NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

February 24, 2017

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
150 Mattatuck Heights, Waterbury CT 06705
Latitude: 41.53780000
Longitude: -72.98500000
T-Mobile Site#: CT11269B_L1900

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 100-foot level of the existing 133-foot lattice tower at 150 Mattatuck Heights, Waterbury CT. The tower is owned by Crown Castle. The property is owned by Waterbury Twin LLC & 150MH LLC. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 1900/2100 MHz antenna and add (1) hybrid cable. The new antennas would be installed at the 100-foot level of the tower.

Planned Modifications:
Remove:
NONE
Remove and Replace:
(3)AIR21 B4A /B2P (REMOVE) - (3)AIR32 B66Aa/B2a (REPLACE)

Install New:
(1) 1-1/2" Hybrid Cable

Existing to Remain:
(3)AIR21 B2A /B4P
(3) Commscope LNX-6515 Antenna
(3) RRUS11 B12
(3) Twin TMA
(6) 1-1/4" Coax
(6) 7/8" Coax
(1) 1-5/8" Coax

This facility was approved by the Connecticut Siting Council. Tower Share No.TS-VOICESTREAM-151000609 – Approval install antenna at the 100'8" AGL centerline on the 133' tower. Please see attached.

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor Neil M. O'Leary, Elected Official for the City of Waterbury and James A. Sequin, City Planner as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in 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 structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site. ·

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: Neil M. O'Leary- Mayor - as elected official
James A. Sequin- City Planner
Crown Castle - as tower owner

NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development

Waterbury Twin LLC & 150MH LLC. - as property owner

54 Main Street Unit 3 | Sturbridge Ma 01566 | f: 413-521-0558 | www.northeastsitesolutions.com

Exhibit A

File CTT2693
Sharkey
Paul
Giordano

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

June 26, 2000

J. Brendan Sharkey, Esq.
VoiceStream Wireless, Inc.
100 Filley Street
Cromwell, CT 06002

RE: TS-VOICESTREAM-151-000609 - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 150 Mattatuck Heights Road in Waterbury, Connecticut.

Dear Attorney Sharkey:

At a public meeting held June 20, 2000, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. The proposed shared use is to be implemented as specified in your letter dated June 9, 2000.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/PMA/grg

c: Honorable Philip A. Giordano, Mayor, City of Waterbury

I:\siting\em\voice\waterbury\dc062000.doc

June 21, 2000

J. Brendan Sharkey, Esq.
VoiceStream Wireless, Inc.
100 Filley Street
Cromwell, CT 06002

RE: TS-VOICESTREAM-151-000609 - VoiceStream Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 150 Mattatuck Heights Road in Waterbury, Connecticut.

Dear Attorney Sharkey:

At a public meeting held June 20, 2000, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. The proposed shared use is to be implemented as specified in your letter dated June 9, 2000.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/PMA/

c: Honorable Philip A. Giordano, Mayor, City of Waterbury

TS-VOICESTREAM-151-00060

VoiceStream WIRELESS

100 Filley Street, Waterbury, CT 06002
(860) 692-7154 phone
(860) 692-7159 fax

9 June, 2000

RECEIVED
JUN - 9 2000
CONNECTICUT
SITING COUNCIL

Mortimer A. Gelston, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Request by VoiceStream Wireless for an Order to Approve the Shared Use of a Tower Facility
150 Mattatuck Heights Road, Waterbury, Connecticut

Dear Chairman Gelston and Members of the Council:

Pursuant to Connecticut General Statutes §16-50aa, VoiceStream Wireless ("VoiceStream") hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed shared use by the Applicant of an existing tower located at 150 Mattatuck Heights Road in Waterbury, Connecticut. The tower is owned and operated by Sprint Spectrum L.P. ("Sprint"). VoiceStream proposes to install antennas on the existing tower located within Sprint's leased compound area, and to locate the equipment associated with this facility near the base of the tower within the existing compound (see "Exhibit A"). The Applicant requests that the Council find that the proposed shared use of the tower satisfies the criteria stated in §16-50aa and issue an order approving the proposed use.

Background

In February, 2000, VoiceStream acquired from Omnipoint Communications, Inc. the "A block" "Wideband PCS" license for the 2-GH_z PCS frequencies for the Greater New York City area, including the entire State of Connecticut. VoiceStream provides PCS wireless telephone service in the State of Connecticut, which includes the area to be served by VoiceStream's proposed installation.

The Sprint tower at 150 Mattatuck Heights Road in Waterbury is a 133-foot monopole located on a 40' x 50' or 2000 sq. ft. leased compound off Mattatuck Heights Road. The coordinates for the site are **41-32-07 N** and **72-58-55 W**. The tower currently holds Sprint's antennas at the top level with centerlines at 130' 8" above ground level ("AGL"). Additional co-locating carriers include Nextel Communications ("Nextel") with antennas at 120' 8" AGL, and Bell Atlantic Mobile ("BAM") with antennas at 110' 8" AGL.

VoiceStream proposes to install six (6) EMS RR 90-1702 DP antennas on low-profile platforms with centerlines at 100' 8" AGL. The radio transmission equipment associated with these antennas, a Nortel S8000 cabinet, would be located near the base of the tower on an existing concrete pad. Exhibit B contains specifications for the proposed antennas and equipment cabinet.

VoiceStream and Sprint have agreed to the proposed shared use of this tower pursuant to mutually acceptable terms and conditions, and Sprint has authorized VoiceStream to act on its behalf to apply for all necessary local, state and federal permits, approvals, and authorizations that may be required for the proposed shared use of this facility.

C.G.S. §16-50aa (c) (1) provides that, upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." The shared use of the tower satisfies those criteria as follows:

A. **Technical Feasibility** The existing tower is structurally sound and capable of supporting the proposed VoiceStream antennas. A structural analysis of the tower with the proposed VoiceStream installation has been performed and is attached as Exhibit C. The proposed shared use of this tower therefore is technically feasible.

B. **Legal Feasibility** Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the proposed shared use of an existing tower facility such as the facility on Mattatuck Heights Road in Waterbury. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. C.G.S. § 16-50x (a) vests exclusive jurisdiction over these facilities in the Council, which shall "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing towers facilities. Under this statutory authority vested in the Council, an order by the Council approving the shared use would permit the applicant to obtain a building permit for the proposed installations.

C. **Environmental Feasibility** The proposed shared use would have a minimal environmental effect, for the following reasons:

1. The proposed installations would have an insignificant incremental visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing site. In particular, the proposed installations would not increase the height of the existing tower, and would not extend the boundaries of the existing Sprint compound area.

2. The proposed installations would not increase the noise levels at the existing facility by six decibels or more.

3. Operation of antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the American National Standards Institute ("ANSI"). The "worst-case" exposure calculated for operation of this facility (i.e., calculated at the base of the tower, which represents the closest publicly accessible point within the broadcast field of the antennas), with the Sprint, Nextel, BAM and VoiceStream antennas, would be 18.2725% of the ANSI standard. These calculations are attached as Exhibit D.

4. The proposed installations, would not require any water or sanitary facilities, or generate air emissions or discharges to water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is complete (approximately two weeks), the proposed installations would not generate any traffic other than periodic maintenance visits.

The proposed use of this facility would therefore have a minimal environmental effect, and is environmentally feasible.

E. **Economic Feasibility** As previously mentioned, Sprint and VoiceStream have entered into a mutual agreement to share the use of the existing tower on terms agreeable to the parties. The proposed tower sharing is therefore economically feasible.

F. **Public Safety Concerns** As stated above, the existing tower is structurally capable of supporting the proposed VoiceStream antennas. The tower stands on a compound accessible from an existing access drive off Mattatuck Heights Road. VoiceStream is not aware of any other public safety concerns relative to the proposed sharing of the existing tower. In fact, the tower was initially approved by the relevant Waterbury land use agencies with an eye toward public health and safety concerns, and the provision of new or improved phone service through shared use of the existing tower will enhance the safety and welfare of area residents.

Conclusion

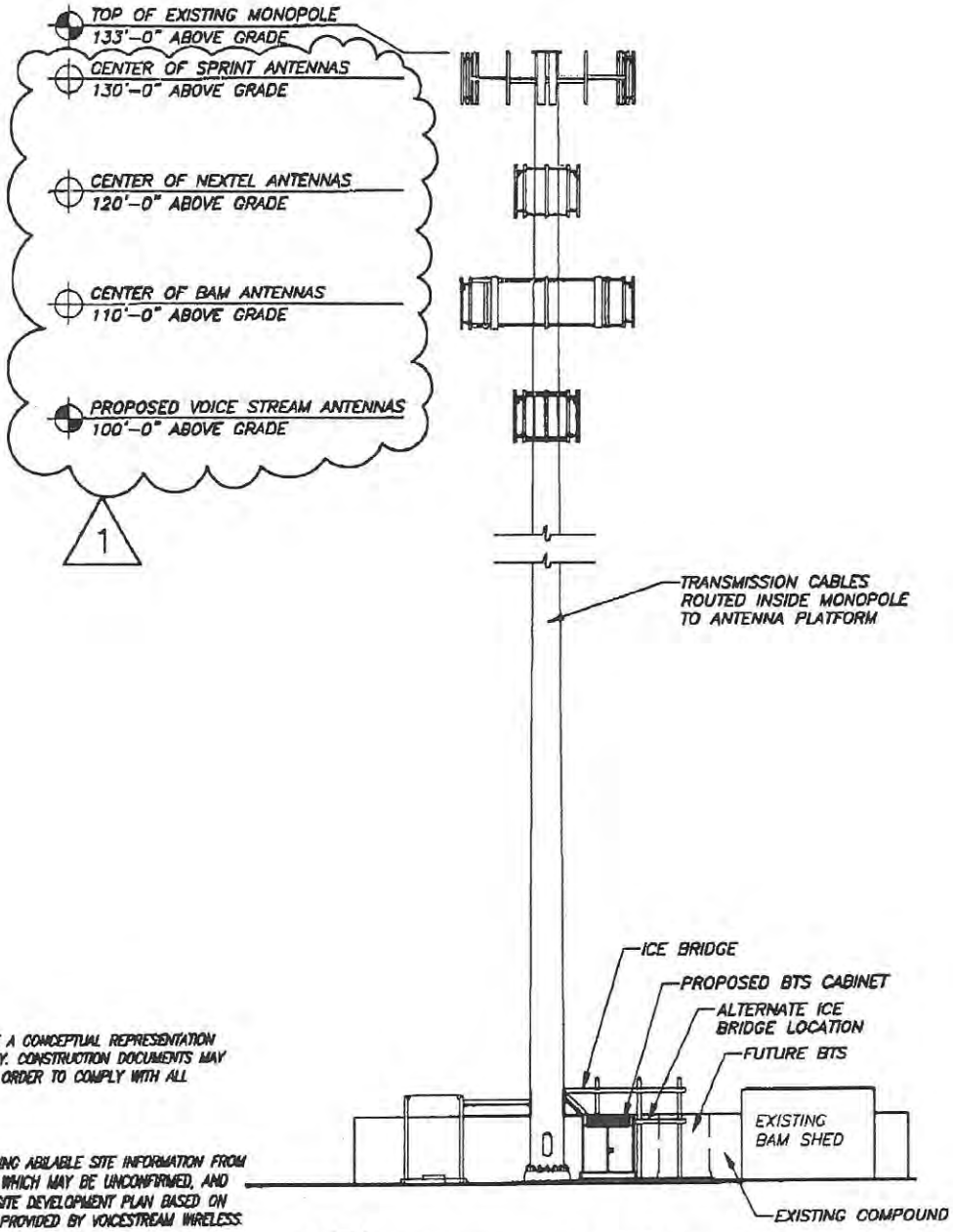
For the reasons discussed above, the proposed shared use of the existing tower facility at 150 Mattatuck Heights Road in Waterbury, Connecticut satisfies the criteria stated in C.G.S. §16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in Connecticut. The Applicant therefore requests that the Siting Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Sincerely,

J. Brendan Sharkey, Esq.
for VoiceStream Wireless, Inc.

enclosures
cc: Philip A. Giordano, Mayor of Waterbury



NOTE:

LEASE EXHIBITS SUBMITTED ARE A CONCEPTUAL REPRESENTATION OF THE LEASE AGREEMENT ONLY. CONSTRUCTION DOCUMENTS MAY VARY FROM THESE EXHIBITS IN ORDER TO COMPLY WITH ALL APPLICABLE CODES.

THIS PLAN WAS PREPARED USING ABLABLE SITE INFORMATION FROM SEVERAL SOURCES, SOME OF WHICH MAY BE UNCONFIRMED, AND REPRESENTS A CONCEPTUAL SITE DEVELOPMENT PLAN BASED ON DEVELOPMENT REQUIREMENTS PROVIDED BY VOICESTREAM WIRELESS.

1 / LE-3 **Monopole Elevation**

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

1 HEIGHTS REVISED PER STRUCTURAL INVENTORY

Client:
VoiceStream WIRELESS
100 FILLEY STREET
BLOOMFIELD, CT 06002

OMNIPOINT

Approved By:
Owner/SAC: _____ Date: _____
R.F. Engr.: _____ Date: _____
Network: _____ Date: _____

Drawing Title: ELEVATION (ALTERNATE 1)

Project: SPRINT MONOPOLE CO-LOCATE
150 MATTATUCK HEIGHTS
WATERBURY, CT

Client Project I.D. No: CT-11269B

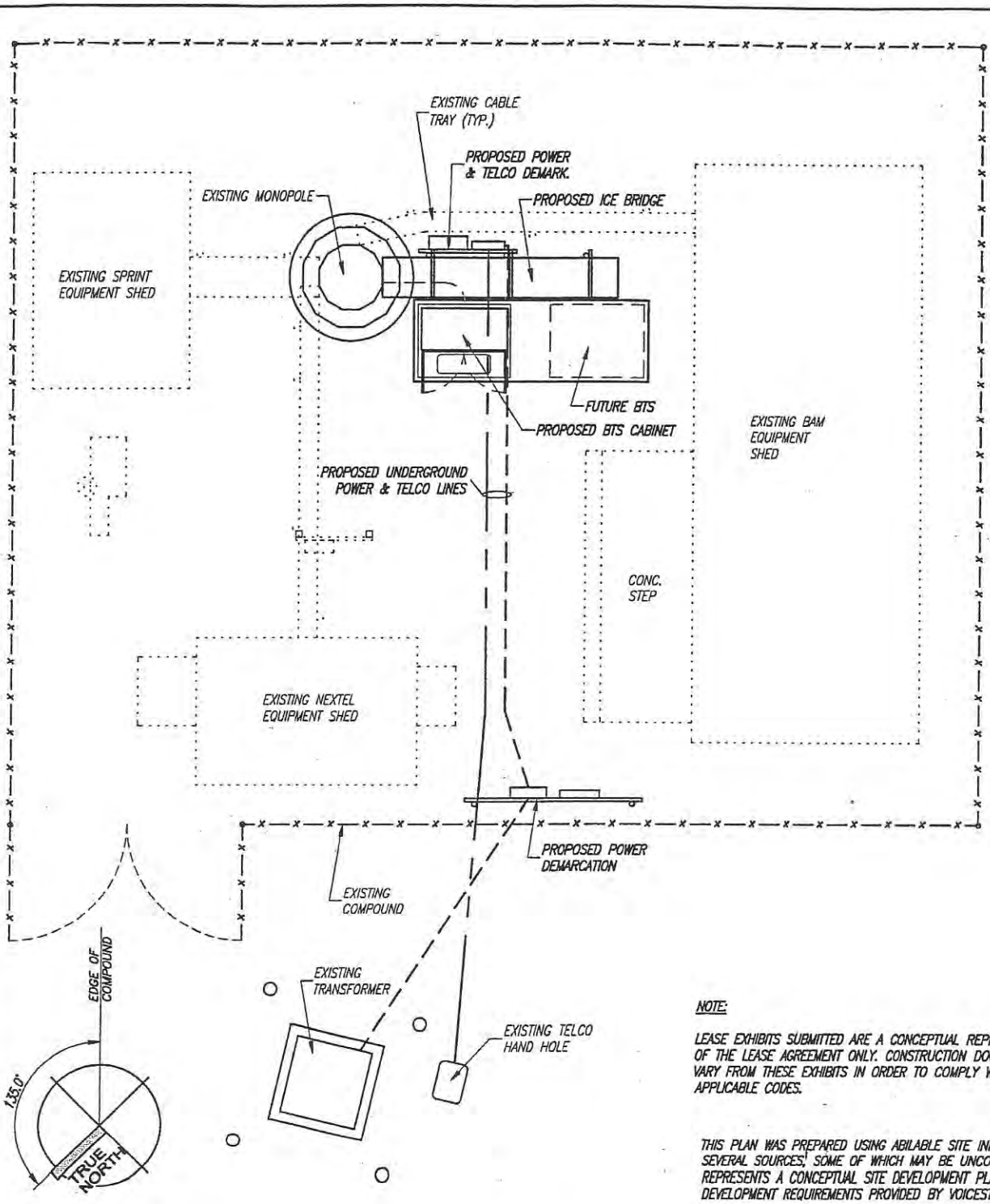
Carter • Burgess
401 BUCKLAND ROAD, SUITE 201
SOUTH WINDSOR, CT 06074
TEL 860-648-0339 FAX 860-648-5665

C-B Project Number	PM	Drawn By	Date
320345	KAM	DBK	5/4/00

Rev. No.	Date:
1	6-7-00

Drawing No. LE-2

FRI, JUN 09, 2000 12:26 P TK H:\VOICESTREAM-OMNIPOINT\WATERBURY\320345-269B\CAD\LEASE_EXHIBIT\320345-269B-LE-2.DWG X-REFS, 320345-269B-LE-BORDER.DWG



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1 / LE-1 **Compound Plan**

SCALE: 1/8" = 1'-0"

Client:

VoiceStream WIRELESS

100 FILLEY STREET
BLOOMFIELD, CT 06002

OMNIPOINT

Approved By:

Owner/SAC: _____ Date: _____

R.F. Engr.: _____ Date: _____

Network: _____ Date: _____

Drawing Title: COMPOUND PLAN

Project: SPRINT MONOPOLE CO-LOCATE
150 MATTATUCK HEIGHTS
WATERBURY, CT

Client Project I.D. No: CT-11269B

Carter-Burgess
481 BUCKLAND ROAD, SUITE 201
SOUTH WINDSOR, CT 06074
TEL 860-648-5619 FAX 860-648-5665

C-B Project Number:	PM:	Drawn By:	Date:
320345	KAM	DBK	5/4/00

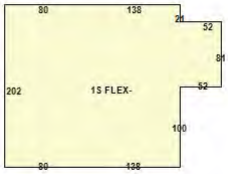
Rev. No.	Date:

Drawing No. LE-1

FRI, MAY 05, 2000 11:26 A DBK H:\VOICESTREAM-OMNIPOINT\WATERBURY\320345-269B\CAD\LEASE_EXHIBIT\320345-269B-LE-1.DWG X-REFS, 320345-269B-LE-BORDER.DWG

Exhibit B

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



Property Information:

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

Property Values:

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

Sales Information:

Sale Date	Sale Price	Sale Type	Valid sale
5/15/2003	2315000	Warranty Sale	Yes

Building Information:

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

Outbuilding Information:

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

Special Features:

Feature:	Sprinklers

Permit Information:

Permit Date	Permit Number	Permit Type	Click for Details
11/03/2014	PR20140003145	BD - Electrical	Details
09/25/2009	588-09-E	BD - Electrical	Details
09/25/2009	589-09-E	BD - Electrical	Details
07/21/2009	436-09-E	BD - Electrical	Details
07/10/2015	PR20150001784	BD - Electrical	Details
06/16/2010	PR20100000455	BD - Electrical	Details
06/13/2016	PR20160001412	BD - Electrical	Details
05/05/2009	266-09-E	BD - Electrical	Details
04/08/2009	199-09-E	BD - Electrical	Details
03/24/2014	PR20140000494	BD - Electrical	Details
03/16/2010	142-10-E	BD - Electrical	Details
02/28/2013	PR20130000461	BD - Building	Details
02/10/2014	PR20140000271	BD - Electrical	Details

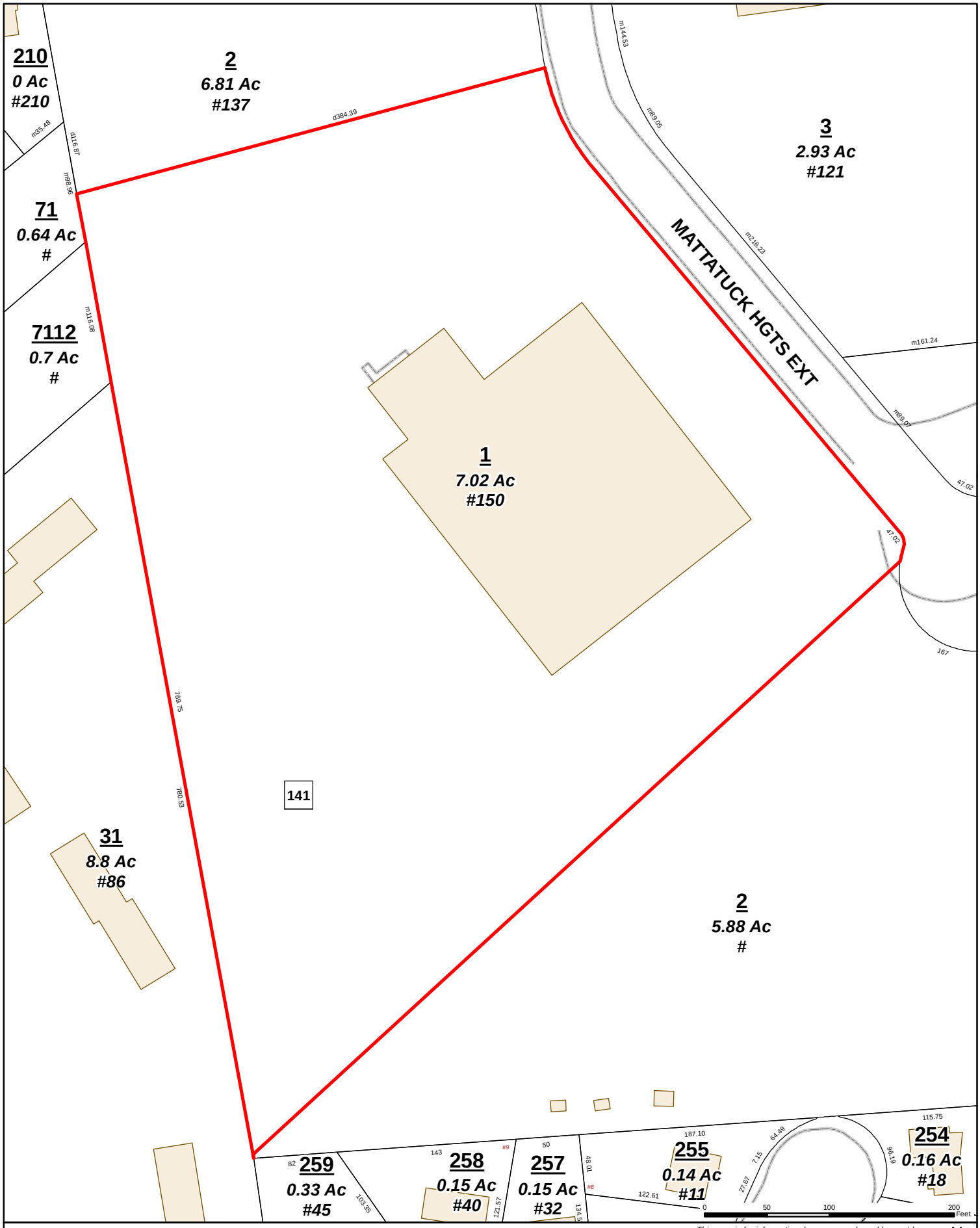
Planning Application:

Application Date	Application Number	Application Type	Click for Details
06/06/2013	PL20130000133	Zoning - General Letter of Compliance	Details

Code Enforcement:

Case Date	Case Number	Case Type	Click for Details

Close



City of Waterbury
Public Works Department

MBL: **0424-0141-0001**

ADDRESS: 150 MATTATUCK HEIGHTS

Exhibit C

T-MOBILE NORTHEAST LLC

SITE NUMBER:
CT11269B

SITE NAME:
WATERBURY/I-84/MATTATUCK

SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

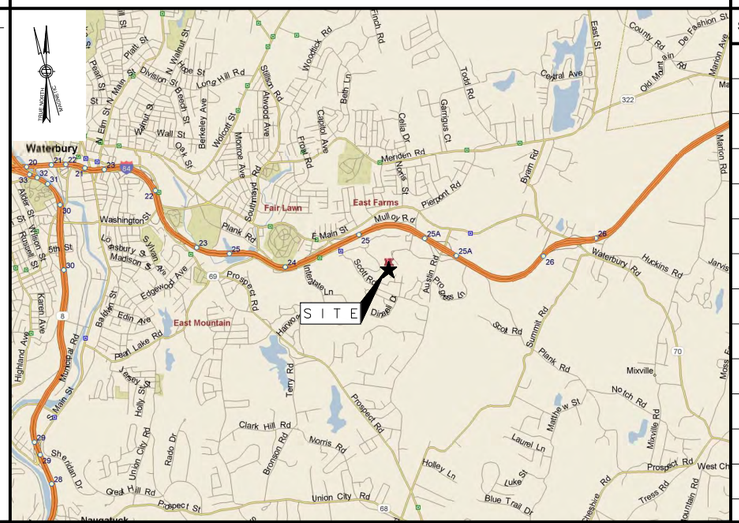
(792DB CONFIGURATION)

SITE INFORMATION

SITE NUMBER:	CT11269B
SITE NAME:	WATERBURY/I-84/MATTATUCK
SITE ADDRESS:	150 MATTATUCK HEIGHTS WATERBURY, CT 06705
COUNTY:	NEW HAVEN
ZONING:	N/A
PARCEL ID:	N/A
FAA 2-C COORDINATES:	N 41° 32' 16.3" W 72° 59' 06.1"
GROUND ELEV:	694'-0" ± AMSL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	133'-0"± AGL
ANTENNA RAD CENTER:	100'-0"± AGL

TOWER OWNER:	CROWN CASTLE INTERNATIONAL 500 W CUMMINGS PARK WOBURN, MA 01801
LOCAL POWER COMPANY:	EVERSOURCE
LOCAL TELCO COMPANY:	LIGHT TOWER
APPLICANT:	T-MOBILE NORTHEAST LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 P: (860) 648-1116
SITE ACQUISITION REPRESENTATIVE:	NORTHEAST SITE SOLUTIONS 420 MAIN STREET UNIT #2 STURBRIDGE, MA 01566 P: (860) 394-7021
ARCHITECT/ENGINEER:	VERTICAL RESOURCES GROUP 489 WASHINGTON STREET AUBURN, MA 01501 TEL:508-981-9590 FAX:508-519-8939

VICINITY MAP (NOT TO SCALE)



DRAWING INDEX

SHT #	SHEET DESCRIPTION
01	TITLE SHEET
02	GENERAL NOTES
03	ROOF PLAN & ELEVATIONS
04	ANTENNA DETAILS
05	GROUNDING & RF PLUMBING DIAGRAM
06	GROUNDING DETAILS

GENERAL NOTES

1. THIS IS AN IS UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   - –HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED.
   - –FACILITY HAS NO PLUMBING OR REFRIGERANTS.
   - –THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATOR REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
3. DEVELOPMENT AND USE OF THIS SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   BUILDING CODE: CONNECTICUT STATE BUILDING CODE
   ELECTRICAL CODE: 2008 (OR LATEST) NATIONAL ELECTRICAL CODE
   STRUCTURAL CODE: TIA/EIA-222-G OR LATEST EDITION

DIRECTIONS:
FROM BLOOMFIELD, CT PROCEED SOUTH ON I-91. CONTINUE THROUGH HARTFORD. TAKE I-91 SOUTH EXIT 32 TOWARDS I-84 WEST. CONTINUE ON I-84 WEST. TAKE I-84 WEST EXIT 25A TOWARDS AUSTIN ROAD. AT END OF OFF RAMP TURN LEFT ONTO AUSTIN RD. TURN RIGHT ONTO CAPTAIN NEVILLE DR. TURN LEFT ONTO MATTATUCK HEIGHTS ROAD. PROCEED TO END. SITE WILL BE ON RIGHT BEHIND BUILDING.

CONNECTICUT ONE CALL SYSTEM, INC.
1-800-922-4455
STOP-CALL BEFORE YOU DIG!

CALL BEFORE YOU DIG
CBYD.COM

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CONSTRUCTION: ______________________ DATE: __________

SITE ACQUISITION: ______________________ DATE: __________

LEASING/
R.F. ENGINEER: ______________________ DATE: __________

LANDLORD/
PROPERTY OWNER: ______________________ DATE: __________

T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
O: 860-692-7100
F: 860-692-7159

NSS
NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET
STURBRIDGE, MA 01566
O: 860-692-7100
F: 860-692-7159

VRG
VERTICAL RESOURCES GRP.
489 WASHINGTON STREET
AUBURN, MA 01501
TEL: 508-981-9590
FAX: 508-519-8939

STATE OF CONNECTICUT
JAMES P. STROKE
No. 8657
PROFESSIONAL ENGINEER

SUBMITTALS

NO	DATE	DESCRIPTION	BY
2	02/22/17	FOR PERMITTING	MN
1	02/21/17	GENERAL REVISIONS	MN
0	02/06/17	ISSUED FOR REVIEW	MN

SITE NUMBER:
CT11269-B
SITE NAME:
WATERBURY/I-84
MATTATUCK
SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
01

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR – PRIME CONTRACTOR
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – AT&T WIRELESS
OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. ROUTING OF CONDUIT FOR POWER AND TELCO SHALL BE APPROVED BY OWNER OF SITE.

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

SITE WORK GENERAL NOTES

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.

3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.

6. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.

7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE OWNER SPECIFICATION FOR SITE SIGNAGE.

8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.

9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE DETAIL 303.

11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.

12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

13. ALL EARTH WORK SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED.

3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:

#6 AND LARGER .....2 INCH
#5 AND SMALLER & WWF.....1 1/2 INCH

CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:

SLAB AND WALL .....3/4 INCH
BEAMS AND COLUMNS.....1 1/2 INCH

5. A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD HILTI OR APPROVED EQUAL.

7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
(A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,

(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.

FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.

8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.

9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

10. ALL CONCRETE SHALL BE SUPPLIED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL, EXPOSE UNDISTURBED NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.

2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.

3. AS AN ALTERNATIVE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.

4. COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING 1" SIEVE.

5. AS AN ALTERNATIVE TO ITEMS 2 AND 3 PROOF ROLL THE SUBGRADE SOILS WITH 5 PASSES OF A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). ANY SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL, AND COMPACTED AS STATED ABOVE.

6. COMPACTION CRITERIA FOR OTHER FILL AREAS ON SITE SHALL MEET THE SAME REQUIREMENTS AS NOTED ABOVE.

7. SOIL COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

COMPACTION EQUIPMENT:

HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

ELECTRICAL INSTALLATION NOTES

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.

5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.

6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA.

7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PERMANENT LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S). NO HAND WRITTEN LABELS ALLOWED.

8. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED. NO HAND WRITTEN LABELS ALLOWED.

9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

18. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

19. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

20. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.

21. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

22. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

23. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS

ELECTRICAL INSTALLATION NOTES (cont.)

24. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

25. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 (HOT-DIP) UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".

2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.

3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. STEEL FASTENER HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (HOT-DIP)

4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.

5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD, HILTI OR APPROVED EQUAL.

6. ALL STRUCTURAL STEEL SHALL BE SUPPLIED IN ACCORDANCE WITH TECHNICAL SPECIFICATION FOR CONSTRUCTION OF RADIO ACCESS NETWORK SITES.

