Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

May 17, 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: 876317**
T-Mobile Site ID: CT11269B
150 Mattatuck Heights, Waterbury, CT 06705
Latitude: 41° 32' 16.3" / Longitude: -72° 59' 6.1"

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 100 foot level of the existing 133 foot monopole at 150 Mattatuck Heights, Waterbury, CT. The tower is owned by Crown Castle. The property is owned by Waterbury Twin LLC & 150 MH LLC. T-Mobile now intends to remove and replace their existing antenna mount with a new antenna mount. Remove and replace 3 existing antennas with 9 new antennas. Install 3 new RRUs. Install 1 new hybrid cable along monopole exterior. Remove 3 existing TMAs. Remove existing MetroPCS antennas at 90'.

Please be advised I have included an email from Margaret Rice from the City of Waterbury indicating they no longer have the original zoning approval on file as well as an email from myself indicating the same. Please use both emails to replace the zoning approval requirement.

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 The Honorable Carmen L. Vance, First Selectman, Town of Columbia.

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

2. The proposed modifications 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.

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

Sincerely,

Kimberly Myl
Real Estate Specialist
Crown Castle
1200 MacArthur Boulevard, Suite 200
Mahwah, New Jersey 07430
201-236-9069
kimberly.myl@crowncastle.com

Attachments:

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

cc: The Honorable Neil M. O'Leary, Mayor
City Hall Building
235 Grand Street, 2nd floor
Waterbury, CT 06702

Waterbury Twin LLC & 150 MH LLC
12 Iselin Terrace
Larchmont, New York 10538

Myl, Kimberly

From: Myl, Kimberly
Sent: Tuesday, May 17, 2016 3:38 PM
To: 'siting.council@ct.gov'
Subject: 150 Mattatuck Heights - Existing Telecommunications Tower Original Zoning Approval

To Whom It May Concern:

Please be advised both the township (email below) and Crown Castle as the tower owner, do not have the original zoning resolution on file. Please use this email as notification to waive this requirement as we will include this and the email from the township within our submission.

Please let me know if you have any questions or need additional information. Thank you in advance.

KIMBERLY MYL
Real Estate Specialist
T: (201) 236-9069 | M: (201) 993-3697

CROWN CASTLE
1200 MacArthur Blvd, Suite 200
Mahwah, NJ 07430

From: Margaret Rice [mailto:mrice@waterburyct.org]
Sent: Tuesday, May 17, 2016 1:03 PM
To: Myl, Kimberly
Subject: RE: 150 Mattatuck Heights - Existing Telecommunications Tower Original Zoning Approval

Hi Kimberly,

I checked our records and City Clerk's office and could not find anything. I then contacted the Town Clerk and I was told that there might be something on the Land Records and that you would need to contact the Town Clerk for them to do a Title Search. They're phone number is (203) 574-6806.

Cissie
Administrative Support Specialist III
203)574-6817 Ext,7296

Receipt # 112028

Instr # 2012-01801

VOL 6896 PG 152
02/14/2012 03:33:30 PM
17 Pages
EASEMENT

Antoinette C Spinelli, Waterbury Town Clerk

Clerk:BG

Prepared out of State.
Return to:
Old Republic Title
Attn: Post Closing (1)
530 South Main Street
Suite 1031 J.Hill
Akron, OH 44311
01-1117610404-03E

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE

GRANT OF EASEMENT AND ASSIGNMENT OF LEASE

Facilities:	876317
Street Address:	150 Mattatuck Heights
City:	Waterbury
County:	New Haven
State:	Connecticut
Tax Parcel:	WATE-000424-000141-000001

between

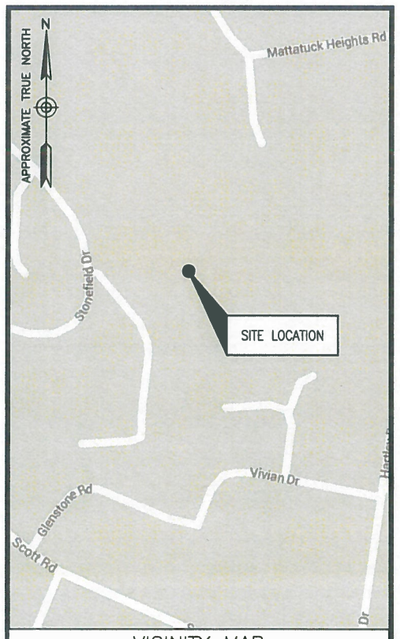
GLOBAL SIGNAL ACQUISITIONS IV LLC,
a Delaware limited liability company ("GSA IV" or "Grantee")

and

150 MH, LLC, a Connecticut limited liability company, and
WATERBURY TWIN LLC, a Connecticut limited liability company
(collectively, "Grantor")

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11269B
CROWN CASTLE BU #: 876317
SITE NAME: WATERBURY
150 MATTATUCK HEIGHTS ROAD
WATERBURY, CT 06705
NEW HAVEN 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 LANE TO MERGE ONTO I-91 S VIA THE RAMP TO HARTFORD. MERGE ONTO I-91 S. TAKE EXIT 32A-32B FOR I-84 W TOWARD WATERBURY. MERGE ONTO I-84. KEEP LEFT TO STAY ON I-84. TAKE EXIT 25A FOR AUSTIN RD. TURN LEFT ONTO AUSTIN RD. TURN RIGHT ONTO CAPTAIN NEVILLE DR. TURN LEFT ONTO MATTATUCK HEIGHTS RD. SITE WILL BE ON THE LEFT.

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

CONSULTANT TEAM

SITE NAME:
WATERBURY

SITE NUMBER:
CT11269B

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°-32'-16.3" N (NAD83)
LONGITUDE: 72°-59'-06.1" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
702Cu

PROJECT SUMMARY

SITE ADDRESS:
150 MATTATUCK HEIGHTS ROAD
WATERBURY, CT 06705
NEW HAVEN COUNTY

PROJECT DIRECTORY

- REMOVE AND REPLACE EXISTING ANTENNA MOUNT WITH A NEW ANTENNA MOUNT.
- REMOVE AND REPLACE (3) EXISTING ANTENNAS WITH (9) NEW ANTENNAS.
- INSTALL (3) NEW RRU'S.
- INSTALL (1) NEW HYBRID CABLE ALONG MONOPOLE EXTERIOR.
- REMOVE (3) EXISTING TMA'S.
- REMOVE EXISTING METRO-PCS ANTENNAS AT A CENTERLINE ELEVATION OF 90'-0"± A.G.L.

SCOPE OF WORK

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.

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

SHEET INDEX

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

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

CT11269B
WATERBURY

CONSTRUCTION DRAWINGS

D	05/10/16	ISSUED AS FINAL
A	04/06/16	ISSUED FOR REVIEW

Dewberry®
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. 0023222
LICENSED
PROFESSIONAL ENGINEER

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078111
SITE ADDRESS:	

150 MATTATUCK HEIGHTS ROAD, WATERBURY, CT 06705
NEW HAVEN 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.

T-Mobile

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

CROWN CASTLE

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

CT11269B
WATERBURY

CONSTRUCTION DRAWINGS		
0	05/10/16	ISSUED AS FINAL
A	04/06/16	ISSUED FOR REVIEW

Dewberry

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

STATE OF CONNECTICUT
LIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078111
SITE ADDRESS:	

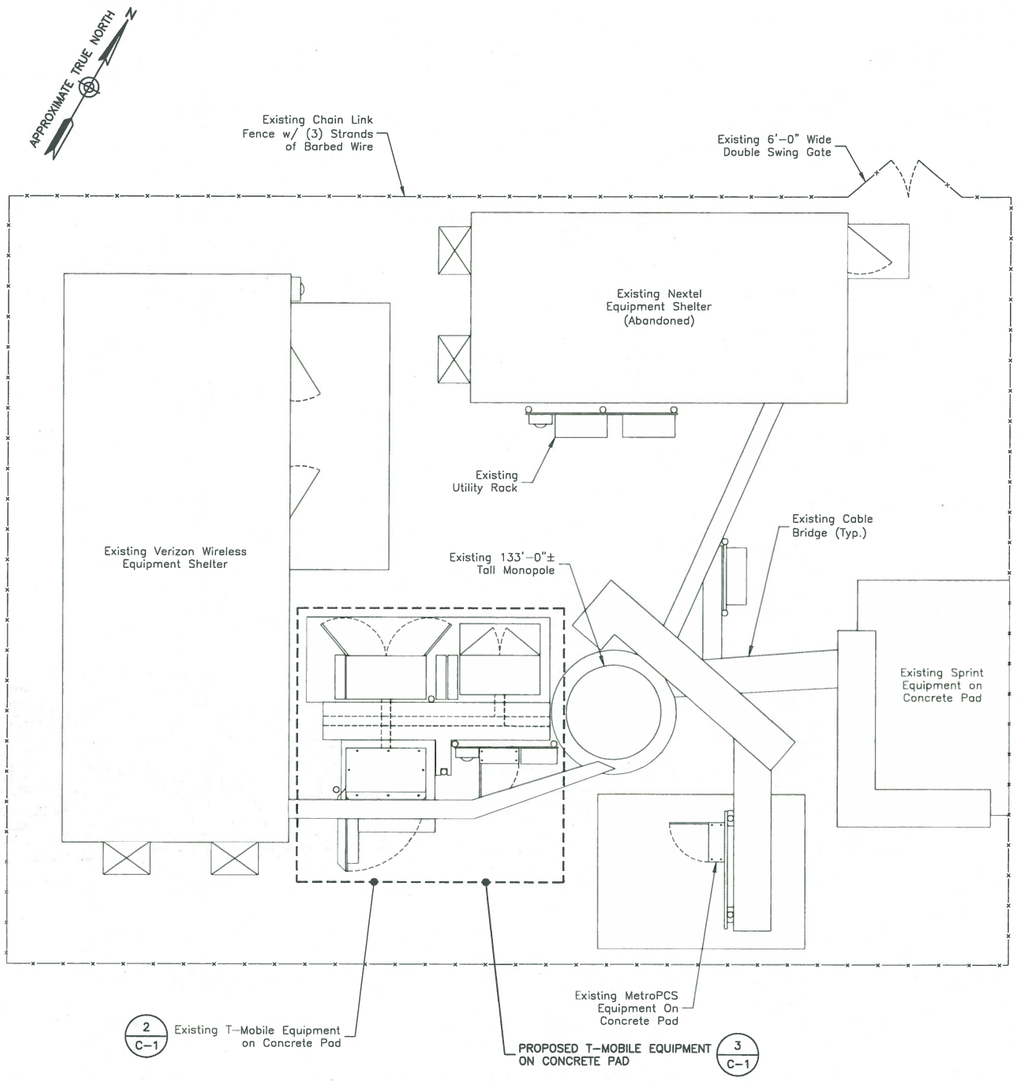
150 MATTATUCK
HEIGHTS ROAD,
WATERBURY, CT 06705
NEW HAVEN COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

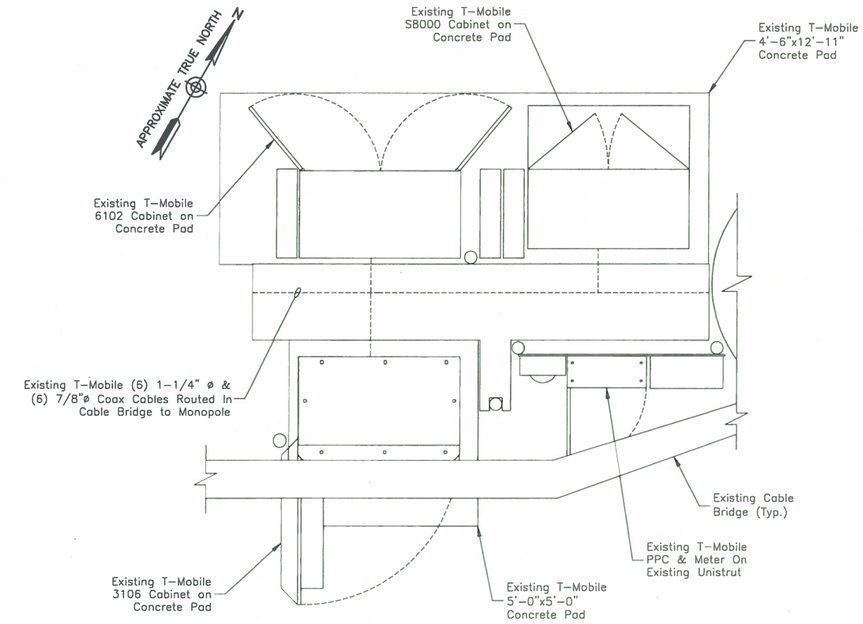
G–1



COMPOUND PLAN 1

SCALE: 1/8"=1' FOR 11"x17"
1/4"=1' FOR 22"x34"

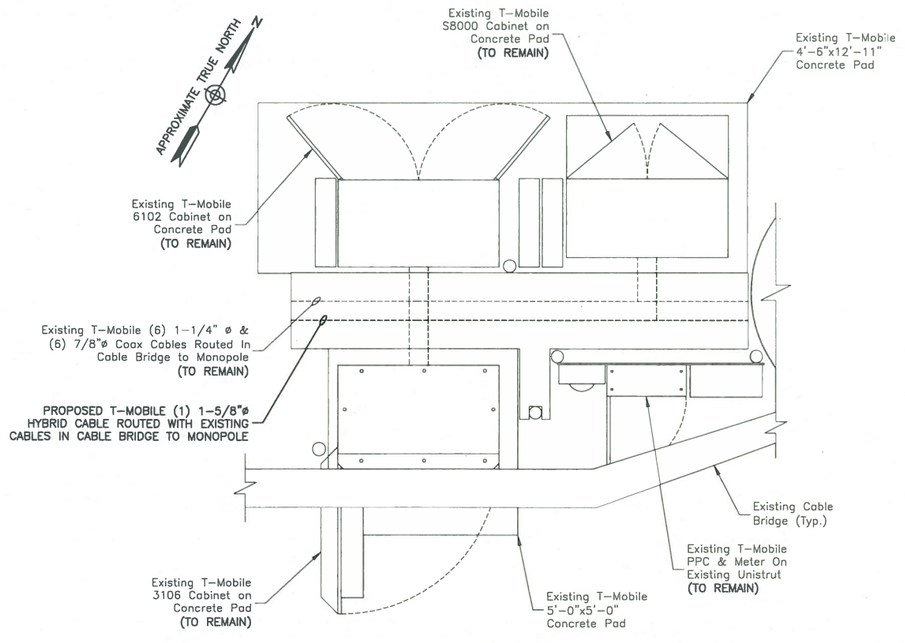
0' 2' 4' 8'



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, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY JACOBS ENGINEERING GROUP, INC. DATED APRIL 15, 2016.

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

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

CT11269B
WATERBURY

CONSTRUCTION DRAWINGS

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Dewberry®
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

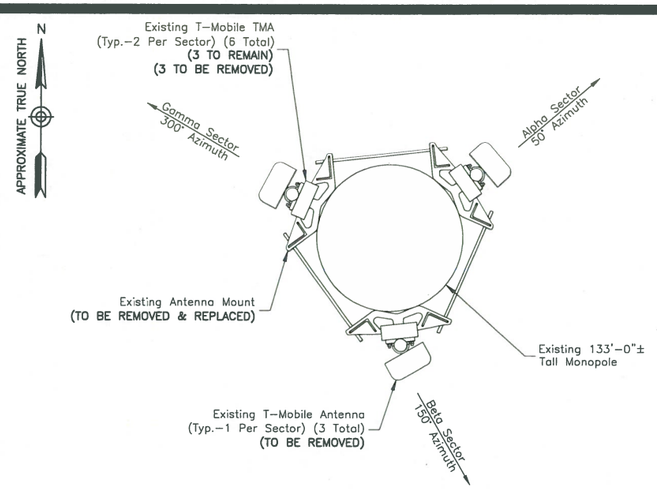
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078111

SITE ADDRESS:
150 MATTATUCK HEIGHTS ROAD,
WATERBURY, CT 06705
NEW HAVEN COUNTY

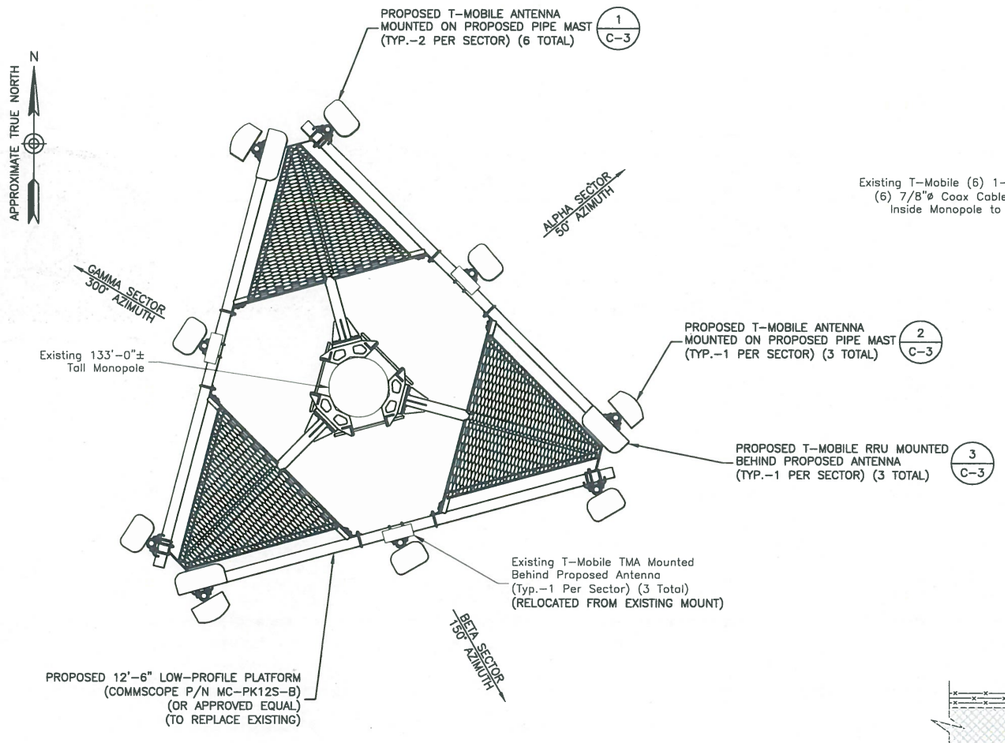
SHEET TITLE
COMPOUND PLAN & EQUIPMENT PLANS

SHEET NUMBER
C-1



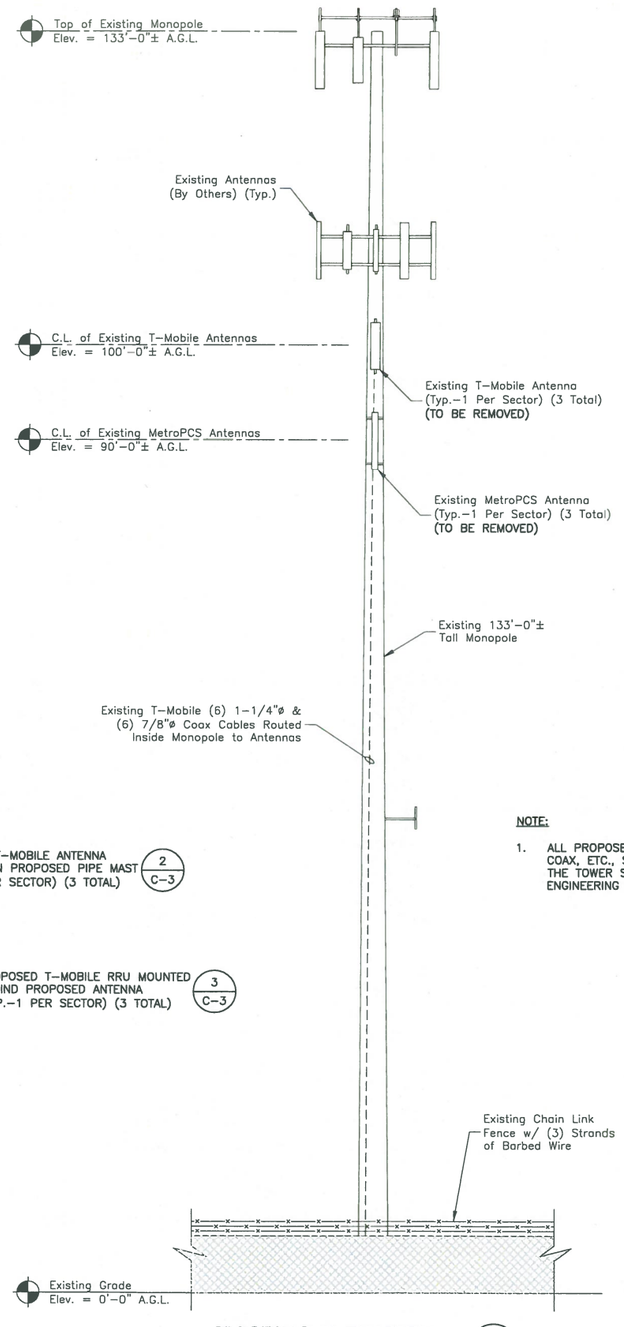
EXISTING ANTENNA LAYOUT 1

SCALE: N.T.S.



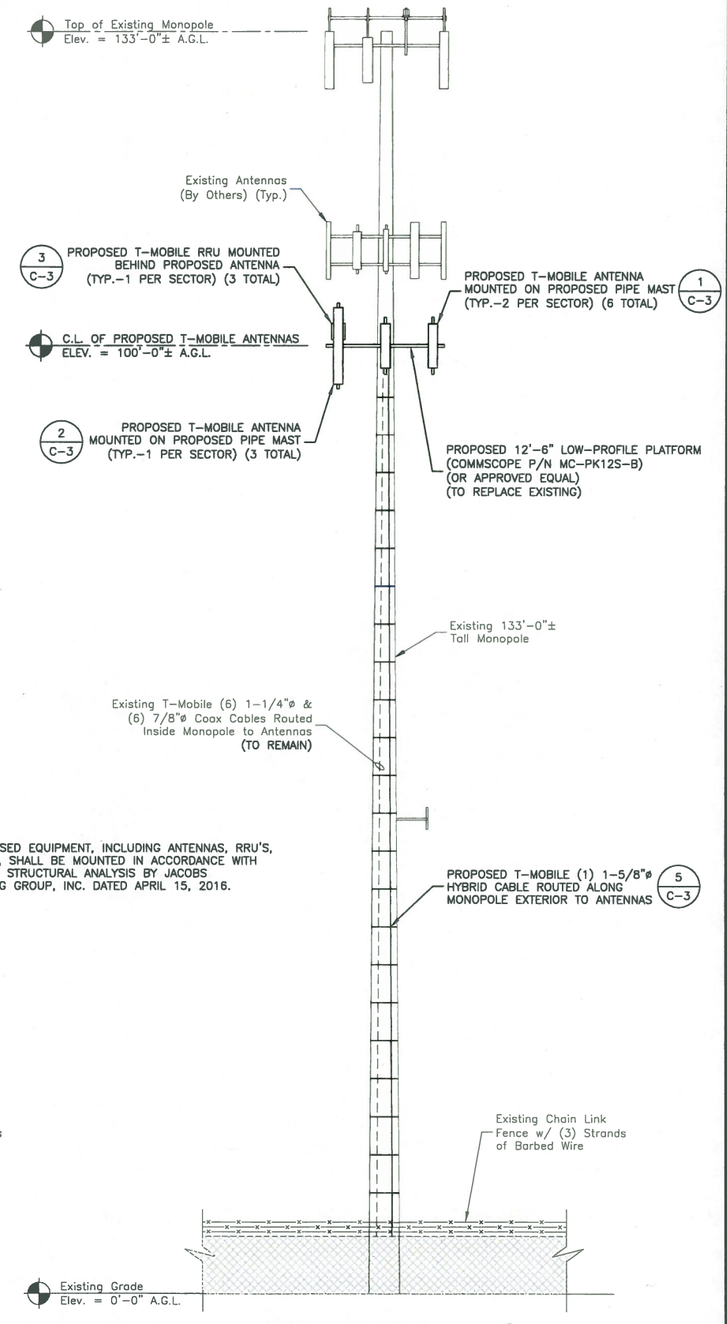
PROPOSED ANTENNA LAYOUT 1

SCALE: N.T.S.



EXISTING ELEVATION 3

SCALE: 1/16"=1' FOR 11"x17"
1/8"=1' FOR 22"x34"



PROPOSED ELEVATION 4

SCALE: 1/16"=1' FOR 11"x17"
1/8"=1' FOR 22"x34"

0' 4' 8' 16'

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

CROWN CASTLE

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

CT11269B
WATERBURY

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

STATE OF CONNECTICUT
JIANG YU
LICENSED PROFESSIONAL ENGINEER

JIANG YU, P.E.
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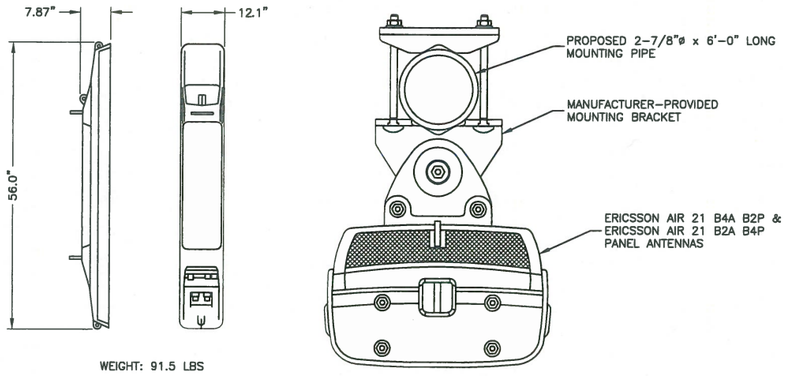
150 MATTATUCK HEIGHTS ROAD,
WATERBURY, CT 06705
NEW HAVEN COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

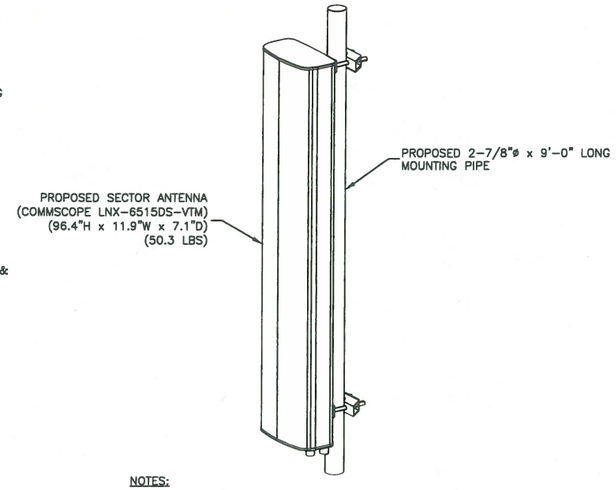
C-2



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.

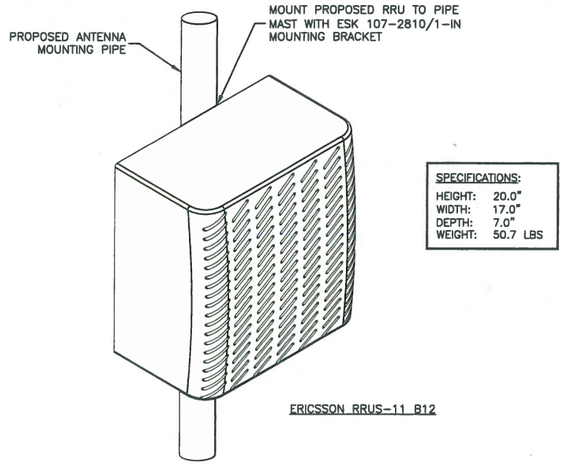
ANTENNA DETAIL 1
SCALE: N.T.S.



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.

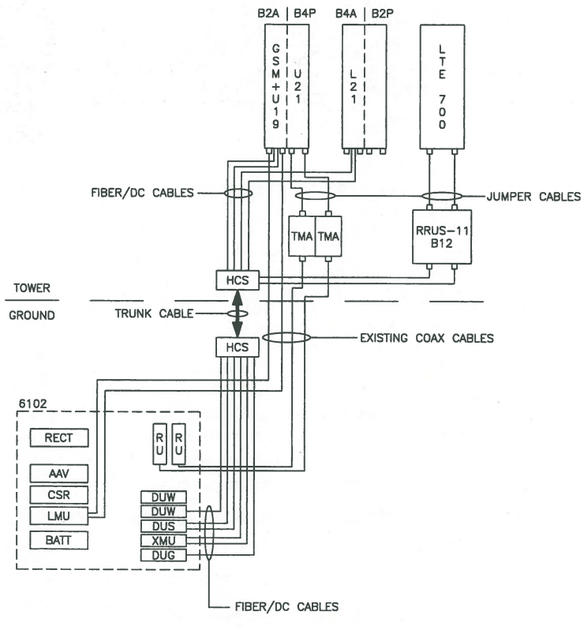
ISOMETRIC ANTENNA DETAIL 2
SCALE: N.T.S.



