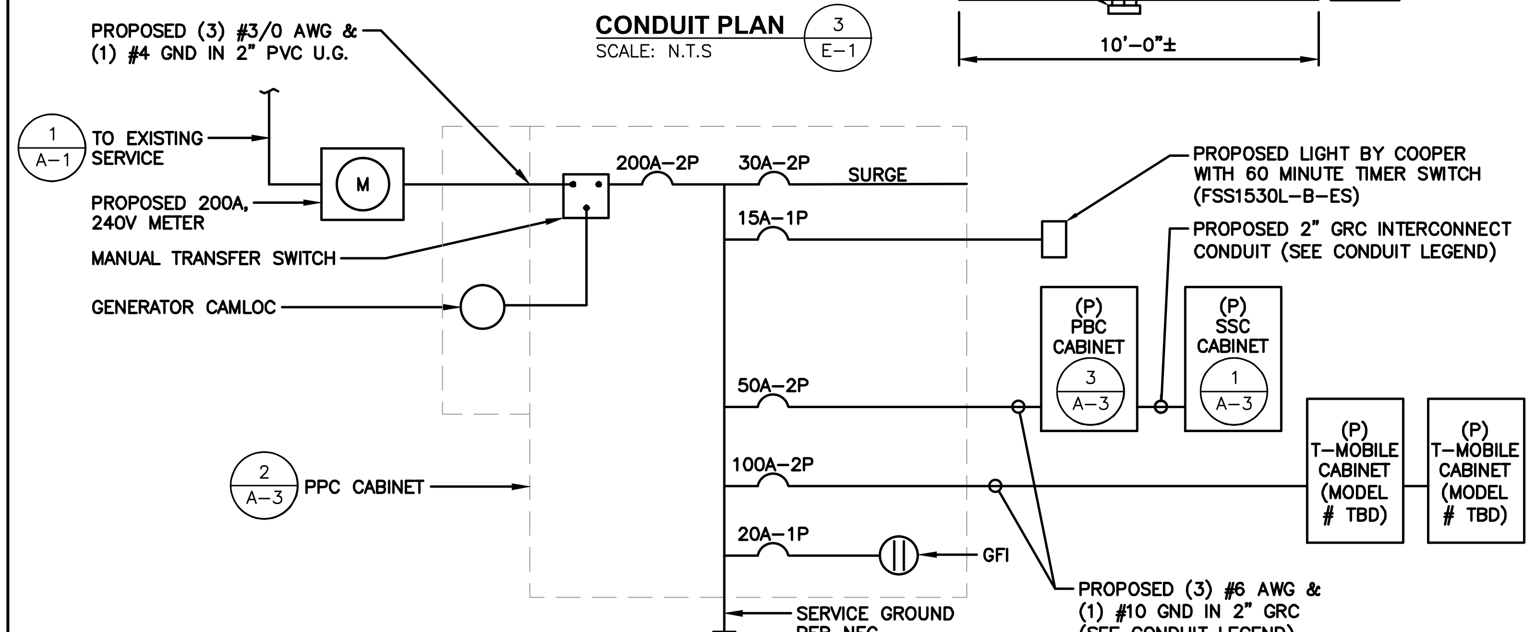
POWER RISER DIAGRAM (1 / E–1)
SCALE: N.T.S



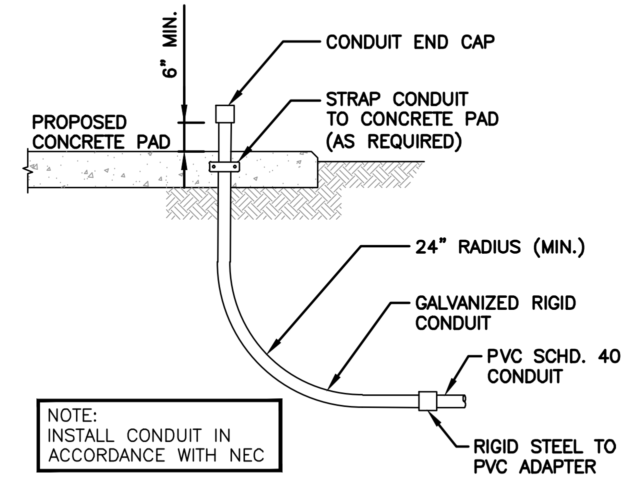
CONDUIT PLAN (3 / E–1)
SCALE: N.T.S

CONDUIT LEGEND

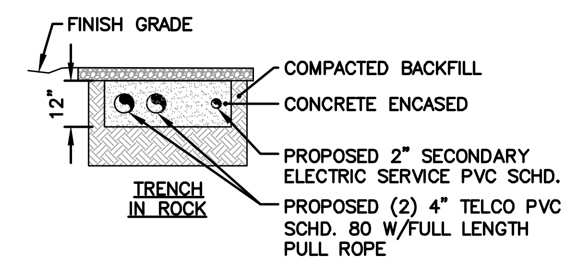
————	2"ø GRC INETRCONNECT KIT, –48V DC, ON CONCRETE PAD, (1) CONDUIT PBC TO SSC AND (1) CONDUIT PPC TO FUTURE BBU, ANCHOR AT 3' INTERVALS , GROUNDING BOND AT EACH END
— — —	2"ø PVC SCHD. 40 CONDUIT, AC–POWER, BELOW CONCRETE PAD, (1) CONDUIT PPC TO PBC, (2) CONDUIT PPC TO FUTURE PBC
–·–·–	2"ø PVC SCHD. 40 CONDUIT, TELCO, BELOW CONCRETE PAD, (1) CONDUIT PPC TO SSC AND (1) CONDUIT SSC FOR DAISY CHAIN TO FUTURE SSC

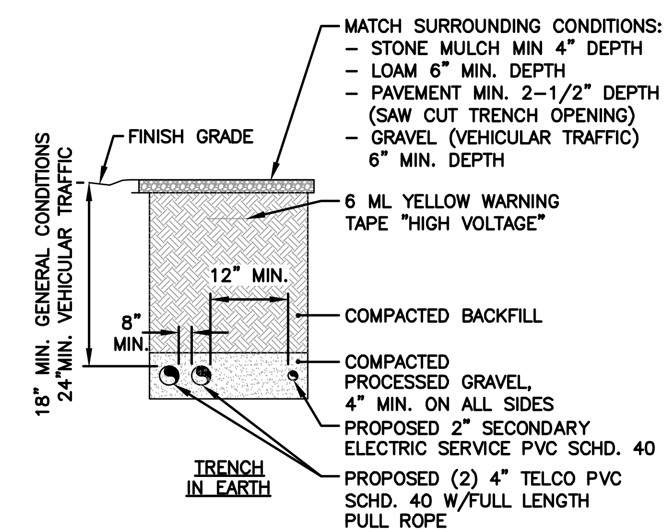


EQUIPMENT ONE LINE DIAGRAM (4 / E–1)
SCALE: N.T.S



CONDUIT SWEEP DETAIL (2 / E–1)
SCALE: N.T.S





SPECIAL WORK NOTE:
EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. WHERE DIRECTED OR REQUIRED, HAND–EXCAVATE PROPOSED UTILITY TRENCHING