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STATE OF CONNECTICUT
JAMES P. STROKE
No. 8657
REGISTERED PROFESSIONAL ENGINEER

SUBMITTALS

NO	DATE	DESCRIPTION	BY
2	02/22/17	FOR PERMITTING	MN
1	02/21/17	GENERAL REVISIONS	MN
0	02/06/17	ISSUED FOR REVIEW	MN

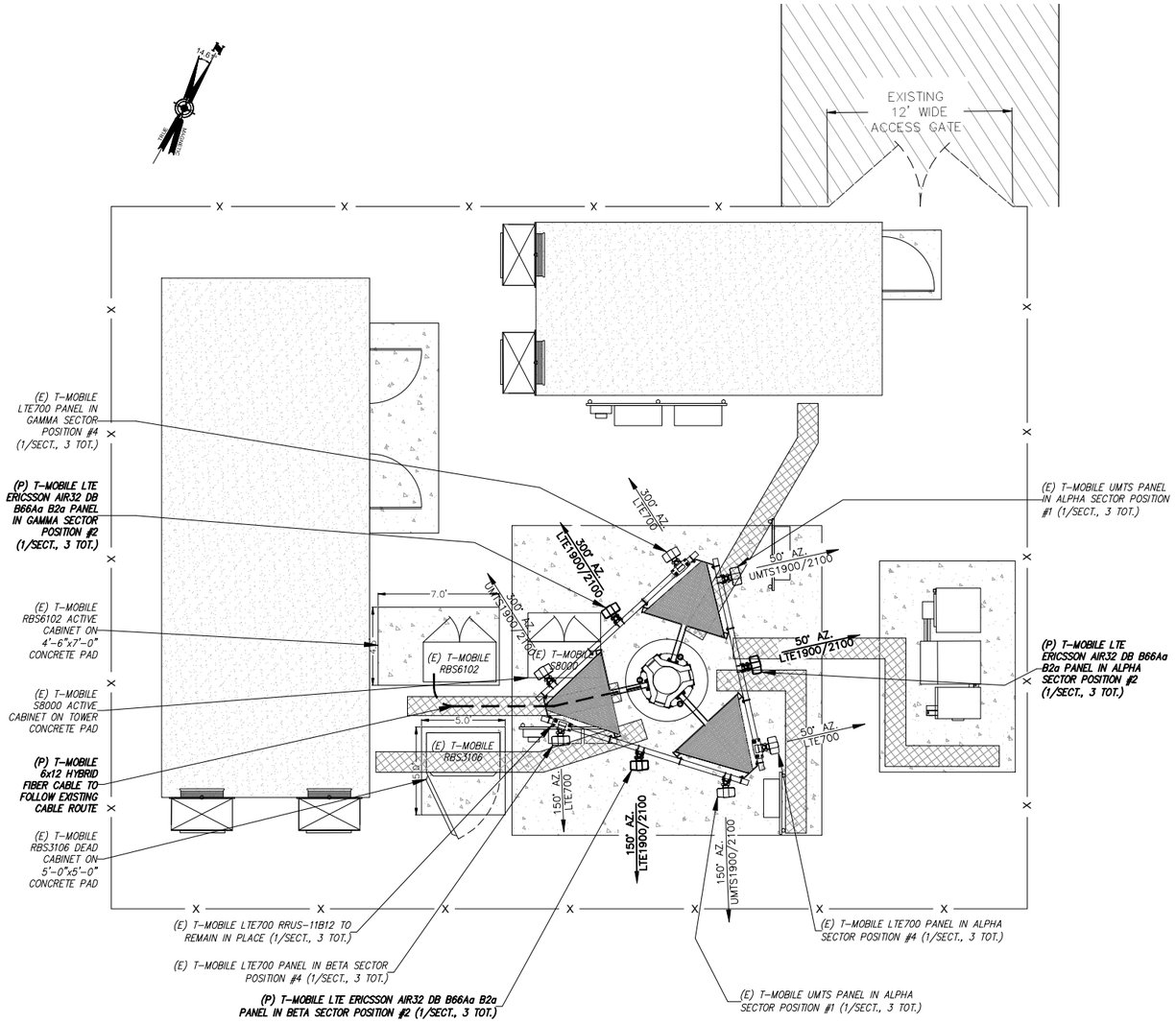
SITE NUMBER:
CT11269-B
SITE NAME:
WATERBURY/I-84 MATTATUCK
SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
02

GENERAL NOTES

1. THE TYPE, DIMENSIONS, MOUNTING HARDWARE, AND THE POSITIONS OF ALL EQUIPMENT IN THE COMPOUND ARE SHOWN IN ILLUSTRATIVE FASHION. THESE DRAWINGS ARE NOT INTENDED FOR CONSTRUCTION. ACTUAL HARDWARE DETAILS AND FINAL LOCATIONS MAY DIFFER SLIGHTLY FROM WHAT IS SHOWN.
2. THE CELLULAR INSTALLATION IS AN UNMANNED PRIVATE AND SECURED COMPOUND. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONSTRUCTION, MAINTENANCE & OPERATION OF PROPOSED TOWER FACILITY WILL BE HELD IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE & FEDERAL REGULATIONS AND GUIDELINES.

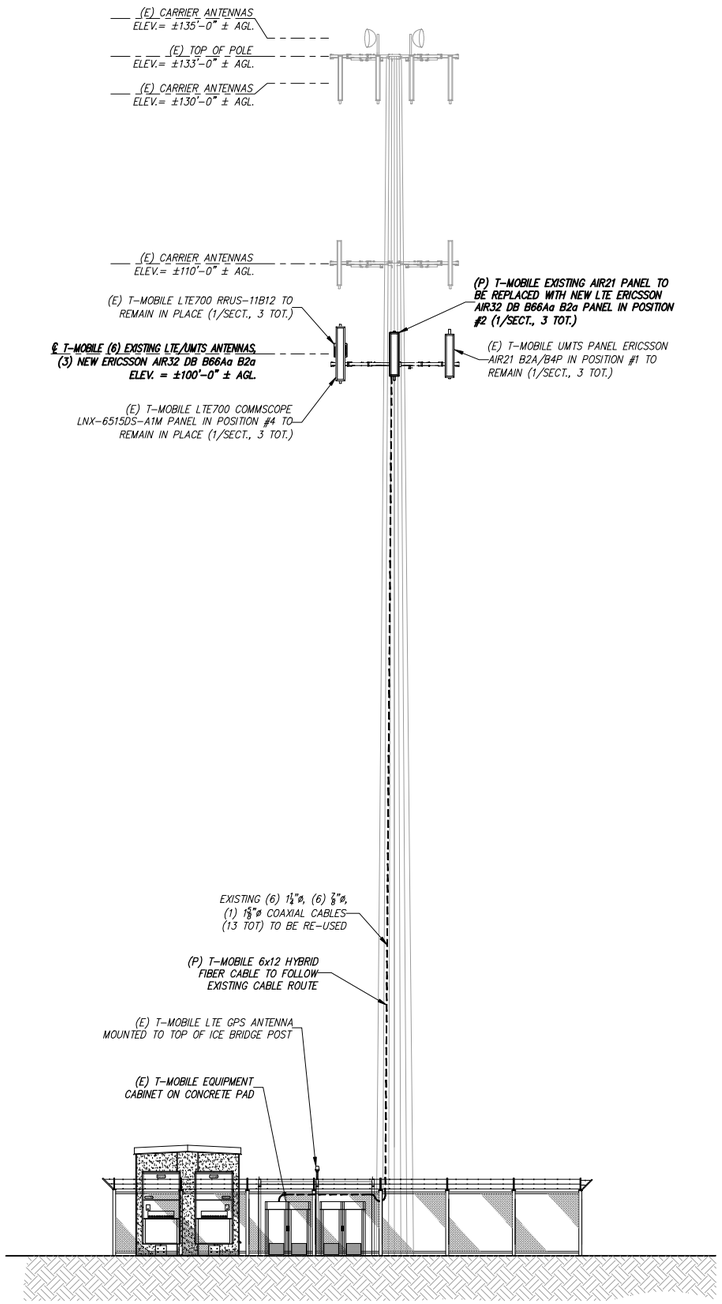


SITE PLAN — SCALE: 1" = 4' — 2/03

GRAPHIC SCALE

4 0 2 4 8 16

(IN FEET)
1 inch = 4 ft.



TOWER ELEVATION VIEW — SCALE: 1" = 8' — 3/03

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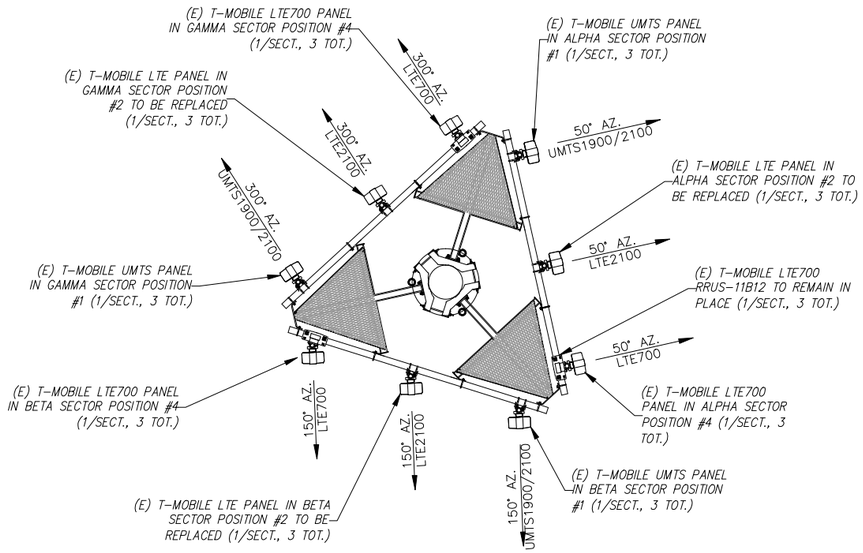
SHEET TITLE:
SITE PLAN & ELEVATIONS

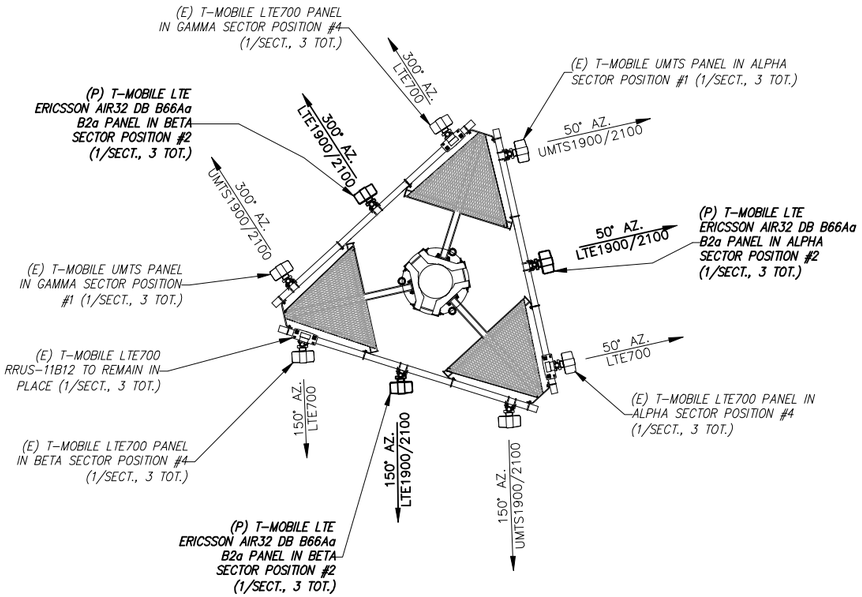
SHEET NUMBER:
03



EXISTING ANTENNA CONDITIONS 1/04

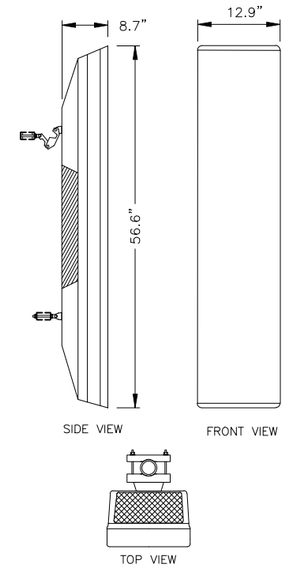
SCALE: N.T.S

NOTES:
REFER TO FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS AND CONFIGURATIONS



PROPOSED ANTENNA CONFIGURATION 2/04

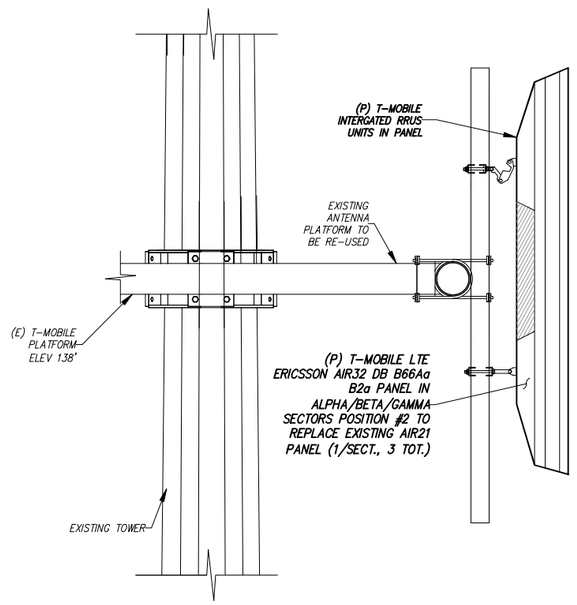
SCALE: N.T.S



MANUFACTURER:	ERICSSON
MODEL:	AIR32 B66Aa B2A
DIMENSIONS:	HxWxD 56.6"x12.9"x8.7"

ANTENNA DETAILS
ERICSSON AIR32 B66Aa/B2A 5/04

SCALE: N.T.S



ANTENNA & PIPE MAST ATTACHMENT 6/04

SCALE: N.T.S

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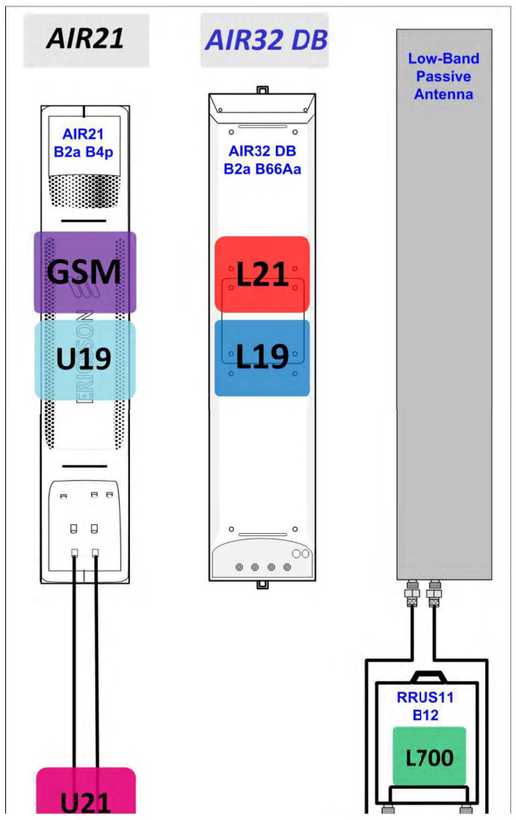
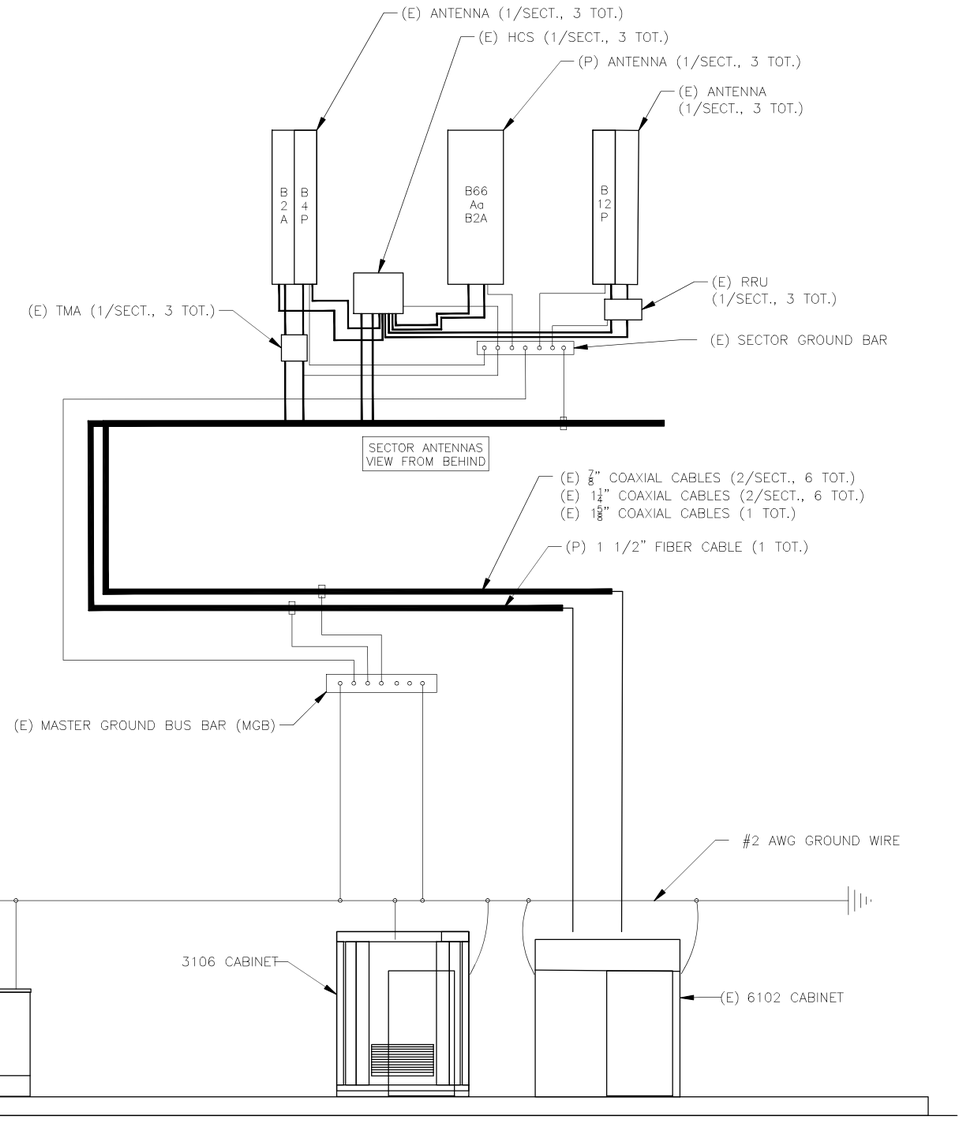


COAX/FIBER CABLE PLUMBING DIAGRAM 1/05

SCALE: N.T.S.



GROUNDING PLUMBING DIAGRAM 2/05

SCALE: N.T.S.

HYBRID FIBER/POWER JUMPER NOTES:

1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A " COAXIAL CABLE. 38" COAXIAL CABLE.
2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN " (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS. 34" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

TRUNK FIBER NOTES:

1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO " COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL 78" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.

2. THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.

3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.

4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN " (19MM) BEND RADIUS, ELSE THERE IS 34" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.

5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS, ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.

6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT CATCH ON TOWER MEMBERS OR OTHER OBSTACLES.

7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).

8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.

9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.

10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS. 11. MAXIMUM HANGER SPACING 3FT (0.9 M).

T-Mobile
T-MOBILE NORTHEAST LLC
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NSS NORTHEAST SITE SOLUTIONS
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VERTICAL RESOURCES GRP.
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AUBURN, MA 01501
TEL: 508-981-9590
FAX: 508-519-8939

STATE OF CONNECTICUT
JAMES P. STROKE
No. 8657
REGISTERED PROFESSIONAL ENGINEER

SUBMITTALS

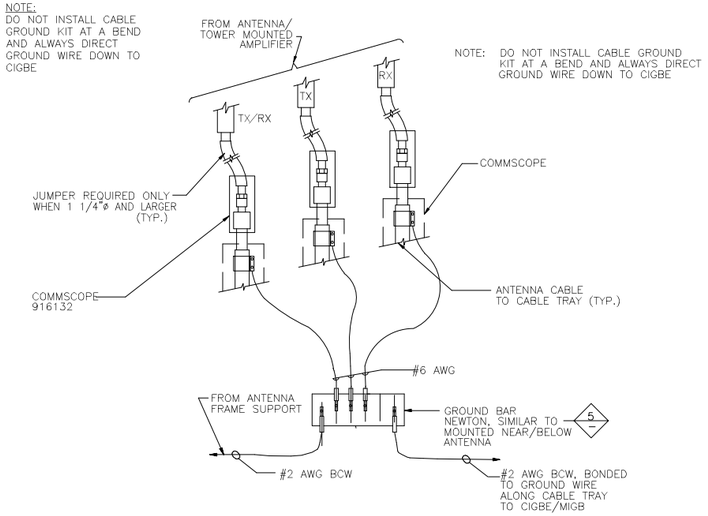
NO	DATE	DESCRIPTION	BY
2	02/22/17	FOR PERMITTING	MN
1	02/21/17	GENERAL REVISIONS	MN
0	02/06/17	ISSUED FOR REVIEW	MN

SITE NUMBER:
CT11269-B
SITE NAME:
WATERBURY/I-84 MATTATUCK
SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

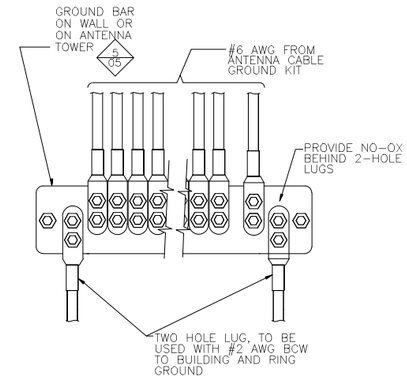
SHEET TITLE:
GROUNDING & RF PLUMBING DIAGRAM

SHEET NUMBER:
05

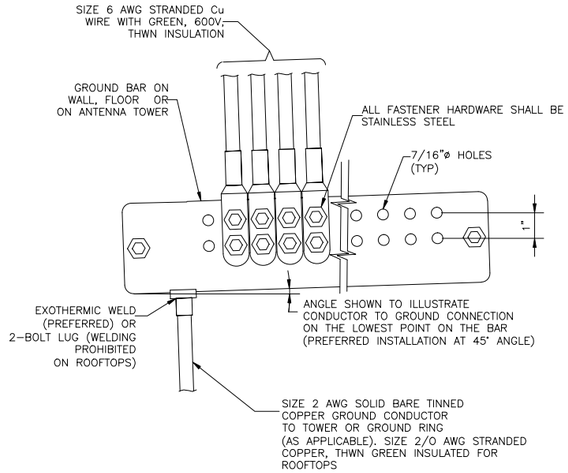
NOTE:
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE



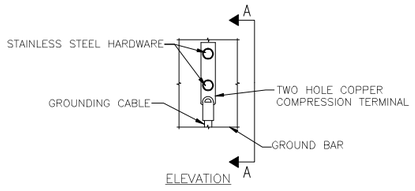
CONNECTION OF GROUND WIRES TO GROUNDING BAR — 1/06
SCALE: N.T.S.



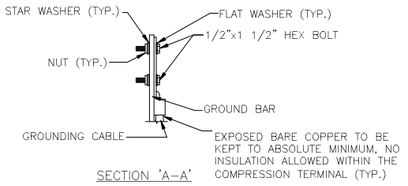
INSTALLATION OF GROUND WIRE TO GROUND BAR — 2/06
SCALE: N.T.S.



INSTALLATION OF GROUND WIRE TO ANTENNA CABLE GROUND BAR — 5/06
SCALE: N.T.S.



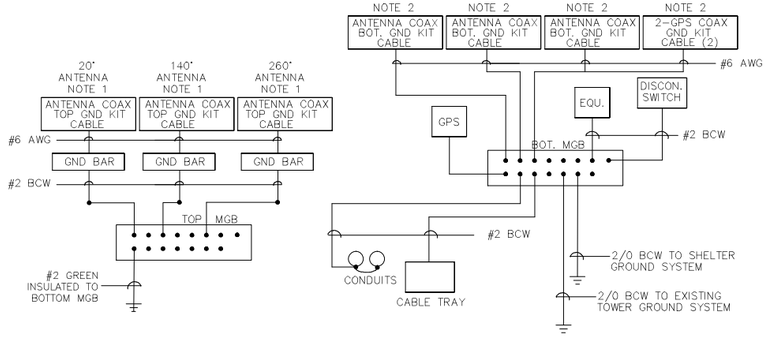
ELEVATION



SECTION 'A-A'

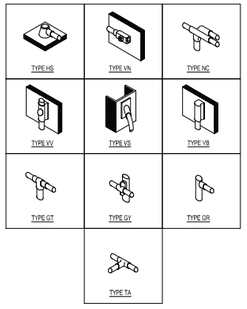
NOTES:
1. DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYP. MECHANICAL CONNECTION — 6/06
SCALE: N.T.S.



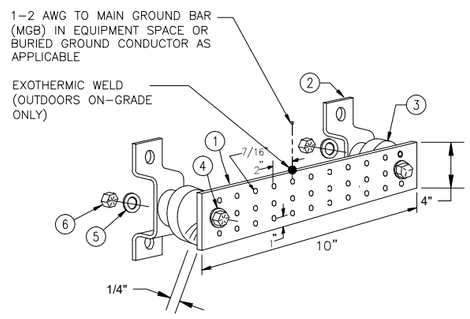
NOTE:
1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE

GROUNDING ONE-LINE DIAGRAM — 3/06
SCALE: N.T.S.



GROUNDING CONNECTION DETAIL — 4/06
SCALE: N.T.S.

NEWTON INSTRUMENT COMPANY, INC. BUTNER, N.C. OR APPROVED EQUAL			
ITEM	REQ.	PART NO.	DESCRIPTION
1	1	1/4"x4"x12"	PRE DRILLED GND. BAR
2	2	A-6056	WALL MTG. BRKT.
3	2	3061-4	INSULATORS
4	2	3012-13	5/8"-11x4" H.H.C.S.
5	4	3015-8	5/8 LOCKWASHER
6	2	3014-8	5/8"-11 HEX NUT



GROUND BAR DETAIL — 7/06
SCALE: N.T.S.

T-MOBILE NORTHEAST LLC
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VRG VERTICAL RESOURCES GRP.
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TEL: 508-981-9590
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STATE OF CONNECTICUT
JAMES P. STROKE
No. 8657
REGISTERED
PROFESSIONAL ENGINEER

SUBMITTALS

NO	DATE	DESCRIPTION	BY
2	02/22/17	FOR PERMITTING	MN
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SITE NUMBER:
CT11269-B
SITE NAME:
WATERBURY/I-84 MATTATUCK
SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705

SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
06

Exhibit D

Date: **February 02, 2017**

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

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

Subject: **Structural Analysis Report**

Carrier Designation:

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

Crown Castle Designation:

Crown Castle BU Number: 876317
Crown Castle Site Name: WATERBURY
Crown Castle JDE Job Number: 417156
Crown Castle Work Order Number: 1354540
Crown Castle Application Number: 374822 Rev. 0

Engineering Firm Designation: **Jacobs Engineering Group, Inc. Project Number:** 1354540 Rev.1

Site Data:

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

Dear Charles Trask,

Jacobs Engineering Group, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 995014, in accordance with application 374822, 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:

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by:

Hector Vergara
Structural Engineer

Reviewed by:

STATE OF CONNECTICUT
MATTHEW E. WATKINS
No. 29955
LICENSED PROFESSIONAL ENGINEER

2/3/17

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

tnxTower Report - version 7.0.7.0

TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	100.0	3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe	1	1-1/2	-

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
133.0	135.0	1	andrew	VHLP2-18	3 3	1-1/4 7983A	1
		2	andrew	VHLP2-23			
	133.0	6	alcatel lucent	1900MHz RRH (65MHz)			
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ RRH			
		3	alcatel lucent	TD-RRH8x20-25			
		12	rfs celwave	ACU-A20-N			
		4	rfs celwave	IBC1900HB-2			
		2	rfs celwave	PD2DE-700/2700			
		1	tower mounts (crown)	Platform Mount [LP 602-1]			
	130.0	4	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
110.0	113.0	1	trimble	BULLET III	13 1	1-5/8 1/2	1
	110.0	3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
		3	antel	BXA-80063/4CF w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		1	tower mounts	Platform Mount [LP 602-1]			
		3	alcatel lucent	RRH2X60-PCS	-	-	2
		3	alcatel lucent	RRH4X45-AWS4 B66			
		6	andrew	SBNHH-1D65B w/ Mount Pipe			
		6	commscope	CBC78-DF			
100.0	100.0	3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	-	-	3
		3	commscope	LNX-6515DS-A1M w/ Mount Pipe	1 6 6	1-5/8 1-1/4 7/8	1
		3	ericsson	AIR 21 B2A/B4P w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			
		3	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Platform Mount [LP 303-1]			
90.0	90.0	3	rfs celwave	APXV18-206517S-C	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
50.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed; Not Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
130.0	130.0	12	Decibel	DB980H	-	-
110.0	110.0	12	Decibel	DB980H	-	-
90.0	90.0	2	Generic	Omni	-	-
50.0	50.0	1	Generic	GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

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

3.1) Analysis Method

tnxTower (version 7.0.7.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133 - 128	Pole	TP14.48x13.48x0.1875	Pole	15.1%	Pass
128 - 123	Pole	TP15.479x14.48x0.1875	Pole	27.5%	Pass
123 - 118	Pole	TP16.479x15.479x0.1875	Pole	37.5%	Pass
118 - 113	Pole	TP17.478x16.479x0.1875	Pole	46.4%	Pass
113 - 108	Pole	TP18.478x17.478x0.1875	Pole	57.9%	Pass
108 - 104.75	Pole	TP19.127x18.478x0.1875	Pole	67.4%	Pass
104.75 - 104.5	Pole + Reinf.	TP19.177x19.127x0.425	Reinf. 11 Tension Rupture	39.2%	Pass
104.5 - 99.5	Pole + Reinf.	TP20.177x19.177x0.4063	Reinf. 11 Tension Rupture	47.5%	Pass
99.5 - 98.75	Pole + Reinf.	TP20.327x20.177x0.4063	Reinf. 11 Tension Rupture	49.0%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
98.75 - 98.5	Pole + Reinf.	TP20.377x20.327x0.675	Reinf. 6 Tension Rupture	45.6%	Pass
98.5 - 95	Pole + Reinf.	TP21.81x20.377x0.6625	Reinf. 6 Tension Rupture	52.1%	Pass
95 - 90	Pole + Reinf.	TP21.7x20.701x0.7125	Reinf. 6 Tension Rupture	56.5%	Pass
90 - 89.25	Pole + Reinf.	TP21.85x21.7x0.7	Reinf. 6 Tension Rupture	57.6%	Pass
89.25 - 89	Pole + Reinf.	TP21.9x21.85x0.85	Reinf. 5 Tension Rupture	41.6%	Pass
89 - 88.25	Pole + Reinf.	TP22.05x21.9x0.8375	Reinf. 5 Tension Rupture	42.5%	Pass
88.25 - 88	Pole + Reinf.	TP22.1x22.05x0.6125	Reinf. 5 Tension Rupture	56.5%	Pass
88 - 83	Pole + Reinf.	TP23.099x22.1x0.5875	Reinf. 5 Tension Rupture	63.3%	Pass
83 - 78	Pole + Reinf.	TP24.097x23.099x0.575	Reinf. 5 Tension Rupture	69.4%	Pass
78 - 77	Pole + Reinf.	TP24.297x24.097x0.575	Reinf. 5 Tension Rupture	70.5%	Pass
77 - 76.75	Pole + Reinf.	TP24.347x24.297x0.7625	Reinf. 5 Tension Rupture	54.1%	Pass
76.75 - 71.75	Pole + Reinf.	TP25.346x24.347x0.7375	Reinf. 5 Tension Rupture	58.5%	Pass
71.75 - 66.75	Pole + Reinf.	TP26.345x25.346x0.7125	Reinf. 5 Tension Rupture	62.5%	Pass
66.75 - 61.75	Pole + Reinf.	TP27.344x26.345x0.6875	Reinf. 5 Tension Rupture	66.3%	Pass
61.75 - 60.5	Pole + Reinf.	TP27.593x27.344x0.6875	Reinf. 5 Tension Rupture	67.2%	Pass
60.5 - 60.25	Pole + Reinf.	TP27.643x27.593x0.6875	Reinf. 5 Tension Rupture	67.4%	Pass
60.25 - 59.5	Pole + Reinf.	TP27.793x27.643x0.6875	Reinf. 5 Tension Rupture	67.9%	Pass
59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.75	Reinf. 4 Tension Rupture	59.8%	Pass
59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.725	Reinf. 4 Tension Rupture	63.0%	Pass
54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.7	Reinf. 4 Tension Rupture	65.6%	Pass
50 - 45	Pole + Reinf.	TP30.192x29.191x0.7625	Reinf. 4 Tension Rupture	64.2%	Pass
45 - 40	Pole + Reinf.	TP31.193x30.192x0.75	Reinf. 4 Tension Rupture	66.6%	Pass
40 - 39	Pole + Reinf.	TP31.393x31.193x0.7375	Reinf. 4 Tension Rupture	67.0%	Pass
39 - 38.75	Pole + Reinf.	TP31.443x31.393x0.7375	Reinf. 4 Tension Rupture	67.1%	Pass
38.75 - 34	Pole + Reinf.	TP32.394x31.443x0.725	Reinf. 4 Tension Rupture	69.2%	Pass
34 - 33.75	Pole + Reinf.	TP32.444x32.394x0.6875	Reinf. 4 Tension Rupture	74.0%	Pass
33.75 - 29.75	Pole + Reinf.	TP33.245x32.444x0.6875	Reinf. 4 Tension Rupture	75.7%	Pass
29.75 - 29.5	Pole + Reinf.	TP33.295x33.245x0.6875	Reinf. 1 Tension Rupture	74.0%	Pass
29.5 - 24.5	Pole + Reinf.	TP34.296x33.295x0.675	Reinf. 1 Tension Rupture	76.1%	Pass
24.5 - 19.5	Pole + Reinf.	TP35.297x34.296x0.6625	Reinf. 1 Tension Rupture	78.0%	Pass
19.5 - 14.5	Pole + Reinf.	TP36.297x35.297x0.65	Reinf. 1 Tension Rupture	79.9%	Pass
14.5 - 12.5	Pole + Reinf.	TP36.698x36.297x0.65	Reinf. 1 Tension Rupture	80.6%	Pass
12.5 - 12.25	Pole + Reinf.	TP36.748x36.698x0.5625	Reinf. 1 Tension Rupture	91.0%	Pass
12.25 - 10.75	Pole + Reinf.	TP37.048x36.748x0.5625	Reinf. 1 Tension Rupture	91.6%	Pass
10.75 - 10.5	Pole + Reinf.	TP37.098x37.048x0.6375	Reinf. 1 Tension Rupture	84.4%	Pass
10.5 - 5.5	Pole + Reinf.	TP38.099x37.098x0.625	Reinf. 1 Tension Rupture	86.1%	Pass
5.5 - 0.5	Pole + Reinf.	TP39.1x38.099x0.6125	Reinf. 1 Tension Rupture	87.7%	Pass
0.5 - 0	Pole + Reinf.	TP39.2x39.1x0.6125	Reinf. 1 Tension Rupture	87.8%	Pass
				Summary	
			Pole	67.3%	Pass
			Reinforcement	91.6%	Pass
			Overall	91.6%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	57.8	Pass
1	Base Plate	0	47.9	Pass
1	Base Foundation Structural	0	10.1	Pass
1	Base Foundation Soil Interaction	0	66.3	Pass

