Crown Castle
3530 Toringdon Way
Suite 300
Charlotte, NC 28277

Tel: 704-405-6600

www.crowncastle.com

April 10, 2014

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

RE: **T-Mobile-Exempt Modification - Crown Site BU: 876360**
T-Mobile Site ID: CT11441A
Located at: 389 Rt. 2, Preston, CT 06365

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 Modernization technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mr. Robert Congdon, First Selectman of the Town of Preston.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **389 Rt. 2, Preston, CT 06365**. 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 Sprint'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). Please send approval/rejection letter to Attn: Donna Neal.

Sincerely,

Jeff Barbadora
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. Robert Congdon, First Selectman
Town of Preston
389 Route 2
Preston, CT 06365

T-Mobile

NORTHEAST LLC.

SITE NAME: **TOWN HALL SPRINT TOWER**

SITE ID NUMBER: **CT11441A**

SITE ADDRESS: **ROUTE 2, PRESTON TOWN HALL**
PRESTON CT, 06365

PROJECT SUMMARY

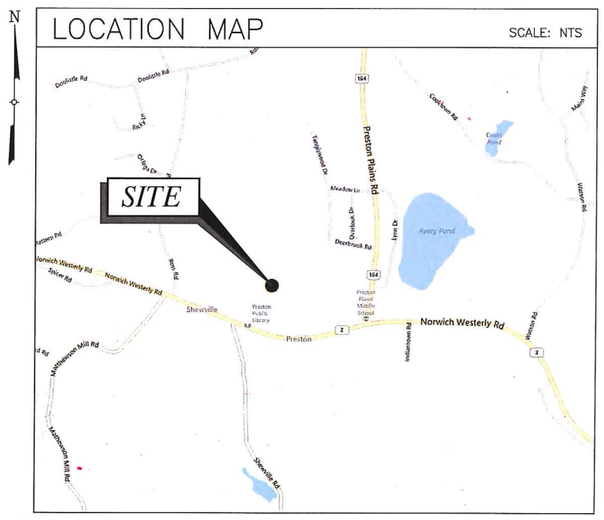
SITE ID NUMBER:	CT11441A
SITE NAME:	TOWN HALL SPRINT TOWER
CROWN BU#:	876360
SITE ADDRESS:	ROUTE 2, PRESTON TOWN HALL PRESTON CT, 06365
COUNTY:	NEW LONDON COUNTY
PROPERTY OWNER:	CROWN CASTLE USA
APPLICANT:	T-MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 0602 PHONE: (800) 692-7100
ENGINEER/ SURVEYOR/ STRUCTURAL ENG:	TECTONIC ENGINEERING CONSULTANTS P.C. 1279 ROUTE 300 NEWBURGH, NY 12550
CONTACT: PHONE:	TAMMY NOSEK (845) 567-6656 EXT. 2807
SITE ACQUISITION:	CROWN CASTLE 1200 MACARTHUR BLVD SUITE 200 MAHWAH, NJ 07430
CONTACT: PHONE:	PAUL HUGHES (585) 259-7604
PARCEL INFO:	24-0-2-389
LATITUDE: (NAD 83)	41.49035° N
LONGITUDE: (NAD 83)	71.99155° W

SITE DIRECTIONS

HEAD NORTHEAST ON GRIFFIN RD S TOWARD W NEWBERRY RD. TAKE THE 1ST RIGHT ONTO W NEWBERRY RD. TURN LEFT ONTO WOODLAND AVE. TAKE THE 1ST RIGHT ONTO CT-187 S/BLUE HILLS AVE. TURN LEFT ONTO CT-178 E/WINTONBURY AVE. CONTINUE TO FOLLOW CT-178 E. TURN RIGHT AND MERGE ONTO I-91 S TOWARD HARTFORD. TAKE EXIT 30 ON THE LEFT FOR INTERSTATE 84 E TOWARD CONNECTICUT 2/EAST HARTFORD/NEW LONDON. MERGE ONTO I-84. TAKE EXIT 55 TO MERGE ONTO CT-2 E TOWARD NORWICH/NEW LONDON/I-84 E. TURN RIGHT ONTO WASHINGTON ST. (SIGNS FOR CT-2 E/CT-32 S/NORWICH/HARBOR/DOWNTOWN). CONTINUE TO CHELSEA HARBOR DR. TURN RIGHT ONTO WATER ST. SLIGHT LEFT ONTO CT-12 N/CT-2 E/N MAIN ST. CONTINUE TO FOLLOW CT-12N/CT-2 E. TURN RIGHT ONTO CT-2 E/MAIN ST. CONTINUE TO FOLLOW CT-2 E. TURN LEFT INTO PRESTON PUBLIC LIBRARY PARKING LOT. SITE IS AHEAD ON THE RIGHT.

LOCATION MAP

SCALE: NTS



SHEET INDEX

SHEET NO	DESCRIPTION	REV NO
T-1	TITLE SHEET	1
A-1	SITE PLAN	1
A-2	EQUIPMENT LAYOUT PLANS	1
A-3	ELEVATION & DETAIL	1
A-4	ANTENNA LAYOUT PLANS & DETAILS	1
A-5	DETAILS	1
A-6	DETAILS	1
A-7	NOTES	1
A-8	NOTES	1

THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL ITEMS HAVE BEEN ADDRESSED AND EACH OF THE DRAWINGS HAS BEEN REVISED AND ISSUED "FOR CONSTRUCTION".

811 Know what's **below.** **Call** before you dig.

CONFIGURATION
2C
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • CONSTRUCTION MANAGEMENT
• ENGINEERING
• SURVEYING
TECTONIC Engineering & Survey Consultants P.C.
1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703

T-Mobile
T-MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692-7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY	DATE

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

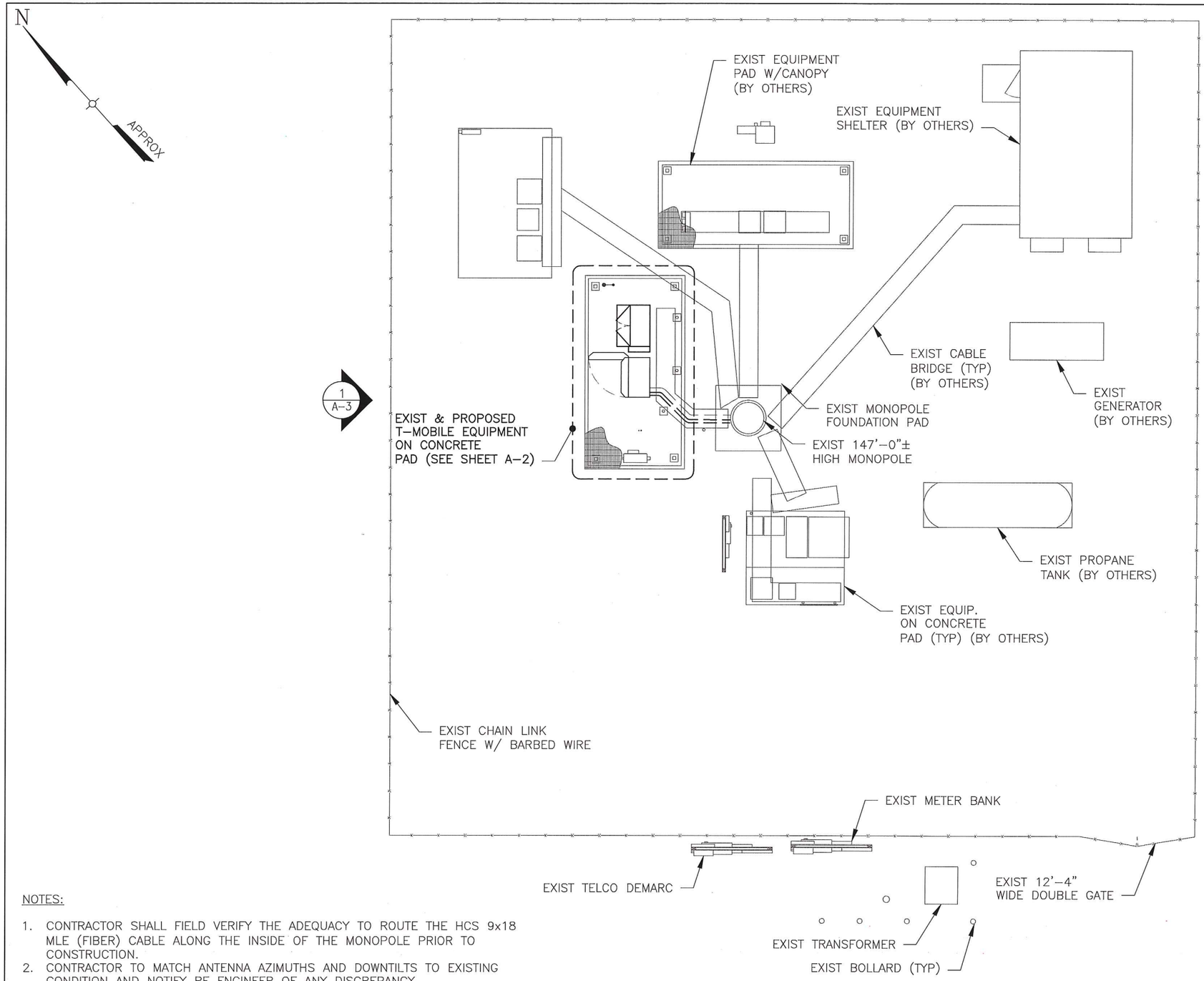
CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



NOTES:

1. CONTRACTOR SHALL FIELD VERIFY THE ADEQUACY TO ROUTE THE HCS 9x18 MLE (FIBER) CABLE ALONG THE INSIDE OF THE MONOPOLE PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO MATCH ANTENNA AZIMUTHS AND DOWNTILTS TO EXISTING CONDITION AND NOTIFY RF ENGINEER OF ANY DISCREPANCY.
3. LOCK & TAG BREAKERS FOR ALL EQUIPMENT BEING TURNED OFF (WHEN APPLICABLE).
4. CONTRACTOR TO RE-VERIFY CABLE LENGTHS PRIOR TO CONSTRUCTION.
5. SEE RFDS FOR FINAL EQUIPMENT CONFIGURATION.

1 A-1 SITE PLAN

SCALE: 3/32" = 1'-0'

CONFIGURATION
2C
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC

- PLANNING
- ENGINEERING
- SURVEYING
- CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Survey Consultants P.C.

1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703

T-Mobile

T-MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692-7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY _____ DATE _____

STATE OF CONNECTICUT
ANTONIO A. GALATIER
No. 25406
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION

CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

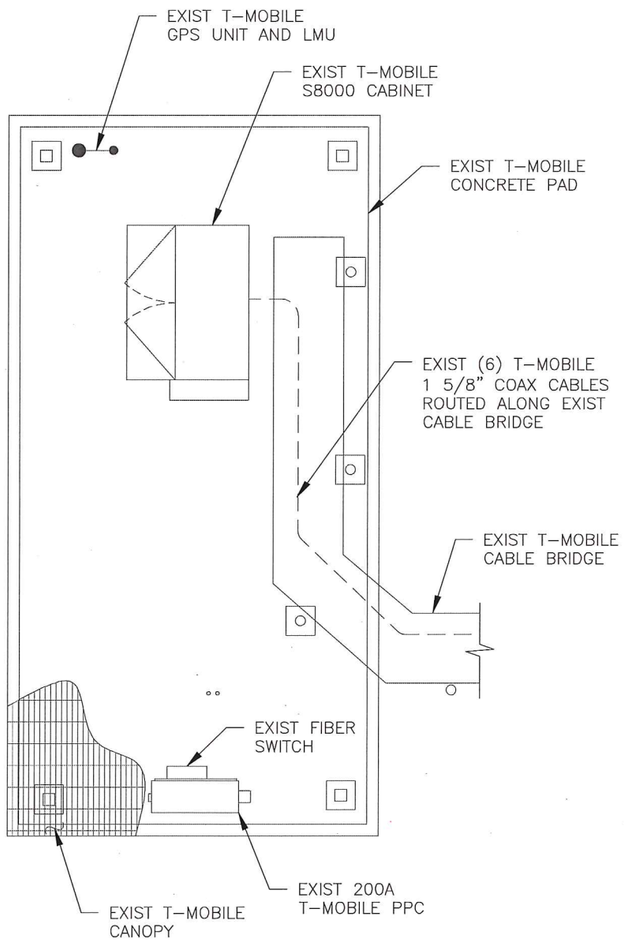
SITE PLAN

SHEET NUMBER

A-1

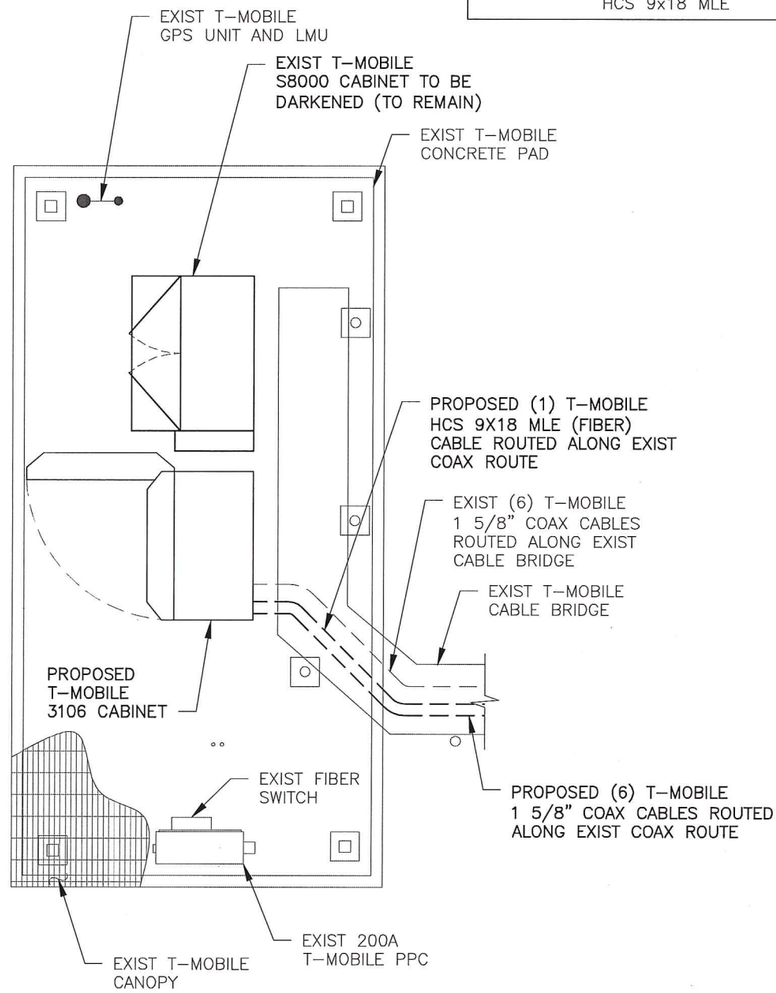
N

APPROX



1 / A–2 EXIST EQUIPMENT PLAN

SCALE: 1/4" = 1'–0'



2 / A–2 PROPOSED EQUIPMENT PLAN

SCALE: 1/4" = 1'–0'

HCS LENGTH			
FROM EQUIPMENT CABINET TO ANTENNA			
SECTOR	ALPHA	BETA	GAMMA
LENGTH	200'±	200'±	200'±
SIZE	1–5/8"		
HCS 9x18 MLE			

CONFIGURATION
2C
REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC

• PLANNING • CONSTRUCTION MANAGEMENT
• ENGINEERING
• SURVEYING

TECTONIC Engineering & Survey Consultants P.C.