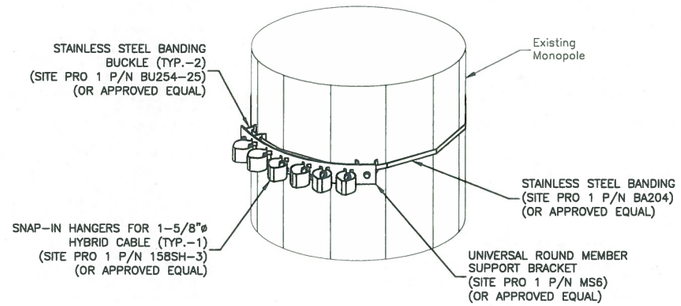
RRU NOTES:

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 3
SCALE: N.T.S.



SITE CONFIGURATION 702Cu 4
SCALE: N.T.S.



NOTE:

1. SUPPORT BRACKETS SHALL BE SPACED AT 4'-0" C-C MAX.

COAX SUPPORT DETAIL 5
SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		HYBRID	COAX/HYBRID LENGTH	TMA	RRU
	EXISTING	PROPOSED	EXISTING	PROPOSED	PROPOSED		EXISTING	PROPOSED
ALPHA	ANDREW TMZXX-6516-R2M	ERICSSON AIR 21 B4A B2P	(2) 1-1/4"ø & (2) 7/8"ø	–	(1) 1-5/8"ø	150'-0"	–	–
	–	ERICSSON AIR 21 B2A B4P					(1) ATMAA1412D-1A20	–
	–	COMMSCOPE LNX-6515DS-VTM					–	(1) RRUS-11 B12
BETA	ANDREW TMZXX-6516-R2M	ERICSSON AIR 21 B4A B2P	(2) 1-1/4"ø & (2) 7/8"ø	–		150'-0"	–	–
	–	ERICSSON AIR 21 B2A B4P					(1) ATMAA1412D-1A20	–
	–	COMMSCOPE LNX-6515DS-VTM					–	(1) RRUS-11 B12
GAMMA	ANDREW TMZXX-6516-R2M	ERICSSON AIR 21 B4A B2P	(2) 1-1/4"ø & (2) 7/8"ø	–		150'-0"	–	–
	–	ERICSSON AIR 21 B2A B4P					(1) ATMAA1412D-1A20	–
	–	COMMSCOPE LNX-6515DS-VTM					–	(1) RRUS-11 B12

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

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

CT11269B
WATERBURY

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

STATE OF CONNECTICUT
JIANG YU
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150 MATTATUCK HEIGHTS ROAD,
WATERBURY, CT 06705
NEW HAVEN COUNTY

SHEET TITLE

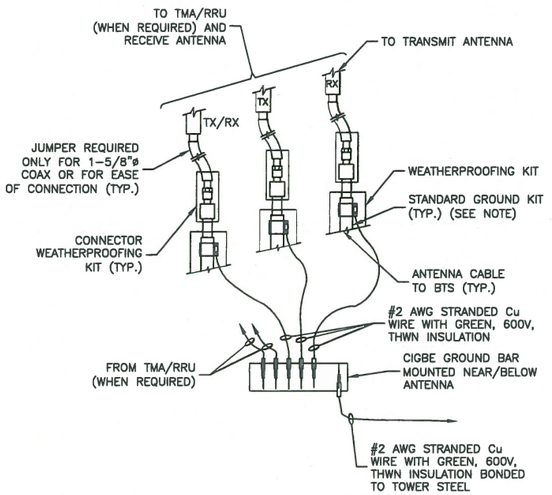
CONSTRUCTION DETAILS I

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.

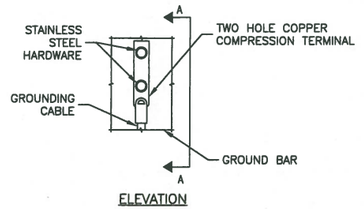


NOTE:

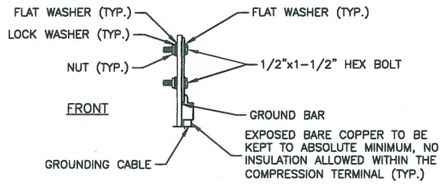
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE)

SCALE: N.T.S. — 1



ELEVATION



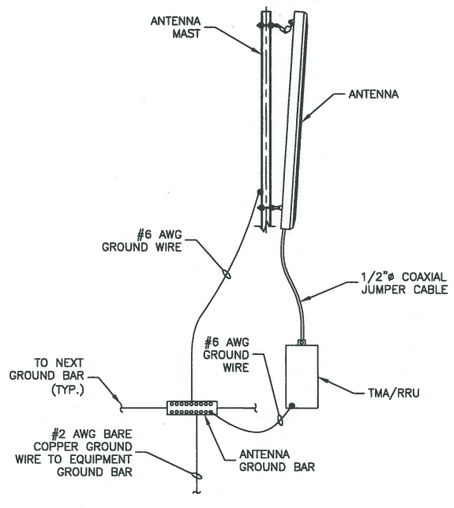
SECTION 'A-A'

NOTES:

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

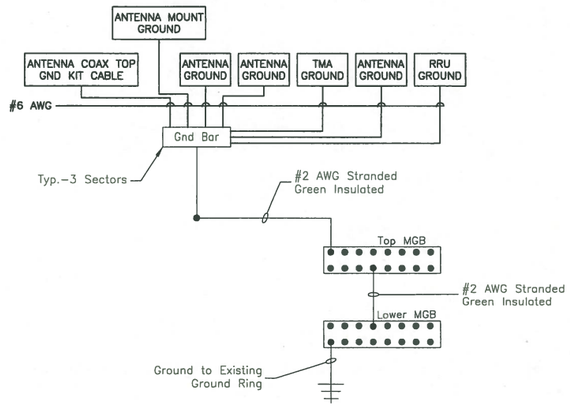
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL

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

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

CROWN CASTLE

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

CT11269B
WATERBURY

CONSTRUCTION DRAWINGS		
0	05/10/16	ISSUED AS FINAL
A	04/06/16	ISSUED FOR REVIEW

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

STATE OF CONNECTICUT
JIANG YU
0023222
LICENSED
PROFESSIONAL ENGINEER

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078111
SITE ADDRESS:	

150 MATTATUCK HEIGHTS ROAD,
WATERBURY, CT 06705
NEW HAVEN COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

Date: **April 15, 2016**

Sean Dempsey
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
(770) 701-2500

Subject: **Structural Analysis Report**

Carrier Designation:

***T-Mobile* Co-Locate**
Carrier Site Number: CT11269B
Carrier Site Name: Waterbury/I-84/Mattatuck

Crown Castle Designation:

Crown Castle BU Number: 876317
Crown Castle Site Name: WATERBURY
Crown Castle JDE Job Number: 347011
Crown Castle Work Order Number: 1217006
Crown Castle Application Number: 309957 Rev. 11

Engineering Firm Designation: **Jacobs Engineering Group, Inc. Project Number:** 1217006 R1

Site Data:

150 Mattatuck Heights, WATERBURY, New Haven County, CT
Latitude *41° 32' 16.3"*, Longitude *-72° 59' 6.1"*
133 Foot - Monopole Tower

Dear Sean Dempsey,

Jacobs Engineering Group, Inc. 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 889109, in accordance with application 309957, revision 11.

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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA-222-G standard and the 2005 Connecticut State Building Code based upon a wind speed of 105 mph 3-second gust, exposure category B with topographic category 1 and crest height of 0 feet

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 *Jacobs Engineering Group, Inc.* 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:

Kristi Holder

Kristi Holder, E.I.
Tower Structural Engineer

Reviewed by:

Matthew E. Watkins, P.E.
Engineering Project Manager

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1) INTRODUCTION

This tower is a 133-ft Monopole tower designed by VALMONT in April of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. The tower has been modified multiple times in the past to accommodate additional loading.

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 105 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

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
100.0	100.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	1	1-5/8	-
		1	commscope	MC-PK12S-B Mount			
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			

Table 2 - Existing 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
133.0	135.0	1	andrew	VHLP2-18	4 3	1-1/4 7983A	1
		2	andrew	VHLP2-23			
	133.0	6	alcatel lucent	1900MHz RRH (65MHz)			
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ RRH			
		3	alcatel lucent	TD-RRH8x20-25			
		1	crown mounts	Platform Mount [LP 602-1]			
		12	rfs celwave	ACU-A20-N			
		4	rfs celwave	IBC1900HB-2			
		2	rfs celwave	PD2DE-700/2700			
	130.0	4	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 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
110.0	113.0	1	trimble	BULLET III	13 1	1-5/8 1/2	1
	110.0	3	antel	BXA-80063/4CF w/ Mount Pipe			
		3	antel	BXA-171063/12CF w/ Mount Pipe			
		3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		3	alcatel lucent	RRH2x40-AWS			
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		1	crown mounts	Platform Mount [LP 602-1]			
100.0	100.0	3	andrew	TMZXX-6516-R2M	-	-	2
		3	rfs celwave	ATMAA1412D-1A20			
		1	crown mounts	Pipe Mount [PM 601-3]			
		3	rfs celwave	ATMAA1412D-1A20	6 6	1-1/4 7/8	1
90.0	90.0	1	crown mounts	Pipe Mount [PM 601-3]	6	1-5/8	2
		3	rfs celwave	APXV18-206517S-C			
50.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	crown mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) 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)
130.0	130.0	12	Decibel	DB980H	-	-
110.0	110.0	12	Decibel	DB980H	-	-
90.0	90.0	2	Generic	Omni	-	-
50.0	50.0	1	Generic	GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Velocitel	1529737	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont	1630930	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont	1530953	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions	2381113	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	3315244	CCISITES
4-POST-MODIFICATION INSPECTION	JTec Enterprises, Inc.	1956508	CCISITES
4-POST-MODIFICATION INSPECTION	Vertical Solutions	2381112	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	3770745	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.

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, Inc. 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	133 - 128	Pole	TP14.48x13.48x0.1875	Note 1	Note 1	Note 1	17.1%	Pass
L2	128 - 123	Pole	TP15.479x14.48x0.1875	Note 1	Note 1	Note 1	31.5%	Pass
L3	123 - 118	Pole	TP16.479x15.479x0.1875	Note 1	Note 1	Note 1	43.0%	Pass
L4	118 - 113	Pole	TP17.478x16.479x0.1875	Note 1	Note 1	Note 1	53.3%	Pass
L5	113 - 108	Pole	TP18.478x17.478x0.1875	Note 1	Note 1	Note 1	65.8%	Pass
L6	108 - 104.75	Pole	TP19.127x18.478x0.1875	Note 1	Note 1	Note 1	75.6%	Pass
L7	104.75 -	Pole + Reinf.	TP19.177x19.127x0.425	Note 1	Note 1	Note 1	44.1%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
	104.5							
L8	104.5 - 99.5	Pole + Reinf.	TP20.177x19.177x0.4063	Note 1	Note 1	Note 1	52.8%	Pass
L9	99.5 - 98.75	Pole + Reinf.	TP20.327x20.177x0.4063	Note 1	Note 1	Note 1	54.4%	Pass
L10	98.75 - 98.5	Pole + Reinf.	TP20.377x20.327x0.675	Note 1	Note 1	Note 1	50.5%	Pass
L11	98.5 - 95	Pole + Reinf.	TP21.81x20.377x0.6625	Note 1	Note 1	Note 1	57.5%	Pass
L12	95 - 90	Pole + Reinf.	TP21.7x20.701x0.7125	Note 1	Note 1	Note 1	62.1%	Pass
L13	90 - 89.25	Pole + Reinf.	TP21.85x21.7x0.7	Note 1	Note 1	Note 1	63.3%	Pass
L14	89.25 - 89	Pole + Reinf.	TP21.9x21.85x0.85	Note 1	Note 1	Note 1	45.7%	Pass
L15	89 - 88.25	Pole + Reinf.	TP22.05x21.9x0.8375	Note 1	Note 1	Note 1	46.5%	Pass
L16	88.25 - 88	Pole + Reinf.	TP22.1x22.05x0.6125	Note 1	Note 1	Note 1	61.9%	Pass
L17	88 - 83	Pole + Reinf.	TP23.099x22.1x0.5875	Note 1	Note 1	Note 1	68.9%	Pass
L18	83 - 78	Pole + Reinf.	TP24.097x23.099x0.575	Note 1	Note 1	Note 1	75.2%	Pass
L19	78 - 77	Pole + Reinf.	TP24.297x24.097x0.575	Note 1	Note 1	Note 1	76.4%	Pass
L20	77 - 76.75	Pole + Reinf.	TP24.347x24.297x0.7625	Note 1	Note 1	Note 1	58.6%	Pass
L21	76.75 - 71.75	Pole + Reinf.	TP25.346x24.347x0.7375	Note 1	Note 1	Note 1	63.2%	Pass
L22	71.75 - 66.75	Pole + Reinf.	TP26.345x25.346x0.7125	Note 1	Note 1	Note 1	67.4%	Pass
L23	66.75 - 61.75	Pole + Reinf.	TP27.344x26.345x0.6875	Note 1	Note 1	Note 1	71.3%	Pass
L24	61.75 - 60.5	Pole + Reinf.	TP27.593x27.344x0.6875	Note 1	Note 1	Note 1	72.2%	Pass
L25	60.5 - 60.25	Pole + Reinf.	TP27.643x27.593x0.6875	Note 1	Note 1	Note 1	72.4%	Pass
L26	60.25 - 59.5	Pole + Reinf.	TP27.793x27.643x0.6875	Note 1	Note 1	Note 1	72.9%	Pass
L27	59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.75	Note 1	Note 1	Note 1	64.2%	Pass
L28	59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.725	Note 1	Note 1	Note 1	67.4%	Pass
L29	54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.7	Note 1	Note 1	Note 1	70.0%	Pass
L30	50 - 45	Pole + Reinf.	TP30.192x29.191x0.7625	Note 1	Note 1	Note 1	68.4%	Pass
L31	45 - 40	Pole + Reinf.	TP31.193x30.192x0.75	Note 1	Note 1	Note 1	70.9%	Pass
L32	40 - 39	Pole + Reinf.	TP31.393x31.193x0.7375	Note 1	Note 1	Note 1	71.3%	Pass
L33	39 - 38.75	Pole + Reinf.	TP31.443x31.393x0.7375	Note 1	Note 1	Note 1	71.4%	Pass
L34	38.75 - 34	Pole + Reinf.	TP32.394x31.443x0.725	Note 1	Note 1	Note 1	73.6%	Pass
L35	34 - 33.75	Pole + Reinf.	TP32.444x32.394x0.6875	Note 1	Note 1	Note 1	78.6%	Pass
L36	33.75 - 29.75	Pole + Reinf.	TP33.245x32.444x0.6875	Note 1	Note 1	Note 1	80.4%	Pass
L37	29.75 - 29.5	Pole + Reinf.	TP33.295x33.245x0.6875	Note 1	Note 1	Note 1	78.6%	Pass
L38	29.5 - 24.5	Pole + Reinf.	TP34.296x33.295x0.675	Note 1	Note 1	Note 1	80.7%	Pass
L39	24.5 - 19.5	Pole + Reinf.	TP35.297x34.296x0.6625	Note 1	Note 1	Note 1	82.8%	Pass
L40	19.5 - 14.5	Pole + Reinf.	TP36.297x35.297x0.65	Note 1	Note 1	Note 1	84.7%	Pass
L41	14.5 - 12.5	Pole + Reinf.	TP36.698x36.297x0.65	Note 1	Note 1	Note 1	85.4%	Pass
L42	12.5 - 12.25	Pole + Reinf.	TP36.748x36.698x0.5625	Note 1	Note 1	Note 1	96.5%	Pass
L43	12.25 - 10.75	Pole + Reinf.	TP37.048x36.748x0.5625	Note 1	Note 1	Note 1	97.0%	Pass
L44	10.75 - 10.5	Pole + Reinf.	TP37.098x37.048x0.6375	Note 1	Note 1	Note 1	89.4%	Pass
L45	10.5 - 5.5	Pole + Reinf.	TP38.099x37.098x0.625	Note 1	Note 1	Note 1	91.2%	Pass
L46	5.5 - 0.5	Pole + Reinf.	TP39.1x38.099x0.6125	Note 1	Note 1	Note 1	92.8%	Pass
L47	0.5 - 0	Pole + Reinf.	TP39.2x39.1x0.6125	Note 1	Note 1	Note 1	92.9%	Pass
							Summary	
						Pole	78.5%	Pass
						Reinforcement	97.0%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Overall	97.0%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.2	Pass
1	Base Plate	0	50.6	Pass
1	Base Foundation Structural	0	15.1	Pass
1	Base Foundation Soil Interaction	0	52.6	Pass

Structure Rating (max from all components) =	97.0%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

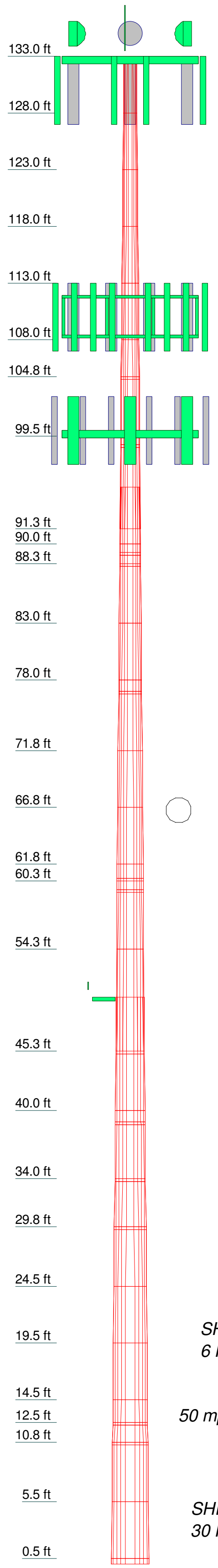
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	12	0.1875		13.4800	14.4795	A572-65	0.1
2	5.00	12	0.1875		14.4795	15.4790		0.2
3	5.00	12	0.1875		15.4790	16.4786		0.2
4	5.00	12	0.1875		16.4786	17.4781		0.2
5	5.00	12	0.1875		17.4781	18.4776		0.2
6	3.25	12	[illegible]		[illegible]	[illegible]		0.1
7	0.25	12	[illegible]		[illegible]	[illegible]		0.0
8	5.00	12	[illegible]		[illegible]	[illegible]		0.4
9	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
10	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
11	7.17	12	0.6625	3.67	[illegible]	[illegible]		0.9
12	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
13	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
14	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
15	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
16	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
17	5.00	12	[illegible]		[illegible]	[illegible]		0.6
18	5.00	12	[illegible]		[illegible]	[illegible]		0.7
19	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
20	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
21	5.00	12	[illegible]		[illegible]	[illegible]		0.9
22	5.00	12	0.7125		25.3460	26.3449		0.9
23	5.00	12	[illegible]		[illegible]	27.3438		0.9
24	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
25	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
26	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
27	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
28	5.00	12	[illegible]		[illegible]	[illegible]		1.0
29	9.00	12	0.7000	4.75	28.8421	30.6400		1.9
30	[illegible]	12	[illegible]		[illegible]	[illegible]		1.1
31	5.00	12	[illegible]		[illegible]	[illegible]		1.1
32	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
33	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
34	4.75	12	[illegible]		[illegible]	[illegible]		1.2
35	0.25	12	[illegible]		[illegible]	[illegible]		0.1
36	4.00	12	[illegible]		[illegible]	[illegible]		0.9
37	0.25	12	[illegible]		[illegible]	[illegible]		0.1
38	5.00	12	[illegible]		[illegible]	[illegible]		1.2
39	5.00	12	0.6625		34.2956	35.2965		1.2
40	5.00	12	[illegible]		[illegible]	[illegible]		1.2
41	[illegible]	12	[illegible]		[illegible]	[illegible]		0.5
42	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
43	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
44	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
45	5.00	12	[illegible]		[illegible]	[illegible]		1.2
46	5.00	12	[illegible]		[illegible]	[illegible]		1.2
47	0.50	12	[illegible]		[illegible]	[illegible]		[illegible]
								22.9



DESIGNED APPURTENANCE LOADING

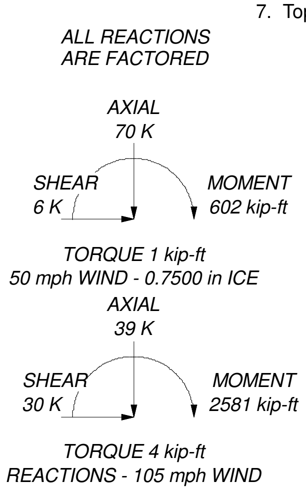
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 1"x5'	133	MG D3-800Tx w/ Mount Pipe	110
(2) APXVSPP18-C-A20 w/ Mount Pipe	133	MG D3-800Tx w/ Mount Pipe	110
APXVSPP18-C-A20 w/ Mount Pipe	133	(2) FD9R6004/2C-3L	110
APXVSPP18-C-A20 w/ Mount Pipe	133	(2) FD9R6004/2C-3L	110
APXVTM14-C-120 w/ Mount Pipe	133	(2) FD9R6004/2C-3L	110
APXVTM14-C-120 w/ Mount Pipe	133	RRH2x40-AWS	110
APXVTM14-C-120 w/ Mount Pipe	133	RRH2x40-AWS	110
(6) ACU-A20-N	133	RRH2x40-AWS	110
(3) ACU-A20-N	133	DB-T1-6Z-8AB-0Z	110
(3) ACU-A20-N	133	BULLET III	110
(2) 800MHZ RRH	133	Platform Mount [LP 602-1]	110
800MHZ RRH	133	BXA-171063/12CF w/ Mount Pipe	110
(2) IBC1900HB-2	133	BXA-171063/12CF w/ Mount Pipe	110
IBC1900HB-2	133	BXA-171063/12CF w/ Mount Pipe	110
IBC1900HB-2	133	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	100
(4) 1900MHz RRH (65MHz)	133	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	100
(2) 1900MHz RRH (65MHz)	133	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	100
(2) 800 EXTERNAL NOTCH FILTER	133	LNX-6515DS-VTM w/ Mount Pipe	100
800 EXTERNAL NOTCH FILTER	133	LNX-6515DS-VTM w/ Mount Pipe	100
TD-RRH8x20-25	133	LNX-6515DS-VTM w/ Mount Pipe	100
TD-RRH8x20-25	133	RRUS 11 B12	100
TD-RRH8x20-25	133	RRUS 11 B12	100
PD2DE-700/2700	133	RRUS 11 B12	100
PD2DE-700/2700	133	ATMAA1412D-1A20	100
Platform Mount [LP 602-1]	133	ATMAA1412D-1A20	100
6' x 2" Mount Pipe	133	ATMAA1412D-1A20	100
(2) 6' x 2" Mount Pipe	133	MC-PK12S-B Mount	100
(2) 6' x 2" Mount Pipe	133	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	100
VHLP2-23	133	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	100
VHLP2-23	133	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	100
VHLP2-18	133	Side Arm Mount [SO 701-1]	50
BXA-70063/6CF-2 w/ Mount Pipe	110	KS24019-L112A	50
BXA-70063/6CF-2 w/ Mount Pipe	110		
BXA-70063/6CF-2 w/ Mount Pipe	110		
BXA-80063/4CF w/ Mount Pipe	110		
BXA-80063/4CF w/ Mount Pipe	110		
BXA-80063/4CF w/ Mount Pipe	110		
MG D3-800Tx w/ Mount Pipe	110		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 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



Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
Phone: (770) 701-2500
FAX: (770) 701-2501

Job: **133-ft Monopole - WATERBURY**		
Project: **BU876317_WO1217006**		
Client: Crown Castle	Drawn by: holderkg	App'd:
Code: TIA-222-G	Date: 04/15/16	Scale: NTS
Path: \\RALFIL03\Telecom\876317 WATERBURY\WO1217006\Analysis\R1\CCI Pole Model\CCI Pole Model.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:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 105 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
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				

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	133.00-128.00	5.00	0.00	12	13.4800	14.4795	0.1875	0.7500	A572-65 (65 ksi)
L2	128.00-123.00	5.00	0.00	12	14.4795	15.4790	0.1875	0.7500	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	123.00-118.00	5.00	0.00	12	15.4790	16.4786	0.1875	0.7500	A572-65 (65 ksi)
L4	118.00-113.00	5.00	0.00	12	16.4786	17.4781	0.1875	0.7500	A572-65 (65 ksi)
L5	113.00-108.00	5.00	0.00	12	17.4781	18.4776	0.1875	0.7500	A572-65 (65 ksi)
L6	108.00-104.75	3.25	0.00	12	18.4776	19.1273	0.1875	0.7500	A572-65 (65 ksi)
L7	104.75-104.50	0.25	0.00	12	19.1273	19.1773	0.4250	1.7000	A572-65 (65 ksi)
L8	104.50-99.50	5.00	0.00	12	19.1773	20.1768	0.4063	1.6250	A572-65 (65 ksi)
L9	99.50-98.75	0.75	0.00	12	20.1768	20.3267	0.4063	1.6250	A572-65 (65 ksi)
L10	98.75-98.50	0.25	0.00	12	20.3267	20.3767	0.6750	2.7000	A572-65 (65 ksi)
L11	98.50-91.33	7.17	3.67	12	20.3767	21.8100	0.6625	2.6500	A572-65 (65 ksi)
L12	91.33-90.00	5.00	0.00	12	20.7014	21.7002	0.7125	2.8500	A572-65 (65 ksi)
L13	90.00-89.25	0.75	0.00	12	21.7002	21.8500	0.7000	2.8000	A572-65 (65 ksi)
L14	89.25-89.00	0.25	0.00	12	21.8500	21.9000	0.8500	3.4000	A572-65 (65 ksi)
L15	89.00-88.25	0.75	0.00	12	21.9000	22.0498	0.8375	3.3500	A572-65 (65 ksi)
L16	88.25-88.00	0.25	0.00	12	22.0498	22.0998	0.6125	2.4500	A572-65 (65 ksi)
L17	88.00-83.00	5.00	0.00	12	22.0998	23.0986	0.5875	2.3500	A572-65 (65 ksi)
L18	83.00-78.00	5.00	0.00	12	23.0986	24.0975	0.5750	2.3000	A572-65 (65 ksi)
L19	78.00-77.00	1.00	0.00	12	24.0975	24.2972	0.5750	2.3000	A572-65 (65 ksi)
L20	77.00-76.75	0.25	0.00	12	24.2972	24.3472	0.7625	3.0500	A572-65 (65 ksi)
L21	76.75-71.75	5.00	0.00	12	24.3472	25.3460	0.7375	2.9500	A572-65 (65 ksi)
L22	71.75-66.75	5.00	0.00	12	25.3460	26.3449	0.7125	2.8500	A572-65 (65 ksi)
L23	66.75-61.75	5.00	0.00	12	26.3449	27.3438	0.6875	2.7500	A572-65 (65 ksi)
L24	61.75-60.50	1.25	0.00	12	27.3438	27.5935	0.6875	2.7500	A572-65 (65 ksi)
L25	60.50-60.25	0.25	0.00	12	27.5935	27.6434	0.6875	2.7500	A572-65 (65 ksi)
L26	60.25-59.50	0.75	0.00	12	27.6434	27.7933	0.6875	2.7500	A572-65 (65 ksi)
L27	59.50-59.25	0.25	0.00	12	27.7933	27.8432	0.7500	3.0000	A572-65 (65 ksi)
L28	59.25-54.25	5.00	0.00	12	27.8432	28.8421	0.7250	2.9000	A572-65 (65 ksi)
L29	54.25-45.25	9.00	4.75	12	28.8421	30.6400	0.7000	2.8000	A572-65 (65 ksi)
L30	45.25-45.00	5.00	0.00	12	29.1911	30.1920	0.7625	3.0500	A572-65 (65 ksi)
L31	45.00-40.00	5.00	0.00	12	30.1920	31.1929	0.7500	3.0000	A572-65 (65 ksi)
L32	40.00-39.00	1.00	0.00	12	31.1929	31.3930	0.7375	2.9500	A572-65 (65 ksi)
L33	39.00-38.75	0.25	0.00	12	31.3930	31.4431	0.7375	2.9500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L34	38.75-34.00	4.75	0.00	12	31.4431	32.3939	0.7250	2.9000	(65 ksi) A572-65 (65 ksi)
L35	34.00-33.75	0.25	0.00	12	32.3939	32.4440	0.6875	2.7500	A572-65 (65 ksi)
L36	33.75-29.75	4.00	0.00	12	32.4440	33.2447	0.6875	2.7500	A572-65 (65 ksi)
L37	29.75-29.50	0.25	0.00	12	33.2447	33.2947	0.6875	2.7500	A572-65 (65 ksi)
L38	29.50-24.50	5.00	0.00	12	33.2947	34.2956	0.6750	2.7000	A572-65 (65 ksi)
L39	24.50-19.50	5.00	0.00	12	34.2956	35.2965	0.6625	2.6500	A572-65 (65 ksi)
L40	19.50-14.50	5.00	0.00	12	35.2965	36.2974	0.6500	2.6000	A572-65 (65 ksi)
L41	14.50-12.50	2.00	0.00	12	36.2974	36.6978	0.6500	2.6000	A572-65 (65 ksi)
L42	12.50-12.25	0.25	0.00	12	36.6978	36.7478	0.5625	2.2500	A572-65 (65 ksi)
L43	12.25-10.75	1.50	0.00	12	36.7478	37.0481	0.5625	2.2500	A572-65 (65 ksi)
L44	10.75-10.50	0.25	0.00	12	37.0481	37.0981	0.6375	2.5500	A572-65 (65 ksi)
L45	10.50-5.50	5.00	0.00	12	37.0981	38.0990	0.6250	2.5000	A572-65 (65 ksi)
L46	5.50-0.50	5.00	0.00	12	38.0990	39.0999	0.6125	2.4500	A572-65 (65 ksi)
L47	0.50-0.00	0.50		12	39.0999	39.2000	0.6125	2.4500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	13.9555	8.0253	180.9936	4.7587	6.9826	25.9205	366.7420	3.9498	3.1101	16.587
	14.9903	8.6288	224.9697	5.1165	7.5004	29.9944	455.8495	4.2468	3.3780	18.016
L2	14.9903	8.6288	224.9697	5.1165	7.5004	29.9944	455.8495	4.2468	3.3780	18.016
	16.0251	9.2323	275.5477	5.4744	8.0181	34.3655	558.3343	4.5438	3.6459	19.445
L3	16.0251	9.2323	275.5477	5.4744	8.0181	34.3655	558.3343	4.5438	3.6459	19.445
	17.0599	9.8357	333.1894	5.8322	8.5359	39.0339	675.1320	4.8408	3.9138	20.873
L4	17.0599	9.8357	333.1894	5.8322	8.5359	39.0339	675.1320	4.8408	3.9138	20.873
	18.0946	10.4392	398.3564	6.1900	9.0536	43.9996	807.1781	5.1379	4.1816	22.302
L5	18.0946	10.4392	398.3564	6.1900	9.0536	43.9996	807.1781	5.1379	4.1816	22.302
	19.1294	11.0426	471.5105	6.5479	9.5714	49.2625	955.4081	5.4349	4.4495	23.731
L6	19.1294	11.0426	471.5105	6.5479	9.5714	49.2625	955.4081	5.4349	4.4495	23.731
	19.8020	11.4349	523.5624	6.7804	9.9079	52.8427	1060.8794	5.6279	4.6236	24.659
L7	19.8020	25.5941	1142.6546	6.6954	9.9079	115.3272	2315.3281	12.5966	3.9871	9.381
	19.8538	25.6625	1151.8393	6.7133	9.9338	115.9513	2333.9387	12.6303	4.0005	9.413
L8	19.8538	24.5548	1104.3288	6.7200	9.9338	111.1686	2237.6696	12.0851	4.0508	9.971
	20.8885	25.8623	1290.2992	7.0779	10.4516	123.4550	2614.4959	12.7287	4.3186	10.63
L9	20.8885	25.8623	1290.2992	7.0779	10.4516	123.4550	2614.4959	12.7287	4.3186	10.63
	21.0438	26.0585	1319.8769	7.1315	10.5292	125.3535	2674.4285	12.8252	4.3588	10.729
L10	21.0438	42.7130	2105.4590	7.0353	10.5292	199.9631	4266.2307	21.0220	3.6386	5.39
	21.0955	42.8216	2121.5630	7.0532	10.5551	200.9984	4298.8617	21.0755	3.6520	5.41
L11	21.0955	42.0553	2086.2407	7.0577	10.5551	197.6519	4227.2892	20.6983	3.6855	5.563
	22.5794	45.1129	2575.1635	7.5708	11.2976	227.9394	5217.9794	22.2032	4.0696	6.143