Structure Rating (max from all components) =	91.6%

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

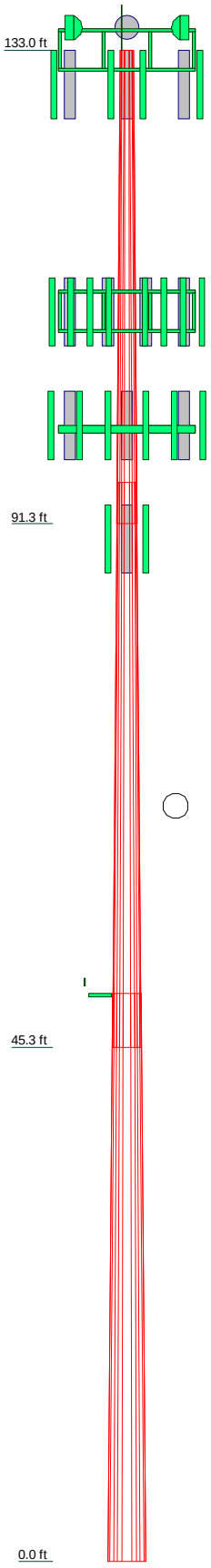
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved and proposed loads once the proposed modifications are installed.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	41.67	12	0.1875	3.67	13.4800	21.8100		1.5
2	49.75	12	0.2500	4.75	20.7014	30.6400	A572-65	3.5
3	50.00	12	0.3125		29.1911	39.2000		5.8
								10.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	133	BXA-80063/4CF w/ Mount Pipe	110
Platform Mount [LP 602-1]	133	BULLET III	110
(2) 6' x 2" Mount Pipe	133	DB-T1-6Z-8AB-0Z	110
(2) 6' x 2" Mount Pipe	133	RRH4X45-AWS4 B66	110
(2) 6' x 2" Mount Pipe	133	RRH4X45-AWS4 B66	110
(2) APXVSPP18-C-A20 w/ Mount Pipe	133	RRH4X45-AWS4 B66	110
APXVSPP18-C-A20 w/ Mount Pipe	133	RRH2X60-PCS	110
APXVSPP18-C-A20 w/ Mount Pipe	133	RRH2X60-PCS	110
APXVTM14-C-120 w/ Mount Pipe	133	RRH2X60-PCS	110
APXVTM14-C-120 w/ Mount Pipe	133	(2) CBC78-DF	110
APXVTM14-C-120 w/ Mount Pipe	133	(2) CBC78-DF	110
(6) ACU-A20-N	133	(2) CBC78-DF	110
(3) ACU-A20-N	133	Platform Mount [LP 602-1]	110
(3) ACU-A20-N	133	(2) SBNHH-1D65B w/ Mount Pipe	110
(2) 800MHZ RRH	133	(2) SBNHH-1D65B w/ Mount Pipe	110
800MHZ RRH	133	AIR -32 B2A/B66AA w/ Mount Pipe	100
(2) IBC1900HB-2	133	LNX-6515DS-A1M w/ Mount Pipe	100
IBC1900HB-2	133	LNX-6515DS-A1M w/ Mount Pipe	100
IBC1900HB-2	133	LNX-6515DS-A1M w/ Mount Pipe	100
(4) 1900MHz RRH (65MHz)	133	AIR 21 B2A/B4P w/ Mount Pipe	100
(2) 1900MHz RRH (65MHz)	133	AIR 21 B2A/B4P w/ Mount Pipe	100
(2) 800 EXTERNAL NOTCH FILTER	133	AIR 21 B2A/B4P w/ Mount Pipe	100
800 EXTERNAL NOTCH FILTER	133	ATMAA1412D-1A20	100
TD-RRH8x20-25	133	ATMAA1412D-1A20	100
TD-RRH8x20-25	133	ATMAA1412D-1A20	100
TD-RRH8x20-25	133	RRUS 11 B12	100
PD2DE-700/2700	133	RRUS 11 B12	100
PD2DE-700/2700	133	RRUS 11 B12	100
VHLP2-23	133	Platform Mount [LP 303-1]	100
VHLP2-23	133	AIR -32 B2A/B66AA w/ Mount Pipe	100
VHLP2-18	133	AIR -32 B2A/B66AA w/ Mount Pipe	100
(2) SBNHH-1D65B w/ Mount Pipe	110	APXV18-206517S-C	90
BXA-70063/6CF-2 w/ Mount Pipe	110	Pipe Mount [PM 601-3]	90
BXA-70063/6CF-2 w/ Mount Pipe	110	APXV18-206517S-C	90
BXA-70063/6CF-2 w/ Mount Pipe	110	APXV18-206517S-C	90
BXA-80063/4CF w/ Mount Pipe	110	KS24019-L112A	50
BXA-80063/4CF w/ Mount Pipe	110	Side Arm Mount [SO 701-1]	50

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

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

Job: ***WATERBURY***			
Project: ***BU#876317 WO#1354540 Rev.1***			
Client: Crown Castle	Drawn by: Hector Vergara	App'd:	
Code: TIA-222-G	Date: 02/02/17	Scale: NTS	
Path:		Dwg No. E-1	

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	133	BXA-80063/4CF w/ Mount Pipe	110
Platform Mount [LP 602-1]	133	BULLET III	110
(2) 6' x 2" Mount Pipe	133	DB-T1-6Z-8AB-0Z	110
(2) 6' x 2" Mount Pipe	133	RRH4X45-AWS4 B66	110
(2) 6' x 2" Mount Pipe	133	RRH4X45-AWS4 B66	110
(2) APXVSPP18-C-A20 w/ Mount Pipe	133	RRH4X45-AWS4 B66	110
APXVSPP18-C-A20 w/ Mount Pipe	133	RRH2X60-PCS	110
APXVSPP18-C-A20 w/ Mount Pipe	133	RRH2X60-PCS	110
APXVTM14-C-120 w/ Mount Pipe	133	RRH2X60-PCS	110
APXVTM14-C-120 w/ Mount Pipe	133	(2) CBC78-DF	110
APXVTM14-C-120 w/ Mount Pipe	133	(2) CBC78-DF	110
(6) ACU-A20-N	133	(2) CBC78-DF	110
(3) ACU-A20-N	133	Platform Mount [LP 602-1]	110
(3) ACU-A20-N	133	(2) SBNHH-1D65B w/ Mount Pipe	110
(2) 800MHZ RRH	133	(2) SBNHH-1D65B w/ Mount Pipe	110
800MHZ RRH	133	AIR -32 B2A/B66AA w/ Mount Pipe	100
(2) IBC1900HB-2	133	LNX-6515DS-A1M w/ Mount Pipe	100
IBC1900HB-2	133	LNX-6515DS-A1M w/ Mount Pipe	100
IBC1900HB-2	133	LNX-6515DS-A1M w/ Mount Pipe	100
(4) 1900MHz RRH (65MHz)	133	AIR 21 B2A/B4P w/ Mount Pipe	100
(2) 1900MHz RRH (65MHz)	133	AIR 21 B2A/B4P w/ Mount Pipe	100
(2) 800 EXTERNAL NOTCH FILTER	133	AIR 21 B2A/B4P w/ Mount Pipe	100
800 EXTERNAL NOTCH FILTER	133	ATMAA1412D-1A20	100
TD-RRH8x20-25	133	ATMAA1412D-1A20	100
TD-RRH8x20-25	133	ATMAA1412D-1A20	100
TD-RRH8x20-25	133	RRUS 11 B12	100
PD2DE-700/2700	133	RRUS 11 B12	100
PD2DE-700/2700	133	RRUS 11 B12	100
VHLP2-23	133	Platform Mount [LP 303-1]	100
VHLP2-23	133	AIR -32 B2A/B66AA w/ Mount Pipe	100
VHLP2-18	133	AIR -32 B2A/B66AA w/ Mount Pipe	100
(2) SBNHH-1D65B w/ Mount Pipe	110	APXV18-206517S-C	90
BXA-70063/6CF-2 w/ Mount Pipe	110	Pipe Mount [PM 601-3]	90
BXA-70063/6CF-2 w/ Mount Pipe	110	APXV18-206517S-C	90
BXA-70063/6CF-2 w/ Mount Pipe	110	APXV18-206517S-C	90
BXA-80063/4CF w/ Mount Pipe	110	KS24019-L112A	50
BXA-80063/4CF w/ Mount Pipe	110	Side Arm Mount [SO 701-1]	50

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 91.6%

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

Job: **WATERBURY**		
Project: **BU#876317 WO#1354540 Rev.1**		
Client: Crown Castle	Drawn by: Hector Vergara	App'd:
Code: TIA-222-G	Date: 02/02/17	Scale: NTS
Path:		Dwg No. E-1

Tower Input Data

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

1) Tower is located in New Haven County, Connecticut.
2) Basic wind speed of 97 mph.
3) Structure Class II.
4) Exposure Category B.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 0.7500 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) TOWER RATING: 91.6%.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation*	*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	133.00-128.00	5.00	0.00	12	13.4800	14.4795	0.1875	0.7500	A572-65 (65 ksi)
L2	128.00-123.00	5.00	0.00	12	14.4795	15.4790	0.1875	0.7500	A572-65 (65 ksi)
L3	123.00-118.00	5.00	0.00	12	15.4790	16.4786	0.1875	0.7500	A572-65 (65 ksi)
L4	118.00-113.00	5.00	0.00	12	16.4786	17.4781	0.1875	0.7500	A572-65 (65 ksi)
L5	113.00-108.00	5.00	0.00	12	17.4781	18.4776	0.1875	0.7500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L6	108.00-104.75	3.25	0.00	12	18.4776	19.1273	0.1875	0.7500	(65 ksi) A572-65 (65 ksi)
L7	104.75-104.50	0.25	0.00	12	19.1273	19.1773	0.4250	1.7000	A572-65 (65 ksi)
L8	104.50-99.50	5.00	0.00	12	19.1773	20.1768	0.4063	1.6250	A572-65 (65 ksi)
L9	99.50-98.75	0.75	0.00	12	20.1768	20.3267	0.4063	1.6250	A572-65 (65 ksi)
L10	98.75-98.50	0.25	0.00	12	20.3267	20.3767	0.6750	2.7000	A572-65 (65 ksi)
L11	98.50-91.33	7.17	3.67	12	20.3767	21.8100	0.6625	2.6500	A572-65 (65 ksi)
L12	91.33-90.00	5.00	0.00	12	20.7014	21.7002	0.7125	2.8500	A572-65 (65 ksi)
L13	90.00-89.25	0.75	0.00	12	21.7002	21.8500	0.7000	2.8000	A572-65 (65 ksi)
L14	89.25-89.00	0.25	0.00	12	21.8500	21.9000	0.8500	3.4000	A572-65 (65 ksi)
L15	89.00-88.25	0.75	0.00	12	21.9000	22.0498	0.8375	3.3500	A572-65 (65 ksi)
L16	88.25-88.00	0.25	0.00	12	22.0498	22.0998	0.6125	2.4500	A572-65 (65 ksi)
L17	88.00-83.00	5.00	0.00	12	22.0998	23.0986	0.5875	2.3500	A572-65 (65 ksi)
L18	83.00-78.00	5.00	0.00	12	23.0986	24.0975	0.5750	2.3000	A572-65 (65 ksi)
L19	78.00-77.00	1.00	0.00	12	24.0975	24.2972	0.5750	2.3000	A572-65 (65 ksi)
L20	77.00-76.75	0.25	0.00	12	24.2972	24.3472	0.7625	3.0500	A572-65 (65 ksi)
L21	76.75-71.75	5.00	0.00	12	24.3472	25.3460	0.7375	2.9500	A572-65 (65 ksi)
L22	71.75-66.75	5.00	0.00	12	25.3460	26.3449	0.7125	2.8500	A572-65 (65 ksi)
L23	66.75-61.75	5.00	0.00	12	26.3449	27.3438	0.6875	2.7500	A572-65 (65 ksi)
L24	61.75-60.50	1.25	0.00	12	27.3438	27.5935	0.6875	2.7500	A572-65 (65 ksi)
L25	60.50-60.25	0.25	0.00	12	27.5935	27.6434	0.6875	2.7500	A572-65 (65 ksi)
L26	60.25-59.50	0.75	0.00	12	27.6434	27.7933	0.6875	2.7500	A572-65 (65 ksi)
L27	59.50-59.25	0.25	0.00	12	27.7933	27.8432	0.7500	3.0000	A572-65 (65 ksi)
L28	59.25-54.25	5.00	0.00	12	27.8432	28.8421	0.7250	2.9000	A572-65 (65 ksi)
L29	54.25-45.25	9.00	4.75	12	28.8421	30.6400	0.7000	2.8000	A572-65 (65 ksi)
L30	45.25-45.00	5.00	0.00	12	29.1911	30.1920	0.7625	3.0500	A572-65 (65 ksi)
L31	45.00-40.00	5.00	0.00	12	30.1920	31.1929	0.7500	3.0000	A572-65 (65 ksi)
L32	40.00-39.00	1.00	0.00	12	31.1929	31.3930	0.7375	2.9500	A572-65 (65 ksi)
L33	39.00-38.75	0.25	0.00	12	31.3930	31.4431	0.7375	2.9500	A572-65 (65 ksi)
L34	38.75-34.00	4.75	0.00	12	31.4431	32.3939	0.7250	2.9000	A572-65 (65 ksi)
L35	34.00-33.75	0.25	0.00	12	32.3939	32.4440	0.6875	2.7500	A572-65 (65 ksi)
L36	33.75-29.75	4.00	0.00	12	32.4440	33.2447	0.6875	2.7500	A572-65 (65 ksi)
L37	29.75-29.50	0.25	0.00	12	33.2447	33.2947	0.6875	2.7500	A572-65 (65 ksi)
L38	29.50-24.50	5.00	0.00	12	33.2947	34.2956	0.6750	2.7000	A572-65 (65 ksi)
L39	24.50-19.50	5.00	0.00	12	34.2956	35.2965	0.6625	2.6500	A572-65 (65 ksi)

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
L40	19.50-14.50	5.00	0.00	12	35.2965	36.2974	0.6500	2.6000	A572-65 (65 ksi)
L41	14.50-12.50	2.00	0.00	12	36.2974	36.6978	0.6500	2.6000	A572-65 (65 ksi)
L42	12.50-12.25	0.25	0.00	12	36.6978	36.7478	0.5625	2.2500	A572-65 (65 ksi)
L43	12.25-10.75	1.50	0.00	12	36.7478	37.0481	0.5625	2.2500	A572-65 (65 ksi)
L44	10.75-10.50	0.25	0.00	12	37.0481	37.0981	0.6375	2.5500	A572-65 (65 ksi)
L45	10.50-5.50	5.00	0.00	12	37.0981	38.0990	0.6250	2.5000	A572-65 (65 ksi)
L46	5.50-0.50	5.00	0.00	12	38.0990	39.0999	0.6125	2.4500	A572-65 (65 ksi)
L47	0.50-0.00	0.50		12	39.0999	39.2000	0.6125	2.4500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	13.9555	8.0253	180.9936	4.7587	6.9826	25.9205	366.7420	3.9498	3.1101	16.587
	14.9903	8.6288	224.9697	5.1165	7.5004	29.9944	455.8495	4.2468	3.3780	18.016
L2	14.9903	8.6288	224.9697	5.1165	7.5004	29.9944	455.8495	4.2468	3.3780	18.016
	16.0251	9.2323	275.5477	5.4744	8.0181	34.3655	558.3343	4.5438	3.6459	19.445
L3	16.0251	9.2323	275.5477	5.4744	8.0181	34.3655	558.3343	4.5438	3.6459	19.445
	17.0599	9.8357	333.1894	5.8322	8.5359	39.0339	675.1320	4.8408	3.9138	20.873
L4	17.0599	9.8357	333.1894	5.8322	8.5359	39.0339	675.1320	4.8408	3.9138	20.873
	18.0946	10.4392	398.3564	6.1900	9.0536	43.9996	807.1781	5.1379	4.1816	22.302
L5	18.0946	10.4392	398.3564	6.1900	9.0536	43.9996	807.1781	5.1379	4.1816	22.302
	19.1294	11.0426	471.5105	6.5479	9.5714	49.2625	955.4081	5.4349	4.4495	23.731
L6	19.1294	11.0426	471.5105	6.5479	9.5714	49.2625	955.4081	5.4349	4.4495	23.731
	19.8020	11.4349	523.5624	6.7804	9.9079	52.8427	1060.8794	5.6279	4.6236	24.659
L7	19.8020	25.5941	1142.6546	6.6954	9.9079	115.3272	2315.3281	12.5966	3.9871	9.381
	19.8538	25.6625	1151.8393	6.7133	9.9338	115.9513	2333.9387	12.6303	4.0005	9.413
L8	19.8538	24.5548	1104.3288	6.7200	9.9338	111.1686	2237.6696	12.0851	4.0508	9.971
	20.8885	25.8623	1290.2992	7.0779	10.4516	123.4550	2614.4959	12.7287	4.3186	10.63
L9	20.8885	25.8623	1290.2992	7.0779	10.4516	123.4550	2614.4959	12.7287	4.3186	10.63
	21.0438	26.0585	1319.8769	7.1315	10.5292	125.3535	2674.4285	12.8252	4.3588	10.729
L10	21.0438	42.7130	2105.4590	7.0353	10.5292	199.9631	4266.2307	21.0220	3.6386	5.39
	21.0955	42.8216	2121.5630	7.0532	10.5551	200.9984	4298.8617	21.0755	3.6520	5.41
L11	21.0955	42.0553	2086.2407	7.0577	10.5551	197.6519	4227.2892	20.6983	3.6855	5.563
	22.5794	45.1129	2575.1635	7.5708	11.2976	227.9394	5217.9794	22.2032	4.0696	6.143
L12	22.1906	45.8594	2338.7848	7.1560	10.7233	218.1031	4739.0121	22.5706	3.6385	5.107
	22.4657	48.1511	2707.2100	7.5136	11.2407	240.8398	5485.5413	23.6985	3.9062	5.482
L13	22.4657	47.3345	2664.4701	7.5181	11.2407	237.0375	5398.9389	23.2966	3.9397	5.628
	22.6208	47.6722	2721.9081	7.5717	11.3183	240.4869	5515.3237	23.4628	3.9798	5.685
L14	22.6208	57.4771	3235.3489	7.5180	11.3183	285.8506	6555.6941	28.2885	3.5778	4.209
	22.6725	57.6138	3258.4871	7.5359	11.3442	287.2384	6602.5783	28.3558	3.5912	4.225
L15	22.6725	56.8003	3216.2911	7.5404	11.3442	283.5188	6517.0778	27.9554	3.6247	4.328
	22.8276	57.2043	3285.4182	7.5940	11.4218	287.6445	6657.1480	28.1542	3.6648	4.376
L16	22.8276	42.2797	2480.0412	7.6746	11.4218	217.1322	5025.2359	20.8088	4.2678	6.968
	22.8793	42.3782	2497.4151	7.6924	11.4477	218.1592	5060.4400	20.8573	4.2812	6.99
L17	22.8793	40.6958	2403.8508	7.7014	11.4477	209.9860	4870.8534	20.0292	4.3482	7.401
	23.9134	42.5854	2754.4866	8.0590	11.9651	230.2104	5581.3365	20.9592	4.6159	7.857
L18	23.9134	41.7025	2700.3739	8.0635	11.9651	225.6879	5471.6896	20.5247	4.6494	8.086
	24.9475	43.5519	3075.8037	8.4210	12.4825	246.4094	6232.4121	21.4349	4.9171	8.552
L19	24.9475	43.5519	3075.8037	8.4210	12.4825	246.4094	6232.4121	21.4349	4.9171	8.552
	25.1544	43.9217	3154.8377	8.4926	12.5860	250.6630	6392.5565	21.6169	4.9707	8.645
L20	25.1544	57.7837	4085.1702	8.4254	12.5860	324.5812	8277.6624	28.4394	4.4682	5.86
	25.2061	57.9063	4111.2328	8.4433	12.6118	325.9819	8330.4723	28.4997	4.4815	5.877
L21	25.2061	56.0671	3989.0969	8.4523	12.6118	316.2977	8082.9918	27.5945	4.5485	6.168
	26.2402	58.4391	4517.1214	8.8099	13.1293	344.0502	9152.9125	28.7620	4.8162	6.53
L22	26.2402	56.5155	4377.3124	8.8188	13.1293	333.4015	8869.6216	27.8152	4.8832	6.854
	27.2743	58.8071	4931.6791	9.1764	13.6467	361.3836	9992.9189	28.9431	5.1509	7.229

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
L23	27.2743	56.7991	4772.5750	9.1854	13.6467	349.7247	9670.5309	27.9548	5.2179	7.59
	28.3083	59.0103	5351.9546	9.5429	14.1641	377.8543	10844.5110	29.0431	5.4856	7.979
L24	28.3083	59.0103	5351.9546	9.5429	14.1641	377.8543	10844.5110	29.0431	5.4856	7.979
	28.5669	59.5631	5503.7787	9.6323	14.2934	385.0567	11152.1478	29.3152	5.5526	8.076
L25	28.5669	59.5631	5503.7787	9.6323	14.2934	385.0567	11152.1478	29.3152	5.5526	8.076
	28.6186	59.6737	5534.4840	9.6502	14.3193	386.5054	11214.3651	29.3696	5.5659	8.096
L26	28.6186	59.6737	5534.4840	9.6502	14.3193	386.5054	11214.3651	29.3696	5.5659	8.096
	28.7737	60.0054	5627.2847	9.7039	14.3969	390.8677	11402.4045	29.5328	5.6061	8.154
L27	28.7737	65.3095	6096.4893	9.6815	14.3969	423.4583	12353.1401	32.1433	5.4386	7.251
	28.8254	65.4301	6130.3283	9.6994	14.4228	425.0450	12421.7072	32.2027	5.4520	7.269
L28	28.8254	63.3074	5942.4036	9.7083	14.4228	412.0153	12040.9208	31.1580	5.5190	7.612
	29.8595	65.6393	6623.5262	10.0659	14.9402	443.3363	13421.0598	32.3056	5.7867	7.982
L29	29.8595	63.4322	6412.2024	10.0749	14.9402	429.1917	12992.8605	31.2194	5.8537	8.362
	31.7209	67.4848	7721.3858	10.7185	15.8715	486.4931	15645.6209	33.2139	6.3355	9.051
L30	31.2052	69.7993	7200.2463	10.1774	15.1210	476.1759	14589.6510	34.3531	5.7797	7.58
	31.2570	72.2567	7987.8378	10.5358	15.6394	510.7495	16185.5249	35.5626	6.0479	7.932
L31	31.2570	71.1024	7866.9054	10.5402	15.6394	503.0170	15940.4831	34.9944	6.0814	8.109
	32.2932	73.5195	8696.8052	10.8985	16.1579	538.2384	17622.0851	36.1841	6.3497	8.466
L32	32.2932	72.3239	8562.3971	10.9030	16.1579	529.9200	17349.7378	35.5956	6.3832	8.655
	32.5005	72.7993	8732.3471	10.9747	16.2616	536.9920	17694.1027	35.8296	6.4368	8.728
L33	32.5005	72.7993	8732.3471	10.9747	16.2616	536.9920	17694.1027	35.8296	6.4368	8.728
	32.5523	72.9181	8775.1831	10.9926	16.2875	538.7673	17780.9000	35.8881	6.4502	8.746
L34	32.5523	71.7114	8636.9907	10.9971	16.2875	530.2827	17500.8849	35.2942	6.4837	8.943
	33.5367	73.9311	9464.1211	11.3375	16.7801	564.0100	19176.8752	36.3867	6.7386	9.295
L35	33.5367	70.1901	9006.5165	11.3509	16.7801	536.7393	18249.6442	34.5454	6.8391	9.948
	33.5885	70.3009	9049.2308	11.3688	16.8060	538.4529	18336.1949	34.6000	6.8525	9.967
L36	33.5885	70.3009	9049.2308	11.3688	16.8060	538.4529	18336.1949	34.6000	6.8525	9.967
	34.4174	72.0735	9751.1416	11.6555	17.2208	566.2437	19758.4565	35.4724	7.0671	10.279
L37	34.4174	72.0735	9751.1416	11.6555	17.2208	566.2437	19758.4565	35.4724	7.0671	10.279
	34.4693	72.1843	9796.1770	11.6734	17.2467	568.0038	19849.7105	35.5269	7.0805	10.299
L38	34.4693	70.8990	9629.1302	11.6779	17.2467	558.3181	19511.2284	34.8943	7.1140	10.539
	35.5054	73.0744	10542.9751	12.0362	17.7651	593.4643	21362.9258	35.9650	7.3822	10.937
L39	35.5054	71.7479	10359.2808	12.0407	17.7651	583.1242	20990.7114	35.3121	7.4157	11.194
	36.5416	73.8830	11311.9250	12.3990	18.2836	618.6925	22921.0269	36.3630	7.6840	11.598
L40	36.5416	72.5152	11110.5137	12.4035	18.2836	607.6765	22512.9129	35.6898	7.7175	11.873
	37.5778	74.6100	12101.502	12.7618	18.8021	643.6264	24520.924	36.7208	7.9857	12.286

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
			1				1			
L41	37.5778	74.6100	12101.502	12.7618	18.8021	643.6264	24520.924	36.7208	7.9857	12.286
			1				1			
	37.9923	75.4480	12513.835	12.9051	19.0094	658.2956	25356.422	37.1332	8.0930	12.451
			0				4			
L42	37.9923	65.4500	10908.330	12.9364	19.0094	573.8374	22103.235	32.2125	8.3275	14.804
			7				4			
	38.0441	65.5407	10953.715	12.9543	19.0354	575.4401	22195.196	32.2571	8.3409	14.828
			1				5			
L43	38.0441	65.5407	10953.715	12.9543	19.0354	575.4401	22195.196	32.2571	8.3409	14.828
			1				5			
	38.3550	66.0845	11228.667	13.0618	19.1909	585.1035	22752.324	32.5248	8.4214	14.971
			5				5			
L44	38.3550	74.7418	12647.506	13.0350	19.1909	659.0364	25627.277	36.7857	8.2204	12.895
			5				0			
	38.4068	74.8446	12699.728	13.0529	19.2168	660.8649	25733.092	36.8362	8.2338	12.916
			3				7			
L45	38.4068	73.4022	12463.524	13.0574	19.2168	648.5734	25254.478	36.1263	8.2673	13.228
			1				9			
	39.4430	75.4165	13518.006	13.4157	19.7353	684.9661	27391.147	37.1177	8.5355	13.657
			9				0			
L46	39.4430	73.9328	13260.908	13.4202	19.7353	671.9388	26870.194	36.3875	8.5690	13.99
			1				9			
	40.4792	75.9068	14351.721	13.7785	20.2538	708.5956	29080.479	37.3590	8.8373	14.428
			6				0			
L47	40.4792	75.9068	14351.721	13.7785	20.2538	708.5956	29080.479	37.3590	8.8373	14.428
			6				0			
	40.5828	76.1042	14463.981	13.8143	20.3056	712.3149	29307.946	37.4562	8.8641	14.472
			0				9			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 133.00-128.00				1	1	1			
L2 128.00-123.00				1	1	1			
L3 123.00-118.00				1	1	1			
L4 118.00-113.00				1	1	1			
L5 113.00-108.00				1	1	1			
L6 108.00-104.75				1	1	1			
L7 104.75-104.50				1	1	0.915043			
L8 104.50-99.50				1	1	0.931306			
L9 99.50-98.75				1	1	0.92777			
L10 98.75-98.50				1	1	0.883191			
L11 98.50-91.33				1	1	0.878162			
L12 91.33-90.00				1	1	0.890902			
L13 90.00-89.25				1	1	0.902381			
L14 89.25-89.00				1	1	0.869583			
L15 89.00-88.25				1	1	0.877917			
L16 88.25-88.00				1	1	0.902435			
L17 88.00-83.00				1	1	0.916927			

Tower Elevation	*Gusset Area (per face)*	*Gusset Thickness*	*Gusset Grade*	*Adjust. Factor A_f*	*Adjust. Factor A_r*	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals*	*Double Angle Stitch Bolt Spacing Horizontals*	*Double Angle Stitch Bolt Spacing Redundants*
ft	*ft^2*	*in*					*in*	*in*	*in*
L18 83.00-78.00				1	1	0.915042			
L19 78.00-77.00				1	1	0.910998			
L20 77.00-76.75				1	1	0.899211			
L21 76.75-71.75				1	1	0.904772			
L22 71.75-66.75				1	1	0.912783			
L23 66.75-61.75				1	1	0.923267			
L24 61.75-60.50				1	1	0.918073			
L25 60.50-60.25				1	1	0.917046			
L26 60.25-59.50				1	1	0.913987			
L27 59.50-59.25				1	1	0.903393			
L28 59.25-54.25				1	1	0.912764			
L29 54.25-45.25				1	1	0.927321			
L30 45.25-45.00				1	1	0.926734			
L31 45.00-40.00				1	1	0.924516			
L32 40.00-39.00				1	1	0.936429			
L33 39.00-38.75				1	1	0.990529			
L34 38.75-34.00				1	1	0.989898			
L35 34.00-33.75				1	1	0.984751			
L36 33.75-29.75				1	1	0.971711			
L37 29.75-29.50				1	1	0.983923			
L38 29.50-24.50				1	1	0.98572			
L39 24.50-19.50				1	1	0.988564			
L40 19.50-14.50				1	1	0.99243			
L41 14.50-12.50				1	1	0.986747			
L42 12.50-12.25				1	1	0.95332			
L43 12.25-10.75				1	1	0.950047			
L44 10.75-10.50				1	1	0.954509			
L45 10.50-5.50				1	1	0.960625			
L46 5.50-0.50				1	1	0.967688			
L47 0.50-0.00				1	1	0.966502			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Top									
Safety Line 5/8	A	Surface Ar (CaAa)	133.00 - 0.00	1	1	0.500 0.500	0.8800		0.40
Level 133									
7983A(ELLIPTICAL)	A	Surface Ar (CaAa)	133.00 - 0.00	3	3	0.280 0.350	0.5730		0.08
MLC HYBRID 6x12 6AWGx6(1-1/2)	C	Surface Ar (CaAa)	100.00 - 0.00	1	1	0.250 0.250	1.5300		0.59
MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	C	Surface Ar (CaAa)	100.00 - 0.00	1	1	0.200 0.200	1.6250		1.07
Level 90									
LCF158-50JL(1-5/8)	A	Surface Ar (CaAa)	90.00 - 0.00	2	2	-0.100 -0.050	1.9800		0.52
***									
RNF 2381113									
6.875" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	12.00 - 0.00	1	1	0.000 0.000	6.8750	27.5000	0.00
6.875" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	12.00 - 0.00	1	1	0.500 0.500	6.8750	27.5000	0.00
*									
6.875" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	29.75 - 0.00	1	1	0.200 0.200	6.8750	27.5000	0.00
6.875" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	29.75 - 0.00	1	1	0.200 0.200	6.8750	27.5000	0.00
6.875" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	29.75 - 7.25	1	1	0.200 0.200	6.8750	27.5000	0.00
*									
6.625" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	59.50 - 29.75	1	1	0.200 0.200	6.6250	26.5000	0.00
6.625" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	59.50 - 29.75	1	1	0.200 0.200	6.6250	26.5000	0.00
6.625" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	59.50 - 29.75	1	1	0.200 0.200	6.6250	26.5000	0.00
*									
5.5" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	89.25 - 59.50	1	1	0.200 0.200	5.5000	13.5000	0.00
5.5" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	89.25 - 59.50	1	1	0.200 0.200	5.5000	13.5000	0.00
5.5" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	89.25 - 59.50	1	1	0.200 0.200	5.5000	13.5000	0.00
*									
3.625" x 1.25" Flat Plate (G)	A	Surface Af (CaAa)	100.00 - 89.25	1	1	0.200 0.200	3.6250	14.5000	0.00
3.625" x 1.25" Flat Plate (G)	B	Surface Af (CaAa)	100.00 - 89.25	1	1	0.200 0.200	3.6250	14.5000	0.00
3.625" x 1.25" Flat Plate (G)	C	Surface Af (CaAa)	100.00 - 89.25	1	1	0.200 0.200	3.6250	14.5000	0.00
RNF 3315244									
4" x 1" Flat Plate (G)	A	Surface Af (CaAa)	35.75 - 10.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	40.75 - 10.75	1	1	-0.500 -0.500	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	C	Surface Af (CaAa)	35.75 - 10.75	1	1	-0.300 -0.300	4.0000	10.0000	0.00
*									
4" x 1" Flat Plate (G)	A	Surface Af (CaAa)	62.25 - 32.25	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	62.25 - 32.25	1	1	0.000 0.000	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	C	Surface Af (CaAa)	62.25 - 32.25	1	1	0.000 0.000	4.0000	10.0000	0.00
*									
4" x 1" Flat Plate (G)	A	Surface Af (CaAa)	78.75 - 58.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	78.75 - 58.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	C	Surface Af (CaAa)	78.75 - 58.75	1	1	-0.300 -0.300	4.0000	10.0000	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
*									
4" x 1" Flat Plate (G)	A	Surface Af (CaAa)	106.50 - 86.50	1	1	-0.250 -0.250	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	B	Surface Af (CaAa)	106.50 - 86.50	1	1	-0.250 -0.250	4.0000	10.0000	0.00
4" x 1" Flat Plate (G)	C	Surface Af (CaAa)	106.50 - 86.50	1	1	-0.300 -0.300	4.0000	10.0000	0.00
***									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HB114-1-0813U4-M5J(1 1/4")	A	No	Inside Pole	133.00 - 0.00	3	No Ice	0.00	1.20
						1/2" Ice	0.00	1.20
						1" Ice	0.00	1.20
Level 110								
LDF4-50A(1/2")	B	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF7-50A(1-5/8)	B	No	Inside Pole	110.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
Level 100								
LDF5-50A(7/8)	C	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF6-50A(1-1/4)	C	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
LCF158-50JL(1-5/8)	A	No	Inside Pole	90.00 - 0.00	4	No Ice	0.00	0.52
						1/2" Ice	0.00	0.52
						1" Ice	0.00	0.52
Level 50								
LDF4-50A(1/2")	B	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
***								
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	133.00-128.00	A	0.000	0.000	1.300	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	128.00-123.00	A	0.000	0.000	1.300	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	123.00-118.00	A	0.000	0.000	1.300	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	118.00-113.00	A	0.000	0.000	1.300	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	113.00-108.00	A	0.000	0.000	1.300	0.000	0.02

