Crown Castle
12 Gill Street, Suite 5800
Woburn, MA 01801

November 2, 2016

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

RE: **Notice of Exempt Modification for T-Mobile / L700 Crown Site BU: 876326**
T-Mobile Site ID: CT11280A
Located at: 440 Hayden Station Road, Windsor, CT 06095
Latitude: 41° 53' 52.2"/ Longitude: -72° 38' 38.7"

Dear Ms. Bachman,

T-Mobile currently maintains six (6) antennas at the 75-foot level of the existing 96-foot monopole tower located at 440 Hayden Station Road, Windsor, CT. The tower is owned by Crown Castle. The property is owned by Global Signal Acquisition (Crown Castle). T-Mobile now proposes to add three (3) new antennas and three (3) remote radio units (non-antennas). All work is to be completed within the existing area and the antennas would be installed at the same 75-foot level of the tower.

This facility was approved by the Town of Windsor Zoning Board of Appeals on September 18, 1996. The approval did not include any conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. Peter Souza, Town Manager for the Town of Windsor, as well as the property owner and the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modification will not require the extension of the site boundary.

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.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Amanda Goodall.

Sincerely,

Amanda Goodall
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
339-205-7017
Amanda.Goodall@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 4: Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)

cc: Peter Souza, Town Manager
Town of Windsor
275 Broad Street
Windsor, CT 06095

Crown Castle (Tower Owner & Property Owner)
12 Gill Street, Suite 5800
Woburn, Ma 01801

SITE 065 ZONING HAYDEN STATION

TOWN OF WINDSOR • CONNECTICUT
FIRST IN STATE • FIRST IN SERVICE • FIRST IN VALUE

October 3, 1996

Sprint Spectrum L.P.
C/O John Stevens
450 Murdock Road
Meriden, Connecticut 06450

Subject: 440 Hayden Station Road
Variance Request

Dear Mr. Stevens,

The Windsor Zoning Board of Appeals at it's business meeting following the public hearing held at 7:00 P.M. on Wednesday September 18, 1996, approved your request for a variance of Section 3.4.2F(I).

In accordance with Public Act 75-317 of the Connecticut General Statutes, the enclosed form must be **filed with the Town Clerk** of Windsor before said grant becomes effective. There is a filing fee of $10.00. The paperwork must be filed by the record owner of the property within six months, according to Section 6.6 of the Zoning Board of Appeals By Laws, or the grant is null and void.

Very truly yours,

Helene H. Shay
Secretary
WINDSOR ZONING BOARD OF APPEALS

Encl.

Certified Mail No. P 433 581 779

275 Broad Street • Windsor, Connecticut 06095-2994
FAX: (860) 285-1909 http://www.state.ct.us/MUNIC/WINDSOR/windsor.htm

WINDSOR ZONING BOARD OF APPEALS

I, Helene H. Shay, Secretary of the Windsor Zoning Board of Appeals, hereby certify that on Wednesday, September 18, 1996, the Zoning Board of Appeals of the Town of Windsor granted to:

Owner of Record: Jeffrey R. Wannamaker
(The Coast Distribution System, Inc.)

Located at: 440 Hayden Station Road

and more particularly bounded and described as follows:

Map No. 49, Block No. 471, Lot No. 109
in Volume 998, Page 108

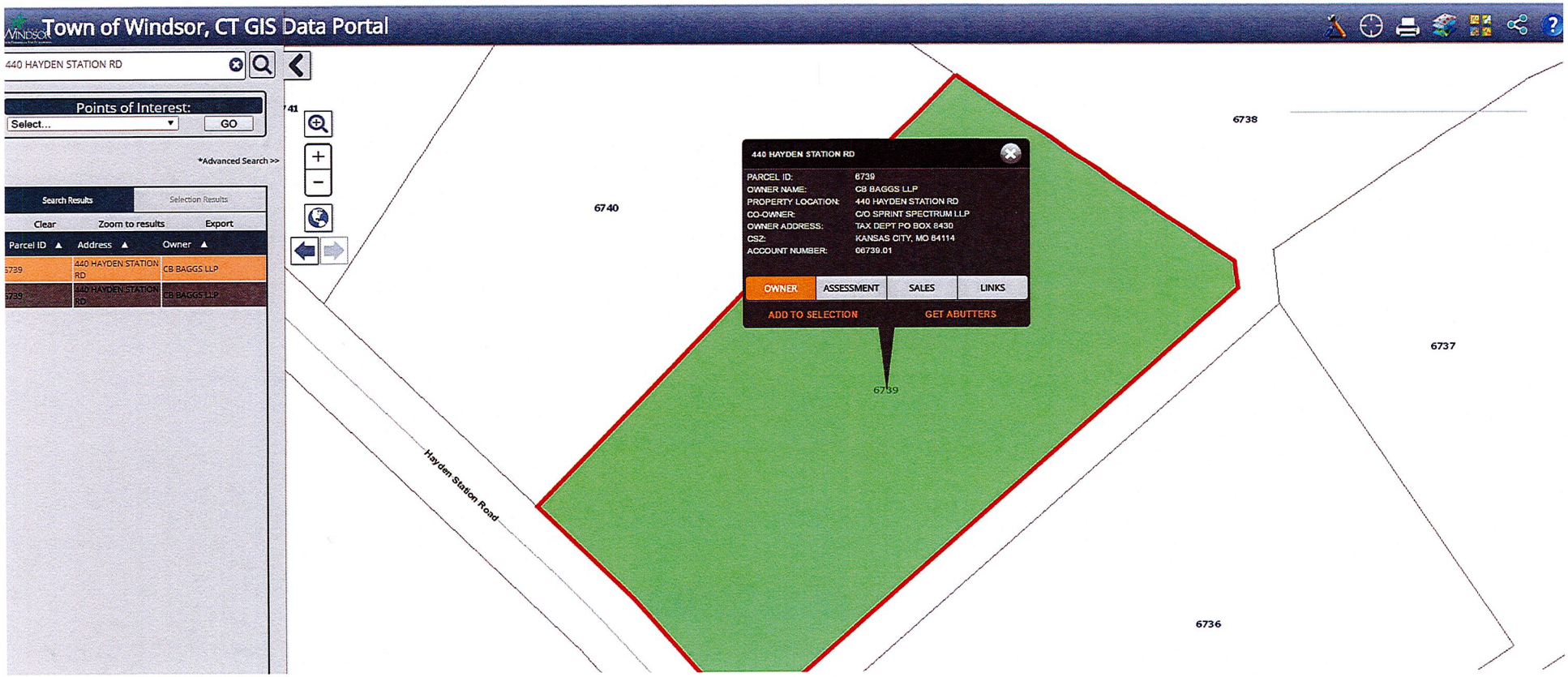
the following variances to the Windsor Zoning Regulations:

Section 3.4.2F(1) - Parking Reduction
for Erection of Tower Antenna

Dated at Windsor, Connecticut, this 3rd day of October, 1996.

Helene H. Shay, Secretary
Windsor Zoning Board of Appeals

Received for the Record:


Town of Windsor, CT GIS Data Portal
440 HAYDEN STATION RD
Points of Interest:
Select...
GO
*Advanced Search >>
Search Results
Selection Results
Clear
Zoom to results
Export
Parcel ID
Address
Owner
6739
440 HAYDEN STATION RD
CB BAGGS LLP
6739
440 HAYDEN STATION RD
CB BAGGS LLP
440 HAYDEN STATION RD
PARCEL ID: 6739
OWNER NAME: CB BAGGS LLP
PROPERTY LOCATION: 440 HAYDEN STATION RD
CO-OWNER: C/O SPRINT SPECTRUM LLP
OWNER ADDRESS: TAX DEPT PO BOX 8430
CSZ: KANSAS CITY, MO 64114
ACCOUNT NUMBER: 06739.01
OWNER
ASSESSMENT
SALES
LINKS
ADD TO SELECTION
GET ABUTTERS
6740
6738
6737
6736
6739
Hayden Station Road

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11280A
CROWN CASTLE BU #: 876326
SITE NAME: HAYDEN STATION
440 HAYDEN STATION ROAD
WINDSOR, CT 06095
HARTFORD COUNTY

VICINITY MAP

FROM BLOOMFIELD, CT:

HEAD NORTHEAST ON GRIFFIN RD S TOWARD W NEWBERRY RD. TURN RIGHT ONTO DAY HILL RD. USE THE RIGHT 2 LANES TO TURN RIGHT ONTO CT-75 S. USE THE LEFT 2 LANES TO TURN LEFT ONTO THE INTERSTATE 91 N RAMP TO SPRINGFIELD. MERGE ONTO I-91 N. TAKE EXIT 39-41 FOR KENNEDY RD TOWARD CENTER ST. CONTINUE ONTO ARCHER RD. TURN LEFT ONTO HAYDEN STATION RD. SITE WILL BE ON THE RIGHT.

CONSULTANT TEAM

ENGINEER
DEWBERRY ENGINEERS INC.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054

CONTACT: BRYAN HUFF
PHONE #: (973) 576-0147

CONSTRUCTION
CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CONTACT: PATRICIA PELON
PHONE #: (518) 373-3507

PROJECT SUMMARY

SITE NAME:
HAYDEN STATION

SITE NUMBER:
CT11280A

TOWER OWNER:
CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

APPLICANT/DEVELOPER:
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

COORDINATES:
LATITUDE: 41°-53'-52.2" N (NAD83)
LONGITUDE: 72°-38'-38.7" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
702Cu

PROJECT DIRECTORY

SITE ADDRESS:
440 HAYDEN STATION ROAD
WINDSOR, CT 06095
HARTFORD COUNTY

SCOPE OF WORK

- INSTALL (3) NEW ANTENNAS.
- INSTALL (3) NEW RRU'S.
- UPGRADE (1) EXISTING EQUIPMENT CABINET AT GRADE.

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

A.D.A. COMPLIANCE:
FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.

SHEET INDEX

SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
G-1	GENERAL NOTES
C-1	COMPOUND PLAN & EQUIPMENT PLANS
C-2	ANTENNA LAYOUTS & ELEVATIONS
C-3	CONSTRUCTION DETAILS
E-1	GROUNDING NOTES & DETAILS

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11280A
HAYDEN STATION

CONSTRUCTION DRAWINGS

0	10/25/16	ISSUED AS FINAL
A	10/17/16	ISSUED FOR REVIEW

Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER

CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078135
SITE ADDRESS:	

440 HAYDEN STATION RD.
WINDSOR, CT 06095
HARTFORD COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – CROWN CASTLE
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T–MOBILE
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 PROJECT MANAGEMENT.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR 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.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
5. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE CONTRACTOR 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 CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
9. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
10. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. CONTRACTOR 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. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
14. CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
15. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
16. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR 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.
17. 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.

SITE WORK GENERAL NOTES:

1. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO:
   A) FALL PROTECTION
   B) CONFINED SPACE
   C) ELECTRICAL SAFETY
   D) TRENCHING & EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T–MOBILE SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE SOIL COMPACTION NOTES.
11. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
3. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
4. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
5. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.
6. CABLES SHALL NOT BE ROUTED THROUGH LADDER–STYLE CABLE TRAY RUNGS.
7. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
8. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
9. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
10. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
11. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
12. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL.) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
13. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN–2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
14. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
15. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
16. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
17. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
18. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
19. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
20. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
21. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
22. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
23. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
24. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
25. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
26. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
27. WIREWAYS SHALL BE EPOXY–COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
28. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
29. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED, OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
30. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
31. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
32. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE (UNO). SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.

5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
   FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM–A–36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON–STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
   CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T–MOBILE ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
2. COORDINATION OF WORK:
   CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT.
3. CABLE LADDER RACK:
   CONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.
4. GROUNDING OF ALL EQUIPMENT AND ANTENNAS IS NOT CONSIDERED PART OF THE SCOPE OF THIS PROJECT AND IS THE RESPONSIBILITY OF THE OWNER AND CONTRACTOR AT THE TIME OF CONSTRUCTION. ALL EQUIPMENT AND ANTENNAS TO BE INSTALLED AND GROUNDED IN ACCORDANCE WITH GOVERNING BUILDING CODE, MANUFACTURER RECOMMENDATIONS AND OWNER SPECIFICATIONS.

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CT11280A
HAYDEN STATION

CONSTRUCTION DRAWINGS

0	10/25/16	ISSUED AS FINAL
A	10/17/16	ISSUED FOR REVIEW

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STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER

CONNECTICUT LICENSED PE, 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078135
SITE ADDRESS:	

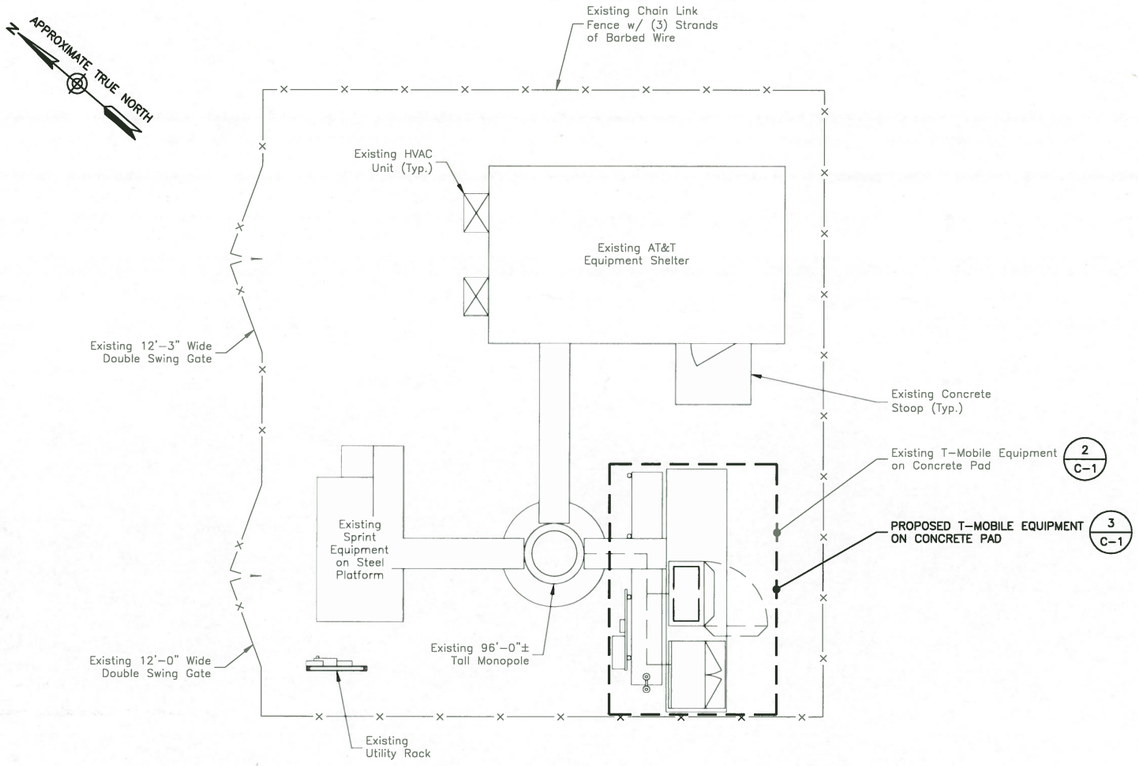
440 HAYDEN STATION RD.
WINDSOR, CT 06095
HARTFORD COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

