Crown Castle
3530 Toringdon Way Suite 300
Charlotte NC 28277

Tel (704) 405-6600

March 9, 2015

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

RE: **T-Mobile-Exempt Modification - Crown Site BU: 876314**
T-Mobile Site ID: CT11124H
Located at: 214 Russian Village Road, Southbury, CT 06488

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 Mr. Ed Edelson, First Selectman for the Town of Southbury and Thomas & Mieke Crider, Property Owners.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **214 Russian Village Road, Southbury, CT 06488**. 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

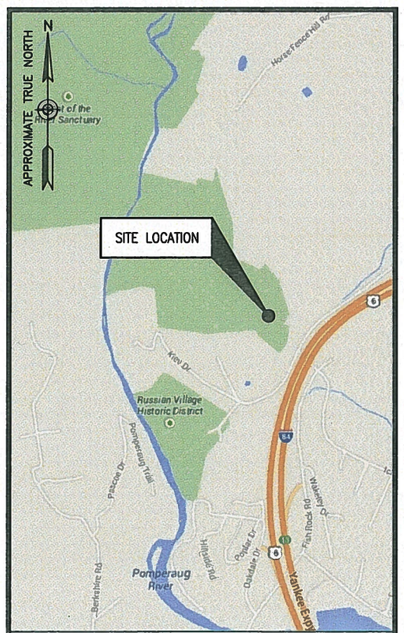
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Ed Edelson, First Selectman
Southbury Town Hall
501 Main Street South
Southbury, CT 06488

cc: Thomas & Mieke Crider
a/k/a Mieke Maas
100 Russian Village Road
Southbury, CT 06488

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11124H
CROWN CASTLE BU #: 876314
SITE NAME: HORSE HILL
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY



VICINITY MAP

FROM PARSIPPANY, NJ:

DEPART SYLVAN WAY AND TAKE I-287 N TOWARD MAHWAH. TAKE THE I-87 S/I-287/NEW YORK THRUWAY EXIT TOWARD TAPPAN ZEE BR/NEW YORK CITY. TAKE EXIT 8A FOR NY-119/SAW MILL PKWY N TOWARD ELMSFORD. KEEP LEFT, FOLLOW SIGNS FOR SAW MILL RIVER PKWY N/KATONAH AND MERGE ONTO SAW MILL PKWY N. KEEP LEFT, FOLLOW SIGNS FOR I-684/BREWSTER AND MERGE ONTO I-684 N. TAKE EXIT 9E FOR INTERSTATE 84 E TOWARD DANBURY. MERGE ONTO I-84 E. TAKE EXIT 13 TOWARD RIVER RD. TURN LEFT ONTO FISH ROCK RD. TURN LEFT ONTO ICHABOD RD. TURN LEFT ONTO RUSSIAN VILLAGE ROAD. SLIGHT RIGHT TO STAY ON RUSSIAN VILLAGE ROAD. SITE WILL BE ON THE RIGHT.

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

CONTACT: GREG NAWROTZKI
PHONE #: (973) 576-9653

CONSTRUCTION
CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

CONTACT: WARREN KELLEHER
PHONE #: (781) 970-0055

CONSULTANT TEAM

SITE NAME:
HORSE HILL

SITE NUMBER:
CT11124H

TOWER OWNER:
CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

APPLICANT/DEVELOPER:
T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

COORDINATES:
LATITUDE: 41°-27'-7.97" N (NAD83)
LONGITUDE: 73°-15'-1.25" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
704G

PROJECT SUMMARY

SITE ADDRESS:
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

PROJECT DIRECTORY

- INSTALL (3) NEW ANTENNAS.
- INSTALL (3) NEW BIAS TEES.
- INSTALL (6) NEW LINES OF COAX.
- INSTALL (1) NEW BBU CABINET AT GRADE.

SCOPE OF WORK

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

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

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

SHEET INDEX

T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

CT11124H
HORSE HILL

CONSTRUCTION DRAWINGS

0	03/06/15	ISSUED AS FINAL
B	03/03/15	REVISED PER COMMENTS
A	03/01/15	ISSUED FOR REVIEW

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

STATE OF CONNECTICUT
JIANG YU
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50071488
SITE ADDRESS:	

214 RUSSIAN
VILLAGE ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – CROWN CASTLE
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T–MOBILE
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF PROJECT MANAGEMENT.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
5. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
9. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
10. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
14. CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
15. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
16. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
17. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

CONCRETE AND REINFORCING STEEL NOTES:

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

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

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

STRUCTURAL STEEL NOTES:

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

CONSTRUCTION NOTES:

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

T-Mobile

T–MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE

CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

CT11124H
HORSE HILL

CONSTRUCTION DRAWINGS		
0	03/06/15	ISSUED AS FINAL
B	03/03/15	REVISED PER COMMENTS
A	03/01/15	ISSUED FOR REVIEW

Dewberry

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

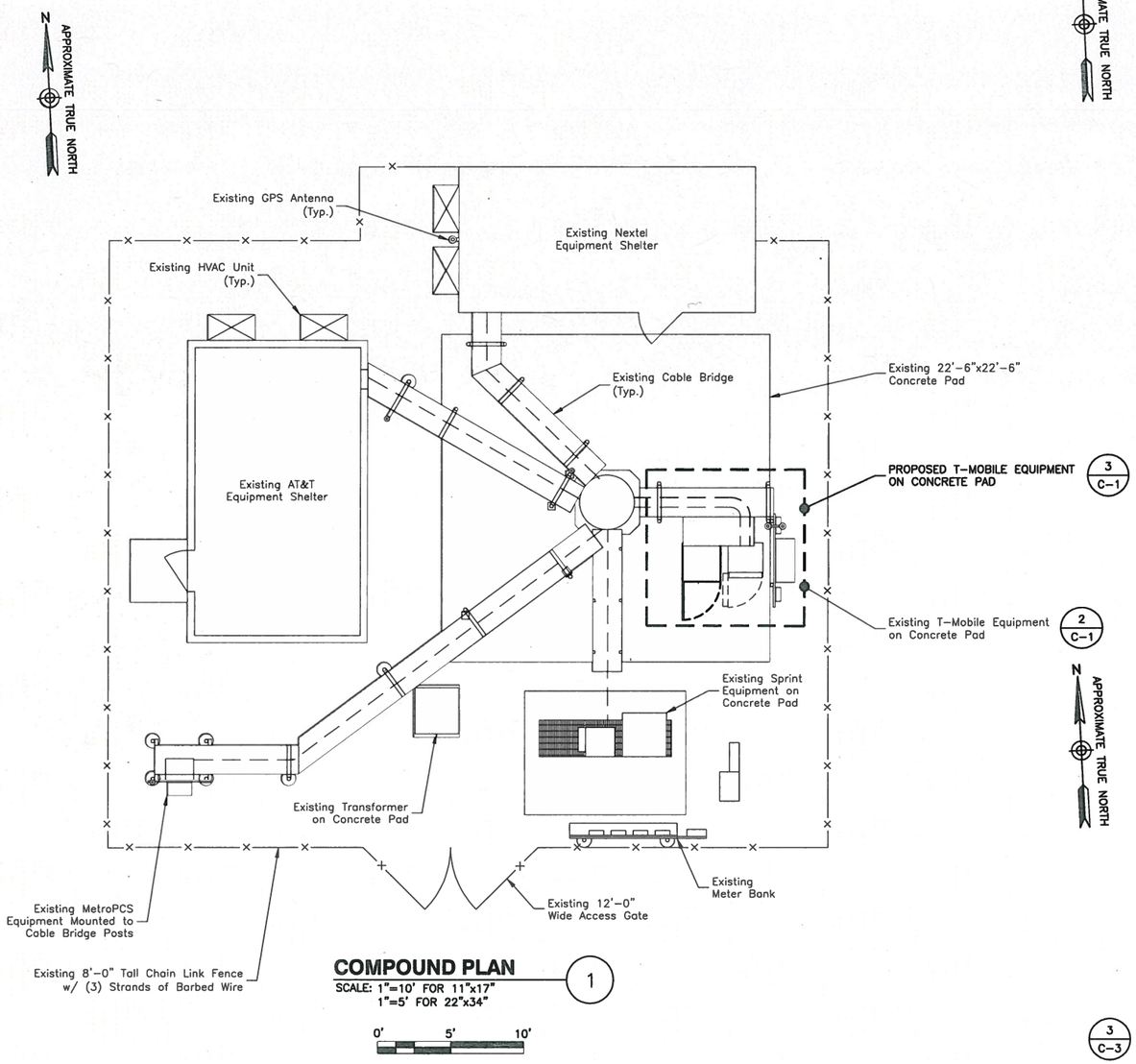
STATE OF CONNECTICUT
JIANG YU RYE
No. 0023222
LICENSED PROFESSIONAL ENGINEER
JIANG YU RYE
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50071488

SITE ADDRESS:
214 RUSSIAN
VILLAGE ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
G–1

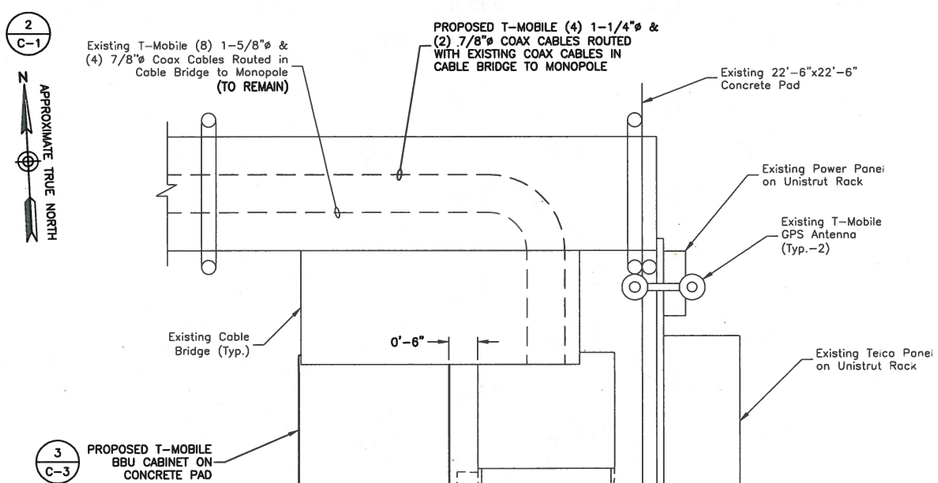


COMPOUND PLAN 1

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

EXISTING EQUIPMENT PLAN 2

SCALE: 3/8"=1' FOR 11"x17"
3/4"=1' FOR 22"x34"



PROPOSED EQUIPMENT PLAN 3

SCALE: 3/8"=1' FOR 11"x17"
3/4"=1' FOR 22"x34"

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, BIAS TEES, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY TOWER ENGINEERING PROFESSIONALS DATED FEBRUARY 13, 2015.

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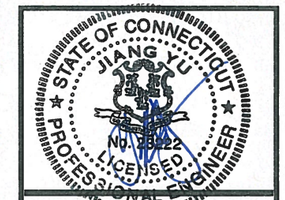

CONNECTICUT LICENSE NO. 0023222

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SITE ADDRESS:	

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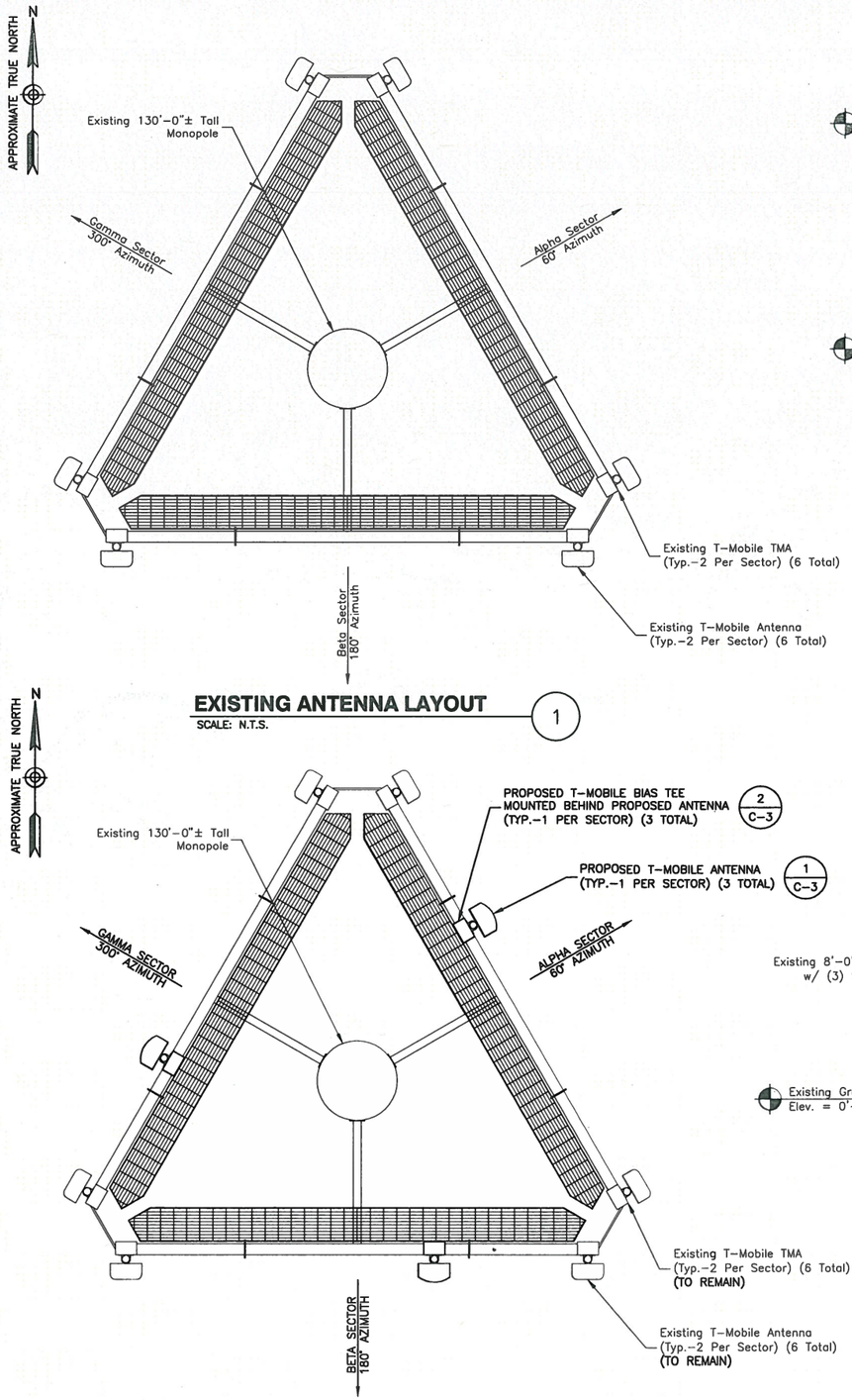
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

SHEET TITLE

COMPOUND PLAN &
EQUIPMENT PLANS

SHEET NUMBER

C-1

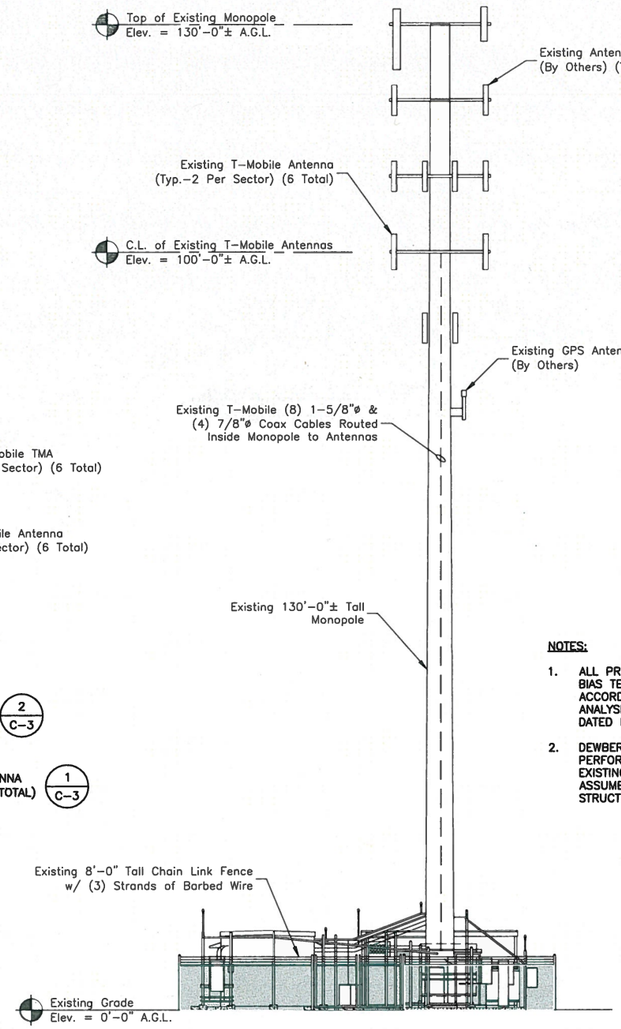


EXISTING ANTENNA LAYOUT (1)

SCALE: N.T.S.

PROPOSED ANTENNA LAYOUT (2)

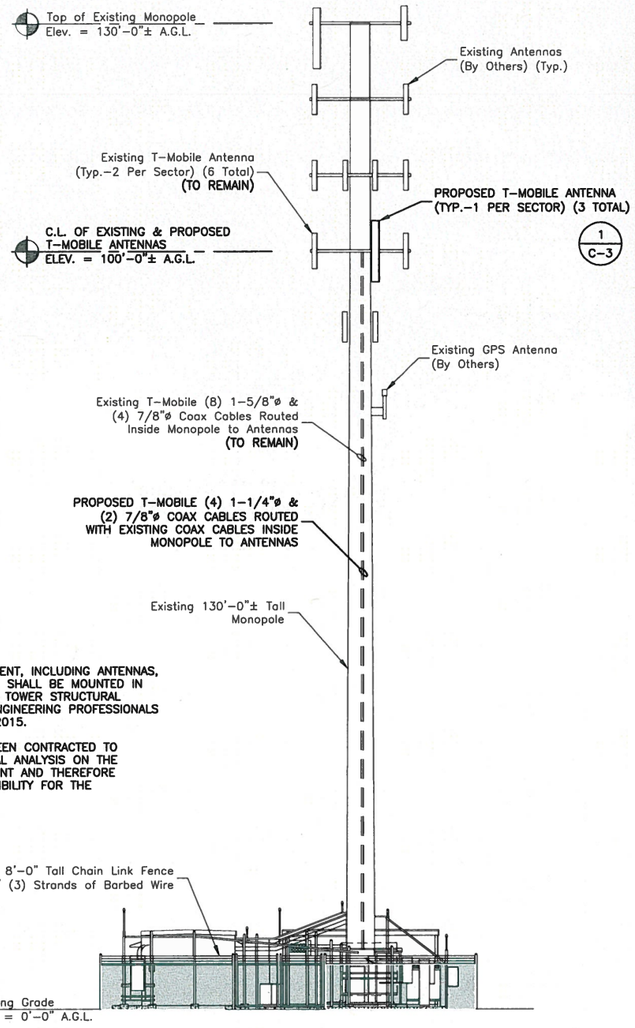
SCALE: N.T.S.



EXISTING ELEVATION (3)

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

0' 10' 20'



PROPOSED ELEVATION (4)

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

0' 10' 20'

NOTES:

1. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, BIAS TEES, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY TOWER ENGINEERING PROFESSIONALS DATED FEBRUARY 13, 2015.
2. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.

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

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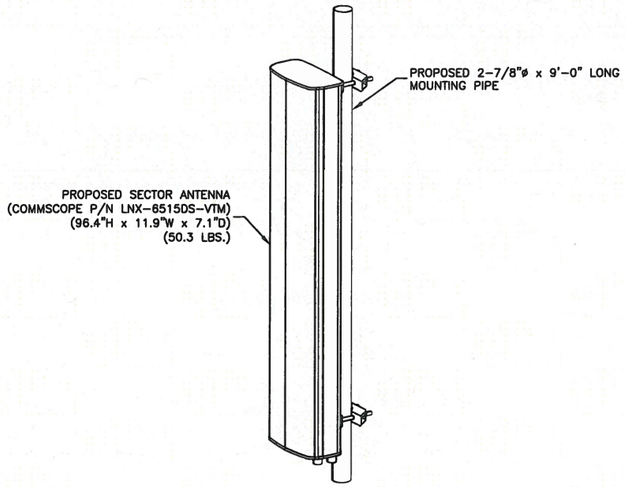
NEW HAVEN COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

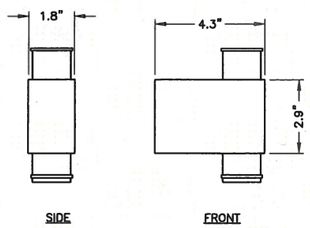
C-2



NOTES:

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

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

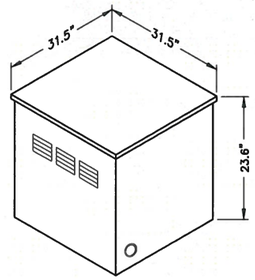


ANDREW ATBT-BOTTOM-24V

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.



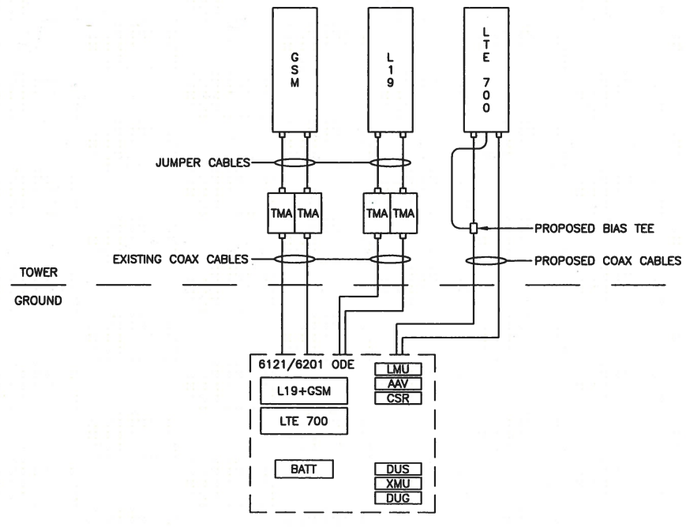
MATERIAL:	ANCHOR:
CONCRETE	3/8"ø HILTI KWIK BOLT 3 W/2-1/2" MIN. EMBED.
STRUCTURAL STEEL	1/2"ø STRUCTURAL BOLTS

ALCATEL-LUCENT EZ8Fo BATTERY BACKUP SYSTEM

NOTE:

1. CONTRACTOR SHALL ANCHOR CABINET IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

BBU CABINET DETAIL 3
SCALE: N.T.S.