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L12	22.1906	45.8594	2338.7848	7.1560	10.7233	218.1031	4739.0121	22.5706	3.6385	5.107
	22.4657	48.1511	2707.2100	7.5136	11.2407	240.8398	5485.5413	23.6985	3.9062	5.482
L13	22.4657	47.3345	2664.4701	7.5181	11.2407	237.0375	5398.9389	23.2966	3.9397	5.628
	22.6208	47.6722	2721.9081	7.5717	11.3183	240.4869	5515.3237	23.4628	3.9798	5.685
L14	22.6208	57.4771	3235.3489	7.5180	11.3183	285.8506	6555.6941	28.2885	3.5778	4.209
	22.6725	57.6138	3258.4871	7.5359	11.3442	287.2384	6602.5783	28.3558	3.5912	4.225
L15	22.6725	56.8003	3216.2911	7.5404	11.3442	283.5188	6517.0778	27.9554	3.6247	4.328
	22.8276	57.2043	3285.4182	7.5940	11.4218	287.6445	6657.1480	28.1542	3.6648	4.376
L16	22.8276	42.2797	2480.0412	7.6746	11.4218	217.1322	5025.2359	20.8088	4.2678	6.968
	22.8793	42.3782	2497.4151	7.6924	11.4477	218.1592	5060.4400	20.8573	4.2812	6.99
L17	22.8793	40.6958	2403.8508	7.7014	11.4477	209.9860	4870.8534	20.0292	4.3482	7.401
	23.9134	42.5854	2754.4866	8.0590	11.9651	230.2104	5581.3365	20.9592	4.6159	7.857
L18	23.9134	41.7025	2700.3739	8.0635	11.9651	225.6879	5471.6896	20.5247	4.6494	8.086
	24.9475	43.5519	3075.8037	8.4210	12.4825	246.4094	6232.4121	21.4349	4.9171	8.552
L19	24.9475	43.5519	3075.8037	8.4210	12.4825	246.4094	6232.4121	21.4349	4.9171	8.552
	25.1544	43.9217	3154.8377	8.4926	12.5860	250.6630	6392.5565	21.6169	4.9707	8.645
L20	25.1544	57.7837	4085.1702	8.4254	12.5860	324.5812	8277.6624	28.4394	4.4682	5.86
	25.2061	57.9063	4111.2328	8.4433	12.6118	325.9819	8330.4723	28.4997	4.4815	5.877
L21	25.2061	56.0671	3989.0969	8.4523	12.6118	316.2977	8082.9918	27.5945	4.5485	6.168
	26.2402	58.4391	4517.1214	8.8099	13.1293	344.0502	9152.9125	28.7620	4.8162	6.53
L22	26.2402	56.5155	4377.3124	8.8188	13.1293	333.4015	8869.6216	27.8152	4.8832	6.854
	27.2743	58.8071	4931.6791	9.1764	13.6467	361.3836	9992.9189	28.9431	5.1509	7.229
L23	27.2743	56.7991	4772.5750	9.1854	13.6467	349.7247	9670.5309	27.9548	5.2179	7.59
	28.3083	59.0103	5351.9546	9.5429	14.1641	377.8543	10844.5110	29.0431	5.4856	7.979
L24	28.3083	59.0103	5351.9546	9.5429	14.1641	377.8543	10844.5110	29.0431	5.4856	7.979
	28.5669	59.5631	5503.7787	9.6323	14.2934	385.0567	11152.1478	29.3152	5.5526	8.076
L25	28.5669	59.5631	5503.7787	9.6323	14.2934	385.0567	11152.1478	29.3152	5.5526	8.076
	28.6186	59.6737	5534.4840	9.6502	14.3193	386.5054	11214.3651	29.3696	5.5659	8.096
L26	28.6186	59.6737	5534.4840	9.6502	14.3193	386.5054	11214.3651	29.3696	5.5659	8.096
	28.7737	60.0054	5627.2847	9.7039	14.3969	390.8677	11402.4045	29.5328	5.6061	8.154
L27	28.7737	65.3095	6096.4893	9.6815	14.3969	423.4583	12353.1401	32.1433	5.4386	7.251
	28.8254	65.4301	6130.3283	9.6994	14.4228	425.0450	12421.7072	32.2027	5.4520	7.269
L28	28.8254	63.3074	5942.4036	9.7083	14.4228	412.0153	12040.9208	31.1580	5.5190	7.612
	29.8595	65.6393	6623.5262	10.0659	14.9402	443.3363	13421.0598	32.3056	5.7867	7.982
L29	29.8595	63.4322	6412.2024	10.0749	14.9402	429.1917	12992.8605	31.2194	5.8537	8.362
	31.7209	67.4848	7721.3858	10.7185	15.8715	486.4931	15645.6209	33.2139	6.3355	9.051
L30	31.2052	69.7993	7200.2463	10.1774	15.1210	476.1759	14589.6510	34.3531	5.7797	7.58
	31.2570	72.2567	7987.8378	10.5358	15.6394	510.7495	16185.5249	35.5626	6.0479	7.932
L31	31.2570	71.1024	7866.9054	10.5402	15.6394	503.0170	15940.4831	34.9944	6.0814	8.109
	32.2932	73.5195	8696.8052	10.8985	16.1579	538.2384	17622.0851	36.1841	6.3497	8.466
L32	32.2932	72.3239	8562.3971	10.9030	16.1579	529.9200	17349.7378	35.5956	6.3832	8.655
	32.5005	72.7993	8732.3471	10.9747	16.2616	536.9920	17694.1027	35.8296	6.4368	8.728
L33	32.5005	72.7993	8732.3471	10.9747	16.2616	536.9920	17694.1027	35.8296	6.4368	8.728
	32.5523	72.9181	8775.1831	10.9926	16.2875	538.7673	17780.9000	35.8881	6.4502	8.746
L34	32.5523	71.7114	8636.9907	10.9971	16.2875	530.2827	17500.8849	35.2942	6.4837	8.943
	33.5367	73.9311	9464.1211	11.3375	16.7801	564.0100	19176.8752	36.3867	6.7386	9.295
L35	33.5367	70.1901	9006.5165	11.3509	16.7801	536.7393	18249.6442	34.5454	6.8391	9.948
	33.5885	70.3009	9049.2308	11.3688	16.8060	538.4529	18336.1949	34.6000	6.8525	9.967
L36	33.5885	70.3009	9049.2308	11.3688	16.8060	538.4529	18336.1949	34.6000	6.8525	9.967
	34.4174	72.0735	9751.1416	11.6555	17.2208	566.2437	19758.4565	35.4724	7.0671	10.279
L37	34.4174	72.0735	9751.1416	11.6555	17.2208	566.2437	19758.4565	35.4724	7.0671	10.279
	34.4693	72.1843	9796.1770	11.6734	17.2467	568.0038	19849.7105	35.5269	7.0805	10.299
L38	34.4693	70.8990	9629.1302	11.6779	17.2467	558.3181	19511.2284	34.8943	7.1140	10.539
	35.5054	73.0744	10542.9751	12.0362	17.7651	593.4643	21362.9258	35.9650	7.3822	10.937
L39	35.5054	71.7479	10359.2808	12.0407	17.7651	583.1242	20990.7114	35.3121	7.4157	11.194
	36.5416	73.8830	11311.9250	12.3990	18.2836	618.6925	22921.0269	36.3630	7.6840	11.598
L40	36.5416	72.5152	11110.5137	12.4035	18.2836	607.6765	22512.9129	35.6898	7.7175	11.873
	37.5778	74.6100	12101.5021	12.7618	18.8021	643.6264	24520.9241	36.7208	7.9857	12.286
L41	37.5778	74.6100	12101.5021	12.7618	18.8021	643.6264	24520.9241	36.7208	7.9857	12.286
	37.9923	75.4480	12513.8350	12.9051	19.0094	658.2956	25356.4224	37.1332	8.0930	12.451
L42	37.9923	65.4500	10908.3307	12.9364	19.0094	573.8374	22103.2354	32.2125	8.3275	14.804
	38.0441	65.5407	10953.7151	12.9543	19.0354	575.4401	22195.1965	32.2571	8.3409	14.828

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L43	38.0441	65.5407	10953.7151	12.9543	19.0354	575.4401	22195.1965	32.2571	8.3409	14.828
	38.3550	66.0845	11228.6675	13.0618	19.1909	585.1035	22752.3245	32.5248	8.4214	14.971
L44	38.3550	74.7418	12647.5065	13.0350	19.1909	659.0364	25627.2770	36.7857	8.2204	12.895
	38.4068	74.8446	12699.7283	13.0529	19.2168	660.8649	25733.0927	36.8362	8.2338	12.916
L45	38.4068	73.4022	12463.5241	13.0574	19.2168	648.5734	25254.4789	36.1263	8.2673	13.228
	39.4430	75.4165	13518.0069	13.4157	19.7353	684.9661	27391.1470	37.1177	8.5355	13.657
L46	39.4430	73.9328	13260.9081	13.4202	19.7353	671.9388	26870.1949	36.3875	8.5690	13.99
	40.4792	75.9068	14351.7216	13.7785	20.2538	708.5956	29080.4790	37.3590	8.8373	14.428
L47	40.4792	75.9068	14351.7216	13.7785	20.2538	708.5956	29080.4790	37.3590	8.8373	14.428
	40.5828	76.1042	14463.9810	13.8143	20.3056	712.3149	29307.9469	37.4562	8.8641	14.472

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 133.00-128.00				1	1	1			
L2 128.00-123.00				1	1	1			
L3 123.00-118.00				1	1	1			
L4 118.00-113.00				1	1	1			
L5 113.00-108.00				1	1	1			
L6 108.00-104.75				1	1	1			
L7 104.75-104.50				1	1	0.915043			
L8 104.50-99.50				1	1	0.931306			
L9 99.50-98.75				1	1	0.92777			
L10 98.75-98.50				1	1	0.883191			
L11 98.50-91.33				1	1	0.878162			
L12 91.33-90.00				1	1	0.890902			
L13 90.00-89.25				1	1	0.902381			
L14 89.25-89.00				1	1	0.869583			
L15 89.00-88.25				1	1	0.877917			
L16 88.25-88.00				1	1	0.902435			
L17 88.00-83.00				1	1	0.916927			
L18 83.00-78.00				1	1	0.915042			
L19 78.00-77.00				1	1	0.910998			
L20 77.00-76.75				1	1	0.899211			
L21 76.75-71.75				1	1	0.904772			
L22 71.75-66.75				1	1	0.912783			
L23 66.75-61.75				1	1	0.923267			

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
L24 61.75-60.50				1	1	0.918073			
L25 60.50-60.25				1	1	0.917046			
L26 60.25-59.50				1	1	0.913987			
L27 59.50-59.25				1	1	0.903393			
L28 59.25-54.25				1	1	0.912764			
L29 54.25-45.25				1	1	0.927321			
L30 45.25-45.00				1	1	0.926734			
L31 45.00-40.00				1	1	0.924516			
L32 40.00-39.00				1	1	0.936429			
L33 39.00-38.75				1	1	0.990529			
L34 38.75-34.00				1	1	0.989898			
L35 34.00-33.75				1	1	0.984751			
L36 33.75-29.75				1	1	0.971711			
L37 29.75-29.50				1	1	0.983923			
L38 29.50-24.50				1	1	0.98572			
L39 24.50-19.50				1	1	0.988564			
L40 19.50-14.50				1	1	0.99243			
L41 14.50-12.50				1	1	0.986747			
L42 12.50-12.25				1	1	0.95332			
L43 12.25-10.75				1	1	0.950047			
L44 10.75-10.50				1	1	0.954509			
L45 10.50-5.50				1	1	0.960625			
L46 5.50-0.50				1	1	0.967688			
L47 0.50-0.00				1	1	0.966502			

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
* 133' *									
7983A(ELLIPTICAL)	A	Surface Ar (CaAa)	133.00 - 0.00	2	2	0.300 0.330	0.5730		0.08
7983A(ELLIPTICAL)	A	Surface Ar	100.00 - 0.00	1	1	0.340	0.5730		0.08

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
		(CaAa)				0.350			
7983A(ELLIPTICAL)	A	Surface Ar (CaAa)	133.00 - 100.00	1	1	0.360 0.370	0.5730		0.08
***									
Safety Line 3/8	A	Surface Ar (CaAa)	133.00 - 0.00	1	1	0.400 0.500	0.3750		0.22
* EXISTING MODS *									
6.875" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	12.00 - 0.00	1	1	0.000 0.000	6.8750	27.5000	0.00
6.875" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	12.00 - 0.00	1	1	0.400 0.500	6.8750	27.5000	0.00
*									
6.875" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	29.75 - 7.25	1	1	0.000 0.000	6.8750	27.5000	0.00
6.875" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	29.75 - 0.00	1	1	0.000 0.000	6.8750	27.5000	0.00
6.875" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	29.75 - 0.00	1	1	0.000 0.000	6.8750	27.5000	0.00
*									
6.625" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	59.50 - 29.75	1	1	0.000 0.000	6.6250	26.5000	0.00
6.625" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	59.50 - 29.75	1	1	0.000 0.000	6.6250	26.5000	0.00
6.625" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	59.50 - 29.75	1	1	0.000 0.000	6.6250	26.5000	0.00
*									
5.5" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	89.25 - 59.50	1	1	0.000 0.000	5.5000	13.5000	0.00
5.5" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	89.25 - 59.50	1	1	0.000 0.000	5.5000	13.5000	0.00
5.5" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	89.25 - 59.50	1	1	0.000 0.000	5.5000	13.5000	0.00
*									
3.625" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	100.00 - 89.25	1	1	0.000 0.000	3.6250	14.5000	0.00
3.625" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	100.00 - 89.25	1	1	0.000 0.000	3.6250	14.5000	0.00
3.625" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	100.00 - 89.25	1	1	0.000 0.000	3.6250	14.5000	0.00
***									
4" x 1" Flat Plate (G)	A	Surface Af (CaAa)	40.75 - 10.75	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	35.75 - 10.75	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	C	Surface Af (CaAa)	35.75 - 10.75	1	1	0.000 0.000	4.0000	10.0000	0.00
*									
4" x 1" Flat Plate (G)	A	Surface Af (CaAa)	62.25 - 32.25	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	35.75 - 32.25	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	62.25 - 35.75	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	C	Surface Af (CaAa)	62.25 - 32.25	1	1	0.000 0.000	4.0000	10.0000	0.00
*									
4" x 1" Flat Plate (G)	A	Surface Af (CaAa)	78.75 - 58.75	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	62.25 - 58.75	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af	78.75 - 62.25	1	1	0.000	4.0000	10.0000	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
		(CaAa)				0.000			
4" x 1" Flat Plate (G)	C	Surface Af	78.75 - 58.75	1	1	0.000	4.0000	10.0000	0.00
		(CaAa)				0.000			
*									
4" x 1" Flat Plate (G)	A	Surface Af	106.50 - 86.50	1	1	0.000	4.0000	10.0000	0.00
		(CaAa)				0.000			
4" x 1" Flat Plate (G)	B	Surface Af	106.50 - 86.50	1	1	0.000	4.0000	10.0000	0.00
		(CaAa)				0.000			
4" x 1" Flat Plate (G)	C	Surface Af	106.50 - 86.50	1	1	0.000	4.0000	10.0000	0.00
		(CaAa)				0.000			
***									

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
HB114-1-0813U4-M5J(	A	No	Inside Pole	133.00 - 0.00	3	No Ice	0.00	1.20
1 1/4")						1/2" Ice	0.00	1.20
						1" Ice	0.00	1.20
HB114-13U3M12-XXX	A	No	Inside Pole	133.00 - 0.00	1	No Ice	0.00	0.99
F(1-1/4")						1/2" Ice	0.00	0.99
						1" Ice	0.00	0.99
* 110' *								
LDF4-50A(1/2")	B	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF7-50A(1-5/8)	B	No	Inside Pole	110.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(	B	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	1.30
1-5/8)						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
* 100' *								
LDF5-50A(7/8)	C	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF6-50A(1-1/4)	C	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
MLE Hybrid	C	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	1.07
9Power/18Fiber RL 2(1						1/2" Ice	0.00	1.07
5/8")						1" Ice	0.00	1.07
* 90' * (TBR)								
* 50' *								
LDF4-50A(1/2")	B	No	Inside Pole	50.00 - 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

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	133.00-128.00	A	0.000	0.000	1.047	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	128.00-123.00	A	0.000	0.000	1.047	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	123.00-118.00	A	0.000	0.000	1.047	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	118.00-113.00	A	0.000	0.000	1.047	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	113.00-108.00	A	0.000	0.000	1.047	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
L6	108.00-104.75	A	0.000	0.000	1.847	0.000	0.02
		B	0.000	0.000	1.167	0.000	0.04
		C	0.000	0.000	1.167	0.000	0.00
L7	104.75-104.50	A	0.000	0.000	0.219	0.000	0.00
		B	0.000	0.000	0.167	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L8	104.50-99.50	A	0.000	0.000	4.682	0.000	0.03
		B	0.000	0.000	3.635	0.000	0.06
		C	0.000	0.000	3.635	0.000	0.00
L9	99.50-98.75	A	0.000	0.000	1.110	0.000	0.00
		B	0.000	0.000	0.953	0.000	0.01
		C	0.000	0.000	0.953	0.000	0.00
L10	98.75-98.50	A	0.000	0.000	0.370	0.000	0.00
		B	0.000	0.000	0.318	0.000	0.00
		C	0.000	0.000	0.318	0.000	0.00
L11	98.50-91.33	A	0.000	0.000	10.613	0.000	0.04
		B	0.000	0.000	9.112	0.000	0.08
		C	0.000	0.000	9.112	0.000	0.05
L12	91.33-90.00	A	0.000	0.000	1.969	0.000	0.01
		B	0.000	0.000	1.690	0.000	0.02
		C	0.000	0.000	1.690	0.000	0.01
L13	90.00-89.25	A	0.000	0.000	1.110	0.000	0.00
		B	0.000	0.000	0.953	0.000	0.01
		C	0.000	0.000	0.953	0.000	0.00
L14	89.25-89.00	A	0.000	0.000	0.448	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L15	89.00-88.25	A	0.000	0.000	1.345	0.000	0.00
		B	0.000	0.000	1.188	0.000	0.01
		C	0.000	0.000	1.188	0.000	0.00
L16	88.25-88.00	A	0.000	0.000	0.448	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L17	88.00-83.00	A	0.000	0.000	6.630	0.000	0.03
		B	0.000	0.000	5.583	0.000	0.06
		C	0.000	0.000	5.583	0.000	0.03
L18	83.00-78.00	A	0.000	0.000	6.130	0.000	0.03
		B	0.000	0.000	5.083	0.000	0.06
		C	0.000	0.000	5.083	0.000	0.03
L19	78.00-77.00	A	0.000	0.000	1.793	0.000	0.01
		B	0.000	0.000	1.583	0.000	0.01
		C	0.000	0.000	1.583	0.000	0.01
L20	77.00-76.75	A	0.000	0.000	0.448	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.396	0.000	0.00
L21	76.75-71.75	A	0.000	0.000	8.964	0.000	0.03

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
		B	0.000	0.000	7.917	0.000	0.06
		C	0.000	0.000	7.917	0.000	0.03
L22	71.75-66.75	A	0.000	0.000	8.964	0.000	0.03
		B	0.000	0.000	7.917	0.000	0.06
		C	0.000	0.000	7.917	0.000	0.03
L23	66.75-61.75	A	0.000	0.000	9.297	0.000	0.03
		B	0.000	0.000	8.250	0.000	0.06
		C	0.000	0.000	8.250	0.000	0.03
L24	61.75-60.50	A	0.000	0.000	3.074	0.000	0.01
		B	0.000	0.000	2.813	0.000	0.01
		C	0.000	0.000	2.813	0.000	0.01
L25	60.50-60.25	A	0.000	0.000	0.615	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.563	0.000	0.00
L26	60.25-59.50	A	0.000	0.000	1.845	0.000	0.00
		B	0.000	0.000	1.688	0.000	0.01
		C	0.000	0.000	1.688	0.000	0.00
L27	59.50-59.25	A	0.000	0.000	0.662	0.000	0.00
		B	0.000	0.000	0.609	0.000	0.00
		C	0.000	0.000	0.609	0.000	0.00
L28	59.25-54.25	A	0.000	0.000	10.235	0.000	0.03
		B	0.000	0.000	9.188	0.000	0.06
		C	0.000	0.000	9.188	0.000	0.03
L29	54.25-45.25	A	0.000	0.000	17.822	0.000	0.05
		B	0.000	0.000	15.938	0.000	0.10
		C	0.000	0.000	15.938	0.000	0.06
L30	45.25-45.00	A	0.000	0.000	0.495	0.000	0.00
		B	0.000	0.000	0.443	0.000	0.00
		C	0.000	0.000	0.443	0.000	0.00
L31	45.00-40.00	A	0.000	0.000	10.401	0.000	0.03
		B	0.000	0.000	8.854	0.000	0.06
		C	0.000	0.000	8.854	0.000	0.03
L32	40.00-39.00	A	0.000	0.000	2.647	0.000	0.01
		B	0.000	0.000	1.771	0.000	0.01
		C	0.000	0.000	1.771	0.000	0.01
L33	39.00-38.75	A	0.000	0.000	0.662	0.000	0.00
		B	0.000	0.000	0.443	0.000	0.00
		C	0.000	0.000	0.443	0.000	0.00
L34	38.75-34.00	A	0.000	0.000	12.573	0.000	0.02
		B	0.000	0.000	9.578	0.000	0.05
		C	0.000	0.000	9.578	0.000	0.03
L35	34.00-33.75	A	0.000	0.000	0.662	0.000	0.00
		B	0.000	0.000	0.609	0.000	0.00
		C	0.000	0.000	0.609	0.000	0.00
L36	33.75-29.75	A	0.000	0.000	8.921	0.000	0.02
		B	0.000	0.000	8.083	0.000	0.05
		C	0.000	0.000	8.083	0.000	0.03
L37	29.75-29.50	A	0.000	0.000	0.505	0.000	0.00
		B	0.000	0.000	0.453	0.000	0.00
		C	0.000	0.000	0.453	0.000	0.00
L38	29.50-24.50	A	0.000	0.000	10.110	0.000	0.03
		B	0.000	0.000	9.063	0.000	0.06
		C	0.000	0.000	9.063	0.000	0.03
L39	24.50-19.50	A	0.000	0.000	10.110	0.000	0.03
		B	0.000	0.000	9.063	0.000	0.06
		C	0.000	0.000	9.063	0.000	0.03
L40	19.50-14.50	A	0.000	0.000	10.110	0.000	0.03
		B	0.000	0.000	9.063	0.000	0.06
		C	0.000	0.000	9.063	0.000	0.03
L41	14.50-12.50	A	0.000	0.000	4.044	0.000	0.01
		B	0.000	0.000	3.625	0.000	0.02

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
		C	0.000	0.000	3.625	0.000	0.01
L42	12.50-12.25	A	0.000	0.000	0.505	0.000	0.00
		B	0.000	0.000	0.453	0.000	0.00
		C	0.000	0.000	0.453	0.000	0.00
L43	12.25-10.75	A	0.000	0.000	5.897	0.000	0.01
		B	0.000	0.000	2.719	0.000	0.02
		C	0.000	0.000	2.719	0.000	0.01
L44	10.75-10.50	A	0.000	0.000	0.912	0.000	0.00
		B	0.000	0.000	0.286	0.000	0.00
		C	0.000	0.000	0.286	0.000	0.00
L45	10.50-5.50	A	0.000	0.000	16.229	0.000	0.03
		B	0.000	0.000	5.729	0.000	0.06
		C	0.000	0.000	5.729	0.000	0.03
L46	5.50-0.50	A	0.000	0.000	12.505	0.000	0.03
		B	0.000	0.000	5.729	0.000	0.06
		C	0.000	0.000	5.729	0.000	0.03
L47	0.50-0.00	A	0.000	0.000	1.251	0.000	0.00
		B	0.000	0.000	0.573	0.000	0.01
		C	0.000	0.000	0.573	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	133.00-128.00	A	1.721	0.000	0.000	6.784	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	128.00-123.00	A	1.714	0.000	0.000	6.762	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	123.00-118.00	A	1.707	0.000	0.000	6.739	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	118.00-113.00	A	1.700	0.000	0.000	6.716	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L5	113.00-108.00	A	1.693	0.000	0.000	6.691	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.00
L6	108.00-104.75	A	1.686	0.000	0.000	6.093	0.000	0.08
		B		0.000	0.000	1.757	0.000	0.06
		C		0.000	0.000	1.757	0.000	0.02
L7	104.75-104.50	A	1.683	0.000	0.000	0.584	0.000	0.01
		B		0.000	0.000	0.251	0.000	0.01
		C		0.000	0.000	0.251	0.000	0.00
L8	104.50-99.50	A	1.679	0.000	0.000	12.098	0.000	0.16
		B		0.000	0.000	5.450	0.000	0.12
		C		0.000	0.000	5.450	0.000	0.06
L9	99.50-98.75	A	1.674	0.000	0.000	2.403	0.000	0.03
		B		0.000	0.000	1.408	0.000	0.03
		C		0.000	0.000	1.408	0.000	0.02
L10	98.75-98.50	A	1.674	0.000	0.000	0.801	0.000	0.01
		B		0.000	0.000	0.469	0.000	0.01
		C		0.000	0.000	0.469	0.000	0.01
L11	98.50-91.33	A	1.667	0.000	0.000	22.919	0.000	0.31
		B		0.000	0.000	13.443	0.000	0.25
		C		0.000	0.000	13.443	0.000	0.22

