STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A SUB-PETITION OF CROWN CASTLE FOR	:	SUB-PETITION NO. 1133
THE MODIFICATION OF AN EXISTING	:	150 MATTATUCK HEIGHTS ROAD
WIRELESS TELECOMMUNICATIONS	:	WATERBURY, CT
FACILITY AT 150 MATTATUCK HEIGHTS	:	
ROAD, WATERBURY, CONNECTICUT	:	FEBRUARY 15, 2019

SUB-PETITION FOR DECLARATORY RULING:
ELIGIBLE FACILITIES REQUEST FOR MODIFICATIONS
THAT WILL NOT SUBSTANTIALLY CHANGE THE
PHYSICAL DIMENSIONS OF AN EXISTING BASE STATION

I. Introduction

Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, codified at 47 U.S.C. § 1455(a) ("Section 6409(a)") and the October 21, 2014 Report and Order (FCC-14-153) issued by the Federal Communications Commission ("FCC") (the "FCC Order"), Crown Castle ("Crown") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Sub-Petition") that the extension of the existing tower and the installation of antennas and related telecommunications equipment at the extended wireless telecommunications base station at 150 Mattatuck Heights Road in Waterbury, Connecticut (the "Property") constitutes an Eligible Facilities Request ("EFR") under the FCC Order.

II. Factual Background

The Property is a 7.02-acre parcel located in Waterbury's Industrial Park ("IP") zone district. An approximately 48,000 square-foot industrial building and associated parking and loading areas occupy a majority of the Property adjacent to Mattatuck Heights Road. The existing wireless telecommunications facility is located in a wooded portion of the Property to the southwest of the existing industrial building. (*See* City of Waterbury Aerial Map included in

Attachment 1). The existing Mattatuck Heights telecommunications facility was approved by the City of Waterbury and was constructed by Sprint prior to 1999.[1] The Property is surrounded by industrial uses and vacant industrial property to the north, south and east, and a multi-family residential community to the west.

According to the Council's telecommunications database the tower is currently shared by Sprint, with antennas at the 130-foot level; Cellco, with antennas at the 110-foot level; and T-Mobile, with antennas at the 100-foot level. Recently, New Cingular Wireless PCS, LLC ("AT&T") expressed an interest in sharing the Mattatuck Heights telecommunications facility at the Property and notified Crown of its need to extend the height of the tower by 10 feet and install its antennas at the 143-foot level on the extended structure.

III. Proposed Facility Modifications

Crown intends to install a ten-foot extension on the existing tower to accommodate AT&T's need for service in eastern Waterbury. AT&T will install a total of nine (9) antennas and twelve (12) remote radio heads ("RRHs") on an antenna platform at the 143-foot level on the tower. AT&T's equipment and back-up generator will be located on a 7'-3" x 12'-6" steel equipment platform within the existing facility compound. Power and telephone service will extend from the existing utility backboard, also within the facility compound. Project Plans, including specifications for AT&T's antennas and equipment, for the Mattatuck Heights facility are included in Attachment 3. A Structural Modification Report and Mount Analysis Report confirming that the tower and proposed antenna mounting system can support the proposed modifications are included in Attachment 4.

[1] Crown's effort to locate the City of Waterbury's land use approval for the existing tower has been unsuccessful. (*See* Attachment 2).

IV. Discussion

A. The Proposed Modification Will Not Cause a Substantial Change to the Physical Dimensions of the Existing Base Station

Section 6409(a) provides, in relevant part, that "a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." Pursuant to the FCC Order, the proposed modification does not substantially change the physical dimensions of the base station if the following criteria are satisfied.

1. *The proposed modified facility will not increase the height of the tower by more than ten (10) percent of the height.* Crown intends to increase the height of the existing 133-foot tower by ten (10) feet to 143 feet, which is less than 10% of the height of the existing structure.

2. *The proposed facility modification will not protrude from the edge of the structure more than six (6) feet.* AT&T's antennas and RRHs will not protrude more than six (6) feet from the face of the tower.

3. *The proposed facility does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets.* AT&T intends to install two (2) equipment cabinets and a back-up generator on its equipment platform.

4. *The proposed facility does not entail any excavation or deployment outside the current site of the base station.* AT&T's proposed facility modifications will remain within the limits of the existing facility compound.

5. *The proposed facility does not defeat the existing concealment elements of the base station.* The existing facility does not maintain any concealment elements and none are

proposed as a part of this modification proposal.

6. *The proposed facility complies with conditions associated with the prior approval of construction or modification of the base station.* Other than the proposed height increase, the existing facility and tower has not changed, in any substantial way, from its original configuration as approved by the City of Waterbury. Following an extensive search of City of Waterbury records neither Crown nor City Officials were able to find the original zoning approval for the Mattatuck Heights tower site. (*See* Attachment 2). Since 1999, all facility modifications have been approved by the Council.

B. FCC Compliance

Included in Attachment 5 is an RF Emissions Compliance Report confirming that the Mattatuck Heights facility, with the proposed modifications, will operate within the FCC safety standards for radio frequency emissions.

C. Visual Impact

According to a Photographic Documentation & Photosimulations report prepared by All-Points Technologies, the ten-foot extension of the existing Mattatuck Heights tower will not substantially change the character of existing views or have an adverse visual effect on the surrounding community. (*See* Attachment 6).

D. Notice to the City, Property Owner and Abutting Landowners

On February 15, 2019, a copy of this Sub-Petition was sent to Waterbury Mayor, Neil M. O'Leary; James Sequin, Waterbury's Director of City Planning; and Waterbury Twin LLC & 150 MH LLC, the owner of the Property. Copies of the letters sent to Mayor O'Leary, Mr. Sequin and Waterbury Twin LLC & 150 MH LLC are included in Attachment 6. A copy of this Sub-Petition was also sent to the owners of land that abuts the Property. A sample abutter's letter and

the list of those abutting landowners who were sent notice and a copy of this filing is included in Attachment 7.

V. Conclusion

Based on the information provided above, Crown respectfully submits that the proposed modification of the existing Mattatuck Heights Facility constitutes an "eligible facilities request" under Section 6409(a) and the FCC Order.

Respectfully submitted,

CROWN CASTLE

By: _____

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1

City of Waterbury
Public Works Department

MBL: **0424-0141-0001**

ADDRESS: 150 MATTATUCK HEIGHTS

This map is for informational purposes only and has not been prepared for, or suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to verify the usability of the information. The City of Waterbury makes no warranties, express or implied, as to the use of the information obtained herein.

N

ATTACHMENT 2

Myl, Kimberly

From: Myl, Kimberly
Sent: Tuesday, May 17, 2016 3:38 PM
To: 'siting.council@ct.gov'
Subject: 150 Mattatuck Heights - Existing Telecommunications Tower Original Zoning Approval

To Whom It May Concern:

Please be advised both the township (email below) and Crown Castle as the tower owner, do not have the original zoning resolution on file. Please use this email as notification to waive this requirement as we will include this and the email from the township within our submission.

Please let me know if you have any questions or need additional information. Thank you in advance.

KIMBERLY MYL
Real Estate Specialist
T: (201) 236-9069 | M: (201) 993-3697

CROWN CASTLE
1200 MacArthur Blvd, Suite 200
Mahwah, NJ 07430

From: Margaret Rice [mailto:mrice@waterburyct.org]
Sent: Tuesday, May 17, 2016 1:03 PM
To: Myl, Kimberly
Subject: RE: 150 Mattatuck Heights - Existing Telecommunications Tower Original Zoning Approval

Hi Kimberly,

I checked our records and City Clerk's office and could not find anything. I then contacted the Town Clerk and I was told that there might be something on the Land Records and that you would need to contact the Town Clerk for them to do a Title Search. They're phone number is (203) 574-6806.

Cissie
Administrative Support Specialist III
203)574-6817 Ext.7296

ATTACHMENT 3

at&t

SHEET INDEX

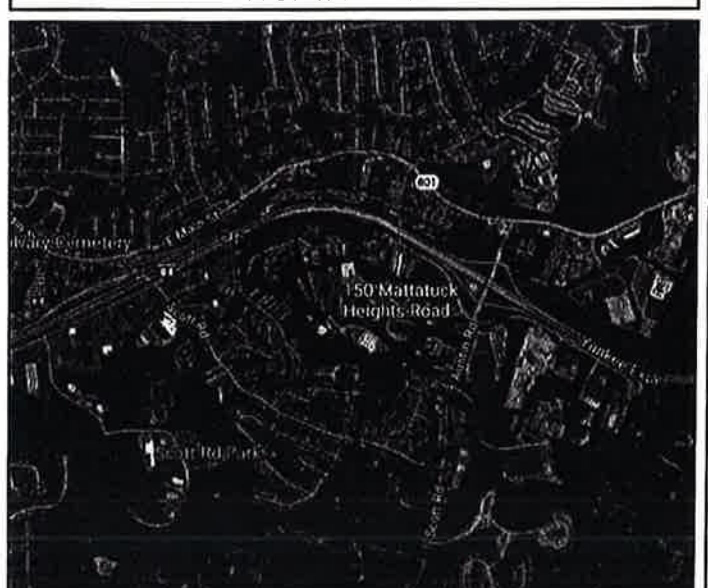
NO.	DESCRIPTION	NO.	DESCRIPTION
T1	TITLE SHEET	C11	EQUIPMENT PLATFORM DETAILS
C1	GENERAL NOTES	C12	ANTENNA MOUNT DETAILS
C2	GENERAL NOTES	E1	UTILITY ROUTING PLAN
C3	EXISTING OVERALL SITE PLAN	E2	ELECTRICAL ONE-LINE DIAGRAM
C3A	PROPOSED OVERALL SITE PLAN	E3	ANTENNA EQUIPMENT SCHEMATIC
C4	EQUIPMENT SITE PLAN	G1	GROUNDING DETAILS
C5	SITE ELEVATION	G2	GROUNDING DETAILS
C6	ANTENNA ORIENTATION		
C7	RF SCHEDULE		
C8	EQUIPMENT DETAILS		
C9	EQUIPMENT DETAILS		
C10	GENERATOR DETAIL		

DRIVING DIRECTIONS

DEPART FROM AT&T: 5841 BRIDGE STREET EAST SYRACUSE, NY 13057

1. HEAD SOUTHWEST ON BRIDGE ST
2. USE THE LEFT 2 LANES TO TURN LEFT ONTO WIDEWATERS PKWY
3. MAKE A U-TURN
4. USE THE MIDDLE LANE TO TURN RIGHT AT THE 1ST CROSS STREET ONTO BRIDGE ST
5. TURN LEFT ONTO THE INTERSTATE 690 E RAMP TO INTERSTATE 481
6. MERGE ONTO I-690 E
7. USE THE LEFT LANE TO TAKE THE INTERSTATE 481 N EXIT TOWARD INTERSTATE 90/THRUWAY
8. MERGE ONTO I-481 N
9. TAKE EXIT 6 TO MERGE ONTO I-90 E
10. KEEP RIGHT TO CONTINUE ON GOVERNOR THOMAS E. DEWEY THRUWAY/NEW YORK STATE THRUWAY, FOLLOW SIGNS FOR I-87 S/NEW YORK/BOSTON
11. CONTINUE ONTO I-87 S/GOVERNOR THOMAS E. DEWEY THRUWAY/NEW YORK STATE THRUWAY
12. TAKE EXIT 21A TOWARD I-90 E/MASS TURNPIKE/BOSTON
13. CONTINUE ONTO NY-912M E
14. CONTINUE ONTO I-90 E
15. TAKE EXIT 2 FOR US-20 E
16. USE ANY LANE TO TURN LEFT ONTO US-20 E/HWY 20 E
17. TURN RIGHT ONTO MA-8 S
18. CONTINUE ONTO CT-8 S
19. TURN LEFT ONTO S MAIN ST
20. TURN RIGHT ONTO CT-8 S (SIGNS FOR TORRINGTON/WATERBURY)
21. CONTINUE ONTO CT-8 S/US-6 W
22. CONTINUE ONTO CT-8 S
23. USE THE LEFT LANE TO TAKE EXIT 31 TO MERGE ONTO I-84 E TOWARD HARTFORD
24. TAKE EXIT 25A TOWARD AUSTIN RD
25. TURN RIGHT ONTO AUSTIN RD
26. TURN RIGHT ONTO CAPTAIN NEVILLE DR
27. TURN LEFT ONTO MATTATUCK HEIGHTS RD
28. TURN LEFT TO STAY ON MATTATUCK HEIGHTS RD
29. DESTINATION WILL BE ON THE RIGHT

VICINITY MAP



SITE NAME

WATERBURY

AT&T FA NUMBER:

10578275

CROWN CASTLE BU #:

876317

SITE ADDRESS

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

STRUCTURE TYPE

GUYED

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

TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG

TOLL FREE: 1-800-922-4455 OR www.cbyd.com

CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

PROJECT TEAM

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

PROJECT MANAGER

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
OFFICE #: (518) 690-0790
FAX #: (518) 690-0793

ENGINEER

SCOPE OF WORK:

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
- FACILITY HAS NO PLUMBING OR REFRIGERANTS
- THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS
- ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. CABINETS, ANTENNAS/RRU AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR

INSTALL:

- INSTALL POWER AND TELCO CONDUITS
- INSTALL ICE BRIDGE
- INSTALL GPS ANTENNA
- ROUTE NEW FIBER AND DC TRUNKS FROM PROPOSED EQUIPMENT TO TOWER VIA ICE BRIDGE
- INSTALL (1) PLATFORM ANTENNA MOUNT
- INSTALL (6) KMW EPBQ-654L8H8-L2 PANEL ANTENNAS
- INSTALL (3) CCI HPA65R-BU8A PANEL ANTENNAS
- INSTALL (3) RRUS-4415 B30
- INSTALL (3) RRUS-4449 B5/B12
- INSTALL (3) RRUS-4478 B14
- ISNTALL (3) RRUS-8843 B2/B66A
- INSTALL (3) DC6 'SQUID'
- INSTALL NEW 7'-3"x12'-8" STEEL EQUIPMENT PLATFORM
- INSTALL (3) EQUIPMENT CABINETS
- INSTALL (1) GENERATOR
- INSTALL (6) DC CABLES AND (2) FIBER CABLES

PROJECT SUMMARY

SITE NAME:	WATERBURY	
AT&T FA SITE NUMBER:	10578275	
CROWN CASTLE BU#:	876317	
SITE ADDRESS:	150 MATTATUCK HEIGHTS WATERBURY, CT 06705-3831	
COUNTY:	NEW HAVEN	
SITE COORDINATES:		
LATITUDE:	41° 32' 16.30" N	(NAD 83)
LONGITUDE:	72° 59' 6.10" W	(NAD 83)
JURISDICTION:	TOWN OF WATERBURY	
APPLICANT:	AT&T MOBILITY CORP. 5841 BRIDGE STREET EAST SYRACUSE, NY 13057	
TOWER OWNER:	CROWN CASTLE INTERNATIONAL 3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065	
BUILDING CODE:	CT BUILDING CODE UNIFORM BUILDING CODE BUILDING OFFICIALS & CODE ADMINISTRATORS UNIFORM MECHANICAL CODE UNIFORM PLUMBING CODE LOCAL BUILDING CODE CITY/COUNTY ORDINANCES	
ELECTRICAL CODE:	NATIONAL ELECTRICAL CODE	

ENGINEER'S LICENSE

CERTIFICATION STATEMENT:

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CONNECTICUT.

LICENSED ENGINEER – STATE OF CONNECTICUT

APPROVALS

CONST.		DATE
RF		DATE
LEASING/SITE ACQ.		DATE
IN-MARKET CONSTRUCTION LEAD		DATE
SITE OWNER	NAME/COMPANY: TITLE:	DATE

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT – JOHN S. STEVENS – No. 24463 – LICENSED PROFESSIONAL ENGINEER – FEB 04 2019

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF APPLICABLE STATE AND/OR LOCAL LAWS

No	Submittal / Revision	App'd	Date
B	REVISED PER MA	MPS	02/04/19
A	ISSUED FOR REVIEW	MPS	01/18/19

Drawn: MAP Date: 01/18/19
Designed: MPS Date: 01/18/19
Checked: MPS Date: 01/18/19

Project Number: 406-000

Project Title:
WATERBURY
876317

FA #: 10578275

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For: CROWN CASTLE

Drawing Scale: AS NOTED

Date: 02/04/19

Drawing Title: **TITLE SHEET**

Drawing Number: **T1**

GENERAL CONSTRUCTION NOTES:

TOWER OWNER NOTIFICATION: CROWN CASTLE NOTICE TO PROCEED IS REQUIRED PRIOR TO STARTING WORK. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER NOTED ON THE NTP A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   GENERAL CONTRACTOR
   SUBCONTRACTOR – CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T
2. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND AT&T PROJECT SPECIFICATIONS.
3. GENERAL CONTRACTOR AND SUBCONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR AND SUBCONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
4. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
5. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ARCHIETCT/ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH WORK.
8. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS. THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE SPACE FOR APPROVAL BY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
11. GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINE.
12. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
13. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. SUBCONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.
14. WORK PREVIOUSLY COMPLETED IS REPRESENTED BY LIGHT SHADED LINES AND NOTES. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. SUBCONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
15. SUBCONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
16. 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 THE OWNER.
17. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
18. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND SUBCONTRACTORS TO THE SITE AND/OR BUILDING.
19. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
20. THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.
21. THE GENERAL CONTRACTOR AND SUBCONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OT 2-A:10-B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.
22. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT/ENGINEER. 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 SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, D) TRENCHING & EXCAVATION.
23. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ARCHITECT/ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
24. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
25. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.
26. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
27. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE-APPROVED BY THE LOCAL JURISDICTION.
28. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
29. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.
30. SUBCONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.
31. SUBCONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
32. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS REQUIRED).
33. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.
34. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
35. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION OF AT&T MOBILITY GROUNDING STANDARD "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM/GPRS WIRELESS SITES" AND "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING." IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.
35. SUBCONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF SUBCONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.
36. SUBCONTRACTOR SHALL REMOVED ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
37. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
38. NO WHITE STROBE LIGHTS ARE PERMITTED. ANY REQUIRED LIGHTING MUST MEET FAA STANDARDS AND REQUIREMENTS.
39. ALL COAXIAL CABLE INSTALLATIONS TO FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
40. NO SIGNIFICANT NOISE, SMOKE, DUST OR VIBRATIONS WILL RESULT FROM THIS FACILITY. (DISREGARD THIS NOTE IF THIS SITE HAS A GENERATOR)
41. NO ADDITIONAL PARKING TO BE PROPOSED. EXISTING ACCESS AND PARKING TO REMAIN, UNLESS NOTED OTHERWISE.
42. NO LANDSCAPING IS PROPOSED AT THIS SITE, UNLESS NOTED OTHERWISE.

ELECTRICAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ANY/ALL ELECTRICAL WORK INDICATED. ANY/ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH DRAWINGS AND ANY/ALL APPLICABLE SPECIFICATIONS. IF ANY PROBLEMS ARE ENCOUNTERED BY COMPLYING WITH THESE REQUIREMENTS, CONTRACTOR SHALL NOTIFY 'CONSTRUCTION MANAGER' AS SOON AS POSSIBLE, AFTER THE DISCOVERY OF THE PROBLEMS, AND SHALL NOT PROCEED WITH THAT PORTION OF WORK, UNTIL THE 'CONSTRUCTION MANAGER' HAS DIRECTED THE CORRECTIVE ACTIONS TO BE TAKEN.
2. ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ANY/ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATION INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. ALL EXISTING CONDITIONS OF ELECTRICAL EQUIP., LIGHT FIXTURES, ETC., THAT ARE PART OF THE FINAL SYSTEM, SHALL BE VERIFIED BY THE CONTRACTOR, PRIOR TO THE SUBMITTING OF HIS BID. FAILURE TO COMPLY WITH THIS PARAGRAPH WILL IN NO WAY RELIEVE CONTRACTOR OF PERFORMING ALL WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND ALL CODES AND LOCAL ORDINANCES OF THE LOCAL POWER & TELEPHONE COMPANIES HAVING JURISDICTION AND SHALL INCLUDE BUT NOT BE LIMITED TO:
   C – NATIONAL FIRE CODES
   A. UL – UNDERWRITERS LABORATORIES
   B. NEC – NATIONAL ELECTRICAL CODE
   C. NEMA – NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
   D. OSHA – OCCUPATIONAL SAFETY AND HEALTH ACT
   E. SBC – STANDARD BUILDING CODE
4. DO NOT SCALE ELECTRICAL DRAWINGS; REFER TO SITE PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, AND CONFIRM WITH CONSTRUCTION MANAGER' ANY SIZES AND LOCATIONS WHEN NEEDED.
5. EXISTING SERVICES: CONTRACTOR SHALL NOT INTERRUPT EXISTING SERVICES WITHOUT WRITTEN PERMISSION OF THE OWNER.
6. CONTRACTOR SHALL PAY FOR ANY/ALL PERMITS, FEES, INSPECTIONS, AND TESTING. CONTRACTOR IS TO OBTAIN PERMITS AND APPROVED SUBMITTALS PRIOR TO THE WORK BEGINNING OR ORDERING EQUIPMENT.
7. THE TERM "PROVIDE" USED IN CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, INDICATES THAT THE CONTRACTOR SHALL FURNISH AND INSTALL.
8. CONTRACTOR SHALL CONFIRM WITH LOCAL UTILITY COMPANY ANY/ALL REQUIREMENTS, SUCH AS THE: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, SIZE OF TRANSFORMERS, SCHEDULED DOWNTIME FOR THE OWNERS' CONFIRMATION, ETC... ANY/ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER, PRIOR TO BEGINNING ANY WORK.
9. MINIMUM WIRE SIZE SHALL BE #12 AWG, NOT INCLUDING CONTROL WIRING, UNLESS NOTED OTHERWISE. ALL CONDUCTORS SHALL BE COPPER WITH THWN INSULATION.
10. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET/DAMP LOCATIONS AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
11. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF THE CONSTRUCTION. CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
12. ELECTRICAL SYSTEM SHALL BE AS COMPLETELY AND EFFECTIVELY GROUNDED, AS REQUIRED BY SPECIFICATIONS, SET FORTY BY AT&T.
13. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS, WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND SUBJECT TO REGULATORY INSPECTION & APPROVAL BY CONSTRUCTION MANAGER.
14. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
15. CONTRACTOR SHALL GUARANTEE ANY/ALL MATERIALS AND WORK FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE.
16. THE CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ANY ADDITIONAL CHARGE AND SHALL INCLUDE THE REPLACEMENT OR THE REPAIR OF ANY OTHER PHASE OF THE INSTALLATION, WHICH MAY HAVE BEEN DAMAGED THEREIN.
17. ADEQUATE AND REQUIRED LIABILITY INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LOSS AND ANY/ALL PROPERTY DAMAGE FOR THE DURATION OF WORK.
18. PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES AND DEVICES FOR ALL OUTLETS AS INDICATED.
19. DITCHING AND BACK FILL: CONTRACTOR SHALL PROVIDE FOR ALL UNDERGROUND INSTALLED CONDUIT AND/OR CABLES INCLUDING EXCAVATION, BACKFILLING AND COMPACTION. REFER TO 'FOUNDATION, EXCAVATION, AND BACKFILLING NOTES.'
20. MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SHALL APPEAR ON THE LIST OF U.L. APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NEC, NEMA, AND IECE.
21. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR MANUFACTURERS CATALOG INFORMATION OF ANY/ALL LIGHTING FIXTURES, SWITCHES, AND ALL OTHER ELECTRICAL ITEMS FOR APPROVAL BY THE CONSTRUCTION MANAGER PRIOR TO INSTALLATION.
22. ANY CUTTING OR PATCHING DEEMED NECESSARY FOR ELECTRICAL WORK IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY AND SHALL BE INCLUDED IN THE COST FOR WORK AND PERFORMED TO THE SATISFACTION OF THE 'CONSTRUCTION MANAGER' UPON FINAL ACCEPTANCE.
23. THE ELECTRICAL CONTRACTOR SHALL LABEL AL PANELS WITH ONLY TYPEWRITTEN DIRECTORIES. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
24. DISCONNECT SWITCHES SHALL BE H.P. RATED HEAVY-DUTY, QUICK-MADE AND QUICK-BREAK ENCLOSURES, AS REQUIRED BY EXPOSURE TYPE.
25. ALL CONNECTIONS SHALL BE MADE WITH A PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND SUCH AS "NO-OXIDE A" BY DEARBORNE CHEMICAL CO. COAT ALL WIRE SURFACES BEFORE CONNECTING. EXPOSED COPPER SURFACES, INCLUDING GROUND BARS, SHALL BE TREATED – NO SUBSTITUTIONS.
26. RACEWAYS: CONDUIT SHALL BE SCHEDULE 40 PVC MEETING OR EXCEEDING NEMA TC2 – 1990. CONTRACTOR SHALL PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS – 200 LBS TEST POLYETHYLENE CORD. ALL CONDUIT BENDS SHALL BE A MINIMUM OF 2 FT. RADIUS. RGS CONDUITS WHEN SPECIFIED, SHALL MEET UL-6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADING RIGID CONDUIT. COAT ALL THREADS WITH 'BRITE ZINC' OR 'COLD CALV.'
27. SUPPORT OF ALL ELECTRICAL WORK SHALL BE AS REQUIRED BY NEC.
28. CONDUCTORS: CONTRACTOR SHALL USE 98% CONDUCTIVITY COPPER WITH TYPE THWN INSULATION, 600 VOLT, COLOR CODED. USE SOLID CONDUCTORS FOR WIRE UP TO AND INCLUDING NO. 8 AWG. USE STRANDED CONDUCTORS FOR WIRE ABOVE NO. 8 AWG.
29. CONNECTORS FOR POWER CONDUCTORS: CONTRACTOR SHALL USE PRESSURE TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER. USE SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER.
30. SERVICES: 240/120V, SINGLE PHASE, 3 WIRE CONNECTION AVAILABLE FROM UTILITY COMPANY. OWNER OR OWNERS AGENT WILL APPLY FOR POWER.
31. TELEPHONE SERVICE: CONTRACTOR SHALL PROVIDE EMPTY CONDUITS WITH PULL STRINGS AS INDICATED ON DRAWINGS.
32. ELECTRICAL AND TELCO RACEWAYS TO BE BURIED A MINIMUM OF 2' DEPTH.
33. CONTRACTOR SHALL PLACE TWO LENGTHS OF WARNING TAPE AT A DEPTH OF 12" BELOW GROUND AND DIRECTLY ABOVE ELECTRICAL AND TELCO SERVICE CONDUITS. CAUTION TAPE TO READ "CAUTION BURIED ELECTRIC" OR "BURIED TELECOMM."
34. ALL BOLTS SHALL BE STAINLESS STEEL

GROUNDING NOTES:

1. COMPRESSION CONNECTIONS (2), 2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. EC SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P," "A," "N," "I") WITH 1" LETTERS.
3. ALL HARDWARE 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.
4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE.
6. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
7. WHEN THE SCOPE OF WORK REQUIRES THE ADDITION OF A GROUNDING BAR TO AN EXISTING TOWER, THE SUBCONTRACTOR SHALL OBTAIN APPROVAL FROM THE TOWER OWNER PRIOR TO MOUNTING THE GROUNDING BAR TO THE TOWER.
8. ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER.

FOUNDATION, EXCAVATION, & BACKFILL NOTES:

1. ALL FINAL GRADED SLOPES SHALL BE A MAXIMUM OF 3 HORIZONTAL TO 1 VERTICAL.
2. ALL EXCAVATIONS PREPARED FOR PLACEMENT OF CONCRETE SHALL BE OF UNDISTURBED SOILS, SUBSTANTIALLY HORIZONTAL, AND FREE FROM ANY LOOSE, UNSUITABLE MATERIAL OR FROZEN SOILS, AND WITHOUT THE PRESENCE OF POUNDING WATER. DEWATERING FOR EXCESS GROUND WATER SHALL BE PROVIDED WHEN REQUIRED. COMPACTION OF SOILS UNDER CONCRETE PAD FOUNDATIONS SHALL NOT BE LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR THE SOIL IN ACCORDANCE WITH ASTM D1557.
3. CONCRETE FOUNDATIONS SHALL NOT BE PLACED ON ORGANIC OR UNSUITABLE MATERIAL. IF INADEQUATE BEARING CAPACITY IS REACHED AT THE DESIGNED EXCAVATION DEPTH, THE UNSATISFACTORY SOIL SHALL BE EXCAVATED TO ITS FULL DEPTH AND EITHER BE REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL OR THE EXCAVATION SHALL BE FILLED WITH CONCRETE OF THE SAME TYPE SPECIFIED FOR THE FOUNDATION. CRUSHED STONE MAY BE USED TO STABILIZE THE BOTTOM OF THE EXCAVATION. ANY STONE SUB BASE MATERIAL, IF USED, SHALL NOT SUBSTITUTE FOR REQUIRED THICKNESS OF CONCRETE.
4. ALL EXCAVATIONS SHALL BE CLEAN OF UNSUITABLE MATERIAL SUCH AS VEGETATION, TRASH, DEBRIS, AND SO FORTH PRIOR TO BACK FILLING. BACK FILL SHALL CONSIST OF APPROVED MATERIALS SUCH AS EARTH, LOAM, SANDY CLAY, SAND AND GRAVEL, OR SOFT SHALE, FREE FROM CLODS OR LARGE STONES OVER 2 1/2 MAX DIMENSIONS. ALL BACK FILL SHALL BE PLACED IN COMPACTED LAYERS.
5. ALL FILL MATERIALS AND FOUNDATION BACK FILL SHALL BE PLACED IN MAXIMUM 6" THICK LIFTS BEFORE COMPACTION. EACH LIFT SHALL BE WETTED IF REQUIRED AND COMPACTED TO NOT LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR SOIL IN ACCORDANCE WITH ASTM D1557
6. NEWLY PLACED CONCRETE FOUNDATIONS SHALL CURE A MINIMUM OF 72 HOURS PRIOR TO BACK FILLING.
7. FINISHED GRADING SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE AND PREVENT STANDING WATER. THE FINAL (FINISH) ELEVATION OF SLAB FOUNDATIONS SHALL SLOPE AWAY IN ALL DIRECTIONS FROM THE CENTER. FINISH GRADE OF CONCRETE PADS SHALL BE A MAXIMUM OF 4 INCHES ABOVE FINAL FINISH GRADE ELEVATIONS. PROVIDE SURFACE FILL GRAVEL TO ESTABLISH SPECIFIED ELEVATIONS WHERE REQUIRED.
8. NEWLY GRADED SURFACE AREAS TO RECEIVE GRAVEL SHALL BE COVERED WITH GEOTEXTILE FABRIC TYPE: TYPAR-3401 AS MANUFACTURED BY "CONSTRUCTION MATERIAL 1-800-239-3841" OR AN APPROVED EQUIVALENT, SHOWN ON PLANS. THE GEOTEXTILE FABRIC SHALL BE BLACK IN COLOR TO CONTROL THE RECURRENCE OF VEGETATIVE GROWTH AND EXTEND TO WITHIN 1 FOOT OUTSIDE THE SITE FENCING OR ELECTRICAL GROUNDING SYSTEM PERIMETER WHICHEVER IS GREATER. ALL FABRIC SHALL BE COVERED WITH A MINIMUM OF 4" DEEP COMPACTED STONE OR GRAVEL AS SPECIFIED. I.E. FDOT TYPE NO.57 FOR FENCED COMPOUND; FDOT TYPE NO. 67 FOR ACCESS DRIVE AREA.
9. IN ALL AREAS TO RECEIVE FILL, REMOVE ALL VEGETATION, TOPSOIL, DEBRIS, WET AND UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS, AND DELETERIOUS MATERIALS FROM GROUND SURFACE. PLOW STRIP OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SUCH THAT FILL MATERIAL WILL BIND WITH EXISTING/PREPARED SOIL SURFACE.

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10. WHEN SUBGRADE OR PREPARED GROUND SURFACE HAS A DENSITY LESS THAN THAT REQUIRED FOR THE FILL MATERIAL, SCARIFY THE GROUND SURFACE TO DEPTH REQUIRED, PULVERIZE, MOISTURE-CONDITION AND/OR AERATE THE SOILS AND RE-COMPACT TO THE REQUIRED DENSITY PRIOR TO PLACEMENT OR FILLS.
11. IN AREAS WHICH EXISTING GRAVEL SURFACING IS REMOVED OR DISTURBED DURING CONSTRUCTION OPERATIONS, REPLACE GRAVEL SURFACING TO MATCH ADJACENT GRAVEL SURFACING AND RESTORED TO THE SAME THICKNESS AND COMPACTION AS SPECIFIED. ALL RESTORED GRAVEL SURFACING SHALL BE FREE FROM CORRUGATIONS AND WAVES.
12. EXISTING GRAVEL SURFACING MAY BE EXCAVATED SEPARATELY AND REUSED WITH THE CONDITION THAT ANY UNFAVORABLE AMOUNTS OF ORGANIC MATTER, OR OTHER DELETERIOUS MATERIALS ARE REMOVED PRIOR TO REUSE. FURNISH ANY ADDITIONAL GRAVEL RESURFACING MATERIAL AS NEEDED TO PROVIDE A FULL DEPTH COMPACTED SURFACE THROUGHOUT SITE.
13. GRAVEL SUB SURFACE SHALL BE PREPARED TO REQUIRED COMPACTION AND SUBGRADE ELEVATIONS BEFORE GRAVEL SURFACING IS PLACED AND/OR RESTORED. ANY LOOSE OR DISTURBED MATERIALS SHALL BE THOROUGHLY COMPACTED AND ANY DEPRESSIONS IN THE SUBGRADE SHALL BE FILLED AND COMPACTED WITH APPROVED SELECTED MATERIAL. GRAVEL SURFACING MATERIAL SHALL NOT BE USED FOR FILLING DEPRESSIONS IN THE SUBGRADE.
14. PROTECT EXISTING GRAVEL SURFACING AND SUBGRADE IN AREAS WHERE EQUIPMENT LOADS WILL OPERATE. USE PLANKING 'MATTS' OR OTHER SUITABLE PROTECTION DESIGNED TO SPREAD EQUIPMENT LOADS AS MAY BE NECESSARY. REPAIR ANY DAMAGE TO EXISTING GRAVEL SURFACING OR SUB GRADE WHERE SUCH DAMAGE IS DUE TO THE CONTRACTORS OPERATIONS.
15. DAMAGE TO EXISTING STRUCTURES AND/OR UTILITIES RESULTING FROM CONTRACTORS NEGLIGENCE SHALL BE REPAIRED AND/OR REPLACED TO THE OWNERS SATISFACTION AT NO ADDITIONAL COST TO THE CONTRACT.
16. ALL SUITABLE BORROW MATERIAL FOR BACK FILL OF THE SITE SHALL BE INCLUDED IN THE BID. EXCESS TOPSOIL AND UNSUITABLE MATERIAL SHALL BE DISPOSED OF OFF SITE AT LOCATIONS APPROVED BY GOVERNING AGENCIES AT NO ADDITIONAL COST TO THE CONTRACT.

