Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
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June 2, 2016

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

T-Mobile Northeast LLC- CT11606H
Tower Share Application
48 Ritch Avenue West, Greenwich, CT 06830
Latitude- 41.00506389
Longitude- -73.6481112

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 American Tower monopine site located at 48 Ritch Avenue West in Greenwich, Connecticut.

T-Mobile will install nine (9) 700/1900/2100 MHz antennas and six (6) RRH's at the 77' level of the existing 78' monopine. Two (2) hybrid cables will also be installed inside of the monopine. T-Mobile's equipment cabinets will be placed on a concrete pad within an 11'8" X 14' lease area within the existing fenced equipment compound. Included are plans prepared by Hudson Design Group dated May 12, 2016, depicting the planned changes and attached as Exhibit A. Also included is a structural analysis prepared by A.T. Engineering Service, PLLC dated May 7, 2016, confirming that the existing monopine is structurally capable of supporting T-Mobile's equipment. This is attached as Exhibit B. The analysis was run with only one (1) proposed T-Mobile hybrid cable, however, it was confirmed by A.T. Engineering Service, PLLC that the analysis still passes with the additional hybrid cable. A confirmation email from American Tower is included with 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 First Selectman of the Town of Greenwich, Peter Tesei, the property owner, 36 Ritch Avenue, LLC, and the tower owner, American Tower. Please see the letter from American Tower authorizing the proposed shared use of the facility attached as Exhibit C.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the monopine is approximately 78'; T-Mobile's proposed antennas will be located at a center line height of 77'.

2. The proposed modifications will not require the extension of the site boundary as depicted on the attached site plan. T-Mobile's equipment will be located entirely within the existing compound area.

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

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 46.13%. The power density calculations are attached as Exhibit D.

5. The proposed equipment will not cause a change or alteration in the physical or environmental characteristics of the site. Please see the Programmatic Agreement Letter from American Tower dated April 28, 2016, attached as Exhibit E.

Sincerely,

Kyle Richers

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
krichers@transcendwireless.com
908-447-4716

cc: Peter Tesei, First Selectman, Town of Greenwich
36 Ritch Avenue, LLC- property owner
American Tower- tower owner

SITE NUMBER: CT11606H

48 RITCH AVENUE WEST
GREENWICH, CT 06830
FAIRFIELD COUNTY

SITE NAME: BYRAM PARK CT

RF DESIGN GUIDELINE: 797DB2

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.

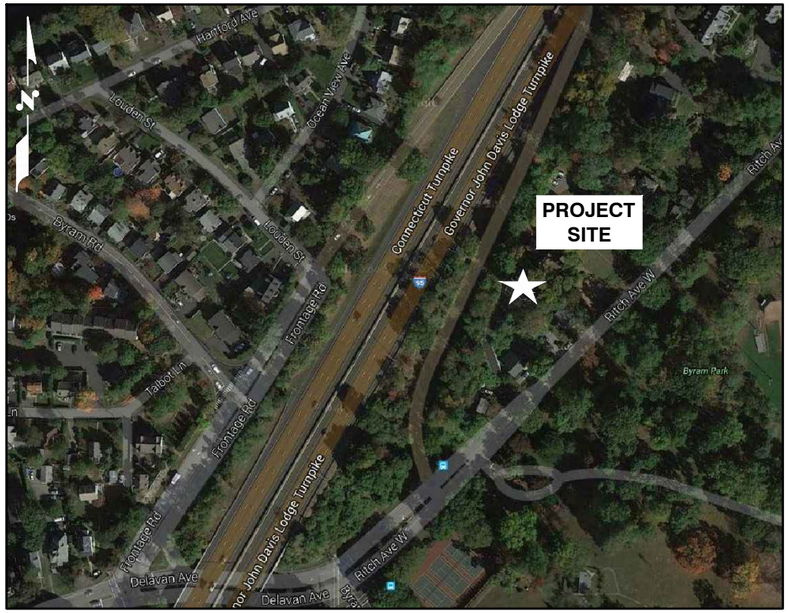
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

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 GREENWICH)	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:	48 RITCH AVENUE WEST GREENWICH, CT 06830
LATITUDE:	41° 00' 18.23" N
LONGITUDE:	73° 38' 53.92" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER:	AMERICAN TOWER CORPORATION 116 HUNTINGTON AVENUE 11TH FLOOR BOSTON, MA 02116
ATC SITE ID:	414240

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 RAMP TO MERGE ONTO I-91 S. TAKE EXIT 17 OFF I-91 S TO MERGE ONTO CT-15 S. TAKE EXIT 52 OFF CT-15 S FOR RT-108 S. KEEP LEFT, FOLLOW SIGNS FOR CT-8 S AND MERGE ONTO CT-8 S. TAKE THE I-95 S EXIT TOWARD N.Y.C. MERGE ONTO I-95 S THEN TAKE EXIT 2 TOWARD DELAVAN AVE/BYRAM. CONTINUE ONTO FRONTAGE RD. TURN LEFT ONTO DELAVAN AVE. CONTINUE ONTO RITCH AVE W. DESTINATION WILL BE ON THE LEFT.

ARRIVE AT 48 RITCH AVENUE GREENWICH, CT 06830.

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

DRAWING INDEX

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STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: DR

APPROVED BY: DPH

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48 RITCH AVENUE WEST
GREENWICH, CT 06830
FAIRFIELD 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

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.

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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STATE OF CONNECTICUT
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LICENSED PROFESSIONAL ENGINEER

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CHECKED BY: DR

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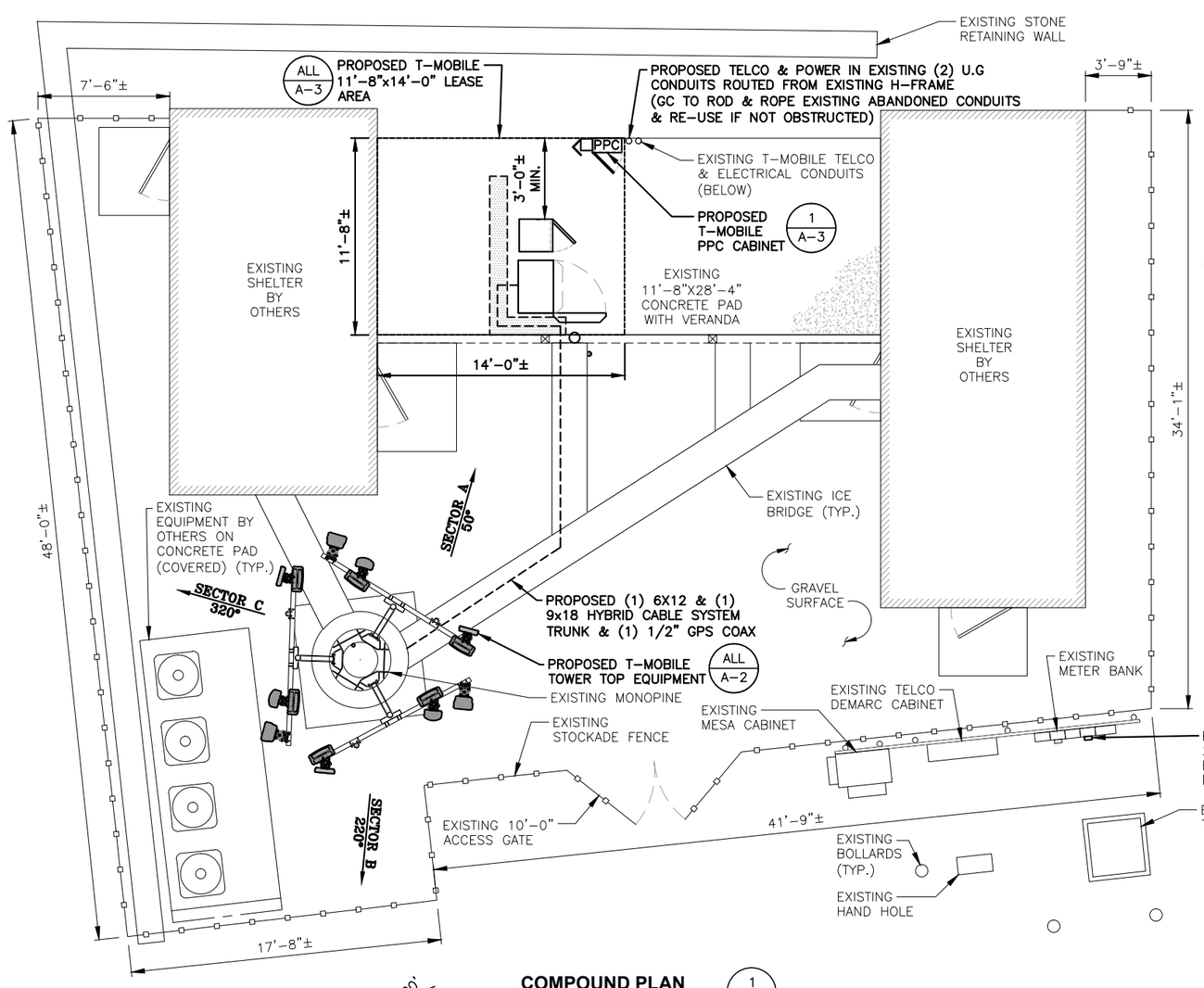
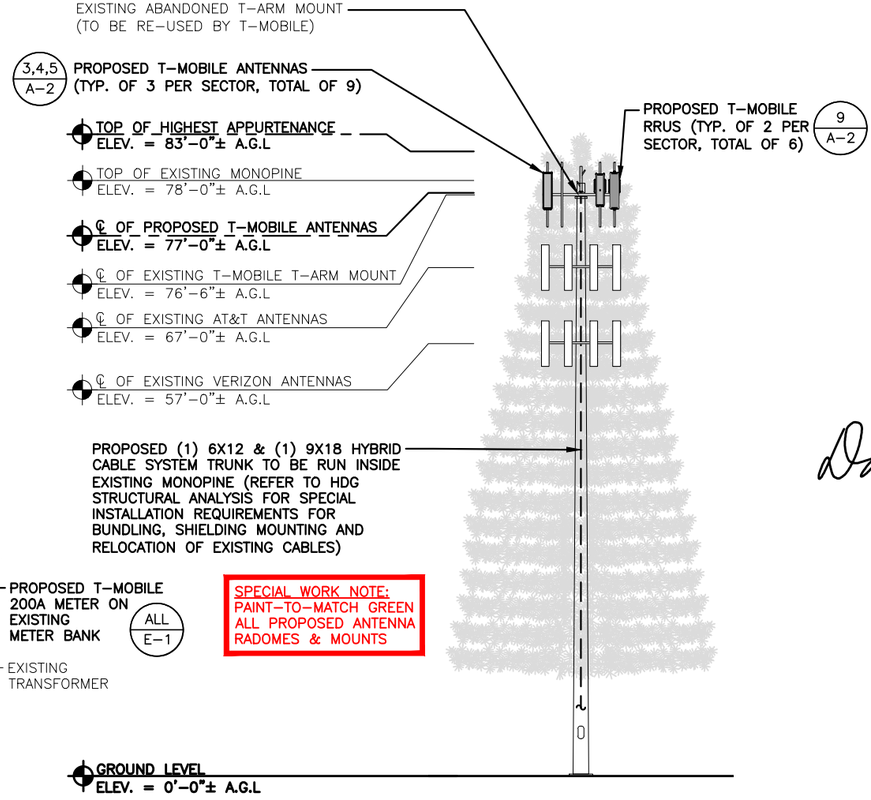


COMPOUND PLAN 1 A-1
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"



TOWER ELEVATION DETAIL 2 A-1
SCALE: N.T.S

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER, DATED: MAY 09, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR RF EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS.

SPECIAL WORK NOTE:
PAINT-TO-MATCH GREEN ALL PROPOSED ANTENNA RADOMES & MOUNTS

5 A-3 PROPOSED T-MOBILE 11'-8"x14'-0" LEASE AREA

SOURCE: HDG 04-12-2016

EQUIPMENT LOCATION PHOTO DETAIL 3 A-1
SCALE: N.T.S

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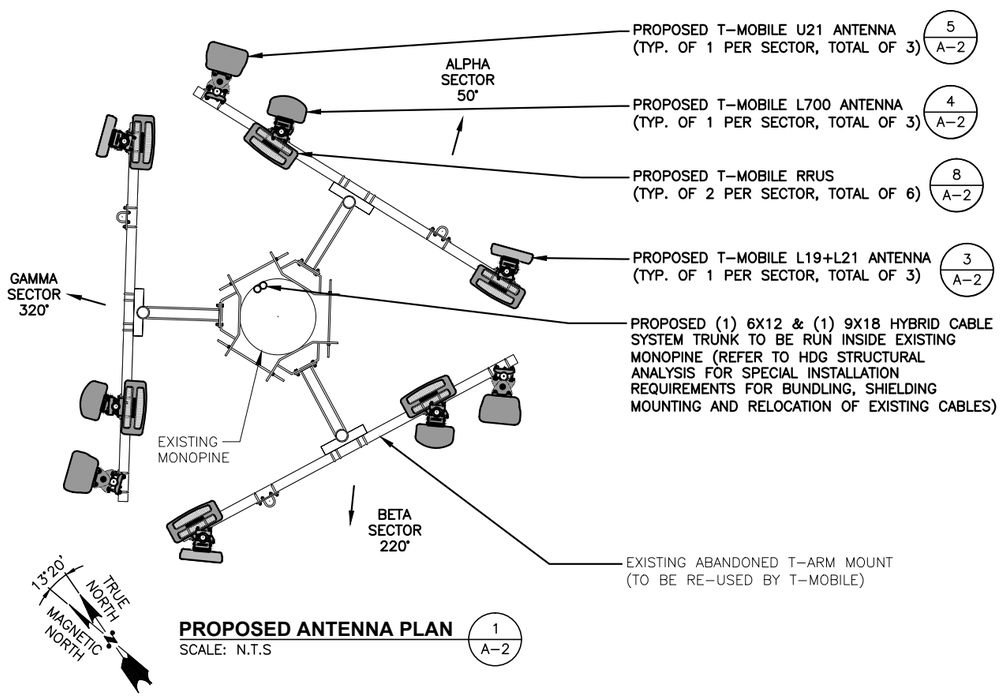
COMPOUND PLAN, EQUIPMENT PLAN & ELEVATION

SHEET NUMBER
A-1



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

5 / A-2 PROPOSED T-MOBILE U21 ANTENNA (TYP. OF 1 PER SECTOR, TOTAL OF 3)

4 / A-2 PROPOSED T-MOBILE L700 ANTENNA (TYP. OF 1 PER SECTOR, TOTAL OF 3)

8 / A-2 PROPOSED T-MOBILE RRUS (TYP. OF 2 PER SECTOR, TOTAL OF 6)

3 / A-2 PROPOSED T-MOBILE L19+L21 ANTENNA (TYP. OF 1 PER SECTOR, TOTAL OF 3)

℄ OF PROPOSED T-MOBILE ANTENNAS
ELEV. = 77'-0"± A.G.L

℄ OF EXISTING T-MOBILE T-ARM MOUNT
ELEV. = 76'-6"± A.G.L

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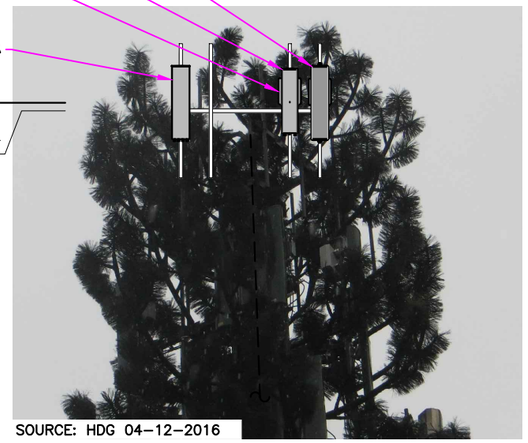
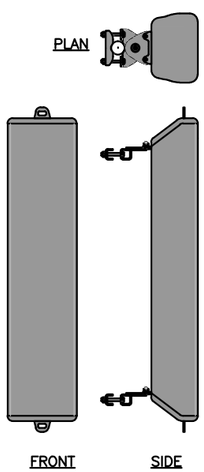
STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER, DATED: MAY 09, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR RF EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS.