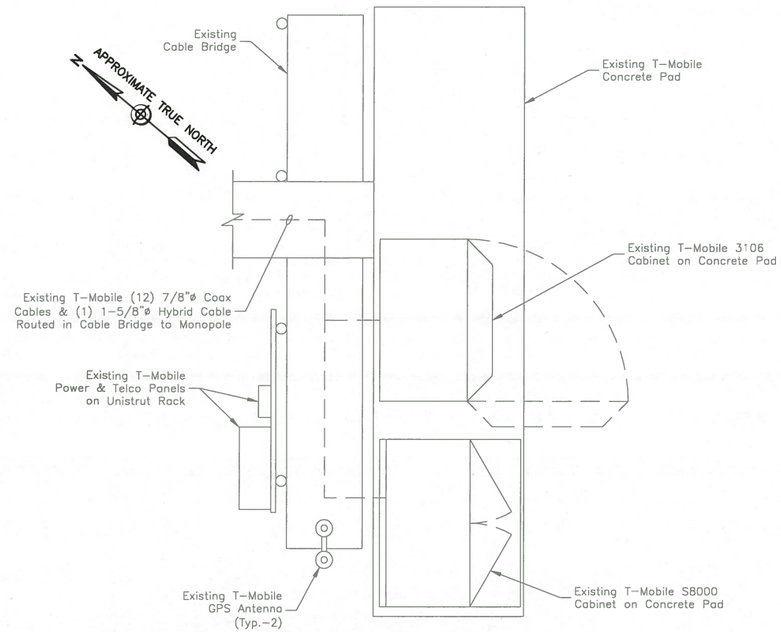
G–1



COMPOUND PLAN 1

SCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"

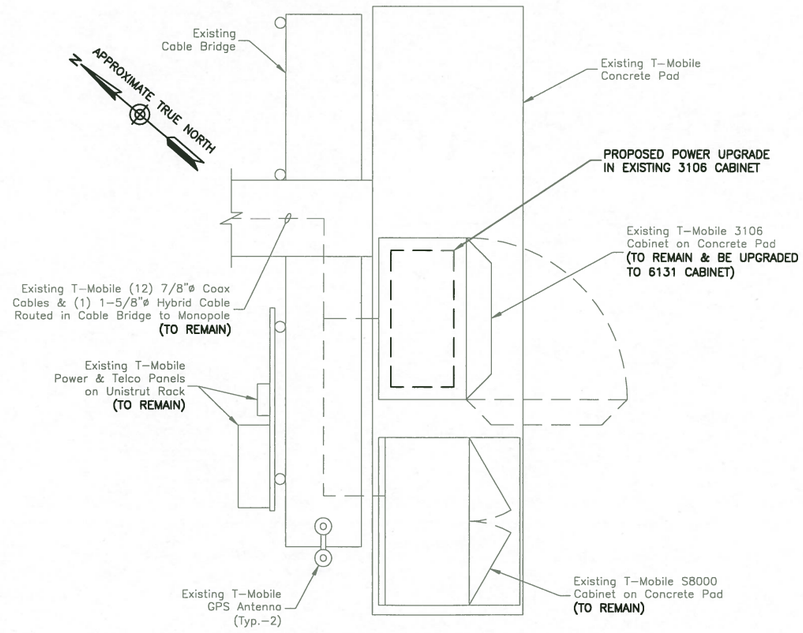
0' 5' 10'



EXISTING EQUIPMENT PLAN 2

SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"

0' 1' 2' 4'



PROPOSED EQUIPMENT PLAN 3

SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"

0' 1' 2' 4'

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, COAX, RRU'S, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS.

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CONNECTICUT LICENSE NO. 0023222

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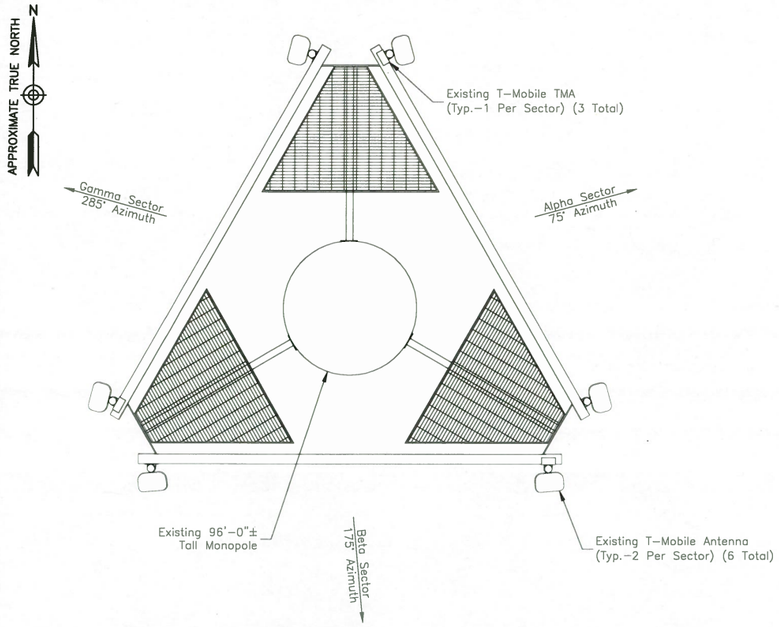
SHEET TITLE

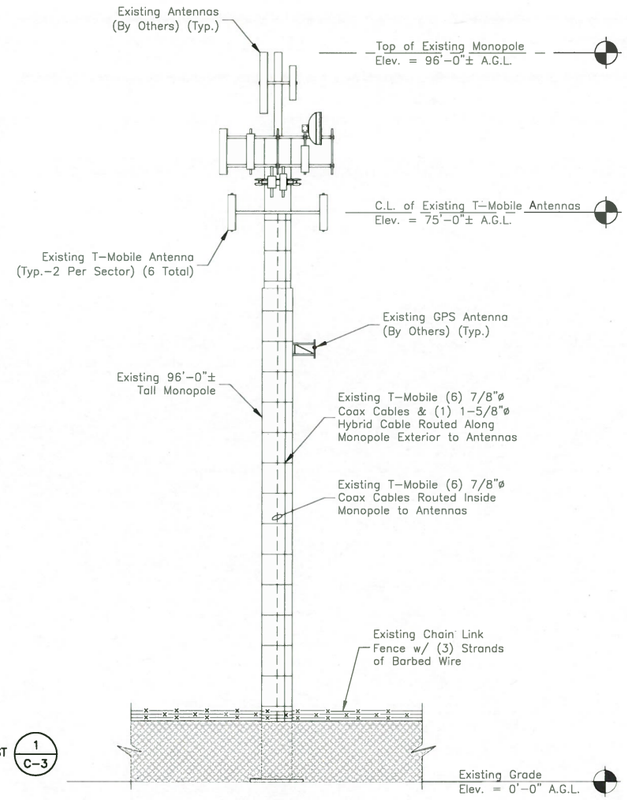
COMPOUND PLAN & EQUIPMENT PLANS

SHEET NUMBER

C-1

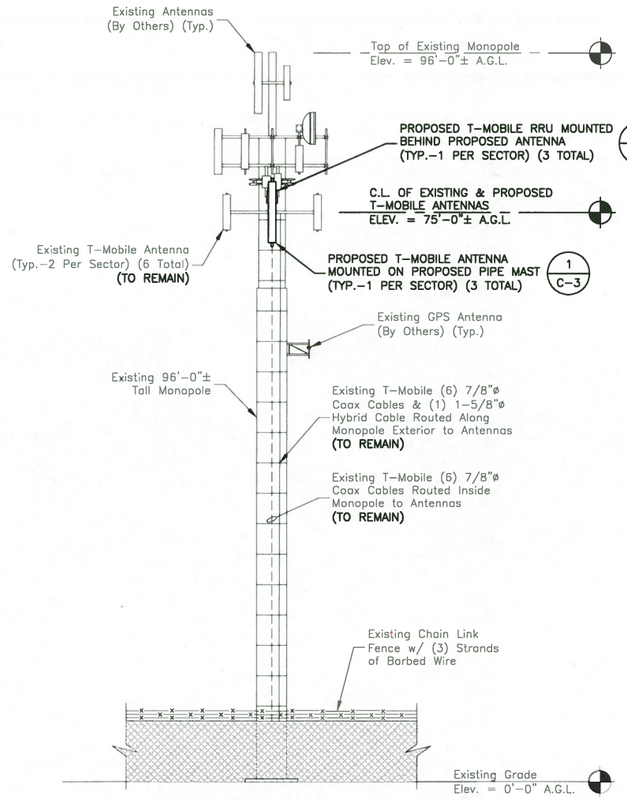


EXISTING ANTENNA LAYOUT (1)
SCALE: N.T.S.



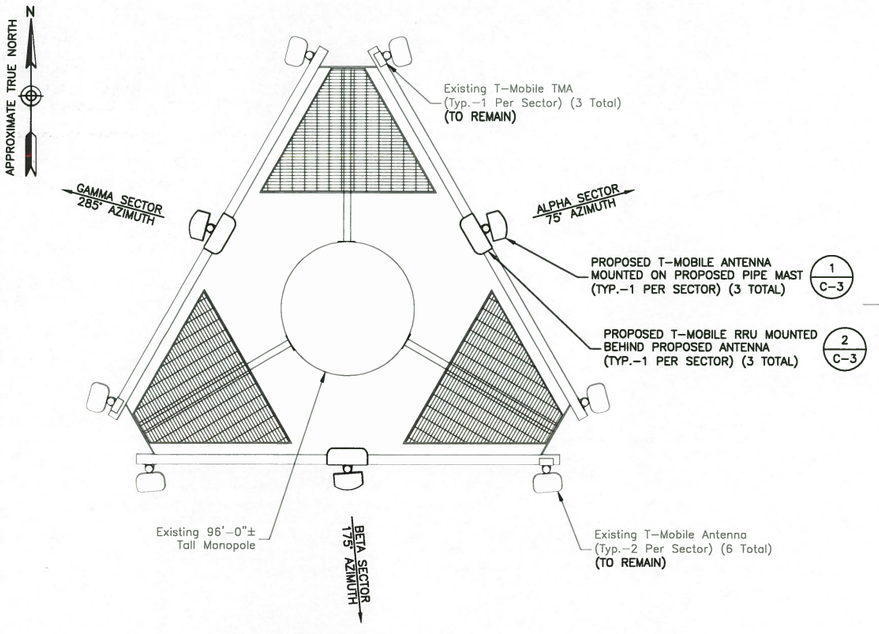
EXISTING ELEVATION (3)
SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'



PROPOSED ELEVATION (4)
SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'



PROPOSED ANTENNA LAYOUT (2)
SCALE: N.T.S.

NOTES:

1. PRIOR TO START OF ANY WORK, A PASSING STRUCTURAL ANALYSIS SHALL BE PROVIDED BY A CONNECTICUT LICENSED P.E. CONTRACTOR TO OBTAIN A COPY BEFORE STARTING ANY WORK.
2. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, COAX, RRU'S, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS.
3. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.

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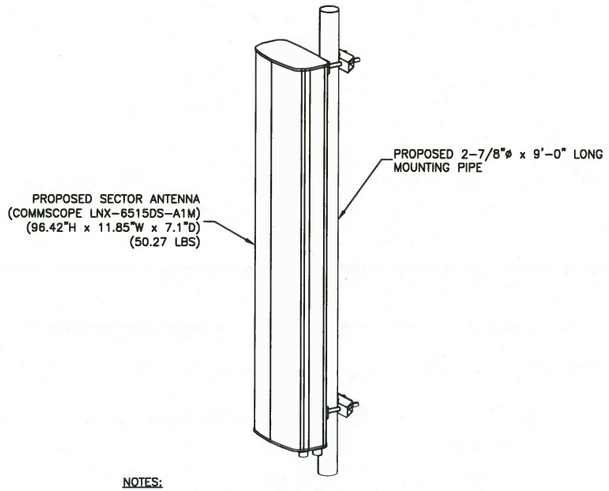
SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

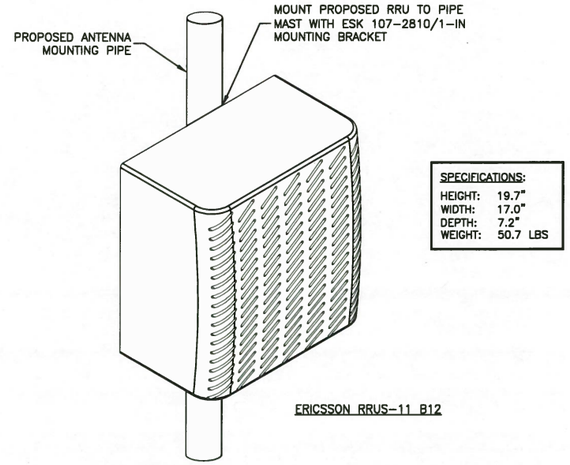
C-2



NOTES:

1. MOUNT ANTENNAS PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND ANTENNAS AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED ANTENNAS WITH THE LATEST RFDS.

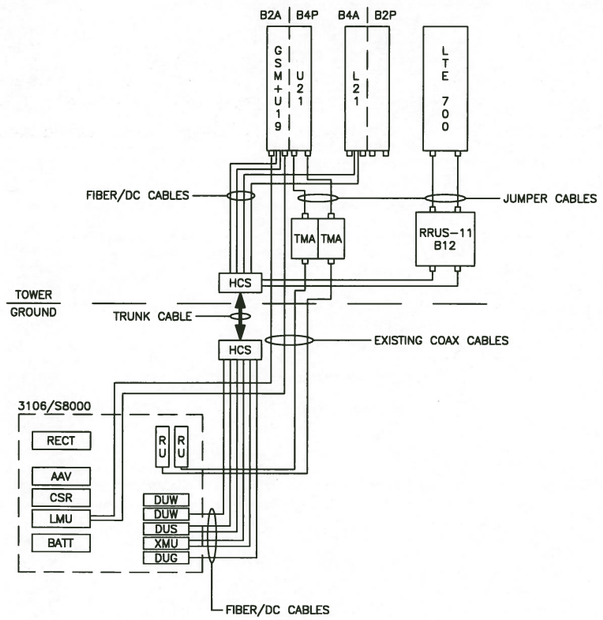
ISOMETRIC ANTENNA DETAIL (1)
SCALE: N.T.S.



RRU NOTES:

1. MOUNT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

RRUS-11 - REMOTE RADIO UNIT (2)
SCALE: N.T.S.



