Crown Castle
3530 Toringdon Way Suite 300
Charlotte NC 28277

Tel (704) 405-6600

October 14, 2014

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

RE: **T-Mobile-Exempt Modification - Crown Site BU: 823530**
T-Mobile Site ID: CT11364B
Located at: 580 Chapel St, Thomaston, CT 06787

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of T-Mobile. T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement their 700MHz technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Edmond V. Mone, First Selectman for Town of Thomaston, and Town of Thomaston, Property Owner.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **580 Chapel St, Thomaston, CT 06787**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to T-Mobile's operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. T-Mobile's replacement antennas will be located at the same elevation on the existing tower.

2. There will be no proposed modifications to the ground and no extension of boundaries.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for T-Mobile's modified facility is included as Exhibit-3.

5. A Structural Modification Report confirming that the tower and foundation can support T-Mobile's proposed modifications is included as Exhibit-2.

For the foregoing reasons, T-Mobile respectfully submits the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Jerry Feathers
Real Estate Specialist

Enclosure

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)

cc: The Honorable Edmond V. Mone
Town of Thomaston
Town Hall
158 Main St
Thomaston, CT 06787

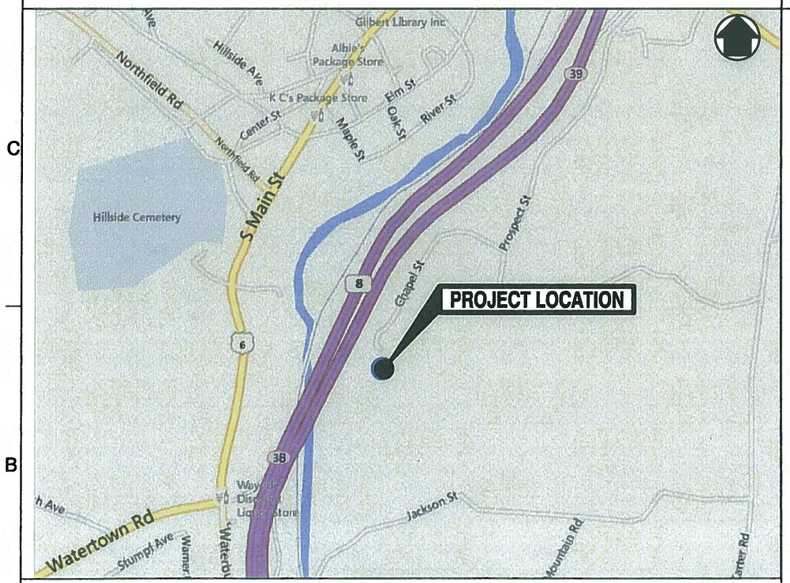
cc: Town of Thomaston
Town Hall
158 Main St
Thomaston, CT 06787

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11364B
CROWN CASTLE BU #: 823530
SITE NAME: CT364/CHAPEL ST. MONOPOLE
580 CHAPEL STREET
THOMASTON, CT 06787
LITCHFIELD COUNTY

SITE CONFIGURATION: 704G

SITE INFORMATION



KEY MAP
N.T.S.

DIRECTIONS: (FROM PARSIPPANY):

START OUT GOING WEST ON SYLVAN WAY TOWARD CENTURY DR. TURN RIGHT ONTO LITTLETON RD/US-202 N. KEEP LEFT AT THE FORK TO GO ON LITTLETON RD E. MERGE ONTO I-287 N. MERGE ONTO I-87 S/I-287 E/NEW YORK TRWY S TOWARD I-87 S/TAPPAN ZEE BRG/NEW YORK CITY. TAKE THE I-87 S EXIT TOWARD SAW MILL PKWY S/NEW YORK CITY. TAKE THE NY-119/SAW MILL PKWY N EXIT. EXIT 8A. TOWARD ELMSFORD. MERGE ONTO SAW MILL RIVER PKWY N VIA THE RAMP ON THE LEFT TOWARD KATONAH. MERGE ONTO I-684 N VIA THE EXIT ON THE LEFT. MERGE ONTO I-84 E VIA EXIT 9E TOWARD DANBURY. MERGE ONTO CT-8 N/JAMES H DARCEY MEMORIAL HWY N VIA EXIT 20 ON THE LEFT TOWARD TORRINGTON. TAKE THE US-6 E/CT-222 EXIT 39. TOWARD THOMASTON/BRISTOL. TURN RIGHT ONTO US-6 E/E MAIN ST. TURN RIGHT ONTO PROSPECT ST. TAKE THE 1ST RIGHT ONTO CHAPEL ST. 580 CHAPEL ST.

PROJECT INFORMATION

T-MOBILE SITE #:	CT11364B
CROWN CASTLE BU #:	823530
SITE ADDRESS:	580 CHAPEL STREET THOMASTON, CT 06787 LITCHFIELD COUNTY
LATITUDE:	N 41° 39' 48.48"
LONGITUDE:	W 73° 4' 27.41"
TOWER OWNER:	CROWN CASTLE 1200 MACARTHUR BLVD., SUITE 200 MAHWAH, NJ 07430
CONTACT:	PETER TISI (201) 236-9224
APPLICANT:	T-MOBILE NORTHEAST, LLC 4 SYLVAN WAY PARSIPPANY, NJ 07054
CONTACT:	PHONE #: (973) 397-4800 FAX #: (973) 292-8893
ENGINEER:	DEWBERRY ENGINEERS INC. 600 PARSIPPANY ROAD, SUITE 301 PARSIPPANY, NJ 07054
CONTACT:	GREG NAWROTZKI (973) 576-9653
SCOPE OF WORK:	ADD (3) NEW ANTENNAS, ADD (3) NEW BIAS TEES, ADD (6) NEW COAX CABLES.

SHEET INDEX

SHEET NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
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C-2	ANTENNA LAYOUTS & ELEVATIONS
C-3	CONSTRUCTION DETAILS
E-1	GROUNDING NOTES & DETAILS

APPROVALS

T-MOBILE — DATE

OWNER/ LANDLORD — DATE

RF ENGINEER — DATE

ZONING — DATE

CONSTRUCTION — DATE

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FAX: (973) 292-8893

CT364/CHAPEL ST.
MONOPOLE

CT11364B

580 CHAPEL STREET
THOMASTON, CT 06787
LITCHFIELD COUNTY

SEAL

STATE OF CONNECTICUT
JIANG XU
No. 23222
LICENSED PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 23222

SCALE
AS SHOWN

REV.	DATE	BY	DESCRIPTION
0	09/15/14	HMP	ISSUED AS FINAL
A	09/02/14	HMP	ISSUED FOR REVIEW

REVISIONS

DRAWN BY HMP
CHECKED BY BSH
APPROVED BY CHN
DATE 09/02/14

TITLE

TITLE SHEET

PROJECT NO. 50066258/50068453

T - 1

SHEET NO.

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.

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.

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.

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DRAWN BY HMP
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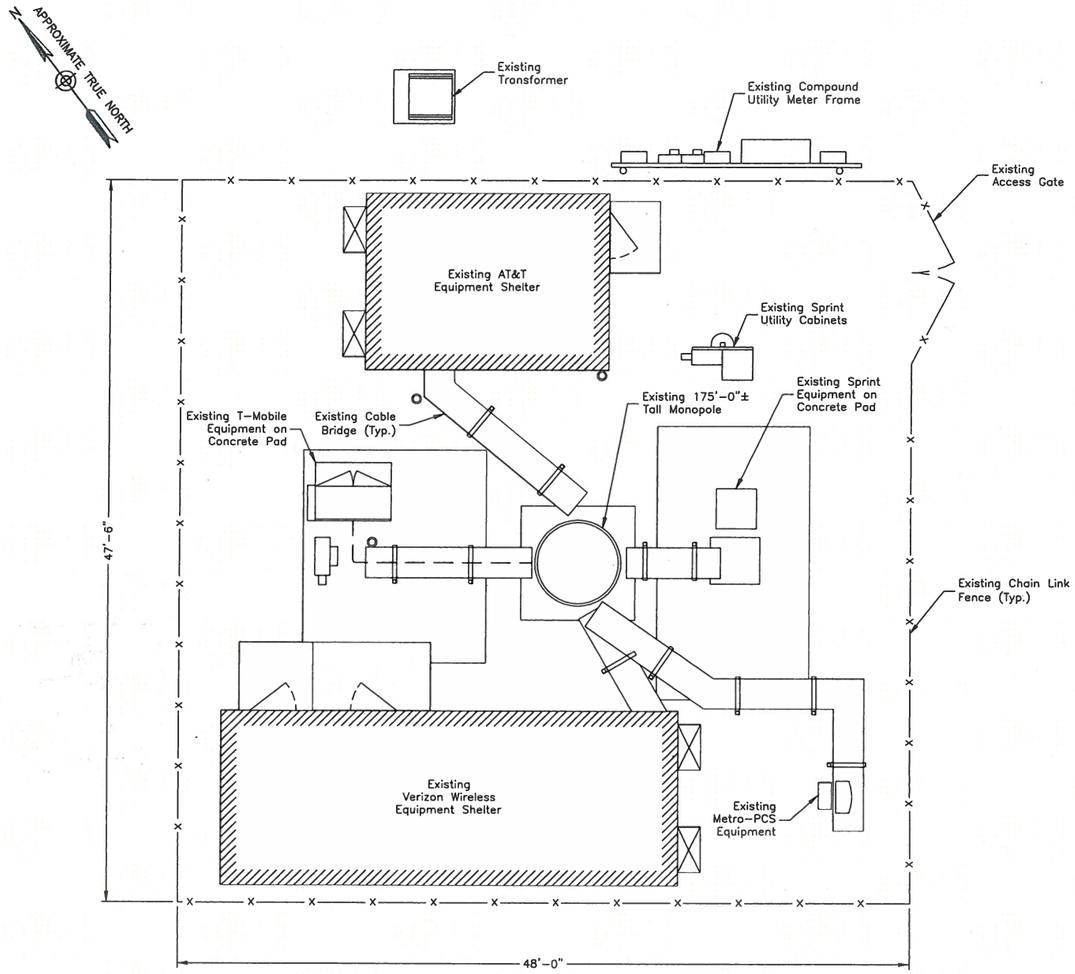
TITLE

GENERAL NOTES

PROJECT NO. 50066258/50068453

G - 1

SHEET NO.

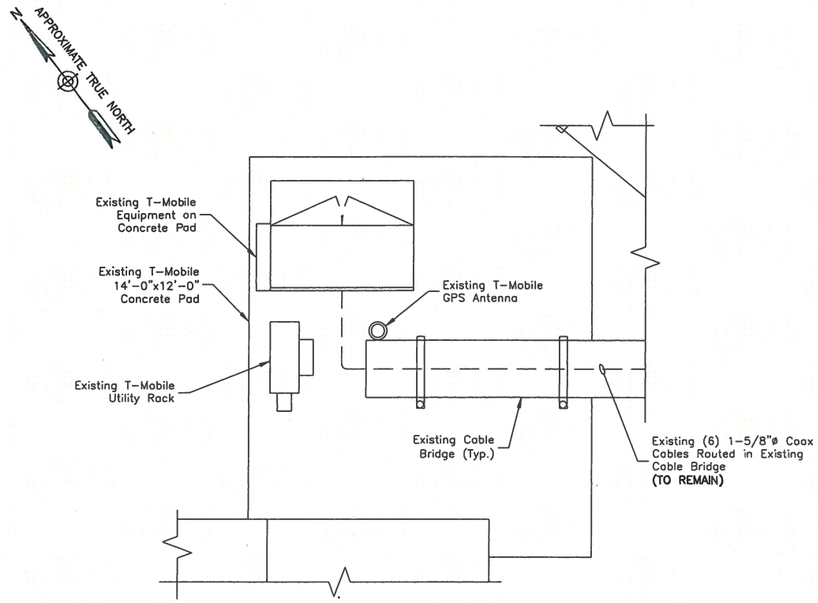


COMPOUND PLAN

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

0' 5' 10'

(1)

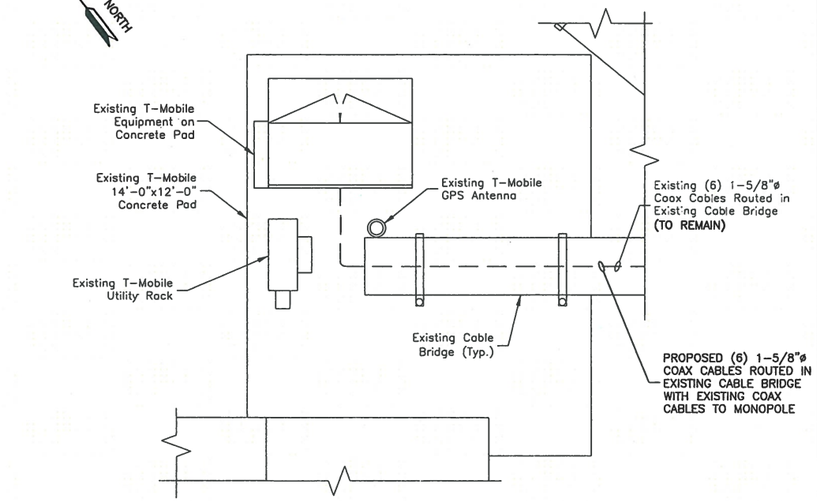


EXISTING EQUIPMENT PLAN

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'

(2)



PROPOSED EQUIPMENT PLAN

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'

(3)

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. MOUNT ALL ANTENNAS, BIAS TEES, COAX, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS.

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

T-Mobile
T-MOBILE NORTHEAST LLC
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COMPOUND PLAN & EQUIPMENT PLANS

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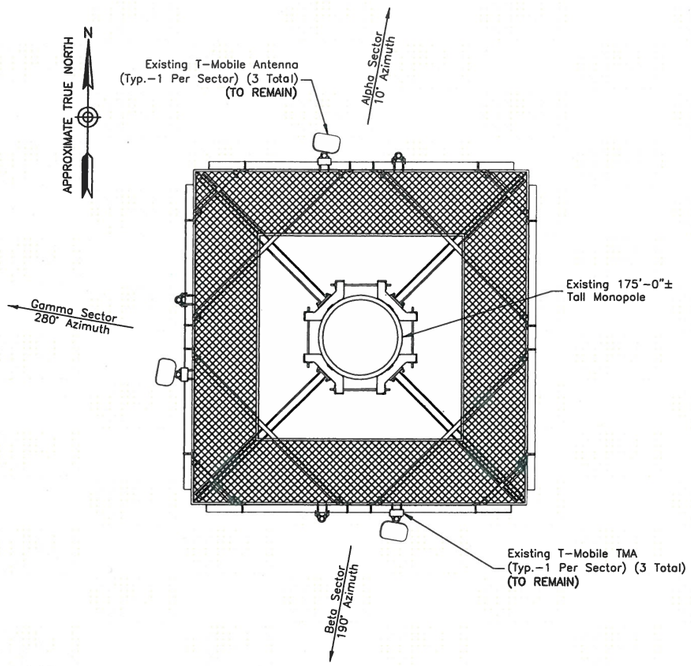
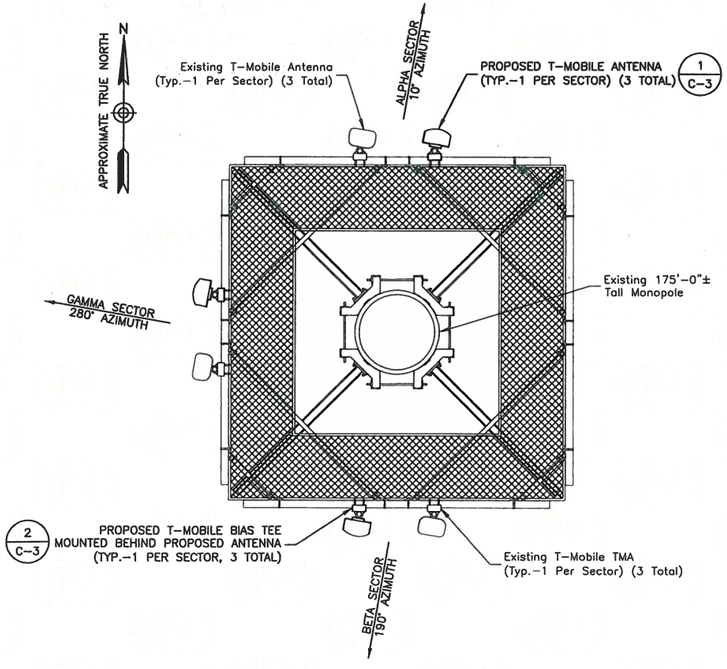
C - 1

SHEET NO.