ENVIRONMENTAL NOTES:

1. ALL WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH ISSUED PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF FINES AND PROPER CLEAN UP FOR AREAS IN VIOLATION.
2. CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS AND WATERWAYS AND SHALL BE MAINTAINED IN PLACE THROUGH FINAL JURISDICTIONAL INSPECTION & RELEASE OF SITE.
3. CONTRACTOR SHALL INSTALL/CONSTRUCT ALL NECESSARY SEDIMENT/SILT CONTROL FENCING AND PROTECTIVE MEASURES WITHIN THE LIMITS OF SITE DISTURBANCE PRIOR TO CONSTRUCTION.
4. NO SEDIMENT SHALL BE ALLOWED TO EXIT THE PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ADEQUATE MEASURES FOR CONTROLLING EROSION. ADDITIONAL SEDIMENT CONTROL FENCING MAY BE REQUIRED IN ANY AREAS SUBJECT TO EROSION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTIONS AND ANY REPAIRS OF ALL SEDIMENT CONTROL MEASURES INCLUDING SEDIMENT REMOVAL AS NECESSARY.
6. CLEARING OF VEGETATION AND TREE REMOVAL SHALL BE ONLY AS PERMITTED AND BE HELD TO A MINIMUM. ONLY TREES NECESSARY FOR CONSTRUCTION OF THE FACILITIES SHALL BE REMOVED.
7. SEEDING AND MULCHING AND/OR SODDING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE PROJECT FACILITIES AFFECTING LAND DISTURBANCE.
8. CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENTS FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS, AND CHECK DAMS.
9. RIP RAP OF SIZES INDICATED SHALL CONSIST OF CLEAN, HARD, SOUND, DURABLE, UNIFORM IN QUALITY STONE FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI, OR OTHER DELETERIOUS SUBSTANCES.

CONCRETE MASONRY NOTES:

1. CONCRETE MASONRY UNITS SHALL BE MEDIUM WEIGHT UNITS CONFORMING TO ASTM C90, GRADE N-1, (F'M=1,500 PSI). MEDIUM WEIGHT (115).
2. MORTAR SHALL BE TYPE "S" (MINIMUM 1,800 PSI AT 28 DAYS).
3. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS.
4. ALL CELLS CONTAINING REINFORCING STEEL OR EMBEDDED ITEMS AND ALL CELLS IN RETAINING WALLS AND WALLS BELOW GRADE SHALL BE SOLID GROUTED.
5. ALL HORIZONTAL REINFORCING STEEL SHALL BE PLACED IN BOND BEAM OR LINTEL BEAM UNITS.
6. WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS SHALL BE FORMED BY STOPPING THE GROUT POUR 1-1/2" BELOW TOP OF THE UPPERMOST UNIT.
7. ALL BOND BEAM BLOCK SHALL BE "DEEP CUT" UNITS.
8. PROVIDE INSPECTION AND CLEAN-OUT HOLES AT BASE OF VERTICAL CELLS HAVING GROUT LIFTS IN EXCESS OF 4'-0" OF HEIGHT.
9. ALL GROUT SHALL BE CONSOLIDATED WITH A MECHANICAL VIBRATOR.
10. CEMENT SHALL BE AS SPECIFIED FOR CONCRETE.
11. REINFORCING BARS – SEE NOTES UNDER "REINFORCING STEEL" FOR REQUIREMENTS.
31. PROVIDE ONE BAR DIAMETER (A MINIMUM OF 1/2") GROUT BETWEEN MAIN REINFORCING AND MASONRY UNITS.
32. LOW LIFT CONSTRUCTION, MAXIMUM GROUT POUR HEIGHT IS 4 FEET.
33. LIFT GROUTED CONSTRUCTION MAY BE USED IN CONFORMANCE WITH PROJECT SPECIFICATIONS AND SECTION 2104.6.1 OF CURRENT BUILDING CODE.
34. ALL CELLS IN CONCRETE BLOCKS SHALL BE FILLED SOLID WITH GROUT, EXCEPT AS NOTED IN THE DRAWINGS OR SPECIFICATIONS.
35. CELLS SHALL BE IN VERTICAL ALIGNMENT, DOWELS IN FOOTINGS SHALL BE SET TO ALIGN WITH CORES CONTAINING REINFORCING STEEL.
36. REFER TO ARCHITECTURAL DRAWINGS FOR SURFACE AND HEIGHT OF UNITS, LAYING PATTERN AND JOINT TYPE.
37. SAND SHALL BE CLEAN, SHARP AND WELL GRADED, FREE FROM INJURIOUS AMOUNTS OF DUST, LUMPS, SHALE, ALKALI OR ORGANIC MATERIAL.
38. BRICK SHALL CONFORM TO ASTM C-62 AND SHALL BE GRADE MW OR BETTER.

STRUCTURAL CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI-301-10
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH fc'=2,500 PSI AT 28 DAYS UNLESS NOTED OTHERWISE.
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.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

CONCRETE CAST AGAINST EARTH	3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 AND LARGER	2 IN.
#5 AND SMALLER & WWF	1-1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER, NOR CAST AGAINST THE GROUND:	
SLAB AND WALL	3/4 IN.
BEAMS AND COLUMNS	1-1/2 IN.

5. A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE U.N.O. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. HOLES TO RECEIVE EXPANSION/WEDGE ANCHORS SHALL BE 1/8" LARGER IN DIAMETER THAN THE ANCHOR BOLD, DOWEL OR ROD AND SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. LOCATE AND AVOID CUTTING EXISTING REBAR WHEN DRILLING HOLES IN ELEVATED CONCRETE SLABS.
7. USE AND INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER ICBO & MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURES.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION. STEEL SECTIONS SHALL BE IN ACCORDANCE WITH ASTM AS INDICATED BELOW:
   W-SHAPES: ASTM A992, 50 KSI
   ANGLES, BARS CHANNELS: ASTM A36, 36 KSI
   HSS SECTIONS: ASTM 500, 46 KSI
   PIPE SECTIONS: ASTM A53-E, 35 KSI
2. ALL EXTERIOR EXPOSED STEEL AND HARDWARE SHALL BE HOT DIPPED GALVANIZED.
3. 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.
4. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE 3/4" Ø CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
5. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" Ø ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
6. FIELD MODIFICATIONS ARE TO BE COATED WITH ZINC ENRICHED PAINT.

SITE WORK & DRAINAGE:

PART 1 – GENERAL

CLEARING, GRUBBING, STRIPPING, EROSION CONTROL, SURVEY, LAYOUT, SUBGRADE PREPARATION AND FINISH GRADING AS REQUIRED TO COMPLETE THE PROPOSED WORK SHOWN IN THESE PLANS.

1.1 REFERENCES:
A. DOT (STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR WAY CONSTRUCTION – CURRENT EDITION)
B. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
C. OSHA (OCCUPATION SAFETY AND HEALTH ADMINISTRATION)

1.2 INSPECTION AND TESTING:
A. FIELD TESTING OF EARTHWORK COMPACTION AND CONCRETE CYLINDERS
B. ALL WORK SHALL BE INSPECTED AND RELEASED BY THE GENERAL CONTRACTOR WHO SHALL CARRY OUT THE GENERAL INSPECTION OF THE WORK WITH SPECIFIC CONCERN TO PROPER PERFORMANCE OF THE WORK AS SPECIFIED AND/OR CALLED FOR ON THE DRAWINGS. IT IS THE SUBCONTRACTOR'S RESPONSIBILITY TO REQUEST TIMELY INSPECTIONS PRIOR TO PROCEEDING WITH FURTHER WORK THAT WOULD MAKE PARTS OF WORK INACCESSIBLE OR DIFFICULT TO INSPECT.

1.3 SITE MAINTENANCE AND PROTECTION:
A. PROVIDE ALL NECESSARY JOB SITE MAINTENANCE FROM COMMENCEMENT OF WORK UNTIL COMPLETION OF THE SUBCONTRACT.
B. AVOID DAMAGE TO THE SITE AND TO EXISTING FACILITIES, STRUCTURES, TREES, AND SHRUBS DESIGNATED TO REMAIN. TAKE PROTECTIVE MEASURES TO PREVENT EXISTING FACILITIES THAT ARE NOT DESIGNATED FOR REMOVAL FROM BEING DAMAGED BY THE WORK.
C. KEEP SITE FREE OF ALL PONDING WATER.
D. PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH STATE DOT AND EPA REQUIREMENTS.
E. PROVIDE AND MAINTAIN ALL TEMPORARY FENCING, BARRICADES, WARNING SIGNALS AND SIMILAR DEVICES NECESSARY TO PROTECT AGAINST THEFT FROM PROPERTY DURING THE ENTIRE PERIOD OF CONSTRUCTION. REMOVE ALL SUCH DEVICES UPON COMPLETION OF THE WORK.
F. EXISTING UTILITIES: DO NOT INTERRUPT EXISTING UTILITIES SERVING FACILITIES OCCUPIED BY THE OWNER OR OTHERS, EXCEPT WHEN PERMITTED IN WRITING BY THE ENGINEER, AND THEN ONLY AFTER ACCEPTABLE TEMPORARY UTILITY SERVICES HAVE BEEN PROVIDED.

   PROVIDE A MINIMUM 48-HOUR NOTICE TO THE ENGINEER AND RECEIVE WRITTEN NOTICE TO PROCEED BEFORE INTERRUPTING ANY UTILITY SERVICE.

PART 2 – PRODUCTS

2.1 SUITABLE BACKFILL: ASTM D2321 (CLASS I, II, III, OR IVA) FREE FROM FROZEN LUMPS, REFUSE, STONES OR ROCKS LARGER THAN 3 INCHES IN ANY DIMENSION OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL.
2.2 NON-POROUS GRANULAR EMBANKMENT AND BACKFILL: ASTM D2321 (CLASS III, IVA OR IVB) COARSE AGGREGATE. FREE FROM FROZEN LUMPS, REFUSE, STONES, OR ROCKS LARGER THAN 3 INCHES IN ANY DIMENSION OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL.
2.3 POROUS GRANULAR EMBANKMENT AND BACKFILL: ASTM D2321 (CLASS IA, IB, OR II) COARSE AGGREGATE FREE FROM FROZEN LUMPS, REFUSE, STONES, OR ROCKS LARGER THAN 3 INCHES IN ANY DIMENSION OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL.
2.4 SELECT STRUCTURAL FILL: GRANULAR FILL MATERIAL MEETING THE REQUIREMENTS OF ASTM E850-95. FOR USE AROUND AND UNDER STRUCTURES WHERE STRUCTURAL FILL MATERIAL ARE REQUIRED.
2.5 GRANULAR BEDDING AND TRENCH BACKFILL: WELL-GRADED SAND MEETING THE GRADATION REQUIREMENTS OF ASTM D2487 (SE OR SW-SM).
2.6 COARSE AGGREGATE FOR ACCESS ROAD SUB BASE COURSE SHALL CONFORM TO ASTM D2940.
2.7 UNSUITABLE MATERIAL: AND MODERATELY PLASTIC SILTS AND CLAYS (LL>45). MATERIAL CONTAINING REFUSE, FROZEN LUMPS, DEMOLISHED BITUMINOUS MATERIAL, VEGETATIVE MATTER, WOOD, STONES IN EXCESS OF 3 INCHES IN ANY DIMENSION, AND DEBRIS AS DETERMINED BY THE CONSTRUCTION MANAGER. TYPICAL THESE WILL BE SOILS CLASSIFIED BY ASTM AS PT, MH, CH, OH, ML, AND OL.
2.8 GEOTEXTILE FABRIC: MIRAFI 500X OR APPROVED EQUAL.
2.9 PLASTIC MARKING TAPE: SHALL BE ACID AND ALKALI RESISTANT POLYETHYLENE FILM SPECIFICALLY MANUFACTURED FOR MARKING AND LOCATING UNDERGROUND UTILITIES, 6 INCHES WIDE WITH A MINIMUM THICKNESS OF 0.004 INCH. TAPE SHALL HAVE MINIMUM STRENGTH OF 1500 PSI IN BOTH DIRECTIONS AND MANUFACTURED WITH INTEGRAL CONDUCTORS, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY A METAL DETECTOR WHEN BURIED UP TO 3 FEET DEEP. THE METALLIC CORE OF THE TAPE SHALL BE ENCASED IN A PROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. TAPE COLOR SHALL BE RED FOR ELECTRIC UTILITIES AND ORANGE FOR TELECOMMUNICATION UTILITIES.

PART 2 – EXECUTION

3.1 GENERAL:
A. BEFORE STARTING GENERAL SITE PREPARATION ACTIVITIES, INSTALL EROSION AND SEDIMENT CONTROL MEASURES. THE WORK AREA SHALL BE CONSTRUCTED AND MAINTAINED IN SUCH A CONDITION THAT IN THE EVENT OF RAIN THE SITE WILL BE DRAINED AT ANY TIME.
B. BEFORE ALL SURVEY, LAYOUT, STAKING, AND MARKING, ESTABLISH AND MAINTAIN ALL LINES, GRADES, ELEVATIONS AND BENCHMARKS NEEDED FOR EXECUTION OF THE WORK.
C. CLEAR AND GRUB THE AREA WITHIN THE LIMITS OF THE SITE. REMOVE TREES, BRUSH, STUMPS, RUBBISH AND OTHER DEBRIS AND VEGETATION RESTING ON OR PROTRUDING THROUGH THE SURFACE OF THE SITE AREA TO BE CLEARED.
   1. REMOVE THE FOLLOWING MATERIALS TO A DEPTH OF NO LESS THAN 12 INCHES BELOW THE ORIGINAL GROUND SURFACE: ROOTS, STUMPS, AND OTHER DEBRIS, BRUSH, AND REFUSE EMBEDDED IN OR PROTRUDING THROUGH THE GROUND SURFACE, RAKE, DISK OR PLOW THE AREA TO A DEPTH OF NO LESS THAN 6 INCHES, AND REMOVE TO A DEPTH OF 12 INCHES ALL ROOTS AND OTHER DEBRIS THEREBY EXPOSED.
   2. REMOVE TOPSOIL MATERIAL COMPLETELY FROM THE SURFACE UNTIL THE SOIL NO LONGER MEETS THE DEFINITION OF TOPSOIL. AVOID MIXING TOPSOIL WITH SUBSOIL OR OTHER UNDESIRABLE MATERIALS.
   3. EXCEPT WHERE EXCAVATION TO GREATER DEPTH IS INDICATED, FILL DEPRESSIONS RESULTING FROM CLEARING, GRUBBING, AND DEMOLITION WORK COMPLETELY WITH SUITABLE FILL.
D. REMOVE FROM THE SITE AND DISPOSE IN AN AUTHORIZED LANDFILL ALL DEBRIS RESULTING FROM CLEARING AND GRUBBING OPERATIONS. BURNING WILL NOT BE PERMITTED.
E. PRIOR TO EXCAVATING, THOROUGHLY EXAMINE THE AREA TO BE EXCAVATED AND/OR TRENCHED TO VERIFY THE LOCATIONS OF FEATURES INDICATED ON THE DRAWINGS AND TO ASCERTAIN THE EXISTENCE AND LOCATION OF ANY STRUCTURE, UNDERGROUND STRUCTURE, OR OTHER ITEM NOT SHOWN THAT MIGHT INTERFERE WITH THE PROPOSED CONSTRUCTION. NOTIFY THE CONSTRUCTION MANAGER OF ANY OBSTRUCTIONS THAT WILL PREVENT ACCOMPLISHMENT OF THE WORK AS INDICATED ON THE DRAWINGS.
F. SEPARATE AND STOCK PILE AL EXCAVATED MATERIALS SUITABLE FOR BACKFILL. ALL EXCESS EXCAVATED AND UNSUITABLE MATERIALS SHALL BE DISPOSED OF OFF-SITE IN A LEGAL MANNER.

3.2 BACKFILL:
A. AS SOON AS PRACTICAL, AFTER COMPLETING CONSTRUCTION OF THE RELATED STRUCTURE, INCLUDING EXPIRATION OF THE SPECIFIED MINIMUM CURING PERIOD FOR CAST-IN-PLACE CONCRETE, BACKFILL THE EXCAVATION WITH APPROVED MATERIAL TO RESTORE THE REQUIRED FINISHED GRADE.
B. PRIOR TO PLACING BACKFILL AROUND STRUCTURES, ALL FORMS SHALL BE REMOVED AND THE EXCAVATION CLEANED OF ALL TRASH, DEBRIS, AND UNSUITABLE MATERIALS.
C. BACKFILL BY PLACING AND COMPACTING SUITABLE BACKFILL MATERIAL OR SELECT GRANULAR BACKFILL MATERIAL WHEN REQUIRED IN UNIFORM HORIZONTAL LAYERS OF NO GREATER THAN 8-INCHES LOOSE THICKNESS AND COMPACTED. WHERE HAND OPERATED COMPACTORS ARE USED, THE FILL MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 4 INCHES IN LOOSE DEPTH AND COMPACTED.
D. WHENEVER THE DENSITY TESTING INDICATES THAT THE CONTRACTOR HAS NOT OBTAINED THE SPECIFIED DENSITY, THE SUCCEEDING LAYER SHALL NOT BE PLACED UNTIL THE SPECIFICATION REQUIREMENTS ARE MET UNLESS OTHERWISE AUTHORIZED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL TAKE WHATEVER APPROPRIATE ACTION IS NECESSARY , SUCH AS DISKING AND DRYING, ADDING WATER, OR INCREASING THE COMPACTIVE EFFORT TO MEET THE MINIMUM COMPACTION REQUIREMENTS.
E. THOROUGHLY COMPACT EACH LAYER OF BACKFILL TO A MINIMUM 95% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE STANDARD PROCTOR TEST, ASTM D 698.

3.3 TRENCH EXCAVATION:
A. UTILITY TRENCHES SHALL BE EXCAVATED TO THE LINES AND GRADES SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE GENERAL CONTRACTOR. PROVIDE SHORING, SHEETING AND BRACING AS REQUIRED TO PREVENT CAVING OR SLOUGHING OF THE TRENCH WALLS.
B. EXTEND THE TRENCH WIDTH A MINIMUM OF 6 INCHES BEYOND THE OUTSIDE EDGE OF THE OUTERMOST CONDUIT.
C. WHEN SOFT YIELDING, OR OTHERWISE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, BACKFILL AT THE REQUIRED TRENCH TO A DEPTH OF NO LESS THAN 12 INCHES BELOW THE REQUIRED ELEVATION AND BACKFILL WITH GRANULAR BEDDING MATERIAL.

3.4 TRENCH BACKFILL:
A. PROVIDE GRANULAR BEDDING MATERIAL IN ACCORDANCE WITH THE DRAWINGS AND THE UTILITY REQUIREMENTS.
B. NOTIFY THE GENERAL CONTRACTOR 24 HOURS IN ADVANCE OF BACKFILLING.
C. CONDUCT UTILITY CHECK TESTS BEFORE BACKFILLING. BACKFILL AND COMPACT TRENCH BEFORE ACCEPTANCE TESTING.
D. PLACE GRANULAR TRENCH BACKFILL UNIFORMLY ON BOTH SIDES OF THE CONDUITS IN 6-INCH UNCOMPACTED LIFTS UNTIL 12 INCHES OVER THE CONDUITS. SOLIDLY RAM AND TAMP BACKFILL INTO SPACE AROUND CONDUITS.
E. PROTECT CONDUIT FROM LATERAL MOVEMENT, IMPACT DAMAGE, OR UNBALANCED LOADING.
F. ABOVE THE CONDUIT EMBEDMENT ZONE, PLACE AND COMPACT SATISFACTORY BACKFILL MATERIAL IN 8-INCH MAXIMUM LOOSE THICKNESS LIFTS TO RESTORE THE REQUIRED FINISHED SURFACE GRADE.
G. COMPACT FINAL TRENCH BACKFILL TO A DENSITY EQUAL TO OR GREATER THAN THAT OF THE EXISTING UNDISTURBED MATERIAL IMMEDIATELY ADJACENT TO THE TRENCH BUT NO LESS THAN A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE STANDARD PROCTOR TEST, ASTM D 698.

3.5 FINISH GRADING:
A. PERFORM ALL GRADING TO PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES AND SMOOTH, EVEN SURFACE DRAINAGE OF THE ENTIRE AREA WITHIN THE LIMITS OF CONSTRUCTION. GRADING SHALL BE COMPATIBLE WITH ALL SURROUNDING TOPOGRAPHY AND STRUCTURES.
B. UTILIZE SATISFACTORY FILL MATERIAL RESULTING FROM THE EXCAVATION WORK IN THE CONSTRUCTION OF FILLS, EMBANKMENTS AND FOR REPLACEMENT OF REMOVED UNSUITABLE MATERIALS.
C. ACHIEVE FINISHED GRADE BY PLACING A MINIMUM OF 4 INCHES OF 1/2" – 3/4" CRUSHED STONE ON TOP SOIL STABILIZER FABRIC.
D. REPAIR ALL ACCESS ROADS AND SURROUNDING AREAS USED DURING THE CORSE OF THIS WORK TO THEIR ORIGINAL CONDITION.

3.7 ASPHALT PAVING ROAD:
A. DIVISION 600 – KDOT FLEXIBLE PAVEMENT. (UPDATE PER LOCAL DOT)
B. SECTION 403 – MODOT ASPHALT CONCRETE PAVEMENT.

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STATE OF CONNECTICUT
JOHN STEVEN
LICENSED PROFESSIONAL ENGINEER
FEB 04 2019

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No.	Submittal / Revision	App'd	Date
B	REVISED PER MA	MPS	02/04/19
A	ISSUED FOR REVIEW	MPS	01/18/19

Drawn: MAP Date: 01/18/19
Designed: MPS Date: 01/18/19
Checked: MPS Date: 01/18/19

Project Number 406-000

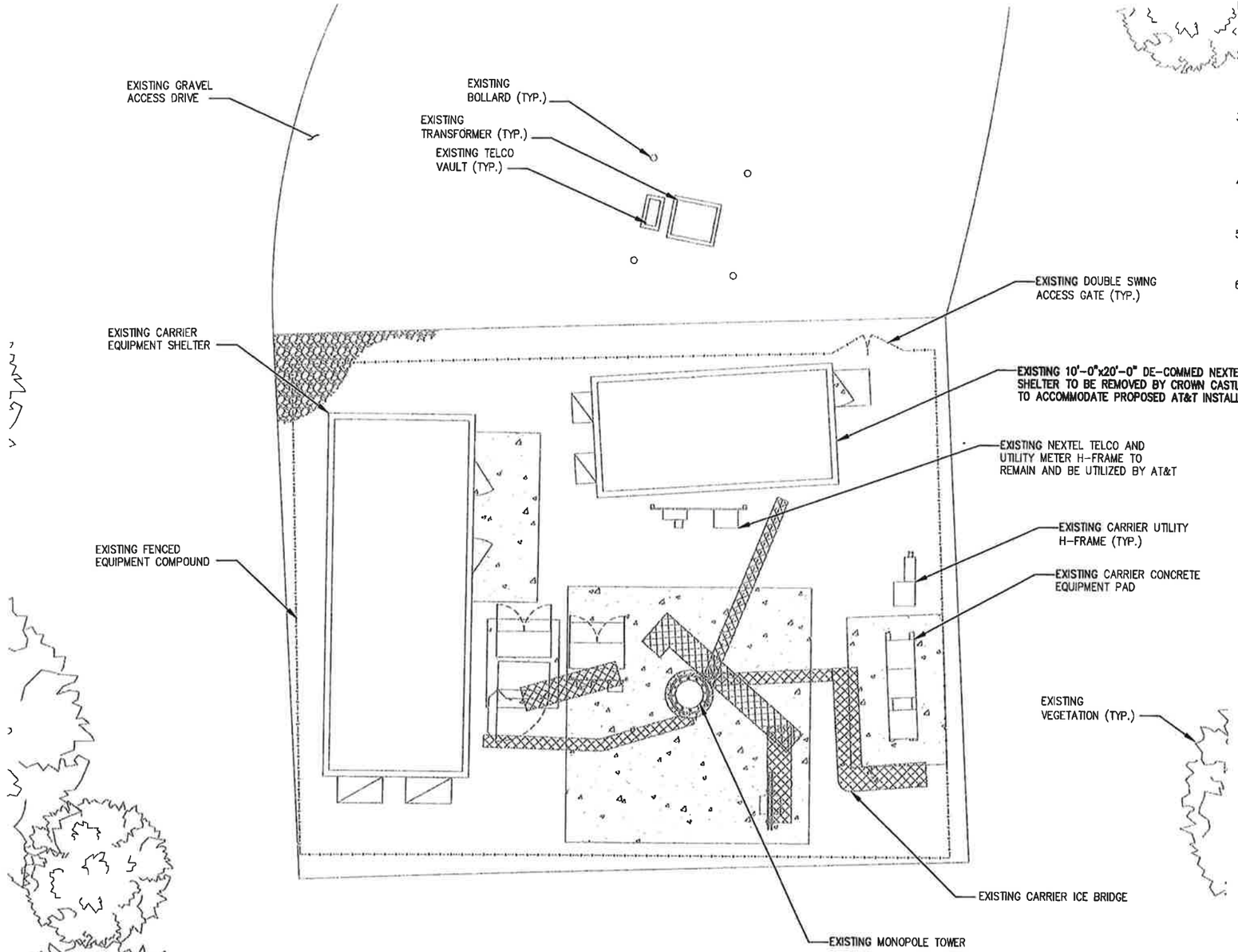
Project Title
WATERBURY
876317
FA #: 10578275
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For
CROWN CASTLE

Drawing Scale: AS NOTED
Date: 02/04/19

Drawing Title
GENERAL NOTES

Drawing Number
C2



1 EXISTING OVERALL SITE PLAN
SCALE: AS NOTED

INFORMATION CONTAINED WITHIN DRAWINGS IS BASED ON PROVIDED INFORMATION AND A SITE WALK PERFORMED BY INFINIGY SOLUTIONS ON 12/20/18 AND IS NOT THE RESULT OF A FIELD SURVEY. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.

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6. EXISTING FIBER PROVIDER: VERIZON

GRAPHIC SCALE:
20' 10' 0 10' 20'
SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

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FEB 04 2019

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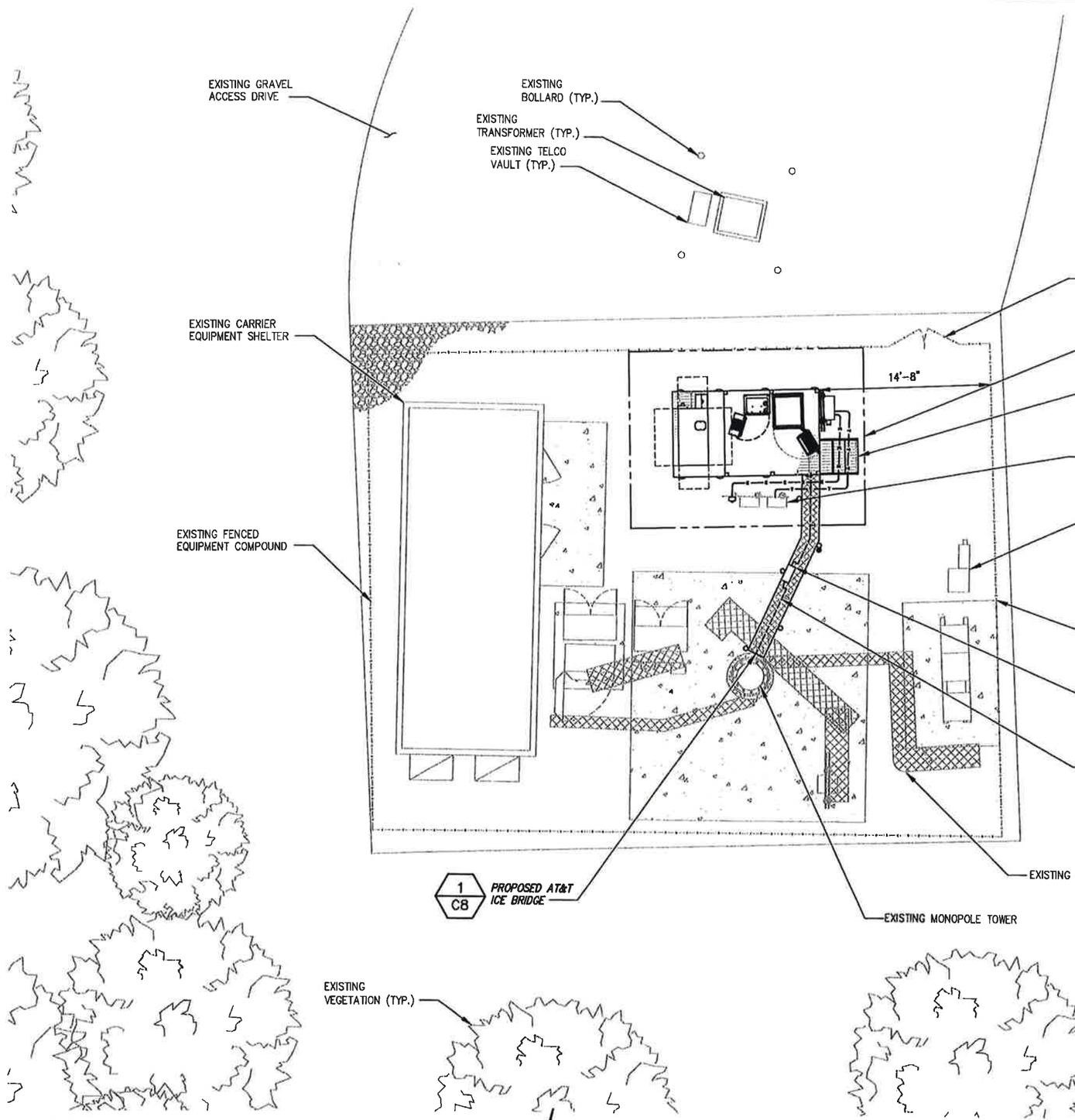
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For
CROWN CASTLE

Drawing Scale:
AS NOTED
Date:
02/04/19

Drawing Title
OVERALL SITE PLAN

Drawing Number
C3



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EXISTING FIBER PROVIDER: VERIZON

1 — PROPOSED OVERALL SITE PLAN
SCALE: AS NOTED

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10' 5' 0 5' 10'
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SCALE (22x34): 1" = 5'-0"

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160 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For
CROWN CASTLE

Drawing Scale:
AS NOTED

Date:
02/04/19

Drawing Title
OVERALL SITE PLAN

Drawing Number
C3A

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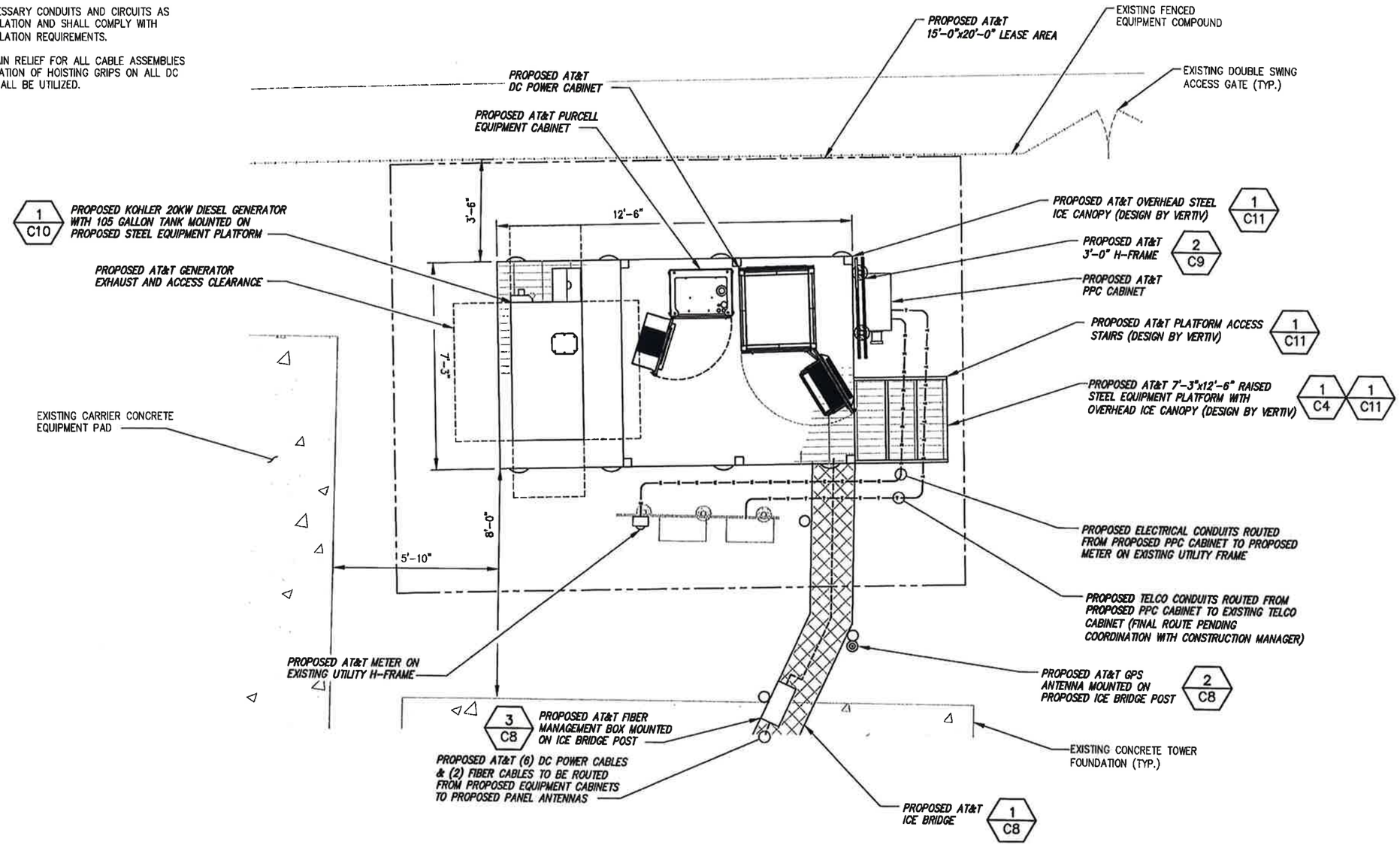

CALLED NORTH

1 -- EQUIPMENT SITE PLAN
SCALE: AS NOTED

GRAPHIC SCALE:
6' 3' 0 3' 6'
SCALE (11x17): 1" = 6'-0"
SCALE (22x34): 1" = 3'-0"

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150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For
CROWN CASTLE

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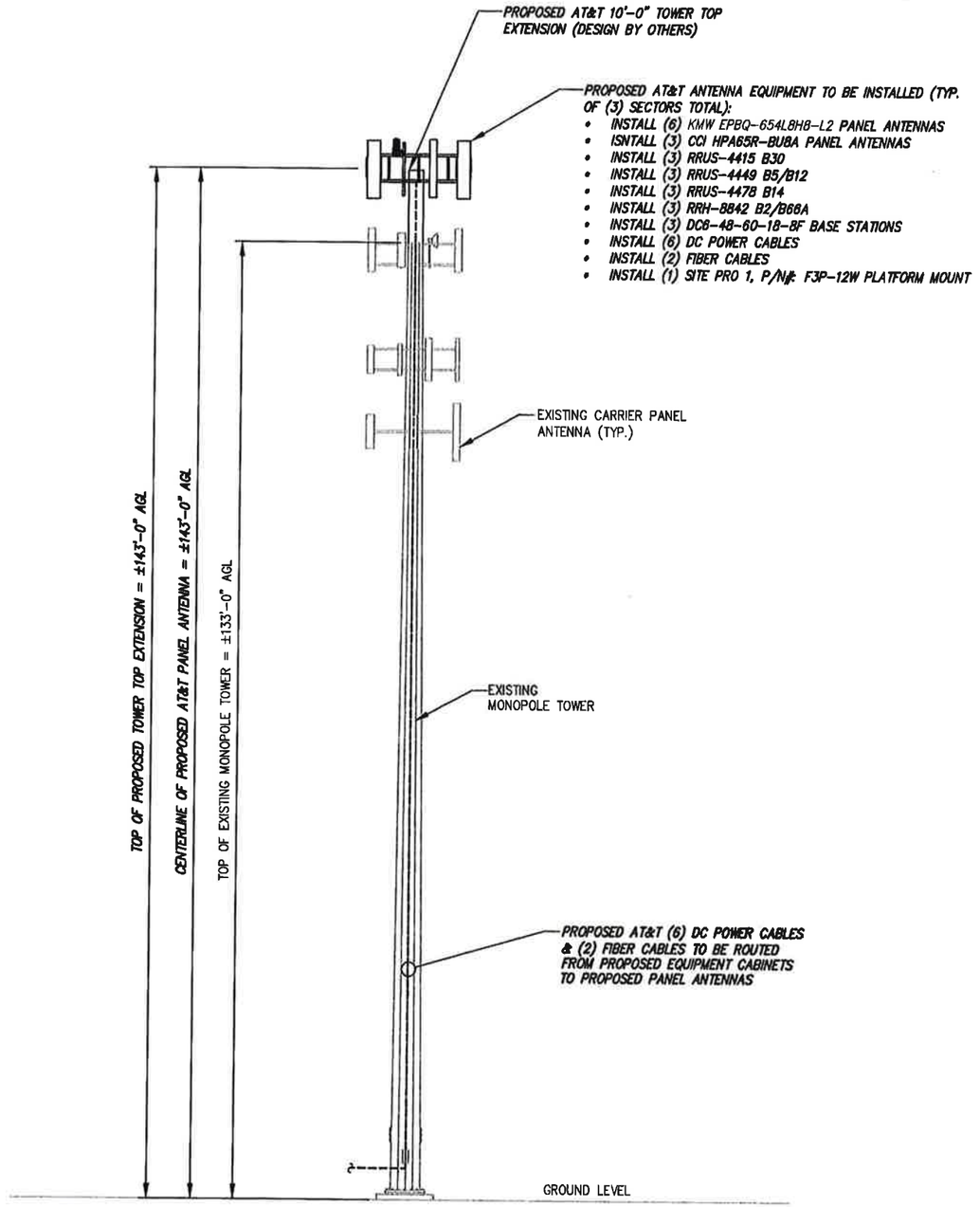
EQUIPMENT SITE PLAN

Drawing Number
C4



1 SITE ELEVATION
NOT TO SCALE

NOTE:
INFINIGY ENGINEERING HAS NOT EVALUATED THE TOWER FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY REGARDING ITS EXISTING OR PROPOSED LOADING. FINAL INSTALLATION TO COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSIS.