1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567–6656
Fax: (845) 567–8703

T–Mobile

T–MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692–7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY	DATE

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION

CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

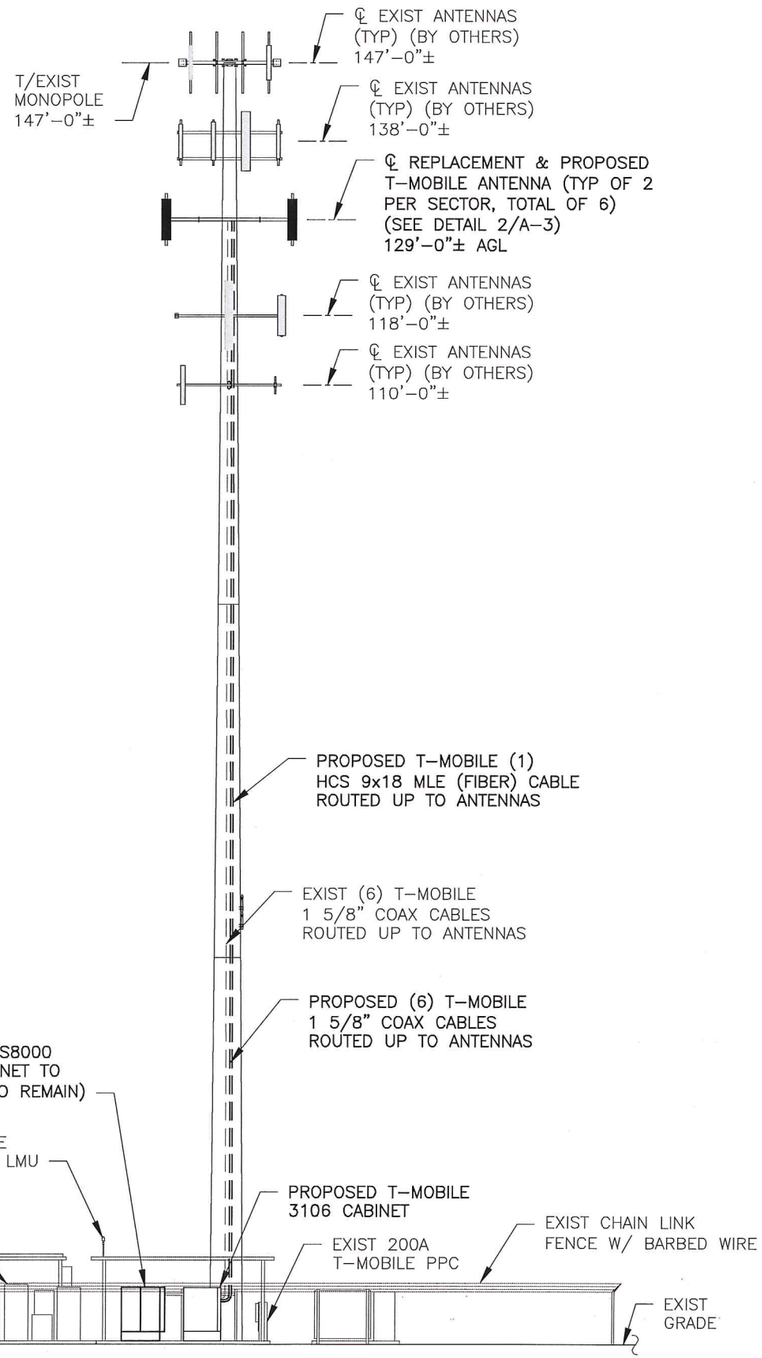
EQUIPMENT LAYOUT PLANS

SHEET NUMBER

A–2

ELEVATION NOTE:

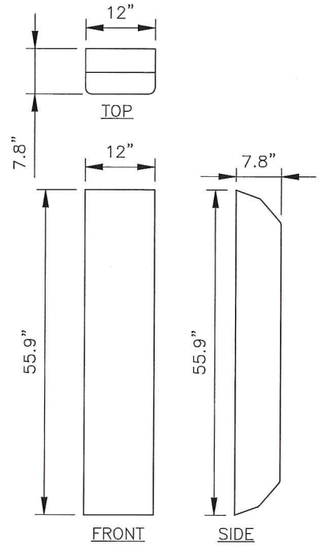
ELEVATION OF EXIST MONOPOLE HAS BEEN ARBITRARILY ASSIGNED AS EL 329'–0"±. THIS IS APPROXIMATELY 147'–0"± ABOVE GRADE WHICH WAS ESTIMATED AS EL 182'–0"± TAKEN FROM U.S.G.S. QUAD MAP, AND DOES NOT NECESSARILY CORRESPOND TO ACTUAL ELEVATION ABOVE SEA LEVEL. ALL OTHER ELEVATIONS INDICATED WERE DETERMINED ON THIS BASIS.



1 / A–3 ELEVATION

SCALE: 1/16" = 1'–0"

THE PROPOSED INSTALLATION, EXISTING MOUNTS & EXISTING MONOPOLE SHALL BE STRUCTURALLY ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS).



AIR 21

2 / A–3 ANTENNA DETAIL

SCALE: 1/2" = 1'–0"

CONFIGURATION

2C

REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC

• PLANNING • CONSTRUCTION MANAGEMENT
• ENGINEERING
• SURVEYING

TECTONIC Engineering & Survey Consultants P.C.

1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567–6656
Fax: (845) 567–8703

T–Mobile

T–MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692–7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY _____ DATE _____

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

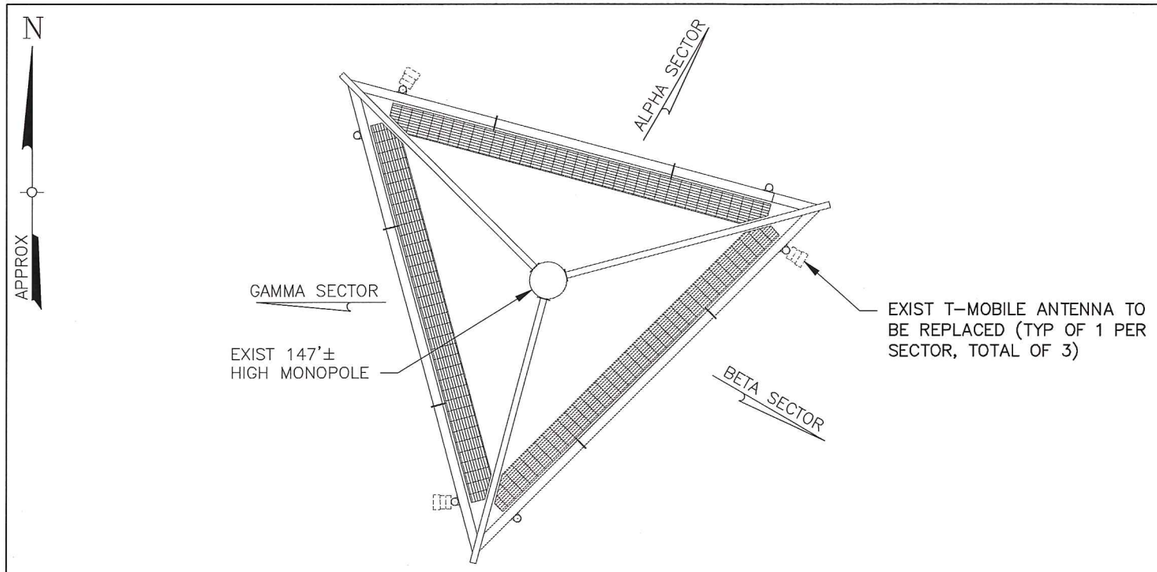
CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

ELEVATION & DETAIL

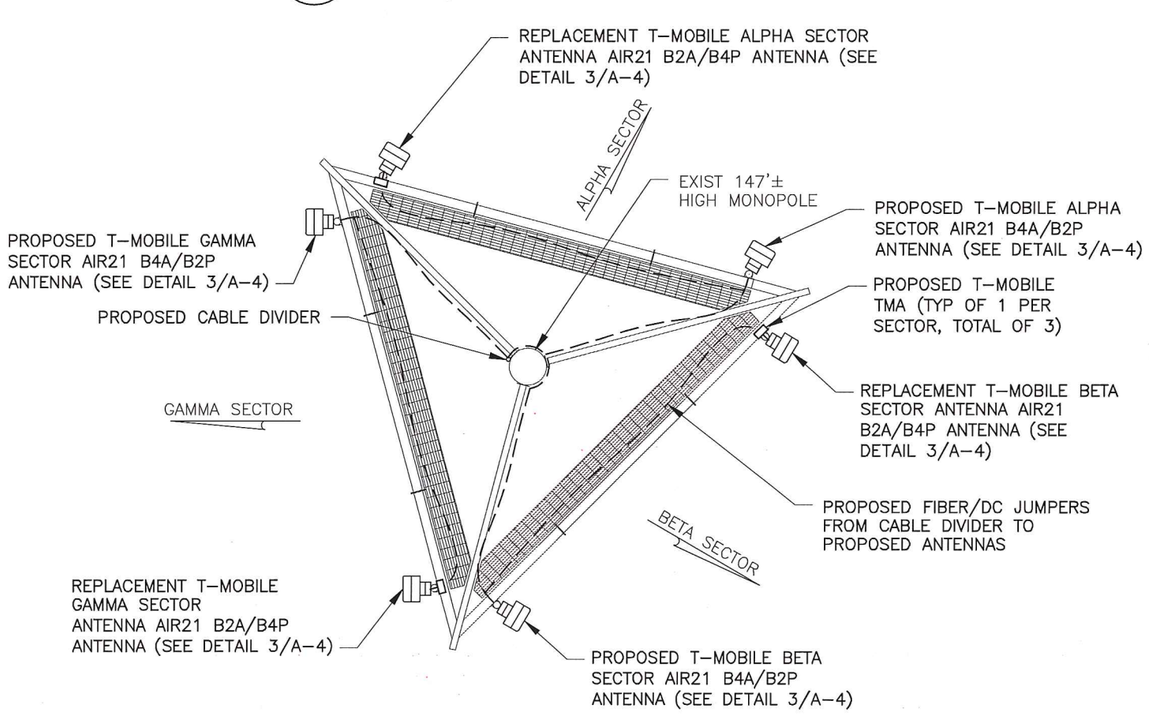
SHEET NUMBER

A–3



1 / A-4 EXIST ANTENNA PLAN

SCALE: 3/16" = 1'-0"



2 / A-4 PROPOSED ANTENNA PLAN

SCALE: 3/16" = 1'-0"

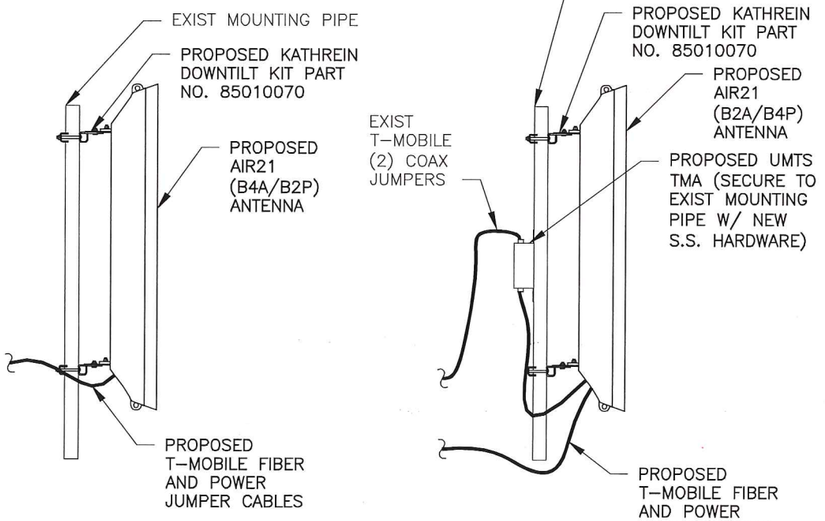
THE PROPOSED INSTALLATION, EXISTING MOUNTS & EXISTING MONOPOLE SHALL BE STRUCTURALLY ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS).