SITE CONFIGURATION 704G 4
SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		COAX LENGTH
	EXISTING	PROPOSED	EXISTING	PROPOSED	
ALPHA	EMS RR90-17-02DP	EXISTING TO REMAIN	(4) 1-5/8"ø	(2) 1-1/4"ø	150'-0"
	-	COMMSCOPE LNX-6515DS-VTM			
	EMS RR90-17-02DP	EXISTING TO REMAIN			
BETA	EMS RR90-17-02DP	EXISTING TO REMAIN	(4) 1-5/8"ø	(2) 1-1/4"ø	150'-0"
	-	COMMSCOPE LNX-6515DS-VTM			
	EMS RR90-17-02DP	EXISTING TO REMAIN			
GAMMA	EMS RR90-17-02DP	EXISTING TO REMAIN	(4) 7/8"ø	(2) 7/8"ø	150'-0"
	-	COMMSCOPE LNX-6515DS-VTM			
	EMS RR90-17-02DP	EXISTING TO REMAIN			

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STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER

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

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NEW HAVEN COUNTY

SHEET TITLE

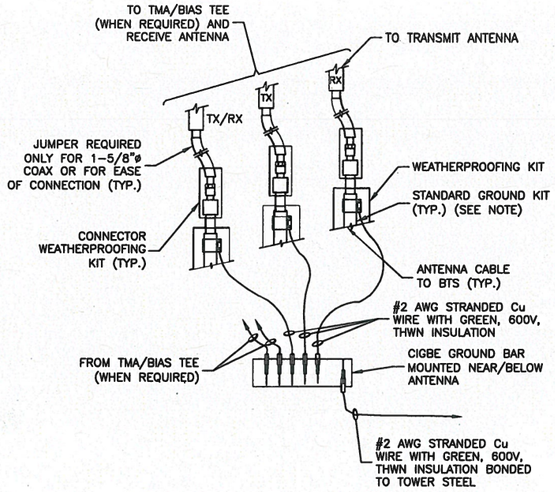
CONSTRUCTION DETAILS

SHEET NUMBER

C-3

GROUNDING NOTES:

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

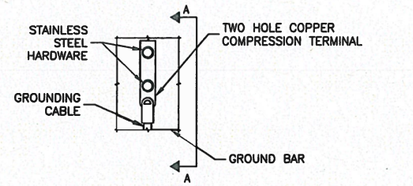


NOTE:

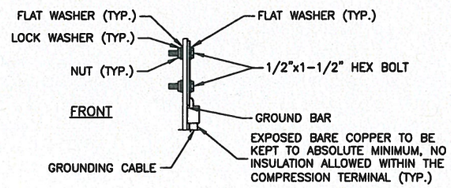
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) — 1

SCALE: N.T.S.



ELEVATION



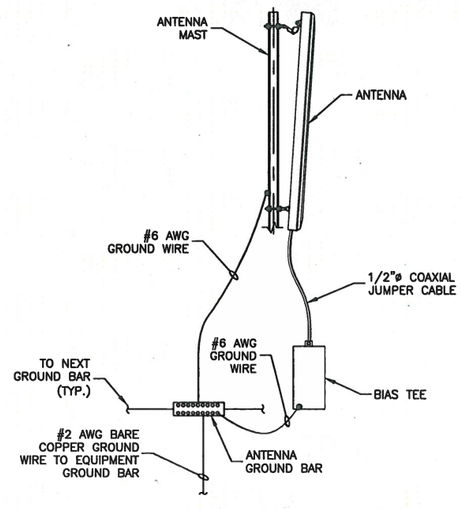
SECTION 'A-A'

NOTES:

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

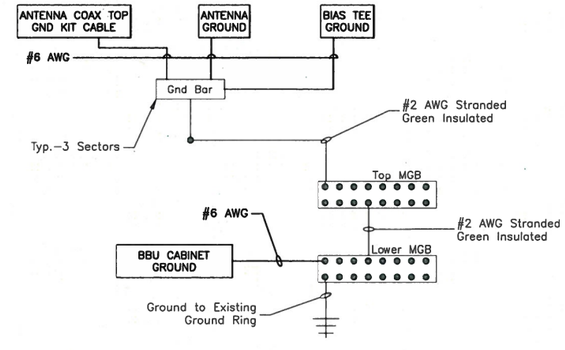
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL — 2

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.
4. VERIFY EXISTING GROUND SYSTEM IS INSTALLED PER T-MOBILE STANDARDS.

SCHEMATIC GROUNDING DIAGRAM — 4

SCALE: N.T.S.

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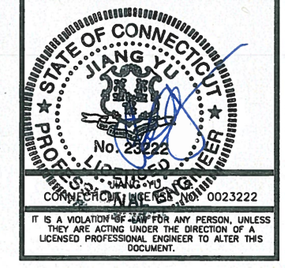

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VILLAGE ROAD
SOUTHBURY, CT 06488
NEW HAVEN COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

Date: **February 13, 2015**

Holly Haas
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6535

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
crown@tepgroup.net

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11124H
	Carrier Site Name:	Southbury-W/ I-84
Crown Castle Designation:	**Crown Castle BU Number:**	876314
	Crown Castle Site Name:	Horse Hill
	Crown Castle JDE Job Number:	322233
	Crown Castle Work Order Number:	1006813
	Crown Castle Application Number:	282506 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	25675.29504
Site Data:	**214 Russian Village Rd., Southbury, New Haven County, CT 06488** **Latitude *41° 27' 7.97"*, Longitude *-73° 15' 1.25"*** **130 Foot - Monopole Tower**	

Dear Holly Haas,

Tower Engineering Professionals 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 754677, in accordance with application 282506, revision 0.

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

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

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code with 2009 Amendment based upon a wind speed of 85 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Tables 1 and 2 and the attached drawing for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Travis L. Infante, E.I. / PRS

Respectfully submitted by:

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STATE OF CONNECTICUT GRAHAM M. ANDRES 29538 LICENSED PROFESSIONAL ENGINEER 2/13/15

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1) INTRODUCTION

This tower is a monopole tower that was originally 120' and was extended to 130', designed by Summit Manufacturing Inc. in January of 1998. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F for the appurtenances listed in Table 3. The tower has been modified per reinforcement drawings prepared by GPD Group in August of 2012. TEP visited the site in April of 2013 to perform a post modification inspection. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and ASCE 7-05 Minimum Design Loads for Buildings and Other Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch escalating 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
100.0	100.0	3	Commscope	LNX-6515DS-VTM w/ Mount Pipe	2	7/8	1
		3	Commscope	ATBT-Bottom-24V	4	1-1/4	

Notes:
1) See "Appendix B – Base Level Drawing" for assumed feed line configuration.

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
130.0	130.0	1	Andrew	SBNH-1D6565C w/ Mount Pipe	1 2 6	3/8 3/4 1-5/8	1
		3	Ericsson	RRUS-11			
		1	KMW Communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	Powerwave Technologies	7770.00 w/ Mount Pipe			
		6	Powerwave Technologies	LGP21401			
		1	Powerwave Technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	Raycap	DC6-48-60-18-8F			
		1	Tower Mounts	Platform Mount [LP 303-1]			
120.0	120.0	3	Alcatel Lucent	800 External Notch Filter	3	1-1/4	1
		9	RFS Celwave	ACU-A20-N			
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		1	Tower Mounts	Platform Mount [LP 1201-1]			
118.0	119.0	3	Alcatel Lucent	TME-1900MHz RRH (65MHz)	-	-	1
	118.0	1	Tower Mounts	Side Arm Mount [SO 102-3]			
	117.0	3	Alcatel Lucent	TME-800MHZ RRH w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
110.0	110.0	12	Decibel	DB844H90E-SX w/ Mount Pipe	12	7/8	2
		1	Tower Mounts	Platform Mount [LP 1201-1]			
100.0	100.0	-	-	-	1	1/2	3
		6	EMS Wireless	RR90-17-02DP w/ Mount Pipe	4 8	7/8 1-5/8	1
		6	RFS Celwave	ATMAP1412D-1A20			
		1	Tower Mounts	Platform Mount [LP 1201-1]			
90.0	90.0	2	RFS Celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
80.0	80.0	1	GPS	GPS_A	1	1/2	1
		1	Tower Mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing equipment
2) Abandoned equipment; to be removed
3) Existing equipment; to be removed

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)
120.0	120.0	12	Swedcom	ALPS 9212-N	-	-
110.0	110.0	12	Swedcom	ALPS 9212-N	-	-
100.0	100.0	12	Swedcom	ALPS 9212-N	-	-
80.0	80.0	1	Generic	1-GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Reports	Clarence Welti Assoc. Inc.	1529735	CCISites
Tower Foundation Drawing	Paul J Ford and Company	1611741	CCISites
Tower Manufacturer Drawing	Summit	1529812	CCISites
Tower Reinforcement Drawings	GPD Group	3797841	CCISites
Post Modification Inspection	Tower Engineering Professionals	3797830	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.

For analysis of monopole shaft reinforcements, the plates are modeled as linear appurtenances along the exterior of the pole. The loads calculated from tnxTower are then exported to a proprietary calculation sheet created by Tower Engineering Professionals, Inc. that analyzes each reinforcing element along each critical axis and presents percent capacities for each element and the pole shaft along each critical axis. The actual percent capacity of the tower structure including the reinforcing elements is reported in Table 5 - Section Capacity (Summary).

3.2) Assumptions

1) The tower and foundation were built in accordance with the manufacturer's specifications.
2) The tower and foundation 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 "Appendix B – Base Level Drawing".
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by the standard.
5) All tower components are in sufficient condition to carry their full design capacity.
6) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
7) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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	130.00-120.00	Pole	TP16.00×16.00×0.3750	1	Note 1	Note 1	17.5	Pass
L2	120.00-91.50	Pole	TP22.98×16.00×0.1875	2	Note 1	Note 1	49.9	Pass
L3	94.50-64.50	Pole	TP29.22×21.87×0.2500	3	Note 1	Note 1	86.4	Pass
L4	68.25-42.50	Pole	TP34.11×27.80×0.3125	4	Note 1	Note 1	62.5	Pass
L5	46.75-20.25	Pole	TP38.94×32.44×0.3438	5	Note 1	Note 1	92.6	Pass
L6	25.25-0.00	Pole	TP43.21×37.03×0.3750	6	Note 1	Note 1	74.3	Pass
M1	15.50-0.50	Mod (Ex)	(Aero) MP304	1	Note 1	Note 1	78.9	Pass
M2	42.67-12.67	Mod (Ex)	(Aero) MP304	2	Note 1	Note 1	76.9	Pass
M3	70.33-40.33	Mod (Ex)	(Aero) MP304	3	Note 1	Note 1	72.5	Pass
M4	88.17-68.17	Mod (Ex)	(Aero) MP303	4	Note 1	Note 1	85.0	Pass
M5	73.08-68.17	Mod (Ex)	(Aero) MP303	5	Note 1	Note 1	51.3	Pass
M6	89.50-79.50	Mod (Ex)	(Aero) MP303	6	Note 1	Note 1	66.5	Pass
M7	116.17-86.17	Mod (Ex)	(Aero) MP303	7	Note 1	Note 1	65.8	Pass
M8	97.67-87.67	Mod (Ex)	(Aero) MP303	8	Note 1	Note 1	56.1	Pass
M9	103.92-95.17	Mod (Ex)	(Aero) MP303	9	Note 1	Note 1	42.6	Pass
M10	109.42-103.92	Mod (Ex)	(Aero) MP303	10	Note 1	Note 1	38.6	Pass
M11	116.17-109.42	Mod (Ex)	(Aero) MP303	11	Note 1	Note 1	25.1	Pass
							Summary	
						Pole (L5)	92.6	Pass
						Mod (M4)	85.0	Pass
						RATING =	**92.6**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	120.0	42.7	Pass
1	Anchor Rods	-	60.8	Pass
1	Base Plate	-	81.0	Pass
1	Base Foundation Soil Interaction	-	82.3	Pass
1	Base Foundation Structural	-	32.3	Pass

Structure Rating (max from all components) =	92.6%

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

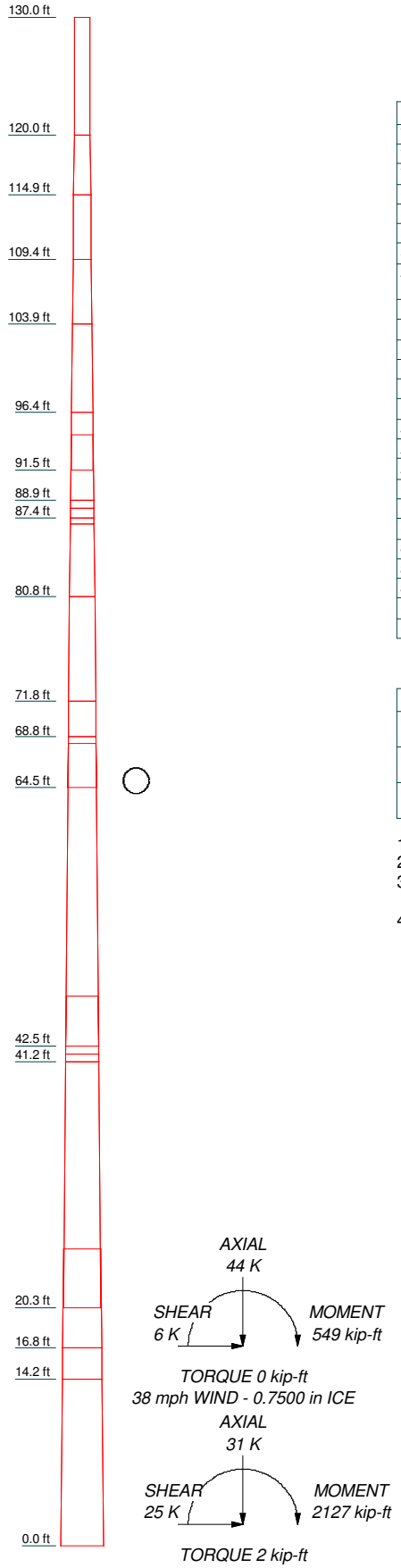
4.1) Recommendations

1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Length (ft)	10.00	5.08	5.50	5.50	7.50	5.92	5.84	0.67	4.92	0.67	6.17	8.92	3.01	4.33	25.75	0.67	4.92	20.92	8.42	2.67	14.17
Number of Sides	1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.3750	0.1875	0.4900	0.4115	0.4339	0.3825	0.3379	0.3379	0.3379	0.3379	0.4196	0.3196	0.6188	0.4616	0.4903	0.4903	0.4903	0.4970	0.5227	0.6682	0.5066
Socket Length (ft)						3.00								3.75	4.25			5.00			
Top Dia (in)	16.0000	16.0000	17.2450	18.5912	19.9382	21.7758	22.1702	22.1702	22.1702	22.1702	23.7282	25.2389	27.4234	28.1600	27.8013	33.4088	33.4088	33.8125	37.0268	39.0837	39.7409
Bot Dia (in)	16.0000	17.2450	18.5912	19.9382	21.7758	22.9800	23.3702	23.3702	23.3702	23.3702	25.2388	27.4234	28.1600	29.2200	34.1100	33.8450	33.8450	38.9400	39.0879	39.7409	43.2100
Grade	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=50%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%
Weight (K)	0.6	0.2	0.2	0.2	0.3	0.2	0.3	0.0	0.0	0.0	0.4	0.6	0.2	0.3	2.7	0.0	0.0	2.8	1.3	0.4	2.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
7770.00 w/ Mount Pipe	130	(2) 2.4-in x 6-ft Mount Pipe	120
7770.00 w/ Mount Pipe	130	Platform Mount [LP 1201-1]	120
7770.00 w/ Mount Pipe	130	TME-800MHZ RRH w/ Mount Pipe	118
(2) LGP21401	130	TME-800MHZ RRH w/ Mount Pipe	118
(2) LGP21401	130	TME-800MHZ RRH w/ Mount Pipe	118
(2) LGP21401	130	TME-1900MHz RRH (65MHz)	118
SBNH-1D6565C w/ Mount Pipe	130	TME-1900MHz RRH (65MHz)	118
AM-X-CD-16-65-00T-RET w/ Mount Pipe	130	TME-1900MHz RRH (65MHz)	118
		Side Arm Mount [SO 102-3]	118
P65-17-XLH-RR w/ Mount Pipe	130	(2) RR90-17-02DP w/ Mount Pipe	100
RRUS-11	130	(2) RR90-17-02DP w/ Mount Pipe	100
RRUS-11	130	(2) RR90-17-02DP w/ Mount Pipe	100
RRUS-11	130	(2) ATMAP1412D-1A20	100
DC6-48-60-18-8F	130	(2) ATMAP1412D-1A20	100
Platform Mount [LP 303-1]	130	(2) ATMAP1412D-1A20	100
APXVSPP18-C-A20 w/ Mount Pipe	120	LNX-6515DS-VTM w/ Mount Pipe	100
APXVSPP18-C-A20 w/ Mount Pipe	120	LNX-6515DS-VTM w/ Mount Pipe	100
APXVSPP18-C-A20 w/ Mount Pipe	120	LNX-6515DS-VTM w/ Mount Pipe	100
(3) ACU-A20-N	120	ATBT-BOTTOM-24V	100
(3) ACU-A20-N	120	ATBT-BOTTOM-24V	100
(3) ACU-A20-N	120	ATBT-BOTTOM-24V	100
800 EXTERNAL NOTCH FILTER	120	Platform Mount [LP 1201-1]	100
800 EXTERNAL NOTCH FILTER	120	APXV18-206517S-C w/ Mount Pipe	90
800 EXTERNAL NOTCH FILTER	120	APXV18-206517S-C w/ Mount Pipe	90
(2) 2.4-in x 6-ft Mount Pipe	120	Side Arm Mount [SO 701-1]	80
(2) 2.4-in x 6-ft Mount Pipe	120	GPS_A	80

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
MPRF-Fy=42ks Density=100%	42 ksi	58 ksi	MPRF-Fy=65ks Density=100%	65 ksi	80 ksi
MPRF-Fy=60ks Density=100%	60 ksi	75 ksi	MPRF-Fy=65ks Density=50%	65 ksi	80 ksi
MPRF-Fy=60ks Density=50%	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 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.

Tower Engineering Professionals

Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603-5263
Phone: (919) 661-6351
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Job:	***Horse Hill (BU 876314)***		
Project:	***TEP No. 25675.29504***		
Client: Crown Castle	Drawn by: PRS		App'd:
Code: TIA/EIA-222-F	Date: 02/13/15		Scale: NTS
Path: C:\Users\pstewart\Desktop\Structural TNX Files\876314\876314_LC5.eri			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 New Haven County, Connecticut.
Basic wind speed of 85 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 38 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	130.00-120.00	10.00	0.00	Round	16.0000	16.0000	0.3750		MPRF-Fy=42ksi, Density=100% (42 ksi)
L2	120.00-114.92	5.08	0.00	12	16.0000	17.2450	0.1875	0.7500	MPRF-Fy=60ksi, Density=100% (60 ksi)
L3	114.92-109.42	5.50	0.00	12	17.2450	18.5912	0.4900	1.9600	MPRF-Fy=60ks

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
									i, Density=50% (60 ksi)
L4	109.42-103.92	5.50	0.00	12	18.5912	19.9382	0.4115	1.6462	MPRF-Fy=60ksi, Density=50% (60 ksi)
L5	103.92-96.42	7.50	0.00	12	19.9382	21.7758	0.4339	1.7354	MPRF-Fy=60ksi, Density=50% (60 ksi)
L6	96.42-91.50	4.92	3.00	12	21.7758	22.9800	0.3825	1.5299	MPRF-Fy=60ksi, Density=50% (60 ksi)
L7	91.50-88.92	5.58	0.00	12	21.8703	23.2381	0.4379	1.7516	MPRF-Fy=65ksi, Density=100% (65 ksi)
L8	88.92-88.25	0.67	0.00	12	23.2381	23.4015	0.3336	1.3343	MPRF-Fy=65ksi, Density=100% (65 ksi)
L9	88.25-87.42	0.83	0.00	12	23.4015	23.6056	0.3875	1.5499	MPRF-Fy=65ksi, Density=100% (65 ksi)
L10	87.42-86.92	0.50	0.00	12	23.6056	23.7281	0.2513	1.0051	MPRF-Fy=65ksi, Density=100% (65 ksi)
L11	86.92-80.75	6.17	0.00	12	23.7281	25.2389	0.4196	1.6785	MPRF-Fy=65ksi, Density=100% (65 ksi)
L12	80.75-71.83	8.92	0.00	12	25.2389	27.4234	0.3196	1.2786	MPRF-Fy=65ksi, Density=100% (65 ksi)
L13	71.83-68.83	3.01	0.00	12	27.4234	28.1600	0.6188	2.4753	MPRF-Fy=65ksi, Density=50% (65 ksi)
L14	68.83-64.50	4.33	3.75	12	28.1600	29.2200	0.4616	1.8462	MPRF-Fy=65ksi, Density=100% (65 ksi)
L15	64.50-42.50	25.75	4.25	12	27.8013	34.1100	0.4903	1.9611	MPRF-Fy=65ksi, Density=100% (65 ksi)
L16	42.50-41.83	4.92	0.00	12	32.4438	33.6490	0.5189	2.0757	MPRF-Fy=65ksi, Density=100% (65 ksi)
L17	41.83-41.17	0.67	0.00	12	33.6490	33.8125	0.3438	1.3750	MPRF-Fy=65ksi, Density=100% (65 ksi)
L18	41.17-20.25	20.92	5.00	12	33.8125	38.9400	0.4970	1.9878	MPRF-Fy=65ksi, Density=100% (65 ksi)
L19	20.25-16.83	8.42	0.00	12	37.0268	39.0879	0.5227	2.0909	MPRF-Fy=60ksi, Density=100%

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
L20	16.83-14.17	2.67	0.00	12	39.0879	39.7409	0.6682	2.6729	(60 ksi) MPRF-Fy=60ksi, Density=100%
L21	14.17-0.00	14.17		12	39.7409	43.2100	0.5066	2.0266	(60 ksi) MPRF-Fy=60ksi, Density=100% (60 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	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
L2	16.5644	9.5468	304.6805	5.6609	8.2880	36.7616	617.3654	4.6986	3.7855	20.189
	17.8533	10.2984	382.4609	6.1066	8.9329	42.8149	774.9694	5.0686	4.1192	21.969
L3	17.8533	26.4366	947.2788	5.9983	8.9329	106.0439	1919.4438	13.0113	3.3084	6.752
	19.2470	28.5607	1194.4472	6.4802	9.6302	124.0310	2420.2738	14.0567	3.6692	7.488
L4	19.2470	24.0908	1016.2678	6.5083	9.6302	105.5290	2059.2340	11.8568	3.8795	9.427
	20.6415	25.8758	1259.3198	6.9905	10.3280	121.9328	2551.7234	12.7353	4.2405	10.304
L5	20.6415	27.2478	1323.0608	6.9826	10.3280	128.1045	2680.8799	13.4105	4.1807	9.636
	22.5440	29.8150	1733.3703	7.6404	11.2799	153.6691	3512.2781	14.6741	4.6732	10.771
L6	22.5440	26.3467	1539.1142	7.6588	11.2799	136.4476	3118.6626	12.9670	4.8109	12.579
	23.7906	27.8296	1813.9096	8.0899	11.9036	152.3828	3675.4727	13.6969	5.1336	13.423
L7	23.4027	30.2202	1771.8385	7.6728	11.3288	156.4013	3590.2252	14.8735	4.6877	10.705
	24.0579	32.1490	2133.2006	8.1625	12.0374	177.2151	4322.4428	15.8227	5.0543	11.542
L8	24.0579	24.6021	1647.4119	8.1998	12.0374	136.8583	3338.1031	12.1084	5.3338	15.99
	24.2270	24.7776	1682.9057	8.2583	12.1220	138.8312	3410.0232	12.1948	5.3776	16.121
L9	24.2270	28.7145	1941.2008	8.2390	12.1220	160.1392	3933.3990	14.1324	5.2331	13.505
	24.4383	28.9692	1993.3223	8.3121	12.2277	163.0168	4039.0115	14.2578	5.2878	13.647
L10	24.4383	18.8962	1315.5148	8.3609	12.2277	107.5847	2665.5896	9.3001	5.6529	22.497
	24.5652	18.9953	1336.3234	8.4047	12.2912	108.7223	2707.7536	9.3489	5.6857	22.627
L11	24.5652	31.4949	2184.0083	8.3444	12.2912	177.6893	4425.3930	15.5008	5.2345	12.474
	26.1292	33.5363	2636.8105	8.8853	13.0737	201.6874	5342.8930	16.5056	5.6394	13.439
L12	26.1292	25.6484	2032.8992	8.9211	13.0737	155.4948	4119.2049	12.6234	5.9074	18.481
	28.3908	27.8968	2615.7687	9.7031	14.2053	184.1401	5300.2566	13.7300	6.4928	20.313
L13	28.3908	53.4109	4898.1687	9.5960	14.2053	344.8123	9925.0178	26.2872	5.6910	9.197
	29.1534	54.8787	5313.1819	9.8597	14.5869	364.2438	10765.9470	27.0096	5.8884	9.516
L14	29.1534	41.1657	4031.1836	9.9160	14.5869	276.3568	8168.2708	20.2605	6.3099	13.671
	30.2508	42.7411	4511.9302	10.2955	15.1360	298.0934	9142.3939	21.0359	6.5940	14.286
L15	29.7332	43.1160	4104.8736	9.7773	14.4011	285.0396	8317.5868	21.2204	6.1368	12.517
	35.3133	53.0756	7657.1847	12.0359	17.6690	433.3688	15515.5322	26.1222	7.8275	15.965
L16	34.6668	53.3452	6939.6659	11.4291	16.8059	412.9312	14061.6446	26.2549	7.3042	14.075
	34.8360	55.3592	7755.7069	11.8606	17.4302	444.9580	15715.1650	27.2461	7.6272	14.698
L17	34.8360	36.8648	5219.4405	11.9233	17.4302	299.4481	10576.0016	18.1437	8.0967	23.554
	35.0052	37.0457	5296.6526	11.9818	17.5149	302.4092	10732.4541	18.2328	8.1405	23.681
L18	35.0052	53.3119	7552.7157	11.9269	17.5149	431.2177	15303.8496	26.2385	7.7299	15.554
	40.3137	61.5171	11604.2551	13.7626	20.1709	575.2963	23513.3668	30.2768	9.1041	18.319
L19	39.6005	61.4435	10450.6777	13.0685	19.1799	544.8771	21175.9063	30.2406	8.5223	16.303
	40.4667	64.9127	12322.6839	13.8063	20.2475	608.6024	24969.0984	31.9481	9.0746	17.36
L20	40.4667	82.6671	15574.8879	13.7542	20.2475	769.2248	31558.9454	40.6862	8.6847	12.997
	41.1428	84.0721	16382.6339	13.9880	20.5858	795.8231	33195.6578	41.3777	8.8597	13.259
L21	41.1428	64.0060	12575.8350	14.0459	20.5858	610.8993	25482.0512	31.5018	9.2928	18.342
	44.7343	69.6654	16215.3915	15.2878	22.3828	724.4583	32856.7795	34.2872	10.2225	20.177