BURIED CONDUIT DETAIL (5 / E–1)
SCALE: N.T.S

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STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER

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27 MAYNARD ROAD
SALEM, CT 06420
NEW LONDON COUNTY

SHEET TITLE
ELECTRICAL DETAILS & NOTES

SHEET NUMBER
E-1

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LEGEND

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KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
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EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
——	EXPOSED WIRING
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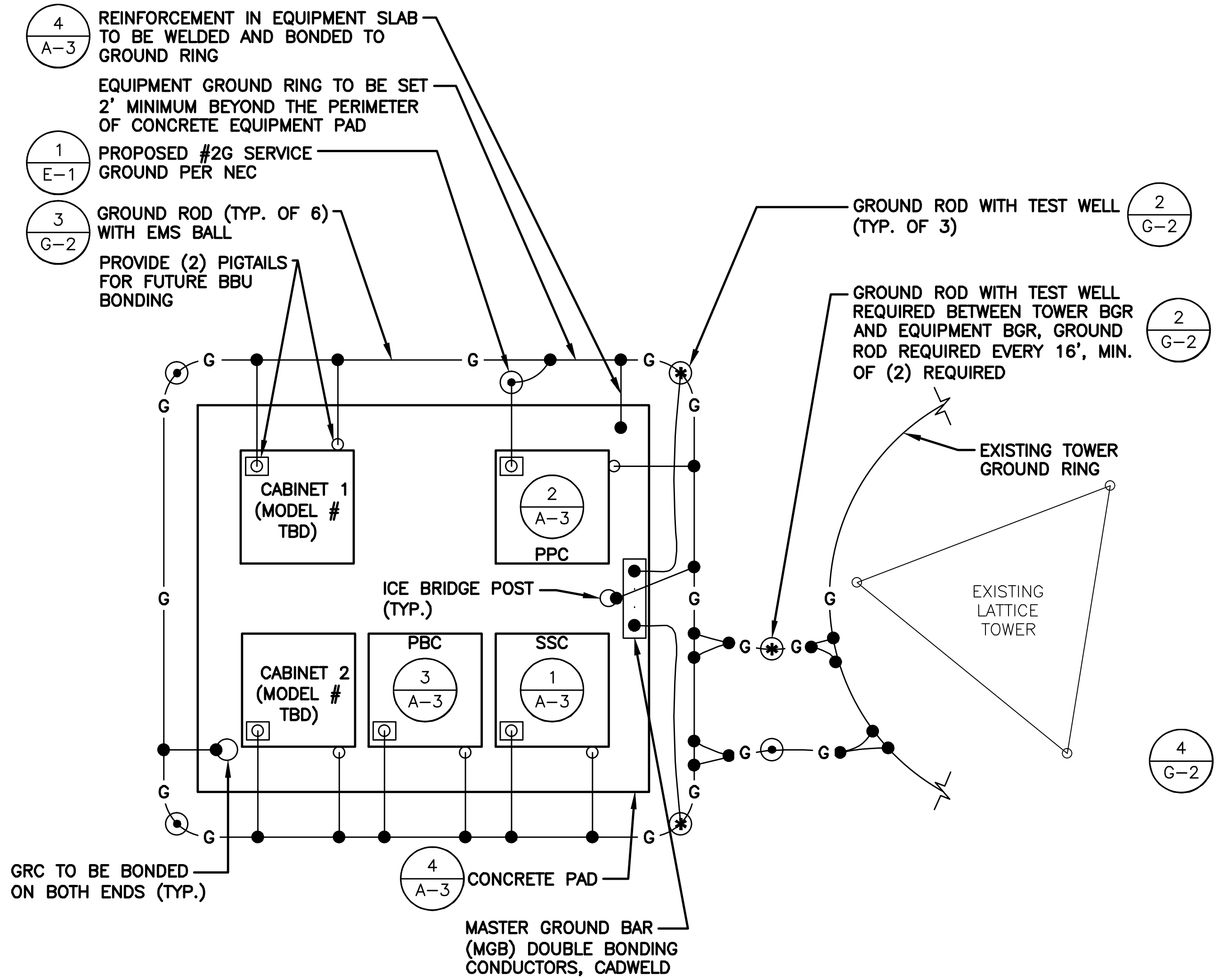
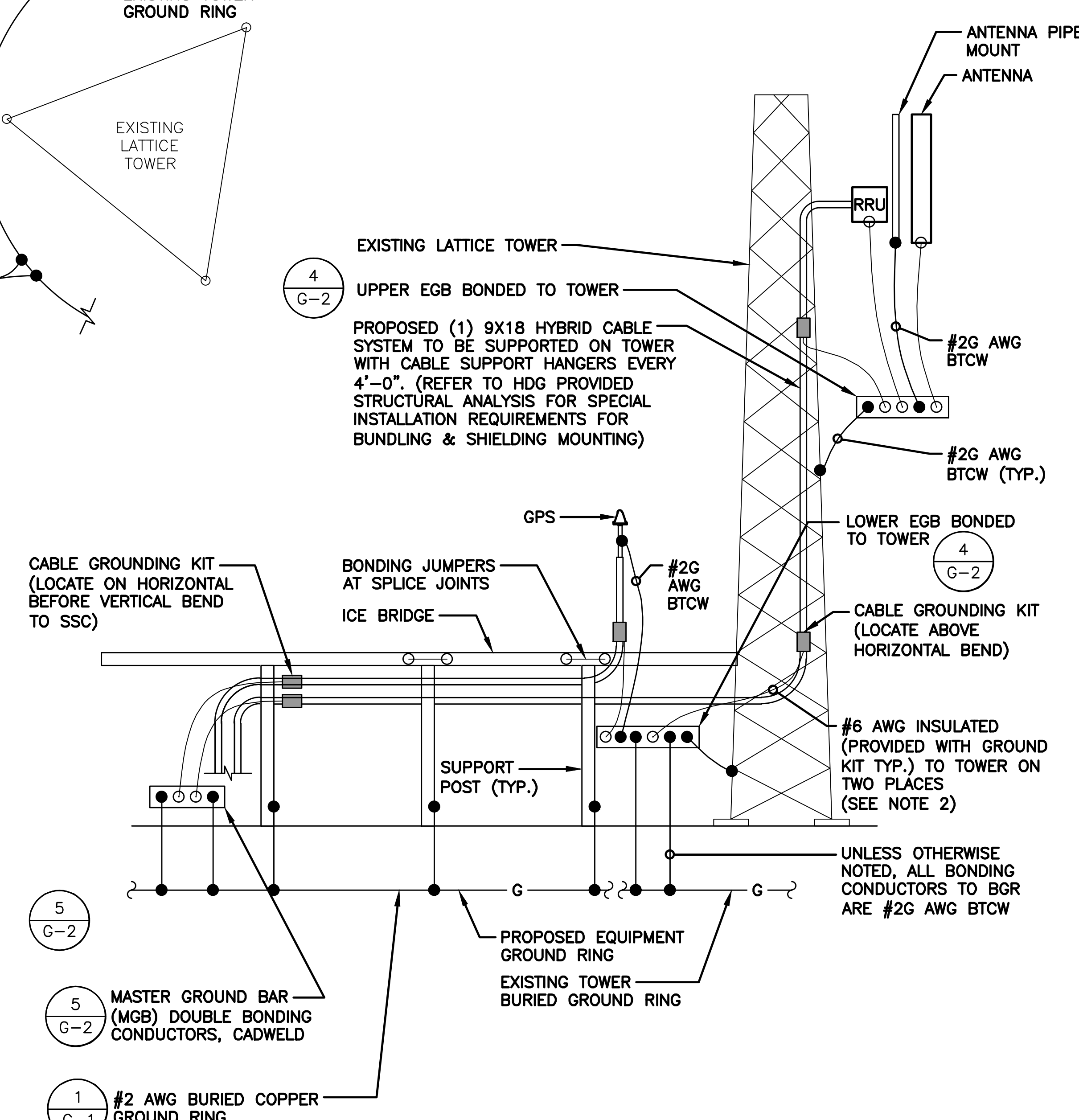
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊛	GROUND ROD WITH TEST WELL
–○–●	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL
U.G	UNDERGROUND