EXIST ANTENNA SCHEDULE

SECTOR	MAKE	QUANTITY	MODEL#	SIZE
ALPHA	EMS	1	RR90-17-02DP	56.0x8.0x2.8
BETA	EMS	1	RR90-17-02DP	56.0x8.0x2.8
GAMMA	EMS	1	RR90-17-02DP	56.0x8.0x2.8

PROPOSED ANTENNA SCHEDULE

SECTOR	MAKE	QUANTITY	MODEL#	SIZE
ALPHA	ERICSSON	1	AIR21 B2A/B4P	12x8x56
	ERICSSON	1	AIR21 B4A/B2P	12x8x56
BETA	ERICSSON	1	AIR21 B2A/B4P	12x8x56
	ERICSSON	1	AIR21 B4A/B2P	12x8x56
GAMMA	ERICSSON	1	AIR21 B2A/B4P	12x8x56
	ERICSSON	1	AIR21 B4A/B2P	12x8x56



3 / A-4 ANTENNA DETAIL

SCALE: 1/2" = 1'-0"

CONFIGURATION
2C
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • CONSTRUCTION MANAGEMENT
• ENGINEERING
• SURVEYING
TECTONIC Engineering & Survey Consultants P.C.
1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703

T-Mobile
T-MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692-7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY DATE

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION

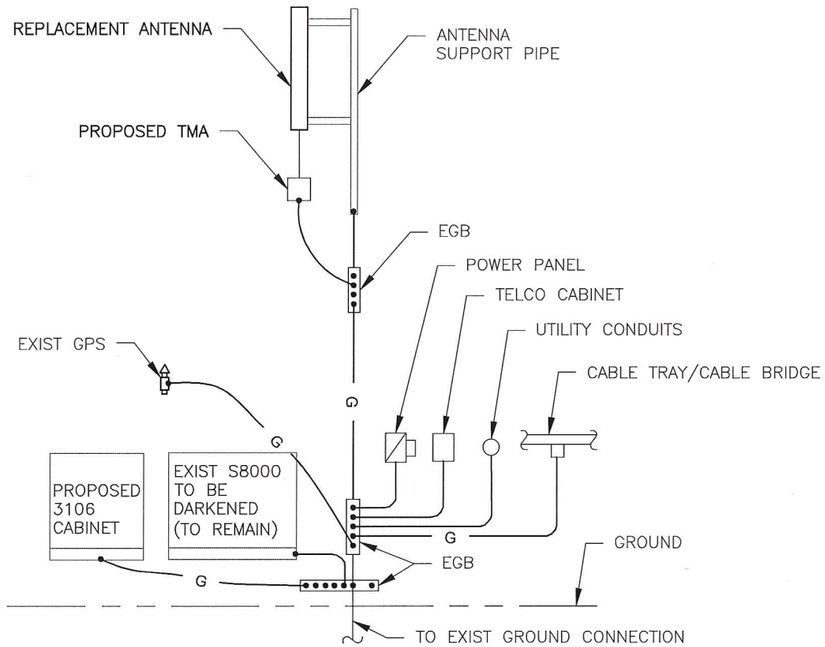
CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

ANTENNA LAYOUT PLANS & DETAILS

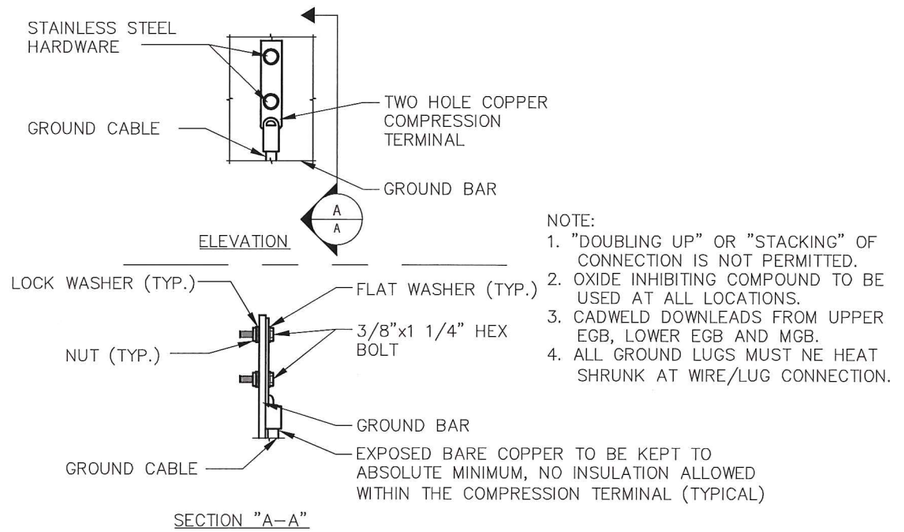
SHEET NUMBER

A-4



1 A–5 GROUNDING RISER DIAGRAM

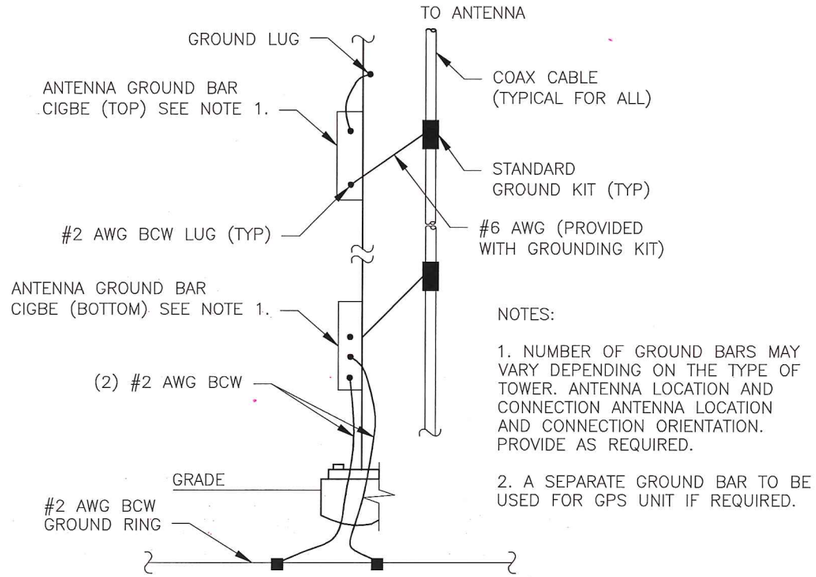
SCALE: NTS



NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.
4. ALL GROUND LUGS MUST NE HEAT SHRUNK AT WIRE/LUG CONNECTION.

2 A–5 GROUNDING BAR CONN. DETAIL

SCALE: NTS



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

2. A SEPARATE GROUND BAR TO BE USED FOR GPS UNIT IF REQUIRED.

3 A–5 ANTENNA CABLE GROUNDING

SCALE: NTS

CONFIGURATION

2C

REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • CONSTRUCTION MANAGEMENT
• ENGINEERING
• SURVEYING
TECTONIC Engineering & Survey Consultants P.C.
1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567–6656
Fax: (845) 567–8703

T–Mobile
T–MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692–7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY	DATE

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION

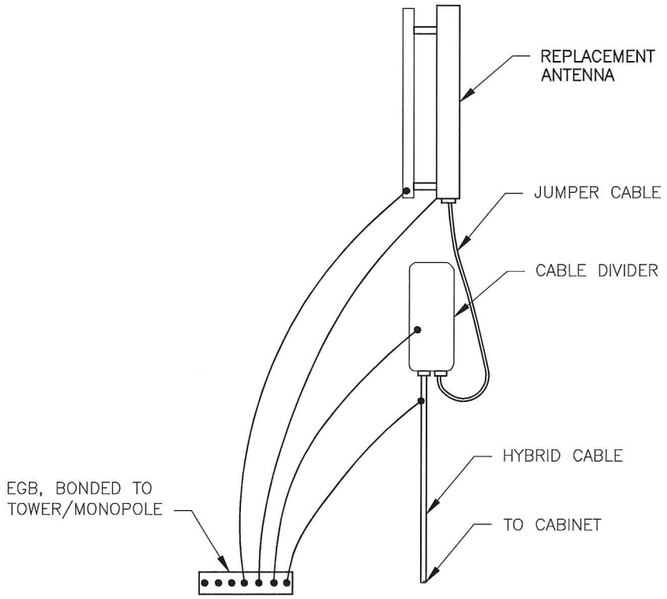
CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

DETAILS

SHEET NUMBER

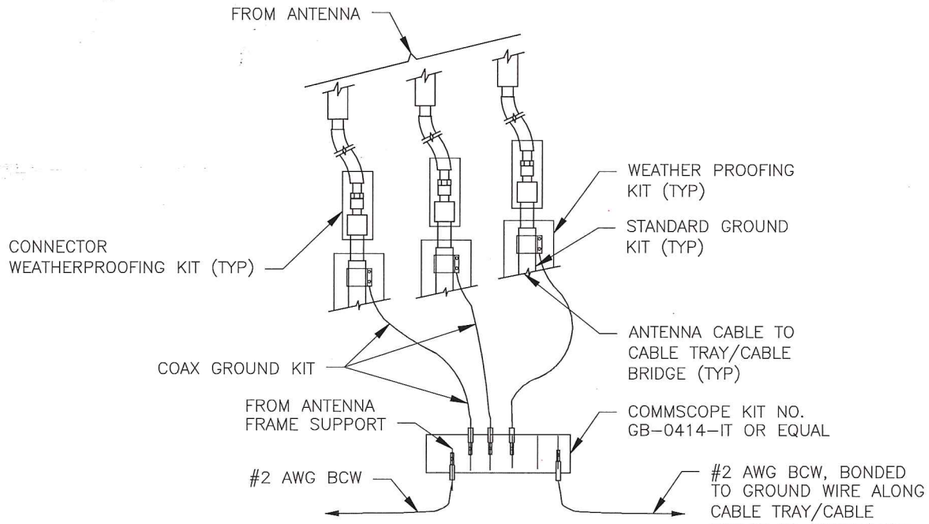
A–5



HYBRID CABLE CONNECTION AND GROUNDING DETAIL

1 / A-6

SCALE: NTS

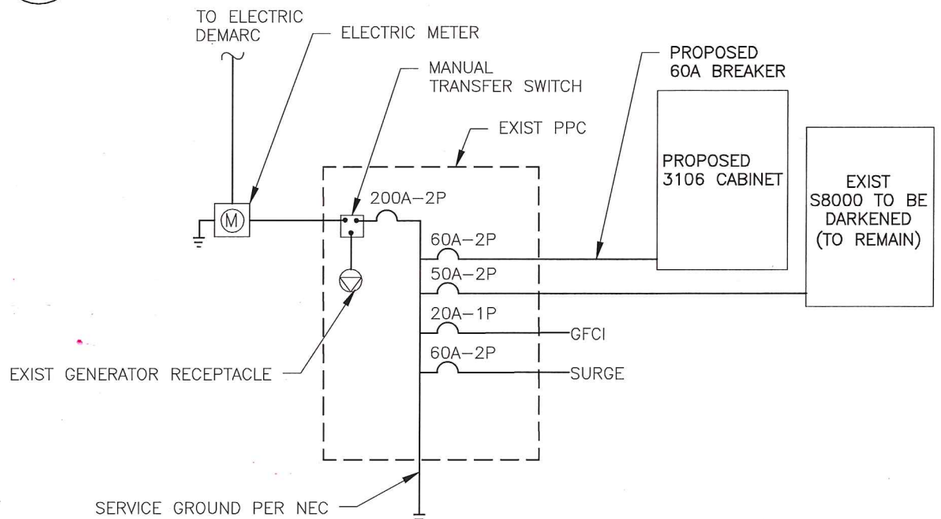


NOTE:
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

2 / A-6

SCALE: NTS



ONE-LINE POWER DIAGRAM

3 / A-6

SCALE: NTS

CONFIGURATION

2C

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • CONSTRUCTION MANAGEMENT
• ENGINEERING
• SURVEYING
TECTONIC Engineering & Survey Consultants P.C.
1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703

T-Mobile

T-MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692-7100

CROWN CASTLE

APPROVALS

LANDLORD
RF
CONSTRUCTION
OPERATIONS
SITE ACQ.

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY | DATE

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

DETAILS

SHEET NUMBER

A-6

GENERAL NOTES

1. CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL HE OBTAINS, AT HIS OWN EXPENSE, ALL INSURANCE REQUIRED BY T–MOBILE, THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.
2. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATE "ISSUED FOR PERMIT"
3. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
4. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES OR OTHER PUBLIC AUTHORITIES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
6. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THIS PROJECT IN ACCORDANCE WITH THE OVERALL INTENT OF THESE DRAWINGS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
8. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
9. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
10. POWER TO THE FACILITY IS MONITORED BY AN EXISTING METER.
11. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
12. CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
13. IF ANY PIPING EXISTS BENEATH THE SITE AREA, CONTRACTOR MUST LOCATE IT AND CONTACT OWNER'S REPRESENTATIVE.
14. THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.
15. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
16. THE CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. THE CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB–CONTRACTORS AND RELATED PARTIES. THE SUB–CONTRACTOR SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
17. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
18. ALL MATERIAL PROVIDED BY T–MOBILE IS TO BE REVIEWED BY THE CONTRACTOR AND ALL APPLICABLE SUB–CONTRACTORS PRIOR TO INSTALLATION. ANY DEFICIENCIES TO PROVIDE MATERIALS SHALL BE BROUGHT TO THE CONSTRUCTION MANAGER'S ATTENTION IMMEDIATELY.
19. THE MATERIALS INSTALLED SHALL MEET REQUIREMENTS OF CONTRACTORS DOCUMENTS. NO SUBSTITUTIONS ARE ALLOWED.
20. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.

GENERAL NOTES

21. THE CONTRACTOR SHALL RECEIVE CLARIFICATION AND AUTHORIZATION IN WRITING TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONSTRUCTION DOCUMENTS.
22. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
23. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST–ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAND PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
24. THE CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
26. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS MAY TAKE PRECEDENCE.
27. THE CONTRACTOR SHALL REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
28. THE CONTRACTOR SHALL KEEP CONTRACT AREA CLEAN, HAZARD FREE AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITIONS AND FREE FROM PAINT SPOTS, DUST OR SMUDGES OF ANY NATURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
29. BEFORE FINAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT, TEMPORARY WORK, UNUSED AND USELESS MATERIALS, RUBBISH AND TEMPORARY STRUCTURES.
30. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2005 CONNECTICUT STATE BUILDING CODE (INCLUDING AMENDMENTS) AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
31. CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
32. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
33. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
34. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.

CONFIGURATION

2C

REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC

- PLANNING
- ENGINEERING
- SURVEYING
- CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Survey Consultants P.C.
1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567–6656
Fax: (845) 567–8703

T–Mobile
T–MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692–7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY _____ DATE _____

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

NOTES

SHEET NUMBER

A–7

GROUNDING NOTES

1. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
2. ALL GROUNDING WORK SHALL BE IN ACCORDANCE WITH T–MOBILE STANDARD PRACTICE.
3. ALL BUS CONNECTORS SHALL BE TWO–HOLE, LONG–BARREL TYPE COMPRESSION LUGS, T&B OR EQUAL, UNLESS OTHERWISE NOTED ON DRAWINGS. ALL LUGS SHALL BE ATTACHED TO BUSSES USING BOLTS, NUTS, AND LOCK WASHERS. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED.
4. ALL CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS, T&B #TBM 8 OR EQUIVALENT.
5. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE A NON–OXIDIZING AGENT APPLIED PRIOR TO INSTALLATION.
6. ALL COPPER BUSSES SHALL BE CLEANED, POLISHED, AND A NON–OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
7. ALL BENDS SHALL BE AS SHALLOW AS POSSIBLE, WITH NO TURN SHORTER THAN AN 8–INCH NOMINAL RADIUS.
8. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2. ALL GROUNDING CONDUCTORS SHALL RUN THROUGH PVC SLEEVES WHEREVER CONDUCTORS RUN THROUGH WALLS, FLOORS, OR CEILINGS. IF CONDUCTORS MUST RUN THROUGH EMT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
9. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 10 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE PROJECT MANAGER FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE.
10. ALL ROOF TOP ANTENNA MOUNTS SHALL BE GROUNDED WITH A #2 GROUND WIRE CONNECTED TO THE NEAREST GROUND BUS. ALL CONNECTIONS ARE TO BE CAD–WELDED IF POSSIBLE.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. GROUNDING CONNECTION TO TRAVEL IN A DOWNWARD DIRECTION.
13. ALL EXPOSED #2 WIRE MUST BE TINN NOT BTW.
14. TECTONIC TAKES NO RESPONSIBILITY OR LIABILITY FOR THE GROUNDING SYSTEM AS SHOWN ON THIS SITE. THIS IS A STANDARD GROUNDING SYSTEM.