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 130.00-120.00				1	1	1		
L2 120.00-114.92				1	1	1		
L3 114.92-109.42				1	1	0.778078		
L4 109.42-103.92				1	1	0.921669		
L5 103.92-96.42				1	1	0.874322		
L6 96.42-91.50				1	1	0.989229		
L7 91.50-88.92				1	1	0.575615		
L8 88.92-88.25				1	1	0.752169		
L9 88.25-87.42				1	1	0.649009		
L10 87.42-86.92				1	1	0.994975		
L11 86.92-80.75				1	1	0.59983		
L12 80.75-71.83				1	1	0.784125		
L13 71.83-68.83				1	1	0.818808		
L14 68.83-64.50				1	1	0.545762		
L15 64.50-42.50				1	1	0.640868		
L16 42.50-41.83				1	1	0.665919		
L17 41.83-41.17				1	1	1		
L18 41.17-20.25				1	1	0.694551		
L19 20.25-16.83				1	1	0.720133		
L20 16.83-14.17				1	1	0.565399		
L21 14.17-0.00				1	1	0.742452		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Step Pegs (5/8" SR) 7-in. w/30" step	C	No	CaAa (Out Of Face)	130.00 - 0.00	1	No Ice	0.03	0.49
						1/2" Ice	0.14	1.01
						1" Ice	0.23	2.07
						2" Ice	0.43	6.09
						4" Ice	0.83	21.46
Safety Line 3/8	C	No	CaAa (Out Of Face)	130.00 - 0.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
A								

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8")	A	No	Inside Pole	130.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
FB-L98B-002-75000(3/8")	A	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	130.00 - 0.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
2" Flexible Conduit	A	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.34
						1/2" Ice	0.00	0.34
						1" Ice	0.00	0.34
						2" Ice	0.00	0.34
						4" Ice	0.00	0.34
B								
LDF7-50A(1-5/8")	B	No	Inside Pole	100.00 - 0.00	8	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF5-50A(7/8")	B	No	Inside Pole	100.00 - 8.00	4	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
AVA6-50(1-1/4")	B	No	Inside Pole	100.00 - 0.00	4	No Ice	0.00	0.45
						1/2" Ice	0.00	0.45
						1" Ice	0.00	0.45
						2" Ice	0.00	0.45
						4" Ice	0.00	0.45
LDF5-50A(7/8")	B	No	Inside Pole	100.00 - 0.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
C								
HB114-21U3M12-XXX F(1-1/4")	C	No	CaAa (Out Of Face)	116.17 - 0.00	3	No Ice	0.00	1.22
						1/2" Ice	0.00	2.47
						1" Ice	0.00	4.32
						2" Ice	0.00	9.87
						4" Ice	0.00	28.29
HB114-21U3M12-XXX F(1-1/4")	C	No	CaAa (Out Of Face)	120.00 - 116.17	2	No Ice	0.00	1.22
						1/2" Ice	0.00	2.47
						1" Ice	0.00	4.32
						2" Ice	0.00	9.87
						4" Ice	0.00	28.29
HB114-21U3M12-XXX F(1-1/4")	C	No	CaAa (Out Of Face)	120.00 - 116.17	1	No Ice	0.15	1.22
						1/2" Ice	0.25	2.47
						1" Ice	0.35	4.32
						2" Ice	0.55	9.87
						4" Ice	0.95	28.29
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	90.00 - 0.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						4" Ice	0.00	30.04
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	90.00 - 0.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF4-50A(1/2")	C	No	Inside Pole	80.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
****								
Aero MP3-04	A	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.27	14.10
						1/2" Ice	0.38	15.30
						1" Ice	0.49	16.85
						2" Ice	0.71	20.99
						4" Ice	1.16	33.40
Aero MP3-04	B	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.27	14.10
						1/2" Ice	0.38	15.30
						1" Ice	0.49	16.85
						2" Ice	0.71	20.99
						4" Ice	1.16	33.40
Aero MP3-04	B	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
Aero MP3-04	C	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
***								
Aero MP3-04	A	No	CaAa (Out Of Face)	42.67 - 15.50	1	No Ice	0.27	14.10
						1/2" Ice	0.38	15.30
						1" Ice	0.49	16.85
						2" Ice	0.71	20.99
						4" Ice	1.16	33.40
Aero MP3-04	B	No	CaAa (Out Of Face)	42.67 - 15.50	1	No Ice	0.27	14.10
						1/2" Ice	0.38	15.30
						1" Ice	0.49	16.85
						2" Ice	0.71	20.99
						4" Ice	1.16	33.40
Aero MP3-04	A	No	CaAa (Out Of Face)	15.50 - 12.67	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
Aero MP3-04	B	No	CaAa (Out Of Face)	15.50 - 12.67	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
Aero MP3-04	C	No	CaAa (Out Of Face)	42.67 - 12.67	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
Aero MP3-04	C	No	CaAa (Out Of Face)	42.67 - 12.67	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
***								
Aero MP3-04	A	No	CaAa (Out Of Face)	70.33 - 42.67	1	No Ice	0.27	14.10
						1/2" Ice	0.38	15.30
						1" Ice	0.49	16.85
						2" Ice	0.71	20.99
						4" Ice	1.16	33.40
Aero MP3-04	B	No	CaAa (Out Of Face)	70.33 - 42.67	1	No Ice	0.27	14.10
						1/2" Ice	0.38	15.30
						1" Ice	0.49	16.85
						2" Ice	0.71	20.99
						4" Ice	1.16	33.40
Aero MP3-04	A	No	CaAa (Out Of Face)	42.67 - 40.33	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
Aero MP3-04	B	No	CaAa (Out Of Face)	42.67 - 40.33	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
Aero MP3-04	B	No	CaAa (Out Of Face)	70.33 - 40.33	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
Aero MP3-04	C	No	CaAa (Out Of Face)	70.33 - 40.33	1	No Ice	0.00	14.10
						1/2" Ice	0.00	15.30
						1" Ice	0.00	16.85
						2" Ice	0.00	20.99
						4" Ice	0.00	33.40
***								
Aero MP3-03	A	No	CaAa (Out Of Face)	88.17 - 70.33	1	No Ice	0.26	9.90
						1/2" Ice	0.37	11.06
						1" Ice	0.48	12.57
						2" Ice	0.71	16.63
						4" Ice	1.15	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	88.17 - 70.33	1	No Ice	0.26	9.90
						1/2" Ice	0.37	11.06
						1" Ice	0.48	12.57
						2" Ice	0.71	16.63
						4" Ice	1.15	28.88
Aero MP3-03	A	No	CaAa (Out Of Face)	70.33 - 68.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	70.33 - 68.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	73.17 - 68.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	89.50 - 79.50	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	C	No	CaAa (Out Of Face)	88.17 - 68.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
***								
Aero MP3-03	A	No	CaAa (Out Of Face)	116.17 - 88.17	1	No Ice	0.26	9.90
						1/2" Ice	0.37	11.06
						1" Ice	0.48	12.57
						2" Ice	0.71	16.63
						4" Ice	1.15	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	116.17 - 88.17	1	No Ice	0.26	9.90
						1/2" Ice	0.37	11.06
						1" Ice	0.48	12.57
						2" Ice	0.71	16.63
						4" Ice	1.15	28.88
Aero MP3-03	A	No	CaAa (Out Of Face)	88.17 - 86.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	88.17 - 86.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	C	No	CaAa (Out Of Face)	116.67 - 86.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
**								
Aero MP3-03	B	No	CaAa (Out Of Face)	97.67 - 87.67	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	105.17 - 95.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	105.17 - 95.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	110.83 - 102.83	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of Face)	116.17 - 108.17	1	No Ice	0.00	9.90
						1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88
Aero MP3-03	B	No	CaAa (Out Of	116.17 - 108.17	1	No Ice	0.00	9.90

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
			Face)			1/2" Ice	0.00	11.06
						1" Ice	0.00	12.57
						2" Ice	0.00	16.63
						4" Ice	0.00	28.88

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	130.00-120.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.725	0.01
L2	120.00-114.92	A	0.000	0.000	0.000	0.328	0.05
		B	0.000	0.000	0.000	0.328	0.04
		C	0.000	0.000	0.000	0.958	0.04
L3	114.92-109.42	A	0.000	0.000	0.000	1.438	0.09
		B	0.000	0.000	0.000	1.438	0.18
		C	0.000	0.000	0.000	0.399	0.08
L4	109.42-103.92	A	0.000	0.000	0.000	1.439	0.09
		B	0.000	0.000	0.000	1.439	0.16
		C	0.000	0.000	0.000	0.399	0.08
L5	103.92-96.42	A	0.000	0.000	0.000	1.963	0.12
		B	0.000	0.000	0.000	1.963	0.28
		C	0.000	0.000	0.000	0.544	0.11
L6	96.42-91.50	A	0.000	0.000	0.000	1.287	0.08
		B	0.000	0.000	0.000	1.287	0.17
		C	0.000	0.000	0.000	0.356	0.07
L7	91.50-88.92	A	0.000	0.000	0.000	0.676	0.04
		B	0.000	0.000	0.000	0.676	0.08
		C	0.000	0.000	0.000	0.187	0.04
L8	88.92-88.25	A	0.000	0.000	0.000	0.174	0.01
		B	0.000	0.000	0.000	0.174	0.03
		C	0.000	0.000	0.000	0.048	0.01
L9	88.25-87.42	A	0.000	0.000	0.000	0.218	0.02
		B	0.000	0.000	0.000	0.218	0.04
		C	0.000	0.000	0.000	0.060	0.02
L10	87.42-86.92	A	0.000	0.000	0.000	0.131	0.01
		B	0.000	0.000	0.000	0.131	0.02
		C	0.000	0.000	0.000	0.036	0.01
L11	86.92-80.75	A	0.000	0.000	0.000	1.614	0.11
		B	0.000	0.000	0.000	1.614	0.19
		C	0.000	0.000	0.000	0.447	0.13
L12	80.75-71.83	A	0.000	0.000	0.000	2.333	0.15
		B	0.000	0.000	0.000	2.333	0.21
		C	0.000	0.000	0.000	0.646	0.17
L13	71.83-68.83	A	0.000	0.000	0.000	0.797	0.07
		B	0.000	0.000	0.000	0.797	0.13
		C	0.000	0.000	0.000	0.218	0.08
L14	68.83-64.50	A	0.000	0.000	0.000	1.161	0.10
		B	0.000	0.000	0.000	1.161	0.18
		C	0.000	0.000	0.000	0.314	0.11
L15	64.50-42.50	A	0.000	0.000	0.000	5.903	0.46
		B	0.000	0.000	0.000	5.903	0.85
		C	0.000	0.000	0.000	1.595	0.52
L16	42.50-41.83	A	0.000	0.000	0.000	0.179	0.02
		B	0.000	0.000	0.000	0.179	0.04
		C	0.000	0.000	0.000	0.048	0.03

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L17	41.83-41.17	A	0.000	0.000	0.000	0.179	0.02
		B	0.000	0.000	0.000	0.179	0.04
		C	0.000	0.000	0.000	0.048	0.03
L18	41.17-20.25	A	0.000	0.000	0.000	5.613	0.44
		B	0.000	0.000	0.000	5.613	0.53
		C	0.000	0.000	0.000	1.516	0.80
L19	20.25-16.83	A	0.000	0.000	0.000	0.917	0.07
		B	0.000	0.000	0.000	0.917	0.08
		C	0.000	0.000	0.000	0.248	0.13
L20	16.83-14.17	A	0.000	0.000	0.000	0.716	0.07
		B	0.000	0.000	0.000	0.716	0.10
		C	0.000	0.000	0.000	0.193	0.12
L21	14.17-0.00	A	0.000	0.000	0.000	3.667	0.31
		B	0.000	0.000	0.000	3.667	0.54
		C	0.000	0.000	0.000	1.027	0.37

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	130.00-120.00	A	0.880	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.245	0.03
L2	120.00-114.92	A	0.873	0.000	0.000	0.000	0.571	0.05
		B		0.000	0.000	0.000	0.571	0.05
		C		0.000	0.000	0.000	3.403	0.10
L3	114.92-109.42	A	0.869	0.000	0.000	0.000	2.499	0.10
		B		0.000	0.000	0.000	2.499	0.22
		C		0.000	0.000	0.000	2.308	0.15
L4	109.42-103.92	A	0.863	0.000	0.000	0.000	2.494	0.10
		B		0.000	0.000	0.000	2.494	0.19
		C		0.000	0.000	0.000	2.298	0.15
L5	103.92-96.42	A	0.857	0.000	0.000	0.000	3.392	0.14
		B		0.000	0.000	0.000	3.392	0.34
		C		0.000	0.000	0.000	3.116	0.20
L6	96.42-91.50	A	0.850	0.000	0.000	0.000	2.216	0.09
		B		0.000	0.000	0.000	2.216	0.20
		C		0.000	0.000	0.000	2.029	0.13
L7	91.50-88.92	A	0.846	0.000	0.000	0.000	1.164	0.05
		B		0.000	0.000	0.000	1.164	0.10
		C		0.000	0.000	0.000	1.066	0.09
L8	88.92-88.25	A	0.844	0.000	0.000	0.000	0.300	0.01
		B		0.000	0.000	0.000	0.300	0.03
		C		0.000	0.000	0.000	0.273	0.03
L9	88.25-87.42	A	0.843	0.000	0.000	0.000	0.374	0.02
		B		0.000	0.000	0.000	0.374	0.04
		C		0.000	0.000	0.000	0.342	0.05
L10	87.42-86.92	A	0.843	0.000	0.000	0.000	0.224	0.02
		B		0.000	0.000	0.000	0.224	0.02
		C		0.000	0.000	0.000	0.205	0.03
L11	86.92-80.75	A	0.839	0.000	0.000	0.000	2.763	0.12
		B		0.000	0.000	0.000	2.763	0.22
		C		0.000	0.000	0.000	2.516	0.31
L12	80.75-71.83	A	0.829	0.000	0.000	0.000	3.976	0.17
		B		0.000	0.000	0.000	3.976	0.23
		C		0.000	0.000	0.000	3.604	0.43
L13	71.83-68.83	A	0.821	0.000	0.000	0.000	1.346	0.08

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	1.346	0.15
		C		0.000	0.000	0.000	1.206	0.17
L14	68.83-64.50	A	0.816	0.000	0.000	0.000	1.946	0.11
		B		0.000	0.000	0.000	1.946	0.20
		C		0.000	0.000	0.000	1.726	0.23
L15	64.50-42.50	A	0.794	0.000	0.000	0.000	9.893	0.50
		B		0.000	0.000	0.000	9.893	0.95
		C		0.000	0.000	0.000	8.776	1.15
L16	42.50-41.83	A	0.772	0.000	0.000	0.000	0.297	0.03
		B		0.000	0.000	0.000	0.297	0.04
		C		0.000	0.000	0.000	0.260	0.06
L17	41.83-41.17	A	0.771	0.000	0.000	0.000	0.293	0.03
		B		0.000	0.000	0.000	0.293	0.04
		C		0.000	0.000	0.000	0.254	0.06
L18	41.17-20.25	A	0.750	0.000	0.000	0.000	9.099	0.49
		B		0.000	0.000	0.000	9.099	0.58
		C		0.000	0.000	0.000	7.791	1.38
L19	20.25-16.83	A	0.750	0.000	0.000	0.000	1.486	0.08
		B		0.000	0.000	0.000	1.486	0.09
		C		0.000	0.000	0.000	1.273	0.22
L20	16.83-14.17	A	0.750	0.000	0.000	0.000	1.160	0.08
		B		0.000	0.000	0.000	1.160	0.11
		C		0.000	0.000	0.000	0.993	0.20
L21	14.17-0.00	A	0.750	0.000	0.000	0.000	5.945	0.34
		B		0.000	0.000	0.000	5.945	0.60
		C		0.000	0.000	0.000	5.277	0.74

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	130.00-120.00	-0.0893	0.0516	-0.3861	0.2229
L2	120.00-114.92	-0.1280	0.0739	-0.4094	0.2363
L3	114.92-109.42	0.1756	-0.1014	0.0227	-0.0131
L4	109.42-103.92	0.1792	-0.1035	0.0242	-0.0140
L5	103.92-96.42	0.1830	-0.1057	0.0260	-0.0150
L6	96.42-91.50	0.1862	-0.1075	0.0277	-0.0160
L7	91.50-88.92	0.1873	-0.1081	0.0280	-0.0162
L8	88.92-88.25	0.1881	-0.1086	0.0291	-0.0168
L9	88.25-87.42	0.1884	-0.1088	0.0293	-0.0169
L10	87.42-86.92	0.1887	-0.1090	0.0295	-0.0170
L11	86.92-80.75	0.1902	-0.1098	0.0305	-0.0176
L12	80.75-71.83	0.1933	-0.1116	0.0328	-0.0189
L13	71.83-68.83	0.1985	-0.1146	0.0373	-0.0216
L14	68.83-64.50	0.2027	-0.1171	0.0412	-0.0238
L15	64.50-42.50	0.2064	-0.1191	0.0426	-0.0246
L16	42.50-41.83	0.2089	-0.1206	0.0472	-0.0272
L17	41.83-41.17	0.2091	-0.1207	0.0511	-0.0295
L18	41.17-20.25	0.2118	-0.1223	0.0560	-0.0323
L19	20.25-16.83	0.2139	-0.1235	0.0570	-0.0329
L20	16.83-14.17	0.2146	-0.1239	0.0573	-0.0331
L21	14.17-0.00	0.2064	-0.1191	0.0436	-0.0252

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
130									
7770.00 w/ Mount Pipe	A	From Centroid-Face	4.00 -6.00 0.00	-10.0000	130.00	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
7770.00 w/ Mount Pipe	B	From Centroid-Face	4.00 -6.00 0.00	-10.0000	130.00	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
7770.00 w/ Mount Pipe	C	From Centroid-Face	4.00 -6.00 0.00	-10.0000	130.00	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) LGP21401	A	From Centroid-Face	4.00 -6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
(2) LGP21401	B	From Centroid-Face	4.00 -6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
(2) LGP21401	C	From Centroid-Face	4.00 -6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
SBNH-1D6565C w/ Mount Pipe	B	From Centroid-Face	4.00 6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.69 12.42 13.16 14.63 17.92	9.85 11.38 12.94 15.31 20.19	0.10 0.19 0.29 0.52 1.17
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Centroid-Face	4.00 6.00 0.00	-10.0000	130.00	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
P65-17-XLH-RR w/ Mount Pipe	A	From Centroid-Face	4.00 6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.70 12.42 13.15 14.64 17.91	8.94 10.45 11.99 14.31 19.14	0.09 0.18 0.27 0.50 1.13
RRUS-11	A	From Centroid-Face	4.00 6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
RRUS-11	B	From	4.00	-10.0000	130.00	No Ice	2.94	1.25	0.06

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
		Centroid-Face	6.00 0.00			1/2" Ice 1" Ice 2" Ice 4" Ice	3.17 3.41 3.91 5.02	1.41 1.59 1.96 2.82	0.07 0.10 0.15 0.30
RRUS-11	C	From Centroid-Face	4.00 6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
DC6-48-60-18-8F	B	From Centroid-Face	4.00 6.00 0.00	-10.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.27 1.46 1.66 2.09 3.10	1.27 1.46 1.66 2.09 3.10	0.02 0.04 0.05 0.10 0.21
Platform Mount [LP 303-1]	C	None		0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	14.66 18.87 23.08 31.50 48.34	14.66 18.87 23.08 31.50 48.34	1.25 1.48 1.71 2.18 3.10
120									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	120.00	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/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	40.0000	120.00	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/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	30.0000	120.00	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
(3) ACU-A20-N	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
(3) ACU-A20-N	B	From Centroid-Leg	4.00 0.00 0.00	40.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
(3) ACU-A20-N	C	From Centroid-Leg	4.00 0.00 0.00	30.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	0.00 0.00 0.00 0.01 0.04
800 EXTERNAL NOTCH FILTER	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	0.01 0.02 0.02 0.04 0.11
800 EXTERNAL NOTCH FILTER	B	From Centroid-Le	4.00 0.00	40.0000	120.00	No Ice 1/2" Ice	0.77 0.89	0.37 0.46	0.01 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		g	0.00			1" Ice	1.02	0.56	0.02
						2" Ice	1.30	0.79	0.04
						4" Ice	1.97	1.34	0.11
800 EXTERNAL NOTCH FILTER	C	From Centroid-Le g	4.00 0.00 0.00	30.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	0.01 0.02 0.02 0.04 0.11
(2) 2.4-in x 6-ft Mount Pipe	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.44 1.93 2.30 3.07 4.71	1.44 1.93 2.30 3.07 4.71	0.02 0.03 0.05 0.09 0.23
(2) 2.4-in x 6-ft Mount Pipe	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.44 1.93 2.30 3.07 4.71	1.44 1.93 2.30 3.07 4.71	0.02 0.03 0.05 0.09 0.23
(2) 2.4-in x 6-ft Mount Pipe	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.44 1.93 2.30 3.07 4.71	1.44 1.93 2.30 3.07 4.71	0.02 0.03 0.05 0.09 0.23
Platform Mount [LP 1201-1]	C	None		0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.10 26.80 30.50 37.90 52.70	23.10 26.80 30.50 37.90 52.70	2.10 2.50 2.90 3.70 5.30
118									
TME-800MHZ RRH w/ Mount Pipe	A	From Leg	1.00 0.00 -1.00	30.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.55 2.79 3.04 3.58 4.79	2.41 2.74 3.11 3.92 5.77	0.06 0.09 0.12 0.19 0.41
TME-800MHZ RRH w/ Mount Pipe	B	From Leg	1.00 0.00 -1.00	40.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.55 2.79 3.04 3.58 4.79	2.41 2.74 3.11 3.92 5.77	0.06 0.09 0.12 0.19 0.41
TME-800MHZ RRH w/ Mount Pipe	C	From Leg	1.00 0.00 -1.00	30.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.55 2.79 3.04 3.58 4.79	2.41 2.74 3.11 3.92 5.77	0.06 0.09 0.12 0.19 0.41
TME-1900MHz RRH (65MHz)	A	From Leg	1.00 0.00 1.00	30.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
TME-1900MHz RRH (65MHz)	B	From Leg	1.00 0.00 1.00	40.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
TME-1900MHz RRH (65MHz)	C	From Leg	1.00 0.00 1.00	30.0000	118.00	No Ice 1/2" Ice 1" Ice	2.70 2.94 3.18	2.77 3.01 3.26	0.06 0.08 0.11

