



Crown Castle
3530 Torringdon Way, Suite 300
Charlotte, NC 28277

September 10, 2015

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

RE: T-Mobile-Exempt Modification – Crown Site BU: 807132
T-Mobile Site ID: CT11091A
Located at: 1081 North Street, Greenwich, CT 06831

Dear Ms. Bachman:

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

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **1081 North Street, Greenwich, CT 06831**. 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 additional 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. A Structural Modification Report confirming that the tower and foundation can support T-Mobile's proposed modifications is included as Exhibit-2.
5. The operation of the additional 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.

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: Heather Helton.

Sincerely,



Kimberly Myl
Real Estate Specialist

Enclosures

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Peter Tesei, First Selectman
Greenwich Town Hall
101 Field Point Road
Greenwich, CT 06830

Crown Atlantic Company, LLC
PO Box 203127
Houston, TX 77216

7741

CROWN CASTLE - ETA PROPERTY

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

DATE 9/10/15

32-61-1110

PAY TO THE ORDER OF Connecticut Siting Council \$ 025.00

Six hundred twenty-five and 00/100

DOLLARS 

Security Features Included. Details on back.

TMobile zoning



JPMorgan Chase Bank, N.A.
www.Chase.com

VALID FOR 180 DAYS

FOR 807132 322228 CT11091A

MP

⑈007741⑈ ⑆111000614⑆

464638118⑈



T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11091A
CROWN CASTLE BU #:807132
SITE NAME: BRG 133 943050
1081 NORTH STREET
GREENWICH, CT 06831
FAIRFIELD COUNTY



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



T-MOBILE NORTHEAST LLC

4 SYLVAN WAY
 PARSIPPANY, NJ 07054
 PHONE: (973) 397-4800
 FAX: (973) 292-8893

BRG 133 943050

CT11091A

1081 NORTH STREET
 GREENWICH, CT 06831
 FAIRFIELD COUNTY

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SCALE

AS SHOWN

REV.	DATE	BY	DESCRIPTION
1	09/10/15	BSH	ISSUED AS FINAL
0	10/16/14	ALH	ISSUED AS FINAL
A	10/15/14	ALH	ISSUED FOR REVIEW

REVISIONS

DRAWN BY ALH
 CHECKED BY BSH
 APPROVED BY GHN
 DATE 10/14/14

TITLE

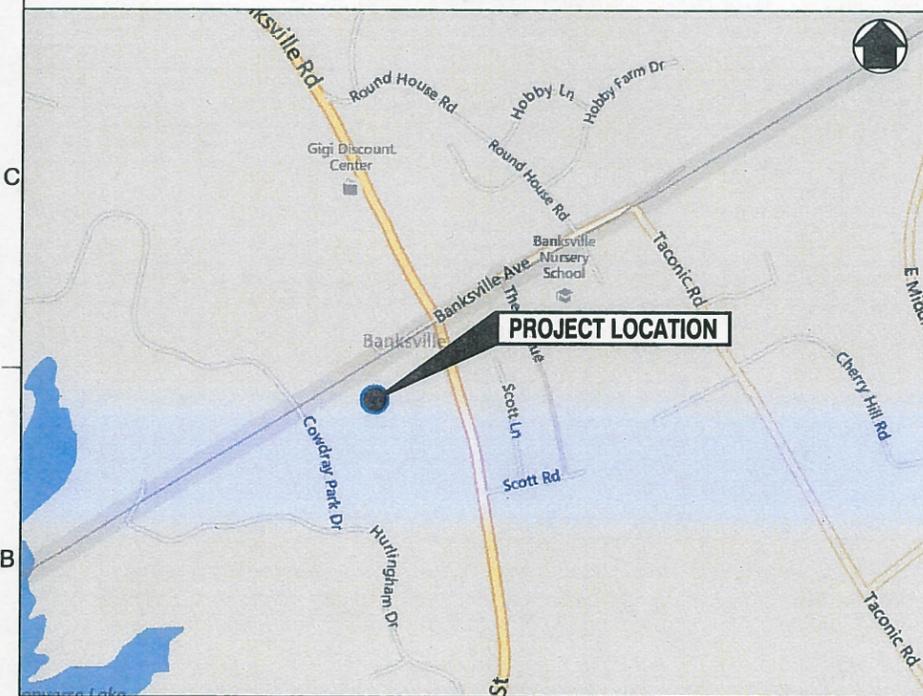
TITLE SHEET

PROJECT NO. 50066258/50072430

T - 1

SHEET NO.

SITE INFORMATION



KEY MAP

N.T.S.

DIRECTIONS: (FROM PARSIPPANY):

START OUT GOING WEST ON SYLVAN WAY TOWARD CENTURY DR. TURN RIGHT ONTO LITTLETON RD / US-202 N. KEEP LEFT AT THE FORK TO GO ON LITTLETON RD E. MERGE ONTO I-287 N. MERGE ONTO I-87 S / I-287 E / NEW YORK TRWY S TOWARD I-87 S / TAPPAN ZEE BRG / NEW YORK CITY. KEEP LEFT TO TAKE I-287 E / CROSS WESTCHESTER EXPY E VIA EXIT 8 TOWARD WHITE PLAINS / RYE. MERGE ONTO I-684 N VIA EXIT 9A TOWARD BREWSTER. TAKE THE NY-22 N EXIT, EXIT 3N, TOWARD BEDFORD. TURN RIGHT ONTO BEDFORD RD / NY-22. TURN RIGHT ONTO BANKSVILLE RD. TURN RIGHT TO STAY ON BANKSVILLE RD. TURN LEFT ONTO ROUND HILL RD. TURN RIGHT ONTO COUNTY HWY-56A / BEDFORD BANKSVILLE RD. COUNTY HWY-56A / BEDFORD BANKSVILLE RD BECOMES NORTH ST. 1081 NORTH ST WILL BE ON THE LEFT.

PROJECT INFORMATION

T-MOBILE SITE #: CT11091A
 CROWN CASTLE BU #: 807132
 SITE ADDRESS: 1081 NORTH STREET
 GREENWICH, CT 06831
 FAIRFIELD COUNTY

LATITUDE: N 41° 8' 22.91"
 LONGITUDE: W 73° 38' 29.58"

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

CONTACT: TRICIA PELON
 (518) 373-3507

APPLICANT: T-MOBILE NORTHEAST, LLC
 4 SYLVAN WAY
 PARSIPPANY, NJ 07054
 PHONE #: (973) 397-4800
 FAX #: (973) 292-8893

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

CONTACT: BRYAN HUFF
 (973) 576-0147

SCOPE OF WORK: REMOVE AND REPLACE EXISTING ANTENNAS WITH (3) NEW ANTENNAS, REMOVE (6) EXISTING TMA'S, REMOVE (6) EXISTING COAX LINES, INSTALL (9) NEW RRU'S ON A NEW MOUNT, INSTALL (1) NEW HYBRID CABLE, INSTALL (1) NEW RET CABLE, REMOVE AND REPLACE (1) EXISTING EQUIPMENT CABINET WITH (1) NEW EQUIPMENT CABINET AT GRADE REMOVE EXISTING ANTENNAS, MOUNTS, & CABLES AT CENTERLINE ELEVATIONS OF 134'-0"± & 156'-0"± A.G.L.

CONFIGURATION

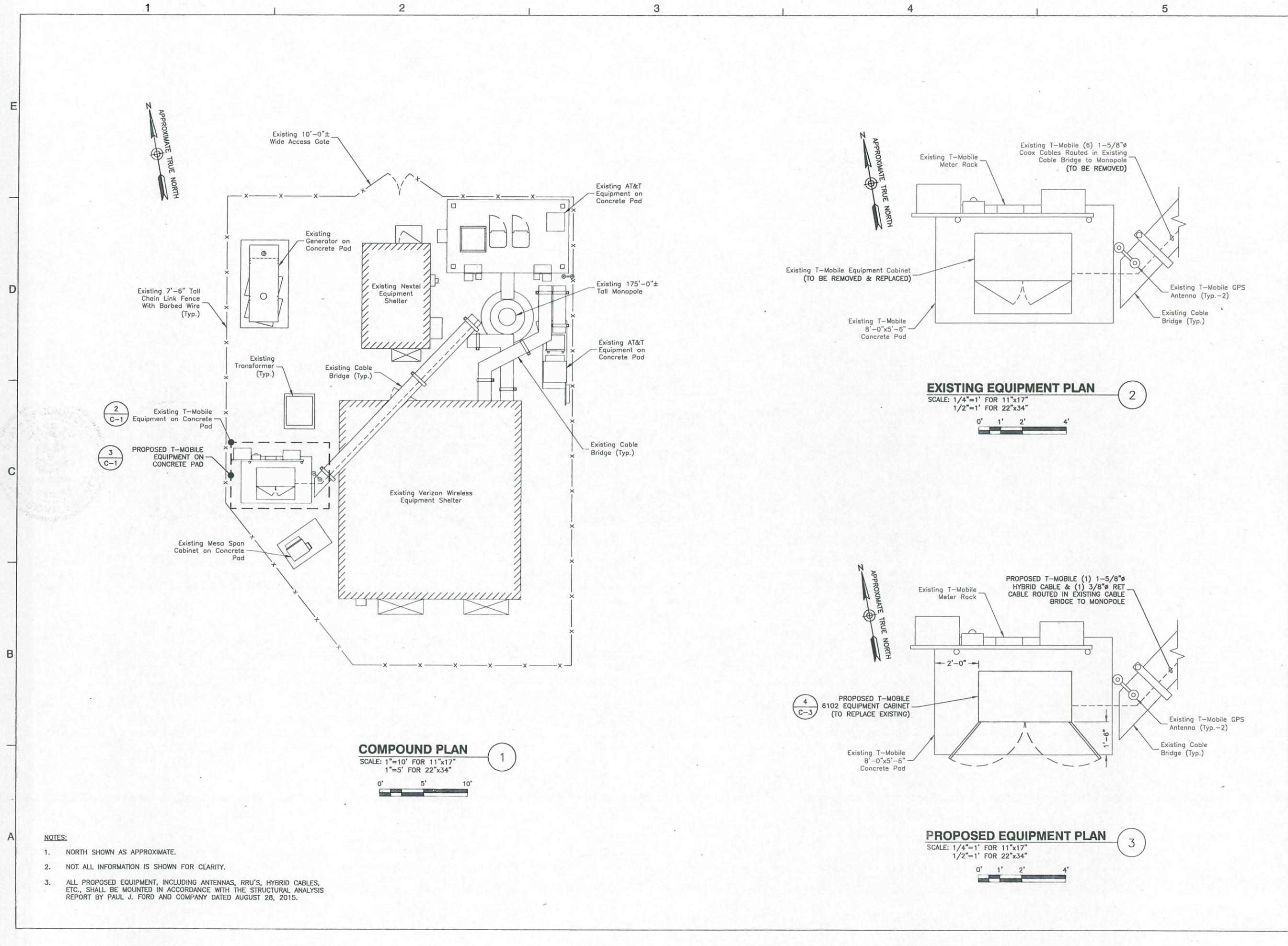
703A

SHEET INDEX

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

APPROVALS

T-MOBILE	DATE
OWNER/ LANDLORD	DATE
RF ENGINEER	DATE
ZONING	DATE
CONSTRUCTION	DATE



- NOTES:**
1. NORTH SHOWN AS APPROXIMATE.
 2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
 3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, HYBRID CABLES, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS REPORT BY PAUL J. FORD AND COMPANY DATED AUGUST 28, 2015.

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

T-Mobile
 T-MOBILE NORTHEAST LLC
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BRG 133 943050

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REVISIONS

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COMPOUND PLAN & EQUIPMENT PLANS

PROJECT NO. 50066258/50072430

C - 1

SHEET NO.