CONFIGURATION

2C

REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC

• PLANNING • CONSTRUCTION MANAGEMENT
• ENGINEERING
• SURVEYING

TECTONIC Engineering & Survey Consultants P.C.

1279 ROUTE 300
NEWBURGH, NY 12550
Phone: (845) 567–6656
Fax: (845) 567–8703

T–Mobile

T–MOBILE NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
PHONE: (860) 692–7100

CROWN CASTLE

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
7061.CT11441A	JQ

REV	DATE	REVISION	DRAWN BY
0	04/08/14	FOR COMMENT	MP
1	04/09/14	FOR CONSTRUCTION	MP

ISSUED BY	DATE

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION

CT11441A
TOWN HALL SPRINT TOWER
ROUTE 2, PRESTON
TOWN HALL
PRESTON, CT 06365

SHEET TITLE

NOTES

SHEET NUMBER

A–8

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **March 28, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11441A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	876360
	Crown Castle Site Name:	PRESTON / TOWN HALL
	Crown Castle JDE Job Number:	268442
	Crown Castle Work Order Number:	731140
	Crown Castle Application Number:	223703 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37514-0680
Site Data:	**389 Rt. 2, PRESTON, New London County, CT** **Latitude *41° 29' 25.25"*, Longitude *-71° 59' 29.55"*** **147 Foot - Monopole Tower**	

Dear Patrick Byrum,

Paul J. Ford and Company 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 629408, in accordance with application 223703, 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 + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Maria C. Lopez, P.E.
Project Manager

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED
PROFESSIONAL ENGINEER

tnxTower Report - version 6.1.4.1

MAR 2 8 2014

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **March 28, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11441A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	876360
	Crown Castle Site Name:	PRESTON / TOWN HALL
	Crown Castle JDE Job Number:	268442
	Crown Castle Work Order Number:	731140
	Crown Castle Application Number:	223703 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37514-0680
Site Data:	**389 Rt. 2, PRESTON, New London County, CT** **Latitude *41° 29' 25.25"*, Longitude *-71° 59' 29.55"*** **147 Foot - Monopole Tower**	

Dear Patrick Byrum,

Paul J. Ford and Company 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 629408, in accordance with application 223703, 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 + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Maria C. Lopez, P.E.
Project Manager

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 147 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in May of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. The tower has been modified multiple times in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
129.0	129.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	7	1-5/8	-
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
147.0	147.0	6	decibel	DB978H90T2E-M w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Platform Mount [LP 601-1]			
136.0	138.0	6	antel	LPA-80080/4CF w/ Mount Pipe	12	1-5/8	1
		3	rfs celwave	APX75-866514-CT0 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		3	rymsa wireless	MG D5-800Tx w/ Mount Pipe			
	136.0	1	tower mounts	Platform Mount [LP 601-1]			
129.0	129.0	3	ems wireless	RR65-19-02DP w/ Mount Pipe	-	-	2
		1	tower mounts	Platform Mount [LP 403-1]	6	1-5/8	1
120.0	120.0	6	ericsson	TME-RRUS-11	-	-	1
		1	tower mounts	Side Arm Mount [SO 102-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
118.0	118.0	1	andrew	SBNH-1D6565C w/ Mount Pipe	3* 6 1	3/8 1-1/4 2” conduit	1
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 301-1]			
110.0	110.0	3	kathrein	800 10504 w/ Mount Pipe	6	1-5/8	1
		3	kathrein	860 10025			
		1	tower mounts	T-Arm Mount [TA 602-3]			
50.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Side Arm Mount [SO 701-1]			
48.0	49.0	1	lucent	KS24019-L112A	1	1/2	1
	48.0	1	tower mounts	Side Arm Mount [SO 701-1]			

* Installed inside conduit

Notes:
1) Existing Equipment
2) 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)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 08-01210G, 01/24/2008	2192501	CCISITES
4-POST-MODIFICATION INSPECTION	Vertical Solutions, 080609.05, 09/26/2008	2331610	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 131001.876360, 04/04/2013	3846952	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 6938, 05/03/2000	1615411	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 6938, 05/02/2000	1615372	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Monopole was reinforced in conformance with the referenced modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company 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	147 - 120.37	Pole	TP21.98x16.25x0.1875	1	-5.22	652.60	53.3	Pass
L2	120.37 - 105	Pole	TP24.8521x20.9057x0.25	2	-10.08	1014.88	85.7	Pass
L3	105 - 84.91	Pole	TP29.11x24.8521x0.4572	3	-12.85	1458.68	89.3	Pass
L4	84.91 - 59.5	Pole	TP33.993x27.3118x0.5014	4	-19.65	2031.21	97.1	Pass
L5	59.5 - 44.41	Pole	TP37.19x33.993x0.4981	5	-22.06	2189.89	98.5	Pass
L6	44.41 - 29.75	Pole	TP39.6814x35.0984x0.5432	6	-28.39	2634.15	96.6	Pass
L7	29.75 - 6.75	Pole	TP44.5664x39.6814x0.5911	7	-35.65	3231.33	90.0	Pass
L8	6.75 - 0	Pole	TP46x44.5664x0.5317	8	-37.74	3181.66	94.2	Pass
							Summary	
						Pole (L5)	98.5	Pass
						Rating =	98.5	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.9	Pass
1	Base Plate	0	83.0	Pass
1	Base Foundation Steel	0	78.8	Pass
1	Base Foundation Soil Interaction	0	53.0	Pass

Structure Rating (max from all components) =	98.5%

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

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in New London County, Connecticut.
2) Basic wind speed of 85.00 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56.00 pcf.
6) A wind speed of 37.60 mph is used in combination with ice.
7) Deflections calculated using a wind speed of 50.00 mph.
8) A non-linear (P-delta) analysis was used.
9) Pressures are calculated at each section.
10) Stress ratio used in pole design is 1.333.
11) 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	147.0000-120.3700	26.6300	3.25	18	16.2500	21.9800	0.1875	0.7500	A572-65 (65 ksi)
L2	120.3700-105.0000	18.6200	0.00	18	20.9057	24.8521	0.2500	1.0000	A572-65 (65 ksi)
L3	105.0000-84.9100	20.0900	4.17	18	24.8521	29.1100	0.4572	1.8288	Reinf 45.26 ksi (45 ksi)
L4	84.9100-59.5000	29.5800	0.00	18	27.3118	33.9930	0.5014	2.0055	Reinf 47.65 ksi (48 ksi)
L5	59.5000-44.4100	15.0900	5.17	18	33.9930	37.1900	0.4981	1.9925	Reinf 48.65 ksi (49 ksi)
L6	44.4100-29.7500	19.8300	0.00	18	35.0984	39.6814	0.5432	2.1727	Reinf 48.81 ksi (49 ksi)
L7	29.7500-6.7500	23.0000	0.00	18	39.6814	44.5664	0.5911	2.3644	Reinf 48.97 ksi (49 ksi)
L8	6.7500-0.0000	6.7500		18	44.5664	46.0000	0.5317	2.1269	Reinf 51.84 ksi (52 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	16.5007	9.5592	311.5911	5.7022	8.2550	37.7457	623.5922	4.7805	2.5300	13.493
	22.3191	12.9693	778.1562	7.7363	11.1658	69.6908	1557.3364	6.4859	3.5385	18.872
L2	21.9276	16.3903	883.4944	7.3328	10.6201	83.1908	1768.1514	8.1967	3.2394	12.958
	25.2355	19.5217	1492.7921	8.7337	12.6249	118.2423	2987.5485	9.7627	3.9340	15.736
L3	25.2355	35.3999	2661.5655	8.6602	12.6249	210.8195	5326.6331	17.7033	3.5693	7.807
	29.5591	41.5787	4312.6355	10.1717	14.7879	291.6331	8630.9457	20.7933	4.3187	9.446
L4	28.6896	42.6656	3874.5668	9.5177	13.8744	279.2601	7754.2319	21.3369	3.9245	7.827
	34.5174	53.2979	7553.0265	11.8895	17.2685	437.3886	15115.9915	26.6540	5.1003	10.173
L5	34.5174	52.9576	7506.2518	11.8907	17.2685	434.6799	15022.3805	26.4838	5.1061	10.25
	37.7637	58.0122	9867.2608	13.0256	18.8925	522.2840	19747.5053	29.0116	5.6687	11.38
L6	36.8532	59.5751	8987.3157	12.2671	17.8300	504.0559	17986.4571	29.7932	5.2213	9.613
	40.2935	67.4764	13058.4417	13.8941	20.1582	647.7996	26134.0660	33.7446	6.0279	11.097
L7	40.2935	73.3381	14158.1115	13.8771	20.1582	702.3517	28334.8526	36.6760	5.9436	10.055
	45.2539	82.5029	20156.9039	15.6112	22.6397	890.3338	40340.3307	41.2593	6.8034	11.51
L8	45.2539	74.3177	18206.1823	15.6323	22.6397	804.1701	36436.3207	37.1659	6.9078	12.991
	46.7096	76.7373	20042.9123	16.1412	23.3680	857.7076	40112.1977	38.3759	7.1602	13.466

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 147.0000-120.3700				1	1	1		
L2 120.3700-105.0000				1	1	1		
L3 105.0000-84.9100				1	1	1		
L4 84.9100-59.5000				1	1	1		
L5 59.5000-44.4100				1	1	1		
L6 44.4100-29.7500				1	1	1		
L7 29.7500-6.7500				1	1	1		
L8 6.7500-0.0000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
**										
**										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8")	C	No	Inside Pole	147.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	136.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	129.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
LDF7-50A(1-5/8")	C	No	Inside Pole	129.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	129.0000 - 0.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
						2" Ice	0.0000	1.07
						4" Ice	0.0000	1.07
**								
AVA6-50(1-1/4")	C	No	Inside Pole	118.0000 - 0.0000	6	No Ice	0.0000	0.45
						1/2" Ice	0.0000	0.45
						1" Ice	0.0000	0.45
						2" Ice	0.0000	0.45
						4" Ice	0.0000	0.45
FB-L98B-002-75000(3/8")	C	No	Inside Pole	118.0000 - 0.0000	3	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
						2" Ice	0.0000	0.06
						4" Ice	0.0000	0.06
2" Conduit (1 1/2" EMT)	C	No	Inside Pole	118.0000 - 0.0000	1	No Ice	0.0000	1.16
						1/2" Ice	0.0000	1.16
						1" Ice	0.0000	1.16
						2" Ice	0.0000	1.16
						4" Ice	0.0000	1.16
**								
**								
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	110.0000 - 0.0000	1	No Ice	0.1980	0.82
						1/2" Ice	0.2980	2.33
						1" Ice	0.3980	4.46
						2" Ice	0.5980	10.54
						4" Ice	0.9980	30.04
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	110.0000 - 0.0000	5	No Ice	0.0000	0.82
						1/2" Ice	0.0000	2.33
						1" Ice	0.0000	4.46
						2" Ice	0.0000	10.54
						4" Ice	0.0000	30.04
***								
LDF4-50A(1/2")	C	No	Inside Pole	50.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
**								
LDF4-50A(1/2")	C	No	Inside Pole	48.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
**********								
**								

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 1/4" Flat Reinforcement	B	No	CaAa (Out Of Face)	105.0000 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
						2" Ice	0.6528	0.00
						4" Ice	1.0972	0.00
*								
Aero MP3-03	C	No	CaAa (Out Of Face)	30.7500 - 5.7500	1	No Ice	0.2625	0.00
						1/2" Ice	0.3736	0.00
						1" Ice	0.4847	0.00
						2" Ice	0.7069	0.00
						4" Ice	1.1514	0.00
**								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.0000-120.3700	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.38
L2	120.3700-105.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.990	0.47
L3	105.0000-84.9100	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	4.185	0.00
		C	0.000	0.000	0.000	3.978	0.70
L4	84.9100-59.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	5.294	0.00
		C	0.000	0.000	0.000	5.031	0.88
L5	59.5000-44.4100	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	3.144	0.00
		C	0.000	0.000	0.000	2.988	0.52
L6	44.4100-29.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	3.054	0.00
		C	0.000	0.000	0.000	3.165	0.51
L7	29.7500-6.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	4.792	0.00
		C	0.000	0.000	0.000	10.591	0.80
L8	6.7500-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	1.406	0.00
		C	0.000	0.000	0.000	1.599	0.24

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	147.0000-120.3700	A	0.887	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.38
L2	120.3700-105.0000	A	0.869	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.877	0.57
L3	105.0000-84.9100	A	0.851	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	7.985	0.00
		C		0.000	0.000	0.000	7.398	1.06
L4	84.9100-59.5000	A	0.823	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	10.100	0.00
		C		0.000	0.000	0.000	9.357	1.34
L5	59.5000-44.4100	A	0.792	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	5.799	0.00
		C		0.000	0.000	0.000	5.377	0.77

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
L6	44.4100-29.7500	A	0.760	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	5.634	0.00
		C		0.000	0.000	0.000	5.663	0.75
L7	29.7500-6.7500	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	8.625	0.00
		C		0.000	0.000	0.000	17.874	1.16
L8	6.7500-0.0000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	2.531	0.00
		C		0.000	0.000	0.000	2.778	0.34

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.0000-120.3700	0.0000	0.0000	0.0000	0.0000
L2	120.3700-105.0000	-0.0848	0.0490	-0.1458	0.0842
L3	105.0000-84.9100	0.0114	0.2581	0.0271	0.4091
L4	84.9100-59.5000	0.0116	0.2635	0.0281	0.4254
L5	59.5000-44.4100	0.0118	0.2680	0.0280	0.4292
L6	44.4100-29.7500	-0.0095	0.2811	-0.0033	0.4504
L7	29.7500-6.7500	-0.2751	0.4213	-0.3830	0.6336
L8	6.7500-0.0000	-0.0326	0.2983	-0.0374	0.4746