SOURCE: HDG 04-12-2016

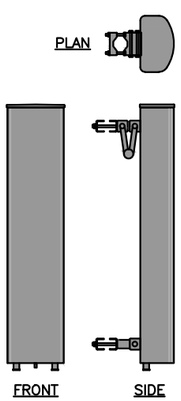
PROPOSED ANTENNA MOUNT PHOTO DETAIL (2 / A-2)
SCALE: N.T.S

L19+L21 ANTENNA DIMENSIONS	
MODEL #	AIR 32 B4A/B2P
MANUF.	ERICSSON
WIDTH	12.9"
DEPTH	8.7"
HEIGHT	56.6"
WEIGHT	106 LBS



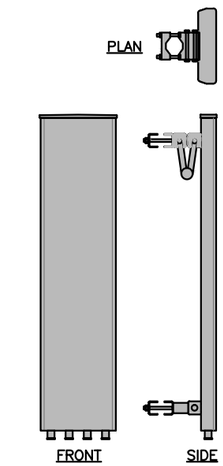
L19+L21 ANTENNA DETAIL (3 / A-2)
SCALE: N.T.S

L700 ANTENNA DIMENSIONS	
MODEL #	LNX-6512DS-A1M
MANUF.	COMMSCOPE
WIDTH	11.9"
DEPTH	7.1"
HEIGHT	48.5"
WEIGHT	28.7 LBS



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

U21 ANTENNA DIMENSIONS	
MODEL #	APX16DWV-16DWV-S-E-A20
MANUF.	RFS
WIDTH	13"
DEPTH	3.15"
HEIGHT	55.9"
WEIGHT	40.7 LBS



U21 ANTENNA DETAIL (5 / A-2)
SCALE: N.T.S

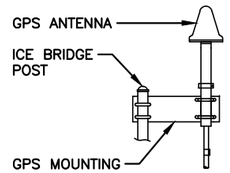
3,4,5 / A-2 PROPOSED T-MOBILE ANTENNA (SEE RFDS FOR REQ. CONFIGURATION)

EXISTING ANTENNA MOUNTING PIPE (TYP.)

6 / A-2 PROPOSED RRUS (TYP. OF 2 PER SECTOR, TOTAL OF 6)

EXISTING T-ARM SECTOR FACE FRAME

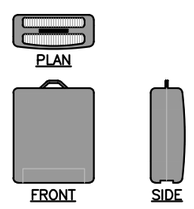
PROPOSED ANTENNA & RRU MOUNTING DETAIL (6 / A-2)
SCALE: N.T.S



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

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

RRU DIMENSIONS	
MODEL #	RRUS 32 B66A
MODEL #	RRUS 11 B12
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



PROPOSED RRU DETAIL (8 / A-2)
SCALE: N.T.S

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STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: DR

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/12/16	REVISED FOR PERMITTING	VP
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0	04/28/16	ISSUED FOR REVIEW	VP

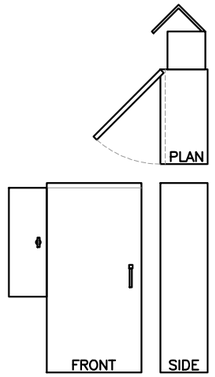
SITE NUMBER:
CT11606H
ATC SITE ID:
414240
SITE NAME:
BYRAM PARK CT
SITE ADDRESS:
48 RITCH AVENUE WEST
GREENWICH, CT 06830
FAIRFIELD COUNTY

SHEET TITLE
TOWER EQUIPMENT DETAILS

SHEET NUMBER
A-2

PPC DIMENSIONS	
MODEL #	3799340400
MANUF.	DELTA
WIDTH	20"
DEPTH	10"
HEIGHT	40"
WEIGHT	75 LBS

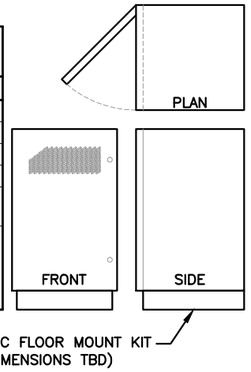
NOTE:
INSTALL CABINET ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES



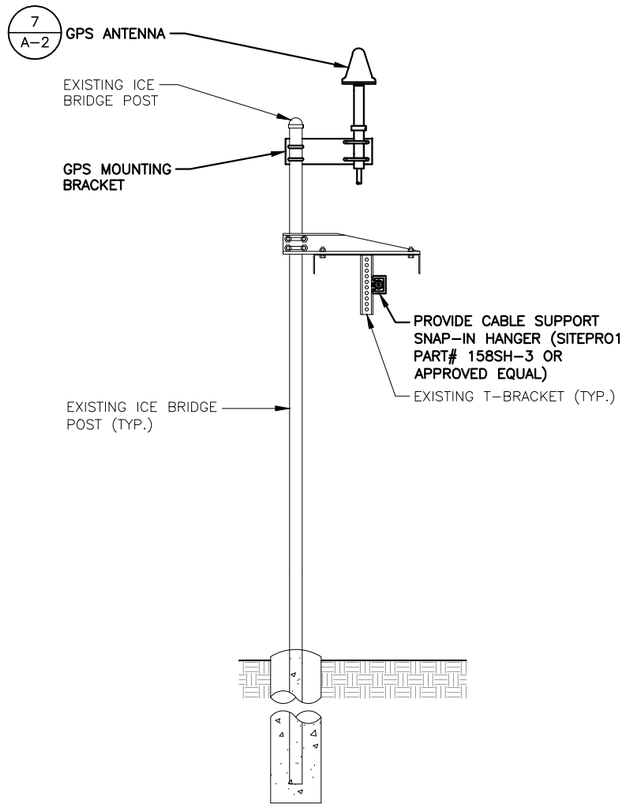
POWER PROTECTION CABINET (PPC) (1 / A-3)
SCALE: N.T.S

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

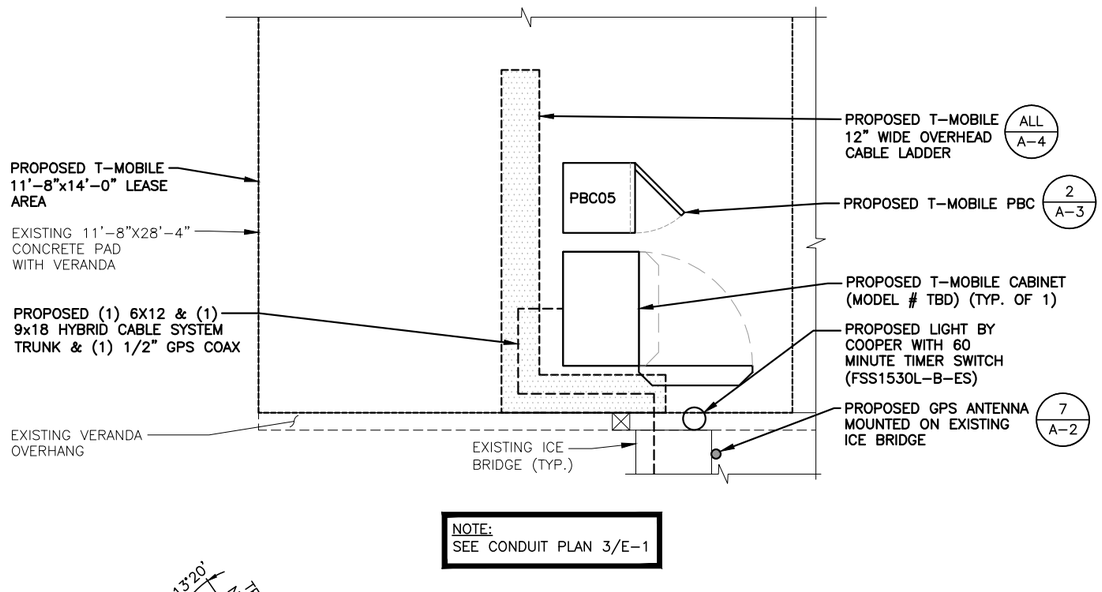


POWER AND BATTERY CABINET (PBC) (2 / A-3)
SCALE: N.T.S

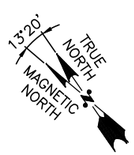


NOTE:
ALL STEEL IS GALVANIZED. ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.

COAX ICE BRIDGE DETAIL (3 / A-3)
SCALE: N.T.S



NOTE:
SEE CONDUIT PLAN 3/E-1



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

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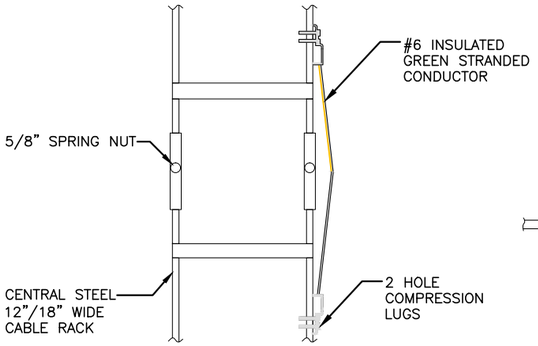
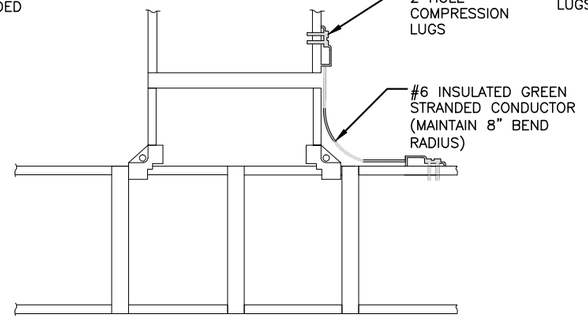
FAIRFIELD COUNTY

SHEET TITLE
GROUND EQUIPMENT DETAILS

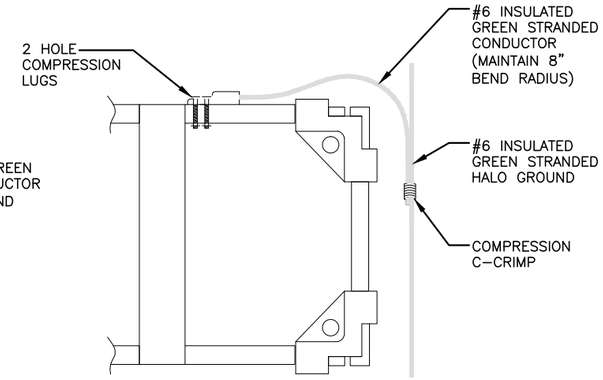
SHEET NUMBER
A-3



CABLE RACK GROUNDING - SPLICE (1 / A-4)
SCALE: N.T.S



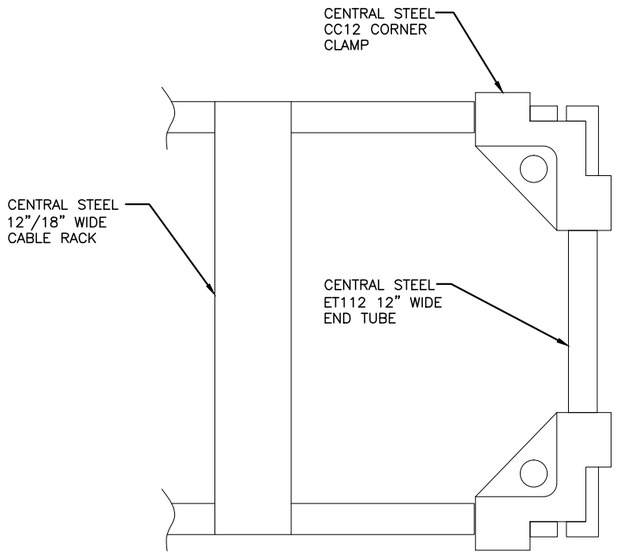
CABLE RACK GROUNDING - CORNER (2 / A-4)
SCALE: N.T.S



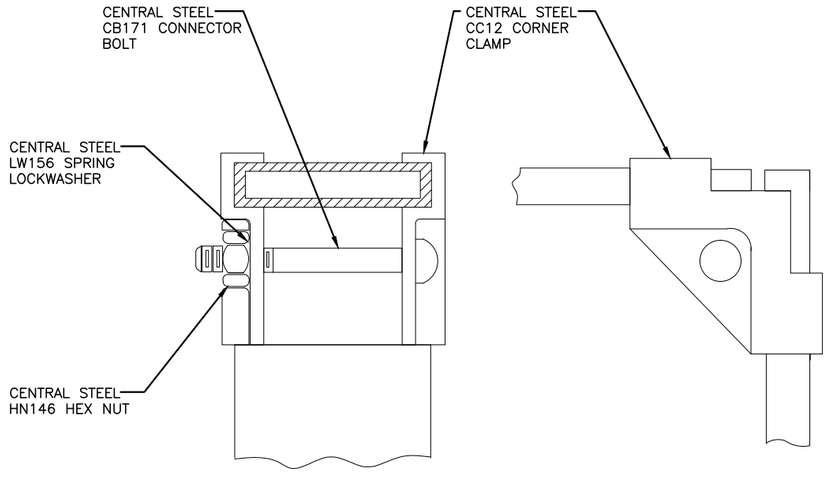
CABLE RACK GROUNDING - END (3 / A-4)
SCALE: N.T.S

CABLE TRAY PARTS – BOM

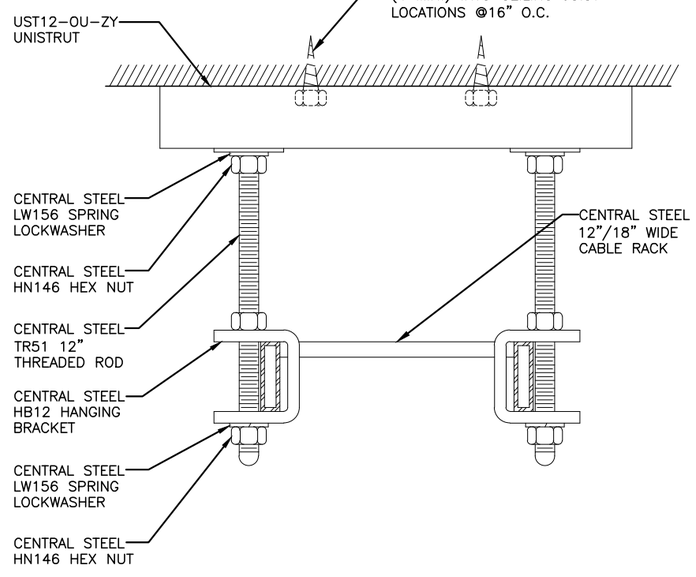
DESCRIPTION
CENTRAL STEEL 10012ZY 12" WIDE CABLE RACK
CENTRAL STEEL 10018ZY 18" WIDE CABLE RACK
CENTRAL STEEL HB12 HANGING BRACKET
CENTRAL STEEL SC–12 STRAIGHT CLAMP
CENTRAL STEEL CC12 CORNER CLAMP
CENTRAL STEEL HN148 5/8–11 HEX NUT
CENTRAL STEEL LW158 5/8" SPRING LOCKWASHER
CENTRAL STEEL FW168 5/8" FLAT WASHER
CENTRAL STEEL HN146 3/8"–11 HEX NUT
CENTRAL STEEL LW156 5/8" SPRING LOCKWASHER
CENTRAL STEEL TR51 12" THREADED ROD
PSNSS 5/8" SPRING NUT, 5/8–11
CENTRAL STEEL ET112 12" WIDE END TUBE
UST12–OU–ZY UNISTRUT



CABLE RACK DETAIL - END (4 / A-4)
SCALE: N.T.S



CABLE RACK DETAIL - CORNER (5 / A-4)
SCALE: N.T.S



CABLE RACK DETAIL - HANGER (6 / A-4)
SCALE: N.T.S

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GREENWICH, CT 06830
FAIRFIELD COUNTY

SHEET TITLE
OVERHEAD CABLE LADDER DETAILS

SHEET NUMBER
A-4

ELECTRICAL NOTES

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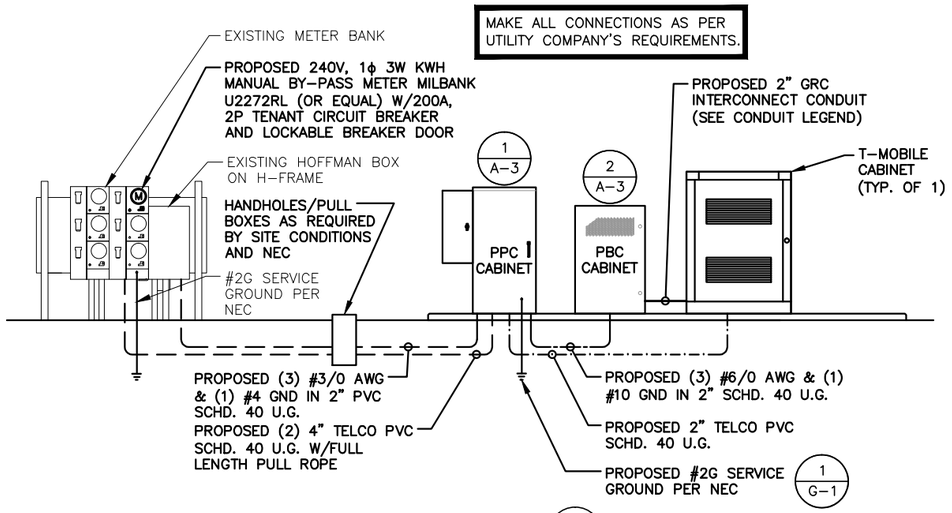
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR 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 THIN 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.