SITE CONFIGURATION 702Cu (3)
SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		HYBRID	COAX/HYBRID LENGTH	TMA	RRU
	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING		EXISTING	PROPOSED
ALPHA	ERICSSON AIR 21 B2A B4P	EXISTING TO REMAIN	(4) 7/8"ø	–	(1) 1-5/8"ø	125'-0"	(1) KRY 112 144/1	–
	–	COMMSCOPE LNX-6515DS-A1M					–	(1) RRUS-11 B12
	ERICSSON AIR 21 B4A B2P	EXISTING TO REMAIN					–	–
BETA	ERICSSON AIR 21 B2A B4P	EXISTING TO REMAIN	(4) 7/8"ø	–		125'-0"	(1) KRY 112 144/1	–
	–	COMMSCOPE LNX-6515DS-A1M					–	(1) RRUS-11 B12
	ERICSSON AIR 21 B4A B2P	EXISTING TO REMAIN					–	–
GAMMA	ERICSSON AIR 21 B2A B4P	EXISTING TO REMAIN	(4) 7/8"ø	–		125'-0"	(1) KRY 112 144/1	–
	–	COMMSCOPE LNX-6515DS-A1M					–	(1) RRUS-11 B12
	ERICSSON AIR 21 B4A B2P	EXISTING TO REMAIN					–	–

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CONSTRUCTION DRAWINGS

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JIANG YU
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LICENSED PROFESSIONAL ENGINEER

CONNECTICUT LICENSE NO. 0023222

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WINDSOR, CT 06095
HARTFORD COUNTY

SHEET TITLE

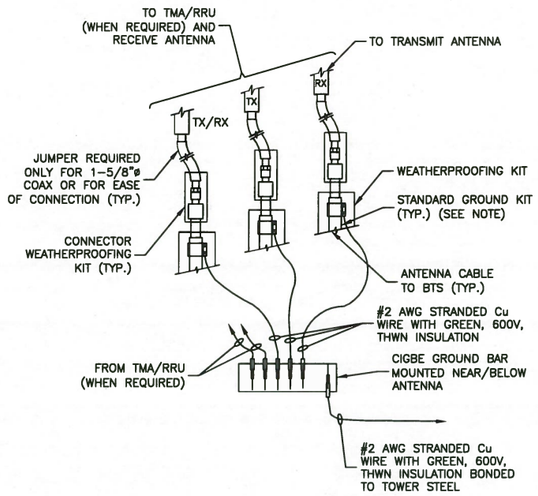
CONSTRUCTION DETAILS

SHEET NUMBER

C-3

GROUNDING NOTES:

1. THE CONTRACTOR 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 CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE ENGINEER 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. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
3. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY THE ENGINEER IN WRITING.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
6. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
7. 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 TRANSMISSION EQUIPMENT.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
11. EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
12. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
13. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM T-MOBILE MARKET REPRESENTATIVE.
14. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
15. ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
16. ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP TRANSMISSION EQUIPMENT AND STRUCTURAL STEEL.
17. COAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO-HOLE MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
18. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
19. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
20. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
21. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
22. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.

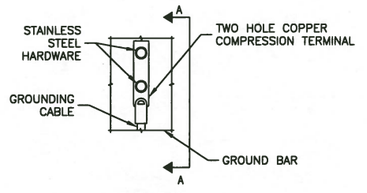


NOTE:

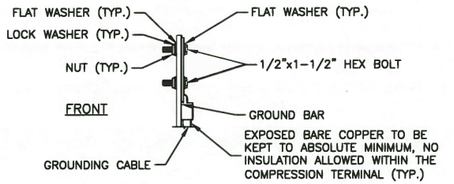
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE)

SCALE: N.T.S. — 1



ELEVATION



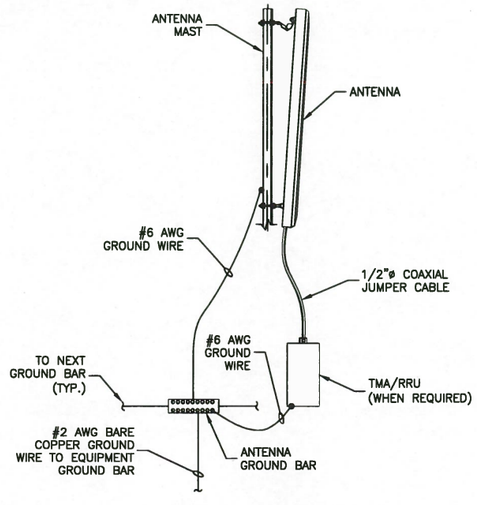
SECTION 'A-A'

NOTES:

1. DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

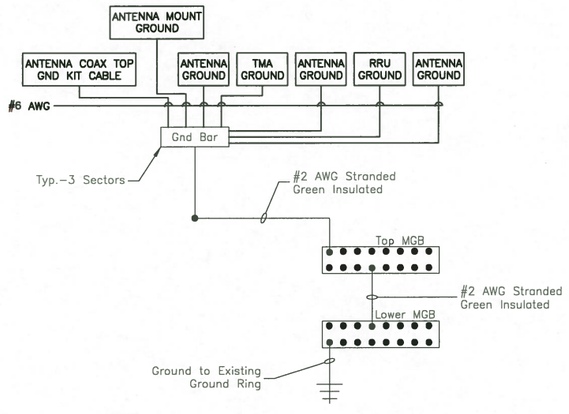
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL

SCALE: N.T.S. — 2



TYPICAL ANTENNA GROUNDING DETAIL

SCALE: N.T.S — 3



NOTES:

1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE.
3. SCHEMATIC GROUNDING DIAGRAM IS TYPICAL FOR EACH SECTOR.
4. VERIFY EXISTING GROUND SYSTEM IS INSTALLED PER T-MOBILE STANDARDS.

SCHEMATIC GROUNDING DIAGRAM

SCALE: N.T.S. — 4

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440 HAYDEN STATION RD.
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HARTFORD COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

Date: **October 12, 2016**

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Canonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11280A
	Carrier Site Name:	Windsor Locks/ Airport
Crown Castle Designation:	**Crown Castle BU Number:**	876326
	Crown Castle Site Name:	HAYDEN STATION
	Crown Castle JDE Job Number:	400583
	Crown Castle Work Order Number:	1310912
	Crown Castle Application Number:	364740 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1310912
Site Data:	**440 Hayden Station Road, WINDSOR, Hartford County, CT** **Latitude *41° 53' 52.2"*, Longitude *-72° 38' 38.7"*** **96 Foot - Monopole Tower**	

Dear Sean Dempsey,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1310912, in accordance with application 364740, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects, please give us a call.

Structural analysis prepared by: Kibreab Gebremariam/ AGH

Respectfully submitted by:

Maham Barimani, P.E.
Sr. Project Engineer

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

10-17-2016

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 96 ft Monopole tower designed by ROHN in January of 1997. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F. This tower was extended in the past from 85ft to 96ft.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1-inch ice thickness and 60 mph under service loads, exposure category C.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
75.0	75.0	3	andrew	LNX-6515DS-A1M w/ Mount Pipe	-	-	-
		3	ericsson	RRUS 11 B12			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
92.0	92.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	6	1-5/8	2
		1	ericsson	RRUS-11			
		3	ericsson	RRUS12/RRUS A2			
		2	ericsson	RRUS-11	6 2 1 1	1-5/8 3/4 3/8 2" Conduit	1
		3	kathrein	800 10121 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	T-Arm Mount [TA 702-3]			
83.0	86.0	1	dragonwave	A-ANT-11G-4-C	6 4 1 3 2	5/16 1/2 5/8 1-1/4 2" Conduit	1
		1	andrew	VHLP2-180			
		1	dragonwave	A-ANT-11G-4-C			
	83.0	3	alcatel lucent	TD-RRH8x20-25			
		3	dragonwave	Horizon DUO			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	samsung telecommunications	WIMAX DAP HEAD			
		1	tower mounts	Platform Mount [LP 502-1]			
	82.0	3	kathrein	840 10045 w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
79.0	80.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
	79.0	1	tower mounts	Side Arm Mount [SO 104-3)			
	77.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
75.0	75.0	3	commscope	E15S08P80	6	7/8	3
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	12 1	7/8 1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		1	tower mounts	Platform Mount [LP 303-1]			
57.0	58.0	1	gps	GPS_A	1	1/2	1

Notes:
1) Existing Equipment
2) Reserved equipment
3) Equipment To Be Removed; Not Considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
85	85	12	swedcom	ALP9212	12	1 5/8
75	75	12	swedcom	ALP9212	12	1 5/8
60	60	12	swedcom	ALP9212	12	1 5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clough, Harbor, & Associates LLP	1530918	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, Inc.	1640630	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn, Inc.	1639483	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	URS	1771083	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Tower extension geometry was taken from the previous analysis.
5) The existing base plate grout was not considered in this analysis.
6) Base and flange plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	96 - 85	Pole	P12x.5	1	-2.78	606.13	14.0	Pass
L2	85 - 65	Pole	P42x3/8	2	-13.11	1668.87	16.1	Pass
L3	65 - 32.5	Pole	P48x3/8	3	-21.78	1847.49	38.0	Pass
L4	32.5 - 0	Pole	P48x1/2	4	-32.92	2649.06	49.7	Pass
							Summary	
						Pole (L4)	49.7	Pass
						Rating =	49.7	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	51.6	Pass
1,3	Base Plate	0	51.6	Pass
1	Base Foundation	0	34.6	Pass
1	Base Foundation Soil Interaction	0	13.2	Pass
1,2	Flange Bolts/ Plates	32.5	33.5/38.0	Pass
1,2	Flange Bolts/ Plates	65.0	10.5/16.1	Pass
1,2	Flange Bolts/ Plates	85.0	1.9/14.0	Pass

Structure Rating (max from all components) =	**51.6%**

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Flange plates have the same capacity as their respective shaft.
3) Base plate has the same capacity as anchor rods.

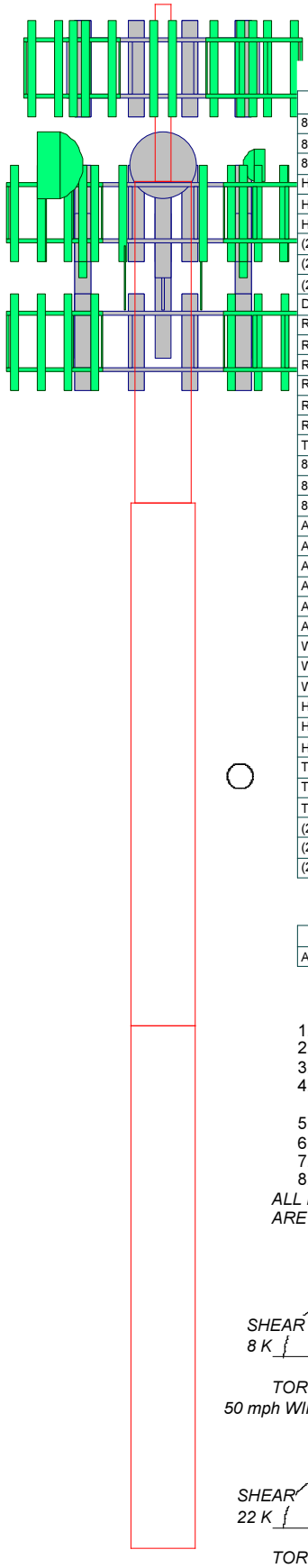
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Size	Length (ft)	Grade	Weight (K)
1	P12x.5	11.00	A53-B-35	0.7
2	P42x3/8	20.00	A53-B-42	3.3
3	P48x3/8	32.50		6.2
4	P48x1/2	32.50		8.3
				18.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
800 10121 w/ Mount Pipe	92	Platform Mount [LP 502-1]	83
800 10121 w/ Mount Pipe	92	dragonwave A-ANT-11G-4-C	83
800 10121 w/ Mount Pipe	92	VHLP2-180	83
HPA-65R-BUU-H8 w/ Mount Pipe	92	A-ANT-11G-4-C	83
HPA-65R-BUU-H8 w/ Mount Pipe	92	PCS 1900MHz 4x45W-65MHz	79
HPA-65R-BUU-H8 w/ Mount Pipe	92	PCS 1900MHz 4x45W-65MHz	79
(2) LGP21401	92	PCS 1900MHz 4x45W-65MHz	79
(2) LGP21401	92	4' x 2" Pipe Mount	79
(2) LGP21401	92	4' x 2" Pipe Mount	79
DC6-48-60-18-8F	92	4' x 2" Pipe Mount	79
RRUS-11	92	Side Arm Mount [SO 104-3)	79
RRUS-11	92	800MHz 2X50W RRH W/FILTER	79
RRUS-11	92	800MHz 2X50W RRH W/FILTER	79
RRUS12/RRUS A2	92	800MHz 2X50W RRH W/FILTER	79
RRUS12/RRUS A2	92	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	75
RRUS12/RRUS A2	92		
T-Arm Mount [TA 702-3]	92	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	75
840 10045 w/ Mount Pipe	83		
840 10045 w/ Mount Pipe	83	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	75
840 10045 w/ Mount Pipe	83		
APXVSPP18-C-A20 w/ Mount Pipe	83	KRY 112 144/1	75
APXVSPP18-C-A20 w/ Mount Pipe	83	KRY 112 144/1	75
APXVSPP18-C-A20 w/ Mount Pipe	83	KRY 112 144/1	75
APXVTM14-C-120 w/ Mount Pipe	83	LNX-6515DS-A1M w/ Mount Pipe	75
APXVTM14-C-120 w/ Mount Pipe	83	LNX-6515DS-A1M w/ Mount Pipe	75
APXVTM14-C-120 w/ Mount Pipe	83	LNX-6515DS-A1M w/ Mount Pipe	75
WIMAX DAP HEAD	83	RRUS 11 B12	75
WIMAX DAP HEAD	83	RRUS 11 B12	75
WIMAX DAP HEAD	83	RRUS 11 B12	75
Horizon DUO	83	Platform Mount [LP 303-1]	75
Horizon DUO	83	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	75
Horizon DUO	83	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	75
TD-RRH8x20-25	83	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	75
TD-RRH8x20-25	83	4.5' x 2" horizontal mount pipe	57
TD-RRH8x20-25	83	GPS_A	57
(2) 4' x 2" Pipe Mount	83		
(2) 4' x 2" Pipe Mount	83		
(2) 4' x 2" Pipe Mount	83		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A53-B-42	42 ksi	63 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 49.7%

ALL REACTIONS ARE FACTORED

AXIAL 65 K

SHEAR 8 K *MOMENT 504 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 33 K

SHEAR 22 K *MOMENT 1537 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 97 mph WIND