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
L6	108.00-104.75	A	0.000	0.000	2.011	0.000	0.01
		B	0.000	0.000	1.167	0.000	0.04
		C	0.000	0.000	1.167	0.000	0.00
L7	104.75-104.50	A	0.000	0.000	0.232	0.000	0.00
		B	0.000	0.000	0.167	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L8	104.50-99.50	A	0.000	0.000	4.935	0.000	0.02
		B	0.000	0.000	3.635	0.000	0.06
		C	0.000	0.000	3.793	0.000	0.00
L9	99.50-98.75	A	0.000	0.000	1.148	0.000	0.00
		B	0.000	0.000	0.953	0.000	0.01
		C	0.000	0.000	1.190	0.000	0.01
L10	98.75-98.50	A	0.000	0.000	0.383	0.000	0.00
		B	0.000	0.000	0.318	0.000	0.00
		C	0.000	0.000	0.397	0.000	0.00
L11	98.50-91.33	A	0.000	0.000	10.975	0.000	0.03
		B	0.000	0.000	9.112	0.000	0.08
		C	0.000	0.000	11.374	0.000	0.05
L12	91.33-90.00	A	0.000	0.000	2.036	0.000	0.01
		B	0.000	0.000	1.690	0.000	0.02
		C	0.000	0.000	2.110	0.000	0.01
L13	90.00-89.25	A	0.000	0.000	1.445	0.000	0.01
		B	0.000	0.000	0.953	0.000	0.01
		C	0.000	0.000	1.190	0.000	0.01
L14	89.25-89.00	A	0.000	0.000	0.560	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.475	0.000	0.00
L15	89.00-88.25	A	0.000	0.000	1.679	0.000	0.01
		B	0.000	0.000	1.188	0.000	0.01
		C	0.000	0.000	1.424	0.000	0.01
L16	88.25-88.00	A	0.000	0.000	0.560	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.475	0.000	0.00
L17	88.00-83.00	A	0.000	0.000	8.863	0.000	0.04
		B	0.000	0.000	5.583	0.000	0.06
		C	0.000	0.000	7.161	0.000	0.04
L18	83.00-78.00	A	0.000	0.000	8.363	0.000	0.04
		B	0.000	0.000	5.083	0.000	0.06
		C	0.000	0.000	6.661	0.000	0.04
L19	78.00-77.00	A	0.000	0.000	2.239	0.000	0.01
		B	0.000	0.000	1.583	0.000	0.01
		C	0.000	0.000	1.899	0.000	0.01
L20	77.00-76.75	A	0.000	0.000	0.560	0.000	0.00
		B	0.000	0.000	0.396	0.000	0.00
		C	0.000	0.000	0.475	0.000	0.00
L21	76.75-71.75	A	0.000	0.000	11.196	0.000	0.04
		B	0.000	0.000	7.917	0.000	0.06
		C	0.000	0.000	9.494	0.000	0.04
L22	71.75-66.75	A	0.000	0.000	11.196	0.000	0.04
		B	0.000	0.000	7.917	0.000	0.06
		C	0.000	0.000	9.494	0.000	0.04
L23	66.75-61.75	A	0.000	0.000	11.530	0.000	0.04
		B	0.000	0.000	8.250	0.000	0.06
		C	0.000	0.000	9.828	0.000	0.04
L24	61.75-60.50	A	0.000	0.000	3.632	0.000	0.01
		B	0.000	0.000	2.813	0.000	0.01
		C	0.000	0.000	3.207	0.000	0.01
L25	60.50-60.25	A	0.000	0.000	0.726	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.641	0.000	0.00
L26	60.25-59.50	A	0.000	0.000	2.179	0.000	0.01
		B	0.000	0.000	1.688	0.000	0.01
		C	0.000	0.000	1.924	0.000	0.01
L27	59.50-59.25	A	0.000	0.000	0.773	0.000	0.00
		B	0.000	0.000	0.609	0.000	0.00
		C	0.000	0.000	0.688	0.000	0.00
L28	59.25-54.25	A	0.000	0.000	12.467	0.000	0.04

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	9.188	0.000	0.06
		C	0.000	0.000	10.765	0.000	0.04
L29	54.25-45.25	A	0.000	0.000	21.841	0.000	0.07
		B	0.000	0.000	15.938	0.000	0.10
		C	0.000	0.000	18.777	0.000	0.07
L30	45.25-45.00	A	0.000	0.000	0.607	0.000	0.00
		B	0.000	0.000	0.443	0.000	0.00
		C	0.000	0.000	0.522	0.000	0.00
L31	45.00-40.00	A	0.000	0.000	12.134	0.000	0.04
		B	0.000	0.000	9.354	0.000	0.06
		C	0.000	0.000	10.432	0.000	0.04
L32	40.00-39.00	A	0.000	0.000	2.427	0.000	0.01
		B	0.000	0.000	2.438	0.000	0.01
		C	0.000	0.000	2.086	0.000	0.01
L33	39.00-38.75	A	0.000	0.000	0.607	0.000	0.00
		B	0.000	0.000	0.609	0.000	0.00
		C	0.000	0.000	0.522	0.000	0.00
L34	38.75-34.00	A	0.000	0.000	12.694	0.000	0.04
		B	0.000	0.000	11.578	0.000	0.05
		C	0.000	0.000	11.077	0.000	0.03
L35	34.00-33.75	A	0.000	0.000	0.773	0.000	0.00
		B	0.000	0.000	0.609	0.000	0.00
		C	0.000	0.000	0.688	0.000	0.00
L36	33.75-29.75	A	0.000	0.000	10.707	0.000	0.03
		B	0.000	0.000	8.083	0.000	0.05
		C	0.000	0.000	9.345	0.000	0.03
L37	29.75-29.50	A	0.000	0.000	0.617	0.000	0.00
		B	0.000	0.000	0.453	0.000	0.00
		C	0.000	0.000	0.532	0.000	0.00
L38	29.50-24.50	A	0.000	0.000	12.342	0.000	0.04
		B	0.000	0.000	9.063	0.000	0.06
		C	0.000	0.000	10.640	0.000	0.04
L39	24.50-19.50	A	0.000	0.000	12.342	0.000	0.04
		B	0.000	0.000	9.063	0.000	0.06
		C	0.000	0.000	10.640	0.000	0.04
L40	19.50-14.50	A	0.000	0.000	12.342	0.000	0.04
		B	0.000	0.000	9.063	0.000	0.06
		C	0.000	0.000	10.640	0.000	0.04
L41	14.50-12.50	A	0.000	0.000	4.937	0.000	0.01
		B	0.000	0.000	3.625	0.000	0.02
		C	0.000	0.000	4.256	0.000	0.01
L42	12.50-12.25	A	0.000	0.000	0.617	0.000	0.00
		B	0.000	0.000	0.453	0.000	0.00
		C	0.000	0.000	0.532	0.000	0.00
L43	12.25-10.75	A	0.000	0.000	3.703	0.000	0.01
		B	0.000	0.000	2.719	0.000	0.02
		C	0.000	0.000	6.057	0.000	0.01
L44	10.75-10.50	A	0.000	0.000	0.450	0.000	0.00
		B	0.000	0.000	0.286	0.000	0.00
		C	0.000	0.000	0.938	0.000	0.00
L45	10.50-5.50	A	0.000	0.000	9.009	0.000	0.04
		B	0.000	0.000	5.729	0.000	0.06
		C	0.000	0.000	16.760	0.000	0.04
L46	5.50-0.50	A	0.000	0.000	9.009	0.000	0.04
		B	0.000	0.000	5.729	0.000	0.06
		C	0.000	0.000	13.036	0.000	0.04
L47	0.50-0.00	A	0.000	0.000	0.901	0.000	0.00
		B	0.000	0.000	0.573	0.000	0.01
		C	0.000	0.000	1.304	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	133.00-128.00	A	1.721	0.000	0.000	5.387	0.000	0.08

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	128.00-123.00	A	1.714	0.000	0.000	5.372	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	123.00-118.00	A	1.707	0.000	0.000	5.356	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	118.00-113.00	A	1.700	0.000	0.000	5.340	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L5	113.00-108.00	A	1.693	0.000	0.000	5.323	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.00
L6	108.00-104.75	A	1.686	0.000	0.000	5.207	0.000	0.07
		B		0.000	0.000	1.757	0.000	0.06
		C		0.000	0.000	1.757	0.000	0.02
L7	104.75-104.50	A	1.683	0.000	0.000	0.516	0.000	0.01
		B		0.000	0.000	0.251	0.000	0.01
		C		0.000	0.000	0.251	0.000	0.00
L8	104.50-99.50	A	1.679	0.000	0.000	10.743	0.000	0.14
		B		0.000	0.000	5.450	0.000	0.12
		C		0.000	0.000	5.944	0.000	0.07
L9	99.50-98.75	A	1.674	0.000	0.000	2.200	0.000	0.03
		B		0.000	0.000	1.408	0.000	0.03
		C		0.000	0.000	2.147	0.000	0.03
L10	98.75-98.50	A	1.674	0.000	0.000	0.733	0.000	0.01
		B		0.000	0.000	0.469	0.000	0.01
		C		0.000	0.000	0.715	0.000	0.01
L11	98.50-91.33	A	1.667	0.000	0.000	20.994	0.000	0.28
		B		0.000	0.000	13.443	0.000	0.25
		C		0.000	0.000	20.487	0.000	0.32
L12	91.33-90.00	A	1.660	0.000	0.000	3.895	0.000	0.05
		B		0.000	0.000	2.494	0.000	0.05
		C		0.000	0.000	3.801	0.000	0.06
L13	90.00-89.25	A	1.658	0.000	0.000	2.873	0.000	0.04
		B		0.000	0.000	1.404	0.000	0.03
		C		0.000	0.000	2.138	0.000	0.03
L14	89.25-89.00	A	1.657	0.000	0.000	1.051	0.000	0.01
		B		0.000	0.000	0.562	0.000	0.01
		C		0.000	0.000	0.806	0.000	0.01
L15	89.00-88.25	A	1.656	0.000	0.000	3.152	0.000	0.04
		B		0.000	0.000	1.684	0.000	0.03
		C		0.000	0.000	2.418	0.000	0.03
L16	88.25-88.00	A	1.655	0.000	0.000	1.050	0.000	0.01
		B		0.000	0.000	0.561	0.000	0.01
		C		0.000	0.000	0.806	0.000	0.01
L17	88.00-83.00	A	1.650	0.000	0.000	17.492	0.000	0.22
		B		0.000	0.000	7.728	0.000	0.14
		C		0.000	0.000	12.605	0.000	0.18
L18	83.00-78.00	A	1.640	0.000	0.000	16.698	0.000	0.21
		B		0.000	0.000	6.969	0.000	0.13
		C		0.000	0.000	11.826	0.000	0.17
L19	78.00-77.00	A	1.634	0.000	0.000	4.178	0.000	0.05
		B		0.000	0.000	2.237	0.000	0.03
		C		0.000	0.000	3.206	0.000	0.04
L20	77.00-76.75	A	1.632	0.000	0.000	1.044	0.000	0.01
		B		0.000	0.000	0.559	0.000	0.01
		C		0.000	0.000	0.801	0.000	0.01
L21	76.75-71.75	A	1.627	0.000	0.000	20.853	0.000	0.25
		B		0.000	0.000	11.170	0.000	0.17
		C		0.000	0.000	16.001	0.000	0.21
L22	71.75-66.75	A	1.615	0.000	0.000	20.791	0.000	0.25
		B		0.000	0.000	11.147	0.000	0.17
		C		0.000	0.000	15.956	0.000	0.21
L23	66.75-61.75	A	1.603	0.000	0.000	21.218	0.000	0.26
		B		0.000	0.000	11.617	0.000	0.17
		C		0.000	0.000	16.401	0.000	0.21
L24	61.75-60.50	A	1.595	0.000	0.000	6.402	0.000	0.07

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	4.009	0.000	0.05
		C		0.000	0.000	5.201	0.000	0.06
L25	60.50-60.25	A	1.593	0.000	0.000	1.280	0.000	0.01
		B		0.000	0.000	0.802	0.000	0.01
		C		0.000	0.000	1.040	0.000	0.01
L26	60.25-59.50	A	1.592	0.000	0.000	3.838	0.000	0.04
		B		0.000	0.000	2.404	0.000	0.03
		C		0.000	0.000	3.118	0.000	0.04
L27	59.50-59.25	A	1.591	0.000	0.000	1.326	0.000	0.02
		B		0.000	0.000	0.848	0.000	0.01
		C		0.000	0.000	1.086	0.000	0.01
L28	59.25-54.25	A	1.584	0.000	0.000	22.045	0.000	0.29
		B		0.000	0.000	12.513	0.000	0.21
		C		0.000	0.000	17.257	0.000	0.25
L29	54.25-45.25	A	1.563	0.000	0.000	38.589	0.000	0.51
		B		0.000	0.000	21.563	0.000	0.37
		C		0.000	0.000	30.029	0.000	0.44
L30	45.25-45.00	A	1.548	0.000	0.000	1.072	0.000	0.01
		B		0.000	0.000	0.599	0.000	0.01
		C		0.000	0.000	0.834	0.000	0.01
L31	45.00-40.00	A	1.538	0.000	0.000	21.305	0.000	0.28
		B		0.000	0.000	12.662	0.000	0.21
		C		0.000	0.000	16.585	0.000	0.24
L32	40.00-39.00	A	1.527	0.000	0.000	4.249	0.000	0.05
		B		0.000	0.000	3.354	0.000	0.05
		C		0.000	0.000	3.308	0.000	0.05
L33	39.00-38.75	A	1.525	0.000	0.000	1.061	0.000	0.01
		B		0.000	0.000	0.838	0.000	0.01
		C		0.000	0.000	0.827	0.000	0.01
L34	38.75-34.00	A	1.515	0.000	0.000	21.812	0.000	0.27
		B		0.000	0.000	15.895	0.000	0.23
		C		0.000	0.000	17.362	0.000	0.24
L35	34.00-33.75	A	1.504	0.000	0.000	1.298	0.000	0.02
		B		0.000	0.000	0.835	0.000	0.01
		C		0.000	0.000	1.064	0.000	0.01
L36	33.75-29.75	A	1.494	0.000	0.000	18.297	0.000	0.23
		B		0.000	0.000	10.922	0.000	0.17
		C		0.000	0.000	14.575	0.000	0.20
L37	29.75-29.50	A	1.484	0.000	0.000	1.061	0.000	0.01
		B		0.000	0.000	0.602	0.000	0.01
		C		0.000	0.000	0.829	0.000	0.01
L38	29.50-24.50	A	1.470	0.000	0.000	21.138	0.000	0.27
		B		0.000	0.000	12.003	0.000	0.20
		C		0.000	0.000	16.521	0.000	0.23
L39	24.50-19.50	A	1.440	0.000	0.000	20.974	0.000	0.26
		B		0.000	0.000	11.943	0.000	0.19
		C		0.000	0.000	16.401	0.000	0.22
L40	19.50-14.50	A	1.404	0.000	0.000	20.772	0.000	0.25
		B		0.000	0.000	11.870	0.000	0.19
		C		0.000	0.000	16.255	0.000	0.22
L41	14.50-12.50	A	1.372	0.000	0.000	8.239	0.000	0.10
		B		0.000	0.000	4.722	0.000	0.07
		C		0.000	0.000	6.451	0.000	0.09
L42	12.50-12.25	A	1.360	0.000	0.000	1.027	0.000	0.01
		B		0.000	0.000	0.589	0.000	0.01
		C		0.000	0.000	0.804	0.000	0.01
L43	12.25-10.75	A	1.350	0.000	0.000	6.143	0.000	0.07
		B		0.000	0.000	3.529	0.000	0.05
		C		0.000	0.000	7.839	0.000	0.11
L44	10.75-10.50	A	1.339	0.000	0.000	0.787	0.000	0.01
		B		0.000	0.000	0.353	0.000	0.01
		C		0.000	0.000	1.171	0.000	0.02
L45	10.50-5.50	A	1.302	0.000	0.000	15.576	0.000	0.20
		B		0.000	0.000	7.031	0.000	0.14
		C		0.000	0.000	20.811	0.000	0.30
L46	5.50-0.50	A	1.180	0.000	0.000	15.027	0.000	0.18
		B		0.000	0.000	6.909	0.000	0.13
		C		0.000	0.000	15.871	0.000	0.22
L47	0.50-0.00	A	0.920	0.000	0.000	1.386	0.000	0.01

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.665	0.000	0.01
		C		0.000	0.000	1.508	0.000	0.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	133.00-128.00	-0.0806	-0.3090	-0.1443	-0.6150
L2	128.00-123.00	-0.0813	-0.3117	-0.1499	-0.6383
L3	123.00-118.00	-0.0820	-0.3142	-0.1552	-0.6602
L4	118.00-113.00	-0.0826	-0.3164	-0.1601	-0.6808
L5	113.00-108.00	-0.0832	-0.3183	-0.1648	-0.7002
L6	108.00-104.75	-0.0115	-0.2502	-0.0781	-0.5279
L7	104.75-104.50	0.0181	-0.2230	-0.0376	-0.4473
L8	104.50-99.50	0.0082	-0.1965	-0.0539	-0.3972
L9	99.50-98.75	-0.0512	-0.0251	-0.1447	-0.0651
L10	98.75-98.50	-0.0514	-0.0253	-0.1452	-0.0653
L11	98.50-91.33	-0.0525	-0.0261	-0.1490	-0.0675
L12	91.33-90.00	-0.0533	-0.0266	-0.1515	-0.0689
L13	90.00-89.25	-0.2152	-0.0885	-0.3447	-0.1419
L14	89.25-89.00	-0.1892	-0.0778	-0.3160	-0.1301
L15	89.00-88.25	-0.1898	-0.0781	-0.3171	-0.1306
L16	88.25-88.00	-0.1904	-0.0784	-0.3182	-0.1311
L17	88.00-83.00	-0.2670	-0.0632	-0.4120	-0.1298
L18	83.00-78.00	-0.2945	-0.0608	-0.4489	-0.1336
L19	78.00-77.00	-0.2024	-0.0838	-0.3408	-0.1414
L20	77.00-76.75	-0.2030	-0.0841	-0.3421	-0.1420
L21	76.75-71.75	-0.2059	-0.0854	-0.3476	-0.1445
L22	71.75-66.75	-0.2113	-0.0879	-0.3578	-0.1491
L23	66.75-61.75	-0.2113	-0.0881	-0.3597	-0.1503
L24	61.75-60.50	-0.1762	-0.0735	-0.3058	-0.1280
L25	60.50-60.25	-0.1769	-0.0739	-0.3071	-0.1286
L26	60.25-59.50	-0.1773	-0.0741	-0.3079	-0.1289
L27	59.50-59.25	-0.1684	-0.0703	-0.2984	-0.1250
L28	59.25-54.25	-0.2392	-0.0472	-0.3909	-0.1149
L29	54.25-45.25	-0.2565	-0.0455	-0.4168	-0.1175
L30	45.25-45.00	-0.2589	-0.0460	-0.4213	-0.1189
L31	45.00-40.00	-0.3020	-0.0905	-0.4614	-0.1604
L32	40.00-39.00	-0.5171	-0.3228	-0.6575	-0.3764
L33	39.00-38.75	-0.5185	-0.3237	-0.6595	-0.3775
L34	38.75-34.00	-0.4931	-0.2162	-0.6312	-0.2746
L35	34.00-33.75	-0.4514	-0.0517	-0.5835	-0.1149
L36	33.75-29.75	-0.5133	-0.0588	-0.6598	-0.1298
L37	29.75-29.50	-0.5527	-0.0633	-0.7110	-0.1399
L38	29.50-24.50	-0.5584	-0.0639	-0.7186	-0.1413
L39	24.50-19.50	-0.5692	-0.0652	-0.7327	-0.1439
L40	19.50-14.50	-0.5798	-0.0664	-0.7459	-0.1462
L41	14.50-12.50	-0.5871	-0.0672	-0.7545	-0.1476
L42	12.50-12.25	-0.5894	-0.0675	-0.7570	-0.1480
L43	12.25-10.75	-1.0782	0.2935	-1.1062	0.1349
L44	10.75-10.50	-1.1017	0.4386	-1.1115	0.2372
L45	10.50-5.50	-0.9890	0.2766	-1.0130	0.0868
L46	5.50-0.50	-0.7479	-0.0665	-0.8000	-0.2274
L47	0.50-0.00	-0.7536	-0.0680	-0.7934	-0.2146