LEGEND

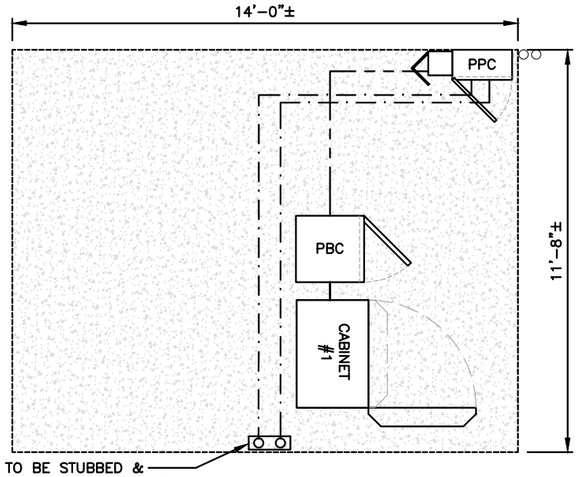
A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#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



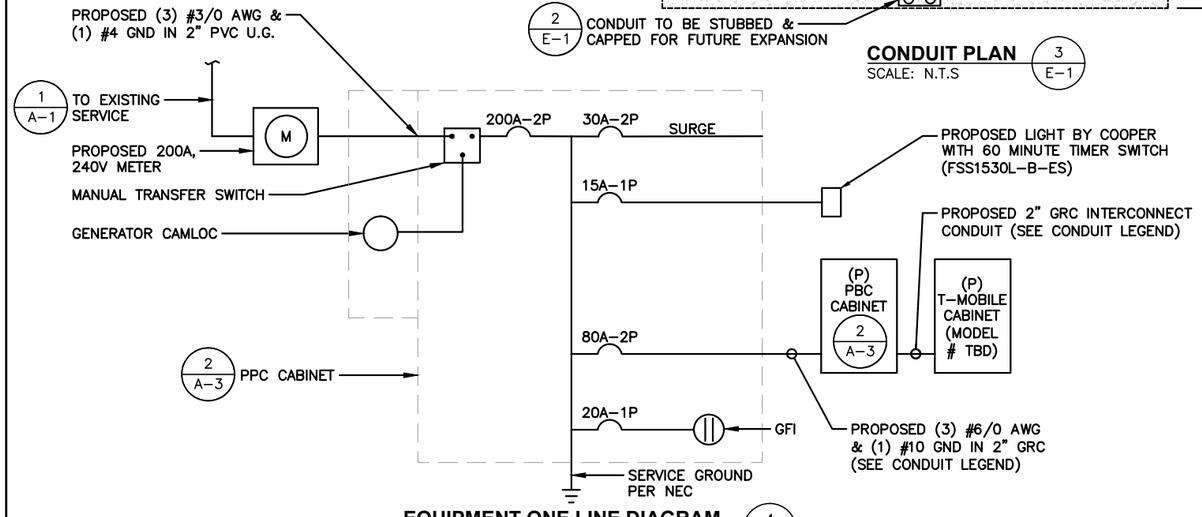
POWER RISER DIAGRAM 1/E–1
SCALE: N.T.S

CONDUIT LEGEND

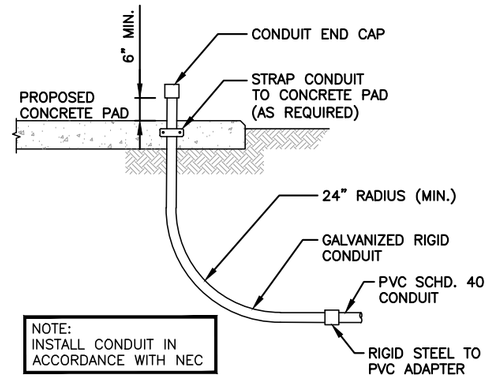
———	2"ø GRC INETRCONNECT KIT, –48V DC, ON CONCRETE PAD, (1) CONDUIT PBC TO SSC AND (1) CONDUIT PBC TO FUTURE BBU, ANCHOR AT 3' INTERVALS , GROUNDING BOND AT EACH END
——–——–	2"ø PVC SCHD. 40 CONDUIT, AC–POWER, ON CONCRETE PAD, (1) CONDUIT PPC TO PBC, (2) CONDUIT PPC TO FUTURE PBC



CONDUIT PLAN 3/E–1
SCALE: N.T.S

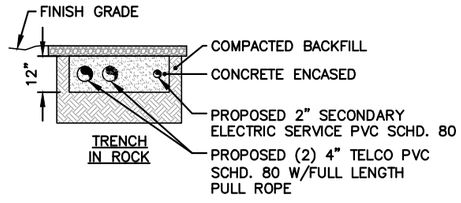


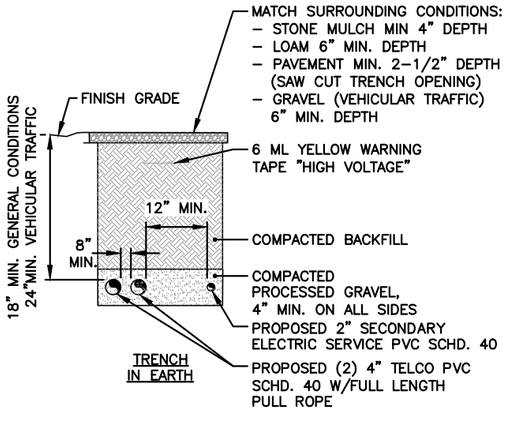
EQUIPMENT ONE LINE DIAGRAM 4/E–1
SCALE: N.T.S



NOTE:
INSTALL CONDUIT IN ACCORDANCE WITH NEC

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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SHEET TITLE
ELECTRICAL DETAILS & NOTES

SHEET NUMBER
E-1

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6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN 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.
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LEGEND

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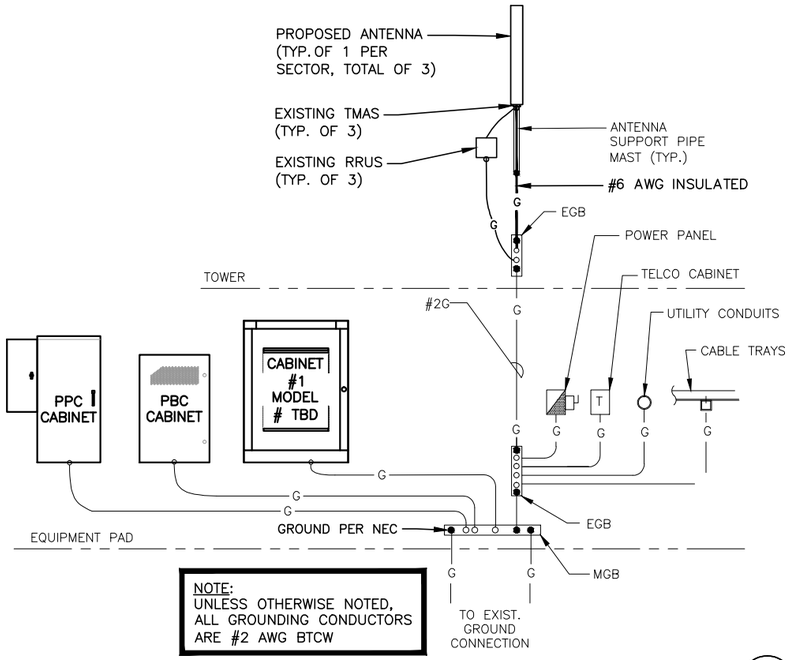
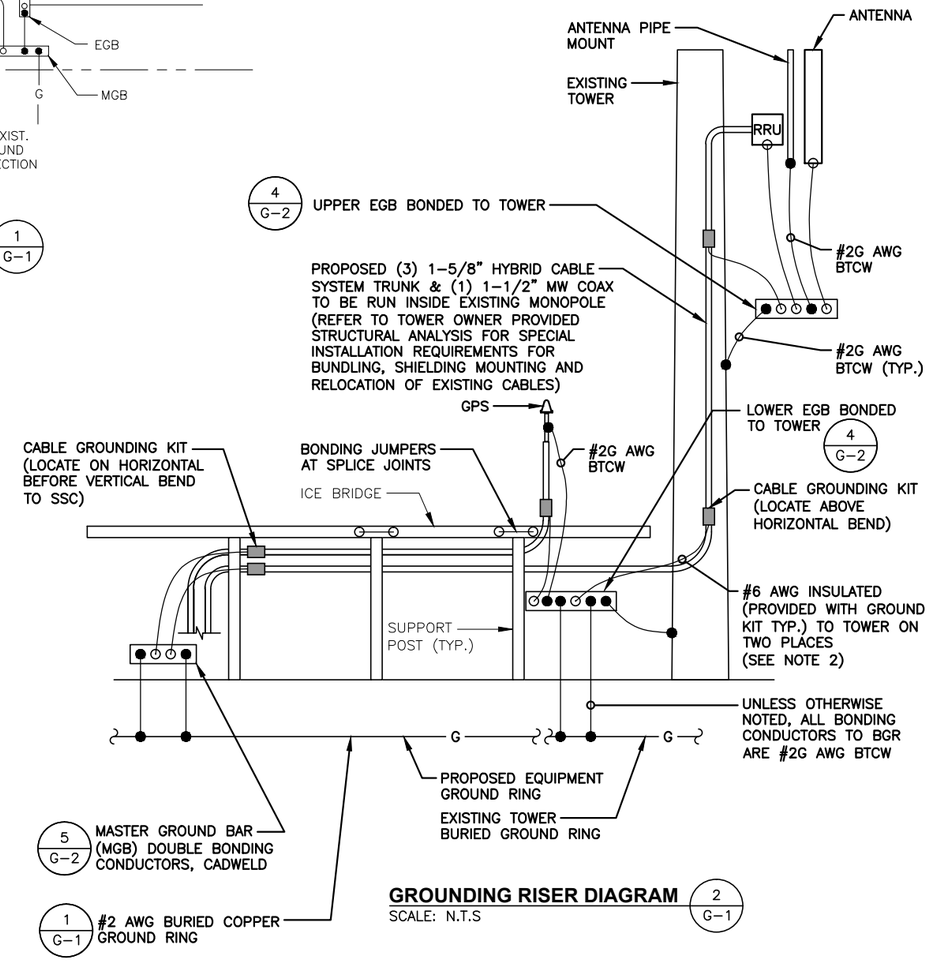
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#6G AWG INSULATED STRANDED
———	COAXIAL CABLE/HYBRID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



NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

GROUNDING RISER DIAGRAM (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.



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

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

Transcend Wireless
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH, NJ 07430
TEL: (201) 684-0055
FAX:(201) 684-0066

Hudson Design Groupuc
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CHECKED BY: DR

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/12/16	REVISED FOR PERMITTING	VP
1	05/10/16	ISSUED FOR PERMITTING	VP
0	04/28/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CT11606H
ATC SITE ID:
414240
SITE NAME:
BYRAM PARK CT
SITE ADDRESS:
48 RITCH AVENUE WEST
GREENWICH, CT 06830
FAIRFIELD COUNTY

SHEET TITLE
GROUNDING SCHEMATIC & RISER DIAGRAM

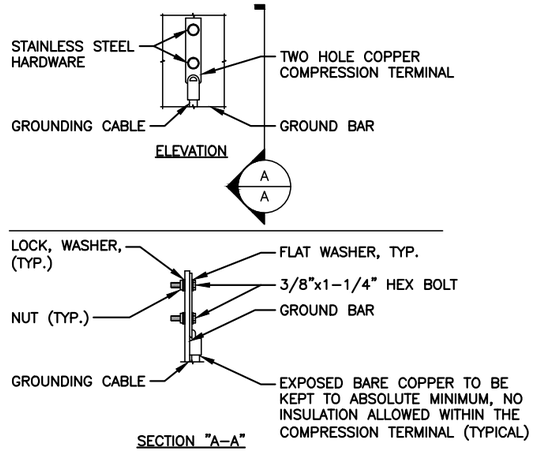
SHEET NUMBER
G-1

ELECTRICAL NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
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 THIN 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.

LEGEND

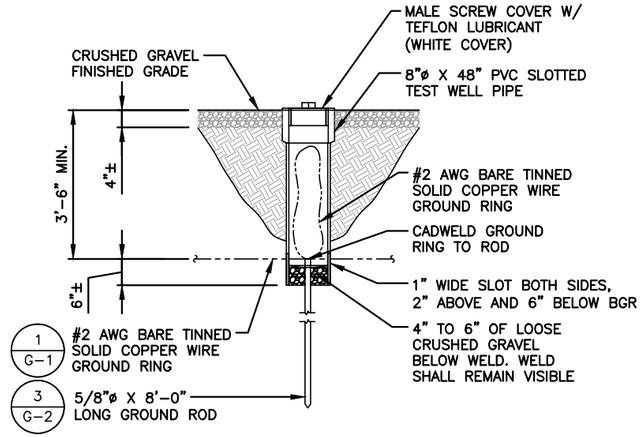
A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
	○ MECHANICAL CONNECTION
	● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
———	#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



SECTION "A-A"

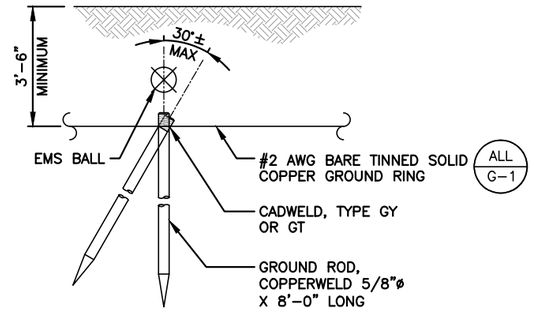
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

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



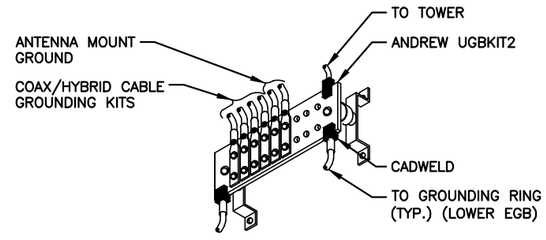
NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND LOOP AND TWO ON THE EQUIPMENT GROUND LOOP

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

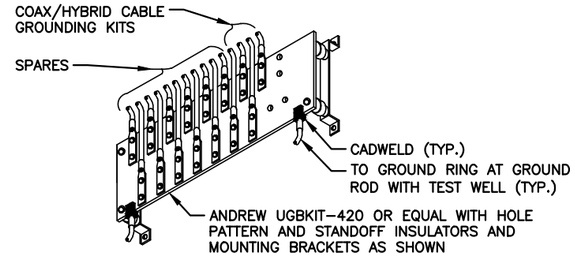


NOTE:
1. PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 30 DEGREES FROM THE VERTICAL.