Discrete Tower Loads

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
*** 150 ft ***									
(2) DB978H90T2E-M w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2208 3.5954 4.0226 4.9085 6.8160	2.8875 3.4896 4.1025 5.3784 8.2404	0.03 0.06 0.09 0.18 0.47
(2) DB978H90T2E-M w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2208 3.5954 4.0226 4.9085 6.8160	2.8875 3.4896 4.1025 5.3784 8.2404	0.03 0.06 0.09 0.18 0.47
(2) DB978H90T2E-M w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2208 3.5954 4.0226 4.9085 6.8160	2.8875 3.4896 4.1025 5.3784 8.2404	0.03 0.06 0.09 0.18 0.47
Platform Mount [LP 601-1]	C	None		0.0000	147.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.4700 33.5900 38.7100 48.9500 69.4300	28.4700 33.5900 38.7100 48.9500 69.4300	1.12 1.51 1.91 2.69 4.26
*** 138 ft ***									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LPA-80080/4CF w/ Mount Pipe	A	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.8561 3.2195 3.5922 4.4498 6.3182	7.2274 7.9217 8.6338 10.1119 13.3391	0.03 0.08 0.13 0.25 0.61
(2) LPA-80080/4CF w/ Mount Pipe	B	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.8561 3.2195 3.5922 4.4498 6.3182	7.2274 7.9217 8.6338 10.1119 13.3391	0.03 0.08 0.13 0.25 0.61
(2) LPA-80080/4CF w/ Mount Pipe	C	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.8561 3.2195 3.5922 4.4498 6.3182	7.2274 7.9217 8.6338 10.1119 13.3391	0.03 0.08 0.13 0.25 0.61
APX75-866514-CT0 w/ Mount Pipe	A	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.0035 10.7223 11.4265 12.8248 15.7391	6.5726 7.8816 9.0166 11.0249 15.2417	0.06 0.13 0.21 0.40 0.93
APX75-866514-CT0 w/ Mount Pipe	B	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.0035 10.7223 11.4265 12.8248 15.7391	6.5726 7.8816 9.0166 11.0249 15.2417	0.06 0.13 0.21 0.40 0.93
APX75-866514-CT0 w/ Mount Pipe	C	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.0035 10.7223 11.4265 12.8248 15.7391	6.5726 7.8816 9.0166 11.0249 15.2417	0.06 0.13 0.21 0.40 0.93
MG D5-800Tx w/ Mount Pipe	A	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.5703 3.9790 4.3870 5.3253 7.3410	3.4178 4.1193 4.7842 6.1642 9.1751	0.04 0.07 0.11 0.21 0.52
MG D5-800Tx w/ Mount Pipe	B	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.5703 3.9790 4.3870 5.3253 7.3410	3.4178 4.1193 4.7842 6.1642 9.1751	0.04 0.07 0.11 0.21 0.52
MG D5-800Tx w/ Mount Pipe	C	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.5703 3.9790 4.3870 5.3253 7.3410	3.4178 4.1193 4.7842 6.1642 9.1751	0.04 0.07 0.11 0.21 0.52
(2) FD9R6004/2C-3L	A	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3665 0.4506 0.5433 0.7546 1.2808	0.0846 0.1362 0.1965 0.3430 0.7396	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	B	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.3665 0.4506 0.5433 0.7546 1.2808	0.0846 0.1362 0.1965 0.3430 0.7396	0.00 0.01 0.01 0.02 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice			
(2) FD9R6004/2C-3L	C	From Face	4.0000 0.00 2.00	0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3665 0.4506 0.5433 0.7546 1.2808	0.0846 0.1362 0.1965 0.3430 0.7396	0.00 0.01 0.01 0.02 0.06
Platform Mount [LP 601-1]	C	None		0.0000	136.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.4700 33.5900 38.7100 48.9500 69.4300	28.4700 33.5900 38.7100 48.9500 69.4300	1.12 1.51 1.91 2.69 4.26
*** 129 ft ***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8253 7.3471 7.8631 8.9261 11.1755	5.6424 6.4800 7.2567 8.8640 12.2932	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8155 7.3373 7.8532 8.9160 11.1650	5.6334 6.4717 7.2478 8.8537 12.2804	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	A	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4083 0.4969 0.5941 0.8145 1.3590	0.2042 0.2733 0.3511 0.5326 0.9992	0.01 0.01 0.02 0.03 0.08
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8253 7.3471 7.8631 8.9261 11.1755	5.6424 6.4800 7.2567 8.8640 12.2932	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8155 7.3373 7.8532 8.9160 11.1650	5.6334 6.4717 7.2478 8.8537 12.2804	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	B	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4083 0.4969 0.5941 0.8145 1.3590	0.2042 0.2733 0.3511 0.5326 0.9992	0.01 0.01 0.02 0.03 0.08
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8253 7.3471 7.8631 8.9261 11.1755	5.6424 6.4800 7.2567 8.8640 12.2932	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.8155 7.3373 7.8532 8.9160 11.1650	5.6334 6.4717 7.2478 8.8537 12.2804	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	C	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 1/2" Ice	0.4083 0.4969 0.5941	0.2042 0.2733 0.3511	0.01 0.01 0.02

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
						1" Ice	0.8145	0.5326	0.03
						2" Ice	1.3590	0.9992	0.08
						4" Ice			
Platform Mount [LP 403-1]	C	None		0.0000	129.0000	No Ice	18.8500	18.8500	1.50
						1/2" Ice	24.3000	24.3000	1.80
						1" Ice	29.7500	29.7500	2.09
						2" Ice	40.6500	40.6500	2.69
						4" Ice	62.4500	62.4500	3.87
*** 118 ft ***									
(2) TME-RRUS-11	A	From Leg	2.0000 0.00 0.00	0.0000	120.0000	No Ice	3.2486	1.3726	0.05
						1/2" Ice	3.4905	1.5510	0.07
						1" Ice	3.7411	1.7380	0.09
						2" Ice	4.2682	2.1381	0.15
						4" Ice	5.4260	3.0418	0.31
(2) TME-RRUS-11	B	From Leg	2.0000 0.00 0.00	0.0000	120.0000	No Ice	3.2486	1.3726	0.05
						1/2" Ice	3.4905	1.5510	0.07
						1" Ice	3.7411	1.7380	0.09
						2" Ice	4.2682	2.1381	0.15
						4" Ice	5.4260	3.0418	0.31
(2) TME-RRUS-11	C	From Leg	2.0000 0.00 0.00	0.0000	120.0000	No Ice	3.2486	1.3726	0.05
						1/2" Ice	3.4905	1.5510	0.07
						1" Ice	3.7411	1.7380	0.09
						2" Ice	4.2682	2.1381	0.15
						4" Ice	5.4260	3.0418	0.31
Side Arm Mount [SO 102-3]	C	None		0.0000	120.0000	No Ice	3.0000	3.0000	0.08
						1/2" Ice	3.4800	3.4800	0.11
						1" Ice	3.9600	3.9600	0.14
						2" Ice	4.9200	4.9200	0.20
						4" Ice	6.8400	6.8400	0.32
*** 118 ft ***									
7770.00 w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice	6.1194	4.2543	0.06
						1/2" Ice	6.6258	5.0137	0.10
						1" Ice	7.1283	5.7109	0.16
						2" Ice	8.1643	7.1553	0.29
						4" Ice	10.3599	10.4117	0.66
7770.00 w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice	6.1194	4.2543	0.06
						1/2" Ice	6.6258	5.0137	0.10
						1" Ice	7.1283	5.7109	0.16
						2" Ice	8.1643	7.1553	0.29
						4" Ice	10.3599	10.4117	0.66
7770.00 w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice	6.1194	4.2543	0.06
						1/2" Ice	6.6258	5.0137	0.10
						1" Ice	7.1283	5.7109	0.16
						2" Ice	8.1643	7.1553	0.29
						4" Ice	10.3599	10.4117	0.66
(2) LGP21401	A	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice	1.2880	0.2326	0.01
						1/2" Ice	1.4453	0.3134	0.02
						1" Ice	1.6112	0.4028	0.03
						2" Ice	1.9690	0.6076	0.05
						4" Ice	2.7882	1.1210	0.14
(2) LGP21401	B	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice	1.2880	0.2326	0.01
						1/2" Ice	1.4453	0.3134	0.02
						1" Ice	1.6112	0.4028	0.03
						2" Ice	1.9690	0.6076	0.05
						4" Ice	2.7882	1.1210	0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP21401	C	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.2880 1.4453 1.6112 1.9690 2.7882	0.2326 0.3134 0.4028 0.6076 1.1210	0.01 0.02 0.03 0.05 0.14
P65-17-XLH-RR w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.8229 12.5940 13.3752 14.9400 18.3336	9.0563 10.6186 12.2051 14.6968 19.6430	0.09 0.18 0.28 0.51 1.14
SBNH-1D6565C w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.5561 12.2227 12.8929 14.2911 17.4280	9.7151 11.1857 12.5942 14.8689 19.6184	0.10 0.19 0.28 0.51 1.15
P65-17-XLH-RR w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.8229 12.5940 13.3752 14.9400 18.3336	9.0563 10.6186 12.2051 14.6968 19.6430	0.09 0.18 0.28 0.51 1.14
DC6-48-60-18-8F	A	From Face	4.0000 0.00 0.00	0.0000	118.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5667 2.7978 3.0377 3.5432 4.6580	2.5667 2.7978 3.0377 3.5432 4.6580	0.02 0.04 0.07 0.13 0.30
Platform Mount [LP 301-1]	C	None		0.0000	118.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	30.1000 40.8000 51.5000 72.9000 115.7000	30.1000 40.8000 51.5000 72.9000 115.7000	1.59 2.03 2.47 3.35 5.11
110 ft*									
800 10504 w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.5887 4.0069 4.4217 5.3391 7.3849	3.1779 3.9053 4.5808 5.9816 8.9834	0.04 0.07 0.11 0.21 0.51
800 10504 w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.5887 4.0069 4.4217 5.3391 7.3849	3.1779 3.9053 4.5808 5.9816 8.9834	0.04 0.07 0.11 0.21 0.51
800 10504 w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.5887 4.0069 4.4217 5.3391 7.3849	3.1779 3.9053 4.5808 5.9816 8.9834	0.04 0.07 0.11 0.21 0.51
860 10025	A	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.1633 0.2286 0.3025 0.4762 0.9273	0.1361 0.1988 0.2701 0.4386 0.8793	0.00 0.00 0.01 0.01 0.05
860 10025	B	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice 1/2" Ice 1" Ice	0.1633 0.2286 0.3025 0.4762	0.1361 0.1988 0.2701 0.4386	0.00 0.00 0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	0.9273	0.8793	0.05
						4" Ice			
860 10025	C	From Face	4.0000 0.00 0.00	0.0000	110.0000	No Ice	0.1633	0.1361	0.00
						1/2" Ice	0.2286	0.1988	0.00
							0.3025	0.2701	0.01
						1" Ice	0.4762	0.4386	0.01
						2" Ice	0.9273	0.8793	0.05
						4" Ice			
T-Arm Mount [TA 602-3]	C	None		0.0000	110.0000	No Ice	11.5900	11.5900	0.77
						1/2" Ice	15.4400	15.4400	0.99
							19.2900	19.2900	1.21
						1" Ice	26.9900	26.9900	1.64
						2" Ice	42.3900	42.3900	2.50
						4" Ice			
*** 50 ft ***									
KS24019-L112A	C	From Face	1.0000 0.00 1.00	0.0000	50.0000	No Ice	0.1556	0.1556	0.01
						1/2" Ice	0.2247	0.2247	0.01
							0.3025	0.3025	0.01
						1" Ice	0.4840	0.4840	0.02
						2" Ice	0.9506	0.9506	0.06
						4" Ice			
Side Arm Mount [SO 701-1]	C	None		0.0000	50.0000	No Ice	0.8500	1.6700	0.07
						1/2" Ice	1.1400	2.3400	0.08
							1.4300	3.0100	0.09
						1" Ice	2.0100	4.3500	0.12
						2" Ice	3.1700	7.0300	0.18
						4" Ice			
*** 48 ft ***									
KS24019-L112A	A	From Face	1.0000 0.00 1.00	0.0000	48.0000	No Ice	0.1556	0.1556	0.01
						1/2" Ice	0.2247	0.2247	0.01
							0.3025	0.3025	0.01
						1" Ice	0.4840	0.4840	0.02
						2" Ice	0.9506	0.9506	0.06
						4" Ice			
Side Arm Mount [SO 701-1]	A	None		0.0000	48.0000	No Ice	0.8500	1.6700	0.07
						1/2" Ice	1.1400	2.3400	0.08
							1.4300	3.0100	0.09
						1" Ice	2.0100	4.3500	0.12
						2" Ice	3.1700	7.0300	0.18
						4" Ice			
***									

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 147.0000-120.3700	133.0198	1.489	27.55	42.419	A	0.000	42.419	42.419	100.00	0.000	0.000
					B	0.000	42.419		100.00	0.000	0.000
					C	0.000	42.419		100.00	0.000	0.000
L2 120.3700-105.0000	112.5053	1.42	26.26	29.745	A	0.000	29.745	29.745	100.00	0.000	0.000
					B	0.000	29.745		100.00	0.000	0.000
					C	0.000	29.745		100.00	0.000	0.990
L3 105.0000-84.9100	94.6908	1.351	25.00	45.171	A	0.000	45.171	45.171	100.00	0.000	0.000
					B	0.000	45.171		100.00	0.000	4.185
					C	0.000	45.171		100.00	0.000	3.978

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L4 84.9100-59.5000	71.8145	1.249	23.10	65.904	A	0.000	65.904	65.904	100.00	0.000	0.000
					B	0.000	65.904		100.00	0.000	5.294
					C	0.000	65.904		100.00	0.000	5.031
L5 59.5000-44.4100	51.8420	1.138	21.04	44.756	A	0.000	44.756	44.756	100.00	0.000	0.000
					B	0.000	44.756		100.00	0.000	3.144
					C	0.000	44.756		100.00	0.000	2.988
L6 44.4100-29.7500	36.9710	1.033	19.11	46.408	A	0.000	46.408	46.408	100.00	0.000	0.000
					B	0.000	46.408		100.00	0.000	3.054
					C	0.000	46.408		100.00	0.000	3.165
L7 29.7500-6.7500	18.0277	1	18.50	80.737	A	0.000	80.737	80.737	100.00	0.000	0.000
					B	0.000	80.737		100.00	0.000	4.792
					C	0.000	80.737		100.00	0.000	10.591
L8 6.7500-0.0000	3.3572	1	18.50	25.472	A	0.000	25.472	25.472	100.00	0.000	0.000
					B	0.000	25.472		100.00	0.000	1.406
					C	0.000	25.472		100.00	0.000	1.599