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	3.70	3.78	0.18
						4" Ice	4.85	4.93	0.35
Side Arm Mount [SO 102-3]	C	None		0.0000	118.00	No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
						2" Ice	4.92	4.92	0.20
						4" Ice	6.84	6.84	0.32
110									
100									
(2) RR90-17-02DP w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	100.00	No Ice	4.59	3.32	0.03
						1/2" Ice	5.09	4.09	0.07
						1" Ice	5.58	4.78	0.12
						2" Ice	6.59	6.23	0.22
						4" Ice	8.73	9.31	0.56
(2) RR90-17-02DP w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	100.00	No Ice	4.59	3.32	0.03
						1/2" Ice	5.09	4.09	0.07
						1" Ice	5.58	4.78	0.12
						2" Ice	6.59	6.23	0.22
						4" Ice	8.73	9.31	0.56
(2) RR90-17-02DP w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	100.00	No Ice	4.59	3.32	0.03
						1/2" Ice	5.09	4.09	0.07
						1" Ice	5.58	4.78	0.12
						2" Ice	6.59	6.23	0.22
						4" Ice	8.73	9.31	0.56
(2) ATMAP1412D-1A20	A	From Centroid-Face	4.00 0.00 0.00	0.0000	100.00	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
(2) ATMAP1412D-1A20	B	From Centroid-Face	4.00 0.00 0.00	0.0000	100.00	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
(2) ATMAP1412D-1A20	C	From Centroid-Face	4.00 0.00 0.00	0.0000	100.00	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
LNX-6515DS-VTM w/ Mount Pipe	A	From Centroid-Face	4.00 -2.00 0.00	0.0000	100.00	No Ice	11.68	9.84	0.08
						1/2" Ice	12.40	11.37	0.17
						1" Ice	13.14	12.91	0.27
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
LNX-6515DS-VTM w/ Mount Pipe	B	From Centroid-Face	4.00 -2.00 0.00	0.0000	100.00	No Ice	11.68	9.84	0.08
						1/2" Ice	12.40	11.37	0.17
						1" Ice	13.14	12.91	0.27
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
LNX-6515DS-VTM w/ Mount Pipe	C	From Centroid-Face	4.00 -2.00 0.00	0.0000	100.00	No Ice	11.68	9.84	0.08
						1/2" Ice	12.40	11.37	0.17
						1" Ice	13.14	12.91	0.27
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
ATBT-BOTTOM-24V	A	From Centroid-Face	4.00 -2.00 0.00	0.0000	100.00	No Ice	0.12	0.08	0.00
						1/2" Ice	0.17	0.12	0.00
						1" Ice	0.23	0.17	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 Centroid-Face	4.00 -2.00 0.00	0.0000	100.00	No Ice	0.12	0.08	0.00
						1/2" Ice	0.17	0.12	0.00
						1" Ice	0.23	0.17	0.01
						2" Ice	0.38	0.30	0.01
						4" Ice	0.77	0.67	0.04
ATBT-BOTTOM-24V	C	From Centroid-Face	4.00 -2.00 0.00	0.0000	100.00	No Ice	0.12	0.08	0.00
						1/2" Ice	0.17	0.12	0.00
						1" Ice	0.23	0.17	0.01
						2" Ice	0.38	0.30	0.01
						4" Ice	0.77	0.67	0.04
Platform Mount [LP 1201-1]	C	None		0.0000	100.00	No Ice	23.10	23.10	2.10
						1/2" Ice	26.80	26.80	2.50
						1" Ice	30.50	30.50	2.90
						2" Ice	37.90	37.90	3.70
						4" Ice	52.70	52.70	5.30
90									
APXV18-206517S-C w/ Mount Pipe	B	From Face	0.50 0.00 0.00	30.0000	90.00	No Ice	5.40	4.70	0.05
						1/2" Ice	5.96	5.86	0.10
						1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68
APXV18-206517S-C w/ Mount Pipe	C	From Face	0.50 0.00 0.00	0.0000	90.00	No Ice	5.40	4.70	0.05
						1/2" Ice	5.96	5.86	0.10
						1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68
80									
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00	0.0000	80.00	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
GPS_A	A	From Leg	3.00 0.00 0.00	0.0000	80.00	No Ice	0.30	0.30	0.00
						1/2" Ice	0.37	0.37	0.00
						1" Ice	0.46	0.46	0.01
						2" Ice	0.65	0.65	0.02
						4" Ice	1.15	1.15	0.08
****									

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

Comb. No.	Description
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	130 - 120	Pole	Max Tension	14	0.00	0.00	0.00
			Max. Compression	14	-4.20	-0.73	0.01
			Max. Mx	5	-2.32	-37.00	-0.22
			Max. My	8	-2.32	-0.38	-36.53
			Max. Vy	5	3.89	-37.00	-0.22
			Max. Vx	8	3.88	-0.38	-36.53
			Max. Torque	7			1.41
L2	120 - 114.917	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-9.22	-0.71	-0.04
			Max. Mx	5	-5.24	-74.76	-0.27
			Max. My	8	-5.24	-0.43	-74.33
			Max. Vy	5	7.97	-74.76	-0.27
			Max. Vx	8	7.97	-0.43	-74.33
			Max. Torque	7			1.45
L3	114.917 - 109.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-10.00	-0.76	-0.13
			Max. Mx	5	-5.76	-120.11	-0.37
			Max. My	8	-5.76	-0.55	-119.69
			Max. Vy	5	8.52	-120.11	-0.37
			Max. Vx	8	8.52	-0.55	-119.69

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	7			1.46
L4	109.42 - 103.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-10.78	-0.80	-0.22
			Max. Mx	5	-6.29	-168.53	-0.46
			Max. My	8	-6.29	-0.66	-168.13
			Max. Vy	5	9.08	-168.53	-0.46
			Max. Vx	8	9.08	-0.66	-168.13
			Max. Torque	7			1.47
L5	103.92 - 96.4167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.26	-0.88	-0.37
			Max. Mx	5	-9.43	-253.29	-0.61
			Max. My	8	-9.43	-0.84	-252.91
			Max. Vy	5	13.67	-253.29	-0.61
			Max. Vx	8	13.67	-0.84	-252.91
			Max. Torque	7			1.48
L6	96.4167 - 91.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.56	-0.89	-0.40
			Max. Mx	5	-9.64	-279.69	-0.64
			Max. My	8	-9.64	-0.88	-279.32
			Max. Vy	5	13.87	-279.69	-0.64
			Max. Vx	8	13.88	-0.88	-279.32
			Max. Torque	7			1.48
L7	91.5 - 88.9167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.02	-1.05	-0.60
			Max. Mx	5	-10.57	-359.42	-0.76
			Max. My	8	-10.57	-1.02	-359.06
			Max. Vy	5	14.92	-359.42	-0.76
			Max. Vx	8	14.92	-1.02	-359.06
			Max. Torque	8			1.73
L8	88.9167 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.15	-1.04	-0.62
			Max. Mx	5	-10.67	-369.39	-0.78
			Max. My	8	-10.67	-1.03	-369.03
			Max. Vy	5	14.99	-369.39	-0.78
			Max. Vx	8	14.99	-1.03	-369.03
			Max. Torque	8			1.73
L9	88.25 - 87.4167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.35	-1.03	-0.64
			Max. Mx	5	-10.81	-381.92	-0.79
			Max. My	8	-10.81	-1.05	-381.57
			Max. Vy	5	15.08	-381.92	-0.79
			Max. Vx	8	15.08	-1.05	-381.57
			Max. Torque	8			1.73
L10	87.4167 - 86.9167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.46	-1.02	-0.65
			Max. Mx	5	-10.90	-389.47	-0.80
			Max. My	8	-10.90	-1.05	-389.12
			Max. Vy	5	15.13	-389.47	-0.80
			Max. Vx	8	15.13	-1.05	-389.12
			Max. Torque	8			1.73
L11	86.9167 - 80.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.69	-0.89	-0.81
			Max. Mx	5	-11.77	-484.77	-0.91
			Max. My	8	-11.78	-1.12	-484.50
			Max. Vy	5	15.79	-484.77	-0.91

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	8	15.80	-1.12	-484.50
			Max. Torque	8			1.74
L12	80.75 - 71.8333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.50	-0.61	-0.74
			Max. Mx	5	-13.11	-630.31	-0.88
			Max. My	8	-13.11	-1.14	-629.76
			Max. Vy	5	16.82	-630.31	-0.88
			Max. Vx	8	16.79	-1.14	-629.76
			Max. Torque	7			1.79
L13	71.8333 - 68.8267	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.22	-0.56	-0.84
			Max. Mx	5	-13.64	-681.40	-0.95
			Max. My	8	-13.64	-1.19	-680.79
			Max. Vy	5	17.16	-681.40	-0.95
			Max. Vx	8	17.13	-1.19	-680.79
			Max. Torque	7			1.79
L14	68.8267 - 64.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.35	-0.55	-0.86
			Max. Mx	5	-13.74	-691.32	-0.97
			Max. My	8	-13.75	-1.20	-690.69
			Max. Vy	5	17.23	-691.32	-0.97
			Max. Vx	8	17.20	-1.20	-690.69
			Max. Torque	7			1.79
L15	64.5 - 42.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.23	-0.09	-1.59
			Max. Mx	5	-18.25	-1087.81	-1.47
			Max. My	8	-18.25	-1.51	-1086.78
			Max. Vy	5	19.65	-1087.81	-1.47
			Max. Vx	8	19.62	-1.51	-1086.78
			Max. Torque	7			1.84
L16	42.5 - 41.8333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30.25	0.03	-1.76
			Max. Mx	5	-19.81	-1185.94	-1.59
			Max. My	8	-19.81	-1.56	-1184.83
			Max. Vy	5	20.27	-1185.94	-1.59
			Max. Vx	8	20.24	-1.56	-1184.83
			Max. Torque	7			1.85
L17	41.8333 - 41.1667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30.47	0.06	-1.79
			Max. Mx	5	-20.00	-1199.46	-1.61
			Max. My	8	-20.00	-1.56	-1198.36
			Max. Vy	5	20.34	-1199.46	-1.61
			Max. Vx	8	20.31	-1.56	-1198.36
			Max. Torque	7			1.85
L18	41.1667 - 20.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.01	1.08	-2.39
			Max. Mx	5	-23.69	-1535.36	-2.02
			Max. My	8	-23.69	-1.21	-1534.57
			Max. Vy	5	21.97	-1535.36	-2.02
			Max. Vx	8	21.94	-1.21	-1534.57
			Max. Torque	7			1.89
L19	20.25 - 16.8333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.49	1.63	-2.72
			Max. Mx	5	-26.49	-1724.11	-2.24
			Max. My	8	-26.50	-1.01	-1723.49
			Max. Vy	5	22.94	-1724.11	-2.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	8	22.91	-1.01	-1723.49
			Max. Torque	7			1.91
L20	16.8333 - 14.1667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-39.41	1.79	-2.84
			Max. Mx	11	-27.25	1785.60	-0.37
			Max. My	8	-27.25	-0.97	-1785.03
			Max. Vy	5	23.24	-1785.59	-2.33
			Max. Vx	8	23.21	-0.97	-1785.03
			Max. Torque	7			1.92
L21	14.1667 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-44.04	2.20	-3.46
			Max. Mx	5	-31.08	-2125.76	-2.73
			Max. My	8	-31.08	-1.13	-2125.03
			Max. Vy	5	24.81	-2125.76	-2.73
			Max. Vx	8	24.79	-1.13	-2125.03
			Max. Torque	7			1.95

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	44.04	-0.00	-0.00
	Max. H_x	11	31.09	24.80	0.01
	Max. H_z	2	31.09	0.01	24.78
	Max. M_x	2	2121.74	0.01	24.78
	Max. M_z	5	2125.76	-24.80	-0.01
	Max. Torsion	7	1.95	-12.41	-21.46
	Min. Vert	1	31.09	0.00	0.00
	Min. H_x	5	31.09	-24.80	-0.01
	Min. H_z	8	31.09	-0.01	-24.78
	Min. M_x	8	-2125.03	-0.01	-24.78
	Min. M_z	11	-2125.65	24.80	0.01
	Min. Torsion	13	-1.95	12.41	21.46

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	31.09	0.00	0.00	1.61	-0.03	-0.00
Dead+Wind 0 deg - No Ice	31.09	-0.01	-24.78	-2121.74	1.04	1.90
Dead+Wind 30 deg - No Ice	31.09	12.40	-21.45	-1836.72	-1061.97	1.34
Dead+Wind 60 deg - No Ice	31.09	21.48	-12.38	-1059.11	-1840.43	0.42
Dead+Wind 90 deg - No Ice	31.09	24.80	0.01	2.73	-2125.76	-0.61
Dead+Wind 120 deg - No Ice	31.09	21.48	12.39	1064.28	-1841.50	-1.48
Dead+Wind 150 deg - No Ice	31.09	12.41	21.46	1841.09	-1063.83	-1.95
Dead+Wind 180 deg - No Ice	31.09	0.01	24.78	2125.03	-1.13	-1.90
Dead+Wind 210 deg - No Ice	31.09	-12.40	21.45	1840.01	1061.87	-1.34
Dead+Wind 240 deg - No Ice	31.09	-21.48	12.38	1062.40	1840.32	-0.42
Dead+Wind 270 deg - No Ice	31.09	-24.80	-0.01	0.57	2125.65	0.61
Dead+Wind 300 deg - No Ice	31.09	-21.48	-12.39	-1060.98	1841.40	1.48

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg - No Ice	31.09	-12.41	-21.46	-1837.79	1063.75	1.95
Dead+Ice+Temp	44.04	0.00	0.00	3.46	2.20	-0.00
Dead+Wind 0 deg+Ice+Temp	44.04	-0.00	-6.15	-541.24	2.72	0.39
Dead+Wind 30 deg+Ice+Temp	44.04	3.08	-5.33	-468.00	-269.92	0.27
Dead+Wind 60 deg+Ice+Temp	44.04	5.33	-3.07	-268.41	-469.64	0.09
Dead+Wind 90 deg+Ice+Temp	44.04	6.16	0.00	4.06	-542.92	-0.12
Dead+Wind 120 deg+Ice+Temp	44.04	5.34	3.08	276.39	-470.13	-0.30
Dead+Wind 150 deg+Ice+Temp	44.04	3.08	5.33	475.62	-270.77	-0.40
Dead+Wind 180 deg+Ice+Temp	44.04	0.00	6.15	548.37	1.74	-0.39
Dead+Wind 210 deg+Ice+Temp	44.04	-3.08	5.33	475.14	274.38	-0.27
Dead+Wind 240 deg+Ice+Temp	44.04	-5.33	3.07	275.55	474.09	-0.09
Dead+Wind 270 deg+Ice+Temp	44.04	-6.16	-0.00	3.08	547.37	0.12
Dead+Wind 300 deg+Ice+Temp	44.04	-5.34	-3.08	-269.26	474.58	0.30
Dead+Wind 330 deg+Ice+Temp	44.04	-3.08	-5.33	-468.49	275.22	0.40
Dead+Wind 0 deg - Service	31.09	-0.00	-8.57	-733.72	0.32	0.66
Dead+Wind 30 deg - Service	31.09	4.29	-7.42	-635.01	-367.82	0.47
Dead+Wind 60 deg - Service	31.09	7.43	-4.28	-365.71	-637.41	0.15
Dead+Wind 90 deg - Service	31.09	8.58	0.00	2.02	-736.23	-0.21
Dead+Wind 120 deg - Service	31.09	7.43	4.29	369.66	-637.79	-0.52
Dead+Wind 150 deg - Service	31.09	4.29	7.43	638.68	-368.47	-0.68
Dead+Wind 180 deg - Service	31.09	0.00	8.57	737.01	-0.43	-0.66
Dead+Wind 210 deg - Service	31.09	-4.29	7.42	638.31	367.70	-0.47
Dead+Wind 240 deg - Service	31.09	-7.43	4.28	369.01	637.30	-0.15
Dead+Wind 270 deg - Service	31.09	-8.58	-0.00	1.27	736.11	0.21
Dead+Wind 300 deg - Service	31.09	-7.43	-4.29	-366.36	637.67	0.52
Dead+Wind 330 deg - Service	31.09	-4.29	-7.43	-635.39	368.35	0.68

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-31.09	0.00	0.00	31.09	0.00	0.000%
2	-0.01	-31.09	-24.78	0.01	31.09	24.78	0.000%
3	12.40	-31.09	-21.45	-12.40	31.09	21.45	0.000%
4	21.48	-31.09	-12.38	-21.48	31.09	12.38	0.000%
5	24.80	-31.09	0.01	-24.80	31.09	-0.01	0.000%
6	21.48	-31.09	12.39	-21.48	31.09	-12.39	0.000%
7	12.41	-31.09	21.46	-12.41	31.09	-21.46	0.000%
8	0.01	-31.09	24.78	-0.01	31.09	-24.78	0.000%
9	-12.40	-31.09	21.45	12.40	31.09	-21.45	0.000%
10	-21.48	-31.09	12.38	21.48	31.09	-12.38	0.000%
11	-24.80	-31.09	-0.01	24.80	31.09	0.01	0.000%
12	-21.48	-31.09	-12.39	21.48	31.09	12.39	0.000%
13	-12.41	-31.09	-21.46	12.41	31.09	21.46	0.000%
14	0.00	-44.04	0.00	-0.00	44.04	-0.00	0.000%
15	-0.00	-44.04	-6.15	0.00	44.04	6.15	0.000%
16	3.08	-44.04	-5.33	-3.08	44.04	5.33	0.000%
17	5.33	-44.04	-3.07	-5.33	44.04	3.07	0.000%
18	6.16	-44.04	0.00	-6.16	44.04	-0.00	0.000%
19	5.34	-44.04	3.08	-5.34	44.04	-3.08	0.000%
20	3.08	-44.04	5.33	-3.08	44.04	-5.33	0.000%
21	0.00	-44.04	6.15	-0.00	44.04	-6.15	0.000%
22	-3.08	-44.04	5.33	3.08	44.04	-5.33	0.000%
23	-5.33	-44.04	3.07	5.33	44.04	-3.07	0.000%
24	-6.16	-44.04	-0.00	6.16	44.04	0.00	0.000%
25	-5.34	-44.04	-3.08	5.34	44.04	3.08	0.000%
26	-3.08	-44.04	-5.33	3.08	44.04	5.33	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
27	-0.00	-31.09	-8.57	0.00	31.09	8.57	0.000%
28	4.29	-31.09	-7.42	-4.29	31.09	7.42	0.000%
29	7.43	-31.09	-4.28	-7.43	31.09	4.28	0.000%
30	8.58	-31.09	0.00	-8.58	31.09	-0.00	0.000%
31	7.43	-31.09	4.29	-7.43	31.09	-4.29	0.000%
32	4.29	-31.09	7.43	-4.29	31.09	-7.43	0.000%
33	0.00	-31.09	8.57	-0.00	31.09	-8.57	0.000%
34	-4.29	-31.09	7.42	4.29	31.09	-7.42	0.000%
35	-7.43	-31.09	4.28	7.43	31.09	-4.28	0.000%
36	-8.58	-31.09	-0.00	8.58	31.09	0.00	0.000%
37	-7.43	-31.09	-4.29	7.43	31.09	4.29	0.000%
38	-4.29	-31.09	-7.43	4.29	31.09	7.43	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	0.00012497
3	Yes	6	0.00000001	0.00004447
4	Yes	6	0.00000001	0.00004155
5	Yes	4	0.00000001	0.00083697
6	Yes	6	0.00000001	0.00004054
7	Yes	6	0.00000001	0.00004562
8	Yes	5	0.00000001	0.00012848
9	Yes	6	0.00000001	0.00004036
10	Yes	6	0.00000001	0.00004300
11	Yes	4	0.00000001	0.00091289
12	Yes	6	0.00000001	0.00004455
13	Yes	6	0.00000001	0.00003975
14	Yes	4	0.00000001	0.00002512
15	Yes	5	0.00000001	0.00031086
16	Yes	5	0.00000001	0.00036841
17	Yes	5	0.00000001	0.00036555
18	Yes	5	0.00000001	0.00031198
19	Yes	5	0.00000001	0.00036992
20	Yes	5	0.00000001	0.00037507
21	Yes	5	0.00000001	0.00031449
22	Yes	5	0.00000001	0.00036795
23	Yes	5	0.00000001	0.00036994
24	Yes	5	0.00000001	0.00031110
25	Yes	5	0.00000001	0.00036882
26	Yes	5	0.00000001	0.00036472
27	Yes	4	0.00000001	0.00054020
28	Yes	5	0.00000001	0.00008553
29	Yes	5	0.00000001	0.00007381
30	Yes	4	0.00000001	0.00019531
31	Yes	5	0.00000001	0.00007115
32	Yes	5	0.00000001	0.00009073
33	Yes	4	0.00000001	0.00054718
34	Yes	5	0.00000001	0.00007008
35	Yes	5	0.00000001	0.00007935
36	Yes	4	0.00000001	0.00019793
37	Yes	5	0.00000001	0.00008549
38	Yes	5	0.00000001	0.00006849