EQUIPMENT PLAN GROUNDING RING SCHEMATIC 1 G-1
SCALE: N.T.S

NOTE:
1. BASE BID TO INCLUDE INSTALLATION OF A BURIED GROUND RING AND (6) GROUND RODS OR SINGLE XIT HORIZONTAL CHEMICAL ROD AS DETERMINED BY FIELD CONDITIONS. ADDITIONAL RODS AS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE.
2. MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 100 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.
3. ALL CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S GUIDELINES.
4. ALL ABOVE-GRADE DOWNLEADS TO BGR SHALL BE INSTALLED IN 1" NON-METALLIC CONDUIT SECURED EVERY 2' WITH NON-METALLIC CLIPS.
5. NO EXOTHERMIC WELDING OR DRILLING TO TOWER MEMBERS.



GROUNDING RISER DIAGRAM 2 G-1
SCALE: N.T.S

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SHEET TITLE
GROUNDING SCHEMATIC & RISER DIAGRAM

SHEET NUMBER
G-1

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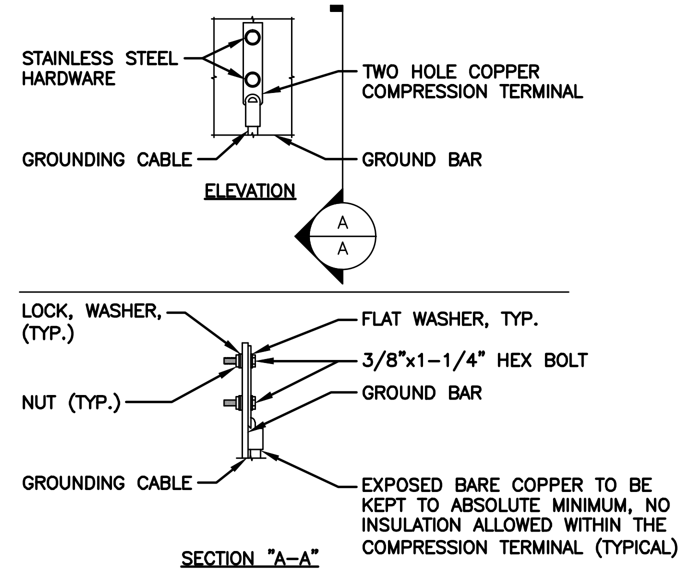
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. FURNISH COPIES OF ALL PERMITS AND INSPECTIONS AND FINAL CERTIFICATE OF OCCUPANCY TO SALEM TELECOM LLC.

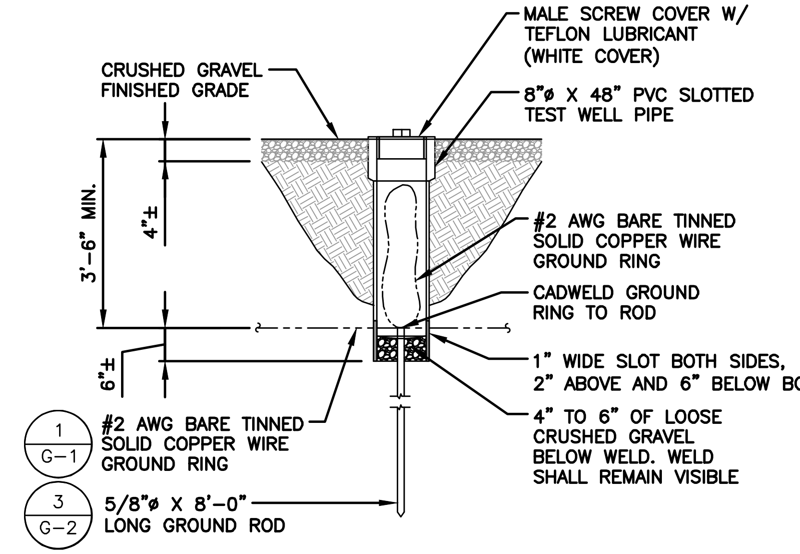
LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
——	EXPOSED WIRING
——	#6G AWG INSULATED STRANDED
——	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊛	GROUND ROD WITH TEST WELL
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊠	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL
U.G	UNDERGROUND



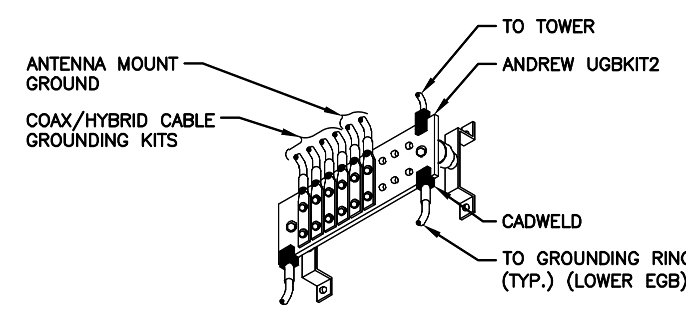
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL (1 / G-2)
SCALE: N.T.S