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 147.0000-120.3700	133.0198	1.489	5.39	0.8866	46.354	A	0.000	46.354	46.354	100.00	0.000	0.000
						B	0.000	46.354		100.00	0.000	0.000
						C	0.000	46.354		100.00	0.000	0.000
L2 120.3700-105.0000	112.5053	1.42	5.14	0.8689	32.016	A	0.000	32.016	32.016	100.00	0.000	0.000
						B	0.000	32.016		100.00	0.000	0.000
						C	0.000	32.016		100.00	0.000	1.877
L3 105.0000-84.9100	94.6908	1.351	4.89	0.8511	48.021	A	0.000	48.021	48.021	100.00	0.000	0.000
						B	0.000	48.021		100.00	0.000	7.985
						C	0.000	48.021		100.00	0.000	7.398
L4 84.9100-59.5000	71.8145	1.249	4.52	0.8234	69.508	A	0.000	69.508	69.508	100.00	0.000	0.000
						B	0.000	69.508		100.00	0.000	10.100
						C	0.000	69.508		100.00	0.000	9.357
L5 59.5000-44.4100	51.8420	1.138	4.12	0.7918	46.748	A	0.000	46.748	46.748	100.00	0.000	0.000
						B	0.000	46.748		100.00	0.000	5.799
						C	0.000	46.748		100.00	0.000	5.377
L6 44.4100-29.7500	36.9710	1.033	3.74	0.7603	48.342	A	0.000	48.342	48.342	100.00	0.000	0.000
						B	0.000	48.342		100.00	0.000	5.634
						C	0.000	48.342		100.00	0.000	5.663
L7 29.7500-6.7500	18.0277	1	3.62	0.7500	83.612	A	0.000	83.612	83.612	100.00	0.000	0.000
						B	0.000	83.612		100.00	0.000	8.625
						C	0.000	83.612		100.00	0.000	17.874
L8 6.7500-0.0000	3.3572	1	3.62	0.7500	26.316	A	0.000	26.316	26.316	100.00	0.000	0.000
						B	0.000	26.316		100.00	0.000	2.531
						C	0.000	26.316		100.00	0.000	2.778

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 147.0000-120.3700	133.0198	1.489	9.53	42.419	A	0.000	42.419	42.419	100.00	0.000	0.000
					B	0.000	42.419		100.00	0.000	0.000
					C	0.000	42.419		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L2 120.3700-105.0000	112.5053	1.42	9.09	29.745	A	0.000	29.745	29.745	100.00	0.000	0.000
					B	0.000	29.745		100.00	0.000	0.000
					C	0.000	29.745		100.00	0.000	0.990
L3 105.0000-84.9100	94.6908	1.351	8.65	45.171	A	0.000	45.171	45.171	100.00	0.000	0.000
					B	0.000	45.171		100.00	0.000	4.185
					C	0.000	45.171		100.00	0.000	3.978
L4 84.9100-59.5000	71.8145	1.249	7.99	65.904	A	0.000	65.904	65.904	100.00	0.000	0.000
					B	0.000	65.904		100.00	0.000	5.294
					C	0.000	65.904		100.00	0.000	5.031
L5 59.5000-44.4100	51.8420	1.138	7.28	44.756	A	0.000	44.756	44.756	100.00	0.000	0.000
					B	0.000	44.756		100.00	0.000	3.144
					C	0.000	44.756		100.00	0.000	2.988
L6 44.4100-29.7500	36.9710	1.033	6.61	46.408	A	0.000	46.408	46.408	100.00	0.000	0.000
					B	0.000	46.408		100.00	0.000	3.054
					C	0.000	46.408		100.00	0.000	3.165
L7 29.7500-6.7500	18.0277	1	6.40	80.737	A	0.000	80.737	80.737	100.00	0.000	0.000
					B	0.000	80.737		100.00	0.000	4.792
					C	0.000	80.737		100.00	0.000	10.591
L8 6.7500-0.0000	3.3572	1	6.40	25.472	A	0.000	25.472	25.472	100.00	0.000	0.000
					B	0.000	25.472		100.00	0.000	1.406
					C	0.000	25.472		100.00	0.000	1.599

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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	147 - 120.37	Pole	Max Tension	24	0.00	-0.00	-0.00
			Max. Compression	14	-10.88	0.01	-0.00
			Max. Mx	11	-5.22	148.12	0.01
			Max. My	8	-5.22	0.00	-148.13
			Max. Vy	11	-11.06	148.12	0.01
			Max. Vx	8	11.06	0.00	-148.13
			Max. Torque	2			-0.00
L2	120.37 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.22	0.37	0.09
			Max. Mx	11	-10.08	433.12	0.29
			Max. My	2	-10.08	0.30	433.40
			Max. Vy	11	-17.96	433.12	0.29
			Max. Vx	8	17.98	-0.20	-433.28
			Max. Torque	9			-0.49
L3	105 - 84.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.57	0.73	-0.11
			Max. Mx	11	-12.85	728.99	0.55
			Max. My	2	-12.85	0.69	729.48
			Max. Vy	11	-19.23	728.99	0.55
			Max. Vx	8	19.25	-0.41	-729.45
			Max. Torque	9			-0.49
L4	84.91 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30.62	1.48	-0.54
			Max. Mx	11	-19.65	1333.39	1.02
			Max. My	8	-19.65	-0.79	-1334.43
			Max. Vy	11	-21.60	1333.39	1.02
			Max. Vx	8	21.62	-0.79	-1334.43
			Max. Torque	9			-0.47
L5	59.5 - 44.41	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.42	1.75	-0.72
			Max. Mx	11	-22.07	1551.16	1.16
			Max. My	8	-22.06	-0.91	-1552.39
			Max. Vy	11	-22.38	1551.16	1.16
			Max. Vx	8	22.40	-0.91	-1552.39
			Max. Torque	9			-0.45
L6	44.41 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-40.73	2.34	-1.04
			Max. Mx	11	-28.39	2011.07	1.46
			Max. My	8	-28.39	-1.13	-2012.66
			Max. Vy	11	-23.87	2011.07	1.46
			Max. Vx	8	23.89	-1.13	-2012.66
			Max. Torque	9			-0.44
L7	29.75 - 6.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-48.90	3.06	-1.45
			Max. Mx	11	-35.65	2579.57	1.78
			Max. My	8	-35.65	-1.38	-2581.57
			Max. Vy	11	-25.59	2579.57	1.78
			Max. Vx	8	25.61	-1.38	-2581.57
			Max. Torque	9			-0.43
L8	6.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.27	3.28	-1.58
			Max. Mx	11	-37.74	2753.75	1.87
			Max. My	8	-37.74	-1.45	-2755.86
			Max. Vy	11	-26.03	2753.75	1.87
			Max. Vx	8	26.05	-1.45	-2755.86
			Max. Torque	9			-0.43

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	51.27	0.00	-0.00
	Max. H_x	11	37.75	26.02	0.02
	Max. H_z	2	37.75	0.02	26.04
	Max. M_x	2	2755.20	0.02	26.04
	Max. M_z	5	2752.24	-26.02	-0.02
	Max. Torsion	3	0.42	-12.99	22.54
	Min. Vert	1	37.75	0.00	0.00
	Min. H_x	5	37.75	-26.02	-0.02
	Min. H_z	8	37.75	-0.02	-26.04
	Min. M_x	8	-2755.86	-0.02	-26.04
	Min. M_z	11	-2753.75	26.02	0.02
	Min. Torsion	9	-0.43	12.99	-22.54

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	37.75	0.00	0.00	0.32	0.73	0.00
Dead+Wind 0 deg - No Ice	37.75	-0.02	-26.04	-2755.20	2.96	-0.42
Dead+Wind 30 deg - No Ice	37.75	12.99	-22.54	-2384.94	-1373.84	-0.42
Dead+Wind 60 deg - No Ice	37.75	22.52	-13.00	-1375.53	-2382.32	-0.31
Dead+Wind 90 deg - No Ice	37.75	26.02	0.02	2.54	-2752.24	-0.12
Dead+Wind 120 deg - No Ice	37.75	22.54	13.04	1380.01	-2384.51	0.11
Dead+Wind 150 deg - No Ice	37.75	13.02	22.56	2387.80	-1377.65	0.31
Dead+Wind 180 deg - No Ice	37.75	0.02	26.04	2755.86	-1.45	0.42
Dead+Wind 210 deg - No Ice	37.75	-12.99	22.54	2385.60	1375.34	0.43
Dead+Wind 240 deg - No Ice	37.75	-22.52	13.00	1376.20	2383.82	0.31
Dead+Wind 270 deg - No Ice	37.75	-26.02	-0.02	-1.87	2753.75	0.12
Dead+Wind 300 deg - No Ice	37.75	-22.54	-13.04	-1379.35	2386.02	-0.11
Dead+Wind 330 deg - No Ice	37.75	-13.02	-22.56	-2387.14	1379.16	-0.31
Dead+Ice	51.27	-0.00	0.00	1.58	3.28	-0.00
Dead+Wind 0 deg+Ice	51.27	-0.00	-6.38	-696.92	3.85	-0.11
Dead+Wind 30 deg+Ice	51.27	3.19	-5.52	-603.13	-345.25	-0.09
Dead+Wind 60 deg+Ice	51.27	5.52	-3.19	-347.28	-600.92	-0.04
Dead+Wind 90 deg+Ice	51.27	6.38	0.00	2.07	-694.64	0.01
Dead+Wind 120 deg+Ice	51.27	5.52	3.19	351.30	-601.34	0.07
Dead+Wind 150 deg+Ice	51.27	3.19	5.53	606.84	-345.98	0.11
Dead+Wind 180 deg+Ice	51.27	0.00	6.38	700.21	3.01	0.11
Dead+Wind 210 deg+Ice	51.27	-3.19	5.52	606.42	352.11	0.09
Dead+Wind 240 deg+Ice	51.27	-5.52	3.19	350.57	607.78	0.04
Dead+Wind 270 deg+Ice	51.27	-6.38	-0.00	1.22	701.50	-0.01
Dead+Wind 300 deg+Ice	51.27	-5.52	-3.19	-348.01	608.20	-0.07
Dead+Wind 330 deg+Ice	51.27	-3.19	-5.53	-603.55	352.84	-0.11
Dead+Wind 0 deg - Service	37.75	-0.01	-9.01	-954.46	1.52	-0.15
Dead+Wind 30 deg - Service	37.75	4.50	-7.80	-826.17	-475.54	-0.15
Dead+Wind 60 deg - Service	37.75	7.79	-4.50	-476.41	-824.98	-0.11
Dead+Wind 90 deg - Service	37.75	9.00	0.01	1.10	-953.16	-0.04
Dead+Wind 120 deg - Service	37.75	7.80	4.51	478.39	-825.74	0.04
Dead+Wind 150 deg - Service	37.75	4.51	7.81	827.59	-476.86	0.11
Dead+Wind 180 deg - Service	37.75	0.01	9.01	955.13	-0.01	0.15
Dead+Wind 210 deg - Service	37.75	-4.50	7.80	826.83	477.05	0.15
Dead+Wind 240 deg - Service	37.75	-7.79	4.50	477.07	826.49	0.11
Dead+Wind 270 deg - Service	37.75	-9.00	-0.01	-0.43	954.67	0.04
Dead+Wind 300 deg - Service	37.75	-7.80	-4.51	-477.73	827.26	-0.04
Dead+Wind 330 deg - Service	37.75	-4.51	-7.81	-826.93	478.38	-0.11

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-37.75	0.00	0.00	37.75	0.00	0.000%
2	-0.02	-37.75	-26.04	0.02	37.75	26.04	0.000%
3	12.99	-37.75	-22.54	-12.99	37.75	22.54	0.000%
4	22.52	-37.75	-13.00	-22.52	37.75	13.00	0.000%
5	26.02	-37.75	0.02	-26.02	37.75	-0.02	0.000%
6	22.54	-37.75	13.04	-22.54	37.75	-13.04	0.000%
7	13.02	-37.75	22.56	-13.02	37.75	-22.56	0.000%
8	0.02	-37.75	26.04	-0.02	37.75	-26.04	0.000%
9	-12.99	-37.75	22.54	12.99	37.75	-22.54	0.000%
10	-22.52	-37.75	13.00	22.52	37.75	-13.00	0.000%
11	-26.02	-37.75	-0.02	26.02	37.75	0.02	0.000%
12	-22.54	-37.75	-13.04	22.54	37.75	13.04	0.000%
13	-13.02	-37.75	-22.56	13.02	37.75	22.56	0.000%
14	0.00	-51.27	0.00	0.00	51.27	-0.00	0.000%
15	-0.00	-51.27	-6.38	0.00	51.27	6.38	0.000%
16	3.19	-51.27	-5.52	-3.19	51.27	5.52	0.000%
17	5.52	-51.27	-3.19	-5.52	51.27	3.19	0.000%
18	6.38	-51.27	0.00	-6.38	51.27	-0.00	0.000%
19	5.52	-51.27	3.19	-5.52	51.27	-3.19	0.000%
20	3.19	-51.27	5.53	-3.19	51.27	-5.53	0.000%
21	0.00	-51.27	6.38	-0.00	51.27	-6.38	0.000%
22	-3.19	-51.27	5.52	3.19	51.27	-5.52	0.000%
23	-5.52	-51.27	3.19	5.52	51.27	-3.19	0.000%
24	-6.38	-51.27	-0.00	6.38	51.27	0.00	0.000%
25	-5.52	-51.27	-3.19	5.52	51.27	3.19	0.000%
26	-3.19	-51.27	-5.53	3.19	51.27	5.53	0.000%
27	-0.01	-37.75	-9.01	0.01	37.75	9.01	0.000%
28	4.50	-37.75	-7.80	-4.50	37.75	7.80	0.000%
29	7.79	-37.75	-4.50	-7.79	37.75	4.50	0.000%
30	9.00	-37.75	0.01	-9.00	37.75	-0.01	0.000%
31	7.80	-37.75	4.51	-7.80	37.75	-4.51	0.000%
32	4.51	-37.75	7.81	-4.51	37.75	-7.81	0.000%
33	0.01	-37.75	9.01	-0.01	37.75	-9.01	0.000%
34	-4.50	-37.75	7.80	4.50	37.75	-7.80	0.000%
35	-7.79	-37.75	4.50	7.79	37.75	-4.50	0.000%
36	-9.00	-37.75	-0.01	9.00	37.75	0.01	0.000%
37	-7.80	-37.75	-4.51	7.80	37.75	4.51	0.000%
38	-4.51	-37.75	-7.81	4.51	37.75	7.81	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	4	0.00000001	0.00068789
3	Yes	6	0.00000001	0.00006189
4	Yes	6	0.00000001	0.00006317
5	Yes	4	0.00000001	0.00044341
6	Yes	6	0.00000001	0.00006266
7	Yes	6	0.00000001	0.00006246
8	Yes	4	0.00000001	0.00056056
9	Yes	6	0.00000001	0.00006329
10	Yes	6	0.00000001	0.00006200
11	Yes	4	0.00000001	0.00055406
12	Yes	6	0.00000001	0.00006283
13	Yes	6	0.00000001	0.00006303
14	Yes	4	0.00000001	0.00000506
15	Yes	4	0.00000001	0.00032543
16	Yes	5	0.00000001	0.00015058
17	Yes	5	0.00000001	0.00015687