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



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



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

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT
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SUBMITTALS

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SITE NUMBER:
CT11606H
ATC SITE ID:
414240
SITE NAME:
BYRAM PARK CT
SITE ADDRESS:
48 RITCH AVENUE WEST
GREENWICH, CT 06830
FAIRFIELD COUNTY

SHEET TITLE
GROUNDING DETAILS & NOTES

SHEET NUMBER
G-2

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**76.7 ft Monopine**
ATC Site Name	:	**Byram Park CT, CT**
ATC Site Number	:	**414240**
Engineering Number	:	**65998023**
Proposed Carrier	:	**T-Mobile**
Carrier Site Name	:	**N/A**
Carrier Site Number	:	**CT11606H**
Site Location	:	**48 Ritch Avenue West** **Greenwich, CT 06830-9992** **41.005064,-73.648306**
County	:	**Fairfield**
Date	:	**May 7, 2016**
Max Usage	:	**83%**
Result	:	**Pass**

Reviewed by:
William Garrett, PE
Chief Engineer

Prepared By:
Annika A. Venning

May 9 2016 11:37 AM

COA: PEC.0001553

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CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 76.7 ft Monopine to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	EEI Project #16733 Rev. 3, dated December 9, 2011
Foundation Drawing	Centek Engineering Job #09129 Rev. 0, dated February 14, 2012
Geotechnical Report	DET Job #2010.14, dated October 4, 2010

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	110 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.26, S_1 = 0.07
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
67.0	68.0	6	Powerwave Allgon TT19-08BP111-001	Sector Frames	(12) 1 5/8" Coax (2) 0.63" Cable (1) 3" Conduit (1) 5/8" Hybriflex Cable	AT&T Mobility
		1	Raycap DC6-48-60-18-8F(32.8 lbs)			
		6	Ericsson RRUS-11			
		9	Powerwave Allgon P65-16-XLH-RR			
57.0	57.0	1	20" x 15" x 10" BOB	T-Arms	(18) 1 5/8" Coax (1) 1 1/4" Coax	Verizon
		3	25" x 13" x 8" RRU/RRH			
		6	Amphenol Antel BXA-171063-12CF			
		6	KMW AM-X-CD-16-65-00T-RET (54")			
		3	Commscope LNX-4514DS-A1M			
		3	Amphenol Antel LPA-80063-6CF-EDIN-X			
		1	VZW Unused Reserve: 16,383 sq in			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
76.6	77.0	3	Ericsson RRUS 32 w/ Solar Shield (52.9 lbs)	T-Arms	(1) 1 5/8" Fiber	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Commscope LNX-6512DS-A1M (28.7 lbs)			
		3	Ericsson AIR-32 B2A/B66Aa			
		3	RFS APX16DWV-16DWVS-E-A20			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	53%	Pass
Shaft	51%	Pass
Base Plate	75%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	4,555.2	3,217.1	71%
Shear (Kips)	74.4	62.1	83%

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
76.6	Ericsson RRUS 32 w/ Solar Shield (52.9 lbs)	T-Mobile	0.259	0.309
	Ericsson RRUS 11 B12			
	Commscope LNX-6512DS-A1M (28.7 lbs)			
	Ericsson AIR-32 B2A/B66Aa			
	RFS APX16DWV-16DWVS-E-A20			

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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CORPORATION

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

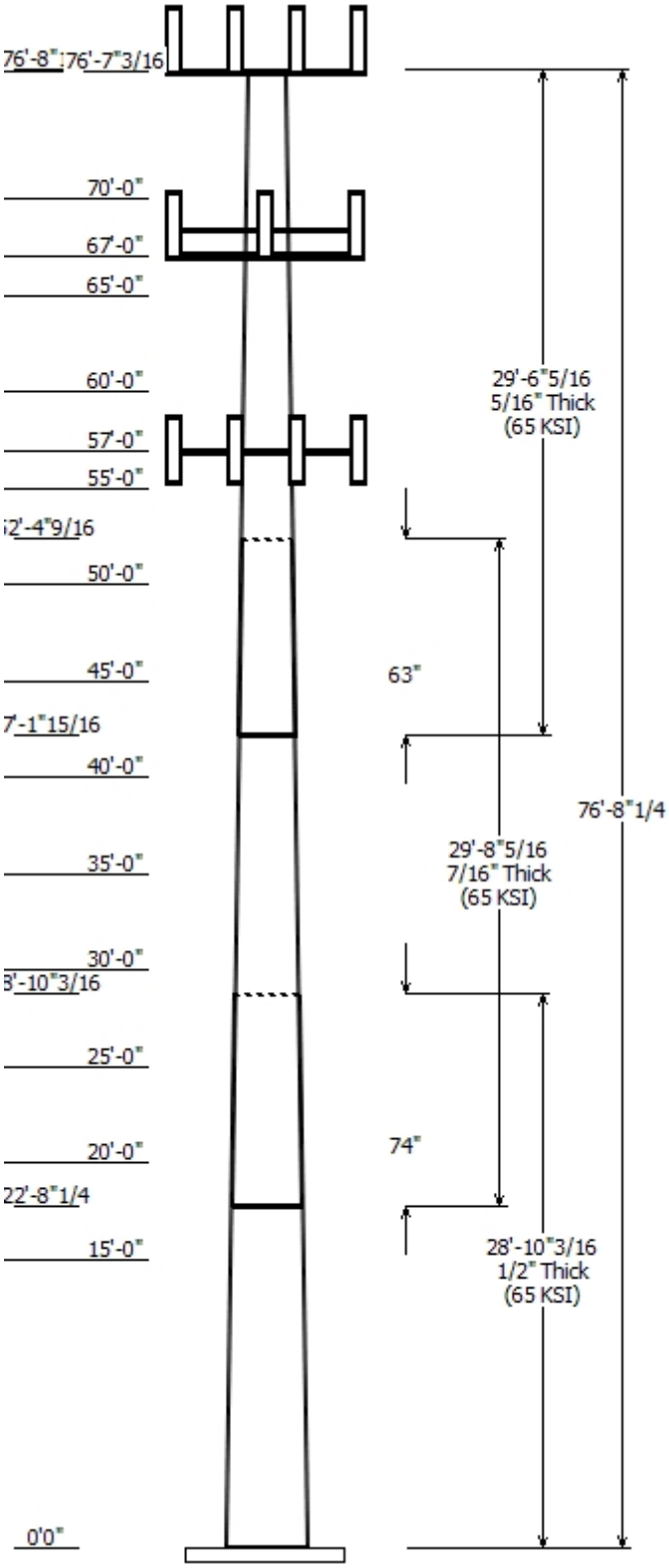
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Job Information

Pole :	414240	Code:	ANSI/TIA-222-G
Description :	77' EEI Monopole		
Client :	T-MOBILE	Struct Class :	II
Location :	Byram Park CT, CT		
Shape :	18 Sides	Exposure :	C
Height :	76.69 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.33579(in/ft)		

Sections Properties

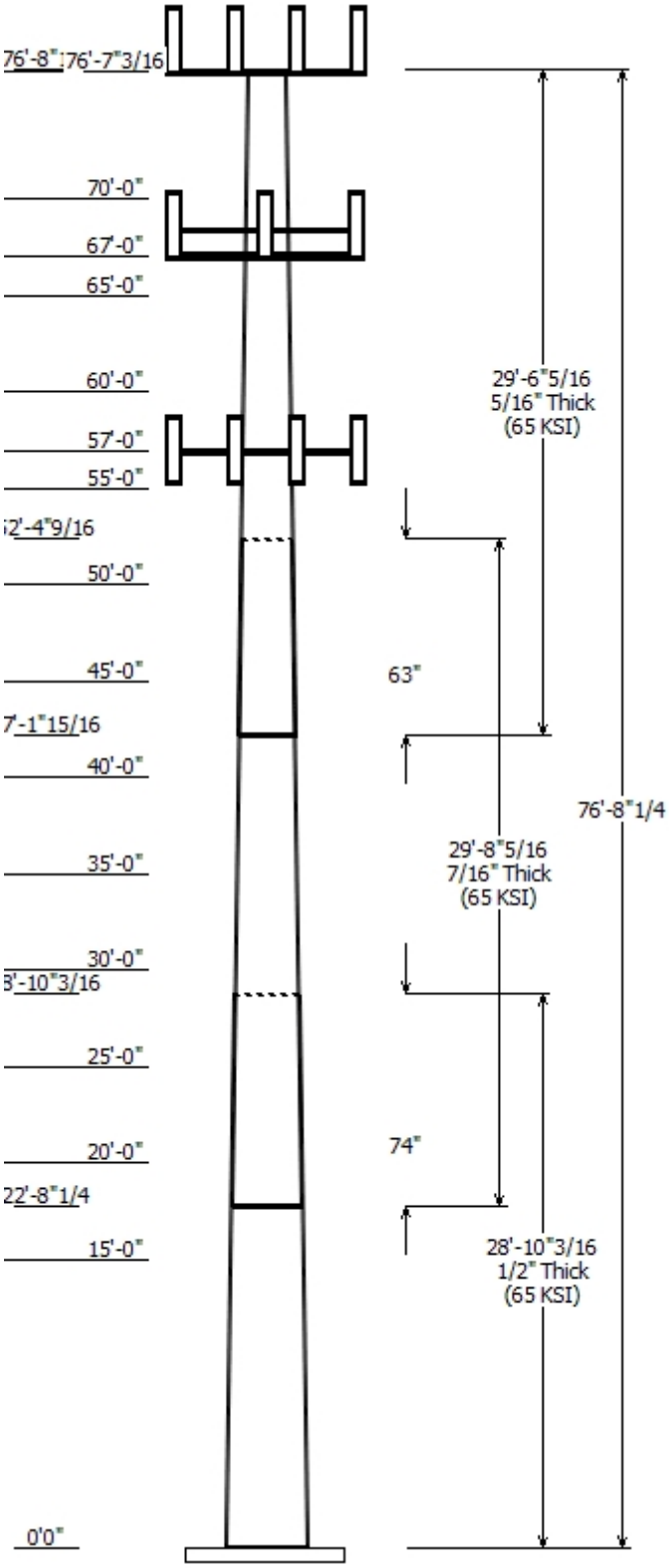
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	28.852	42.31	52.00	0.500		0.000	0.335800	65
2	29.693	35.28	45.25	0.438	Slip Joint	73.969	0.335800	65
3	29.529	27.75	37.66	0.313	Slip Joint	62.656	0.335800	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
76.600	76.600	3	Flat T-Arm
76.600	77.000	3	RFS APX16DWV-16DWVS-E-A20
76.600	77.000	3	Ericsson AIR-32 B2A/B66Aa
76.600	77.000	3	Commscope LNX-6512DS-A1M
76.600	77.000	3	Ericsson RRUS 11 B12
76.600	77.000	3	Ericsson RRUS 32 w/ Solar Shi
76.600	77.000	1	Pine Branches
70.000	70.000	1	Pine Branches
67.000	67.000	3	Round Sector Frame
67.000	68.000	9	Powerwave Allgon P65-16-
67.000	68.000	6	Ericsson RRUS-11
67.000	68.000	1	Raycap DC6-48-60-18-8F(32.8 lb
67.000	68.000	6	Powerwave Allgon TT19-
65.000	65.000	1	Pine Branches
60.000	60.000	1	Pine Branches
57.000	57.000	1	VZW Unused Reserve: 16,383
57.000	57.000	3	Commscope LNX-4514DS-A1M
57.000	57.000	3	Amphenol Antel LPA-80063-
57.000	57.000	6	Amphenol Antel BXA-171063-
57.000	57.000	6	KMW AM-X-CD-16-65-00T-RET
57.000	57.000	1	20" x 15" x 10" BOB
57.000	57.000	3	Flat T-Arm
57.000	57.000	3	25" x 13" x 8" RRU/RRH
55.000	55.000	1	Pine Branches
50.000	50.000	1	Pine Branches
45.000	45.000	1	Pine Branches
40.000	40.000	1	Pine Branches
35.000	35.000	1	Pine Branches
30.000	30.000	1	Pine Branches
25.000	25.000	1	Pine Branches
20.000	20.000	1	Pine Branches
15.000	15.000	1	Pine Branches

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	57.000	1 1/4" Coax	No
0.000	57.000	1 5/8" Coax	No
0.000	68.000	0.63" Cable	No
0.000	68.000	1 5/8" Coax	No
0.000	68.000	3" Conduit	No
0.000	68.000	5/8" Hybriflex	No



0.000	77.000	1 5/8" Fiber	No

Load Cases

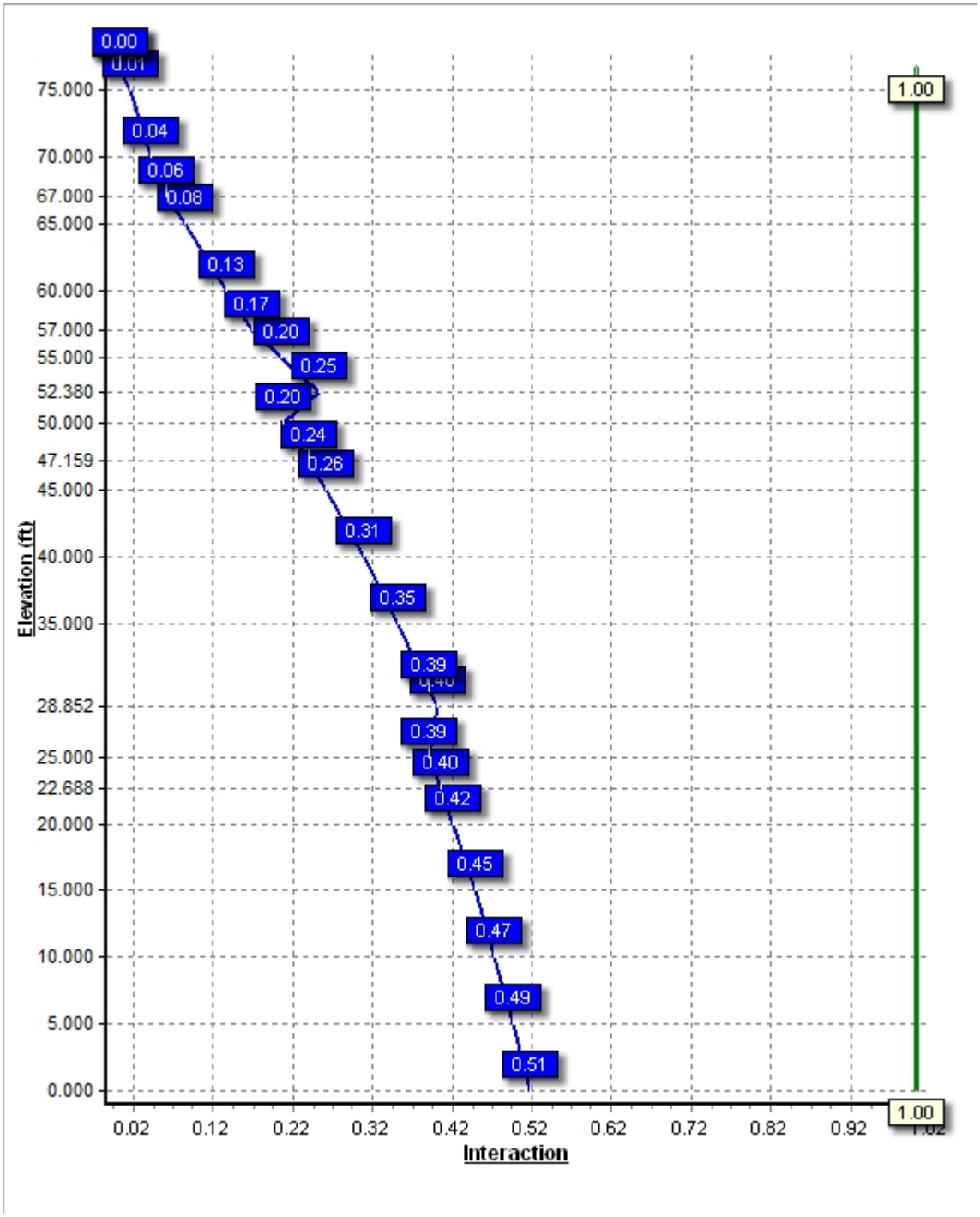
1.2D + 1.6W	110 mph with No Ice
0.9D + 1.6W	110 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3217.09	62.09	39.41
0.9D + 1.6W	3211.35	62.08	29.53
1.2D + 1.0Di + 1.0Wi	668.57	12.99	64.14
(1.2 + 0.2Sds) * DL + E ELFM	258.53	4.83	39.39
(1.2 + 0.2Sds) * DL + E EMAM	238.94	3.98	39.39
(0.9 - 0.2Sds) * DL + E ELFM	257.92	4.83	26.48
(0.9 - 0.2Sds) * DL + E EMAM	238.33	3.98	26.48
1.0D + 1.0W	597.55	11.54	32.91

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000


0.00
0.01
0.04
0.06
0.08
0.13
0.17
0.20
0.25
0.20
0.24
0.26
0.31
0.35
0.39
0.39
0.40
0.42
0.45
0.47
0.49
0.51
1.00
1.00
75.000
70.000
67.000
65.000
60.000
57.000
55.000
52.380
50.000
47.159
45.000
40.000
35.000
28.852
25.000
22.688
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	**414240**	**Code: ANSI/TIA-222-G**	
Site Name:	**Byram Park CT, CT**	**Engineering Number: 65998023**	**5/7/2016 11:04:40 AM**
Customer:	**T-MOBILE**		

Analysis Parameters

Location:	**Fairfield County, CT**		
Code:	**ANSI/TIA-222-G**	**Height (ft):**	**76.6**
Shape:	**18 Sides**	**Base Diameter (in):**	**52.00**
Pole Type:	**Taper**	**Top Diameter (in):**	**27.75**
Pole Manfacturer:	**EEI**	**Taper (in/ft) :**	**0.336**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**110 mph**
Exposure Category:	**C**	**Design Wind Speed With Ice:**	**50 mph**
Topographic Category:	**1**	**Operational Wind Speed:**	**60 mph**
Crest Height:	**0.0 ft**	**Design Ice Thickness:**	**0.75 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**0.67**				
T_L (sec):	**6**	**p:**	**1.3**	**C_s:**	**0.113**
S_s:	**0.263**	**S_1:**	**0.071**	**C_s Max:**	**0.113**
F_a:	**1.590**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.279**	**S_{d1}:**	**0.114**		