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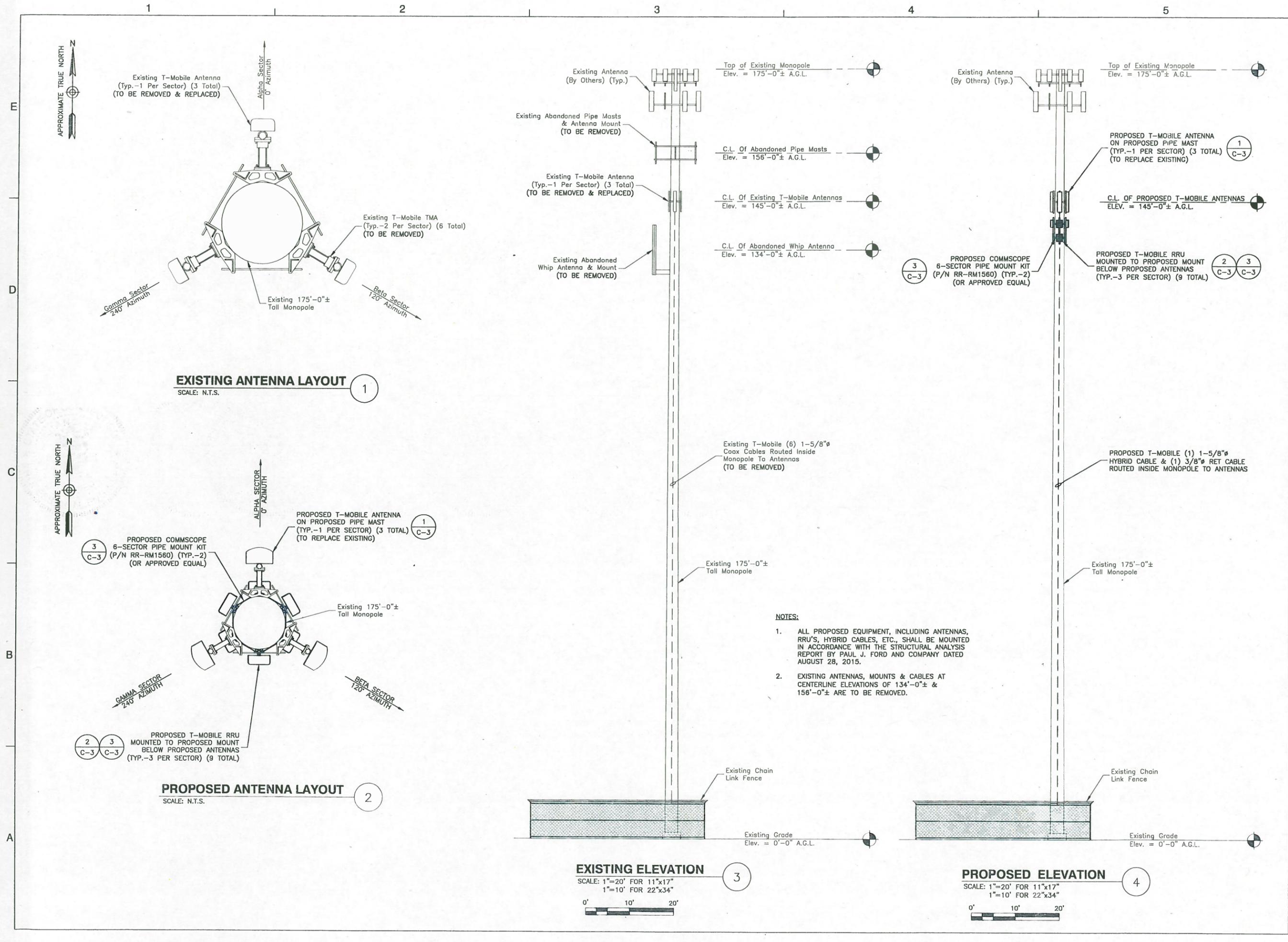
REVISIONS
 DRAWN BY: ALH
 CHECKED BY: BSH
 APPROVED BY: GHN
 DATE: 10/14/14

ANTENNA LAYOUTS & ELEVATIONS

PROJECT NO. 50066258/50072430

C - 2

SHEET NO.



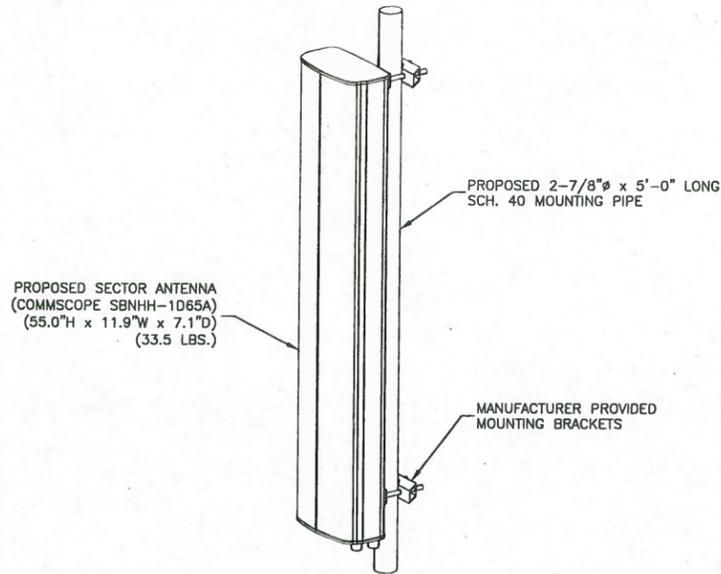
EXISTING ANTENNA LAYOUT
 SCALE: N.T.S.

PROPOSED ANTENNA LAYOUT
 SCALE: N.T.S.

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

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

- NOTES:**
- ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, HYBRID CABLES, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS REPORT BY PAUL J. FORD AND COMPANY DATED AUGUST 28, 2015.
 - EXISTING ANTENNAS, MOUNTS & CABLES AT CENTERLINE ELEVATIONS OF 134'-0"± & 156'-0"± ARE TO BE REMOVED.



PROPOSED SECTOR ANTENNA
(COMMSCOPE SBNHH-1D65A)
(55.0"H x 11.9"W x 7.1"D)
(33.5 LBS.)

PROPOSED 2-7/8"Ø x 5'-0" LONG
SCH. 40 MOUNTING PIPE

MANUFACTURER PROVIDED
MOUNTING BRACKETS

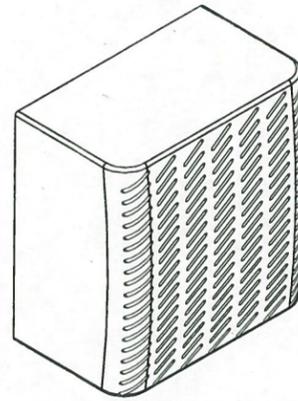
NOTES:

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

ISOMETRIC ANTENNA DETAILS

SCALE: N.T.S.

1



ERICSSON RRUS-11

SPECIFICATIONS:
HEIGHT: 20.0"
WIDTH: 17.0"
DEPTH: 7.0"
WEIGHT: 50.7 LBS

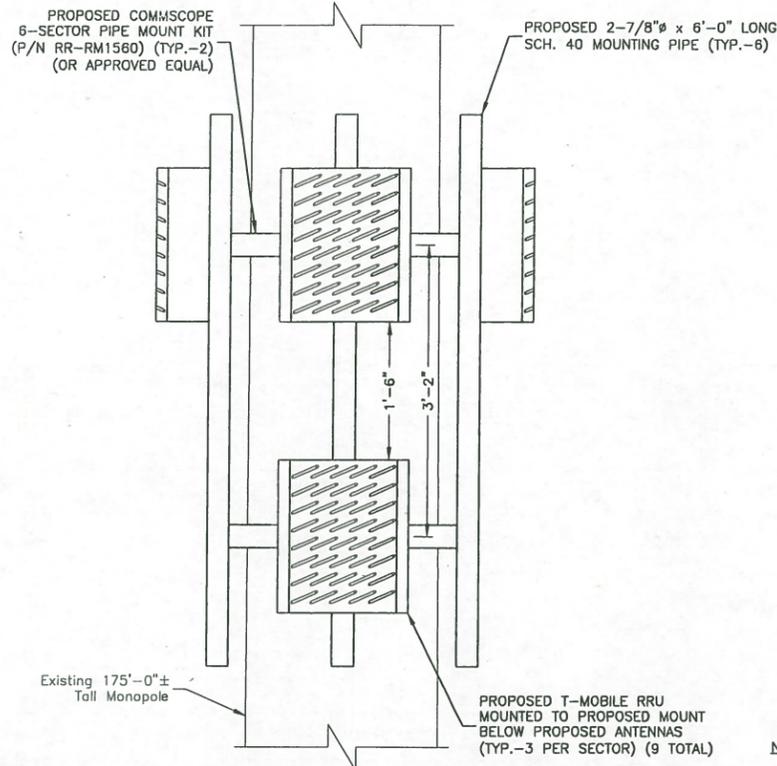
RRU NOTES:

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

RRUS-11 - REMOTE RADIO UNIT

SCALE: N.T.S.

2



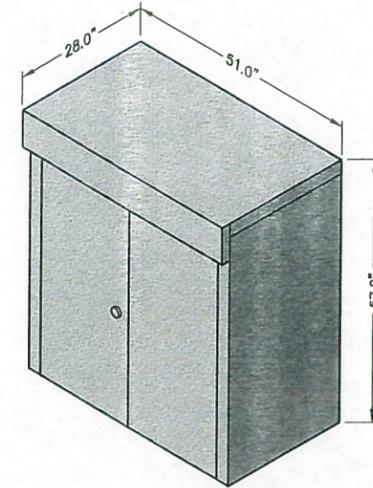
Existing 175'-0"±
Tall Monopole

PROPOSED T-MOBILE RRU
MOUNTED TO PROPOSED MOUNT
BELOW PROPOSED ANTENNAS
(TYP.-3 PER SECTOR) (9 TOTAL)

RRUS-11 MOUNTING DETAIL

SCALE: N.T.S.

3



ERICSSON RBS 6102 EQUIPMENT CABINET

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

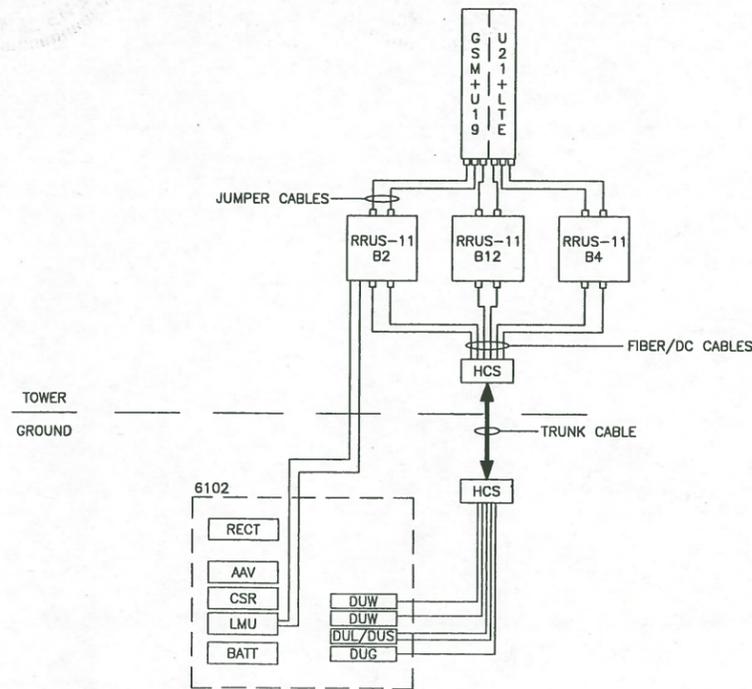
NOTE:

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

ERICSSON RBS 6102 CABINET

SCALE: N.T.S.

4



SITE CONFIGURATION 703A

SCALE: N.T.S.

5

DESIGN CONFIGURATION							
	ANTENNAS		COAX/HYBRID CABLES		CABLE LENGTH	RRH	
	EXISTING	PROPOSED	EXISTING	PROPOSED		EXISTING	PROPOSED
ALPHA	EMS RR90-17-02DP	COMMSCOPE SBNHH-1D65A	(2) 1-5/8"Ø COAX (TO BE REMOVED)		194'-0"	-	RRUS-11 B2 RRUS-11 B4
BETA	EMS RR90-17-02DP	COMMSCOPE SBNHH-1D65A	(2) 1-5/8"Ø COAX (TO BE REMOVED)	(1) 1-5/8"Ø HYBRID CABLE & (1) 3/8"Ø RET CABLE	194'-0"	-	RRUS-11 B2 RRUS-11 B4 RRUS-11 B12
GAMMA	EMS RR90-17-02DP	COMMSCOPE SBNHH-1D65A	(2) 1-5/8"Ø COAX (TO BE REMOVED)		194'-0"	-	RRUS-11 B2 RRUS-11 B4 RRUS-11 B12

Dewberry
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
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T-Mobile
T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
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SCALE: AS SHOWN

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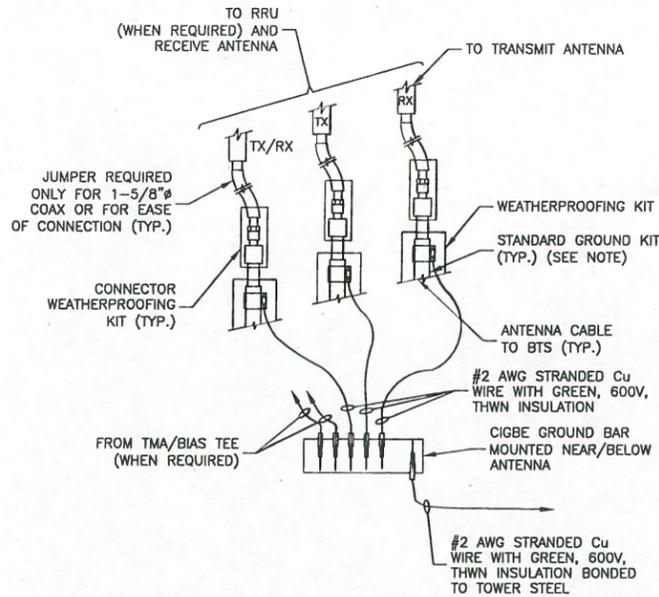
DRAWN BY: ALH
CHECKED BY: BSH
APPROVED BY: GHN
DATE: 10/14/14

CONSTRUCTION DETAILS

PROJECT NO. 50066258/50072430

GROUNDING NOTES:

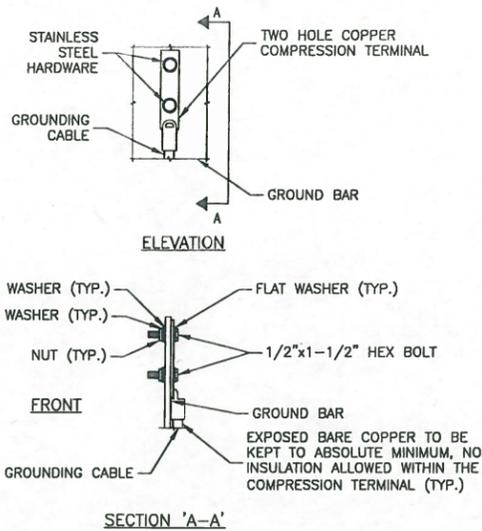
1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA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



NOTE:

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

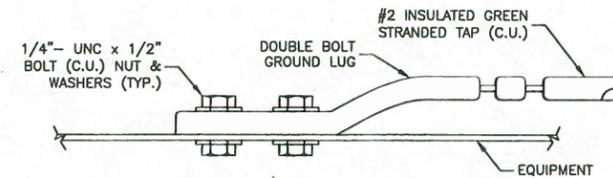
CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE)
SCALE: N.T.S.