NOTE:
FOR MORE INFORMATION PERTAINING TO THE ANTENNA MOUNTS, REFER TO PASSING "MOUNT ANALYSIS REPORT," COMPLETED BY INFINIGY, DATED 01/18/19.

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Prepared For
CROWN CASTLE

Drawing Scale:
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Date:
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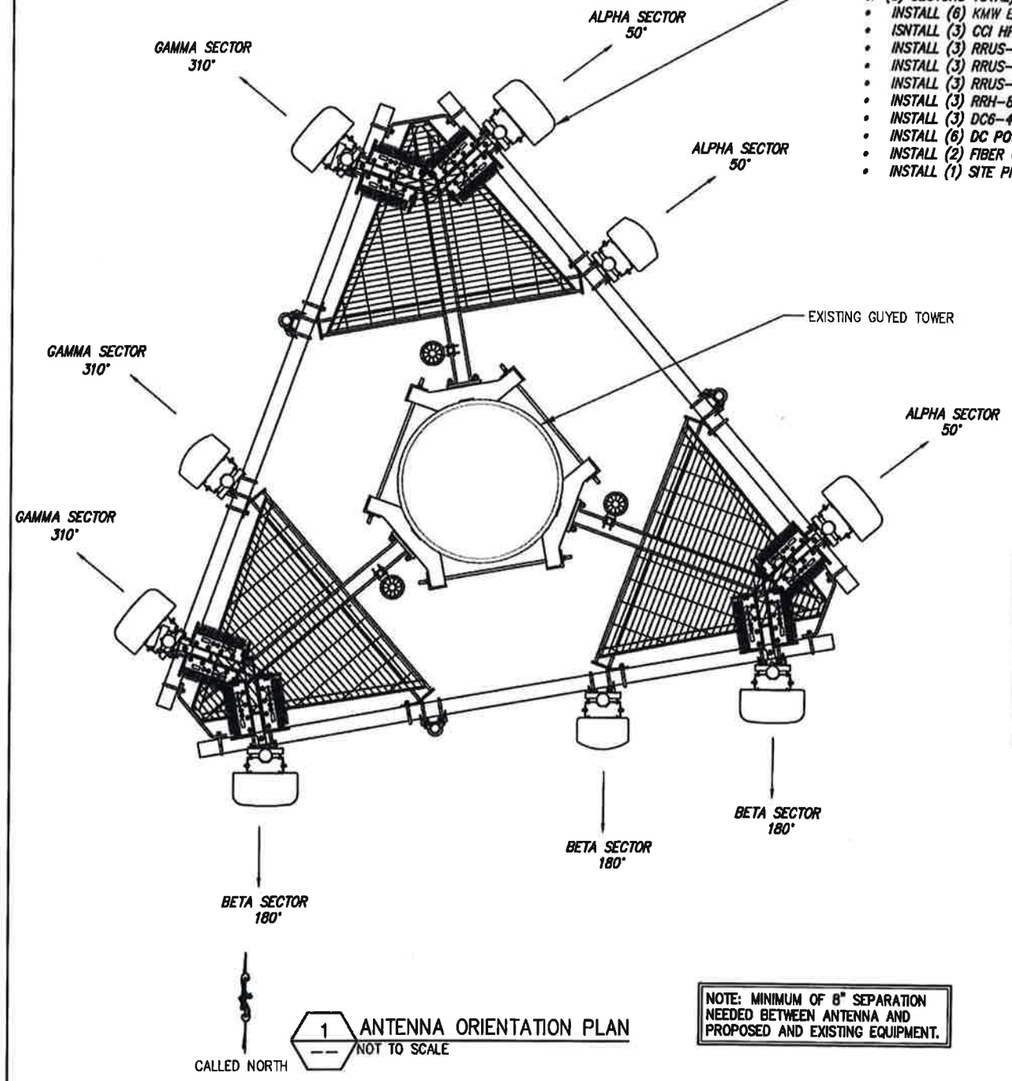
Drawing Title
SITE ELEVATION

Drawing Number
C5



1 ANTENNA ORIENTATION PLAN
NOT TO SCALE

PROPOSED AT&T ANTENNA EQUIPMENT TO BE INSTALLED (TYP. OF (3) SECTORS TOTAL):

- INSTALL (6) KMW EPBQ-654L8H8-L2 PANEL ANTENNAS
- ISNTALL (3) CCI HPA65R-BU8A PANEL ANTENNAS
- INSTALL (3) RRUS-4415 B30
- INSTALL (3) RRUS-4449 B5/B12
- INSTALL (3) RRUS-4478 B14
- INSTALL (3) RRH-8842 B2/B66A
- INSTALL (3) DC6-48-60-18-8F BASE STATIONS
- INSTALL (6) DC POWER CABLES
- INSTALL (2) FIBER CABLES
- INSTALL (1) SITE PRO 1, P/N#: F3P-12W PLATFORM MOUNT

NOTE: MINIMUM OF 8" SEPARATION NEEDED BETWEEN ANTENNA AND PROPOSED AND EXISTING EQUIPMENT.

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6. EXISTING FIBER PROVIDER: VERIZON

PROPOSED ANTENNA, TMA AND DIPLEXER MODEL NUMBERS

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	ANTENNA ℄ HEIGHT	AZIMUTH	RRU	TMA/DIPLEXER	CABLE	CABLE LENGTH
ALPHA	PROPOSED	LTE	(1) EPBQ-654L8H8-L2	143'-0"	50°	(1) RRH-4415 B30 (1) RRH-4449 B5/B12	--	(2) WR-VG86ST-BRD	±318'
								(1) FB-L98B-034	±318'
	PROPOSED	LTE	(1) HPA65R-BU8A	143'-0"	50°	--	--	SHARED	-
	PROPOSED	LTE	(1) EPBQ-654L8H8-L2	143'-0"	50°	(1) RRH-4478 B14 (1) RRH-8843 B2/B66A	--	SHARED	-
BETA	PROPOSED	LTE	(1) EPBQ-654L8H8-L2	143'-0"	180°	(1) RRH-4415 B30 (1) RRH-4449 B5/B12	--	(2) WR-VG86ST-BRD	±318'
								(1) FB-L98B-034	±318'
	PROPOSED	LTE	(1) HPA65R-BU8A	143'-0"	180°	--	--	SHARED	-
	PROPOSED	LTE	(1) EPBQ-654L8H8-L2	143'-0"	180°	(1) RRH-4478 B14 (1) RRH-8843 B2/B66A	--	SHARED	-
GAMMA	PROPOSED	LTE	(1) EPBQ-654L8H8-L2	143'-0"	310°	(1) RRH-4415 B30 (1) RRH-4449 B5/B12	--	(2) WR-VG86ST-BRD	±318'
	PROPOSED	LTE	(1) HPA65R-BU8A	143'-0"	310°	--	--	SHARED	-
	PROPOSED	LTE	(1) EPBQ-654L8H8-L2	143'-0"	310°	(1) RRH-4478 B14 (1) RRH-8843 B2/B66A	--	SHARED	-

PROPOSED RRU AND CABLE SCHEDULE (GROUND MOUNT)

SECTOR	FIBER TRUNK	SINGLE FIBER	DC 3-PAIR	DC 1-PAIR	RRU'S
ALPHA	2 PROPOSED	(1) ±15'	6 PROPOSED	(2) #8 AWG, 15'	(1) RRH-4478 B14 (1) RRH-4415 B30 (1) RRH-8843 B2/B66A (1) RRH-4449 B5/B12
BETA		(1) ±15'		(2) #8 AWG, 15'	(1) RRH-4478 B14 (1) RRH-4415 B30 (1) RRH-8843 B2/B66A (1) RRH-4449 B5/B12
GAMMA		--		(2) #8 AWG, 15'	(1) RRH-4478 B14 (1) RRH-4415 B30 (1) RRH-8843 B2/B66A (1) RRH-4449 B5/B12

NOTE:
INFINIGY ENGINEERING HAS NOT EVALUATED THE TOWER FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY REGARDING ITS EXISTING OR PROPOSED LOADING. FINAL INSTALLATION TO COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSIS.

INFORMATION CONTAINED WITHIN DRAWINGS IS BASED ON PROVIDED INFORMATION AND A SITE WALK PERFORMED BY INFINIGY SOLUTIONS ON 12/20/18 AND IS NOT THE RESULT OF A FIELD SURVEY. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.

NOTE:
FOR MORE INFORMATION PERTAINING TO THE ANTENNA MOUNTS, REFER TO PASSING "MOUNT ANALYSIS REPORT," COMPLETED BY INFINIGY, DATED 01/18/19.

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24709
FEB. 04 2019
LICENSED PROFESSIONAL ENGINEER

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No	Submittal / Revision	App'd	Date
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Drawn: MAP Date: 01/18/19
Designed: MPS Date: 01/18/19
Checked: MPS Date: 01/18/19

Project Number
406-000

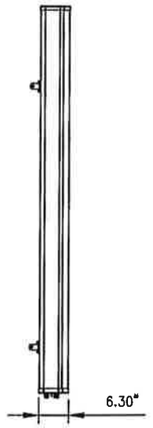
Project Title
WATERBURY
876317
FA #: 10578275
160 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For
CROWN CASTLE

Drawing Scale:
AS NOTED
Date:
02/04/19

Drawing Title
ANTENNA ORIENTATION

Drawing Number
C6



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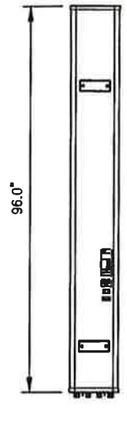

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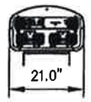
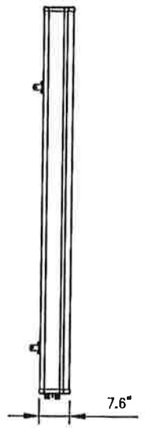


TOP

KMW MODEL NO.:	EPBQ-654L8H8-L2
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	96.0"x21.0"x6.30"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	86.00 LBS
CONNECTOR:	7-16 DIN FEMALE



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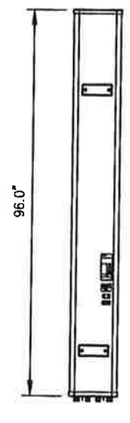

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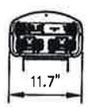
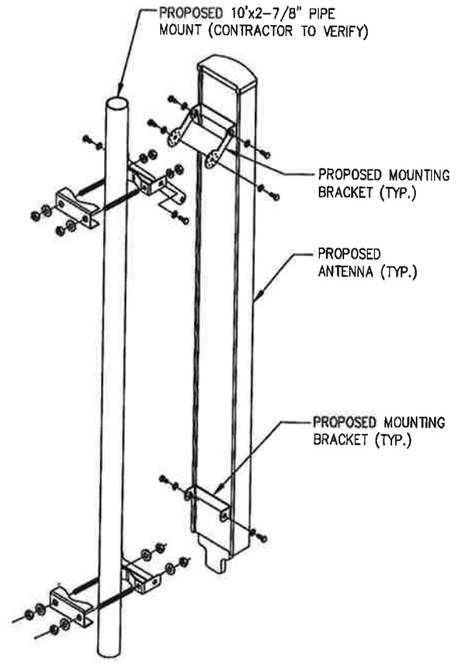


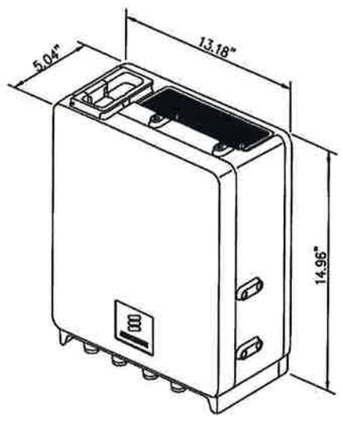
TOP

CCI MODEL NO.:	HPA65R-BU8A
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	96.0"x11.7"x7.6"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	54.00 LBS
CONNECTOR:	7-16 DIN FEMALE

1 ANTENNA DETAILS
NOT TO SCALE

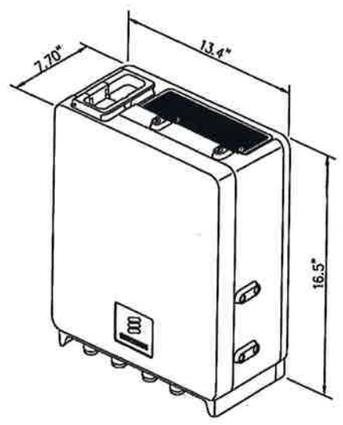


2 MOUNTING DETAIL
NOT TO SCALE



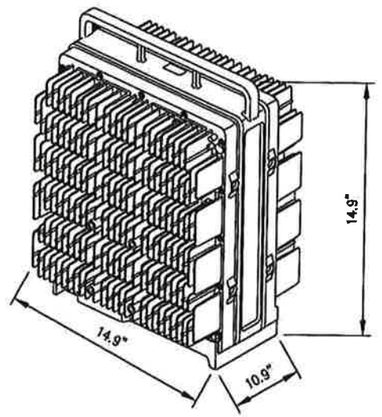
RADIO 4415 SPECIFICATIONS
- HxWxD, (INCHES): 14.96"x13.18"x5.04"
- WEIGHT (LBS): 42.90
- COLOR: NCS S 1002-B/NCS S 6502-B

4 ERICSSON RADIO 4415 DETAIL
NOT TO SCALE

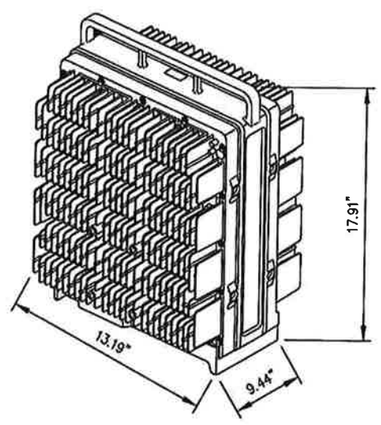


RADIO 4478 SPECIFICATIONS
- HxWxD, (INCHES): 16.50"x13.4"x7.70"
- WEIGHT (LBS): 59.90
- COLOR: NCS S 1002-B/NCS S 6502-B

5 RRUS-12 B5 DETAIL
NOT TO SCALE



RRUS-8843 SPECIFICATIONS
- HXWXD, (INCHES) : 14.9"X13.2"X10.9"
- WEIGHT (LBS) : 72.0
- COLOR : GRAY



RADIO 4449 SPECIFICATIONS
- HxWxD, (INCHES) : 17.91"x13.19"x9.44"
- WEIGHT (LBS) : 70.54
- COLOR : GRAY

6 RADIO DETAILS
NOT TO SCALE

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTION
JOHN S. STEVENS
FEB 04 2019
NO. 247035
LICENSED PROFESSIONAL ENGINEER

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Project Number
408-000

Project Title
WATERBURY
876317

FA #: 10578275

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

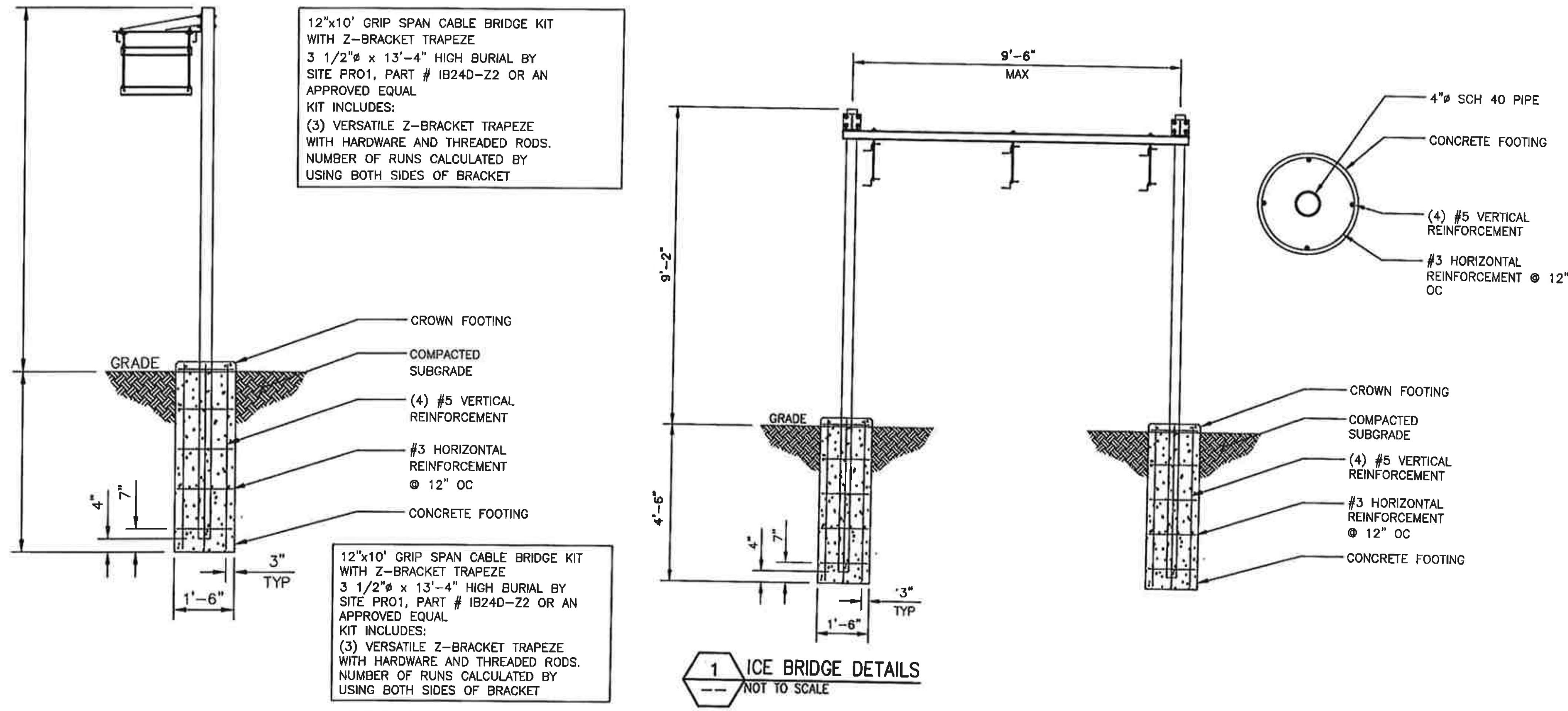
Prepared For
CROWN CASTLE

Drawing Scale:
AS NOTED

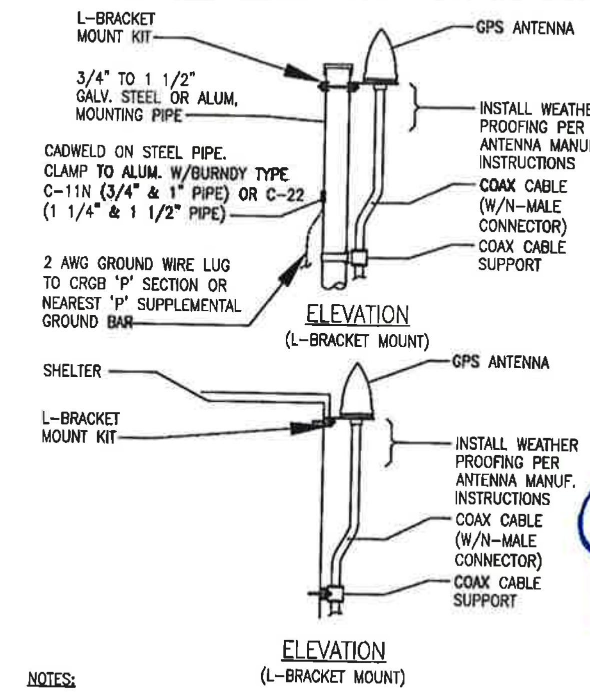
Date:
02/04/19

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C7



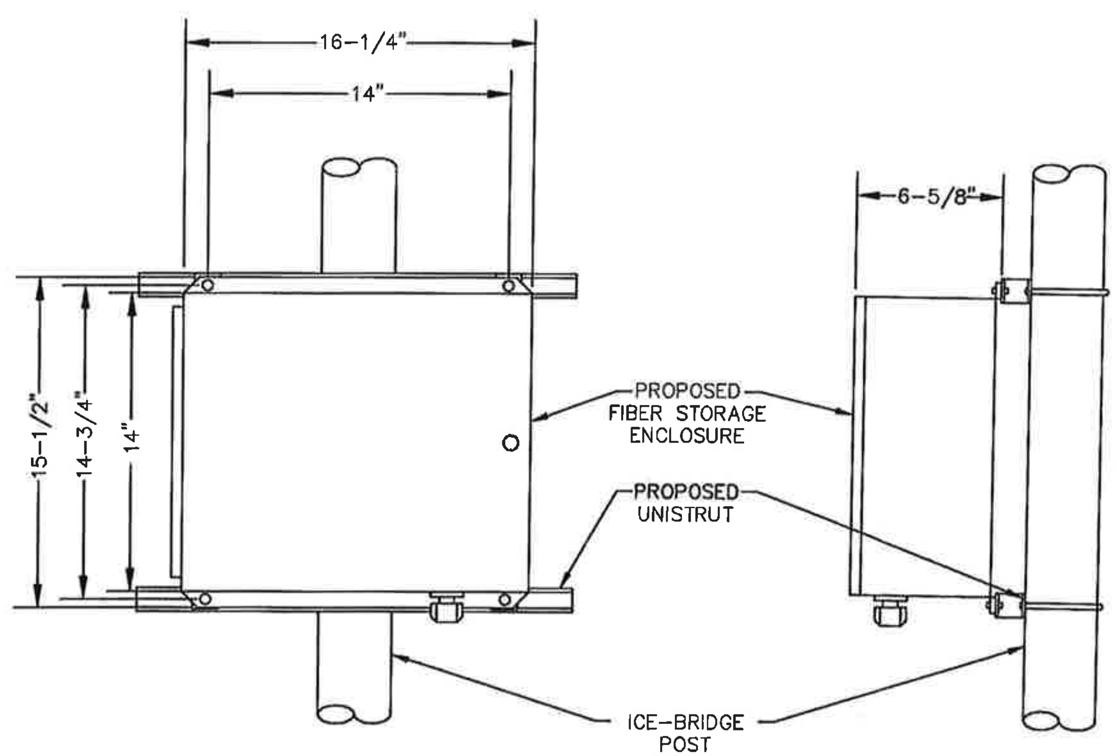
1 ICE BRIDGE DETAILS
NOT TO SCALE



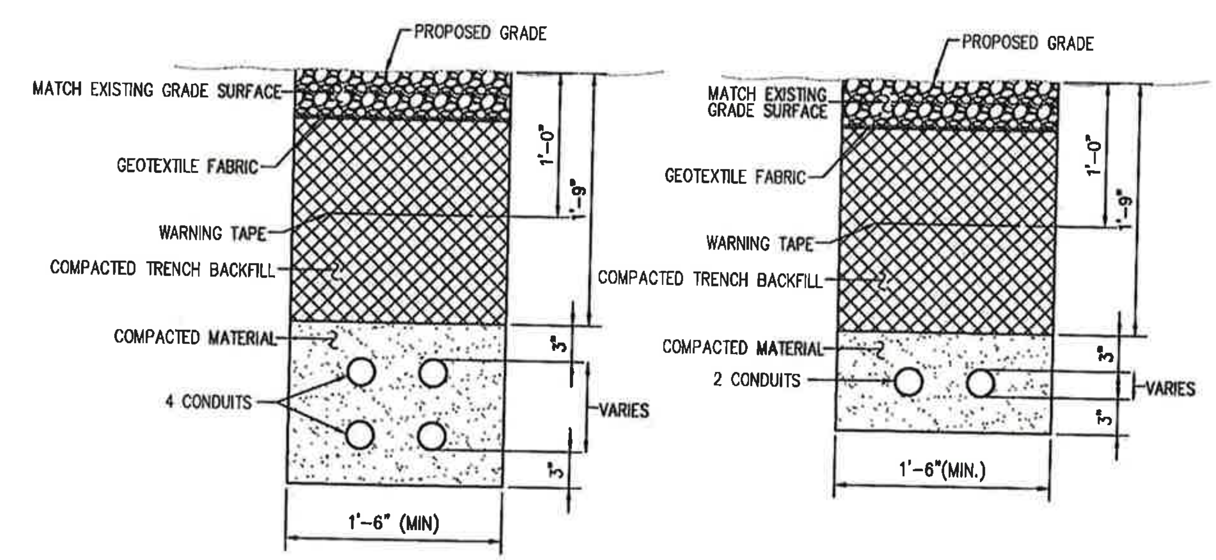
NOTES:

1. LOCATION OF ANTENNA MUST HAVE CLEAR VIEW OF SOUTHERN SKY AND CANNOT HAVE ANY BLOCKAGES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS ANTENNA.
2. ALL GPS ANTENNA LOCATIONS MUST BE ABLE TO RECEIVE CLEAR SIGNALS FROM A MINIMUM OF FOUR (4) SATELLITES. VERIFY WITH HANDHELD GPS BEFORE FINAL LOCATION OF GPS ANTENNA.
3. CADWELDING SHALL NOT BE PERFORMED ON ROOFTOPS.
4. LTE-GPS ANTENNA SHALL BE LOCATED 10' FROM ALL ANTENNAS.

2 GPS DETAIL
NOT TO SCALE



3 FIBER MANAGEMENT BOX DETAIL
NOT TO SCALE



4 COMMUNICATION TRENCH DETAIL
NOT TO SCALE

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
FEB 04 2019
No. 24705
LICENSED PROFESSIONAL ENGINEER

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Checked: MPS Date: 01/18/19

Project Number
406-000

Project Title
WATERBURY
876317
FA #: 10578275

150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For
CROWN CASTLE

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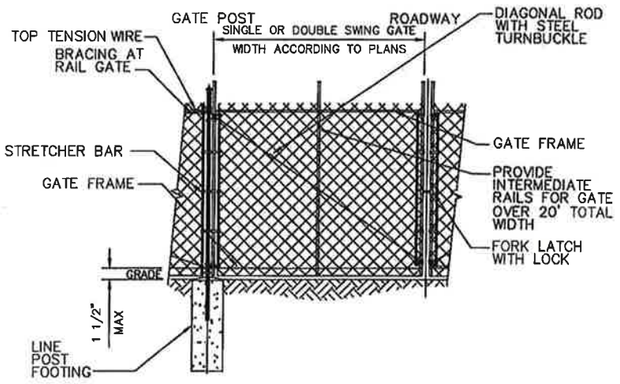
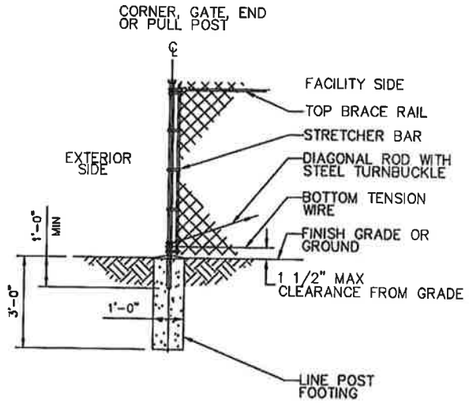
Drawing Scale:
AS NOTED

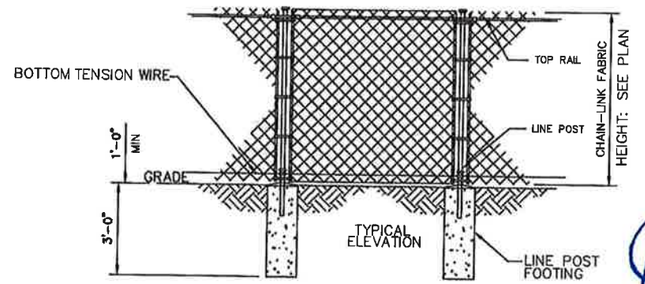
Date:
02/04/19

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C8



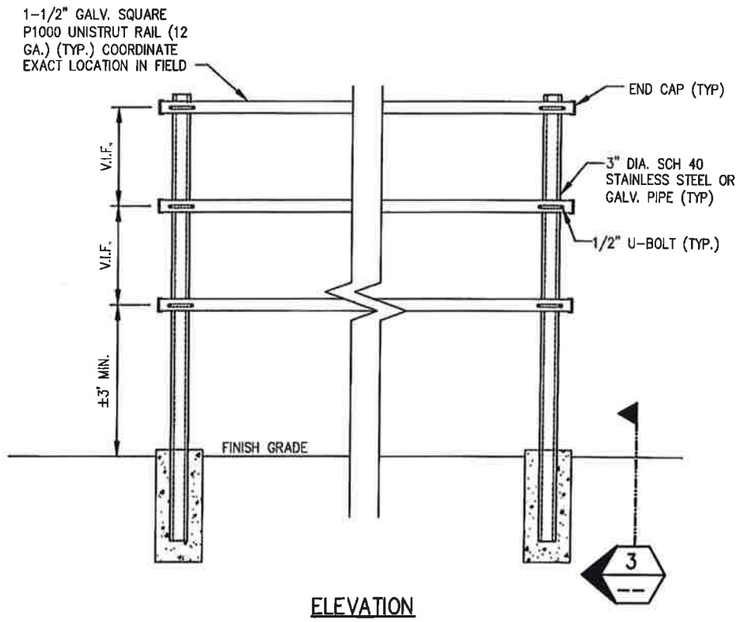




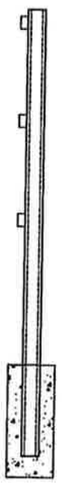
NOTE:
1. ALTERNATE FOOTINGS FOR ALL FENCE POSTS IN ROCK: IF ROCK IS ENCOUNTERED AT GRADE, OR AT A DEPTH SHALLOWER THAN 3'-6", CORE DRILL AN 8" DIA HOLE 18" INTO THE ROCK. CENTER POST IN THE HOLE AND FILL WITH CONCRETE OR GROUT. IF ROCK IS BELOW FINISH GRADE, COAT BACKFILLED SECTION OF POST WITH COAL TAR, AND BACKFILL WITH WELL-DRAINING GRAVEL.
2. ATTACH EACH GATE WITH 3 NON-LIFT-OFF TYPE, MALLEABLE IRON OR FORGING, PIN-TYPE HINGES. ASSEMBLIES SHALL ALLOW FOR 180° OF GATE TRAVEL. (THREE POINT HINGE)

1 — FENCE & ACCESS GATE DETAILS
SCALE: N.T.S.

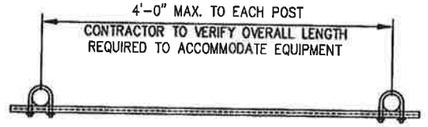
CHAIN LINK FENCING NOTES:
1. INSTALL FENCING PER ASTM F-567. SWING GATES PER ASTM F-900. GATE POST, CORNER, TERMINAL, OR PULL POST 2-1/2" SCHEDULE 40 FOR GATE WIDTH UP THROUGH 6' OR 12' FOR DOUBLE-SWING GATES PER ASTM-F1083.
2. LINE POST: 2" SCHEDULE 40 PIPE PER ASTM-F1083.
3. GATE FRAME: 1-1/2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
4. TOP AND BRACE RAILS: 1-1/2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
5. FABRIC: 12 GAGE CORE WIRE SIZE 2" MESH, CONFORMING TO ASTM-A392.
6. TIE WIRE: MINIMUM 11 GAGE GALVANIZED STEEL AT POSTS AND RAILS BY A SINGLE WRAP OF FABRIC TIE AND AT TENSIONWIRE BY HOG RINGS SPACED AT 24" INTERVALS MAXIMUM.
7. TENSION WIRE: 7 GAGE GALVANIZED STEEL.
8. GATE LATCH: DROP DOWN LOCKABLE FORKLATCH AND LOCK.
9. SEE SITE PLAN AND FENCE DETAILS FOR FENCE HEIGHT DIMENSION.