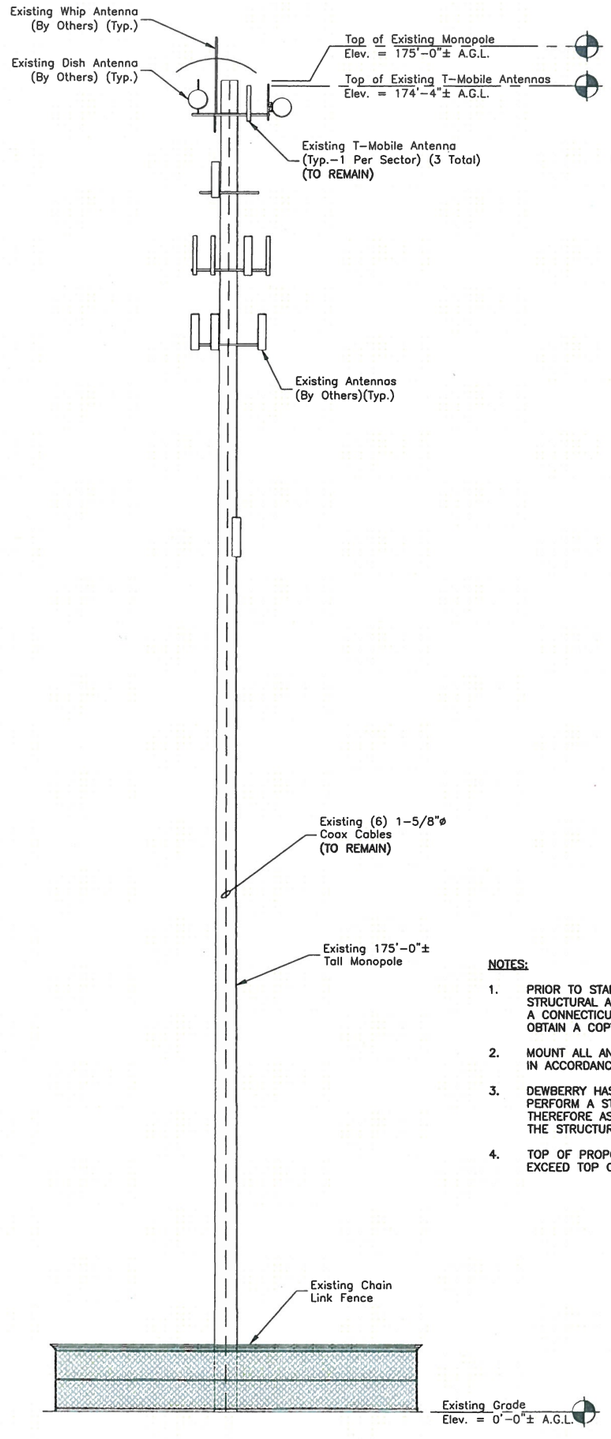
EXISTING ANTENNA LAYOUT (1)

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT (2)

SCALE: N.T.S.



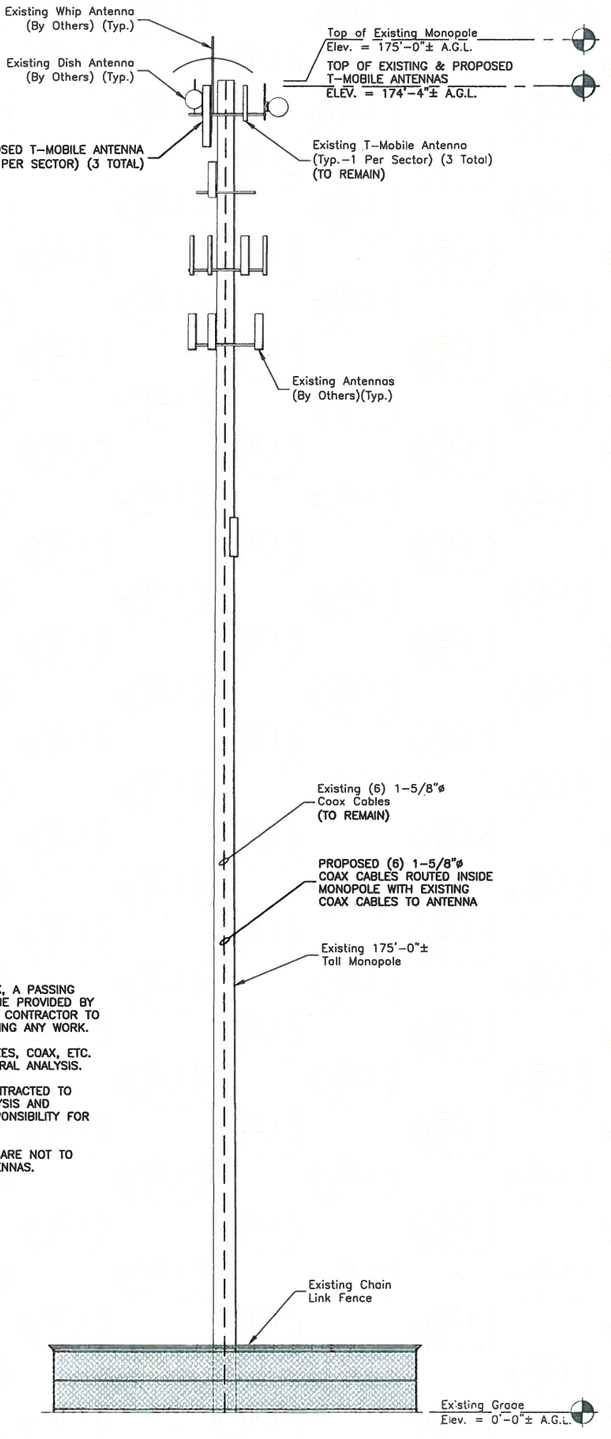
EXISTING ELEVATION (3)

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

NOTES:

1. PRIOR TO START OF ANY WORK, A PASSING STRUCTURAL ANALYSIS SHALL BE PROVIDED BY A CONNECTICUT LICENSED P.E. CONTRACTOR TO OBTAIN A COPY BEFORE STARTING ANY WORK.
2. MOUNT ALL ANTENNAS, BIAS TEES, COAX, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS.
3. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.
4. TOP OF PROPOSED ANTENNAS ARE NOT TO EXCEED TOP OF EXISTING ANTENNAS.



PROPOSED ELEVATION (4)

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

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MONOPOLE

CT11364B

580 CHAPEL STREET
THOMASTON, CT 06787
LITCHFIELD COUNTY

SEAL

SCALE
AS SHOWN

REV.	DATE	BY	DESCRIPTION
0	09/15/14	HMP	ISSUED AS FINAL
A	09/02/14	HMP	ISSUED FOR REVIEW

REVISIONS

DRAWN BY HMP
CHECKED BY BSH
APPROVED BY GHN
DATE 09/02/14

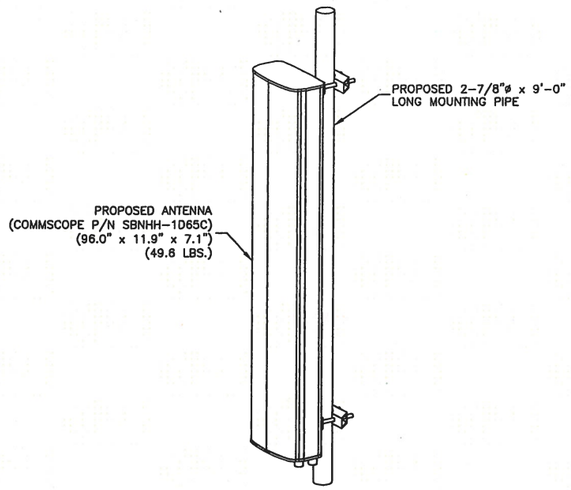
TITLE

ANTENNA LAYOUTS & ELEVATIONS

PROJECT NO. 50066258/50068453

C - 2

SHEET NO.

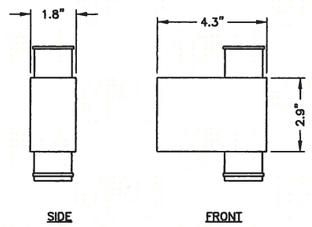


NOTES:

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

ISOMETRIC ANTENNA DETAIL 1

SCALE: N.T.S.



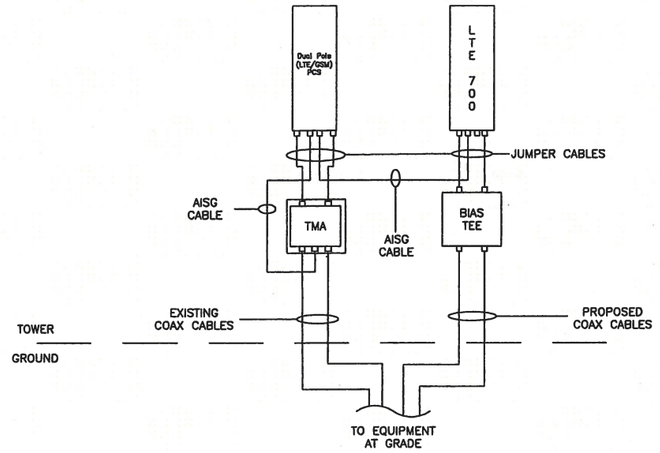
ANDREW ATBT-BOTTOM-24V

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.

BIAS TEE DETAIL 2

SCALE: N.T.S.



SITE CONFIGURATION 700MHZ 3

SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		COAX LENGTH
	EXISTING	PROPOSED	EXISTING	PROPOSED	
ALPHA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	(2) 1-5/8"	222'
	———	COMMSCOPE SBNHH-1D65C			
BETA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	(2) 1-5/8"	222'
	———	COMMSCOPE SBNHH-1D65C			
GAMMA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	(2) 1-5/8"	222'
	———	COMMSCOPE SBNHH-1D65C			

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LITCHFIELD COUNTY

SEAL

STATE OF CONNECTICUT
JIANG YU
No. 23282
JIANG YU, PE
CONNECTICUT LICENSE NO. 23282
PROFESSIONAL ENGINEER

SCALE
AS SHOWN

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0	09/15/14	HMP	ISSUED AS FINAL
A	09/02/14	HMP	ISSUED FOR REVIEW

REVISIONS

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APPROVED BY GHN
DATE 09/02/14

TITLE

CONSTRUCTION DETAILS

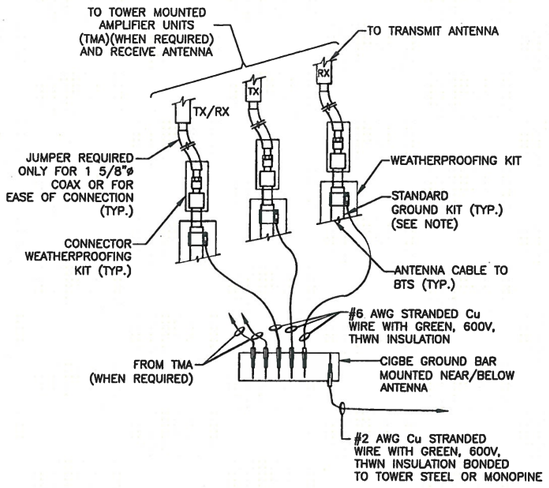
PROJECT NO. 50066258/50068453

C - 3

SHEET NO.

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.

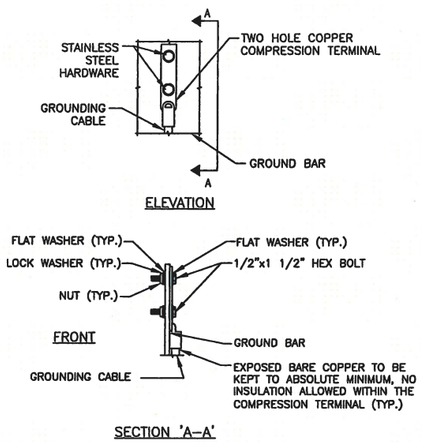


NOTE:

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) — 1

SCALE: N.T.S.



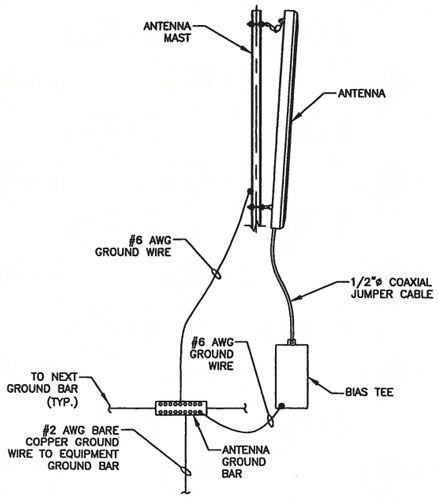
SECTION 'A-A'

NOTES:

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

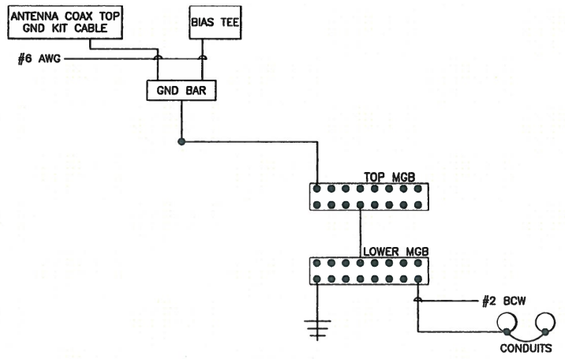
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL — 2

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL — 3

SCALE: N.T.S



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.

SCHEMATIC GROUNDING DIAGRAM — 4

SCALE: N.T.S.

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SCALE

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REVISIONS

DRAWN BY HMP
CHECKED BY BSH
APPROVED BY CHN
DATE 09/02/14

TITLE

GROUNDING NOTES & DETAILS

PROJECT NO. 50066258/50068453

E - 1

SHEET NO.

Date: **September 4, 2014**

Charles Trask
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

FDH Engineering, Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina
9197551012

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11364B
	Carrier Site Name:	Thomaston
Crown Castle Designation:	**Crown Castle BU Number:**	823530
	Crown Castle Site Name:	CT364/Chapel St. Monopole
	Crown Castle JDE Job Number:	302455
	Crown Castle Work Order Number:	915630
	Crown Castle Application Number:	261489 Rev. 1
Engineering Firm Designation:	**FDH Engineering, Inc. Project Number:**	146BRR1400(R1)
Site Data:	**580 Chapel Street, Thomaston, Litchfield County, CT** **Latitude *41° 39' 48.48"*, Longitude *-73° 4' 27.41"*** **175 Foot - Monopole Tower**	

Dear Charles Trask,

FDH Engineering, 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 684570, in accordance with application 261489, revision 1.

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

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

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 *FDH Engineering, 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.

Respectfully submitted by:

Jeffrey B. Ray, EI
Project Engineer

Reviewed by:

Dennis D. Abel PE
Director - Structural Engineering
CT PE License No. 23247

STATE OF CONNECTICUT DENNIS D. ABEL No. 23247 LICENSED PROFESSIONAL ENGINEER
09-04-2014

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 175 ft Monopole tower designed by PIROD MANUFACTURES INC. in October of 2002. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 28 mph with 0.75 inch ice thickness and 50 mph under service loads.