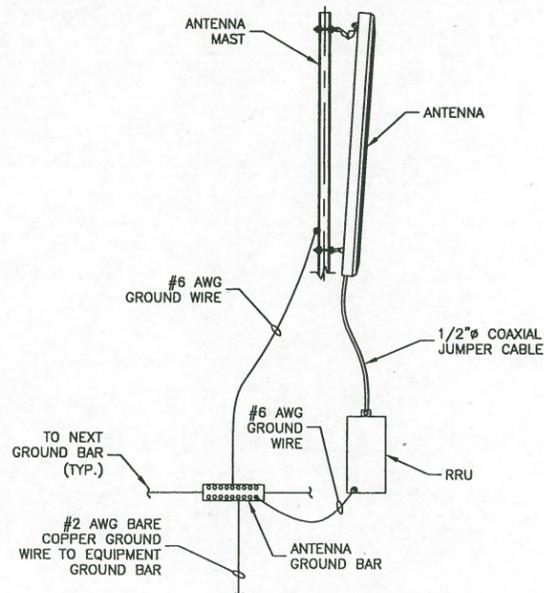
NOTES:

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

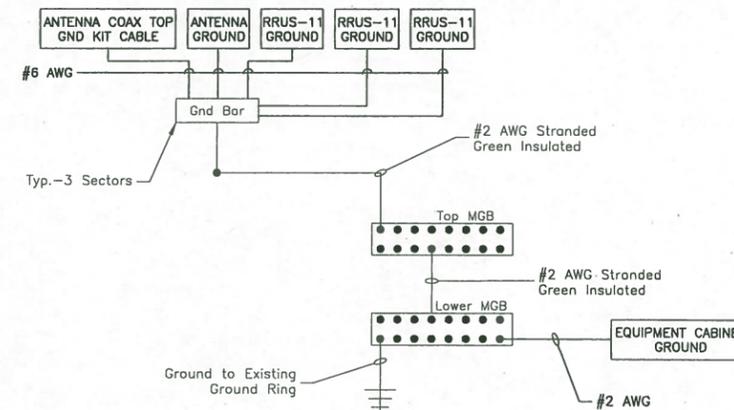
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL
SCALE: N.T.S.



CONNECTION TO EQUIPMENT DETAIL
SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL
SCALE: N.T.S.



NOTES:

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

SCHEMATIC GROUNDING DIAGRAM
SCALE: N.T.S.



Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
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T-MOBILE NORTHEAST LLC

4 SYLVAN WAY
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BRG 133 943050

CT11091A

1081 NORTH STREET
GREENWICH, CT 06831
FAIRFIELD COUNTY

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SCALE

AS SHOWN

REV.	DATE	BY	DESCRIPTION
1	09/10/15	BSH	ISSUED AS FINAL
0	10/16/14	ALH	ISSUED AS FINAL
A	10/15/14	ALH	ISSUED FOR REVIEW

DRAWN BY ALH
CHECKED BY BSH
APPROVED BY GHN
DATE 10/14/14

TITLE

GROUNDING NOTES & DETAILS

PROJECT NO. 50066258/50072430

E - 1

SHEET NO.



Date: August 28, 2015

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
mscroggy@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: T-Mobile Co-Locate
Carrier Site Number: CT11091A
Carrier Site Name: Greenwich - North_2

Crown Castle Designation: Crown Castle BU Number: 807132
Crown Castle Site Name: BRG 133 943050
Crown Castle JDE Job Number: 322228
Crown Castle Work Order Number: 1111172
Crown Castle Application Number: 282577 Rev. 7

Engineering Firm Designation: Paul J. Ford and Company Project Number: 37515-0524.005.7805

Site Data: 1081 North Street, Greenwich, Fairfield County, CT
Latitude 41° 8' 22.91", Longitude -73° 38' 29.58"
175 Foot - Monopole Tower

Dear Timothy Howell,

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 819610, in accordance with application 282577, revision 7.

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

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

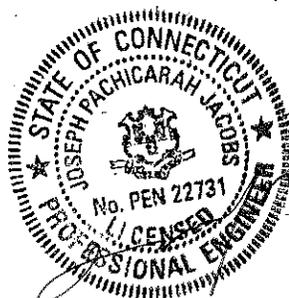
The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75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

The abandoned equipment at 156' and 129' shall be removed for the determined available structural capacity to be effective.

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:


Morgan Scroggy, E.I.
Structural Designer 





Date: **August 28, 2015**

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

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LC5: Existing + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing 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.

The abandoned equipment at 156' and 129' shall be removed for the determined available structural capacity to be effective.

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:

Morgan Scroggy, E.I.
Structural Designer

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1) INTRODUCTION

This tower is a 175 ft Monopole tower designed by VALMONT in October of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

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
144.0	144.0	3	commscope	SBNHH-1D65A w/ Mount Pipe	1 1	3/8 1-5/8	-
		3	ericsson	RRUS 11 B12			
		3	ericsson	RRUS 11 B2			
		3	ericsson	RRUS 11 B4			
		1	tower mounts	Pipe Mount [PM 601-3]			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
174.0	175.0	3	alcatel lucent	RRH2X40-AWS	11 2	1-1/4 1-5/8	1
		2	antel	ADA-85408580CF w/ Mount Pipe			
		3	antel	BCD-HP7WD-NE w/ Mount Pipe			
		3	antel	BXA-171063-12BF-EDIN-X w/ Mount Pipe			
		2	antel	BXA-80080/4CF w/ Mount Pipe			
		2	decibel	932DG90T2E-M w/ Mount Pipe			
		3	powerwave technologies	P65.16.XL.2 w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
	174.0	6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Miscellaneous [NA 507-2]			
162.0	162.0	1	tower mounts	Platform Mount [LP 601-1]	1 2 4 4	3/8 3/4 1-1/4 1-5/8	1
		6	ericsson	RRUS-11			
		2	kathrein	800 10121 w/ Mount Pipe			
		2	powerwave technologies	7770.00 w/ Mount Pipe			
		8		LGP2140X			
		3		P65-16-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
1	tower mounts	Platform Mount [LP 303-1]					
156.0	156.0	6	pole mounts	2.375" OD x 5' Mount Pipe	-	-	3
		1	tower mounts	Platform Mount [LP 602-1]			
144.0	145.0	6	ericsson	KRY 112 71	6	1-5/8	2
	144.0	3	ems wireless	RR90-17-02DP			
129.0	134.0	1	antel	BCR-87010:90	1	1-1/4	3
	129.0	1	tower mounts	Side Arm Mount [SO 701-1]			

- Notes:
 1) Existing Equipment
 2) Equipment To Be Removed, Not Included in this Analysis
 3) Abandoned Equipment to be Removed, Not Included in this Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 14215O1600, 04/09/2014	4837566	CCISITES
4-POST-MODIFICATION INSPECTION	B&T, 83626.003, 07/26/2012	3279736	CCISITES
4-POST-MODIFICATION INSPECTION	SGS, 145056, 11/18/2014	5456964	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	SSI/PJF, 37600-0057, 10/26/2000	1057735	CCISITES
4-TOWER MANUFACTURER DRAWINGS	SSI/PJF, 37600-0057, 10/26/2000	1057736	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) Monopole was reinforced in conformance with the referenced modification drawings.
- 5) The abandoned equipment at 156' and 129' shall be removed.

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	175 - 145.5	Pole	TP27.435x22.125x0.2188	1	-4.83	965.83	50.7	Pass
L2	145.5 - 95.5	Pole	TP35.997x26.1874x0.3125	2	-11.87	1814.93	96.2	Pass
L3	95.5 - 83.25	Pole	TP37.5769x34.382x0.375	3	-15.70	2335.32	94.9	Pass
L4	83.25 - 65.5	Pole	TP40.7716x37.5769x0.5255	4	-20.22	2885.66	92.1	Pass
L5	65.5 - 64	Pole	TP41.0416x40.7716x0.5244	5	-20.61	2897.82	92.9	Pass
L6	64 - 46.58	Pole	TP44.177x41.0416x0.616	6	-24.05	3568.83	83.0	Pass
L7	46.58 - 43	Pole	TP44.0718x41.7895x0.6418	7	-29.16	3808.97	85.6	Pass
L8	43 - 42.5	Pole	TP44.1618x44.0718x0.6814	8	-29.34	3959.45	82.8	Pass
L9	42.5 - 42	Pole	TP44.2518x44.1618x0.7773	9	-29.54	4615.69	71.6	Pass
L10	42 - 35.5	Pole	TP45.422x44.2518x0.6708	10	-31.88	4105.15	83.8	Pass
L11	35.5 - 18	Pole	TP48.5724x45.422x0.6982	11	-38.71	4638.43	83.0	Pass
L12	18 - 17	Pole	TP48.7524x48.5724x0.697	12	-39.12	4651.17	83.3	Pass
L13	17 - 2.75	Pole	TP50.505x48.7524x0.6609	13	-44.74	4902.19	86.9	Pass
L14	2.75 - 0	Pole	TP51x50.505x0.6644	14	-45.86	5130.24	84.2	Pass
							Summary	
						Pole (L2)	96.2	Pass
						Rating =	96.2	Pass

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	95.6	Fail
1	Base Plate	0	63.9	Pass
1	Base Foundation	0	89.8	Pass

Structure Rating (max from all components) =	96.2%
---	--------------

Notes:

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

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 Fairfield County, Connecticut.
2. Basic wind speed of 85 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 38 mph is used in combination with ice.
7. Temperature drop of 50 °F.
8. Deflections calculated using a wind speed of 50 mph.
9. A non-linear (P-delta) analysis was used.
10. Pressures are calculated at each section.
11. Stress ratio used in pole design is 1.333.
12. Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Apurt. ✓ Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption	Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	---	--

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	175.0000- 145.5000	29.5000	4.50	12	22.1250	27.4350	0.2188	0.8752	A572-65 (65 ksi)
L2	145.5000- 95.5000	54.5000	5.50	12	26.1874	35.9970	0.3125	1.2500	A572-65 (65 ksi)
L3	95.5000- 83.2500	17.7500	0.00	12	34.3820	37.5769	0.3750	1.5000	A572-65 (65 ksi)
L4	83.2500- 65.5000	17.7500	0.00	12	37.5769	40.7716	0.5255	2.1020	Reinf 52.98 ksi (53 ksi)
L5	65.5000- 64.0000	1.5000	0.00	12	40.7716	41.0416	0.5244	2.0975	Reinf 52.96 ksi (53 ksi)
L6	64.0000- 46.5800	17.4200	6.42	12	41.0416	44.1770	0.6160	2.4640	Reinf 53.05 ksi (53 ksi)
L7	46.5800- 43.0000	10.0000	0.00	12	41.7895	44.0718	0.6418	2.5673	Reinf 53.06 ksi (53 ksi)
L8	43.0000- 42.5000	0.5000	0.00	12	44.0718	44.1618	0.6814	2.7257	Reinf 51.89 ksi (52 ksi)
L9	42.5000- 42.0000	0.5000	0.00	12	44.1618	44.2518	0.7773	3.1090	Reinf 53.04 ksi (53 ksi)
L10	42.0000- 35.5000	6.5000	0.00	12	44.2518	45.4220	0.6708	2.6832	Reinf 53.10 ksi (53 ksi)
L11	35.5000-	17.5000	0.00	12	45.4220	48.5724	0.6982	2.7930	Reinf 53.88 ksi