Shielding Factor Ka

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L1	2	Safety Line 5/8	128.00 - 133.00	1.0000	1.0000
L1	4	7983A(ELLIPTICAL)	128.00 - 133.00	1.0000	1.0000
L2	2	Safety Line 5/8	123.00 - 128.00	1.0000	1.0000
L2	4	7983A(ELLIPTICAL)	123.00 - 128.00	1.0000	1.0000
L3	2	Safety Line 5/8	118.00 - 123.00	1.0000	1.0000
L3	4	7983A(ELLIPTICAL)	118.00 - 123.00	1.0000	1.0000
L4	2	Safety Line 5/8	113.00 - 118.00	1.0000	1.0000
L4	4	7983A(ELLIPTICAL)	113.00 - 118.00	1.0000	1.0000
L5	2	Safety Line 5/8	108.00 - 113.00	1.0000	1.0000
L5	4	7983A(ELLIPTICAL)	108.00 - 113.00	1.0000	1.0000
L6	2	Safety Line 5/8	104.75 - 108.00	1.0000	1.0000
L6	4	7983A(ELLIPTICAL)	104.75 - 108.00	1.0000	1.0000
L6	53	4" x 1" Flat Plate (G)	104.75 - 106.50	1.0000	1.0000
L6	54	4" x 1" Flat Plate (G)	104.75 - 106.50	1.0000	1.0000
L6	55	4" x 1" Flat Plate (G)	104.75 - 106.50	1.0000	1.0000
L7	2	Safety Line 5/8	104.50 - 104.75	1.0000	1.0000
L7	4	7983A(ELLIPTICAL)	104.50 - 104.75	1.0000	1.0000
L7	53	4" x 1" Flat Plate (G)	104.50 - 104.75	1.0000	1.0000
L7	54	4" x 1" Flat Plate (G)	104.50 - 104.75	1.0000	1.0000
L7	55	4" x 1" Flat Plate (G)	104.50 - 104.75	1.0000	1.0000
L8	2	Safety Line 5/8	99.50 - 104.50	1.0000	1.0000
L8	4	7983A(ELLIPTICAL)	99.50 - 104.50	1.0000	1.0000
L8	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	99.50 - 100.00	1.0000	1.0000
L8	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	99.50 - 100.00	1.0000	1.0000
L8	37	3.625" x 1.25" Flat Plate (G)	99.50 - 100.00	1.0000	1.0000
L8	38	3.625" x 1.25" Flat Plate (G)	99.50 - 100.00	1.0000	1.0000
L8	39	3.625" x 1.25" Flat Plate (G)	99.50 - 100.00	1.0000	1.0000
L8	53	4" x 1" Flat Plate (G)	99.50 - 104.50	1.0000	1.0000
L8	54	4" x 1" Flat Plate (G)	99.50 - 104.50	1.0000	1.0000
L8	55	4" x 1" Flat Plate (G)	99.50 - 104.50	1.0000	1.0000
L9	2	Safety Line 5/8	98.75 - 99.50	1.0000	1.0000
L9	4	7983A(ELLIPTICAL)	98.75 - 99.50	1.0000	1.0000
L9	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	98.75 - 99.50	1.0000	1.0000
L9	14	MLE Hybrid 9Power/18Fiber RL 2(1	98.75 - 99.50	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
		5/8")			
L9	37	3.625" x 1.25" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	38	3.625" x 1.25" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	39	3.625" x 1.25" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	53	4" x 1" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	54	4" x 1" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L9	55	4" x 1" Flat Plate (G)	98.75 - 99.50	1.0000	1.0000
L10	2	Safety Line 5/8	98.50 - 98.75	1.0000	1.0000
L10	4	7983A(ELLIPTICAL)	98.50 - 98.75	1.0000	1.0000
L10	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	98.50 - 98.75	1.0000	1.0000
L10	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	98.50 - 98.75	1.0000	1.0000
L10	37	3.625" x 1.25" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	38	3.625" x 1.25" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	39	3.625" x 1.25" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	53	4" x 1" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	54	4" x 1" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L10	55	4" x 1" Flat Plate (G)	98.50 - 98.75	1.0000	1.0000
L11	2	Safety Line 5/8	91.33 - 98.50	1.0000	1.0000
L11	4	7983A(ELLIPTICAL)	91.33 - 98.50	1.0000	1.0000
L11	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	91.33 - 98.50	1.0000	1.0000
L11	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	91.33 - 98.50	1.0000	1.0000
L11	37	3.625" x 1.25" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	38	3.625" x 1.25" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	39	3.625" x 1.25" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	53	4" x 1" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	54	4" x 1" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L11	55	4" x 1" Flat Plate (G)	91.33 - 98.50	1.0000	1.0000
L13	2	Safety Line 5/8	89.25 - 90.00	1.0000	1.0000
L13	4	7983A(ELLIPTICAL)	89.25 - 90.00	1.0000	1.0000
L13	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	89.25 - 90.00	1.0000	1.0000
L13	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	89.25 - 90.00	1.0000	1.0000
L13	16	LCF158-50JL(1-5/8)	89.25 - 90.00	1.0000	1.0000
L13	37	3.625" x 1.25" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	38	3.625" x 1.25" Flat Plate	89.25 -	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
		(G)	90.00		
L13	39	3.625" x 1.25" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	53	4" x 1" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	54	4" x 1" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L13	55	4" x 1" Flat Plate (G)	89.25 - 90.00	1.0000	1.0000
L14	2	Safety Line 5/8	89.00 - 89.25	1.0000	1.0000
L14	4	7983A(ELLIPTICAL)	89.00 - 89.25	1.0000	1.0000
L14	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	89.00 - 89.25	1.0000	1.0000
L14	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	89.00 - 89.25	1.0000	1.0000
L14	16	LCF158-50JL(1-5/8)	89.00 - 89.25	1.0000	1.0000
L14	33	5.5" x 1.25" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	34	5.5" x 1.25" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	35	5.5" x 1.25" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	53	4" x 1" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	54	4" x 1" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L14	55	4" x 1" Flat Plate (G)	89.00 - 89.25	1.0000	1.0000
L15	2	Safety Line 5/8	88.25 - 89.00	1.0000	1.0000
L15	4	7983A(ELLIPTICAL)	88.25 - 89.00	1.0000	1.0000
L15	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	88.25 - 89.00	1.0000	1.0000
L15	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	88.25 - 89.00	1.0000	1.0000
L15	16	LCF158-50JL(1-5/8)	88.25 - 89.00	1.0000	1.0000
L15	33	5.5" x 1.25" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	34	5.5" x 1.25" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	35	5.5" x 1.25" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	53	4" x 1" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	54	4" x 1" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L15	55	4" x 1" Flat Plate (G)	88.25 - 89.00	1.0000	1.0000
L16	2	Safety Line 5/8	88.00 - 88.25	1.0000	1.0000
L16	4	7983A(ELLIPTICAL)	88.00 - 88.25	1.0000	1.0000
L16	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	88.00 - 88.25	1.0000	1.0000
L16	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	88.00 - 88.25	1.0000	1.0000
L16	16	LCF158-50JL(1-5/8)	88.00 - 88.25	1.0000	1.0000
L16	33	5.5" x 1.25" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	34	5.5" x 1.25" Flat Plate (G)	88.00 -	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
			88.25		
L16	35	5.5" x 1.25" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	53	4" x 1" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	54	4" x 1" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L16	55	4" x 1" Flat Plate (G)	88.00 - 88.25	1.0000	1.0000
L17	2	Safety Line 5/8	83.00 - 88.00	1.0000	1.0000
L17	4	7983A(ELLIPTICAL)	83.00 - 88.00	1.0000	1.0000
L17	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	83.00 - 88.00	1.0000	1.0000
L17	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	83.00 - 88.00	1.0000	1.0000
L17	16	LCF158-50JL(1-5/8)	83.00 - 88.00	1.0000	1.0000
L17	33	5.5" x 1.25" Flat Plate (G)	83.00 - 88.00	1.0000	1.0000
L17	34	5.5" x 1.25" Flat Plate (G)	83.00 - 88.00	1.0000	1.0000
L17	35	5.5" x 1.25" Flat Plate (G)	83.00 - 88.00	1.0000	1.0000
L17	53	4" x 1" Flat Plate (G)	86.50 - 88.00	1.0000	1.0000
L17	54	4" x 1" Flat Plate (G)	86.50 - 88.00	1.0000	1.0000
L17	55	4" x 1" Flat Plate (G)	86.50 - 88.00	1.0000	1.0000
L18	2	Safety Line 5/8	78.00 - 83.00	1.0000	1.0000
L18	4	7983A(ELLIPTICAL)	78.00 - 83.00	1.0000	1.0000
L18	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	78.00 - 83.00	1.0000	1.0000
L18	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	78.00 - 83.00	1.0000	1.0000
L18	16	LCF158-50JL(1-5/8)	78.00 - 83.00	1.0000	1.0000
L18	33	5.5" x 1.25" Flat Plate (G)	78.00 - 83.00	1.0000	1.0000
L18	34	5.5" x 1.25" Flat Plate (G)	78.00 - 83.00	1.0000	1.0000
L18	35	5.5" x 1.25" Flat Plate (G)	78.00 - 83.00	1.0000	1.0000
L18	49	4" x 1" Flat Plate (G)	78.00 - 78.75	1.0000	1.0000
L18	50	4" x 1" Flat Plate (G)	78.00 - 78.75	1.0000	1.0000
L18	51	4" x 1" Flat Plate (G)	78.00 - 78.75	1.0000	1.0000
L19	2	Safety Line 5/8	77.00 - 78.00	1.0000	1.0000
L19	4	7983A(ELLIPTICAL)	77.00 - 78.00	1.0000	1.0000
L19	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	77.00 - 78.00	1.0000	1.0000
L19	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	77.00 - 78.00	1.0000	1.0000
L19	16	LCF158-50JL(1-5/8)	77.00 - 78.00	1.0000	1.0000
L19	33	5.5" x 1.25" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	34	5.5" x 1.25" Flat Plate (G)	77.00 -	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
			78.00		
L19	35	5.5" x 1.25" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	49	4" x 1" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	50	4" x 1" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L19	51	4" x 1" Flat Plate (G)	77.00 - 78.00	1.0000	1.0000
L20	2	Safety Line 5/8	76.75 - 77.00	1.0000	1.0000
L20	4	7983A(ELLIPTICAL)	76.75 - 77.00	1.0000	1.0000
L20	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	76.75 - 77.00	1.0000	1.0000
L20	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	76.75 - 77.00	1.0000	1.0000
L20	16	LCF158-50JL(1-5/8)	76.75 - 77.00	1.0000	1.0000
L20	33	5.5" x 1.25" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	34	5.5" x 1.25" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	35	5.5" x 1.25" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	49	4" x 1" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	50	4" x 1" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L20	51	4" x 1" Flat Plate (G)	76.75 - 77.00	1.0000	1.0000
L21	2	Safety Line 5/8	71.75 - 76.75	1.0000	1.0000
L21	4	7983A(ELLIPTICAL)	71.75 - 76.75	1.0000	1.0000
L21	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	71.75 - 76.75	1.0000	1.0000
L21	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	71.75 - 76.75	1.0000	1.0000
L21	16	LCF158-50JL(1-5/8)	71.75 - 76.75	1.0000	1.0000
L21	33	5.5" x 1.25" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	34	5.5" x 1.25" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	35	5.5" x 1.25" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	49	4" x 1" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	50	4" x 1" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L21	51	4" x 1" Flat Plate (G)	71.75 - 76.75	1.0000	1.0000
L22	2	Safety Line 5/8	66.75 - 71.75	1.0000	1.0000
L22	4	7983A(ELLIPTICAL)	66.75 - 71.75	1.0000	1.0000
L22	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	66.75 - 71.75	1.0000	1.0000
L22	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	66.75 - 71.75	1.0000	1.0000
L22	16	LCF158-50JL(1-5/8)	66.75 - 71.75	1.0000	1.0000
L22	33	5.5" x 1.25" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	34	5.5" x 1.25" Flat Plate (G)	66.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L22	35	5.5" x 1.25" Flat Plate (G)	71.75 66.75 - 71.75	1.0000	1.0000
L22	49	4" x 1" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	50	4" x 1" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L22	51	4" x 1" Flat Plate (G)	66.75 - 71.75	1.0000	1.0000
L23	2	Safety Line 5/8	61.75 - 66.75	1.0000	1.0000
L23	4	7983A(ELLIPTICAL)	61.75 - 66.75	1.0000	1.0000
L23	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	61.75 - 66.75	1.0000	1.0000
L23	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	61.75 - 66.75	1.0000	1.0000
L23	16	LCF158-50JL(1-5/8)	61.75 - 66.75	1.0000	1.0000
L23	33	5.5" x 1.25" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	34	5.5" x 1.25" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	35	5.5" x 1.25" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	45	4" x 1" Flat Plate (G)	61.75 - 62.25	1.0000	1.0000
L23	46	4" x 1" Flat Plate (G)	61.75 - 62.25	1.0000	1.0000
L23	47	4" x 1" Flat Plate (G)	61.75 - 62.25	1.0000	1.0000
L23	49	4" x 1" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	50	4" x 1" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L23	51	4" x 1" Flat Plate (G)	61.75 - 66.75	1.0000	1.0000
L24	2	Safety Line 5/8	60.50 - 61.75	1.0000	1.0000
L24	4	7983A(ELLIPTICAL)	60.50 - 61.75	1.0000	1.0000
L24	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	60.50 - 61.75	1.0000	1.0000
L24	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	60.50 - 61.75	1.0000	1.0000
L24	16	LCF158-50JL(1-5/8)	60.50 - 61.75	1.0000	1.0000
L24	33	5.5" x 1.25" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	34	5.5" x 1.25" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	35	5.5" x 1.25" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	45	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	46	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	47	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	49	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	50	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L24	51	4" x 1" Flat Plate (G)	60.50 - 61.75	1.0000	1.0000
L25	2	Safety Line 5/8	60.25 - 60.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	4	7983A(ELLIPTICAL)	60.25 - 60.50	1.0000	1.0000
L25	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	60.25 - 60.50	1.0000	1.0000
L25	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	60.25 - 60.50	1.0000	1.0000
L25	16	LCF158-50JL(1-5/8)	60.25 - 60.50	1.0000	1.0000
L25	33	5.5" x 1.25" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	34	5.5" x 1.25" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	35	5.5" x 1.25" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	45	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	46	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	47	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	49	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	50	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L25	51	4" x 1" Flat Plate (G)	60.25 - 60.50	1.0000	1.0000
L26	2	Safety Line 5/8	59.50 - 60.25	1.0000	1.0000
L26	4	7983A(ELLIPTICAL)	59.50 - 60.25	1.0000	1.0000
L26	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	59.50 - 60.25	1.0000	1.0000
L26	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	59.50 - 60.25	1.0000	1.0000
L26	16	LCF158-50JL(1-5/8)	59.50 - 60.25	1.0000	1.0000
L26	33	5.5" x 1.25" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	34	5.5" x 1.25" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	35	5.5" x 1.25" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	45	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	46	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	47	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	49	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	50	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L26	51	4" x 1" Flat Plate (G)	59.50 - 60.25	1.0000	1.0000
L27	2	Safety Line 5/8	59.25 - 59.50	1.0000	1.0000
L27	4	7983A(ELLIPTICAL)	59.25 - 59.50	1.0000	1.0000
L27	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	59.25 - 59.50	1.0000	1.0000
L27	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	59.25 - 59.50	1.0000	1.0000
L27	16	LCF158-50JL(1-5/8)	59.25 - 59.50	1.0000	1.0000
L27	29	6.625" x 1.25" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L27	30	6.625" x 1.25" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	31	6.625" x 1.25" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	45	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	46	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	47	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	49	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	50	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L27	51	4" x 1" Flat Plate (G)	59.25 - 59.50	1.0000	1.0000
L28	2	Safety Line 5/8	54.25 - 59.25	1.0000	1.0000
L28	4	7983A(ELLIPTICAL)	54.25 - 59.25	1.0000	1.0000
L28	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	54.25 - 59.25	1.0000	1.0000
L28	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	54.25 - 59.25	1.0000	1.0000
L28	16	LCF158-50JL(1-5/8)	54.25 - 59.25	1.0000	1.0000
L28	29	6.625" x 1.25" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	30	6.625" x 1.25" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	31	6.625" x 1.25" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	45	4" x 1" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	46	4" x 1" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	47	4" x 1" Flat Plate (G)	54.25 - 59.25	1.0000	1.0000
L28	49	4" x 1" Flat Plate (G)	58.75 - 59.25	1.0000	1.0000
L28	50	4" x 1" Flat Plate (G)	58.75 - 59.25	1.0000	1.0000
L28	51	4" x 1" Flat Plate (G)	58.75 - 59.25	1.0000	1.0000
L29	2	Safety Line 5/8	45.25 - 54.25	1.0000	1.0000
L29	4	7983A(ELLIPTICAL)	45.25 - 54.25	1.0000	1.0000
L29	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	45.25 - 54.25	1.0000	1.0000
L29	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	45.25 - 54.25	1.0000	1.0000
L29	16	LCF158-50JL(1-5/8)	45.25 - 54.25	1.0000	1.0000
L29	29	6.625" x 1.25" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	30	6.625" x 1.25" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	31	6.625" x 1.25" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	45	4" x 1" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	46	4" x 1" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L29	47	4" x 1" Flat Plate (G)	45.25 - 54.25	1.0000	1.0000
L31	2	Safety Line 5/8	40.00 -	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
			45.00		
L31	4	7983A(ELLIPTICAL)	40.00 - 45.00	1.0000	1.0000
L31	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	40.00 - 45.00	1.0000	1.0000
L31	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	40.00 - 45.00	1.0000	1.0000
L31	16	LCF158-50JL(1-5/8)	40.00 - 45.00	1.0000	1.0000
L31	29	6.625" x 1.25" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	30	6.625" x 1.25" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	31	6.625" x 1.25" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	42	4" x 1" Flat Plate (G)	40.00 - 40.75	1.0000	1.0000
L31	45	4" x 1" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	46	4" x 1" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L31	47	4" x 1" Flat Plate (G)	40.00 - 45.00	1.0000	1.0000
L32	2	Safety Line 5/8	39.00 - 40.00	1.0000	1.0000
L32	4	7983A(ELLIPTICAL)	39.00 - 40.00	1.0000	1.0000
L32	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	39.00 - 40.00	1.0000	1.0000
L32	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	39.00 - 40.00	1.0000	1.0000
L32	16	LCF158-50JL(1-5/8)	39.00 - 40.00	1.0000	1.0000
L32	29	6.625" x 1.25" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	30	6.625" x 1.25" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	31	6.625" x 1.25" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	42	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	45	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	46	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L32	47	4" x 1" Flat Plate (G)	39.00 - 40.00	1.0000	1.0000
L33	2	Safety Line 5/8	38.75 - 39.00	1.0000	1.0000
L33	4	7983A(ELLIPTICAL)	38.75 - 39.00	1.0000	1.0000
L33	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	38.75 - 39.00	1.0000	1.0000
L33	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	38.75 - 39.00	1.0000	1.0000
L33	16	LCF158-50JL(1-5/8)	38.75 - 39.00	1.0000	1.0000
L33	29	6.625" x 1.25" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	30	6.625" x 1.25" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	31	6.625" x 1.25" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	42	4" x 1" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	45	4" x 1" Flat Plate (G)	38.75 -	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
			39.00		
L33	46	4" x 1" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L33	47	4" x 1" Flat Plate (G)	38.75 - 39.00	1.0000	1.0000
L34	2	Safety Line 5/8	34.00 - 38.75	1.0000	1.0000
L34	4	7983A(ELLIPTICAL)	34.00 - 38.75	1.0000	1.0000
L34	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	34.00 - 38.75	1.0000	1.0000
L34	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	34.00 - 38.75	1.0000	1.0000
L34	16	LCF158-50JL(1-5/8)	34.00 - 38.75	1.0000	1.0000
L34	29	6.625" x 1.25" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	30	6.625" x 1.25" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	31	6.625" x 1.25" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	41	4" x 1" Flat Plate (G)	34.00 - 35.75	1.0000	1.0000
L34	42	4" x 1" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	43	4" x 1" Flat Plate (G)	34.00 - 35.75	1.0000	1.0000
L34	45	4" x 1" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	46	4" x 1" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L34	47	4" x 1" Flat Plate (G)	34.00 - 38.75	1.0000	1.0000
L35	2	Safety Line 5/8	33.75 - 34.00	1.0000	1.0000
L35	4	7983A(ELLIPTICAL)	33.75 - 34.00	1.0000	1.0000
L35	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	33.75 - 34.00	1.0000	1.0000
L35	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	33.75 - 34.00	1.0000	1.0000
L35	16	LCF158-50JL(1-5/8)	33.75 - 34.00	1.0000	1.0000
L35	29	6.625" x 1.25" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	30	6.625" x 1.25" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	31	6.625" x 1.25" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	41	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	42	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	43	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	45	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	46	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L35	47	4" x 1" Flat Plate (G)	33.75 - 34.00	1.0000	1.0000
L36	2	Safety Line 5/8	29.75 - 33.75	1.0000	1.0000
L36	4	7983A(ELLIPTICAL)	29.75 - 33.75	1.0000	1.0000
L36	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	29.75 - 33.75	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L36	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	29.75 - 33.75	1.0000	1.0000
L36	16	LCF158-50JL(1-5/8)	29.75 - 33.75	1.0000	1.0000
L36	29	6.625" x 1.25" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	30	6.625" x 1.25" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	31	6.625" x 1.25" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	41	4" x 1" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	42	4" x 1" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	43	4" x 1" Flat Plate (G)	29.75 - 33.75	1.0000	1.0000
L36	45	4" x 1" Flat Plate (G)	32.25 - 33.75	1.0000	1.0000
L36	46	4" x 1" Flat Plate (G)	32.25 - 33.75	1.0000	1.0000
L36	47	4" x 1" Flat Plate (G)	32.25 - 33.75	1.0000	1.0000
L37	2	Safety Line 5/8	29.50 - 29.75	1.0000	1.0000
L37	4	7983A(ELLIPTICAL)	29.50 - 29.75	1.0000	1.0000
L37	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	29.50 - 29.75	1.0000	1.0000
L37	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	29.50 - 29.75	1.0000	1.0000
L37	16	LCF158-50JL(1-5/8)	29.50 - 29.75	1.0000	1.0000
L37	25	6.875" x 1.25" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	26	6.875" x 1.25" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	27	6.875" x 1.25" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	41	4" x 1" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	42	4" x 1" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L37	43	4" x 1" Flat Plate (G)	29.50 - 29.75	1.0000	1.0000
L38	2	Safety Line 5/8	24.50 - 29.50	1.0000	1.0000
L38	4	7983A(ELLIPTICAL)	24.50 - 29.50	1.0000	1.0000
L38	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	24.50 - 29.50	1.0000	1.0000
L38	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	24.50 - 29.50	1.0000	1.0000
L38	16	LCF158-50JL(1-5/8)	24.50 - 29.50	1.0000	1.0000
L38	25	6.875" x 1.25" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	26	6.875" x 1.25" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	27	6.875" x 1.25" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	41	4" x 1" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	42	4" x 1" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000
L38	43	4" x 1" Flat Plate (G)	24.50 - 29.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	2	Safety Line 5/8	19.50 - 24.50	1.0000	1.0000
L39	4	7983A(ELLIPTICAL)	19.50 - 24.50	1.0000	1.0000
L39	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	19.50 - 24.50	1.0000	1.0000
L39	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	19.50 - 24.50	1.0000	1.0000
L39	16	LCF158-50JL(1-5/8)	19.50 - 24.50	1.0000	1.0000
L39	25	6.875" x 1.25" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	26	6.875" x 1.25" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	27	6.875" x 1.25" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	41	4" x 1" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	42	4" x 1" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L39	43	4" x 1" Flat Plate (G)	19.50 - 24.50	1.0000	1.0000
L40	2	Safety Line 5/8	14.50 - 19.50	1.0000	1.0000
L40	4	7983A(ELLIPTICAL)	14.50 - 19.50	1.0000	1.0000
L40	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	14.50 - 19.50	1.0000	1.0000
L40	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	14.50 - 19.50	1.0000	1.0000
L40	16	LCF158-50JL(1-5/8)	14.50 - 19.50	1.0000	1.0000
L40	25	6.875" x 1.25" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	26	6.875" x 1.25" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	27	6.875" x 1.25" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	41	4" x 1" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	42	4" x 1" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L40	43	4" x 1" Flat Plate (G)	14.50 - 19.50	1.0000	1.0000
L41	2	Safety Line 5/8	12.50 - 14.50	1.0000	1.0000
L41	4	7983A(ELLIPTICAL)	12.50 - 14.50	1.0000	1.0000
L41	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	12.50 - 14.50	1.0000	1.0000
L41	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	12.50 - 14.50	1.0000	1.0000
L41	16	LCF158-50JL(1-5/8)	12.50 - 14.50	1.0000	1.0000
L41	25	6.875" x 1.25" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	26	6.875" x 1.25" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	27	6.875" x 1.25" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	41	4" x 1" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	42	4" x 1" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000
L41	43	4" x 1" Flat Plate (G)	12.50 - 14.50	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L42	2	Safety Line 5/8	12.25 - 12.50	1.0000	1.0000
L42	4	7983A(ELLIPTICAL)	12.25 - 12.50	1.0000	1.0000
L42	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	12.25 - 12.50	1.0000	1.0000
L42	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	12.25 - 12.50	1.0000	1.0000
L42	16	LCF158-50JL(1-5/8)	12.25 - 12.50	1.0000	1.0000
L42	25	6.875" x 1.25" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	26	6.875" x 1.25" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	27	6.875" x 1.25" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	41	4" x 1" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	42	4" x 1" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L42	43	4" x 1" Flat Plate (G)	12.25 - 12.50	1.0000	1.0000
L43	2	Safety Line 5/8	10.75 - 12.25	1.0000	1.0000
L43	4	7983A(ELLIPTICAL)	10.75 - 12.25	1.0000	1.0000
L43	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	10.75 - 12.25	1.0000	1.0000
L43	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	10.75 - 12.25	1.0000	1.0000
L43	16	LCF158-50JL(1-5/8)	10.75 - 12.25	1.0000	1.0000
L43	22	6.875" x 1.25" Flat Plate (G)	10.75 - 12.00	1.0000	1.0000
L43	23	6.875" x 1.25" Flat Plate (G)	10.75 - 12.00	1.0000	1.0000
L43	25	6.875" x 1.25" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	26	6.875" x 1.25" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	27	6.875" x 1.25" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	41	4" x 1" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	42	4" x 1" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L43	43	4" x 1" Flat Plate (G)	10.75 - 12.25	1.0000	1.0000
L44	2	Safety Line 5/8	10.50 - 10.75	1.0000	1.0000
L44	4	7983A(ELLIPTICAL)	10.50 - 10.75	1.0000	1.0000
L44	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	10.50 - 10.75	1.0000	1.0000
L44	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	10.50 - 10.75	1.0000	1.0000
L44	16	LCF158-50JL(1-5/8)	10.50 - 10.75	1.0000	1.0000
L44	22	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L44	23	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L44	25	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L44	26	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	27	6.875" x 1.25" Flat Plate (G)	10.50 - 10.75	1.0000	1.0000
L45	2	Safety Line 5/8	5.50 - 10.50	1.0000	1.0000
L45	4	7983A(ELLIPTICAL)	5.50 - 10.50	1.0000	1.0000
L45	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	5.50 - 10.50	1.0000	1.0000
L45	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	5.50 - 10.50	1.0000	1.0000
L45	16	LCF158-50JL(1-5/8)	5.50 - 10.50	1.0000	1.0000
L45	22	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L45	23	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L45	25	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L45	26	6.875" x 1.25" Flat Plate (G)	5.50 - 10.50	1.0000	1.0000
L45	27	6.875" x 1.25" Flat Plate (G)	7.25 - 10.50	1.0000	1.0000
L46	2	Safety Line 5/8	0.50 - 5.50	1.0000	1.0000
L46	4	7983A(ELLIPTICAL)	0.50 - 5.50	1.0000	1.0000
L46	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	0.50 - 5.50	1.0000	1.0000
L46	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	0.50 - 5.50	1.0000	1.0000
L46	16	LCF158-50JL(1-5/8)	0.50 - 5.50	1.0000	1.0000
L46	22	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L46	23	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L46	25	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L46	26	6.875" x 1.25" Flat Plate (G)	0.50 - 5.50	1.0000	1.0000
L47	2	Safety Line 5/8	0.00 - 0.50	1.0000	1.0000
L47	4	7983A(ELLIPTICAL)	0.00 - 0.50	1.0000	1.0000
L47	12	MLC HYBRID 6x12 6AWGx6(1-1/2)	0.00 - 0.50	1.0000	1.0000
L47	14	MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	0.00 - 0.50	1.0000	1.0000
L47	16	LCF158-50JL(1-5/8)	0.00 - 0.50	1.0000	1.0000
L47	22	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000
L47	23	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000
L47	25	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000
L47	26	6.875" x 1.25" Flat Plate (G)	0.00 - 0.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft	ft^2	ft^2	K

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
Lightning Rod 5/8x4'	C	From Leg	0.00 0.00 2.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	0.03 0.03 0.04
Level 133 Platform Mount [LP 602-1]	C	None		0.0000	133.00	No Ice 1/2" Ice 1" Ice	32.03 38.71 45.39	32.03 38.71 45.39	1.34 1.80 2.26
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
(6) ACU-A20-N	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	0.00 0.00 0.00
(3) ACU-A20-N	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	0.00 0.00 0.00
(3) ACU-A20-N	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	0.00 0.00 0.00
(2) 800MHZ RRH	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
800MHZ RRH	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10

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) IBC1900HB-2	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.13 1.27 1.42	0.71 0.84 0.97	0.04 0.05 0.06
IBC1900HB-2	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.13 1.27 1.42	0.71 0.84 0.97	0.04 0.05 0.06
IBC1900HB-2	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.13 1.27 1.42	0.71 0.84 0.97	0.04 0.05 0.06
(4) 1900MHz RRH (65MHz)	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	0.06 0.08 0.11
(2) 1900MHz RRH (65MHz)	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	0.06 0.08 0.11
(2) 800 EXTERNAL NOTCH FILTER	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	0.01 0.02 0.02
TD-RRH8x20-25	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
PD2DE-700/2700	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.11 0.18 0.25	0.11 0.18 0.25	0.00 0.00 0.00
PD2DE-700/2700	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	0.11 0.18 0.25	0.11 0.18 0.25	0.00 0.00 0.00
Level 110 Platform Mount [LP 602-1]	C	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice	32.03 38.71 45.39	32.03 38.71 45.39	1.34 1.80 2.26
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	8.62 9.28 9.91	7.30 8.58 9.72	0.07 0.14 0.22
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	8.62 9.28 9.91	7.30 8.58 9.72	0.07 0.14 0.22
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	8.62 9.28 9.91	7.30 8.58 9.72	0.07 0.14 0.22

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
BXA-70063/6CF-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.40 6.55 7.41	0.04 0.10 0.17
BXA-70063/6CF-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.40 6.55 7.41	0.04 0.10 0.17
BXA-70063/6CF-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.40 6.55 7.41	0.04 0.10 0.17
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	4.95 5.32 5.71	3.42 4.02 4.64	0.03 0.07 0.12
BXA-80063/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	4.95 5.32 5.71	3.42 4.02 4.64	0.03 0.07 0.12
BXA-80063/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	4.95 5.32 5.71	3.42 4.02 4.64	0.03 0.07 0.12
BULLET III	C	From Leg	4.00 0.00 3.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.14	0.07 0.10 0.14	0.00 0.00 0.00
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
RRH4X45-AWS4 B66	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
RRH4X45-AWS4 B66	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
RRH4X45-AWS4 B66	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	0.06 0.08 0.11
RRH2X60-PCS	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
(2) CBC78-DF	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.39 0.47 0.56	0.17 0.23 0.30	0.01 0.01 0.01
(2) CBC78-DF	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.39 0.47 0.56	0.17 0.23 0.30	0.01 0.01 0.01
(2) CBC78-DF	C	From Leg	4.00	0.0000	110.00	No Ice	0.39	0.17	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*
			0.00			1/2"	0.47	0.23	0.01
			0.00			Ice	0.56	0.30	0.01
						1" Ice			
Level 100									
Platform Mount [LP 303-1]	C	None		0.0000	100.00	No Ice	14.66	14.66	1.25
						1/2"	18.87	18.87	1.48
						Ice	23.08	23.08	1.71
						1" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			0.00			Ice	7.65	7.58	0.28
						1" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			0.00			Ice	7.65	7.58	0.28
						1" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			0.00			Ice	7.65	7.58	0.28
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	11.45	9.36	0.08
			0.00			1/2"	12.06	10.68	0.16
			0.00			Ice	12.69	11.71	0.25
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	11.45	9.36	0.08
			0.00			1/2"	12.06	10.68	0.16
			0.00			Ice	12.69	11.71	0.25
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	11.45	9.36	0.08
			0.00			1/2"	12.06	10.68	0.16
			0.00			Ice	12.69	11.71	0.25
						1" Ice			
AIR 21 B2A/B4P w/ Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	6.16	5.55	0.10
			0.00			1/2"	6.60	6.30	0.16
			0.00			Ice	7.03	7.00	0.22
						1" Ice			
AIR 21 B2A/B4P w/ Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	6.16	5.55	0.10
			0.00			1/2"	6.60	6.30	0.16
			0.00			Ice	7.03	7.00	0.22
						1" Ice			
AIR 21 B2A/B4P w/ Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	6.16	5.55	0.10
			0.00			1/2"	6.60	6.30	0.16
			0.00			Ice	7.03	7.00	0.22
						1" Ice			
ATMAA1412D-1A20	A	From Leg	4.00	0.0000	100.00	No Ice	1.00	0.41	0.01
			0.00			1/2"	1.13	0.50	0.02
			0.00			Ice	1.26	0.59	0.03
						1" Ice			
ATMAA1412D-1A20	B	From Leg	4.00	0.0000	100.00	No Ice	1.00	0.41	0.01
			0.00			1/2"	1.13	0.50	0.02
			0.00			Ice	1.26	0.59	0.03
						1" Ice			
ATMAA1412D-1A20	C	From Leg	4.00	0.0000	100.00	No Ice	1.00	0.41	0.01
			0.00			1/2"	1.13	0.50	0.02
			0.00			Ice	1.26	0.59	0.03
						1" Ice			
RRUS 11 B12	A	From Leg	4.00	0.0000	100.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			0.00			Ice	3.26	1.48	0.10
						1" Ice			
RRUS 11 B12	B	From Leg	4.00	0.0000	100.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			0.00			Ice	3.26	1.48	0.10
						1" Ice			
RRUS 11 B12	C	From Leg	4.00	0.0000	100.00	No Ice	2.83	1.18	0.05

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
			0.00 0.00			1/2" Ice 1" Ice	3.04 3.26	1.33 1.48	0.07 0.10
Level 90									
Pipe Mount [PM 601-3]	C	None		0.0000	90.00	No Ice 1/2" Ice 1" Ice	4.39 5.48 6.57	4.39 5.48 6.57	0.20 0.24 0.28
APXV18-206517S-C	A	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	5.17 5.62 6.08	3.04 3.47 3.91	0.03 0.05 0.09
APXV18-206517S-C	B	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	5.17 5.62 6.08	3.04 3.47 3.91	0.03 0.05 0.09
APXV18-206517S-C	C	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	5.17 5.62 6.08	3.04 3.47 3.91	0.03 0.05 0.09
Level 50									
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
KS24019-L112A	C	From Leg	3.00 0.00 1.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26	0.14 0.20 0.26	0.01 0.01 0.01

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
* 133' *											
VHLP2-23	A	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.03 0.05 0.07
VHLP2-23	B	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	-30.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.03 0.05 0.07
VHLP2-18	C	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 2.00	-60.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.03 0.05 0.07
***											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice

Comb. No.	Description
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	133 - 128	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-9.59	-2.11	6.02
			Max. Mx	8	-3.25	-24.55	1.81
			Max. My	2	-3.21	-0.84	26.94
			Max. Vy	20	-5.74	23.15	1.90
			Max. Vx	2	-5.90	-0.84	26.94
			Max. Torque	20			-3.14
L2	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.04	-2.14	6.20
			Max. Mx	8	-3.45	-53.76	1.82
			Max. My	2	-3.40	-0.90	57.16
			Max. Vy	20	-6.02	52.55	2.01
			Max. Vx	2	-6.19	-0.90	57.16
			Max. Torque	20			-3.14

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.51	-2.17	6.35
			Max. Mx	8	-3.67	-84.40	1.81
			Max. My	2	-3.63	-0.95	88.81
			Max. Vy	20	-6.32	83.39	2.11
			Max. Vx	2	-6.48	-0.95	88.81
			Max. Torque	20			-3.14
L4	118 - 113	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.00	-2.18	6.49
			Max. Mx	8	-3.91	-116.52	1.80
			Max. My	2	-3.87	-1.00	121.94
			Max. Vy	20	-6.62	115.71	2.20
			Max. Vx	2	-6.78	-1.00	121.94
			Max. Torque	20			-3.13
L5	113 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.62	-2.16	7.53
			Max. Mx	8	-6.68	-159.57	1.98
			Max. My	2	-6.63	-1.05	166.43
			Max. Vy	20	-11.63	158.97	2.49
			Max. Vx	2	-11.89	-1.05	166.43
			Max. Torque	20			-3.46
L6	108 - 104.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.06	-2.17	7.63
			Max. Mx	8	-6.94	-197.52	1.97
			Max. My	2	-6.89	-1.08	205.35
			Max. Vy	20	-11.82	197.05	2.54
			Max. Vx	2	-12.08	-1.08	205.35
			Max. Torque	20			-3.46
L7	104.75 - 104.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.11	-2.17	7.64
			Max. Mx	8	-6.98	-200.47	1.97
			Max. My	2	-6.93	-1.08	208.37
			Max. Vy	20	-11.83	200.00	2.55
			Max. Vx	2	-12.09	-1.08	208.37
			Max. Torque	20			-3.45
L8	104.5 - 99.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.56	-2.18	7.78
			Max. Mx	8	-10.24	-261.91	1.95
			Max. My	2	-10.18	-1.13	271.30
			Max. Vy	20	-15.41	261.65	2.63
			Max. Vx	2	-15.68	-1.13	271.30
			Max. Torque	20			-3.45
L9	99.5 - 98.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.76	-2.18	7.79
			Max. Mx	8	-10.34	-273.46	1.95
			Max. My	2	-10.28	-1.14	283.08
			Max. Vy	20	-15.49	273.24	2.64
			Max. Vx	2	-15.75	-1.14	283.08
			Max. Torque	20			-3.45
L10	98.75 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.84	-2.18	7.80
			Max. Mx	8	-10.39	-277.33	1.95
			Max. My	2	-10.33	-1.14	287.02
			Max. Vy	20	-15.52	277.11	2.65
			Max. Vx	2	-15.78	-1.14	287.02
			Max. Torque	20			-3.45
L11	98.5 - 91.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.98	-2.16	7.86
			Max. Mx	8	-11.02	-332.16	1.93
			Max. My	2	-10.97	-1.17	342.93
			Max. Vy	20	-15.91	332.10	2.70
			Max. Vx	2	-16.18	-1.17	342.93
			Max. Torque	20			-3.45
L12	91.33 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.45	-2.14	7.95
			Max. Mx	20	-12.59	413.24	2.78
			Max. My	2	-12.54	-1.22	425.41
			Max. Vy	20	-16.52	413.24	2.78

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-16.81	-1.22	425.41
			Max. Torque	20			-3.45
L13	90 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.53	-2.13	7.97
			Max. Mx	20	-13.05	426.07	2.80
			Max. My	2	-13.00	-1.23	438.48
			Max. Vy	20	-17.16	426.07	2.80
			Max. Vx	2	-17.48	-1.23	438.48
			Max. Torque	20			-3.45
L14	89.25 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.63	-2.13	7.98
			Max. Mx	20	-13.11	430.37	2.80
			Max. My	2	-13.06	-1.23	442.85
			Max. Vy	20	-17.17	430.37	2.80
			Max. Vx	2	-17.50	-1.23	442.85
			Max. Torque	20			-3.45
L15	89 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.92	-2.12	7.99
			Max. Mx	20	-13.29	443.27	2.81
			Max. My	2	-13.24	-1.23	456.00
			Max. Vy	20	-17.24	443.27	2.81
			Max. Vx	2	-17.57	-1.23	456.00
			Max. Torque	20			-3.45
L16	88.25 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.00	-2.11	8.00
			Max. Mx	20	-13.34	447.58	2.82
			Max. My	2	-13.29	-1.24	460.39
			Max. Vy	20	-17.25	447.58	2.82
			Max. Vx	2	-17.59	-1.24	460.39
			Max. Torque	20			-3.45
L17	88 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.60	-2.03	8.10
			Max. Mx	20	-14.32	534.77	2.90
			Max. My	2	-14.28	-1.27	549.27
			Max. Vy	20	-17.63	534.77	2.90
			Max. Vx	2	-17.97	-1.27	549.27
			Max. Torque	20			-3.45
L18	83 - 78	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.19	-1.93	8.19
			Max. Mx	20	-15.34	623.80	2.97
			Max. My	2	-15.29	-1.31	640.01
			Max. Vy	20	-18.00	623.80	2.97
			Max. Vx	2	-18.34	-1.31	640.01
			Max. Torque	20			-3.45
L19	78 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.54	-1.92	8.21
			Max. Mx	20	-15.54	641.83	2.98
			Max. My	2	-15.50	-1.32	658.39
			Max. Vy	20	-18.07	641.83	2.98
			Max. Vx	2	-18.42	-1.32	658.39
			Max. Torque	20			-3.45
L20	77 - 76.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.64	-1.91	8.22
			Max. Mx	20	-15.61	646.34	2.99
			Max. My	2	-15.57	-1.32	663.00
			Max. Vy	20	-18.08	646.34	2.99
			Max. Vx	2	-18.44	-1.32	663.00
			Max. Torque	20			-3.45
L21	76.75 - 71.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.63	-1.82	8.31
			Max. Mx	20	-16.87	737.76	3.06
			Max. My	2	-16.83	-1.35	756.26
			Max. Vy	20	-18.49	737.76	3.06
			Max. Vx	2	-18.88	-1.35	756.26
			Max. Torque	20			-3.45
L22	71.75 - 66.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.64	-1.72	8.39

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-18.15	831.14	3.13
			Max. My	2	-18.11	-1.39	851.65
			Max. Vy	20	-18.88	831.14	3.13
			Max. Vx	2	-19.30	-1.39	851.65
			Max. Torque	20			-3.45
L23	66.75 - 61.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.69	-1.62	8.48
			Max. Mx	20	-19.46	926.48	3.19
			Max. My	2	-19.42	-1.42	949.13
			Max. Vy	20	-19.27	926.48	3.19
			Max. Vx	2	-19.71	-1.42	949.13
			Max. Torque	20			-3.45
L24	61.75 - 60.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.24	-1.60	8.50
			Max. Mx	20	-19.79	950.62	3.21
			Max. My	2	-19.75	-1.43	973.82
			Max. Vy	20	-19.37	950.62	3.21
			Max. Vx	2	-19.81	-1.43	973.82
			Max. Torque	20			-3.44
L25	60.5 - 60.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.35	-1.59	8.50
			Max. Mx	20	-19.87	955.47	3.21
			Max. My	2	-19.83	-1.43	978.77
			Max. Vy	20	-19.38	955.47	3.21
			Max. Vx	2	-19.83	-1.43	978.77
			Max. Torque	20			-3.44
L26	60.25 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.68	-1.58	8.51
			Max. Mx	20	-20.06	970.02	3.22
			Max. My	2	-20.02	-1.43	993.66
			Max. Vy	20	-19.44	970.02	3.22
			Max. Vx	2	-19.89	-1.43	993.66
			Max. Torque	20			-3.44
L27	59.5 - 59.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.80	-1.57	8.52
			Max. Mx	20	-20.14	974.88	3.23
			Max. My	2	-20.10	-1.44	998.64
			Max. Vy	20	-19.47	974.88	3.23
			Max. Vx	2	-19.92	-1.44	998.64
			Max. Torque	20			-3.44
L28	59.25 - 54.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.08	-1.46	8.58
			Max. Mx	20	-21.54	1073.90	3.29
			Max. My	2	-21.50	-1.47	1099.81
			Max. Vy	20	-20.14	1073.90	3.29
			Max. Vx	2	-20.56	-1.47	1099.81
			Max. Torque	20			-3.45
L29	54.25 - 45.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.01	-1.35	8.63
			Max. Mx	20	-22.75	1160.65	3.34
			Max. My	2	-22.72	-1.49	1188.25
			Max. Vy	20	-20.69	1160.65	3.34
			Max. Vx	2	-21.08	-1.49	1188.25
			Max. Torque	20			-3.45
L30	45.25 - 45	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.04	-0.89	8.49
			Max. Mx	20	-25.55	1266.39	3.35
			Max. My	2	-25.52	-1.26	1295.57
			Max. Vy	20	-21.48	1266.39	3.35
			Max. Vx	2	-21.85	-1.26	1295.57
			Max. Torque	20			-3.37
L31	45 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.47	-0.76	8.56
			Max. Mx	20	-27.13	1375.34	3.46
			Max. My	2	-27.10	-1.24	1406.26
			Max. Vy	20	-22.11	1375.34	3.46