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
172.0	172.0	3	commscope	ATBT-BOTTOM-24V	6	1 5/8	--
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
172.0	175.0	2	andrew	VHLP2.6	4	7/8	2,4
		1	bird technologies group	OA20-67-DIN			
		2	decibel	DB201-F	2	7/8	4
	174.0	2	crown mounts	Pipe Mount [PM 601-1]	--	--	2,4
		1	crown mounts	Side Arm Mount [SO 305-1]			
	172.0	1	andrew	ATJB200-A01-007	6	1 5/8	1
		2	andrew	ETW190VS12UB			
		3	ems wireless	RR90-17-02DP w/ Mount Pipe			
		1	crown mounts	Platform Mount [LP 701-1]			
		1	andrew	ETW190VS12UB	--	--	3
	170.0	1	crown mounts	Side Arm Mount [SO 305-1]	--	--	2,4
	168.0	1	lone star electronics	LS-230C			
162.0	162.0	3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe	1	1 1/4	2
		3	alcatel lucent	TD-RRH8x20-25			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	3	1 1/4	1
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		3	alcatel lucent	PCS 1900MHz 2x40W			
		1	crown mounts	Platform Mount [LP 712-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
152.0	152.0	3	kathrein	742 213 w/ Mount Pipe	1	1 5/8	2
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	alcatel lucent	RRH2x40-AWS			
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe	18	1 5/8	1
		6	antel	LPA-80080/4CF W/Mount Pipe			
		3	antel	BXA-171085-12BF w/ Mount Pipe			
		1	crown mounts	Platform Mount [LP 403-1]			
142.0	142.0	1	andrew	APTDC-BDFDM-DB	2 1 12	1/2 5/8 1 5/8	1
		1	crown mounts	Platform Mount [LP 303-1]			
		6	ericsson	RRUS 11			
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP2140X			
		1	raycap	DC6-48-60-18-8F			
115.0	115.0	1	crown mounts	Pipe Mount [PM 501-3]	6	1 5/8	1
		3	rfs celwave	APXV18-206517S-C w/ Mount Pipe			
50.0	50.0	1	crown mounts	Side Arm Mount [SO 701-1]	1	1/2	1
		1	pctel	GPS-TMG-HR-26NCM			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Existing Equipment to be removed; not considered in this analysis
4) Separate Carrier

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)
172	172	12	andrew	RR65-19-00XP	12	1-5/8
162	162	12	andrew	RR65-19-00XP	12	1-5/8
152	152	12	andrew	RR65-19-00XP	12	1-5/8
142	142	12	andrew	RR65-19-00XP	12	1-5/8
125	125	3	generic	Whip Antennas	3	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	ATC	3462674	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PiROD	3464631	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PiROD	3462695	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Assumed that the top diameter of the pole shaft is 22" (flat-flat). Assumed that the base plate is 71" in diameter, 1.5" thick with 12"x4"x1" gusset plates welded to the base plate with a 0.5" fillet weld and the pole shaft with a 0.25" fillet weld.
6) Base and flange plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Engineering, 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	175 - 164.25	Pole	TP26x22x0.25	1	-3.47	1017.41	7.3	Pass
L2	164.25 - 129.67	Pole	TP34.0625x24.4135x0.3125	2	-13.23	1689.48	50.7	Pass
L3	129.67 - 96	Pole	TP41.75x32.452x0.375	3	-20.25	2488.54	68.7	Pass
L4	96 - 63.17	Pole	TP49.0625x39.8421x0.375	4	-28.45	2928.99	82.4	Pass
L5	63.17 - 31.17	Pole	TP56.125x46.9602x0.375	5	-37.84	3355.16	89.8	Pass
L6	31.17 - 0	Pole	TP62.9375x53.8475x0.375	6	-50.13	3684.96	98.7	Pass
							Summary	
						Pole (L6)	98.7	Pass
						RATING =	**98.7**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	88.1	Pass
1	Base Plate	0	OK	Pass
1	Base Foundation	0	98.6	Pass

Structure Rating (max from all components) =	98.7%

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

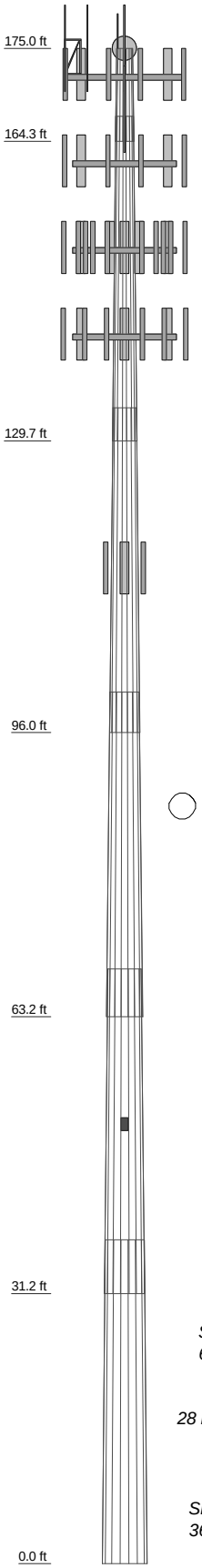
4.1) Recommendations

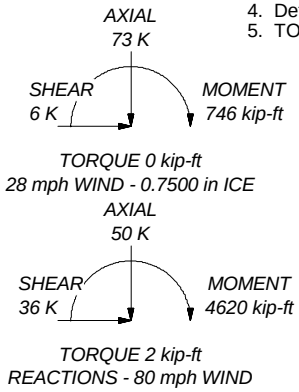
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

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	10.75	18	0.2500	2.92	22.0000	26.0000		0.7
2	37.50	18	0.3125	3.83	24.4135	34.0625		3.7
3	37.50	18	0.3750	4.67	32.4520	41.7500		5.6
4	37.50	18	0.3750	5.50	39.8421	49.0625	A572-65	6.7
5	37.50	18	0.3750	6.25	46.9602	56.1250		7.8
6	37.42	18	0.3750		53.8475	62.9375		8.8
								33.2





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	175	APXVTM14-C-120 w/ Mount Pipe	162
DB201-F	172	BXA-171085-12BF w/ Mount Pipe	152
DB201-F	172	BXA-70063-6CF-2 w/ Mount Pipe	152
RR90-17-02DP w/ Mount Pipe	172	BXA-70063-6CF-2 w/ Mount Pipe	152
RR90-17-02DP w/ Mount Pipe	172	BXA-70063-6CF-2 w/ Mount Pipe	152
RR90-17-02DP w/ Mount Pipe	172	(2) LPA-80080/4CF W/Mount Pipe	152
LNX-6515DS-VTM w/ Mount Pipe	172	(2) LPA-80080/4CF W/Mount Pipe	152
LNX-6515DS-VTM w/ Mount Pipe	172	(2) LPA-80080/4CF W/Mount Pipe	152
LNX-6515DS-VTM w/ Mount Pipe	172	RRH2x40-AWS	152
ATBT-BOTTOM-24V	172	RRH2x40-AWS	152
ATBT-BOTTOM-24V	172	RRH2x40-AWS	152
ATBT-BOTTOM-24V	172	742 213 w/ Mount Pipe	152
ATJB200-A01-007	172	742 213 w/ Mount Pipe	152
ETW190VS12UB	172	742 213 w/ Mount Pipe	152
ETW190VS12UB	172	DB-T1-6Z-8AB-0Z	152
OA20-67-DIN	172	Platform Mount [LP 403-1]	152
LS-230C	172	BXA-171085-12BF w/ Mount Pipe	152
Empty Mount Pipe	172	BXA-171085-12BF w/ Mount Pipe	152
Empty Mount Pipe	172	AM-X-CD-16-65-00T-RET w/ Mount Pipe	142
Empty Mount Pipe	172		
Pipe Mount [PM 601-1]	172	(2) 7770.00 w/ Mount Pipe	142
Pipe Mount [PM 601-1]	172	(2) 7770.00 w/ Mount Pipe	142
Side Arm Mount [SO 305-1]	172	(2) 7770.00 w/ Mount Pipe	142
Side Arm Mount [SO 305-1]	172	(2) LGP2140X	142
Platform Mount [LP 701-1]	172	(2) LGP2140X	142
VHLP2.6	172	(2) LGP2140X	142
VHLP2.6	172	(2) RRUS 11	142
APXVTM14-C-120 w/ Mount Pipe	162	(2) RRUS 11	142
TD-RRH8x20-25	162	(2) RRUS 11	142
TD-RRH8x20-25	162	APTDC-BDFDM-DB	142
TD-RRH8x20-25	162	DC6-48-60-18-8F	142
APXVSPP18-C-A20 w/ Mount Pipe	162	Empty Pipe Mount	142
APXVSPP18-C-A20 w/ Mount Pipe	162	Empty Pipe Mount	142
APXVSPP18-C-A20 w/ Mount Pipe	162	Empty Pipe Mount	142
800MHz 2X50W RRH W/FILTER	162	Platform Mount [LP 303-1]	142
800MHz 2X50W RRH W/FILTER	162	AM-X-CD-16-65-00T-RET w/ Mount Pipe	142
800MHz 2X50W RRH W/FILTER	162		
PCS 1900MHz 2x40W	162	AM-X-CD-16-65-00T-RET w/ Mount Pipe	142
PCS 1900MHz 2x40W	162		
PCS 1900MHz 2x40W	162	APXV18-206517S-C w/ Mount Pipe	115
(2) Empty Pipe Mount	162	Pipe Mount [PM 501-3]	115
(2) Empty Pipe Mount	162	APXV18-206517S-C w/ Mount Pipe	115
(2) Empty Pipe Mount	162	APXV18-206517S-C w/ Mount Pipe	115
Platform Mount [LP 712-1]	162	GPS-TMG-HR-26NCM	50
APXVTM14-C-120 w/ Mount Pipe	162	Side Arm Mount [SO 701-1]	50

MATERIAL STRENGTH

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

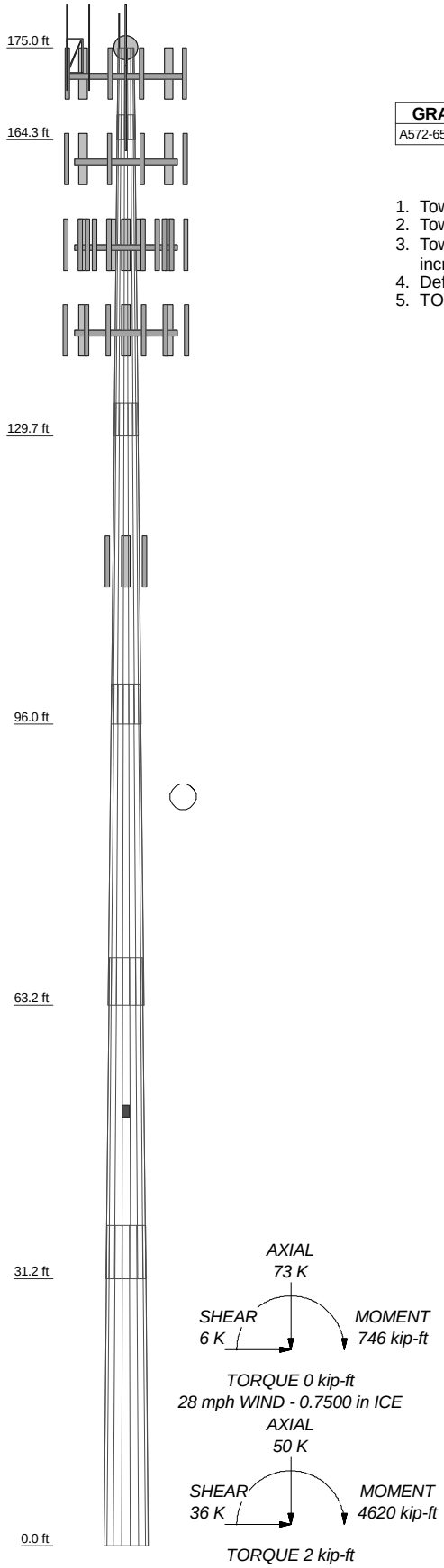
TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.7%

FDH Engineering, Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina
Phone: 9197551012
FAX: 9197551031
Tower Analysis

Job: BU:# 823530 CT364/CHAPEL ST. MONOPOLE			
Project: 146BRR1400(R1)			
Client: Crown Castle	Drawn by: Jeffrey B. Ray	App'd:	
Code: TIA/EIA-222-F	Date: 09/04/14	Scale: NTS	
Path:		Dwg No. E-1	

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.75	18	0.2500	2.92	22.0000	26.0000		0.7
2	37.50	18	0.3125	3.83	24.4135	34.0625		3.7
3	37.50	18	0.3750	4.67	32.4520	41.7500		5.6
4	37.50	18	0.3750	5.50	39.8421	49.0625		6.7
5	37.50	18	0.3750	6.25	46.9602	56.1250		7.8
6	37.42	18	0.3750		53.8475	62.9375		8.8
							A572-65	33.2



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.7%

FDH Engineering, Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina
Phone: 9197551012
FAX: 9197551031

Tower Analysis

Job: BU:# 823530 CT364/CHAPEL ST. MONOPOLE			
Project: 146BRR1400(R1)			
Client: Crown Castle	Drawn by: Jeffrey B. Ray	App'd:	
Code: TIA/EIA-222-F	Date: 09/04/14	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

Tower is located in Litchfield County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 28 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
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		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

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	175.00-164.25	10.75	2.92	18	22.0000	26.0000	0.2500	1.0000	A572-65 (65 ksi)
L2	164.25-129.67	37.50	3.83	18	24.4135	34.0625	0.3125	1.2500	A572-65 (65 ksi)
L3	129.67-96.00	37.50	4.67	18	32.4520	41.7500	0.3750	1.5000	A572-65 (65 ksi)
L4	96.00-63.17	37.50	5.50	18	39.8421	49.0625	0.3750	1.5000	A572-65 (65 ksi)
L5	63.17-31.17	37.50	6.25	18	46.9602	56.1250	0.3750	1.5000	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
L6	31.17-0.00	37.42		18	53.8475	62.9375	0.3750	1.5000	(65 ksi) 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	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	26.4011	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
L2	25.5530	23.9052	1754.2801	8.5559	12.4021	141.4508	3510.8685	11.9549	3.7468	11.99
	34.5880	33.4758	4817.4335	11.9812	17.3038	278.4040	9641.2058	16.7411	5.4450	17.424
L3	33.9169	38.1797	4963.1505	11.3873	16.4856	301.0593	9932.8316	19.0935	5.0516	13.471
	42.3941	49.2466	10650.9822	14.6881	21.2090	502.1916	21315.9793	24.6280	6.6880	17.835
L4	41.6227	46.9757	9244.4482	14.0108	20.2398	456.7464	18501.0604	23.4923	6.3522	16.939
	49.8194	57.9503	17355.1378	17.2841	24.9238	696.3293	34733.1119	28.9807	7.9750	21.267
L5	49.0495	55.4480	15202.6318	16.5377	23.8558	637.2728	30425.2677	27.7293	7.6050	20.28
	56.9908	66.3564	26056.1506	19.7913	28.5115	913.8821	52146.5865	33.1845	9.2180	24.581
L6	56.2199	63.6457	22991.5269	18.9827	27.3545	840.5012	46013.3066	31.8289	8.8172	23.512
	63.9084	74.4650	36822.8946	22.2097	31.9722	1151.7142	73694.2417	37.2396	10.4170	27.779

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
L1 175.00-164.25				1	1	1		
L2 164.25-129.67				1	1	1		
L3 129.67-96.00				1	1	1		
L4 96.00-63.17				1	1	1		
L5 63.17-31.17				1	1	1		
L6 31.17-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
HB114-1-08U4-M5J(1 1/4")	C	Surface Ar (CaAa)	162.00 - 115.00	4	1	-0.450 -0.350	1.5400		0.00
LDF7-50A(1-5/8") **	A	Surface Ar (CaAa)	152.00 - 8.00	7	1	-0.250 0.000	1.9800		0.00
LDF7-50A(1-5/8") **	C	Surface Ar (CaAa)	115.00 - 8.00	6	1	-0.250 -0.050	1.9800		0.00
LDF4-50A(1/2") **	C	Surface Ar (CaAa)	50.00 - 8.00	1	1	-0.460 -0.450	0.6300		0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
Safety Line 3/8	C	Surface Ar (CaAa)	175.00 - 8.00	1	1	0.000 0.000	0.3750		0.00
**									

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 klf
**								
AVA5-50(7/8")	A	No	Inside Pole	172.00 - 0.00	6	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
LDF7-50A(1-5/8")	A	No	Inside Pole	172.00 - 0.00	6	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
LDF7-50A(1-5/8")	A	No	Inside Pole	172.00 - 0.00	6	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
**								
**								
LDF7-50A(1-5/8")	C	No	Inside Pole	152.00 - 8.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
**								
LDF7-50A(1-5/8")	B	No	Inside Pole	142.00 - 8.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
AMR-S304(5/8)	B	No	Inside Pole	142.00 - 8.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
FSJ4P-50B-40(1/2")	B	No	Inside Pole	142.00 - 8.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
**								
**								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	175.00-164.25	A	0.000	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.403	0.000	0.00
L2	164.25-129.67	A	0.000	0.000	4.421	0.000	0.53
		B	0.000	0.000	0.000	0.000	0.13
		C	0.000	0.000	6.276	0.000	0.23
L3	129.67-96.00	A	0.000	0.000	6.667	0.000	0.59
		B	0.000	0.000	0.000	0.000	0.35
		C	0.000	0.000	7.284	0.000	0.43
L4	96.00-63.17	A	0.000	0.000	6.500	0.000	0.57
		B	0.000	0.000	0.000	0.000	0.34
		C	0.000	0.000	7.731	0.000	0.49
L5	63.17-31.17	A	0.000	0.000	6.336	0.000	0.56
		B	0.000	0.000	0.000	0.000	0.33
		C	0.000	0.000	8.722	0.000	0.48
L6	31.17-0.00	A	0.000	0.000	4.588	0.000	0.50
		B	0.000	0.000	0.000	0.000	0.24
		C	0.000	0.000	6.916	0.000	0.35