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L12	18.0000 18.0000- 17.0000	1.0000	0.00	12	48.5724	48.7524	0.6970	2.7880	(54 ksi) Reinf 53.92 ksi (54 ksi)
L13	17.0000- 2.7500	14.2500	0.00	12	48.7524	50.5050	0.6609	2.6438	Reinf 57.78 ksi (58 ksi)
L14	2.7500-0.0000	2.7500		12	50.5050	51.0000	0.6644	2.6574	Reinf 59.57 ksi (60 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.9055	15.4337	945.3449	7.8424	11.4608	82.4854	1915.5251	7.5960	5.3431	24.42
	28.4028	19.1748	1812.8906	9.7434	14.2113	127.5666	3673.4079	9.4372	6.7662	30.924
L2	27.9497	26.0366	2224.9891	9.2632	13.5651	164.0234	4508.4311	12.8144	6.1807	19.778
	37.2668	35.9075	5836.2071	12.7751	18.6464	312.9930	11825.7378	17.6726	8.8097	28.191
L3	36.6198	41.0635	6061.4927	12.1745	17.8099	340.3441	12282.2276	20.2102	8.2094	21.892
	38.9024	44.9213	7935.3740	13.3183	19.4648	407.6778	16079.2192	22.1089	9.0656	24.175
L4	38.9024	62.6950	10985.6904	13.2644	19.4648	564.3870	22259.9871	30.8566	8.6623	16.484
	42.2099	68.1009	14079.5004	14.4081	21.1197	666.6522	28528.8849	33.5172	9.5185	18.113
L5	42.2099	67.9576	14050.6656	14.4085	21.1197	665.2869	28470.4579	33.4467	9.5215	18.158
	42.4894	68.4135	14335.3237	14.5052	21.2596	674.3001	29047.2522	33.6710	9.5938	18.296
L6	42.4894	80.1850	16726.0196	14.4724	21.2596	786.7529	33891.4504	39.4646	9.3483	15.176
	45.7354	86.4041	20927.4377	15.5948	22.8837	914.5134	42404.6624	42.5255	10.1886	16.54
L7	44.7806	85.0382	18377.6733	14.7309	21.6470	848.9728	37238.1486	41.8532	9.4795	14.77
	45.6264	89.7549	21608.4072	15.5479	22.8292	946.5261	43784.4914	44.1746	10.0912	15.723
L8	45.6264	95.2073	22879.2577	15.5337	22.8292	1002.1939	46359.5791	46.8581	9.9850	14.653
	45.7196	95.4048	23021.9372	15.5660	22.8758	1006.3884	46648.6864	46.9553	10.0091	14.688
L9	45.7196	108.5804	26085.9672	15.5317	22.8758	1140.3304	52857.2417	53.4400	9.7523	12.547
	45.8128	108.8057	26248.6662	15.5639	22.9224	1145.1088	53186.9140	53.5508	9.7764	12.578
L10	45.8128	94.1339	22820.5366	15.6020	22.9224	995.5552	46240.5941	46.3298	10.0617	15
	47.0243	96.6614	24708.5623	16.0209	23.5286	1050.1515	50066.2461	47.5738	10.3753	15.467
L11	47.0243	100.5538	25672.0184	16.0111	23.5286	1091.0998	52018.4691	49.4895	10.3018	14.754
	50.2858	107.6370	31488.3406	17.1389	25.1605	1251.4991	63803.9151	52.9757	11.1461	15.963
L12	50.2858	107.4487	31434.8632	17.1394	25.1605	1249.3736	63695.5552	52.8830	11.1494	15.996
	50.4722	107.8527	31790.8201	17.2038	25.2538	1258.8552	64416.8205	53.0818	11.1977	16.066
L13	50.4722	102.3496	30214.0042	17.2167	25.2538	1196.4164	61221.7640	50.3733	11.2943	17.088
	52.2866	106.0794	33639.0379	17.8442	26.1616	1285.8183	68161.8107	52.2091	11.7640	17.799
L14	52.2866	106.6194	33805.6531	17.8429	26.1616	1292.1870	68499.4184	52.4748	11.7549	17.694
	52.7991	107.6784	34822.9697	18.0202	26.4180	1318.1531	70560.7775	52.9960	11.8875	17.893

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		CA _A ft ² /ft	Weight klf
LDF6-50A(1-1/4")	C	No	Inside Pole	174.0000 - 0.0000	11	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
LDF7-50A(1-5/8")	C	No	Inside Pole	174.0000 - 0.0000	2	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00

LDF6-50A(1-1/4")	C	No	Inside Pole	162.0000 - 0.0000	4	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
2" (Nominal) Conduit	C	No	Inside Pole	162.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
FB-L98B-002-75000(3/8")	C	No	Inside Pole	162.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	162.0000 - 0.0000	2	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	162.0000 - 0.0000	2	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.01
						4" Ice	0.0000	0.03
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	162.0000 - 0.0000	2	No Ice	0.1980	0.00
						1/2" Ice	0.2980	0.00
						1" Ice	0.3980	0.00
						2" Ice	0.5980	0.01
						4" Ice	0.9980	0.03

CNT-400(3/8)	C	No	Inside Pole	144.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	144.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00

Aero MP3-05	C	No	CaAa (Out Of Face)	45.5000 - 0.0000	1	No Ice	0.3478	0.00
						1/2" Ice	0.4001	0.00
						1" Ice	0.6566	0.00
						2" Ice	0.8788	0.00
						4" Ice	1.3232	0.00
Aero MP3-04	C	No	CaAa (Out Of Face)	65.5000 - 45.5000	1	No Ice	0.2690	0.00
						1/2" Ice	0.3801	0.00
						1" Ice	0.4913	0.00
						2" Ice	0.7135	0.00
						4" Ice	1.1579	0.00

1 1/4" Flat	C	No	CaAa (Out Of Face)	35.5000 - 0.0000	1	No Ice	0.2083	0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CAAA ft ² /ft	Weight klf	
Reinforcement			Face)					
						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
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	85.0000 - 35.5000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
						2" Ice	0.6111	0.00
						4" Ice	1.0556	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight K	
(2) ADA-85408580CF w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.3988 5.8435 6.2986 7.2405 9.2612	3.4238 4.0221 4.6369 5.9176 8.9263	0.03 0.07 0.12 0.23 0.57
BXA-80080/4CF w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.4859 5.9372 6.3975 7.3495 9.3886	4.0332 4.6550 5.2983 6.7042 9.7775	0.03 0.08 0.13 0.25 0.60
BXA-80080/4CF w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.4859 5.9372 6.3975 7.3495 9.3886	4.0332 4.6550 5.2983 6.7042 9.7775	0.03 0.08 0.13 0.25 0.60
932DG90T2E-M w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.7722 4.1938 4.6479 5.5875 7.5935	3.3311 4.0072 4.6596 6.0143 9.0020	0.03 0.06 0.10 0.20 0.51
932DG90T2E-M w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.7722 4.1938 4.6479 5.5875 7.5935	3.3311 4.0072 4.6596 6.0143 9.0020	0.03 0.06 0.10 0.20 0.51
P65.16.XL.2 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.6375 9.2903 9.9098 11.1763 13.8289	5.7792 6.9491 7.8329 9.6341 13.4365	0.06 0.12 0.19 0.36 0.84
P65.16.XL.2 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.6375 9.2903 9.9098 11.1763 13.8289	5.7792 6.9491 7.8329 9.6341 13.4365	0.06 0.12 0.19 0.36 0.84
P65.16.XL.2 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	174.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.6375 9.2903 9.9098 11.1763 13.8289	5.7792 6.9491 7.8329 9.6341 13.4365	0.06 0.12 0.19 0.36 0.84

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	0.00	174.0000	No Ice	0.3665	0.0846	0.00
			0.00				1/2"	0.4506	0.1362	0.01
			1.00				Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	0.00	174.0000	No Ice	0.3665	0.0846	0.00
			0.00				1/2"	0.4506	0.1362	0.01
			1.00				Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	0.00	174.0000	No Ice	0.3665	0.0846	0.00
			0.00				1/2"	0.4506	0.1362	0.01
			1.00				Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
BXA-171063-12BF-EDIN-X w/ Mount Pipe	A	From Leg	4.0000	0.00	0.00	174.0000	No Ice	5.0373	5.2974	0.04
			0.00				1/2"	5.5919	6.4695	0.08
			1.00				Ice	6.1129	7.3603	0.14
							1" Ice	7.1769	9.1623	0.27
							2" Ice	9.4492	12.9662	0.68
BXA-171063-12BF-EDIN-X w/ Mount Pipe	B	From Leg	4.0000	0.00	0.00	174.0000	No Ice	5.0373	5.2974	0.04
			0.00				1/2"	5.5919	6.4695	0.08
			1.00				Ice	6.1129	7.3603	0.14
							1" Ice	7.1769	9.1623	0.27
							2" Ice	9.4492	12.9662	0.68
BXA-171063-12BF-EDIN-X w/ Mount Pipe	C	From Leg	4.0000	0.00	0.00	174.0000	No Ice	5.0373	5.2974	0.04
			0.00				1/2"	5.5919	6.4695	0.08
			1.00				Ice	6.1129	7.3603	0.14
							1" Ice	7.1769	9.1623	0.27
							2" Ice	9.4492	12.9662	0.68
RRH2X40-AWS	A	From Leg	4.0000	0.00	0.00	174.0000	No Ice	2.5217	1.5894	0.04
			0.00				1/2"	2.7530	1.7953	0.06
			1.00				Ice	2.9930	2.0098	0.08
							1" Ice	3.4990	2.4648	0.13
							2" Ice	4.6146	3.4785	0.28
RRH2X40-AWS	B	From Leg	4.0000	0.00	0.00	174.0000	No Ice	2.5217	1.5894	0.04
			0.00				1/2"	2.7530	1.7953	0.06
			1.00				Ice	2.9930	2.0098	0.08
							1" Ice	3.4990	2.4648	0.13
							2" Ice	4.6146	3.4785	0.28
RRH2X40-AWS	C	From Leg	4.0000	0.00	0.00	174.0000	No Ice	2.5217	1.5894	0.04
			0.00				1/2"	2.7530	1.7953	0.06
			1.00				Ice	2.9930	2.0098	0.08
							1" Ice	3.4990	2.4648	0.13
							2" Ice	4.6146	3.4785	0.28
DB-T1-6Z-8AB-0Z	C	From Leg	4.0000	0.00	0.00	174.0000	No Ice	5.6000	2.3333	0.04
			0.00				1/2"	5.9154	2.5580	0.08
			1.00				Ice	6.2395	2.7914	0.12
							1" Ice	6.9136	3.2840	0.21
							2" Ice	8.3654	4.3728	0.45
BCD-HP7WD-NE w/ Mount Pipe	A	From Leg	4.0000	0.00	0.00	174.0000	No Ice	4.9597	6.5431	0.04
			0.00				1/2"	5.5509	7.8253	0.09
			1.00				Ice	6.1225	8.9087	0.15
							1" Ice	7.2594	10.8778	0.30
							2" Ice	9.6365	15.0160	0.73

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
BCD-HP7WD-NE w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	174.0000	4" Ice			
						No Ice	4.9597	6.5431	0.04
						1/2"	5.5509	7.8253	0.09
						Ice	6.1225	8.9087	0.15
						1" Ice	7.2594	10.8778	0.30
						2" Ice	9.6365	15.0160	0.73
BCD-HP7WD-NE w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	174.0000	4" Ice			
						No Ice	4.9597	6.5431	0.04
						1/2"	5.5509	7.8253	0.09
						Ice	6.1225	8.9087	0.15
						1" Ice	7.2594	10.8778	0.30
						2" Ice	9.6365	15.0160	0.73
Platform Mount [LP 601-1]	C	None		0.00	174.0000	4" Ice			
						No Ice	28.4700	28.4700	1.12
						1/2"	33.5900	33.5900	1.51
						Ice	38.7100	38.7100	1.91
						1" Ice	48.9500	48.9500	2.69
						2" Ice	69.4300	69.4300	4.26
Miscellaneous [NA 507-2]	C	None		0.00	174.0000	4" Ice			
						No Ice	11.1000	11.1000	0.43
						1/2"	14.3000	14.3000	0.58
						Ice	17.5000	17.5000	0.74
						1" Ice	23.9000	23.9000	1.05
						2" Ice	36.7000	36.7000	1.66
**** P65-16-XLH-RR w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	162.0000	4" Ice			
						No Ice	8.6375	6.3625	0.08
						1/2"	9.2903	7.5378	0.14
						Ice	9.9098	8.4270	0.22
						1" Ice	11.1763	10.2390	0.39
						2" Ice	13.8289	14.0988	0.89
P65-16-XLH-RR w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	162.0000	4" Ice			
						No Ice	8.6375	6.3625	0.08
						1/2"	9.2903	7.5378	0.14
						Ice	9.9098	8.4270	0.22
						1" Ice	11.1763	10.2390	0.39
						2" Ice	13.8289	14.0988	0.89
P65-16-XLH-RR w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	162.0000	4" Ice			
						No Ice	8.6375	6.3625	0.08
						1/2"	9.2903	7.5378	0.14
						Ice	9.9098	8.4270	0.22
						1" Ice	11.1763	10.2390	0.39
						2" Ice	13.8289	14.0988	0.89
(2) 800 10121 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	162.0000	4" Ice			
						No Ice	6.0334	4.9479	0.07
						1/2"	6.7136	6.0222	0.12
						Ice	7.2991	6.8104	0.18
						1" Ice	8.4999	8.4586	0.32
						2" Ice	11.0444	12.1015	0.73
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	162.0000	4" Ice			
						No Ice	6.2208	4.8204	0.09
						1/2"	6.7144	5.5082	0.14
						Ice	7.2182	6.2127	0.21
						1" Ice	8.2568	7.6716	0.36
						2" Ice	10.4762	11.0613	0.76
(2) RRUS-11	A	From Leg	4.0000 0.00 0.00	0.00	162.0000	4" Ice			
						No Ice	3.2486	1.3726	0.05
						1/2"	3.4905	1.5510	0.07
						Ice	3.7411	1.7380	0.09
						1" Ice	4.2682	2.1381	0.15
						2" Ice	5.4260	3.0418	0.31
(2) RRUS-11	B	From Leg	4.0000 0.00 0.00	0.00	162.0000	4" Ice			
						No Ice	3.2486	1.3726	0.05
						1/2"	3.4905	1.5510	0.07
						Ice	3.7411	1.7380	0.09