ELEVATION

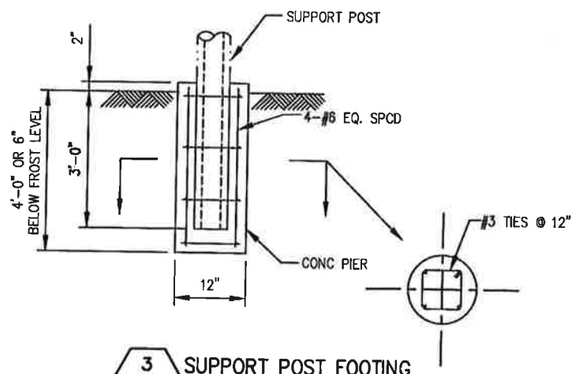


END VIEW



PLAN VIEW

2 — H-FRAME FABRICATION DETAIL
NOT TO SCALE



3 — SUPPORT POST FOOTING
NOT TO SCALE

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
JOHN S. STEVENS
PROFESSIONAL ENGINEER
LICENSED
FEB 04 2019

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876317
FA #: 10578275
160 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

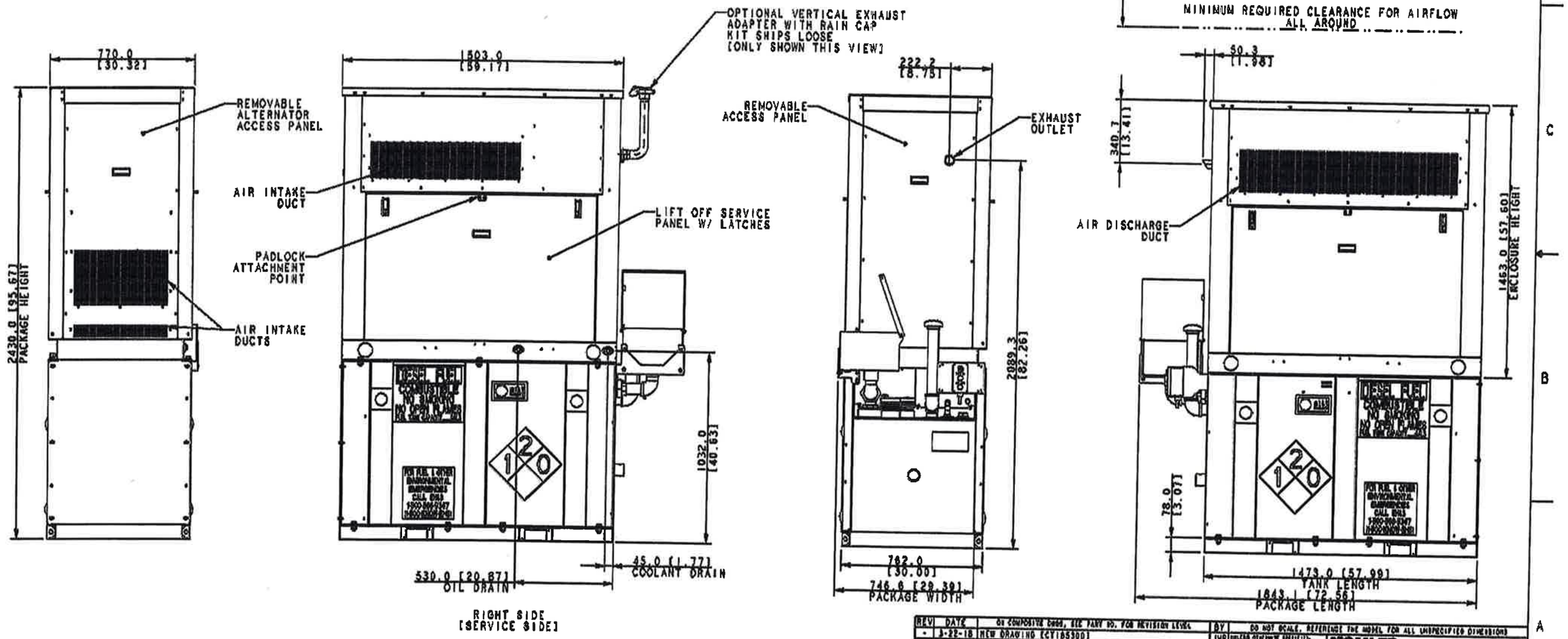
Prepared For
CROWN CASTLE

Drawing Scale:
AS NOTED
Date:
02/04/19

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C9

NOTES:
1. ALL SIDES OF THE GENERATOR ARE SERVICE ACCESSIBLE. RIGHT SIDE IS PRIMARY SERVICE SIDE.
2. 8 AMP BATTERY CHARGER.
3. 120VAC ENGINE BLOCK HEATER.
4. 120VAC BOW BATTERY HEATER.
5. GENERATOR MUST BE GROUNDED.
6. SOUND ATTENUATED ENCLOSURE STANDARD WITH GENERATOR.
7. MUST ALLOW FREE FLOW OF DISCHARGE AIR AND EXHAUST.
8. MUST ALLOW FREE FLOW OF INTAKE AIR.
9. BASE TANK REQUIRES ALL STUB-UPS TO BE IN THE REAR TANK STUB-UP AREA.
10. TANK EQUIPPED WITH FIRE SAFETY VALVE ON FUEL SUPPLY LINE.
11. IT IS THE RESPONSIBILITY OF THE INSTALLATION TECHNICIAN TO ENSURE THAT THE GENERATOR INSTALLATION COMPLIES WITH ALL APPLICABLE CODES, STANDARDS, AND REGULATIONS.
12. GENERATOR IS INSTALLED ON A UL-142 RATED DOUBLE WALL SUBBASE FUEL TANK.



TOTAL PACKAGE WEIGHT: 982 KG [2164 LBS]

AT&T 20KW KOHLER DIESEL COMPACT SOUND ENCLOSURE W/ 105 GAL STATE TANK

REV	DATE	DR COMPOSITE DWG, SEE PART NO. FOR REVISION LEVEL	BY
-	3-22-18	NEW DRAWING (CY185300)	JHR

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

KOHLER

APPROVALS		DATE
DRAWN	JHR	3-22-18
CHECKED	JHR	3-22-18
ENGINEER	LBD	3-22-18

DIMENSION PRINT, 20KW STATE TANK, ENCL

SCALE 0.40 SIZE D SHT 1 of 8

DWG NO. ADV-9084 D

GENERATOR
KOHLER
20KW DC DIESEL GENERATOR
MODEL #: 20REOZK-C
105 GALLON TANK

1 GENERATOR DETAIL
NOT TO SCALE

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
JOHN S. STEVENS
LICENSED PROFESSIONAL ENGINEER
FEB 04 2019

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Prepared For
CROWN CASTLE

Drawing Scale:
AS NOTED

Date:
02/04/19

Drawing Title
GENERATOR DETAILS

Drawing Number
C10

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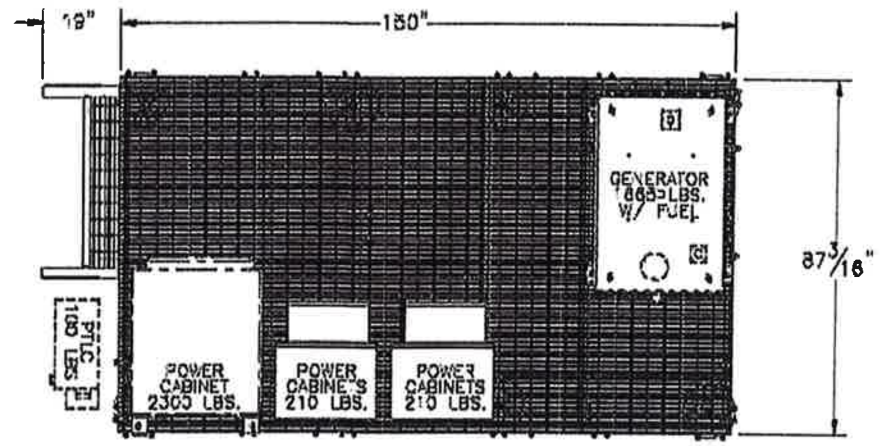

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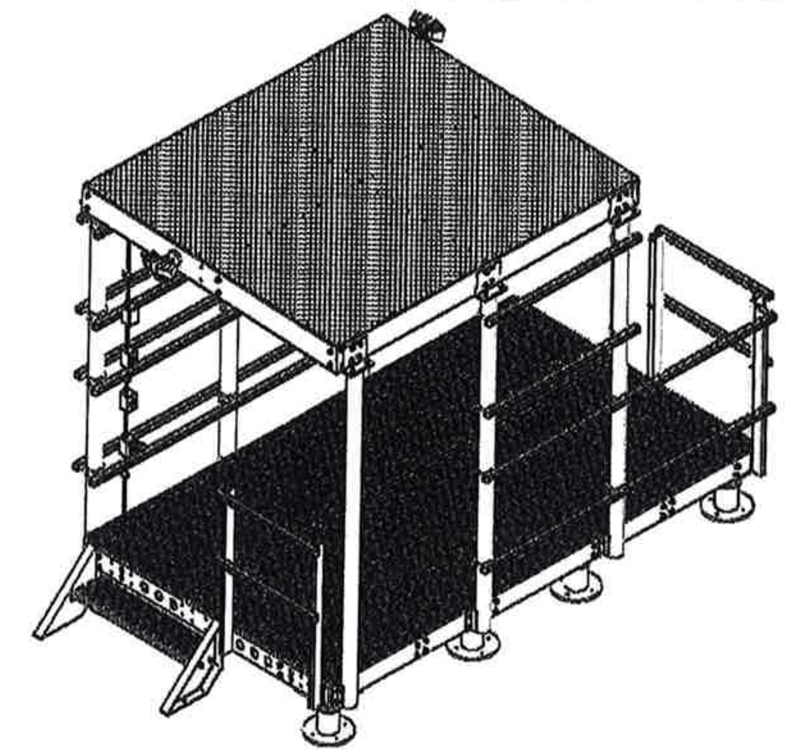

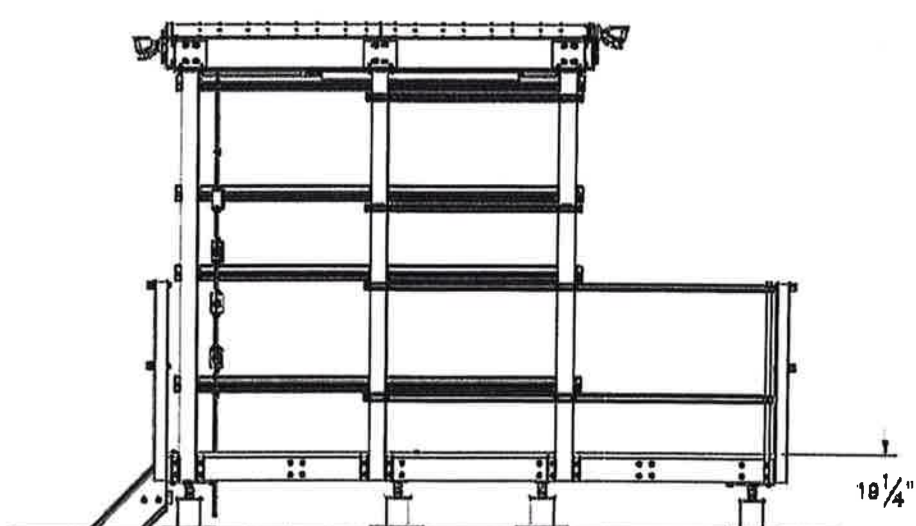

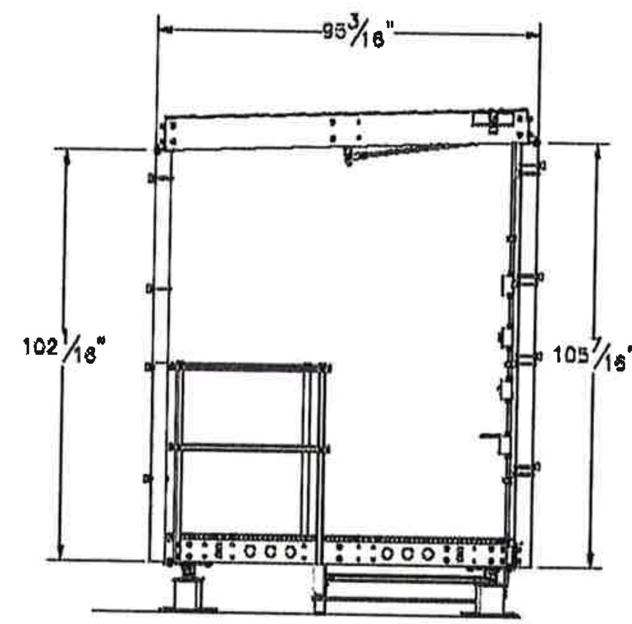

SURFACE FINISH √ UNLESS OTHERWISE SPECIFIED	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	APPROVALS	DATE	ELECTRO MECHANICAL INDUSTRIES, INC.	
MATERIAL: SEE PARTS LIST	TOLERANCES	DRAWN J. CANTELLI	11.21.18	TITLE: 87"X150" BOLT TOGETHER PLATFORM GROUNDED MOUNT W EXPANDED METAL CANOPY	
THIRD ANGLE PROJECTION	FRACTIONS ± 1/16	CHECKED			
	ANGLES ± .25°	ENGINEER/DESIGNER			
NEXT ASSY / USED ON	HOLES: DRILLED OR PUNCHED +1/32	PRODUCTION		SIZE B DRAWING NO. 1000-0010-0131	REV —
APPLICATIONS	BURNED ±1/32			SCALE: 1:40	SHEET 1 OF 1

PLATFORM DETAILS
NOT TO SCALE

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT JOHN S. STEVENS No. 24705 LICENSED PROFESSIONAL ENGINEER FEB 04 2019

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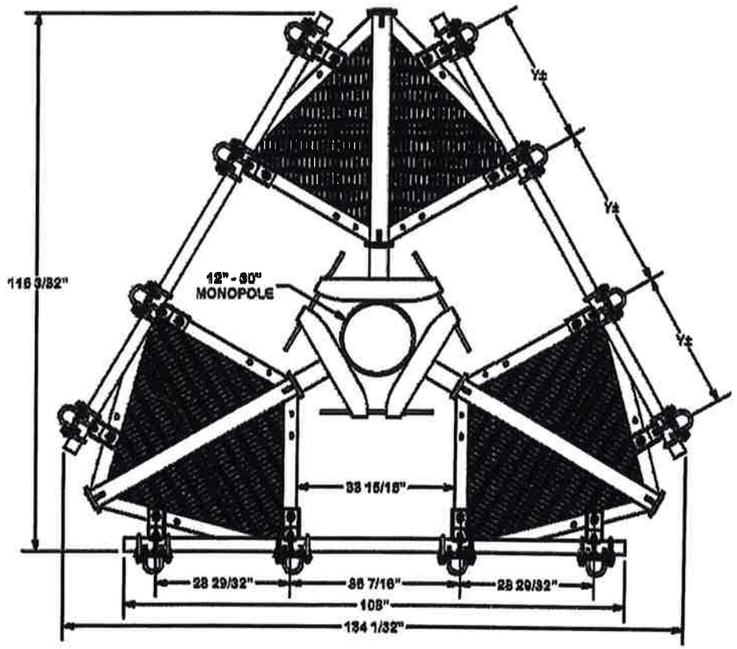
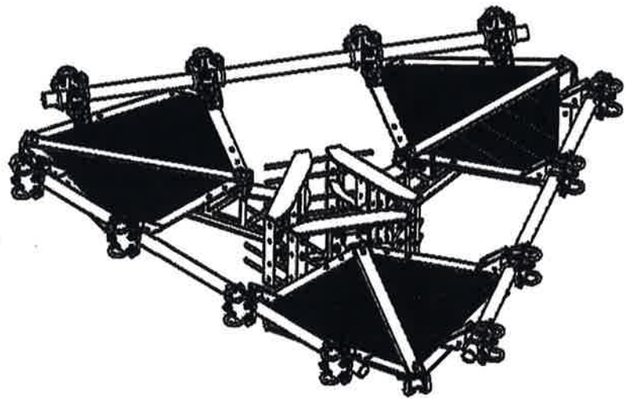
Project Number: 406-000

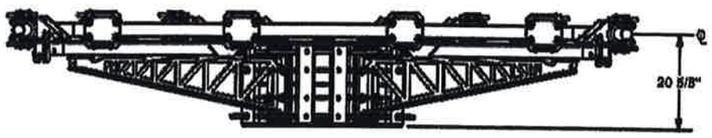
Project Title
WATERBURY
876317
FA #: 10578275
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

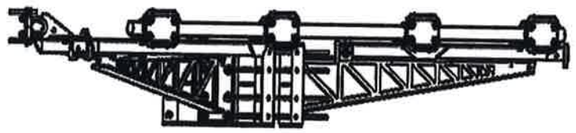
Prepared For
CROWN CASTLE

Drawing Scale: AS NOTED
Date: 02/04/19
Drawing Title
PLATFORM DETAILS
Drawing Number
C11









TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

PROPRIETARY NOTE:
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DESCRIPTION: 8' FORTRESS™ TRI-PLATFORM MOUNT

SITE PRO — A valmont company

Engineering Support Team: 1-888-785-7448

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	
	CEK 8/9/2017		F3P-8	PAGE 2 OF 4
CLASS: 91 SUB: 02	DRAWING LEADER: CUSTOMER	CHECKED BY: BMC 8/30/2017	DWG. NO.: F3P-8	

1 ANTENNA MOUNT DETAILS
-- NOT TO SCALE

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No	Submittal / Revision	Appd	Date
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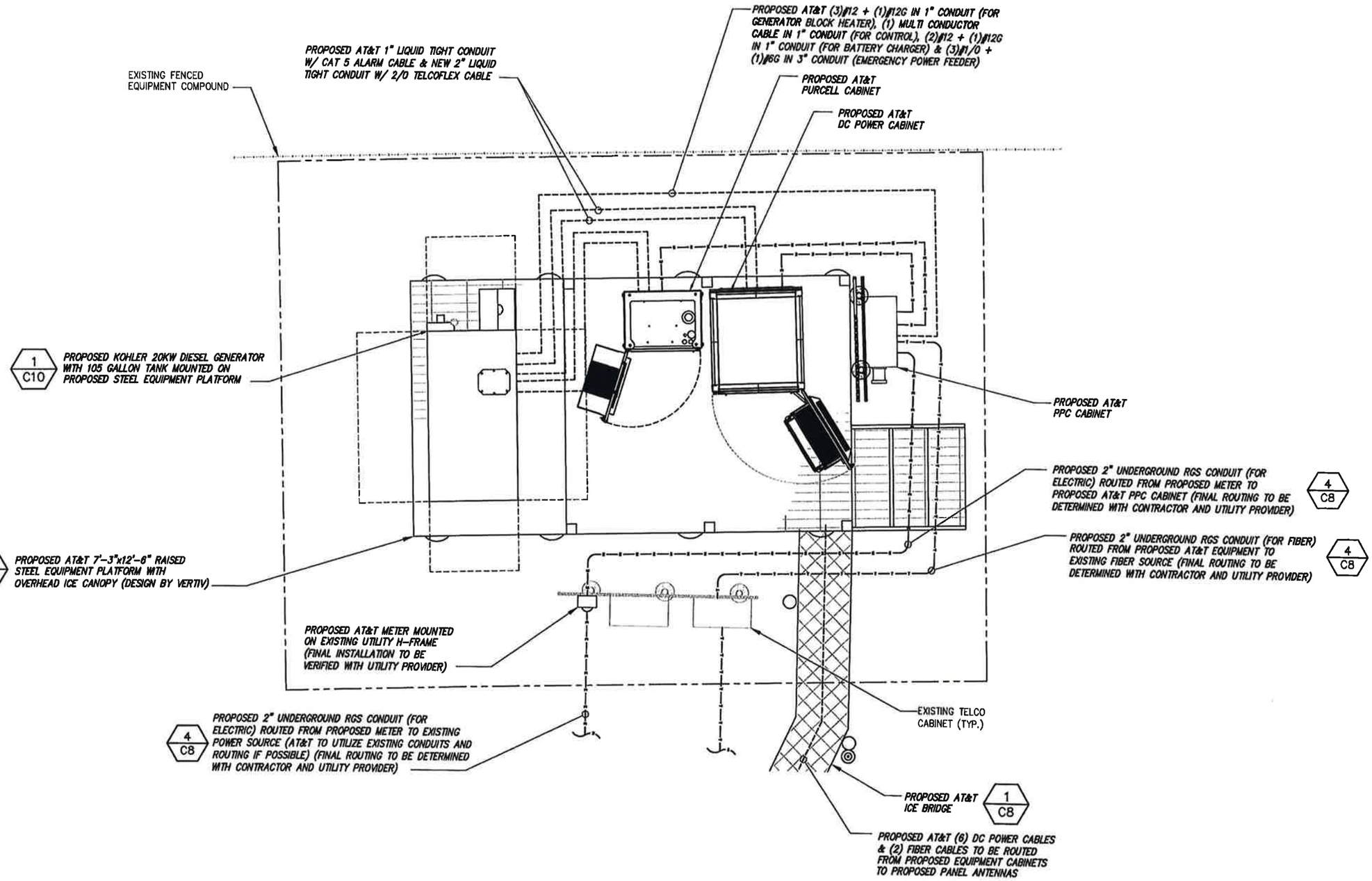
Drawing Title: **ANTENNA MOUNT DETAILS**

Drawing Number: **C12**



CALLED NORTH

1 — ELECTRICAL PLAN
SCALE: NOT TO SCALE

GRAPHIC SCALE:
3' 1'-6" 0 1'-6" 3'
SCALE (11x17): 1" = 3'-0"
SCALE (22x34): 1" = 1'-6"

INFORMATION CONTAINED WITHIN DRAWINGS IS BASED ON PROVIDED INFORMATION AND A SITE WALK PERFORMED BY INFINIGY SOLUTIONS ON 12/20/18 AND IS NOT THE RESULT OF A FIELD SURVEY. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.

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FEB 04 2019

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Drawing Scale:
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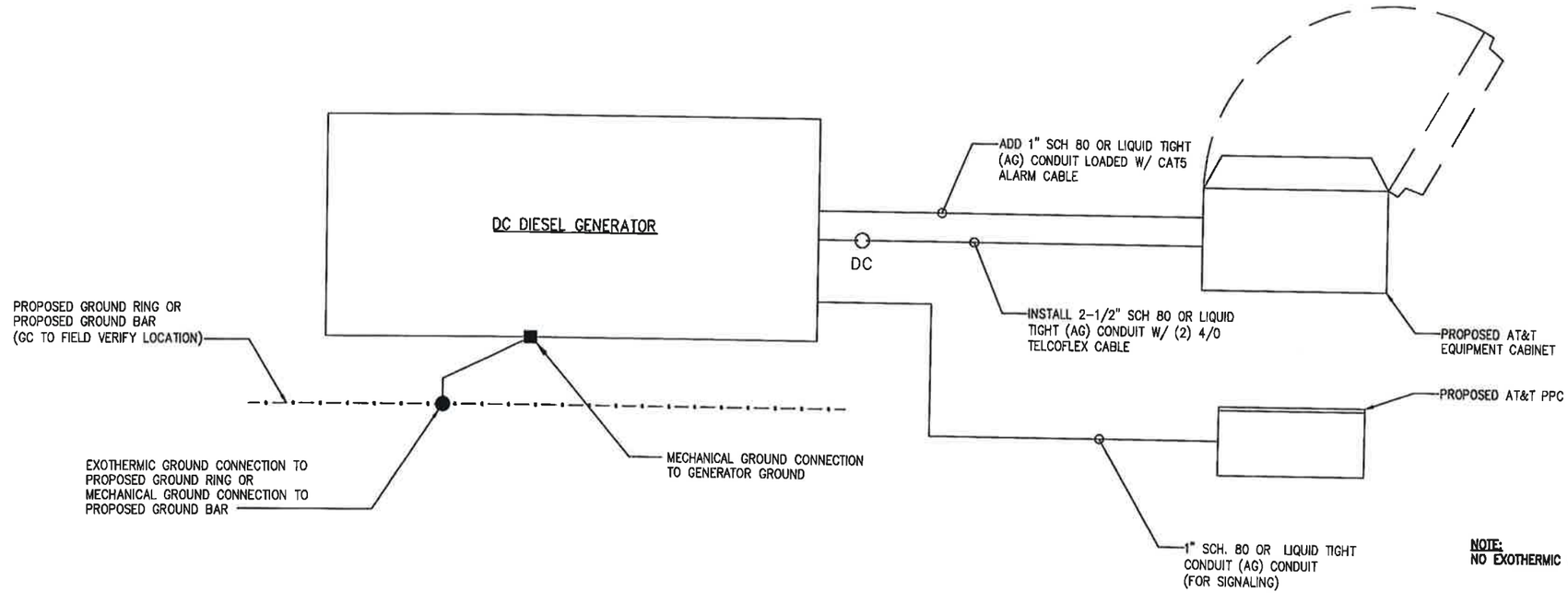
02/04/19

Drawing Title
UTILITY ROUTING PLAN

Drawing Number
E1



1 ELECTRICAL ONE-LINE DIAGRAM
SCALE: NOT TO SCALE

NOTE:
NO EXOTHERMIC WELD ON ROOFTOPS

GROUNDING SYMBOLS

- ■ COMPRESSION TYPE CONNECTION
- ● EXOTHERMIC WELD TYPE CONNECTION

2 DETAIL NOT USED
SCALE: NOT TO SCALE

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FEB 04 2019
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LICENSED PROFESSIONAL ENGINEER

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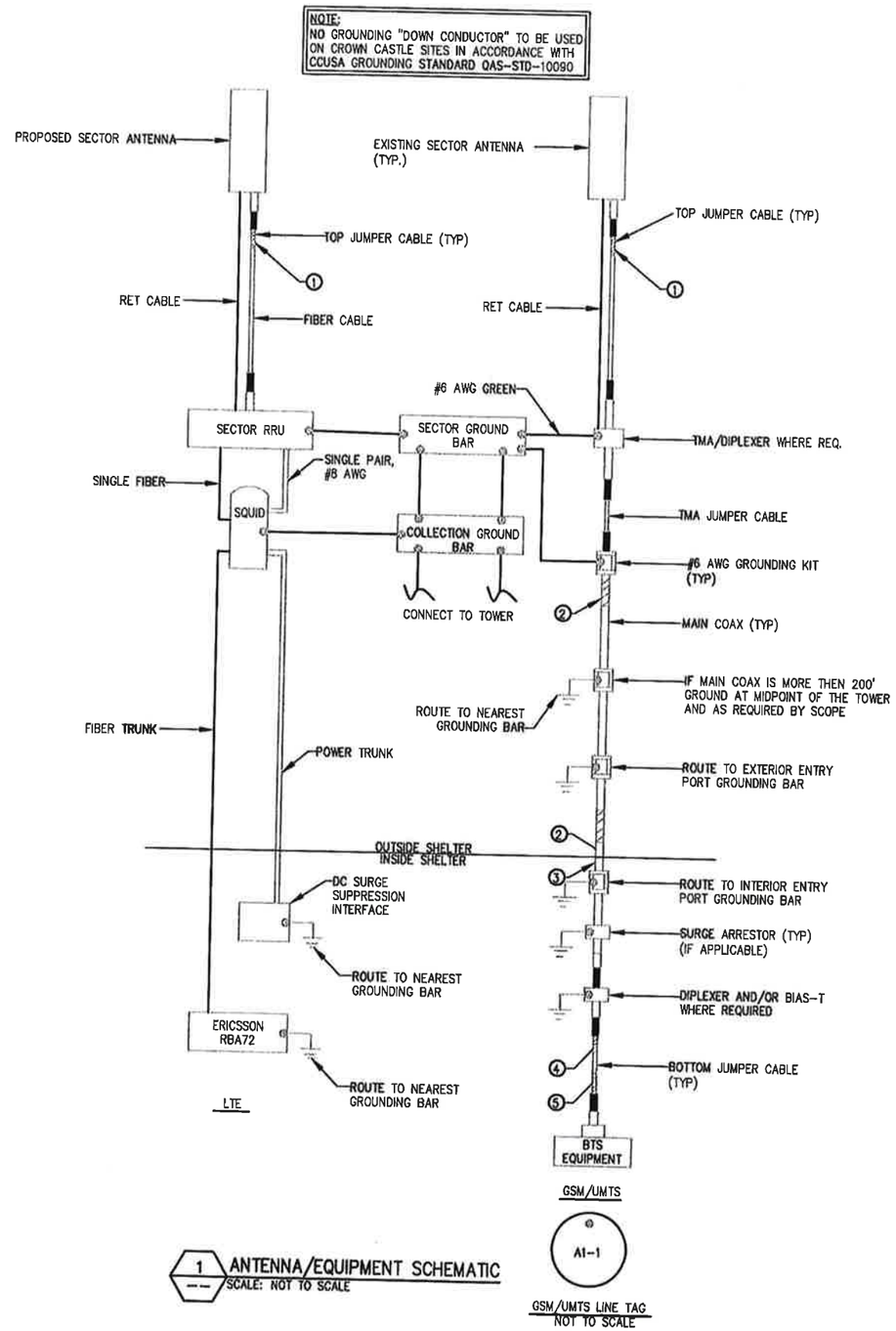
Drawing Title
ELECTRICAL ONE-LINE DIAGRAM

Drawing Number
E2

	CABLE MARKING LOCATIONS TABLE
NO.	LOCATIONS
①	EACH TOP JUMPER SHALL BE COLOR CODED WITH ONE (1) SET OF 3" WIDE BANDS
②	EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS NEAR THE TOP OF THE JUMPER CONNECTION AND WITH (1) SET OF 3/4" WIDE COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING
③	CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER
④	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER
⑤	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER

CABLE MARKING TAGS:

WHEN USING THE ALTERNATIVE LABELING METHOD, EACH RF CABLE SHALL BE IDENTIFIED WITH A METAL ID TAG MADE OF STAINLESS STEEL OR BRASS. THE TAG SHALL BE 1– 1 ½" IN DIAMETER WITH ¼" STAMPED LETTERS AND NUMBERS INDICATING THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER. THE ID MARKING LOCATIONS SHOULD BE AS PER "CABLE MARKING LOCATIONS TABLE". THE TAG SHOULD BE ATTACHED WITH CORROSION PROOF WIRE AROUND THE CABLE AT THE SAME LOCATIONS AS DEFINED ABOVE. THE TAG SHOULD BE LABELED AS SHOWN ON THE "GSM AND UMTS LINE TAG" DETAIL.



1 ANTENNA/EQUIPMENT SCHEMATIC
SCALE: NOT TO SCALE

COAX COLOR CODING & IDENTIFICATION NOTES:

1. SECTOR ORIENTATION/ AZIMUTH WILL VARY FROM REGION AND IS SITE SPECIFIC. REFER TO RF REPORT FOR EACH SITE TO DETERMINE THE ANTENNA LOCATION AND FUNCTION OF EACH TOWER SECTOR FACE.
2. THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE EXCEPT IN LOCATIONS WHERE ENVIRONMENTAL CONDITIONS CAUSE PHYSICAL DAMAGE, THEN PHYSICAL TAGS ARE PREFERRED.
3. THE STANDARD IS BASED ON EIGHT COLORED TAPES– RED, BLUE, GREEN, YELLOW, ORANGE, BROWN, WHITE AND VIOLET. THESE TAPES MUST BE 3/4" WIDE AND UV RESISTANT SUCH AS SCOTCH 35 VINYL ELECTRICAL COLOR CODING TAPE AND SHOULD BE READILY AVAILABLE TO THE ELECTRICIAN OR SUBCONTRACTOR ON SITE.
4. USING COLOR BANDS ON THE CABLES MARK ALL RF CABLE BY SECTOR AND NUMBER AS SHOWN ON "CABLE MARKING COLOR CONVENTION TABLE".
5. WHEN AN EXISTING COAXIAL LINE THAT IS INTENDED TO BE A SHARED LINE BETWEEN GSM/3G TDMA IS ENCOUNTERED, THE SUBCONTRACTOR SHALL REMOVE THE COLOR CODING SCHEME AND REPLACE IT WITH THE COLOR CODING AND TAGGING STANDARD THAT IS OUTLINED IN THE CURRENT VERSION OF THE STANDARD. IN THE ABSENCE OF AN EXISTING COLOR CODING AND TAGGING SCHEME, OR WHEN INSTALLING PROPOSED COAXIAL CABLES, THIS GUIDELINE SHALL BE IMPLEMENTED AT THAT SITE REGARDLESS OF TECHNOLOGY.
6. ALL COLOR CODE TAPE SHALL BE 3M–35 AND SHALL BE A MINIMUM OF (3) THREE WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID ANY UNRAVELING.
7. ALL COLOR BANDS INSTALLED AT THE TOP OF THE TOWER SHALL BE A MINIMUM IF 3" WIDE, AND SHALL HAVE A MINIMUM OF 3/4" OF SPACE IN BETWEEN EACH COLOR.
8. ALL COLOR CODES SHALL BE INSTALLED AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE TO SIDE.
9. IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE GSM TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