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	175.00-164.25	A	0.913	0.000	0.000	0.000	0.000	0.09
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.365	0.000	0.02
L2	164.25-129.67	A	0.897	0.000	0.000	8.497	0.000	1.03
		B		0.000	0.000	0.000	0.000	0.13
		C		0.000	0.000	18.489	0.000	0.63
L3	129.67-96.00	A	0.869	0.000	0.000	12.705	0.000	1.33
		B		0.000	0.000	0.000	0.000	0.35
		C		0.000	0.000	19.361	0.000	1.00
L4	96.00-63.17	A	0.833	0.000	0.000	12.205	0.000	1.27
		B		0.000	0.000	0.000	0.000	0.34
		C		0.000	0.000	19.141	0.000	1.13
L5	63.17-31.17	A	0.783	0.000	0.000	11.669	0.000	1.20
		B		0.000	0.000	0.000	0.000	0.33
		C		0.000	0.000	22.526	0.000	1.10
L6	31.17-0.00	A	0.750	0.000	0.000	8.215	0.000	0.92
		B		0.000	0.000	0.000	0.000	0.24
		C		0.000	0.000	17.799	0.000	0.77

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	175.00-164.25	0.0000	0.0561	0.0000	0.2826
L2	164.25-129.67	-0.0767	0.1399	-0.0831	0.4164
L3	129.67-96.00	-0.2117	0.2148	-0.3221	0.5200
L4	96.00-63.17	-0.2324	0.2807	-0.3764	0.6195
L5	63.17-31.17	-0.1833	0.3066	-0.2261	0.6969
L6	31.17-0.00	-0.1135	0.2428	-0.1020	0.5653

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod	C	From Leg	0.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.25 0.66 0.97 1.49 2.68	0.25 0.66 0.97 1.49 2.68	0.03 0.03 0.04 0.06 0.14
**									
**									
DB201-F	A	From Leg	4.00 0.00 3.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.40 0.72 1.04 1.68 2.96	0.40 0.72 1.04 1.68 2.96	0.01 0.01 0.02 0.02 0.03
DB201-F	C	From Leg	4.00 0.00 3.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.40 0.72 1.04 1.68 2.96	0.40 0.72 1.04 1.68 2.96	0.01 0.01 0.02 0.02 0.03
RR90-17-02DP w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	0.03 0.07 0.12 0.22 0.56
RR90-17-02DP w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	0.03 0.07 0.12 0.22 0.56
RR90-17-02DP w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	0.03 0.07 0.12 0.22 0.56
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	0.08 0.17 0.27 0.51 1.15
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	0.08 0.17 0.27 0.51 1.15
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	0.08 0.17 0.27 0.51 1.15
ATBT-BOTTOM-24V	A	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice	0.12 0.17 0.23	0.08 0.12 0.17	0.00 0.00 0.01

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
						2" Ice	0.38	0.30	0.01
						4" Ice	0.77	0.67	0.04
ATBT-BOTTOM-24V	B	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.77	0.08 0.12 0.17 0.30 0.67	0.00 0.00 0.01 0.01 0.04
ATBT-BOTTOM-24V	C	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.77	0.08 0.12 0.17 0.30 0.67	0.00 0.00 0.01 0.01 0.04
ATJB200-A01-007	A	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.44 0.53 0.63 0.86 1.42	0.14 0.21 0.28 0.45 0.90	0.00 0.01 0.01 0.02 0.07
ETW190VS12UB	B	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.66 0.78 0.90 1.17 1.82	0.37 0.46 0.56 0.80 1.36	0.01 0.02 0.03 0.04 0.11
ETW190VS12UB	C	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.66 0.78 0.90 1.17 1.82	0.37 0.46 0.56 0.80 1.36	0.01 0.02 0.03 0.04 0.11
OA20-67-DIN	C	From Leg	7.00 0.00 3.00	60.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 2.50 4.00 5.50 7.00	1.80 2.50 4.00 5.50 7.00	0.01 0.01 0.01 0.02 0.03
LS-230C	C	From Face	7.00 0.00 -4.00	60.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.61 2.34 2.80 3.68 5.55	1.61 2.34 2.80 3.68 5.55	0.01 0.02 0.04 0.09 0.25
Empty Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.40 2.13 2.68 3.56 5.42	1.40 2.13 2.68 3.56 5.42	0.03 0.04 0.06 0.10 0.26
Empty Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.40 2.13 2.68 3.56 5.42	1.40 2.13 2.68 3.56 5.42	0.03 0.04 0.06 0.10 0.26
Empty Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.40 2.13 2.68 3.56 5.42	1.40 2.13 2.68 3.56 5.42	0.03 0.04 0.06 0.10 0.26
Pipe Mount [PM 601-1]	A	From Leg	5.00 0.00 2.00	-20.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	0.07 0.08 0.09 0.12 0.18

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
Pipe Mount [PM 601-1]	A	From Leg	5.00 0.00 2.00	-6.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	0.07 0.08 0.09 0.12 0.18
Side Arm Mount [SO 305-1]	C	From Leg	6.00 0.00 2.00	60.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	0.03 0.04 0.06 0.08 0.14
Side Arm Mount [SO 305-1]	C	From Face	6.00 0.00 -2.00	60.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	0.03 0.04 0.06 0.08 0.14
Platform Mount [LP 701-1]	C	None		0.0000	172.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	59.15 71.12 83.09 107.03 154.91	59.15 71.12 83.09 107.03 154.91	2.75 3.42 4.10 5.45 8.15
**									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	A	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.14 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	B	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.14 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	C	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.14 2.62 3.68	0.07 0.10 0.13 0.20 0.40
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
APXVSPP18-C-A20 w/	B	From Leg	4.00	0.0000	162.00	No Ice	8.50	6.95	0.08

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
Mount Pipe			0.00			1/2" Ice	9.15	8.13	0.15
			0.00			1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	162.00	No Ice	8.50	6.95	0.08
			0.00			1/2" Ice	9.15	8.13	0.15
			0.00			1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00	0.0000	162.00	No Ice	2.40	2.25	0.06
			0.00			1/2" Ice	2.61	2.46	0.09
			0.00			1" Ice	2.83	2.68	0.11
						2" Ice	3.30	□嬭岫愕	0.17
						4" Ice	4.34	4.15	0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00	0.0000	162.00	No Ice	2.40	2.25	0.06
			0.00			1/2" Ice	2.61	2.46	0.09
			0.00			1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00	0.0000	162.00	No Ice	2.40	2.25	0.06
			0.00			1/2" Ice	2.61	2.46	0.09
			0.00			1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
PCS 1900MHz 2x40W	A	From Leg	4.00	0.0000	162.00	No Ice	2.74	1.46	0.04
			0.00			1/2" Ice	2.97	1.65	0.06
			0.00			1" Ice	3.21	1.84	0.08
						2" Ice	3.71	2.27	0.14
						4" Ice	4.82	3.22	0.28
PCS 1900MHz 2x40W	B	From Leg	4.00	0.0000	162.00	No Ice	2.74	1.46	0.04
			0.00			1/2" Ice	2.97	1.65	0.06
			0.00			1" Ice	3.21	1.84	0.08
						2" Ice	3.71	2.27	0.14
						4" Ice	4.82	3.22	0.28
PCS 1900MHz 2x40W	C	From Leg	4.00	0.0000	162.00	No Ice	2.74	1.46	0.04
			0.00			1/2" Ice	2.97	1.65	0.06
			0.00			1" Ice	3.21	1.84	0.08
						2" Ice	3.71	2.27	0.14
						4" Ice	4.82	3.22	0.28
(2) Empty Pipe Mount	A	From Face	4.00	0.0000	162.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
						4" Ice	3.93	3.93	0.20
(2) Empty Pipe Mount	B	From Face	4.00	0.0000	162.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
						4" Ice	3.93	3.93	0.20
(2) Empty Pipe Mount	C	From Face	4.00	0.0000	162.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
						4" Ice	3.93	3.93	0.20
Platform Mount [LP 712-1]	C	None		0.0000	162.00	No Ice	24.53	24.53	1.34
						1/2" Ice	29.94	29.94	1.65
						1" Ice	35.35	35.35	1.96

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	46.17	46.17	2.58
						4" Ice	67.81	67.81	3.82
**									
BXA-171085-12BF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.97 5.52 6.04 7.09 9.36	5.23 6.39 7.26 9.05 12.82	0.04 0.09 0.14 0.27 0.67
BXA-171085-12BF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.97 5.52 6.04 7.09 9.36	5.23 6.39 7.26 9.05 12.82	0.04 0.09 0.14 0.27 0.67
BXA-171085-12BF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.97 5.52 6.04 7.09 9.36	5.23 6.39 7.26 9.05 12.82	0.04 0.09 0.14 0.27 0.67
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	0.04 0.10 0.17 0.34 0.80
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	0.04 0.10 0.17 0.34 0.80
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	0.04 0.10 0.17 0.34 0.80
(2) LPA-80080/4CF W/Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.62 2.92 3.23 3.96 5.53	6.06 6.45 6.86 7.69 9.47	0.01 0.05 0.08 0.17 0.41
(2) LPA-80080/4CF W/Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.62 2.92 3.23 3.96 5.53	6.06 6.45 6.86 7.69 9.47	0.01 0.05 0.08 0.17 0.41
(2) LPA-80080/4CF W/Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.62 2.92 3.23 3.96 5.53	6.06 6.45 6.86 7.69 9.47	0.01 0.05 0.08 0.17 0.41
RRH2x40-AWS	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28
RRH2x40-AWS	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.52 2.75 2.99 3.50	1.59 1.80 2.01 2.46	0.04 0.06 0.08 0.13

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
						4" Ice	4.61	3.48	0.28
RRH2x40-AWS	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28
742 213 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	0.05 0.09 0.15 0.28 0.68
742 213 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	0.05 0.09 0.15 0.28 0.68
742 213 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	0.05 0.09 0.15 0.28 0.68
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.60 5.92 6.24 6.91 8.37	2.33 2.56 2.79 3.28 4.37	0.04 0.08 0.12 0.21 0.45
Platform Mount [LP 403-1]	C	None		0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	18.85 24.30 29.75 40.65 62.45	18.85 24.30 29.75 40.65 62.45	1.50 1.80 2.09 2.69 3.87
**									
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66

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
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) LGP2140X	A	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.01 0.02 0.03 0.05 0.13
(2) LGP2140X	B	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.01 0.02 0.03 0.05 0.13
(2) LGP2140X	C	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.01 0.02 0.03 0.05 0.13
(2) RRUS 11	A	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.10 0.15 0.31
(2) RRUS 11	B	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.10 0.15 0.31
(2) RRUS 11	C	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.10 0.15 0.31
APTDC-BDFDM-DB	C	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.06 0.09 0.14 0.26 0.60	0.12 0.17 0.22 0.36 0.75	0.00 0.00 0.00 0.01 0.04
DC6-48-60-18-8F	C	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.80 3.04 3.54 4.66	4.32 4.60 4.88 5.49 6.80	0.03 0.06 0.10 0.18 0.40
Empty Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.20 1.50 1.81 2.47 3.93	1.20 1.50 1.81 2.47 3.93	0.02 0.03 0.04 0.08 0.20
Empty Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.20 1.50 1.81 2.47 3.93	1.20 1.50 1.81 2.47 3.93	0.02 0.03 0.04 0.08 0.20
Empty Pipe Mount	C	From Leg	4.00 0.00	0.0000	142.00	No Ice 1/2" Ice	1.20 1.50	1.20 1.50	0.02 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
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
						4" Ice	3.93	3.93	0.20
Platform Mount [LP 303-1]	C	None		0.0000	142.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
						4" Ice	48.34	48.34	3.10
**									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
Pipe Mount [PM 501-3]	C	None		0.0000	115.00	No Ice	5.78	5.78	0.16
						1/2" Ice	7.37	7.37	0.18
						1" Ice	8.96	8.96	0.20
						2" Ice	12.14	12.14	0.24
						4" Ice	18.50	18.50	0.32
**									
GPS-TMG-HR-26NCM	A	From Leg	2.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.16 0.21 0.28 0.44 0.86	0.16 0.21 0.28 0.44 0.86	0.00 0.00 0.01 0.01 0.05
Side Arm Mount [SO 701-1]	A	None		0.0000	50.00	No Ice	0.85	1.67	0.07
						1/2" Ice	1.14	2.34	0.08
						1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
						4" Ice	3.17	7.03	0.18
**									

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
**											
VHLP2.6	A	Paraboloid	From	5.00	-20.0000		172.00	2.92	No Ice	6.68	0.05

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)
		w/Shroud (HP)	Leg	0.00 3.00					1/2" Ice 1" Ice 2" Ice 4" Ice	7.07 7.46 8.23 9.78	0.08 0.12 0.19 0.34
VHLP2.6	A	Paraboloid w/Shroud (HP)	From Leg	5.00 0.00 3.00	-6.0000		172.00	2.92	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.68 7.07 7.46 8.23 9.78	0.05 0.08 0.12 0.19 0.34
**											

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	175 - 164.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-6.74	0.53	1.44
			Max. Mx	11	-3.52	32.41	2.20
			Max. My	2	-3.47	1.08	35.77
			Max. Vy	11	-6.44	32.41	2.20
			Max. Vx	8	6.98	-0.73	-35.19
			Max. Torque	11			-2.55
L2	164.25 - 129.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.40	1.75	1.69
			Max. Mx	11	-13.35	543.02	9.50
			Max. My	8	-13.23	-5.63	-567.01
			Max. Vy	11	-22.49	543.02	9.50
			Max. Vx	8	23.23	-5.63	-567.01
			Max. Torque	11			-2.27
L3	129.67 - 96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.22	3.23	1.10
			Max. Mx	11	-20.35	1346.76	17.31
			Max. My	8	-20.25	-11.27	-1395.14
			Max. Vy	11	-26.57	1346.76	17.31
			Max. Vx	8	27.33	-11.27	-1395.14
			Max. Torque	4			1.90
L4	96 - 63.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-45.96	4.79	-0.04
			Max. Mx	11	-28.52	2248.66	24.73
			Max. My	8	-28.45	-16.77	-2320.98
			Max. Vy	11	-29.71	2248.66	24.73
			Max. Vx	8	30.46	-16.77	-2320.98
			Max. Torque	4			1.88
L5	63.17 - 31.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-57.94	6.30	-1.31
			Max. Mx	11	-37.88	3223.67	31.81
			Max. My	8	-37.84	-22.05	-3319.17
			Max. Vy	11	-32.56	3223.67	31.81
			Max. Vx	8	33.30	-22.05	-3319.17
			Max. Torque	4			1.84
L6	31.17 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-72.97	7.73	-2.60
			Max. Mx	11	-50.13	4497.55	40.10
			Max. My	8	-50.13	-28.29	-4620.19
			Max. Vy	11	-35.44	4497.55	40.10
			Max. Vx	8	36.15	-28.29	-4620.19
			Max. Torque	4			1.81

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	72.97	0.00	0.00
	Max. H_x	11	50.15	35.41	0.22
	Max. H_z	2	50.15	0.14	35.97
	Max. M_x	2	4592.15	0.14	35.97
	Max. M_z	5	4491.69	-35.40	-0.23

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. Torsion	4	1.77	-30.55	17.98
	Min. Vert	1	50.15	0.00	0.00
	Min. H_x	5	50.15	-35.40	-0.23
	Min. H_z	8	50.15	-0.17	-36.12
	Min. M_x	8	-4620.19	-0.17	-36.12
	Min. M_z	11	-4497.55	35.41	0.22
	Min. Torsion	10	-1.52	30.53	-18.01