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz ft	Lateral ft						Vert ft
(2) RRUS-11	C	From Leg	4.0000	0.00	0.00	162.0000	1" Ice	4.2682	2.1381	0.15
							2" Ice	5.4260	3.0418	0.31
							4" Ice			
							No Ice	3.2486	1.3726	0.05
							1/2" Ice	3.4905	1.5510	0.07
							Ice	3.7411	1.7380	0.09
(4) LGP2140X	A	From Leg	4.0000	0.00	0.00	162.0000	1" Ice	4.2682	2.1381	0.15
							2" Ice	5.4260	3.0418	0.31
							4" Ice			
							No Ice	1.2600	0.3780	0.01
							1/2" Ice	1.4160	0.4932	0.02
							Ice	1.5806	0.6170	0.03
(4) LGP2140X	B	From Leg	4.0000	0.00	0.00	162.0000	1" Ice	1.9358	0.8905	0.05
							2" Ice	2.7499	1.5412	0.13
							4" Ice			
							No Ice	1.2600	0.3780	0.01
							1/2" Ice	1.4160	0.4932	0.02
							Ice	1.5806	0.6170	0.03
DC6-48-60-18-8F	C	From Leg	4.0000	0.00	0.00	162.0000	1" Ice	1.9358	0.8905	0.05
							2" Ice	2.7499	1.5412	0.13
							4" Ice			
							No Ice	1.4667	1.4667	0.02
							1/2" Ice	1.6667	1.6667	0.04
							Ice	1.8778	1.8778	0.06
2.375" OD x 5' Mount Pipe	A	From Leg	4.0000	0.00	0.00	162.0000	1" Ice	2.3333	2.3333	0.11
							2" Ice	3.3778	3.3778	0.24
							4" Ice			
							No Ice	1.1875	1.1875	0.02
							1/2" Ice	1.4956	1.4956	0.03
							Ice	1.8071	1.8071	0.04
2.375" OD x 5' Mount Pipe	B	From Leg	4.0000	0.00	0.00	162.0000	1" Ice	2.4580	2.4580	0.08
							2" Ice	3.9194	3.9194	0.20
							4" Ice			
							No Ice	1.1875	1.1875	0.02
							1/2" Ice	1.4956	1.4956	0.03
							Ice	1.8071	1.8071	0.04
(3) 2.375" OD x 5' Mount Pipe	C	From Leg	4.0000	0.00	0.00	162.0000	1" Ice	2.4580	2.4580	0.08
							2" Ice	3.9194	3.9194	0.20
							4" Ice			
							No Ice	1.1875	1.1875	0.02
							1/2" Ice	1.4956	1.4956	0.03
							Ice	1.8071	1.8071	0.04
Platform Mount [LP 303-1]	C	None				162.0000	1" Ice	2.4580	2.4580	0.08
							2" Ice	3.9194	3.9194	0.20
							4" Ice			
							No Ice	14.6600	14.6600	1.25
							1/2" Ice	18.8700	18.8700	1.48
							Ice	23.0800	23.0800	1.71
SBNHH-1D65A w/ Mount Pipe	A	From Leg	1.0000	0.00	0.00	144.0000	1" Ice	31.5000	31.5000	2.18
							2" Ice	48.3400	48.3400	3.10
							4" Ice			
							No Ice	6.6007	5.1900	0.05
							1/2" Ice	7.1129	5.9608	0.11
							Ice	7.6213	6.7045	0.17
SBNHH-1D65A w/ Mount Pipe	B	From Leg	1.0000	0.00	0.00	144.0000	1" Ice	8.6689	8.2792	0.31
							2" Ice	10.8878	11.6435	0.72
							4" Ice			
							No Ice	6.6007	5.1900	0.05
							1/2" Ice	7.1129	5.9608	0.11
							Ice	7.6213	6.7045	0.17

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
SBNHH-1D65A w/ Mount Pipe	C	From Leg	1.0000	0.00	0.00	144.0000	No Ice	6.6007	5.1900	0.05
			0.00				1/2"	7.1129	5.9608	0.11
			0.00				Ice	7.6213	6.7045	0.17
							1" Ice	8.6689	8.2792	0.31
							2" Ice	10.8878	11.6435	0.72
RRUS 11 B4	A	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B4	B	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B4	C	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B12	A	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B12	B	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B12	C	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B2	A	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B2	B	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
RRUS 11 B2	C	From Leg	1.0000	0.00	0.00	144.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			0.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
Pipe Mount [PM 601-3]	C	None			0.00	144.0000	No Ice	4.3900	4.3900	0.20
							1/2"	5.4800	5.4800	0.24
							Ice	6.5700	6.5700	0.28
							1" Ice	8.7500	8.7500	0.36
							2" Ice	13.1100	13.1100	0.53

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
					4" Ice			

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K _z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 175.0000-145.5000	159.7232	1.569	0.029	60.917	A	0.000	60.917	60.917	100.00	0.000	0.000
					B	0.000	60.917		100.00	0.000	0.000
					C	0.000	60.917		100.00	0.000	6.534
L2 145.5000-95.5000	119.6797	1.445	0.027	131.238	A	0.000	131.238	131.238	100.00	0.000	0.000
				8	B	0.000	131.238		100.00	0.000	0.000
					C	0.000	131.238		100.00	0.000	19.800
L3 95.5000-83.2500	89.3133	1.329	0.025	37.234	A	0.000	37.234	37.234	100.00	0.000	0.000
					B	0.000	37.234		100.00	0.000	0.000
					C	0.000	37.234		100.00	0.000	5.143
L4 83.2500-65.5000	74.2544	1.261	0.023	57.945	A	0.000	57.945	57.945	100.00	0.000	0.000
					B	0.000	57.945		100.00	0.000	0.000
					C	0.000	57.945		100.00	0.000	9.987
L5 65.5000-64.0000	64.7492	1.212	0.022	5.113	A	0.000	5.113	5.113	100.00	0.000	0.000
					B	0.000	5.113		100.00	0.000	0.000
					C	0.000	5.113		100.00	0.000	1.248
L6 64.0000-46.5800	55.1832	1.158	0.021	61.855	A	0.000	61.855	61.855	100.00	0.000	0.000
					B	0.000	61.855		100.00	0.000	0.000
					C	0.000	61.855		100.00	0.000	14.488
L7 46.5800-43.0000	44.7844	1.091	0.020	13.026	A	0.000	13.026	13.026	100.00	0.000	0.000
					B	0.000	13.026		100.00	0.000	0.000
					C	0.000	13.026		100.00	0.000	3.174
L8 43.0000-42.5000	42.7499	1.077	0.020	1.838	A	0.000	1.838	1.838	100.00	0.000	0.000
					B	0.000	1.838		100.00	0.000	0.000
					C	0.000	1.838		100.00	0.000	0.455
L9 42.5000-42.0000	42.2499	1.073	0.020	1.842	A	0.000	1.842	1.842	100.00	0.000	0.000
					B	0.000	1.842		100.00	0.000	0.000
					C	0.000	1.842		100.00	0.000	0.455
L10 42.0000-35.5000	38.7359	1.047	0.019	24.287	A	0.000	24.287	24.287	100.00	0.000	0.000
					B	0.000	24.287		100.00	0.000	0.000
					C	0.000	24.287		100.00	0.000	5.918
L11 35.5000-18.0000	26.6522	1	0.018	68.538	A	0.000	68.538	68.538	100.00	0.000	0.000
					B	0.000	68.538		100.00	0.000	0.000
					C	0.000	68.538		100.00	0.000	16.662
L12 18.0000-17.0000	17.4997	1	0.018	4.055	A	0.000	4.055	4.055	100.00	0.000	0.000
					B	0.000	4.055		100.00	0.000	0.000
					C	0.000	4.055		100.00	0.000	0.952
L13 17.0000-2.7500	9.8331	1	0.018	58.934	A	0.000	58.934	58.934	100.00	0.000	0.000
					B	0.000	58.934		100.00	0.000	0.000
					C	0.000	58.934		100.00	0.000	13.568
L14 2.7500-0.0000	1.3728	1	0.018	11.631	A	0.000	11.631	11.631	100.00	0.000	0.000
					B	0.000	11.631		100.00	0.000	0.000
					C	0.000	11.631		100.00	0.000	2.618

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K _z	q _z ksf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 175.0000-145.5000	159.7232	1.569	0.006	0.9062	65.373	A	0.000	65.373	65.373	100.00	0.000	0.000
						B	0.000	65.373	100.00	0.000	0.000	
						C	0.000	65.373	100.00	0.000	12.515	
L2 145.5000-95.5000	119.6797	1.445	0.005	0.8754	138.790	A	0.000	138.790	138.790	100.00	0.000	0.000
						B	0.000	138.790	100.00	0.000	0.000	
						C	0.000	138.790	100.00	0.000	37.925	
L3 95.5000-83.2500	89.3133	1.329	0.005	0.8452	39.022	A	0.000	39.022	39.022	100.00	0.000	0.000
						B	0.000	39.022	100.00	0.000	0.000	
						C	0.000	39.022	100.00	0.000	9.773	
L4 83.2500-65.5000	74.2544	1.261	0.005	0.8267	60.391	A	0.000	60.391	60.391	100.00	0.000	0.000
						B	0.000	60.391	100.00	0.000	0.000	
						C	0.000	60.391	100.00	0.000	19.117	
L5 65.5000-64.0000	64.7492	1.212	0.004	0.8132	5.317	A	0.000	5.317	5.317	100.00	0.000	0.000
						B	0.000	5.317	100.00	0.000	0.000	
						C	0.000	5.317	100.00	0.000	2.278	
L6 64.0000-46.5800	55.1832	1.158	0.004	0.7977	64.171	A	0.000	64.171	64.171	100.00	0.000	0.000
						B	0.000	64.171	100.00	0.000	0.000	
						C	0.000	64.171	100.00	0.000	26.223	
L7 46.5800-43.0000	44.7844	1.091	0.004	0.7780	13.502	A	0.000	13.502	13.502	100.00	0.000	0.000
						B	0.000	13.502	100.00	0.000	0.000	
						C	0.000	13.502	100.00	0.000	5.655	
L8 43.0000-42.5000	42.7499	1.077	0.004	0.7737	1.903	A	0.000	1.903	1.903	100.00	0.000	0.000
						B	0.000	1.903	100.00	0.000	0.000	
						C	0.000	1.903	100.00	0.000	0.792	
L9 42.5000-42.0000	42.2499	1.073	0.004	0.7726	1.906	A	0.000	1.906	1.906	100.00	0.000	0.000
						B	0.000	1.906	100.00	0.000	0.000	
						C	0.000	1.906	100.00	0.000	0.792	
L10 42.0000-35.5000	38.7359	1.047	0.004	0.7646	25.115	A	0.000	25.115	25.115	100.00	0.000	0.000
						B	0.000	25.115	100.00	0.000	0.000	
						C	0.000	25.115	100.00	0.000	10.232	
L11 35.5000-18.0000	26.6522	1	0.004	0.7500	70.725	A	0.000	70.725	70.725	100.00	0.000	0.000
						B	0.000	70.725	100.00	0.000	0.000	
						C	0.000	70.725	100.00	0.000	27.988	
L12 18.0000-17.0000	17.4997	1	0.004	0.7500	4.180	A	0.000	4.180	4.180	100.00	0.000	0.000
						B	0.000	4.180	100.00	0.000	0.000	
						C	0.000	4.180	100.00	0.000	1.599	
L13 17.0000-2.7500	9.8331	1	0.004	0.7500	60.715	A	0.000	60.715	60.715	100.00	0.000	0.000
						B	0.000	60.715	100.00	0.000	0.000	
						C	0.000	60.715	100.00	0.000	22.790	
L14 2.7500-0.0000	1.3728	1	0.004	0.7500	11.975	A	0.000	11.975	11.975	100.00	0.000	0.000
						B	0.000	11.975	100.00	0.000	0.000	
						C	0.000	11.975	100.00	0.000	4.398	