18	Yes	4	0.00000001	0.00030660
19	Yes	5	0.00000001	0.00015606
20	Yes	5	0.00000001	0.00015325
21	Yes	4	0.00000001	0.00032483
22	Yes	5	0.00000001	0.00016154
23	Yes	5	0.00000001	0.00015507
24	Yes	4	0.00000001	0.00031024
25	Yes	5	0.00000001	0.00015679
26	Yes	5	0.00000001	0.00015974
27	Yes	4	0.00000001	0.00017719
28	Yes	5	0.00000001	0.00011608
29	Yes	5	0.00000001	0.00012085
30	Yes	4	0.00000001	0.00016002
31	Yes	5	0.00000001	0.00011884
32	Yes	5	0.00000001	0.00011812
33	Yes	4	0.00000001	0.00017245
34	Yes	5	0.00000001	0.00012153
35	Yes	5	0.00000001	0.00011666
36	Yes	4	0.00000001	0.00016383
37	Yes	5	0.00000001	0.00011963
38	Yes	5	0.00000001	0.00012045

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 120.37	34.853	38	2.2423	0.0015
L2	123.62 - 105	24.198	38	2.0284	0.0015
L3	105 - 84.91	16.956	38	1.6261	0.0009
L4	89.08 - 59.5	11.989	38	1.3478	0.0005
L5	59.5 - 44.41	5.106	38	0.8471	0.0003
L6	49.58 - 29.75	3.525	38	0.6756	0.0002
L7	29.75 - 6.75	1.238	38	0.3993	0.0001
L8	6.75 - 0	0.065	38	0.0930	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	(2) DB978H90T2E-M w/ Mount Pipe	38	34.853	2.2423	0.0015	15332
136.0000	(2) LPA-80080/4CF w/ Mount Pipe	38	29.717	2.1761	0.0016	6969
129.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	38	26.545	2.1071	0.0016	4258
120.0000	(2) TME-RRUS-11	38	22.676	1.9600	0.0014	3063
118.0000	7770.00 w/ Mount Pipe	38	21.857	1.9180	0.0013	2954
110.0000	800 10504 w/ Mount Pipe	38	18.750	1.7362	0.0010	2591
50.0000	KS24019-L112A	38	3.586	0.6824	0.0002	4151
48.0000	KS24019-L112A	38	3.302	0.6504	0.0002	4282

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 120.37	100.311	8	6.4584	0.0042
L2	123.62 - 105	69.682	8	5.8434	0.0043

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	105 - 84.91	48.854	13	4.6866	0.0024
L4	89.08 - 59.5	34.558	13	3.8856	0.0016
L5	59.5 - 44.41	14.726	13	2.4433	0.0007
L6	49.58 - 29.75	10.168	13	1.9488	0.0005
L7	29.75 - 6.75	3.573	13	1.1522	0.0003
L8	6.75 - 0	0.189	13	0.2683	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	(2) DB978H90T2E-M w/ Mount Pipe	8	100.311	6.4584	0.0044	5447
136.0000	(2) LPA-80080/4CF w/ Mount Pipe	8	85.550	6.2683	0.0047	2475
129.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	76.431	6.0698	0.0046	1510
120.0000	(2) TME-RRUS-11	8	65.307	5.6469	0.0041	1084
118.0000	7770.00 w/ Mount Pipe	8	62.951	5.5261	0.0039	1045
110.0000	800 10504 w/ Mount Pipe	8	54.013	5.0033	0.0030	913
50.0000	KS24019-L112A	13	10.343	1.9685	0.0005	1444
48.0000	KS24019-L112A	13	9.524	1.8763	0.0005	1489

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	147 - 120.37 (1)	TP21.98x16.25x0.1875	26.6300	0.0000	0.0	39.000	12.5531	-5.22	489.57	0.011
L2	120.37 - 105 (2)	TP24.8521x20.9057x0.25	18.6200	0.0000	0.0	39.000	19.5217	-10.08	761.35	0.013
L3	105 - 84.91 (3)	TP29.11x24.8521x0.4572	20.0900	0.0000	0.0	27.156	40.2962	-12.85	1094.28	0.012
L4	84.91 - 59.5 (4)	TP33.993x27.3118x0.5014	29.5800	0.0000	0.0	28.590	53.2979	-19.65	1523.79	0.013
L5	59.5 - 44.41 (5)	TP37.19x33.993x0.4981	15.0900	0.0000	0.0	29.190	56.2804	-22.06	1642.83	0.013
L6	44.41 - 29.75 (6)	TP39.6814x35.0984x0.5432	19.8300	0.0000	0.0	29.286	67.4764	-28.39	1976.11	0.014
L7	29.75 - 6.75 (7)	TP44.5664x39.6814x0.5911	23.0000	0.0000	0.0	29.382	82.5029	-35.65	2424.10	0.015
L8	6.75 - 0 (8)	TP46x44.5664x0.5317	6.7500	0.0000	0.0	31.104	76.7373	-37.74	2386.84	0.016

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	147 - 120.37 (1)	TP21.98x16.25x0.1875	148.13	27.233	39.000	0.698	0.00	0.000	39.000	0.000
L2	120.37 - 105	TP24.8521x20.9057x0.25	433.57	44.001	39.000	1.128	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L3	105 - 84.91 (2)	TP29.11x24.8521x0.4572	729.87	31.991	27.156	1.178	0.00	0.000	27.156	0.000
L4	84.91 - 59.5 (3)	TP33.993x27.3118x0.5014	1335.08	36.629	28.590	1.281	0.00	0.000	28.590	0.000
L5	59.5 - 44.41 (4)	TP37.19x33.993x0.4981	1553.09	37.929	29.190	1.299	0.00	0.000	29.190	0.000
L6	44.41 - 29.75 (5)	TP39.6814x35.0984x0.5432	2013.51	37.299	29.286	1.274	0.00	0.000	29.286	0.000
L7	29.75 - 6.75 (6)	TP44.5664x39.6814x0.5911	2582.57	34.808	29.382	1.185	0.00	0.000	29.382	0.000
L8	6.75 - 0 (7)	TP46x44.5664x0.5317	2756.90	38.571	31.104	1.240	0.00	0.000	31.104	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	147 - 120.37 (1)	TP21.98x16.25x0.1875	11.06	0.881	26.000	0.068	0.00	0.000	26.000	0.000
L2	120.37 - 105 (2)	TP24.8521x20.9057x0.25	17.99	0.922	26.000	0.071	0.14	0.007	26.000	0.000
L3	105 - 84.91 (3)	TP29.11x24.8521x0.4572	19.26	0.478	18.104	0.053	0.16	0.003	18.104	0.000
L4	84.91 - 59.5 (4)	TP33.993x27.3118x0.5014	21.63	0.406	19.060	0.043	0.18	0.002	19.060	0.000
L5	59.5 - 44.41 (5)	TP37.19x33.993x0.4981	22.41	0.398	19.460	0.041	0.20	0.002	19.460	0.000
L6	44.41 - 29.75 (6)	TP39.6814x35.0984x0.5432	23.90	0.354	19.524	0.036	0.22	0.002	19.524	0.000
L7	29.75 - 6.75 (7)	TP44.5664x39.6814x0.5911	25.62	0.311	19.588	0.032	0.30	0.002	19.588	0.000
L8	6.75 - 0 (8)	TP46x44.5664x0.5317	26.06	0.340	20.736	0.033	0.31	0.002	20.736	0.000

Pole Interaction Design Data

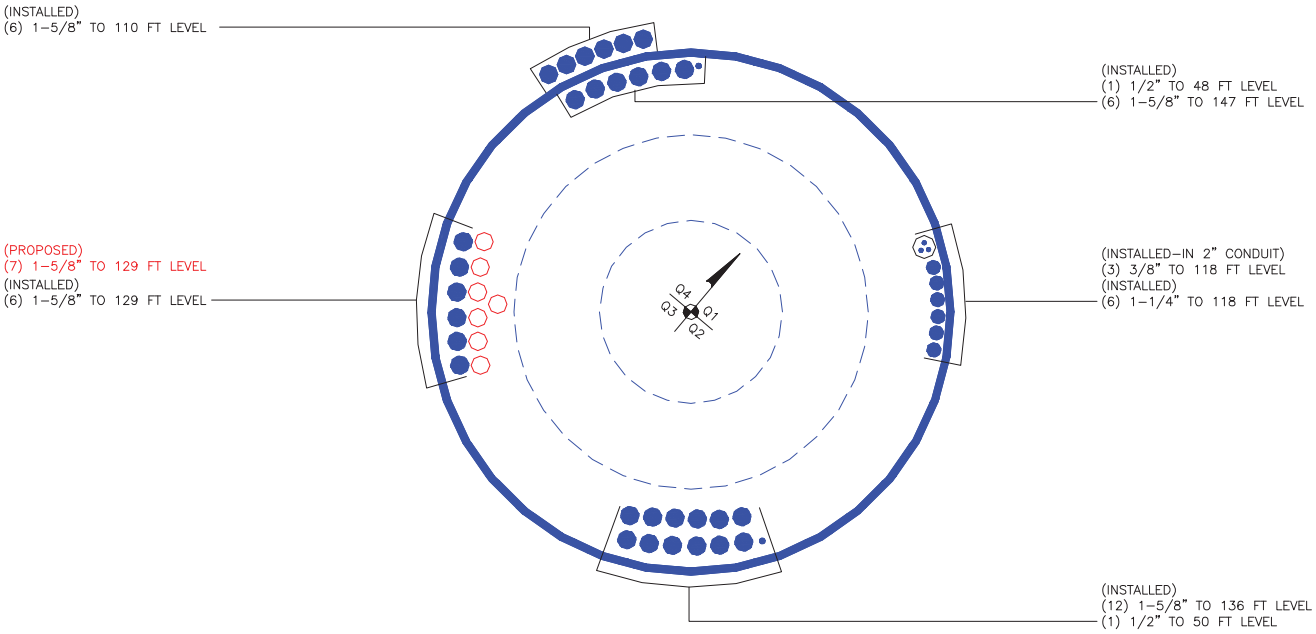
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	147 - 120.37 (1)	0.011	0.698	0.000	0.068	0.000	0.710 ✔	1.333	H1-3+VT ✔
L2	120.37 - 105 (2)	0.013	1.128	0.000	0.071	0.000	1.143 ✔	1.333	H1-3+VT ✔
L3	105 - 84.91 (3)	0.012	1.178	0.000	0.053	0.000	1.190 ✔	1.333	H1-3+VT ✔
L4	84.91 - 59.5 (4)	0.013	1.281	0.000	0.043	0.000	1.295 ✔	1.333	H1-3+VT ✔
L5	59.5 - 44.41 (5)	0.013	1.299	0.000	0.041	0.000	1.313 ✔	1.333	H1-3+VT ✔
L6	44.41 - 29.75 (6)	0.014	1.274	0.000	0.036	0.000	1.288 ✔	1.333	H1-3+VT ✔
L7	29.75 - 6.75 (7)	0.015	1.185	0.000	0.032	0.000	1.200 ✔	1.333	H1-3+VT ✔
L8	6.75 - 0 (8)	0.016	1.240	0.000	0.033	0.000	1.256 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
L1	147 - 120.37	Pole	TP21.98x16.25x0.1875	1	-5.22	652.60	53.3	Pass
L2	120.37 - 105	Pole	TP24.8521x20.9057x0.25	2	-10.08	1014.88	85.7	Pass
L3	105 - 84.91	Pole	TP29.11x24.8521x0.4572	3	-12.85	1458.68	89.3	Pass
L4	84.91 - 59.5	Pole	TP33.993x27.3118x0.5014	4	-19.65	2031.21	97.1	Pass
L5	59.5 - 44.41	Pole	TP37.19x33.993x0.4981	5	-22.06	2189.89	98.5	Pass
L6	44.41 - 29.75	Pole	TP39.6814x35.0984x0.5432	6	-28.39	2634.15	96.6	Pass
L7	29.75 - 6.75	Pole	TP44.5664x39.6814x0.5911	7	-35.65	3231.33	90.0	Pass
L8	6.75 - 0	Pole	TP46x44.5664x0.5317	8	-37.74	3181.66	94.2	Pass
							Summary	
						Pole (L5)	98.5	Pass
						RATING =	**98.5**	**Pass**

APPENDIX B

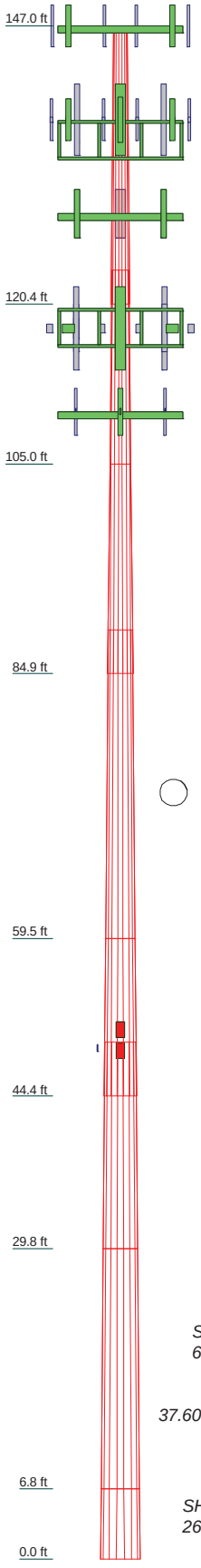
BASE LEVEL DRAWING

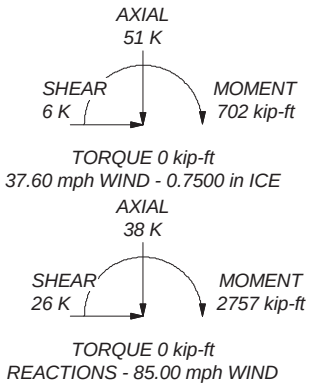

(INSTALLED)
(6) 1-5/8" TO 110 FT LEVEL
(INSTALLED)
(1) 1/2" TO 48 FT LEVEL
(6) 1-5/8" TO 147 FT LEVEL
(PROPOSED)
(7) 1-5/8" TO 129 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 129 FT LEVEL
(INSTALLED-IN 2" CONDUIT)
(3) 3/8" TO 118 FT LEVEL
(INSTALLED)
(6) 1-1/4" TO 118 FT LEVEL
Q4
Q1
Q3
Q2
(INSTALLED)
(12) 1-5/8" TO 136 FT LEVEL
(1) 1/2" TO 50 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8
Length (ft)	26.6300	18.6200	20.0900	29.5800	15.0900	19.8300	23.0000	6.7500
Number of Sides	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.2500	0.4572	0.5014	0.4981	0.5432	0.5911	0.5317
Socket Length (ft)	3.2500		4.1700		5.1700			
Top Dia (in)	16.2500	20.9057	24.8521	27.3118	33.9930	35.0984	39.6814	44.5664
Bot Dia (in)	21.9800	24.8521	29.1100	33.9930	37.1900	39.6814	44.5664	46.0000
Grade	A572-65			Reinf 45.26 ksi		Reinf 47.65 ksi	Reinf 48.65 ksi	Reinf 48.81 ksi	Reinf 48.97 ksi	Reinf 51.84 ksi
Weight (K)	1.0	1.1	2.6	4.8	2.8	4.3	6.1	1.7	24.6