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-22.45	-1.24	1406.26
			Max. Torque	20			-3.37
L32	40 - 39	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.96	-0.72	8.58
			Max. Mx	20	-27.45	1397.51	3.49
			Max. My	2	-27.42	-1.23	1428.75
			Max. Vy	20	-22.24	1397.51	3.49
			Max. Vx	2	-22.56	-1.23	1428.75
			Max. Torque	20			-3.38
L33	39 - 38.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.09	-0.71	8.59
			Max. Mx	20	-27.54	1403.07	3.49
			Max. My	2	-27.52	-1.23	1434.39
			Max. Vy	20	-22.26	1403.07	3.49
			Max. Vx	2	-22.58	-1.23	1434.39
			Max. Torque	20			-3.38
L34	38.75 - 34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.56	-0.54	8.67
			Max. Mx	20	-29.14	1510.22	3.60
			Max. My	2	-29.12	-1.20	1542.94
			Max. Vy	20	-22.86	1510.22	3.60
			Max. Vx	2	-23.14	-1.20	1542.94
			Max. Torque	20			-3.40
L35	34 - 33.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.69	-0.53	8.68
			Max. Mx	20	-29.23	1515.94	3.61
			Max. My	2	-29.21	-1.20	1548.73
			Max. Vy	20	-22.88	1515.94	3.61
			Max. Vx	2	-23.16	-1.20	1548.73
			Max. Torque	20			-3.40
L36	33.75 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.70	-0.38	8.72
			Max. Mx	20	-30.54	1608.39	3.70
			Max. My	2	-30.53	-1.18	1642.24
			Max. Vy	20	-23.35	1608.39	3.70
			Max. Vx	2	-23.61	-1.18	1642.24
			Max. Torque	20			-3.40
L37	29.75 - 29.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.82	-0.37	8.72
			Max. Mx	20	-30.63	1614.23	3.70
			Max. My	2	-30.62	-1.17	1648.14
			Max. Vy	20	-23.37	1614.23	3.70
			Max. Vx	2	-23.63	-1.17	1648.14
			Max. Torque	20			-3.40
L38	29.5 - 24.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.32	-0.18	8.75
			Max. Mx	20	-32.31	1732.48	3.81
			Max. My	2	-32.30	-1.14	1767.67
			Max. Vy	20	-23.94	1732.48	3.81
			Max. Vx	2	-24.20	-1.14	1767.67
			Max. Torque	20			-3.40
L39	24.5 - 19.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.82	0.00	8.76
			Max. Mx	20	-34.03	1853.52	3.92
			Max. My	2	-34.02	-1.11	1889.96
			Max. Vy	20	-24.50	1853.52	3.92
			Max. Vx	2	-24.75	-1.11	1889.96
			Max. Torque	20			-3.41
L40	19.5 - 14.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.32	0.19	8.77
			Max. Mx	20	-35.77	1977.36	4.03
			Max. My	2	-35.76	-1.08	2015.04
			Max. Vy	20	-25.06	1977.36	4.03
			Max. Vx	2	-25.31	-1.08	2015.04
			Max. Torque	20			-3.41
L41	14.5 - 12.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.32	0.26	8.78
			Max. Mx	20	-36.47	2027.68	4.07

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-36.46	-1.06	2065.85
			Max. Vy	20	-25.28	2027.68	4.07
			Max. Vx	2	-25.53	-1.06	2065.85
			Max. Torque	20			-3.42
L42	12.5 - 12.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.44	0.27	8.78
			Max. Mx	20	-36.56	2034.00	4.07
			Max. My	2	-36.55	-1.06	2072.23
			Max. Vy	20	-25.30	2034.00	4.07
			Max. Vx	2	-25.55	-1.06	2072.23
			Max. Torque	20			-3.42
L43	12.25 - 10.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.16	0.38	8.75
			Max. Mx	20	-37.00	2072.09	4.11
			Max. My	2	-37.00	-1.05	2110.68
			Max. Vy	20	-25.51	2072.09	4.11
			Max. Vx	2	-25.75	-1.05	2110.68
			Max. Torque	20			-3.42
L44	10.75 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.28	0.39	8.75
			Max. Mx	20	-37.10	2078.47	4.11
			Max. My	2	-37.10	-1.05	2117.12
			Max. Vy	20	-25.53	2078.47	4.11
			Max. Vx	2	-25.76	-1.05	2117.12
			Max. Torque	20			-3.40
L45	10.5 - 5.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.72	0.67	8.68
			Max. Mx	20	-38.81	2207.68	4.21
			Max. My	2	-38.81	-1.01	2247.37
			Max. Vy	20	-26.17	2207.68	4.21
			Max. Vx	2	-26.37	-1.01	2247.37
			Max. Torque	20			-3.40
L46	5.5 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.05	0.86	8.69
			Max. Mx	20	-40.55	2339.94	4.31
			Max. My	2	-40.55	-0.98	2380.63
			Max. Vy	20	-26.76	2339.94	4.31
			Max. Vx	2	-26.97	-0.98	2380.63
			Max. Torque	20			-3.38
L47	0.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.26	0.88	8.69
			Max. Mx	20	-40.74	2353.33	4.32
			Max. My	2	-40.74	-0.98	2394.12
			Max. Vy	20	-26.81	2353.33	4.32
			Max. Vx	2	-27.02	-0.98	2394.12
			Max. Torque	20			-3.38

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	74.26	-0.00	0.00
	Max. H_x	21	30.56	26.80	0.02
	Max. H_z	2	40.74	0.00	27.01
	Max. M_x	2	2394.12	0.00	27.01
	Max. M_z	8	2348.54	-26.76	-0.02
	Max. Torsion	8	3.33	-26.76	-0.02
	Min. Vert	25	30.56	12.98	22.65
	Min. H_x	9	30.56	-26.76	-0.02
	Min. H_z	14	40.74	-0.04	-27.01
	Min. M_x	14	-2389.33	-0.04	-27.01
	Min. M_z	20	-2353.33	26.80	0.02
	Min. Torsion	20	-3.38	26.80	0.02

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K

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	33.95	0.00	-0.00	-1.92	-0.33	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	40.74	-0.00	-27.01	-2394.12	-0.98	0.12
0.9 Dead+1.6 Wind 0 deg - No Ice	30.56	-0.00	-27.01	-2367.78	-0.85	0.09
1.2 Dead+1.6 Wind 30 deg - No Ice	40.74	13.22	-23.19	-2055.31	-1164.03	-1.66
0.9 Dead+1.6 Wind 30 deg - No Ice	30.56	13.22	-23.19	-2032.61	-1151.44	-1.65
1.2 Dead+1.6 Wind 60 deg - No Ice	40.74	22.88	-13.43	-1199.56	-2023.26	-3.19
0.9 Dead+1.6 Wind 60 deg - No Ice	30.56	22.88	-13.43	-1186.00	-2001.43	-3.14
1.2 Dead+1.6 Wind 90 deg - No Ice	40.74	26.76	0.02	-0.43	-2348.54	-3.33
0.9 Dead+1.6 Wind 90 deg - No Ice	30.56	26.76	0.02	0.19	-2323.28	-3.26
1.2 Dead+1.6 Wind 120 deg - No Ice	40.74	23.96	14.07	1236.93	-2092.32	-2.62
0.9 Dead+1.6 Wind 120 deg - No Ice	30.56	23.96	14.07	1224.32	-2069.96	-2.55
1.2 Dead+1.6 Wind 150 deg - No Ice	40.74	12.94	22.67	2032.73	-1155.98	-1.76
0.9 Dead+1.6 Wind 150 deg - No Ice	30.56	12.94	22.67	2011.38	-1143.42	-1.71
1.2 Dead+1.6 Wind 180 deg - No Ice	40.74	0.04	27.01	2389.33	-4.87	-0.19
0.9 Dead+1.6 Wind 180 deg - No Ice	30.56	0.04	27.01	2364.28	-4.70	-0.17
1.2 Dead+1.6 Wind 210 deg - No Ice	40.74	-13.25	23.18	2048.91	1168.55	1.47
0.9 Dead+1.6 Wind 210 deg - No Ice	30.56	-13.25	23.18	2027.52	1156.13	1.46
1.2 Dead+1.6 Wind 240 deg - No Ice	40.74	-22.92	13.44	1196.13	2028.21	2.74
0.9 Dead+1.6 Wind 240 deg - No Ice	30.56	-22.92	13.44	1183.84	2006.54	2.70
1.2 Dead+1.6 Wind 270 deg - No Ice	40.74	-26.80	-0.02	-4.32	2353.33	3.38
0.9 Dead+1.6 Wind 270 deg - No Ice	30.56	-26.80	-0.02	-3.66	2328.22	3.31
1.2 Dead+1.6 Wind 300 deg - No Ice	40.74	-24.00	-14.08	-1243.02	2097.30	2.59
0.9 Dead+1.6 Wind 300 deg - No Ice	30.56	-24.00	-14.08	-1229.12	2075.09	2.52
1.2 Dead+1.6 Wind 330 deg - No Ice	40.74	-12.98	-22.65	-2035.89	1160.53	1.46
0.9 Dead+1.6 Wind 330 deg - No Ice	30.56	-12.98	-22.65	-2013.28	1148.13	1.41
1.2 Dead+1.0 Ice+1.0 Temp	74.26	0.00	-0.00	-8.69	0.88	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	74.26	-0.00	-6.26	-619.07	0.86	0.03
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	74.26	3.11	-5.45	-538.81	-301.15	-0.48
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	74.26	5.39	-3.15	-317.59	-524.31	-0.89
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	74.26	6.59	0.01	-8.23	-630.13	-0.97
1.2 Dead+1.0 Wind 120	74.26	5.58	3.27	307.14	-535.52	-0.77

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	74.26	3.03	5.28	510.22	-295.39	-0.50
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	74.26	0.01	6.26	601.52	-0.22	-0.04
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	74.26	-3.12	5.44	520.90	304.13	0.44
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	74.26	-5.40	3.15	300.35	527.39	0.80
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	74.26	-6.60	-0.01	-9.31	633.18	0.98
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	74.26	-5.59	-3.27	-324.99	538.61	0.76
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	74.26	-3.03	-5.28	-527.41	298.38	0.44
Dead+Wind 0 deg - Service	33.95	-0.00	-5.78	-510.72	-0.46	0.14
Dead+Wind 30 deg - Service	33.95	2.83	-4.96	-438.64	-247.85	-0.26
Dead+Wind 60 deg - Service	33.95	4.90	-2.87	-256.61	-430.60	-0.62
Dead+Wind 90 deg - Service	33.95	5.73	0.00	-1.56	-499.79	-0.71
Dead+Wind 120 deg - Service	33.95	5.13	3.01	261.64	-445.34	-0.62
Dead+Wind 150 deg - Service	33.95	2.77	4.85	430.88	-246.13	-0.45
Dead+Wind 180 deg - Service	33.95	0.01	5.78	506.76	-1.29	-0.15
Dead+Wind 210 deg - Service	33.95	-2.84	4.96	434.34	248.30	0.22
Dead+Wind 240 deg - Service	33.95	-4.90	2.88	252.94	431.15	0.53
Dead+Wind 270 deg - Service	33.95	-5.73	-0.00	-2.39	500.30	0.72
Dead+Wind 300 deg - Service	33.95	-5.13	-3.01	-265.89	445.89	0.61
Dead+Wind 330 deg - Service	33.95	-2.78	-4.85	-434.50	246.59	0.38

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-33.95	0.00	-0.00	33.95	0.00	0.000%
2	-0.00	-40.74	-27.01	0.00	40.74	27.01	0.000%
3	-0.00	-30.56	-27.01	0.00	30.56	27.01	0.000%
4	13.22	-40.74	-23.19	-13.22	40.74	23.19	0.000%
5	13.22	-30.56	-23.19	-13.22	30.56	23.19	0.000%
6	22.88	-40.74	-13.43	-22.88	40.74	13.43	0.000%
7	22.88	-30.56	-13.43	-22.88	30.56	13.43	0.000%
8	26.76	-40.74	0.02	-26.76	40.74	-0.02	0.000%
9	26.76	-30.56	0.02	-26.76	30.56	-0.02	0.000%
10	23.96	-40.74	14.07	-23.96	40.74	-14.07	0.000%
11	23.96	-30.56	14.07	-23.96	30.56	-14.07	0.000%
12	12.94	-40.74	22.67	-12.94	40.74	-22.67	0.000%
13	12.94	-30.56	22.67	-12.94	30.56	-22.67	0.000%
14	0.04	-40.74	27.01	-0.04	40.74	-27.01	0.000%
15	0.04	-30.56	27.01	-0.04	30.56	-27.01	0.000%
16	-13.25	-40.74	23.18	13.25	40.74	-23.18	0.000%
17	-13.25	-30.56	23.18	13.25	30.56	-23.18	0.000%
18	-22.92	-40.74	13.44	22.92	40.74	-13.44	0.000%
19	-22.92	-30.56	13.44	22.92	30.56	-13.44	0.000%
20	-26.80	-40.74	-0.02	26.80	40.74	0.02	0.000%
21	-26.80	-30.56	-0.02	26.80	30.56	0.02	0.000%
22	-24.00	-40.74	-14.08	24.00	40.74	14.08	0.000%
23	-24.00	-30.56	-14.08	24.00	30.56	14.08	0.000%
24	-12.98	-40.74	-22.65	12.98	40.74	22.65	0.000%
25	-12.98	-30.56	-22.65	12.98	30.56	22.65	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
26	0.00	-74.26	0.00	-0.00	74.26	0.00	0.000%
27	-0.00	-74.26	-6.26	0.00	74.26	6.26	0.000%
28	3.11	-74.26	-5.45	-3.11	74.26	5.45	0.000%
29	5.39	-74.26	-3.15	-5.39	74.26	3.15	0.000%
30	6.59	-74.26	0.01	-6.59	74.26	-0.01	0.000%
31	5.58	-74.26	3.27	-5.58	74.26	-3.27	0.000%
32	3.03	-74.26	5.28	-3.03	74.26	-5.28	0.000%
33	0.01	-74.26	6.26	-0.01	74.26	-6.26	0.000%
34	-3.12	-74.26	5.44	3.12	74.26	-5.44	0.000%
35	-5.40	-74.26	3.15	5.40	74.26	-3.15	0.000%
36	-6.60	-74.26	-0.01	6.60	74.26	0.01	0.000%
37	-5.59	-74.26	-3.27	5.59	74.26	3.27	0.000%
38	-3.03	-74.26	-5.28	3.03	74.26	5.28	0.000%
39	-0.00	-33.95	-5.78	0.00	33.95	5.78	0.000%
40	2.83	-33.95	-4.96	-2.83	33.95	4.96	0.000%
41	4.90	-33.95	-2.87	-4.90	33.95	2.87	0.000%
42	5.73	-33.95	0.00	-5.73	33.95	-0.00	0.000%
43	5.13	-33.95	3.01	-5.13	33.95	-3.01	0.000%
44	2.77	-33.95	4.85	-2.77	33.95	-4.85	0.000%
45	0.01	-33.95	5.78	-0.01	33.95	-5.78	0.000%
46	-2.84	-33.95	4.96	2.84	33.95	-4.96	0.000%
47	-4.90	-33.95	2.88	4.90	33.95	-2.88	0.000%
48	-5.73	-33.95	-0.00	5.73	33.95	0.00	0.000%
49	-5.13	-33.95	-3.01	5.13	33.95	3.01	0.000%
50	-2.78	-33.95	-4.85	2.78	33.95	4.85	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000507
2	Yes	5	0.00000001	0.00043701
3	Yes	5	0.00000001	0.00019169
4	Yes	6	0.00000001	0.00063693
5	Yes	6	0.00000001	0.00020193
6	Yes	6	0.00000001	0.00072051
7	Yes	6	0.00000001	0.00023133
8	Yes	6	0.00000001	0.00010208
9	Yes	5	0.00000001	0.00093181
10	Yes	6	0.00000001	0.00064552
11	Yes	6	0.00000001	0.00020238
12	Yes	6	0.00000001	0.00069245
13	Yes	6	0.00000001	0.00022278
14	Yes	5	0.00000001	0.00053292
15	Yes	5	0.00000001	0.00023675
16	Yes	6	0.00000001	0.00067168
17	Yes	6	0.00000001	0.00021514
18	Yes	6	0.00000001	0.00062666
19	Yes	6	0.00000001	0.00019849
20	Yes	6	0.00000001	0.00010618
21	Yes	5	0.00000001	0.00096972
22	Yes	6	0.00000001	0.00074607
23	Yes	6	0.00000001	0.00023684
24	Yes	6	0.00000001	0.00062864
25	Yes	6	0.00000001	0.00019947
26	Yes	5	0.00000001	0.00034953
27	Yes	6	0.00000001	0.00097395
28	Yes	7	0.00000001	0.00014964
29	Yes	7	0.00000001	0.00015382
30	Yes	6	0.00000001	0.00097996
31	Yes	7	0.00000001	0.00014156
32	Yes	7	0.00000001	0.00013853
33	Yes	6	0.00000001	0.00089518
34	Yes	7	0.00000001	0.00013802
35	Yes	7	0.00000001	0.00013749

36	Yes	6	0.00000001	0.00096642
37	Yes	7	0.00000001	0.00015466
38	Yes	7	0.00000001	0.00014547
39	Yes	4	0.00000001	0.00071430
40	Yes	5	0.00000001	0.00015440
41	Yes	5	0.00000001	0.00021900
42	Yes	5	0.00000001	0.00010061
43	Yes	5	0.00000001	0.00015507
44	Yes	5	0.00000001	0.00019647
45	Yes	4	0.00000001	0.00073978
46	Yes	5	0.00000001	0.00017366
47	Yes	5	0.00000001	0.00014532
48	Yes	5	0.00000001	0.00010203
49	Yes	5	0.00000001	0.00022922
50	Yes	5	0.00000001	0.00014740

Compression Checks

Pole Design Data

Section No.	*Elevation*	*Size*	*L*	L_u	*Kl/r*	*A*	P_u	ϕP_n	*Ratio* $\frac{P_u}{\phi P_n}$
	ft		*ft*	*ft*		in^2	*K*	*K*	
L1	133 - 132	TP14.4795x13.48x0.1875	5.00	0.00	0.0	8.1460	-9.20	600.45	0.015
	132 - 131					8.2667	-9.28	609.34	0.015
	131 - 130					8.3874	-3.13	618.24	0.005
	130 - 129					8.5081	-3.17	627.13	0.005
	129 - 128					8.6288	-3.21	636.03	0.005
L2	128 - 127	TP15.479x14.4795x0.1875	5.00	0.00	0.0	8.7495	-3.24	644.93	0.005
	127 - 126					8.8702	-3.28	653.82	0.005
	126 - 125					8.9909	-3.32	662.72	0.005
	125 - 124					9.1116	-3.36	671.61	0.005
	124 - 123					9.2323	-3.40	680.51	0.005
L3	123 - 122	TP16.4786x15.479x0.1875	5.00	0.00	0.0	9.3530	-3.45	689.41	0.005
	122 - 121					9.4736	-3.49	698.30	0.005
	121 - 120					9.5943	-3.53	707.20	0.005
	120 - 119					9.7150	-3.58	716.10	0.005
	119 - 118					9.8357	-3.63	724.99	0.005
L4	118 - 117	TP17.4781x16.4786x0.1875	5.00	0.00	0.0	9.9564	-3.67	731.54	0.005
	117 - 116					10.0771	-3.72	737.58	0.005
	116 - 115					10.1978	-3.77	743.55	0.005
	115 - 114					10.3185	-3.82	749.46	0.005
	114 - 113					10.4392	-3.87	755.30	0.005
L5	113 - 112	TP18.4776x17.4781x0.1875	5.00	0.00	0.0	10.5599	-3.93	761.07	0.005
	112 - 111					10.6806	-3.99	766.77	0.005
	111 - 110					10.8013	-4.05	772.40	0.005
	110 - 109					10.9220	-6.56	777.97	0.008
	109 - 108					11.0426	-6.63	783.47	0.008
L6	108 - 106.917	TP19.1273x18.4776x0.1875	3.25	0.00	0.0	11.1734	-6.71	789.35	0.009
	106.917 - 105.833					11.3041	-6.80	795.16	0.009
	105.833 -					11.434	-6.89	800.88	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	104.75					9			
L7	104.75 - 104.5 (7)	TP19.1773x19.1273x0.425	0.25	0.00	0.0	25.6625	-6.93	1891.58	0.004
L8	104.5 - 103.5	TP20.1768x19.1773x0.4063	5.00	0.00	0.0	24.8163	-7.04	1829.21	0.004
	103.5 - 102.5					25.0778	-7.16	1848.49	0.004
	102.5 - 101.5					25.3393	-7.29	1867.76	0.004
	101.5 - 100.5					25.6008	-7.41	1887.04	0.004
	100.5 - 99.5					25.8623	-10.18	1906.31	0.005
L9	99.5 - 98.75 (9)	TP20.3267x20.1768x0.4063	0.75	0.00	0.0	26.0585	-10.28	1920.77	0.005
L10	98.75 - 98.5 (10)	TP20.3767x20.3267x0.675	0.25	0.00	0.0	42.8216	-10.33	3156.38	0.003
L11	98.5 - 97.3333	TP21.81x20.3767x0.6625	7.17	0.00	0.0	42.5528	-10.54	3136.57	0.003
	97.3333 - 96.1667					43.0503	-10.75	3173.24	0.003
	96.1667 - 95					43.5479	-10.97	3209.91	0.003
	95 - 91.33					45.1129	-5.99	3325.27	0.002
L12	95 - 91.33	TP21.7002x20.7014x0.7125	5.00	0.00	0.0	47.5415	-6.27	3504.28	0.002
	91.33 - 90					48.1511	-12.54	3549.21	0.004
L13	90 - 89.25 (13)	TP21.85x21.7002x0.7	0.75	0.00	0.0	47.6722	-13.00	3513.92	0.004
L14	89.25 - 89 (14)	TP21.9x21.85x0.85	0.25	0.00	0.0	57.6138	-13.06	4246.71	0.003
L15	89 - 88.25 (15)	TP22.0498x21.9x0.8375	0.75	0.00	0.0	57.2043	-13.24	4216.53	0.003
L16	88.25 - 88 (16)	TP22.0998x22.0498x0.6125	0.25	0.00	0.0	42.3782	-13.29	3123.70	0.004
L17	88 - 87	TP23.0986x22.0998x0.5875	5.00	0.00	0.0	41.0737	-13.48	3027.54	0.004
	87 - 86					41.4516	-13.68	3055.40	0.004
	86 - 85					41.8296	-13.87	3083.26	0.004
	85 - 84					42.2075	-14.07	3111.11	0.005
	84 - 83					42.5854	-14.28	3138.97	0.005
L18	83 - 82	TP24.0975x23.0986x0.575	5.00	0.00	0.0	42.0723	-14.48	3101.15	0.005
	82 - 81					42.4422	-14.68	3128.42	0.005
	81 - 80					42.8121	-14.88	3155.68	0.005
	80 - 79					43.1820	-15.09	3182.94	0.005
	79 - 78					43.5519	-15.29	3210.21	0.005
L19	78 - 77 (19)	TP24.2972x24.0975x0.575	1.00	0.00	0.0	43.9217	-15.50	3237.47	0.005
L20	77 - 76.75 (20)	TP24.3472x24.2972x0.7625	0.25	0.00	0.0	57.9063	-15.57	4268.27	0.004
L21	76.75 - 75.75	TP25.346x24.3472x0.7375	5.00	0.00	0.0	56.5415	-15.81	4167.68	0.004
	75.75 - 74.75					57.0159	-16.06	4202.64	0.004
	74.75 - 73.75					57.4903	-16.32	4237.61	0.004
	73.75 - 72.75					57.9647	-16.57	4272.58	0.004

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	72.75 - 71.75					58.4391	-16.83	4307.55	0.004
L22	71.75 - 70.75	TP26.3449x25.346x0.7125	5.00	0.00	0.0	56.9738	-17.08	4199.54	0.004
	70.75 - 69.75					57.4322	-17.33	4233.33	0.004
	69.75 - 68.75					57.8905	-17.59	4267.11	0.004
	68.75 - 67.75					58.3488	-17.85	4300.89	0.004
	67.75 - 66.75					58.8071	-18.11	4334.68	0.004
L23	66.75 - 65.75	TP27.3438x26.3449x0.6875	5.00	0.00	0.0	57.2413	-18.37	4219.26	0.004
	65.75 - 64.75					57.6836	-18.63	4251.86	0.004
	64.75 - 63.75					58.1258	-18.89	4284.45	0.004
	63.75 - 62.75					58.5681	-19.12	4317.05	0.004
	62.75 - 61.75					59.0103	-19.38	4349.65	0.004
L24	61.75 - 60.5 (24)	TP27.5935x27.3438x0.6875	1.25	0.00	0.0	59.5631	-19.71	4390.40	0.004
L25	60.5 - 60.25 (25)	TP27.6434x27.5935x0.6875	0.25	0.00	0.0	59.6737	-19.79	4398.55	0.004
L26	60.25 - 59.5 (26)	TP27.7933x27.6434x0.6875	0.75	0.00	0.0	60.0054	-19.99	4423.00	0.005
L27	59.5 - 59.25 (27)	TP27.8432x27.7933x0.75	0.25	0.00	0.0	65.4301	-20.06	4822.85	0.004
L28	59.25 - 58.25	TP28.8421x27.8432x0.725	5.00	0.00	0.0	63.7738	-20.33	4700.77	0.004
	58.25 - 57.25					64.2402	-20.61	4735.14	0.004
	57.25 - 56.25					64.7065	-20.89	4769.52	0.004
	56.25 - 55.25					65.1729	-21.18	4803.89	0.004
	55.25 - 54.25					65.6393	-21.46	4838.27	0.004
L29	54.25 - 53.1875	TP30.64x28.8421x0.7	9.00	0.00	0.0	63.9106	-21.77	4710.85	0.005
	53.1875 - 52.125					64.3890	-22.07	4746.12	0.005
	52.125 - 51.0625					64.8675	-22.38	4781.38	0.005
	51.0625 - 50					65.3459	-22.68	4816.65	0.005
	50 - 45.25					67.4848	-12.30	4974.30	0.002
L30	50 - 45.25	TP30.192x29.1911x0.7625	5.00	0.00	0.0	72.1339	-13.08	5316.99	0.002
	45.25 - 45					72.2567	-25.49	5326.04	0.005
L31	45 - 44	TP31.1929x30.192x0.75	5.00	0.00	0.0	71.5858	-25.79	5276.59	0.005
	44 - 43					72.0692	-26.11	5312.22	0.005
	43 - 42					72.5527	-26.43	5347.86	0.005
	42 - 41					73.0361	-26.75	5383.49	0.005
	41 - 40					73.5195	-27.07	5419.12	0.005
L32	40 - 39 (32)	TP31.393x31.1929x0.7375	1.00	0.00	0.0	72.7993	-27.39	5366.03	0.005
L33	39 - 38.75 (33)	TP31.4431x31.393x0.7375	0.25	0.00	0.0	72.9181	-27.48	5374.79	0.005
L34	38.75 -	TP32.3939x31.4431x0.72	4.75	0.00	0.0	72.266	-27.87	5326.75	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	37.5625	5				3			
	37.5625 - 36.375					72.8213	-28.28	5367.66	0.005
	36.375 - 35.1875					73.3762	-28.68	5408.56	0.005
	35.1875 - 34					73.9311	-29.09	5449.46	0.005
L35	34 - 33.75 (35)	TP32.444x32.3939x0.6875	0.25	0.00	0.0	70.3009	-29.18	5181.88	0.006
L36	33.75 - 32.75	TP33.2447x32.444x0.6875	4.00	0.00	0.0	70.7441	-29.50	5214.54	0.006
	32.75 - 31.75					71.1872	-29.83	5247.21	0.006
	31.75 - 30.75					71.6303	-30.16	5279.87	0.006
	30.75 - 29.75					72.0735	-30.50	5312.54	0.006
L37	29.75 - 29.5 (37)	TP33.2947x33.2447x0.6875	0.25	0.00	0.0	72.1843	-30.59	5320.70	0.006
L38	29.5 - 28.5	TP34.2956x33.2947x0.675	5.00	0.00	0.0	71.3341	-30.92	5258.04	0.006
	28.5 - 27.5					71.7692	-31.25	5290.11	0.006
	27.5 - 26.5					72.2043	-31.59	5322.18	0.006
	26.5 - 25.5					72.6394	-31.93	5354.25	0.006
	25.5 - 24.5					73.0744	-32.28	5386.32	0.006
L39	24.5 - 23.5	TP35.2965x34.2956x0.6625	5.00	0.00	0.0	72.1749	-32.62	5320.01	0.006
	23.5 - 22.5					72.6019	-32.96	5351.49	0.006
	22.5 - 21.5					73.0290	-33.30	5382.97	0.006
	21.5 - 20.5					73.4560	-33.65	5414.44	0.006
	20.5 - 19.5					73.8830	-34.00	5445.92	0.006
L40	19.5 - 18.5	TP36.2974x35.2965x0.65	5.00	0.00	0.0	72.9341	-34.34	5375.98	0.006
	18.5 - 17.5					73.3531	-34.69	5406.86	0.006
	17.5 - 16.5					73.7721	-35.04	5437.74	0.006
	16.5 - 15.5					74.1911	-35.39	5468.62	0.006
	15.5 - 14.5					74.6100	-35.74	5499.51	0.006
L41	14.5 - 13.5	TP36.6978x36.2974x0.65	2.00	0.00	0.0	75.0290	-36.10	5530.39	0.007
	13.5 - 12.5					75.4480	-36.45	5561.27	0.007
L42	12.5 - 12.25 (42)	TP36.7478x36.6978x0.5625	0.25	0.00	0.0	65.5406	-36.54	4831.00	0.008
L43	12.25 - 10.75 (43)	TP37.0481x36.7478x0.5625	1.50	0.00	0.0	66.0845	-36.98	4871.09	0.008
L44	10.75 - 10.5 (44)	TP37.0981x37.0481x0.6375	0.25	0.00	0.0	74.8446	-37.09	5516.79	0.007
L45	10.5 - 9.5	TP38.099x37.0981x0.625	5.00	0.00	0.0	73.8050	-37.42	5440.17	0.007
	9.5 - 8.5					74.2079	-37.76	5469.86	0.007
	8.5 - 7.5					74.6107	-38.11	5499.56	0.007
	7.5 - 6.5					75.0136	-38.45	5529.25	0.007
	6.5 - 5.5					75.4165	-38.80	5558.95	0.007

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L46	5.5 - 4.5	TP39.0999x38.099x0.6125	5.00	0.00	0.0	74.3276	-39.15	5478.69	0.007
	4.5 - 3.5					74.7224	-39.50	5507.79	0.007
	3.5 - 2.5					75.1172	-39.85	5536.89	0.007
	2.5 - 1.5					75.5120	-40.20	5565.99	0.007
	1.5 - 0.5					75.9068	-40.55	5595.09	0.007
L47	0.5 - 0 (47)	TP39.2x39.0999x0.6125	0.50	0.00	0.0	76.1042	-40.74	5609.64	0.007