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876317

FA #: 10578275

160 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared For
CROWN CASTLE

Drawing Scale:
AS NOTED

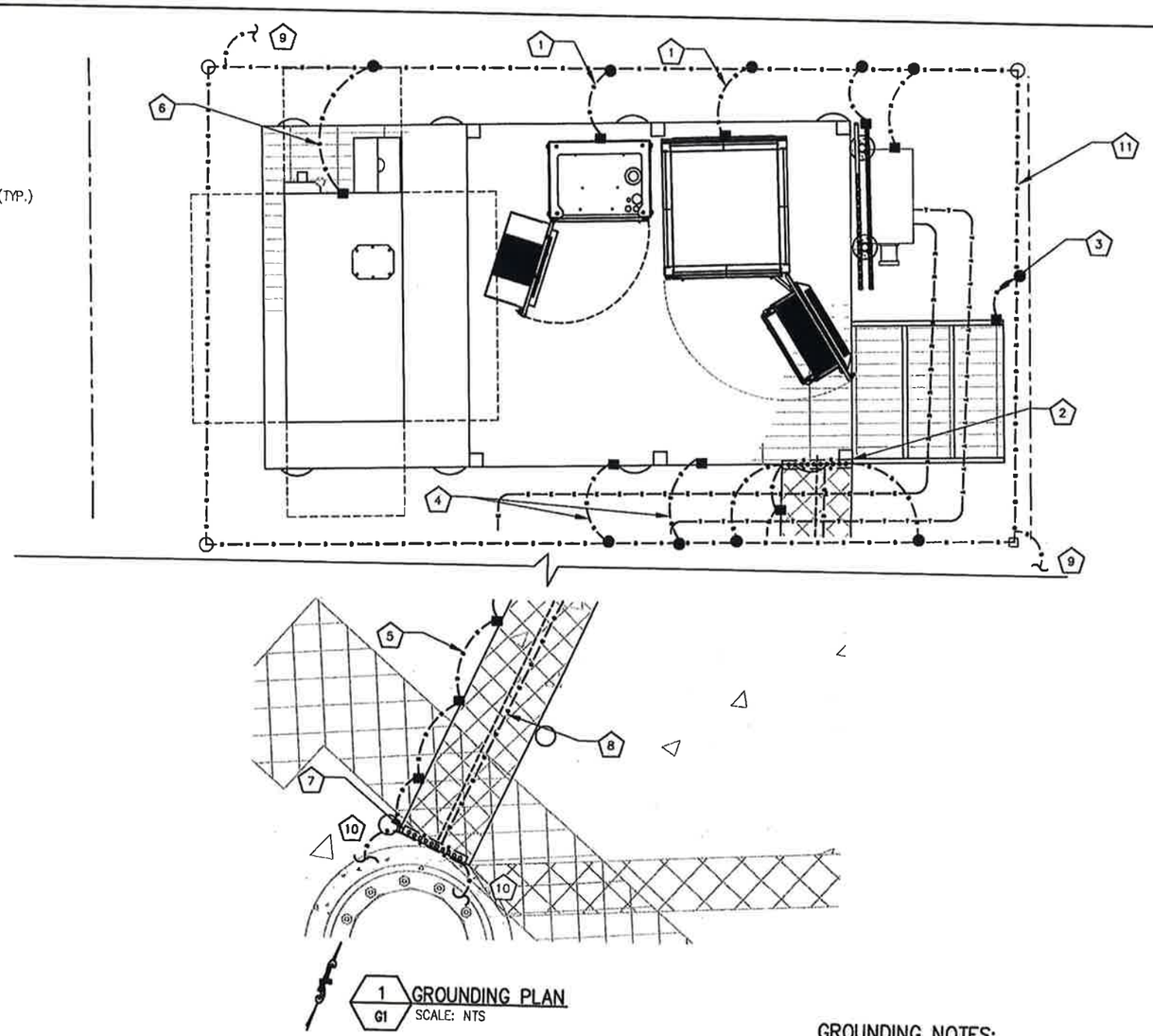
Date:
02/04/19

Drawing Title
ANTENNA/ EQUIPMENT SCHEMATIC

Drawing Number
E3

CODED DRAWING NOTES

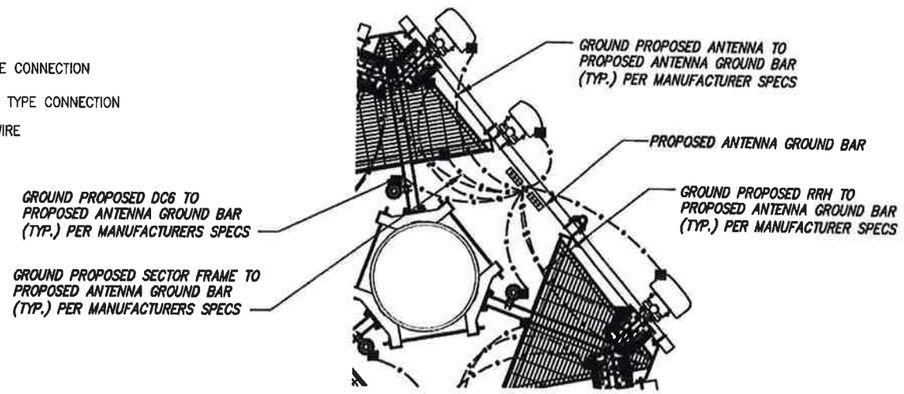
1. PROPOSED AT&T EQUIPMENT CABINETS TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS. (TYP.)
2. PROPOSED MAIN GROUND BAR, NEAR PROPOSED EQUIPMENT, GROUND TO BUILDING STEEL..
3. BOND PROPOSED PLATFORM STAIRS TO PROPOSED GROUND BAR.
4. BOND PROPOSED STEEL EQUIPMENT PLATFORM & OVERHEAD ICE CANOPY TO PROPOSED MAIN GROUND BAR (TYP.)
5. BOND PROPOSED ICE BRIDGE PER MANUFACTURERS SPECS (TYP.)
6. BOND PROPOSED GENERATOR MANUFACTURERS SPECS (TYP.)
7. SECONDARY GROUND BAR (AT BASE OF TOWER)
8. BOND PROPOSED SECONDARY GROUND BAR TO MAIN GROUND BAR (TYP.)
9. BOND PROPOSED SITE GROUND RING TO COMPOUND GROUND RING (TYP. OF (2) PLACES)
10. BOND PROPOSED SECONDARY GROUND BAR TO TOWER GROUND RING (TYP. OF (2) PLACES)
11. PROPOSED SITE GROUND RING



1 G1 GROUNDING PLAN
SCALE: NTS

GROUNDING SYMBOLS

- S/G — SOLID GROUND BUS BAR
- S/N — SOLID NEUTRAL BUS BAR
- SUPPLEMENTAL GROUND CONDUCTOR
- 2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- CHEMICAL GROUND ROD
- GROUND ROD
- DISCONNECT SWITCH
- (M) METER
- CADWELD TYPE CONNECTION
- COMPRESSION TYPE CONNECTION
- GROUNDING WIRE



2 GROUNDING DETAIL
NOT TO SCALE

GROUNDING NOTES:

1. ALL DOWN CONDUCTORS AND GROUND RING AND CONDUCTOR SHALL BE #2 AWG, SOLID, BARE, TINNED COPPER, UNO. ALL CONNECTIONS TO GROUND RING SHALL BE EXOTHERMICALLY WELDED. CONDUCTOR SHALL BE A MINIMUM DEPTH BELOW GRADE OF 30 INCHES OR TO THE LEDGE. MINIMUM BEND RADIUS SHALL BE 8 INCHES. CONDUCTOR SHALL BE AT LEAST 24 INCHES FROM ANY FOUNDATION, UNO.
2. WHERE MECHANICAL CONDUCTOR CONNECTIONS ARE SPECIFIED, BOLTED, COMPRESSION-TYPE CLAMPS OR SPLIT-BOLT TYPE CONNECTORS SHALL BE USED.
3. GRIND OFF GALVANIZING IN AFFECTED AREA. EXOTHERMICALLY WELD #2 CONDUCTOR AT 6 INCHES ABOVE GRADE R FOUNDATION, WHICHEVER IS HIGHER. COLD-GALY AFTER. EXOTHERMICALLY WELD OTHER END TO THE GROUND.
4. GROUND CONDUCTORS ON EXTERIOR WALL OF SHELTER SHALL BE ENCASED IN ¾" PVC CONDUIT TO GRADE. MOUNT PVC WITH GALVANIZED "C" CLAMPS. SEAL TOP ENDS.
5. FOLLOWING COMPLETION OF WORK, CONDUCT GROUND TEST. SUBMIT WRITTEN TEST TO CONSTRUCTION MANAGER AND PROJECT MANAGER.
6. ALL GROUNDING WORK SHALL COMPLY WITH CARRIER(S) STANDARDS.
7. GROUNDING REQUIREMENTS SHOWN ON THIS PLAN ARE FOR ITEMS THAT ARE LOCATED NEAR GRADE LEVEL AND THAT NEED TO BE TIED TO THE BELOW GRADE GROUND RING.
8. UNLESS NOTED OTHERWISE, ALL GROUNDING SHALL BE IN ACCORDANCE WITH AT&T'S SSEQ DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES", AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING". ALL GROUNDING SHALL ALSO COMPLY WITH ALL STATE AND LOCAL CODES, AND THE NATIONAL ELECTRICAL CODE (NEC).
9. UNLESS NOTED OTHERWISE, ALL GROUNDING CONNECTIONS SHALL BE MADE BY AN EXOTHERMIC WELD.
10. RESISTANCE TO EARTH TESTING IS REQUIRED PER AT&T STANDARDS ON ALL NEW SITES.

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FEB 04 2019

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Prepared For
CROWN CASTLE

Drawing Scale:
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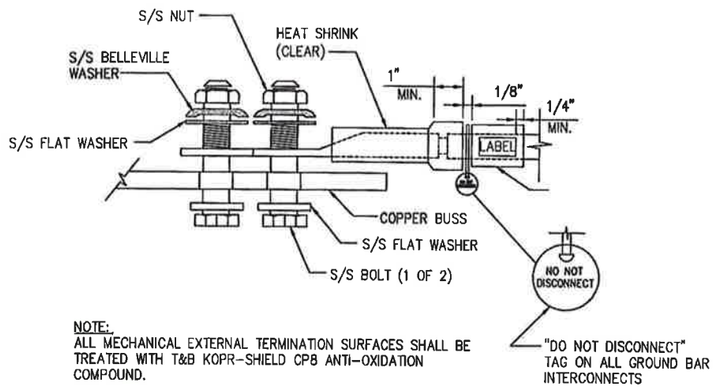
Date:
02/04/19

Drawing Title
GROUNDING DETAILS

Drawing Number
G1

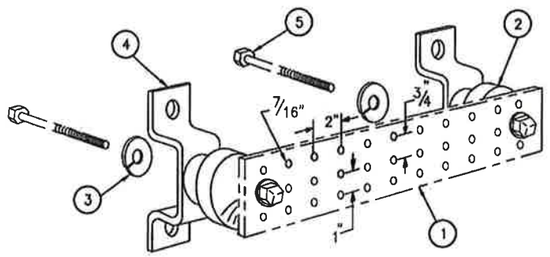


NOTE:
ALL MECHANICAL EXTERNAL TERMINATION SURFACES SHALL BE TREATED WITH T&B KOPR-SHIELD CP8 ANTI-OXIDATION COMPOUND.

1 EQUIPMENT GROUND CONNECTION
NOT TO SCALE

GENERAL GROUNDING NOTES:

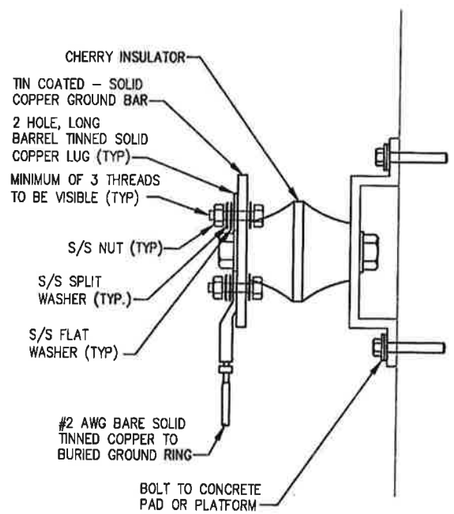
1. BOND PPC AND EQUIPMENT ENCLOSURES TO BURIED GROUNDING CONDUCTOR. USE A NEMA DRILLED, TWO-HOLE CONNECTOR FOR BONDS TO EQUIPMENT ENCLOSURES; USE AN APPROVED CONDUIT CLAMP FOR CONNECTIONS TO SERVICE CONDUITS. EXOTHERMICALLY WELD CONNECTIONS TO GROUNDING CONDUCTOR.
2. BOND ALL EXTERIOR CONDUITS, PIPES AND CYLINDRICAL METALLIC OBJECTS WITH A PENN-UNION GT SERIES CLAMP, BLACKBURN GUV SERIES CLAMP OR A BURNDY GAR 3900BU SERIES CLAMP ONLY. NO SUBSTITUTES ACCEPTED.
3. AFTER INSTALLATION IS COMPLETED IN CONFORMANCE WITH THESE DRAWINGS AND THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL CONFIRM THE IMPEDANCE (GROUND RESISTANCE) TO EARTH AND BETWEEN GROUNDING CIRCUITS. THE GROUNDING SYSTEM IS EXPECTED TO PROVIDE FOR A MAXIMUM EARTH RESISTANCE OF 5 OHMS. THE CONTRACTOR SHALL NOTIFY AT&T PRIOR TO ALL TESTING AND SHALL FURTHER NOTIFY AT&T IN THE EVENT THE EARTH RESISTANCE IS GREATER THAN 5 OHMS.
4. GROUNDING SHALL BE IN ACCORDANCE WITH AT&T AND CROWN CASTLE SPECIFICATIONS. REFER TO "CCUSA GROUNDING STANDARD", DOCUMENT #: QAS-STD-10090 FOR ADDITIONAL INFORMATION.
5. ALL BENDS ON THE GROUND CONDUCTOR TO BE MADE WITH A MINIMUM 24" RADIUS.
6. ALL GROUND LEADS MUST TERMINATE AT MGB, NOT HALO.
7. MUST USE INSPECTION HOLE LUGS FOR GROUNDING.
8. NO OVERLAPPING GROUND HARDWARE.
9. WHERE MECHANICAL CONNECTIONS ARE USED (TWO HOLE OR CRIMP), APPLY A LIBERAL PROTECTIVE COATING OF A CONDUCTIVE ANTI-OXIDE COMPOUND ON ALL CONNECTORS SUCH AS NO-OX OR APPROVED EQUAL.



2 GROUND BAR DETAIL
NOT TO SCALE

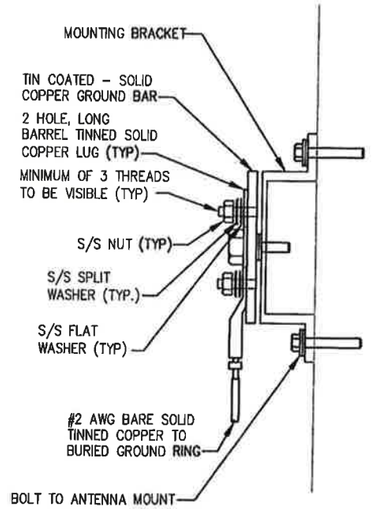
LEGEND

1 – TINNED COPPER GROUND BAR, 1/4"x 4"x 24"
2 – INSULATORS (NO INSULATORS ON TOWER)
3 – 5/8" LOCK WASHERS
4 – MOUNTING BRACKET (MOUNT HORIZONTAL ON VERTICAL CABLE LADDER)
5 – 5/8-11 X 1" H.H.C.S.BOLTS



3 INSULATED GROUND BAR
SCALE: N.T.S.

NOTE:
1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING. DO NOT COAT ENTIRE BAR.
4. NON-INSULATED GROUND BAR TO BE USED ON ALL TOWER MOUNTED GROUND BAR.



4 NON-INSULATED GROUND BAR
SCALE: N.T.S.

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STATE OF CONNECTICUT
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Drawing Title
GROUNDING DETAILS

Drawing Number
G2

ATTACHMENT 4

Date: **January 09, 2019**

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

Black & Veatch, Corp.
6800 W. 115th., Suite 2292
Overland Park, KS 66211
(913) 458-6984

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	10578275
	Carrier Site Name:	WOLCOTT
Crown Castle Designation:	**Crown Castle BU Number:**	876317
	Crown Castle Site Name:	WATERBURY
	Crown Castle JDE Job Number:	546296
	Crown Castle Work Order Number:	1673707
	Crown Castle Order Number:	469368 Rev. 0
Engineering Firm Designation:	**Black & Veatch, Corp. Project Number:**	400087
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,

Black & Veatch, Corp. is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower.

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:

LC4: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code (2015 IBC). Applicable standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Graham Burkholder

Respectfully submitted by:

Riley, Joshua J Jan 11 2019 1:52 PM
Csign

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER

01/11/2019

Josh Riley, P.E.
Professional Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 133 ft Monopole tower designed by Valmont.

This tower has been modified per reinforcement drawings prepared by Vertical Solutions in January of 2009. Modifications consist of the installation of flat plates from 0.0' – 100.0' and (24) baseplate stiffeners. These modifications are considered effective per the Post Modification Inspection Report prepared by Vertical Solutions in February of 2009.

This tower has been modified per reinforcement drawings prepared by Paul J. Ford and Company in August of 2012. Modifications consist of flat plates from 10.8' – 40.0', 42.0' – 70.0', 72.0' – 80.3', and 87.5' – 106.8' and a foundation modification. These modifications are considered effective per the Post Modification Inspection Report prepared by Tower Engineering Professionals in March of 2013.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
142.0	143.0	3	cci antennas	HPA65R-BU8A	6 2	3/4 3/8
		3	ericsson	RADIO 4415 B30		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 8843 B2/B66A		
		6	kmw communications	EPBQ-654L8H8-L2		
		3	raycap	DC6-48-60-18-8F		
	142.0	1	cci tower mounts	Platform Mount [LP 301-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
133.0	135.0	1	andrew	VHLP2-18	3 1 3	1-1/4 1-1/2 7983A
		2	andrew	VHLP2-23		
		6	alcatel lucent	1900MHz RRH (65MHz)		
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		1	cci tower mounts	Platform Mount [LP 602-1]		
		4	rfs celwave	IBC1900HB-2		
		2	rfs celwave	PD2DE-700/2700		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	130.0	3	nokia	AAHC w/ Mount Pipe		
		4	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
110.0	113.0	1	trimble	BULLET III	7 1 1	1-5/8 1-1/4 1/2
	110.0	6	andrew	SBNHH-1D65B w/ Mount Pipe		
		6	antel	BXA-80063/4CF w/ Mount Pipe		
		1	cci tower mounts	Platform Mount [LP 602-1]		
		1	raycap	RVZDC-6627-PF-48		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
100.0	100.0	1	cci tower mounts	Platform Mount [LP 303-1]	6 5 2 1	1-1/4 7/8 1-1/2 1-5/8
		3	ericsson	AIR 32 B2A B66AA w/ Mount Pipe		
		3	ericsson	AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	rfs celwave	ATMAA1412D-1A20		
50.0	51.0	1	lucent	KS24019-L112A	1	1/2
	50.0	1	cci tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - 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-POST-MODIFICATION INSPECTION	Verical Solutions	2381112	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	3315244	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	3770745	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Black & Veatch, Corp.	8053869	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, appurtenance loading, tower/foundation details, and geotechnical data. The loading on the structure is based on CAD level drawings and carrier orders provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch, Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
143 - 138	Pole	TP12.75x12.75x0.375	Pole	15.8%	Pass
138 - 133	Pole	TP12.75x12.75x0.375	Pole	32.7%	Pass
133 - 128	Pole	TP14.48x13.48x0.1875	Pole	65.8%	Pass
128 - 123	Pole	TP15.479x14.48x0.1875	Pole	85.8%	Pass
123 - 122.75	Pole + Reinf.	TP15.529x15.479x0.5375	Reinf. 27 Tension Rupture	56.1%	Pass
122.75 - 117.75	Pole + Reinf.	TP16.529x15.529x0.5125	Reinf. 27 Tension Rupture	68.7%	Pass
117.75 - 112.75	Pole + Reinf.	TP17.528x16.529x0.4875	Reinf. 27 Tension Rupture	79.7%	Pass
112.75 - 109.5	Pole + Reinf.	TP18.178x17.528x0.475	Reinf. 27 Tension Rupture	86.9%	Pass
109.5 - 109.25	Pole + Reinf.	TP18.228x18.178x0.6	Reinf. 27 Tension Rupture	73.2%	Pass
109.25 - 104.75	Pole + Reinf.	TP19.127x18.228x0.575	Reinf. 27 Tension Rupture	84.0%	Pass
104.75 - 104.5	Pole + Reinf.	TP19.177x19.127x0.7875	Reinf. 11 Tension Rupture	67.7%	Pass
104.5 - 102.5	Pole + Reinf.	TP19.577x19.177x0.7625	Reinf. 11 Tension Rupture	71.4%	Pass
102.5 - 102.25	Pole + Reinf.	TP19.627x19.577x0.7	Reinf. 11 Tension Rupture	74.9%	Pass
102.25 - 100	Pole + Reinf.	TP20.077x19.627x0.6875	Reinf. 11 Tension Rupture	79.0%	Pass
100 - 99.75	Pole + Reinf.	TP20.127x20.077x0.575	Reinf. 11 Tension Rupture	91.7%	Pass
99.75 - 98.75	Pole + Reinf.	TP20.327x20.127x0.575	Reinf. 11 Tension Rupture	94.3%	Pass
98.75 - 98.5	Pole + Reinf.	TP20.377x20.327x0.8625	Reinf. 6 Tension Rupture	72.0%	Pass
98.5 - 95	Pole + Reinf.	TP21.81x20.377x0.8375	Reinf. 6 Tension Rupture	78.7%	Pass

95 - 91	Pole + Reinf.	TP21.5x20.701x0.8875	Reinf. 6 Tension Rupture	81.2%	Pass
91 - 90.75	Pole + Reinf.	TP21.55x21.5x0.775	Reinf. 6 Tension Rupture	95.3%	Pass
90.75 - 89.25	Pole + Reinf.	TP21.85x21.55x0.775	Reinf. 6 Tension Rupture	97.9%	Pass
89.25 - 89	Pole + Reinf.	TP21.9x21.85x0.925	Reinf. 5 Bolt Shear	79.4%	Pass
89 - 88.5	Pole + Reinf.	TP22x21.9x0.9125	Reinf. 11 Tension Rupture	77.9%	Pass
88.5 - 88.25	Pole + Reinf.	TP22.05x22x0.925	Reinf. 11 Tension Rupture	77.5%	Pass
88.25 - 88	Pole + Reinf.	TP22.1x22.05x0.6875	Reinf. 5 Tension Rupture	83.8%	Pass
88 - 83	Pole + Reinf.	TP23.099x22.1x0.6625	Reinf. 5 Tension Rupture	90.5%	Pass
83 - 78	Pole + Reinf.	TP24.097x23.099x0.6375	Reinf. 5 Tension Rupture	96.5%	Pass
78 - 77	Pole + Reinf.	TP24.297x24.097x0.625	Reinf. 5 Tension Rupture	97.7%	Pass
77 - 76.75	Pole + Reinf.	TP24.347x24.297x0.825	Reinf. 10 Tension Rupture	91.6%	Pass
76.75 - 76.5	Pole + Reinf.	TP24.397x24.347x0.825	Reinf. 10 Tension Rupture	91.9%	Pass
76.5 - 76.25	Pole + Reinf.	TP24.447x24.397x0.825	Reinf. 10 Tension Rupture	93.0%	Pass
76.25 - 75	Pole + Reinf.	TP24.697x24.447x0.8125	Reinf. 10 Tension Rupture	94.4%	Pass
75 - 74.75	Pole + Reinf.	TP24.747x24.697x0.825	Reinf. 10 Tension Rupture	93.5%	Pass
74.75 - 73.5	Pole + Reinf.	TP24.996x24.747x0.825	Reinf. 10 Tension Rupture	94.8%	Pass
73.5 - 73.25	Pole + Reinf.	TP25.046x24.996x0.9125	Reinf. 23 Tension Rupture	83.7%	Pass
73.25 - 68.25	Pole + Reinf.	TP26.045x25.046x0.875	Reinf. 23 Tension Rupture	88.2%	Pass
68.25 - 63.25	Pole + Reinf.	TP27.044x26.045x0.85	Reinf. 23 Tension Rupture	92.4%	Pass
63.25 - 60.5	Pole + Reinf.	TP27.593x27.044x0.825	Reinf. 23 Tension Rupture	94.5%	Pass
60.5 - 60.25	Pole + Reinf.	TP27.643x27.593x0.825	Reinf. 23 Tension Rupture	94.7%	Pass
60.25 - 59.5	Pole + Reinf.	TP27.793x27.643x0.825	Reinf. 23 Tension Rupture	95.3%	Pass
59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.9	Reinf. 23 Tension Rupture	89.2%	Pass
59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.8625	Reinf. 23 Tension Rupture	92.6%	Pass
54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.8375	Reinf. 23 Tension Rupture	95.4%	Pass
50 - 44.25	Pole + Reinf.	TP30.342x29.191x0.9125	Reinf. 9 Tension Rupture	92.8%	Pass
44.25 - 43.5	Pole + Reinf.	TP30.492x30.342x0.9125	Reinf. 9 Tension Rupture	93.1%	Pass
43.5 - 43.25	Pole + Reinf.	TP30.542x30.492x0.9375	Reinf. 9 Tension Rupture	91.6%	Pass
43.25 - 39	Pole + Reinf.	TP31.393x30.542x0.9125	Reinf. 9 Tension Rupture	93.7%	Pass
39 - 38.75	Pole + Reinf.	TP31.443x31.393x0.9625	Reinf. 9 Tension Rupture	87.1%	Pass
38.75 - 35	Pole + Reinf.	TP32.194x31.443x0.9375	Reinf. 9 Tension Rupture	88.8%	Pass
35 - 34.75	Pole + Reinf.	TP32.244x32.194x0.8875	Reinf. 9 Tension Rupture	92.2%	Pass
34.75 - 34	Pole + Reinf.	TP32.394x32.244x0.8875	Reinf. 9 Tension Rupture	92.5%	Pass
34 - 33.75	Pole + Reinf.	TP32.444x32.394x0.8875	Reinf. 7 Tension Rupture	94.5%	Pass
33.75 - 29.75	Pole + Reinf.	TP33.245x32.444x0.8625	Reinf. 7 Tension Rupture	96.1%	Pass
29.75 - 29.5	Pole + Reinf.	TP33.295x33.245x0.875	Reinf. 7 Tension Rupture	95.1%	Pass
29.5 - 25	Pole + Reinf.	TP34.196x33.295x0.8625	Reinf. 7 Tension Rupture	96.8%	Pass
25 - 24.75	Pole + Reinf.	TP34.246x34.196x0.8875	Reinf. 8 Tension Rupture	94.3%	Pass
24.75 - 23.5	Pole + Reinf.	TP34.496x34.246x0.8875	Reinf. 8 Tension Rupture	94.7%	Pass

23.5 - 23.25	Pole + Reinf.	TP34.546x34.496x0.9625	Reinf. 8 Tension Rupture	89.3%	Pass
23.25 - 21.5	Pole + Reinf.	TP34.896x34.546x0.9625	Reinf. 8 Tension Rupture	89.9%	Pass
21.5 - 21.25	Pole + Reinf.	TP34.946x34.896x0.85	Reinf. 8 Tension Rupture	95.3%	Pass
21.25 - 16.25	Pole + Reinf.	TP35.947x34.946x0.8375	Reinf. 8 Tension Rupture	96.9%	Pass
16.25 - 12.92	Pole + Reinf.	TP36.614x35.947x0.8125	Reinf. 8 Tension Rupture	98.0%	Pass
12.92 - 12.67	Pole + Reinf.	TP36.665x36.614x1.0625	Reinf. 7 Tension Rupture	83.1%	Pass
12.67 - 12.5	Pole + Reinf.	TP36.698x36.665x1.0625	Reinf. 7 Tension Rupture	83.2%	Pass
12.5 - 12.15	Pole + Reinf.	TP36.768x36.698x0.7625	Reinf. 16 Tension Rupture	92.3%	Pass
12.15 - 11.9	Pole + Reinf.	TP36.818x36.768x0.6625	Reinf. 2 Tension Rupture	94.4%	Pass
11.9 - 11.75	Pole + Reinf.	TP36.848x36.818x0.6625	Reinf. 2 Tension Rupture	94.4%	Pass
11.75 - 8.5	Pole + Reinf.	TP37.498x36.848x0.65	Reinf. 2 Tension Rupture	95.2%	Pass
8.5 - 8.25	Pole + Reinf.	TP37.549x37.498x0.8875	Reinf. 13 Weldment	79.4%	Pass
8.25 - 6.5	Pole + Reinf.	TP37.899x37.549x0.8875	Reinf. 1 Tension Rupture	78.9%	Pass
6.5 - 6.25	Pole + Reinf.	TP37.949x37.899x0.8125	Reinf. 1 Tension Rupture	90.5%	Pass
6.25 - 1.25	Pole + Reinf.	TP38.95x37.949x0.8	Reinf. 1 Tension Rupture	91.8%	Pass
1.25 - 0	Pole + Reinf.	TP39.2x38.95x0.7875	Reinf. 1 Tension Rupture	92.1%	Pass
				Summary	
			Pole	85.8%	Pass
			Reinforcement	98.0%	Pass
			Overall	98.0%	Pass

Table 5 - Tower Component Stresses vs. Capacity (Monopole) - LC4

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	133	27.0	Pass
1	Flange Plate	133	46.2	Pass
1	Anchor Rods	0	96.1	Pass
1	Base Plate	0	70.5	Pass
1	Base Foundation	0	22.0	Pass
1	Base Foundation Soil Interaction	0	91.1	Pass

Structure Rating (max from all components) =	**98.0%**

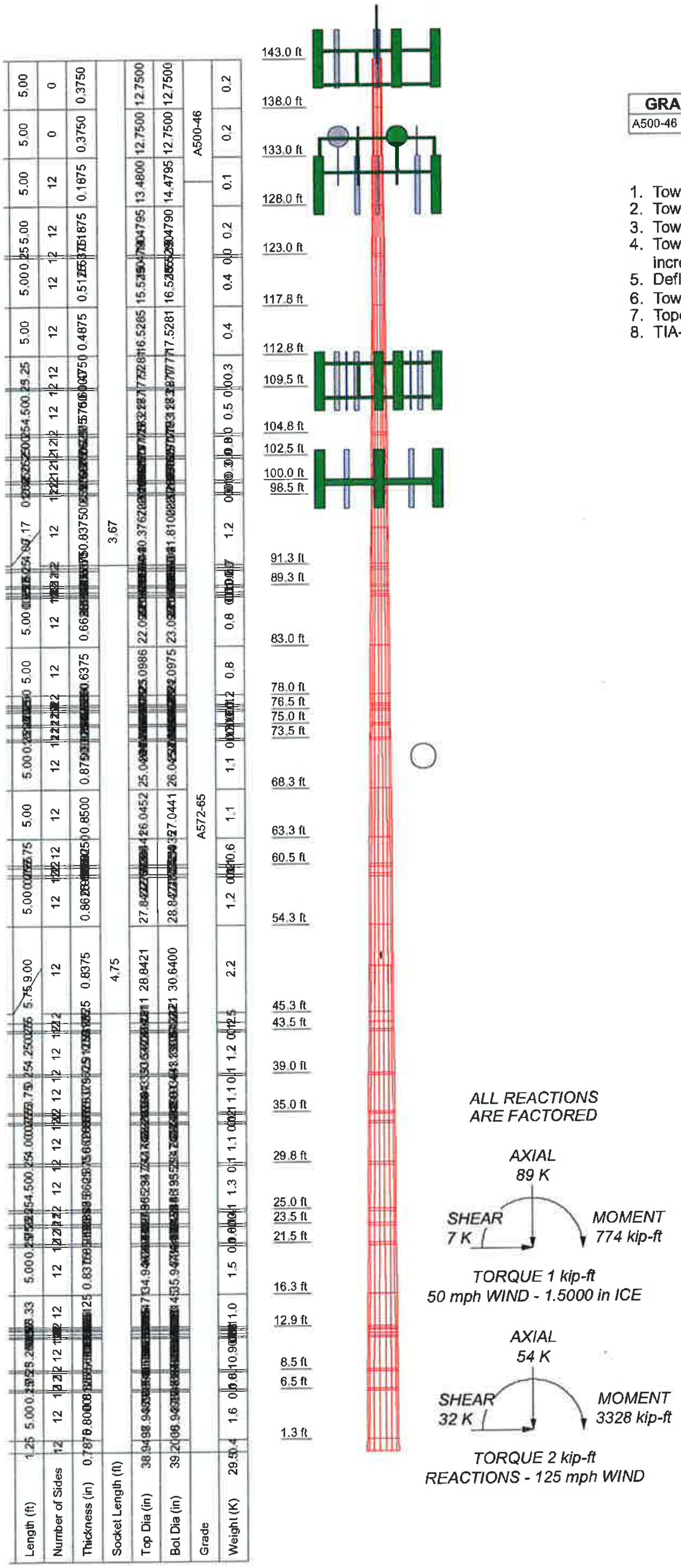
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed. Capacities per TIA-222-H Section 15.5.

4.1) Recommendations

The tower and its foundation will have sufficient capacity to carry the proposed loading configuration after proper installation of the proposed reinforcements shown in Appendix D.

APPENDIX A

TNXTOWER OUTPUT



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-46	46 ksi	62 ksi	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-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S

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Job: Waterbury (BU# 876317)	
Project: 400087 (876317.1673707)	
Client: Crown Castle International	Drawn by: Graham M. Burkholder, E.I.T. — App'd:
Code: TIA-222-H	Date: 01/09/19 — Scale:
Path:	Dwg No.