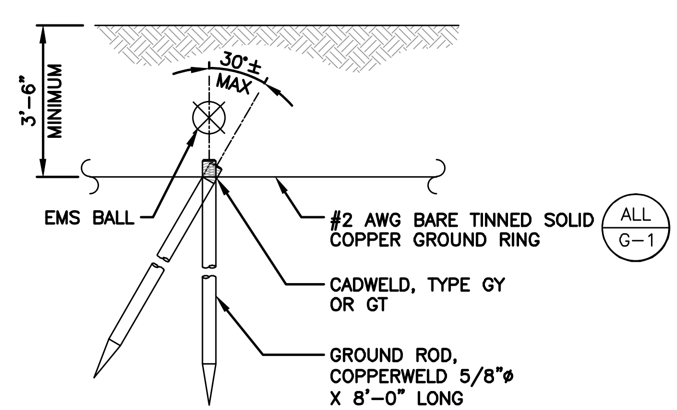


NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND LOOP AND TWO ON THE EQUIPMENT GROUND LOOP

GROUND ROD TEST WELL DETAIL (2 / G-2)
SCALE: N.T.S

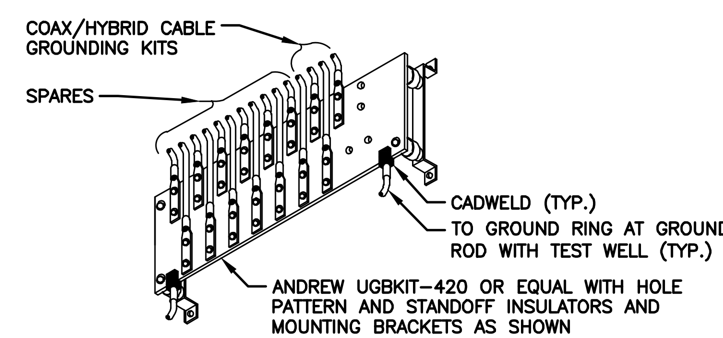


EQUIPMENT GROUND BAR (EGB) (4 / G-2)
SCALE: N.T.S



NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 30 DEGREES FROM THE VERTICAL.

GROUND ROD DETAIL (3 / G-2)
SCALE: N.T.S



MASTER GROUND BAR (MGB) (5 / G-2)
SCALE: N.T.S

T-MOBILE NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

Transcend Wireless

TRANSCEND WIRELESS
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1600 OSGOOD STREET
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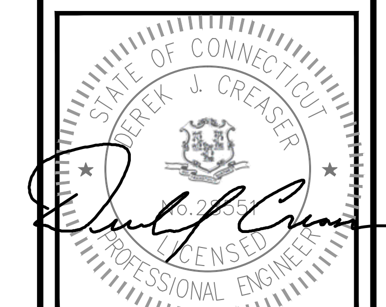
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586



CHECKED BY: DR

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/20/16	ISSUED FOR CONSTRUCTION	VP
2	06/09/16	ISSUED FOR CONSTRUCTION	VP
1	06/06/16	ISSUED FOR CONSTRUCTION	VP
0	05/06/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CT11451G

SITE NAME:
CT11451G

SITE ADDRESS:
27 MAYNARD ROAD
SALEM, CT 06420
NEW LONDON COUNTY

SHEET TITLE
GROUNDING DETAILS & NOTES

SHEET NUMBER
G-2

STRUCTURAL ANALYSIS REPORT

For

CT11451G
MAYNARD/SALEM

27 Maynard Road
Salem, CT 06420

Antennas Mounted to the Tower

Prepared for:

Transcend Wireless

T-Mobile

Dated: July 5, 2016

STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED
PROFESSIONAL ENGINEER

7/5/2016

Prepared by:

Hudson Design Group LLC

1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by T-Mobile to conduct a structural evaluation of the 100' self-supporting tower supporting the proposed T-Mobile's antennas located at elevation 82' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of T-Mobile's proposed antennas listed below.

Record drawings of the existing tower prepared by Central Tower Inc., dated September 1, 1999, were available and obtained for our use. The previous structural analysis report prepared by this office, dated October 29, 2012, was used for tower analysis.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower and foundation **are in conformance** with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **64.6%** - (Diagonal at Tower Section T2 from EL.60' to EL.80' Controlling).

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	Lightning Rod	100’	Tower Leg
	15’ Dipole	100’	Tower Leg
	10’ Omni	100’	Tower Leg
	(3) 8’ Omni	100’	T - Frame
T-Mobile	***(3) AIR 21 B4A/B2P Antennas***	***82’***	***T - Frame***
T-Mobile	***(3) LNX-6515DS-A1M Antennas***	***82’***	***T - Frame***
T-Mobile	***(3) RRUS 11 B2***	***82’***	***T - Frame***
T-Mobile	***(3) RRUS 11 B12***	***82’***	***T - Frame***
AT&T	(6) Powerwave 7770 Antennas	70’	T - Frame
AT&T	(6) LGP 21400 TMA	70’	T - Frame
AT&T	(6) LGP 21900	70’	T - Frame
AT&T	AM-X-CD-14-65 Antenna	70’	T - Frame
AT&T	P65-17-XLH-RR Antenna	70’	T - Frame
AT&T	AM-X-CD-16-65 Antenna	70’	T - Frame
AT&T	(6) RRUs	70’	T - Frame
AT&T	Surge Arrestor DC6-48-60-18-8F	70’	Tower Leg
AT&T	GPS-TMG-HR-26N	20’	Tower Leg

Proposed T-Mobile Appurtenances shown in Bold.

T-MOBILE EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
T-Mobile	***(1) Fiber Cable***	82’	***T - Bracket***

Proposed T-Mobile Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	44.5 %	0 – 20	PASS	
Diagonals	**64.6 %**	60 – 80	PASS	**Controlling**
Top Girts	1.9 %	80 – 100	PASS	
Bottom Girts	4.9 %	80 – 100	PASS	

FOUNDATION ANALYSIS RESULTS SUMMARY:

	Design Reactions (DL + WL)	Base Reactions (DL + WL)	Pass/Fail	Comments
AXIAL	**34.1 k**	19.2 k	PASS	
SHEAR	**29.8 k**	17.3 k	PASS	
MOMENT	**2139 ft-k**	1074 ft-k	PASS	

DESIGN CRITERIA:

1. EIA/TIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   City/Town: Salem
   County: New London
   Wind Load: 85 mph (fastest mile)
   105 mph (3 second gust)
   Nominal Ice Thickness: 0.5 inch

2. Approximate height above grade to proposed antennas: 82'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The tower dimensions, member sizes and material strength are as indicated in the record drawings of the existing tower prepared by Central Tower Inc., dated September 1, 1999.

2. The existing appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. The tower and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas and RRHs be mounted on the proposed T-frame supported by the tower.