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	130 - 120 (1)	TP16x16x0.375	10.00	0.00	0.0	25.200	18.4078	-2.32	463.88	0.005
L2	120 - 114.917 (2)	TP17.245x16x0.1875	5.08	0.00	0.0	36.000	10.2984	-5.24	370.74	0.014
L3	114.917 - 109.42 (3)	TP18.5912x17.245x0.49	5.50	0.00	0.0	36.000	28.5607	-5.76	1028.18	0.006
L4	109.42 - 103.92 (4)	TP19.9382x18.5912x0.4115	5.50	0.00	0.0	36.000	25.8758	-6.29	931.53	0.007
L5	103.92 - 96.4167 (5)	TP21.7758x19.9382x0.4339	7.50	0.00	0.0	36.000	29.8150	-9.43	1073.34	0.009
L6	96.4167 - 91.5 (6)	TP22.98x21.7758x0.3825	4.92	0.00	0.0	36.000	26.9248	-9.64	969.29	0.010
L7	91.5 - 88.9167 (7)	TP23.2381x21.8703x0.4379	5.58	0.00	0.0	39.000	32.1490	-10.57	1253.81	0.008
L8	88.9167 - 88.25 (8)	TP23.4015x23.2381x0.3336	0.67	0.00	0.0	39.000	24.7776	-10.67	966.33	0.011
L9	88.25 - 87.4167 (9)	TP23.6056x23.4015x0.3875	0.83	0.00	0.0	39.000	28.9692	-10.81	1129.80	0.010
L10	87.4167 - 86.9167 (10)	TP23.7281x23.6056x0.2513	0.50	0.00	0.0	39.000	18.9953	-10.90	740.82	0.015
L11	86.9167 - 80.75 (11)	TP25.2389x23.7281x0.4196	6.17	0.00	0.0	39.000	33.5363	-11.77	1307.92	0.009
L12	80.75 - 71.8333 (12)	TP27.4234x25.2389x0.3196	8.92	0.00	0.0	39.000	27.8968	-13.11	1087.98	0.012
L13	71.8333 - 68.8267 (13)	TP28.16x27.4234x0.6188	3.01	0.00	0.0	39.000	54.8787	-13.64	2140.27	0.006
L14	68.8267 - 64.5 (14)	TP29.22x28.16x0.4616	4.33	0.00	0.0	39.000	41.3757	-13.74	1613.65	0.009
L15	64.5 - 42.5 (15)	TP34.11x27.8013x0.4903	25.75	0.00	0.0	39.000	51.4318	-18.25	2005.84	0.009
L16	42.5 - 41.8333 (16)	TP33.649x32.4438x0.5189	4.92	0.00	0.0	39.000	55.3592	-19.81	2159.01	0.009
L17	41.8333 - 41.1667 (17)	TP33.8125x33.649x0.3438	0.67	0.00	0.0	39.000	37.0457	-20.00	1444.78	0.014
L18	41.1667 - 20.25 (18)	TP38.94x33.8125x0.497	20.92	0.00	0.0	39.000	59.5557	-23.69	2322.67	0.010
L19	20.25 - 16.8333 (19)	TP39.0879x37.0268x0.5227	8.42	0.00	0.0	36.000	64.9127	-26.49	2336.86	0.011
L20	16.8333 - 14.1667 (20)	TP39.7409x39.0879x0.6682	2.67	0.00	0.0	36.000	84.0721	-27.25	3026.60	0.009
L21	14.1667 - 0 (21)	TP43.21x39.7409x0.5066	14.17	0.00	0.0	36.000	69.6654	-31.08	2507.96	0.012

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	130 - 120 (1)	TP16x16x0.375	37.07	6.331	27.720	0.228	0.00	0.000	27.720	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 $\frac{f_{by}}{F_{by}}$
L2	120 - 114.917 (2)	TP17.245x16x0.1875	74.88	20.986	36.000	0.583	0.00	0.000	36.000	0.000
L3	114.917 - 109.42 (3)	TP18.5912x17.245x0.49	120.29	11.638	36.000	0.323	0.00	0.000	36.000	0.000
L4	109.42 - 103.92 (4)	TP19.9382x18.5912x0.4115	168.77	16.610	36.000	0.461	0.00	0.000	36.000	0.000
L5	103.92 - 96.4167 (5)	TP21.7758x19.9382x0.4339	253.62	19.805	36.000	0.550	0.00	0.000	36.000	0.000
L6	96.4167 - 91.5 (6)	TP22.98x21.7758x0.3825	280.04	23.573	36.000	0.655	0.00	0.000	36.000	0.000
L7	91.5 - 88.9167 (7)	TP23.2381x21.8703x0.4379	359.85	24.367	39.000	0.625	0.00	0.000	39.000	0.000
L8	88.9167 - 88.25 (8)	TP23.4015x23.2381x0.3336	369.83	31.966	39.000	0.820	0.00	0.000	39.000	0.000
L9	88.25 - 87.4167 (9)	TP23.6056x23.4015x0.3875	382.37	28.147	39.000	0.722	0.00	0.000	39.000	0.000
L10	87.4167 - 86.9167 (10)	TP23.7281x23.6056x0.2513	389.92	43.037	39.000	1.104	0.00	0.000	39.000	0.000
L11	86.9167 - 80.75 (11)	TP25.2389x23.7281x0.4196	485.30	28.874	39.000	0.740	0.00	0.000	39.000	0.000
L12	80.75 - 71.8333 (12)	TP27.4234x25.2389x0.3196	630.80	41.108	39.000	1.054	0.00	0.000	39.000	0.000
L13	71.8333 - 68.8267 (13)	TP28.16x27.4234x0.6188	681.91	22.465	39.000	0.576	0.00	0.000	39.000	0.000
L14	68.8267 - 64.5 (14)	TP29.22x28.16x0.4616	691.83	29.734	39.000	0.762	0.00	0.000	39.000	0.000
L15	64.5 - 42.5 (15)	TP34.11x27.8013x0.4903	1088.47	32.112	39.000	0.823	0.00	0.000	39.000	0.000
L16	42.5 - 41.8333 (16)	TP33.649x32.4438x0.5189	1186.63	32.002	39.000	0.821	0.00	0.000	39.000	0.000
L17	41.8333 - 41.1667 (17)	TP33.8125x33.649x0.3438	1200.16	47.624	39.000	1.221	0.00	0.000	39.000	0.000
L18	41.1667 - 20.25 (18)	TP38.94x33.8125x0.497	1536.25	34.204	39.000	0.877	0.00	0.000	39.000	0.000
L19	20.25 - 16.8333 (19)	TP39.0879x37.0268x0.5227	1725.11	34.015	36.000	0.945	0.00	0.000	36.000	0.000
L20	16.8333 - 14.1667 (20)	TP39.7409x39.0879x0.6682	1786.63	26.940	36.000	0.748	0.00	0.000	36.000	0.000
L21	14.1667 - 0 (21)	TP43.21x39.7409x0.5066	2126.93	35.231	36.000	0.979	0.00	0.000	36.000	0.000

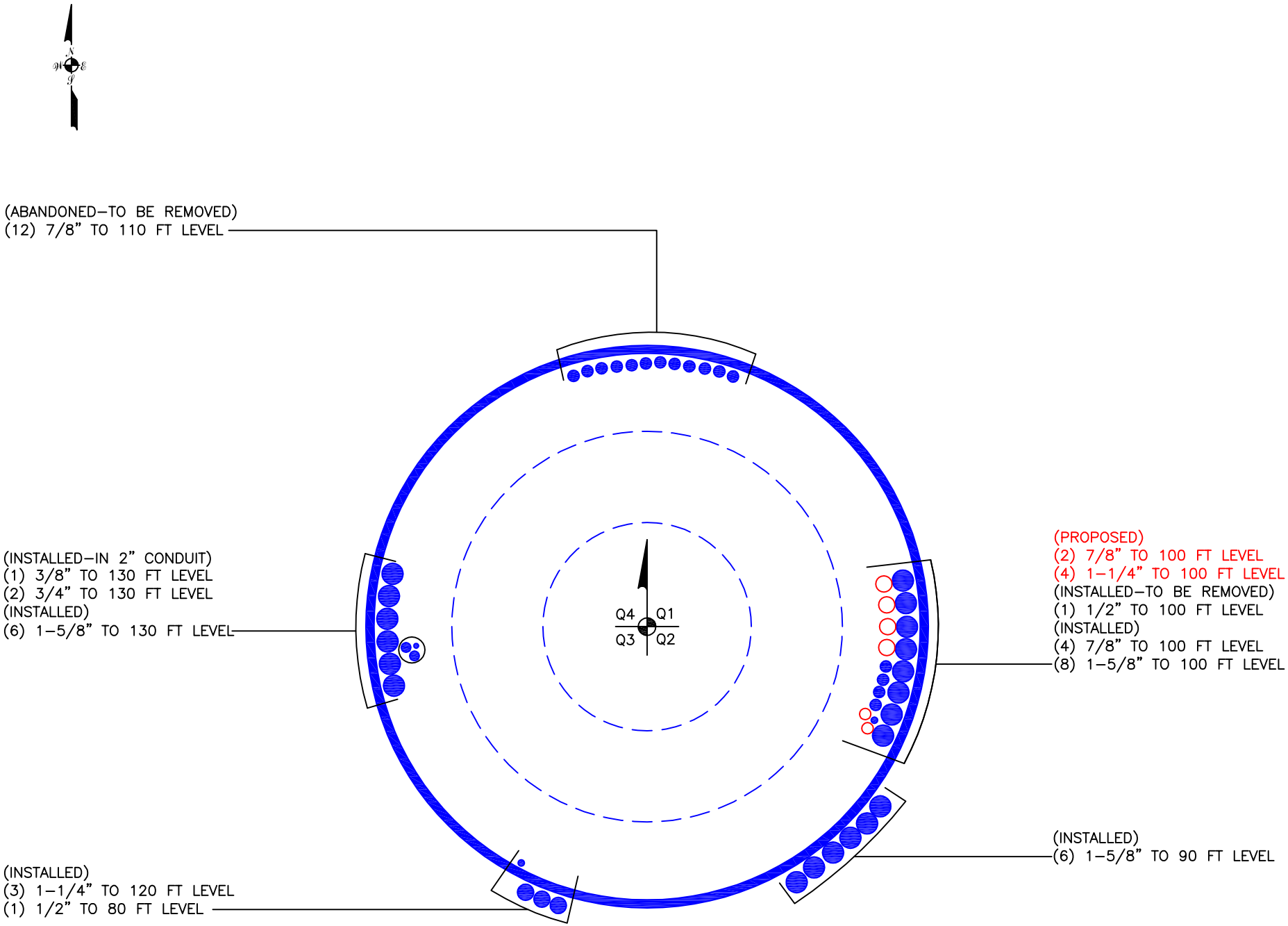
Pole Shear Design Data

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	130 - 120 (1)	TP16x16x0.375	3.90	0.212	16.800	0.025	1.05	0.087	16.800	0.005
L2	120 - 114.917 (2)	TP17.245x16x0.1875	7.98	0.775	24.000	0.066	1.06	0.141	24.000	0.006
L3	114.917 - 109.42 (3)	TP18.5912x17.245x0.49	8.53	0.299	24.000	0.025	1.07	0.048	24.000	0.002
L4	109.42 - 103.92 (4)	TP19.9382x18.5912x0.4115	9.09	0.351	24.000	0.030	1.08	0.050	24.000	0.002
L5	103.92 - 96.4167 (5)	TP21.7758x19.9382x0.4339	13.68	0.459	24.000	0.039	1.09	0.040	24.000	0.002
L6	96.4167 - 91.5 (6)	TP22.98x21.7758x0.3825	13.88	0.516	24.000	0.044	1.09	0.043	24.000	0.002

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 $\frac{f_{vt}}{F_{vt}}$
L7	91.5 - 88.9167 (7)	TP23.2381x21.8703x0.4379	14.92	0.464	26.000	0.036	1.12	0.035	26.000	0.001
L8	88.9167 - 88.25 (8)	TP23.4015x23.2381x0.3336	14.99	0.605	26.000	0.047	1.12	0.046	26.000	0.002
L9	88.25 - 87.4167 (9)	TP23.6056x23.4015x0.3875	15.08	0.521	26.000	0.041	1.12	0.039	26.000	0.001
L10	87.4167 - 86.9167 (10)	TP23.7281x23.6056x0.2513	15.13	0.797	26.000	0.062	1.12	0.058	26.000	0.002
L11	86.9167 - 80.75 (11)	TP25.2389x23.7281x0.4196	15.80	0.471	26.000	0.037	1.13	0.032	26.000	0.001
L12	80.75 - 71.8333 (12)	TP27.4234x25.2389x0.3196	16.82	0.603	26.000	0.047	1.34	0.041	26.000	0.002
L13	71.8333 - 68.8267 (13)	TP28.16x27.4234x0.6188	17.16	0.313	26.000	0.024	1.34	0.021	26.000	0.001
L14	68.8267 - 64.5 (14)	TP29.22x28.16x0.4616	17.22	0.416	26.000	0.033	1.34	0.027	26.000	0.001
L15	64.5 - 42.5 (15)	TP34.11x27.8013x0.4903	19.65	0.382	26.000	0.030	1.38	0.019	26.000	0.001
L16	42.5 - 41.8333 (16)	TP33.649x32.4438x0.5189	20.26	0.366	26.000	0.029	1.39	0.018	26.000	0.001
L17	41.8333 - 41.1667 (17)	TP33.8125x33.649x0.3438	20.33	0.549	26.000	0.043	1.40	0.026	26.000	0.001
L18	41.1667 - 20.25 (18)	TP38.94x33.8125x0.497	21.97	0.369	26.000	0.029	1.43	0.015	26.000	0.001
L19	20.25 - 16.8333 (19)	TP39.0879x37.0268x0.5227	22.94	0.353	24.000	0.030	1.45	0.013	24.000	0.001
L20	16.8333 - 14.1667 (20)	TP39.7409x39.0879x0.6682	23.24	0.276	24.000	0.023	1.45	0.010	24.000	0.000
L21	14.1667 - 0 (21)	TP43.21x39.7409x0.5066	24.81	0.356	24.000	0.030	1.48	0.012	24.000	0.000

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876314 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Mod #	Modification Type	Termination Length (ft)	Bot. Elevation (ft)	Top Elevation (ft)	Termination Length (ft)	Modification Location (° or Flat/Point #)	Location (F/P)	Lateral Offset (in)
1	(Aero) MP304	-0.50	0.50	15.50	-1.33	3 6 9 12	Flats	0.00
2	(Aero) MP304		12.67	42.67		1 4 7 10	Flats	0.00
3	(Aero) MP304		40.33	70.33	-1.50	3 6 9 12	Flats	0.00
4	(Aero) MP303	0.66	68.17	88.17		1 4 10	Flats	0.00
5	(Aero) MP303	0.66	68.17	73.08		7	Flats	0.00
6	(Aero) MP303		79.50	89.50		7	Flats	0.00
7	(Aero) MP303		86.17	116.17		3 9 12	Flats	0.00
8	(Aero) MP303		87.67	97.67		6	Flats	0.00
9	(Aero) MP303		95.17	103.92	0.00	5 7	Flats	0.00
10	(Aero) MP303	0.00	103.92	109.42	0.00	6	Flats	0.00
11	(Aero) MP303	0.00	109.42	116.17		5 7	Flats	0.00

MODIFICATION PROPERTIES

#	Modification	Default Termination (ft)	Stitch (in)	k	Drill Hole (in)	Bolt/Weld Capacity (k)	A_G (in^2)	F_Y (ksi)	F_U (ksi)
1	(Aero) MP304	1.50	18.00	0.80	1.2188	30.0	4.13	65.0	80.0
4	(Aero) MP303	1.25	18.00	0.80	1.2188	30.0	2.92	65.0	80.0

Pole (L5)	92.6%	Pass
Mod (M4)	85.0%	Pass

Horse Hill (BU 876314)

TEP #: 25675.29504

Analysis: TLI 2/13/2015

Check: PRS 2/13/2015

Monopole Reinforcement_v1.3.8 - TIA-222-F - Capacities

Section No.	*Elevation (ft)*	*Type*	*Size*	*Critical Element*	*P (k)*	*Pa (k)*	*% Capacity*	*Pass/Fail*
L1	130.00-120.00	Pole	TP16.00×16.00×0.3750	1	Note 1	Note 1	17.5	Pass
L2	120.00-91.50	Pole	TP22.98×16.00×0.1875	2	Note 1	Note 1	49.9	Pass
L3	94.50-64.50	Pole	TP29.22×21.87×0.2500	3	Note 1	Note 1	86.4	Pass
L4	68.25-42.50	Pole	TP34.11×27.80×0.3125	4	Note 1	Note 1	62.5	Pass
L5	46.75-20.25	Pole	TP38.94×32.44×0.3438	5	Note 1	Note 1	92.6	Pass
L6	25.25-0.00	Pole	TP43.21×37.03×0.3750	6	Note 1	Note 1	74.3	Pass
M1	15.50-0.50	Mod (Ex)	(Aero) MP304	1	Note 1	Note 1	78.9	Pass
M2	42.67-12.67	Mod (Ex)	(Aero) MP304	2	Note 1	Note 1	76.9	Pass
M3	70.33-40.33	Mod (Ex)	(Aero) MP304	3	Note 1	Note 1	72.5	Pass
M4	88.17-68.17	Mod (Ex)	(Aero) MP303	4	Note 1	Note 1	85.0	Pass
M5	73.08-68.17	Mod (Ex)	(Aero) MP303	5	Note 1	Note 1	51.3	Pass
M6	89.50-79.50	Mod (Ex)	(Aero) MP303	6	Note 1	Note 1	66.5	Pass
M7	116.17-86.17	Mod (Ex)	(Aero) MP303	7	Note 1	Note 1	65.8	Pass
M8	97.67-87.67	Mod (Ex)	(Aero) MP303	8	Note 1	Note 1	56.1	Pass
M9	103.92-95.17	Mod (Ex)	(Aero) MP303	9	Note 1	Note 1	42.6	Pass
M10	109.42-103.92	Mod (Ex)	(Aero) MP303	10	Note 1	Note 1	38.6	Pass
M11	116.17-109.42	Mod (Ex)	(Aero) MP303	11	Note 1	Note 1	25.1	Pass

	Summary	
Pole (L5)	92.6	Pass
Mod (M4)	85.0	Pass
RATING =	**92.6**	**Pass**

*Note 1: See additional documentation in following sheets for details.

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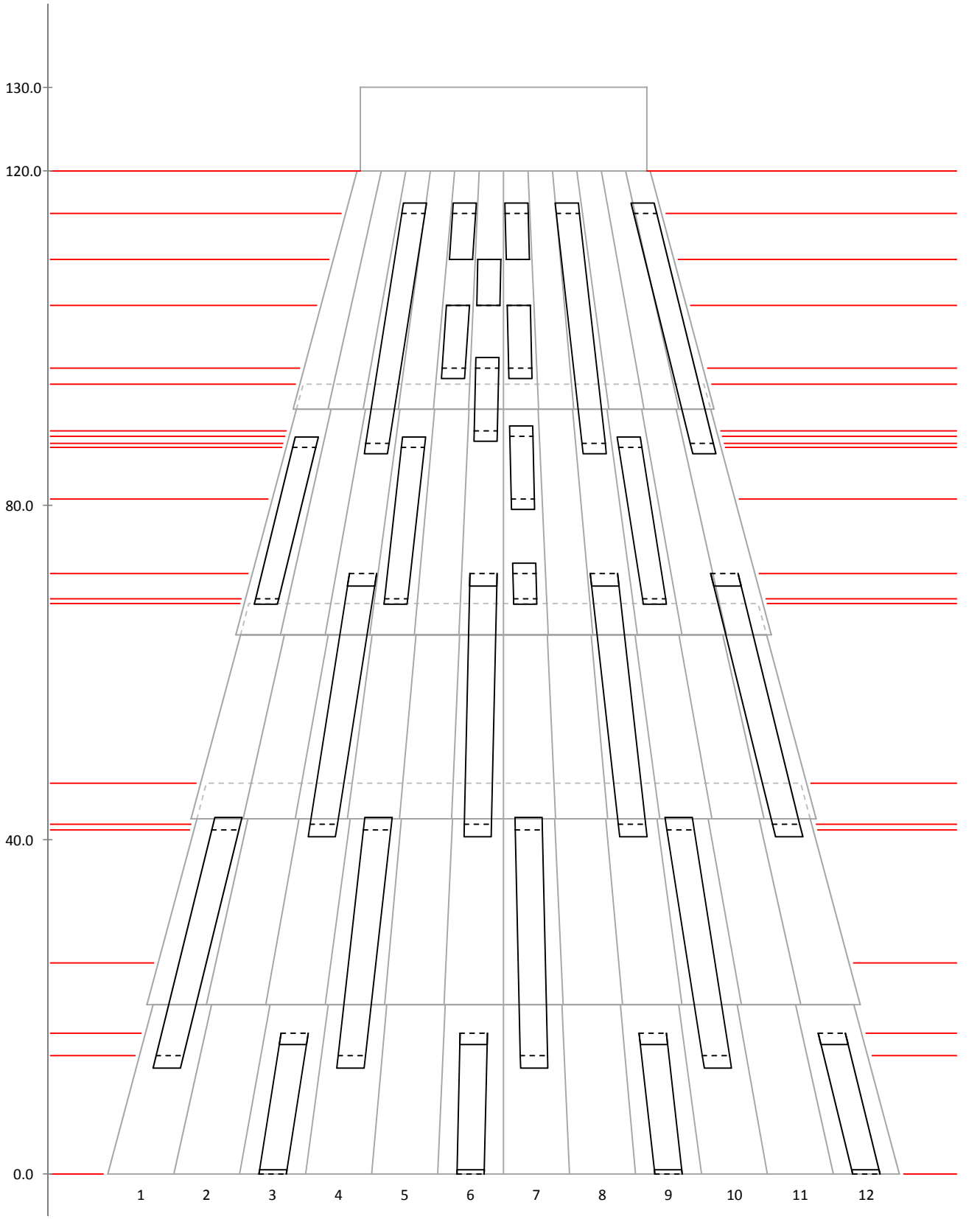
Reinforcement Layout



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Loads	
Axial:	31.1 k
Moment:	2,126.9 k·ft
Shear:	24.8 k
Torsion:	1.5 k·ft

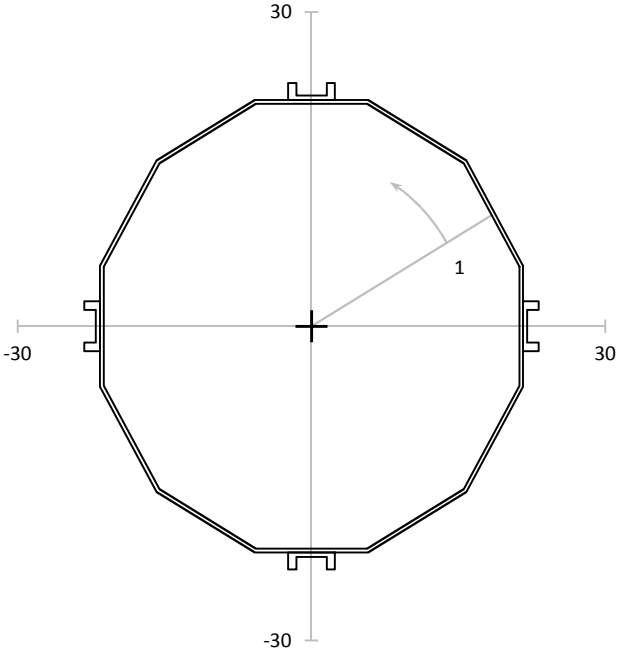
Pole Info	
OD:	43.21 in
t:	0.3750 in
Pole A_G:	51.72 in^2
Pole I_G:	12,113.5 in^4

Equivalent Loads to Pole	
Axial:	23.6 k
Moment:	1,588.9 k·ft
Shear:	18.8 k
Torsion:	1.5 k·ft

Controlling	
Angle:	**60.00°**
I_{CONT}:	16,215.4 in^4
A_G:	68.24 in^2

Shear Flow	
Controlling Mod:	1
q:	0.140 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	213.68 in
Stitch:	18.00 in
Capacity:	**8.4%**

Minimum	
Angle:	**13.90°**
I_{MIN}:	16,215.4 in^4
t_{EFF}:	0.5066 in



Pole Segment: L6, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
15.00	22.38	16215.4	0.455	35.231	48.000	48.000	**74.3%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
1	1	**60.00**	22.22	16215.4	0.455	34.967	45.961	44.339	**78.9%**
1	2	**150.00**	22.22	16215.4	0.455	34.967	45.961	44.339	**78.9%**
1	3	**240.00**	22.22	16215.4	0.455	34.967	45.961	44.339	**78.9%**
1	4	**330.00**	22.22	16215.4	0.455	34.967	45.961	44.339	**78.9%**