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
L12	91.33-90.00	A	1.660	0.000	0.000	4.252	0.000	0.06
		B		0.000	0.000	2.494	0.000	0.05
		C		0.000	0.000	2.494	0.000	0.04
L13	90.00-89.25	A	1.658	0.000	0.000	2.391	0.000	0.03
		B		0.000	0.000	1.404	0.000	0.03
		C		0.000	0.000	1.404	0.000	0.02
L14	89.25-89.00	A	1.657	0.000	0.000	0.890	0.000	0.01
		B		0.000	0.000	0.562	0.000	0.01
		C		0.000	0.000	0.562	0.000	0.01
L15	89.00-88.25	A	1.656	0.000	0.000	2.670	0.000	0.03
		B		0.000	0.000	1.684	0.000	0.03
		C		0.000	0.000	1.684	0.000	0.02
L16	88.25-88.00	A	1.655	0.000	0.000	0.890	0.000	0.01
		B		0.000	0.000	0.561	0.000	0.01
		C		0.000	0.000	0.561	0.000	0.01
L17	88.00-83.00	A	1.650	0.000	0.000	14.280	0.000	0.17
		B		0.000	0.000	7.728	0.000	0.14
		C		0.000	0.000	7.728	0.000	0.11
L18	83.00-78.00	A	1.640	0.000	0.000	13.489	0.000	0.16
		B		0.000	0.000	6.969	0.000	0.13
		C		0.000	0.000	6.969	0.000	0.10
L19	78.00-77.00	A	1.634	0.000	0.000	3.537	0.000	0.04
		B		0.000	0.000	2.237	0.000	0.03
		C		0.000	0.000	2.237	0.000	0.03
L20	77.00-76.75	A	1.632	0.000	0.000	0.884	0.000	0.01
		B		0.000	0.000	0.559	0.000	0.01
		C		0.000	0.000	0.559	0.000	0.01
L21	76.75-71.75	A	1.627	0.000	0.000	17.647	0.000	0.21
		B		0.000	0.000	11.170	0.000	0.17
		C		0.000	0.000	11.170	0.000	0.15
L22	71.75-66.75	A	1.615	0.000	0.000	17.588	0.000	0.20
		B		0.000	0.000	11.147	0.000	0.17
		C		0.000	0.000	11.147	0.000	0.15
L23	66.75-61.75	A	1.603	0.000	0.000	18.018	0.000	0.21
		B		0.000	0.000	11.462	0.000	0.17
		C		0.000	0.000	11.617	0.000	0.15
L24	61.75-60.50	A	1.595	0.000	0.000	5.603	0.000	0.06
		B		0.000	0.000	3.624	0.000	0.05
		C		0.000	0.000	4.009	0.000	0.05
L25	60.50-60.25	A	1.593	0.000	0.000	1.120	0.000	0.01
		B		0.000	0.000	0.724	0.000	0.01
		C		0.000	0.000	0.802	0.000	0.01
L26	60.25-59.50	A	1.592	0.000	0.000	3.359	0.000	0.04
		B		0.000	0.000	2.173	0.000	0.03
		C		0.000	0.000	2.404	0.000	0.03
L27	59.50-59.25	A	1.591	0.000	0.000	1.166	0.000	0.01
		B		0.000	0.000	0.771	0.000	0.01
		C		0.000	0.000	0.848	0.000	0.01
L28	59.25-54.25	A	1.584	0.000	0.000	18.850	0.000	0.24
		B		0.000	0.000	12.359	0.000	0.21
		C		0.000	0.000	12.513	0.000	0.19
L29	54.25-45.25	A	1.563	0.000	0.000	32.848	0.000	0.42
		B		0.000	0.000	21.563	0.000	0.37
		C		0.000	0.000	21.563	0.000	0.32
L30	45.25-45.00	A	1.548	0.000	0.000	0.912	0.000	0.01
		B		0.000	0.000	0.599	0.000	0.01
		C		0.000	0.000	0.599	0.000	0.01
L31	45.00-40.00	A	1.538	0.000	0.000	18.852	0.000	0.24
		B		0.000	0.000	11.931	0.000	0.20
		C		0.000	0.000	11.931	0.000	0.18
L32	40.00-39.00	A	1.527	0.000	0.000	4.585	0.000	0.06

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
		B		0.000	0.000	2.382	0.000	0.04
		C		0.000	0.000	2.382	0.000	0.04
L33	39.00-38.75	A	1.525	0.000	0.000	1.145	0.000	0.01
		B		0.000	0.000	0.595	0.000	0.01
		C		0.000	0.000	0.595	0.000	0.01
L34	38.75-34.00	A	1.515	0.000	0.000	21.702	0.000	0.26
		B		0.000	0.000	12.460	0.000	0.20
		C		0.000	0.000	12.986	0.000	0.18
L35	34.00-33.75	A	1.504	0.000	0.000	1.139	0.000	0.01
		B		0.000	0.000	0.760	0.000	0.01
		C		0.000	0.000	0.835	0.000	0.01
L36	33.75-29.75	A	1.494	0.000	0.000	15.759	0.000	0.19
		B		0.000	0.000	10.474	0.000	0.17
		C		0.000	0.000	10.922	0.000	0.15
L37	29.75-29.50	A	1.484	0.000	0.000	0.902	0.000	0.01
		B		0.000	0.000	0.602	0.000	0.01
		C		0.000	0.000	0.602	0.000	0.01
L38	29.50-24.50	A	1.470	0.000	0.000	17.971	0.000	0.22
		B		0.000	0.000	12.003	0.000	0.20
		C		0.000	0.000	12.003	0.000	0.17
L39	24.50-19.50	A	1.440	0.000	0.000	17.814	0.000	0.22
		B		0.000	0.000	11.943	0.000	0.19
		C		0.000	0.000	11.943	0.000	0.17
L40	19.50-14.50	A	1.404	0.000	0.000	17.622	0.000	0.21
		B		0.000	0.000	11.870	0.000	0.19
		C		0.000	0.000	11.870	0.000	0.16
L41	14.50-12.50	A	1.372	0.000	0.000	6.982	0.000	0.08
		B		0.000	0.000	4.722	0.000	0.07
		C		0.000	0.000	4.722	0.000	0.06
L42	12.50-12.25	A	1.360	0.000	0.000	0.870	0.000	0.01
		B		0.000	0.000	0.589	0.000	0.01
		C		0.000	0.000	0.589	0.000	0.01
L43	12.25-10.75	A	1.350	0.000	0.000	8.229	0.000	0.10
		B		0.000	0.000	3.529	0.000	0.05
		C		0.000	0.000	3.529	0.000	0.05
L44	10.75-10.50	A	1.339	0.000	0.000	1.236	0.000	0.02
		B		0.000	0.000	0.353	0.000	0.01
		C		0.000	0.000	0.353	0.000	0.01
L45	10.50-5.50	A	1.302	0.000	0.000	22.051	0.000	0.29
		B		0.000	0.000	7.031	0.000	0.14
		C		0.000	0.000	7.031	0.000	0.12
L46	5.50-0.50	A	1.180	0.000	0.000	16.959	0.000	0.21
		B		0.000	0.000	6.909	0.000	0.13
		C		0.000	0.000	6.909	0.000	0.11
L47	0.50-0.00	A	0.920	0.000	0.000	1.585	0.000	0.02
		B		0.000	0.000	0.665	0.000	0.01
		C		0.000	0.000	0.665	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	133.00-128.00	-0.0812	-0.2544	-0.1998	-0.7007
L2	128.00-123.00	-0.0818	-0.2563	-0.2079	-0.7294
L3	123.00-118.00	-0.0823	-0.2580	-0.2157	-0.7565
L4	118.00-113.00	-0.0828	-0.2595	-0.2229	-0.7820

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L5	113.00-108.00	-0.0832	-0.2608	-0.2298	-0.8061
L6	108.00-104.75	-0.0526	-0.1649	-0.1639	-0.5750
L7	104.75-104.50	-0.0403	-0.1265	-0.1318	-0.4623
L8	104.50-99.50	-0.0393	-0.1226	-0.1299	-0.4533
L9	99.50-98.75	-0.0295	-0.0890	-0.1033	-0.3458
L10	98.75-98.50	-0.0296	-0.0893	-0.1037	-0.3471
L11	98.50-91.33	-0.0303	-0.0915	-0.1064	-0.3564
L12	91.33-90.00	-0.0308	-0.0929	-0.1083	-0.3626
L13	90.00-89.25	-0.0310	-0.0934	-0.1088	-0.3644
L14	89.25-89.00	-0.0268	-0.0809	-0.0977	-0.3272
L15	89.00-88.25	-0.0269	-0.0812	-0.0981	-0.3283
L16	88.25-88.00	-0.0270	-0.0814	-0.0984	-0.3294
L17	88.00-83.00	-0.0344	-0.1038	-0.1243	-0.4162
L18	83.00-78.00	-0.0374	-0.1126	-0.1350	-0.4519
L19	78.00-77.00	-0.0288	-0.0867	-0.1052	-0.3522
L20	77.00-76.75	-0.0289	-0.0870	-0.1056	-0.3535
L21	76.75-71.75	-0.0293	-0.0883	-0.1072	-0.3588
L22	71.75-66.75	-0.0301	-0.0907	-0.1102	-0.3688
L23	66.75-61.75	-0.0300	-0.0905	-0.1188	-0.3646
L24	61.75-60.50	-0.0246	-0.0742	-0.1620	-0.2698
L25	60.50-60.25	-0.0247	-0.0745	-0.1627	-0.2708
L26	60.25-59.50	-0.0248	-0.0747	-0.1631	-0.2715
L27	59.50-59.25	-0.0234	-0.0706	-0.1571	-0.2615
L28	59.25-54.25	-0.0290	-0.0874	-0.1171	-0.3602
L29	54.25-45.25	-0.0307	-0.0925	-0.1150	-0.3846
L30	45.25-45.00	-0.0310	-0.0934	-0.1163	-0.3888
L31	45.00-40.00	-0.0730	-0.1176	-0.1582	-0.4107
L32	40.00-39.00	-0.2915	-0.2399	-0.3756	-0.5188
L33	39.00-38.75	-0.2923	-0.2405	-0.3767	-0.5201
L34	38.75-34.00	-0.1864	-0.1764	-0.2974	-0.4288
L35	34.00-33.75	-0.0262	-0.0789	-0.1739	-0.2865
L36	33.75-29.75	-0.0300	-0.0906	-0.1439	-0.3560
L37	29.75-29.50	-0.0325	-0.0981	-0.1207	-0.4033
L38	29.50-24.50	-0.0328	-0.0991	-0.1216	-0.4060
L39	24.50-19.50	-0.0335	-0.1010	-0.1230	-0.4104
L40	19.50-14.50	-0.0341	-0.1028	-0.1239	-0.4134
L41	14.50-12.50	-0.0345	-0.1041	-0.1242	-0.4141
L42	12.50-12.25	-0.0346	-0.1045	-0.1243	-0.4141
L43	12.25-10.75	-0.1337	-0.8522	-0.1915	-0.9749
L44	10.75-10.50	-0.1822	-1.1860	-0.2518	-1.3292
L45	10.50-5.50	0.0308	-1.1213	-0.0472	-1.2714
L46	5.50-0.50	0.4859	-0.9806	0.3945	-1.1370
L47	0.50-0.00	0.4902	-0.9870	0.4166	-1.1057

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	7983A(ELLIPTICAL)	128.00 - 133.00	1.0000	1.0000
L1	4	7983A(ELLIPTICAL)	128.00 - 133.00	1.0000	1.0000
L1	23	Safety Line 3/8	128.00 - 133.00	1.0000	1.0000
L2	2	7983A(ELLIPTICAL)	123.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			128.00		
L2	4	7983A(ELLIPTICAL)	123.00 - 128.00	1.0000	1.0000
L2	23	Safety Line 3/8	123.00 - 128.00	1.0000	1.0000
L3	2	7983A(ELLIPTICAL)	118.00 - 123.00	1.0000	1.0000
L3	4	7983A(ELLIPTICAL)	118.00 - 123.00	1.0000	1.0000
L3	23	Safety Line 3/8	118.00 - 123.00	1.0000	1.0000
L4	2	7983A(ELLIPTICAL)	113.00 - 118.00	1.0000	1.0000
L4	4	7983A(ELLIPTICAL)	113.00 - 118.00	1.0000	1.0000
L4	23	Safety Line 3/8	113.00 - 118.00	1.0000	1.0000
L5	2	7983A(ELLIPTICAL)	108.00 - 113.00	1.0000	1.0000
L5	4	7983A(ELLIPTICAL)	108.00 - 113.00	1.0000	1.0000
L5	23	Safety Line 3/8	108.00 - 113.00	1.0000	1.0000
L6	2	7983A(ELLIPTICAL)	104.75 - 108.00	1.0000	1.0000
L6	4	7983A(ELLIPTICAL)	104.75 - 108.00	1.0000	1.0000
L6	23	Safety Line 3/8	104.75 - 108.00	1.0000	1.0000
L6	58	4" x 1" Flat Plate (G)	104.75 - 106.50	1.0000	1.0000
L6	59	4" x 1" Flat Plate (G)	104.75 - 106.50	1.0000	1.0000
L6	60	4" x 1" Flat Plate (G)	104.75 - 106.50	1.0000	1.0000
L7	2	7983A(ELLIPTICAL)	104.50 - 104.75	1.0000	1.0000
L7	4	7983A(ELLIPTICAL)	104.50 - 104.75	1.0000	1.0000
L7	23	Safety Line 3/8	104.50 - 104.75	1.0000	1.0000
L7	58	4" x 1" Flat Plate (G)	104.50 - 104.75	1.0000	1.0000
L7	59	4" x 1" Flat Plate (G)	104.50 - 104.75	1.0000	1.0000
L7	60	4" x 1" Flat Plate (G)	104.50 - 104.75	1.0000	1.0000
L8	2	7983A(ELLIPTICAL)	99.50 - 104.50	1.0000	1.0000
L8	3	7983A(ELLIPTICAL)	99.50 - 100.00	1.0000	1.0000
L8	4	7983A(ELLIPTICAL)	100.00 - 104.50	1.0000	1.0000
L8	23	Safety Line 3/8	99.50 - 104.50	1.0000	1.0000
L8	40	3.625" x 1.25" Flat Plate (G)	99.50 - 100.00	1.0000	1.0000
L8	41	3.625" x 1.25" Flat Plate (G)	99.50 - 100.00	1.0000	1.0000
L8	42	3.625" x 1.25" Flat Plate (G)	99.50 - 100.00	1.0000	1.0000
L8	58	4" x 1" Flat Plate (G)	99.50 - 104.50	1.0000	1.0000
L8	59	4" x 1" Flat Plate (G)	99.50 - 104.50	1.0000	1.0000
L8	60	4" x 1" Flat Plate (G)	99.50 - 104.50	1.0000	1.0000
L9	2	7983A(ELLIPTICAL)	98.75 - 99.50	1.0000	1.0000
L9	3	7983A(ELLIPTICAL)	98.75 - 99.50	1.0000	1.0000
L9	23	Safety Line 3/8	98.75 - 99.50	1.0000	1.0000
L9	40	3.625" x 1.25" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	41	3.625" x 1.25" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	42	3.625" x 1.25" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	58	4" x 1" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	59	4" x 1" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	60	4" x 1" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L10	2	7983A(ELLIPTICAL)	98.50 - 98.75	1.0000	1.0000
L10	3	7983A(ELLIPTICAL)	98.50 - 98.75	1.0000	1.0000
L10	23	Safety Line 3/8	98.50 - 98.75	1.0000	1.0000
L10	40	3.625" x 1.25" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	41	3.625" x 1.25" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	42	3.625" x 1.25" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	58	4" x 1" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	59	4" x 1" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	60	4" x 1" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L11	2	7983A(ELLIPTICAL)	91.33 - 98.50	1.0000	1.0000
L11	3	7983A(ELLIPTICAL)	91.33 - 98.50	1.0000	1.0000
L11	23	Safety Line 3/8	91.33 - 98.50	1.0000	1.0000
L11	40	3.625" x 1.25" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	41	3.625" x 1.25" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	42	3.625" x 1.25" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	58	4" x 1" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	59	4" x 1" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	60	4" x 1" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L13	2	7983A(ELLIPTICAL)	89.25 - 90.00	1.0000	1.0000
L13	3	7983A(ELLIPTICAL)	89.25 - 90.00	1.0000	1.0000
L13	23	Safety Line 3/8	89.25 - 90.00	1.0000	1.0000
L13	40	3.625" x 1.25" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	41	3.625" x 1.25" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	42	3.625" x 1.25" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	58	4" x 1" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	59	4" x 1" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	60	4" x 1" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L14	2	7983A(ELLIPTICAL)	89.00 - 89.25	1.0000	1.0000
L14	3	7983A(ELLIPTICAL)	89.00 - 89.25	1.0000	1.0000
L14	23	Safety Line 3/8	89.00 - 89.25	1.0000	1.0000
L14	36	5.5" x 1.25" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	37	5.5" x 1.25" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	38	5.5" x 1.25" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	58	4" x 1" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	59	4" x 1" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	60	4" x 1" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L15	2	7983A(ELLIPTICAL)	88.25 - 89.00	1.0000	1.0000
L15	3	7983A(ELLIPTICAL)	88.25 - 89.00	1.0000	1.0000
L15	23	Safety Line 3/8	88.25 - 89.00	1.0000	1.0000
L15	36	5.5" x 1.25" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	37	5.5" x 1.25" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	38	5.5" x 1.25" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	58	4" x 1" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	59	4" x 1" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	60	4" x 1" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L16	2	7983A(ELLIPTICAL)	88.00 - 88.25	1.0000	1.0000
L16	3	7983A(ELLIPTICAL)	88.00 - 88.25	1.0000	1.0000
L16	23	Safety Line 3/8	88.00 - 88.25	1.0000	1.0000
L16	36	5.5" x 1.25" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	37	5.5" x 1.25" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	38	5.5" x 1.25" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	58	4" x 1" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	59	4" x 1" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	60	4" x 1" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L17	2	7983A(ELLIPTICAL)	83.00 - 88.00	1.0000	1.0000
L17	3	7983A(ELLIPTICAL)	83.00 - 88.00	1.0000	1.0000
L17	23	Safety Line 3/8	83.00 - 88.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	36	5.5" x 1.25" Flat Plate (G)	83.00 - 88.00	1.0000	1.0000
L17	37	5.5" x 1.25" Flat Plate (G)	83.00 - 88.00	1.0000	1.0000
L17	38	5.5" x 1.25" Flat Plate (G)	83.00 - 88.00	1.0000	1.0000
L17	58	4" x 1" Flat Plate (G)	86.50 - 88.00	1.0000	1.0000
L17	59	4" x 1" Flat Plate (G)	86.50 - 88.00	1.0000	1.0000
L17	60	4" x 1" Flat Plate (G)	86.50 - 88.00	1.0000	1.0000
L18	2	7983A(ELLIPTICAL)	78.00 - 83.00	1.0000	1.0000
L18	3	7983A(ELLIPTICAL)	78.00 - 83.00	1.0000	1.0000
L18	23	Safety Line 3/8	78.00 - 83.00	1.0000	1.0000
L18	36	5.5" x 1.25" Flat Plate (G)	78.00 - 83.00	1.0000	1.0000
L18	37	5.5" x 1.25" Flat Plate (G)	78.00 - 83.00	1.0000	1.0000
L18	38	5.5" x 1.25" Flat Plate (G)	78.00 - 83.00	1.0000	1.0000
L18	53	4" x 1" Flat Plate (G)	78.00 - 78.75	1.0000	1.0000
L18	55	4" x 1" Flat Plate (G)	78.00 - 78.75	1.0000	1.0000
L18	56	4" x 1" Flat Plate (G)	78.00 - 78.75	1.0000	1.0000
L19	2	7983A(ELLIPTICAL)	77.00 - 78.00	1.0000	1.0000
L19	3	7983A(ELLIPTICAL)	77.00 - 78.00	1.0000	1.0000
L19	23	Safety Line 3/8	77.00 - 78.00	1.0000	1.0000
L19	36	5.5" x 1.25" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	37	5.5" x 1.25" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	38	5.5" x 1.25" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	53	4" x 1" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	55	4" x 1" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	56	4" x 1" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L20	2	7983A(ELLIPTICAL)	76.75 - 77.00	1.0000	1.0000
L20	3	7983A(ELLIPTICAL)	76.75 - 77.00	1.0000	1.0000
L20	23	Safety Line 3/8	76.75 - 77.00	1.0000	1.0000
L20	36	5.5" x 1.25" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	37	5.5" x 1.25" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	38	5.5" x 1.25" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	53	4" x 1" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	55	4" x 1" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	56	4" x 1" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L21	2	7983A(ELLIPTICAL)	71.75 - 76.75	1.0000	1.0000
L21	3	7983A(ELLIPTICAL)	71.75 - 76.75	1.0000	1.0000
L21	23	Safety Line 3/8	71.75 - 76.75	1.0000	1.0000
L21	36	5.5" x 1.25" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	37	5.5" x 1.25" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	38	5.5" x 1.25" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	53	4" x 1" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	55	4" x 1" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	56	4" x 1" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L22	2	7983A(ELLIPTICAL)	66.75 - 71.75	1.0000	1.0000
L22	3	7983A(ELLIPTICAL)	66.75 - 71.75	1.0000	1.0000
L22	23	Safety Line 3/8	66.75 - 71.75	1.0000	1.0000
L22	36	5.5" x 1.25" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	37	5.5" x 1.25" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	38	5.5" x 1.25" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	53	4" x 1" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	55	4" x 1" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	56	4" x 1" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L23	2	7983A(ELLIPTICAL)	61.75 - 66.75	1.0000	1.0000
L23	3	7983A(ELLIPTICAL)	61.75 - 66.75	1.0000	1.0000
L23	23	Safety Line 3/8	61.75 - 66.75	1.0000	1.0000
L23	36	5.5" x 1.25" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	37	5.5" x 1.25" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	38	5.5" x 1.25" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	48	4" x 1" Flat Plate (G)	61.75 - 62.25	1.0000	1.0000
L23	50	4" x 1" Flat Plate (G)	61.75 - 62.25	1.0000	1.0000
L23	51	4" x 1" Flat Plate (G)	61.75 - 62.25	1.0000	1.0000
L23	53	4" x 1" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	54	4" x 1" Flat Plate (G)	61.75 - 62.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L23	55	4" x 1" Flat Plate (G)	62.25 - 66.75	1.0000	1.0000
L23	56	4" x 1" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L24	2	7983A(ELLIPTICAL)	60.50 - 61.75	1.0000	1.0000
L24	3	7983A(ELLIPTICAL)	60.50 - 61.75	1.0000	1.0000
L24	23	Safety Line 3/8	60.50 - 61.75	1.0000	1.0000
L24	36	5.5" x 1.25" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	37	5.5" x 1.25" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	38	5.5" x 1.25" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	48	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	50	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	51	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	53	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	54	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	56	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L25	2	7983A(ELLIPTICAL)	60.25 - 60.50	1.0000	1.0000
L25	3	7983A(ELLIPTICAL)	60.25 - 60.50	1.0000	1.0000
L25	23	Safety Line 3/8	60.25 - 60.50	1.0000	1.0000
L25	36	5.5" x 1.25" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	37	5.5" x 1.25" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	38	5.5" x 1.25" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	48	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	50	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	51	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	53	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	54	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	56	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L26	2	7983A(ELLIPTICAL)	59.50 - 60.25	1.0000	1.0000
L26	3	7983A(ELLIPTICAL)	59.50 - 60.25	1.0000	1.0000
L26	23	Safety Line 3/8	59.50 - 60.25	1.0000	1.0000
L26	36	5.5" x 1.25" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	37	5.5" x 1.25" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	38	5.5" x 1.25" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	48	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	50	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	51	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	53	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	54	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	56	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L27	2	7983A(ELLIPTICAL)	59.25 - 59.50	1.0000	1.0000
L27	3	7983A(ELLIPTICAL)	59.25 - 59.50	1.0000	1.0000
L27	23	Safety Line 3/8	59.25 - 59.50	1.0000	1.0000
L27	32	6.625" x 1.25" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	33	6.625" x 1.25" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	34	6.625" x 1.25" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	48	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	50	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	51	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	53	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	54	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	56	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L28	2	7983A(ELLIPTICAL)	54.25 - 59.25	1.0000	1.0000
L28	3	7983A(ELLIPTICAL)	54.25 - 59.25	1.0000	1.0000
L28	23	Safety Line 3/8	54.25 - 59.25	1.0000	1.0000
L28	32	6.625" x 1.25" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	33	6.625" x 1.25" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	34	6.625" x 1.25" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	48	4" x 1" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	50	4" x 1" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	51	4" x 1" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	53	4" x 1" Flat Plate (G)	58.75 - 59.25	1.0000	1.0000
L28	54	4" x 1" Flat Plate (G)	58.75 - 59.25	1.0000	1.0000
L28	56	4" x 1" Flat Plate (G)	58.75 - 59.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	2	7983A(ELLIPTICAL)	45.25 - 54.25	1.0000	1.0000
L29	3	7983A(ELLIPTICAL)	45.25 - 54.25	1.0000	1.0000
L29	23	Safety Line 3/8	45.25 - 54.25	1.0000	1.0000
L29	32	6.625" x 1.25" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	33	6.625" x 1.25" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	34	6.625" x 1.25" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	48	4" x 1" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	50	4" x 1" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	51	4" x 1" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L31	2	7983A(ELLIPTICAL)	40.00 - 45.00	1.0000	1.0000
L31	3	7983A(ELLIPTICAL)	40.00 - 45.00	1.0000	1.0000
L31	23	Safety Line 3/8	40.00 - 45.00	1.0000	1.0000
L31	32	6.625" x 1.25" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	33	6.625" x 1.25" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	34	6.625" x 1.25" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	44	4" x 1" Flat Plate (G)	40.00 - 40.75	1.0000	1.0000
L31	48	4" x 1" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	50	4" x 1" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	51	4" x 1" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L32	2	7983A(ELLIPTICAL)	39.00 - 40.00	1.0000	1.0000
L32	3	7983A(ELLIPTICAL)	39.00 - 40.00	1.0000	1.0000
L32	23	Safety Line 3/8	39.00 - 40.00	1.0000	1.0000
L32	32	6.625" x 1.25" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	33	6.625" x 1.25" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	34	6.625" x 1.25" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	44	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	48	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	50	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	51	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L33	2	7983A(ELLIPTICAL)	38.75 - 39.00	1.0000	1.0000
L33	3	7983A(ELLIPTICAL)	38.75 - 39.00	1.0000	1.0000
L33	23	Safety Line 3/8	38.75 - 39.00	1.0000	1.0000
L33	32	6.625" x 1.25" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	33	6.625" x 1.25" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	34	6.625" x 1.25" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	44	4" x 1" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	48	4" x 1" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	50	4" x 1" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	51	4" x 1" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L34	2	7983A(ELLIPTICAL)	34.00 - 38.75	1.0000	1.0000
L34	3	7983A(ELLIPTICAL)	34.00 - 38.75	1.0000	1.0000
L34	23	Safety Line 3/8	34.00 - 38.75	1.0000	1.0000
L34	32	6.625" x 1.25" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	33	6.625" x 1.25" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	34	6.625" x 1.25" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	44	4" x 1" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	45	4" x 1" Flat Plate (G)	34.00 - 35.75	1.0000	1.0000
L34	46	4" x 1" Flat Plate (G)	34.00 - 35.75	1.0000	1.0000
L34	48	4" x 1" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	49	4" x 1" Flat Plate (G)	34.00 - 35.75	1.0000	1.0000
L34	50	4" x 1" Flat Plate (G)	35.75 - 38.75	1.0000	1.0000
L34	51	4" x 1" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L35	2	7983A(ELLIPTICAL)	33.75 - 34.00	1.0000	1.0000
L35	3	7983A(ELLIPTICAL)	33.75 - 34.00	1.0000	1.0000
L35	23	Safety Line 3/8	33.75 - 34.00	1.0000	1.0000
L35	32	6.625" x 1.25" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	33	6.625" x 1.25" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	34	6.625" x 1.25" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	44	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	45	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	46	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	48	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	49	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	51	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L36	2	7983A(ELLIPTICAL)	29.75 - 33.75	1.0000	1.0000
L36	3	7983A(ELLIPTICAL)	29.75 - 33.75	1.0000	1.0000
L36	23	Safety Line 3/8	29.75 - 33.75	1.0000	1.0000
L36	32	6.625" x 1.25" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	33	6.625" x 1.25" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	34	6.625" x 1.25" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	44	4" x 1" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	45	4" x 1" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	46	4" x 1" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	48	4" x 1" Flat Plate (G)	32.25 - 33.75	1.0000	1.0000
L36	49	4" x 1" Flat Plate (G)	32.25 - 33.75	1.0000	1.0000
L36	51	4" x 1" Flat Plate (G)	32.25 - 33.75	1.0000	1.0000
L37	2	7983A(ELLIPTICAL)	29.50 - 29.75	1.0000	1.0000
L37	3	7983A(ELLIPTICAL)	29.50 - 29.75	1.0000	1.0000
L37	23	Safety Line 3/8	29.50 - 29.75	1.0000	1.0000
L37	28	6.875" x 1.25" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	29	6.875" x 1.25" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	30	6.875" x 1.25" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	44	4" x 1" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	45	4" x 1" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	46	4" x 1" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L38	2	7983A(ELLIPTICAL)	24.50 - 29.50	1.0000	1.0000
L38	3	7983A(ELLIPTICAL)	24.50 - 29.50	1.0000	1.0000
L38	23	Safety Line 3/8	24.50 - 29.50	1.0000	1.0000
L38	28	6.875" x 1.25" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	29	6.875" x 1.25" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	30	6.875" x 1.25" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	44	4" x 1" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	45	4" x 1" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	46	4" x 1" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L39	2	7983A(ELLIPTICAL)	19.50 - 24.50	1.0000	1.0000
L39	3	7983A(ELLIPTICAL)	19.50 - 24.50	1.0000	1.0000
L39	23	Safety Line 3/8	19.50 - 24.50	1.0000	1.0000
L39	28	6.875" x 1.25" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	29	6.875" x 1.25" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	30	6.875" x 1.25" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	44	4" x 1" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	45	4" x 1" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	46	4" x 1" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L40	2	7983A(ELLIPTICAL)	14.50 - 19.50	1.0000	1.0000
L40	3	7983A(ELLIPTICAL)	14.50 - 19.50	1.0000	1.0000
L40	23	Safety Line 3/8	14.50 - 19.50	1.0000	1.0000
L40	28	6.875" x 1.25" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	29	6.875" x 1.25" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	30	6.875" x 1.25" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	44	4" x 1" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	45	4" x 1" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	46	4" x 1" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L41	2	7983A(ELLIPTICAL)	12.50 - 14.50	1.0000	1.0000
L41	3	7983A(ELLIPTICAL)	12.50 - 14.50	1.0000	1.0000
L41	23	Safety Line 3/8	12.50 - 14.50	1.0000	1.0000
L41	28	6.875" x 1.25" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	29	6.875" x 1.25" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	30	6.875" x 1.25" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	44	4" x 1" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	45	4" x 1" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	46	4" x 1" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L42	2	7983A(ELLIPTICAL)	12.25 - 12.50	1.0000	1.0000
L42	3	7983A(ELLIPTICAL)	12.25 - 12.50	1.0000	1.0000
L42	23	Safety Line 3/8	12.25 - 12.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L42	28	6.875" x 1.25" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	29	6.875" x 1.25" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	30	6.875" x 1.25" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	44	4" x 1" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	45	4" x 1" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	46	4" x 1" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L43	2	7983A(ELLIPTICAL)	10.75 - 12.25	1.0000	1.0000
L43	3	7983A(ELLIPTICAL)	10.75 - 12.25	1.0000	1.0000
L43	23	Safety Line 3/8	10.75 - 12.25	1.0000	1.0000
L43	25	6.875" x 1.25" Flat Plate (G)	10.75 - 12.00	1.0000	1.0000
L43	26	6.875" x 1.25" Flat Plate (G)	10.75 - 12.00	1.0000	1.0000
L43	28	6.875" x 1.25" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	29	6.875" x 1.25" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	30	6.875" x 1.25" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	44	4" x 1" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	45	4" x 1" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	46	4" x 1" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L44	2	7983A(ELLIPTICAL)	10.50 - 10.75	1.0000	1.0000
L44	3	7983A(ELLIPTICAL)	10.50 - 10.75	1.0000	1.0000
L44	23	Safety Line 3/8	10.50 - 10.75	1.0000	1.0000
L44	25	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L44	26	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L44	28	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L44	29	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L44	30	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L45	2	7983A(ELLIPTICAL)	5.50 - 10.50	1.0000	1.0000
L45	3	7983A(ELLIPTICAL)	5.50 - 10.50	1.0000	1.0000
L45	23	Safety Line 3/8	5.50 - 10.50	1.0000	1.0000
L45	25	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L45	26	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L45	28	6.875" x 1.25" Flat Plate (G)	7.25 - 10.50	1.0000	1.0000
L45	29	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L45	30	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L46	2	7983A(ELLIPTICAL)	0.50 - 5.50	1.0000	1.0000
L46	3	7983A(ELLIPTICAL)	0.50 - 5.50	1.0000	1.0000
L46	23	Safety Line 3/8	0.50 - 5.50	1.0000	1.0000
L46	25	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L46	26	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L46	29	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L46	30	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L47	2	7983A(ELLIPTICAL)	0.00 - 0.50	1.0000	1.0000
L47	3	7983A(ELLIPTICAL)	0.00 - 0.50	1.0000	1.0000
L47	23	Safety Line 3/8	0.00 - 0.50	1.0000	1.0000
L47	25	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000
L47	26	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000
L47	29	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000
L47	30	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 1"x5'	C	From Leg	0.00	0.0000	133.00	No Ice	0.50	0.50	0.03
			0.00			1/2" Ice	1.02	1.02	0.03
			2.50			1" Ice	1.43	1.43	0.04
* 133' *									
(2) APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	133.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			-3.00			1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	133.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			-3.00			1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	133.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			-3.00			1" Ice	9.35	9.02	0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.0000	133.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			-3.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.0000	133.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			-3.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.0000	133.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			-3.00			1" Ice	7.47	6.47	0.19
(6) ACU-A20-N	A	From Leg	4.00	0.0000	133.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
(3) ACU-A20-N	B	From Leg	4.00	0.0000	133.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
(3) ACU-A20-N	C	From Leg	4.00	0.0000	133.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
(2) 800MHZ RRH	A	From Leg	4.00	0.0000	133.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
800MHZ RRH	B	From Leg	4.00	0.0000	133.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
(2) IBC1900HB-2	A	From Leg	4.00	0.0000	133.00	No Ice	1.13	0.71	0.04
			0.00			1/2" Ice	1.27	0.84	0.05
			0.00			1" Ice	1.42	0.97	0.06
IBC1900HB-2	B	From Leg	4.00	0.0000	133.00	No Ice	1.13	0.71	0.04
			0.00			1/2" Ice	1.27	0.84	0.05
			0.00			1" Ice	1.42	0.97	0.06
IBC1900HB-2	C	From Leg	4.00	0.0000	133.00	No Ice	1.13	0.71	0.04
			0.00			1/2" Ice	1.27	0.84	0.05
			0.00			1" Ice	1.42	0.97	0.06
(4) 1900MHz RRH (65MHz)	A	From Leg	4.00	0.0000	133.00	No Ice	2.31	2.38	0.06
			0.00			1/2" Ice	2.52	2.58	0.08
			0.00			1" Ice	2.73	2.79	0.11
(2) 1900MHz RRH (65MHz)	B	From Leg	4.00	0.0000	133.00	No Ice	2.31	2.38	0.06
			0.00			1/2" Ice	2.52	2.58	0.08
			0.00			1" Ice	2.73	2.79	0.11
(2) 800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	133.00	No Ice	0.66	0.32	0.01
			0.00			1/2" Ice	0.76	0.40	0.02
			0.00			1" Ice	0.87	0.48	0.02
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	133.00	No Ice	0.66	0.32	0.01
			0.00			1/2" Ice	0.76	0.40	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	0.87	0.48	0.02
TD-RRH8x20-25	A	From Leg	4.00	0.0000	133.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	B	From Leg	4.00	0.0000	133.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	4.00	0.0000	133.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
PD2DE-700/2700	B	From Leg	4.00	0.0000	133.00	No Ice	0.11	0.11	0.00
			0.00			1/2" Ice	0.18	0.18	0.00
			0.00			1" Ice	0.25	0.25	0.00
PD2DE-700/2700	C	From Leg	4.00	0.0000	133.00	No Ice	0.11	0.11	0.00
			0.00			1/2" Ice	0.18	0.18	0.00
			0.00			1" Ice	0.25	0.25	0.00
Platform Mount [LP 602-1]	C	None		0.0000	133.00	No Ice	32.03	32.03	1.34
						1/2" Ice	38.71	38.71	1.80
						1" Ice	45.39	45.39	2.26
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	133.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(2) 6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	133.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(2) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	133.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
* 110' *									
BXA-171063/12CF w/ Mount Pipe	A	From Leg	4.00	0.0000	110.00	No Ice	5.03	5.29	0.04
			0.00			1/2" Ice	5.58	6.46	0.09
			0.00			1" Ice	6.10	7.35	0.14
BXA-171063/12CF w/ Mount Pipe	B	From Leg	4.00	0.0000	110.00	No Ice	5.03	5.29	0.04
			0.00			1/2" Ice	5.58	6.46	0.09
			0.00			1" Ice	6.10	7.35	0.14
BXA-171063/12CF w/ Mount Pipe	C	From Leg	4.00	0.0000	110.00	No Ice	5.03	5.29	0.04
			0.00			1/2" Ice	5.58	6.46	0.09
			0.00			1" Ice	6.10	7.35	0.14
BXA-70063/6CF-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	110.00	No Ice	7.81	5.40	0.04
			0.00			1/2" Ice	8.36	6.55	0.10
			0.00			1" Ice	8.87	7.41	0.17
BXA-70063/6CF-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	110.00	No Ice	7.81	5.40	0.04
			0.00			1/2" Ice	8.36	6.55	0.10
			0.00			1" Ice	8.87	7.41	0.17
BXA-70063/6CF-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	110.00	No Ice	7.81	5.40	0.04
			0.00			1/2" Ice	8.36	6.55	0.10
			0.00			1" Ice	8.87	7.41	0.17
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00	0.0000	110.00	No Ice	4.95	3.42	0.03
			0.00			1/2" Ice	5.32	4.02	0.07
			0.00			1" Ice	5.71	4.64	0.12
BXA-80063/4CF w/ Mount Pipe	B	From Leg	4.00	0.0000	110.00	No Ice	4.95	3.42	0.03
			0.00			1/2" Ice	5.32	4.02	0.07
			0.00			1" Ice	5.71	4.64	0.12
BXA-80063/4CF w/ Mount Pipe	C	From Leg	4.00	0.0000	110.00	No Ice	4.95	3.42	0.03
			0.00			1/2" Ice	5.32	4.02	0.07
			0.00			1" Ice	5.71	4.64	0.12
MG D3-800Tx w/ Mount	A	From Leg	4.00	0.0000	110.00	No Ice	3.57	3.42	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0.00			1/2" Ice	3.98	4.12	0.07
			0.00			1" Ice	4.39	4.78	0.11
MG D3-800Tx w/ Mount Pipe	B	From Leg	4.00	0.0000	110.00	No Ice	3.57	3.42	0.03
			0.00			1/2" Ice	3.98	4.12	0.07
			0.00			1" Ice	4.39	4.78	0.11
MG D3-800Tx w/ Mount Pipe	C	From Leg	4.00	0.0000	110.00	No Ice	3.57	3.42	0.03
			0.00			1/2" Ice	3.98	4.12	0.07
			0.00			1" Ice	4.39	4.78	0.11
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.0000	110.00	No Ice	0.31	0.08	0.00
			0.00			1/2" Ice	0.39	0.12	0.01
			0.00			1" Ice	0.47	0.17	0.01
(2) FD9R6004/2C-3L	B	From Leg	4.00	0.0000	110.00	No Ice	0.31	0.08	0.00
			0.00			1/2" Ice	0.39	0.12	0.01
			0.00			1" Ice	0.47	0.17	0.01
(2) FD9R6004/2C-3L	C	From Leg	4.00	0.0000	110.00	No Ice	0.31	0.08	0.00
			0.00			1/2" Ice	0.39	0.12	0.01
			0.00			1" Ice	0.47	0.17	0.01
RRH2x40-AWS	A	From Leg	4.00	0.0000	110.00	No Ice	2.16	1.42	0.04
			0.00			1/2" Ice	2.36	1.59	0.06
			0.00			1" Ice	2.57	1.77	0.08
RRH2x40-AWS	B	From Leg	4.00	0.0000	110.00	No Ice	2.16	1.42	0.04
			0.00			1/2" Ice	2.36	1.59	0.06
			0.00			1" Ice	2.57	1.77	0.08
RRH2x40-AWS	C	From Leg	4.00	0.0000	110.00	No Ice	2.16	1.42	0.04
			0.00			1/2" Ice	2.36	1.59	0.06
			0.00			1" Ice	2.57	1.77	0.08
DB-T1-6Z-8AB-0Z	A	From Leg	4.00	0.0000	110.00	No Ice	4.80	2.00	0.04
			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
BULLET III	C	From Leg	4.00	0.0000	110.00	No Ice	0.07	0.07	0.00
			0.00			1/2" Ice	0.10	0.10	0.00
			3.00			1" Ice	0.14	0.14	0.00
Platform Mount [LP 602-1]	C	None		0.0000	110.00	No Ice	32.03	32.03	1.34
						1/2" Ice	38.71	38.71	1.80
						1" Ice	45.39	45.39	2.26
* 100' *									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.00	0.0000	100.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			0.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.00	0.0000	100.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			0.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.00	0.0000	100.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			0.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	4.00	0.0000	100.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			0.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	4.00	0.0000	100.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			0.00			1" Ice	7.21	7.13	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	4.00	0.0000	100.00	No Ice	6.33	5.64	0.11
			0.00			1/2" Ice	6.78	6.43	0.17
			0.00			1" Ice	7.21	7.13	0.23
LNX-6515DS-VTM w/ Mount Pipe	A	From Face	4.00	0.0000	100.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			0.00			1" Ice	13.14	12.91	0.27