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

1) Tower is located in New Haven County, Connecticut.
2) Tower base elevation above sea level: 660.00 ft.
3) Basic wind speed of 125 mph.
4) Risk Category II.
5) Exposure Category B.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height: 0.00 ft.
9) Nominal ice thickness of 1.5000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Tower analysis based on target reliabilities in accordance with Annex S.
20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
21) 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-H Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-H 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	Ignore KL/ry For 60 Deg. Angle Legs	Pole Without Linear Attachments
		Pole With Shroud Or No Appurtenances
		Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	143.00-138.00	5.00	0.00	Round	12.7500	12.7500	0.3750		A500-46 (46 ksi)
L2	138.00-133.00	5.00	0.00	Round	12.7500	12.7500	0.3750		A500-46 (46 ksi)
L3	133.00-128.00	5.00	0.00	12	13.4800	14.4795	0.1875	0.7500	A572-65 (65 ksi)
L4	128.00-123.00	5.00	0.00	12	14.4795	15.4790	0.1875	0.7500	A572-65 (65 ksi)
L5	123.00-122.75	0.25	0.00	12	15.4790	15.5290	0.5375	2.1500	A572-65 (65 ksi)
L6	122.75-117.75	5.00	0.00	12	15.5290	16.5285	0.5125	2.0500	A572-65 (65 ksi)
L7	117.75-112.75	5.00	0.00	12	16.5285	17.5281	0.4875	1.9500	A572-65 (65 ksi)
L8	112.75-109.50	3.25	0.00	12	17.5281	18.1777	0.4750	1.9000	A572-65 (65 ksi)
L9	109.50-109.25	0.25	0.00	12	18.1777	18.2277	0.6000	2.4000	A572-65 (65 ksi)
L10	109.25-104.75	4.50	0.00	12	18.2277	19.1273	0.5750	2.3000	A572-65 (65 ksi)
L11	104.75-104.50	0.25	0.00	12	19.1273	19.1773	0.7875	3.1500	A572-65 (65 ksi)
L12	104.50-102.50	2.00	0.00	12	19.1773	19.5771	0.7625	3.0500	A572-65 (65 ksi)
L13	102.50-102.25	0.25	0.00	12	19.5771	19.6270	0.7000	2.8000	A572-65 (65 ksi)
L14	102.25-100.00	2.25	0.00	12	19.6270	20.0768	0.6875	2.7500	A572-65 (65 ksi)
L15	100.00-99.75	0.25	0.00	12	20.0768	20.1268	0.5750	2.3000	A572-65 (65 ksi)
L16	99.75-98.75	1.00	0.00	12	20.1268	20.3267	0.5750	2.3000	A572-65 (65 ksi)
L17	98.75-98.50	0.25	0.00	12	20.3267	20.3767	0.8625	3.4500	A572-65 (65 ksi)
L18	98.50-91.33	7.17	3.67	12	20.3767	21.8100	0.8375	3.3500	A572-65 (65 ksi)
L19	91.33-91.00	4.00	0.00	12	20.7014	21.5004	0.8875	3.5500	A572-65 (65 ksi)
L20	91.00-90.75	0.25	0.00	12	21.5004	21.5504	0.7750	3.1000	A572-65 (65 ksi)
L21	90.75-89.25	1.50	0.00	12	21.5504	21.8500	0.7750	3.1000	A572-65 (65 ksi)
L22	89.25-89.00	0.25	0.00	12	21.8500	21.9000	0.9250	3.7000	A572-65 (65 ksi)
L23	89.00-88.50	0.50	0.00	12	21.9000	21.9999	0.9125	3.6500	A572-65 (65 ksi)
L24	88.50-88.25	0.25	0.00	12	21.9999	22.0498	0.9250	3.7000	A572-65 (65 ksi)
L25	88.25-88.00	0.25	0.00	12	22.0498	22.0998	0.6875	2.7500	A572-65 (65 ksi)
L26	88.00-83.00	5.00	0.00	12	22.0998	23.0986	0.6625	2.6500	A572-65 (65 ksi)
L27	83.00-78.00	5.00	0.00	12	23.0986	24.0975	0.6375	2.5500	A572-65 (65 ksi)
L28	78.00-77.00	1.00	0.00	12	24.0975	24.2972	0.6250	2.5000	A572-65 (65 ksi)
L29	77.00-76.75	0.25	0.00	12	24.2972	24.3472	0.8250	3.3000	A572-65 (65 ksi)
L30	76.75-76.50	0.25	0.00	12	24.3472	24.3971	0.8250	3.3000	A572-65 (65 ksi)
L31	76.50-76.25	0.25	0.00	12	24.3971	24.4471	0.8250	3.3000	A572-65 (65 ksi)
L32	76.25-75.00	1.25	0.00	12	24.4471	24.6968	0.8125	3.2500	A572-65 (65 ksi)
L33	75.00-74.75	0.25	0.00	12	24.6968	24.7467	0.8250	3.3000	A572-65 (65 ksi)
L34	74.75-73.50	1.25	0.00	12	24.7467	24.9964	0.8250	3.3000	A572-65 (65 ksi)
L35	73.50-73.25	0.25	0.00	12	24.9964	25.0464	0.9125	3.6500	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
									(65 ksi)
L36	73.25-68.25	5.00	0.00	12	25.0464	26.0452	0.8750	3.5000	A572-65 (65 ksi)
L37	68.25-63.25	5.00	0.00	12	26.0452	27.0441	0.8500	3.4000	A572-65 (65 ksi)
L38	63.25-60.50	2.75	0.00	12	27.0441	27.5935	0.8250	3.3000	A572-65 (65 ksi)
L39	60.50-60.25	0.25	0.00	12	27.5935	27.6434	0.8250	3.3000	A572-65 (65 ksi)
L40	60.25-59.50	0.75	0.00	12	27.6434	27.7933	0.8250	3.3000	A572-65 (65 ksi)
L41	59.50-59.25	0.25	0.00	12	27.7933	27.8432	0.9000	3.6000	A572-65 (65 ksi)
L42	59.25-54.25	5.00	0.00	12	27.8432	28.8421	0.8625	3.4500	A572-65 (65 ksi)
L43	54.25-45.25	9.00	4.75	12	28.8421	30.6400	0.8375	3.3500	A572-65 (65 ksi)
L44	45.25-44.25	5.75	0.00	12	29.1911	30.3421	0.9125	3.6500	A572-65 (65 ksi)
L45	44.25-43.50	0.75	0.00	12	30.3421	30.4922	0.9125	3.6500	A572-65 (65 ksi)
L46	43.50-43.25	0.25	0.00	12	30.4922	30.5423	0.9375	3.7500	A572-65 (65 ksi)
L47	43.25-39.00	4.25	0.00	12	30.5423	31.3930	0.9125	3.6500	A572-65 (65 ksi)
L48	39.00-38.75	0.25	0.00	12	31.3930	31.4431	0.9625	3.8500	A572-65 (65 ksi)
L49	38.75-35.00	3.75	0.00	12	31.4431	32.1938	0.9375	3.7500	A572-65 (65 ksi)
L50	35.00-34.75	0.25	0.00	12	32.1938	32.2438	0.8875	3.5500	A572-65 (65 ksi)
L51	34.75-34.00	0.75	0.00	12	32.2438	32.3939	0.8875	3.5500	A572-65 (65 ksi)
L52	34.00-33.75	0.25	0.00	12	32.3939	32.4440	0.8875	3.5500	A572-65 (65 ksi)
L53	33.75-29.75	4.00	0.00	12	32.4440	33.2447	0.8625	3.4500	A572-65 (65 ksi)
L54	29.75-29.50	0.25	0.00	12	33.2447	33.2947	0.8750	3.5000	A572-65 (65 ksi)
L55	29.50-25.00	4.50	0.00	12	33.2947	34.1955	0.8625	3.4500	A572-65 (65 ksi)
L56	25.00-24.75	0.25	0.00	12	34.1955	34.2456	0.8875	3.5500	A572-65 (65 ksi)
L57	24.75-23.50	1.25	0.00	12	34.2456	34.4958	0.8875	3.5500	A572-65 (65 ksi)
L58	23.50-23.25	0.25	0.00	12	34.4958	34.5459	0.9625	3.8500	A572-65 (65 ksi)
L59	23.25-21.50	1.75	0.00	12	34.5459	34.8962	0.9625	3.8500	A572-65 (65 ksi)
L60	21.50-21.25	0.25	0.00	12	34.8962	34.9462	0.8500	3.4000	A572-65 (65 ksi)
L61	21.25-16.25	5.00	0.00	12	34.9462	35.9471	0.8375	3.3500	A572-65 (65 ksi)
L62	16.25-12.92	3.33	0.00	12	35.9471	36.6145	0.8125	3.2500	A572-65 (65 ksi)
L63	12.92-12.67	0.25	0.00	12	36.6145	36.6645	1.0625	4.2500	A572-65 (65 ksi)
L64	12.67-12.50	0.17	0.00	12	36.6645	36.6978	1.0625	4.2500	A572-65 (65 ksi)
L65	12.50-12.15	0.35	0.00	12	36.6978	36.7678	0.7625	3.0500	A572-65 (65 ksi)
L66	12.15-11.90	0.25	0.00	12	36.7678	36.8179	0.6625	2.6500	A572-65 (65 ksi)
L67	11.90-11.75	0.15	0.00	12	36.8179	36.8479	0.6625	2.6500	A572-65 (65 ksi)
L68	11.75-8.50	3.25	0.00	12	36.8479	37.4985	0.6500	2.6000	A572-65 (65 ksi)
L69	8.50-8.25	0.25	0.00	12	37.4985	37.5485	0.8875	3.5500	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
L70	8.25-6.50	1.75	0.00	12	37.5485	37.8988	0.8875	3.5500	A572-65 (65 ksi)
L71	6.50-6.25	0.25	0.00	12	37.8988	37.9489	0.8125	3.2500	A572-65 (65 ksi)
L72	6.25-1.25	5.00	0.00	12	37.9489	38.9498	0.8000	3.2000	A572-65 (65 ksi)
L73	1.25-0.00	1.25		12	38.9498	39.2000	0.7875	3.1500	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	12.7500	14.5790	279.3350	4.3772	6.3750	43.8173	558.6701	7.2851	0.0000	0
	12.7500	14.5790	279.3350	4.3772	6.3750	43.8173	558.6701	7.2851	0.0000	0
L2	12.7500	14.5790	279.3350	4.3772	6.3750	43.8173	558.6701	7.2851	0.0000	0
	12.7500	14.5790	279.3350	4.3772	6.3750	43.8173	558.6701	7.2851	0.0000	0
L3	13.8894	8.0253	180.9936	4.7587	6.9826	25.9205	366.7420	3.9498	3.1101	16.587
	14.9242	8.6288	224.9697	5.1165	7.5004	29.9944	455.8495	4.2468	3.3780	18.016
L4	14.9242	8.6288	224.9697	5.1165	7.5004	29.9944	455.8495	4.2468	3.3780	18.016
	15.9589	9.2323	275.5477	5.4744	8.0181	34.3655	558.3343	4.5438	3.6459	19.445
L5	15.8355	25.8601	736.8963	5.3491	8.0181	91.9036	1493.1517	12.7275	2.7079	5.038
	15.8872	25.9466	744.3153	5.3670	8.0440	92.5301	1508.1846	12.7701	2.7213	5.063
L6	15.8960	24.7810	713.2524	5.3759	8.0440	88.6685	1445.2428	12.1965	2.7883	5.441
	16.9308	26.4305	865.3680	5.7337	8.5618	101.0733	1753.4701	13.0083	3.0561	5.963
L7	16.9396	25.1804	827.0156	5.7427	8.5618	96.5939	1675.7578	12.3930	3.1231	6.406
	17.9744	26.7494	991.4430	6.1005	9.0795	109.1954	2008.9322	13.1652	3.3910	6.956
L8	17.9788	26.0826	968.1488	6.1050	9.0795	106.6298	1961.7319	12.8371	3.4245	7.21
	18.6514	27.0763	1083.0717	6.3376	9.4161	115.0237	2194.5969	13.3262	3.5986	7.576
L9	18.6073	33.9602	1339.3143	6.2928	9.4161	142.2371	2713.8138	16.7142	3.2636	5.439
	18.6591	34.0568	1350.7703	6.3107	9.4420	143.0604	2737.0269	16.7617	3.2770	5.462
L10	18.6679	32.6840	1300.0037	6.3197	9.4420	137.6837	2634.1599	16.0861	3.3440	5.816
	19.5992	34.3496	1509.0447	6.6417	9.9079	152.3067	3057.7338	16.9058	3.5851	6.235
L11	19.5242	46.5051	1996.5277	6.5656	9.9079	201.5079	4045.5063	22.8884	3.0156	3.829
	19.5760	46.6318	2012.8938	6.5835	9.9338	202.6303	4078.6686	22.9508	3.0290	3.846
L12	19.5848	45.2128	1956.9519	6.5925	9.9338	196.9989	3965.3152	22.2524	3.0960	4.06
	19.9987	46.1945	2087.2031	6.7356	10.1409	205.8198	4229.2394	22.7355	3.2032	4.201
L13	20.0207	42.5489	1935.2799	6.7580	10.1409	190.8386	3921.4017	20.9413	3.3707	4.815
	20.0725	42.6616	1950.6912	6.7759	10.1668	191.8685	3952.6293	20.9967	3.3840	4.834
L14	20.0769	41.9274	1919.6558	6.7804	10.1668	188.8159	3889.7431	20.6354	3.4175	4.971
	20.5425	42.9231	2059.6958	6.9414	10.3998	198.0515	4173.5021	21.1255	3.5381	5.146
L15	20.5822	36.1076	1752.8143	6.9817	10.3998	168.5431	3551.6771	17.7711	3.8396	6.678
	20.6340	36.2002	1766.3243	6.9995	10.4257	169.4204	3579.0520	17.8166	3.8530	6.701
L16	20.6340	36.2002	1766.3243	6.9995	10.4257	169.4204	3579.0520	17.8166	3.8530	6.701
	20.8409	36.5703	1821.0586	7.0711	10.5292	172.9526	3689.9584	17.9988	3.9066	6.794
L17	20.7395	54.0570	2614.0351	6.9682	10.5292	248.2644	5296.7439	26.6052	3.1361	3.636
	20.7912	54.1958	2634.2222	6.9861	10.5551	249.5681	5337.6483	26.6735	3.1495	3.652
L18	20.8001	52.6923	2567.7113	6.9950	10.5551	243.2668	5202.8792	25.9336	3.2165	3.841
	22.2839	56.5576	3175.2450	7.5082	11.2976	281.0553	6433.9073	27.8359	3.6006	4.299
L19	21.8776	56.6230	2837.3764	7.0934	10.7233	264.5992	5749.2938	27.8681	3.1695	3.571
	21.9458	58.9066	3194.6992	7.3794	11.1372	286.8487	6473.3267	28.9921	3.3836	3.813
L20	21.9855	51.7203	2835.6640	7.4197	11.1372	254.6113	5745.8241	25.4552	3.6851	4.755
	22.0372	51.8450	2856.2131	7.4376	11.1631	255.8620	5787.4621	25.5165	3.6985	4.772
L21	22.0372	51.8450	2856.2131	7.4376	11.1631	255.8620	5787.4621	25.5165	3.6985	4.772
	22.3474	52.5928	2981.5957	7.5449	11.3183	263.4309	6041.5213	25.8846	3.7788	4.876
L22	22.2945	62.3252	3483.2325	7.4912	11.3183	307.7517	7057.9733	30.6746	3.3768	3.651
	22.3462	62.4740	3508.2329	7.5090	11.3442	309.2537	7108.6310	30.7478	3.3902	3.665
L23	22.3506	61.6665	3467.0155	7.5135	11.3442	305.6203	7025.1133	30.3504	3.4237	3.752
	22.4540	61.9600	3516.7532	7.5493	11.3959	308.5972	7125.8954	30.4948	3.4505	3.781
L24	22.4496	62.7715	3558.5921	7.5448	11.3959	312.2686	7210.6724	30.8942	3.4170	3.694
	22.5013	62.9203	3583.9514	7.5627	11.4218	313.7816	7262.0572	30.9674	3.4303	3.708
L25	22.5851	47.2908	2754.6047	7.6477	11.4218	241.1708	5581.5760	23.2751	4.0668	5.915
	22.6368	47.4014	2773.9699	7.6656	11.4477	242.3174	5620.8151	23.3295	4.0802	5.935
L26	22.6456	45.7310	2682.4722	7.6745	11.4477	234.3247	5435.4159	22.5074	4.1472	6.26
	23.6797	47.8618	3075.1806	8.0321	11.9651	257.0129	6231.1496	23.5561	4.4149	6.664

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
L27	23.6886	46.1071	2969.0389	8.0411	11.9651	248.1420	6016.0778	22.6925	4.4819	7.03
	24.7227	48.1575	3383.0198	8.3987	12.4825	271.0212	6854.9153	23.7016	4.7496	7.45
L28	24.7271	47.2384	3321.9905	8.4031	12.4825	266.1320	6731.2535	23.2493	4.7831	7.653
	24.9339	47.6404	3407.5338	8.4747	12.5860	270.7406	6904.5874	23.4472	4.8367	7.739
L29	24.8633	62.3540	4384.8996	8.4031	12.5860	348.3958	8884.9954	30.6888	4.3007	5.213
	24.9150	62.4867	4412.9491	8.4209	12.6118	349.9052	8941.8312	30.7540	4.3140	5.229
L30	24.9150	62.4867	4412.9491	8.4209	12.6118	349.9052	8941.8312	30.7540	4.3140	5.229
	24.9667	62.6194	4441.1179	8.4388	12.6377	351.4178	8998.9088	30.8193	4.3274	5.245
L31	24.9667	62.6194	4441.1179	8.4388	12.6377	351.4178	8998.9088	30.8193	4.3274	5.245
	25.0184	62.7520	4469.4063	8.4567	12.6636	352.9338	9056.2289	30.8846	4.3408	5.262
L32	25.0229	61.8340	4408.6794	8.4612	12.6636	348.1384	8933.1797	30.4328	4.3743	5.384
	25.2814	62.4873	4549.9028	8.5506	12.7929	355.6574	9219.3366	30.7543	4.4412	5.466
L33	25.2770	63.4154	4612.6515	8.5461	12.7929	360.5624	9346.4826	31.2111	4.4077	5.343
	25.3287	63.5481	4641.6630	8.5640	12.8188	362.0979	9405.2676	31.2764	4.4211	5.359
L34	25.3287	63.5481	4641.6630	8.5640	12.8188	362.0979	9405.2676	31.2764	4.4211	5.359
	25.5872	64.2114	4788.5462	8.6534	12.9482	369.8245	9702.8928	31.6029	4.4880	5.44
L35	25.5563	70.7647	5239.1115	8.6221	12.9482	404.6221	10615.8604	34.8282	4.2535	4.661
	25.6080	70.9114	5271.7723	8.6399	12.9740	406.3327	10682.0398	34.9004	4.2669	4.676
L36	25.6213	68.1029	5078.7252	8.6534	12.9740	391.4532	10290.8741	33.5182	4.3674	4.991
	26.6554	70.9172	5734.7221	9.0109	13.4914	425.0638	11620.1017	34.9033	4.6351	5.297
L37	26.6642	68.9594	5587.4889	9.0199	13.4914	414.1507	11321.7674	33.9397	4.7021	5.532
	27.6983	71.6933	6278.7264	9.3775	14.0088	448.1972	12722.4019	35.2852	4.9698	5.847
L38	27.7071	69.6511	6111.5234	9.3864	14.0088	436.2617	12383.6032	34.2801	5.0368	6.105
	28.2758	71.1105	6503.7958	9.5831	14.2934	455.0202	13178.4535	34.9984	5.1841	6.284
L39	28.2758	71.1105	6503.7958	9.5831	14.2934	455.0202	13178.4535	34.9984	5.1841	6.284
	28.3275	71.2431	6540.2669	9.6010	14.3193	456.7451	13252.3539	35.0637	5.1974	6.3
L40	28.3275	71.2431	6540.2669	9.6010	14.3193	456.7451	13252.3539	35.0637	5.1974	6.3
	28.4827	71.6412	6650.4977	9.6546	14.3969	461.9394	13475.7114	35.2596	5.2376	6.349
L41	28.4562	77.9366	7194.7263	9.6278	14.3969	499.7412	14578.4661	38.3580	5.0366	5.596
	28.5079	78.0814	7234.8844	9.6457	14.4228	501.6292	14659.8372	38.4293	5.0500	5.611
L42	28.5211	74.9321	6962.4214	9.6591	14.4228	482.7380	14107.7533	36.8793	5.1505	5.972
	29.5552	77.7062	7764.6748	10.0167	14.9402	519.7175	15733.3363	38.2446	5.4182	6.282
L43	29.5641	75.5213	7559.8400	10.0256	14.9402	506.0072	15318.2854	37.1693	5.4852	6.549
	31.4254	80.3699	9111.3919	10.6693	15.8715	574.0718	18462.1502	39.5556	5.9670	7.125
L44	30.8833	83.0895	8481.0118	10.1237	15.1210	560.8771	17184.8292	40.8941	5.3777	5.893
	31.0906	86.4715	9559.3460	10.5358	15.7172	608.2087	19369.8267	42.5587	5.6862	6.231
L45	31.0906	86.4715	9559.3460	10.5358	15.7172	608.2087	19369.8267	42.5587	5.6862	6.231
	31.2460	86.9127	9706.3933	10.5895	15.7950	614.5239	19667.7843	42.7758	5.7264	6.276
L46	31.2372	89.2184	9947.0582	10.5806	15.7950	629.7607	20155.4367	43.9106	5.6594	6.037
	31.2890	89.3695	9997.6734	10.5985	15.8209	631.9280	20257.9968	43.9849	5.6728	6.051
L47	31.2978	87.0597	9755.7420	10.6075	15.8209	616.6362	19767.7783	42.8481	5.7398	6.29
	32.1786	89.5595	10620.4495	10.9120	16.2616	653.1000	21519.9100	44.0784	5.9678	6.54
L48	32.1609	94.3119	11147.3534	10.8941	16.2616	685.5017	22587.5602	46.4174	5.8338	6.061
	32.2127	94.4670	11202.4411	10.9121	16.2875	687.7929	22699.1828	46.4938	5.8472	6.075
L49	32.2216	92.0887	10938.3392	10.9210	16.2875	671.5779	22164.0407	45.3233	5.9142	6.309
	32.9987	94.3548	11765.8709	11.1897	16.6764	705.5416	23840.8443	46.4386	6.1154	6.523
L50	33.0164	89.4655	11191.8967	11.2076	16.6764	671.1232	22677.8170	44.0322	6.2494	7.042
	33.0682	89.6085	11245.6549	11.2256	16.7023	673.3002	22786.7458	44.1026	6.2628	7.057
L51	33.0682	89.6085	11245.6549	11.2256	16.7023	673.3002	22786.7458	44.1026	6.2628	7.057
	33.2236	90.0375	11407.9619	11.2793	16.7801	679.8523	23115.6237	44.3137	6.3031	7.102
L52	33.2236	90.0375	11407.9619	11.2793	16.7801	679.8523	23115.6237	44.3137	6.3031	7.102
	33.2754	90.1805	11462.4093	11.2972	16.8060	682.0434	23225.9488	44.3841	6.3165	7.117
L53	33.2842	87.7097	11166.0207	11.3062	16.8060	664.4075	22625.3852	43.1680	6.3835	7.401
	34.1132	89.9335	12037.0419	11.5928	17.2208	698.9847	24390.3103	44.2625	6.5981	7.65
L54	34.1088	91.2016	12197.3558	11.5884	17.2208	708.2940	24715.1498	44.8867	6.5646	7.502
	34.1606	91.3426	12254.0158	11.6063	17.2467	710.5147	24829.9583	44.9561	6.5780	7.518
L55	34.1650	90.0724	12092.9356	11.6107	17.2467	701.1749	24503.5661	44.3309	6.6115	7.665
	35.0976	92.5742	13128.8224	11.9332	17.7133	741.1848	26602.5535	45.5622	6.8529	7.945
L56	35.0888	95.1861	13478.9944	11.9243	17.7133	760.9537	27312.0970	46.8477	6.7859	7.646
	35.1406	95.3291	13539.8414	11.9422	17.7392	763.2718	27435.3894	46.9181	6.7993	7.661
L57	35.1406	95.3291	13539.8414	11.9422	17.7392	763.2718	27435.3894	46.9181	6.7993	7.661
	35.3996	96.0441	13846.8244	12.0318	17.8688	774.9150	28057.4203	47.2700	6.8664	7.737
L58	35.3732	103.9281	14916.6675	12.0049	17.8688	834.7871	30225.2125	51.1503	6.6654	6.925
	35.4250	104.0832	14983.5514	12.0228	17.8948	837.3154	30360.7374	51.2266	6.6788	6.939
L59	35.4250	104.0832	14983.5514	12.0228	17.8948	837.3154	30360.7374	51.2266	6.6788	6.939
	35.7876	105.1689	15457.3452	12.1483	18.0762	855.1207	31320.7720	51.7609	6.7727	7.037
L60	35.8273	93.1844	13786.8607	12.1885	18.0762	762.7073	27935.9176	45.8625	7.0742	8.323
	35.8791	93.3213	13847.7462	12.2064	18.1021	764.9785	28059.2880	45.9299	7.0876	8.338
L61	35.8835	91.9827	13659.1145	12.2109	18.1021	754.5581	27677.0692	45.2711	7.1211	8.503
	36.9197	94.6818	14897.1903	12.5692	18.6206	800.0382	30185.7464	46.5995	7.3893	8.823

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
L62	36.9286	91.9209	14483.3930	12.5782	18.6206	777.8156	29347.2809	45.2407	7.4563	9.177
	37.6195	93.6670	15324.5221	12.8171	18.9663	807.9865	31051.6364	46.1000	7.6352	9.397
L63	37.5313	121.6323	19622.8803	12.7276	18.9663	1034.6178	39761.2755	59.8637	6.9652	6.555
	37.5831	121.8035	19705.8631	12.7455	18.9922	1037.5749	39929.4212	59.9480	6.9786	6.568
L64	37.5831	121.8035	19705.8631	12.7455	18.9922	1037.5749	39929.4212	59.9480	6.9786	6.568
	37.6175	121.9172	19761.0928	12.7574	19.0094	1039.5407	40041.3315	60.0039	6.9875	6.576
L65	37.7233	88.2301	14542.6798	12.8648	19.0094	765.0239	29467.4120	43.4242	7.7915	10.218
	37.7959	88.4021	14627.9066	12.8899	19.0457	768.0410	29640.1047	43.5088	7.8103	10.243
L66	37.8312	77.0217	12815.6838	12.9257	19.0457	672.8899	25968.0498	37.9077	8.0783	12.194
	37.8830	77.1285	12869.0480	12.9436	19.0717	674.7733	26076.1803	37.9603	8.0917	12.214
L67	37.8830	77.1285	12869.0480	12.9436	19.0717	674.7733	26076.1803	37.9603	8.0917	12.214
	37.9141	77.1925	12901.1376	12.9544	19.0872	675.9047	26141.2025	37.9918	8.0997	12.226
L68	37.9185	75.7622	12670.8420	12.9588	19.0872	663.8392	25674.5612	37.2879	8.1332	12.513
	38.5920	77.1239	13366.3880	13.1918	19.4242	688.1302	27083.9258	37.9580	8.3076	12.781
L69	38.5082	104.6250	17899.6442	13.1067	19.4242	921.5119	36269.5319	51.4933	7.6711	8.643
	38.5600	104.7681	17973.1471	13.1246	19.4501	924.0627	36418.4689	51.5636	7.6845	8.659
L70	38.5600	104.7681	17973.1471	13.1246	19.4501	924.0627	36418.4689	51.5636	7.6845	8.659
	38.9227	105.7692	18493.3097	13.2501	19.6316	942.0175	37472.4592	52.0564	7.7784	8.764
L71	38.9491	97.0271	17033.6277	13.2769	19.6316	867.6638	34514.7477	47.7538	7.9794	9.821
	39.0010	97.1581	17102.6767	13.2948	19.6575	870.0321	34654.6597	47.8182	7.9928	9.837
L72	39.0054	95.6955	16856.5687	13.2993	19.6575	857.5124	34155.9783	47.0984	8.0263	10.033
	40.0416	98.2738	18256.0923	13.6576	20.1760	904.8427	36991.7925	48.3674	8.2945	10.368
L73	40.0460	96.7700	17988.5114	13.6621	20.1760	891.5804	36449.6011	47.6272	8.3280	10.575
	40.3050	97.4045	18344.6785	13.7517	20.3056	903.4295	37171.2921	47.9395	8.3951	10.66

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 143.00-138.00				1	1	1			
L2 138.00-133.00				1	1	1			
L3 133.00-128.00				1	1	1			
L4 128.00-123.00				1	1	1			
L5 123.00-122.75				1	1	0.878027			
L6 122.75-117.75				1	1	0.884784			
L7 117.75-112.75				1	1	0.896794			
L8 112.75-109.50				1	1	0.900452			
L9 109.50-109.25				1	1	0.893207			
L10 109.25-104.75				1	1	0.901405			
L11 104.75-104.50				1	1	0.922336			
L12 104.50-102.50				1	1	0.936294			
L13 102.50-102.25				1	1	0.873695			
L14 102.25-100.00				1	1	0.874697			
L15 100.00-99.75				1	1	0.913489			
L16 99.75-98.75				1	1	0.907544			
L17 98.75-98.50				1	1	0.864137			
L18 98.50-91.33				1	1	0.865807			
L19 91.33-91.00				1	1	0.878508			
L20 91.00-90.75				1	1	0.940995			
L21 90.75-89.25				1	1	0.932202			
L22 89.25-89.00				1	1	0.898112			
L23 89.00-88.50				1	1	0.90686			
L24 88.50-88.25				1	1	0.941406			
L25 88.25-88.00				1	1	0.996944			
L26 88.00-83.00				1	1	1.00415			
L27 83.00-78.00				1	1	1.01469			
L28 78.00-77.00				1	1	1.02907			
L29 77.00-76.75				1	1	0.977535			
L30 76.75-76.50				1	1	0.976106			
L31 76.50-76.25				1	1	0.926807			
L32 76.25-75.00				1	1	0.933951			
L33 75.00-74.75				1	1	0.966269			
L34 74.75-73.50				1	1	0.959417			
L35 73.50-73.25				1	1	0.911702			
L36 73.25-68.25				1	1	0.922966			
L37 68.25-63.25				1	1	0.92419			
L38 63.25-60.50				1	1	0.937984			
L39 60.50-60.25				1	1	0.936802			

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
L40 60.25-59.50				1	1	0.93328			
L41 59.50-59.25				1	1	0.910925			
L42 59.25-54.25				1	1	0.925671			
L43 54.25-45.25				1	1	0.933209			
L44 45.25-44.25				1	1	0.915111			
L45 44.25-43.50				1	1	0.912205			
L46 43.50-43.25				1	1	0.938116			
L47 43.25-39.00				1	1	0.945685			
L48 39.00-38.75				1	1	0.939494			
L49 38.75-35.00				1	1	0.948616			
L50 35.00-34.75				1	1	0.965897			
L51 34.75-34.00				1	1	0.962972			
L52 34.00-33.75				1	1	0.917584			
L53 33.75-29.75				1	1	0.929064			
L54 29.75-29.50				1	1	0.925561			
L55 29.50-25.00				1	1	0.923039			
L56 25.00-24.75				1	1	0.928408			
L57 24.75-23.50				1	1	0.924117			
L58 23.50-23.25				1	1	0.910954			
L59 23.25-21.50				1	1	0.904901			
L60 21.50-21.25				1	1	0.972033			
L61 21.25-16.25				1	1	0.968703			
L62 16.25-12.92				1	1	0.986368			
L63 12.92-12.67				1	1	0.900242			
L64 12.67-12.50				1	1	0.899677			
L65 12.50-12.15				1	1	1.00827			
L66 12.15-11.90				1	1	1.0784			
L67 11.90-11.75				1	1	1.07789			
L68 11.75-8.50				1	1	1.08734			
L69 8.50-8.25				1	1	1.00164			
L70 8.25-6.50				1	1	0.995497			
L71 6.50-6.25				1	1	0.960558			
L72 6.25-1.25				1	1	0.959901			
L73 1.25-0.00				1	1	0.971053			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
**********										
****										
142										
FB-L98B-034-XXX(3/8)	C	No	Surface Ar (CaAa)	142.00 - 0.00	2	2	0.000 0.020	0.3937		0.06
WR-VG86ST-BRD(3/4)	C	No	Surface Ar (CaAa)	142.00 - 0.00	6	6	0.000 0.170	0.7950		0.58
133										
7983A(ELLIPTICAL)	A	No	Surface Ar (CaAa)	133.00 - 0.00	3	3	0.275 0.337	0.5730		0.08
MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	C	No	Surface Ar (CaAa)	100.00 - 0.00	1	1	0.000 0.050	1.6250		1.07
***										
***										
PL1.25x6.875 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	29.75 - 0.00	1	1	0.250 0.250	6.8750	16.2500	0.00
PL1.25x6.875 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	29.75 - 0.00	1	1	0.250 0.250	6.8750	16.2500	0.00
PL1.25x6.875	C	No	Surface Af	29.75 -	1	1	0.250	6.8750	16.2500	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Reinforcement - Wind Area			(CaAa)	9.17			0.250			
PL1.25x6.875 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	16.42 - 0.00	1	1	0.000 0.000	6.8750	16.2500	0.00
PL1.25x6.875 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	16.42 - 0.00	1	1	0.500 0.500	6.8750	16.2500	0.00
***										
PL1.25x6.625 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	59.50 - 29.75	1	1	0.250 0.250	6.6250	15.7500	0.00
PL1.25x6.625 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	59.50 - 29.75	1	1	0.250 0.250	6.6250	15.7500	0.00
PL1.25x6.625 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	59.50 - 29.75	1	1	0.250 0.250	6.6250	15.7500	0.00
***										
PL1.25x5.5 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	89.25 - 59.50	1	1	0.250 0.250	5.5000	13.5000	0.00
PL1.25x5.5 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	89.25 - 59.50	1	1	0.250 0.250	5.5000	13.5000	0.00
PL1.25x5.5 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	89.25 - 59.50	1	1	0.250 0.250	5.5000	13.5000	0.00
***										
PL1.25x3.625 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	100.00 - 89.25	1	1	0.250 0.250	3.6250	9.7500	0.00
PL1.25x3.625 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	100.00 - 89.25	1	1	0.250 0.250	3.6250	9.7500	0.00
PL1.25x3.625 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	100.00 - 89.25	1	1	0.250 0.250	3.6250	9.7500	0.00
***										
PL1x4 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	35.75 - 10.75	1	1	0.000 0.000	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	35.75 - 10.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	40.75 - 10.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
***										
PL1x4 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	62.25 - 32.25	1	1	0.500 0.500	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	62.25 - 32.25	1	1	0.500 0.500	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	62.25 - 32.25	1	1	0.500 0.500	4.0000	10.0000	0.00
***										
PL1x4 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	78.75 - 58.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	78.75 - 58.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	78.75 - 58.75	1	1	-0.250 -0.250	4.0000	10.0000	0.00
***										
PL1x4 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	106.50 - 86.50	1	1	-0.250 -0.250	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	106.50 - 86.50	1	1	-0.250 -0.250	4.0000	10.0000	0.00
PL1x4 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	106.50 - 86.50	1	1	-0.250 -0.250	4.0000	10.0000	0.00
***										
Transition Stiffener 1x7	A	No	Surface Af	10.50 -	1	1	-0.500	1.0000	16.0000	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
			(CaAa)	0.00			-0.500			
Transition Stiffener 1x7	B	No	Surface Af	10.50 -	1	1	-0.250	1.0000	16.0000	0.00
			(CaAa)	0.00			-0.250			
Transition Stiffener 1x7	C	No	Surface Af	10.50 -	1	1	-0.250	1.0000	16.0000	0.00
			(CaAa)	0.00			-0.250			
CCI-SFP-060100	B	No	Surface Af	25.00 -	1	1	-0.500	6.0000	14.0000	0.00
			(CaAa)	5.00			-0.500			
CCI-SFP-060100	C	No	Surface Af	25.00 -	1	1	0.000	6.0000	14.0000	0.00
			(CaAa)	5.00			0.000			
CCI-SFP-060100	C	No	Surface Af	25.00 -	1	1	-0.250	6.0000	14.0000	0.00
			(CaAa)	10.00			-0.250			
CCI-SFP-045100	B	No	Surface Af	35.08 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	20.00			0.000			
CCI-SFP-045100	C	No	Surface Af	35.08 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	25.00			0.000			
CCI-SFP-045100	A	No	Surface Af	45.08 -	1	1	-0.250	4.5000	11.0000	0.00
			(CaAa)	25.00			-0.250			
CCI-SFP-060100	B	No	Surface Af	45.17 -	1	1	0.000	6.0000	14.0000	0.00
			(CaAa)	35.08			0.000			
CCI-SFP-060100	C	No	Surface Af	45.17 -	1	1	0.000	6.0000	14.0000	0.00
			(CaAa)	35.08			0.000			
CCI-SFP-045100	A	No	Surface Af	72.25 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	45.25			0.000			
CCI-SFP-045100	B	No	Surface Af	75.25 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	45.17			0.000			
CCI-SFP-045100	C	No	Surface Af	75.25 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	45.17			0.000			
CCI-SFP-040075	B	No	Surface Af	100.33 -	1	1	0.000	4.0000	9.5000	0.00
			(CaAa)	75.25			0.000			
CCI-SFP-040075	C	No	Surface Af	100.33 -	1	1	0.000	4.0000	9.5000	0.00
			(CaAa)	75.25			0.000			
CCI-AFP-040075	A	No	Surface Af	90.00 -	1	1	-0.500	4.0000	9.5000	0.00
			(CaAa)	75.00			-0.500			
CCI-AFP-040075	A	No	Surface Af	100.33 -	1	1	0.000	4.0000	9.5000	0.00
			(CaAa)	90.33			0.000			
CCI-AFP-045100	A	No	Surface Af	125.42 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	100.33			0.000			
CCI-AFP-045100	B	No	Surface Af	125.42 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	100.33			0.000			
CCI-AFP-045100	C	No	Surface Af	125.42 -	1	1	0.000	4.5000	11.0000	0.00
			(CaAa)	100.33			0.000			
CCI-AFP-040075	A	No	Surface Af	111.00 -	1	1	-0.500	4.0000	9.5000	0.00
			(CaAa)	101.00			-0.500			
CCI-AFP-040075	B	No	Surface Af	111.00 -	1	1	-0.500	4.0000	9.5000	0.00
			(CaAa)	101.00			-0.500			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
********** ********* ********** *********									
HB114-1-0813U4-M5J(1-1/4)	C	No	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
							2" Ice	0.00	1.20
MLC6C-06C-008R-008R(1-1/2)	C	No	No	Inside Pole	133.00 - 0.00	1	No Ice	0.00	1.52
							1/2" Ice	0.00	1.52
							1" Ice	0.00	1.52
							2" Ice	0.00	1.52
110									