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	50.15	0.00	0.00	-0.23	1.99	0.00
Dead+Wind 0 deg - No Ice	50.15	-0.14	-35.97	-4592.15	27.19	-1.47
Dead+Wind 30 deg - No Ice	50.15	17.48	-31.16	-3980.25	-2205.15	-1.42
Dead+Wind 60 deg - No Ice	50.15	30.55	-17.98	-2296.84	-3870.60	-1.77
Dead+Wind 90 deg - No Ice	50.15	35.40	0.23	40.44	-4491.69	-1.33
Dead+Wind 120 deg - No Ice	50.15	30.69	18.34	2360.44	-3894.48	-0.06
Dead+Wind 150 deg - No Ice	50.15	17.83	31.38	4018.00	-2266.35	0.67
Dead+Wind 180 deg - No Ice	50.15	0.17	36.12	4620.19	-28.29	1.20
Dead+Wind 210 deg - No Ice	50.15	-17.46	31.30	4004.17	2206.21	1.11
Dead+Wind 240 deg - No Ice	50.15	-30.53	18.01	2301.41	3870.76	1.52
Dead+Wind 270 deg - No Ice	50.15	-35.41	-0.22	-40.10	4497.55	1.49
Dead+Wind 300 deg - No Ice	50.15	-30.66	-18.22	-2337.90	3892.39	0.07
Dead+Wind 330 deg - No Ice	50.15	-17.78	-31.23	-3990.72	2261.90	-0.82
Dead+Ice+Temp	72.97	-0.00	-0.00	2.60	7.73	0.00
Dead+Wind 0 deg+Ice+Temp	72.97	-0.02	-5.56	-737.14	11.73	-0.33
Dead+Wind 30 deg+Ice+Temp	72.97	2.71	-4.82	-638.33	-348.57	-0.23
Dead+Wind 60 deg+Ice+Temp	72.97	4.73	-2.78	-367.07	-616.75	-0.18
Dead+Wind 90 deg+Ice+Temp	72.97	5.48	0.03	8.62	-716.63	-0.03
Dead+Wind 120 deg+Ice+Temp	72.97	4.75	2.83	381.84	-620.39	0.19
Dead+Wind 150 deg+Ice+Temp	72.97	2.76	4.85	649.29	-357.63	0.28
Dead+Wind 180 deg+Ice+Temp	72.97	0.02	5.58	746.46	3.41	0.30
Dead+Wind 210 deg+Ice+Temp	72.97	-2.71	4.84	647.06	364.02	0.19
Dead+Wind 240 deg+Ice+Temp	72.97	-4.73	2.78	373.09	632.07	0.14
Dead+Wind 270 deg+Ice+Temp	72.97	-5.48	-0.03	-3.20	732.74	0.05
Dead+Wind 300 deg+Ice+Temp	72.97	-4.75	-2.81	-373.30	635.39	-0.19
Dead+Wind 330 deg+Ice+Temp	72.97	-2.75	-4.83	-640.09	372.29	-0.30
Dead+Wind 0 deg - Service	50.15	-0.06	-14.05	-1796.29	11.91	-0.58
Dead+Wind 30 deg - Service	50.15	6.83	-12.17	-1556.93	-861.19	-0.56
Dead+Wind 60 deg - Service	50.15	11.93	-7.02	-898.49	-1512.54	-0.70
Dead+Wind 90 deg - Service	50.15	13.83	0.09	15.65	-1755.44	-0.53
Dead+Wind 120 deg - Service	50.15	11.99	7.17	923.06	-1521.93	-0.03
Dead+Wind 150 deg - Service	50.15	6.96	12.26	1571.43	-885.18	0.26
Dead+Wind 180 deg - Service	50.15	0.07	14.11	1806.97	-9.80	0.47
Dead+Wind 210 deg - Service	50.15	-6.82	12.23	1565.97	864.16	0.44
Dead+Wind 240 deg - Service	50.15	-11.93	7.03	899.93	1515.14	0.60
Dead+Wind 270 deg - Service	50.15	-13.83	-0.09	-15.86	1760.27	0.59
Dead+Wind 300 deg - Service	50.15	-11.97	-7.12	-914.57	1523.64	0.03
Dead+Wind 330 deg - Service	50.15	-6.94	-12.20	-1561.06	885.96	-0.32

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	-50.15	0.00	0.00	50.15	0.00	0.000%
2	-0.14	-50.15	-35.97	0.14	50.15	35.97	0.000%
3	17.48	-50.15	-31.16	-17.48	50.15	31.16	0.000%
4	30.55	-50.15	-17.98	-30.55	50.15	17.98	0.000%
5	35.40	-50.15	0.23	-35.40	50.15	-0.23	0.000%
6	30.69	-50.15	18.34	-30.69	50.15	-18.34	0.000%
7	17.83	-50.15	31.38	-17.83	50.15	-31.38	0.000%
8	0.17	-50.15	36.12	-0.17	50.15	-36.12	0.000%
9	-17.46	-50.15	31.30	17.46	50.15	-31.30	0.000%
10	-30.53	-50.15	18.01	30.53	50.15	-18.01	0.000%
11	-35.41	-50.15	-0.22	35.41	50.15	0.22	0.000%
12	-30.66	-50.15	-18.22	30.66	50.15	18.22	0.000%
13	-17.78	-50.15	-31.23	17.78	50.15	31.23	0.000%
14	0.00	-72.97	0.00	0.00	72.97	0.00	0.000%
15	-0.02	-72.97	-5.56	0.02	72.97	5.56	0.000%
16	2.71	-72.97	-4.82	-2.71	72.97	4.82	0.000%
17	4.73	-72.97	-2.78	-4.73	72.97	2.78	0.000%
18	5.48	-72.97	0.03	-5.48	72.97	-0.03	0.000%
19	4.75	-72.97	2.83	-4.75	72.97	-2.83	0.000%
20	2.76	-72.97	4.85	-2.76	72.97	-4.85	0.000%
21	0.02	-72.97	5.58	-0.02	72.97	-5.58	0.000%
22	-2.71	-72.97	4.84	2.71	72.97	-4.84	0.000%
23	-4.73	-72.97	2.78	4.73	72.97	-2.78	0.000%
24	-5.48	-72.97	-0.03	5.48	72.97	0.03	0.000%
25	-4.74	-72.97	-2.81	4.75	72.97	2.81	0.000%
26	-2.75	-72.97	-4.83	2.75	72.97	4.83	0.000%
27	-0.06	-50.15	-14.05	0.06	50.15	14.05	0.000%
28	6.83	-50.15	-12.17	-6.83	50.15	12.17	0.000%
29	11.93	-50.15	-7.02	-11.93	50.15	7.02	0.000%
30	13.83	-50.15	0.09	-13.83	50.15	-0.09	0.000%
31	11.99	-50.15	7.17	-11.99	50.15	-7.17	0.000%
32	6.96	-50.15	12.26	-6.96	50.15	-12.26	0.000%
33	0.07	-50.15	14.11	-0.07	50.15	-14.11	0.000%
34	-6.82	-50.15	12.23	6.82	50.15	-12.23	0.000%
35	-11.93	-50.15	7.03	11.93	50.15	-7.03	0.000%
36	-13.83	-50.15	-0.09	13.83	50.15	0.09	0.000%
37	-11.97	-50.15	-7.12	11.97	50.15	7.12	0.000%
38	-6.94	-50.15	-12.20	6.94	50.15	12.20	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00008265
3	Yes	6	0.00000001	0.00007284
4	Yes	6	0.00000001	0.00007653
5	Yes	4	0.00000001	0.00081351
6	Yes	6	0.00000001	0.00007645
7	Yes	6	0.00000001	0.00007638
8	Yes	4	0.00000001	0.00051989
9	Yes	6	0.00000001	0.00007603
10	Yes	6	0.00000001	0.00007312
11	Yes	5	0.00000001	0.00011665
12	Yes	6	0.00000001	0.00007658
13	Yes	6	0.00000001	0.00007678

14	Yes	4	0.00000001	0.00004153
15	Yes	5	0.00000001	0.00027686
16	Yes	5	0.00000001	0.00029442
17	Yes	5	0.00000001	0.00029185
18	Yes	5	0.00000001	0.00026634
19	Yes	5	0.00000001	0.00029637
20	Yes	5	0.00000001	0.00029965
21	Yes	5	0.00000001	0.00027812
22	Yes	5	0.00000001	0.00030172
23	Yes	5	0.00000001	0.00029805
24	Yes	5	0.00000001	0.00027352
25	Yes	5	0.00000001	0.00030176
26	Yes	5	0.00000001	0.00030433
27	Yes	4	0.00000001	0.00037880
28	Yes	5	0.00000001	0.00016384
29	Yes	5	0.00000001	0.00017926
30	Yes	4	0.00000001	0.00032885
31	Yes	5	0.00000001	0.00017693
32	Yes	5	0.00000001	0.00017726
33	Yes	4	0.00000001	0.00026736
34	Yes	5	0.00000001	0.00017775
35	Yes	5	0.00000001	0.00016460
36	Yes	4	0.00000001	0.00047547
37	Yes	5	0.00000001	0.00017895
38	Yes	5	0.00000001	0.00018043

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 164.25	45.552	33	2.2141	0.0070
L2	167.17 - 129.67	41.925	33	2.2075	0.0051
L3	133.5 - 96	27.095	33	1.9258	0.0022
L4	100.67 - 63.17	15.320	33	1.4625	0.0012
L5	68.67 - 31.17	7.063	33	0.9703	0.0006
L6	37.42 - 0	2.116	33	0.5106	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	VHLP2.6	33	45.552	2.2141	0.0070	32640
172.00	DB201-F	33	44.161	2.2132	0.0063	32640
162.00	APXVTM14-C-120 w/ Mount Pipe	33	39.545	2.1901	0.0043	13199
152.00	BXA-171085-12BF w/ Mount Pipe	33	35.017	2.1248	0.0033	7730
142.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	33	30.643	2.0267	0.0028	5465
115.00	APXV18-206517S-C w/ Mount Pipe	33	20.062	1.6751	0.0018	3978
50.00	GPS-TMG-HR-26NCM	33	3.708	0.6915	0.0004	3478

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 164.25	116.353	8	5.6646	0.0172
L2	167.17 - 129.67	107.086	8	5.6457	0.0127
L3	133.5 - 96	69.219	8	4.9221	0.0060
L4	100.67 - 63.17	39.148	8	3.7381	0.0031
L5	68.67 - 31.17	18.054	8	2.4801	0.0015
L6	37.42 - 0	5.409	8	1.3055	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	VHLP2.6	8	116.353	5.6646	0.0178	13482
172.00	DB201-F	8	112.798	5.6615	0.0160	13482
162.00	APXVTM14-C-120 w/ Mount Pipe	8	101.009	5.6002	0.0110	5365
152.00	BXA-171085-12BF w/ Mount Pipe	8	89.446	5.4319	0.0086	3088
142.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	8	78.278	5.1805	0.0070	2166
115.00	APXV18-206517S-C w/ Mount Pipe	8	51.260	4.2813	0.0043	1571
50.00	GPS-TMG-HR-26NCM	8	9.479	1.7677	0.0011	1363

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	175 - 173.881	TP26x22x0.25	10.75	0.00	0.0	39.000	17.2586	-0.32	673.09	0.000*
	173.881 - 172.763					39.000	17.9192	-0.21	698.85	0.000
	172.763 - 171.644					39.000	18.2494	-3.17	711.73	0.004
	171.644 - 170.526					39.000	18.5797	-3.24	724.61	0.004
	170.526 - 169.407					39.000	18.9099	-3.31	737.49	0.004
	169.407 - 168.289					39.000	19.2402	-3.39	750.37	0.005
	168.289 - 167.17					39.000	19.5705	-3.47	763.25	0.005
	167.17 - 164.25					39.000	20.4326	-1.77	796.87	0.002
L2	167.17 - 164.25	TP34.0625x24.4135x0.3125	37.50	0.00	0.0	39.000	24.6504	-2.14	961.37	0.002
	164.25 - 162.542					39.000	25.0864	-4.07	978.37	0.004
	162.542 - 160.833					39.000	25.5224	-6.27	995.37	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	160.833 - 159.125					39.000	25.9584	-6.46	1012.38	0.006
	159.125 - 157.417					39.000	26.3944	-6.65	1029.38	0.006
	157.417 - 155.708					39.000	26.8304	-6.84	1046.38	0.007
	155.708 - 154					39.000	27.2664	-7.03	1063.39	0.007
	154 - 152.292					39.000	27.7024	-7.23	1080.39	0.007
	152.292 - 150.583					39.000	28.1384	-9.09	1097.40	0.008
	150.583 - 148.875					39.000	28.5744	-9.30	1114.40	0.008
	148.875 - 147.167					39.000	29.0103	-9.51	1131.40	0.008
	147.167 - 145.458					39.000	29.4463	-9.72	1148.41	0.008
	145.458 - 143.75					39.000	29.8823	-9.94	1165.41	0.009
	143.75 - 142.042					39.000	30.3183	-10.16	1182.41	0.009
	142.042 - 140.333					39.000	30.7543	-12.28	1199.42	0.010
	140.333 - 138.625					39.000	31.1903	-12.52	1216.42	0.010
	138.625 - 136.917					39.000	31.6263	-12.75	1233.43	0.010
	136.917 - 135.208					39.000	32.0623	-12.99	1250.43	0.010
	135.208 - 133.5					39.000	32.4983	-13.23	1267.43	0.010
	133.5 - 129.67					39.000	33.4758	-6.57	1305.56	0.005
L3	133.5 - 129.67	TP41.75x32.452x0.375	37.50	0.00	0.0	39.000	39.3100	-7.68	1533.09	0.005
	129.67 - 128.059					39.000	39.7854	-14.55	1551.63	0.009
	128.059 - 126.448					39.000	40.2609	-14.85	1570.18	0.009
	126.448 - 124.837					39.000	40.7364	-15.15	1588.72	0.010
	124.837 - 123.226					39.000	41.2118	-15.45	1607.26	0.010
	123.226 - 121.614					39.000	41.6873	-15.75	1625.81	0.010
	121.614 - 120.003					39.000	42.1628	-16.06	1644.35	0.010
	120.003 - 118.392					39.000	42.6382	-16.37	1662.89	0.010
	118.392 - 116.781					39.000	43.1137	-16.69	1681.43	0.010
	116.781 - 115.17					39.000	43.5892	-17.00	1699.98	0.010
	115.17 - 113.559					39.000	44.0646	-17.57	1718.52	0.010
	113.559 - 111.948					39.000	44.5401	-17.89	1737.06	0.010
	111.948 - 110.337					39.000	45.0156	-18.22	1755.61	0.010
	110.337 - 108.726					39.000	45.4911	-18.55	1774.15	0.010
	108.726 - 107.114					39.000	45.9665	-18.89	1792.69	0.011
	107.114 -					39.000	46.4420	-19.22	1811.24	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	105.503									
	105.503 - 103.892					39.000	46.9175	-19.56	1829.78	0.011
	103.892 - 102.281					39.000	47.3929	-19.90	1848.32	0.011
	102.281 - 100.67					39.000	47.8684	-20.25	1866.87	0.011
	100.67 - 96					39.000	49.2466	-11.13	1920.62	0.006
L4	100.67 - 96	TP49.0625x39.8421x0.375	37.50	0.00	0.0	39.000	48.3424	-10.84	1885.35	0.006
	96 - 94.4817					39.000	48.7868	-22.32	1902.68	0.012
	94.4817 - 92.9633					39.000	49.2311	-22.66	1920.01	0.012
	92.9633 - 91.445					39.000	49.6755	-23.00	1937.34	0.012
	91.445 - 89.9267					39.000	50.1198	-23.35	1954.67	0.012
	89.9267 - 88.4083					39.000	50.5642	-23.70	1972.00	0.012
	88.4083 - 86.89					39.000	51.0085	-24.05	1989.33	0.012
	86.89 - 85.3717					39.000	51.4529	-24.40	2006.66	0.012
	85.3717 - 83.8533					39.000	51.8972	-24.75	2023.99	0.012
	83.8533 - 82.335					39.000	52.3415	-25.11	2041.32	0.012
	82.335 - 80.8167					39.000	52.7859	-25.47	2058.65	0.012
	80.8167 - 79.2983					39.000	53.2302	-25.84	2075.98	0.012
	79.2983 - 77.78					39.000	53.6746	-26.20	2093.31	0.013
	77.78 - 76.2617					39.000	54.1189	-26.57	2110.64	0.013
	76.2617 - 74.7433					39.000	54.5633	-26.94	2127.97	0.013
	74.7433 - 73.225					39.000	55.0076	-27.32	2145.30	0.013
	73.225 - 71.7067					39.000	55.4520	-27.69	2162.63	0.013
	71.7067 - 70.1883					39.000	55.8963	-28.07	2179.96	0.013
	70.1883 - 68.67					39.000	56.3407	-28.45	2197.29	0.013
	68.67 - 63.17					39.000	57.9503	-15.59	2260.06	0.007
L5	68.67 - 63.17	TP56.125x46.9602x0.375	37.50	0.00	0.0	39.000	57.0479	-15.24	2224.87	0.007
	63.17 - 61.7394					39.000	57.4640	-31.21	2241.10	0.014
	61.7394 - 60.3089					39.000	57.8802	-31.58	2257.33	0.014
	60.3089 - 58.8783					39.000	58.2963	-31.95	2273.56	0.014
	58.8783 - 57.4478					39.000	58.7125	-32.32	2289.79	0.014
	57.4478 - 56.0172					39.000	59.1286	-32.70	2306.02	0.014
	56.0172 - 54.5867					39.000	59.5447	-33.08	2322.24	0.014
	54.5867 - 53.1561					39.000	59.9609	-33.46	2338.47	0.014
	53.1561 - 51.7256					39.000	60.3770	-33.84	2354.70	0.014
	51.7256 - 50.295					39.000	60.7931	-34.22	2370.93	0.014
	50.295 - 48.8644					39.000	61.2093	-34.67	2387.16	0.015