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
LNX-6515DS-VTM w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
RRUS 11 B12	A	From Face	4.00 0.00 0.00	0.0000	100.00	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 Face	4.00 0.00 0.00	0.0000	100.00	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 Face	4.00 0.00 0.00	0.0000	100.00	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
ATMAA1412D-1A20	A	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.26	0.41 0.50 0.59	0.01 0.02 0.03
ATMAA1412D-1A20	B	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.26	0.41 0.50 0.59	0.01 0.02 0.03
ATMAA1412D-1A20	C	From Face	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.26	0.41 0.50 0.59	0.01 0.02 0.03
MC-PK12S-B Mount * 90' * (TBR) * 50' *	C	None		0.0000	100.00	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
KS24019-L112A	C	From Leg	3.00 0.00 1.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26	0.14 0.20 0.26	0.01 0.01 0.01
Side Arm Mount [SO 701-1] ***	C	From Leg	1.50 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
* 133' *											
VHLP2-23	A	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.03 0.05 0.07
VHLP2-23	B	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	-30.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.03 0.05 0.07

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)
VHLP2-18	C	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	-60.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.03 0.05 0.07
***											

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

Comb. No.	Description
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	133 - 128	Pole	Max Tension	1	0.00	0.00	-0.00
			Max. Compression	26	-9.54	-2.11	5.64
			Max. Mx	8	-3.05	-28.20	1.64
			Max. My	2	-3.01	-0.83	30.64
			Max. Vy	20	-6.63	26.85	1.75
			Max. Vx	2	-6.82	-0.83	30.64
			Max. Torque	20			-3.34
L2	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.00	-2.13	5.82
			Max. Mx	8	-3.25	-61.96	1.64
			Max. My	2	-3.21	-0.90	65.55
			Max. Vy	20	-6.97	60.84	1.87
			Max. Vx	2	-7.15	-0.90	65.55
			Max. Torque	20			-3.34
L3	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.49	-2.15	5.98
			Max. Mx	8	-3.48	-97.40	1.64
			Max. My	2	-3.44	-0.96	102.15
			Max. Vy	20	-7.31	96.51	1.99
			Max. Vx	2	-7.49	-0.96	102.15
			Max. Torque	20			-3.34
L4	118 - 113	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.00	-2.17	6.13
			Max. Mx	8	-3.73	-134.57	1.62
			Max. My	2	-3.70	-1.02	140.48
			Max. Vy	20	-7.66	133.92	2.09
			Max. Vx	2	-7.84	-1.02	140.48
			Max. Torque	20			-3.34
L5	113 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.12	-2.14	7.17
			Max. Mx	8	-5.95	-182.17	1.79
			Max. My	2	-5.90	-1.08	189.67
			Max. Vy	20	-12.34	181.75	2.38
			Max. Vx	2	-12.63	-1.08	189.67
			Max. Torque	20			-3.71
L6	108 - 104.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.58	-2.15	7.26
			Max. Mx	8	-6.22	-222.46	1.77
			Max. My	2	-6.17	-1.12	231.07
			Max. Vy	20	-12.57	222.20	2.44
			Max. Vx	2	-12.86	-1.12	231.07
			Max. Torque	20			-3.71
L7	104.75 - 104.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.63	-2.15	7.27
			Max. Mx	8	-6.26	-225.60	1.77
			Max. My	2	-6.22	-1.12	234.29
			Max. Vy	20	-12.58	225.35	2.44
			Max. Vx	2	-12.87	-1.12	234.29
			Max. Torque	20			-3.71
L8	104.5 - 99.5	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-26.02	-2.15	7.41
			Max. Mx	8	-9.35	-291.17	1.75
			Max. My	2	-9.30	-1.18	301.56
			Max. Vy	20	-16.76	291.16	2.54
			Max. Vx	2	-17.05	-1.18	301.56
			Max. Torque	20			-3.71
L9	99.5 - 98.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.21	-2.15	7.44
			Max. Mx	20	-9.45	303.76	2.55
			Max. My	2	-9.41	-1.19	314.37
			Max. Vy	20	-16.85	303.76	2.55
			Max. Vx	2	-17.12	-1.19	314.37
			Max. Torque	20			-3.71
L10	98.75 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.29	-2.15	7.44
			Max. Mx	20	-9.50	307.98	2.56
			Max. My	2	-9.46	-1.19	318.66
			Max. Vy	20	-16.88	307.98	2.56
			Max. Vx	2	-17.15	-1.19	318.66
			Max. Torque	20			-3.71
L11	98.5 - 91.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.39	-2.15	7.55
			Max. Mx	20	-10.13	367.89	2.63
			Max. My	2	-10.11	-1.23	379.30
			Max. Vy	20	-17.36	367.89	2.63
			Max. Vx	2	-17.51	-1.23	379.30
			Max. Torque	20			-3.71
L12	91.33 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.82	-2.16	7.71
			Max. Mx	20	-11.69	456.57	2.73
			Max. My	2	-11.68	-1.29	468.37
			Max. Vy	20	-18.11	456.57	2.73
			Max. Vx	2	-18.11	-1.29	468.37
			Max. Torque	20			-3.72
L13	90 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.07	-2.16	7.73
			Max. Mx	20	-11.85	470.18	2.74
			Max. My	2	-11.84	-1.30	481.98
			Max. Vy	20	-18.21	470.18	2.74
			Max. Vx	2	-18.18	-1.30	481.98
			Max. Torque	20			-3.72
L14	89.25 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.16	-2.16	7.74
			Max. Mx	20	-11.92	474.74	2.75
			Max. My	2	-11.91	-1.30	486.53
			Max. Vy	20	-18.23	474.74	2.75
			Max. Vx	2	-18.21	-1.30	486.53
			Max. Torque	20			-3.72
L15	89 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.43	-2.16	7.76
			Max. Mx	20	-12.09	488.44	2.76
			Max. My	2	-12.08	-1.31	500.21
			Max. Vy	20	-18.31	488.44	2.76
			Max. Vx	2	-18.28	-1.31	500.21
			Max. Torque	20			-3.72
L16	88.25 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.51	-2.16	7.77
			Max. Mx	20	-12.14	493.02	2.77
			Max. My	2	-12.13	-1.31	504.78
			Max. Vy	20	-18.33	493.02	2.77
			Max. Vx	2	-18.30	-1.31	504.78

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-3.72
L17	88 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.99	-2.16	7.92
			Max. Mx	20	-13.11	585.74	2.86
			Max. My	2	-13.11	-1.37	597.35
			Max. Vy	20	-18.77	585.74	2.86
			Max. Vx	2	-18.74	-1.37	597.35
			Max. Torque	20			-3.72
L18	83 - 78	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.46	-2.16	8.07
			Max. Mx	20	-14.12	680.64	2.95
			Max. My	2	-14.11	-1.42	692.11
			Max. Vy	20	-19.21	680.64	2.95
			Max. Vx	2	-19.18	-1.42	692.11
			Max. Torque	20			-3.72
L19	78 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.79	-2.15	8.09
			Max. Mx	20	-14.32	699.88	2.97
			Max. My	2	-14.32	-1.43	711.32
			Max. Vy	20	-19.30	699.88	2.97
			Max. Vx	2	-19.26	-1.43	711.32
			Max. Torque	20			-3.71
L20	77 - 76.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.88	-2.15	8.10
			Max. Mx	20	-14.39	704.71	2.97
			Max. My	2	-14.39	-1.44	716.14
			Max. Vy	20	-19.31	704.71	2.97
			Max. Vx	2	-19.28	-1.44	716.14
			Max. Torque	20			-3.71
L21	76.75 - 71.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.75	-2.15	8.24
			Max. Mx	20	-15.63	802.45	3.06
			Max. My	2	-15.63	-1.49	813.71
			Max. Vy	20	-19.79	802.45	3.06
			Max. Vx	2	-19.76	-1.49	813.71
			Max. Torque	20			-3.71
L22	71.75 - 66.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.65	-2.14	8.38
			Max. Mx	20	-16.91	902.53	3.15
			Max. My	2	-16.90	-1.55	913.61
			Max. Vy	20	-20.26	902.53	3.15
			Max. Vx	2	-20.22	-1.55	913.61
			Max. Torque	20			-3.71
L23	66.75 - 61.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.57	-2.13	8.51
			Max. Mx	20	-18.20	1004.92	3.23
			Max. My	2	-18.20	-1.60	1015.82
			Max. Vy	20	-20.72	1004.92	3.23
			Max. Vx	2	-20.68	-1.60	1015.82
			Max. Torque	20			-3.71
L24	61.75 - 60.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.10	-2.13	8.55
			Max. Mx	20	-18.53	1030.89	3.25
			Max. My	2	-18.53	-1.61	1041.74
			Max. Vy	20	-20.85	1030.89	3.25
			Max. Vx	2	-20.80	-1.61	1041.74
			Max. Torque	20			-3.71
L25	60.5 - 60.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.20	-2.13	8.55
			Max. Mx	20	-18.61	1036.10	3.25
			Max. My	2	-18.61	-1.61	1046.94

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-20.86	1036.10	3.25
			Max. Vx	2	-20.81	-1.61	1046.94
			Max. Torque	20			-3.71
L26	60.25 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.51	-2.13	8.57
			Max. Mx	20	-18.80	1051.77	3.27
			Max. My	2	-18.80	-1.62	1062.57
			Max. Vy	20	-20.94	1051.77	3.27
			Max. Vx	2	-20.89	-1.62	1062.57
			Max. Torque	20			-3.71
L27	59.5 - 59.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.63	-2.13	8.58
			Max. Mx	20	-18.88	1057.01	3.27
			Max. My	2	-18.87	-1.62	1067.80
			Max. Vy	20	-20.98	1057.01	3.27
			Max. Vx	2	-20.92	-1.62	1067.80
			Max. Torque	20			-3.71
L28	59.25 - 54.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.79	-2.11	8.71
			Max. Mx	20	-20.26	1163.77	3.35
			Max. My	2	-20.26	-1.68	1174.23
			Max. Vy	20	-21.74	1163.77	3.35
			Max. Vx	2	-21.67	-1.68	1174.23
			Max. Torque	20			-3.71
L29	54.25 - 45.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.63	-2.10	8.82
			Max. Mx	20	-21.47	1257.46	3.41
			Max. My	2	-21.47	-1.72	1267.58
			Max. Vy	20	-22.37	1257.46	3.41
			Max. Vx	2	-22.28	-1.72	1267.58
			Max. Torque	20			-3.72
L30	45.25 - 45	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.55	-1.74	8.75
			Max. Mx	20	-24.25	1371.82	3.45
			Max. My	2	-24.25	-1.50	1381.23
			Max. Vy	20	-23.25	1371.82	3.45
			Max. Vx	2	-23.17	-1.50	1381.23
			Max. Torque	20			-3.63
L31	45 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.86	-1.72	8.88
			Max. Mx	20	-25.82	1489.85	3.59
			Max. My	2	-25.82	-1.49	1498.81
			Max. Vy	20	-23.97	1489.85	3.59
			Max. Vx	2	-23.87	-1.49	1498.81
			Max. Torque	20			-3.64
L32	40 - 39	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.34	-1.71	8.91
			Max. Mx	20	-26.14	1513.88	3.62
			Max. My	2	-26.14	-1.48	1522.74
			Max. Vy	20	-24.11	1513.88	3.62
			Max. Vx	2	-24.01	-1.48	1522.74
			Max. Torque	20			-3.64
L33	39 - 38.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.46	-1.70	8.92
			Max. Mx	20	-26.23	1519.91	3.63
			Max. My	2	-26.24	-1.48	1528.74
			Max. Vy	20	-24.14	1519.91	3.63
			Max. Vx	2	-24.04	-1.48	1528.74
			Max. Torque	20			-3.64
L34	38.75 - 34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.83	-1.65	9.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-27.83	1636.13	3.76
			Max. My	2	-27.83	-1.46	1644.43
			Max. Vy	20	-24.81	1636.13	3.76
			Max. Vx	2	-24.69	-1.46	1644.43
			Max. Torque	20			-3.65
L35	34 - 33.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.95	-1.65	9.05
			Max. Mx	20	-27.92	1642.33	3.77
			Max. My	2	-27.92	-1.46	1650.60
			Max. Vy	20	-24.83	1642.33	3.77
			Max. Vx	2	-24.71	-1.46	1650.60
			Max. Torque	20			-3.65
L36	33.75 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.87	-1.64	9.15
			Max. Mx	20	-29.23	1742.72	3.88
			Max. My	2	-29.23	-1.45	1750.46
			Max. Vy	20	-25.37	1742.72	3.88
			Max. Vx	2	-25.23	-1.45	1750.46
			Max. Torque	20			-3.66
L37	29.75 - 29.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.99	-1.64	9.15
			Max. Mx	20	-29.32	1749.06	3.89
			Max. My	2	-29.32	-1.45	1756.77
			Max. Vy	20	-25.40	1749.06	3.89
			Max. Vx	2	-25.26	-1.45	1756.77
			Max. Torque	20			-3.66
L38	29.5 - 24.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.38	-1.62	9.26
			Max. Mx	20	-30.99	1877.66	4.02
			Max. My	2	-31.00	-1.43	1884.60
			Max. Vy	20	-26.06	1877.66	4.02
			Max. Vx	2	-25.89	-1.43	1884.60
			Max. Torque	20			-3.67
L39	24.5 - 19.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.78	-1.59	9.34
			Max. Mx	20	-32.70	2009.52	4.16
			Max. My	2	-32.71	-1.41	2015.22
			Max. Vy	20	-26.72	2009.52	4.16
			Max. Vx	2	-26.38	-1.41	2015.22
			Max. Torque	20			-3.68
L40	19.5 - 14.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.18	-1.57	9.42
			Max. Mx	20	-34.44	2144.67	4.29
			Max. My	2	-34.45	-1.39	2148.26
			Max. Vy	20	-27.37	2144.67	4.29
			Max. Vx	2	-26.87	-1.39	2148.26
			Max. Torque	20			-3.68
L41	14.5 - 12.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.14	-1.56	9.45
			Max. Mx	20	-35.15	2199.65	4.34
			Max. My	2	-35.15	-1.38	2202.16
			Max. Vy	20	-27.64	2199.65	4.34
			Max. Vx	2	-27.06	-1.38	2202.16
			Max. Torque	20			-3.69
L42	12.5 - 12.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.25	-1.56	9.45
			Max. Mx	20	-35.23	2206.56	4.35
			Max. My	2	-35.24	-1.38	2208.93
			Max. Vy	20	-27.66	2206.56	4.35
			Max. Vx	2	-27.08	-1.38	2208.93
			Max. Torque	20			-3.69