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Elevation: 14.17-ft

Loads	
Axial:	27.3 k
Moment:	1,786.7 k·ft
Shear:	23.2 k
Torsion:	1.5 k·ft

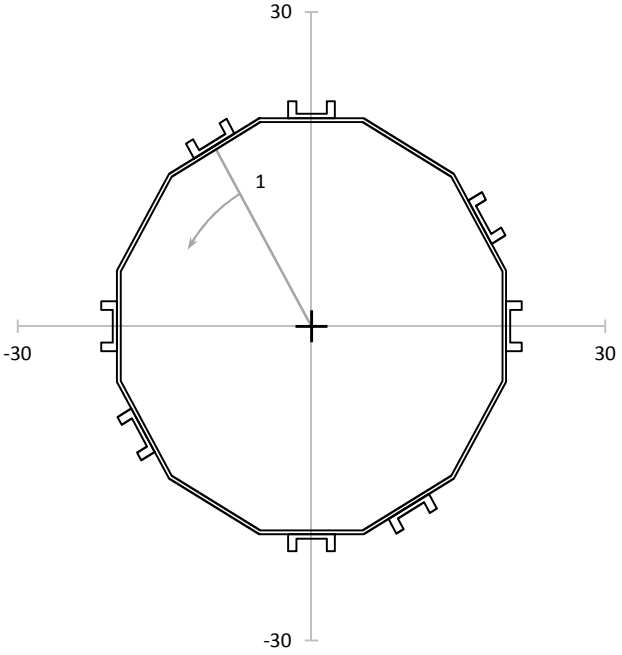
Pole Info	
OD:	39.74 in
t:	0.3750 in
Pole A_G:	47.53 in^2
Pole I_G:	9,402.3 in^4

Equivalent Loads to Pole	
Axial:	16.1 k
Moment:	1,025.4 k·ft
Shear:	13.7 k
Torsion:	1.5 k·ft

Controlling	
Angle:	**330.00°**
I_G:	16,382.6 in^4
A_G:	80.57 in^2

Shear Flow	
Controlling Mod:	1
q:	0.120 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	250.25 in
Stitch:	18.00 in
Capacity:	**7.2%**

Minimum	
Angle:	**162.40°**
I_{MIN}:	16,382.6 in^4
t_{EFF}:	0.6682 in



Pole Segment: L6, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
165.00	20.59	16382.6	0.338	26.941	48.000	48.000	**56.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
1	1	**60.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**
1	2	**150.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**
1	3	**240.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**
1	4	**330.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**
2	1	**360.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**
2	2	**90.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**
2	3	**180.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**
2	4	**270.00**	20.48	16382.6	0.338	26.803	45.961	44.339	**60.5%**

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Loads	
Axial:	26.5 k
Moment:	1,725.0 k·ft
Shear:	22.9 k
Torsion:	1.4 k·ft

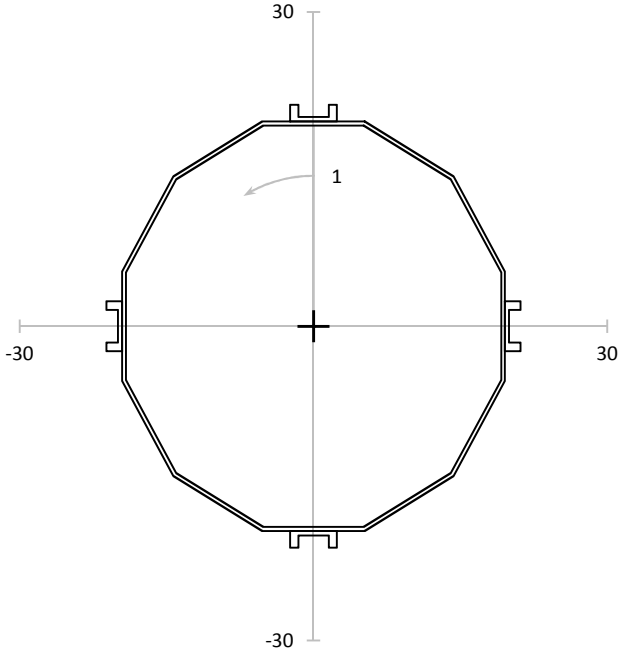
Pole Info	
OD:	39.09 in
t:	0.3750 in
Pole A_G:	46.75 in^2
Pole I_G:	8,942.1 in^4

Equivalent Loads to Pole	
Axial:	19.6 k
Moment:	1,251.8 k·ft
Shear:	16.9 k
Torsion:	1.4 k·ft

Controlling	
Angle:	0.00°
I_G:	12,322.7 in^4
A_G:	63.27 in^2

Shear Flow	
Controlling Mod:	2
q:	0.155 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	193.63 in
Stitch:	18.00 in
Capacity:	9.3%

Minimum	
Angle:	127.80°
I_{MIN}:	12,322.7 in^4
t_{EFF}:	0.5227 in



Pole Segment: L6, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
315.00	20.25	12322.7	0.419	34.013	48.000	48.000	71.7%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
2	1	**0.00**	20.15	12322.7	0.419	33.856	45.961	44.339	76.4%
2	2	**90.00**	20.15	12322.7	0.419	33.856	45.961	44.339	76.4%
2	3	**180.00**	20.15	12322.7	0.419	33.856	45.961	44.339	76.4%
2	4	**270.00**	20.15	12322.7	0.419	33.856	45.961	44.339	76.4%

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Loads	
Axial:	23.7 k
Moment:	1,536.3 k·ft
Shear:	22.0 k
Torsion:	1.4 k·ft

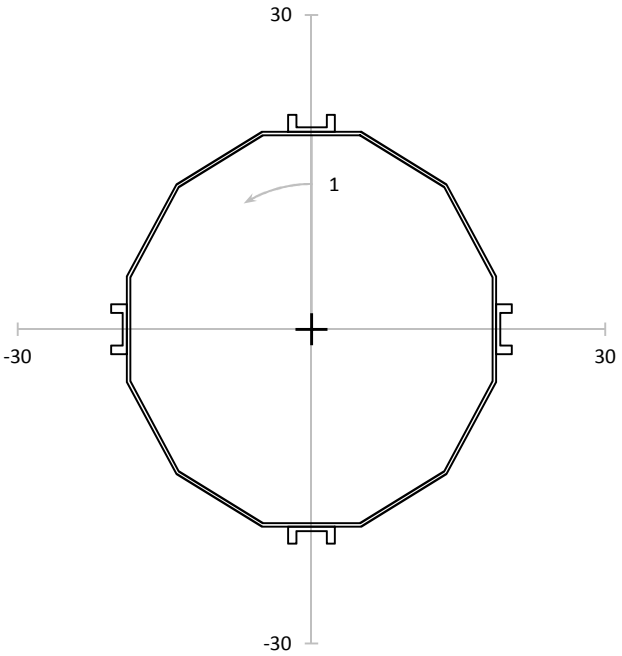
Pole Info	
OD:	37.71 in
t:	0.3438 in
Pole A_G:	41.36 in^2
Pole I_G:	7,373.5 in^4

Equivalent Loads to Pole	
Axial:	16.9 k
Moment:	1,075.8 k·ft
Shear:	15.7 k
Torsion:	1.4 k·ft

Controlling	
Angle:	0.00°
I_G:	10,529.3 in^4
A_G:	57.88 in^2

Shear Flow	
Controlling Mod:	2
q:	0.168 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	178.82 in
Stitch:	18.00 in
Capacity:	10.1%

Minimum	
Angle:	112.60°
I_{MIN}:	10,529.3 in^4
t_{EFF}:	0.4970 in



Pole Segment: L5, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
135.00	19.54	10529.3	0.409	34.204	52.000	52.000	66.6%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
2	1	**0.00**	19.47	10529.3	0.409	34.084	45.961	44.339	76.9%
2	2	**90.00**	19.47	10529.3	0.409	34.084	45.961	44.339	76.9%
2	3	**180.00**	19.47	10529.3	0.409	34.084	45.961	44.339	76.9%
2	4	**270.00**	19.47	10529.3	0.409	34.084	45.961	44.339	76.9%

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Loads	
Axial:	20.0 k
Moment:	1,200.2 k·ft
Shear:	20.3 k
Torsion:	1.4 k·ft

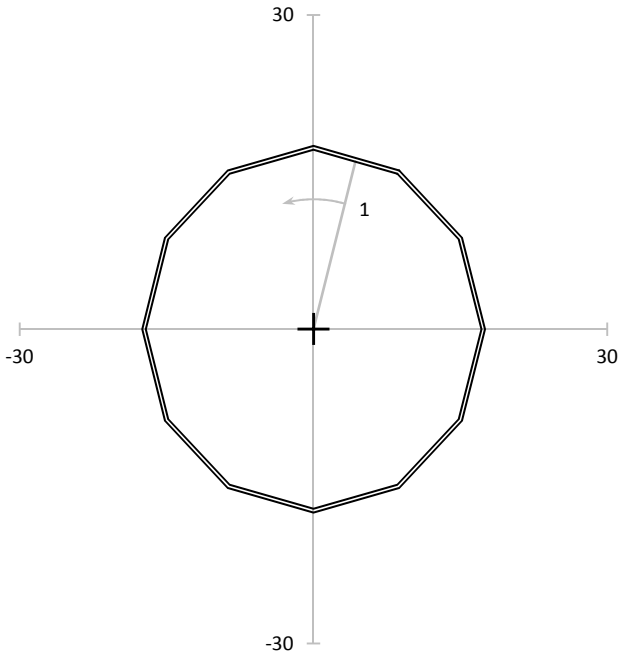
Equivalent Loads to Pole	
Axial:	20.0 k
Moment:	1,200.2 k·ft
Shear:	20.3 k
Torsion:	1.4 k·ft

Shear Flow N/A

Pole Info	
OD:	33.81 in
t:	0.3438 in
Pole A_G:	37.05 in^2
Pole I_G:	5,296.7 in^4

Controlling	
Angle:	**15.00°**
I_G:	5,296.7 in^4
A_G:	37.05 in^2

Minimum	
Angle:	**0.00°**
I_{MIN}:	5,296.7 in^4
t_{EFF}:	0.3437 in



Pole Segment: L5, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
15.00	17.51	5296.7	0.540	47.626	52.000	52.000	**92.6%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity

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Loads	
Axial:	19.8 k
Moment:	1,186.6 k·ft
Shear:	20.3 k
Torsion:	1.4 k·ft

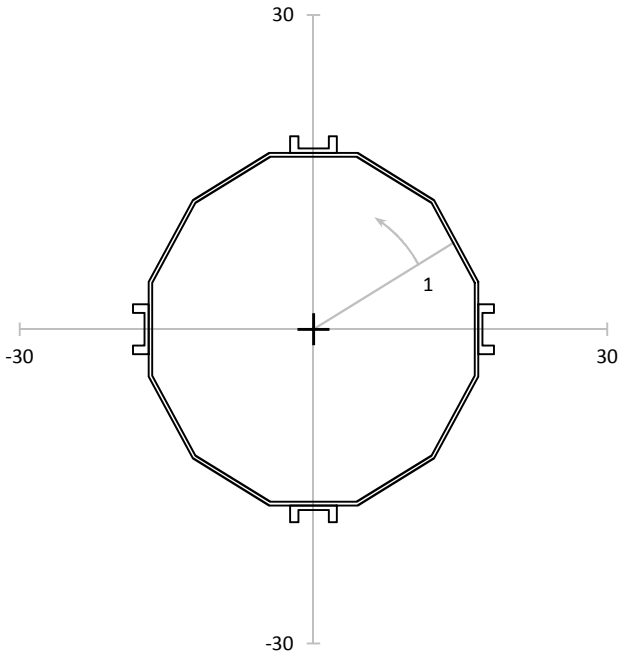
Pole Info	
OD:	33.65 in
t:	0.3438 in
Pole A_G:	36.86 in²
Pole I_G:	5,219.4 in⁴

Equivalent Loads to Pole	
Axial:	13.7 k
Moment:	798.5 k·ft
Shear:	14.0 k
Torsion:	1.4 k·ft

Controlling	
Angle:	60.00°
I_G:	7,755.7 in⁴
A_G:	53.38 in²

Shear Flow	
Controlling Mod:	3
q:	0.188 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	159.56 in
Stitch:	18.00 in
Capacity:	11.3%

Minimum	
Angle:	193.85°
I_{MIN}:	7,755.7 in⁴
t_{EFF}:	0.5189 in



Pole Segment: L5, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
15.00	17.43	7755.7	0.371	32.000	52.000	52.000	62.3%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
3	1	**60.00**	17.43	7755.7	0.371	32.008	45.961	44.339	72.2%
3	2	**150.00**	17.43	7755.7	0.371	32.008	45.961	44.339	72.2%
3	3	**240.00**	17.43	7755.7	0.371	32.008	45.961	44.339	72.2%
3	4	**330.00**	17.43	7755.7	0.371	32.008	45.961	44.339	72.2%

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Loads	
Axial:	18.3 k
Moment:	1,088.5 k·ft
Shear:	19.6 k
Torsion:	1.4 k·ft

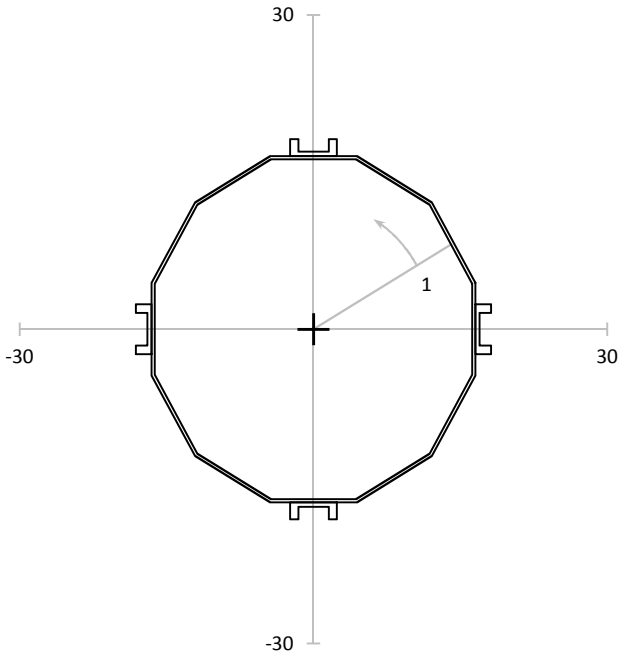
Pole Info	
OD:	33.07 in
t:	0.3125 in
Pole A_G:	32.96 in²
Pole I_G:	4,514.1 in⁴

Equivalent Loads to Pole	
Axial:	12.2 k
Moment:	705.2 k·ft
Shear:	13.1 k
Torsion:	1.4 k·ft

Controlling	
Angle:	60.00°
I_G:	6,967.5 in⁴
A_G:	49.48 in²

Shear Flow	
Controlling Mod:	3
q:	0.200 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	150.26 in
Stitch:	18.00 in
Capacity:	12.0%

Minimum	
Angle:	1.25°
I_{MIN}:	6,967.5 in⁴
t_{EFF}:	0.4903 in



Pole Segment: L4, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	17.13	6967.5	0.369	32.112	52.000	52.000	**62.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
3	1	**60.00**	17.14	6967.5	0.369	32.139	45.961	44.339	**72.5%**
3	2	**150.00**	17.14	6967.5	0.369	32.139	45.961	44.339	**72.5%**
3	3	**240.00**	17.14	6967.5	0.369	32.139	45.961	44.339	**72.5%**
3	4	**330.00**	17.14	6967.5	0.369	32.139	45.961	44.339	**72.5%**

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Elevation: 68.25-ft

Loads	
Axial:	13.7 k
Moment:	691.8 k·ft
Shear:	17.2 k
Torsion:	1.3 k·ft

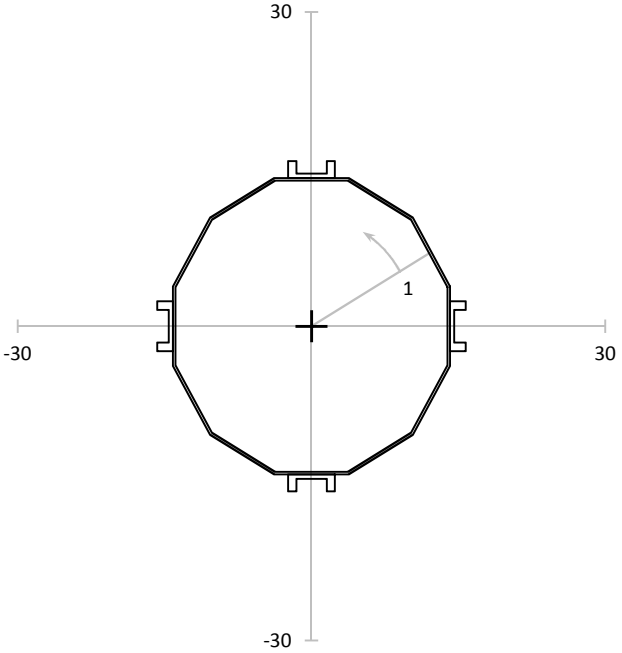
Pole Info	
OD:	28.30 in
t:	0.2500 in
Pole A_G:	22.58 in^2
Pole I_G:	2,268.0 in^4

Equivalent Loads to Pole	
Axial:	7.9 k
Moment:	383.3 k·ft
Shear:	9.9 k
Torsion:	1.3 k·ft

Controlling	
Angle:	**60.00°**
I_G:	4,093.2 in^4
A_G:	39.10 in^2

Shear Flow	
Controlling Mod:	3
q:	0.257 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	116.94 in
Stitch:	18.00 in
Capacity:	**15.4%**

Minimum	
Angle:	**3.65°**
I_{MIN}:	4,093.2 in^4
t_{EFF}:	0.4616 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	14.66	4093.2	0.351	29.734	52.000	52.000	**57.9%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
3	1	**60.00**	14.76	4093.2	0.351	29.938	45.961	44.339	**67.5%**
3	2	**150.00**	14.76	4093.2	0.351	29.938	45.961	44.339	**67.5%**
3	3	**240.00**	14.76	4093.2	0.351	29.938	45.961	44.339	**67.5%**
3	4	**330.00**	14.76	4093.2	0.351	29.938	45.961	44.339	**67.5%**

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Loads	
Axial:	13.6 k
Moment:	682.0 k·ft
Shear:	17.2 k
Torsion:	1.3 k·ft

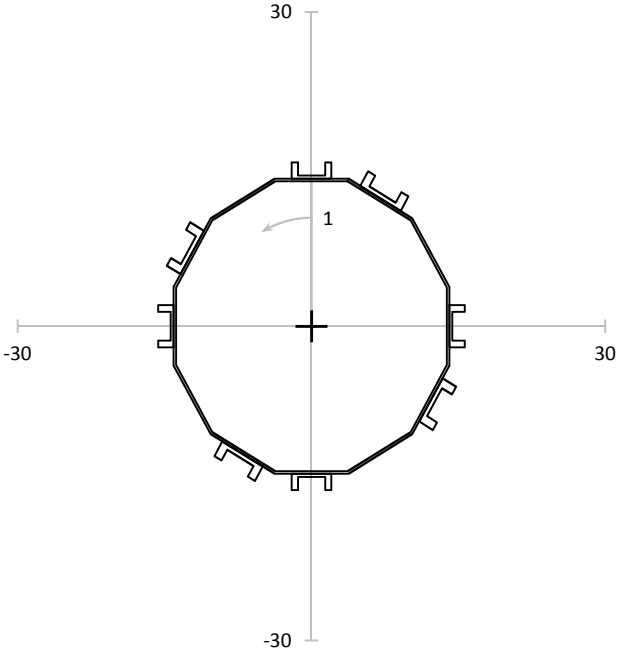
Pole Info	
OD:	28.16 in
t:	0.2500 in
Pole A_G:	22.47 in^2
Pole I_G:	2,233.9 in^4

Equivalent Loads to Pole	
Axial:	6.0 k
Moment:	286.7 k·ft
Shear:	7.6 k
Torsion:	1.3 k·ft

Controlling	
Angle:	360.00°
I_G:	5,313.2 in^4
A_G:	50.67 in^2

Shear Flow	
Controlling Mod:	3
q:	0.196 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	153.09 in
Stitch:	18.00 in
Capacity:	11.8%

Minimum	
Angle:	357.35°
I_{MIN}:	5,313.2 in^4
t_{EFF}:	0.6188 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
165.00	14.59	5313.2	0.269	22.467	52.000	52.000	43.7%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
3	1	**60.00**	14.69	5313.2	0.269	22.626	45.961	44.339	51.0%
3	2	**150.00**	14.69	5313.2	0.269	22.626	45.961	44.339	51.0%
3	3	**240.00**	14.69	5313.2	0.269	22.626	45.961	44.339	51.0%
3	4	**330.00**	14.69	5313.2	0.269	22.626	45.961	44.339	51.0%
4	1	**360.00**	14.67	5313.2	0.269	22.595	46.063	44.036	51.3%
4	2	**90.00**	14.67	5313.2	0.269	22.595	46.063	44.036	51.3%
4	3	**270.00**	14.67	5313.2	0.269	22.595	46.063	44.036	51.3%
5	1	**180.00**	14.67	5313.2	0.269	22.595	46.063	44.036	51.3%

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Loads	
Axial:	13.1 k
Moment:	630.7 k·ft
Shear:	16.8 k
Torsion:	1.3 k·ft

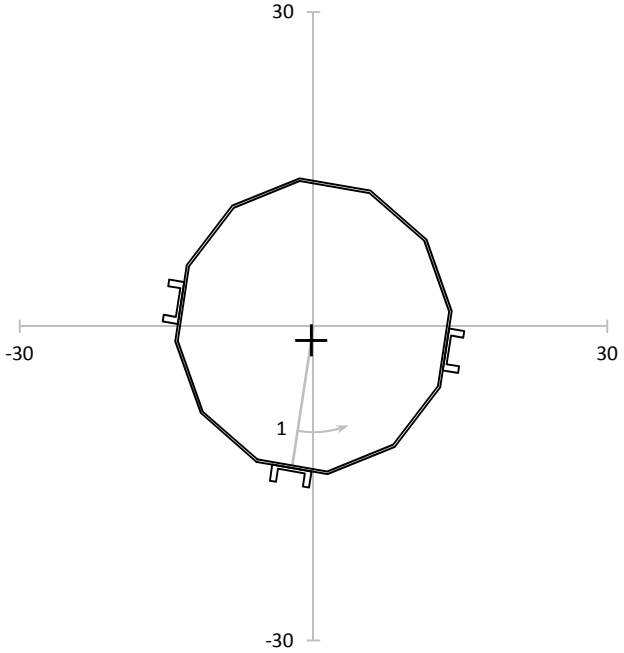
Pole Info	
OD:	27.42 in
t:	0.2500 in
Pole A_G:	21.87 in^2
Pole I_G:	2,061.6 in^4

Equivalent Loads to Pole	
Axial:	9.4 k
Moment:	503.7 k·ft
Shear:	12.0 k
Torsion:	1.3 k·ft

Controlling	
Angle:	**189.25°**
I_G:	2,632.5 in^4
A_G:	30.63 in^2

Shear Flow	
Controlling Mod:	4
q:	0.243 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	123.50 in
Stitch:	18.00 in
Capacity:	14.6%

Minimum	
Angle:	**0.00°**
I_{MIN}:	2,615.8 in^4
t_{EFF}:	0.3196 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
189.25	15.48	2632.5	0.428	44.506	52.000	52.000	86.4%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
4	1	**0.00**	12.94	2615.8	0.428	37.439	46.063	44.036	85.0%
4	2	**98.95**	14.34	3248.3	0.428	33.413	46.063	44.036	75.9%
4	3	**261.05**	14.34	3248.3	0.428	33.413	46.063	44.036	75.9%