CROWN CASTLE
The Foundation for a wireless World

Crown Castle
2000 Corporate Drive
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Phone: (724) 416-2000
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Job:	***BU# 876326***		
Project:			
Client: Crown Castle	Drawn by: Kibreab Gebremariam		App'd:
Code: TIA-222-G	Date: 10/12/16		Scale: NTS
Path: C:\Users\kgebremariam\Desktop\876326 WO 1310912\876326.eri			Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 97 mph.
3) Structure Class II.
4) Exposure Category C.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 1.0000 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	96.00-85.00	11.00	P12x.5	A53-B-35 (35 ksi)	
L2	85.00-65.00	20.00	P42x3/8	A53-B-42 (42 ksi)	
L3	65.00-32.50	32.50	P48x3/8	A53-B-42 (42 ksi)	
L4	32.50-0.00	32.50	P48x1/2	A53-B-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 96.00-85.00				1	1	1			
L2 85.00-65.00				1	1	1			
L3 65.00-32.50				1	1	1			
L4 32.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A(1-5/8)	B	Surface Ar (CaAa)	92.00 - 0.00	6	6	-0.350 -0.300	1.9800		0.82
FSJ4-50B(1/2")	A	Surface Ar (CaAa)	83.00 - 0.00	3	3	0.250 0.270	0.5200		0.14
HB114-1-08U4-M5J(1-1/4")	A	Surface Ar (CaAa)	83.00 - 0.00	4	3	0.200 0.230	1.5400		1.08
2" Rigid Conduit	A	Surface Ar (CaAa)	83.00 - 2.00	2	2	0.300 0.320	2.0000		2.80
AVA7-50(1-5/8)	B	Surface Ar (CaAa)	75.00 - 2.00	1	1	0.400 0.410	2.0100		0.70
*****									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8")	B	No	Inside Pole	92.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FB-L98B-002-75000(3/8")	B	No	Inside Pole	92.00 - 8.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	92.00 - 8.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
2" Rigid Conduit	B	No	Inside Pole	92.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
*								
ATCB-B01-001(5/16")	A	No	Inside Pole	83.00 - 0.00	6	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
LDF4-50A(1/2")	A	No	Inside Pole	83.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
****								
AVA5-50(7/8)	B	No	Inside Pole	75.00 - 2.00	12	No Ice	0.00	0.30
						1/2" Ice	0.00	0.30
						1" Ice	0.00	0.30
*								
LDF4-50A(1/2")	C	No	Inside Pole	57.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
*****								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	96.00-85.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	8.316	0.000	0.10
		C	0.000	0.000	0.000	0.000	0.00
L2	85.00-65.00	A	0.000	0.000	18.324	0.000	0.20
		B	0.000	0.000	25.770	0.000	0.32
		C	0.000	0.000	0.000	0.000	0.00
L3	65.00-32.50	A	0.000	0.000	33.085	0.000	0.36
		B	0.000	0.000	45.142	0.000	0.59
		C	0.000	0.000	0.000	0.000	0.00
L4	32.50-0.00	A	0.000	0.000	32.285	0.000	0.34
		B	0.000	0.000	44.740	0.000	0.53
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	96.00-85.00	A	2.212	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	14.267	0.000	0.31
		C		0.000	0.000	0.000	0.000	0.00
L2	85.00-65.00	A	2.171	0.000	0.000	52.215	0.000	0.94
		B		0.000	0.000	46.908	0.000	1.02
		C		0.000	0.000	0.000	0.000	0.00
L3	65.00-32.50	A	2.081	0.000	0.000	92.076	0.000	1.62
		B		0.000	0.000	85.227	0.000	1.84
		C		0.000	0.000	0.000	0.000	0.00
L4	32.50-0.00	A	1.868	0.000	0.000	84.951	0.000	1.41
		B		0.000	0.000	80.963	0.000	1.61
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	96.00-85.00	0.2743	-0.7146	0.2643	-0.6886
L2	85.00-65.00	0.0738	-1.8122	-0.1078	-1.9427
L3	65.00-32.50	0.1199	-1.8888	-0.0280	-2.0526
L4	32.50-0.00	0.1184	-1.8814	-0.0263	-2.0485

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	4	LDF7-50A(1-5/8)	85.00 - 92.00	1.0000	1.0000
L2	4	LDF7-50A(1-5/8)	65.00 - 85.00	1.0000	1.0000
L2	8	FSJ4-50B(1/2")	65.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			83.00		
L2	11	HB114-1-08U4-M5J(1-1/4")	65.00 - 83.00	1.0000	1.0000
L2	12	2" Rigid Conduit	65.00 - 83.00	1.0000	1.0000
L2	15	AVA7-50(1-5/8)	65.00 - 75.00	1.0000	1.0000
L3	4	LDF7-50A(1-5/8)	32.50 - 65.00	1.0000	1.0000
L3	8	FSJ4-50B(1/2")	32.50 - 65.00	1.0000	1.0000
L3	11	HB114-1-08U4-M5J(1-1/4")	32.50 - 65.00	1.0000	1.0000
L3	12	2" Rigid Conduit	32.50 - 65.00	1.0000	1.0000
L3	15	AVA7-50(1-5/8)	32.50 - 65.00	1.0000	1.0000
L4	4	LDF7-50A(1-5/8)	0.00 - 32.50	1.0000	1.0000
L4	8	FSJ4-50B(1/2")	0.00 - 32.50	1.0000	1.0000
L4	11	HB114-1-08U4-M5J(1-1/4")	0.00 - 32.50	1.0000	1.0000
L4	12	2" Rigid Conduit	2.00 - 32.50	1.0000	1.0000
L4	15	AVA7-50(1-5/8)	2.00 - 32.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800 10121 w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	92.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
800 10121 w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	92.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
800 10121 w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	92.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	92.00	No Ice 1/2" Ice 1" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	92.00	No Ice 1/2" Ice 1" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	92.00	No Ice 1/2" Ice 1" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30
(2) LGP21401	A	From Leg	3.00 0.00 0.00	0.0000	92.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	B	From Leg	3.00	0.0000	92.00	No Ice	1.10	0.21	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice			
(2) LGP21401	C	From Leg	3.00	0.0000	92.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice			
DC6-48-60-18-8F	A	From Leg	3.00	0.0000	92.00	No Ice	0.79	0.79	0.02
			0.00			1/2"	1.27	1.27	0.04
			0.00			Ice	1.45	1.45	0.05
						1" Ice			
RRUS-11	B	From Leg	3.00	0.0000	92.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			0.00			Ice	3.21	1.49	0.09
						1" Ice			
RRUS-11	C	From Leg	3.00	0.0000	92.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			0.00			Ice	3.21	1.49	0.09
						1" Ice			
RRUS-11	A	From Leg	3.00	0.0000	92.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			0.00			Ice	3.21	1.49	0.09
						1" Ice			
RRUS12/RRUS A2	A	From Leg	3.00	0.0000	92.00	No Ice	3.14	1.84	0.07
			0.00			1/2"	3.36	2.01	0.10
			0.00			Ice	3.59	2.20	0.13
						1" Ice			
RRUS12/RRUS A2	B	From Leg	3.00	0.0000	92.00	No Ice	3.14	1.84	0.07
			0.00			1/2"	3.36	2.01	0.10
			0.00			Ice	3.59	2.20	0.13
						1" Ice			
RRUS12/RRUS A2	C	From Leg	3.00	0.0000	92.00	No Ice	3.14	1.84	0.07
			0.00			1/2"	3.36	2.01	0.10
			0.00			Ice	3.59	2.20	0.13
						1" Ice			
T-Arm Mount [TA 702-3]	C	None		0.0000	92.00	No Ice	5.64	5.64	0.34
						1/2"	6.55	6.55	0.43
						Ice	7.46	7.46	0.52
						1" Ice			
****									
840 10045 w/ Mount Pipe	A	From Leg	4.00	0.0000	83.00	No Ice	4.81	2.39	0.05
			0.00			1/2"	5.16	2.92	0.09
			-1.00			Ice	5.53	3.47	0.13
						1" Ice			
840 10045 w/ Mount Pipe	B	From Leg	4.00	0.0000	83.00	No Ice	4.81	2.39	0.05
			0.00			1/2"	5.16	2.92	0.09
			-1.00			Ice	5.53	3.47	0.13
						1" Ice			
840 10045 w/ Mount Pipe	C	From Leg	4.00	0.0000	83.00	No Ice	4.81	2.39	0.05
			0.00			1/2"	5.16	2.92	0.09
			-1.00			Ice	5.53	3.47	0.13
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	83.00	No Ice	8.26	6.95	0.08
			0.00			1/2"	8.82	8.13	0.15
			0.00			Ice	9.35	9.02	0.23
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	83.00	No Ice	8.26	6.95	0.08
			0.00			1/2"	8.82	8.13	0.15
			0.00			Ice	9.35	9.02	0.23
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	83.00	No Ice	8.26	6.95	0.08
			0.00			1/2"	8.82	8.13	0.15
			0.00			Ice	9.35	9.02	0.23
						1" Ice			
APXVTM14-C-120 w/	A	From Leg	4.00	0.0000	83.00	No Ice	6.58	4.96	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	7.03	5.75	0.13
			0.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.07 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.07 0.13 0.19
WIMAX DAP HEAD	A	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	1.55 1.70 1.87	0.68 0.80 0.92	0.03 0.04 0.06
WIMAX DAP HEAD	B	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	1.55 1.70 1.87	0.68 0.80 0.92	0.03 0.04 0.06
WIMAX DAP HEAD	C	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	1.55 1.70 1.87	0.68 0.80 0.92	0.03 0.04 0.06
Horizon DUO	A	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	0.47 0.56 0.65	0.29 0.37 0.44	0.01 0.01 0.02
Horizon DUO	B	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	0.47 0.56 0.65	0.29 0.37 0.44	0.01 0.01 0.02
Horizon DUO	C	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	0.47 0.56 0.65	0.29 0.37 0.44	0.01 0.01 0.02
TD-RRH8x20-25	A	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	C	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
(2) 4' x 2" Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	0.79 1.03 1.28	0.79 1.03 1.28	0.03 0.04 0.04
(2) 4' x 2" Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	0.79 1.03 1.28	0.79 1.03 1.28	0.03 0.04 0.04
(2) 4' x 2" Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice 1" Ice	0.79 1.03 1.28	0.79 1.03 1.28	0.03 0.04 0.04
Platform Mount [LP 502-1]	C	None		0.0000	83.00	No Ice 1/2" Ice 1" Ice	32.35 45.67 58.99	32.35 45.67 58.99	0.93 1.19 1.46
***									
800MHz 2X50W RRH	A	From Leg	1.00	0.0000	79.00	No Ice	2.06	1.93	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
W/FILTER			0.00			1/2" Ice	2.24	2.11	0.09
			1.00			1" Ice	2.43	2.29	0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 1.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 1.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.00 0.00 -2.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.00 0.00 -2.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.00 0.00 -2.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
4' x 2" Pipe Mount	A	From Leg	1.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	0.79 1.03 1.28	0.79 1.03 1.28	0.03 0.04 0.04
4' x 2" Pipe Mount	B	From Leg	1.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	0.79 1.03 1.28	0.79 1.03 1.28	0.03 0.04 0.04
4' x 2" Pipe Mount	C	From Leg	1.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	0.79 1.03 1.28	0.79 1.03 1.28	0.03 0.04 0.04
Side Arm Mount [SO 104-3)	C	None		0.0000	79.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	0.08 0.11 0.14
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
KRY 112 144/1	A	From Leg	4.00	0.0000	75.00	No Ice	0.35	0.17	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00			1/2" Ice 1" Ice	0.43 0.51	0.23 0.30	0.01 0.02
KRY 112 144/1	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
KRY 112 144/1	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	11.65 12.37 13.10	9.84 11.37 12.92	0.08 0.17 0.27
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	11.65 12.37 13.10	9.84 11.37 12.92	0.08 0.17 0.27
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	11.65 12.37 13.10	9.84 11.37 12.92	0.08 0.17 0.27
RRUS 11 B12	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
Platform Mount [LP 303-1]	C	None		0.0000	75.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
***									
GPS_A	B	From Leg	3.00 0.00 1.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	0.26 0.32 0.39	0.26 0.32 0.39	0.00 0.00 0.01
4.5' x 2" horizontal mount pipe	B	From Leg	0.00 0.00 0.00	0.0000	57.00	No Ice 1/2" Ice 1" Ice	0.90 1.21 1.49	0.90 1.21 1.49	0.03 0.04 0.05
******									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
dragonwave A-ANT-11G-4-C	A	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00	0.0000		83.00	4.23	No Ice 1/2" Ice	14.08 14.63	0.12 0.20

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
				3.00					1" Ice	15.19	0.27
VHLP2-180	B	Paraboloid w/Shroud (HP)	From Leg	4.00	0.0000		83.00	2.00	No Ice	3.14	0.03
				0.00					1/2" Ice	3.41	0.04
				3.00					1" Ice	3.68	0.06
A-ANT-11G-4-C	C	Paraboloid w/Shroud (HP)	From Leg	4.00	0.0000		83.00	4.23	No Ice	14.08	0.12
				0.00					1/2" Ice	14.63	0.20
				3.00					1" Ice	15.19	0.27
***											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	96 - 85	Pole	Max Tension	41	0.00	-0.00	-0.00
			Max. Compression	26	-8.23	1.40	1.39
			Max. Mx	20	-2.78	26.44	0.24
			Max. My	2	-2.77	0.05	26.51
			Max. Vy	8	5.01	-25.75	0.64
			Max. Vx	14	5.12	0.61	-25.93
			Max. Torque	8			1.65
L2	85 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.21	1.60	4.16
			Max. Mx	8	-13.11	-270.03	7.38
			Max. My	14	-13.11	5.05	-272.05
			Max. Vy	8	15.75	-270.03	7.38
			Max. Vx	14	15.87	5.05	-272.05
			Max. Torque	8			1.65
L3	65 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.56	1.47	9.07
			Max. Mx	8	-21.79	-840.17	18.52
			Max. My	14	-21.79	12.26	-845.01
			Max. Vy	8	19.22	-840.17	18.52
			Max. Vx	14	19.34	12.26	-845.01
			Max. Torque	8			1.65
L4	32.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.36	1.61	13.46
			Max. Mx	8	-32.92	-1509.18	29.60
			Max. My	14	-32.92	19.47	-1516.88
			Max. Vy	8	21.84	-1509.18	29.60
			Max. Vx	14	21.96	19.47	-1516.88
			Max. Torque	8			1.58

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	65.36	-0.00	-0.00
	Max. H_x	21	24.69	21.70	-0.09
	Max. H_z	3	24.69	-0.34	21.83
	Max. M_x	2	1512.34	-0.34	21.83
	Max. M_z	8	1509.18	-21.84	0.31
	Max. Torsion	8	1.58	-21.84	0.31
	Min. Vert	5	24.69	-11.06	19.01
	Min. H_x	9	24.69	-21.84	0.31
	Min. H_z	15	24.69	0.21	-21.95
	Min. M_x	14	-1516.88	0.21	-21.95
	Min. M_z	20	-1499.18	21.70	-0.09
	Min. Torsion	20	-1.42	21.70	-0.09