Load Cases

1.2D + 1.6W	**110 mph with No Ice**
0.9D + 1.6W	**110 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 0.75 in Radial Ice**
(1.2 + 0.2Sds) * DL + E ELFM	**Seismic Equivalent Lateral Forces Method**
(1.2 + 0.2Sds) * DL + E EMAM	**Seismic Equivalent Modal Analysis Method**
(0.9 - 0.2Sds) * DL + E ELFM	**Seismic (Reduced DL) Equivalent Lateral Forces Method**
(0.9 - 0.2Sds) * DL + E EMAM	**Seismic (Reduced DL) Equivalent Modal Analysis Method**
1.0D + 1.0W	**Serviceability 60 mph**

Site Number:	**414240**	**Code: ANSI/TIA-222-G**	
Site Name:	**Byram Park CT, CT**	**Engineering Number: 65998023**	**5/7/2016 11:04:40 AM**
Customer:	**T-MOBILE**		

Shaft Section Properties

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	28.852	0.5000	65		0.00	7,269	52.00	0.00	81.73	27387.9	16.93	104.00	42.31	28.85	66.35	14656.9	13.51	84.63	0.335790
2-18	29.693	0.4375	65	Slip	73.97	5,589	45.25	22.69	62.24	15795.8	16.83	103.45	35.28	52.38	48.39	7425.4	12.81	80.66	0.335790
3-18	29.529	0.3125	65	Slip	62.66	3,228	37.66	47.16	37.05	6530.8	19.84	120.53	27.75	76.69	27.21	2588.4	14.25	88.80	0.335790
				Shaft Weight		16,086													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
76.60	Ericsson RRUS 32 w/ Solar	3	52.90	2.740	0.67	133.90	3.422	0.67	0.000	0.400
76.60	Commscope LNX-6512DS-	3	28.70	5.090	0.83	159.31	6.008	0.83	0.000	0.400
76.60	Ericsson AIR-32 B2A/B66Aa	3	132.20	6.510	0.86	301.70	7.576	0.86	0.000	0.400
76.60	Ericsson RRUS 11 B12	3	50.70	2.790	0.67	130.19	3.421	0.67	0.000	0.400
76.60	Flat T-Arm	3	250.00	12.900	0.67	445.61	20.554	0.67	0.000	0.000
76.60	Pine Branches	1	600.00	45.000	1.00	991.22	74.341	1.00	0.000	0.400
76.60	RFS APX16DWV-16DWVS-E-	3	41.90	7.010	0.67	154.02	9.177	0.67	0.000	0.400
70.00	Pine Branches	1	600.00	45.000	1.00	987.28	74.046	1.00	0.000	0.000
67.00	Ericsson RRUS-11	6	55.00	3.790	0.67	137.87	4.975	0.67	0.000	1.000
67.00	Powerwave Allgon P65-16-	9	53.00	8.130	0.79	205.04	10.702	0.79	0.000	1.000
67.00	Powerwave Allgon TT19-	6	16.00	0.640	0.50	34.64	1.186	0.50	0.000	1.000
67.00	Raycap DC6-48-60-18-	1	32.80	1.280	1.00	89.75	1.841	1.00	0.000	1.000
67.00	Round Sector Frame	3	300.00	14.400	0.75	639.54	29.679	0.75	0.000	0.000
65.00	Pine Branches	1	600.00	45.000	1.00	983.74	73.781	1.00	0.000	0.000
60.00	Pine Branches	1	600.00	45.000	1.00	981.21	73.591	1.00	0.000	0.000
57.00	20" x 15" x 10" BOB	1	30.00	2.500	0.67	101.34	3.449	0.67	0.000	0.000
57.00	25" x 13" x 8" RRU/RRH	3	30.00	2.710	0.67	99.29	3.739	0.67	0.000	0.000
57.00	Amphenol Antel BXA-171063-	6	12.80	4.800	0.88	99.75	6.947	0.88	0.000	0.000
57.00	Amphenol Antel LPA-80063-	3	27.00	9.730	0.94	263.95	12.217	0.94	0.000	0.000
57.00	Commscope LNX-4514DS-	3	29.50	6.780	0.74	161.70	8.624	0.74	0.000	0.000
57.00	Flat T-Arm	3	250.00	12.900	0.67	439.78	20.326	0.67	0.000	0.000
57.00	KMW AM-X-CD-16-65-00T-	6	33.00	6.050	0.84	164.20	7.952	0.84	0.000	0.000
57.00	VZW Unused Reserve:	1	1935.70	113.87	1.00	3,160.19	185.902	1.00	0.000	0.000
55.00	Pine Branches	1	600.00	45.000	1.00	977.96	73.347	1.00	0.000	0.000
50.00	Pine Branches	1	600.00	45.000	1.00	974.19	73.064	1.00	0.000	0.000
45.00	Pine Branches	1	600.00	45.000	1.00	969.22	72.692	1.00	0.000	0.000
40.00	Pine Branches	1	600.00	45.000	1.00	964.63	72.347	1.00	0.000	0.000
35.00	Pine Branches	1	600.00	45.000	1.00	959.45	71.959	1.00	0.000	0.000
30.00	Pine Branches	1	600.00	45.000	1.00	955.90	71.692	1.00	0.000	0.000
25.00	Pine Branches	1	600.00	45.000	1.00	948.49	71.137	1.00	0.000	0.000
20.00	Pine Branches	1	600.00	45.000	1.00	937.87	70.341	1.00	0.000	0.000
15.00	Pine Branches	1	600.00	45.000	1.00	926.69	69.502	1.00	0.000	0.000
	Totals	82	14555.00			29,160.21			Number of Loadings :	32

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	77.00	1	1 5/8" Fiber	1.63	1.61	N	0.00	N	T-Mobile
0.00	68.00	2	0.63" Cable	0.63	0.31	N	0.00	N	AT&T Mobility
0.00	68.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	68.00	1	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	68.00	1	5/8" Hybriflex	0.84	0.70	N	0.00	N	AT&T Mobility

0.00	57.00	1	1 1/4" Coax	1.55	0.63	N	0.00	N	Verizon
0.00	57.00	18	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5000	52.001	81.729	27,387.9	16.93	104.00	81.5	1037.	0.0	0.0
5.00		0.5000	50.322	79.065	24,795.7	16.34	100.64	82.2	970.5	0.0	1,367.9
10.00		0.5000	48.643	76.400	22,372.4	15.74	97.29	82.6	905.9	0.0	1,322.5
15.00		0.5000	46.964	73.736	20,112.5	15.15	93.93	82.6	843.5	0.0	1,277.2
20.00		0.5000	45.285	71.071	18,010.0	14.56	90.57	82.6	783.3	0.0	1,231.9
22.69	Bot - Section 2	0.5000	44.383	69.639	16,943.1	14.24	88.77	82.6	751.9	0.0	643.4
25.00		0.5000	43.606	68.407	16,059.5	13.97	87.21	82.6	725.4	0.0	1,028.6
28.85	Top - Section 1	0.4375	43.188	59.362	13,706.9	16.00	98.72	82.6	625.1	0.0	1,672.9
30.00		0.4375	42.802	58.827	13,339.3	15.84	97.83	82.6	613.8	0.0	230.9
35.00		0.4375	41.123	56.495	11,815.4	15.16	94.00	82.6	565.9	0.0	981.0
40.00		0.4375	39.444	54.164	10,412.2	14.49	90.16	82.6	519.9	0.0	941.4
45.00		0.4375	37.765	51.833	9,124.8	13.81	86.32	82.6	475.9	0.0	901.7
47.16	Bot - Section 3	0.4375	37.040	50.826	8,603.4	13.52	84.66	82.6	457.5	0.0	377.1
50.00		0.4375	36.086	49.501	7,948.0	13.13	82.48	82.6	433.8	0.0	838.6
52.38	Top - Section 2	0.3125	35.912	35.309	5,653.7	18.85	114.92	79.2	310.1	0.0	685.6
55.00		0.3125	35.032	34.437	5,244.8	18.36	112.10	79.8	294.9	0.0	310.9
57.00		0.3125	34.361	33.771	4,946.3	17.98	109.95	80.3	283.5	0.0	232.1
60.00		0.3125	33.353	32.771	4,520.2	17.41	106.73	80.9	266.9	0.0	339.6
65.00		0.3125	31.675	31.106	3,865.5	16.46	101.36	82.0	240.4	0.0	543.4
67.00		0.3125	31.003	30.440	3,622.5	16.08	99.21	82.5	230.1	0.0	209.4
70.00		0.3125	29.996	29.441	3,277.3	15.51	95.99	82.6	215.2	0.0	305.6
75.00		0.3125	28.317	27.776	2,752.1	14.57	90.61	82.6	191.4	0.0	486.7
76.60		0.3125	27.779	27.243	2,596.7	14.26	88.89	82.6	184.1	0.0	149.8
76.69		0.3125	27.750	27.214	2,588.4	14.25	88.80	82.6	183.7	0.0	8.1
											16,086.3

Load Case: 1.2D + 1.6W — 110 mph with No Ice — 14 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.20
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		309.7	0.0					0.0	0.0	309.7	0.0	0.0	0.0
5.00		609.2	1,641.4					0.0	214.4	609.2	1,855.9	0.0	0.0
10.00		588.9	1,587.0					0.0	214.4	588.9	1,801.5	0.0	0.0
15.00	Appertunance(s)	577.4	1,532.6	1,981.0	0.0	0.0	720.0	0.0	214.4	2,558.5	2,467.1	0.0	0.0
20.00	Appertunance(s)	445.0	1,478.2	2,102.0	0.0	0.0	720.0	0.0	214.4	2,546.9	2,412.7	0.0	0.0
22.69	Bot - Section 2	295.2	772.1					0.0	115.3	295.2	887.3	0.0	0.0
25.00	Appertunance(s)	369.2	1,234.4	2,203.1	0.0	0.0	720.0	0.0	99.2	2,572.3	2,053.5	0.0	0.0
28.85	Top - Section 1	299.7	2,007.4					0.0	165.2	299.7	2,172.6	0.0	0.0
30.00	Appertunance(s)	367.3	277.1	2,289.3	0.0	0.0	720.0	0.0	49.3	2,656.6	1,046.4	0.0	0.0
35.00	Appertunance(s)	593.9	1,177.2	2,364.8	0.0	0.0	720.0	0.0	214.4	2,958.7	2,111.7	0.0	0.0
40.00	Appertunance(s)	585.9	1,129.6	2,432.2	0.0	0.0	720.0	0.0	214.4	3,018.2	2,064.1	0.0	0.0
45.00	Appertunance(s)	414.3	1,082.0	2,493.3	0.0	0.0	720.0	0.0	214.4	2,907.5	2,016.5	0.0	0.0
47.16	Bot - Section 3	287.3	452.5					0.0	92.6	287.3	545.1	0.0	0.0
50.00	Appertunance(s)	298.9	1,006.3	2,549.2	0.0	0.0	720.0	0.0	121.9	2,848.1	1,848.1	0.0	0.0
52.38	Top - Section 2	282.3	822.7					0.0	102.1	282.3	924.8	0.0	0.0
55.00	Appertunance(s)	257.7	373.1	2,600.9	0.0	0.0	720.0	0.0	112.4	2,858.5	1,205.4	0.0	0.0
57.00	Appertunance(s)	274.3	278.5	12,675.9	0.0	0.0	3,900.0	0.0	85.8	12,950.2	4,264.3	0.0	0.0
60.00	Appertunance(s)	429.0	407.6	2,648.9	0.0	0.0	720.0	0.0	73.3	3,077.9	1,200.8	0.0	0.0
65.00	Appertunance(s)	369.0	652.1	2,694.0	0.0	0.0	720.0	0.0	122.1	3,062.9	1,494.2	0.0	0.0
67.00	Appertunance(s)	255.8	251.3	5,150.2	0.0	3,686.2	2,203.0	0.0	48.8	5,406.1	2,503.1	0.0	0.0
70.00	Appertunance(s)	397.9	366.8	2,736.3	0.0	0.0	720.0	0.0	28.3	3,134.2	1,115.1	0.0	0.0
75.00		321.9	584.1					0.0	9.7	321.9	593.7	0.0	0.0
76.60		80.5	179.7					0.0	3.1	80.5	182.8	0.0	0.0
76.69		4.1	9.7					0.0	0.2	4.1	9.9	0.0	0.0
								Totals:		55,635.4	36,776.5	0.00	0.00

Load Case: 1.2D + 1.6W — 110 mph with No Ice — 14 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.20
Wind Load Factor : 1.60
Wind Importance Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-39.41	-62.09	0.00	-3,217.09	0.00	3,217.09	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.514
5.00	-37.38	-61.59	0.00	-2,906.63	0.00	2,906.63	5,848.26	2,924.13	11,946.7	5,982.24	0.09	-0.16	0.493
10.00	-35.42	-61.09	0.00	-2,598.71	0.00	2,598.71	5,676.15	2,838.07	11,200.5	5,608.58	0.34	-0.32	0.470
15.00	-32.81	-58.60	0.00	-2,293.29	0.00	2,293.29	5,478.20	2,739.10	10,429.0	5,222.27	0.76	-0.47	0.446
20.00	-30.31	-56.09	0.00	-2,000.30	0.00	2,000.30	5,280.25	2,640.12	9,685.10	4,849.75	1.34	-0.62	0.419
22.69	-29.35	-55.82	0.00	-1,849.56	0.00	1,849.56	5,173.85	2,586.92	9,296.61	4,655.21	1.72	-0.71	0.403
25.00	-27.25	-53.27	0.00	-1,720.47	0.00	1,720.47	5,082.30	2,541.15	8,968.69	4,491.01	2.08	-0.78	0.389
28.85	-25.02	-52.97	0.00	-1,515.31	0.00	1,515.31	4,410.30	2,205.15	7,729.01	3,870.25	2.75	-0.89	0.398
30.00	-23.93	-50.33	0.00	-1,454.48	0.00	1,454.48	4,370.52	2,185.26	7,589.50	3,800.39	2.97	-0.92	0.389
35.00	-21.76	-47.39	0.00	-1,202.83	0.00	1,202.83	4,197.31	2,098.66	6,996.91	3,503.66	4.01	-1.06	0.349
40.00	-19.66	-44.37	0.00	-965.89	0.00	965.89	4,024.10	2,012.05	6,428.41	3,218.98	5.19	-1.19	0.305
45.00	-17.65	-41.45	0.00	-744.02	0.00	744.02	3,850.90	1,925.45	5,884.00	2,946.37	6.51	-1.31	0.258
47.16	-17.07	-41.16	0.00	-654.55	0.00	654.55	3,776.11	1,888.05	5,656.38	2,832.39	7.11	-1.35	0.236
50.00	-15.26	-38.28	0.00	-537.60	0.00	537.60	3,677.69	1,838.84	5,363.67	2,685.82	7.94	-1.41	0.205
52.38	-14.32	-37.99	0.00	-446.48	0.00	446.48	2,517.68	1,258.84	3,679.49	1,842.48	8.65	-1.45	0.249
55.00	-13.16	-35.11	0.00	-346.96	0.00	346.96	2,473.56	1,236.78	3,524.91	1,765.07	9.46	-1.49	0.203
57.00	-9.23	-22.06	0.00	-276.75	0.00	276.75	2,439.26	1,219.63	3,408.19	1,706.63	10.10	-1.53	0.166
60.00	-8.10	-18.95	0.00	-210.58	0.00	210.58	2,386.80	1,193.40	3,235.34	1,620.07	11.07	-1.57	0.134
65.00	-6.68	-15.85	0.00	-115.81	0.00	115.81	2,296.71	1,148.36	2,953.54	1,478.97	12.75	-1.62	0.081
67.00	-4.33	-10.38	0.00	-80.42	0.00	80.42	2,259.74	1,129.87	2,843.16	1,423.69	13.43	-1.63	0.058
70.00	-3.30	-7.22	0.00	-49.28	0.00	49.28	2,187.31	1,093.65	2,660.78	1,332.37	14.46	-1.65	0.039
75.00	-2.72	-6.88	0.00	-13.21	0.00	13.21	2,063.59	1,031.79	2,366.81	1,185.17	16.20	-1.66	0.013
76.60	-0.01	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	16.76	-1.66	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	16.79	-1.66	0.000