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K _z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 175.0000-145.5000	159.7232	1.569	0.010	60.917	A	0.000	60.917	60.917	100.00	0.000	0.000
					B	0.000	60.917	100.00	0.000	0.000	
					C	0.000	60.917	100.00	0.000	6.534	
L2 145.5000-95.5000	119.6797	1.445	0.009	131.238	A	0.000	131.238	131.238	100.00	0.000	0.000
					B	0.000	131.238	100.00	0.000	0.000	
					C	0.000	131.238	100.00	0.000	19.800	
L3 95.5000-83.2500	89.3133	1.329	0.009	37.234	A	0.000	37.234	37.234	100.00	0.000	0.000
					B	0.000	37.234	100.00	0.000	0.000	
					C	0.000	37.234	100.00	0.000	5.143	
L4 83.2500-65.5000	74.2544	1.261	0.008	57.945	A	0.000	57.945	57.945	100.00	0.000	0.000
					B	0.000	57.945	100.00	0.000	0.000	
					C	0.000	57.945	100.00	0.000	9.987	
L5 65.5000-64.0000	64.7492	1.212	0.008	5.113	A	0.000	5.113	5.113	100.00	0.000	0.000
					B	0.000	5.113	100.00	0.000	0.000	
					C	0.000	5.113	100.00	0.000	0.000	

Section Elevation ft	z ft	K _z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L6 64.0000- 46.5800	55.1832	1.158	0.007	61.855	C	0.000	5.113	61.855	100.00	0.000	1.248
					A	0.000	61.855		100.00	0.000	0.000
					B	0.000	61.855		100.00	0.000	0.000
L7 46.5800- 43.0000	44.7844	1.091	0.007	13.026	C	0.000	61.855	13.026	100.00	0.000	14.488
					A	0.000	13.026		100.00	0.000	0.000
					B	0.000	13.026		100.00	0.000	0.000
L8 43.0000- 42.5000	42.7499	1.077	0.007	1.838	C	0.000	1.838	1.838	100.00	0.000	0.000
					A	0.000	1.838		100.00	0.000	0.000
					B	0.000	1.838		100.00	0.000	0.000
L9 42.5000- 42.0000	42.2499	1.073	0.007	1.842	C	0.000	1.838	1.842	100.00	0.000	0.455
					A	0.000	1.842		100.00	0.000	0.000
					B	0.000	1.842		100.00	0.000	0.000
L10 42.0000- 35.5000	38.7359	1.047	0.007	24.287	C	0.000	1.842	24.287	100.00	0.000	0.455
					A	0.000	24.287		100.00	0.000	0.000
					B	0.000	24.287		100.00	0.000	0.000
L11 35.5000- 18.0000	26.6522	1	0.006	68.538	C	0.000	24.287	68.538	100.00	0.000	5.918
					A	0.000	68.538		100.00	0.000	0.000
					B	0.000	68.538		100.00	0.000	0.000
L12 18.0000- 17.0000	17.4997	1	0.006	4.055	C	0.000	68.538	4.055	100.00	0.000	16.662
					A	0.000	4.055		100.00	0.000	0.000
					B	0.000	4.055		100.00	0.000	0.000
L13 17.0000- 2.7500	9.8331	1	0.006	58.934	C	0.000	4.055	58.934	100.00	0.000	0.952
					A	0.000	58.934		100.00	0.000	0.000
					B	0.000	58.934		100.00	0.000	0.000
L14 2.7500- 0.0000	1.3728	1	0.006	11.631	C	0.000	58.934	11.631	100.00	0.000	13.568
					A	0.000	11.631		100.00	0.000	0.000
					B	0.000	11.631		100.00	0.000	0.000
					C	0.000	11.631		100.00	0.000	2.618

Load Combinations

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

Comb. No.	Description
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	175 - 145.5	Pole	Max Tension	5	0.00	0.00	-0.00
			Max. Compression	14	-11.66	-0.95	0.32
			Max. Mx	5	-4.86	-258.38	0.17
			Max. My	2	-4.83	-0.54	260.09
			Max. Vy	11	-14.26	257.45	-0.11
			Max. Vx	2	-14.41	-0.54	260.09
L2	145.5 - 95.5	Pole	Max. Torque	7			1.18
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.94	-0.09	-0.18
			Max. Mx	5	-11.90	-1214.37	-3.13
			Max. My	8	-11.87	-3.37	-1223.73
			Max. Vy	11	-23.27	1213.91	3.04
L3	95.5 - 83.25	Pole	Max. Vx	8	23.42	-3.37	-1223.73
			Max. Torque	7			1.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26.65	0.27	-0.38
			Max. Mx	5	-15.72	-1650.99	-4.34
			Max. My	8	-15.70	-4.48	-1663.21
L4	83.25 - 65.5	Pole	Max. Vy	11	-25.90	1650.74	4.17
			Max. Vx	8	26.05	-4.48	-1663.21
			Max. Torque	7			0.83
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.87	0.64	-0.60
			Max. Mx	5	-20.23	-2134.09	-5.55
L5	65.5 - 64	Pole	Max. My	8	-20.22	-5.57	-2149.19
			Max. Vy	11	-28.59	2134.07	5.30
			Max. Vx	8	28.74	-5.57	-2149.19
			Max. Torque	13			-0.74
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.32	0.67	-0.62
L6	64 - 46.58	Pole	Max. Mx	11	-20.62	2177.13	5.39
			Max. My	8	-20.61	-5.66	-2192.48
			Max. Vy	11	-28.83	2177.13	5.39
			Max. Vx	8	28.99	-5.66	-2192.48
			Max. Torque	13			-0.58
			Max Tension	1	0.00	0.00	0.00
L7	46.58 - 43	Pole	Max. Compression	14	-36.20	0.92	-0.76
			Max. Mx	11	-24.06	2503.62	6.08
			Max. My	8	-24.05	-6.33	-2520.60
			Max. Vy	11	-30.55	2503.62	6.08
			Max. Vx	8	30.70	-6.33	-2520.60
			Max. Torque	13			-0.56
L8	43 - 42.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42.04	1.14	-0.89
			Max. Mx	11	-29.17	2817.63	6.71
			Max. My	8	-29.16	-6.94	-2836.09
			Max. Vy	11	-32.21	2817.63	6.71
			Max. Vx	8	32.36	-6.94	-2836.09
L9	42.5 - 42	Pole	Max. Torque	13			-0.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42.24	1.15	-0.89
			Max. Mx	11	-29.35	2833.75	6.74
			Max. My	8	-29.34	-6.97	-2852.29
			Max. Vy	5	32.28	-2833.43	-7.12
L9	42.5 - 42	Pole	Max. Vx	8	32.43	-6.97	-2852.29
			Max. Torque	13			-0.27
L9	42.5 - 42	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	42 - 35.5	Pole	Max. Compression	14	-42.46	1.16	-0.90
			Max. Mx	11	-29.55	2849.90	6.77
			Max. My	8	-29.55	-7.00	-2868.51
			Max. Vy	5	32.36	-2849.58	-7.15
			Max. Vx	8	32.51	-7.00	-2868.51
			Max. Torque	13			-0.26
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-45.04	1.31	-0.98
			Max. Mx	11	-31.88	3063.22	7.18
			Max. My	8	-31.88	-7.39	-3082.79
L11	35.5 - 18	Pole	Max. Vy	11	-33.30	3063.22	7.18
			Max. Vx	8	33.45	-7.39	-3082.79
			Max. Torque	13			-0.25
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.53	1.71	-1.22
			Max. Mx	11	-38.72	3667.30	8.26
			Max. My	8	-38.71	-8.43	-3689.45
			Max. Vy	11	-35.77	3667.30	8.26
			Max. Vx	8	35.92	-8.43	-3689.45
			Max. Torque	8			0.17
L12	18 - 17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.97	1.74	-1.23
			Max. Mx	11	-39.12	3703.14	8.32
			Max. My	8	-39.12	-8.49	-3725.43
			Max. Vy	11	-35.91	3703.14	8.32
			Max. Vx	8	36.06	-8.49	-3725.43
			Max. Torque	6			-0.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-59.11	2.08	-1.43
			Max. Mx	11	-44.74	4228.91	9.19
L13	17 - 2.75	Pole	Max. My	8	-44.74	-9.33	-4253.28
			Max. Vy	11	-37.90	4228.91	9.19
			Max. Vx	8	38.04	-9.33	-4253.28
			Max. Torque	7			-0.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-60.32	2.15	-1.47
			Max. Mx	11	-45.86	4333.63	9.36
			Max. My	8	-45.86	-9.49	-4358.38
			Max. Vy	11	-38.28	4333.63	9.36
			Max. Vx	8	38.43	-9.49	-4358.38
L14	2.75 - 0	Pole	Max. Torque	7			-0.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-60.32	2.15	-1.47
			Max. Mx	11	-45.86	4333.63	9.36
			Max. My	8	-45.86	-9.49	-4358.38

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 145.5	44.49	32	2.42	0.00
L2	150 - 95.5	32.15	32	2.23	0.00
L3	101 - 83.25	13.22	32	1.35	0.00
L4	83.25 - 65.5	8.71	32	1.04	0.00
L5	65.5 - 64	5.34	32	0.77	0.00
L6	64 - 46.58	5.10	32	0.75	0.00
L7	53 - 43	3.54	32	0.61	0.00
L8	43 - 42.5	2.35	32	0.52	0.00
L9	42.5 - 42	2.29	32	0.51	0.00
L10	42 - 35.5	2.24	32	0.51	0.00
L11	35.5 - 18	1.60	32	0.43	0.00
L12	18 - 17	0.42	32	0.22	0.00
L13	17 - 2.75	0.37	32	0.21	0.00
L14	2.75 - 0	0.01	32	0.03	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
174.0000	(2) ADA-85408580CF w/ Mount Pipe	32	43.99	2.42	0.00	20660
162.0000	P65-16-XLH-RR w/ Mount Pipe	32	37.96	2.34	0.00	7945
144.0000	SBNHH-1D65A w/ Mount Pipe	32	29.38	2.15	0.00	3889

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 145.5	127.96	8	6.97	0.01
L2	150 - 95.5	92.50	8	6.42	0.01
L3	101 - 83.25	38.08	7	3.89	0.00
L4	83.25 - 65.5	25.10	7	2.99	0.00
L5	65.5 - 64	15.40	7	2.22	0.00
L6	64 - 46.58	14.72	7	2.16	0.00
L7	53 - 43	10.21	7	1.75	0.00
L8	43 - 42.5	6.77	7	1.49	0.00
L9	42.5 - 42	6.61	7	1.48	0.00
L10	42 - 35.5	6.46	7	1.46	0.00
L11	35.5 - 18	4.63	7	1.23	0.00
L12	18 - 17	1.21	7	0.64	0.00
L13	17 - 2.75	1.08	7	0.61	0.00
L14	2.75 - 0	0.03	7	0.10	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
174.0000	(2) ADA-85408580CF w/ Mount Pipe	8	126.51	6.95	0.01	7382
162.0000	P65-16-XLH-RR w/ Mount Pipe	8	109.19	6.74	0.01	2837
144.0000	SBNHH-1D65A w/ Mount Pipe	8	84.55	6.20	0.01	1382

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	175 - 145.5 (1)	TP27.435x22.125x0.2188	29.5000	0.0000	0.0	38.95	18.6041	-4.83	724.55	0.007
L2	145.5 - 95.5 (2)	TP35.997x26.1874x0.3125	54.5000	0.0000	0.0	39.00	34.9114	-11.87	1361.54	0.009
L3	95.5 - 83.25 (3)	TP37.5769x34.382x0.375	17.7500	0.0000	0.0	39.00	44.9213	-15.70	1751.93	0.009
L4	83.25 - 65.5 (4)	TP40.7716x37.5769x0.525 5	17.7500	0.0000	0.0	31.79	68.1009	-20.22	2164.79	0.009
L5	65.5 - 64 (5)	TP41.0416x40.7716x0.524 4	1.5000	0.0000	0.0	31.78	68.4135	-20.61	2173.91	0.009
L6	64 - 46.58 (6)	TP44.177x41.0416x0.616	17.4200	0.0000	0.0	31.83	84.1121	-24.05	2677.29	0.009
L7	46.58 - 43 (7)	TP44.0718x41.7895x0.641 8	10.0000	0.0000	0.0	31.84	89.7549	-29.16	2857.44	0.010
L8	43 - 42.5 (8)	TP44.1618x44.0718x0.681 4	0.5000	0.0000	0.0	31.13	95.4048	-29.34	2970.33	0.010
L9	42.5 - 42 (9)	TP44.2518x44.1618x0.777 3	0.5000	0.0000	0.0	31.82	108.806 0	-29.54	3462.63	0.009
L10	42 - 35.5 (10)	TP45.422x44.2518x0.6708	6.5000	0.0000	0.0	31.86	96.6614	-31.88	3079.63	0.010