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	48.8644 - 47.4339					39.000	61.6254	-35.06	2403.39	0.015
	47.4339 - 46.0033					39.000	62.0415	-35.45	2419.62	0.015
	46.0033 - 44.5728					39.000	62.4577	-35.85	2435.85	0.015
	44.5728 - 43.1422					39.000	62.8738	-36.24	2452.08	0.015
	43.1422 - 41.7117					39.000	63.2900	-36.64	2468.31	0.015
	41.7117 - 40.2811					39.000	63.7061	-37.04	2484.54	0.015
	40.2811 - 38.8506					39.000	64.1222	-37.44	2500.77	0.015
	38.8506 - 37.42					39.000	64.5384	-37.84	2517.00	0.015
	37.42 - 31.17					39.000	66.3564	-20.66	2587.90	0.008
L6	37.42 - 31.17	TP62.9375x53.8475x0.375	37.42	0.00	0.0	39.000	65.4528	-20.25	2552.66	0.008
	31.17 - 29.5295					39.000	65.9271	-41.39	2571.16	0.016
	29.5295 - 27.8889					39.000	66.4014	-41.85	2589.66	0.016
	27.8889 - 26.2484					39.000	66.8757	-42.32	2608.15	0.016
	26.2484 - 24.6079					38.908	67.3501	-42.79	2620.48	0.016
	24.6079 - 22.9674					38.789	67.8244	-43.26	2630.86	0.016
	22.9674 - 21.3268					38.670	68.2987	-43.73	2641.14	0.017
	21.3268 - 19.6863					38.551	68.7731	-44.21	2651.30	0.017
	19.6863 - 18.0458					38.432	69.2474	-44.69	2661.34	0.017
	18.0458 - 16.4053					38.313	69.7217	-45.17	2671.28	0.017
	16.4053 - 14.7647					38.194	70.1961	-45.65	2681.10	0.017
	14.7647 - 13.1242					38.075	70.6704	-46.14	2690.81	0.017
	13.1242 - 11.4837					37.956	71.1447	-46.63	2700.40	0.017
	11.4837 - 9.84316					37.837	71.6190	-47.12	2709.88	0.017
	9.84316 - 8.20263					37.718	72.0934	-47.61	2719.25	0.018
	8.20263 - 6.5621					37.599	72.5677	-48.11	2728.51	0.018
	6.5621 - 4.92158					37.480	73.0420	-48.61	2737.65	0.018
	4.92158 - 3.28105					37.361	73.5164	-49.12	2746.68	0.018
	3.28105 - 1.64053					37.243	73.9907	-49.62	2755.60	0.018
	1.64053 - 0					37.124	74.4650	-50.13	2764.41	0.018

* DL controls

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	175 - 173.881	TP26x22x0.25	1.32	0.172	39.000	0.004	0.00	0.000	39.000	0.000
	173.881 - 172.763		2.12	0.256	39.000	0.007	0.00	0.000	39.000	0.000
	172.763 - 171.644		5.95	0.691	39.000	0.018	0.00	0.000	39.000	0.000
	171.644 - 170.526		13.28	1.489	39.000	0.038	0.00	0.000	39.000	0.000
	170.526 - 169.407		20.70	2.240	39.000	0.057	0.00	0.000	39.000	0.000
	169.407 - 168.289		28.20	2.947	39.000	0.076	0.00	0.000	39.000	0.000
	168.289 - 167.17		35.79	3.614	39.000	0.093	0.00	0.000	39.000	0.000
	167.17 - 164.25		26.16	2.423	39.000	0.062	0.00	0.000	39.000	0.000
L2	167.17 - 164.25	TP34.0625x24.4135x0.3125	29.87	2.382	39.000	0.061	0.00	0.000	39.000	0.000
	164.25 - 162.542		68.34	5.262	39.000	0.135	0.00	0.000	39.000	0.000
	162.542 - 160.833		86.15	6.406	39.000	0.164	0.00	0.000	39.000	0.000
	160.833 - 159.125		106.58	7.660	39.000	0.196	0.00	0.000	39.000	0.000
	159.125 - 157.417		127.25	8.845	39.000	0.227	0.00	0.000	39.000	0.000
	157.417 - 155.708		148.17	9.965	39.000	0.256	0.00	0.000	39.000	0.000
	155.708 - 154		169.34	11.025	39.000	0.283	0.00	0.000	39.000	0.000
	154 - 152.292		190.75	12.029	39.000	0.308	0.00	0.000	39.000	0.000
	152.292 - 150.583		218.99	13.383	39.000	0.343	0.00	0.000	39.000	0.000
	150.583 - 148.875		249.09	14.759	39.000	0.378	0.00	0.000	39.000	0.000
	148.875 - 147.167		279.45	16.061	39.000	0.412	0.00	0.000	39.000	0.000
	147.167 - 145.458		310.06	17.294	39.000	0.443	0.00	0.000	39.000	0.000
	145.458 - 143.75		340.93	18.462	39.000	0.473	0.00	0.000	39.000	0.000
	143.75 - 142.042		372.06	19.570	39.000	0.502	0.00	0.000	39.000	0.000
	142.042 - 140.333		410.46	20.978	39.000	0.538	0.00	0.000	39.000	0.000
	140.333 - 138.625		449.20	22.318	39.000	0.572	0.00	0.000	39.000	0.000
	138.625 - 136.917		488.22	23.589	39.000	0.605	0.00	0.000	39.000	0.000
	136.917 - 135.208		527.49	24.795	39.000	0.636	0.00	0.000	39.000	0.000
	135.208 - 133.5		567.03	25.940	39.000	0.665	0.00	0.000	39.000	0.000
	133.5 - 129.67		309.10	13.323	39.000	0.342	0.00	0.000	39.000	0.000
L3	133.5 - 129.67	TP41.75x32.452x0.375	347.68	13.069	39.000	0.335	0.00	0.000	39.000	0.000
	129.67 - 128.059		695.00	25.499	39.000	0.654	0.00	0.000	39.000	0.000
	128.059 - 126.448		733.46	26.275	39.000	0.674	0.00	0.000	39.000	0.000
	126.448 -		772.17	27.016	39.000	0.693	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	124.837									
	124.837 - 123.226		811.13	27.725	39.000	0.711	0.00	0.000	39.000	0.000
	123.226 - 121.614		850.33	28.402	39.000	0.728	0.00	0.000	39.000	0.000
	121.614 - 120.003		889.79	29.050	39.000	0.745	0.00	0.000	39.000	0.000
	120.003 - 118.392		929.49	29.670	39.000	0.761	0.00	0.000	39.000	0.000
	118.392 - 116.781		969.45	30.263	39.000	0.776	0.00	0.000	39.000	0.000
	116.781 - 115.17		1009.66	30.831	39.000	0.791	0.00	0.000	39.000	0.000
	115.17 - 113.559		1051.35	31.412	39.000	0.805	0.00	0.000	39.000	0.000
	113.559 - 111.948		1093.43	31.972	39.000	0.820	0.00	0.000	39.000	0.000
	111.948 - 110.337		1135.77	32.508	39.000	0.834	0.00	0.000	39.000	0.000
	110.337 - 108.726		1178.36	33.023	39.000	0.847	0.00	0.000	39.000	0.000
	108.726 - 107.114		1221.21	33.516	39.000	0.859	0.00	0.000	39.000	0.000
	107.114 - 105.503		1264.32	33.989	39.000	0.872	0.00	0.000	39.000	0.000
	105.503 - 103.892		1307.68	34.442	39.000	0.883	0.00	0.000	39.000	0.000
	103.892 - 102.281		1351.30	34.877	39.000	0.894	0.00	0.000	39.000	0.000
	102.281 - 100.67		1395.18	35.295	39.000	0.905	0.00	0.000	39.000	0.000
	100.67 - 96		783.45	18.721	39.000	0.480	0.00	0.000	39.000	0.000
L4	100.67 - 96	TP49.0625x39.8421x0.375	740.60	18.368	39.000	0.471	0.00	0.000	39.000	0.000
	96 - 94.4817		1566.48	38.144	39.000	0.978	0.00	0.000	39.000	0.000
	94.4817 - 92.9633		1609.14	38.475	39.000	0.987	0.00	0.000	39.000	0.000
	92.9633 - 91.445		1652.01	38.793	39.000	0.995	0.00	0.000	39.000	0.000
	91.445 - 89.9267		1695.09	39.099	39.000	1.003	0.00	0.000	39.000	0.000
	89.9267 - 88.4083		1738.39	39.393	39.000	1.010	0.00	0.000	39.000	0.000
	88.4083 - 86.89		1781.91	39.676	39.000	1.017	0.00	0.000	39.000	0.000
	86.89 - 85.3717		1825.64	39.948	39.000	1.024	0.00	0.000	39.000	0.000
	85.3717 - 83.8533		1869.59	40.209	39.000	1.031	0.00	0.000	39.000	0.000
	83.8533 - 82.335		1913.76	40.460	39.000	1.037	0.00	0.000	39.000	0.000
	82.335 - 80.8167		1958.14	40.702	39.000	1.044	0.00	0.000	39.000	0.000
	80.8167 - 79.2983		2002.74	40.934	39.000	1.050	0.00	0.000	39.000	0.000
	79.2983 - 77.78		2047.56	41.157	39.000	1.055	0.00	0.000	39.000	0.000
	77.78 - 76.2617		2092.60	41.371	39.000	1.061	0.00	0.000	39.000	0.000
	76.2617 - 74.7433		2137.85	41.578	39.000	1.066	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	74.7433 - 73.225		2183.32	41.776	39.000	1.071	0.00	0.000	39.000	0.000
	73.225 - 71.7067		2229.01	41.967	39.000	1.076	0.00	0.000	39.000	0.000
	71.7067 - 70.1883		2274.92	42.150	39.000	1.081	0.00	0.000	39.000	0.000
	70.1883 - 68.67		2321.04	42.326	39.000	1.085	0.00	0.000	39.000	0.000
	68.67 - 63.17		1274.80	21.969	39.000	0.563	0.00	0.000	39.000	0.000
L5	68.67 - 63.17	TP56.125x46.9602x0.375	1215.43	21.616	39.000	0.554	0.00	0.000	39.000	0.000
	63.17 - 61.7394		2534.77	44.428	39.000	1.139	0.00	0.000	39.000	0.000
	61.7394 - 60.3089		2579.48	44.561	39.000	1.143	0.00	0.000	39.000	0.000
	60.3089 - 58.8783		2624.38	44.689	39.000	1.146	0.00	0.000	39.000	0.000
	58.8783 - 57.4478		2669.45	44.812	39.000	1.149	0.00	0.000	39.000	0.000
	57.4478 - 56.0172		2714.69	44.930	39.000	1.152	0.00	0.000	39.000	0.000
	56.0172 - 54.5867		2760.12	45.043	39.000	1.155	0.00	0.000	39.000	0.000
	54.5867 - 53.1561		2805.71	45.152	39.000	1.158	0.00	0.000	39.000	0.000
	53.1561 - 51.7256		2851.47	45.255	39.000	1.160	0.00	0.000	39.000	0.000
	51.7256 - 50.295		2897.42	45.355	39.000	1.163	0.00	0.000	39.000	0.000
	50.295 - 48.8644		2943.59	45.451	39.000	1.165	0.00	0.000	39.000	0.000
	48.8644 - 47.4339		2989.96	45.543	39.000	1.168	0.00	0.000	39.000	0.000
	47.4339 - 46.0033		3036.49	45.632	39.000	1.170	0.00	0.000	39.000	0.000
	46.0033 - 44.5728		3083.20	45.716	39.000	1.172	0.00	0.000	39.000	0.000
	44.5728 - 43.1422		3130.07	45.797	39.000	1.174	0.00	0.000	39.000	0.000
	43.1422 - 41.7117		3177.12	45.874	39.000	1.176	0.00	0.000	39.000	0.000
	41.7117 - 40.2811		3224.32	45.947	39.000	1.178	0.00	0.000	39.000	0.000
	40.2811 - 38.8506		3271.71	46.017	39.000	1.180	0.00	0.000	39.000	0.000
	38.8506 - 37.42		3319.25	46.083	39.000	1.182	0.00	0.000	39.000	0.000
	37.42 - 31.17		1801.34	23.653	39.000	0.606	0.00	0.000	39.000	0.000
L6	37.42 - 31.17	TP62.9375x53.8475x0.375	1727.89	23.322	39.000	0.598	0.00	0.000	39.000	0.000
	31.17 - 29.5295		3584.94	47.690	39.000	1.223	0.00	0.000	39.000	0.000
	29.5295 - 27.8889		3640.83	47.742	39.000	1.224	0.00	0.000	39.000	0.000
	27.8889 - 26.2484		3696.91	47.790	39.000	1.225	0.00	0.000	39.000	0.000
	26.2484 - 24.6079		3753.18	47.834	38.908	1.229	0.00	0.000	38.908	0.000
	24.6079 - 22.9674		3809.64	47.875	38.789	1.234	0.00	0.000	38.789	0.000
	22.9674 - 21.3268		3866.28	47.912	38.670	1.239	0.00	0.000	38.670	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	21.3268 - 19.6863		3923.13	47.946	38.551	1.244	0.00	0.000	38.551	0.000
	19.6863 - 18.0458		3980.15	47.977	38.432	1.248	0.00	0.000	38.432	0.000
	18.0458 - 16.4053		4037.38	48.004	38.313	1.253	0.00	0.000	38.313	0.000
	16.4053 - 14.7647		4094.78	48.029	38.194	1.257	0.00	0.000	38.194	0.000
	14.7647 - 13.1242		4152.39	48.051	38.075	1.262	0.00	0.000	38.075	0.000
	13.1242 - 11.4837		4210.19	48.071	37.956	1.266	0.00	0.000	37.956	0.000
	11.4837 - 9.84316		4268.18	48.087	37.837	1.271	0.00	0.000	37.837	0.000
	9.84316 - 8.20263		4326.38	48.102	37.718	1.275	0.00	0.000	37.718	0.000
	8.20263 - 6.5621		4384.76	48.114	37.599	1.280	0.00	0.000	37.599	0.000
	6.5621 - 4.92158		4443.34	48.123	37.480	1.284	0.00	0.000	37.480	0.000
	4.92158 - 3.28105		4502.12	48.131	37.361	1.288	0.00	0.000	37.361	0.000
	3.28105 - 1.64053		4561.10	48.136	37.243	1.293	0.00	0.000	37.243	0.000
	1.64053 - 0		4620.27	48.140	37.124	1.297	0.00	0.000	37.124	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	175 - 173.881	TP26x22x0.25	0.00	0.000	26.000	0.000	0.00	0.000	26.000	0.000
	173.881 - 172.763		0.75	0.042	26.000	0.003	0.36	0.021	26.000	0.001
	172.763 - 171.644		6.53	0.358	26.000	0.028	0.40	0.022	26.000	0.001
	171.644 - 170.526		6.60	0.355	26.000	0.027	0.40	0.022	26.000	0.001
	170.526 - 169.407		6.67	0.353	26.000	0.027	0.40	0.021	26.000	0.001
	169.407 - 168.289		6.75	0.351	26.000	0.027	0.40	0.020	26.000	0.001
	168.289 - 167.17		6.82	0.349	26.000	0.027	0.40	0.020	26.000	0.001
	167.17 - 164.25		3.34	0.163	26.000	0.013	0.19	0.008	26.000	0.000
L2	167.17 - 164.25	TP34.0625x24.4135x0.3125	3.71	0.151	26.000	0.012	0.21	0.008	26.000	0.000
	164.25 - 162.542		7.35	0.293	26.000	0.023	0.13	0.005	26.000	0.000
	162.542 - 160.833		11.89	0.466	26.000	0.036	0.13	0.005	26.000	0.000
	160.833 - 159.125		12.03	0.464	26.000	0.036	0.13	0.005	26.000	0.000
	159.125 - 157.417		12.18	0.461	26.000	0.035	0.13	0.004	26.000	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	157.417 - 155.708		12.32	0.459	26.000	0.035	0.13	0.004	26.000	0.000
	155.708 - 154		12.47	0.457	26.000	0.035	0.13	0.004	26.000	0.000
	154 - 152.292		12.61	0.455	26.000	0.035	0.13	0.004	26.000	0.000
	152.292 - 150.583		17.55	0.624	26.000	0.048	0.13	0.004	26.000	0.000
	150.583 - 148.875		17.70	0.619	26.000	0.048	0.13	0.004	26.000	0.000
	148.875 - 147.167		17.85	0.615	26.000	0.047	0.14	0.004	26.000	0.000
	147.167 - 145.458		18.00	0.611	26.000	0.047	0.14	0.004	26.000	0.000
	145.458 - 143.75		18.15	0.607	26.000	0.047	0.14	0.004	26.000	0.000
	143.75 - 142.042		18.31	0.604	26.000	0.046	0.14	0.004	26.000	0.000
	142.042 - 140.333		22.61	0.735	26.000	0.057	1.00	0.025	26.000	0.001
	140.333 - 138.625		22.77	0.730	26.000	0.056	1.00	0.024	26.000	0.001
	138.625 - 136.917		22.92	0.725	26.000	0.056	1.00	0.024	26.000	0.001
	136.917 - 135.208		23.08	0.720	26.000	0.055	1.00	0.023	26.000	0.001
	135.208 - 133.5		23.23	0.715	26.000	0.055	1.00	0.022	26.000	0.001
	133.5 - 129.67		11.22	0.335	26.000	0.026	0.47	0.010	26.000	0.000
L3	133.5 - 129.67	TP41.75x32.452x0.375	12.43	0.316	26.000	0.024	0.53	0.010	26.000	0.000
	129.67 - 128.059		23.80	0.598	26.000	0.046	1.01	0.018	26.000	0.001
	128.059 - 126.448		23.96	0.595	26.000	0.046	1.01	0.018	26.000	0.001
	126.448 - 124.837		24.11	0.592	26.000	0.046	1.01	0.017	26.000	0.001
	124.837 - 123.226		24.26	0.589	26.000	0.045	1.01	0.017	26.000	0.001
	123.226 - 121.614		24.42	0.586	26.000	0.045	1.02	0.017	26.000	0.001
	121.614 - 120.003		24.57	0.583	26.000	0.045	1.02	0.016	26.000	0.001
	120.003 - 118.392		24.73	0.580	26.000	0.045	1.02	0.016	26.000	0.001
	118.392 - 116.781		24.89	0.577	26.000	0.044	1.02	0.016	26.000	0.001
	116.781 - 115.17		25.04	0.575	26.000	0.044	1.03	0.015	26.000	0.001
	115.17 - 113.559		26.05	0.591	26.000	0.045	1.03	0.015	26.000	0.001
	113.559 - 111.948		26.21	0.588	26.000	0.045	1.03	0.015	26.000	0.001
	111.948 - 110.337		26.37	0.586	26.000	0.045	1.03	0.014	26.000	0.001
	110.337 - 108.726		26.52	0.583	26.000	0.045	1.04	0.014	26.000	0.001
	108.726 - 107.114		26.68	0.581	26.000	0.045	1.04	0.014	26.000	0.001
	107.114 - 105.503		26.84	0.578	26.000	0.044	1.04	0.014	26.000	0.001
	105.503 - 103.892		27.01	0.576	26.000	0.044	1.04	0.013	26.000	0.001