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L43	12.25 - 10.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.94	-1.55	9.54
			Max. Mx	20	-35.68	2248.22	4.39
			Max. My	2	-35.68	-1.37	2249.69
			Max. Vy	20	-27.91	2248.22	4.39
			Max. Vx	2	-27.30	-1.37	2249.69
			Max. Torque	20			-3.72
L44	10.75 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.06	-1.54	9.56
			Max. Mx	20	-35.78	2255.19	4.40
			Max. My	2	-35.79	-1.37	2256.51
			Max. Vy	20	-27.93	2255.19	4.40
			Max. Vx	2	-27.31	-1.37	2256.51
			Max. Torque	20			-3.73
L45	10.5 - 5.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.41	-1.54	9.84
			Max. Mx	20	-37.49	2396.76	4.52
			Max. My	2	-37.49	-1.35	2394.77
			Max. Vy	20	-28.72	2396.76	4.52
			Max. Vx	2	-28.01	-1.35	2394.77
			Max. Torque	20			-3.90
L46	5.5 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.65	-1.61	10.06
			Max. Mx	20	-39.23	2542.25	4.65
			Max. My	2	-39.24	-1.33	2535.97
			Max. Vy	20	-29.51	2542.25	4.65
			Max. Vx	2	-28.50	-1.33	2535.97
			Max. Torque	20			-4.07
L47	0.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.86	-1.61	10.07
			Max. Mx	20	-39.42	2557.01	4.66
			Max. My	2	-39.42	-1.32	2550.22
			Max. Vy	20	-29.58	2557.01	4.66
			Max. Vx	2	-28.54	-1.32	2550.22
			Max. Torque	20			-4.08

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	69.86	-0.00	0.00
	Max. H_x	21	29.57	29.57	0.02
	Max. H_z	2	39.42	0.00	28.54
	Max. M_x	2	2550.22	0.00	28.54
	Max. M_z	8	2551.80	-29.52	-0.02
	Max. Torsion	8	4.02	-29.52	-0.02
	Min. Vert	11	29.57	-24.61	-14.49
	Min. H_x	9	29.57	-29.52	-0.02
	Min. H_z	14	39.42	-0.05	-28.54
	Min. M_x	14	-2545.41	-0.05	-28.54
	Min. M_z	20	-2557.01	29.57	0.02
	Min. Torsion	20	-4.08	29.57	0.02

Tower Mast Reaction Summary

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 Only	32.85	0.00	-0.00	-1.94	-0.54	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	39.42	-0.00	-28.54	-2550.22	-1.32	0.70
0.9 Dead+1.6 Wind 0 deg - No Ice	29.57	-0.00	-28.54	-2523.43	-1.13	0.68
1.2 Dead+1.6 Wind 30 deg - No Ice	39.42	14.50	-25.46	-2245.48	-1270.43	-1.44
0.9 Dead+1.6 Wind 30 deg - No Ice	29.57	14.50	-25.46	-2221.91	-1257.31	-1.43
1.2 Dead+1.6 Wind 60 deg - No Ice	39.42	25.27	-14.84	-1294.62	-2179.60	-3.55
0.9 Dead+1.6 Wind 60 deg - No Ice	29.57	25.27	-14.84	-1280.75	-2157.23	-3.50
1.2 Dead+1.6 Wind 90 deg - No Ice	39.42	29.52	0.02	-0.11	-2551.80	-4.02
0.9 Dead+1.6 Wind 90 deg - No Ice	29.57	29.52	0.02	0.50	-2525.65	-3.95
1.2 Dead+1.6 Wind 120 deg - No Ice	39.42	24.61	14.49	1284.16	-2165.19	-3.41
0.9 Dead+1.6 Wind 120 deg - No Ice	29.57	24.61	14.49	1271.57	-2142.88	-3.34
1.2 Dead+1.6 Wind 150 deg - No Ice	39.42	14.39	25.22	2240.09	-1272.69	-2.29
0.9 Dead+1.6 Wind 150 deg - No Ice	29.57	14.39	25.22	2217.79	-1259.54	-2.23
1.2 Dead+1.6 Wind 180 deg - No Ice	39.42	0.05	28.54	2545.41	-5.87	-0.79
0.9 Dead+1.6 Wind 180 deg - No Ice	29.57	0.05	28.54	2519.91	-5.63	-0.77
1.2 Dead+1.6 Wind 210 deg - No Ice	39.42	-14.54	25.45	2238.79	1275.34	1.22
0.9 Dead+1.6 Wind 210 deg - No Ice	29.57	-14.54	25.45	2216.53	1262.51	1.21
1.2 Dead+1.6 Wind 240 deg - No Ice	39.42	-25.32	14.85	1291.39	2185.01	3.03
0.9 Dead+1.6 Wind 240 deg - No Ice	29.57	-25.32	14.85	1278.78	2162.92	2.98
1.2 Dead+1.6 Wind 270 deg - No Ice	39.42	-29.57	-0.02	-4.66	2557.01	4.08
0.9 Dead+1.6 Wind 270 deg - No Ice	29.57	-29.57	-0.02	-4.00	2531.15	4.01
1.2 Dead+1.6 Wind 300 deg - No Ice	39.42	-24.66	-14.50	-1290.51	2170.64	3.38
0.9 Dead+1.6 Wind 300 deg - No Ice	29.57	-24.66	-14.50	-1276.62	2148.60	3.31
1.2 Dead+1.6 Wind 330 deg - No Ice	39.42	-14.43	-25.21	-2243.01	1277.64	1.94
0.9 Dead+1.6 Wind 330 deg - No Ice	29.57	-14.43	-25.21	-2219.44	1264.77	1.88
1.2 Dead+1.0 Ice+1.0 Temp	69.86	0.00	-0.00	-10.07	-1.61	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	69.86	-0.00	-5.67	-563.71	-1.65	0.14
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	69.86	2.81	-4.93	-491.68	-275.68	-0.36
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	69.86	5.39	-3.15	-311.78	-514.44	-0.87
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	69.86	6.25	0.01	-9.61	-597.01	-1.00

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+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	69.86	4.87	2.86	269.10	-474.58	-0.81
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	69.86	2.80	4.89	471.30	-276.25	-0.54
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	69.86	0.01	5.67	543.42	-2.72	-0.16
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	69.86	-2.82	4.93	471.02	273.63	0.33
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	69.86	-5.39	3.15	291.79	512.49	0.78
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	69.86	-6.26	-0.01	-10.68	595.03	1.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	69.86	-4.88	-2.86	-289.69	472.64	0.79
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	69.86	-2.81	-4.89	-491.23	274.21	0.47
Dead+Wind 0 deg - Service	32.85	-0.00	-5.21	-464.78	-0.67	0.13
Dead+Wind 30 deg - Service	32.85	2.65	-4.65	-409.44	-231.20	-0.23
Dead+Wind 60 deg - Service	32.85	4.61	-2.71	-236.71	-396.33	-0.57
Dead+Wind 90 deg - Service	32.85	5.39	0.00	-1.58	-463.94	-0.65
Dead+Wind 120 deg - Service	32.85	4.49	2.65	231.68	-393.71	-0.57
Dead+Wind 150 deg - Service	32.85	2.63	4.61	405.34	-231.62	-0.42
Dead+Wind 180 deg - Service	32.85	0.01	5.21	460.78	-1.50	-0.15
Dead+Wind 210 deg - Service	32.85	-2.66	4.65	405.11	231.23	0.19
Dead+Wind 240 deg - Service	32.85	-4.62	2.71	233.00	396.45	0.48
Dead+Wind 270 deg - Service	32.85	-5.40	-0.00	-2.41	464.02	0.66
Dead+Wind 300 deg - Service	32.85	-4.50	-2.65	-235.96	393.83	0.56
Dead+Wind 330 deg - Service	32.85	-2.64	-4.60	-408.99	231.64	0.35

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-32.85	0.00	-0.00	32.85	0.00	0.000%
2	-0.00	-39.42	-28.54	0.00	39.42	28.54	0.000%
3	-0.00	-29.57	-28.54	0.00	29.57	28.54	0.000%
4	14.50	-39.42	-25.46	-14.50	39.42	25.46	0.000%
5	14.50	-29.57	-25.46	-14.50	29.57	25.46	0.000%
6	25.27	-39.42	-14.84	-25.27	39.42	14.84	0.000%
7	25.27	-29.57	-14.84	-25.27	29.57	14.84	0.000%
8	29.52	-39.42	0.02	-29.52	39.42	-0.02	0.000%
9	29.52	-29.57	0.02	-29.52	29.57	-0.02	0.000%
10	24.61	-39.42	14.49	-24.61	39.42	-14.49	0.000%
11	24.61	-29.57	14.49	-24.61	29.57	-14.49	0.000%
12	14.39	-39.42	25.22	-14.39	39.42	-25.22	0.000%
13	14.39	-29.57	25.22	-14.39	29.57	-25.22	0.000%
14	0.05	-39.42	28.54	-0.05	39.42	-28.54	0.000%
15	0.05	-29.57	28.54	-0.05	29.57	-28.54	0.000%
16	-14.54	-39.42	25.45	14.54	39.42	-25.45	0.000%
17	-14.54	-29.57	25.45	14.54	29.57	-25.45	0.000%
18	-25.32	-39.42	14.85	25.32	39.42	-14.85	0.000%
19	-25.32	-29.57	14.85	25.32	29.57	-14.85	0.000%
20	-29.57	-39.42	-0.02	29.57	39.42	0.02	0.000%
21	-29.57	-29.57	-0.02	29.57	29.57	0.02	0.000%
22	-24.66	-39.42	-14.50	24.66	39.42	14.50	0.000%
23	-24.66	-29.57	-14.50	24.66	29.57	14.50	0.000%
24	-14.43	-39.42	-25.21	14.43	39.42	25.21	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
25	-14.43	-29.57	-25.21	14.43	29.57	25.21	0.000%
26	0.00	-69.86	0.00	-0.00	69.86	0.00	0.000%
27	-0.00	-69.86	-5.67	0.00	69.86	5.67	0.000%
28	2.81	-69.86	-4.93	-2.81	69.86	4.93	0.000%
29	5.39	-69.86	-3.15	-5.39	69.86	3.15	0.000%
30	6.25	-69.86	0.01	-6.25	69.86	-0.01	0.000%
31	4.87	-69.86	2.86	-4.87	69.86	-2.86	0.000%
32	2.80	-69.86	4.89	-2.80	69.86	-4.89	0.000%
33	0.01	-69.86	5.67	-0.01	69.86	-5.67	0.000%
34	-2.82	-69.86	4.93	2.82	69.86	-4.93	0.000%
35	-5.39	-69.86	3.15	5.39	69.86	-3.15	0.000%
36	-6.26	-69.86	-0.01	6.26	69.86	0.01	0.000%
37	-4.88	-69.86	-2.86	4.88	69.86	2.86	0.000%
38	-2.81	-69.86	-4.89	2.81	69.86	4.89	0.000%
39	-0.00	-32.85	-5.21	0.00	32.85	5.21	0.000%
40	2.65	-32.85	-4.65	-2.65	32.85	4.65	0.000%
41	4.61	-32.85	-2.71	-4.61	32.85	2.71	0.000%
42	5.39	-32.85	0.00	-5.39	32.85	-0.00	0.000%
43	4.49	-32.85	2.65	-4.49	32.85	-2.65	0.000%
44	2.63	-32.85	4.61	-2.63	32.85	-4.61	0.000%
45	0.01	-32.85	5.21	-0.01	32.85	-5.21	0.000%
46	-2.66	-32.85	4.65	2.66	32.85	-4.65	0.000%
47	-4.62	-32.85	2.71	4.62	32.85	-2.71	0.000%
48	-5.40	-32.85	-0.00	5.40	32.85	0.00	0.000%
49	-4.50	-32.85	-2.65	4.50	32.85	2.65	0.000%
50	-2.64	-32.85	-4.60	2.64	32.85	4.60	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000614
2	Yes	5	0.00000001	0.00049026
3	Yes	5	0.00000001	0.00021013
4	Yes	6	0.00000001	0.00060899
5	Yes	6	0.00000001	0.00018177
6	Yes	6	0.00000001	0.00066789
7	Yes	6	0.00000001	0.00020365
8	Yes	6	0.00000001	0.00009120
9	Yes	5	0.00000001	0.00086202
10	Yes	6	0.00000001	0.00057603
11	Yes	6	0.00000001	0.00017256
12	Yes	6	0.00000001	0.00066399
13	Yes	6	0.00000001	0.00020118
14	Yes	5	0.00000001	0.00059656
15	Yes	5	0.00000001	0.00025808
16	Yes	6	0.00000001	0.00063905
17	Yes	6	0.00000001	0.00019281
18	Yes	6	0.00000001	0.00058244
19	Yes	6	0.00000001	0.00017432
20	Yes	6	0.00000001	0.00009534
21	Yes	5	0.00000001	0.00090169
22	Yes	6	0.00000001	0.00066920
23	Yes	6	0.00000001	0.00020397
24	Yes	6	0.00000001	0.00060083
25	Yes	6	0.00000001	0.00017882

26	Yes	5	0.00000001	0.00030038
27	Yes	6	0.00000001	0.00078309
28	Yes	6	0.00000001	0.00093029
29	Yes	7	0.00000001	0.00012330
30	Yes	6	0.00000001	0.00081007
31	Yes	6	0.00000001	0.00085296
32	Yes	6	0.00000001	0.00086793
33	Yes	6	0.00000001	0.00071355
34	Yes	6	0.00000001	0.00084457
35	Yes	6	0.00000001	0.00091421
36	Yes	6	0.00000001	0.00079394
37	Yes	6	0.00000001	0.00092496
38	Yes	6	0.00000001	0.00091376
39	Yes	4	0.00000001	0.00060682
40	Yes	5	0.00000001	0.00011607
41	Yes	5	0.00000001	0.00016070
42	Yes	5	0.00000001	0.00007855
43	Yes	5	0.00000001	0.00010584
44	Yes	5	0.00000001	0.00015040
45	Yes	4	0.00000001	0.00062870
46	Yes	5	0.00000001	0.00012977
47	Yes	5	0.00000001	0.00010469
48	Yes	5	0.00000001	0.00007965
49	Yes	5	0.00000001	0.00015917
50	Yes	5	0.00000001	0.00011122

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	133 - 132	TP14.4795x13.48x0.1875	5.00	0.00	0.0	8.1460	-9.13	600.45	0.015
	132 - 131					8.2667	-2.91	609.34	0.005
	131 - 130					8.3874	-2.93	618.24	0.005
	130 - 129					8.5081	-2.97	627.13	0.005
	129 - 128					8.6288	-3.01	636.03	0.005
L2	128 - 127	TP15.479x14.4795x0.1875	5.00	0.00	0.0	8.7495	-3.04	644.93	0.005
	127 - 126					8.8702	-3.08	653.82	0.005
	126 - 125					8.9909	-3.12	662.72	0.005
	125 - 124					9.1116	-3.16	671.61	0.005
	124 - 123					9.2323	-3.21	680.51	0.005
L3	123 - 122	TP16.4786x15.479x0.1875	5.00	0.00	0.0	9.3530	-3.25	689.41	0.005
	122 - 121					9.4736	-3.30	698.30	0.005
	121 - 120					9.5943	-3.34	707.20	0.005
	120 - 119					9.7150	-3.39	716.10	0.005
	119 - 118					9.8357	-3.44	724.99	0.005
L4	118 - 117	TP17.4781x16.4786x0.1875	5.00	0.00	0.0	9.9564	-3.49	731.54	0.005
	117 - 116					10.0771	-3.54	737.58	0.005
	116 - 115					10.1978	-3.59	743.55	0.005
	115 - 114					10.3185	-3.64	749.46	0.005
	114 - 113					10.4392	-3.70	755.30	0.005
L5	113 - 112	TP18.4776x17.4781x0.1875	5.00	0.00	0.0	10.5599	-3.76	761.07	0.005
	112 - 111					10.6806	-3.82	766.77	0.005
	111 - 110					10.8013	-3.88	772.40	0.005
	110 - 109					10.9220	-5.83	777.97	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	109 - 108					11.0426	-5.90	783.47	0.008
L6	108 - 106.917	TP19.1273x18.4776x0.1875	3.25	0.00	0.0	11.1734	-5.99	789.35	0.008
	106.917 - 105.833					11.3041	-6.08	795.16	0.008
	105.833 - 104.75					11.4349	-6.17	800.88	0.008
L7	104.75 - 104.5 (7)	TP19.1773x19.1273x0.425	0.25	0.00	0.0	25.6625	-6.22	1891.58	0.003
L8	104.5 - 103.5	TP20.1768x19.1773x0.4063	5.00	0.00	0.0	24.8163	-6.33	1829.21	0.003
	103.5 - 102.5					25.0778	-6.45	1848.49	0.003
	102.5 - 101.5					25.3393	-6.58	1867.76	0.004
	101.5 - 100.5					25.6008	-6.70	1887.04	0.004
	100.5 - 99.5					25.8623	-9.30	1906.31	0.005
L9	99.5 - 98.75 (9)	TP20.3267x20.1768x0.4063	0.75	0.00	0.0	26.0585	-9.41	1920.77	0.005
L10	98.75 - 98.5 (10)	TP20.3767x20.3267x0.675	0.25	0.00	0.0	42.8216	-9.46	3156.38	0.003
L11	98.5 - 97.3333	TP21.81x20.3767x0.6625	7.17	0.00	0.0	42.5528	-9.67	3136.57	0.003
	97.3333 - 96.1667					43.0503	-9.89	3173.24	0.003
	96.1667 - 95					43.5479	-10.11	3209.91	0.003
	95 - 91.33					45.1129	-5.57	3325.27	0.002
L12	95 - 91.33	TP21.7002x20.7014x0.7125	5.00	0.00	0.0	47.5415	-5.83	3504.28	0.002
	91.33 - 90					48.1511	-11.68	3549.21	0.003
L13	90 - 89.25 (13)	TP21.85x21.7002x0.7	0.75	0.00	0.0	47.6722	-11.84	3513.92	0.003
L14	89.25 - 89 (14)	TP21.9x21.85x0.85	0.25	0.00	0.0	57.6138	-11.91	4246.71	0.003
L15	89 - 88.25 (15)	TP22.0498x21.9x0.8375	0.75	0.00	0.0	57.2043	-12.08	4216.53	0.003
L16	88.25 - 88 (16)	TP22.0998x22.0498x0.6125	0.25	0.00	0.0	42.3782	-12.13	3123.70	0.004
L17	88 - 87	TP23.0986x22.0998x0.5875	5.00	0.00	0.0	41.0737	-12.29	3027.54	0.004
	87 - 86					41.4516	-12.48	3055.40	0.004
	86 - 85					41.8296	-12.68	3083.26	0.004
	85 - 84					42.2075	-12.88	3111.11	0.004
	84 - 83					42.5854	-13.08	3138.97	0.004
L18	83 - 82	TP24.0975x23.0986x0.575	5.00	0.00	0.0	42.0723	-13.27	3101.15	0.004
	82 - 81					42.4422	-13.47	3128.42	0.004
	81 - 80					42.8121	-13.67	3155.68	0.004
	80 - 79					43.1820	-13.88	3182.94	0.004
	79 - 78					43.5519	-14.08	3210.21	0.004
L19	78 - 77 (19)	TP24.2972x24.0975x0.575	1.00	0.00	0.0	43.9217	-14.29	3237.47	0.004
L20	77 - 76.75 (20)	TP24.3472x24.2972x0.7625	0.25	0.00	0.0	57.9063	-14.36	4268.27	0.003
L21	76.75 - 75.75	TP25.346x24.3472x0.7375	5.00	0.00	0.0	56.5415	-14.60	4167.68	0.004
	75.75 - 74.75					57.0159	-14.85	4202.64	0.004
	74.75 - 73.75					57.4903	-15.10	4237.61	0.004
	73.75 - 72.75					57.9647	-15.35	4272.58	0.004
	72.75 - 71.75					58.4391	-15.60	4307.55	0.004
L22	71.75 - 70.75	TP26.3449x25.346x0.7125	5.00	0.00	0.0	56.9738	-15.86	4199.54	0.004
	70.75 - 69.75					57.4322	-16.11	4233.33	0.004
	69.75 - 68.75					57.8905	-16.36	4267.11	0.004
	68.75 - 67.75					58.3488	-16.62	4300.89	0.004
	67.75 - 66.75					58.8071	-16.88	4334.68	0.004
L23	66.75 - 65.75	TP27.3438x26.3449x0.6875	5.00	0.00	0.0	57.2413	-17.14	4219.26	0.004
	65.75 - 64.75					57.6836	-17.39	4251.86	0.004
	64.75 - 63.75					58.1258	-17.65	4284.45	0.004
	63.75 - 62.75					58.5681	-17.92	4317.05	0.004
	62.75 - 61.75					59.0103	-18.18	4349.65	0.004
L24	61.75 - 60.5 (24)	TP27.5935x27.3438x0.6875	1.25	0.00	0.0	59.5631	-18.51	4390.40	0.004
L25	60.5 - 60.25 (25)	TP27.6434x27.5935x0.6875	0.25	0.00	0.0	59.6737	-18.58	4398.55	0.004
L26	60.25 - 59.5 (26)	TP27.7933x27.6434x0.6875	0.75	0.00	0.0	60.0054	-18.78	4423.00	0.004

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L27	59.5 - 59.25 (27)	TP27.8432x27.7933x0.75	0.25	0.00	0.0	65.4301	-18.85	4822.85	0.004
L28	59.25 - 58.25	TP28.8421x27.8432x0.725	5.00	0.00	0.0	63.7738	-19.12	4700.77	0.004
	58.25 - 57.25					64.2402	-19.40	4735.14	0.004
	57.25 - 56.25					64.7065	-19.68	4769.52	0.004
	56.25 - 55.25					65.1729	-19.96	4803.89	0.004
	55.25 - 54.25					65.6393	-20.24	4838.27	0.004
L29	54.25 - 53.1875	TP30.64x28.8421x0.7	9.00	0.00	0.0	63.9106	-20.54	4710.85	0.004
	53.1875 - 52.125					64.3890	-20.84	4746.12	0.004
	52.125 - 51.0625					64.8675	-21.14	4781.38	0.004
	51.0625 - 50					65.3459	-21.45	4816.65	0.004
	50 - 45.25					67.4848	-11.69	4974.30	0.002
L30	50 - 45.25	TP30.192x29.1911x0.7625	5.00	0.00	0.0	72.1339	-12.44	5316.99	0.002
	45.25 - 45					72.2567	-24.23	5326.04	0.005
L31	45 - 44	TP31.1929x30.192x0.75	5.00	0.00	0.0	71.5858	-24.54	5276.59	0.005
	44 - 43					72.0692	-24.85	5312.22	0.005
	43 - 42					72.5527	-25.17	5347.86	0.005
	42 - 41					73.0361	-25.48	5383.49	0.005
	41 - 40					73.5195	-25.80	5419.12	0.005
L32	40 - 39 (32)	TP31.393x31.1929x0.7375	1.00	0.00	0.0	72.7993	-26.12	5366.03	0.005
L33	39 - 38.75 (33)	TP31.4431x31.393x0.7375	0.25	0.00	0.0	72.9181	-26.22	5374.79	0.005
L34	38.75 - 37.5625	TP32.3939x31.4431x0.725	4.75	0.00	0.0	72.2663	-26.60	5326.75	0.005
	37.5625 - 36.375					72.8213	-27.00	5367.66	0.005
	36.375 - 35.1875					73.3762	-27.41	5408.56	0.005
	35.1875 - 34					73.9311	-27.82	5449.46	0.005
L35	34 - 33.75 (35)	TP32.444x32.3939x0.6875	0.25	0.00	0.0	70.3009	-27.91	5181.88	0.005
L36	33.75 - 32.75	TP33.2447x32.444x0.6875	4.00	0.00	0.0	70.7441	-28.22	5214.54	0.005
	32.75 - 31.75					71.1872	-28.55	5247.21	0.005
	31.75 - 30.75					71.6303	-28.88	5279.87	0.005
	30.75 - 29.75					72.0735	-29.21	5312.54	0.005
L37	29.75 - 29.5 (37)	TP33.2947x33.2447x0.6875	0.25	0.00	0.0	72.1843	-29.31	5320.70	0.006
L38	29.5 - 28.5	TP34.2956x33.2947x0.675	5.00	0.00	0.0	71.3341	-29.63	5258.04	0.006
	28.5 - 27.5					71.7692	-29.97	5290.11	0.006
	27.5 - 26.5					72.2043	-30.30	5322.18	0.006
	26.5 - 25.5					72.6394	-30.64	5354.25	0.006
	25.5 - 24.5					73.0744	-30.98	5386.32	0.006
L39	24.5 - 23.5	TP35.2965x34.2956x0.6625	5.00	0.00	0.0	72.1749	-31.32	5320.01	0.006
	23.5 - 22.5					72.6019	-31.66	5351.49	0.006
	22.5 - 21.5					73.0290	-32.01	5382.97	0.006
	21.5 - 20.5					73.4560	-32.35	5414.44	0.006
	20.5 - 19.5					73.8830	-32.70	5445.92	0.006
L40	19.5 - 18.5	TP36.2974x35.2965x0.65	5.00	0.00	0.0	72.9341	-33.04	5375.98	0.006
	18.5 - 17.5					73.3531	-33.39	5406.86	0.006
	17.5 - 16.5					73.7721	-33.73	5437.74	0.006
	16.5 - 15.5					74.1911	-34.08	5468.62	0.006
	15.5 - 14.5					74.6100	-34.44	5499.51	0.006
L41	14.5 - 13.5	TP36.6978x36.2974x0.65	2.00	0.00	0.0	75.0290	-34.79	5530.39	0.006
	13.5 - 12.5					75.4480	-35.14	5561.27	0.006
L42	12.5 - 12.25 (42)	TP36.7478x36.6978x0.5625	0.25	0.00	0.0	65.5406	-35.23	4831.00	0.007
L43	12.25 - 10.75 (43)	TP37.0481x36.7478x0.5625	1.50	0.00	0.0	66.0845	-35.67	4871.09	0.007
L44	10.75 - 10.5	TP37.0981x37.0481x0.6375	0.25	0.00	0.0	74.8446	-35.78	5516.79	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(44)								
L45	10.5 - 9.5	TP38.099x37.0981x0.625	5.00	0.00	0.0	73.8050	-36.11	5440.17	0.007
	9.5 - 8.5					74.2079	-36.45	5469.86	0.007
	8.5 - 7.5					74.6107	-36.80	5499.56	0.007
	7.5 - 6.5					75.0136	-37.14	5529.25	0.007
	6.5 - 5.5					75.4165	-37.49	5558.95	0.007
L46	5.5 - 4.5	TP39.0999x38.099x0.6125	5.00	0.00	0.0	74.3276	-37.83	5478.69	0.007
	4.5 - 3.5					74.7224	-38.18	5507.79	0.007
	3.5 - 2.5					75.1172	-38.53	5536.89	0.007
	2.5 - 1.5					75.5120	-38.88	5565.99	0.007
	1.5 - 0.5					75.9068	-39.23	5595.09	0.007
L47	0.5 - 0 (47)	TP39.2x39.0999x0.6125	0.50	0.00	0.0	76.1042	-39.42	5609.64	0.007