Load Case: 0.9D + 1.6W — 110 mph with No Ice (Reduced DL) — 14 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		309.7	0.0					0.0	0.0	309.7	0.0	0.0	0.0
5.00		609.2	1,231.1					0.0	160.8	609.2	1,391.9	0.0	0.0
10.00		588.9	1,190.3					0.0	160.8	588.9	1,351.1	0.0	0.0
15.00	Appertunance(s)	577.4	1,149.5	1,981.0	0.0	0.0	540.0	0.0	160.8	2,558.5	1,850.3	0.0	0.0
20.00	Appertunance(s)	445.0	1,108.7	2,102.0	0.0	0.0	540.0	0.0	160.8	2,546.9	1,809.5	0.0	0.0
22.69	Bot - Section 2	295.2	579.1					0.0	86.4	295.2	665.5	0.0	0.0
25.00	Appertunance(s)	369.2	925.8	2,203.1	0.0	0.0	540.0	0.0	74.4	2,572.3	1,540.1	0.0	0.0
28.85	Top - Section 1	299.7	1,505.6					0.0	123.9	299.7	1,629.5	0.0	0.0
30.00	Appertunance(s)	367.3	207.8	2,289.3	0.0	0.0	540.0	0.0	36.9	2,656.6	784.8	0.0	0.0
35.00	Appertunance(s)	593.9	882.9	2,364.8	0.0	0.0	540.0	0.0	160.8	2,958.7	1,583.8	0.0	0.0
40.00	Appertunance(s)	585.9	847.2	2,432.2	0.0	0.0	540.0	0.0	160.8	3,018.2	1,548.1	0.0	0.0
45.00	Appertunance(s)	414.3	811.5	2,493.3	0.0	0.0	540.0	0.0	160.8	2,907.5	1,512.4	0.0	0.0
47.16	Bot - Section 3	287.3	339.4					0.0	69.4	287.3	408.8	0.0	0.0
50.00	Appertunance(s)	298.9	754.7	2,549.2	0.0	0.0	540.0	0.0	91.4	2,848.1	1,386.1	0.0	0.0
52.38	Top - Section 2	282.3	617.1					0.0	76.6	282.3	693.6	0.0	0.0
55.00	Appertunance(s)	257.7	279.8	2,600.9	0.0	0.0	540.0	0.0	84.3	2,858.5	904.1	0.0	0.0
57.00	Appertunance(s)	274.3	208.9	12,675.9	0.0	0.0	2,925.0	0.0	64.3	12,950.2	3,198.2	0.0	0.0
60.00	Appertunance(s)	429.0	305.7	2,648.9	0.0	0.0	540.0	0.0	54.9	3,077.9	900.6	0.0	0.0
65.00	Appertunance(s)	369.0	489.1	2,694.0	0.0	0.0	540.0	0.0	91.6	3,062.9	1,120.6	0.0	0.0
67.00	Appertunance(s)	255.8	188.5	5,150.2	0.0	3,686.2	1,652.2	0.0	36.6	5,406.1	1,877.3	0.0	0.0
70.00	Appertunance(s)	397.9	275.1	2,736.3	0.0	0.0	540.0	0.0	21.2	3,134.2	836.3	0.0	0.0
75.00		321.9	438.1					0.0	7.2	321.9	445.3	0.0	0.0
76.60		80.5	134.8					0.0	2.3	80.5	137.1	0.0	0.0
76.69		4.1	7.3					0.0	0.1	4.1	7.4	0.0	0.0
								Totals:		55,635.4	27,582.4	0.00	0.00

Load Case: 0.9D + 1.6W — 110 mph with No Ice (Reduced DL) — 14 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60
Wind Importance Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-29.53	-62.08	0.00	-3,211.35	0.00	3,211.35	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.512
5.00	-27.97	-61.55	0.00	-2,900.96	0.00	2,900.96	5,848.26	2,924.13	11,946.7	5,982.24	0.09	-0.16	0.490
10.00	-26.46	-61.02	0.00	-2,593.23	0.00	2,593.23	5,676.15	2,838.07	11,200.5	5,608.58	0.34	-0.32	0.467
15.00	-24.47	-58.52	0.00	-2,288.12	0.00	2,288.12	5,478.20	2,739.10	10,429.0	5,222.27	0.76	-0.47	0.443
20.00	-22.57	-56.00	0.00	-1,995.54	0.00	1,995.54	5,280.25	2,640.12	9,685.10	4,849.75	1.34	-0.62	0.416
22.69	-21.84	-55.72	0.00	-1,845.04	0.00	1,845.04	5,173.85	2,586.92	9,296.61	4,655.21	1.71	-0.70	0.401
25.00	-20.25	-53.16	0.00	-1,716.18	0.00	1,716.18	5,082.30	2,541.15	8,968.69	4,491.01	2.07	-0.77	0.387
28.85	-18.56	-52.86	0.00	-1,511.42	0.00	1,511.42	4,410.30	2,205.15	7,729.01	3,870.25	2.74	-0.88	0.395
30.00	-17.73	-50.22	0.00	-1,450.70	0.00	1,450.70	4,370.52	2,185.26	7,589.50	3,800.39	2.96	-0.92	0.386
35.00	-16.09	-47.28	0.00	-1,199.59	0.00	1,199.59	4,197.31	2,098.66	6,996.91	3,503.66	4.00	-1.06	0.347
40.00	-14.51	-44.26	0.00	-963.21	0.00	963.21	4,024.10	2,012.05	6,428.41	3,218.98	5.18	-1.19	0.303
45.00	-13.00	-41.34	0.00	-741.92	0.00	741.92	3,850.90	1,925.45	5,884.00	2,946.37	6.49	-1.30	0.256
47.16	-12.56	-41.05	0.00	-652.68	0.00	652.68	3,776.11	1,888.05	5,656.38	2,832.39	7.10	-1.35	0.234
50.00	-11.21	-38.18	0.00	-536.05	0.00	536.05	3,677.69	1,838.84	5,363.67	2,685.82	7.92	-1.41	0.203
52.38	-10.50	-37.89	0.00	-445.17	0.00	445.17	2,517.68	1,258.84	3,679.49	1,842.48	8.63	-1.45	0.247
55.00	-9.65	-35.01	0.00	-345.91	0.00	345.91	2,473.56	1,236.78	3,524.91	1,765.07	9.44	-1.49	0.201
57.00	-6.78	-21.99	0.00	-275.88	0.00	275.88	2,439.26	1,219.63	3,408.19	1,706.63	10.07	-1.52	0.165
60.00	-5.94	-18.89	0.00	-209.91	0.00	209.91	2,386.80	1,193.40	3,235.34	1,620.07	11.05	-1.56	0.132
65.00	-4.90	-15.80	0.00	-115.45	0.00	115.45	2,296.71	1,148.36	2,953.54	1,478.97	12.72	-1.62	0.080
67.00	-3.17	-10.35	0.00	-80.16	0.00	80.16	2,259.74	1,129.87	2,843.16	1,423.69	13.40	-1.63	0.058
70.00	-2.43	-7.19	0.00	-49.12	0.00	49.12	2,187.31	1,093.65	2,660.78	1,332.37	14.43	-1.65	0.038
75.00	-1.99	-6.86	0.00	-13.17	0.00	13.17	2,063.59	1,031.79	2,366.81	1,185.17	16.16	-1.66	0.012
76.60	-0.01	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	16.72	-1.66	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	16.75	-1.66	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 13 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.20
Wind Load Factor : 1.00

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		77.1	0.0					0.0	0.0	77.1	0.0	0.0	0.0
5.00		152.2	2,015.2					0.0	214.4	152.2	2,229.6	0.0	0.0
10.00		147.9	1,991.6					0.0	214.4	147.9	2,206.1	0.0	0.0
15.00	Appertunance(s)	145.7	1,944.7	395.1	0.0	0.0	1,646.7	0.0	214.4	540.8	3,805.8	0.0	0.0
20.00	Appertunance(s)	112.6	1,890.0	424.3	0.0	0.0	1,657.9	0.0	214.4	536.8	3,762.3	0.0	0.0
22.69	Bot - Section 2	74.8	993.6					0.0	115.3	74.8	1,108.9	0.0	0.0
25.00	Appertunance(s)	93.8	1,427.6	449.7	0.0	0.0	1,668.5	0.0	99.2	543.5	3,195.2	0.0	0.0
28.85	Top - Section 1	76.2	2,324.1					0.0	165.2	76.2	2,489.3	0.0	0.0
30.00	Appertunance(s)	93.7	371.6	471.0	0.0	0.0	1,675.9	0.0	49.3	564.7	2,096.7	0.0	0.0
35.00	Appertunance(s)	151.8	1,577.1	488.3	0.0	0.0	1,679.5	0.0	214.4	640.1	3,470.9	0.0	0.0
40.00	Appertunance(s)	150.4	1,519.4	504.9	0.0	0.0	1,684.6	0.0	214.4	655.3	3,418.5	0.0	0.0
45.00	Appertunance(s)	106.6	1,460.7	520.1	0.0	0.0	1,689.2	0.0	214.4	626.7	3,364.4	0.0	0.0
47.16	Bot - Section 3	74.1	614.3					0.0	92.6	74.1	706.9	0.0	0.0
50.00	Appertunance(s)	77.2	1,218.6	534.5	0.0	0.0	1,694.2	0.0	121.9	611.7	3,034.7	0.0	0.0
52.38	Top - Section 2	73.1	997.9					0.0	102.1	73.1	1,100.0	0.0	0.0
55.00	Appertunance(s)	66.9	562.2	547.4	0.0	0.0	1,698.0	0.0	112.4	614.3	2,372.5	0.0	0.0
57.00	Appertunance(s)	71.4	420.9	2,471.7	0.0	0.0	6,155.6	0.0	85.8	2,543.0	6,662.3	0.0	0.0
60.00	Appertunance(s)	112.0	616.1	559.4	0.0	0.0	1,701.2	0.0	73.3	671.4	2,390.6	0.0	0.0
65.00	Appertunance(s)	96.6	985.2	570.4	0.0	0.0	1,703.7	0.0	122.1	667.0	2,811.1	0.0	0.0
67.00	Appertunance(s)	67.3	382.6	1,023.3	0.0	633.7	4,279.5	0.0	48.8	1,090.6	4,710.9	0.0	0.0
70.00	Appertunance(s)	105.1	558.4	581.4	0.0	0.0	1,707.3	0.0	28.3	686.5	2,294.0	0.0	0.0
75.00		85.2	888.3					0.0	9.7	85.2	898.0	0.0	0.0
76.60		21.4	275.8					0.0	3.1	21.4	278.9	0.0	0.0
76.69		1.1	15.0					0.0	0.2	1.1	15.2	0.0	0.0
								Totals:		11,775.5	58,422.7	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 13 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.20
Wind Load Factor : 1.00
Ice Dead Load Factor : 1.00
Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-64.14	-12.99	0.00	-668.57	0.00	668.57	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.116
5.00	-61.90	-12.87	0.00	-603.63	0.00	603.63	5,848.26	2,924.13	11,946.7	5,982.24	0.02	-0.03	0.112
10.00	-59.69	-12.75	0.00	-539.28	0.00	539.28	5,676.15	2,838.07	11,200.5	5,608.58	0.07	-0.07	0.107
15.00	-55.88	-12.24	0.00	-475.51	0.00	475.51	5,478.20	2,739.10	10,429.0	5,222.27	0.16	-0.10	0.101
20.00	-52.11	-11.72	0.00	-414.31	0.00	414.31	5,280.25	2,640.12	9,685.10	4,849.75	0.28	-0.13	0.095
22.69	-51.00	-11.65	0.00	-382.82	0.00	382.82	5,173.85	2,586.92	9,296.61	4,655.21	0.36	-0.15	0.092
25.00	-47.80	-11.12	0.00	-355.87	0.00	355.87	5,082.30	2,541.15	8,968.69	4,491.01	0.43	-0.16	0.089
28.85	-45.31	-11.04	0.00	-313.06	0.00	313.06	4,410.30	2,205.15	7,729.01	3,870.25	0.57	-0.18	0.091
30.00	-43.21	-10.49	0.00	-300.37	0.00	300.37	4,370.52	2,185.26	7,589.50	3,800.39	0.62	-0.19	0.089
35.00	-39.74	-9.85	0.00	-247.94	0.00	247.94	4,197.31	2,098.66	6,996.91	3,503.66	0.83	-0.22	0.080
40.00	-36.32	-9.20	0.00	-198.67	0.00	198.67	4,024.10	2,012.05	6,428.41	3,218.98	1.08	-0.25	0.071
45.00	-32.96	-8.57	0.00	-152.67	0.00	152.67	3,850.90	1,925.45	5,884.00	2,946.37	1.35	-0.27	0.060
47.16	-32.25	-8.50	0.00	-134.17	0.00	134.17	3,776.11	1,888.05	5,656.38	2,832.39	1.47	-0.28	0.056
50.00	-29.21	-7.88	0.00	-110.03	0.00	110.03	3,677.69	1,838.84	5,363.67	2,685.82	1.64	-0.29	0.049
52.38	-28.11	-7.80	0.00	-91.28	0.00	91.28	2,517.68	1,258.84	3,679.49	1,842.48	1.79	-0.30	0.061
55.00	-25.74	-7.18	0.00	-70.85	0.00	70.85	2,473.56	1,236.78	3,524.91	1,765.07	1.96	-0.31	0.051
57.00	-19.09	-4.60	0.00	-56.49	0.00	56.49	2,439.26	1,219.63	3,408.19	1,706.63	2.09	-0.32	0.041
60.00	-16.71	-3.92	0.00	-42.69	0.00	42.69	2,386.80	1,193.40	3,235.34	1,620.07	2.29	-0.32	0.033
65.00	-13.90	-3.24	0.00	-23.10	0.00	23.10	2,296.71	1,148.36	2,953.54	1,478.97	2.64	-0.33	0.022
67.00	-9.20	-2.12	0.00	-15.99	0.00	15.99	2,259.74	1,129.87	2,843.16	1,423.69	2.78	-0.34	0.015
70.00	-6.91	-1.42	0.00	-9.63	0.00	9.63	2,187.31	1,093.65	2,660.78	1,332.37	2.99	-0.34	0.010
75.00	-6.01	-1.33	0.00	-2.54	0.00	2.54	2,063.59	1,031.79	2,366.81	1,185.17	3.35	-0.34	0.005
76.60	-0.02	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	3.47	-0.34	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	3.47	-0.34	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 13 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		57.6	0.0					0.0	0.0	57.6	0.0	0.0	0.0
5.00		113.3	1,367.9					0.0	178.7	113.3	1,546.6	0.0	0.0
10.00		109.5	1,322.5					0.0	178.7	109.5	1,501.2	0.0	0.0
15.00	Appertunance(s)	107.4	1,277.2	368.4	0.0	0.0	600.0	0.0	178.7	475.7	2,055.9	0.0	0.0
20.00	Appertunance(s)	82.7	1,231.9	390.9	0.0	0.0	600.0	0.0	178.7	473.6	2,010.6	0.0	0.0
22.69	Bot - Section 2	54.9	643.4					0.0	96.1	54.9	739.4	0.0	0.0
25.00	Appertunance(s)	68.7	1,028.6	409.7	0.0	0.0	600.0	0.0	82.6	478.3	1,711.3	0.0	0.0
28.85	Top - Section 1	55.7	1,672.9					0.0	137.7	55.7	1,810.5	0.0	0.0
30.00	Appertunance(s)	68.3	230.9	425.7	0.0	0.0	600.0	0.0	41.0	494.0	872.0	0.0	0.0
35.00	Appertunance(s)	110.4	981.0	439.7	0.0	0.0	600.0	0.0	178.7	550.2	1,759.7	0.0	0.0
40.00	Appertunance(s)	109.0	941.4	452.3	0.0	0.0	600.0	0.0	178.7	561.2	1,720.1	0.0	0.0
45.00	Appertunance(s)	77.0	901.7	463.6	0.0	0.0	600.0	0.0	178.7	540.7	1,680.4	0.0	0.0
47.16	Bot - Section 3	53.4	377.1					0.0	77.2	53.4	454.2	0.0	0.0
50.00	Appertunance(s)	55.6	838.6	474.0	0.0	0.0	600.0	0.0	101.5	529.6	1,540.1	0.0	0.0
52.38	Top - Section 2	52.5	685.6					0.0	85.1	52.5	770.7	0.0	0.0
55.00	Appertunance(s)	47.9	310.9	483.6	0.0	0.0	600.0	0.0	93.6	531.5	1,004.5	0.0	0.0
57.00	Appertunance(s)	51.0	232.1	2,357.1	0.0	0.0	3,250.0	0.0	71.5	2,408.1	3,553.6	0.0	0.0
60.00	Appertunance(s)	79.8	339.6	492.6	0.0	0.0	600.0	0.0	61.1	572.3	1,000.7	0.0	0.0
65.00	Appertunance(s)	68.6	543.4	500.9	0.0	0.0	600.0	0.0	101.8	569.6	1,245.2	0.0	0.0
67.00	Appertunance(s)	47.6	209.4	957.7	0.0	685.4	1,835.8	0.0	40.7	1,005.3	2,085.9	0.0	0.0
70.00	Appertunance(s)	74.0	305.6	508.8	0.0	0.0	600.0	0.0	23.6	582.8	929.2	0.0	0.0
75.00		59.9	486.7					0.0	8.1	59.9	494.8	0.0	0.0
76.60		15.0	149.8					0.0	2.6	15.0	152.3	0.0	0.0
76.69		0.8	8.1					0.0	0.1	0.8	8.2	0.0	0.0
								Totals:		10,345.4	30,647.1	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 13 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.00
Wind Load Factor : 1.00
Wind Importance Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-32.91	-11.54	0.00	-597.55	0.00	597.55	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.100
5.00	-31.36	-11.45	0.00	-539.83	0.00	539.83	5,848.26	2,924.13	11,946.7	5,982.24	0.02	-0.03	0.096
10.00	-29.85	-11.35	0.00	-482.60	0.00	482.60	5,676.15	2,838.07	11,200.5	5,608.58	0.06	-0.06	0.091
15.00	-27.79	-10.89	0.00	-425.84	0.00	425.84	5,478.20	2,739.10	10,429.0	5,222.27	0.14	-0.09	0.087
20.00	-25.78	-10.42	0.00	-371.41	0.00	371.41	5,280.25	2,640.12	9,685.10	4,849.75	0.25	-0.12	0.081
22.69	-25.04	-10.37	0.00	-343.41	0.00	343.41	5,173.85	2,586.92	9,296.61	4,655.21	0.32	-0.13	0.079
25.00	-23.32	-9.89	0.00	-319.44	0.00	319.44	5,082.30	2,541.15	8,968.69	4,491.01	0.39	-0.14	0.076
28.85	-21.51	-9.84	0.00	-281.34	0.00	281.34	4,410.30	2,205.15	7,729.01	3,870.25	0.51	-0.16	0.078
30.00	-20.64	-9.35	0.00	-270.04	0.00	270.04	4,370.52	2,185.26	7,589.50	3,800.39	0.55	-0.17	0.076
35.00	-18.88	-8.80	0.00	-223.31	0.00	223.31	4,197.31	2,098.66	6,996.91	3,503.66	0.74	-0.20	0.068
40.00	-17.16	-8.24	0.00	-179.31	0.00	179.31	4,024.10	2,012.05	6,428.41	3,218.98	0.96	-0.22	0.060
45.00	-15.48	-7.69	0.00	-138.12	0.00	138.12	3,850.90	1,925.45	5,884.00	2,946.37	1.21	-0.24	0.051
47.16	-15.02	-7.64	0.00	-121.51	0.00	121.51	3,776.11	1,888.05	5,656.38	2,832.39	1.32	-0.25	0.047
50.00	-13.48	-7.11	0.00	-99.80	0.00	99.80	3,677.69	1,838.84	5,363.67	2,685.82	1.47	-0.26	0.041
52.38	-12.71	-7.05	0.00	-82.88	0.00	82.88	2,517.68	1,258.84	3,679.49	1,842.48	1.61	-0.27	0.050
55.00	-11.71	-6.52	0.00	-64.40	0.00	64.40	2,473.56	1,236.78	3,524.91	1,765.07	1.76	-0.28	0.041
57.00	-8.17	-4.09	0.00	-51.37	0.00	51.37	2,439.26	1,219.63	3,408.19	1,706.63	1.88	-0.28	0.033
60.00	-7.17	-3.52	0.00	-39.08	0.00	39.08	2,386.80	1,193.40	3,235.34	1,620.07	2.06	-0.29	0.027
65.00	-5.92	-2.94	0.00	-21.50	0.00	21.50	2,296.71	1,148.36	2,953.54	1,478.97	2.37	-0.30	0.017
67.00	-3.84	-1.93	0.00	-14.93	0.00	14.93	2,259.74	1,129.87	2,843.16	1,423.69	2.49	-0.30	0.012
70.00	-2.92	-1.34	0.00	-9.15	0.00	9.15	2,187.31	1,093.65	2,660.78	1,332.37	2.69	-0.31	0.008
75.00	-2.42	-1.28	0.00	-2.45	0.00	2.45	2,063.59	1,031.79	2,366.81	1,185.17	3.01	-0.31	0.003
76.60	-0.01	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	3.11	-0.31	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	3.12	-0.31	0.000