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	103.892 - 102.281		27.17	0.573	26.000	0.044	1.05	0.013	26.000	0.001
	102.281 - 100.67		27.33	0.571	26.000	0.044	1.05	0.013	26.000	0.000
	100.67 - 96		14.45	0.293	26.000	0.023	0.55	0.006	26.000	0.000
L4	100.67 - 96	TP49.0625x39.8421x0.375	13.44	0.278	26.000	0.021	0.51	0.006	26.000	0.000
	96 - 94.4817		28.02	0.574	26.000	0.044	1.06	0.013	26.000	0.000
	94.4817 - 92.9633		28.17	0.572	26.000	0.044	1.06	0.012	26.000	0.000
	92.9633 - 91.445		28.31	0.570	26.000	0.044	1.07	0.012	26.000	0.000
	91.445 - 89.9267		28.45	0.568	26.000	0.044	1.07	0.012	26.000	0.000
	89.9267 - 88.4083		28.60	0.566	26.000	0.043	1.07	0.012	26.000	0.000
	88.4083 - 86.89		28.74	0.563	26.000	0.043	1.07	0.012	26.000	0.000
	86.89 - 85.3717		28.88	0.561	26.000	0.043	1.08	0.011	26.000	0.000
	85.3717 - 83.8533		29.03	0.559	26.000	0.043	1.08	0.011	26.000	0.000
	83.8533 - 82.335		29.17	0.557	26.000	0.043	1.08	0.011	26.000	0.000
	82.335 - 80.8167		29.31	0.555	26.000	0.043	1.09	0.011	26.000	0.000
	80.8167 - 79.2983		29.45	0.553	26.000	0.043	1.09	0.011	26.000	0.000
	79.2983 - 77.78		29.60	0.551	26.000	0.042	1.09	0.011	26.000	0.000
	77.78 - 76.2617		29.74	0.550	26.000	0.042	1.09	0.011	26.000	0.000
	76.2617 - 74.7433		29.88	0.548	26.000	0.042	1.10	0.010	26.000	0.000
	74.7433 - 73.225		30.03	0.546	26.000	0.042	1.10	0.010	26.000	0.000
	73.225 - 71.7067		30.17	0.544	26.000	0.042	1.10	0.010	26.000	0.000
	71.7067 - 70.1883		30.32	0.542	26.000	0.042	1.11	0.010	26.000	0.000
	70.1883 - 68.67		30.46	0.541	26.000	0.042	1.11	0.010	26.000	0.000
	68.67 - 63.17		16.06	0.277	26.000	0.021	0.58	0.005	26.000	0.000
L5	68.67 - 63.17	TP56.125x46.9602x0.375	15.04	0.264	26.000	0.020	0.54	0.005	26.000	0.000
	63.17 - 61.7394		31.21	0.543	26.000	0.042	1.12	0.010	26.000	0.000
	61.7394 - 60.3089		31.33	0.541	26.000	0.042	1.12	0.009	26.000	0.000
	60.3089 - 58.8783		31.45	0.540	26.000	0.041	1.13	0.009	26.000	0.000
	58.8783 - 57.4478		31.58	0.538	26.000	0.041	1.13	0.009	26.000	0.000
	57.4478 - 56.0172		31.70	0.536	26.000	0.041	1.13	0.009	26.000	0.000
	56.0172 - 54.5867		31.82	0.534	26.000	0.041	1.13	0.009	26.000	0.000
	54.5867 - 53.1561		31.94	0.533	26.000	0.041	1.14	0.009	26.000	0.000
	53.1561 - 51.7256		32.06	0.531	26.000	0.041	1.14	0.009	26.000	0.000
	51.7256 -		32.18	0.529	26.000	0.041	1.14	0.009	26.000	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	50.295									
	50.295 - 48.8644		32.36	0.529	26.000	0.041	1.14	0.009	26.000	0.000
	48.8644 - 47.4339		32.48	0.527	26.000	0.041	1.14	0.009	26.000	0.000
	47.4339 - 46.0033		32.60	0.525	26.000	0.040	1.15	0.008	26.000	0.000
	46.0033 - 44.5728		32.72	0.524	26.000	0.040	1.15	0.008	26.000	0.000
	44.5728 - 43.1422		32.84	0.522	26.000	0.040	1.15	0.008	26.000	0.000
	43.1422 - 41.7117		32.95	0.521	26.000	0.040	1.15	0.008	26.000	0.000
	41.7117 - 40.2811		33.07	0.519	26.000	0.040	1.15	0.008	26.000	0.000
	40.2811 - 38.8506		33.19	0.518	26.000	0.040	1.16	0.008	26.000	0.000
	38.8506 - 37.42		33.30	0.516	26.000	0.040	1.16	0.008	26.000	0.000
	37.42 - 31.17		17.47	0.263	26.000	0.020	0.60	0.004	26.000	0.000
L6	37.42 - 31.17	TP62.9375x53.8475x0.375	16.47	0.252	26.000	0.019	0.57	0.004	26.000	0.000
	31.17 - 29.5295		34.03	0.516	26.000	0.040	1.17	0.008	26.000	0.000
	29.5295 - 27.8889		34.14	0.514	26.000	0.040	1.17	0.007	26.000	0.000
	27.8889 - 26.2484		34.26	0.512	26.000	0.039	1.17	0.007	26.000	0.000
	26.2484 - 24.6079		34.37	0.510	26.000	0.039	1.17	0.007	26.000	0.000
	24.6079 - 22.9674		34.49	0.509	26.000	0.039	1.18	0.007	26.000	0.000
	22.9674 - 21.3268		34.61	0.507	26.000	0.039	1.18	0.007	26.000	0.000
	21.3268 - 19.6863		34.72	0.505	26.000	0.039	1.18	0.007	26.000	0.000
	19.6863 - 18.0458		34.84	0.503	26.000	0.039	1.18	0.007	26.000	0.000
	18.0458 - 16.4053		34.96	0.501	26.000	0.039	1.18	0.007	26.000	0.000
	16.4053 - 14.7647		35.07	0.500	26.000	0.038	1.18	0.007	26.000	0.000
	14.7647 - 13.1242		35.19	0.498	26.000	0.038	1.18	0.007	26.000	0.000
	13.1242 - 11.4837		35.31	0.496	26.000	0.038	1.19	0.007	26.000	0.000
	11.4837 - 9.84316		35.43	0.495	26.000	0.038	1.19	0.007	26.000	0.000
	9.84316 - 8.20263		35.55	0.493	26.000	0.038	1.19	0.006	26.000	0.000
	8.20263 - 6.5621		35.67	0.492	26.000	0.038	1.19	0.006	26.000	0.000
	6.5621 - 4.92158		35.79	0.490	26.000	0.038	1.19	0.006	26.000	0.000
	4.92158 - 3.28105		35.91	0.488	26.000	0.038	1.19	0.006	26.000	0.000
	3.28105 - 1.64053		36.03	0.487	26.000	0.037	1.19	0.006	26.000	0.000
	1.64053 - 0		36.15	0.485	26.000	0.037	1.20	0.006	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	175 - 173.881	0.000	0.004	0.000	0.000	0.000	0.005* ✔	1.000	H1-3+VT ✔
	173.881 - 172.763	0.000	0.007	0.000	0.003	0.001	0.007 ✔	1.333	H1-3+VT ✔
	172.763 - 171.644	0.004	0.018	0.000	0.028	0.001	0.022 ✔	1.333	H1-3+VT ✔
	171.644 - 170.526	0.004	0.038	0.000	0.027	0.001	0.043 ✔	1.333	H1-3+VT ✔
	170.526 - 169.407	0.004	0.057	0.000	0.027	0.001	0.062 ✔	1.333	H1-3+VT ✔
	169.407 - 168.289	0.005	0.076	0.000	0.027	0.001	0.080 ✔	1.333	H1-3+VT ✔
	168.289 - 167.17	0.005	0.093	0.000	0.027	0.001	0.097 ✔	1.333	H1-3+VT ✔
	167.17 - 164.25	0.002	0.062	0.000	0.013	0.000	0.064 ✔	1.333	H1-3+VT ✔
L2	167.17 - 164.25	0.002	0.061	0.000	0.012	0.000	0.063 ✔	1.333	H1-3+VT ✔
	164.25 - 162.542	0.004	0.135	0.000	0.023	0.000	0.139 ✔	1.333	H1-3+VT ✔
	162.542 - 160.833	0.006	0.164	0.000	0.036	0.000	0.171 ✔	1.333	H1-3+VT ✔
	160.833 - 159.125	0.006	0.196	0.000	0.036	0.000	0.203 ✔	1.333	H1-3+VT ✔
	159.125 - 157.417	0.006	0.227	0.000	0.035	0.000	0.234 ✔	1.333	H1-3+VT ✔
	157.417 - 155.708	0.007	0.256	0.000	0.035	0.000	0.262 ✔	1.333	H1-3+VT ✔
	155.708 - 154	0.007	0.283	0.000	0.035	0.000	0.290 ✔	1.333	H1-3+VT ✔
	154 - 152.292	0.007	0.308	0.000	0.035	0.000	0.315 ✔	1.333	H1-3+VT ✔
	152.292 - 150.583	0.008	0.343	0.000	0.048	0.000	0.352 ✔	1.333	H1-3+VT ✔
	150.583 - 148.875	0.008	0.378	0.000	0.048	0.000	0.387 ✔	1.333	H1-3+VT ✔
	148.875 - 147.167	0.008	0.412	0.000	0.047	0.000	0.421 ✔	1.333	H1-3+VT ✔
	147.167 - 145.458	0.008	0.443	0.000	0.047	0.000	0.452 ✔	1.333	H1-3+VT ✔
	145.458 - 143.75	0.009	0.473	0.000	0.047	0.000	0.482 ✔	1.333	H1-3+VT ✔
	143.75 - 142.042	0.009	0.502	0.000	0.046	0.000	0.511 ✔	1.333	H1-3+VT ✔
	142.042 - 140.333	0.010	0.538	0.000	0.057	0.001	0.549 ✔	1.333	H1-3+VT ✔
	140.333 - 138.625	0.010	0.572	0.000	0.056	0.001	0.583 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	138.625 - 136.917	0.010	0.605	0.000	0.056	0.001	0.616 ✔	1.333	H1-3+VT ✔
	136.917 - 135.208	0.010	0.636	0.000	0.055	0.001	0.647 ✔	1.333	H1-3+VT ✔
	135.208 - 133.5	0.010	0.665	0.000	0.055	0.001	0.676 ✔	1.333	H1-3+VT ✔
	133.5 - 129.67	0.005	0.342	0.000	0.026	0.000	0.347 ✔	1.333	H1-3+VT ✔
L3	133.5 - 129.67	0.005	0.335	0.000	0.024	0.000	0.340 ✔	1.333	H1-3+VT ✔
	129.67 - 128.059	0.009	0.654	0.000	0.046	0.001	0.664 ✔	1.333	H1-3+VT ✔
	128.059 - 126.448	0.009	0.674	0.000	0.046	0.001	0.684 ✔	1.333	H1-3+VT ✔
	126.448 - 124.837	0.010	0.693	0.000	0.046	0.001	0.703 ✔	1.333	H1-3+VT ✔
	124.837 - 123.226	0.010	0.711	0.000	0.045	0.001	0.721 ✔	1.333	H1-3+VT ✔
	123.226 - 121.614	0.010	0.728	0.000	0.045	0.001	0.738 ✔	1.333	H1-3+VT ✔
	121.614 - 120.003	0.010	0.745	0.000	0.045	0.001	0.755 ✔	1.333	H1-3+VT ✔
	120.003 - 118.392	0.010	0.761	0.000	0.045	0.001	0.771 ✔	1.333	H1-3+VT ✔
	118.392 - 116.781	0.010	0.776	0.000	0.044	0.001	0.786 ✔	1.333	H1-3+VT ✔
	116.781 - 115.17	0.010	0.791	0.000	0.044	0.001	0.801 ✔	1.333	H1-3+VT ✔
	115.17 - 113.559	0.010	0.805	0.000	0.045	0.001	0.816 ✔	1.333	H1-3+VT ✔
	113.559 - 111.948	0.010	0.820	0.000	0.045	0.001	0.831 ✔	1.333	H1-3+VT ✔
	111.948 - 110.337	0.010	0.834	0.000	0.045	0.001	0.844 ✔	1.333	H1-3+VT ✔
	110.337 - 108.726	0.010	0.847	0.000	0.045	0.001	0.858 ✔	1.333	H1-3+VT ✔
	108.726 - 107.114	0.011	0.859	0.000	0.045	0.001	0.870 ✔	1.333	H1-3+VT ✔
	107.114 - 105.503	0.011	0.872	0.000	0.044	0.001	0.883 ✔	1.333	H1-3+VT ✔
	105.503 - 103.892	0.011	0.883	0.000	0.044	0.001	0.894 ✔	1.333	H1-3+VT ✔
	103.892 - 102.281	0.011	0.894	0.000	0.044	0.001	0.906 ✔	1.333	H1-3+VT ✔
	102.281 - 100.67	0.011	0.905	0.000	0.044	0.000	0.916 ✔	1.333	H1-3+VT ✔
	100.67 - 96	0.006	0.480	0.000	0.023	0.000	0.486 ✔	1.333	H1-3+VT ✔
L4	100.67 - 96	0.006	0.471	0.000	0.021	0.000	0.477 ✔	1.333	H1-3+VT ✔
	96 - 94.4817	0.012	0.978	0.000	0.044	0.000	0.990 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	94.4817 - 92.9633	0.012	0.987	0.000	0.044	0.000	0.999 ✔	1.333	H1-3+VT ✔
	92.9633 - 91.445	0.012	0.995	0.000	0.044	0.000	1.007 ✔	1.333	H1-3+VT ✔
	91.445 - 89.9267	0.012	1.003	0.000	0.044	0.000	1.015 ✔	1.333	H1-3+VT ✔
	89.9267 - 88.4083	0.012	1.010	0.000	0.043	0.000	1.023 ✔	1.333	H1-3+VT ✔
	88.4083 - 86.89	0.012	1.017	0.000	0.043	0.000	1.030 ✔	1.333	H1-3+VT ✔
	86.89 - 85.3717	0.012	1.024	0.000	0.043	0.000	1.037 ✔	1.333	H1-3+VT ✔
	85.3717 - 83.8533	0.012	1.031	0.000	0.043	0.000	1.044 ✔	1.333	H1-3+VT ✔
	83.8533 - 82.335	0.012	1.037	0.000	0.043	0.000	1.050 ✔	1.333	H1-3+VT ✔
	82.335 - 80.8167	0.012	1.044	0.000	0.043	0.000	1.056 ✔	1.333	H1-3+VT ✔
	80.8167 - 79.2983	0.012	1.050	0.000	0.043	0.000	1.063 ✔	1.333	H1-3+VT ✔
	79.2983 - 77.78	0.013	1.055	0.000	0.042	0.000	1.068 ✔	1.333	H1-3+VT ✔
	77.78 - 76.2617	0.013	1.061	0.000	0.042	0.000	1.074 ✔	1.333	H1-3+VT ✔
	76.2617 - 74.7433	0.013	1.066	0.000	0.042	0.000	1.079 ✔	1.333	H1-3+VT ✔
	74.7433 - 73.225	0.013	1.071	0.000	0.042	0.000	1.084 ✔	1.333	H1-3+VT ✔
	73.225 - 71.7067	0.013	1.076	0.000	0.042	0.000	1.089 ✔	1.333	H1-3+VT ✔
	71.7067 - 70.1883	0.013	1.081	0.000	0.042	0.000	1.094 ✔	1.333	H1-3+VT ✔
	70.1883 - 68.67	0.013	1.085	0.000	0.042	0.000	1.099 ✔	1.333	H1-3+VT ✔
	68.67 - 63.17	0.007	0.563	0.000	0.021	0.000	0.570 ✔	1.333	H1-3+VT ✔
L5	68.67 - 63.17	0.007	0.554	0.000	0.020	0.000	0.561 ✔	1.333	H1-3+VT ✔
	63.17 - 61.7394	0.014	1.139	0.000	0.042	0.000	1.154 ✔	1.333	H1-3+VT ✔
	61.7394 - 60.3089	0.014	1.143	0.000	0.042	0.000	1.157 ✔	1.333	H1-3+VT ✔
	60.3089 - 58.8783	0.014	1.146	0.000	0.041	0.000	1.160 ✔	1.333	H1-3+VT ✔
	58.8783 - 57.4478	0.014	1.149	0.000	0.041	0.000	1.164 ✔	1.333	H1-3+VT ✔
	57.4478 - 56.0172	0.014	1.152	0.000	0.041	0.000	1.167 ✔	1.333	H1-3+VT ✔
	56.0172 - 54.5867	0.014	1.155	0.000	0.041	0.000	1.170 ✔	1.333	H1-3+VT ✔
	54.5867 - 53.1561	0.014	1.158	0.000	0.041	0.000	1.172 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	53.1561 - 51.7256	0.014	1.160	0.000	0.041	0.000	1.175 ✔	1.333	H1-3+VT ✔
	51.7256 - 50.295	0.014	1.163	0.000	0.041	0.000	1.178 ✔	1.333	H1-3+VT ✔
	50.295 - 48.8644	0.015	1.165	0.000	0.041	0.000	1.180 ✔	1.333	H1-3+VT ✔
	48.8644 - 47.4339	0.015	1.168	0.000	0.041	0.000	1.183 ✔	1.333	H1-3+VT ✔
	47.4339 - 46.0033	0.015	1.170	0.000	0.040	0.000	1.185 ✔	1.333	H1-3+VT ✔
	46.0033 - 44.5728	0.015	1.172	0.000	0.040	0.000	1.187 ✔	1.333	H1-3+VT ✔
	44.5728 - 43.1422	0.015	1.174	0.000	0.040	0.000	1.189 ✔	1.333	H1-3+VT ✔
	43.1422 - 41.7117	0.015	1.176	0.000	0.040	0.000	1.191 ✔	1.333	H1-3+VT ✔
	41.7117 - 40.2811	0.015	1.178	0.000	0.040	0.000	1.193 ✔	1.333	H1-3+VT ✔
	40.2811 - 38.8506	0.015	1.180	0.000	0.040	0.000	1.195 ✔	1.333	H1-3+VT ✔
	38.8506 - 37.42	0.015	1.182	0.000	0.040	0.000	1.197 ✔	1.333	H1-3+VT ✔
	37.42 - 31.17	0.008	0.606	0.000	0.020	0.000	0.615 ✔	1.333	H1-3+VT ✔
L6	37.42 - 31.17	0.008	0.598	0.000	0.019	0.000	0.606 ✔	1.333	H1-3+VT ✔
	31.17 - 29.5295	0.016	1.223	0.000	0.040	0.000	1.239 ✔	1.333	H1-3+VT ✔
	29.5295 - 27.8889	0.016	1.224	0.000	0.040	0.000	1.241 ✔	1.333	H1-3+VT ✔
	27.8889 - 26.2484	0.016	1.225	0.000	0.039	0.000	1.242 ✔	1.333	H1-3+VT ✔
	26.2484 - 24.6079	0.016	1.229	0.000	0.039	0.000	1.246 ✔	1.333	H1-3+VT ✔
	24.6079 - 22.9674	0.016	1.234	0.000	0.039	0.000	1.251 ✔	1.333	H1-3+VT ✔
	22.9674 - 21.3268	0.017	1.239	0.000	0.039	0.000	1.256 ✔	1.333	H1-3+VT ✔
	21.3268 - 19.6863	0.017	1.244	0.000	0.039	0.000	1.261 ✔	1.333	H1-3+VT ✔
	19.6863 - 18.0458	0.017	1.248	0.000	0.039	0.000	1.266 ✔	1.333	H1-3+VT ✔
	18.0458 - 16.4053	0.017	1.253	0.000	0.039	0.000	1.270 ✔	1.333	H1-3+VT ✔
	16.4053 - 14.7647	0.017	1.257	0.000	0.038	0.000	1.275 ✔	1.333	H1-3+VT ✔
	14.7647 - 13.1242	0.017	1.262	0.000	0.038	0.000	1.280 ✔	1.333	H1-3+VT ✔
	13.1242 - 11.4837	0.017	1.266	0.000	0.038	0.000	1.284 ✔	1.333	H1-3+VT ✔
	11.4837 - 9.84316	0.017	1.271	0.000	0.038	0.000	1.289 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	9.84316 - 8.20263	0.018	1.275	0.000	0.038	0.000	1.293 ✔	1.333	H1-3+VT ✔
	8.20263 - 6.5621	0.018	1.280	0.000	0.038	0.000	1.298 ✔	1.333	H1-3+VT ✔
	6.5621 - 4.92158	0.018	1.284	0.000	0.038	0.000	1.302 ✔	1.333	H1-3+VT ✔
	4.92158 - 3.28105	0.018	1.288	0.000	0.038	0.000	1.306 ✔	1.333	H1-3+VT ✔
	3.28105 - 1.64053	0.018	1.293	0.000	0.037	0.000	1.311 ✔	1.333	H1-3+VT ✔
	1.64053 - 0	0.018	1.297	0.000	0.037	0.000	1.315 ✔	1.333	H1-3+VT ✔