Pole Bending Design Data

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 $\frac{M_{uy}}{\phi M_{ny}}$
L1	133 - 132	TP14.4795x13.48x0.1875	6.55	164.07	0.040	0.00	164.07	0.000
	132 - 131		10.54	169.01	0.062	0.00	169.01	0.000
	131 - 130		17.15	174.01	0.099	0.00	174.01	0.000
	130 - 129		23.86	179.09	0.133	0.00	179.09	0.000
	129 - 128		30.65	184.24	0.166	0.00	184.24	0.000
L2	128 - 127	TP15.479x14.4795x0.1875	37.50	189.46	0.198	0.00	189.46	0.000
	127 - 126		44.41	194.76	0.228	0.00	194.76	0.000
	126 - 125		51.40	200.13	0.257	0.00	200.13	0.000
	125 - 124		58.44	205.57	0.284	0.00	205.57	0.000
	124 - 123		65.56	211.09	0.311	0.00	211.09	0.000
L3	123 - 122	TP16.4786x15.479x0.1875	72.74	216.68	0.336	0.00	216.68	0.000
	122 - 121		79.99	222.34	0.360	0.00	222.34	0.000
	121 - 120		87.31	228.08	0.383	0.00	228.08	0.000
	120 - 119		94.70	233.88	0.405	0.00	233.88	0.000
	119 - 118		102.16	239.77	0.426	0.00	239.77	0.000
L4	118 - 117	TP17.4781x16.4786x0.1875	109.68	244.93	0.448	0.00	244.93	0.000
	117 - 116		117.28	249.98	0.469	0.00	249.98	0.000
	116 - 115		124.94	255.06	0.490	0.00	255.06	0.000
	115 - 114		132.68	260.16	0.510	0.00	260.16	0.000
	114 - 113		140.48	265.29	0.530	0.00	265.29	0.000
L5	113 - 112	TP18.4776x17.4781x0.1875	148.36	270.44	0.549	0.00	270.44	0.000
	112 - 111		156.31	275.61	0.567	0.00	275.61	0.000
	111 - 110		164.33	280.81	0.585	0.00	280.81	0.000
	110 - 109		177.09	286.02	0.619	0.00	286.02	0.000
	109 - 108		189.68	291.26	0.651	0.00	291.26	0.000
L6	108 - 106.917	TP19.1273x18.4776x0.1875	203.39	296.96	0.685	0.00	296.96	0.000
	106.917 - 105.833		217.19	302.68	0.718	0.00	302.68	0.000
	105.833 - 104.75		231.07	308.42	0.749	0.00	308.42	0.000
L7	104.75 - 104.5 (7)	TP19.1773x19.1273x0.425	234.29	712.23	0.329	0.00	712.23	0.000
L8	104.5 - 103.5	TP20.1768x19.1773x0.4063	247.20	697.63	0.354	0.00	697.63	0.000
	103.5 - 102.5		260.20	712.57	0.365	0.00	712.57	0.000
	102.5 - 101.5		273.28	727.66	0.376	0.00	727.66	0.000
	101.5 - 100.5		286.44	742.91	0.386	0.00	742.91	0.000
	100.5 - 99.5		301.56	758.32	0.398	0.00	758.32	0.000
L9	99.5 - 98.75 (9)	TP20.3267x20.1768x0.4063	314.38	769.98	0.408	0.00	769.98	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 $\frac{M_{uy}}{\phi M_{ny}}$
L10	98.75 - 98.5 (10)	TP20.3767x20.3267x0.675	318.66	1234.63	0.258	0.00	1234.63	0.000
L11	98.5 - 97.3333	TP21.81x20.3767x0.6625	338.73	1243.44	0.272	0.00	1243.44	0.000
	97.3333 - 96.1667		358.94	1273.17	0.282	0.00	1273.17	0.000
	96.1667 - 95		379.30	1303.23	0.291	0.00	1303.23	0.000
	95 - 91.33		221.06	1400.12	0.158	0.00	1400.12	0.000
L12	95 - 91.33	TP21.7002x20.7014x0.7125	223.34	1441.53	0.155	0.00	1441.53	0.000
	91.33 - 90		468.37	1479.36	0.317	0.00	1479.36	0.000
L13	90 - 89.25 (13)	TP21.85x21.7002x0.7	481.98	1477.19	0.326	0.00	1477.19	0.000
L14	89.25 - 89 (14)	TP21.9x21.85x0.85	486.53	1764.36	0.276	0.00	1764.36	0.000
L15	89 - 88.25 (15)	TP22.0498x21.9x0.8375	500.21	1766.86	0.283	0.00	1766.86	0.000
L16	88.25 - 88 (16)	TP22.0998x22.0498x0.6125	504.78	1340.04	0.377	0.00	1340.04	0.000
L17	88 - 87	TP23.0986x22.0998x0.5875	523.14	1314.22	0.398	0.00	1314.22	0.000
	87 - 86		541.82	1338.84	0.405	0.00	1338.84	0.000
	86 - 85		560.58	1363.69	0.411	0.00	1363.69	0.000
	85 - 84		579.44	1388.77	0.417	0.00	1388.77	0.000
	84 - 83		598.38	1414.07	0.423	0.00	1414.07	0.000
L18	83 - 82	TP24.0975x23.0986x0.575	617.41	1411.30	0.437	0.00	1411.30	0.000
	82 - 81		636.53	1436.53	0.443	0.00	1436.53	0.000
	81 - 80		655.74	1461.98	0.449	0.00	1461.98	0.000
	80 - 79		675.03	1487.67	0.454	0.00	1487.67	0.000
	79 - 78		694.41	1513.57	0.459	0.00	1513.57	0.000
L19	78 - 77 (19)	TP24.2972x24.0975x0.575	713.88	1539.70	0.464	0.00	1539.70	0.000
L20	77 - 76.75 (20)	TP24.3472x24.2972x0.7625	718.76	2002.34	0.359	0.00	2002.34	0.000
L21	76.75 - 75.75	TP25.346x24.3472x0.7375	738.34	1976.38	0.374	0.00	1976.38	0.000
	75.75 - 74.75		758.01	2010.18	0.377	0.00	2010.18	0.000
	74.75 - 73.75		777.78	2044.28	0.380	0.00	2044.28	0.000
	73.75 - 72.75		797.64	2078.66	0.384	0.00	2078.66	0.000
	72.75 - 71.75		817.60	2113.32	0.387	0.00	2113.32	0.000
L22	71.75 - 70.75	TP26.3449x25.346x0.7125	837.65	2081.74	0.402	0.00	2081.74	0.000
	70.75 - 69.75		857.79	2115.84	0.405	0.00	2115.84	0.000
	69.75 - 68.75		878.02	2150.22	0.408	0.00	2150.22	0.000
	68.75 - 67.75		898.35	2184.87	0.411	0.00	2184.87	0.000
	67.75 - 66.75		918.77	2219.80	0.414	0.00	2219.80	0.000
L23	66.75 - 65.75	TP27.3438x26.3449x0.6875	939.29	2182.21	0.430	0.00	2182.21	0.000
	65.75 - 64.75		959.89	2216.50	0.433	0.00	2216.50	0.000
	64.75 - 63.75		980.59	2251.05	0.436	0.00	2251.05	0.000
	63.75 - 62.75		1001.38	2285.88	0.438	0.00	2285.88	0.000
	62.75 - 61.75		1022.27	2320.97	0.440	0.00	2320.97	0.000
L24	61.75 - 60.5 (24)	TP27.5935x27.3438x0.6875	1048.50	2365.21	0.443	0.00	2365.21	0.000
L25	60.5 - 60.25 (25)	TP27.6434x27.5935x0.6875	1053.77	2374.11	0.444	0.00	2374.11	0.000
L26	60.25 - 59.5 (26)	TP27.7933x27.6434x0.6875	1069.60	2400.91	0.445	0.00	2400.91	0.000
L27	59.5 - 59.25 (27)	TP27.8432x27.7933x0.75	1074.89	2610.84	0.412	0.00	2610.84	0.000
L28	59.25 - 58.25	TP28.8421x27.8432x0.725	1096.14	2568.72	0.427	0.00	2568.72	0.000
	58.25 - 57.25		1117.55	2606.92	0.429	0.00	2606.92	0.000
	57.25 - 56.25		1139.11	2645.39	0.431	0.00	2645.39	0.000
	56.25 - 55.25		1160.82	2684.15	0.432	0.00	2684.15	0.000
	55.25 - 54.25		1182.68	2723.19	0.434	0.00	2723.19	0.000
L29	54.25 - 53.1875	TP30.64x28.8421x0.7	1206.06	2676.72	0.451	0.00	2676.72	0.000
	53.1875 - 52.125		1229.61	2717.43	0.452	0.00	2717.43	0.000
	52.125 - 51.0625		1253.32	2758.44	0.454	0.00	2758.44	0.000
	51.0625 - 50		1277.19	2799.78	0.456	0.00	2799.78	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 $\frac{M_{uy}}{\phi M_{ny}}$
	50 - 45.25		683.77	2988.28	0.229	0.00	2988.28	0.000
L30	50 - 45.25	TP30.192x29.1911x0.7625	702.77	3126.48	0.225	0.00	3126.48	0.000
	45.25 - 45		1392.41	3137.28	0.444	0.00	3137.28	0.000
L31	45 - 44	TP31.1929x30.192x0.75	1415.93	3132.47	0.452	0.00	3132.47	0.000
	44 - 43		1439.60	3175.44	0.453	0.00	3175.44	0.000
	43 - 42		1463.41	3218.71	0.455	0.00	3218.71	0.000
	42 - 41		1487.36	3262.28	0.456	0.00	3262.28	0.000
	41 - 40		1511.44	3306.13	0.457	0.00	3306.13	0.000
L32	40 - 39 (32)	TP31.393x31.1929x0.7375	1535.68	3298.47	0.466	0.00	3298.47	0.000
L33	39 - 38.75 (33)	TP31.4431x31.393x0.7375	1541.75	3309.38	0.466	0.00	3309.38	0.000
L34	38.75 - 37.5625	TP32.3939x31.4431x0.725	1570.74	3308.46	0.475	0.00	3308.46	0.000
	37.5625 - 36.375		1599.93	3360.05	0.476	0.00	3360.05	0.000
	36.375 - 35.1875		1629.30	3412.04	0.478	0.00	3412.04	0.000
	35.1875 - 34		1658.88	3464.43	0.479	0.00	3464.43	0.000
L35	34 - 33.75 (35)	TP32.444x32.3939x0.6875	1665.13	3307.45	0.503	0.00	3307.45	0.000
L36	33.75 - 32.75	TP33.2447x32.444x0.6875	1690.21	3349.72	0.505	0.00	3349.72	0.000
	32.75 - 31.75		1715.42	3392.26	0.506	0.00	3392.26	0.000
	31.75 - 30.75		1740.77	3435.07	0.507	0.00	3435.07	0.000
	30.75 - 29.75		1766.24	3478.15	0.508	0.00	3478.15	0.000
L37	29.75 - 29.5 (37)	TP33.2947x33.2447x0.6875	1772.63	3488.97	0.508	0.00	3488.97	0.000
L38	29.5 - 28.5	TP34.2956x33.2947x0.675	1798.27	3472.12	0.518	0.00	3472.12	0.000
	28.5 - 27.5		1824.03	3515.03	0.519	0.00	3515.03	0.000
	27.5 - 26.5		1849.93	3558.21	0.520	0.00	3558.21	0.000
	26.5 - 25.5		1875.95	3601.65	0.521	0.00	3601.65	0.000
	25.5 - 24.5		1902.10	3645.36	0.522	0.00	3645.36	0.000
L39	24.5 - 23.5	TP35.2965x34.2956x0.6625	1928.38	3625.02	0.532	0.00	3625.02	0.000
	23.5 - 22.5		1954.78	3668.46	0.533	0.00	3668.46	0.000
	22.5 - 21.5		1981.33	3712.15	0.534	0.00	3712.15	0.000
	21.5 - 20.5		2007.99	3756.11	0.535	0.00	3756.11	0.000
	20.5 - 19.5		2034.78	3800.32	0.535	0.00	3800.32	0.000
L40	19.5 - 18.5	TP36.2974x35.2965x0.65	2061.72	3776.31	0.546	0.00	3776.31	0.000
	18.5 - 17.5		2088.77	3820.22	0.547	0.00	3820.22	0.000
	17.5 - 16.5		2115.95	3864.38	0.548	0.00	3864.38	0.000
	16.5 - 15.5		2143.27	3908.80	0.548	0.00	3908.80	0.000
	15.5 - 14.5		2170.71	3953.47	0.549	0.00	3953.47	0.000
L41	14.5 - 13.5	TP36.6978x36.2974x0.65	2198.29	3998.40	0.550	0.00	3998.40	0.000
	13.5 - 12.5		2225.99	4043.58	0.551	0.00	4043.58	0.000
L42	12.5 - 12.25 (42)	TP36.7478x36.6978x0.5625	2232.94	3534.64	0.632	0.00	3534.64	0.000
L43	12.25 - 10.75 (43)	TP37.0481x36.7478x0.5625	2274.78	3594.00	0.633	0.00	3594.00	0.000
L44	10.75 - 10.5 (44)	TP37.0981x37.0481x0.6375	2281.78	4059.37	0.562	0.00	4059.37	0.000
L45	10.5 - 9.5	TP38.099x37.0981x0.625	2309.85	4028.08	0.573	0.00	4028.08	0.000
	9.5 - 8.5		2338.02	4072.55	0.574	0.00	4072.55	0.000
	8.5 - 7.5		2366.28	4117.26	0.575	0.00	4117.26	0.000
	7.5 - 6.5		2394.63	4162.21	0.575	0.00	4162.21	0.000
	6.5 - 5.5		2423.09	4207.41	0.576	0.00	4207.41	0.000
L46	5.5 - 4.5	TP39.0999x38.099x0.6125	2451.65	4171.94	0.588	0.00	4171.94	0.000
	4.5 - 3.5		2480.30	4216.73	0.588	0.00	4216.73	0.000
	3.5 - 2.5		2509.05	4261.77	0.589	0.00	4261.77	0.000
	2.5 - 1.5		2537.90	4307.03	0.589	0.00	4307.03	0.000
	1.5 - 0.5		2566.85	4352.55	0.590	0.00	4352.55	0.000
L47	0.5 - 0 (47)	TP39.2x39.0999x0.6125	2581.37	4375.39	0.590	0.00	4375.39	0.000

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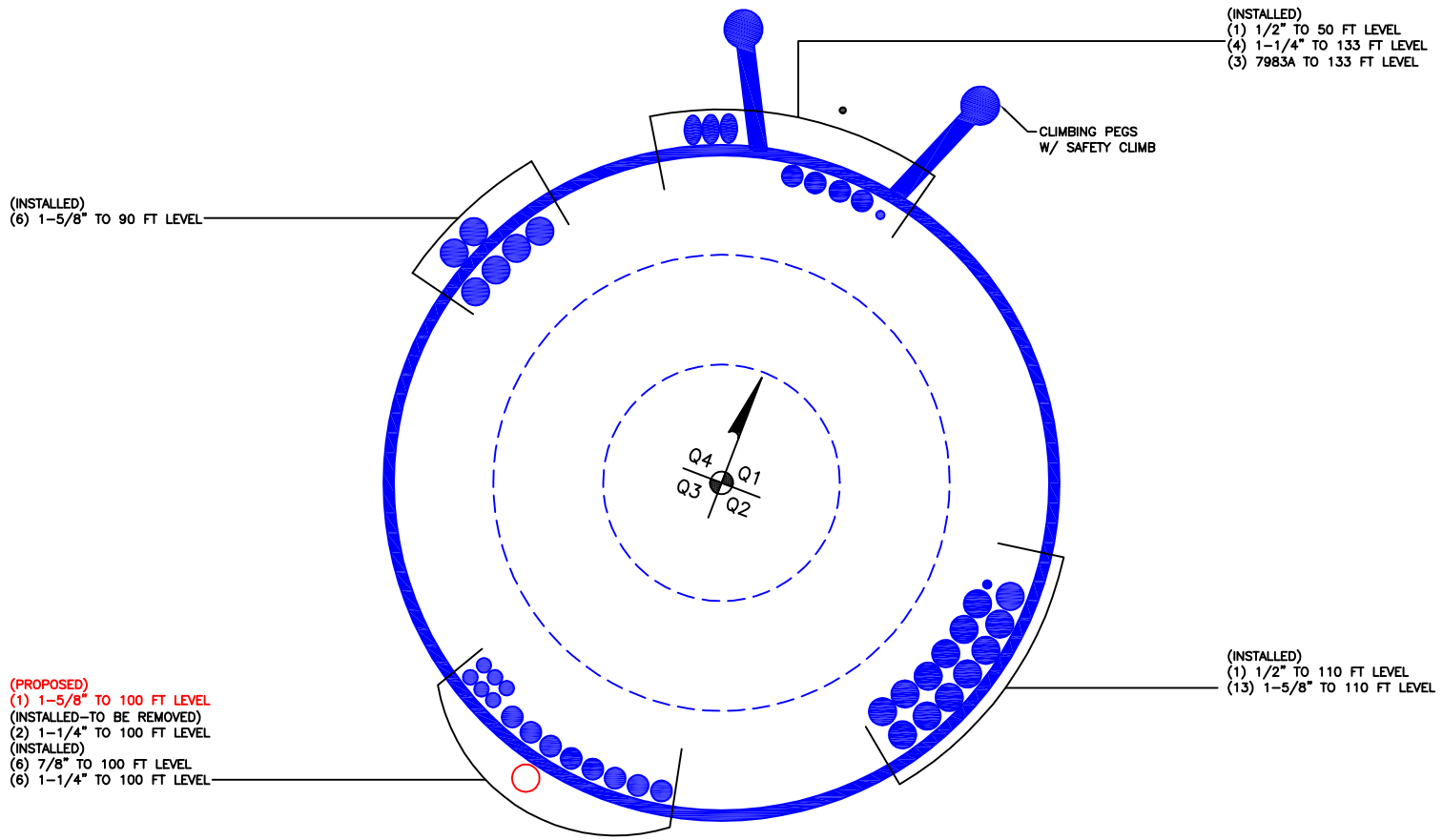
Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	133 - 132	TP14.4795x13.48x0.1875	1.60	300.22	0.005	0.21	332.69	0.001
	132 - 131		6.57	304.67	0.022	0.96	342.69	0.003
	131 - 130		6.69	309.12	0.022	0.94	352.84	0.003
	130 - 129		6.75	313.57	0.022	0.94	363.14	0.003
	129 - 128		6.82	318.01	0.021	0.94	373.58	0.003
L2	128 - 127	TP15.479x14.4795x0.1875	6.89	322.46	0.021	0.94	384.18	0.002
	127 - 126		6.95	326.91	0.021	0.94	394.92	0.002
	126 - 125		7.02	331.36	0.021	0.94	405.80	0.002
	125 - 124		7.08	335.81	0.021	0.94	416.84	0.002
	124 - 123		7.15	340.26	0.021	0.94	428.02	0.002
L3	123 - 122	TP16.4786x15.479x0.1875	7.22	344.70	0.021	0.94	439.36	0.002
	122 - 121		7.29	349.15	0.021	0.94	450.84	0.002
	121 - 120		7.35	353.60	0.021	0.94	462.47	0.002
	120 - 119		7.42	358.05	0.021	0.94	474.25	0.002
	119 - 118		7.49	362.50	0.021	0.94	486.17	0.002
L4	118 - 117	TP17.4781x16.4786x0.1875	7.56	365.77	0.021	0.94	496.65	0.002
	117 - 116		7.63	368.79	0.021	0.94	506.89	0.002
	116 - 115		7.70	371.78	0.021	0.94	517.18	0.002
	115 - 114		7.77	374.73	0.021	0.94	527.53	0.002
	114 - 113		7.84	377.65	0.021	0.94	537.92	0.002
L5	113 - 112	TP18.4776x17.4781x0.1875	7.92	380.53	0.021	0.94	548.37	0.002
	112 - 111		7.99	383.38	0.021	0.94	558.86	0.002
	111 - 110		8.06	386.20	0.021	0.94	569.39	0.002
	110 - 109		12.56	388.99	0.032	0.93	579.97	0.002
	109 - 108		12.63	391.74	0.032	0.93	590.59	0.002
L6	108 - 106.917	TP19.1273x18.4776x0.1875	12.71	394.68	0.032	0.93	602.14	0.002
	106.917 - 105.833		12.78	397.58	0.032	0.92	613.74	0.002
	105.833 - 104.75		12.86	400.44	0.032	0.92	625.37	0.001
L7	104.75 - 104.5 (7)	TP19.1773x19.1273x0.425	12.87	945.79	0.014	0.92	1444.18	0.001
L8	104.5 - 103.5	TP20.1768x19.1773x0.4063	12.96	914.61	0.014	0.92	1414.58	0.001
	103.5 - 102.5		13.04	924.24	0.014	0.92	1444.86	0.001
	102.5 - 101.5		13.12	933.88	0.014	0.92	1475.47	0.001
	101.5 - 100.5		13.21	943.52	0.014	0.92	1506.39	0.001
	100.5 - 99.5		17.05	953.16	0.018	0.92	1537.64	0.001
L9	99.5 - 98.75 (9)	TP20.3267x20.1768x0.4063	17.12	960.38	0.018	0.92	1561.28	0.001
L10	98.75 - 98.5 (10)	TP20.3767x20.3267x0.675	17.15	1578.19	0.011	0.92	2503.45	0.000
L11	98.5 - 97.3333	TP21.81x20.3767x0.6625	17.27	1568.28	0.011	0.92	2521.32	0.000
	97.3333 - 96.1667		17.39	1586.62	0.011	0.92	2581.58	0.000
	96.1667 - 95		17.51	1604.96	0.011	0.92	2642.55	0.000
	95 - 91.33		9.03	1662.64	0.005	0.46	2839.00	0.000
L12	95 - 91.33	TP21.7002x20.7014x0.7125	8.94	1752.14	0.005	0.46	2922.97	0.000
	91.33 - 90		18.11	1774.61	0.010	0.92	2999.68	0.000
L13	90 - 89.25 (13)	TP21.85x21.7002x0.7	18.18	1756.96	0.010	0.92	2995.28	0.000
L14	89.25 - 89 (14)	TP21.9x21.85x0.85	18.21	2123.36	0.009	0.92	3577.57	0.000
L15	89 - 88.25 (15)	TP22.0498x21.9x0.8375	18.28	2108.26	0.009	0.92	3582.63	0.000
L16	88.25 - 88 (16)	TP22.0998x22.0498x0.6125	18.30	1561.85	0.012	0.92	2717.19	0.000
L17	88 - 87	TP23.0986x22.0998x0.5875	18.64	1513.77	0.012	2.15	2664.84	0.001
	87 - 86		18.73	1527.70	0.012	2.15	2714.76	0.001
	86 - 85		18.82	1541.63	0.012	2.15	2765.14	0.001
	85 - 84		18.91	1555.56	0.012	2.15	2815.98	0.001
	84 - 83		18.99	1569.48	0.012	2.14	2867.28	0.001

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 $\frac{T_u}{\phi T_n}$
L18	83 - 82	TP24.0975x23.0986x0.575	19.08	1550.58	0.012	2.14	2861.67	0.001
	82 - 81		19.17	1564.21	0.012	2.14	2912.83	0.001
	81 - 80		19.26	1577.84	0.012	2.14	2964.45	0.001
	80 - 79		19.34	1591.47	0.012	2.14	3016.53	0.001
	79 - 78		19.43	1605.10	0.012	2.14	3069.05	0.001
L19	78 - 77 (19)	TP24.2972x24.0975x0.575	19.52	1618.74	0.012	2.14	3122.03	0.001
L20	77 - 76.75 (20)	TP24.3472x24.2972x0.7625	19.54	2134.14	0.009	2.14	4060.13	0.001
L21	76.75 - 75.75	TP25.346x24.3472x0.7375	19.63	2083.84	0.009	2.14	4007.47	0.001
	75.75 - 74.75		19.73	2101.32	0.009	2.14	4076.03	0.001
	74.75 - 73.75		19.82	2118.81	0.009	2.14	4145.16	0.001
	73.75 - 72.75		19.92	2136.29	0.009	2.14	4214.88	0.001
	72.75 - 71.75		20.01	2153.77	0.009	2.14	4285.17	0.000
L22	71.75 - 70.75	TP26.3449x25.346x0.7125	20.10	2099.77	0.010	2.14	4221.12	0.001
	70.75 - 69.75		20.20	2116.66	0.010	2.14	4290.26	0.000
	69.75 - 68.75		20.29	2133.55	0.010	2.14	4359.97	0.000
	68.75 - 67.75		20.38	2150.45	0.009	2.14	4430.23	0.000
	67.75 - 66.75		20.48	2167.34	0.009	2.14	4501.06	0.000
L23	66.75 - 65.75	TP27.3438x26.3449x0.6875	20.57	2109.63	0.010	2.14	4424.83	0.000
	65.75 - 64.75		20.66	2125.93	0.010	2.14	4494.36	0.000
	64.75 - 63.75		20.75	2142.23	0.010	2.14	4564.43	0.000
	63.75 - 62.75		20.84	2158.53	0.010	2.14	4635.05	0.000
	62.75 - 61.75		20.94	2174.82	0.010	2.14	4706.20	0.000
L24	61.75 - 60.5 (24)	TP27.5935x27.3438x0.6875	21.06	2195.20	0.010	2.14	4795.91	0.000
L25	60.5 - 60.25 (25)	TP27.6434x27.5935x0.6875	21.08	2199.27	0.010	2.14	4813.95	0.000
L26	60.25 - 59.5 (26)	TP27.7933x27.6434x0.6875	21.15	2211.50	0.010	2.14	4868.28	0.000
L27	59.5 - 59.25 (27)	TP27.8432x27.7933x0.75	21.19	2411.43	0.009	2.14	5293.97	0.000
L28	59.25 - 58.25	TP28.8421x27.8432x0.725	21.34	2350.38	0.009	2.14	5208.56	0.000
	58.25 - 57.25		21.49	2367.57	0.009	2.14	5286.01	0.000
	57.25 - 56.25		21.64	2384.76	0.009	2.14	5364.02	0.000
	56.25 - 55.25		21.79	2401.95	0.009	2.14	5442.63	0.000
	55.25 - 54.25		21.94	2419.14	0.009	2.14	5521.78	0.000
L29	54.25 - 53.1875	TP30.64x28.8421x0.7	22.10	2355.43	0.009	2.14	5427.54	0.000
	53.1875 - 52.125		22.25	2373.06	0.009	2.14	5510.09	0.000
	52.125 - 51.0625		22.40	2390.69	0.009	2.14	5593.27	0.000
	51.0625 - 50		22.56	2408.32	0.009	2.14	5677.06	0.000
	50 - 45.25		11.75	2487.15	0.005	0.96	6059.31	0.000
L30	50 - 45.25	TP30.192x29.1911x0.7625	11.70	2658.49	0.004	0.98	6339.53	0.000
	45.25 - 45		23.46	2663.02	0.009	1.94	6361.42	0.000
L31	45 - 44	TP31.1929x30.192x0.75	23.61	2638.29	0.009	1.94	6351.66	0.000
	44 - 43		23.75	2656.11	0.009	1.94	6438.81	0.000
	43 - 42		23.89	2673.93	0.009	1.94	6526.54	0.000
	42 - 41		24.03	2691.75	0.009	1.94	6614.87	0.000
	41 - 40		24.17	2709.56	0.009	1.94	6703.80	0.000
L32	40 - 39 (32)	TP31.393x31.1929x0.7375	24.31	2683.02	0.009	1.94	6688.27	0.000
L33	39 - 38.75 (33)	TP31.4431x31.393x0.7375	24.34	2687.40	0.009	1.93	6710.38	0.000
L34	38.75 - 37.5625	TP32.3939x31.4431x0.725	24.51	2663.38	0.009	1.93	6708.52	0.000
	37.5625 - 36.375		24.67	2683.83	0.009	1.93	6813.12	0.000
	36.375 - 35.1875		24.83	2704.28	0.009	1.93	6918.55	0.000
	35.1875 - 34		25.00	2724.73	0.009	1.93	7024.78	0.000
L35	34 - 33.75 (35)	TP32.444x32.3939x0.6875	25.02	2590.94	0.010	1.93	6706.47	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 $\frac{T_u}{\phi T_n}$
L36	33.75 - 32.75	TP33.2447x32.444x0.6875	25.16	2607.27	0.010	1.93	6792.18	0.000
	32.75 - 31.75		25.29	2623.60	0.010	1.93	6878.45	0.000
	31.75 - 30.75		25.42	2639.94	0.010	1.93	6965.26	0.000
	30.75 - 29.75		25.55	2656.27	0.010	1.93	7052.61	0.000
L37	29.75 - 29.5 (37)	TP33.2947x33.2447x0.6875	25.58	2660.35	0.010	1.93	7074.52	0.000
L38	29.5 - 28.5	TP34.2956x33.2947x0.675	25.71	2629.02	0.010	1.93	7040.37	0.000
	28.5 - 27.5		25.84	2645.05	0.010	1.93	7127.39	0.000
	27.5 - 26.5		25.97	2661.09	0.010	1.93	7214.93	0.000
	26.5 - 25.5		26.10	2677.12	0.010	1.93	7303.02	0.000
	25.5 - 24.5		26.23	2693.16	0.010	1.93	7391.64	0.000
L39	24.5 - 23.5	TP35.2965x34.2956x0.6625	26.36	2660.01	0.010	1.93	7350.41	0.000
	23.5 - 22.5		26.49	2675.74	0.010	1.93	7438.48	0.000
	22.5 - 21.5		26.62	2691.48	0.010	1.93	7527.08	0.000
	21.5 - 20.5		26.75	2707.22	0.010	1.93	7616.21	0.000
	20.5 - 19.5		26.88	2722.96	0.010	1.93	7705.86	0.000
L40	19.5 - 18.5	TP36.2974x35.2965x0.65	27.00	2687.99	0.010	1.93	7657.17	0.000
	18.5 - 17.5		27.13	2703.43	0.010	1.93	7746.22	0.000
	17.5 - 16.5		27.26	2718.87	0.010	1.93	7835.77	0.000
	16.5 - 15.5		27.39	2734.31	0.010	1.93	7925.83	0.000
	15.5 - 14.5		27.52	2749.75	0.010	1.93	8016.42	0.000
L41	14.5 - 13.5	TP36.6978x36.2974x0.65	27.66	2765.19	0.010	1.93	8107.51	0.000
	13.5 - 12.5		27.79	2780.64	0.010	1.93	8199.12	0.000
L42	12.5 - 12.25 (42)	TP36.7478x36.6978x0.5625	27.81	2415.50	0.012	1.93	7167.15	0.000
L43	12.25 - 10.75 (43)	TP37.0481x36.7478x0.5625	28.02	2435.54	0.012	1.94	7287.51	0.000
L44	10.75 - 10.5 (44)	TP37.0981x37.0481x0.6375	28.02	2758.40	0.010	1.94	8231.12	0.000
L45	10.5 - 9.5	TP38.099x37.0981x0.625	28.13	2720.08	0.010	1.94	8167.69	0.000
	9.5 - 8.5		28.23	2734.93	0.010	1.94	8257.85	0.000
	8.5 - 7.5		28.33	2749.78	0.010	1.94	8348.50	0.000
	7.5 - 6.5		28.42	2764.63	0.010	1.94	8439.67	0.000
	6.5 - 5.5		28.52	2779.47	0.010	1.94	8531.33	0.000
L46	5.5 - 4.5	TP39.0999x38.099x0.6125	28.62	2739.34	0.010	1.94	8459.42	0.000
	4.5 - 3.5		28.72	2753.89	0.010	1.94	8550.25	0.000
	3.5 - 2.5		28.82	2768.44	0.010	1.94	8641.50	0.000
	2.5 - 1.5		28.92	2782.99	0.010	1.94	8733.33	0.000
	1.5 - 0.5		29.02	2797.55	0.010	1.94	8825.58	0.000
L47	0.5 - 0 (47)	TP39.2x39.0999x0.6125	29.06	2804.82	0.010	1.94	8871.92	0.000