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	27.44	-0.00	-0.00	-2.54	0.69	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	32.93	0.34	-21.83	-1512.34	-28.96	-0.76
0.9 Dead+1.6 Wind 0 deg - No Ice	24.69	0.34	-21.83	-1508.03	-29.09	-0.76

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 30 deg - No Ice	32.93	11.06	-19.01	-1319.63	-766.28	-0.78
0.9 Dead+1.6 Wind 30 deg - No Ice	24.69	11.06	-19.01	-1315.76	-764.69	-0.77
1.2 Dead+1.6 Wind 60 deg - No Ice	32.93	19.18	-11.32	-787.06	-1319.80	-1.33
0.9 Dead+1.6 Wind 60 deg - No Ice	24.69	19.18	-11.32	-784.44	-1316.92	-1.33
1.2 Dead+1.6 Wind 90 deg - No Ice	32.93	21.84	-0.31	-29.60	-1509.18	-1.58
0.9 Dead+1.6 Wind 90 deg - No Ice	24.69	21.84	-0.31	-28.76	-1505.86	-1.58
1.2 Dead+1.6 Wind 120 deg - No Ice	32.93	18.80	10.85	746.28	-1297.09	-0.10
0.9 Dead+1.6 Wind 120 deg - No Ice	24.69	18.80	10.85	745.30	-1294.26	-0.10
1.2 Dead+1.6 Wind 150 deg - No Ice	32.93	10.65	19.06	1317.92	-731.21	1.41
0.9 Dead+1.6 Wind 150 deg - No Ice	24.69	10.65	19.06	1315.58	-729.71	1.41
1.2 Dead+1.6 Wind 180 deg - No Ice	32.93	-0.21	21.95	1516.88	19.47	1.23
0.9 Dead+1.6 Wind 180 deg - No Ice	24.69	-0.21	21.95	1514.09	19.21	1.23
1.2 Dead+1.6 Wind 210 deg - No Ice	32.93	-10.94	19.08	1319.55	757.45	0.78
0.9 Dead+1.6 Wind 210 deg - No Ice	24.69	-10.94	19.08	1317.22	755.46	0.77
1.2 Dead+1.6 Wind 240 deg - No Ice	32.93	-19.01	11.37	785.22	1306.63	0.86
0.9 Dead+1.6 Wind 240 deg - No Ice	24.69	-19.01	11.37	784.14	1303.35	0.86
1.2 Dead+1.6 Wind 270 deg - No Ice	32.93	-21.70	0.09	4.60	1499.18	1.42
0.9 Dead+1.6 Wind 270 deg - No Ice	24.69	-21.70	0.09	5.35	1495.46	1.42
1.2 Dead+1.6 Wind 300 deg - No Ice	32.93	-18.76	-10.83	-750.70	1295.76	0.10
0.9 Dead+1.6 Wind 300 deg - No Ice	24.69	-18.76	-10.83	-748.17	1292.51	0.10
1.2 Dead+1.6 Wind 330 deg - No Ice	32.93	-10.77	-18.84	-1304.53	743.37	-1.25
0.9 Dead+1.6 Wind 330 deg - No Ice	24.69	-10.77	-18.84	-1300.71	741.42	-1.25
1.2 Dead+1.0 Ice+1.0 Temp	65.36	0.00	0.00	-13.46	1.61	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	65.36	0.06	-6.78	-471.85	-3.97	-0.12
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	65.36	3.42	-5.89	-412.24	-229.97	-0.13
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	65.36	6.58	-3.85	-265.79	-428.17	-0.25
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	65.36	6.78	-0.06	-18.69	-456.83	-0.32
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	65.36	5.85	3.38	214.54	-393.51	-0.04
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	65.36	3.34	5.90	385.99	-223.19	0.25
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	65.36	-0.04	6.81	446.74	5.13	0.21
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	65.36	-3.39	5.91	386.30	231.06	0.13
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	65.36	-6.55	3.86	239.36	428.56	0.16
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	65.36	-6.76	0.02	-12.26	457.89	0.29
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	65.36	-5.85	-3.38	-241.44	396.27	0.04
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	65.36	-3.37	-5.86	-409.40	228.60	-0.22

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 0 deg - Service	27.44	0.07	-4.67	-324.91	-5.66	-0.16
Dead+Wind 30 deg - Service	27.44	2.37	-4.07	-283.75	-163.14	-0.17
Dead+Wind 60 deg - Service	27.44	4.10	-2.42	-170.00	-281.36	-0.28
Dead+Wind 90 deg - Service	27.44	4.67	-0.07	-8.23	-321.81	-0.34
Dead+Wind 120 deg - Service	27.44	4.02	2.32	157.48	-276.50	-0.02
Dead+Wind 150 deg - Service	27.44	2.28	4.08	279.57	-155.65	0.30
Dead+Wind 180 deg - Service	27.44	-0.05	4.70	322.07	4.68	0.26
Dead+Wind 210 deg - Service	27.44	-2.34	4.08	279.92	162.29	0.17
Dead+Wind 240 deg - Service	27.44	-4.07	2.43	165.80	279.59	0.18
Dead+Wind 270 deg - Service	27.44	-4.64	0.02	-0.92	320.71	0.30
Dead+Wind 300 deg - Service	27.44	-4.01	-2.32	-162.24	277.26	0.02
Dead+Wind 330 deg - Service	27.44	-2.30	-4.03	-280.52	159.29	-0.27

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-27.44	0.00	0.00	27.44	0.00	0.000%
2	0.34	-32.93	-21.83	-0.34	32.93	21.83	0.001%
3	0.34	-24.69	-21.83	-0.34	24.69	21.83	0.001%
4	11.06	-32.93	-19.01	-11.06	32.93	19.01	0.000%
5	11.06	-24.69	-19.01	-11.06	24.69	19.01	0.001%
6	19.18	-32.93	-11.32	-19.18	32.93	11.32	0.000%
7	19.18	-24.69	-11.32	-19.18	24.69	11.32	0.000%
8	21.84	-32.93	-0.31	-21.84	32.93	0.31	0.001%
9	21.84	-24.69	-0.31	-21.84	24.69	0.31	0.001%
10	18.80	-32.93	10.85	-18.80	32.93	-10.85	0.000%
11	18.80	-24.69	10.85	-18.80	24.69	-10.85	0.000%
12	10.65	-32.93	19.06	-10.65	32.93	-19.06	0.000%
13	10.65	-24.69	19.06	-10.65	24.69	-19.06	0.001%
14	-0.21	-32.93	21.95	0.21	32.93	-21.95	0.001%
15	-0.21	-24.69	21.95	0.21	24.69	-21.95	0.001%
16	-10.94	-32.93	19.08	10.94	32.93	-19.08	0.000%
17	-10.94	-24.69	19.08	10.94	24.69	-19.08	0.000%
18	-19.01	-32.93	11.37	19.01	32.93	-11.37	0.000%
19	-19.01	-24.69	11.37	19.01	24.69	-11.37	0.001%
20	-21.70	-32.93	0.09	21.70	32.93	-0.09	0.001%
21	-21.70	-24.69	0.09	21.70	24.69	-0.09	0.001%
22	-18.76	-32.93	-10.83	18.76	32.93	10.83	0.000%
23	-18.76	-24.69	-10.83	18.76	24.69	10.83	0.000%
24	-10.77	-32.93	-18.84	10.77	32.93	18.84	0.000%
25	-10.77	-24.69	-18.84	10.77	24.69	18.84	0.000%
26	0.00	-65.36	0.00	-0.00	65.36	-0.00	0.001%
27	0.06	-65.36	-6.78	-0.06	65.36	6.78	0.000%
28	3.42	-65.36	-5.89	-3.42	65.36	5.89	0.000%
29	6.58	-65.36	-3.85	-6.58	65.36	3.85	0.000%
30	6.78	-65.36	-0.06	-6.78	65.36	0.06	0.000%
31	5.85	-65.36	3.38	-5.85	65.36	-3.38	0.000%
32	3.34	-65.36	5.90	-3.34	65.36	-5.90	0.000%
33	-0.04	-65.36	6.81	0.04	65.36	-6.81	0.000%
34	-3.39	-65.36	5.91	3.39	65.36	-5.91	0.000%
35	-6.55	-65.36	3.86	6.55	65.36	-3.86	0.000%
36	-6.76	-65.36	0.02	6.76	65.36	-0.02	0.000%
37	-5.85	-65.36	-3.38	5.85	65.36	3.38	0.000%
38	-3.37	-65.36	-5.86	3.37	65.36	5.86	0.000%
39	0.07	-27.44	-4.67	-0.07	27.44	4.67	0.004%
40	2.37	-27.44	-4.07	-2.37	27.44	4.07	0.004%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
41	4.10	-27.44	-2.42	-4.10	27.44	2.42	0.004%
42	4.67	-27.44	-0.07	-4.67	27.44	0.07	0.004%
43	4.02	-27.44	2.32	-4.02	27.44	-2.32	0.004%
44	2.28	-27.44	4.08	-2.28	27.44	-4.08	0.004%
45	-0.05	-27.44	4.70	0.05	27.44	-4.70	0.004%
46	-2.34	-27.44	4.08	2.34	27.44	-4.08	0.004%
47	-4.07	-27.44	2.43	4.07	27.44	-2.43	0.004%
48	-4.64	-27.44	0.02	4.64	27.44	-0.02	0.004%
49	-4.01	-27.44	-2.32	4.01	27.44	2.32	0.004%
50	-2.31	-27.44	-4.03	2.30	27.44	4.03	0.004%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	9	0.00000001	0.00004535
3	Yes	9	0.00000001	0.00003993
4	Yes	10	0.00000001	0.00004380
5	Yes	9	0.00000001	0.00014594
6	Yes	10	0.00000001	0.00006074
7	Yes	10	0.00000001	0.00005053
8	Yes	9	0.00000001	0.00010217
9	Yes	9	0.00000001	0.00008755
10	Yes	10	0.00000001	0.00004468
11	Yes	10	0.00000001	0.00003714
12	Yes	10	0.00000001	0.00003859
13	Yes	9	0.00000001	0.00012834
14	Yes	9	0.00000001	0.00008192
15	Yes	9	0.00000001	0.00007052
16	Yes	10	0.00000001	0.00005418
17	Yes	10	0.00000001	0.00004509
18	Yes	10	0.00000001	0.00004409
19	Yes	9	0.00000001	0.00014709
20	Yes	9	0.00000001	0.00008340
21	Yes	9	0.00000001	0.00007177
22	Yes	10	0.00000001	0.00004642
23	Yes	10	0.00000001	0.00003849
24	Yes	10	0.00000001	0.00005665
25	Yes	10	0.00000001	0.00004725
26	Yes	6	0.00000001	0.00003472
27	Yes	10	0.00000001	0.00008242
28	Yes	10	0.00000001	0.00008416
29	Yes	10	0.00000001	0.00008872
30	Yes	10	0.00000001	0.00007935
31	Yes	10	0.00000001	0.00007897
32	Yes	10	0.00000001	0.00007859
33	Yes	10	0.00000001	0.00007729
34	Yes	10	0.00000001	0.00007972
35	Yes	10	0.00000001	0.00008582
36	Yes	10	0.00000001	0.00007981
37	Yes	10	0.00000001	0.00008291
38	Yes	10	0.00000001	0.00008376
39	Yes	7	0.00000001	0.00014430
40	Yes	7	0.00000001	0.00013872
41	Yes	7	0.00000001	0.00014236
42	Yes	7	0.00000001	0.00014539
43	Yes	7	0.00000001	0.00013477
44	Yes	7	0.00000001	0.00013700
45	Yes	7	0.00000001	0.00014417
46	Yes	7	0.00000001	0.00013871
47	Yes	7	0.00000001	0.00013740
48	Yes	7	0.00000001	0.00014427
49	Yes	7	0.00000001	0.00013628
50	Yes	7	0.00000001	0.00014036

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	96 - 85	2.727	41	0.2108	0.0011
L2	85 - 65	2.250	41	0.1956	0.0006
L3	65 - 32.5	1.452	41	0.1806	0.0004
L4	32.5 - 0	0.416	41	0.1117	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
92.00	800 10121 w/ Mount Pipe	41	2.552	0.2047	0.0010	86656
86.00	dragonwave A-ANT-11G-4-C	41	2.292	0.1967	0.0007	45867
83.00	840 10045 w/ Mount Pipe	41	2.166	0.1937	0.0006	42598
79.00	800MHz 2X50W RRH W/FILTER	41	2.001	0.1906	0.0005	47019
75.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	41	1.840	0.1880	0.0005	53910
57.00	GPS_A	41	1.155	0.1699	0.0004	37991

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	96 - 85	12.751	6	0.9840	0.0051
L2	85 - 65	10.519	6	0.9147	0.0029
L3	65 - 32.5	6.787	6	0.8442	0.0019
L4	32.5 - 0	1.947	6	0.5220	0.0008

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
92.00	800 10121 w/ Mount Pipe	6	11.930	0.9563	0.0046	19142
86.00	dragonwave A-ANT-11G-4-C	6	10.717	0.9198	0.0034	10127
83.00	840 10045 w/ Mount Pipe	6	10.125	0.9057	0.0029	9388
79.00	800MHz 2X50W RRH W/FILTER	6	9.354	0.8912	0.0025	10292
75.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	6	8.602	0.8792	0.0023	11708
57.00	GPS_A	6	5.397	0.7943	0.0019	8140

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	96 - 95	P12x.5	11.00	0.00	0.0	19.2423	-0.15	606.13	0.000
	95 - 94					19.2423	-0.30	606.13	0.000
	94 - 93					19.2423	-0.45	606.13	0.001
	93 - 92					19.2423	-0.35	606.13	0.001
	92 - 91					19.2423	-1.93	606.13	0.003
	91 - 90					19.2423	-2.02	606.13	0.003
	90 - 89					19.2423	-2.11	606.13	0.003
	89 - 88					19.2423	-2.20	606.13	0.004
	88 - 87					19.2423	-2.29	606.13	0.004
	87 - 86					19.2423	-2.38	606.13	0.004
	86 - 85					19.2423	-2.78	606.13	0.005
L2	85 - 84	P42x3/8	20.00	0.00	0.0	49.0383	-3.00	1668.87	0.002
	84 - 83					49.0383	-3.23	1668.87	0.002
	83 - 82					49.0383	-5.82	1668.87	0.003
	82 - 81					49.0383	-6.05	1668.87	0.004
	81 - 80					49.0383	-6.28	1668.87	0.004
	80 - 79					49.0383	-6.51	1668.87	0.004
	79 - 78					49.0383	-7.37	1668.87	0.004
	78 - 77					49.0383	-7.60	1668.87	0.005
	77 - 76					49.0383	-7.83	1668.87	0.005
	76 - 75					49.0383	-8.06	1668.87	0.005
	75 - 74					49.0383	-11.03	1668.87	0.007
	74 - 73					49.0383	-11.26	1668.87	0.007
	73 - 72					49.0383	-11.49	1668.87	0.007
	72 - 71					49.0383	-11.72	1668.87	0.007
	71 - 70					49.0383	-11.95	1668.87	0.007
	70 - 69					49.0383	-12.18	1668.87	0.007
	69 - 68					49.0383	-12.41	1668.87	0.007
	68 - 67					49.0383	-12.65	1668.87	0.008
	67 - 66					49.0383	-12.88	1668.87	0.008
	66 - 65					49.0383	-13.11	1668.87	0.008
L3	65 - 63.375	P48x3/8	32.50	0.00	0.0	56.1069	-13.54	1847.49	0.007
	63.375 - 61.75					56.1069	-13.97	1847.49	0.008
	61.75 - 60.125					56.1069	-14.40	1847.49	0.008