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 $\frac{P}{P_a}$
L11	35.5 - 18 (11)	TP48.5724x45.422x0.6982	17.5000	0.0000	0.0	32.33	107.637 0	-38.71	3479.69	0.011
L12	18 - 17 (12)	TP48.7524x48.5724x0.697	1.0000	0.0000	0.0	32.35	107.853 0	-39.12	3489.25	0.011
L13	17 - 2.75 (13)	TP50.505x48.7524x0.6609	14.2500	0.0000	0.0	34.67	106.079 0	-44.74	3677.56	0.012
L14	2.75 - 0 (14)	TP51x50.505x0.6644	2.7500	0.0000	0.0	35.74	107.678 0	-45.86	3848.64	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	175 - 145.5 (1)	TP27.435x22.125x0.2188	260.09	26.00	38.95	0.668	0.00	0.00	38.95	0.000
L2	145.5 - 95.5 (2)	TP35.997x26.1874x0.312 5	1224.3 2	49.67	39.00	1.274	0.00	0.00	39.00	0.000
L3	95.5 - 83.25 (3)	TP37.5769x34.382x0.375 6	1664.1 6	48.98	39.00	1.256	0.00	0.00	39.00	0.000
L4	83.25 - 65.5 (4)	TP40.7716x37.5769x0.52 55	2150.4 9	38.71	31.79	1.218	0.00	0.00	31.79	0.000
L5	65.5 - 64 (5)	TP41.0416x40.7716x0.52 44	2193.8 1	39.04	31.78	1.229	0.00	0.00	31.78	0.000
L6	64 - 46.58 (6)	TP44.177x41.0416x0.616 5	2522.1 5	34.94	31.83	1.098	0.00	0.00	31.83	0.000
L7	46.58 - 43 (7)	TP44.0718x41.7895x0.64 18	2837.8 4	35.98	31.84	1.130	0.00	0.00	31.84	0.000
L8	43 - 42.5 (8)	TP44.1618x44.0718x0.68 14	2854.0 4	34.03	31.13	1.093	0.00	0.00	31.13	0.000
L9	42.5 - 42 (9)	TP44.2518x44.1618x0.77 73	2870.2 8	30.08	31.82	0.945	0.00	0.00	31.82	0.000
L10	42 - 35.5 (10)	TP45.422x44.2518x0.670 8	3084.6 8	35.25	31.86	1.106	0.00	0.00	31.86	0.000
L11	35.5 - 18 (11)	TP48.5724x45.422x0.698 2	3691.6 9	35.40	32.33	1.095	0.00	0.00	32.33	0.000
L12	18 - 17 (12)	TP48.7524x48.5724x0.69 7	3727.6 9	35.53	32.35	1.098	0.00	0.00	32.35	0.000
L13	17 - 2.75 (13)	TP50.505x48.7524x0.660 9	4255.8 1	39.72	34.67	1.146	0.00	0.00	34.67	0.000
L14	2.75 - 0 (14)	TP51x50.505x0.6644 7	4360.9 7	39.70	35.74	1.111	0.00	0.00	35.74	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	175 - 145.5 (1)	TP27.435x22.125x0.2188	14.41	0.77	26.00	0.061	1.03	0.05	26.00	0.002
L2	145.5 - 95.5 (2)	TP35.997x26.1874x0.312 5	23.44	0.67	26.00	0.052	0.88	0.02	26.00	0.001
L3	95.5 - 83.25 (3)	TP37.5769x34.382x0.375 6	26.07	0.58	26.00	0.045	0.75	0.01	26.00	0.000
L4	83.25 - 65.5 (4)	TP40.7716x37.5769x0.52 55	28.77	0.42	21.19	0.041	0.59	0.00	21.19	0.000
L5	65.5 - 64 (5)	TP41.0416x40.7716x0.52 44	29.01	0.42	21.18	0.041	0.58	0.00	21.18	0.000
L6	64 - 46.58 (6)	TP44.177x41.0416x0.616	30.72	0.37	21.22	0.035	0.42	0.00	21.22	0.000
L7	46.58 - 43 (7)	TP44.0718x41.7895x0.64 18	32.38	0.36	21.22	0.035	0.29	0.00	21.22	0.000
L8	43 - 42.5 (8)	TP44.1618x44.0718x0.68 14	32.45	0.34	20.76	0.033	0.27	0.00	20.76	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L9	42.5 - 42 (9)	TP44.2518x44.1618x0.7773	32.53	0.30	21.22	0.029	0.26	0.00	21.22	0.000
L10	42 - 35.5 (10)	TP45.422x44.2518x0.6708	33.47	0.35	21.24	0.033	0.18	0.00	21.24	0.000
L11	35.5 - 18 (11)	TP48.5724x45.422x0.6982	35.94	0.33	21.55	0.031	0.10	0.00	21.55	0.000
L12	18 - 17 (12)	TP48.7524x48.5724x0.697	36.08	0.33	21.57	0.032	0.12	0.00	21.57	0.000
L13	17 - 2.75 (13)	TP50.505x48.7524x0.6609	38.06	0.36	23.11	0.032	0.34	0.00	23.11	0.000
L14	2.75 - 0 (14)	TP51x50.505x0.6644	38.45	0.36	23.83	0.030	0.38	0.00	23.83	0.000

Pole Interaction Design Data

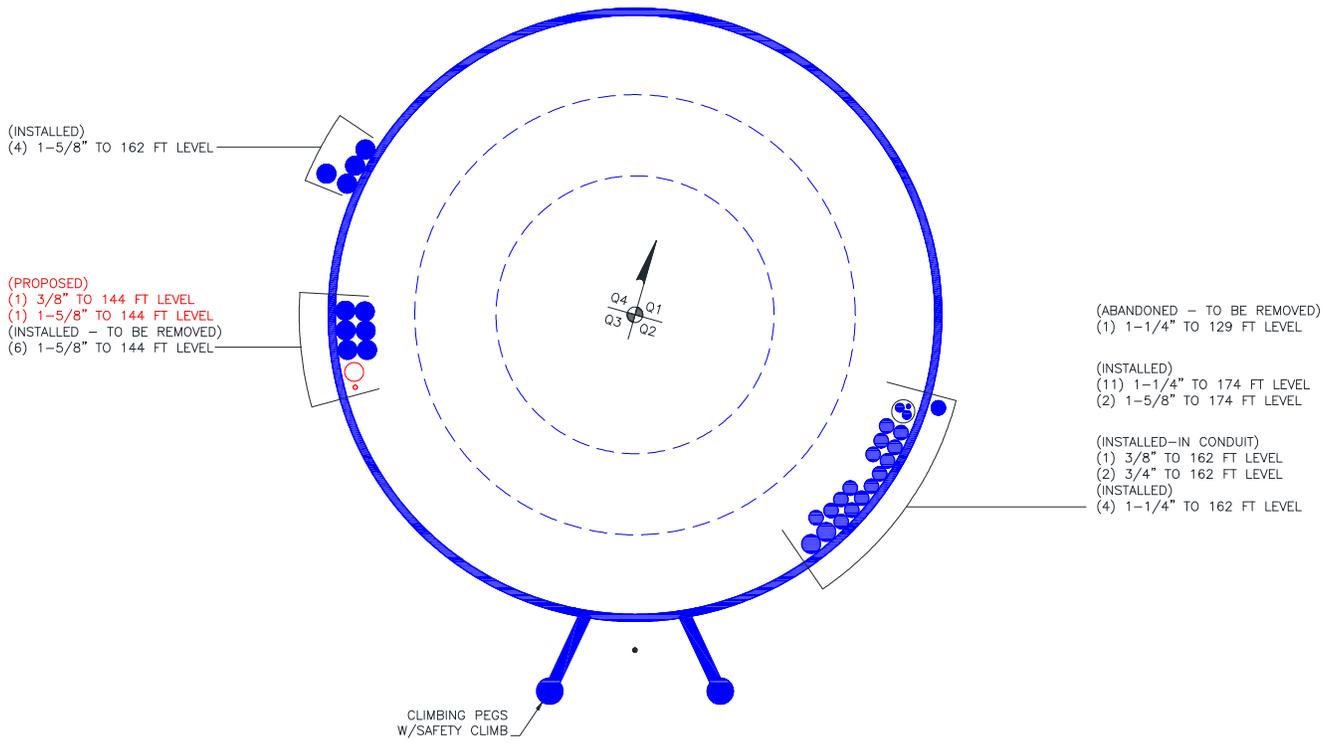
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	175 - 145.5 (1)	0.007	0.668	0.000	0.061	0.002	0.675	1.333	H1-3+VT ✓
L2	145.5 - 95.5 (2)	0.009	1.274	0.000	0.052	0.001	1.283	1.333	H1-3+VT ✓
L3	95.5 - 83.25 (3)	0.009	1.256	0.000	0.045	0.000	1.265	1.333	H1-3+VT ✓
L4	83.25 - 65.5 (4)	0.009	1.218	0.000	0.041	0.000	1.227	1.333	H1-3+VT ✓
L5	65.5 - 64 (5)	0.009	1.229	0.000	0.041	0.000	1.239	1.333	H1-3+VT ✓
L6	64 - 46.58 (6)	0.009	1.098	0.000	0.035	0.000	1.107	1.333	H1-3+VT ✓
L7	46.58 - 43 (7)	0.010	1.130	0.000	0.035	0.000	1.141	1.333	H1-3+VT ✓
L8	43 - 42.5 (8)	0.010	1.093	0.000	0.033	0.000	1.103	1.333	H1-3+VT ✓
L9	42.5 - 42 (9)	0.009	0.945	0.000	0.029	0.000	0.954	1.333	H1-3+VT ✓
L10	42 - 35.5 (10)	0.010	1.106	0.000	0.033	0.000	1.117	1.333	H1-3+VT ✓
L11	35.5 - 18 (11)	0.011	1.095	0.000	0.031	0.000	1.106	1.333	H1-3+VT ✓
L12	18 - 17 (12)	0.011	1.098	0.000	0.032	0.000	1.110	1.333	H1-3+VT ✓
L13	17 - 2.75 (13)	0.012	1.146	0.000	0.032	0.000	1.158	1.333	H1-3+VT ✓
L14	2.75 - 0 (14)	0.012	1.111	0.000	0.030	0.000	1.123	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	175 - 145.5	Pole	TP27.435x22.125x0.2188	1	-4.83	965.83	50.7	Pass
L2	145.5 - 95.5	Pole	TP35.997x26.1874x0.3125	2	-11.87	1814.93	96.2	Pass
L3	95.5 - 83.25	Pole	TP37.5769x34.382x0.375	3	-15.70	2335.32	94.9	Pass
L4	83.25 - 65.5	Pole	TP40.7716x37.5769x0.5255	4	-20.22	2885.66	92.1	Pass
L5	65.5 - 64	Pole	TP41.0416x40.7716x0.5244	5	-20.61	2897.82	92.9	Pass
L6	64 - 46.58	Pole	TP44.177x41.0416x0.616	6	-24.05	3568.83	83.0	Pass
L7	46.58 - 43	Pole	TP44.0718x41.7895x0.6418	7	-29.16	3808.97	85.6	Pass
L8	43 - 42.5	Pole	TP44.1618x44.0718x0.6814	8	-29.34	3959.45	82.8	Pass
L9	42.5 - 42	Pole	TP44.2518x44.1618x0.7773	9	-29.54	4615.69	71.6	Pass