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB978H90T2E-M w/ Mount Pipe	147	KRY 112 144/1	129
(2) DB978H90T2E-M w/ Mount Pipe	147	Platform Mount [LP 403-1]	129
(2) DB978H90T2E-M w/ Mount Pipe	147	(2) TME-RRUS-11	120
Platform Mount [LP 601-1]	147	(2) TME-RRUS-11	120
(2) LPA-80080/4CF w/ Mount Pipe	136	(2) TME-RRUS-11	120
(2) LPA-80080/4CF w/ Mount Pipe	136	Side Arm Mount [SO 102-3]	120
(2) LPA-80080/4CF w/ Mount Pipe	136	7770.00 w/ Mount Pipe	118
APX75-866514-CT0 w/ Mount Pipe	136	7770.00 w/ Mount Pipe	118
APX75-866514-CT0 w/ Mount Pipe	136	7770.00 w/ Mount Pipe	118
APX75-866514-CT0 w/ Mount Pipe	136	(2) LGP21401	118
MG D5-800Tx w/ Mount Pipe	136	(2) LGP21401	118
MG D5-800Tx w/ Mount Pipe	136	(2) LGP21401	118
MG D5-800Tx w/ Mount Pipe	136	P65-17-XLH-RR w/ Mount Pipe	118
(2) FD9R6004/2C-3L	136	SBNH-1D6565C w/ Mount Pipe	118
(2) FD9R6004/2C-3L	136	P65-17-XLH-RR w/ Mount Pipe	118
(2) FD9R6004/2C-3L	136	DC6-48-60-18-8F	118
Platform Mount [LP 601-1]	136	Platform Mount [LP 301-1]	118
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	129	800 10504 w/ Mount Pipe	110
		800 10504 w/ Mount Pipe	110
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129	800 10504 w/ Mount Pipe	110
KRY 112 144/1	129	860 10025	110
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	129	860 10025	110
		860 10025	110
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129	T-Arm Mount [TA 602-3]	110
		KS24019-L112A	50
KRY 112 144/1	129	Side Arm Mount [SO 701-1]	50
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	129	KS24019-L112A	48
		Side Arm Mount [SO 701-1]	48
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 48.81 ksi	49 ksi	62 ksi
Reinf 45.26 ksi	45 ksi	57 ksi	Reinf 48.97 ksi	49 ksi	62 ksi
Reinf 47.65 ksi	48 ksi	60 ksi	Reinf 51.84 ksi	52 ksi	65 ksi
Reinf 48.65 ksi	49 ksi	61 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 85.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.00 mph wind.
5. TOWER RATING: 98.5%

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX: (614) 448-4105

Job: ***147 ft Monopole, Preston, CT***			
Project: ***BU# 876360 / PJF# 37514-0680***			
Client: Crown Castle International	Drawn by: Maria C Lopez	App'd:	
Code: TIA/EIA-222-F	Date: 03/28/14	Scale: NTS	
Path: G:\TOWER\375_Crown_Castle\2014\37514-0680 BU 876360\WO 731140 BU 876360 (7805)\37514-0680.eri		Dwg No. E-1	

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708
Phone 614-221-6679 • Fax 614-448-4105 • www.PJFweb.com

v4.1 - Effective 7-3-12

Date: 3/28/2014
PJF Project: 37514-0680
Client Ref. # BU 876360
Site Name: Preston / Town Hall
Description: 147-ft Monopole
Owner: CCI
Engineer: KAT

Asymmetric Anchor Rod Analysis

Moment =	2757	k-ft	TIA Ref.	F	Location =	Base Plate	
Axial =	38.0	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9
Shear =	26.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G
Anchor Qty =	16						

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
2	2.250	#18J A615 Gr 75	75	100	30.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
3	2.250	#18J A615 Gr 75	75	100	60.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
4	2.250	#18J A615 Gr 75	75	100	90.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
5	2.250	#18J A615 Gr 75	75	100	120.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
6	2.250	#18J A615 Gr 75	75	100	150.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
7	2.250	#18J A615 Gr 75	75	100	180.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
8	2.250	#18J A615 Gr 75	75	100	210.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
9	2.250	#18J A615 Gr 75	75	100	240.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
10	2.250	#18J A615 Gr 75	75	100	270.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
11	2.250	#18J A615 Gr 75	75	100	300.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
12	2.250	#18J A615 Gr 75	75	100	330.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
13	2.250	#18J A615 Gr 75	75	100	15.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
14	2.250	#18J A615 Gr 75	75	100	105.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
15	2.250	#18J A615 Gr 75	75	100	195.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
16	2.250	#18J A615 Gr 75	75	100	285.0	55.00	0.00	3.98	152.76	148.01	148.01	0.00	195.00	75.9%
								63.68						

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

TIA Rev F

Site Data

BU#:	*876360*
Site Name:	*Preston / Town Hall*
App #:	
Pole Manufacturer:	*Other*

Reactions		
Moment:	4113.8167	ft-kips
Axial:	38	kips
Shear:	26	kips

Reactions and Qty adjusted to reflect actual loading condition

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55	in

Plate Data		
Diam:	61	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	6.08	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Groove	
Groove Depth:	0.25	in **
Groove Angle:	45	degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:	0.4375	in
Width:	6	in
Height:	14	in
Thick:	0.5	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	46	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

Maximum Rod Tension: 148.0 Kips

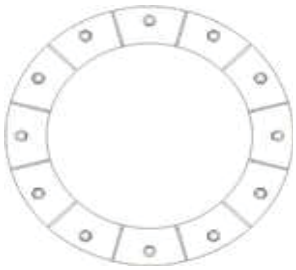
Stiffened
Service, ASD

Base Plate Check Only

Base Plate Results Flexural Check

Base Plate Stress:	49.8 ksi	
Allowable Plate Stress:	60.0 ksi	
Base Plate Stress Ratio:	83.0% **Pass**	

Stiffened
Service, ASD
0.75*Fy*ASIF
Y.L. Length: N/A, Roark



* 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, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#:	*876360*
Site Name:	*Preston / Town Hall*
App #:	
Pole Manufacturer:	*Other*

Reactions		
Moment:	2757	ft-kips
Axial:	38	kips
Shear:	26	kips

Anchor rod Qty adjusted to reflect actual loading condition

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

Stiffener Check Only

Stiffened
Service, ASD
0.75*Fy*ASIF
Y.L. Length: N/A, Roark

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55	in

Plate Data		
Diam:	61	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	6.08	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Groove	
Groove Depth:	0.25	in **
Groove Angle:	45	degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:	0.4375	in
Width:	6	in
Height:	14	in
Thick:	0.5	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	46	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

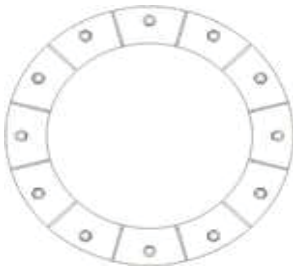
Stress Increase Factor		
ASIF:	1.333	

Stiffener Results

Horizontal Weld :	70.9%	**Pass**
Vertical Weld:	33.8%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	29.7%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	71.9%	**Pass**
Plate Comp. (AISC Bracket):	80.8%	**Pass**

Pole Results

Pole Punching Shear Check:	12.7%	**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

PJF job no. **37514-0680** Project name **0**

Foundation Loads:

Pole weight or tower leg compression =	**38**	(kips)
Horizontal load at top of pier =	**26**	(kips)
Overturning moment at top of pier=	**2757**	(ft-kips)

Design criteria:

Safety factor against overturning =	**1.5**	

Soil Properties:

Soil density =	**125**	(pcf)
Allowable soil bearing =	**5**	(ksf)
Depth to water table =	**99**	(ft)

Dimensions:

Pier shape (round or square)	**S**	("R" or "S")
Pier width =	**7**	(ft)
Pier height above grade =	**1**	(ft)
depth to bottom of footing =	**6**	(ft)
Footing thickness =	**3**	(ft)
Footing width =	**26**	(ft)
Footing length =	**26**	(ft)

Concrete:

Concrete strength =	**4**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

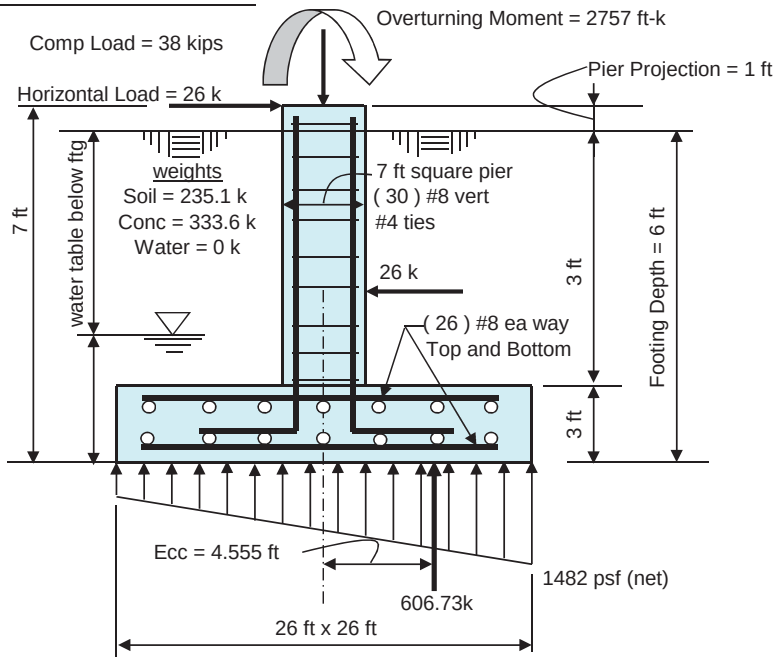
Reinforcing Steel:

	Pad	
minimum cover over rebar =	**3**	inches
size of pad rebar =	**#8**	bar
quantity of pad rebar =	**26**	(ea direction)

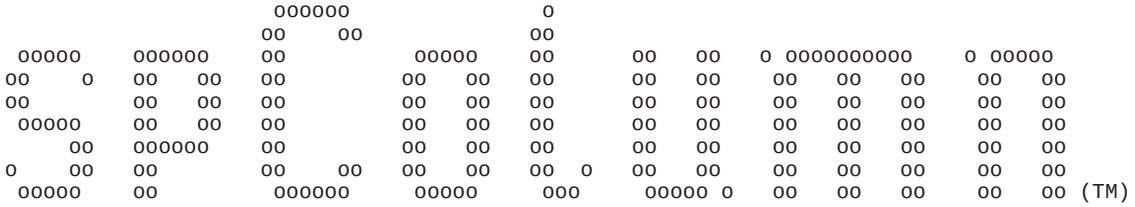
Reinforcing Steel:

	Pier	
size of vert rebar in pier=	**#8**	bar
vertical rebar quantity =	**30**	
size of pier ties =	**#4**	bar
minimum cover over rebar =	**3**	inches

Total volume of concrete = 82.4 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 1.482 ksf Allowable Net Soil Bearing = 5 ksf **Soil Bearing Stress Ratio = 0.3 Okay**	Ult Bending Shear Capacity = 126 psi Ult Bending Shear Stress = 24 psi **Bending Shear Stress Ratio = 0.19 Okay**
Ftg Overturning Resistance = 7887 ft-kips Overturning Moment = 2764 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 2.854 **Ratio = 0.53 Okay**	Pad Bending Moment Capacity= 2858 ft-k Pad Bending Moment = 1200 ft-k **Bending Moment Stress Ratio = 0.42 OK**



spColumn v4.80 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections

General Information:
==========
File Name: G:\TOWER\375_Crown_Castle\2014\37514-0680 BU 876360\WO 731140 BU 876360...\37514-0680.col
Project: 37514-0608
Column: Foundation Engineer: LGR
Code: ACI 318-02 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: X-axis Column Type: Structural

Material Properties:
==========
f'c = 4 ksi fy = 60 ksi
Ec = 3605 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.85

Section:
========
Rectangular: Width = 84 in Depth = 84 in

Gross section area, Ag = 7056 in^2
Ix = 4.14893e+006 in^4 Iy = 4.14893e+006 in^4
rx = 24.2487 in ry = 24.2487 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #4 ties with #10 bars, #5 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 26.07 in^2 at rho = 0.37% (Note: rho < 0.50%)
Minimum clear spacing = 6.22 in

33 #8 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	38.00	3719.30	4721.50	1.269	5.59	79.83	0.03996	0.900

*** End of output ***

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: CT11441A
Town Hall Sprint Tower

389 Route 2
Preston Town Hall
Preston, CT 06365

April 9, 2014

EBI Project Number: 62142280

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

EBI Consulting
environmental | engineering | due diligence

April 9, 2014

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

Re: Emissions Values for Site: **CT11441A – Town Hall Sprint Tower**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 389 Route 2, Preston, 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 μW/cm2 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 (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS and AWS bands is 1000 μW/cm2. 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 389 Route 2, Preston, 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, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower.

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

1) 2 GSM / UMTS channels (1935.000 MHz to 1945.000 MHz / 1983.000 MHz to 1984.000 MHz) were considered for each sector of the proposed installation.
2) 4 UMTS / LTE channels (2110.000 to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
3) 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.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications.

6) The antenna mounting height centerline of the proposed antennas is **129 feet** above ground level (AGL).
7) 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.

Site ID	CT11441A - Town Hall Sprint Tower
Site Addresss	389 Route 2, Preston Town Hall, Preston, CT 06365
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	168	129	None	0	0	48.326044	1.044018	0.10440%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	168	129	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	168	129	1-5/8"	0	0	24.163022	0.522009	0.05220%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	168	129	1-5/8"	0	0	24.163022	0.522009	0.05220%
														Sector total Power Density Value:		0.209%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	168	129	None	0	0	48.326044	1.044018	0.10440%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	168	129	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	168	129	1-5/8"	0	0	24.163022	0.522009	0.05220%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	168	129	1-5/8"	0	0	24.163022	0.522009	0.05220%
														Sector total Power Density Value:		0.209%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	168	129	None	0	0	48.326044	1.044018	0.10440%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	168	129	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	168	129	1-5/8"	0	0	24.163022	0.522009	0.05220%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	168	129	1-5/8"	0	0	24.163022	0.522009	0.05220%
														Sector total Power Density Value:		0.209%	

Site Composite MPE %

Carrier	MPE %
T-Mobile	0.626%
AT&T	24.680%
Metro PCS	3.950%
Verizon	12.520%
Sprint	2.200%
Total Site MPE %	**43.976%**

EBI Consulting
environmental | engineering | due diligence

Summary

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

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.626% (0.209% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **43.976%** 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.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803