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF4-50A(1/2)	C	No	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
							2" Ice	0.00	0.15
HB158-1-08U8-S8J18(1-5/8)	C	No	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
							2" Ice	0.00	1.30
LDF7-50A(1-5/8)	C	No	No	Inside Pole	110.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
HB114-U6S12-XXX-LI(1-1/4)	C	No	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
							2" Ice	0.00	1.70
LDF5-50A(7/8)	C	No	No	Inside Pole	100.00 - 0.00	5	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
LDF6-50A(1-1/4)	C	No	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
							2" Ice	0.00	0.60
MLC HYBRID 6x12 6AWGx6(1-1/2)	C	No	No	Inside Pole	100.00 - 0.00	2	No Ice	0.00	0.59
							1/2" Ice	0.00	0.59
							1" Ice	0.00	0.59
							2" Ice	0.00	0.59
90									
50									
LDF4-50A(1/2)	C	No	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
							2" 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	143.00-138.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.223	0.000	0.01
L2	138.00-133.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.779	0.000	0.02
L3	133.00-128.00	A	0.000	0.000	0.860	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.779	0.000	0.04
L4	128.00-123.00	A	0.000	0.000	2.675	0.000	0.00
		B	0.000	0.000	1.815	0.000	0.00
		C	0.000	0.000	4.594	0.000	0.04
L5	123.00-122.75	A	0.000	0.000	0.230	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.326	0.000	0.00
L6	122.75-117.75	A	0.000	0.000	4.609	0.000	0.00
		B	0.000	0.000	3.750	0.000	0.00
		C	0.000	0.000	6.529	0.000	0.04
L7	117.75-112.75	A	0.000	0.000	4.609	0.000	0.00
		B	0.000	0.000	3.750	0.000	0.00
		C	0.000	0.000	6.529	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
L8	112.75-109.50	A	0.000	0.000	3.996	0.000	0.00
		B	0.000	0.000	3.438	0.000	0.00
		C	0.000	0.000	4.244	0.000	0.03
L9	109.50-109.25	A	0.000	0.000	0.397	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.326	0.000	0.00
L10	109.25-104.75	A	0.000	0.000	8.315	0.000	0.00
		B	0.000	0.000	7.542	0.000	0.00
		C	0.000	0.000	7.042	0.000	0.08
L11	104.75-104.50	A	0.000	0.000	0.564	0.000	0.00
		B	0.000	0.000	0.521	0.000	0.00
		C	0.000	0.000	0.493	0.000	0.00
L12	104.50-102.50	A	0.000	0.000	4.510	0.000	0.00
		B	0.000	0.000	4.167	0.000	0.00
		C	0.000	0.000	3.945	0.000	0.03
L13	102.50-102.25	A	0.000	0.000	0.564	0.000	0.00
		B	0.000	0.000	0.521	0.000	0.00
		C	0.000	0.000	0.493	0.000	0.00
L14	102.25-100.00	A	0.000	0.000	4.380	0.000	0.00
		B	0.000	0.000	3.993	0.000	0.00
		C	0.000	0.000	4.410	0.000	0.04
L15	100.00-99.75	A	0.000	0.000	0.527	0.000	0.00
		B	0.000	0.000	0.484	0.000	0.00
		C	0.000	0.000	0.664	0.000	0.01
L16	99.75-98.75	A	0.000	0.000	2.109	0.000	0.00
		B	0.000	0.000	1.938	0.000	0.00
		C	0.000	0.000	2.656	0.000	0.02
L17	98.75-98.50	A	0.000	0.000	0.527	0.000	0.00
		B	0.000	0.000	0.484	0.000	0.00
		C	0.000	0.000	0.664	0.000	0.01
L18	98.50-91.33	A	0.000	0.000	15.124	0.000	0.00
		B	0.000	0.000	13.892	0.000	0.00
		C	0.000	0.000	19.042	0.000	0.17
L19	91.33-91.00	A	0.000	0.000	0.696	0.000	0.00
		B	0.000	0.000	0.639	0.000	0.00
		C	0.000	0.000	0.876	0.000	0.01
L20	91.00-90.75	A	0.000	0.000	0.527	0.000	0.00
		B	0.000	0.000	0.484	0.000	0.00
		C	0.000	0.000	0.664	0.000	0.01
L21	90.75-89.25	A	0.000	0.000	2.944	0.000	0.00
		B	0.000	0.000	2.906	0.000	0.00
		C	0.000	0.000	3.984	0.000	0.04
L22	89.25-89.00	A	0.000	0.000	0.605	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.742	0.000	0.01
L23	89.00-88.50	A	0.000	0.000	1.211	0.000	0.00
		B	0.000	0.000	1.125	0.000	0.00
		C	0.000	0.000	1.484	0.000	0.01
L24	88.50-88.25	A	0.000	0.000	0.605	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.742	0.000	0.01
L25	88.25-88.00	A	0.000	0.000	0.605	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.742	0.000	0.01
L26	88.00-83.00	A	0.000	0.000	9.776	0.000	0.00
		B	0.000	0.000	8.917	0.000	0.00
		C	0.000	0.000	12.508	0.000	0.12
L27	83.00-78.00	A	0.000	0.000	9.276	0.000	0.00
		B	0.000	0.000	8.417	0.000	0.00
		C	0.000	0.000	12.008	0.000	0.12
L28	78.00-77.00	A	0.000	0.000	2.422	0.000	0.00
		B	0.000	0.000	2.250	0.000	0.00
		C	0.000	0.000	2.968	0.000	0.02
L29	77.00-76.75	A	0.000	0.000	0.605	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.742	0.000	0.01
L30	76.75-76.50	A	0.000	0.000	0.605	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.742	0.000	0.01

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
L31	76.50-76.25	A	0.000	0.000	0.605	0.000	0.00
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.742	0.000	0.01
L32	76.25-75.00	A	0.000	0.000	3.027	0.000	0.00
		B	0.000	0.000	2.833	0.000	0.00
		C	0.000	0.000	3.731	0.000	0.03
L33	75.00-74.75	A	0.000	0.000	0.439	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.763	0.000	0.01
L34	74.75-73.50	A	0.000	0.000	2.194	0.000	0.00
		B	0.000	0.000	2.917	0.000	0.00
		C	0.000	0.000	3.814	0.000	0.03
L35	73.50-73.25	A	0.000	0.000	0.439	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.763	0.000	0.01
L36	73.25-68.25	A	0.000	0.000	11.776	0.000	0.00
		B	0.000	0.000	11.667	0.000	0.00
		C	0.000	0.000	15.258	0.000	0.12
L37	68.25-63.25	A	0.000	0.000	12.526	0.000	0.00
		B	0.000	0.000	11.667	0.000	0.00
		C	0.000	0.000	15.258	0.000	0.12
L38	63.25-60.50	A	0.000	0.000	8.056	0.000	0.00
		B	0.000	0.000	7.583	0.000	0.00
		C	0.000	0.000	9.558	0.000	0.07
L39	60.50-60.25	A	0.000	0.000	0.793	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	0.930	0.000	0.01
L40	60.25-59.50	A	0.000	0.000	2.379	0.000	0.00
		B	0.000	0.000	2.250	0.000	0.00
		C	0.000	0.000	2.789	0.000	0.02
L41	59.50-59.25	A	0.000	0.000	0.840	0.000	0.00
		B	0.000	0.000	0.797	0.000	0.00
		C	0.000	0.000	0.976	0.000	0.01
L42	59.25-54.25	A	0.000	0.000	13.797	0.000	0.00
		B	0.000	0.000	12.938	0.000	0.00
		C	0.000	0.000	16.529	0.000	0.12
L43	54.25-45.25	A	0.000	0.000	24.235	0.000	0.00
		B	0.000	0.000	22.688	0.000	0.00
		C	0.000	0.000	29.152	0.000	0.22
L44	45.25-44.25	A	0.000	0.000	2.565	0.000	0.00
		B	0.000	0.000	2.673	0.000	0.00
		C	0.000	0.000	3.391	0.000	0.02
L45	44.25-43.50	A	0.000	0.000	2.020	0.000	0.00
		B	0.000	0.000	2.014	0.000	0.00
		C	0.000	0.000	2.553	0.000	0.02
L46	43.50-43.25	A	0.000	0.000	0.673	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.851	0.000	0.01
L47	43.25-39.00	A	0.000	0.000	11.444	0.000	0.00
		B	0.000	0.000	11.415	0.000	0.00
		C	0.000	0.000	15.634	0.000	0.10
L48	39.00-38.75	A	0.000	0.000	0.673	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	1.018	0.000	0.01
L49	38.75-35.00	A	0.000	0.000	10.598	0.000	0.00
		B	0.000	0.000	10.559	0.000	0.00
		C	0.000	0.000	15.252	0.000	0.09
L50	35.00-34.75	A	0.000	0.000	0.840	0.000	0.00
		B	0.000	0.000	0.797	0.000	0.00
		C	0.000	0.000	0.976	0.000	0.01
L51	34.75-34.00	A	0.000	0.000	2.520	0.000	0.00
		B	0.000	0.000	2.391	0.000	0.00
		C	0.000	0.000	2.929	0.000	0.02
L52	34.00-33.75	A	0.000	0.000	0.840	0.000	0.00
		B	0.000	0.000	0.797	0.000	0.00
		C	0.000	0.000	0.976	0.000	0.01
L53	33.75-29.75	A	0.000	0.000	11.771	0.000	0.00
		B	0.000	0.000	11.083	0.000	0.00
		C	0.000	0.000	13.956	0.000	0.10

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
L54	29.75-29.50	A	0.000	0.000	0.684	0.000	0.00
		B	0.000	0.000	0.641	0.000	0.00
		C	0.000	0.000	0.820	0.000	0.01
L55	29.50-25.00	A	0.000	0.000	12.305	0.000	0.00
		B	0.000	0.000	11.531	0.000	0.00
		C	0.000	0.000	14.763	0.000	0.11
L56	25.00-24.75	A	0.000	0.000	0.496	0.000	0.00
		B	0.000	0.000	0.891	0.000	0.00
		C	0.000	0.000	1.133	0.000	0.01
L57	24.75-23.50	A	0.000	0.000	2.481	0.000	0.00
		B	0.000	0.000	4.453	0.000	0.00
		C	0.000	0.000	5.663	0.000	0.03
L58	23.50-23.25	A	0.000	0.000	0.496	0.000	0.00
		B	0.000	0.000	0.891	0.000	0.00
		C	0.000	0.000	1.133	0.000	0.01
L59	23.25-21.50	A	0.000	0.000	3.473	0.000	0.00
		B	0.000	0.000	6.234	0.000	0.00
		C	0.000	0.000	7.929	0.000	0.04
L60	21.50-21.25	A	0.000	0.000	0.496	0.000	0.00
		B	0.000	0.000	0.891	0.000	0.00
		C	0.000	0.000	1.133	0.000	0.01
L61	21.25-16.25	A	0.000	0.000	9.922	0.000	0.00
		B	0.000	0.000	15.000	0.000	0.00
		C	0.000	0.000	23.043	0.000	0.12
L62	16.25-12.92	A	0.000	0.000	6.616	0.000	0.00
		B	0.000	0.000	9.377	0.000	0.00
		C	0.000	0.000	22.746	0.000	0.08
L63	12.92-12.67	A	0.000	0.000	0.496	0.000	0.00
		B	0.000	0.000	0.703	0.000	0.00
		C	0.000	0.000	1.706	0.000	0.01
L64	12.67-12.50	A	0.000	0.000	0.329	0.000	0.00
		B	0.000	0.000	0.467	0.000	0.00
		C	0.000	0.000	1.133	0.000	0.00
L65	12.50-12.15	A	0.000	0.000	0.695	0.000	0.00
		B	0.000	0.000	0.984	0.000	0.00
		C	0.000	0.000	2.388	0.000	0.01
L66	12.15-11.90	A	0.000	0.000	0.496	0.000	0.00
		B	0.000	0.000	0.703	0.000	0.00
		C	0.000	0.000	1.706	0.000	0.01
L67	11.90-11.75	A	0.000	0.000	0.298	0.000	0.00
		B	0.000	0.000	0.422	0.000	0.00
		C	0.000	0.000	1.023	0.000	0.00
L68	11.75-8.50	A	0.000	0.000	5.243	0.000	0.00
		B	0.000	0.000	7.934	0.000	0.00
		C	0.000	0.000	18.699	0.000	0.08
L69	8.50-8.25	A	0.000	0.000	0.366	0.000	0.00
		B	0.000	0.000	0.573	0.000	0.00
		C	0.000	0.000	1.039	0.000	0.01
L70	8.25-6.50	A	0.000	0.000	2.563	0.000	0.00
		B	0.000	0.000	4.012	0.000	0.00
		C	0.000	0.000	7.274	0.000	0.04
L71	6.50-6.25	A	0.000	0.000	0.366	0.000	0.00
		B	0.000	0.000	0.573	0.000	0.00
		C	0.000	0.000	1.039	0.000	0.01
L72	6.25-1.25	A	0.000	0.000	7.322	0.000	0.00
		B	0.000	0.000	7.713	0.000	0.00
		C	0.000	0.000	17.033	0.000	0.12
L73	1.25-0.00	A	0.000	0.000	1.831	0.000	0.00
		B	0.000	0.000	1.616	0.000	0.00
		C	0.000	0.000	3.946	0.000	0.03

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

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	143.00-138.00	A	1.474	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	5.726	0.000	0.07
L2	138.00-133.00	A	1.468	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.144	0.000	0.08
L3	133.00-128.00	A	1.463	0.000	0.000	2.903	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.131	0.000	0.11
L4	128.00-123.00	A	1.457	0.000	0.000	5.416	0.000	0.05
		B		0.000	0.000	2.520	0.000	0.02
		C		0.000	0.000	9.637	0.000	0.13
L5	123.00-122.75	A	1.454	0.000	0.000	0.405	0.000	0.00
		B		0.000	0.000	0.260	0.000	0.00
		C		0.000	0.000	0.616	0.000	0.01
L6	122.75-117.75	A	1.451	0.000	0.000	8.089	0.000	0.07
		B		0.000	0.000	5.201	0.000	0.05
		C		0.000	0.000	12.302	0.000	0.15
L7	117.75-112.75	A	1.445	0.000	0.000	8.075	0.000	0.07
		B		0.000	0.000	5.195	0.000	0.05
		C		0.000	0.000	12.280	0.000	0.15
L8	112.75-109.50	A	1.440	0.000	0.000	6.537	0.000	0.06
		B		0.000	0.000	4.669	0.000	0.04
		C		0.000	0.000	7.970	0.000	0.10
L9	109.50-109.25	A	1.437	0.000	0.000	0.619	0.000	0.01
		B		0.000	0.000	0.475	0.000	0.00
		C		0.000	0.000	0.613	0.000	0.01
L10	109.25-104.75	A	1.434	0.000	0.000	12.800	0.000	0.12
		B		0.000	0.000	10.220	0.000	0.09
		C		0.000	0.000	12.687	0.000	0.19
L11	104.75-104.50	A	1.431	0.000	0.000	0.856	0.000	0.01
		B		0.000	0.000	0.713	0.000	0.01
		C		0.000	0.000	0.850	0.000	0.01
L12	104.50-102.50	A	1.429	0.000	0.000	6.847	0.000	0.06
		B		0.000	0.000	5.703	0.000	0.05
		C		0.000	0.000	6.796	0.000	0.09
L13	102.50-102.25	A	1.428	0.000	0.000	0.856	0.000	0.01
		B		0.000	0.000	0.713	0.000	0.01
		C		0.000	0.000	0.849	0.000	0.01
L14	102.25-100.00	A	1.426	0.000	0.000	6.778	0.000	0.06
		B		0.000	0.000	5.522	0.000	0.05
		C		0.000	0.000	7.611	0.000	0.10
L15	100.00-99.75	A	1.424	0.000	0.000	0.806	0.000	0.01
		B		0.000	0.000	0.686	0.000	0.01
		C		0.000	0.000	1.149	0.000	0.02
L16	99.75-98.75	A	1.423	0.000	0.000	3.224	0.000	0.03
		B		0.000	0.000	2.742	0.000	0.03
		C		0.000	0.000	4.596	0.000	0.07
L17	98.75-98.50	A	1.423	0.000	0.000	0.806	0.000	0.01
		B		0.000	0.000	0.685	0.000	0.01
		C		0.000	0.000	1.149	0.000	0.02
L18	98.50-91.33	A	1.417	0.000	0.000	23.084	0.000	0.22
		B		0.000	0.000	19.637	0.000	0.18
		C		0.000	0.000	32.895	0.000	0.48
L19	91.33-91.00	A	1.411	0.000	0.000	1.063	0.000	0.01
		B		0.000	0.000	0.904	0.000	0.01
		C		0.000	0.000	1.514	0.000	0.02
L20	91.00-90.75	A	1.411	0.000	0.000	0.804	0.000	0.01
		B		0.000	0.000	0.684	0.000	0.01
		C		0.000	0.000	1.145	0.000	0.02
L21	90.75-89.25	A	1.410	0.000	0.000	4.604	0.000	0.04
		B		0.000	0.000	4.103	0.000	0.04
		C		0.000	0.000	6.868	0.000	0.10
L22	89.25-89.00	A	1.408	0.000	0.000	0.915	0.000	0.01
		B		0.000	0.000	0.774	0.000	0.01
		C		0.000	0.000	1.234	0.000	0.02
L23	89.00-88.50	A	1.408	0.000	0.000	1.831	0.000	0.02
		B		0.000	0.000	1.547	0.000	0.01
		C		0.000	0.000	2.469	0.000	0.03

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
L24	88.50-88.25	A	1.407	0.000	0.000	0.915	0.000	0.01
		B		0.000	0.000	0.774	0.000	0.01
		C		0.000	0.000	1.234	0.000	0.02
L25	88.25-88.00	A	1.407	0.000	0.000	0.915	0.000	0.01
		B		0.000	0.000	0.773	0.000	0.01
		C		0.000	0.000	1.234	0.000	0.02
L26	88.00-83.00	A	1.402	0.000	0.000	14.969	0.000	0.13
		B		0.000	0.000	12.142	0.000	0.10
		C		0.000	0.000	21.336	0.000	0.31
L27	83.00-78.00	A	1.394	0.000	0.000	14.230	0.000	0.12
		B		0.000	0.000	11.414	0.000	0.10
		C		0.000	0.000	20.578	0.000	0.30
L28	78.00-77.00	A	1.389	0.000	0.000	3.645	0.000	0.03
		B		0.000	0.000	3.083	0.000	0.03
		C		0.000	0.000	4.912	0.000	0.07
L29	77.00-76.75	A	1.388	0.000	0.000	0.911	0.000	0.01
		B		0.000	0.000	0.771	0.000	0.01
		C		0.000	0.000	1.228	0.000	0.02
L30	76.75-76.50	A	1.387	0.000	0.000	0.911	0.000	0.01
		B		0.000	0.000	0.771	0.000	0.01
		C		0.000	0.000	1.228	0.000	0.02
L31	76.50-76.25	A	1.387	0.000	0.000	0.911	0.000	0.01
		B		0.000	0.000	0.770	0.000	0.01
		C		0.000	0.000	1.227	0.000	0.02
L32	76.25-75.00	A	1.385	0.000	0.000	4.553	0.000	0.04
		B		0.000	0.000	3.872	0.000	0.03
		C		0.000	0.000	6.156	0.000	0.08
L33	75.00-74.75	A	1.384	0.000	0.000	0.674	0.000	0.01
		B		0.000	0.000	0.791	0.000	0.01
		C		0.000	0.000	1.247	0.000	0.02
L34	74.75-73.50	A	1.382	0.000	0.000	3.371	0.000	0.03
		B		0.000	0.000	3.954	0.000	0.03
		C		0.000	0.000	6.235	0.000	0.09
L35	73.50-73.25	A	1.381	0.000	0.000	0.674	0.000	0.01
		B		0.000	0.000	0.790	0.000	0.01
		C		0.000	0.000	1.246	0.000	0.02
L36	73.25-68.25	A	1.376	0.000	0.000	17.564	0.000	0.15
		B		0.000	0.000	15.795	0.000	0.13
		C		0.000	0.000	24.897	0.000	0.34
L37	68.25-63.25	A	1.366	0.000	0.000	18.546	0.000	0.16
		B		0.000	0.000	15.765	0.000	0.13
		C		0.000	0.000	24.831	0.000	0.34
L38	63.25-60.50	A	1.358	0.000	0.000	11.823	0.000	0.10
		B		0.000	0.000	10.299	0.000	0.09
		C		0.000	0.000	15.270	0.000	0.20
L39	60.50-60.25	A	1.354	0.000	0.000	1.159	0.000	0.01
		B		0.000	0.000	1.021	0.000	0.01
		C		0.000	0.000	1.472	0.000	0.02
L40	60.25-59.50	A	1.353	0.000	0.000	3.477	0.000	0.03
		B		0.000	0.000	3.062	0.000	0.03
		C		0.000	0.000	4.415	0.000	0.06
L41	59.50-59.25	A	1.352	0.000	0.000	1.206	0.000	0.01
		B		0.000	0.000	1.067	0.000	0.01
		C		0.000	0.000	1.518	0.000	0.02
L42	59.25-54.25	A	1.346	0.000	0.000	19.867	0.000	0.16
		B		0.000	0.000	17.110	0.000	0.14
		C		0.000	0.000	26.107	0.000	0.34
L43	54.25-45.25	A	1.328	0.000	0.000	34.783	0.000	0.28
		B		0.000	0.000	29.860	0.000	0.24
		C		0.000	0.000	45.943	0.000	0.60
L44	45.25-44.25	A	1.314	0.000	0.000	3.692	0.000	0.03
		B		0.000	0.000	3.356	0.000	0.03
		C		0.000	0.000	5.143	0.000	0.07
L45	44.25-43.50	A	1.312	0.000	0.000	2.888	0.000	0.02
		B		0.000	0.000	2.513	0.000	0.02
		C		0.000	0.000	3.844	0.000	0.05
L46	43.50-43.25	A	1.310	0.000	0.000	0.962	0.000	0.01
		B		0.000	0.000	0.837	0.000	0.01
		C		0.000	0.000	1.281	0.000	0.02

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
L47	43.25-39.00	A	1.303	0.000	0.000	16.335	0.000	0.13
		B		0.000	0.000	14.220	0.000	0.12
		C		0.000	0.000	23.364	0.000	0.30
L48	39.00-38.75	A	1.296	0.000	0.000	0.959	0.000	0.01
		B		0.000	0.000	0.836	0.000	0.01
		C		0.000	0.000	1.508	0.000	0.02
L49	38.75-35.00	A	1.289	0.000	0.000	15.062	0.000	0.12
		B		0.000	0.000	13.210	0.000	0.11
		C		0.000	0.000	22.574	0.000	0.28
L50	35.00-34.75	A	1.282	0.000	0.000	1.187	0.000	0.01
		B		0.000	0.000	1.053	0.000	0.01
		C		0.000	0.000	1.465	0.000	0.02
L51	34.75-34.00	A	1.280	0.000	0.000	3.560	0.000	0.03
		B		0.000	0.000	3.159	0.000	0.02
		C		0.000	0.000	4.394	0.000	0.05
L52	34.00-33.75	A	1.278	0.000	0.000	1.186	0.000	0.01
		B		0.000	0.000	1.053	0.000	0.01
		C		0.000	0.000	1.464	0.000	0.02
L53	33.75-29.75	A	1.270	0.000	0.000	16.642	0.000	0.13
		B		0.000	0.000	14.512	0.000	0.11
		C		0.000	0.000	21.075	0.000	0.27
L54	29.75-29.50	A	1.261	0.000	0.000	0.962	0.000	0.01
		B		0.000	0.000	0.830	0.000	0.01
		C		0.000	0.000	1.239	0.000	0.02
L55	29.50-25.00	A	1.251	0.000	0.000	17.282	0.000	0.13
		B		0.000	0.000	14.908	0.000	0.11
		C		0.000	0.000	22.239	0.000	0.29
L56	25.00-24.75	A	1.239	0.000	0.000	0.708	0.000	0.01
		B		0.000	0.000	1.139	0.000	0.01
		C		0.000	0.000	1.622	0.000	0.02
L57	24.75-23.50	A	1.236	0.000	0.000	3.538	0.000	0.03
		B		0.000	0.000	5.689	0.000	0.04
		C		0.000	0.000	8.102	0.000	0.09
L58	23.50-23.25	A	1.232	0.000	0.000	0.707	0.000	0.01
		B		0.000	0.000	1.137	0.000	0.01
		C		0.000	0.000	1.619	0.000	0.02
L59	23.25-21.50	A	1.226	0.000	0.000	4.943	0.000	0.04
		B		0.000	0.000	7.951	0.000	0.06
		C		0.000	0.000	11.320	0.000	0.13
L60	21.50-21.25	A	1.221	0.000	0.000	0.705	0.000	0.01
		B		0.000	0.000	1.135	0.000	0.01
		C		0.000	0.000	1.615	0.000	0.02
L61	21.25-16.25	A	1.205	0.000	0.000	14.053	0.000	0.10
		B		0.000	0.000	18.916	0.000	0.14
		C		0.000	0.000	32.645	0.000	0.36
L62	16.25-12.92	A	1.175	0.000	0.000	9.306	0.000	0.07
		B		0.000	0.000	11.727	0.000	0.08
		C		0.000	0.000	30.200	0.000	0.30
L63	12.92-12.67	A	1.160	0.000	0.000	0.695	0.000	0.00
		B		0.000	0.000	0.877	0.000	0.01
		C		0.000	0.000	2.258	0.000	0.02
L64	12.67-12.50	A	1.158	0.000	0.000	0.461	0.000	0.00
		B		0.000	0.000	0.582	0.000	0.00
		C		0.000	0.000	1.499	0.000	0.01
L65	12.50-12.15	A	1.155	0.000	0.000	0.972	0.000	0.01
		B		0.000	0.000	1.227	0.000	0.01
		C		0.000	0.000	3.159	0.000	0.03
L66	12.15-11.90	A	1.153	0.000	0.000	0.694	0.000	0.00
		B		0.000	0.000	0.876	0.000	0.01
		C		0.000	0.000	2.256	0.000	0.02
L67	11.90-11.75	A	1.151	0.000	0.000	0.416	0.000	0.00
		B		0.000	0.000	0.525	0.000	0.00
		C		0.000	0.000	1.353	0.000	0.01
L68	11.75-8.50	A	1.133	0.000	0.000	7.608	0.000	0.07
		B		0.000	0.000	9.976	0.000	0.08
		C		0.000	0.000	25.134	0.000	0.27
L69	8.50-8.25	A	1.112	0.000	0.000	0.544	0.000	0.01
		B		0.000	0.000	0.726	0.000	0.01
		C		0.000	0.000	1.455	0.000	0.02

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L70	8.25-6.50	A	1.098	0.000	0.000	3.793	0.000	0.04
		B		0.000	0.000	5.071	0.000	0.04
		C		0.000	0.000	10.157	0.000	0.12
L71	6.50-6.25	A	1.082	0.000	0.000	0.540	0.000	0.01
		B		0.000	0.000	0.722	0.000	0.01
		C		0.000	0.000	1.446	0.000	0.02
L72	6.25-1.25	A	1.026	0.000	0.000	10.624	0.000	0.10
		B		0.000	0.000	9.774	0.000	0.09
		C		0.000	0.000	24.052	0.000	0.31
L73	1.25-0.00	A	0.857	0.000	0.000	2.531	0.000	0.02
		B		0.000	0.000	1.995	0.000	0.02
		C		0.000	0.000	5.416	0.000	0.07

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	143.00-138.00	-0.4309	2.7331	-0.2854	2.2195
L2	138.00-133.00	-0.4885	3.0981	-0.3143	2.4431
L3	133.00-128.00	-0.6050	1.5442	-0.5928	1.2751
L4	128.00-123.00	-0.3972	1.0134	-0.4797	1.0318
L5	123.00-122.75	-0.2709	0.6910	-0.3947	0.8491
L6	122.75-117.75	-0.2766	0.7053	-0.4049	0.8712
L7	117.75-112.75	-0.2871	0.7318	-0.4241	0.9126
L8	112.75-109.50	-0.9653	0.8348	-0.9344	0.9909
L9	109.50-109.25	-1.5752	0.9180	-1.4209	1.0482
L10	109.25-104.75	-1.4191	0.8275	-1.3054	0.9631
L11	104.75-104.50	-1.2263	0.7155	-1.1526	0.8505
L12	104.50-102.50	-1.2371	0.7219	-1.1640	0.8589
L13	102.50-102.25	-1.2476	0.7282	-1.1752	0.8672
L14	102.25-100.00	-0.8460	0.6693	-0.8391	0.8381
L15	100.00-99.75	-0.1883	0.6493	-0.2518	0.9918
L16	99.75-98.75	-0.1892	0.6523	-0.2531	0.9967
L17	98.75-98.50	-0.1902	0.6559	-0.2546	1.0023
L18	98.50-91.33	-0.1953	0.6732	-0.2623	1.0311
L19	91.33-91.00	-0.1979	0.6820	-0.2664	1.0458
L20	91.00-90.75	-0.1982	0.6830	-0.2668	1.0472
L21	90.75-89.25	0.1561	1.5452	0.0057	1.7931
L22	89.25-89.00	0.1758	1.9640	0.0244	2.1746
L23	89.00-88.50	0.1763	1.9690	0.0246	2.1807
L24	88.50-88.25	0.1768	1.9743	0.0247	2.1870
L25	88.25-88.00	0.1770	1.9762	0.0248	2.1901
L26	88.00-83.00	0.2107	2.3491	0.0296	2.5682
L27	83.00-78.00	0.2260	2.5129	0.0327	2.7471
L28	78.00-77.00	0.1908	2.1184	0.0287	2.3627
L29	77.00-76.75	0.1917	2.1280	0.0289	2.3737
L30	76.75-76.50	0.1920	2.1313	0.0290	2.3777
L31	76.50-76.25	0.1923	2.1345	0.0291	2.3817
L32	76.25-75.00	0.2115	2.1478	0.0421	2.3955
L33	75.00-74.75	0.6315	1.2002	0.3996	1.5287
L34	74.75-73.50	0.6343	1.2054	0.4016	1.5360
L35	73.50-73.25	0.6372	1.2110	0.4037	1.5436
L36	73.25-68.25	-0.0413	0.7835	-0.1980	1.1493
L37	68.25-63.25	-0.2039	0.7009	-0.3482	1.0844
L38	63.25-60.50	-0.1842	0.6328	-0.3179	0.9899
L39	60.50-60.25	-0.1742	0.5985	-0.3022	0.9409
L40	60.25-59.50	-0.1747	0.6002	-0.3031	0.9435
L41	59.50-59.25	-0.1677	0.5759	-0.2949	0.9181
L42	59.25-54.25	-0.1972	0.6774	-0.3446	1.0727
L43	54.25-45.25	-0.2080	0.7142	-0.3635	1.1311
L44	45.25-44.25	-0.0038	1.6754	-0.3069	1.9963
L45	44.25-43.50	-0.1510	1.7477	-0.4557	2.0587
L46	43.50-43.25	-0.1514	1.7520	-0.4567	2.0640
L47	43.25-39.00	0.1703	1.9423	-0.1330	2.2512

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L48	39.00-38.75	0.6053	2.1921	0.3075	2.4960
L49	38.75-35.00	0.4675	1.9058	0.1775	2.2086
L50	35.00-34.75	-0.2007	0.7394	-0.3404	1.0103
L51	34.75-34.00	-0.2012	0.7411	-0.3411	1.0127
L52	34.00-33.75	-0.2016	0.7428	-0.3419	1.0151
L53	33.75-29.75	-0.2258	0.8317	-0.3809	1.1316
L54	29.75-29.50	-0.2411	0.8882	-0.4066	1.2087
L55	29.50-25.00	-0.2436	0.8971	-0.4105	1.2210
L56	25.00-24.75	0.6584	0.1803	0.4465	0.5284
L57	24.75-23.50	0.6604	0.1808	0.4485	0.5297
L58	23.50-23.25	0.6626	0.1813	0.4506	0.5312
L59	23.25-21.50	0.6653	0.1819	0.4534	0.5329
L60	21.50-21.25	0.6678	0.1825	0.4561	0.5346
L61	21.25-16.25	-0.0218	0.5999	-0.2122	0.9513
L62	16.25-12.92	-1.9266	1.4708	-1.8891	1.6932
L63	12.92-12.67	-1.9423	1.4819	-1.9055	1.7062
L64	12.67-12.50	-1.9440	1.4831	-1.9073	1.7076
L65	12.50-12.15	-1.9449	1.4837	-1.9087	1.7086
L66	12.15-11.90	-1.9469	1.4851	-1.9110	1.7104
L67	11.90-11.75	-1.9486	1.4863	-1.9127	1.7118
L68	11.75-8.50	-2.5151	1.8407	-2.3645	2.2029
L69	8.50-8.25	-2.4274	1.1581	-2.2153	1.7352
L70	8.25-6.50	-2.4364	1.1620	-2.2273	1.7380
L71	6.50-6.25	-2.4448	1.1657	-2.2393	1.7399
L72	6.25-1.25	-1.4907	1.3568	-1.3694	1.9780
L73	1.25-0.00	-1.1115	1.4431	-1.0608	2.0350