ONGOING AND PERIODIC INSPECTION AND MAINTENANCE:

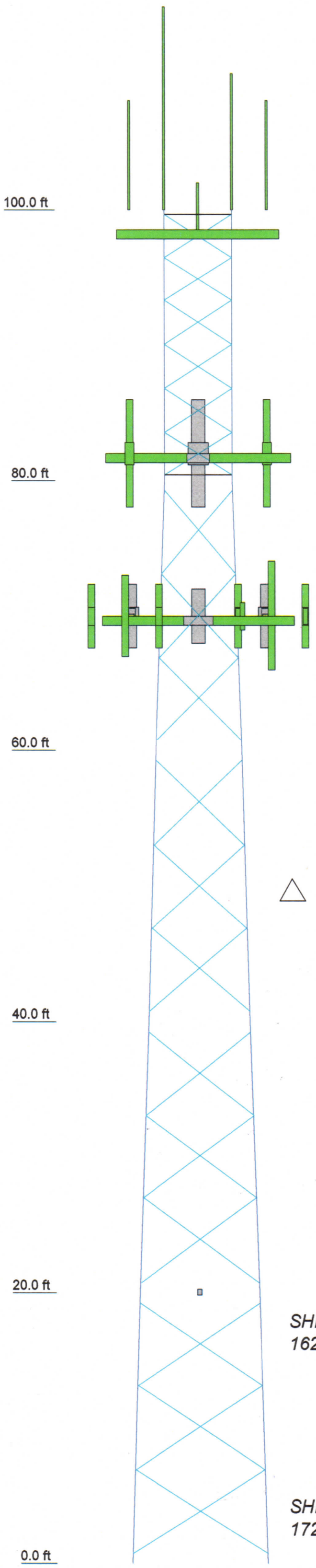
After the Contractor has successfully completed the installation and the work has been accepted, the Owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

Photo 1: Photo illustrating the Tower with Appurtenances shown.

CALCULATIONS

Section	T1	T2	T3	T4	T5
Legs	SR 2 1/4	SR 3	SR 3 1/4	SR 3 1/2	SR 3 3/4
Leg Grade	A572-50				
Diagonals	SR 1	L2x2x3/16	L2x2x1/4		L2 1/2x2 1/2x3/16
Diagonal Grade	A36				
Top Girts	SR 1	N.A.			
Bottom Girts	SR 1	N.A.			
Face Width (ft)	5		6.25	7.5	8.75	10
# Panels @ (ft)	6 @ 3.20833		12 @ 6.16667		
Weight (lb) 10927.2	1463.5	1809.8	2225.6	2551.8	2876.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	100	RRUS 11 B12	82
15' Dipole	100	RRUS 11 B12	82
Omni 3"x10'	100	(2) Ericsson RRU	70
Omni 3"x8'	100	(2) Ericsson RRU	70
Omni 3"x8'	100	(2) Ericsson RRU	70
Omni 3"x8'	100	Surge Arrestor (DC6-48-60-18-8F)	70
PiROD 12' T-Frame	98.5	PiROD 15' T-Frame (ATT - Existing)	70
PiROD 12' T-Frame	98.5	PiROD 15' T-Frame	70
PiROD 12' T-Frame (T-Mobile - Proposed)	82	PiROD 15' T-Frame	70
		(2) Powerwave 7770 w/mount pipe	70
PiROD 12' T-Frame	82	(2) Powerwave 7770 w/mount pipe	70
PiROD 12' T-Frame	82	(2) Powerwave 7770 w/mount pipe	70
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	82	(2) Powerwave LGP21900	70
		(2) Powerwave LGP21900	70
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	82	(2) Powerwave LGP21900	70
		(2) Powerwave TMA LGP21400	70
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	82	(2) Powerwave TMA LGP21400	70
LNX-6515DS-A1M w/ Mount Pipe	82	(2) Powerwave TMA LGP21400	70
LNX-6515DS-A1M w/ Mount Pipe	82	KMW AM-X-CD-14-65-00T-RET w/mount pipe	70
LNX-6515DS-A1M w/ Mount Pipe	82		
RRUS 11	82	Powerwave P65-17-XLH-RR w/mount pipe	70
RRUS 11	82		
RRUS 11	82	KMW AM-X-CD-16-65-00T-RET w/mount pipe	70
RRUS 11 B12	82	PCTEL GPS-TMG-HR-26N	20

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 64.6%

MAX. CORNER REACTIONS AT BASE:
DOWN: 130408 lb
SHEAR: 9776 lb

UPLIFT: -114724 lb
SHEAR: 9302 lb

AXIAL 25896 lb
SHEAR 16202 lb
MOMENT 1024735 lb-ft
TORQUE 2228 lb-ft
74 mph WIND - 0.5000 in ICE

AXIAL 19178 lb
SHEAR 17266 lb
MOMENT 1074009 lb-ft
TORQUE 2332 lb-ft
REACTIONS - 85 mph WIND

Hudson Design Group LLC
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North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: CT11451G Salem, CT		
Project: 100 ft Self Supporting Tower		
Client: T-Mobile	Drawn by: kw	App'd:
Code: TIA/EIA-222-F	Date: 07/05/16	Scale: NTS
Path: C:\Users\kwang\Documents\HUDSON DESIGN GROUP\AAA\CT11451G Rev 2 - SST (Transcent T-Mobile)\CT11451G Rev 2\CT11451G Rev 2.eri		Dwg No. E-1

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 100.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 10.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

- Tower is located in New London County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 50 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	*Tower Elevation* *ft*	*Assembly Database*	*Description*	*Section Width* *ft*	*Number of Sections*	*Section Length* *ft*
T1	100.00-80.00			5.00	1	20.00
T2	80.00-60.00			5.00	1	20.00
T3	60.00-40.00			6.25	1	20.00
T4	40.00-20.00			7.50	1	20.00
T5	20.00-0.00			8.75	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation* *ft*	*Diagonal Spacing* *ft*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset* *in*	*Bottom Girt Offset* *in*
T1	100.00-80.00	3.21	X Brace	No	No	4.5000	4.5000
T2	80.00-60.00	6.17	X Brace	No	No	9.0000	9.0000
T3	60.00-40.00	6.17	X Brace	No	No	9.0000	9.0000
T4	40.00-20.00	6.17	X Brace	No	No	9.0000	9.0000
T5	20.00-0.00	6.17	X Brace	No	No	9.0000	9.0000

Tower Section Geometry *(cont'd)*

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North Andover, MA 01845
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Tower Elevation ft	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 100.00-80.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T2 80.00-60.00	Solid Round	3	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 60.00-40.00	Solid Round	3 1/4	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 40.00-20.00	Solid Round	3 1/2	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T5 20.00-0.00	Solid Round	3 3/4	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Top Girt Type*	*Top Girt Size*	*Top Girt Grade*	*Bottom Girt Type*	*Bottom Girt Size*	*Bottom Girt Grade*
T1 100.00-80.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Face or Leg*	*Allow Shield*	*Component Type*	*Placement ft*	*Total Number*	*Number Per Row*	*Clear Spacing in*	*Width or Diameter in*	*Perimeter in*	*Weight plf*
T-bracket	C	No	Ar (CaAa)	100.00 - 7.00	2	2	3.0000	3.0000		8.40
7/8	A	No	Ar (CfAe)	100.00 - 7.00	4	4	1.1100	1.1100		0.54
7/8	A	No	Ar (CfAe)	100.00 - 7.00	1	1	1.1100	1.1100		0.54
7/8 (AT&T)	B	No	Ar (CfAe)	70.00 - 7.00	12	6	1.1100	1.1100		0.54
FB-L98B-002 (AT&T)	B	No	Ar (CfAe)	70.00 - 7.00	1	1	0.4000	0.4000		0.25
WR-VG122ST-BRDA (AT&T)	B	No	Ar (CfAe)	70.00 - 7.00	2	2	0.4000	0.4000		0.25
**********										
FB-L98B-002 (T-Mobile - proposed)	A	No	Ar (CfAe)	82.00 - 7.00	1	1	0.4000	0.4000		0.25
T-bracket (T-Mobile - proposed)	A	No	Af (Leg)	82.00 - 7.00	1	1	3.0000	3.0000	12.0000	8.40