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.26	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.07	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.59	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.28	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11	
Seismic Response Coefficient (C_s):	0.11	
Upper Limit C_s	0.11	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	0.67	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.08	
Total Unfactored Dead Load:	32.92	k
Seismic Base Shear (E):	4.84	k

Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.26
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.07
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.59
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.28
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Period Based on Rayleigh Method (sec):	0.67
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E ELFM **Seismic Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
23	76.64	8	1.888	1.969	1.136	0.606	4	7
22	75.80	152	1.847	1.758	1.059	0.569	75	129
21	72.50	495	1.689	1.082	0.798	0.440	189	418
20	68.50	329	1.508	0.521	0.552	0.313	89	278
19	66.00	250	1.400	0.284	0.432	0.250	54	211
18	62.50	645	1.255	0.063	0.298	0.180	101	545
17	58.50	401	1.100	-0.070	0.187	0.126	44	338
16	56.00	304	1.008	-0.108	0.135	0.104	27	256
15	53.69	405	0.926	-0.121	0.098	0.090	32	342
14	51.19	771	0.842	-0.118	0.067	0.082	54	651
13	48.58	940	0.758	-0.103	0.043	0.077	63	794
12	46.08	454	0.682	-0.081	0.027	0.076	30	383
11	42.50	1,080	0.580	-0.046	0.013	0.076	71	912
10	37.50	1,120	0.452	0.001	0.006	0.076	74	946
9	32.50	1,160	0.339	0.036	0.009	0.073	73	979
8	29.43	272	0.278	0.050	0.014	0.069	16	230
7	26.93	1,811	0.233	0.058	0.019	0.064	101	1,529
6	23.84	1,111	0.183	0.065	0.026	0.059	57	938
5	21.34	739	0.146	0.068	0.031	0.054	35	624
4	17.50	1,411	0.098	0.071	0.037	0.047	57	1,191
3	12.50	1,456	0.050	0.071	0.042	0.039	49	1,229
2	7.50	1,501	0.018	0.063	0.037	0.030	40	1,267
1	2.50	1,547	0.002	0.032	0.018	0.015	20	1,306
Ericsson RRUS 32 w/	76.60	159	1.886	1.957	1.132	0.604	83	134
Ericsson RRUS 11 B12	76.60	152	1.886	1.957	1.132	0.604	80	128
Commscope LNX-	76.60	86	1.886	1.957	1.132	0.604	45	73
Ericsson AIR-32 B2A/	76.60	397	1.886	1.957	1.132	0.604	208	335
RFS APX16DWV-	76.60	126	1.886	1.957	1.132	0.604	66	106
Flat T-Arm	76.60	750	1.886	1.957	1.132	0.604	393	633
Pine Branches	76.60	600	1.886	1.957	1.132	0.604	314	507
Pine Branches	70.00	600	1.575	0.702	0.636	0.357	186	507
Powerwave Allgon TT1	67.00	96	1.443	0.370	0.477	0.274	23	81
Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.274	8	28
Ericsson RRUS-11	67.00	330	1.443	0.370	0.477	0.274	78	279

Powerwave Allgon P65	67.00	477	1.443	0.370	0.477	0.274	113	403
Round Sector Frame	67.00	900	1.443	0.370	0.477	0.274	213	760
Pine Branches	65.00	600	1.358	0.209	0.390	0.227	118	507
Pine Branches	60.00	600	1.157	-0.032	0.224	0.143	74	507
20" x 15" x 10" BOB	57.00	30	1.044	-0.096	0.154	0.112	3	25
25" x 13" x 8" RRU/R	57.00	90	1.044	-0.096	0.154	0.112	9	76
Amphenol Antel BXA-1	57.00	77	1.044	-0.096	0.154	0.112	7	65
KMW AM-X-CD-16-65-00	57.00	198	1.044	-0.096	0.154	0.112	19	167
Commscope LNX-	57.00	89	1.044	-0.096	0.154	0.112	9	75
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.112	8	68
Flat T-Arm	57.00	750	1.044	-0.096	0.154	0.112	73	633
VZW Unused Reserve:	57.00	1,936	1.044	-0.096	0.154	0.112	187	1,634
Pine Branches	55.00	600	0.972	-0.116	0.118	0.097	51	507
Pine Branches	50.00	600	0.803	-0.113	0.055	0.079	41	507
Pine Branches	45.00	600	0.651	-0.071	0.021	0.076	39	507
Pine Branches	40.00	600	0.514	-0.021	0.008	0.077	40	507
Pine Branches	35.00	600	0.394	0.020	0.007	0.075	39	507
Pine Branches	30.00	600	0.289	0.048	0.013	0.070	36	507
Pine Branches	25.00	600	0.201	0.063	0.023	0.061	32	507
Pine Branches	20.00	600	0.129	0.069	0.033	0.051	27	507
Pine Branches	15.00	600	0.072	0.072	0.040	0.043	22	507
		32,916	54.166	21.154	18.194	11.360	3,998	27,790

Load Case (1.2 + 0.2Sds) * DL + E EMAM **Seismic Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
23	76.64	8	1.888	1.969	1.136	0.606	4	7
22	75.80	152	1.847	1.758	1.059	0.569	75	129
21	72.50	495	1.689	1.082	0.798	0.440	189	418
20	68.50	329	1.508	0.521	0.552	0.313	89	278
19	66.00	250	1.400	0.284	0.432	0.250	54	211
18	62.50	645	1.255	0.063	0.298	0.180	101	545
17	58.50	401	1.100	-0.070	0.187	0.126	44	338
16	56.00	304	1.008	-0.108	0.135	0.104	27	256
15	53.69	405	0.926	-0.121	0.098	0.090	32	342
14	51.19	771	0.842	-0.118	0.067	0.082	54	651
13	48.58	940	0.758	-0.103	0.043	0.077	63	794
12	46.08	454	0.682	-0.081	0.027	0.076	30	383
11	42.50	1,080	0.580	-0.046	0.013	0.076	71	912
10	37.50	1,120	0.452	0.001	0.006	0.076	74	946
9	32.50	1,160	0.339	0.036	0.009	0.073	73	979
8	29.43	272	0.278	0.050	0.014	0.069	16	230
7	26.93	1,811	0.233	0.058	0.019	0.064	101	1,529
6	23.84	1,111	0.183	0.065	0.026	0.059	57	938
5	21.34	739	0.146	0.068	0.031	0.054	35	624
4	17.50	1,411	0.098	0.071	0.037	0.047	57	1,191
3	12.50	1,456	0.050	0.071	0.042	0.039	49	1,229
2	7.50	1,501	0.018	0.063	0.037	0.030	40	1,267
1	2.50	1,547	0.002	0.032	0.018	0.015	20	1,306
Ericsson RRUS 32 w/	76.60	159	1.886	1.957	1.132	0.604	83	134
Ericsson RRUS 11 B12	76.60	152	1.886	1.957	1.132	0.604	80	128
Commscope LNX-	76.60	86	1.886	1.957	1.132	0.604	45	73
Ericsson AIR-32 B2A/	76.60	397	1.886	1.957	1.132	0.604	208	335
RFS APX16DWV-	76.60	126	1.886	1.957	1.132	0.604	66	106
Flat T-Arm	76.60	750	1.886	1.957	1.132	0.604	393	633
Pine Branches	76.60	600	1.886	1.957	1.132	0.604	314	507
Pine Branches	70.00	600	1.575	0.702	0.636	0.357	186	507
Powerwave Allgon TT1	67.00	96	1.443	0.370	0.477	0.274	23	81
Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.274	8	28

Ericsson RRUS-11	67.00	330	1.443	0.370	0.477	0.274	78	279
Powerwave Allgon P65	67.00	477	1.443	0.370	0.477	0.274	113	403
Round Sector Frame	67.00	900	1.443	0.370	0.477	0.274	213	760
Pine Branches	65.00	600	1.358	0.209	0.390	0.227	118	507
Pine Branches	60.00	600	1.157	-0.032	0.224	0.143	74	507
20" x 15" x 10" BOB	57.00	30	1.044	-0.096	0.154	0.112	3	25
25" x 13" x 8" RRU/R	57.00	90	1.044	-0.096	0.154	0.112	9	76
Amphenol Antel BXA-1	57.00	77	1.044	-0.096	0.154	0.112	7	65
KMW AM-X-CD-16-65-00	57.00	198	1.044	-0.096	0.154	0.112	19	167
Commscope LNX-	57.00	89	1.044	-0.096	0.154	0.112	9	75
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.112	8	68
Flat T-Arm	57.00	750	1.044	-0.096	0.154	0.112	73	633
VZW Unused Reserve:	57.00	1,936	1.044	-0.096	0.154	0.112	187	1,634
Pine Branches	55.00	600	0.972	-0.116	0.118	0.097	51	507
Pine Branches	50.00	600	0.803	-0.113	0.055	0.079	41	507
Pine Branches	45.00	600	0.651	-0.071	0.021	0.076	39	507
Pine Branches	40.00	600	0.514	-0.021	0.008	0.077	40	507
Pine Branches	35.00	600	0.394	0.020	0.007	0.075	39	507
Pine Branches	30.00	600	0.289	0.048	0.013	0.070	36	507
Pine Branches	25.00	600	0.201	0.063	0.023	0.061	32	507
Pine Branches	20.00	600	0.129	0.069	0.033	0.051	27	507
Pine Branches	15.00	600	0.072	0.072	0.040	0.043	22	507
		32,916	54.166	21.154	18.194	11.360	3,998	27,790

Load Case (0.9 - 0.2Sds) * DL + E ELFM **Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
23	76.64	8	1.888	1.969	1.136	0.606	4	7
22	75.80	152	1.847	1.758	1.059	0.569	75	129
21	72.50	495	1.689	1.082	0.798	0.440	189	418
20	68.50	329	1.508	0.521	0.552	0.313	89	278
19	66.00	250	1.400	0.284	0.432	0.250	54	211
18	62.50	645	1.255	0.063	0.298	0.180	101	545
17	58.50	401	1.100	-0.070	0.187	0.126	44	338
16	56.00	304	1.008	-0.108	0.135	0.104	27	256
15	53.69	405	0.926	-0.121	0.098	0.090	32	342
14	51.19	771	0.842	-0.118	0.067	0.082	54	651
13	48.58	940	0.758	-0.103	0.043	0.077	63	794
12	46.08	454	0.682	-0.081	0.027	0.076	30	383
11	42.50	1,080	0.580	-0.046	0.013	0.076	71	912
10	37.50	1,120	0.452	0.001	0.006	0.076	74	946
9	32.50	1,160	0.339	0.036	0.009	0.073	73	979
8	29.43	272	0.278	0.050	0.014	0.069	16	230
7	26.93	1,811	0.233	0.058	0.019	0.064	101	1,529
6	23.84	1,111	0.183	0.065	0.026	0.059	57	938
5	21.34	739	0.146	0.068	0.031	0.054	35	624
4	17.50	1,411	0.098	0.071	0.037	0.047	57	1,191
3	12.50	1,456	0.050	0.071	0.042	0.039	49	1,229
2	7.50	1,501	0.018	0.063	0.037	0.030	40	1,267
1	2.50	1,547	0.002	0.032	0.018	0.015	20	1,306
Ericsson RRUS 32 w/	76.60	159	1.886	1.957	1.132	0.604	83	134
Ericsson RRUS 11 B12	76.60	152	1.886	1.957	1.132	0.604	80	128
Commscope LNX-	76.60	86	1.886	1.957	1.132	0.604	45	73
Ericsson AIR-32 B2A/	76.60	397	1.886	1.957	1.132	0.604	208	335
RFS APX16DWV-	76.60	126	1.886	1.957	1.132	0.604	66	106
Flat T-Arm	76.60	750	1.886	1.957	1.132	0.604	393	633
Pine Branches	76.60	600	1.886	1.957	1.132	0.604	314	507
Pine Branches	70.00	600	1.575	0.702	0.636	0.357	186	507
Powerwave Allgon TT1	67.00	96	1.443	0.370	0.477	0.274	23	81

Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.274	8	28
Ericsson RRUS-11	67.00	330	1.443	0.370	0.477	0.274	78	279
Powerwave Allgon P65	67.00	477	1.443	0.370	0.477	0.274	113	403
Round Sector Frame	67.00	900	1.443	0.370	0.477	0.274	213	760
Pine Branches	65.00	600	1.358	0.209	0.390	0.227	118	507
Pine Branches	60.00	600	1.157	-0.032	0.224	0.143	74	507
20" x 15" x 10" BOB	57.00	30	1.044	-0.096	0.154	0.112	3	25
25" x 13" x 8" RRU/R	57.00	90	1.044	-0.096	0.154	0.112	9	76
Amphenol Antel BXA-1	57.00	77	1.044	-0.096	0.154	0.112	7	65
KMW AM-X-CD-16-65-00	57.00	198	1.044	-0.096	0.154	0.112	19	167
Commscope LNX-	57.00	89	1.044	-0.096	0.154	0.112	9	75
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.112	8	68
Flat T-Arm	57.00	750	1.044	-0.096	0.154	0.112	73	633
VZW Unused Reserve:	57.00	1,936	1.044	-0.096	0.154	0.112	187	1,634
Pine Branches	55.00	600	0.972	-0.116	0.118	0.097	51	507
Pine Branches	50.00	600	0.803	-0.113	0.055	0.079	41	507
Pine Branches	45.00	600	0.651	-0.071	0.021	0.076	39	507
Pine Branches	40.00	600	0.514	-0.021	0.008	0.077	40	507
Pine Branches	35.00	600	0.394	0.020	0.007	0.075	39	507
Pine Branches	30.00	600	0.289	0.048	0.013	0.070	36	507
Pine Branches	25.00	600	0.201	0.063	0.023	0.061	32	507
Pine Branches	20.00	600	0.129	0.069	0.033	0.051	27	507
Pine Branches	15.00	600	0.072	0.072	0.040	0.043	22	507
		32,916	54.166	21.154	18.194	11.360	3,998	27,790