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	133 - 132	TP14.4795x13.48x0.1875	6.92	164.07	0.042	0.00	164.07	0.000
	132 - 131		8.55	169.01	0.051	0.00	169.01	0.000
	131 - 130		15.26	174.01	0.088	0.00	174.01	0.000
	130 - 129		21.08	179.09	0.118	0.00	179.09	0.000
	129 - 128		26.95	184.24	0.146	0.00	184.24	0.000
L2	128 - 127	TP15.479x14.4795x0.1875	32.88	189.46	0.174	0.00	189.46	0.000
	127 - 126		38.87	194.76	0.200	0.00	194.76	0.000
	126 - 125		44.91	200.13	0.224	0.00	200.13	0.000
	125 - 124		51.01	205.57	0.248	0.00	205.57	0.000
	124 - 123		57.16	211.09	0.271	0.00	211.09	0.000
L3	123 - 122	TP16.4786x15.479x0.1875	63.38	216.68	0.293	0.00	216.68	0.000
	122 - 121		69.65	222.34	0.313	0.00	222.34	0.000
	121 - 120		75.98	228.08	0.333	0.00	228.08	0.000
	120 - 119		82.37	233.88	0.352	0.00	233.88	0.000
	119 - 118		88.82	239.77	0.370	0.00	239.77	0.000
L4	118 - 117	TP17.4781x16.4786x0.1875	95.32	244.93	0.389	0.00	244.93	0.000
	117 - 116		101.89	249.98	0.408	0.00	249.98	0.000
	116 - 115		108.51	255.06	0.425	0.00	255.06	0.000
	115 - 114		115.20	260.16	0.443	0.00	260.16	0.000
	114 - 113		121.95	265.29	0.460	0.00	265.29	0.000
L5	113 - 112	TP18.4776x17.4781x0.1875	128.75	270.44	0.476	0.00	270.44	0.000
	112 - 111		135.62	275.61	0.492	0.00	275.61	0.000
	111 - 110		142.55	280.81	0.508	0.00	280.81	0.000
	110 - 109		154.58	286.02	0.540	0.00	286.02	0.000
	109 - 108		166.43	291.26	0.571	0.00	291.26	0.000
L6	108 - 106.917	TP19.1273x18.4776x0.1875	179.33	296.96	0.604	0.00	296.96	0.000
	106.917 - 105.833		192.31	302.68	0.635	0.00	302.68	0.000
	105.833 - 104.75		205.35	308.42	0.666	0.00	308.42	0.000
L7	104.75 - 104.5 (7)	TP19.1773x19.1273x0.425	208.37	712.23	0.293	0.00	712.23	0.000
L8	104.5 - 103.5	TP20.1768x19.1773x0.4063	220.49	697.63	0.316	0.00	697.63	0.000
	103.5 - 102.5		232.69	712.57	0.327	0.00	712.57	0.000
	102.5 - 101.5		244.95	727.66	0.337	0.00	727.66	0.000
	101.5 - 100.5		257.28	742.91	0.346	0.00	742.91	0.000
	100.5 - 99.5		271.30	758.32	0.358	0.00	758.32	0.000
L9	99.5 - 98.75 (9)	TP20.3267x20.1768x0.4063	283.08	769.98	0.368	0.00	769.98	0.000
L10	98.75 - 98.5 (10)	TP20.3767x20.3267x0.675	287.02	1234.63	0.232	0.00	1234.63	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L11	98.5 - 97.3333	TP21.81x20.3767x0.6625	305.51	1243.44	0.246	0.00	1243.44	0.000
	97.3333 - 96.1667		324.14	1273.17	0.255	0.00	1273.17	0.000
	96.1667 - 95		342.93	1303.23	0.263	0.00	1303.23	0.000
	95 - 91.33		200.56	1400.12	0.143	0.00	1400.12	0.000
L12	95 - 91.33	TP21.7002x20.7014x0.7125	202.60	1441.53	0.141	0.00	1441.53	0.000
	91.33 - 90		425.42	1479.36	0.288	0.00	1479.36	0.000
L13	90 - 89.25 (13)	TP21.85x21.7002x0.7	438.49	1477.19	0.297	0.00	1477.19	0.000
L14	89.25 - 89 (14)	TP21.9x21.85x0.85	442.86	1764.36	0.251	0.00	1764.36	0.000
L15	89 - 88.25 (15)	TP22.0498x21.9x0.8375	456.00	1766.86	0.258	0.00	1766.86	0.000
L16	88.25 - 88 (16)	TP22.0998x22.0498x0.6125	460.40	1340.04	0.344	0.00	1340.04	0.000
L17	88 - 87	TP23.0986x22.0998x0.5875	478.02	1314.22	0.364	0.00	1314.22	0.000
	87 - 86		495.71	1338.84	0.370	0.00	1338.84	0.000
	86 - 85		513.49	1363.69	0.377	0.00	1363.69	0.000
	85 - 84		531.34	1388.77	0.383	0.00	1388.77	0.000
	84 - 83		549.27	1414.07	0.388	0.00	1414.07	0.000
L18	83 - 82	TP24.0975x23.0986x0.575	567.27	1411.30	0.402	0.00	1411.30	0.000
	82 - 81		585.35	1436.53	0.407	0.00	1436.53	0.000
	81 - 80		603.50	1461.98	0.413	0.00	1461.98	0.000
	80 - 79		621.72	1487.67	0.418	0.00	1487.67	0.000
	79 - 78		640.02	1513.57	0.423	0.00	1513.57	0.000
L19	78 - 77 (19)	TP24.2972x24.0975x0.575	658.39	1539.70	0.428	0.00	1539.70	0.000
L20	77 - 76.75 (20)	TP24.3472x24.2972x0.6225	663.00	2002.34	0.331	0.00	2002.34	0.000
L21	76.75 - 75.75	TP25.346x24.3472x0.7375	681.48	1976.38	0.345	0.00	1976.38	0.000
	75.75 - 74.75		700.04	2010.18	0.348	0.00	2010.18	0.000
	74.75 - 73.75		718.70	2044.28	0.352	0.00	2044.28	0.000
	73.75 - 72.75		737.44	2078.66	0.355	0.00	2078.66	0.000
	72.75 - 71.75		756.26	2113.32	0.358	0.00	2113.32	0.000
L22	71.75 - 70.75	TP26.3449x25.346x0.7125	775.17	2081.74	0.372	0.00	2081.74	0.000
	70.75 - 69.75		794.17	2115.84	0.375	0.00	2115.84	0.000
	69.75 - 68.75		813.24	2150.22	0.378	0.00	2150.22	0.000
	68.75 - 67.75		832.41	2184.87	0.381	0.00	2184.87	0.000
	67.75 - 66.75		851.66	2219.80	0.384	0.00	2219.80	0.000
L23	66.75 - 65.75	TP27.3438x26.3449x0.6875	870.98	2182.21	0.399	0.00	2182.21	0.000
	65.75 - 64.75		890.40	2216.50	0.402	0.00	2216.50	0.000
	64.75 - 63.75		909.89	2251.05	0.404	0.00	2251.05	0.000
	63.75 - 62.75		929.61	2285.88	0.407	0.00	2285.88	0.000
	62.75 - 61.75		949.75	2320.97	0.409	0.00	2320.97	0.000
L24	61.75 - 60.5 (24)	TP27.5935x27.3438x0.6875	975.06	2365.21	0.412	0.00	2365.21	0.000
L25	60.5 - 60.25 (25)	TP27.6434x27.5935x0.6875	980.13	2374.11	0.413	0.00	2374.11	0.000
L26	60.25 - 59.5 (26)	TP27.7933x27.6434x0.6875	995.41	2400.91	0.415	0.00	2400.91	0.000
L27	59.5 - 59.25 (27)	TP27.8432x27.7933x0.75	1000.52	2610.84	0.383	0.00	2610.84	0.000
L28	59.25 - 58.25	TP28.8421x27.8432x0.725	1021.02	2568.72	0.397	0.00	2568.72	0.000
	58.25 - 57.25		1041.65	2606.92	0.400	0.00	2606.92	0.000
	57.25 - 56.25		1062.43	2645.39	0.402	0.00	2645.39	0.000
	56.25 - 55.25		1083.33	2684.15	0.404	0.00	2684.15	0.000
	55.25 - 54.25		1104.38	2723.19	0.406	0.00	2723.19	0.000
L29	54.25 - 53.1875	TP30.64x28.8421x0.7	1126.88	2676.72	0.421	0.00	2676.72	0.000
	53.1875 - 52.125		1149.53	2717.43	0.423	0.00	2717.43	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	52.125 - 51.0625		1172.33	2758.44	0.425	0.00	2758.44	0.000
	51.0625 - 50		1195.27	2799.78	0.427	0.00	2799.78	0.000
	50 - 45.25		641.22	2988.28	0.215	0.00	2988.28	0.000
L30	50 - 45.25	TP30.192x29.1911x0.7625	659.05	3126.48	0.211	0.00	3126.48	0.000
	45.25 - 45		1305.88	3137.28	0.416	0.00	3137.28	0.000
L31	45 - 44	TP31.1929x30.192x0.75	1328.43	3132.47	0.424	0.00	3132.47	0.000
	44 - 43		1351.09	3175.44	0.425	0.00	3175.44	0.000
	43 - 42		1373.88	3218.71	0.427	0.00	3218.71	0.000
	42 - 41		1396.79	3262.28	0.428	0.00	3262.28	0.000
	41 - 40		1419.83	3306.13	0.429	0.00	3306.13	0.000
L32	40 - 39 (32)	TP31.393x31.1929x0.7375	1443.00	3298.47	0.437	0.00	3298.47	0.000
L33	39 - 38.75 (33)	TP31.4431x31.393x0.7375	1448.82	3309.38	0.438	0.00	3309.38	0.000
L34	38.75 - 37.5625	TP32.3939x31.4431x0.725	1476.52	3308.46	0.446	0.00	3308.46	0.000
	37.5625 - 36.375		1504.39	3360.05	0.448	0.00	3360.05	0.000
	36.375 - 35.1875		1532.44	3412.04	0.449	0.00	3412.04	0.000
	35.1875 - 34		1560.66	3464.43	0.450	0.00	3464.43	0.000
L35	34 - 33.75 (35)	TP32.444x32.3939x0.6875	1566.62	3307.45	0.474	0.00	3307.45	0.000
L36	33.75 - 32.75	TP33.2447x32.444x0.6875	1590.54	3349.72	0.475	0.00	3349.72	0.000
	32.75 - 31.75		1614.58	3392.26	0.476	0.00	3392.26	0.000
	31.75 - 30.75		1638.72	3435.07	0.477	0.00	3435.07	0.000
	30.75 - 29.75		1662.98	3478.15	0.478	0.00	3478.15	0.000
L37	29.75 - 29.5 (37)	TP33.2947x33.2447x0.6875	1669.07	3488.97	0.478	0.00	3488.97	0.000
L38	29.5 - 28.5	TP34.2956x33.2947x0.675	1693.47	3472.12	0.488	0.00	3472.12	0.000
	28.5 - 27.5		1718.00	3515.03	0.489	0.00	3515.03	0.000
	27.5 - 26.5		1742.63	3558.21	0.490	0.00	3558.21	0.000
	26.5 - 25.5		1767.38	3601.65	0.491	0.00	3601.65	0.000
	25.5 - 24.5		1792.24	3645.36	0.492	0.00	3645.36	0.000
L39	24.5 - 23.5	TP35.2965x34.2956x0.6625	1817.22	3625.02	0.501	0.00	3625.02	0.000
	23.5 - 22.5		1842.30	3668.46	0.502	0.00	3668.46	0.000
	22.5 - 21.5		1867.51	3712.15	0.503	0.00	3712.15	0.000
	21.5 - 20.5		1892.83	3756.11	0.504	0.00	3756.11	0.000
	20.5 - 19.5		1918.26	3800.32	0.505	0.00	3800.32	0.000
L40	19.5 - 18.5	TP36.2974x35.2965x0.65	1943.80	3776.31	0.515	0.00	3776.31	0.000
	18.5 - 17.5		1969.46	3820.22	0.516	0.00	3820.22	0.000
	17.5 - 16.5		1995.23	3864.38	0.516	0.00	3864.38	0.000
	16.5 - 15.5		2021.13	3908.80	0.517	0.00	3908.80	0.000
	15.5 - 14.5		2047.13	3953.47	0.518	0.00	3953.47	0.000
L41	14.5 - 13.5	TP36.6978x36.2974x0.65	2073.24	3998.40	0.519	0.00	3998.40	0.000
	13.5 - 12.5		2099.47	4043.58	0.519	0.00	4043.58	0.000
L42	12.5 - 12.25 (42)	TP36.7478x36.6978x0.5625	2106.05	3534.64	0.596	0.00	3534.64	0.000
L43	12.25 - 10.75 (43)	TP37.0481x36.7478x0.5625	2145.68	3594.00	0.597	0.00	3594.00	0.000
L44	10.75 - 10.5 (44)	TP37.0981x37.0481x0.6375	2152.31	4059.37	0.530	0.00	4059.37	0.000
L45	10.5 - 9.5	TP38.099x37.0981x0.625	2178.92	4028.08	0.541	0.00	4028.08	0.000
	9.5 - 8.5		2205.66	4072.55	0.542	0.00	4072.55	0.000
	8.5 - 7.5		2232.53	4117.26	0.542	0.00	4117.26	0.000
	7.5 - 6.5		2259.53	4162.21	0.543	0.00	4162.21	0.000
	6.5 - 5.5		2286.67	4207.41	0.543	0.00	4207.41	0.000
L46	5.5 - 4.5	TP39.0999x38.099x0.6125	2313.93	4171.94	0.555	0.00	4171.94	0.000
	4.5 - 3.5		2341.29	4216.73	0.555	0.00	4216.73	0.000
	3.5 - 2.5		2368.78	4261.77	0.556	0.00	4261.77	0.000
	2.5 - 1.5		2396.38	4307.03	0.556	0.00	4307.03	0.000
	1.5 - 0.5		2424.08	4352.55	0.557	0.00	4352.55	0.000
L47	0.5 - 0 (47)	TP39.2x39.0999x0.6125	2437.98	4375.39	0.557	0.00	4375.39	0.000

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u	ϕT_n	Ratio $\frac{T_u}{\phi T_n}$
	ft		K	K		kip-ft	kip-ft	
L1	133 - 132	TP14.4795x13.48x0.1875	1.64	300.22	0.005	0.26	332.69	0.001
	132 - 131		1.65	304.67	0.005	0.26	342.69	0.001
	131 - 130		5.79	309.12	0.019	0.81	352.84	0.002
	130 - 129		5.85	313.57	0.019	0.81	363.14	0.002
	129 - 128		5.90	318.01	0.019	0.81	373.58	0.002
L2	128 - 127	TP15.479x14.4795x0.1875	5.96	322.46	0.018	0.81	384.18	0.002
	127 - 126		6.02	326.91	0.018	0.81	394.92	0.002
	126 - 125		6.07	331.36	0.018	0.81	405.80	0.002
	125 - 124		6.13	335.81	0.018	0.81	416.84	0.002
	124 - 123		6.19	340.26	0.018	0.81	428.02	0.002
L3	123 - 122	TP16.4786x15.479x0.1875	6.24	344.70	0.018	0.81	439.36	0.002
	122 - 121		6.30	349.15	0.018	0.81	450.84	0.002
	121 - 120		6.36	353.60	0.018	0.81	462.47	0.002
	120 - 119		6.42	358.05	0.018	0.81	474.25	0.002
	119 - 118		6.48	362.50	0.018	0.81	486.17	0.002
L4	118 - 117	TP17.4781x16.4786x0.1875	6.54	365.77	0.018	0.81	496.65	0.002
	117 - 116		6.60	368.79	0.018	0.81	506.89	0.002
	116 - 115		6.66	371.78	0.018	0.81	517.18	0.002
	115 - 114		6.72	374.73	0.018	0.81	527.53	0.002
	114 - 113		6.78	377.65	0.018	0.81	537.92	0.002
L5	113 - 112	TP18.4776x17.4781x0.1875	6.84	380.53	0.018	0.81	548.37	0.001
	112 - 111		6.90	383.38	0.018	0.81	558.86	0.001
	111 - 110		6.96	386.20	0.018	0.81	569.39	0.001
	110 - 109		11.83	388.99	0.030	0.80	579.97	0.001
	109 - 108		11.89	391.74	0.030	0.80	590.59	0.001
L6	108 - 106.917	TP19.1273x18.4776x0.1875	11.95	394.68	0.030	0.80	602.14	0.001
	106.917 - 105.833		12.01	397.58	0.030	0.80	613.74	0.001
	105.833 - 104.75		12.08	400.44	0.030	0.80	625.37	0.001
L7	104.75 - 104.5 (7)	TP19.1773x19.1273x0.425	12.09	945.79	0.013	0.80	1444.18	0.001
L8	104.5 - 103.5	TP20.1768x19.1773x0.4063	12.16	914.61	0.013	0.80	1414.58	0.001
	103.5 - 102.5		12.23	924.24	0.013	0.80	1444.86	0.001
	102.5 - 101.5		12.30	933.88	0.013	0.80	1475.47	0.001
	101.5 - 100.5		12.37	943.52	0.013	0.80	1506.39	0.001
	100.5 - 99.5		15.68	953.16	0.016	0.80	1537.64	0.001
L9	99.5 - 98.75 (9)	TP20.3267x20.1768x0.4063	15.75	960.38	0.016	0.80	1561.28	0.001
L10	98.75 - 98.5 (10)	TP20.3767x20.3267x0.675	15.78	1578.19	0.010	0.80	2503.45	0.000
L11	98.5 - 97.3333	TP21.81x20.3767x0.6625	15.91	1568.28	0.010	0.80	2521.32	0.000
	97.3333 - 96.1667		16.04	1586.62	0.010	0.80	2581.58	0.000
	96.1667 - 95		16.18	1604.96	0.010	0.80	2642.55	0.000
	95 - 91.33		8.39	1662.64	0.005	0.40	2839.00	0.000
L12	95 - 91.33	TP21.7002x20.7014x0.7125	8.27	1752.14	0.005	0.40	2922.97	0.000
	91.33 - 90		16.81	1774.61	0.009	0.80	2999.68	0.000
L13	90 - 89.25 (13)	TP21.85x21.7002x0.7	17.48	1756.96	0.010	0.80	2995.28	0.000
L14	89.25 - 89	TP21.9x21.85x0.85	17.50	2123.36	0.008	0.79	3577.57	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	(14)							
L15	89 - 88.25	TP22.0498x21.9x0.8375	17.57	2108.26	0.008	0.79	3582.63	0.000
	(15)							
L16	88.25 - 88	TP22.0998x22.0498x0.61	17.59	1561.85	0.011	0.79	2717.19	0.000
	(16)	25						
L17	88 - 87	TP23.0986x22.0998x0.58	17.67	1513.77	0.012	0.79	2664.84	0.000
		75						
	87 - 86		17.74	1527.70	0.012	0.79	2714.76	0.000
	86 - 85		17.82	1541.63	0.012	0.79	2765.14	0.000
	85 - 84		17.90	1555.56	0.012	0.79	2815.98	0.000
	84 - 83		17.97	1569.48	0.011	0.79	2867.28	0.000
L18	83 - 82	TP24.0975x23.0986x0.57	18.05	1550.58	0.012	0.79	2861.67	0.000
		5						
	82 - 81		18.12	1564.21	0.012	0.79	2912.83	0.000
	81 - 80		18.19	1577.84	0.012	0.79	2964.45	0.000
	80 - 79		18.27	1591.47	0.011	0.79	3016.53	0.000
	79 - 78		18.34	1605.10	0.011	0.79	3069.05	0.000
L19	78 - 77 (19)	TP24.2972x24.0975x0.57	18.42	1618.74	0.011	0.79	3122.03	0.000
		5						
L20	77 - 76.75	TP24.3472x24.2972x0.76	18.44	2134.14	0.009	0.79	4060.13	0.000
	(20)	25						
L21	76.75 - 75.75	TP25.346x24.3472x0.737	18.53	2083.84	0.009	0.79	4007.47	0.000
		5						
	75.75 - 74.75		18.62	2101.32	0.009	0.79	4076.03	0.000
	74.75 - 73.75		18.70	2118.81	0.009	0.79	4145.16	0.000
	73.75 - 72.75		18.79	2136.29	0.009	0.79	4214.88	0.000
	72.75 - 71.75		18.88	2153.77	0.009	0.79	4285.17	0.000
L22	71.75 - 70.75	TP26.3449x25.346x0.712	18.96	2099.77	0.009	0.79	4221.12	0.000
		5						
	70.75 - 69.75		19.04	2116.66	0.009	0.79	4290.26	0.000
	69.75 - 68.75		19.13	2133.55	0.009	0.79	4359.97	0.000
	68.75 - 67.75		19.21	2150.45	0.009	0.79	4430.23	0.000
	67.75 - 66.75		19.30	2167.34	0.009	0.79	4501.06	0.000
L23	66.75 - 65.75	TP27.3438x26.3449x0.68	19.38	2109.63	0.009	0.79	4424.83	0.000
		75						
	65.75 - 64.75		19.46	2125.93	0.009	0.79	4494.36	0.000
	64.75 - 63.75		19.55	2142.23	0.009	0.79	4564.43	0.000
	63.75 - 62.75		20.10	2158.53	0.009	3.03	4635.05	0.001
	62.75 - 61.75		20.20	2174.82	0.009	3.03	4706.20	0.001
L24	61.75 - 60.5	TP27.5935x27.3438x0.68	20.32	2195.20	0.009	3.03	4795.91	0.001
	(24)	75						
L25	60.5 - 60.25	TP27.6434x27.5935x0.68	20.33	2199.27	0.009	3.03	4813.95	0.001
	(25)	75						
L26	60.25 - 59.5	TP27.7933x27.6434x0.68	20.41	2211.50	0.009	3.03	4868.28	0.001
	(26)	75						
L27	59.5 - 59.25	TP27.8432x27.7933x0.75	20.44	2411.43	0.008	3.03	5293.97	0.001
	(27)							
L28	59.25 - 58.25	TP28.8421x27.8432x0.72	20.58	2350.38	0.009	3.03	5208.56	0.001
		5						
	58.25 - 57.25		20.71	2367.57	0.009	3.02	5286.01	0.001
	57.25 - 56.25		20.85	2384.76	0.009	3.02	5364.02	0.001
	56.25 - 55.25		20.98	2401.95	0.009	3.02	5442.63	0.001
	55.25 - 54.25		21.12	2419.14	0.009	3.02	5521.78	0.001
L29	54.25 - 53.1875	TP30.64x28.8421x0.7	21.26	2355.43	0.009	3.02	5427.54	0.001
	53.1875 - 52.125		21.39	2373.06	0.009	3.02	5510.09	0.001
	52.125 - 51.0625		21.53	2390.69	0.009	3.01	5593.27	0.001
	51.0625 - 50		21.67	2408.32	0.009	3.01	5677.06	0.001
	50 - 45.25		11.25	2487.15	0.005	1.41	6059.31	0.000
L30	50 - 45.25	TP30.192x29.1911x0.762	11.22	2658.49	0.004	1.45	6339.53	0.000
		5						
	45.25 - 45		22.48	2663.02	0.008	2.85	6361.42	0.000
L31	45 - 44	TP31.1929x30.192x0.75	22.61	2638.29	0.009	2.85	6351.66	0.000
	44 - 43		22.74	2656.11	0.009	2.85	6438.81	0.000
	43 - 42		22.86	2673.93	0.009	2.85	6526.54	0.000
	42 - 41		22.99	2691.75	0.009	2.84	6614.87	0.000
	41 - 40		23.11	2709.56	0.009	2.84	6703.80	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L32	40 - 39 (32)	TP31.393x31.1929x0.7375	23.24	2683.02	0.009	2.84	6688.27	0.000
L33	39 - 38.75 (33)	TP31.4431x31.393x0.7375	23.26	2687.40	0.009	2.84	6710.38	0.000
L34	38.75 - 37.5625	TP32.3939x31.4431x0.725	23.41	2663.38	0.009	2.84	6708.52	0.000
	37.5625 - 36.375		23.56	2683.83	0.009	2.84	6813.12	0.000
	36.375 - 35.1875		23.70	2704.28	0.009	2.84	6918.55	0.000
	35.1875 - 34		23.85	2724.73	0.009	2.84	7024.78	0.000
L35	34 - 33.75 (35)	TP32.444x32.3939x0.6875	23.86	2590.94	0.009	2.84	6706.47	0.000
L36	33.75 - 32.75	TP33.2447x32.444x0.6875	23.99	2607.27	0.009	2.83	6792.18	0.000
	32.75 - 31.75		24.10	2623.60	0.009	2.83	6878.45	0.000
	31.75 - 30.75		24.22	2639.94	0.009	2.83	6965.26	0.000
	30.75 - 29.75		24.33	2656.27	0.009	2.82	7052.61	0.000
L37	29.75 - 29.5 (37)	TP33.2947x33.2447x0.6875	24.35	2660.35	0.009	2.82	7074.52	0.000
L38	29.5 - 28.5	TP34.2956x33.2947x0.675	24.47	2629.02	0.009	2.82	7040.37	0.000
	28.5 - 27.5		24.59	2645.05	0.009	2.82	7127.39	0.000
	27.5 - 26.5		24.70	2661.09	0.009	2.81	7214.93	0.000
	26.5 - 25.5		24.82	2677.12	0.009	2.81	7303.02	0.000
	25.5 - 24.5		24.93	2693.16	0.009	2.80	7391.64	0.000
L39	24.5 - 23.5	TP35.2965x34.2956x0.6625	25.04	2660.01	0.009	2.80	7350.41	0.000
	23.5 - 22.5		25.16	2675.74	0.009	2.80	7438.48	0.000
	22.5 - 21.5		25.27	2691.48	0.009	2.79	7527.08	0.000
	21.5 - 20.5		25.39	2707.22	0.009	2.79	7616.21	0.000
	20.5 - 19.5		25.50	2722.96	0.009	2.79	7705.86	0.000
L40	19.5 - 18.5	TP36.2974x35.2965x0.65	25.62	2687.99	0.010	2.78	7657.17	0.000
	18.5 - 17.5		25.73	2703.43	0.010	2.78	7746.22	0.000
	17.5 - 16.5		25.84	2718.87	0.010	2.77	7835.77	0.000
	16.5 - 15.5		25.96	2734.31	0.009	2.77	7925.83	0.000
	15.5 - 14.5		26.07	2749.75	0.009	2.77	8016.42	0.000
L41	14.5 - 13.5	TP36.6978x36.2974x0.65	26.19	2765.19	0.009	2.76	8107.51	0.000
	13.5 - 12.5		26.30	2780.64	0.009	2.76	8199.12	0.000
L42	12.5 - 12.25 (42)	TP36.7478x36.6978x0.5625	26.32	2415.50	0.011	2.75	7167.15	0.000
L43	12.25 - 10.75 (43)	TP37.0481x36.7478x0.5625	26.54	2435.54	0.011	2.75	7287.51	0.000
L44	10.75 - 10.5 (44)	TP37.0981x37.0481x0.6375	26.55	2758.40	0.010	2.72	8231.12	0.000
L45	10.5 - 9.5	TP38.099x37.0981x0.625	26.69	2720.08	0.010	2.71	8167.69	0.000
	9.5 - 8.5		26.82	2734.93	0.010	2.70	8257.85	0.000
	8.5 - 7.5		26.95	2749.78	0.010	2.68	8348.50	0.000
	7.5 - 6.5		27.08	2764.63	0.010	2.66	8439.67	0.000
	6.5 - 5.5		27.21	2779.47	0.010	2.64	8531.33	0.000
L46	5.5 - 4.5	TP39.0999x38.099x0.6125	27.33	2739.34	0.010	2.62	8459.42	0.000
	4.5 - 3.5		27.44	2753.89	0.010	2.62	8550.25	0.000
	3.5 - 2.5		27.56	2768.44	0.010	2.61	8641.50	0.000
	2.5 - 1.5		27.67	2782.99	0.010	2.60	8733.33	0.000
	1.5 - 0.5		27.79	2797.55	0.010	2.60	8825.58	0.000
L47	0.5 - 0 (47)	TP39.2x39.0999x0.6125	27.83	2804.82	0.010	2.59	8871.92	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

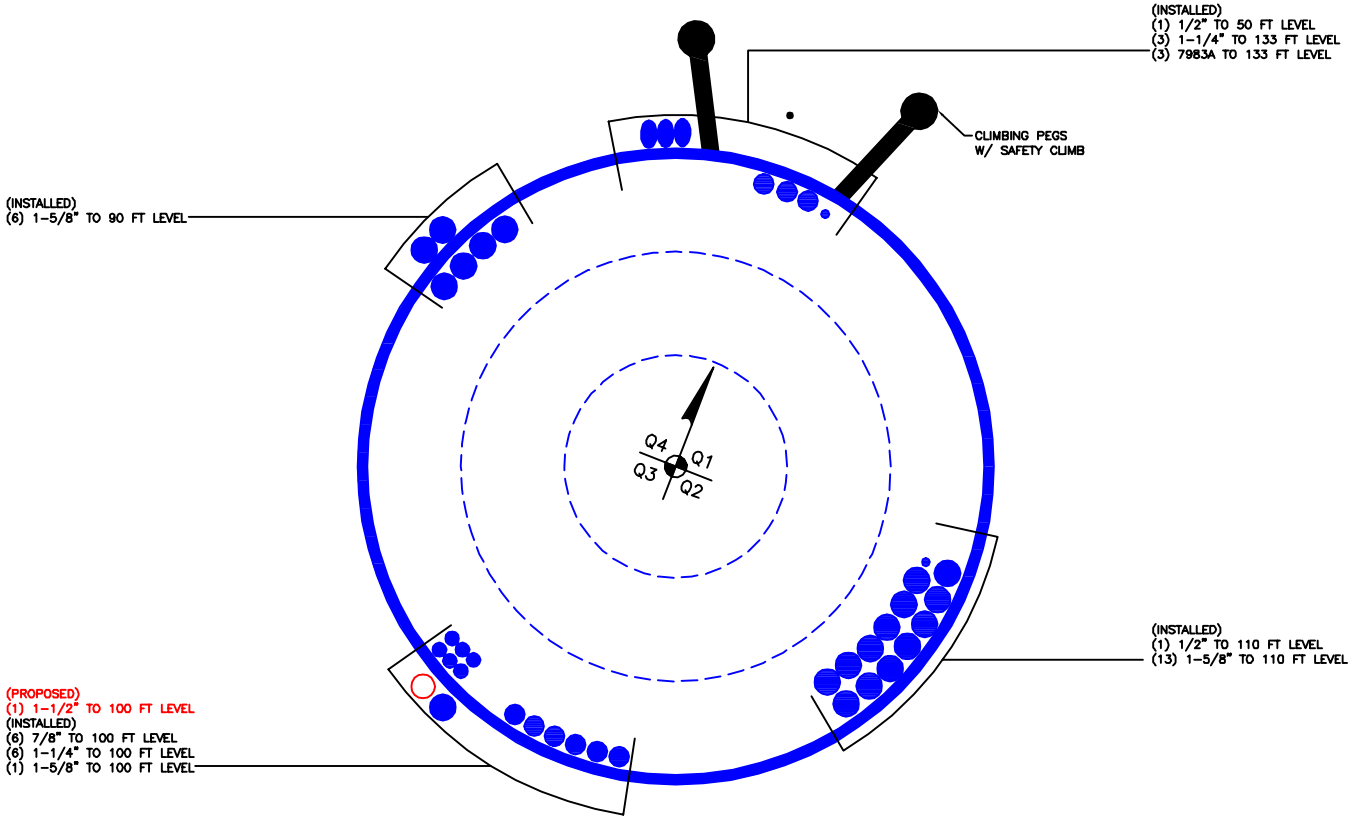
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	133 - 132	0.015	0.042	0.000	0.005	0.001	0.058	1.000	4.8.2
	132 - 131	0.015	0.051	0.000	0.005	0.001	0.066	1.000	4.8.2
	131 - 130	0.005	0.088	0.000	0.019	0.002	0.093	1.000	4.8.2
	130 - 129	0.005	0.118	0.000	0.019	0.002	0.123	1.000	4.8.2
	129 - 128	0.005	0.146	0.000	0.019	0.002	0.152	1.000	4.8.2
L2	128 - 127	0.005	0.174	0.000	0.018	0.002	0.179	1.000	4.8.2
	127 - 126	0.005	0.200	0.000	0.018	0.002	0.205	1.000	4.8.2
	126 - 125	0.005	0.224	0.000	0.018	0.002	0.230	1.000	4.8.2
	125 - 124	0.005	0.248	0.000	0.018	0.002	0.254	1.000	4.8.2
	124 - 123	0.005	0.271	0.000	0.018	0.002	0.276	1.000	4.8.2
L3	123 - 122	0.005	0.293	0.000	0.018	0.002	0.298	1.000	4.8.2
	122 - 121	0.005	0.313	0.000	0.018	0.002	0.319	1.000	4.8.2
	121 - 120	0.005	0.333	0.000	0.018	0.002	0.339	1.000	4.8.2
	120 - 119	0.005	0.352	0.000	0.018	0.002	0.358	1.000	4.8.2
	119 - 118	0.005	0.370	0.000	0.018	0.002	0.376	1.000	4.8.2
L4	118 - 117	0.005	0.389	0.000	0.018	0.002	0.395	1.000	4.8.2
	117 - 116	0.005	0.408	0.000	0.018	0.002	0.413	1.000	4.8.2
	116 - 115	0.005	0.425	0.000	0.018	0.002	0.431	1.000	4.8.2
	115 - 114	0.005	0.443	0.000	0.018	0.002	0.448	1.000	4.8.2
	114 - 113	0.005	0.460	0.000	0.018	0.002	0.465	1.000	4.8.2
L5	113 - 112	0.005	0.476	0.000	0.018	0.001	0.482	1.000	4.8.2
	112 - 111	0.005	0.492	0.000	0.018	0.001	0.498	1.000	4.8.2
	111 - 110	0.005	0.508	0.000	0.018	0.001	0.513	1.000	4.8.2
	110 - 109	0.008	0.540	0.000	0.030	0.001	0.550	1.000	4.8.2
	109 - 108	0.008	0.571	0.000	0.030	0.001	0.581	1.000	4.8.2
L6	108 - 106.917	0.009	0.604	0.000	0.030	0.001	0.613	1.000	4.8.2
	106.917 - 105.833	0.009	0.635	0.000	0.030	0.001	0.645	1.000	4.8.2
	105.833 - 104.75	0.009	0.666	0.000	0.030	0.001	0.675	1.000	4.8.2
L7	104.75 - 104.5 (7)	0.004	0.293	0.000	0.013	0.001	0.296	1.000	4.8.2
L8	104.5 - 103.5	0.004	0.316	0.000	0.013	0.001	0.320	1.000	4.8.2
	103.5 - 102.5	0.004	0.327	0.000	0.013	0.001	0.331	1.000	4.8.2
	102.5 - 101.5	0.004	0.337	0.000	0.013	0.001	0.341	1.000	4.8.2
	101.5 - 100.5	0.004	0.346	0.000	0.013	0.001	0.350	1.000	4.8.2
	100.5 - 99.5	0.005	0.358	0.000	0.016	0.001	0.363	1.000	4.8.2
L9	99.5 - 98.75 (9)	0.005	0.368	0.000	0.016	0.001	0.373	1.000	4.8.2
L10	98.75 - 98.5 (10)	0.003	0.232	0.000	0.010	0.000	0.236	1.000	4.8.2
L11	98.5 - 97.3333	0.003	0.246	0.000	0.010	0.000	0.249	1.000	4.8.2
	97.3333 - 96.1667	0.003	0.255	0.000	0.010	0.000	0.258	1.000	4.8.2
	96.1667 - 95	0.003	0.263	0.000	0.010	0.000	0.267	1.000	4.8.2
	95 - 91.33	0.002	0.143	0.000	0.005	0.000	0.145	1.000	4.8.2
L12	95 - 91.33	0.002	0.141	0.000	0.005	0.000	0.142	1.000	4.8.2
	91.33 - 90	0.004	0.288	0.000	0.009	0.000	0.291	1.000	4.8.2
L13	90 - 89.25 (13)	0.004	0.297	0.000	0.010	0.000	0.301	1.000	4.8.2
L14	89.25 - 89 (14)	0.003	0.251	0.000	0.008	0.000	0.254	1.000	4.8.2
L15	89 - 88.25 (15)	0.003	0.258	0.000	0.008	0.000	0.261	1.000	4.8.2
L16	88.25 - 88 (16)	0.004	0.344	0.000	0.011	0.000	0.348	1.000	4.8.2
L17	88 - 87	0.004	0.364	0.000	0.012	0.000	0.368	1.000	4.8.2
	87 - 86	0.004	0.370	0.000	0.012	0.000	0.375	1.000	4.8.2
	86 - 85	0.004	0.377	0.000	0.012	0.000	0.381	1.000	4.8.2
	85 - 84	0.005	0.383	0.000	0.012	0.000	0.387	1.000	4.8.2
	84 - 83	0.005	0.388	0.000	0.011	0.000	0.393	1.000	4.8.2
L18	83 - 82	0.005	0.402	0.000	0.012	0.000	0.407	1.000	4.8.2
	82 - 81	0.005	0.407	0.000	0.012	0.000	0.412	1.000	4.8.2
	81 - 80	0.005	0.413	0.000	0.012	0.000	0.418	1.000	4.8.2
	80 - 79	0.005	0.418	0.000	0.011	0.000	0.423	1.000	4.8.2
	79 - 78	0.005	0.423	0.000	0.011	0.000	0.428	1.000	4.8.2
L19	78 - 77 (19)	0.005	0.428	0.000	0.011	0.000	0.433	1.000	4.8.2
L20	77 - 76.75	0.004	0.331	0.000	0.009	0.000	0.335	1.000	4.8.2