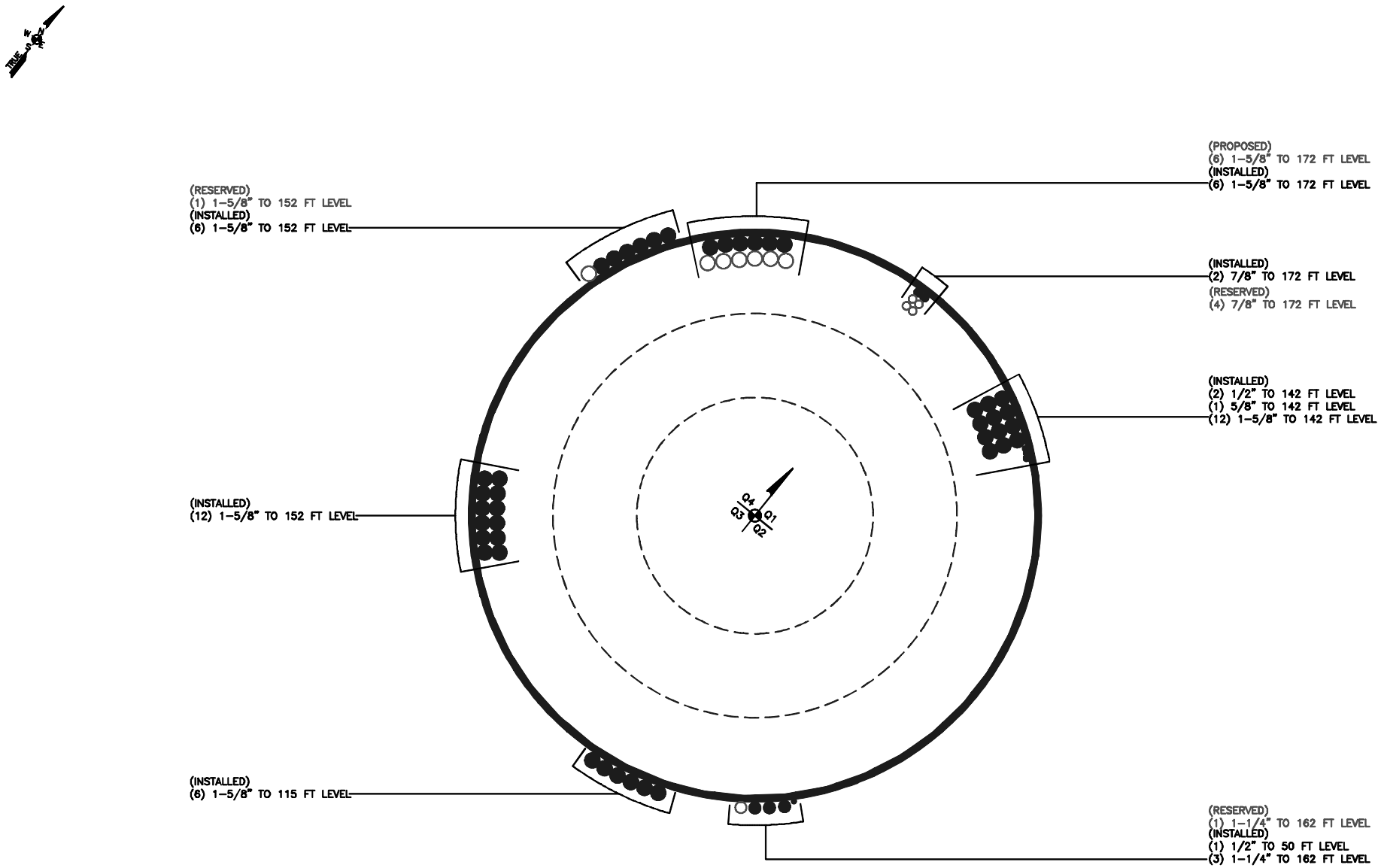
* DL controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	175 - 164.25	Pole	TP26x22x0.25	1	-3.47	1017.41	7.3	Pass
L2	164.25 - 129.67	Pole	TP34.0625x24.4135x0.3125	2	-13.23	1689.48	50.7	Pass
L3	129.67 - 96	Pole	TP41.75x32.452x0.375	3	-20.25	2488.54	68.7	Pass
L4	96 - 63.17	Pole	TP49.0625x39.8421x0.375	4	-28.45	2928.99	82.4	Pass
L5	63.17 - 31.17	Pole	TP56.125x46.9602x0.375	5	-37.84	3355.16	89.8	Pass
L6	31.17 - 0	Pole	TP62.9375x53.8475x0.375	6	-50.13	3684.96	98.7	Pass
							Summary	
						Pole (L6)	98.7	Pass
						RATING =	**98.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 823530 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

Project No.	
Site Name:	
Site ID:	
Pole Manufacturer:	*Pirod*

Reactions		
Moment:	4620	ft-kips
Axial:	50	kips
Shear:	36	kips

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

Anchor Rod Data		
Qty:	45	
Diam:	1.25	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	68	in

Anchor Rod Results

Maximum Rod Tension:	71.4 Kips	Rigid
Allowable Tension:	81.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	88.1% Pass	Fty*ASIF

Plate Data		
Diam:	71	in
Thick:	1.5	in
Grade:	50	ksi
Single-Rod B-eff:	4.44	in

Base Plate Results

Base Plate Stress:	Flexural Check Rohn/Pirod, OK	Rigid Service ASD
Allowable Plate Stress:	50.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	Rohn/Pirod, OK	Y.L. Length: 25.75

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

n/a

Stiffener Results N/A for Rohn / Pirod

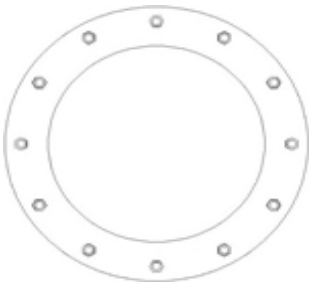
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A

Pole Data		
Diam:	62.9375	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	



* 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#:	
Site Name:	
App #:	

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	8	ft
Pad Thickness, T:	2.75	ft
Pad Width=Length, L:	22.5	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	7.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	44.18	ft^2
Pier Height:	5.75	ft
Soil (above pad) Height:	5.25	ft

Soil Parameters		
Unit Weight, γ:	125.0	pcf
Ultimate Bearing Capacity, qn:	16.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	36.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	12.00	ksf
Passive Pres. Coeff., Kp	3.85	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	48.6	kips
Pad Force Location Above D:	1.28	ft
ϕ(Passive Pressure Moment):	62.20	ft-kips
Factored O.T. M(WL), "1.6W":	6650.1	ft-kips
Factored OT (MW-Msoil), M1	6587.90	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	3.81	ft
Sum of Soil Wedges Wt:	84.42	kips
Soil Wedges ecc, K1:	5.89	ft
Ftg+Soil above Pad wt:	550.2	kips
Unfactored (Total ftg-soil Wt):	634.59	kips
1.2D. **No Soil Wedges**.	720.20	kips
0.9D. **With Soil Wedges**	616.13	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:	F	<--Pull Down
Unfactored DL Axial, PD:	50	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	36	kips
Unfactored WL Moment, M:	4620	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	60	kips
0.90	0.9D+1.6W, Pu:	45	kips
1.35	Vu:	48.6	kips
	Mu:	6237	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	720.20	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	6587.90	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	9.15	ft
Orthogonal qu=	7.61	ksf
qu/ϕ*qn Ratio=	**63.43%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	6.47	ft
Diagonal qu=	7.87	ksf
qu/ϕ*qn Ratio=	**65.59%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	616.13	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	6140.25	ft-kips

Orthogonal ecc3 = M2/P2 =	9.97	ft
Ortho Non Bearing Length,NBL=	19.93	ft
Orthogonal qu=	10.66	ksf
Diagonal qu=	8.72	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	4620.00		
M Orthogonal:	4685.40	**98.60%**	**Pass**
M Diagonal:	4685.40	**98.60%**	**Pass**

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

T-Mobile Existing Facility

Site ID: CT11364B

CT364 / Chapel Street Monopole
580 Chapel Street
Thomaston, CT 06787

October 14, 2014

EBI Project Number: 62145512

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	50.18 %

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

EBI Consulting
environmental | engineering | due diligence

October 14, 2014

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

Emissions Analysis for Site: **CT11364B – CT364 / Chapel Street Monopole**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **580 Chapel Street, Thomaston, 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 467 $\mu W/cm^2$, and the general population exposure limit for the PCS band 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 **580 Chapel Street, Thomaston, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

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

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

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

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

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

7) The antennas used in this modeling are the **Andrew RR90_17_02DP** for 1900 MHz (PCS) 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 **Andrew RR90_17_02DP** has a maximum gain of **14.4 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

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.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Andrew RR90_17_02DP	Make / Model:	Andrew RR90_17_02DP	Make / Model:	Andrew RR90_17_02DP
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	3,505.81	ERP (W):	3,505.81	ERP (W):	3,505.81
Antenna A1 MPE%	2.69	Antenna B1 MPE%	0.63	Antenna C1 MPE%	0.27
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	300	Height (AGL):	300	Height (AGL):	300
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A2 MPE%	0.75	Antenna B2 MPE%	0.18	Antenna C2 MPE%	0.08

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**4.60**
Thomaston FD	1.72 %
Thomaston PD	0.29 %
Litch CO FD	1.72 %
CT State Police	0.57 %
Sprint	2.82 %
Verizon Wireless	22.51 %
AT&T	15.95 %
Site Total MPE %:	**50.18 %**

T-Mobile Sector 1 Total:	3.44 %
T-Mobile Sector 2 Total:	0.81 %
T-Mobile Sector 3 Total:	0.35 %
Site Total:	50.18 %

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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:	3.44 %
Sector 2:	0.81 %
Sector 3 :	0.35 %
T-Mobile Total:	4.60 %
Site Total:	50.18 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **50.18%** 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.

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