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Loads	
Axial:	11.8 k
Moment:	485.3 k·ft
Shear:	15.8 k
Torsion:	1.1 k·ft

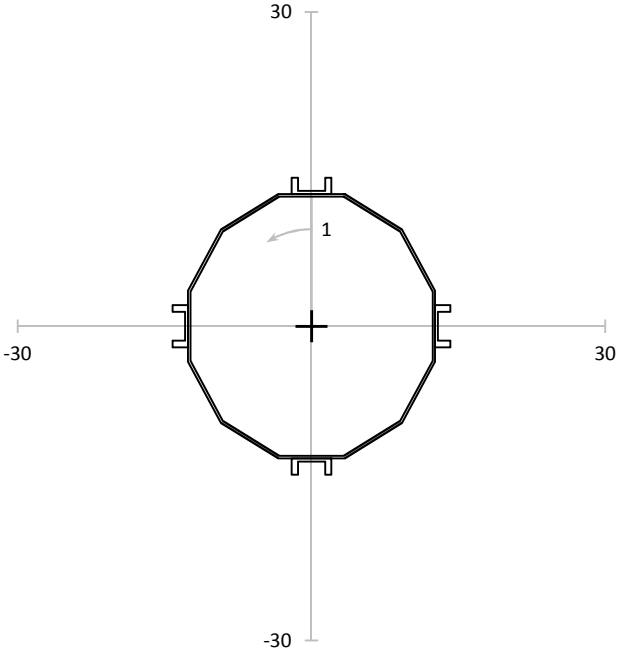
Pole Info	
OD:	25.24 in
t:	0.2500 in
Pole A_G:	20.12 in^2
Pole I_G:	1,603.3 in^4

Equivalent Loads to Pole	
Axial:	7.4 k
Moment:	295.1 k·ft
Shear:	10.0 k
Torsion:	1.1 k·ft

Controlling	
Angle:	0.00°
I_G:	2,636.8 in^4
A_G:	31.80 in^2

Shear Flow	
Controlling Mod:	4
q:	0.231 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	129.78 in
Stitch:	18.00 in
Capacity:	13.9%

Minimum	
Angle:	129.60°
I_{MIN}:	2,636.8 in^4
t_{EFF}:	0.4196 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
135.00	13.07	2636.8	0.370	28.874	52.000	52.000	56.2%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
4	1	**0.00**	13.21	2636.8	0.370	29.174	46.063	44.036	66.3%
4	2	**90.00**	13.21	2636.8	0.370	29.174	46.063	44.036	66.3%
4	3	**270.00**	13.21	2636.8	0.370	29.174	46.063	44.036	66.3%
6	1	**180.00**	13.21	2636.8	0.370	29.174	46.063	44.036	66.3%

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Loads	
Axial:	10.9 k
Moment:	390.0 k·ft
Shear:	15.1 k
Torsion:	1.1 k·ft

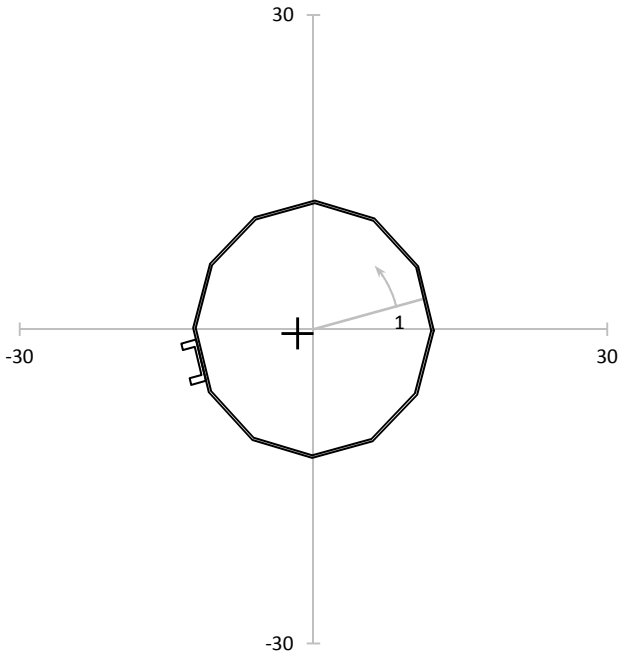
Pole Info	
OD:	23.73 in
t:	0.2500 in
Pole A_G:	18.90 in^2
Pole I_G:	1,329.8 in^4

Equivalent Loads to Pole	
Axial:	9.4 k
Moment:	396.3 k·ft
Shear:	13.1 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**75.60°**
I_G:	1,360.2 in^4
A_G:	21.82 in^2

Shear Flow	
Controlling Mod:	6
q:	0.277 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	108.40 in
Stitch:	18.00 in
Capacity:	**16.6%**

Minimum	
Angle:	**90.00°**
I_{MIN}:	1,336.3 in^4
t_{EFF}:	0.2513 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
75.60	12.70	1360.2	0.499	43.710	52.000	52.000	**85.0%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
6	1	**180.00**	10.79	1722.7	0.499	29.304	46.063	44.036	**66.5%**

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Loads	
Axial:	10.8 k
Moment:	382.4 k·ft
Shear:	15.1 k
Torsion:	1.1 k·ft

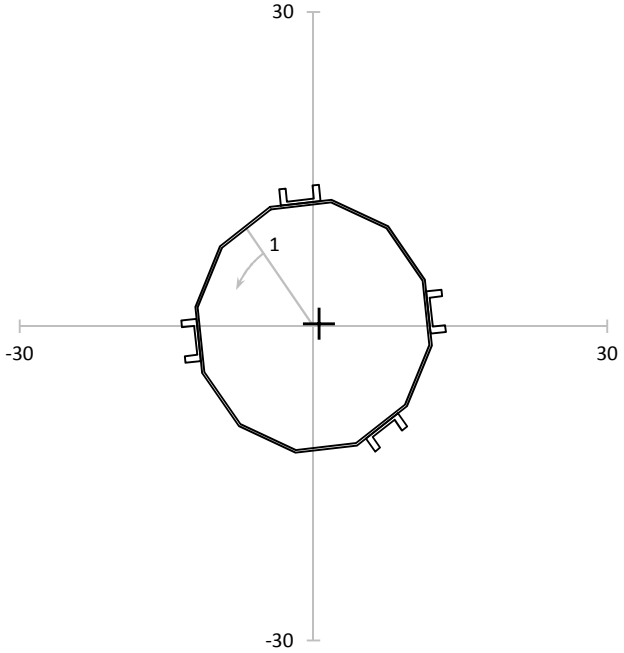
Pole Info	
OD:	23.61 in
t:	0.2500 in
Pole A_G:	18.80 in²
Pole I_G:	1,309.0 in⁴

Equivalent Loads to Pole	
Axial:	6.7 k
Moment:	249.2 k·ft
Shear:	9.3 k
Torsion:	1.1 k·ft

Controlling	
Angle:	323.65°
I_G:	2,068.8 in⁴
A_G:	30.48 in²

Shear Flow	
Controlling Mod:	7
q:	0.257 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	116.52 in
Stitch:	18.00 in
Capacity:	15.4%

Minimum	
Angle:	119.25°
I_{MIN}:	1,993.3 in⁴
t_{EFF}:	0.3875 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
108.30	12.72	2009.3	0.355	29.053	52.000	52.000	56.6%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
6	1	**166.00**	12.01	2228.1	0.355	24.743	46.063	44.036	56.2%
7	1	**71.90**	12.74	2232.8	0.355	26.184	46.063	44.036	59.5%
7	2	**250.30**	11.58	2245.1	0.355	23.671	46.063	44.036	53.8%
7	3	**323.65**	12.09	2068.8	0.355	26.824	46.063	44.036	60.9%

Loads	
Axial:	10.7 k
Moment:	369.8 k·ft
Shear:	15.0 k
Torsion:	1.1 k·ft

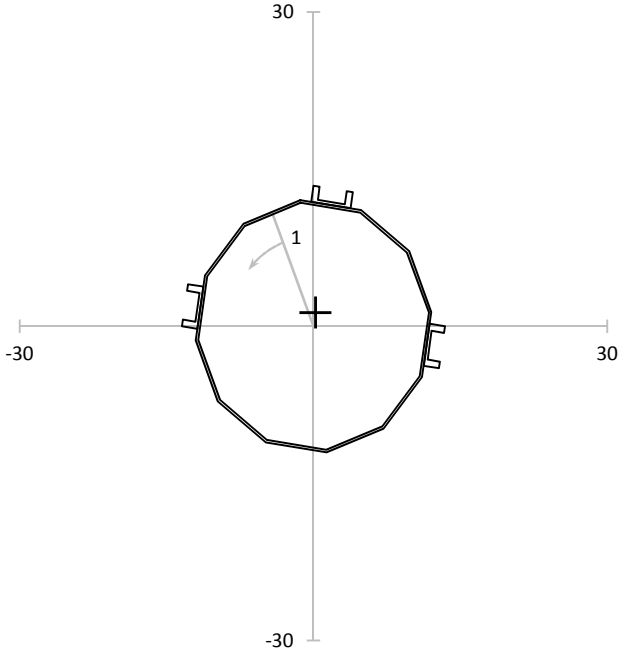
Pole Info	
OD:	23.40 in
t:	0.2500 in
Pole A_G:	18.64 in^2
Pole I_G:	1,275.0 in^4

Equivalent Loads to Pole	
Axial:	7.3 k
Moment:	283.6 k·ft
Shear:	10.2 k
Torsion:	1.1 k·ft

Controlling	
Angle:	338.70°
I_G:	1,693.9 in^4
A_G:	27.40 in^2

Shear Flow	
Controlling Mod:	7
q:	0.286 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	105.02 in
Stitch:	18.00 in
Capacity:	17.1%

Minimum	
Angle:	150.00°
I_{MIN}:	1,682.9 in^4
t_{EFF}:	0.3336 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
338.70	13.34	1693.9	0.389	34.959	52.000	52.000	68.0%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**70.80**	12.32	2148.2	0.389	25.449	46.063	44.036	57.8%
7	2	**229.20**	12.32	2148.2	0.389	25.449	46.063	44.036	57.8%
7	3	**330.00**	10.98	1682.9	0.389	28.957	46.063	44.036	65.8%

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Loads	
Axial:	10.6 k
Moment:	359.9 k·ft
Shear:	14.9 k
Torsion:	1.1 k·ft

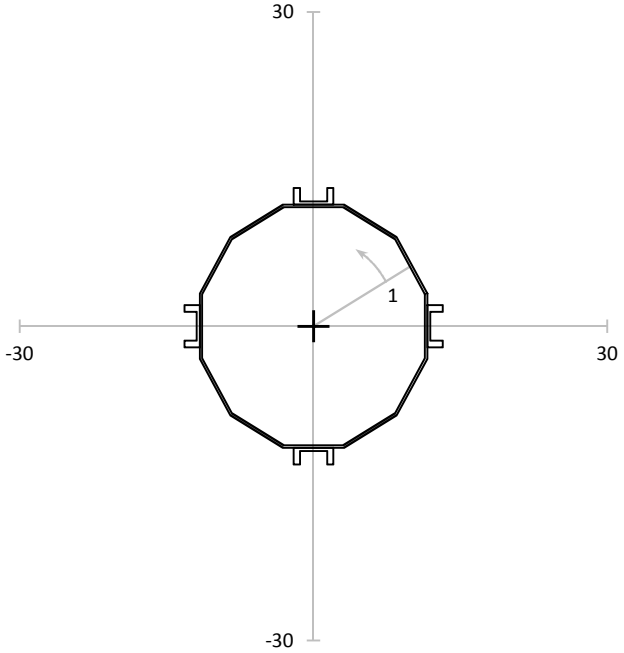
Pole Info	
OD:	23.24 in
t:	0.2500 in
Pole A_G:	18.51 in^2
Pole I_G:	1,248.2 in^4

Equivalent Loads to Pole	
Axial:	6.5 k
Moment:	210.6 k·ft
Shear:	9.1 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**60.00°**
I_G:	2,133.2 in^4
A_G:	30.19 in^2

Shear Flow	
Controlling Mod:	7
q:	0.249 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	120.28 in
Stitch:	18.00 in
Capacity:	**15.0%**

Minimum	
Angle:	**9.10°**
I_{MIN}:	2,133.2 in^4
t_{EFF}:	0.4379 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	12.04	2133.2	0.350	24.370	52.000	52.000	**47.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**60.00**	12.21	2133.2	0.350	24.718	46.063	44.036	**56.1%**
7	2	**240.00**	12.21	2133.2	0.350	24.718	46.063	44.036	**56.1%**
7	3	**330.00**	12.21	2133.2	0.350	24.718	46.063	44.036	**56.1%**
8	1	**150.00**	12.21	2133.2	0.350	24.718	46.063	44.036	**56.1%**

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Loads	
Axial:	9.6 k
Moment:	280.0 k·ft
Shear:	13.9 k
Torsion:	1.1 k·ft

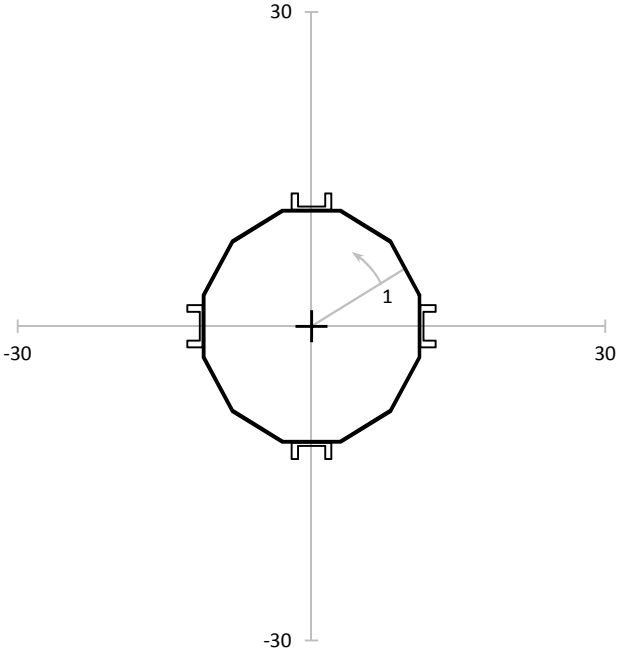
Pole Info	
OD:	22.25 in
t:	0.1875 in
Pole A_G:	13.32 in^2
Pole I_G:	827.0 in^4

Equivalent Loads to Pole	
Axial:	5.1 k
Moment:	141.0 k·ft
Shear:	7.4 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**60.00°**
I_G:	1,642.7 in^4
A_G:	25.00 in^2

Shear Flow	
Controlling Mod:	7
q:	0.289 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	103.81 in
Stitch:	18.00 in
Capacity:	**17.3%**

Minimum	
Angle:	**7.50°**
I_{MIN}:	1,642.7 in^4
t_{EFF}:	0.3825 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	11.52	1642.7	0.386	23.574	48.000	48.000	**49.9%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**60.00**	11.71	1642.7	0.386	23.961	46.063	44.036	**54.4%**
7	2	**240.00**	11.71	1642.7	0.386	23.961	46.063	44.036	**54.4%**
7	3	**330.00**	11.71	1642.7	0.386	23.961	46.063	44.036	**54.4%**
8	1	**150.00**	11.71	1642.7	0.386	23.961	46.063	44.036	**54.4%**

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Loads	
Axial:	9.4 k
Moment:	253.7 k·ft
Shear:	13.7 k
Torsion:	1.1 k·ft

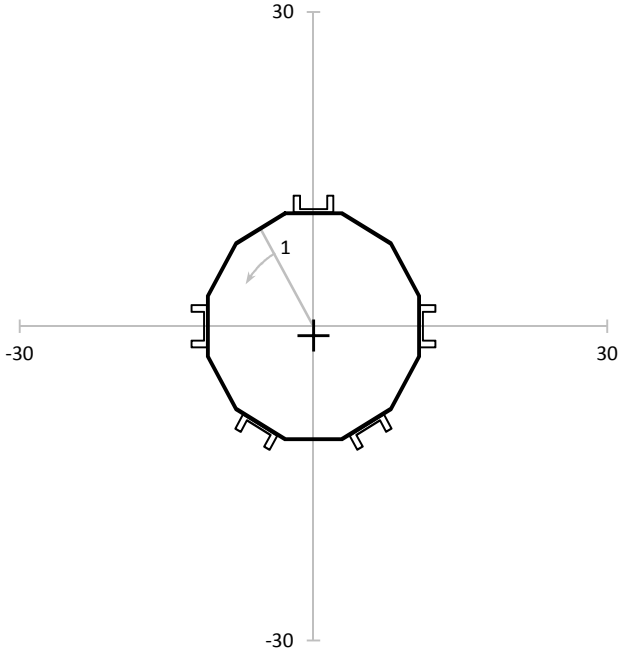
Pole Info	
OD:	21.78 in
t:	0.1875 in
Pole A_G:	13.03 in^2
Pole I_G:	775.4 in^4

Equivalent Loads to Pole	
Axial:	4.4 k
Moment:	114.5 k·ft
Shear:	6.5 k
Torsion:	1.1 k·ft

Controlling	
Angle:	330.00°
I_G:	1,733.4 in^4
A_G:	27.63 in^2

Shear Flow	
Controlling Mod:	7
q:	0.285 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	105.29 in
Stitch:	18.00 in
Capacity:	17.1%

Minimum	
Angle:	150.00°
I_{MIN}:	1,733.4 in^4
t_{EFF}:	0.4339 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
163.60	12.14	1734.6	0.341	21.304	48.000	48.000	45.1%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**55.45**	11.51	1755.0	0.341	19.968	46.063	44.036	45.3%
7	2	**244.55**	11.51	1755.0	0.341	19.968	46.063	44.036	45.3%
7	3	**330.00**	12.37	1733.4	0.341	21.716	46.063	44.036	49.3%
9	1	**118.25**	10.72	1739.4	0.341	18.756	46.063	44.036	42.6%
9	2	**181.75**	10.72	1739.4	0.341	18.756	46.063	44.036	42.6%

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Elevation: 103.92-ft

Loads	
Axial:	6.3 k
Moment:	168.8 k·ft
Shear:	9.1 k
Torsion:	1.1 k·ft

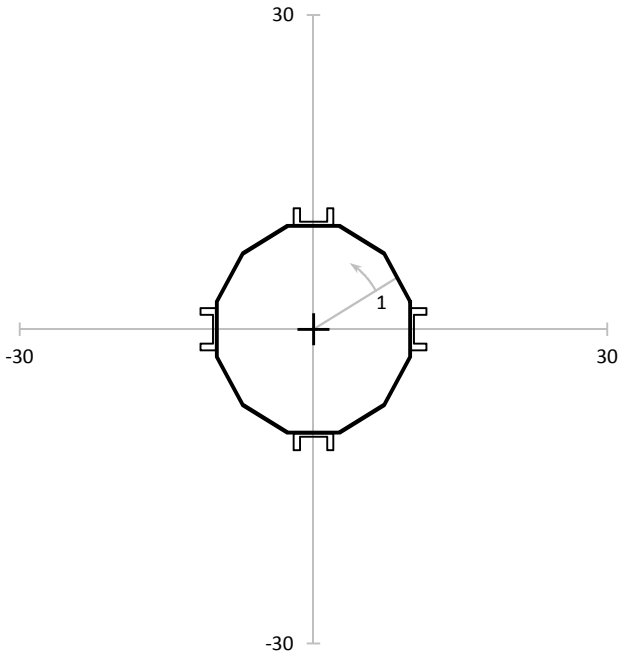
Pole Info	
OD:	19.94 in
t:	0.1875 in
Pole A_G:	11.92 in²
Pole I_G:	593.7 in⁴

Equivalent Loads to Pole	
Axial:	3.2 k
Moment:	79.6 k·ft
Shear:	4.6 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**60.00°**
I_G:	1,259.3 in⁴
A_G:	23.60 in²

Shear Flow	
Controlling Mod:	7
q:	0.222 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	134.84 in
Stitch:	18.00 in
Capacity:	**13.3%**

Minimum	
Angle:	**2.05°**
I_{MIN}:	1,259.3 in⁴
t_{EFF}:	0.4115 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	10.33	1259.3	0.266	16.610	48.000	48.000	**35.2%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**60.00**	10.56	1259.3	0.266	16.981	46.063	44.036	**38.6%**
7	2	**240.00**	10.56	1259.3	0.266	16.981	46.063	44.036	**38.6%**
7	3	**330.00**	10.56	1259.3	0.266	16.981	46.063	44.036	**38.6%**
10	1	**150.00**	10.56	1259.3	0.266	16.981	46.063	44.036	**38.6%**

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Loads	
Axial:	5.8 k
Moment:	120.3 k·ft
Shear:	8.5 k
Torsion:	1.1 k·ft

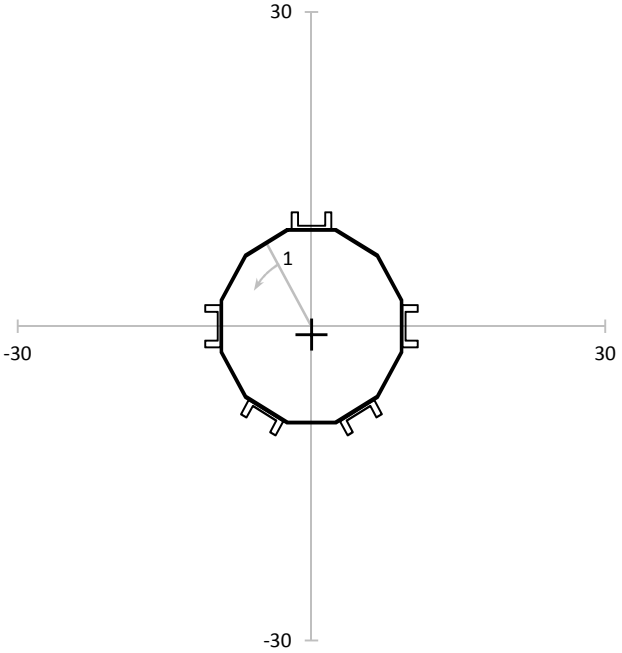
Pole Info	
OD:	18.59 in
t:	0.1875 in
Pole A_G:	11.11 in^2
Pole I_G:	480.3 in^4

Equivalent Loads to Pole	
Axial:	2.5 k
Moment:	48.9 k·ft
Shear:	3.7 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**330.00°**
I_G:	1,194.4 in^4
A_G:	25.71 in^2

Shear Flow	
Controlling Mod:	7
q:	0.223 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	134.43 in
Stitch:	18.00 in
Capacity:	**13.4%**

Minimum	
Angle:	**150.00°**
I_{MIN}:	1,194.4 in^4
t_{EFF}:	0.4900 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
163.45	10.43	1195.4	0.224	12.590	48.000	48.000	**26.7%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**55.10**	9.92	1211.7	0.224	11.817	46.063	44.036	**26.8%**
7	2	**244.90**	9.92	1211.7	0.224	11.817	46.063	44.036	**26.8%**
7	3	**330.00**	10.71	1194.4	0.224	12.940	46.063	44.036	**29.4%**
11	1	**118.20**	9.18	1199.3	0.224	11.052	46.063	44.036	**25.1%**
11	2	**181.80**	9.18	1199.3	0.224	11.052	46.063	44.036	**25.1%**