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	60.125 - 58.5					56.1069	-14.82	1847.49	0.008
	58.5 - 56.875					56.1069	-15.29	1847.49	0.008
	56.875 - 55.25					56.1069	-15.72	1847.49	0.009
	55.25 - 53.625					56.1069	-16.15	1847.49	0.009
	53.625 - 52					56.1069	-16.58	1847.49	0.009
	52 - 50.375					56.1069	-17.01	1847.49	0.009
	50.375 - 48.75					56.1069	-17.44	1847.49	0.009
	48.75 - 47.125					56.1069	-17.88	1847.49	0.010
	47.125 - 45.5					56.1069	-18.31	1847.49	0.010
	45.5 - 43.875					56.1069	-18.74	1847.49	0.010
	43.875 - 42.25					56.1069	-19.18	1847.49	0.010
	42.25 - 40.625					56.1069	-19.61	1847.49	0.011
	40.625 - 39					56.1069	-20.04	1847.49	0.011
	39 - 37.375					56.1069	-20.48	1847.49	0.011
	37.375 - 35.75					56.1069	-20.91	1847.49	0.011
	35.75 - 34.125					56.1069	-21.35	1847.49	0.012
	34.125 - 32.5					56.1069	-21.78	1847.49	0.012
L4	32.5 - 30.875	P48x1/2	32.50	0.00	0.0	74.6128	-22.34	2649.06	0.008
	30.875 - 29.25					74.6128	-22.89	2649.06	0.009
	29.25 - 27.625					74.6128	-23.44	2649.06	0.009
	27.625 - 26					74.6128	-24.00	2649.06	0.009
	26 - 24.375					74.6128	-24.55	2649.06	0.009
	24.375 - 22.75					74.6128	-25.11	2649.06	0.009
	22.75 - 21.125					74.6128	-25.66	2649.06	0.010
	21.125 - 19.5					74.6128	-26.22	2649.06	0.010
	19.5 - 17.875					74.6128	-26.77	2649.06	0.010
	17.875 - 16.25					74.6128	-27.33	2649.06	0.010
	16.25 - 14.625					74.6128	-27.89	2649.06	0.011
	14.625 - 13					74.6128	-28.45	2649.06	0.011
	13 - 11.375					74.6128	-29.00	2649.06	0.011
	11.375 - 9.75					74.6128	-29.56	2649.06	0.011
	9.75 - 8.125					74.6128	-30.12	2649.06	0.011
	8.125 - 6.5					74.6128	-30.68	2649.06	0.012
	6.5 - 4.875					74.6128	-31.24	2649.06	0.012
	4.875 - 3.25					74.612	-31.80	2649.06	0.012

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
	3.25 - 1.625					8 74.6128	-32.36	2649.06	0.012
	1.625 - 0					74.6128	-32.92	2649.06	0.012

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	96 - 95	P12x.5	0.02	197.07	0.000	0.00	197.07	0.000
	95 - 94		0.06	197.07	0.000	0.00	197.07	0.000
	94 - 93		0.11	197.07	0.001	0.00	197.07	0.000
	93 - 92		0.28	197.07	0.001	0.00	197.07	0.000
	92 - 91		3.76	197.07	0.019	0.00	197.07	0.000
	91 - 90		7.20	197.07	0.037	0.00	197.07	0.000
	90 - 89		10.67	197.07	0.054	0.00	197.07	0.000
	89 - 88		14.18	197.07	0.072	0.00	197.07	0.000
	88 - 87		17.71	197.07	0.090	0.00	197.07	0.000
	87 - 86		21.28	197.07	0.108	0.00	197.07	0.000
	86 - 85		26.54	197.07	0.135	0.00	197.07	0.000
L2	85 - 84	P42x3/8	31.67	1796.56	0.018	0.00	1796.56	0.000
	84 - 83		37.01	1796.56	0.021	0.00	1796.56	0.000
	83 - 82		46.34	1796.56	0.026	0.00	1796.56	0.000
	82 - 81		56.20	1796.56	0.031	0.00	1796.56	0.000
	81 - 80		66.17	1796.56	0.037	0.00	1796.56	0.000
	80 - 79		76.23	1796.56	0.042	0.00	1796.56	0.000
	79 - 78		86.86	1796.56	0.048	0.00	1796.56	0.000
	78 - 77		97.88	1796.56	0.054	0.00	1796.56	0.000
	77 - 76		109.00	1796.56	0.061	0.00	1796.56	0.000
	76 - 75		120.23	1796.56	0.067	0.00	1796.56	0.000
	75 - 74		135.18	1796.56	0.075	0.00	1796.56	0.000
	74 - 73		150.24	1796.56	0.084	0.00	1796.56	0.000
	73 - 72		165.41	1796.56	0.092	0.00	1796.56	0.000
	72 - 71		180.67	1796.56	0.101	0.00	1796.56	0.000
	71 - 70		196.04	1796.56	0.109	0.00	1796.56	0.000
	70 - 69		211.51	1796.56	0.118	0.00	1796.56	0.000
	69 - 68		227.09	1796.56	0.126	0.00	1796.56	0.000
	68 - 67		242.77	1796.56	0.135	0.00	1796.56	0.000
	67 - 66		258.55	1796.56	0.144	0.00	1796.56	0.000
	66 - 65		274.43	1796.56	0.153	0.00	1796.56	0.000
L3	65 - 63.375	P48x3/8	300.48	2321.11	0.129	0.00	2321.11	0.000
	63.375 - 61.75		326.83	2321.11	0.141	0.00	2321.11	0.000
	61.75 - 60.125		353.48	2321.11	0.152	0.00	2321.11	0.000
	60.125 - 58.5		380.42	2321.11	0.164	0.00	2321.11	0.000
	58.5 - 56.875		407.83	2321.11	0.176	0.00	2321.11	0.000
	56.875 - 55.25		435.56	2321.11	0.188	0.00	2321.11	0.000
	55.25 - 53.625		463.60	2321.11	0.200	0.00	2321.11	0.000
	53.625 - 52		491.93	2321.11	0.212	0.00	2321.11	0.000
	52 - 50.375		520.55	2321.11	0.224	0.00	2321.11	0.000
	50.375 - 48.75		549.47	2321.11	0.237	0.00	2321.11	0.000
	48.75 - 47.125		578.67	2321.11	0.249	0.00	2321.11	0.000
	47.125 - 45.5		608.16	2321.11	0.262	0.00	2321.11	0.000
	45.5 - 43.875		637.93	2321.11	0.275	0.00	2321.11	0.000
	43.875 - 42.25		667.99	2321.11	0.288	0.00	2321.11	0.000
	42.25 - 40.625		698.33	2321.11	0.301	0.00	2321.11	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	40.625 - 39		728.94	2321.11	0.314	0.00	2321.11	0.000
	39 - 37.375		759.82	2321.11	0.327	0.00	2321.11	0.000
	37.375 - 35.75		790.98	2321.11	0.341	0.00	2321.11	0.000
	35.75 - 34.125		822.41	2321.11	0.354	0.00	2321.11	0.000
	34.125 - 32.5		854.10	2321.11	0.368	0.00	2321.11	0.000
L4	32.5 - 30.875	P48x1/2	886.05	3173.47	0.279	0.00	3173.47	0.000
	30.875 - 29.25		918.25	3173.47	0.289	0.00	3173.47	0.000
	29.25 - 27.625		950.69	3173.47	0.300	0.00	3173.47	0.000
	27.625 - 26		983.38	3173.47	0.310	0.00	3173.47	0.000
	26 - 24.375		1016.30	3173.47	0.320	0.00	3173.47	0.000
	24.375 - 22.75		1049.45	3173.47	0.331	0.00	3173.47	0.000
	22.75 - 21.125		1082.84	3173.47	0.341	0.00	3173.47	0.000
	21.125 - 19.5		1116.47	3173.47	0.352	0.00	3173.47	0.000
	19.5 - 17.875		1150.31	3173.47	0.362	0.00	3173.47	0.000
	17.875 - 16.25		1184.38	3173.47	0.373	0.00	3173.47	0.000
	16.25 - 14.625		1218.68	3173.47	0.384	0.00	3173.47	0.000
	14.625 - 13		1253.18	3173.47	0.395	0.00	3173.47	0.000
	13 - 11.375		1287.90	3173.47	0.406	0.00	3173.47	0.000
	11.375 - 9.75		1322.83	3173.47	0.417	0.00	3173.47	0.000
	9.75 - 8.125		1357.97	3173.47	0.428	0.00	3173.47	0.000
	8.125 - 6.5		1393.32	3173.47	0.439	0.00	3173.47	0.000
	6.5 - 4.875		1428.86	3173.47	0.450	0.00	3173.47	0.000
	4.875 - 3.25		1464.60	3173.47	0.462	0.00	3173.47	0.000
	3.25 - 1.625		1500.54	3173.47	0.473	0.00	3173.47	0.000
	1.625 - 0		1536.67	3173.47	0.484	0.00	3173.47	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	96 - 95	P12x.5	0.02	303.07	0.000	0.00	297.74	0.000
	95 - 94		0.03	303.07	0.000	0.00	297.74	0.000
	94 - 93		0.05	303.07	0.000	0.00	297.74	0.000
	93 - 92		0.13	303.07	0.000	0.00	297.74	0.000
	92 - 91		3.42	303.07	0.011	0.00	297.74	0.000
	91 - 90		3.45	303.07	0.011	0.00	297.74	0.000
	90 - 89		3.48	303.07	0.011	0.00	297.74	0.000
	89 - 88		3.52	303.07	0.012	0.00	297.74	0.000
	88 - 87		3.55	303.07	0.012	0.00	297.74	0.000
	87 - 86		3.58	303.07	0.012	0.00	297.74	0.000
	86 - 85		4.87	303.07	0.016	1.32	297.74	0.004
L2	85 - 84	P42x3/8	5.27	834.44	0.006	0.92	2868.84	0.000
	84 - 83		5.38	834.44	0.006	0.92	2868.84	0.000
	83 - 82		9.79	834.44	0.012	0.92	2868.84	0.000
	82 - 81		9.89	834.44	0.012	0.92	2868.84	0.000
	81 - 80		10.00	834.44	0.012	0.92	2868.84	0.000
	80 - 79		10.10	834.44	0.012	0.92	2868.84	0.000
	79 - 78		10.95	834.44	0.013	0.92	2868.84	0.000
	78 - 77		11.05	834.44	0.013	0.92	2868.84	0.000
	77 - 76		11.16	834.44	0.013	0.92	2868.84	0.000
	76 - 75		11.26	834.44	0.013	0.92	2868.84	0.000
	75 - 74		14.99	834.44	0.018	0.92	2868.84	0.000
	74 - 73		15.09	834.44	0.018	0.92	2868.84	0.000
	73 - 72		15.19	834.44	0.018	0.92	2868.84	0.000
	72 - 71		15.30	834.44	0.018	0.92	2868.84	0.000
	71 - 70		15.40	834.44	0.018	0.92	2868.84	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	70 - 69		15.50	834.44	0.019	0.92	2868.84	0.000
	69 - 68		15.61	834.44	0.019	0.92	2868.84	0.000
	68 - 67		15.71	834.44	0.019	0.92	2868.84	0.000
	67 - 66		15.81	834.44	0.019	0.92	2868.84	0.000
	66 - 65		15.91	834.44	0.019	0.92	2868.84	0.000
L3	65 - 63.375	P48x3/8	16.10	923.75	0.017	0.92	3637.70	0.000
	63.375 - 61.75		16.28	923.75	0.018	0.92	3637.70	0.000
	61.75 - 60.125		16.46	923.75	0.018	0.92	3637.70	0.000
	60.125 - 58.5		16.73	923.75	0.018	1.45	3637.70	0.000
	58.5 - 56.875		16.97	923.75	0.018	1.45	3637.70	0.000
	56.875 - 55.25		17.15	923.75	0.019	1.33	3637.70	0.000
	55.25 - 53.625		17.33	923.75	0.019	1.33	3637.70	0.000
	53.625 - 52		17.51	923.75	0.019	1.33	3637.70	0.000
	52 - 50.375		17.69	923.75	0.019	1.33	3637.70	0.000
	50.375 - 48.75		17.87	923.75	0.019	1.33	3637.70	0.000
	48.75 - 47.125		18.05	923.75	0.020	1.33	3637.70	0.000
	47.125 - 45.5		18.23	923.75	0.020	1.33	3637.70	0.000
	45.5 - 43.875		18.40	923.75	0.020	1.33	3637.70	0.000
	43.875 - 42.25		18.57	923.75	0.020	1.33	3637.70	0.000
	42.25 - 40.625		18.74	923.75	0.020	1.33	3637.70	0.000
	40.625 - 39		18.91	923.75	0.020	1.33	3637.70	0.000
	39 - 37.375		19.08	923.75	0.021	1.33	3637.70	0.000
	37.375 - 35.75		19.25	923.75	0.021	1.33	3637.70	0.000
	35.75 - 34.125		19.41	923.75	0.021	1.33	3637.70	0.000
	34.125 - 32.5		19.58	923.75	0.021	1.33	3637.70	0.000
L4	32.5 - 30.875	P48x1/2	19.73	1324.53	0.015	1.33	5188.89	0.000
	30.875 - 29.25		19.88	1324.53	0.015	1.33	5188.89	0.000
	29.25 - 27.625		20.03	1324.53	0.015	1.33	5188.89	0.000
	27.625 - 26		20.18	1324.53	0.015	1.33	5188.89	0.000
	26 - 24.375		20.33	1324.53	0.015	1.33	5188.89	0.000
	24.375 - 22.75		20.47	1324.53	0.015	1.33	5188.89	0.000
	22.75 - 21.125		20.61	1324.53	0.016	1.33	5188.89	0.000
	21.125 - 19.5		20.75	1324.53	0.016	1.33	5188.89	0.000
	19.5 - 17.875		20.89	1324.53	0.016	1.33	5188.89	0.000
	17.875 - 16.25		21.03	1324.53	0.016	1.33	5188.89	0.000
	16.25 - 14.625		21.16	1324.53	0.016	1.33	5188.89	0.000
	14.625 - 13		21.30	1324.53	0.016	1.33	5188.89	0.000
	13 - 11.375		21.43	1324.53	0.016	1.33	5188.89	0.000
	11.375 - 9.75		21.56	1324.53	0.016	1.33	5188.89	0.000
	9.75 - 8.125		21.68	1324.53	0.016	1.33	5188.89	0.000
	8.125 - 6.5		21.81	1324.53	0.016	1.33	5188.89	0.000
	6.5 - 4.875		21.93	1324.53	0.017	1.33	5188.89	0.000
	4.875 - 3.25		22.05	1324.53	0.017	1.33	5188.89	0.000
	3.25 - 1.625		22.17	1324.53	0.017	1.33	5188.89	0.000
	1.625 - 0		22.29	1324.53	0.017	1.33	5188.89	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	96 - 95	0.000	0.000	0.000	0.000	0.000	0.000 ✔	1.000	4.8.2 ✔
	95 - 94	0.000	0.000	0.000	0.000	0.000	0.001 ✔	1.000	4.8.2 ✔
	94 - 93	0.001	0.001	0.000	0.000	0.000	0.001 ✔	1.000	4.8.2 ✔
	93 - 92	0.001	0.001	0.000	0.000	0.000	0.002 ✔	1.000	4.8.2 ✔
	92 - 91	0.003	0.019	0.000	0.011	0.000	0.022 ✔	1.000	4.8.2 ✔
	91 - 90	0.003	0.037	0.000	0.011	0.000	0.040 ✔	1.000	4.8.2 ✔
	90 - 89	0.003	0.054	0.000	0.011	0.000	0.058 ✔	1.000	4.8.2 ✔
	89 - 88	0.004	0.072	0.000	0.012	0.000	0.076 ✔	1.000	4.8.2 ✔
	88 - 87	0.004	0.090	0.000	0.012	0.000	0.094 ✔	1.000	4.8.2 ✔
	87 - 86	0.004	0.108	0.000	0.012	0.000	0.112 ✔	1.000	4.8.2 ✔
	86 - 85	0.005	0.135	0.000	0.016	0.004	0.140 ✔	1.000	4.8.2 ✔
L2	85 - 84	0.002	0.018	0.000	0.006	0.000	0.019 ✔	1.000	4.8.2 ✔
	84 - 83	0.002	0.021	0.000	0.006	0.000	0.023 ✔	1.000	4.8.2 ✔
	83 - 82	0.003	0.026	0.000	0.012	0.000	0.029 ✔	1.000	4.8.2 ✔
	82 - 81	0.004	0.031	0.000	0.012	0.000	0.035 ✔	1.000	4.8.2 ✔
	81 - 80	0.004	0.037	0.000	0.012	0.000	0.041 ✔	1.000	4.8.2 ✔
	80 - 79	0.004	0.042	0.000	0.012	0.000	0.046 ✔	1.000	4.8.2 ✔
	79 - 78	0.004	0.048	0.000	0.013	0.000	0.053 ✔	1.000	4.8.2 ✔
	78 - 77	0.005	0.054	0.000	0.013	0.000	0.059 ✔	1.000	4.8.2 ✔
	77 - 76	0.005	0.061	0.000	0.013	0.000	0.066 ✔	1.000	4.8.2 ✔
	76 - 75	0.005	0.067	0.000	0.013	0.000	0.072 ✔	1.000	4.8.2 ✔
	75 - 74	0.007	0.075	0.000	0.018	0.000	0.082 ✔	1.000	4.8.2 ✔
	74 - 73	0.007	0.084	0.000	0.018	0.000	0.091 ✔	1.000	4.8.2 ✔
	73 - 72	0.007	0.092	0.000	0.018	0.000	0.099 ✔	1.000	4.8.2 ✔
	72 - 71	0.007	0.101	0.000	0.018	0.000	0.108 ✔	1.000	4.8.2 ✔
	71 - 70	0.007	0.109	0.000	0.018	0.000	0.117 ✔	1.000	4.8.2 ✔
	70 - 69	0.007	0.118	0.000	0.019	0.000	0.125 ✔	1.000	4.8.2 ✔
	69 - 68	0.007	0.126	0.000	0.019	0.000	0.134 ✔	1.000	4.8.2 ✔
	68 - 67	0.008	0.135	0.000	0.019	0.000	0.143 ✔	1.000	4.8.2 ✔
	67 - 66	0.008	0.144	0.000	0.019	0.000	0.152 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	66 - 65	0.008	0.153	0.000	0.019	0.000	0.161 ✔	1.000	4.8.2 ✔
L3	65 - 63.375	0.007	0.129	0.000	0.017	0.000	0.137 ✔	1.000	4.8.2 ✔
	63.375 - 61.75	0.008	0.141	0.000	0.018	0.000	0.149 ✔	1.000	4.8.2 ✔
	61.75 - 60.125	0.008	0.152	0.000	0.018	0.000	0.160 ✔	1.000	4.8.2 ✔
	60.125 - 58.5	0.008	0.164	0.000	0.018	0.000	0.172 ✔	1.000	4.8.2 ✔
	58.5 - 56.875	0.008	0.176	0.000	0.018	0.000	0.184 ✔	1.000	4.8.2 ✔
	56.875 - 55.25	0.009	0.188	0.000	0.019	0.000	0.197 ✔	1.000	4.8.2 ✔
	55.25 - 53.625	0.009	0.200	0.000	0.019	0.000	0.209 ✔	1.000	4.8.2 ✔
	53.625 - 52	0.009	0.212	0.000	0.019	0.000	0.221 ✔	1.000	4.8.2 ✔
	52 - 50.375	0.009	0.224	0.000	0.019	0.000	0.234 ✔	1.000	4.8.2 ✔
	50.375 - 48.75	0.009	0.237	0.000	0.019	0.000	0.247 ✔	1.000	4.8.2 ✔
	48.75 - 47.125	0.010	0.249	0.000	0.020	0.000	0.259 ✔	1.000	4.8.2 ✔
	47.125 - 45.5	0.010	0.262	0.000	0.020	0.000	0.272 ✔	1.000	4.8.2 ✔
	45.5 - 43.875	0.010	0.275	0.000	0.020	0.000	0.285 ✔	1.000	4.8.2 ✔
	43.875 - 42.25	0.010	0.288	0.000	0.020	0.000	0.299 ✔	1.000	4.8.2 ✔
	42.25 - 40.625	0.011	0.301	0.000	0.020	0.000	0.312 ✔	1.000	4.8.2 ✔
	40.625 - 39	0.011	0.314	0.000	0.020	0.000	0.325 ✔	1.000	4.8.2 ✔
	39 - 37.375	0.011	0.327	0.000	0.021	0.000	0.339 ✔	1.000	4.8.2 ✔
	37.375 - 35.75	0.011	0.341	0.000	0.021	0.000	0.353 ✔	1.000	4.8.2 ✔
	35.75 - 34.125	0.012	0.354	0.000	0.021	0.000	0.366 ✔	1.000	4.8.2 ✔
	34.125 - 32.5	0.012	0.368	0.000	0.021	0.000	0.380 ✔	1.000	4.8.2 ✔
L4	32.5 - 30.875	0.008	0.279	0.000	0.015	0.000	0.288 ✔	1.000	4.8.2 ✔
	30.875 - 29.25	0.009	0.289	0.000	0.015	0.000	0.298 ✔	1.000	4.8.2 ✔
	29.25 - 27.625	0.009	0.300	0.000	0.015	0.000	0.309 ✔	1.000	4.8.2 ✔
	27.625 - 26	0.009	0.310	0.000	0.015	0.000	0.319 ✔	1.000	4.8.2 ✔
	26 - 24.375	0.009	0.320	0.000	0.015	0.000	0.330 ✔	1.000	4.8.2 ✔
	24.375 - 22.75	0.009	0.331	0.000	0.015	0.000	0.340 ✔	1.000	4.8.2 ✔
	22.75 - 21.125	0.010	0.341	0.000	0.016	0.000	0.351 ✔	1.000	4.8.2 ✔
	21.125 - 19.5	0.010	0.352	0.000	0.016	0.000	0.362 ✔	1.000	4.8.2 ✔
	19.5 - 17.875	0.010	0.362	0.000	0.016	0.000	0.373 ✔	1.000	4.8.2 ✔