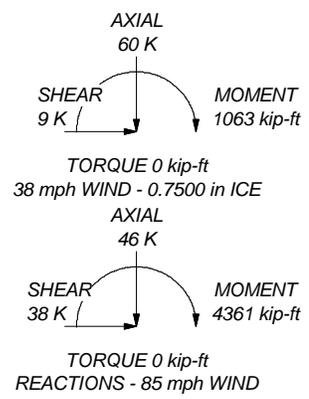
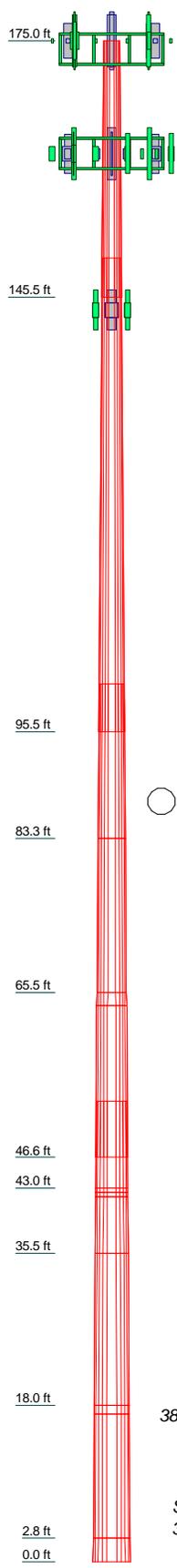
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
L10	42 - 35.5	Pole	TP45.422x44.2518x0.6708	10	-31.88	4105.15	83.8	Pass	
L11	35.5 - 18	Pole	TP48.5724x45.422x0.6982	11	-38.71	4638.43	83.0	Pass	
L12	18 - 17	Pole	TP48.7524x48.5724x0.697	12	-39.12	4651.17	83.3	Pass	
L13	17 - 2.75	Pole	TP50.505x48.7524x0.6609	13	-44.74	4902.19	86.9	Pass	
L14	2.75 - 0	Pole	TP51x50.505x0.6644	14	-45.86	5130.24	84.2	Pass	
							Summary		
							Pole (L2)	96.2	Pass
							RATING =	96.2	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	10	11	12	13	14
Length (ft)	29.5000	54.5000	17.7500	17.7500	1.5000	17.4200	10.0000	6.5000	17.5000	1.0000	14.2500	2.7500
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.2188	0.3125	0.3750	0.5255	0.5244	0.6160	0.6700	0.6700	0.6992	0.6970	0.6609	0.6644
Socket Length (ft)	4.5000	5.5000				6.4200						
Top Dia (in)	22.1250	26.1874	34.3820	37.5769	40.7716	41.0416	44.2544	44.2544	45.4220	48.5724	48.7524	50.5050
Bot Dia (in)	27.4350	35.9970	37.5769	40.7716	41.0416	44.1770	45.4220	45.4220	48.5724	48.7524	50.5050	51.0000
Grade		A572-65			Reinf 52.96 ksi	Reinf 53.05 ksi	Reinf 53.05 ksi	Reinf 53.05 ksi	Reinf 53.88 ksi	Reinf 53.92 ksi	Reinf 53.92 ksi	Reinf 53.92 ksi
Weight (K)	1.7	5.7	2.6	4.0	0.3	4.9	2.1	2.1	6.2	0.4	5.1	37.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) ADA-85408580CF w/ Mount Pipe	174	P65-16-XLH-RR w/ Mount Pipe	162
BXA-80080/4CF w/ Mount Pipe	174	P65-16-XLH-RR w/ Mount Pipe	162
BXA-80080/4CF w/ Mount Pipe	174	(2) 800 10121 w/ Mount Pipe	162
932DG90T2E-M w/ Mount Pipe	174	(2) 7770.00 w/ Mount Pipe	162
932DG90T2E-M w/ Mount Pipe	174	(2) RRUS-11	162
P65.16.XL.2 w/ Mount Pipe	174	(2) RRUS-11	162
P65.16.XL.2 w/ Mount Pipe	174	(2) RRUS-11	162
P65.16.XL.2 w/ Mount Pipe	174	(4) LGP2140X	162
(2) FD9R6004/2C-3L	174	(4) LGP2140X	162
(2) FD9R6004/2C-3L	174	DC6-48-60-18-8F	162
(2) FD9R6004/2C-3L	174	2.375" OD x 5' Mount Pipe	162
BXA-171063-12BF-EDIN-X w/ Mount Pipe	174	2.375" OD x 5' Mount Pipe	162
BXA-171063-12BF-EDIN-X w/ Mount Pipe	174	(3) 2.375" OD x 5' Mount Pipe	162
BXA-171063-12BF-EDIN-X w/ Mount Pipe	174	Platform Mount [LP 303-1]	162
BXA-171063-12BF-EDIN-X w/ Mount Pipe	174	SBNHH-1D65A w/ Mount Pipe	144
RRH2X40-AWS	174	SBNHH-1D65A w/ Mount Pipe	144
RRH2X40-AWS	174	RRUS 11 B4	144
RRH2X40-AWS	174	RRUS 11 B4	144
DB-T1-6Z-8AB-0Z	174	RRUS 11 B4	144
BCD-HP7WD-NE w/ Mount Pipe	174	RRUS 11 B12	144
BCD-HP7WD-NE w/ Mount Pipe	174	RRUS 11 B12	144
BCD-HP7WD-NE w/ Mount Pipe	174	RRUS 11 B12	144
Platform Mount [LP 601-1]	174	RRUS 11 B2	144
Miscellaneous [NA 507-2]	174	RRUS 11 B2	144
P65-16-XLH-RR w/ Mount Pipe	162	RRUS 11 B2	144
		Pipe Mount [PM 601-3]	144

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 53.04 ksi	53 ksi	67 ksi
Reinf 52.98 ksi	53 ksi	67 ksi	Reinf 53.10 ksi	53 ksi	67 ksi
Reinf 52.96 ksi	53 ksi	67 ksi	Reinf 53.88 ksi	54 ksi	68 ksi
Reinf 53.05 ksi	53 ksi	67 ksi	Reinf 53.92 ksi	54 ksi	68 ksi
Reinf 53.06 ksi	53 ksi	67 ksi	Reinf 57.78 ksi	58 ksi	73 ksi
Reinf 51.89 ksi	52 ksi	65 ksi	Reinf 59.57 ksi	60 ksi	75 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 96.2%

Paul J. Ford and Company
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 FAX: 614.448.4105

Job: **175' Monopole / BRG 133 943050**
 Project: **PJF# 37515-0524 / BU# 807132**
 Client: CCI
 Code: TIA/EIA-222-F
 Path:
 Drawn by: Morgan Scroggy
 Date: 08/28/15
 App'd:
 Scale: NTS
 Dwg No. E-1

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v4.4 - Effective 7-12-13

Asymmetric Anchor Rod Analysis

Moment = 4361 k-ft
Axial = 46.0 kips
Shear = 38.0 kips
Anchor Qty = 20

TIA Ref. = F
ASIF = 1.3333
Max Ratio = 100.0%

Location = Base Plate
 η = N/A for BP, Rev. G Sect. 4.9.9
Threads = N/A for FP, Rev. G

**** 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	59.30	0.00	3.98	180.96	176.16	176.16	0.00	195.00	90.3%
2	2.250	#18J A615 Gr 75	75	100	22.5	59.30	0.00	3.98	177.19	172.39	172.39	0.00	195.00	88.4%
3	2.250	#18J A615 Gr 75	75	100	45.0	59.30	0.00	3.98	176.14	171.33	171.33	0.00	195.00	87.9%
4	2.250	#18J A615 Gr 75	75	100	67.5	59.30	0.00	3.98	178.75	173.95	173.95	0.00	195.00	89.2%
5	2.250	#18J A615 Gr 75	75	100	90.0	59.30	0.00	3.98	183.80	179.00	179.00	0.00	195.00	91.8%
6	2.250	#18J A615 Gr 75	75	100	112.5	59.30	0.00	3.98	188.72	183.91	183.91	0.00	195.00	94.3%
7	2.250	#18J A615 Gr 75	75	100	135.0	59.30	0.00	3.98	191.14	186.34	186.34	0.00	195.00	95.6%
8	2.250	#18J A615 Gr 75	75	100	157.5	59.30	0.00	3.98	190.12	185.32	185.32	0.00	195.00	95.0%
9	2.250	#18J A615 Gr 75	75	100	180.0	59.30	0.00	3.98	186.43	181.63	181.63	0.00	195.00	93.1%
10	2.250	#18J A615 Gr 75	75	100	202.5	59.30	0.00	3.98	182.22	177.42	177.42	0.00	195.00	91.0%
11	2.250	#18J A615 Gr 75	75	100	225.0	59.30	0.00	3.98	179.88	175.08	175.08	0.00	195.00	89.8%
12	2.250	#18J A615 Gr 75	75	100	247.5	59.30	0.00	3.98	180.57	175.77	175.77	0.00	195.00	90.1%
13	2.250	#18J A615 Gr 75	75	100	270.0	59.30	0.00	3.98	183.47	178.67	178.67	0.00	195.00	91.6%
14	2.250	#18J A615 Gr 75	75	100	292.5	59.30	0.00	3.98	186.36	181.56	181.56	0.00	195.00	93.1%
15	2.250	#18J A615 Gr 75	75	100	315.0	59.30	0.00	3.98	187.16	182.36	182.36	0.00	195.00	93.5%
16	2.250	#18J A615 Gr 75	75	100	337.5	59.30	0.00	3.98	185.05	180.24	180.24	0.00	195.00	92.4%
17	2.000	A193 Gr B7	105	125	10.0	62.50	0.00	3.14	149.00	145.21	145.21	0.00	172.79	84.0%
18	2.000	A193 Gr B7	105	125	80.0	62.50	0.00	3.14	150.83	147.04	147.04	0.00	172.79	85.1%
19	2.000	A193 Gr B7	105	125	190.0	62.50	0.00	3.14	153.25	149.46	149.46	0.00	172.79	86.5%
20	2.000	A193 Gr B7	105	125	280.0	62.50	0.00	3.14	153.75	149.96	149.96	0.00	172.79	86.8%

76.25

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

TIA Rev F

Site Data	
BU#:	807132
Site Name:	BRG 133 943050
App #:	
Pole Manufacturer:	Other

Reactions		Reactions adjusted to account for additional anchor rods.
Moment:	3730.8 ft-kips	
Axial:	38.4 kips	
Shear:	31.7 kips	

Anchor Rod Data	
Qty:	16
Diam:	2.25 in
Rod Material:	A615-J
Strength (Fu):	100 ksi
Yield (Fy):	75 ksi
Bolt Circle:	59.3 in

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

Anchor Rod Results		Rigid
Maximum Rod Tension:	186.3 Kips	Service ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	95.6% Pass	

Plate Data	
Diam:	63.5 in
Thick:	2.75 in
Grade:	60 ksi
Single-Rod B-eff:	10.25 in

Base Plate Results		Flexural Check	Rigid
Base Plate Stress:	38.3 ksi		Service ASD
Allowable Plate Stress:	60.0 ksi		0.75*Fy*ASIF
Base Plate Stress Ratio:	63.9% Pass		Y.L. Length: 30.26

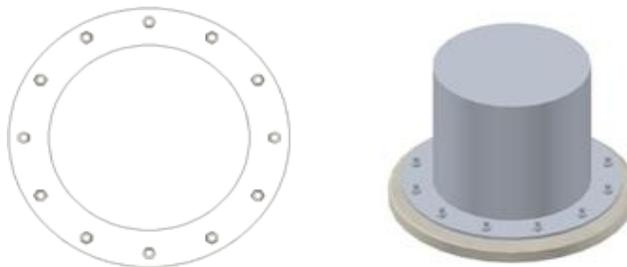
Stiffener Data (Welding at both sides)	
Config:	0 *
Weld Type:	
Groove Depth:	in **
Groove Angle:	degrees
Fillet H. Weld:	<-- Disregard
Fillet V. Weld:	in
Width:	in
Height:	in
Thick:	in
Notch:	in
Grade:	ksi
Weld str.:	ksi

n/a

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

Pole Data	
Diam:	51 in
Thick:	0.4375 in
Grade:	65 ksi
# of Sides:	12 "0" IF Round
Fu	80 ksi
Reinf. Fillet Weld	0 "0" if None

Pole Results	
Pole Punching Shear Check:	n/a



Stress Increase Factor	
ASIF:	1.333

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

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

Check Foundation Capacity

PJF job no: 37515-0524.005
Site: 807132, BRG 133 943050
Location: Greenwich, CT

Assumptions:

- 1) Foundation attempts to rotate about point at intersection of centerline of foundation and rock surface
- 2) There is sufficient caisson rotation so that both soil & existing rock anchors develop full resistance to caisson overturning

Pole Base Moment	4361	ft-k	
Pole Base Shear	38	kips	
Depth to Rock Surface	10	ft	
Moment at Rock Surface	4741	ft-k	
Allowable lateral soil moment capacity	1289.5	ft-k	(SF = 2.0)
Allowable rock anchor moment capacity	3990.9	ft-k	(SF = 2.0)
Allow. OTM for Combined Action	5280.5	ft-k	(SF = 2.0)
% Capacity	89.8%	OK	

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

T-Mobile Existing Facility

Site ID: CT11091A

Grenwich North 2
1081 North Street
Greenwich, CT 06831

September 8, 2015

EBI Project Number: 6215004690

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	4.74 %

September 8, 2015

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

Emissions Analysis for Site: **CT11091A – Greenwich North 2**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1081 North Street, Greenwich, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **1081 North Street, Greenwich, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

- 1) 4 GSM / UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 4) 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.

- 5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 6) The antennas used in this modeling are the **Commscope SBNHH-1D65A** for 1900 MHz (PCS), 2100 MHz (AWS) and 700 MHz. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Commscope SBNHH-1D65A** has a maximum gain of **14.7 dBd** at its main lobe at 1900 MHz and 2100 MHz and a maximum gain of **10.9 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is **144 feet** above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope SBNHH-1D65A	Make / Model:	Commscope SBNHH-1D65A	Make / Model:	Commscope SBNHH-1D65A
Gain:	14.7 dBd / 10.9 dBd	Gain:	14.7 dBd / 10.9 dBd	Gain:	14.7 dBd / 10.9 dBd
Height (AGL):	144	Height (AGL):	144	Height (AGL):	144
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS) / 700 MHz	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS) / 700 MHz	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS) / 700 MHz
Channel Count	7	Channel Count	7	# PCS Channels:	7
Total TX Power:	270	Total TX Power:	270	# AWS Channels:	270
ERP (W):	7,451.98	ERP (W):	7,451.98	ERP (W):	7,451.98
Antenna A1 MPE%	1.49	Antenna B1 MPE%	1.49	Antenna C1 MPE%	1.49

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	1.49 %
RAM Mobile	0.27 %
Verizon Wireless	1.46 %
Sprint	1.03 %
AT&T	0.49 %
Site Total MPE %:	4.74 %

T-Mobile Sector 1 Total:	1.49 %
T-Mobile Sector 2 Total:	1.49 %
T-Mobile Sector 3 Total:	1.49 %
Site Total:	4.74 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	2	1770.73	144	6.69	2100	1000	0.67 %
T-Mobile 700 MHz LTE	1	369.08	144	4.41	700	467	0.94 %
T-Mobile 1900 MHz (PCS) GSM / UMTS	4	885.36	144	6.69	1900	1000	0.67 %
						Total:	1.49%

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.49 %
Sector 2:	1.49 %
Sector 3 :	1.49 %
T-Mobile Per Sector Maximum:	1.49 %
Site Total:	4.74 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **4.74%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



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