Discrete Tower Loads

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert ft ft ft*	*Azimuth Adjustment °*	*Placement ft*		*C_AA_A Front ft^2*	*C_AA_A Side ft^2*	*Weight lb*
Lightning Rod	A	None		0.0000	100.00	No Ice	0.75	0.75	10.00
						1/2" Ice	1.25	1.25	40.00
15' Dipole	C	From Leg	0.00	0.0000	100.00	No Ice	6.00	6.00	40.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00 7.50			1/2" Ice	7.54	7.54	81.87
Omni 3"x10'	B	From Leg	0.00 0.00 5.00	0.0000	100.00	No Ice 1/2" Ice	3.00 4.03	3.00 4.03	20.00 41.79
PiROD 12' T-Frame	C	From Face	1.50 0.00 0.00	0.0000	98.50	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
Omni 3"x8'	B	From Leg	3.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice	2.40 3.19	2.40 3.19	25.00 42.51
Omni 3"x8'	C	From Leg	3.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice	2.40 3.19	2.40 3.19	25.00 42.51
PiROD 12' T-Frame	C	From Face	0.00 0.00 0.00	0.0000	98.50	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
Omni 3"x8'	C	From Leg	3.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice	2.40 3.19	2.40 3.19	25.00 42.51
**********									
PiROD 15' T-Frame (AT&T - Existing)	A	From Leg	1.50 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	500.00 650.00
PiROD 15' T-Frame	B	From Leg	1.50 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	500.00 650.00
PiROD 15' T-Frame	C	From Leg	1.50 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	500.00 650.00
(2) Powerwave 7770 w/mount pipe	A	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 103.17
(2) Powerwave 7770 w/mount pipe	B	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 103.17
(2) Powerwave 7770 w/mount pipe	C	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 103.17
(2) Powerwave LGP21900	A	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave LGP21900	B	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave LGP21900	C	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave TMA LGP21400	A	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
(2) Powerwave TMA LGP21400	B	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
(2) Powerwave TMA LGP21400	C	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert*	*Azimuth Adjustment*	*Placement*		*C_AA_A Front*	*C_AA_A Side*	*Weight*
			ft *ft* *ft*	*°*	*ft*		*ft^2*	*ft^2*	*lb*
**********									
KMW AM-X-CD-14-65-00T-RET w/mount pipe	A	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	5.74 6.20	4.02 4.63	54.65 99.88
Powerwave P65-17-XLH-RR w/mount pipe	B	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	11.75 12.47	9.39 10.90	122.11 212.11
KMW AM-X-CD-16-65-00T-RET w/mount pipe	C	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	8.50 9.15	6.30 7.48	74.05 139.04
(2) Ericsson RRU	A	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
(2) Ericsson RRU	B	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
(2) Ericsson RRU	C	From Leg	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
Surge Arrestor (DC6-48-60-18-8F)	B	From Leg	0.50 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice	1.27 1.46	1.27 1.46	20.00 35.12
PCTEL GPS-TMG-HR-26N	A	From Leg	0.50 0.00 0.00	0.0000	20.00	No Ice 1/2" Ice	0.09 0.14	0.09 0.14	1.00 2.39
**********									
PiROD 12' T-Frame (T-Mobile - Proposed)	A	From Leg	1.50 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame	B	From Leg	1.50 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame	C	From Leg	1.50 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	6.92 7.48	5.75 6.66	112.30 170.21
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	6.92 7.48	5.75 6.66	112.30 170.21
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	6.92 7.48	5.75 6.66	112.30 170.21
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	11.68 12.40	9.84 11.37	83.27 172.93
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	11.68 12.40	9.84 11.37	83.27 172.93
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	11.68 12.40	9.84 11.37	83.27 172.93
RRUS 11	A	From Leg	3.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	50.70 71.50
RRUS 11	B	From Leg	3.00	0.0000	82.00	No Ice	3.25	1.37	50.70

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *lb*
			0.00			1/2" Ice	3.49	1.55	71.50
			0.00						
RRUS 11	C	From Leg	3.00	0.0000	82.00	No Ice	3.25	1.37	50.70
			0.00			1/2" Ice	3.49	1.55	71.50
			0.00						
RRUS 11 B12	A	From Leg	3.00	0.0000	82.00	No Ice	3.31	1.36	50.70
			0.00			1/2" Ice	3.55	1.54	71.57
			0.00						
RRUS 11 B12	B	From Leg	3.00	0.0000	82.00	No Ice	3.31	1.36	50.70
			0.00			1/2" Ice	3.55	1.54	71.57
			0.00						
RRUS 11 B12	C	From Leg	3.00	0.0000	82.00	No Ice	3.31	1.36	50.70
			0.00			1/2" Ice	3.55	1.54	71.57
			0.00						
**********									

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service

Comb. No.	Description
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Reactions

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Leg C	Max. Vert	10	130289.81	8528.66	-4776.11
	Max. H_x	10	130289.81	8528.66	-4776.11
	Max. H_z	3	-98876.55	-6574.46	4762.43
	Min. Vert	4	-114431.66	-8121.97	4530.00
	Min. H_x	4	-114431.66	-8121.97	4530.00
	Min. H_z	10	130289.81	8528.66	-4776.11
Leg B	Max. Vert	6	130408.37	-8504.88	-4819.68
	Max. H_x	12	-114313.20	8096.89	4570.72
	Max. H_z	13	-98758.02	6532.46	4836.34
	Min. Vert	12	-114313.20	8096.89	4570.72
	Min. H_x	6	130408.37	-8504.88	-4819.68
	Min. H_z	6	130408.37	-8504.88	-4819.68
Leg A	Max. Vert	2	129996.97	49.63	9771.27
	Max. H_x	11	6157.48	1601.27	254.53
	Max. H_z	2	129996.97	49.63	9771.27
	Min. Vert	8	-114723.69	-47.79	-9302.05
	Min. H_x	5	6157.48	-1599.79	254.50
	Min. H_z	8	-114723.69	-47.79	-9302.05