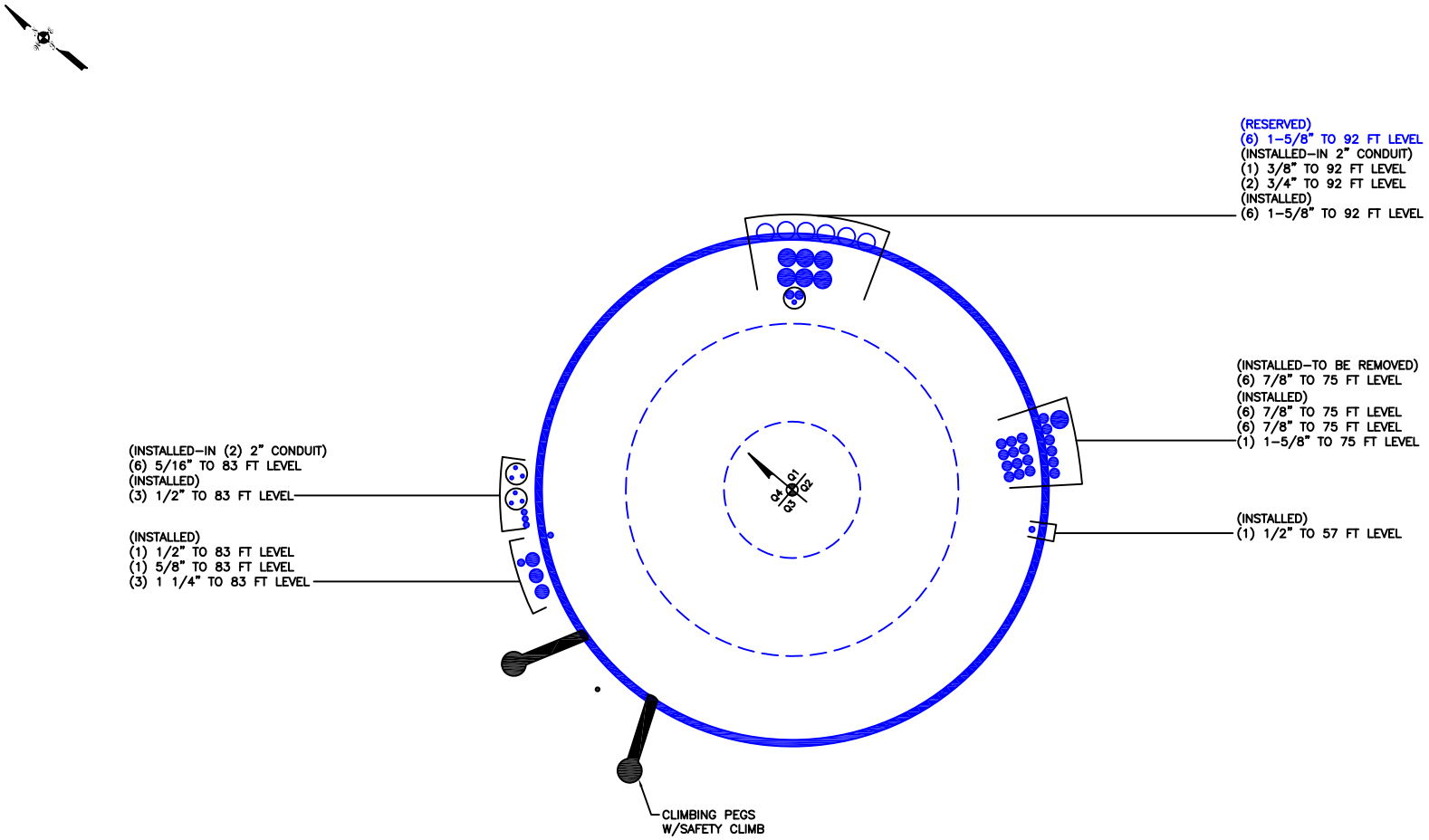
Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	17.875 - 16.25	0.010	0.373	0.000	0.016	0.000	0.384 ✔	1.000	4.8.2 ✔
	16.25 - 14.625	0.011	0.384	0.000	0.016	0.000	0.395 ✔	1.000	4.8.2 ✔
	14.625 - 13	0.011	0.395	0.000	0.016	0.000	0.406 ✔	1.000	4.8.2 ✔
	13 - 11.375	0.011	0.406	0.000	0.016	0.000	0.417 ✔	1.000	4.8.2 ✔
	11.375 - 9.75	0.011	0.417	0.000	0.016	0.000	0.428 ✔	1.000	4.8.2 ✔
	9.75 - 8.125	0.011	0.428	0.000	0.016	0.000	0.440 ✔	1.000	4.8.2 ✔
	8.125 - 6.5	0.012	0.439	0.000	0.016	0.000	0.451 ✔	1.000	4.8.2 ✔
	6.5 - 4.875	0.012	0.450	0.000	0.017	0.000	0.462 ✔	1.000	4.8.2 ✔
	4.875 - 3.25	0.012	0.462	0.000	0.017	0.000	0.474 ✔	1.000	4.8.2 ✔
	3.25 - 1.625	0.012	0.473	0.000	0.017	0.000	0.485 ✔	1.000	4.8.2 ✔
	1.625 - 0	0.012	0.484	0.000	0.017	0.000	0.497 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	96 - 85	Pole	P12x.5	1	-2.78	606.13	14.0	Pass
L2	85 - 65	Pole	P42x3/8	2	-13.11	1668.87	16.1	Pass
L3	65 - 32.5	Pole	P48x3/8	3	-21.78	1847.49	38.0	Pass
L4	32.5 - 0	Pole	P48x1/2	4	-32.92	2649.06	49.7	Pass
							Summary	
						Pole (L4)	49.7	Pass
						RATING =	**49.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876326 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876326*
Site Name: *HAYDEN STATION*
App #: *364740 rev.1*

Pole Manufacturer:	*Rohn*

Reactions		
Mu:	1537	ft-kips
Axial, Pu:	33	kips
Shear, Vu:	22	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Data		
Qty:	20	
Diam:	1.5	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi
Bolt Circle:	53.5	in

Anchor Rod Results

Max Rod (Cu+ Vu/ń):	72.8	Kips
Allowable Axial, Φ*Fu*Anet:	141.0	Kips
Anchor Rod Stress Ratio:	51.6%	**Pass**

Rigid
AISC LRFD
φ*Tn

Plate Data		
Diam:	59	in
Thick:	2	in
Grade:	36	ksi
Single-Rod B-eff:	7.54	in

Base Plate Results

Flexural Check		
Base Plate Stress:	Rohn/Pirod,	OK
Allowable Plate Stress:	32.4	ksi
Base Plate Stress Ratio:	Rohn/Pirod,	OK