Loads	
Axial:	5.2 k
Moment:	74.9 k·ft
Shear:	8.0 k
Torsion:	1.1 k·ft

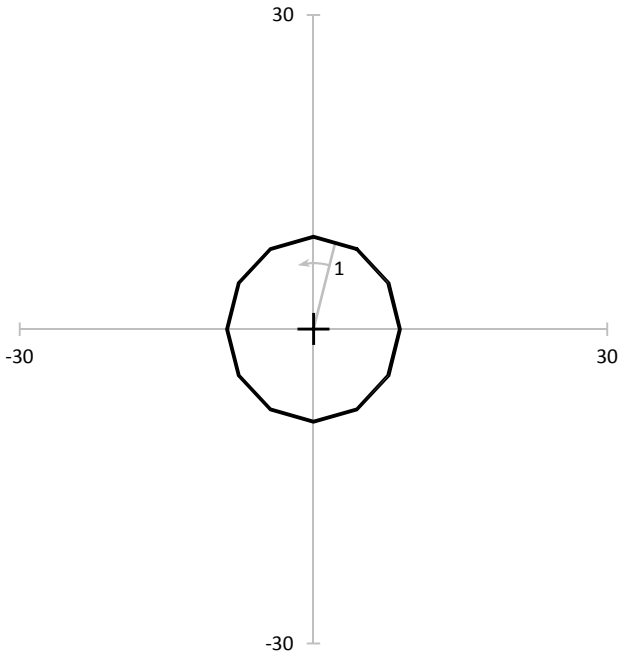
Equivalent Loads to Pole	
Axial:	5.2 k
Moment:	74.9 k·ft
Shear:	8.0 k
Torsion:	1.1 k·ft

Shear Flow N/A

Pole Info	
OD:	17.24 in
t:	0.1875 in
Pole A_G:	10.30 in^2
Pole I_G:	382.5 in^4

Controlling	
Angle:	15.00°
I_G:	382.5 in^4
A_G:	10.30 in^2

Minimum	
Angle:	0.00°
I_{MIN}:	382.5 in^4
t_{EFF}:	0.1875 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
15.00	8.93	382.5	0.509	20.994	48.000	48.000	**44.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Loads	
Axial:	2.3 k
Moment:	37.1 k·ft
Shear:	3.9 k
Torsion:	1.0 k·ft

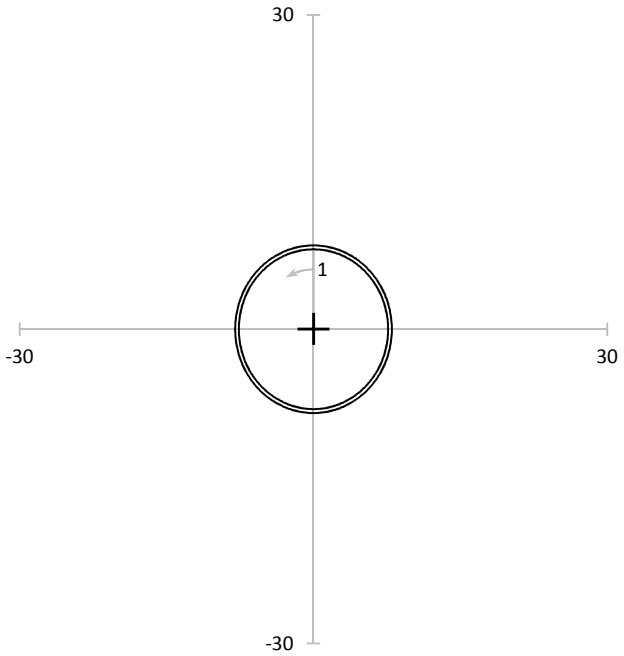
Equivalent Loads to Pole	
Axial:	2.3 k
Moment:	37.1 k·ft
Shear:	3.9 k
Torsion:	1.0 k·ft

Shear Flow N/A

Pole Info	
OD:	16.00 in
t:	0.3750 in
Pole A_G:	18.41 in^2
Pole I_G:	562.1 in^4

Controlling	
Angle:	0.00°
I_G:	562.1 in^4
A_G:	18.41 in^2

Minimum	
Angle:	0.00°
I_{MIN}:	562.1 in^4
t_{EFF}:	0.3750 in



Pole Segment: L1, F_Y = 42 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
0.00	8.00	562.1	0.126	6.331	36.960	36.960	17.5%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

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

Site Data

BU#: *876314*
Site Name: *Horse Hill*
App #: *282506 Rev. 0*

Pole Manufacturer:	Other

Reactions- Bolts		
Moment:	37.07	ft-kips
Axial:	2.32	kips
Shear:	3.90	kips
Elevation:	120	feet

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

Bolt Data				
Qty:	18			
Diameter (in.):	0.75	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:	100	<-- Disregard	Bolt Fty:	
N/A:	75	<-- Disregard	44.00	
Circle (in.):	19			

Plate Data		
Diam:	24	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	2.86	in

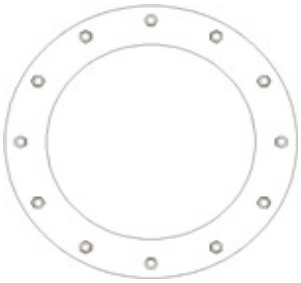
Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

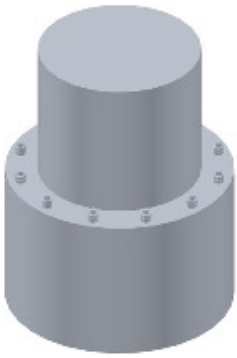
Pole Data		
Diam:	16	in
Thick:	0.375	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round
Fu	75	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor	
ASIF:	1.333

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	25.91	kips	Service, ASD
Max Bolt directly applied T:	5.07	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.319	in	
Min PL "treq" for actual **T w/ Pry**:	0.447	in	
Min PL "t1" for actual **T w/o Pry**:	0.584	in	
T allowable w/o Prying:	25.91	kips	α'<0 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	5.07	kips	
Non-Prying Bolt Stress Ratio, T/B:	19.6%	**Pass**	





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

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

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

Site Data

BU#: *876314*
Site Name: *Horse Hill*
App #: *282506 Rev. 0*

Pole Manufacturer:	Other

Reactions- Upper Plate		
Moment:	31.02	ft-kips
Axial:	2.32	kips
Shear:	3.90	kips
Elevation:	120	feet

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

Bolt Data			
Qty:	15		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle (in.):	19		

Plate Data		
Diam:	24	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.35	in

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

Pole Data		
Diam:	16	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	58	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	25.91	kips	Service, ASD
Max Bolt directly applied T:	5.07	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.204	in	
Min PL "treq" for actual **T w/ Pry**:	0.402	in	
Min PL "t1" for actual **T w/o Pry**:	0.533	in	
T allowable w/o Prying:	25.91	kips	α'<0 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	5.07	kips	
Non-Prying Bolt Stress Ratio, T/B:	19.6%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	3.8	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	10.7%	**Pass**	Comp. Y.L. Length:
No Prying			10.25
Tension Side Stress Ratio, (treq/t)^2:	7.2%	**Pass**	

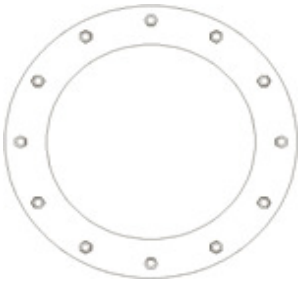
n/a

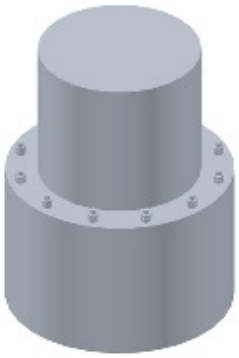
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

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

Site Data

BU#: *876314*
Site Name: *Horse Hill*
App #: *282506 Rev. 0*

Pole Manufacturer:	Other

Bolt Data			
Qty:	15		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle (in.):	19		

Plate Data		
Diam:	24	in
Thick, t:	0.75	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.43	in

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

Pole Data		
Diam:	16	in
Thick:	0.1875	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round
Fu	75	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions- Lower Plate		
Moment:	31.02	ft-kips
Axial:	2.32	kips
Shear:	3.90	kips
Elevation:	120	feet

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

Flange Bolt Results — Non-Rigid; Service, ASD; Fty*ASIF

Bolt Tension Capacity, **B**:	25.91 kips	
Max Bolt directly applied T:	5.07 Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.204 in	
Min PL "treq" for actual **T w/ Pry**:	0.402 in	
Min PL "t1" for actual **T w/o Pry**:	0.533 in	
T allowable with Prying:	17.66 kips	α'>1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	5.07 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	19.6% **Pass**	

Exterior Flange Plate Results — Flexural Check — Non-Rigid; Service ASD; 0.75*Fy*ASIF; Comp. Y.L. Length: 10.25

Compression Side Plate Stress:	15.4 ksi	
Allowable Plate Stress:	36.0 ksi	
Compression Plate Stress Ratio:	42.7% **Pass**	
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	28.7% **Pass**	

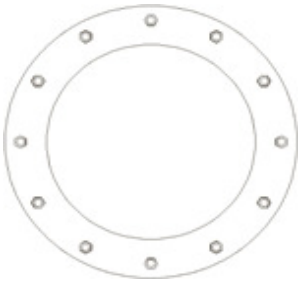
n/a

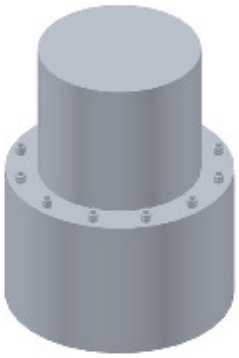
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876314*
Site Name: *Horse Hill*
App #: *282506 Rev. 0*

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	53	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	53	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	7	in

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

Pole Data		
Diam:	43.21	in
Thick:	0.375	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	2127	ft-kips
Unfactored Axial, P:	31	kips
Unfactored Shear, V:	25	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	118.5 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	60.8% **Pass**

Base Plate Results Flexural Check

Base Plate Stress:	40.5 ksi
Allowable PL Bending Stress:	50.0 ksi
Base Plate Stress Ratio:	81.0% **Pass**

PL Ref. Data
Yield Line (in): 31.74
Max PL Length: 31.74

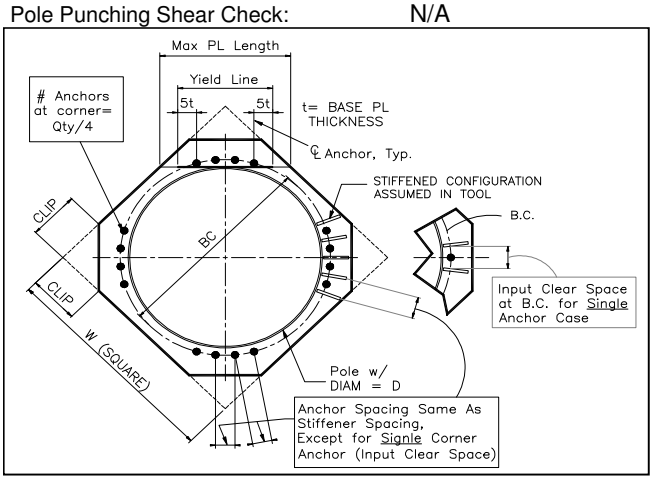
N/A - Unstiffened

Stiffener Results

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



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

Monopole on Mat Foundation with Rock Anchors - TIA-222-F

Site Data	
Site Name:	Horse Hill
CCI Number:	BU 876314
TEP Job Number:	25675.29504

ASIF	1.333

Unfactored Reactions from TNX		
Axial	31	k
Shear	25	k
Moment	2127	k-ft

Soil Properties		
Allowable Bearing q_a	20	ksf
Mat Subgrade, ks	720	kcf
Wt Soil Above Mat	0	pcf

Mat and Pier Properties		
Mat Width	16.5	ft
Mat Length	16.5	ft
Mat Depth	4.0	ft
Pier Type	Round	
Pier Width/Diam.	6.0	ft
Pier Height	0.0	ft

Rock Anchor Properties		
Diameter	2	in
Net Area	2.43	in^2
Yield Stress	90.1	ksi

Rock Geotechnical Properties		
Wt of Rock	165	pcf
Angle of Rock Cone	30	deg
Steel/Grout Bond[1]	145	psi
Grout/Rock Bond[1]	75	psi
Total RA Length	20	ft
Bonded Length	15	ft
Drilled Shaft Diam.	3.50	in

[1]Allowable Bond Values

Spring Stiffness	366.5	k/in

Mat Foundation Results

Bearing Stress	16.5	ksf
Allowable Bearing	20.0	ksf
% Capacity	82.3%	**Pass**

Mat and Pier Structural Results

Bending Moment	1321.589	kft
Allowable Bending	5038.1	kft
% Capacity	26.2%	**Pass**

Grout-Steel Bond

Load Reaction	39.20	k
Allowable Design Load	218.7	k
% Capacity	17.9%	**Pass**

Grout-Rock Bond

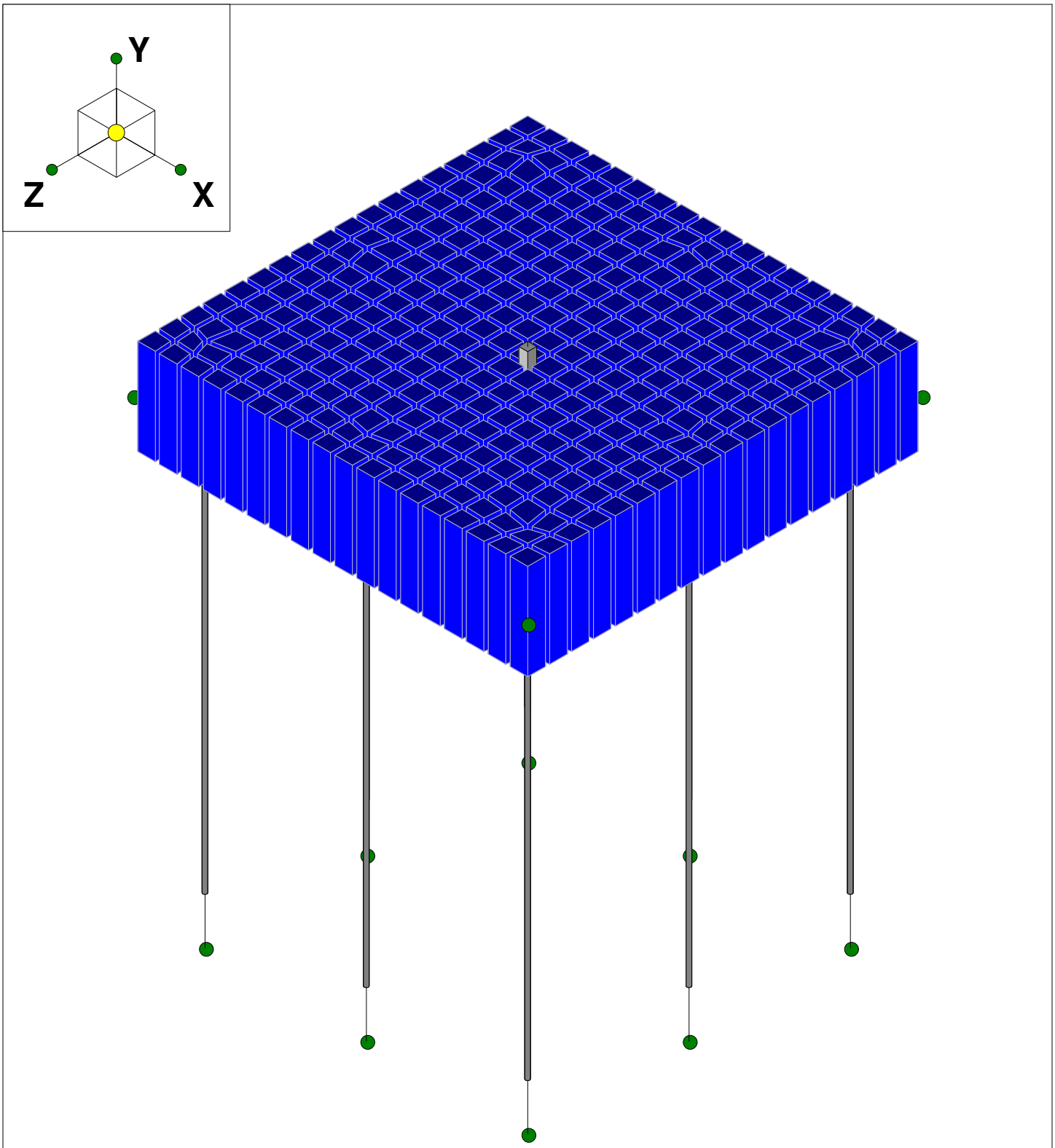
Load Reaction	39.20	k
Allowable Design Load	148.4	k
% Capacity	26.4%	**Pass**

Weight of Rock

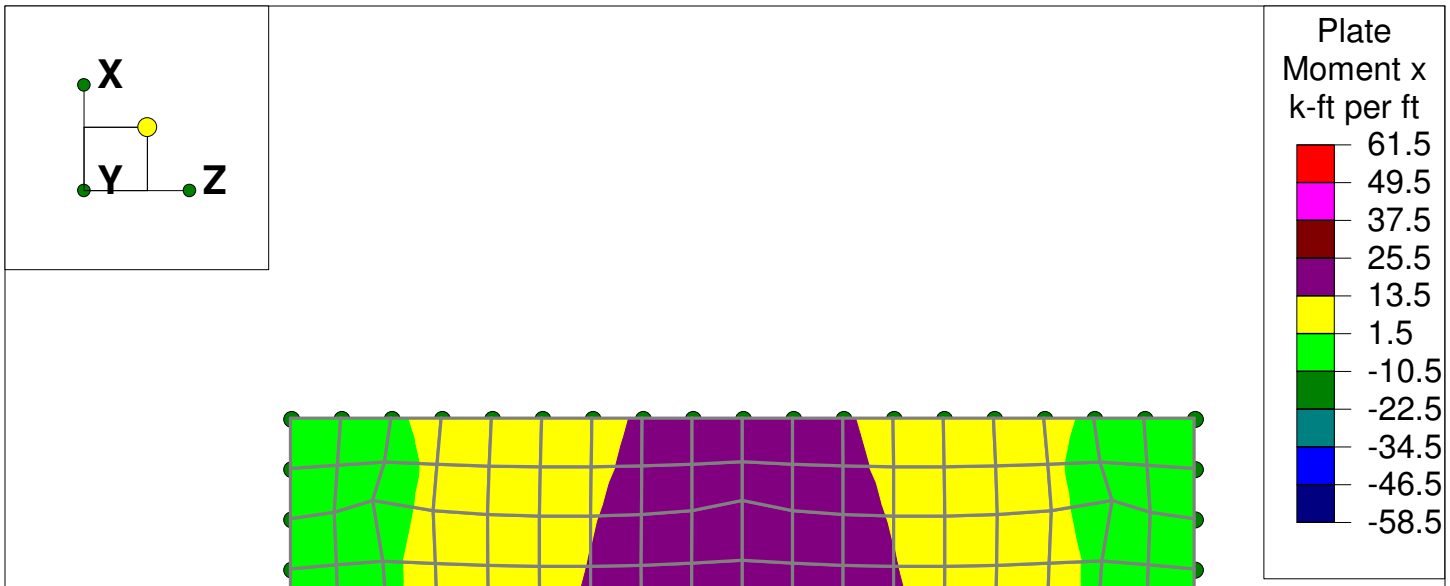
Load Reaction	108.99	k
Allowable Design Load	337.0	k
% Capacity	32.3%	**Pass**

Rock Anchor Steel Results

Load Reaction	39.20	k
Allowable Design Load	175.2	k
% Capacity	22.4%	**Pass**



Crown Castle	Horse Hill (BU 876314)	SK - 1
TLI		Feb 11, 2015 at 11:48 AM
25675.29504		Foundation.r3d



Crown Castle	Horse Hill (BU 876314)	SK - 1
TLI		Feb 13, 2015 at 8:51 AM
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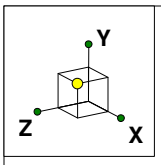

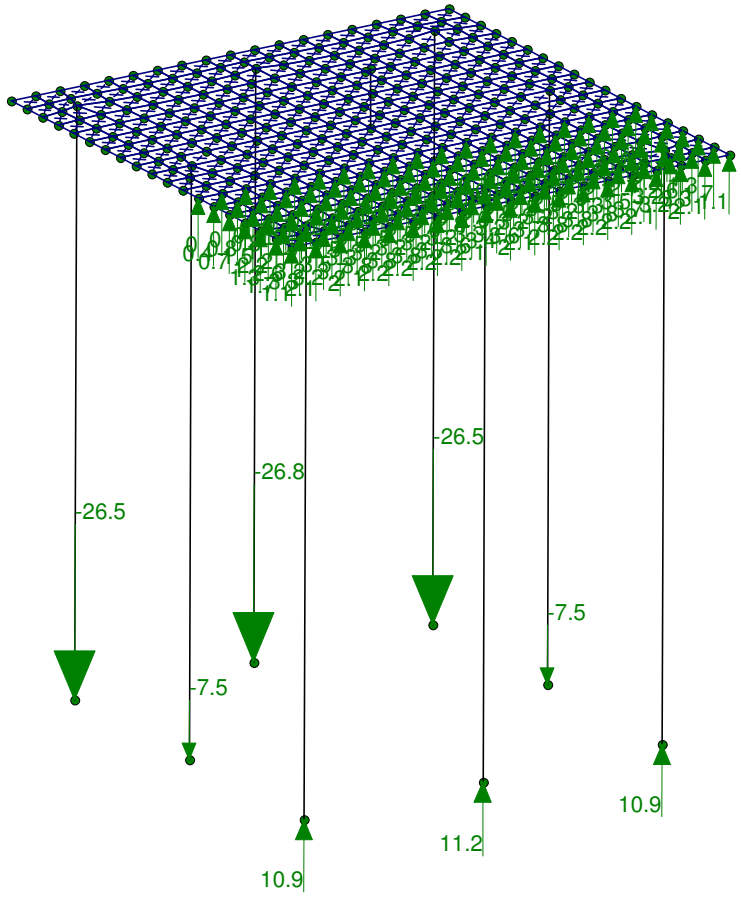

Crown Castle	Horse Hill (BU 876314)	SK - 5
TLI		Feb 13, 2015 at 8:54 AM
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EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11124H

Southbury - / I-84
214 Russian Village Road
Southbury, CT 06488

March 2, 2015

EBI Project Number: 6215001235

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	51.55 %

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

EBI Consulting
environmental | engineering | due diligence

March 2, 2015

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

Emissions Analysis for Site: **CT11124H – Southbury - / I-84**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **214 Russian Village Road, Southbury, 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 **214 Russian Village Road, Southbury, 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 **EMS 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 **EMS 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:	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS 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	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	3,305.07	ERP (W):	3,305.07	ERP (W):	3,305.07
Antenna A1 MPE%	1.34	Antenna B1 MPE%	1.34	Antenna C1 MPE%	1.34
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS 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	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	3,305.07	ERP (W):	3,305.07	ERP (W):	3,305.07
Antenna A2 MPE%	1.34	Antenna B2 MPE%	1.34	Antenna C2 MPE%	1.34
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.75	Antenna B3 MPE%	0.75	Antenna C3 MPE%	0.75

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**10.33**
MetroPCS	8.40 %
Sprint	10.37 %
AT&T	22.45 %
Site Total MPE %:	**51.55 %**

T-Mobile Sector 1 Total:	3.44 %
T-Mobile Sector 2 Total:	3.44 %
T-Mobile Sector 3 Total:	3.44 %
Site Total:	51.55 %

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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:	3.44 %
Sector 3 :	3.44 %
T-Mobile Total:	10.33 %
Site Total:	51.55 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **51.55%** 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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