Tower Mast Reaction Summary

Load Combination	*Vertical lb*	*Shear$_x$ lb*	*Shear$_z$ lb*	*Overturning Moment, M_x lb-ft*	*Overturning Moment, M_z lb-ft*	*Torque lb-ft*
Dead Only	19177.77	0.00	-0.00	2022.02	-591.47	0.00
Dead+Wind 0 deg - No Ice	19177.78	0.00	-17265.58	-1070445.26	-593.12	887.85
Dead+Wind 30 deg - No Ice	19177.77	8390.94	-14533.51	-910132.59	-527226.13	1809.92
Dead+Wind 60 deg - No Ice	19177.76	14393.87	-8310.30	-521402.96	-907210.32	2331.93
Dead+Wind 90 deg - No Ice	19177.77	16781.85	-0.01	2036.10	-1053869.69	2205.78
Dead+Wind 120 deg - No Ice	19177.78	14952.43	8632.79	538267.57	-929388.80	1390.02
Dead+Wind 150 deg - No Ice	19177.77	8390.92	14533.52	914187.42	-527237.74	377.87
Dead+Wind 180 deg - No Ice	19177.76	-0.00	16620.61	1048897.77	-594.13	-806.29
Dead+Wind 210 deg - No Ice	19177.77	-8390.92	14533.52	914188.36	526050.14	-1809.88
Dead+Wind 240 deg - No Ice	19177.78	-14952.43	8632.80	538268.49	928202.66	-2277.75
Dead+Wind 270 deg - No Ice	19177.77	-16781.85	-0.01	2036.11	1052684.57	-2205.78
Dead+Wind 300 deg - No Ice	19177.76	-14393.87	-8310.30	-521403.86	906025.19	-1525.53
Dead+Wind 330 deg - No Ice	19177.77	-8390.94	-14533.51	-910133.51	526040.29	-377.91
Dead+Ice+Temp	25895.99	-0.00	-0.00	1573.09	-1446.19	0.00
Dead+Wind 0 deg+Ice+Temp	25896.00	0.00	-16201.99	-1021094.83	-1448.59	-76.34
Dead+Wind 30 deg+Ice+Temp	25895.99	7916.37	-13711.57	-871543.57	-505544.82	1028.84
Dead+Wind 60 deg+Ice+Temp	25895.99	13604.96	-7854.83	-500097.46	-870395.73	1896.09
Dead+Wind 90 deg+Ice+Temp	25895.99	15832.75	0.00	1593.31	-1009655.04	2227.82
Dead+Wind 120 deg+Ice+Temp	25896.00	14031.33	8101.00	512926.27	-887123.62	1909.04

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Load Combination	*Vertical* lb	*Shear$_x$* lb	*Shear$_z$* lb	*Overturning Moment, M_x* lb-ft	*Overturning Moment, M_z* lb-ft	*Torque* lb-ft
Dead+Wind 150 deg+Ice+Temp	25895.99	7916.38	13711.56	874708.44	-505560.45	1183.40
Dead+Wind 180 deg+Ice+Temp	25895.99	0.00	15709.65	1004953.55	-1451.33	93.57
Dead+Wind 210 deg+Ice+Temp	25895.99	-7916.38	13711.56	874708.80	502658.41	-1028.80
Dead+Wind 240 deg+Ice+Temp	25896.00	-14031.33	8101.00	512926.55	884223.09	-1832.71
Dead+Wind 270 deg+Ice+Temp	25895.99	-15832.75	0.00	1593.13	1006756.13	-2227.82
Dead+Wind 300 deg+Ice+Temp	25895.99	-13604.96	-7854.83	-500098.06	867497.93	-1989.66
Dead+Wind 330 deg+Ice+Temp	25895.99	-7916.37	-13711.57	-871544.10	502647.52	-1183.46
Dead+Wind 0 deg - Service	19177.77	0.00	-5974.29	-369068.28	-592.52	307.21
Dead+Wind 30 deg - Service	19177.77	2903.45	-5028.92	-313597.88	-182819.82	627.47
Dead+Wind 60 deg - Service	19177.77	4980.60	-2875.55	-179089.91	-314303.80	807.03
Dead+Wind 90 deg - Service	19177.77	5806.90	-0.00	2031.92	-365049.84	762.06
Dead+Wind 120 deg - Service	19177.77	5173.89	2987.15	187579.89	-321975.20	481.04
Dead+Wind 150 deg - Service	19177.77	2903.45	5028.92	317657.52	-182822.71	131.97
Dead+Wind 180 deg - Service	19177.77	0.00	5751.10	364271.48	-592.85	-279.08
Dead+Wind 210 deg - Service	19177.77	-2903.45	5028.92	317657.60	181637.11	-627.47
Dead+Wind 240 deg - Service	19177.77	-5173.89	2987.15	187580.00	320789.84	-788.24
Dead+Wind 270 deg - Service	19177.77	-5806.90	-0.00	2031.92	363864.72	-762.06
Dead+Wind 300 deg - Service	19177.77	-4980.60	-2875.55	-179090.00	313118.80	-527.95
Dead+Wind 330 deg - Service	19177.77	-2903.45	-5028.92	-313597.98	181634.84	-131.96

Solution Summary

	Sum of Applied Forces			*Sum of Reactions*			
Load Comb.	*PX* lb	*PY* lb	*PZ* lb	*PX* lb	*PY* lb	*PZ* lb	*% Error*
1	0.00	-19177.77	-0.00	0.00	19177.77	0.00	0.000%
2	0.00	-19177.77	-17265.71	-0.00	19177.78	17265.58	0.000%
3	8390.97	-19177.77	-14533.58	-8390.94	19177.77	14533.51	0.000%
4	14393.93	-19177.77	-8310.34	-14393.87	19177.76	8310.30	0.000%
5	16781.93	-19177.77	-0.00	-16781.85	19177.77	0.01	0.000%
6	14952.54	-19177.77	8632.85	-14952.43	19177.78	-8632.79	0.000%
7	8390.97	-19177.77	14533.58	-8390.92	19177.77	-14533.52	0.000%
8	0.00	-19177.77	16620.68	0.00	19177.76	-16620.61	0.000%
9	-8390.97	-19177.77	14533.58	8390.92	19177.77	-14533.52	0.000%
10	-14952.54	-19177.77	8632.85	14952.43	19177.78	-8632.80	0.000%
11	-16781.93	-19177.77	-0.00	16781.85	19177.77	0.01	0.000%
12	-14393.93	-19177.77	-8310.34	14393.87	19177.76	8310.30	0.000%
13	-8390.97	-19177.77	-14533.58	8390.94	19177.77	14533.51	0.000%
14	0.00	-25895.99	-0.00	0.00	25895.99	0.00	0.000%
15	-0.00	-25895.99	-16202.06	-0.00	25896.00	16201.99	0.000%
16	7916.40	-25895.99	-13711.61	-7916.37	25895.99	13711.57	0.000%
17	13605.02	-25895.99	-7854.86	-13604.96	25895.99	7854.83	0.000%
18	15832.81	-25895.99	-0.00	-15832.75	25895.99	-0.00	0.000%
19	14031.39	-25895.99	8101.03	-14031.33	25896.00	-8101.00	0.000%
20	7916.40	-25895.99	13711.61	-7916.38	25895.99	-13711.56	0.000%
21	0.00	-25895.99	15709.72	-0.00	25895.99	-15709.65	0.000%
22	-7916.40	-25895.99	13711.61	7916.38	25895.99	-13711.56	0.000%
23	-14031.39	-25895.99	8101.03	14031.33	25896.00	-8101.00	0.000%
24	-15832.81	-25895.99	-0.00	15832.75	25895.99	-0.00	0.000%
25	-13605.02	-25895.99	-7854.86	13604.96	25895.99	7854.83	0.000%
26	-7916.40	-25895.99	-13711.61	7916.37	25895.99	13711.57	0.000%
27	0.00	-19177.77	-5974.29	-0.00	19177.77	5974.29	0.000%
28	2903.45	-19177.77	-5028.92	-2903.45	19177.77	5028.92	0.000%
29	4980.60	-19177.77	-2875.55	-4980.60	19177.77	2875.55	0.000%
30	5806.90	-19177.77	-0.00	-5806.90	19177.77	0.00	0.000%
31	5173.89	-19177.77	2987.15	-5173.89	19177.77	-2987.15	0.000%
32	2903.45	-19177.77	5028.92	-2903.45	19177.77	-5028.92	0.000%