Load Case (0.9 - 0.2Sds) * DL + E EMAM **Seismic (Reduced DL) Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
23	76.64	8	1.888	1.969	1.136	0.606	4	7
22	75.80	152	1.847	1.758	1.059	0.569	75	129
21	72.50	495	1.689	1.082	0.798	0.440	189	418
20	68.50	329	1.508	0.521	0.552	0.313	89	278
19	66.00	250	1.400	0.284	0.432	0.250	54	211
18	62.50	645	1.255	0.063	0.298	0.180	101	545
17	58.50	401	1.100	-0.070	0.187	0.126	44	338
16	56.00	304	1.008	-0.108	0.135	0.104	27	256
15	53.69	405	0.926	-0.121	0.098	0.090	32	342
14	51.19	771	0.842	-0.118	0.067	0.082	54	651
13	48.58	940	0.758	-0.103	0.043	0.077	63	794
12	46.08	454	0.682	-0.081	0.027	0.076	30	383
11	42.50	1,080	0.580	-0.046	0.013	0.076	71	912
10	37.50	1,120	0.452	0.001	0.006	0.076	74	946
9	32.50	1,160	0.339	0.036	0.009	0.073	73	979
8	29.43	272	0.278	0.050	0.014	0.069	16	230
7	26.93	1,811	0.233	0.058	0.019	0.064	101	1,529
6	23.84	1,111	0.183	0.065	0.026	0.059	57	938
5	21.34	739	0.146	0.068	0.031	0.054	35	624
4	17.50	1,411	0.098	0.071	0.037	0.047	57	1,191
3	12.50	1,456	0.050	0.071	0.042	0.039	49	1,229
2	7.50	1,501	0.018	0.063	0.037	0.030	40	1,267
1	2.50	1,547	0.002	0.032	0.018	0.015	20	1,306
Ericsson RRUS 32 w/	76.60	159	1.886	1.957	1.132	0.604	83	134
Ericsson RRUS 11 B12	76.60	152	1.886	1.957	1.132	0.604	80	128
Commscope LNX-	76.60	86	1.886	1.957	1.132	0.604	45	73
Ericsson AIR-32 B2A/	76.60	397	1.886	1.957	1.132	0.604	208	335
RFS APX16DWV-	76.60	126	1.886	1.957	1.132	0.604	66	106
Flat T-Arm	76.60	750	1.886	1.957	1.132	0.604	393	633
Pine Branches	76.60	600	1.886	1.957	1.132	0.604	314	507
Pine Branches	70.00	600	1.575	0.702	0.636	0.357	186	507

Powerwave Allgon TT1	67.00	96	1.443	0.370	0.477	0.274	23	81
Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.274	8	28
Ericsson RRUS-11	67.00	330	1.443	0.370	0.477	0.274	78	279
Powerwave Allgon P65	67.00	477	1.443	0.370	0.477	0.274	113	403
Round Sector Frame	67.00	900	1.443	0.370	0.477	0.274	213	760
Pine Branches	65.00	600	1.358	0.209	0.390	0.227	118	507
Pine Branches	60.00	600	1.157	-0.032	0.224	0.143	74	507
20" x 15" x 10" BOB	57.00	30	1.044	-0.096	0.154	0.112	3	25
25" x 13" x 8" RRU/R	57.00	90	1.044	-0.096	0.154	0.112	9	76
Amphenol Antel BXA-1	57.00	77	1.044	-0.096	0.154	0.112	7	65
KMW AM-X-CD-16-65-00	57.00	198	1.044	-0.096	0.154	0.112	19	167
Commscope LNX-	57.00	89	1.044	-0.096	0.154	0.112	9	75
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.112	8	68
Flat T-Arm	57.00	750	1.044	-0.096	0.154	0.112	73	633
VZW Unused Reserve:	57.00	1,936	1.044	-0.096	0.154	0.112	187	1,634
Pine Branches	55.00	600	0.972	-0.116	0.118	0.097	51	507
Pine Branches	50.00	600	0.803	-0.113	0.055	0.079	41	507
Pine Branches	45.00	600	0.651	-0.071	0.021	0.076	39	507
Pine Branches	40.00	600	0.514	-0.021	0.008	0.077	40	507
Pine Branches	35.00	600	0.394	0.020	0.007	0.075	39	507
Pine Branches	30.00	600	0.289	0.048	0.013	0.070	36	507
Pine Branches	25.00	600	0.201	0.063	0.023	0.061	32	507
Pine Branches	20.00	600	0.129	0.069	0.033	0.051	27	507
Pine Branches	15.00	600	0.072	0.072	0.040	0.043	22	507
		32,916	54.166	21.154	18.194	11.360	3,998	27,790

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	62.09	0.00	39.41	0.00	0.00	3217.09	0.00	0.51
0.9D + 1.6W	62.08	0.00	29.53	0.00	0.00	3211.35	0.00	0.51
1.2D + 1.0Di + 1.0Wi	12.99	0.00	64.14	0.00	0.00	668.57	0.00	0.12
(1.2 + 0.2Sds) * DL + E ELFM	4.83	0.00	39.39	0.00	0.00	258.53	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	3.98	0.00	39.39	0.00	0.00	238.94	0.00	0.04
(0.9 - 0.2Sds) * DL + E ELFM	4.83	0.00	26.48	0.00	0.00	257.92	0.00	0.05
(0.9 - 0.2Sds) * DL + E EMAM	3.98	0.00	26.48	0.00	0.00	238.33	0.00	0.04
1.0D + 1.0W	11.54	0.00	32.91	0.00	0.00	597.55	0.00	0.10

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
4,555.20	38.30	74.40	3,217.09	64.14	62.09	70.62

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
50.0	2.750	66.000	Round	0	0.00	8.252	527.51	702.09	0.75

Anchor Bolts

								Start	Compression			Tension		
Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Angle (deg)	Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
60.00	20	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	131.89	260.00	0.53	125.48	260.00	0.51

Kyle Richers

From: Jessica Penney <Jessica.Penney@AmericanTower.com>
Sent: Friday, May 20, 2016 2:50 PM
To: 'krichers@transcendwireless.com'
Cc: ''Richard Pretorius''; 'Mike Kithcart'; 'Brian Paul'
Subject: RE: T-MOBILE @ Byram Park CT, 414240 / Customer #CT11606H NSD (659980)

Hi Kyle,

It did pass, yes.

	#	Engineering Service	Active Date	Completed Date	Delivered Date	Billed Date	Status of Project	Ordered Date	PO Received Date	Engineering #	Passed / Failed	Used by Redev	Redev Status	Mod Installation Complete Date
Edit	3	Opinion		5/13/2016	5/13/2016		Delivered	5/13/2016		65998004	Passed	No		

Jessica Penney
Account Project Manager
American Tower Corporation
(Office) 781-926-4713

From: Kyle Richers [mailto:krichers@transcendwireless.com]
Sent: Friday, May 20, 2016 2:37 PM
To: Jessica Penney; krichers@transcendwireless.com
Cc: ''Richard Pretorius''; 'Mike Kithcart'; 'Brian Paul'
Subject: RE: T-MOBILE @ Byram Park CT, 414240 / Customer #CT11606H NSD (659980)

Hi Jessica,

I see that we got the passing SA, have you been able to obtain an engineering opinion for the additional (1) fiber as discussed below?

Thanks

From: Jessica Penney [mailto:Jessica.Penney@AmericanTower.com]
Sent: Thursday, May 12, 2016 5:03 PM
To: 'krichers@transcendwireless.com' <krichers@transcendwireless.com>
Cc: 'Richard Pretorius' (rpretorius@transcendwireless.com) <rpretorius@transcendwireless.com>; 'Mike Kithcart' <mkithcart@transcendwireless.com>; 'Jamie Marchini' (jmarchini@transcendwireless.com) <jmarchini@transcendwireless.com>
Subject: RE: T-MOBILE @ Byram Park CT, 414240 / Customer #CT11606H (659980)

I'll request an opinion. The last SA run on 5/9 passed at 83%, so the addition of one fiber line shouldn't have any significant impact. As a reminder, the decision is ultimately up to our engineering team. If they determine that a PE Letter is necessary, I will let you know.

Jessica Penney
Account Project Manager

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

ATC SITE # / NAME: 414240/ Byram CT
SITE ADDRESS: 36 Ritch Avenue, Greenwich, CT
LICENSEE: T-Mobile Northeast LLC

I, Margaret Robinson, Senior Counsel for American Tower*, operator of the tower facility and property located at the address identified above (the "Tower Facility"), do hereby authorize **T-Mobile Northeast LLC,** successors and assigns, and/or its agent, (collectively, the "Licensee") to act as American Tower'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 Licensee's telecommunications' installation.

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

Signature:

Print Name: Margaret Robinson
Senior Counsel
American Tower*

NOTARY BLOCK

Commonwealth of MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel for American Tower*, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

WITNESS my hand and official seal, this 17th day of May, 2016.

NOTARY SEAL

SUSANA P. RIBEIRO
Notary Public
Commonwealth of Massachusetts
My Commission Expires
March 16, 2018

Notary Public
My Commission Expires: March 16, 2018

*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

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: CT11606H

48 Ritch Avenue
48 Ritch Avenue
Greenwich, CT 06830

May 27, 2016

EBI Project Number: 6216002597

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	46.13 %

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

EBI Consulting
environmental | engineering | due diligence

May 27, 2016

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

Emissions Analysis for Site: **CT11606H – 48 Ritch Avenue**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **48 Ritch Avenue, Greenwich, 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 **48 Ritch Avenue, Greenwich, 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 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 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.

3) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 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.

6) 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.

7) The antennas used in this modeling are the **Ericsson AIR32 B2A/B66AA** & **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6512DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B2A/B66AA** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6512DS-VTM** has a maximum gain of **12 dBd** at its main lobe at 700 MHz. 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.

8) The antenna mounting height centerline of the proposed antennas is **77 feet** above ground level (AGL).

9) 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.

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	77	Height (AGL):	77	Height (AGL):	77
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	4	Channel Count	4	Channel Count	4
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%	6.66	Antenna B1 MPE%	6.66	Antenna C1 MPE%	6.66
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	77	Height (AGL):	77	Height (AGL):	77
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	2,559.48	ERP (W):	2,559.48	ERP (W):	2,559.48
Antenna A2 MPE%	1.83	Antenna B2 MPE%	1.83	Antenna C2 MPE%	1.83
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6512DS-VTM	Make / Model:	Commscope LNX-6512DS-VTM	Make / Model:	Commscope LNX-6512DS-VTM
Gain:	12 dBd	Gain:	12 dBd	Gain:	12 dBd
Height (AGL):	77	Height (AGL):	77	Height (AGL):	77
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):	475.47	ERP (W):	475.47	ERP (W):	475.47
Antenna A3 MPE%	0.73	Antenna B3 MPE%	0.73	Antenna C3 MPE%	0.73

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**9.21 %**
AT&T	16.02 %
Verizon Wireless	20.90 %
Site Total MPE %:	**46.13 %**

T-Mobile Sector 1 Total:	9.21 %
T-Mobile Sector 2 Total:	9.21 %
T-Mobile Sector 3 Total:	9.21 %
Site Total:	46.13 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**77**	**33.29**	**2100**	**1000**	**3.33 %**
T-Mobile 1900 MHz (PCS) LTE	**2**	**2334.27**	**77**	**33.29**	**1900**	**1000**	**3.33 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1279.74**	**77**	**18.25**	**2100**	**1000**	**1.83 %**
T-Mobile 700 MHz LTE	**1**	**475.47**	**77**	**3.39**	**700**	**467**	**0.73 %**
						Total:	**9.21 %**

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:	9.21 %
Sector 2:	9.21 %
Sector 3:	9.21 %
T-Mobile Per Sector Maximum:	9.21 %
Site Total:	46.13 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **46.13%** 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.

AMERICAN TOWER™
CORPORATION

Compliance Statement:
Nationwide Programmatic Agreement for the Collocation of Wireless Antennas and Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communication Commission

4/28/2016

T-MOBILE
OFFICE ADDRESS

Attn: **T-MOBILE**

Re: Proposed collocation or modification of telecommunications equipment by T-MOBILE, or its agents or designees ("Customer") on that certain tower, known as Byram Park CT, ATC # 414240 and located at 48 RITCH AVENUE WEST (41-0-18.229968 N and 73-38-53.89998 W) in the county of FAIRFIELD, State of CT (the "Tower"), and constructed on **01/16/2012.**

FOR TOWERS BUILT AFTER 3/16/01: SHPO Concurrence on file.

Dear **T-MOBILE**:

To facilitate Customer's collocation or modification of its telecommunications equipment on the above referenced Tower in compliance with both the Nationwide Programmatic Agreement for the Collocation of Wireless Antennas (the "Collocation Programmatic Agreement") and the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communication Commission ("the Nationwide Programmatic Agreement") executed by the Federal Communication Commission ("FCC"), the National Conference of State Historic Preservation Officers and the Advisory Council On Historic Preservation ("ACHP"), American Tower Corporation ("ATC"), makes the following certifications:

1. The Tower is a structure built for the primary purpose of supporting FCC-licensed antennas and their associated facilities.

2. Tower construction was completed on or before March 16, 2001, OR, if construction was not completed by that date, consultation with a SHPO/THPO has been completed pursuant to Section 106 of the National Historic Preservation Act ("NHPA"), and the SHPO/THPO has concurred that the undertaking will have "no effect" or "no adverse effect" to historic properties, OR, the tower was categorically exempt from SHPO review based on 47 CFR § 1.1306 Note 3 or one of the exemptions outlined in Section III of the Nationwide Programmatic Agreement, OR, SHPO choose to let the 30 day response period close and per Section VII B 2 of the Nationwide Programmatic Agreement the applicant may consider the S106 process complete.

3. Based solely on ATC's review of the plans provided by Customer and statements made by Customer to ATC, the proposed collocation or modification does not require a "substantial increase in the size of the tower," as that phrase is defined in Stipulation I.C. of the Collocation Programmatic Agreement, nor does it require "enhancement of the tower" as that phrase is defined in Stipulation III.A. of the Nationwide Programmatic Agreement; **OR**, if the proposed collocation or modification does require a "substantial increase" or "enhancement" ATC has completed consultation with a SHPO/THPO

pursuant to Section 106 of the NHPA and the Programmatic Agreements. ATC has confirmed the SHPO/THPO has concurred that the undertaking will have “no effect” or “no adverse effect” to historic properties.

4. There has been no “substantial increase in the size of the tower” since March 16, 2001, OR if there has been a “substantial increase, consultation with a SHPO/THPO has been completed pursuant to Section 106 of the NHPA and the Programmatic Agreements, and the SHPO/THPO has concurred that the undertaking will have “no effect” or “no adverse effect” to historic properties.

5. There has been no “enhancement of the tower” since March 7, 2005, OR if there has been an “enhancement”, consultation with a SHPO/THPO has been completed pursuant to Section 106 of the NHPA and the Programmatic Agreements, and the SHPO/THPO has concurred that the undertaking will have “no effect” or “no adverse effect” to historic properties.

6. ATC has no knowledge that the FCC has determined that the Tower has an effect on one or more historic properties, or if such an effect has been found, that such effect has been found to be not adverse through a no adverse effect finding, or that an adverse or potentially adverse effect has not been resolved through a conditional no adverse effect determination, a Memorandum of Agreement, a programmatic agreement, or that the Tower is not otherwise in compliance with Section 106 and Subpart B of 36 CFR Part 800.

7. ATC has no knowledge that the Tower is the subject of a pending environmental review or related proceeding before the FCC involving compliance with Section 106 of the NHPA.

8. ATC has no knowledge of having received any written or electronic notification that the FCC is in receipt of a complaint from a member of the public, a SHPO, or the ACHP that the collocation has or will have an adverse effect on one or more historic properties.

Based on the above certifications, the installation of the equipment on the Tower would not require review under the consultation process set forth under Subpart B of 36 CFR Part 800.

Please contact ATC’s Environmental Compliance Team at [colo.enviro@americantower.com] with any questions regarding this certification.

AMERICAN TOWER CORPORATION
10 Presidential Way
Woburn, MA 01801

By: Katey Kimball

Title: **Project Specialist**