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(20)								
L21	76.75 - 75.75	0.004	0.345	0.000	0.009	0.000	0.349	1.000	4.8.2
	75.75 - 74.75	0.004	0.348	0.000	0.009	0.000	0.352	1.000	4.8.2
	74.75 - 73.75	0.004	0.352	0.000	0.009	0.000	0.355	1.000	4.8.2
	73.75 - 72.75	0.004	0.355	0.000	0.009	0.000	0.359	1.000	4.8.2
	72.75 - 71.75	0.004	0.358	0.000	0.009	0.000	0.362	1.000	4.8.2
L22	71.75 - 70.75	0.004	0.372	0.000	0.009	0.000	0.377	1.000	4.8.2
	70.75 - 69.75	0.004	0.375	0.000	0.009	0.000	0.380	1.000	4.8.2
	69.75 - 68.75	0.004	0.378	0.000	0.009	0.000	0.382	1.000	4.8.2
	68.75 - 67.75	0.004	0.381	0.000	0.009	0.000	0.385	1.000	4.8.2
	67.75 - 66.75	0.004	0.384	0.000	0.009	0.000	0.388	1.000	4.8.2
L23	66.75 - 65.75	0.004	0.399	0.000	0.009	0.000	0.404	1.000	4.8.2
	65.75 - 64.75	0.004	0.402	0.000	0.009	0.000	0.406	1.000	4.8.2
	64.75 - 63.75	0.004	0.404	0.000	0.009	0.000	0.409	1.000	4.8.2
	63.75 - 62.75	0.004	0.407	0.000	0.009	0.001	0.411	1.000	4.8.2
	62.75 - 61.75	0.004	0.409	0.000	0.009	0.001	0.414	1.000	4.8.2
L24	61.75 - 60.5	0.004	0.412	0.000	0.009	0.001	0.417	1.000	4.8.2
	(24)								
L25	60.5 - 60.25	0.004	0.413	0.000	0.009	0.001	0.417	1.000	4.8.2
	(25)								
L26	60.25 - 59.5	0.005	0.415	0.000	0.009	0.001	0.419	1.000	4.8.2
	(26)								
L27	59.5 - 59.25	0.004	0.383	0.000	0.008	0.001	0.387	1.000	4.8.2
	(27)								
L28	59.25 - 58.25	0.004	0.397	0.000	0.009	0.001	0.402	1.000	4.8.2
	58.25 - 57.25	0.004	0.400	0.000	0.009	0.001	0.404	1.000	4.8.2
	57.25 - 56.25	0.004	0.402	0.000	0.009	0.001	0.406	1.000	4.8.2
	56.25 - 55.25	0.004	0.404	0.000	0.009	0.001	0.408	1.000	4.8.2
	55.25 - 54.25	0.004	0.406	0.000	0.009	0.001	0.410	1.000	4.8.2
L29	54.25 - 53.1875	0.005	0.421	0.000	0.009	0.001	0.426	1.000	4.8.2
	53.1875 - 52.125	0.005	0.423	0.000	0.009	0.001	0.428	1.000	4.8.2
	52.125 - 51.0625	0.005	0.425	0.000	0.009	0.001	0.430	1.000	4.8.2
	51.0625 - 50	0.005	0.427	0.000	0.009	0.001	0.432	1.000	4.8.2
	50 - 45.25	0.002	0.215	0.000	0.005	0.000	0.217	1.000	4.8.2
L30	50 - 45.25	0.002	0.211	0.000	0.004	0.000	0.213	1.000	4.8.2
	45.25 - 45	0.005	0.416	0.000	0.008	0.000	0.421	1.000	4.8.2
L31	45 - 44	0.005	0.424	0.000	0.009	0.000	0.429	1.000	4.8.2
	44 - 43	0.005	0.425	0.000	0.009	0.000	0.430	1.000	4.8.2
	43 - 42	0.005	0.427	0.000	0.009	0.000	0.432	1.000	4.8.2
	42 - 41	0.005	0.428	0.000	0.009	0.000	0.433	1.000	4.8.2
	41 - 40	0.005	0.429	0.000	0.009	0.000	0.435	1.000	4.8.2
L32	40 - 39 (32)	0.005	0.437	0.000	0.009	0.000	0.443	1.000	4.8.2
L33	39 - 38.75	0.005	0.438	0.000	0.009	0.000	0.443	1.000	4.8.2
	(33)								
L34	38.75 - 37.5625	0.005	0.446	0.000	0.009	0.000	0.452	1.000	4.8.2
	37.5625 - 36.375	0.005	0.448	0.000	0.009	0.000	0.453	1.000	4.8.2
	36.375 - 35.1875	0.005	0.449	0.000	0.009	0.000	0.455	1.000	4.8.2
	35.1875 - 34	0.005	0.450	0.000	0.009	0.000	0.456	1.000	4.8.2
L35	34 - 33.75	0.006	0.474	0.000	0.009	0.000	0.479	1.000	4.8.2
	(35)								
L36	33.75 - 32.75	0.006	0.475	0.000	0.009	0.000	0.481	1.000	4.8.2
	32.75 - 31.75	0.006	0.476	0.000	0.009	0.000	0.482	1.000	4.8.2
	31.75 - 30.75	0.006	0.477	0.000	0.009	0.000	0.483	1.000	4.8.2
	30.75 - 29.75	0.006	0.478	0.000	0.009	0.000	0.484	1.000	4.8.2
L37	29.75 - 29.5	0.006	0.478	0.000	0.009	0.000	0.484	1.000	4.8.2
	(37)								
L38	29.5 - 28.5	0.006	0.488	0.000	0.009	0.000	0.494	1.000	4.8.2
	28.5 - 27.5	0.006	0.489	0.000	0.009	0.000	0.495	1.000	4.8.2
	27.5 - 26.5	0.006	0.490	0.000	0.009	0.000	0.496	1.000	4.8.2
	26.5 - 25.5	0.006	0.491	0.000	0.009	0.000	0.497	1.000	4.8.2
	25.5 - 24.5	0.006	0.492	0.000	0.009	0.000	0.498	1.000	4.8.2
L39	24.5 - 23.5	0.006	0.501	0.000	0.009	0.000	0.508	1.000	4.8.2
	23.5 - 22.5	0.006	0.502	0.000	0.009	0.000	0.508	1.000	4.8.2

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	22.5 - 21.5	0.006	0.503	0.000	0.009	0.000	0.509	1.000	4.8.2
	21.5 - 20.5	0.006	0.504	0.000	0.009	0.000	0.510	1.000	4.8.2
	20.5 - 19.5	0.006	0.505	0.000	0.009	0.000	0.511	1.000	4.8.2
L40	19.5 - 18.5	0.006	0.515	0.000	0.010	0.000	0.521	1.000	4.8.2
	18.5 - 17.5	0.006	0.516	0.000	0.010	0.000	0.522	1.000	4.8.2
	17.5 - 16.5	0.006	0.516	0.000	0.010	0.000	0.523	1.000	4.8.2
	16.5 - 15.5	0.006	0.517	0.000	0.009	0.000	0.524	1.000	4.8.2
	15.5 - 14.5	0.006	0.518	0.000	0.009	0.000	0.524	1.000	4.8.2
L41	14.5 - 13.5	0.007	0.519	0.000	0.009	0.000	0.525	1.000	4.8.2
	13.5 - 12.5	0.007	0.519	0.000	0.009	0.000	0.526	1.000	4.8.2
L42	12.5 - 12.25 (42)	0.008	0.596	0.000	0.011	0.000	0.604	1.000	4.8.2
L43	12.25 - 10.75 (43)	0.008	0.597	0.000	0.011	0.000	0.605	1.000	4.8.2
L44	10.75 - 10.5 (44)	0.007	0.530	0.000	0.010	0.000	0.537	1.000	4.8.2
L45	10.5 - 9.5	0.007	0.541	0.000	0.010	0.000	0.548	1.000	4.8.2
	9.5 - 8.5	0.007	0.542	0.000	0.010	0.000	0.549	1.000	4.8.2
	8.5 - 7.5	0.007	0.542	0.000	0.010	0.000	0.549	1.000	4.8.2
	7.5 - 6.5	0.007	0.543	0.000	0.010	0.000	0.550	1.000	4.8.2
	6.5 - 5.5	0.007	0.543	0.000	0.010	0.000	0.551	1.000	4.8.2
L46	5.5 - 4.5	0.007	0.555	0.000	0.010	0.000	0.562	1.000	4.8.2
	4.5 - 3.5	0.007	0.555	0.000	0.010	0.000	0.563	1.000	4.8.2
	3.5 - 2.5	0.007	0.556	0.000	0.010	0.000	0.563	1.000	4.8.2
	2.5 - 1.5	0.007	0.556	0.000	0.010	0.000	0.564	1.000	4.8.2
	1.5 - 0.5	0.007	0.557	0.000	0.010	0.000	0.564	1.000	4.8.2
L47	0.5 - 0 (47)	0.007	0.557	0.000	0.010	0.000	0.565	1.000	4.8.2

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876317 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

14/1/2015	UPDATED PER WORK ORDER 924618	ADE
6/6/2015	UPDATED PER WORK ORDER 1101679	ANT
21/9/2015	UPDATED PER WORK ORDER 1135561	AAC
2/12/2015	UPDATED PER WORK ORDER 1165372 1161338	NJH
15/02/16	UPDATED PER WORK ORDER 1506275	AMM
04/05/16	UPDATED PER WORK ORDER 1531179	ARR
05/09/16	UPDATED PER WORK ORDER 1257982	ADE
08/12/16	UPDATED PER WORK ORDER 1325609	ALM
28/01/17	UPDATED PER WORK ORDER 1354633	BF

DRAWN BY: GSV
CHECKED BY: KAH
DRAWING DATE: 30/11/07

SITE NUMBER:
SITE NAME:

SITE NAME

WATERBURY

BUSINESS UNIT NUMBER

876317

SITE ADDRESS

150 MATTATUCK HEIGHTS
WATERBURY, CT06705
NEW HAVEN COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING

SCALE: 1" = 1'-0" | 1

PLOT DATE: 9/26/2016 FILENAME: 876317_BASELEVEL.DWG

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 876317

Work Order: 1354540 Rev.1

CROWN CASTLE

Pole Geometry

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

Reinforcement Configuration

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

Reinforcement Details

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

TNX Geometry Input

Increment (ft): 5

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

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	133 - 128	3.2052	26.951	5.9038
2	128 - 123	3.4036	57.165	6.1875
3	123 - 118	3.627	88.817	6.4791
4	118 - 113	3.8732	121.95	6.779
5	113 - 108	6.6291	166.43	11.886
6	108 - 104.75	6.8888	205.35	12.078
7	104.75 - 104.5	6.9299	208.37	12.089
8	104.5 - 99.5	10.182	271.3	15.676
9	99.5 - 98.75	10.283	283.08	15.754
10	98.75 - 98.5	10.334	287.02	15.779
11	98.5 - 95	10.97	342.93	16.176
12	95 - 90	12.537	425.42	16.815
13	90 - 89.25	12.998	438.49	17.476
14	89.25 - 89	13.062	442.86	17.496
15	89 - 88.25	13.239	456	17.566
16	88.25 - 88	13.291	460.4	17.586
17	88 - 83	14.275	549.27	17.974
18	83 - 78	15.292	640.02	18.343
19	78 - 77	15.499	658.39	18.424
20	77 - 76.75	15.57	663	18.44
21	76.75 - 71.75	16.826	756.26	18.877
22	71.75 - 66.75	18.112	851.66	19.299
23	66.75 - 61.75	19.385	949.75	20.196
24	61.75 - 60.5	19.715	975.06	20.316
25	60.5 - 60.25	19.791	980.14	20.333
26	60.25 - 59.5	19.986	995.41	20.405
27	59.5 - 59.25	20.061	1000.5	20.438
28	59.25 - 54.25	21.464	1104.4	21.119
29	54.25 - 50	22.684	1195.3	21.672
30	50 - 45	25.486	1305.9	22.479
31	45 - 40	27.068	1419.8	23.114
32	40 - 39	27.39	1443	23.238
33	39 - 38.75	27.483	1448.8	23.262
34	38.75 - 34	29.092	1560.7	23.846
35	34 - 33.75	29.184	1566.6	23.865
36	33.75 - 29.75	30.498	1663	24.333
37	29.75 - 29.5	30.59	1669.1	24.352
38	29.5 - 24.5	32.277	1792.2	24.931
39	24.5 - 19.5	34.0	1918.3	25.5
40	19.5 - 14.5	35.7	2047.1	26.1
41	14.5 - 12.5	36.4	2099.5	26.3
42	12.5 - 12.25	36.5	2106.1	26.3
43	12.25 - 10.75	37.0	2145.7	26.5
44	10.75 - 10.5	37.1	2152.3	26.5
45	10.5 - 5.5	38.8	2286.7	27.2
46	5.5 - 0.5	40.6	2424.1	27.8
47	0.5 - 0	40.7	2438.0	27.8

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133 - 128	Pole	TP14.48x13.48x0.1875	Pole	15.1%	Pass
128 - 123	Pole	TP15.479x14.48x0.1875	Pole	27.5%	Pass
123 - 118	Pole	TP16.479x15.479x0.1875	Pole	37.5%	Pass
118 - 113	Pole	TP17.478x16.479x0.1875	Pole	46.4%	Pass
113 - 108	Pole	TP18.478x17.478x0.1875	Pole	57.9%	Pass
108 - 104.75	Pole	TP19.127x18.478x0.1875	Pole	67.4%	Pass
104.75 - 104.5	Pole + Reinf.	TP19.177x19.127x0.425	Reinf. 11 Tension Rupture	39.2%	Pass
104.5 - 99.5	Pole + Reinf.	TP20.177x19.177x0.4063	Reinf. 11 Tension Rupture	47.5%	Pass
99.5 - 98.75	Pole + Reinf.	TP20.327x20.177x0.4063	Reinf. 11 Tension Rupture	49.0%	Pass
98.75 - 98.5	Pole + Reinf.	TP20.377x20.327x0.675	Reinf. 6 Tension Rupture	45.6%	Pass
98.5 - 95	Pole + Reinf.	TP21.81x20.377x0.6625	Reinf. 6 Tension Rupture	52.1%	Pass
95 - 90	Pole + Reinf.	TP21.7x20.701x0.7125	Reinf. 6 Tension Rupture	56.5%	Pass
90 - 89.25	Pole + Reinf.	TP21.85x21.7x0.7	Reinf. 6 Tension Rupture	57.6%	Pass
89.25 - 89	Pole + Reinf.	TP21.9x21.85x0.85	Reinf. 5 Tension Rupture	41.6%	Pass
89 - 88.25	Pole + Reinf.	TP22.05x21.9x0.8375	Reinf. 5 Tension Rupture	42.5%	Pass
88.25 - 88	Pole + Reinf.	TP22.1x22.05x0.6125	Reinf. 5 Tension Rupture	56.5%	Pass
88 - 83	Pole + Reinf.	TP23.099x22.1x0.5875	Reinf. 5 Tension Rupture	63.3%	Pass
83 - 78	Pole + Reinf.	TP24.097x23.099x0.575	Reinf. 5 Tension Rupture	69.4%	Pass
78 - 77	Pole + Reinf.	TP24.297x24.097x0.575	Reinf. 5 Tension Rupture	70.5%	Pass
77 - 76.75	Pole + Reinf.	TP24.347x24.297x0.7625	Reinf. 5 Tension Rupture	54.1%	Pass
76.75 - 71.75	Pole + Reinf.	TP25.346x24.347x0.7375	Reinf. 5 Tension Rupture	58.5%	Pass
71.75 - 66.75	Pole + Reinf.	TP26.345x25.346x0.7125	Reinf. 5 Tension Rupture	62.5%	Pass
66.75 - 61.75	Pole + Reinf.	TP27.344x26.345x0.6875	Reinf. 5 Tension Rupture	66.3%	Pass
61.75 - 60.5	Pole + Reinf.	TP27.593x27.344x0.6875	Reinf. 5 Tension Rupture	67.2%	Pass
60.5 - 60.25	Pole + Reinf.	TP27.643x27.593x0.6875	Reinf. 5 Tension Rupture	67.4%	Pass
60.25 - 59.5	Pole + Reinf.	TP27.793x27.643x0.6875	Reinf. 5 Tension Rupture	67.9%	Pass
59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.75	Reinf. 4 Tension Rupture	59.8%	Pass
59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.725	Reinf. 4 Tension Rupture	63.0%	Pass
54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.7	Reinf. 4 Tension Rupture	65.6%	Pass
50 - 45	Pole + Reinf.	TP30.192x29.191x0.7625	Reinf. 4 Tension Rupture	64.2%	Pass
45 - 40	Pole + Reinf.	TP31.193x30.192x0.75	Reinf. 4 Tension Rupture	66.6%	Pass
40 - 39	Pole + Reinf.	TP31.393x31.193x0.7375	Reinf. 4 Tension Rupture	67.0%	Pass
39 - 38.75	Pole + Reinf.	TP31.443x31.393x0.7375	Reinf. 4 Tension Rupture	67.1%	Pass
38.75 - 34	Pole + Reinf.	TP32.394x31.443x0.725	Reinf. 4 Tension Rupture	69.2%	Pass
34 - 33.75	Pole + Reinf.	TP32.444x32.394x0.6875	Reinf. 4 Tension Rupture	74.0%	Pass
33.75 - 29.75	Pole + Reinf.	TP33.245x32.444x0.6875	Reinf. 4 Tension Rupture	75.7%	Pass
29.75 - 29.5	Pole + Reinf.	TP33.295x33.245x0.6875	Reinf. 1 Tension Rupture	74.0%	Pass
29.5 - 24.5	Pole + Reinf.	TP34.296x33.295x0.675	Reinf. 1 Tension Rupture	76.1%	Pass
24.5 - 19.5	Pole + Reinf.	TP35.297x34.296x0.6625	Reinf. 1 Tension Rupture	78.0%	Pass
19.5 - 14.5	Pole + Reinf.	TP36.297x35.297x0.65	Reinf. 1 Tension Rupture	79.9%	Pass
14.5 - 12.5	Pole + Reinf.	TP36.698x36.297x0.65	Reinf. 1 Tension Rupture	80.6%	Pass
12.5 - 12.25	Pole + Reinf.	TP36.748x36.698x0.5625	Reinf. 1 Tension Rupture	91.0%	Pass
12.25 - 10.75	Pole + Reinf.	TP37.048x36.748x0.5625	Reinf. 1 Tension Rupture	91.6%	Pass
10.75 - 10.5	Pole + Reinf.	TP37.098x37.048x0.6375	Reinf. 1 Tension Rupture	84.4%	Pass
10.5 - 5.5	Pole + Reinf.	TP38.099x37.098x0.625	Reinf. 1 Tension Rupture	86.1%	Pass
5.5 - 0.5	Pole + Reinf.	TP39.1x38.099x0.6125	Reinf. 1 Tension Rupture	87.7%	Pass
0.5 - 0	Pole + Reinf.	TP39.2x39.1x0.6125	Reinf. 1 Tension Rupture	87.8%	Pass
				Summary	
			Pole	67.3%	Pass
			Reinforcement	91.6%	Pass
			Overall	91.6%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
133 - 128	225	n/a	225	8.62	n/a	8.62	15.1%											
128 - 123	276	n/a	276	9.22	n/a	9.22	27.5%											
123 - 118	334	n/a	334	9.82	n/a	9.82	37.5%											
118 - 113	399	n/a	399	10.42	n/a	10.42	46.4%											
113 - 108	472	n/a	472	11.03	n/a	11.03	57.9%											
108 - 104.75	524	n/a	524	11.42	n/a	11.42	67.3%											
104.75 - 104.5	528	619	1148	11.45	12.00	23.45	30.3%											39.2%
104.5 - 99.5	616	681	1298	12.05	12.00	24.05	37.6%											47.5%
99.5 - 98.75	630	691	1321	12.14	12.00	24.14	38.9%											49.0%
98.75 - 98.5	635	1497	2132	12.17	25.59	37.77	24.6%						45.6%					30.9%
98.5 - 95	703	1595	2298	12.59	25.59	38.19	28.6%						52.1%					35.4%
95 - 90	1015	1685	2700	17.24	25.59	42.84	28.3%						56.5%					38.3%
90 - 89.25	1037	1707	2744	17.36	25.59	42.96	28.9%						57.6%					39.1%
89.25 - 89	1044	2204	3248	17.40	32.63	50.03	24.7%					41.6%						33.5%
89 - 88.25	1066	2232	3298	17.52	32.63	50.15	25.3%					42.5%						34.2%
88.25 - 88	1073	1433	2506	17.56	20.63	38.19	33.7%					56.5%						
88 - 83	1227	1556	2783	18.37	20.63	38.99	38.3%					63.3%						
83 - 78	1395	1684	3079	19.17	20.63	39.79	42.7%					69.4%						
78 - 77	1431	1710	3141	19.33	20.63	39.96	43.5%					70.5%						
77 - 76.75	1440	2689	4128	19.37	32.63	52.00	33.4%					54.1%					43.6%	
76.75 - 71.75	1626	2901	4527	20.17	32.63	52.80	36.7%					58.5%					47.1%	
71.75 - 66.75	1828	3121	4949	20.98	32.63	53.60	39.9%					62.5%					50.4%	
66.75 - 61.75	2046	3349	5395	21.78	32.63	54.40	43.0%					66.3%					53.4%	
61.75 - 60.5	2103	3407	5511	21.98	32.63	54.60	43.8%					67.2%					54.1%	
60.5 - 60.25	2115	3419	5534	22.02	32.63	54.65	44.0%					67.4%				54.3%		
60.25 - 59.5	2150	3454	5604	22.14	32.63	54.77	44.4%					67.9%				54.7%		
59.5 - 59.25	2162	3932	6094	22.18	36.84	59.02	41.2%				59.8%					50.7%		
59.25 - 54.25	2405	4203	6608	22.98	36.84	59.83	44.1%				63.0%					53.4%		
54.25 - 50	2626	4441	7067	23.67	36.84	60.51	46.6%				65.6%					55.6%		
50 - 45	3431	4585	8016	30.02	36.84	66.87	41.9%				64.2%					54.4%		
45 - 40	3787	4879	8666	31.03	36.84	67.87	44.1%				66.6%					56.5%		
40 - 39	3861	4939	8800	31.23	36.84	68.07	44.5%				67.0%					56.9%		
39 - 38.75	3880	4966	8847	31.28	40.84	72.12	45.6%				67.1%				48.4%	54.3%		
38.75 - 34	4247	5257	9503	32.24	40.84	73.08	47.6%				69.2%				50.1%	56.1%		
34 - 33.75	4274	4879	9152	32.29	36.84	69.13	50.9%				74.0%			59.3%	57.3%			
33.75 - 29.75	4601	5111	9712	33.09	36.84	69.93	52.7%				75.7%			60.8%	58.7%			
29.75 - 29.5	4622	5271	9893	33.14	37.78	70.92	52.0%	74.0%		71.3%				60.0%	58.0%			
29.5 - 24.5	5055	5578	10634	34.15	37.78	71.93	54.2%	76.1%		73.3%				61.7%	59.7%			
24.5 - 19.5	5515	5894	11409	35.15	37.78	72.93	56.3%	78.0%		75.2%				63.4%	61.3%			
19.5 - 14.5	6002	6219	12221	36.16	37.78	73.94	58.4%	79.9%		77.0%				64.9%	62.8%			
14.5 - 12.5	6204	6351	12555	36.56	37.78	74.34	59.2%	80.6%		77.7%				65.5%	63.4%			
12.5 - 12.25	6221	4705	10926	36.61	25.78	62.39	65.4%	91.0%		91.0%								
12.25 - 10.75	6376	4779	11155	36.91	25.78	62.69	66.1%	91.6%		91.6%								
10.75 - 10.5	6437	6287	12724	36.96	34.38	71.34	62.4%	84.4%	75.0%									
10.5 - 5.5	6975	6617	13592	37.97	34.38	72.34	64.5%	86.1%	76.7%									
5.5 - 0.5	7543	6955	14498	38.97	34.38	73.35	66.6%	87.7%	78.2%									
0.5 - 0	7602	6989	14591	39.07	34.38	73.45	66.8%	87.8%	78.4%									

Note: Section capacity checked in 5 degree increments.

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

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data	
BU#:	*876317*
Site Name:	*WATERBURY*
App #:	*374822 Rev.0*
Pole Manufacturer:	*Other*

Reactions		
Mu:	2438	ft-kips
Axial, Pu:	41	kips
Shear, Vu:	28	kips
Eta Factor, ɳ	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	12	
Diam:	2.5	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55.16	in

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

Stiffener Data (Welding at both sides)		
Config:	3	*
Weld Type:	Both	
Groove Depth:	0.3125	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.3125	in
Width:	11	in
Height:	21.5	in
Thick:	0.625	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	80	ksi
Clear Space between	7.5	in

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

Anchor Rod Results

		Stiffened
Max Rod (Cu+ Vu/ɳ):	184.8 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	320.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	57.8% **Pass**	

Base Plate Results

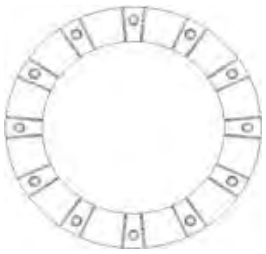
	Flexural Check	Stiffened
Base Plate Stress:	15.7 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	29.0% **Pass**	Y.L. Length: N/A, Roark

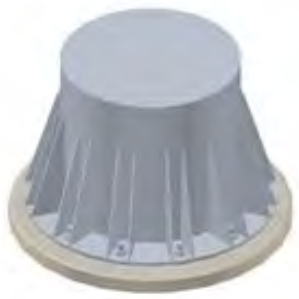
Stiffener Results

Horizontal Weld :	31.2% **Pass**
Vertical Weld:	32.2% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	17.0% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	32.9% **Pass**
Plate Comp. (AISC Bracket):	47.9% **Pass**

Pole Results

Pole Punching Shear Check:	14.5% **Pass**





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

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

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

Site Data

BU#: *876317*
Site Name: *WATERBURY*
App #: *374822 Rev. 0*

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

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

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

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	28.0	kips
Pad Force Location Above D:	2.25	ft
ϕ(Passive Pressure Moment):	63.00	ft-kips
Factored O.T. M(WL), "1.6W":	2655.0	ft-kips
Factored OT (MW-Msoil), M1	2592.00	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	411.3	kips
Unfactored (Total ftg-soil Wt):	411.34	kips
1.2D. **No Soil Wedges**.	534.61	kips
0.9D. **With Soil Wedges**	400.95	kips

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

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDu:	41	kips
Factored WL Axial, PWu:	0	kips
Factored WL Shear, Vu:	28	kips
Factored WL Moment, Mu:	2438	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	41	kips
0.90	0.9D+1.6W, Pu:	30.75	kips
1.00	Vu:	28	kips
	Mu:	2438	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	534.61	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	2592.00	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	4.85	ft
Orthogonal qu=	2.63	ksf
qu/ϕ*qn Ratio=	**11.70%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	3.43	ft
Diagonal qu=	3.09	ksf
qu/ϕ*qn Ratio=	**13.75%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	400.95	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	2592.00	ft-kips

Orthogonal ecc3 = M2/P2 =	6.46	ft
Ortho Non Bearing Length,NBL=	12.93	ft
Orthogonal qu=	2.84	ksf
Diagonal qu=	3.40	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	2438.00		
M Orthogonal:	3676.91	**66.31%**	**Pass**
M Diagonal:	3676.91	**66.31%**	**Pass**

Project Name:	WATERBURY	JACOBS® Jacobs Engineering Group, Inc.	Created On: 6/3/2014
Project Number:	BU876317		Checked By: DW
Job Number:	WO1354540 Rev.1		Revised On: 3/4/2015
Date:	2/2/2017		Revision No.: 1.6

Monopole Pad & Pier Foundation

Foundation Parameters

Load		
Code	G	
Axial	41	kips
Shear	28	kips
Moment	2438	k-ft
Soil Unit Weight	135	pcf
Friction Angle	40	
Cohesion	0	psf

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

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

Structural Checks

Pad Beam Shear Capacity	1732.6	kips
Pad Beam Shear	175.6	kips
Pad Beam Shear Check	10.1%	Pass

Pad Bending Moment Capacity	9014.9	k-ft
Pad Bending Moment	890.9	k-ft
Pad Bending Moment Check	9.9%	Pass

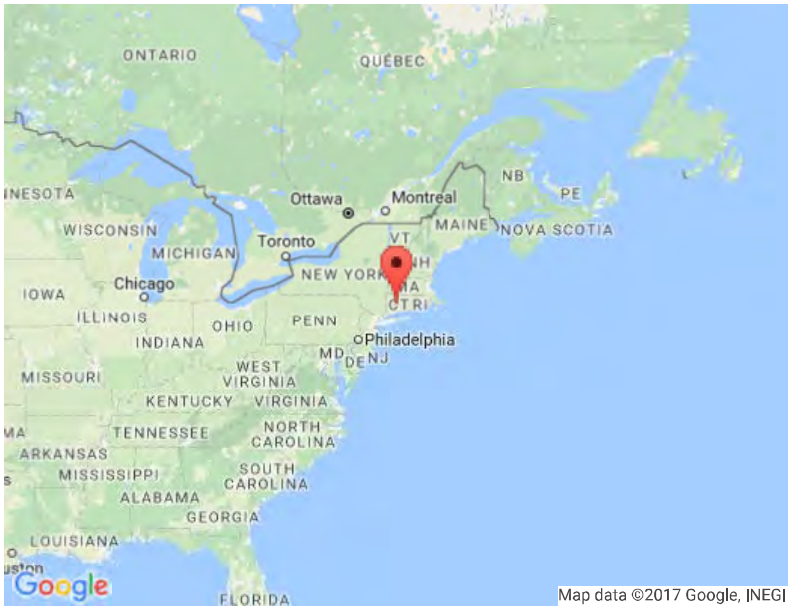
Search Results

Query Date: Mon Jan 30 2017
Latitude: 41.5379
Longitude: -72.9850

ASCE 7-10 Windspeeds (3-sec peak gust in mph*):

Risk Category I: 111
Risk Category II: 121
Risk Category III-IV: 131
MRI 10-Year:** 76
MRI 25-Year:** 86
MRI 50-Year:** 92
MRI 100-Year:** 98

ASCE 7-05 Windspeed:
101 (3-sec peak gust in mph)
ASCE 7-93 Windspeed:
80 (fastest mile in mph)



*Miles per hour
**Mean Recurrence Interval

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.

Print your results

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Exhibit E

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: CT11269B

Waterbury/I-84/Mattatuck
150 Mattatuck Heights
Waterbury, CT 06705

February 12, 2017

EBI Project Number: 6217000481

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	16.15 %

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

EBI Consulting
environmental | engineering | due diligence

February 12, 2017

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

Emissions Analysis for Site: **CT11269B – Waterbury/I-84/Mattatuck**

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

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **150 Mattatuck Heights, Waterbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 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

6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

7) Since the 2100 MHz UMTS radios are ground mounted there are additional cabling losses accounted for. For each ground mounted 2100 MHz UMTS RF path an additional 1.61 dB of additional cable loss was factored into the calculations used for this analysis. This is based on manufacturers Specifications for 125 feet of 1-1/4" coax cable on each path.

8) 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.

9) For the following calculations the sample point was the top of a 6-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.

10) The antennas used in this modeling are the **Ericsson AIR32 B66Aa/B2A** & **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-A1M** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B66Aa/B2A** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-A1M** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

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

12) 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.

13) 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:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	3.80	Antenna B1 MPE%	3.80	Antenna C1 MPE%	3.80
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	6,279.75	ERP (W):	6,279.75	ERP (W):	6,279.75
Antenna A2 MPE%	2.56	Antenna B2 MPE%	2.56	Antenna C2 MPE%	2.56
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.75	Antenna B3 MPE%	0.75	Antenna C3 MPE%	0.75

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**7.11 %**
Verizon Wireless	7.41 %
Clearwire	0.12 %
Sprint	1.07 %
Nextel	0.44 %
Site Total MPE %:	**16.15 %**

T-Mobile Sector A Total:	7.11 %
T-Mobile Sector B Total:	7.11 %
T-Mobile Sector C Total:	7.11 %
Site Total:	16.15 %

T-Mobile _Max Values per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	100	18.99	AWS - 2100 MHz	1000	1.90%
T-Mobile PCS - 1900 MHz LTE	2	2,334.27	100	18.99	PCS - 1900 MHz	1000	1.90%
T-Mobile AWS - 2100 MHz UMTS	2	805.60	100	6.56	AWS - 2100 MHz	1000	0.66%
T-Mobile PCS - 1950 MHz UMTS	2	1,167.14	100	9.50	PCS - 1950 MHz	1000	0.95%
T-Mobile PCS - 1950 MHz GSM	2	1,167.14	100	9.50	PCS - 1950 MHz	1000	0.95%
T-Mobile 700 MHz LTE	1	865.21	100	3.52	700 MHz	467	0.75%
						Total:	**7.11%**

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 A:	7.11 %
Sector B:	7.11 %
Sector C:	7.11 %
T-Mobile Per Sector Maximum:	7.11 %
Site Total:	16.15 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.15%** 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.