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876317 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Additional Calculations

CCIpole

per TIA-222- G

Site BU: 876317

Work Order: 1217006

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	133	41.67	3.67	12	13.48	21.81	0.1875	0.75	A572-65
2	95	49.75	4.75	12	20.70	30.64	0.25	1	A572-65
3	50	50	0	12	29.19	39.2	0.3125	1.25	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	29.75	plate	BAR #1	2				x								x
2	0	10.75	plate	BAR #1A	2							x		x			
3	10.75	29.75	plate	BAR #1B	1								x				
4	29.75	59.5	plate	BAR #2	3				x				x				x
5	59.5	89.25	plate	BAR #3	3				x				x				x
6	89.25	98.75	plate	BAR #4	3				x				x				x
7	12.5	34	plate	SR1	2						x				x		
8	12.5	39	plate	SR2	1	x											
9	34	60.5	plate	SR3	3			x				x				x	
10	60.5	77	plate	SR4	3		x				x				x		
11	88.25	104.75	plate	SR5	3		x				x				x		
12																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6.875	1.25	8.59375	0.625	n/a	36.000	15.000	6.991	1.2200	A572-65
2	6.875	1.25	8.59375	0.625	n/a	42.000	15.000	6.991	1.2200	A572-65
3	6.875	1.25	8.59375	0.625	42.000	36.000	15.000	6.991	1.2200	A572-65
4	6.625	1.25	8.28125	0.625	3.000	30.000	18.000	6.678	1.2200	A572-65
5	5.5	1.25	6.875	0.625	3.000	18.000	18.000	5.272	1.2200	A572-65
6	3.625	1.25	4.53125	0.625	3.000	15.000	24.000	2.928	1.2200	A572-65
7	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A514-GR100
8	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A514-GR100
9	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A514-GR100
10	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A514-GR100
11	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A514-GR100

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	133 - 128	5		12	13.480	14.480	0.1875	A572-65	1.000
2	128 - 123	5		12	14.480	15.479	0.1875	A572-65	1.000
3	123 - 118	5		12	15.479	16.479	0.1875	A572-65	1.000
4	118 - 113	5		12	16.479	17.478	0.1875	A572-65	1.000
5	113 - 108	5		12	17.478	18.478	0.1875	A572-65	1.000
6	108 - 104.75	3.25		12	18.478	19.127	0.1875	A572-65	1.000
7	104.75 - 104.5	0.25		12	19.127	19.177	0.425	A572-65	0.915
8	104.5 - 99.5	5		12	19.177	20.177	0.40625	A572-65	0.931
9	99.5 - 98.75	0.75		12	20.177	20.327	0.40625	A572-65	0.928
10	98.75 - 98.5	0.25		12	20.327	20.377	0.675	A572-65	0.883
11	98.5 - 95	7.17	3.67	12	20.377	21.810	0.6625	A572-65	0.878
12	95 - 90	5		12	20.701	21.700	0.7125	A572-65	0.891
13	90 - 89.25	0.75		12	21.700	21.850	0.7	A572-65	0.902
14	89.25 - 89	0.25		12	21.850	21.900	0.85	A572-65	0.870
15	89 - 88.25	0.75		12	21.900	22.050	0.8375	A572-65	0.878
16	88.25 - 88	0.25		12	22.050	22.100	0.6125	A572-65	0.902
17	88 - 83	5		12	22.100	23.099	0.5875	A572-65	0.917
18	83 - 78	5		12	23.099	24.097	0.575	A572-65	0.915
19	78 - 77	1		12	24.097	24.297	0.575	A572-65	0.911
20	77 - 76.75	0.25		12	24.297	24.347	0.7625	A572-65	0.899
21	76.75 - 71.75	5		12	24.347	25.346	0.7375	A572-65	0.905
22	71.75 - 66.75	5		12	25.346	26.345	0.7125	A572-65	0.913
23	66.75 - 61.75	5		12	26.345	27.344	0.6875	A572-65	0.923
24	61.75 - 60.5	1.25		12	27.344	27.593	0.6875	A572-65	0.918
25	60.5 - 60.25	0.25		12	27.593	27.643	0.6875	A572-65	0.917
26	60.25 - 59.5	0.75		12	27.643	27.793	0.6875	A572-65	0.914
27	59.5 - 59.25	0.25		12	27.793	27.843	0.75	A572-65	0.903
28	59.25 - 54.25	5		12	27.843	28.842	0.725	A572-65	0.913
29	54.25 - 50	9	4.75	12	28.842	30.640	0.7	A572-65	0.927
30	50 - 45	5		12	29.191	30.192	0.7625	A572-65	0.927
31	45 - 40	5		12	30.192	31.193	0.75	A572-65	0.925
32	40 - 39	1		12	31.193	31.393	0.7375	A572-65	0.936
33	39 - 38.75	0.25		12	31.393	31.443	0.7375	A572-65	0.991
34	38.75 - 34	4.75		12	31.443	32.394	0.725	A572-65	0.990
35	34 - 33.75	0.25		12	32.394	32.444	0.6875	A572-65	0.985
36	33.75 - 29.75	4		12	32.444	33.245	0.6875	A572-65	0.972
37	29.75 - 29.5	0.25		12	33.245	33.295	0.6875	A572-65	0.984
38	29.5 - 24.5	5		12	33.295	34.296	0.675	A572-65	0.986
39	24.5 - 19.5	5		12	34.296	35.297	0.6625	A572-65	0.989
40	19.5 - 14.5	5		12	35.297	36.297	0.65	A572-65	0.992
41	14.5 - 12.5	2		12	36.297	36.698	0.65	A572-65	0.987
42	12.5 - 12.25	0.25		12	36.698	36.748	0.5625	A572-65	0.953
43	12.25 - 10.75	1.5		12	36.748	37.048	0.5625	A572-65	0.950
44	10.75 - 10.5	0.25		12	37.048	37.098	0.6375	A572-65	0.955
45	10.5 - 5.5	5		12	37.098	38.099	0.625	A572-65	0.961
46	5.5 - 0.5	5		12	38.099	39.100	0.6125	A572-65	0.968
47	0.5 - 0	0.5		12	39.100	39.200	0.6125	A572-65	0.967

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	133 - 128	3.0055	30.648	6.8197
2	128 - 123	3.2071	65.56	7.1516
3	123 - 118	3.4381	102.16	7.4933
4	118 - 113	3.6957	140.48	7.8449
5	113 - 108	5.9017	189.68	12.63
6	108 - 104.75	6.1738	231.07	12.859
7	104.75 - 104.5	6.2175	234.29	12.874
8	104.5 - 99.5	9.3037	301.56	17.052
9	99.5 - 98.75	9.4088	314.38	17.123
10	98.75 - 98.5	9.4611	318.66	17.146
11	98.5 - 95	10.105	379.3	17.513
12	95 - 90	11.681	468.37	18.109
13	90 - 89.25	11.843	481.98	18.184
14	89.25 - 89	11.906	486.53	18.206
15	89 - 88.25	12.082	500.21	18.279
16	88.25 - 88	12.133	504.78	18.299
17	88 - 83	13.076	598.38	18.994
18	83 - 78	14.082	694.41	19.431
19	78 - 77	14.288	713.88	19.519
20	77 - 76.75	14.359	718.76	19.539
21	76.75 - 71.75	15.604	817.6	20.01
22	71.75 - 66.75	16.879	918.77	20.476
23	66.75 - 61.75	18.179	1022.3	20.937
24	61.75 - 60.5	18.506	1048.5	21.059
25	60.5 - 60.25	18.582	1053.8	21.076
26	60.25 - 59.5	18.776	1069.6	21.151
27	59.5 - 59.25	18.851	1074.9	21.187
28	59.25 - 54.25	20.24	1182.7	21.943
29	54.25 - 50	21.449	1277.2	22.558
30	50 - 45	24.234	1392.4	23.461
31	45 - 40	25.804	1511.4	24.17
32	40 - 39	26.124	1535.7	24.309
33	39 - 38.75	26.217	1541.8	24.336
34	38.75 - 34	27.815	1658.9	24.998
35	34 - 33.75	27.907	1665.1	25.021
36	33.75 - 29.75	29.214	1766.2	25.554
37	29.75 - 29.5	29.306	1772.6	25.576
38	29.5 - 24.5	30.984	1902.1	26.229
39	24.5 - 19.5	32.7	2034.8	26.9
40	19.5 - 14.5	34.4	2170.7	27.5
41	14.5 - 12.5	35.1	2226.0	27.8
42	12.5 - 12.25	35.2	2232.9	27.8
43	12.25 - 10.75	35.7	2274.8	28.0
44	10.75 - 10.5	35.8	2281.8	28.0
45	10.5 - 5.5	37.5	2423.1	28.5
46	5.5 - 0.5	39.2	2566.9	29.0
47	0.5 - 0	39.4	2581.4	29.1

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133 - 128	Pole	TP14.48x13.48x0.1875	Pole	17.1%	Pass
128 - 123	Pole	TP15.479x14.48x0.1875	Pole	31.5%	Pass
123 - 118	Pole	TP16.479x15.479x0.1875	Pole	43.0%	Pass
118 - 113	Pole	TP17.478x16.479x0.1875	Pole	53.3%	Pass
113 - 108	Pole	TP18.478x17.478x0.1875	Pole	65.8%	Pass
108 - 104.75	Pole	TP19.127x18.478x0.1875	Pole	75.6%	Pass
104.75 - 104.5	Pole + Reinf.	TP19.177x19.127x0.425	Reinf. 11 Tension Rupture	44.1%	Pass
104.5 - 99.5	Pole + Reinf.	TP20.177x19.177x0.4063	Reinf. 11 Tension Rupture	52.8%	Pass
99.5 - 98.75	Pole + Reinf.	TP20.327x20.177x0.4063	Reinf. 11 Tension Rupture	54.4%	Pass
98.75 - 98.5	Pole + Reinf.	TP20.377x20.327x0.675	Reinf. 6 Tension Rupture	50.5%	Pass
98.5 - 95	Pole + Reinf.	TP21.81x20.377x0.6625	Reinf. 6 Tension Rupture	57.5%	Pass
95 - 90	Pole + Reinf.	TP21.7x20.701x0.7125	Reinf. 6 Tension Rupture	62.1%	Pass
90 - 89.25	Pole + Reinf.	TP21.85x21.7x0.7	Reinf. 6 Tension Rupture	63.3%	Pass
89.25 - 89	Pole + Reinf.	TP21.9x21.85x0.85	Reinf. 5 Tension Rupture	45.7%	Pass
89 - 88.25	Pole + Reinf.	TP22.05x21.9x0.8375	Reinf. 5 Tension Rupture	46.5%	Pass
88.25 - 88	Pole + Reinf.	TP22.1x22.05x0.6125	Reinf. 5 Tension Rupture	61.9%	Pass
88 - 83	Pole + Reinf.	TP23.099x22.1x0.5875	Reinf. 5 Tension Rupture	68.9%	Pass
83 - 78	Pole + Reinf.	TP24.097x23.099x0.575	Reinf. 5 Tension Rupture	75.2%	Pass
78 - 77	Pole + Reinf.	TP24.297x24.097x0.575	Reinf. 5 Tension Rupture	76.4%	Pass
77 - 76.75	Pole + Reinf.	TP24.347x24.297x0.7625	Reinf. 5 Tension Rupture	58.6%	Pass
76.75 - 71.75	Pole + Reinf.	TP25.346x24.347x0.7375	Reinf. 5 Tension Rupture	63.2%	Pass
71.75 - 66.75	Pole + Reinf.	TP26.345x25.346x0.7125	Reinf. 5 Tension Rupture	67.4%	Pass
66.75 - 61.75	Pole + Reinf.	TP27.344x26.345x0.6875	Reinf. 5 Tension Rupture	71.3%	Pass
61.75 - 60.5	Pole + Reinf.	TP27.593x27.344x0.6875	Reinf. 5 Tension Rupture	72.2%	Pass
60.5 - 60.25	Pole + Reinf.	TP27.643x27.593x0.6875	Reinf. 5 Tension Rupture	72.4%	Pass
60.25 - 59.5	Pole + Reinf.	TP27.793x27.643x0.6875	Reinf. 5 Tension Rupture	72.9%	Pass
59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.75	Reinf. 4 Tension Rupture	64.2%	Pass
59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.725	Reinf. 4 Tension Rupture	67.4%	Pass
54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.7	Reinf. 4 Tension Rupture	70.0%	Pass
50 - 45	Pole + Reinf.	TP30.192x29.191x0.7625	Reinf. 4 Tension Rupture	68.4%	Pass
45 - 40	Pole + Reinf.	TP31.193x30.192x0.75	Reinf. 4 Tension Rupture	70.9%	Pass
40 - 39	Pole + Reinf.	TP31.393x31.193x0.7375	Reinf. 4 Tension Rupture	71.3%	Pass
39 - 38.75	Pole + Reinf.	TP31.443x31.393x0.7375	Reinf. 4 Tension Rupture	71.4%	Pass
38.75 - 34	Pole + Reinf.	TP32.394x31.443x0.725	Reinf. 4 Tension Rupture	73.6%	Pass
34 - 33.75	Pole + Reinf.	TP32.444x32.394x0.6875	Reinf. 4 Tension Rupture	78.6%	Pass
33.75 - 29.75	Pole + Reinf.	TP33.245x32.444x0.6875	Reinf. 4 Tension Rupture	80.4%	Pass
29.75 - 29.5	Pole + Reinf.	TP33.295x33.245x0.6875	Reinf. 1 Tension Rupture	78.6%	Pass
29.5 - 24.5	Pole + Reinf.	TP34.296x33.295x0.675	Reinf. 1 Tension Rupture	80.7%	Pass
24.5 - 19.5	Pole + Reinf.	TP35.297x34.296x0.6625	Reinf. 1 Tension Rupture	82.8%	Pass
19.5 - 14.5	Pole + Reinf.	TP36.297x35.297x0.65	Reinf. 1 Tension Rupture	84.7%	Pass
14.5 - 12.5	Pole + Reinf.	TP36.698x36.297x0.65	Reinf. 1 Tension Rupture	85.4%	Pass
12.5 - 12.25	Pole + Reinf.	TP36.748x36.698x0.5625	Reinf. 1 Tension Rupture	96.5%	Pass
12.25 - 10.75	Pole + Reinf.	TP37.048x36.748x0.5625	Reinf. 1 Tension Rupture	97.0%	Pass
10.75 - 10.5	Pole + Reinf.	TP37.098x37.048x0.6375	Reinf. 1 Tension Rupture	89.4%	Pass
10.5 - 5.5	Pole + Reinf.	TP38.099x37.098x0.625	Reinf. 1 Tension Rupture	91.2%	Pass
5.5 - 0.5	Pole + Reinf.	TP39.1x38.099x0.6125	Reinf. 1 Tension Rupture	92.8%	Pass
0.5 - 0	Pole + Reinf.	TP39.2x39.1x0.6125	Reinf. 1 Tension Rupture	92.9%	Pass
				Summary	
			Pole	78.5%	Pass
			Reinforcement	97.0%	Pass
			Overall	97.0%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
133 - 128	225	n/a	225	8.62	n/a	8.62	17.1%											
128 - 123	276	n/a	276	9.22	n/a	9.22	31.5%											
123 - 118	334	n/a	334	9.82	n/a	9.82	43.0%											
118 - 113	399	n/a	399	10.42	n/a	10.42	53.3%											
113 - 108	472	n/a	472	11.03	n/a	11.03	65.8%											
108 - 104.75	524	n/a	524	11.42	n/a	11.42	75.6%											
104.75 - 104.5	528	619	1148	11.45	12.00	23.45	40.6%											44.1%
104.5 - 99.5	616	681	1298	12.05	12.00	24.05	48.8%											52.8%
99.5 - 98.75	630	691	1321	12.14	12.00	24.14	50.3%											54.4%
98.75 - 98.5	635	1497	2132	12.17	25.59	37.77	31.7%						50.5%					34.3%
98.5 - 95	703	1595	2298	12.59	25.59	38.19	36.2%						57.5%					39.1%
95 - 90	1015	1685	2700	17.24	25.59	42.84	39.1%						62.1%					42.2%
90 - 89.25	1037	1707	2744	17.36	25.59	42.96	39.9%						63.3%					43.0%
89.25 - 89	1044	2204	3248	17.40	32.63	50.03	34.1%					45.7%						36.7%
89 - 88.25	1066	2232	3298	17.52	32.63	50.15	34.7%					46.5%						37.4%
88.25 - 88	1073	1433	2506	17.56	20.63	38.19	46.3%					61.9%						
88 - 83	1227	1556	2783	18.37	20.63	38.99	51.6%					68.9%						
83 - 78	1395	1684	3079	19.17	20.63	39.79	56.4%					75.2%						
78 - 77	1431	1710	3141	19.33	20.63	39.96	57.3%					76.4%						
77 - 76.75	1440	2689	4128	19.37	32.63	52.00	44.0%					58.6%					47.2%	
76.75 - 71.75	1626	2901	4527	20.17	32.63	52.80	47.5%					63.2%					50.9%	
71.75 - 66.75	1828	3121	4949	20.98	32.63	53.60	50.7%					67.4%					54.3%	
66.75 - 61.75	2046	3349	5395	21.78	32.63	54.40	53.8%					71.3%					57.4%	
61.75 - 60.5	2103	3407	5511	21.98	32.63	54.60	54.5%					72.2%					58.2%	
60.5 - 60.25	2115	3419	5534	22.02	32.63	54.65	54.6%					72.4%				58.3%		
60.25 - 59.5	2150	3454	5604	22.14	32.63	54.77	55.0%					72.9%				58.8%		
59.5 - 59.25	2162	3932	6094	22.18	36.84	59.02	51.0%				64.2%					54.4%		
59.25 - 54.25	2405	4203	6608	22.98	36.84	59.83	53.6%				67.4%					57.1%		
54.25 - 50	2626	4441	7067	23.67	36.84	60.51	55.7%				70.0%					59.3%		
50 - 45	3431	4585	8016	30.02	36.84	66.87	54.5%				68.4%					58.0%		
45 - 40	3787	4879	8666	31.03	36.84	67.87	56.5%				70.9%					60.1%		
40 - 39	3861	4939	8800	31.23	36.84	68.07	56.9%				71.3%					60.5%		
39 - 38.75	3880	4966	8847	31.28	40.84	72.12	58.2%				71.4%				51.5%	57.8%		
38.75 - 34	4247	5257	9503	32.24	40.84	73.08	60.1%				73.6%				53.2%	59.6%		
34 - 33.75	4274	4879	9152	32.29	36.84	69.13	64.2%				78.6%			63.1%	60.9%			
33.75 - 29.75	4601	5111	9712	33.09	36.84	69.93	65.8%				80.4%			64.6%	62.4%			
29.75 - 29.5	4622	5271	9893	33.14	37.78	70.92	64.8%	78.6%		75.7%				63.7%	61.6%			
29.5 - 24.5	5055	5578	10634	34.15	37.78	71.93	66.7%	80.7%		77.8%				65.5%	63.3%			
24.5 - 19.5	5515	5894	11409	35.15	37.78	72.93	68.4%	82.8%		79.8%				67.2%	65.0%			
19.5 - 14.5	6002	6219	12221	36.16	37.78	73.94	70.0%	84.7%		81.6%				68.8%	66.6%			
14.5 - 12.5	6204	6351	12555	36.56	37.78	74.34	70.7%	85.4%		82.4%				69.4%	67.2%			
12.5 - 12.25	6221	4705	10926	36.61	25.78	62.39	78.1%	96.5%		96.5%								
12.25 - 10.75	6376	4779	11155	36.91	25.78	62.69	78.5%	97.0%		97.0%								
10.75 - 10.5	6437	6287	12724	36.96	34.38	71.34	74.0%	89.4%	79.5%									
10.5 - 5.5	6975	6617	13592	37.97	34.38	72.34	75.8%	91.2%	81.2%									
5.5 - 0.5	7543	6955	14498	38.97	34.38	73.35	78.2%	92.8%	82.8%									
0.5 - 0	7602	6989	14591	39.07	34.38	73.45	78.4%	92.9%	83.0%									

Note: Section capacity checked in 5 degree increments.

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#:	*876317*
Site Name:	*WATERBURY*
App #:	*309957 Rev. 11*
Pole Manufacturer:	*Other*

Reactions		
Mu:	2581	ft-kips
Axial, Pu:	39	kips
Shear, Vu:	30	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:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55.16	in

Plate Data		
Diam:	61.16	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	10.50	in

Stiffener Data (Welding at both sides)		
Config:	3	*
Weld Type:	Both	
Groove Depth:	0.3125	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.25	in
Fillet V. Weld:	0.25	in
Width:	11	in
Height:	21.5	in
Thick:	0.625	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	80	ksi
Clear Space between Stiffeners (b):	7.5	in

Pole Data		
Diam:	39.2	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Anchor Rod Results

		Stiffened
Max Rod (Cu+ Vu/ń):	195.4 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	75.2% **Pass**	

Base Plate Results Flexural Check

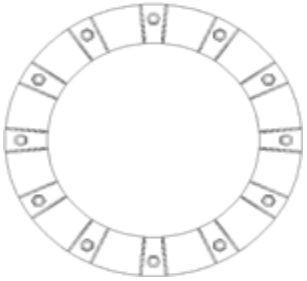
		Stiffened
Base Plate Stress:	16.6 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	30.7% **Pass**	Y.L. Length: N/A, Roark

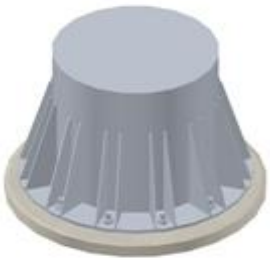
Stiffener Results

Horizontal Weld :	33.1% **Pass**
Vertical Weld:	42.6% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	18.3% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	35.0% **Pass**
Plate Comp. (AISC Bracket):	50.6% **Pass**

Pole Results

Pole Punching Shear Check:	15.3% **Pass**





* 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

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: *876317*
Site Name: *WATERBURY*
App #: *309957 Rev. 11*

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	6.75	ft
Pad Thickness, T:	6.75	ft
Pad Width=Length, L:	20	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	6.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	42.25	ft^2
Pier Height:	1.00	ft
Soil (above pad) Height:	0.00	ft

Soil Parameters		
Unit Weight, γ:	135.0	pcf
Ultimate Bearing Capacity, qn:	30.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	40.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	22.50	ksf
Passive Pres. Coeff., Kp	4.60	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	30.0	kips
Pad Force Location Above D:	2.25	ft
ϕ(Passive Pressure Moment):	67.50	ft-kips
Factored O.T. M(WL), "1.6W":	2153.5	ft-kips
Factored OT (MW-Msoil), M1	2086.00	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	411.3	kips
Unfactored (Total ftg-soil Wt):	411.34	kips
1.2D. **No Soil Wedges**.	532.61	kips
0.9D. **With Soil Wedges**	399.45	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDu:	39	kips
Factored WL Axial, PWu:	0	kips
Factored WL Shear, Vu:	30	kips
Factored WL Moment, Mu:	1921	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	39	kips
0.90	0.9D+1.6W, Pu:	29.25	kips
1.00	Vu:	30	kips
	Mu:	1921	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	532.61	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	2086.00	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	3.92	ft
Orthogonal qu=	2.37	ksf
qu/ϕ*qn Ratio=	**10.55%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	2.77	ft
Diagonal qu=	2.55	ksf
qu/ϕ*qn Ratio=	**11.32%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	399.45	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	2086.00	ft-kips

Orthogonal ecc3 = M2/P2 =	5.22	ft
Ortho Non Bearing Length,NBL=	10.44	ft
Orthogonal qu=	2.09	ksf
Diagonal qu=	2.51	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	1921.00		
M Orthogonal:	3652.24	**52.60%**	**Pass**
M Diagonal:	3652.24	**52.60%**	**Pass**

Project Name:	WATERBURY	JACOBS® Jacobs Engineering Group, Inc.	Created On: 6/3/2014
Project Number:	BU#876317		Checked By: DW
Job Number:	WO#1217006		Revised On: 3/4/2015
Date:	4/15/2016		Revision No.: 1.6

Monopole Pad & Pier Foundation

Foundation Parameters

Load		
Code	G	
Axial	39	kips
Shear	30	kips
Moment	2581	k-ft
Soil Unit Weight	135	pcf
Friction Angle	40	
Cohesion	0	psf

Material		
Concrete Strength (F'c)	4000	psi
Concrete Density	150	pcf
Rebar Tensile (Fy)	60	ksi
Clear Cover	3	in

Pad		
Thickness	6.75	ft
Bearing Depth	6.75	ft
Width	20	ft
Rebar Size	10	
Rebar Quantity	21	

Structural Checks

Pad Beam Shear Capacity	1732.6	kips
Pad Beam Shear	181.7	kips
Pad Beam Shear Check	10.5%	Pass

Pad Bending Moment Capacity	9014.9	k-ft
Pad Bending Moment	1361.3	k-ft
Pad Bending Moment Check	15.1%	Pass

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

T-Mobile Existing Facility

Site ID: CT11269B

Waterbury
150 Mattatuck Heights Road
Waterbury, CT 06705

May 11, 2016

EBI Project Number: 6216002292

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	11.71 %

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

EBI Consulting
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May 11, 2016

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

Emissions Analysis for Site: **CT11269B – Waterbury**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **150 Mattatuck Heights Road, Waterbury, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **150 Mattatuck Heights Road, Waterbury, 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 / 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

2) 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.

3) 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.

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

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

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

7) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** & **B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** & **B2A/B4P** have a maximum gain of **15.9 dBd** at their 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 at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **100 feet** above ground level (AGL).

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

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson 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):	100	Height (AGL):	100	Height (AGL):	100
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	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.90	Antenna B1 MPE%	1.90	Antenna C1 MPE%	1.90
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
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):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	1.90	Antenna B2 MPE%	1.90	Antenna C2 MPE%	1.90
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):	100	Height (AGL):	100	Height (AGL):	100
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%	0.75	Antenna B3 MPE%	0.75	Antenna C3 MPE%	0.75

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**4.55 %**
Verizon Wireless	3.81 %
MetroPCS	1.72 %
Clearwire	0.12 %
Sprint	1.07 %
Nextel	0.44 %
Site Total MPE %:	**11.71 %**

T-Mobile Sector 1 Total:	4.55 %
T-Mobile Sector 2 Total:	4.55 %
T-Mobile Sector 3 Total:	4.55 %
Site Total:	11.71 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**100**	**18.99**	**2100**	**1000**	**1.90 %**
T-Mobile 1900 MHz (PCS) GSM/UMTS	**2**	**1167.14**	**100**	**9.50**	**1900**	**1000**	**0.95 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.14**	**100**	**9.50**	**2100**	**1000**	**0.95 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**100**	**3.52**	**700**	**467**	**0.75 %**
						Total:	**4.55%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	4.55 %
Sector 2:	4.55 %
Sector 3:	4.55 %
T-Mobile Per Sector Maximum:	4.55 %
Site Total:	11.71 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.71%** 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.

Location: 150 MATTATUCK HEIGHTS **Owner:** WATERBURY TWIN LLC & 150 MH LLC

Property Information:

Map Block Lot:	0424-0141-0001	**Acres:**	7.02
Primary Use:	Industrial - Flex	**Zone:**	IP
Neighborhood:	85000-Industrial Park	**Vol/Page:**	4647
Mailing Address:	WATERBURY TWIN LLC & 150 MH LLC 12 ISELIN TERRACE LARCHMONT NY 10538		

Property Values:

	Appraised Value	**Assessed Value (70%)**
Building	1524049	1066830
Land	287048	200940
OutBuilding	88903	62230
Total	1900000	1330000

Building Information:

Bldg Style:		**Living Area:**	48248sq.ft
Construction:	Average	**Year Built:**	1988
Exterior Wall:	Brick Solid	**Stories:**	1
Roof Cover:		**Heating:**	Package Unit
Condition:	Average	**Heat Fuel:**	
Rooms:	0	**Bedrooms:**	0
Full Baths:	0	**Half Baths:**	0

Outbuilding Information:

Type	**Area (sq.ft)**	**Year Built**	**Condition**
Tanks Tanks	1sq.ft	1996	Average
Concrete Paving	390sq.ft	1996	Average
Concrete Paving	40sq.ft	1988	Average
Concrete Paving	40sq.ft	1988	Average
Asphalt Paving	46096sq.ft	1988	Average

Close