Rigid
AISC LRFD
φ*Fy
Y.L. Length: 23.63

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

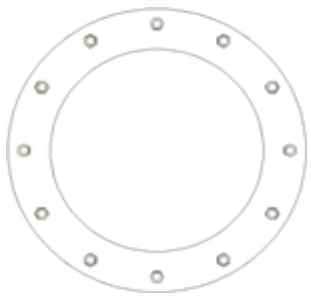
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A

Pole Data		
Diam:	48	in
Thick:	0.5	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *876326*
Site Name: *HAYDEN STATION*
App #: *364740 rev.1*

Reactions		
Mu	854.10	ft-kips
Axial, Pu:	21.78	kips
Shear, Vu:	19.58	kips
Elevation:	32.5	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
76.54

Pole Manufacturer:	Rohn

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	20		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	53.5		

Plate Data		
Diam:	59	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	7.54	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	48	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,**B1**:	111.04	kips	Rigid	
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	111.03	kips	φ*Tn	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	37.23	Kips		
Min. PL "tc" for **B** cap. **w/o** Pry:	1.502	in		
Min PL "treq" for actual **T w/ Pry**:	0.649	in		
Min PL "t1" for actual **T w/o Pry**:	0.869	in		
T allowable w/o Prying:	111.04	kips	α'<0 case	
Prying Force, q:	0.00	kips		
Total Bolt Tension=Tu+q:	37.23	kips		
Non-Prying Bolt Stress Ratio, Tu/B:	33.5%	**Pass**		

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	Rohn/Piroc	OK	Rigid
Allowable Plate Stress:	32.4	ksi	TIA G
Compression Plate Stress Ratio:	Rohn/Piroc	OK	φ*Fy
No Prying			Comp. Y.L. Length:
Tension Side Stress Ratio, (treq/t)^2:	Rohn/Pirod	OK	23.63

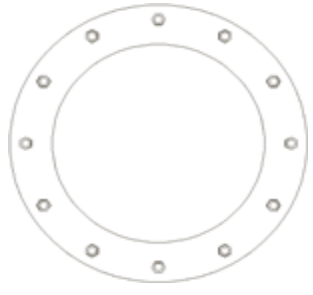
n/a

Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *876326*
Site Name: *HAYDEN STATION*
App #: *364740 rev.1*

Reactions		
Mu	274.43	ft-kips
Axial, Pu:	13.11	kips
Shear, Vu:	15.91	kips
Elevation:	65	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
76.54

Pole Manufacturer:	Rohn

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	20		
Diameter (in.):	1.5	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	53.5		

Plate Data		
Diam:	59	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	6.60	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,**B1**:	111.04	kips	Rigid: φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	111.03	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	11.66	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	2.538	in	
Min PL "treq" for actual **T w/ Pry**:	0.619	in	
Min PL "t1" for actual **T w/o Pry**:	0.822	in	
T allowable with Prying:	86.27	kips	0≤α'≤1 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	11.66	kips	
Prying Bolt Stress Ratio=(Tu+q)/(B):	10.5%	**Pass**	

Exterior Flange Plate Results — Flexural Check

Compression Side Plate Stress:	Rohn/Piroc	OK	Rigid: TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Piroc	OK	Comp. Y.L. Length: 33.14

No Prying

Tension Side Stress Ratio, (treq/t)^2: Rohn/Pirod OK

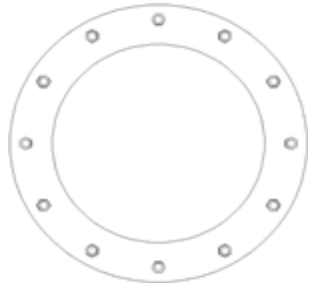
n/a

Stiffener Results — N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *876326*
Site Name: *HAYDEN STATION*
App #: *364740 rev.1*

Reactions		
Mu	26.54	ft-kips
Axial, Pu:	2.78	kips
Shear, Vu:	4.87	kips
Elevation:	85	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Rohn

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	53.5		

Plate Data		
Diam:	59	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	2.00	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	12.75	in
Thick:	0.5	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

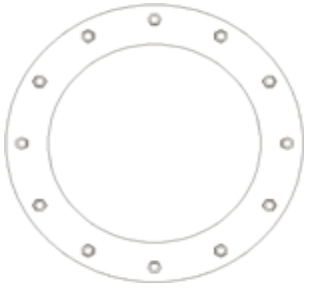
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	Non-Rigid: φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.54	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	1.05	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	6.437	in	
Min PL "treq" for actual **T w/ Pry**:	0.737	in	
Min PL "t1" for actual **T w/o Pry**:	0.894	in	
T allowable with Prying:	7.74	kips	α'>1 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	1.05	kips	
Prying Bolt Stress Ratio=(Tu+q)/(B):	1.9%	**Pass**	

Exterior Flange Plate Results — Flexural Check

Compression Side Plate Stress:	Rohn/Piroc	OK	Non-Rigid: TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Piroc	OK	Comp. Y.L. Length: 51.96
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	Rohn/Pirod	OK	

n/a

Stiffener Results	N/A for Rohn / Pirod
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A
Pole Results	
Pole Punching Shear Check:	N/A



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

CCI Foundation Tool Suite - Monopole Pier

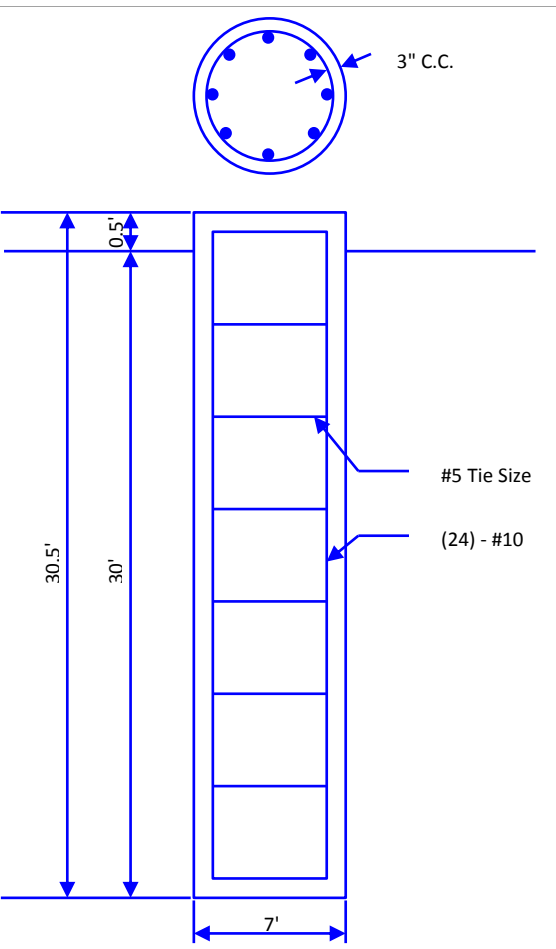
CCIFTS 1.2.108.14286 - Phase 1-2 Date: 10/13/2016

BU:	876326
Site Name:	HAYDEN STATION
App Number:	364740 Rev.1
Work Order:	1310912

Monopole Drilled Pier

Input

Criteria		
TIA Revision:	G	
ACI 318 Revision:	2008	
Seismic Category:	B	
Forces		
Compression	33	kips
Shear	22	kips
Moment	1537	k-ft
Swelling Force	0	kips
Foundation Dimensions		
Pier Diameter:	7	ft
Ext. above grade:	0.5	ft
Depth below grade:	30	ft
Material Properties		
Number of Rebar:	24	
Rebar Size:	10	
Tie Size	5	
Rebar tensile strength:	60	ksi
Concrete Strength:	3000	psi
Ultimate Concrete Strain	0.003	in/in
Clear Cover to Ties:	3	in



Soil Profile:	1

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.5	0	3.5	120					0	
2	22.5	3.5	26	120		32			0	
3	4	26	30	60		32			6	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	8.15	ft
Max Moment, Mu:	1683.00	k-ft
Soil Safety Factor:	10.10	
Safety Factor Req'd:	1.33	
RATING:	13.2%	

Soil Axial Capacity

Skin Friction (k):	326.41	kips
End Bearing (k):	173.18	kips
Comp. Capacity (k), ϕCn:	499.59	kips
Comp. (k), Cu:	33.00	kips
RATING:	6.6%	

Concrete/Steel Check

Mu (from soil analysis)	1683.00	k-ft
ϕMn	4868.09	k-ft
RATING:	34.6%	
rho provided	0.55	
rho required	0.33	OK
Rebar Spacing	8.61	
Spacing required	20.32	OK
Dev. Length required	21.60	
Dev. Length provided	55.65	OK

Overall Foundation Rating: 34.6%

USGS Design Maps Summary Report

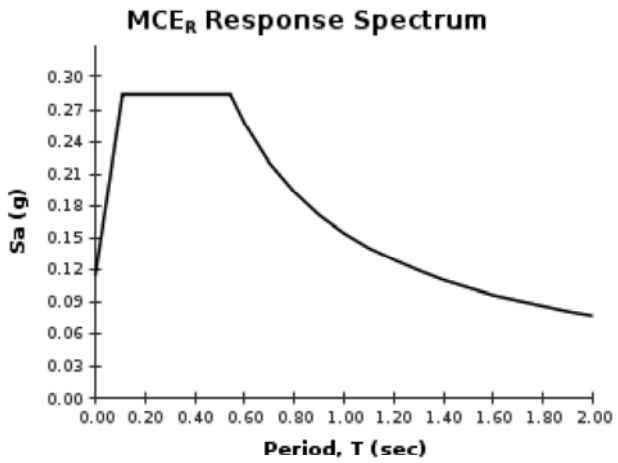
User–Specified Input

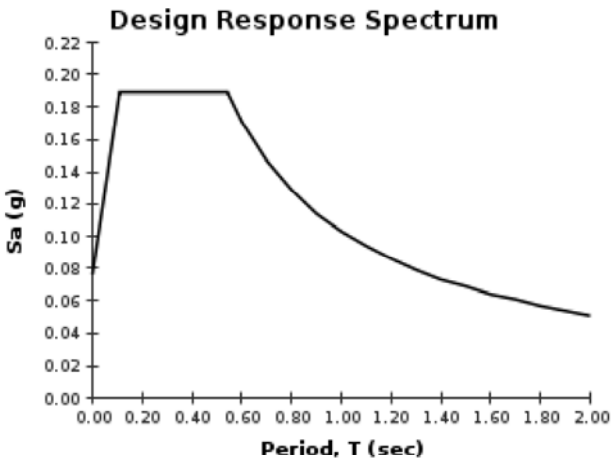
Building Code Reference Document	2012/2015 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	41.8978°N, 72.6441°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS–Provided Output

S_S =	0.178 g	S_{MS} =	0.284 g	S_{DS} =	0.189 g
S_1 =	0.064 g	S_{M1} =	0.154 g	S_{D1} =	0.103 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





CCISeismic - Design Category

Per *2012/2015 IBC*

Site BU: 876326
Work Order: 1310912
Application: 364740 Rev. 1

	Degrees	Minutes	Seconds		
Site Latitude =	41	53	52.20	41.8978	degrees
Site Longitude =	-72	38	38.70	-72.6441	degrees
Ground Supported Structure =	Yes				
Structure Class =	II				*(Table 2-1)*
Site Class =	D - Stiff Soil				*(Table 2-11)*

Spectral response acceleration short periods, S_S =	0.178	USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.064	

Importance Factor, I =	1.0	*(Table 2-3)*
Acceleration-based site coefficient, F_a =	1.6	*(Table 2-12)*
Velocity-based site coefficient, F_v =	2.4	*(Table 2-13)*

Design spectral response acceleration short period, S_{DS} =	0.190	*(2.7.6)*
Design spectral response acceleration 1 s period, S_{D1} =	0.102	*(2.7.6)*

Seismic Design Category - Short Period Response =	B	*ASCE 7-05 Table 11.6-1*
Seismic Design Category - 1s Period Response =	B	*ASCE 7-05 Table 11.6-2*

Worst Case Seismic Design Category =	B	*ASCE 7-05 Tables 11.6-1 and 6-2*

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: CT11280A

Hayden Station
440 Hayden Station Road
Windsor, CT 06095

October 25, 2016

EBI Project Number: 6216004851

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	22.49 %

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

EBI Consulting
environmental | engineering | due diligence

October 25, 2016

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

Emissions Analysis for Site: **CT11280A – Hayden Station**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **440 Hayden Station Road, Windsor, 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 1900 MHz (PCS) and 2100 MHz (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 **440 Hayden Station Road, Windsor, 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 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 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.

4) 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.

5) 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

6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

7) 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.

8) For the following calculations, the sample point was the top of a 6-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.

9) The antennas used in this modeling are the **Ericsson AIR32 B4A/B2P** & **Ericsson AIR21 B4A/B2P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **75 feet** above ground level (AGL).

11) 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.

12) 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 B4A/B2P	Make / Model:	Ericsson AIR32 B4A/B2P	Make / Model:	Ericsson AIR32 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	75	Height (AGL):	75	Height (AGL):	75
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%	7.05	Antenna B1 MPE%	7.05	Antenna C1 MPE%	7.05
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	75	Height (AGL):	75	Height (AGL):	75
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	5.29	Antenna B2 MPE%	5.29	Antenna C2 MPE%	5.29
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	75	Height (AGL):	75	Height (AGL):	75
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	1.40	Antenna B3 MPE%	1.40	Antenna C3 MPE%	1.40

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**13.74 %**
AT&T	6.71 %
Clearwire	0.31 %
Sprint	1.73 %
Site Total MPE %:	**22.49 %**

T-Mobile Sector A Total:	13.74 %
T-Mobile Sector B Total:	13.74 %
T-Mobile Sector C Total:	13.74 %
Site Total:	22.49 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	75	35.25	AWS - 2100 MHz	1000	3.53%
T-Mobile PCS - 1900 MHz LTE	2	2,334.27	75	35.25	PCS - 1900 MHz	1000	3.53%
T-Mobile AWS - 2100 MHz UMTS	2	1,167.14	75	17.63	AWS - 2100 MHz	1000	1.76%
T-Mobile PCS - 1950 MHz UMTS	2	1,167.14	75	17.63	PCS - 1950 MHz	1000	1.76%
T-Mobile PCS - 1950 MHz GSM	2	1,167.14	75	17.63	PCS - 1950 MHz	1000	1.76%
T-Mobile 700 MHz LTE	1	865.21	75	6.53	700 MHz	467	1.40%
						Total:	**13.74%**

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 A:	13.74 %
Sector B:	13.74 %
Sector C:	13.74 %
T-Mobile Per Sector Maximum:	13.74 %
Site Total:	22.49 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **22.49%** 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.