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Load Comb.	Sum of Applied Forces PX lb	Sum of Applied Forces PY lb	Sum of Applied Forces PZ lb	Sum of Reactions PX lb	Sum of Reactions PY lb	Sum of Reactions PZ lb	% Error
33	-0.00	-19177.77	5751.10	-0.00	19177.77	-5751.10	0.000%
34	-2903.45	-19177.77	5028.92	2903.45	19177.77	-5028.92	0.000%
35	-5173.89	-19177.77	2987.15	5173.89	19177.77	-2987.15	0.000%
36	-5806.90	-19177.77	-0.00	5806.90	19177.77	0.00	0.000%
37	-4980.60	-19177.77	-2875.55	4980.60	19177.77	2875.55	0.000%
38	-2903.45	-19177.77	-5028.92	2903.45	19177.77	5028.92	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	100 - 80	1.354	31	0.0858	0.0443
T2	80 - 60	0.991	31	0.0794	0.0337
T3	60 - 40	0.612	31	0.0684	0.0166
T4	40 - 20	0.307	31	0.0477	0.0079
T5	20 - 0	0.102	31	0.0239	0.0031

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	Lightning Rod	31	1.354	0.0858	0.0443	313841
98.50	PiROD 12' T-Frame	31	1.327	0.0854	0.0437	313841
82.00	PiROD 12' T-Frame	31	1.029	0.0801	0.0351	90413
70.00	PiROD 15' T-Frame	31	0.798	0.0750	0.0250	166654
20.00	PCTEL GPS-TMG-HR-26N	31	0.102	0.0239	0.0031	38914

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	100 - 80	Leg	2 1/4	1	-13788.00	112490.40	12.3	Pass
T2	80 - 60	Leg	3	47	-37843.70	141321.99	26.8	Pass
T3	60 - 40	Leg	3 1/4	68	-69813.40	184589.83	37.8	Pass
T4	40 - 20	Leg	3 1/2	89	-99094.20	231767.37	42.8	Pass
T5	20 - 0	Leg	3 3/4	110	-125920.00	282887.92	44.5	Pass
T1	100 - 80	Diagonal	1	11	-2516.56	10232.60	24.6	Pass
T2	80 - 60	Diagonal	L2x2x3/16	49	-5449.55	8435.09	64.6	Pass
T3	60 - 40	Diagonal	L2x2x1/4	70	-4898.71	8928.19	54.9	Pass
T4	40 - 20	Diagonal	L2x2x1/4	91	-4739.27	7347.80	64.5	Pass
T5	20 - 0	Diagonal	L2 1/2x2 1/2x3/16	112	-4803.06	9396.61	51.1	Pass
T1	100 - 80	Top Girt	1	5	-111.28	5979.30	1.9	Pass
T1	100 - 80	Bottom Girt	1	7	-290.48	5979.30	4.9	Pass
							Summary	
						Leg (T5)	44.5	Pass
						Diagonal (T2)	64.6	Pass

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Section No.	*Elevation ft*	*Component Type*	*Size*	*Critical Element*	*P lb*	*SF*P_{allow} lb*	*% Capacity*	*Pass Fail*
						Top Girt (T1)	1.9	Pass
						Bottom Girt (T1)	4.9	Pass
						RATING =	**64.6**	**Pass**

Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

Letter of Authorization

Site: Self-Support Tower at 27 Maynard Road, Salem, CT 06420

Owner: Salem Telecom LLC

Lessee: T-Mobile Northeast LLC

I, John Spigel of Salem Telecom LLC, owner of the tower facility located at the address identified above (the "Tower Facility), do hereby authorize T-Mobile Northeast LLC, its successors and assigns, and/or its agent, (collectively, the "Lessee") to act as Salem Telecom LLC's non-exclusive agent for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for Lessee's telecommunications' installations.

We understand that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Lessee only of conditions related to Lessee's installation and any such conditions of approval or modifications will be Lessee's sole responsibility.

Signature: John Spigel

Print Name: JOHN SPIGEL
MANAGER

Date: 5/17/2016

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11451G

Maynard/Salem
27 Maynard Road
Salem, CT 06420

May 15, 2016

EBI Project Number: 6216002332

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general public allowable limit:	**17.47 %**

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

May 15, 2016

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11451G – Maynard/Salem**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **27 Maynard Road, Salem, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **27 Maynard Road, Salem, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

2) 4 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is **82 feet** above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	82	Height (AGL):	82	Height (AGL):	82
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	5.81	Antenna B1 MPE%	5.81	Antenna C1 MPE%	5.81
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	82	Height (AGL):	82	Height (AGL):	82
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A2 MPE%	1.15	Antenna B2 MPE%	1.15	Antenna C2 MPE%	1.15

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**6.96 %**
AT&T	8.39 %
Antenna System 2	0.21 %
Antenna System 3	0.21 %
Antenna System 4	0.21 %
Antenna System 5	0.14 %
Antenna System 6	0.13 %
Antenna System 7	0.30 %
Antenna System 8	0.91 %
Site Total MPE %:	**17.47 %**

T-Mobile Sector 1 Total:	6.96 %
T-Mobile Sector 2 Total:	6.96 %
T-Mobile Sector 3 Total:	6.96 %
Site Total:	17.47 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm^2)	Frequency (MHz)	Allowable MPE (μW/cm^2)	Calculated % MPE
T-Mobile 1900 MHz (PCS) UMTS	**4**	**1167.14**	**82**	**2.91**	**1900**	**1000**	**2.91 %**
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**82**	**2.91**	**2100**	**1000**	**2.91 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**82**	**1.15**	**700**	**467**	**1.15 %**
						Total:	**6.96%**

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	6.96 %
Sector 2:	6.96 %
Sector 3 :	6.96 %
T-Mobile Per Sector Maximum:	6.96 %
Site Total:	17.47 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.47%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.