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	6	FB-L98B-034-XXX(3/8)	138.00 - 142.00	1.0000	1.0000
L1	7	WR-VG86ST-BRD(3/4)	138.00 - 142.00	1.0000	1.0000
L2	6	FB-L98B-034-XXX(3/8)	133.00 - 138.00	1.0000	1.0000
L2	7	WR-VG86ST-BRD(3/4)	133.00 - 138.00	1.0000	1.0000
L3	6	FB-L98B-034-XXX(3/8)	128.00 - 133.00	1.0000	1.0000
L3	7	WR-VG86ST-BRD(3/4)	128.00 - 133.00	1.0000	1.0000
L3	9	7983A(ELLIPTICAL)	128.00 - 133.00	1.0000	1.0000
L4	6	FB-L98B-034-XXX(3/8)	123.00 - 128.00	1.0000	1.0000
L4	7	WR-VG86ST-BRD(3/4)	123.00 - 128.00	1.0000	1.0000
L4	9	7983A(ELLIPTICAL)	123.00 - 128.00	1.0000	1.0000
L4	83	CCI-AFP-045100	123.00 - 125.42	1.0000	1.0000
L4	84	CCI-AFP-045100	123.00 - 125.42	1.0000	1.0000
L4	85	CCI-AFP-045100	123.00 - 125.42	1.0000	1.0000
L5	6	FB-L98B-034-XXX(3/8)	122.75 - 123.00	1.0000	1.0000
L5	7	WR-VG86ST-BRD(3/4)	122.75 - 123.00	1.0000	1.0000
L5	9	7983A(ELLIPTICAL)	122.75 - 123.00	1.0000	1.0000
L5	83	CCI-AFP-045100	122.75 - 123.00	1.0000	1.0000
L5	84	CCI-AFP-045100	122.75 - 123.00	1.0000	1.0000
L5	85	CCI-AFP-045100	122.75 - 123.00	1.0000	1.0000
L6	6	FB-L98B-034-XXX(3/8)	117.75 - 122.75	1.0000	1.0000
L6	7	WR-VG86ST-BRD(3/4)	117.75 - 122.75	1.0000	1.0000
L6	9	7983A(ELLIPTICAL)	117.75 - 122.75	1.0000	1.0000
L6	83	CCI-AFP-045100	117.75 - 122.75	1.0000	1.0000
L6	84	CCI-AFP-045100	117.75 - 122.75	1.0000	1.0000
L6	85	CCI-AFP-045100	117.75 - 122.75	1.0000	1.0000
L7	6	FB-L98B-034-XXX(3/8)	112.75 - 117.75	1.0000	1.0000
L7	7	WR-VG86ST-BRD(3/4)	112.75 - 117.75	1.0000	1.0000
L7	9	7983A(ELLIPTICAL)	112.75 - 117.75	1.0000	1.0000
L7	83	CCI-AFP-045100	112.75 - 117.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L7	84	CCI-AFP-045100	112.75 - 117.75	1.0000	1.0000
L7	85	CCI-AFP-045100	112.75 - 117.75	1.0000	1.0000
L8	6	FB-L98B-034-XXX(3/8)	109.50 - 112.75	1.0000	1.0000
L8	7	WR-VG86ST-BRD(3/4)	109.50 - 112.75	1.0000	1.0000
L8	9	7983A(ELLIPTICAL)	109.50 - 112.75	1.0000	1.0000
L8	83	CCI-AFP-045100	109.50 - 112.75	1.0000	1.0000
L8	84	CCI-AFP-045100	109.50 - 112.75	1.0000	1.0000
L8	85	CCI-AFP-045100	109.50 - 112.75	1.0000	1.0000
L8	86	CCI-AFP-040075	109.50 - 111.00	1.0000	1.0000
L8	87	CCI-AFP-040075	109.50 - 111.00	1.0000	1.0000
L9	6	FB-L98B-034-XXX(3/8)	109.25 - 109.50	1.0000	1.0000
L9	7	WR-VG86ST-BRD(3/4)	109.25 - 109.50	1.0000	1.0000
L9	9	7983A(ELLIPTICAL)	109.25 - 109.50	1.0000	1.0000
L9	83	CCI-AFP-045100	109.25 - 109.50	1.0000	1.0000
L9	84	CCI-AFP-045100	109.25 - 109.50	1.0000	1.0000
L9	85	CCI-AFP-045100	109.25 - 109.50	1.0000	1.0000
L9	86	CCI-AFP-040075	109.25 - 109.50	1.0000	1.0000
L9	87	CCI-AFP-040075	109.25 - 109.50	1.0000	1.0000
L10	6	FB-L98B-034-XXX(3/8)	104.75 - 109.25	1.0000	1.0000
L10	7	WR-VG86ST-BRD(3/4)	104.75 - 109.25	1.0000	1.0000
L10	9	7983A(ELLIPTICAL)	104.75 - 109.25	1.0000	1.0000
L10	61	PL1x4 Reinforcement - Wind Area	104.75 - 106.50	1.0000	1.0000
L10	62	PL1x4 Reinforcement - Wind Area	104.75 - 106.50	1.0000	1.0000
L10	63	PL1x4 Reinforcement - Wind Area	104.75 - 106.50	1.0000	1.0000
L10	83	CCI-AFP-045100	104.75 - 109.25	1.0000	1.0000
L10	84	CCI-AFP-045100	104.75 - 109.25	1.0000	1.0000
L10	85	CCI-AFP-045100	104.75 - 109.25	1.0000	1.0000
L10	86	CCI-AFP-040075	104.75 - 109.25	1.0000	1.0000
L10	87	CCI-AFP-040075	104.75 - 109.25	1.0000	1.0000
L11	6	FB-L98B-034-XXX(3/8)	104.50 - 104.75	1.0000	1.0000
L11	7	WR-VG86ST-BRD(3/4)	104.50 - 104.75	1.0000	1.0000
L11	9	7983A(ELLIPTICAL)	104.50 - 104.75	1.0000	1.0000
L11	61	PL1x4 Reinforcement - Wind Area	104.50 - 104.75	1.0000	1.0000
L11	62	PL1x4 Reinforcement - Wind Area	104.50 - 104.75	1.0000	1.0000
L11	63	PL1x4 Reinforcement - Wind Area	104.50 - 104.75	1.0000	1.0000
L11	83	CCI-AFP-045100	104.50 - 104.75	1.0000	1.0000
L11	84	CCI-AFP-045100	104.50 - 104.75	1.0000	1.0000
L11	85	CCI-AFP-045100	104.50 - 104.75	1.0000	1.0000
L11	86	CCI-AFP-040075	104.50 - 104.75	1.0000	1.0000
L11	87	CCI-AFP-040075	104.50 - 104.75	1.0000	1.0000
L12	6	FB-L98B-034-XXX(3/8)	102.50 - 104.50	1.0000	1.0000
L12	7	WR-VG86ST-BRD(3/4)	102.50 - 104.50	1.0000	1.0000
L12	9	7983A(ELLIPTICAL)	102.50 - 104.50	1.0000	1.0000
L12	61	PL1x4 Reinforcement - Wind Area	102.50 - 104.50	1.0000	1.0000
L12	62	PL1x4 Reinforcement - Wind Area	102.50 - 104.50	1.0000	1.0000
L12	63	PL1x4 Reinforcement - Wind Area	102.50 - 104.50	1.0000	1.0000
L12	83	CCI-AFP-045100	102.50 - 104.50	1.0000	1.0000
L12	84	CCI-AFP-045100	102.50 - 104.50	1.0000	1.0000
L12	85	CCI-AFP-045100	102.50 - 104.50	1.0000	1.0000
L12	86	CCI-AFP-040075	102.50 - 104.50	1.0000	1.0000
L12	87	CCI-AFP-040075	102.50 - 104.50	1.0000	1.0000
L13	6	FB-L98B-034-XXX(3/8)	102.25 - 102.50	1.0000	1.0000
L13	7	WR-VG86ST-BRD(3/4)	102.25 - 102.50	1.0000	1.0000
L13	9	7983A(ELLIPTICAL)	102.25 - 102.50	1.0000	1.0000
L13	61	PL1x4 Reinforcement - Wind Area	102.25 - 102.50	1.0000	1.0000
L13	62	PL1x4 Reinforcement - Wind Area	102.25 - 102.50	1.0000	1.0000
L13	63	PL1x4 Reinforcement - Wind Area	102.25 - 102.50	1.0000	1.0000
L13	83	CCI-AFP-045100	102.25 - 102.50	1.0000	1.0000
L13	84	CCI-AFP-045100	102.25 - 102.50	1.0000	1.0000
L13	85	CCI-AFP-045100	102.25 - 102.50	1.0000	1.0000
L13	86	CCI-AFP-040075	102.25 - 102.50	1.0000	1.0000
L13	87	CCI-AFP-040075	102.25 - 102.50	1.0000	1.0000
L14	6	FB-L98B-034-XXX(3/8)	100.00 - 102.25	1.0000	1.0000
L14	7	WR-VG86ST-BRD(3/4)	100.00 - 102.25	1.0000	1.0000
L14	9	7983A(ELLIPTICAL)	100.00 - 102.25	1.0000	1.0000
L14	61	PL1x4 Reinforcement - Wind Area	100.00 - 102.25	1.0000	1.0000
L14	62	PL1x4 Reinforcement - Wind Area	100.00 - 102.25	1.0000	1.0000
L14	63	PL1x4 Reinforcement - Wind Area	100.00 - 102.25	1.0000	1.0000
L14	79	CCI-SFP-040075	100.00 - 100.33	1.0000	1.0000
L14	80	CCI-SFP-040075	100.00 - 100.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L14	82	CCI-AFP-040075	100.00 - 100.33	1.0000	1.0000
L14	83	CCI-AFP-045100	100.33 - 102.25	1.0000	1.0000
L14	84	CCI-AFP-045100	100.33 - 102.25	1.0000	1.0000
L14	85	CCI-AFP-045100	100.33 - 102.25	1.0000	1.0000
L14	86	CCI-AFP-040075	101.00 - 102.25	1.0000	1.0000
L14	87	CCI-AFP-040075	101.00 - 102.25	1.0000	1.0000
L15	6	FB-L98B-034-XXX(3/8)	99.75 - 100.00	1.0000	1.0000
L15	7	WR-VG86ST-BRD(3/4)	99.75 - 100.00	1.0000	1.0000
L15	9	7983A(ELLIPTICAL)	99.75 - 100.00	1.0000	1.0000
L15	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	99.75 - 100.00	1.0000	1.0000
L15	45	PL1.25x3.625 Reinforcement - Wind Area	99.75 - 100.00	1.0000	1.0000
L15	46	PL1.25x3.625 Reinforcement - Wind Area	99.75 - 100.00	1.0000	1.0000
L15	47	PL1.25x3.625 Reinforcement - Wind Area	99.75 - 100.00	1.0000	1.0000
L15	61	PL1x4 Reinforcement - Wind Area	99.75 - 100.00	1.0000	1.0000
L15	62	PL1x4 Reinforcement - Wind Area	99.75 - 100.00	1.0000	1.0000
L15	63	PL1x4 Reinforcement - Wind Area	99.75 - 100.00	1.0000	1.0000
L15	79	CCI-SFP-040075	99.75 - 100.00	1.0000	1.0000
L15	80	CCI-SFP-040075	99.75 - 100.00	1.0000	1.0000
L15	82	CCI-AFP-040075	99.75 - 100.00	1.0000	1.0000
L16	6	FB-L98B-034-XXX(3/8)	98.75 - 99.75	1.0000	1.0000
L16	7	WR-VG86ST-BRD(3/4)	98.75 - 99.75	1.0000	1.0000
L16	9	7983A(ELLIPTICAL)	98.75 - 99.75	1.0000	1.0000
L16	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	98.75 - 99.75	1.0000	1.0000
L16	45	PL1.25x3.625 Reinforcement - Wind Area	98.75 - 99.75	1.0000	1.0000
L16	46	PL1.25x3.625 Reinforcement - Wind Area	98.75 - 99.75	1.0000	1.0000
L16	47	PL1.25x3.625 Reinforcement - Wind Area	98.75 - 99.75	1.0000	1.0000
L16	61	PL1x4 Reinforcement - Wind Area	98.75 - 99.75	1.0000	1.0000
L16	62	PL1x4 Reinforcement - Wind Area	98.75 - 99.75	1.0000	1.0000
L16	63	PL1x4 Reinforcement - Wind Area	98.75 - 99.75	1.0000	1.0000
L16	79	CCI-SFP-040075	98.75 - 99.75	1.0000	1.0000
L16	80	CCI-SFP-040075	98.75 - 99.75	1.0000	1.0000
L16	82	CCI-AFP-040075	98.75 - 99.75	1.0000	1.0000
L17	6	FB-L98B-034-XXX(3/8)	98.50 - 98.75	1.0000	1.0000
L17	7	WR-VG86ST-BRD(3/4)	98.50 - 98.75	1.0000	1.0000
L17	9	7983A(ELLIPTICAL)	98.50 - 98.75	1.0000	1.0000
L17	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	98.50 - 98.75	1.0000	1.0000
L17	45	PL1.25x3.625 Reinforcement - Wind Area	98.50 - 98.75	1.0000	1.0000
L17	46	PL1.25x3.625 Reinforcement - Wind Area	98.50 - 98.75	1.0000	1.0000
L17	47	PL1.25x3.625 Reinforcement - Wind Area	98.50 - 98.75	1.0000	1.0000
L17	61	PL1x4 Reinforcement - Wind Area	98.50 - 98.75	1.0000	1.0000
L17	62	PL1x4 Reinforcement - Wind Area	98.50 - 98.75	1.0000	1.0000
L17	63	PL1x4 Reinforcement - Wind Area	98.50 - 98.75	1.0000	1.0000
L17	79	CCI-SFP-040075	98.50 - 98.75	1.0000	1.0000
L17	80	CCI-SFP-040075	98.50 - 98.75	1.0000	1.0000
L17	82	CCI-AFP-040075	98.50 - 98.75	1.0000	1.0000
L18	6	FB-L98B-034-XXX(3/8)	91.33 - 98.50	1.0000	1.0000
L18	7	WR-VG86ST-BRD(3/4)	91.33 - 98.50	1.0000	1.0000
L18	9	7983A(ELLIPTICAL)	91.33 - 98.50	1.0000	1.0000
L18	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	91.33 - 98.50	1.0000	1.0000
L18	45	PL1.25x3.625 Reinforcement - Wind Area	91.33 - 98.50	1.0000	1.0000
L18	46	PL1.25x3.625 Reinforcement - Wind Area	91.33 - 98.50	1.0000	1.0000
L18	47	PL1.25x3.625 Reinforcement - Wind Area	91.33 - 98.50	1.0000	1.0000
L18	61	PL1x4 Reinforcement - Wind Area	91.33 - 98.50	1.0000	1.0000
L18	62	PL1x4 Reinforcement - Wind Area	91.33 - 98.50	1.0000	1.0000
L18	63	PL1x4 Reinforcement - Wind Area	91.33 - 98.50	1.0000	1.0000
L18	79	CCI-SFP-040075	91.33 - 98.50	1.0000	1.0000
L18	80	CCI-SFP-040075	91.33 - 98.50	1.0000	1.0000
L18	82	CCI-AFP-040075	91.33 - 98.50	1.0000	1.0000
L20	6	FB-L98B-034-XXX(3/8)	90.75 - 91.00	1.0000	1.0000
L20	7	WR-VG86ST-BRD(3/4)	90.75 - 91.00	1.0000	1.0000
L20	9	7983A(ELLIPTICAL)	90.75 - 91.00	1.0000	1.0000
L20	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	90.75 - 91.00	1.0000	1.0000
L20	45	PL1.25x3.625 Reinforcement - Wind Area	90.75 - 91.00	1.0000	1.0000
L20	46	PL1.25x3.625 Reinforcement - Wind Area	90.75 - 91.00	1.0000	1.0000
L20	47	PL1.25x3.625 Reinforcement - Wind Area	90.75 - 91.00	1.0000	1.0000
L20	61	PL1x4 Reinforcement - Wind Area	90.75 - 91.00	1.0000	1.0000
L20	62	PL1x4 Reinforcement - Wind Area	90.75 - 91.00	1.0000	1.0000
L20	63	PL1x4 Reinforcement - Wind Area	90.75 - 91.00	1.0000	1.0000
L20	79	CCI-SFP-040075	90.75 - 91.00	1.0000	1.0000
L20	80	CCI-SFP-040075	90.75 - 91.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L20	82	CCI-AFP-040075	90.75 - 91.00	1.0000	1.0000
L21	6	FB-L98B-034-XXX(3/8)	89.25 - 90.75	1.0000	1.0000
L21	7	WR-VG86ST-BRD(3/4)	89.25 - 90.75	1.0000	1.0000
L21	9	7983A(ELLIPTICAL)	89.25 - 90.75	1.0000	1.0000
L21	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	89.25 - 90.75	1.0000	1.0000
L21	45	PL1.25x3.625 Reinforcement - Wind Area	89.25 - 90.75	1.0000	1.0000
L21	46	PL1.25x3.625 Reinforcement - Wind Area	89.25 - 90.75	1.0000	1.0000
L21	47	PL1.25x3.625 Reinforcement - Wind Area	89.25 - 90.75	1.0000	1.0000
L21	61	PL1x4 Reinforcement - Wind Area	89.25 - 90.75	1.0000	1.0000
L21	62	PL1x4 Reinforcement - Wind Area	89.25 - 90.75	1.0000	1.0000
L21	63	PL1x4 Reinforcement - Wind Area	89.25 - 90.75	1.0000	1.0000
L21	79	CCI-SFP-040075	89.25 - 90.75	1.0000	1.0000
L21	80	CCI-SFP-040075	89.25 - 90.75	1.0000	1.0000
L21	81	CCI-AFP-040075	89.25 - 90.00	1.0000	1.0000
L21	82	CCI-AFP-040075	90.33 - 90.75	1.0000	1.0000
L22	6	FB-L98B-034-XXX(3/8)	89.00 - 89.25	1.0000	1.0000
L22	7	WR-VG86ST-BRD(3/4)	89.00 - 89.25	1.0000	1.0000
L22	9	7983A(ELLIPTICAL)	89.00 - 89.25	1.0000	1.0000
L22	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	89.00 - 89.25	1.0000	1.0000
L22	41	PL1.25x5.5 Reinforcement - Wind Area	89.00 - 89.25	1.0000	1.0000
L22	42	PL1.25x5.5 Reinforcement - Wind Area	89.00 - 89.25	1.0000	1.0000
L22	43	PL1.25x5.5 Reinforcement - Wind Area	89.00 - 89.25	1.0000	1.0000
L22	61	PL1x4 Reinforcement - Wind Area	89.00 - 89.25	1.0000	1.0000
L22	62	PL1x4 Reinforcement - Wind Area	89.00 - 89.25	1.0000	1.0000
L22	63	PL1x4 Reinforcement - Wind Area	89.00 - 89.25	1.0000	1.0000
L22	79	CCI-SFP-040075	89.00 - 89.25	1.0000	1.0000
L22	80	CCI-SFP-040075	89.00 - 89.25	1.0000	1.0000
L22	81	CCI-AFP-040075	89.00 - 89.25	1.0000	1.0000
L23	6	FB-L98B-034-XXX(3/8)	88.50 - 89.00	1.0000	1.0000
L23	7	WR-VG86ST-BRD(3/4)	88.50 - 89.00	1.0000	1.0000
L23	9	7983A(ELLIPTICAL)	88.50 - 89.00	1.0000	1.0000
L23	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	88.50 - 89.00	1.0000	1.0000
L23	41	PL1.25x5.5 Reinforcement - Wind Area	88.50 - 89.00	1.0000	1.0000
L23	42	PL1.25x5.5 Reinforcement - Wind Area	88.50 - 89.00	1.0000	1.0000
L23	43	PL1.25x5.5 Reinforcement - Wind Area	88.50 - 89.00	1.0000	1.0000
L23	61	PL1x4 Reinforcement - Wind Area	88.50 - 89.00	1.0000	1.0000
L23	62	PL1x4 Reinforcement - Wind Area	88.50 - 89.00	1.0000	1.0000
L23	63	PL1x4 Reinforcement - Wind Area	88.50 - 89.00	1.0000	1.0000
L23	79	CCI-SFP-040075	88.50 - 89.00	1.0000	1.0000
L23	80	CCI-SFP-040075	88.50 - 89.00	1.0000	1.0000
L23	81	CCI-AFP-040075	88.50 - 89.00	1.0000	1.0000
L24	6	FB-L98B-034-XXX(3/8)	88.25 - 88.50	1.0000	1.0000
L24	7	WR-VG86ST-BRD(3/4)	88.25 - 88.50	1.0000	1.0000
L24	9	7983A(ELLIPTICAL)	88.25 - 88.50	1.0000	1.0000
L24	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	88.25 - 88.50	1.0000	1.0000
L24	41	PL1.25x5.5 Reinforcement - Wind Area	88.25 - 88.50	1.0000	1.0000
L24	42	PL1.25x5.5 Reinforcement - Wind Area	88.25 - 88.50	1.0000	1.0000
L24	43	PL1.25x5.5 Reinforcement - Wind Area	88.25 - 88.50	1.0000	1.0000
L24	61	PL1x4 Reinforcement - Wind Area	88.25 - 88.50	1.0000	1.0000
L24	62	PL1x4 Reinforcement - Wind Area	88.25 - 88.50	1.0000	1.0000
L24	63	PL1x4 Reinforcement - Wind Area	88.25 - 88.50	1.0000	1.0000
L24	79	CCI-SFP-040075	88.25 - 88.50	1.0000	1.0000
L24	80	CCI-SFP-040075	88.25 - 88.50	1.0000	1.0000
L24	81	CCI-AFP-040075	88.25 - 88.50	1.0000	1.0000
L25	6	FB-L98B-034-XXX(3/8)	88.00 - 88.25	1.0000	1.0000
L25	7	WR-VG86ST-BRD(3/4)	88.00 - 88.25	1.0000	1.0000
L25	9	7983A(ELLIPTICAL)	88.00 - 88.25	1.0000	1.0000
L25	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	88.00 - 88.25	1.0000	1.0000
L25	41	PL1.25x5.5 Reinforcement - Wind Area	88.00 - 88.25	1.0000	1.0000
L25	42	PL1.25x5.5 Reinforcement - Wind Area	88.00 - 88.25	1.0000	1.0000
L25	43	PL1.25x5.5 Reinforcement - Wind Area	88.00 - 88.25	1.0000	1.0000
L25	61	PL1x4 Reinforcement - Wind Area	88.00 - 88.25	1.0000	1.0000
L25	62	PL1x4 Reinforcement - Wind Area	88.00 - 88.25	1.0000	1.0000
L25	63	PL1x4 Reinforcement - Wind Area	88.00 - 88.25	1.0000	1.0000
L25	79	CCI-SFP-040075	88.00 - 88.25	1.0000	1.0000
L25	80	CCI-SFP-040075	88.00 - 88.25	1.0000	1.0000
L25	81	CCI-AFP-040075	88.00 - 88.25	1.0000	1.0000
L26	6	FB-L98B-034-XXX(3/8)	83.00 - 88.00	1.0000	1.0000
L26	7	WR-VG86ST-BRD(3/4)	83.00 - 88.00	1.0000	1.0000
L26	9	7983A(ELLIPTICAL)	83.00 - 88.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	83.00 - 88.00	1.0000	1.0000
L26	41	PL1.25x5.5 Reinforcement - Wind Area	83.00 - 88.00	1.0000	1.0000
L26	42	PL1.25x5.5 Reinforcement - Wind Area	83.00 - 88.00	1.0000	1.0000
L26	43	PL1.25x5.5 Reinforcement - Wind Area	83.00 - 88.00	1.0000	1.0000
L26	61	PL1x4 Reinforcement - Wind Area	86.50 - 88.00	1.0000	1.0000
L26	62	PL1x4 Reinforcement - Wind Area	86.50 - 88.00	1.0000	1.0000
L26	63	PL1x4 Reinforcement - Wind Area	86.50 - 88.00	1.0000	1.0000
L26	79	CCI-SFP-040075	83.00 - 88.00	1.0000	1.0000
L26	80	CCI-SFP-040075	83.00 - 88.00	1.0000	1.0000
L26	81	CCI-AFP-040075	83.00 - 88.00	1.0000	1.0000
L27	6	FB-L98B-034-XXX(3/8)	78.00 - 83.00	1.0000	1.0000
L27	7	WR-VG86ST-BRD(3/4)	78.00 - 83.00	1.0000	1.0000
L27	9	7983A(ELLIPTICAL)	78.00 - 83.00	1.0000	1.0000
L27	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	78.00 - 83.00	1.0000	1.0000
L27	41	PL1.25x5.5 Reinforcement - Wind Area	78.00 - 83.00	1.0000	1.0000
L27	42	PL1.25x5.5 Reinforcement - Wind Area	78.00 - 83.00	1.0000	1.0000
L27	43	PL1.25x5.5 Reinforcement - Wind Area	78.00 - 83.00	1.0000	1.0000
L27	57	PL1x4 Reinforcement - Wind Area	78.00 - 78.75	1.0000	1.0000
L27	58	PL1x4 Reinforcement - Wind Area	78.00 - 78.75	1.0000	1.0000
L27	59	PL1x4 Reinforcement - Wind Area	78.00 - 78.75	1.0000	1.0000
L27	79	CCI-SFP-040075	78.00 - 83.00	1.0000	1.0000
L27	80	CCI-SFP-040075	78.00 - 83.00	1.0000	1.0000
L27	81	CCI-AFP-040075	78.00 - 83.00	1.0000	1.0000
L28	6	FB-L98B-034-XXX(3/8)	77.00 - 78.00	1.0000	1.0000
L28	7	WR-VG86ST-BRD(3/4)	77.00 - 78.00	1.0000	1.0000
L28	9	7983A(ELLIPTICAL)	77.00 - 78.00	1.0000	1.0000
L28	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	77.00 - 78.00	1.0000	1.0000
L28	41	PL1.25x5.5 Reinforcement - Wind Area	77.00 - 78.00	1.0000	1.0000
L28	42	PL1.25x5.5 Reinforcement - Wind Area	77.00 - 78.00	1.0000	1.0000
L28	43	PL1.25x5.5 Reinforcement - Wind Area	77.00 - 78.00	1.0000	1.0000
L28	57	PL1x4 Reinforcement - Wind Area	77.00 - 78.00	1.0000	1.0000
L28	58	PL1x4 Reinforcement - Wind Area	77.00 - 78.00	1.0000	1.0000
L28	59	PL1x4 Reinforcement - Wind Area	77.00 - 78.00	1.0000	1.0000
L28	79	CCI-SFP-040075	77.00 - 78.00	1.0000	1.0000
L28	80	CCI-SFP-040075	77.00 - 78.00	1.0000	1.0000
L28	81	CCI-AFP-040075	77.00 - 78.00	1.0000	1.0000
L29	6	FB-L98B-034-XXX(3/8)	76.75 - 77.00	1.0000	1.0000
L29	7	WR-VG86ST-BRD(3/4)	76.75 - 77.00	1.0000	1.0000
L29	9	7983A(ELLIPTICAL)	76.75 - 77.00	1.0000	1.0000
L29	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	76.75 - 77.00	1.0000	1.0000
L29	41	PL1.25x5.5 Reinforcement - Wind Area	76.75 - 77.00	1.0000	1.0000
L29	42	PL1.25x5.5 Reinforcement - Wind Area	76.75 - 77.00	1.0000	1.0000
L29	43	PL1.25x5.5 Reinforcement - Wind Area	76.75 - 77.00	1.0000	1.0000
L29	57	PL1x4 Reinforcement - Wind Area	76.75 - 77.00	1.0000	1.0000
L29	58	PL1x4 Reinforcement - Wind Area	76.75 - 77.00	1.0000	1.0000
L29	59	PL1x4 Reinforcement - Wind Area	76.75 - 77.00	1.0000	1.0000
L29	79	CCI-SFP-040075	76.75 - 77.00	1.0000	1.0000
L29	80	CCI-SFP-040075	76.75 - 77.00	1.0000	1.0000
L29	81	CCI-AFP-040075	76.75 - 77.00	1.0000	1.0000
L30	6	FB-L98B-034-XXX(3/8)	76.50 - 76.75	1.0000	1.0000
L30	7	WR-VG86ST-BRD(3/4)	76.50 - 76.75	1.0000	1.0000
L30	9	7983A(ELLIPTICAL)	76.50 - 76.75	1.0000	1.0000
L30	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	76.50 - 76.75	1.0000	1.0000
L30	41	PL1.25x5.5 Reinforcement - Wind Area	76.50 - 76.75	1.0000	1.0000
L30	42	PL1.25x5.5 Reinforcement - Wind Area	76.50 - 76.75	1.0000	1.0000
L30	43	PL1.25x5.5 Reinforcement - Wind Area	76.50 - 76.75	1.0000	1.0000
L30	57	PL1x4 Reinforcement - Wind Area	76.50 - 76.75	1.0000	1.0000
L30	58	PL1x4 Reinforcement - Wind Area	76.50 - 76.75	1.0000	1.0000
L30	59	PL1x4 Reinforcement - Wind Area	76.50 - 76.75	1.0000	1.0000
L30	79	CCI-SFP-040075	76.50 - 76.75	1.0000	1.0000
L30	80	CCI-SFP-040075	76.50 - 76.75	1.0000	1.0000
L30	81	CCI-AFP-040075	76.50 - 76.75	1.0000	1.0000
L31	6	FB-L98B-034-XXX(3/8)	76.25 - 76.50	1.0000	1.0000
L31	7	WR-VG86ST-BRD(3/4)	76.25 - 76.50	1.0000	1.0000
L31	9	7983A(ELLIPTICAL)	76.25 - 76.50	1.0000	1.0000
L31	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	76.25 - 76.50	1.0000	1.0000
L31	41	PL1.25x5.5 Reinforcement - Wind Area	76.25 - 76.50	1.0000	1.0000
L31	42	PL1.25x5.5 Reinforcement - Wind Area	76.25 - 76.50	1.0000	1.0000
L31	43	PL1.25x5.5 Reinforcement - Wind Area	76.25 - 76.50	1.0000	1.0000
L31	57	PL1x4 Reinforcement - Wind Area	76.25 - 76.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L31	58	PL1x4 Reinforcement - Wind Area	76.25 - 76.50	1.0000	1.0000
L31	59	PL1x4 Reinforcement - Wind Area	76.25 - 76.50	1.0000	1.0000
L31	79	CCI-SFP-040075	76.25 - 76.50	1.0000	1.0000
L31	80	CCI-SFP-040075	76.25 - 76.50	1.0000	1.0000
L31	81	CCI-AFP-040075	76.25 - 76.50	1.0000	1.0000
L32	6	FB-L98B-034-XXX(3/8)	75.00 - 76.25	1.0000	1.0000
L32	7	WR-VG86ST-BRD(3/4)	75.00 - 76.25	1.0000	1.0000
L32	9	7983A(ELLIPTICAL)	75.00 - 76.25	1.0000	1.0000
L32	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	75.00 - 76.25	1.0000	1.0000
L32	41	PL1.25x5.5 Reinforcement - Wind Area	75.00 - 76.25	1.0000	1.0000
L32	42	PL1.25x5.5 Reinforcement - Wind Area	75.00 - 76.25	1.0000	1.0000
L32	43	PL1.25x5.5 Reinforcement - Wind Area	75.00 - 76.25	1.0000	1.0000
L32	57	PL1x4 Reinforcement - Wind Area	75.00 - 76.25	1.0000	1.0000
L32	58	PL1x4 Reinforcement - Wind Area	75.00 - 76.25	1.0000	1.0000
L32	59	PL1x4 Reinforcement - Wind Area	75.00 - 76.25	1.0000	1.0000
L32	77	CCI-SFP-045100	75.00 - 75.25	1.0000	1.0000
L32	78	CCI-SFP-045100	75.00 - 75.25	1.0000	1.0000
L32	79	CCI-SFP-040075	75.25 - 76.25	1.0000	1.0000
L32	80	CCI-SFP-040075	75.25 - 76.25	1.0000	1.0000
L32	81	CCI-AFP-040075	75.00 - 76.25	1.0000	1.0000
L33	6	FB-L98B-034-XXX(3/8)	74.75 - 75.00	1.0000	1.0000
L33	7	WR-VG86ST-BRD(3/4)	74.75 - 75.00	1.0000	1.0000
L33	9	7983A(ELLIPTICAL)	74.75 - 75.00	1.0000	1.0000
L33	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	74.75 - 75.00	1.0000	1.0000
L33	41	PL1.25x5.5 Reinforcement - Wind Area	74.75 - 75.00	1.0000	1.0000
L33	42	PL1.25x5.5 Reinforcement - Wind Area	74.75 - 75.00	1.0000	1.0000
L33	43	PL1.25x5.5 Reinforcement - Wind Area	74.75 - 75.00	1.0000	1.0000
L33	57	PL1x4 Reinforcement - Wind Area	74.75 - 75.00	1.0000	1.0000
L33	58	PL1x4 Reinforcement - Wind Area	74.75 - 75.00	1.0000	1.0000
L33	59	PL1x4 Reinforcement - Wind Area	74.75 - 75.00	1.0000	1.0000
L33	77	CCI-SFP-045100	74.75 - 75.00	1.0000	1.0000
L33	78	CCI-SFP-045100	74.75 - 75.00	1.0000	1.0000
L34	6	FB-L98B-034-XXX(3/8)	73.50 - 74.75	1.0000	1.0000
L34	7	WR-VG86ST-BRD(3/4)	73.50 - 74.75	1.0000	1.0000
L34	9	7983A(ELLIPTICAL)	73.50 - 74.75	1.0000	1.0000
L34	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	73.50 - 74.75	1.0000	1.0000
L34	41	PL1.25x5.5 Reinforcement - Wind Area	73.50 - 74.75	1.0000	1.0000
L34	42	PL1.25x5.5 Reinforcement - Wind Area	73.50 - 74.75	1.0000	1.0000
L34	43	PL1.25x5.5 Reinforcement - Wind Area	73.50 - 74.75	1.0000	1.0000
L34	57	PL1x4 Reinforcement - Wind Area	73.50 - 74.75	1.0000	1.0000
L34	58	PL1x4 Reinforcement - Wind Area	73.50 - 74.75	1.0000	1.0000
L34	59	PL1x4 Reinforcement - Wind Area	73.50 - 74.75	1.0000	1.0000
L34	77	CCI-SFP-045100	73.50 - 74.75	1.0000	1.0000
L34	78	CCI-SFP-045100	73.50 - 74.75	1.0000	1.0000
L35	6	FB-L98B-034-XXX(3/8)	73.25 - 73.50	1.0000	1.0000
L35	7	WR-VG86ST-BRD(3/4)	73.25 - 73.50	1.0000	1.0000
L35	9	7983A(ELLIPTICAL)	73.25 - 73.50	1.0000	1.0000
L35	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	73.25 - 73.50	1.0000	1.0000
L35	41	PL1.25x5.5 Reinforcement - Wind Area	73.25 - 73.50	1.0000	1.0000
L35	42	PL1.25x5.5 Reinforcement - Wind Area	73.25 - 73.50	1.0000	1.0000
L35	43	PL1.25x5.5 Reinforcement - Wind Area	73.25 - 73.50	1.0000	1.0000
L35	57	PL1x4 Reinforcement - Wind Area	73.25 - 73.50	1.0000	1.0000
L35	58	PL1x4 Reinforcement - Wind Area	73.25 - 73.50	1.0000	1.0000
L35	59	PL1x4 Reinforcement - Wind Area	73.25 - 73.50	1.0000	1.0000
L35	77	CCI-SFP-045100	73.25 - 73.50	1.0000	1.0000
L35	78	CCI-SFP-045100	73.25 - 73.50	1.0000	1.0000
L36	6	FB-L98B-034-XXX(3/8)	68.25 - 73.25	1.0000	1.0000
L36	7	WR-VG86ST-BRD(3/4)	68.25 - 73.25	1.0000	1.0000
L36	9	7983A(ELLIPTICAL)	68.25 - 73.25	1.0000	1.0000
L36	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	68.25 - 73.25	1.0000	1.0000
L36	41	PL1.25x5.5 Reinforcement - Wind Area	68.25 - 73.25	1.0000	1.0000
L36	42	PL1.25x5.5 Reinforcement - Wind Area	68.25 - 73.25	1.0000	1.0000
L36	43	PL1.25x5.5 Reinforcement - Wind Area	68.25 - 73.25	1.0000	1.0000
L36	57	PL1x4 Reinforcement - Wind Area	68.25 - 73.25	1.0000	1.0000
L36	58	PL1x4 Reinforcement - Wind Area	68.25 - 73.25	1.0000	1.0000
L36	59	PL1x4 Reinforcement - Wind Area	68.25 - 73.25	1.0000	1.0000
L36	76	CCI-SFP-045100	68.25 - 72.25	1.0000	1.0000
L36	77	CCI-SFP-045100	68.25 - 73.25	1.0000	1.0000
L36	78	CCI-SFP-045100	68.25 - 73.25	1.0000	1.0000
L37	6	FB-L98B-034-XXX(3/8)	63.25 - 68.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L37	7	WR-VG86ST-BRD(3/4)	63.25 - 68.25	1.0000	1.0000
L37	9	7983A(ELLIPTICAL)	63.25 - 68.25	1.0000	1.0000
L37	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	63.25 - 68.25	1.0000	1.0000
L37	41	PL1.25x5.5 Reinforcement - Wind Area	63.25 - 68.25	1.0000	1.0000
L37	42	PL1.25x5.5 Reinforcement - Wind Area	63.25 - 68.25	1.0000	1.0000
L37	43	PL1.25x5.5 Reinforcement - Wind Area	63.25 - 68.25	1.0000	1.0000
L37	57	PL1x4 Reinforcement - Wind Area	63.25 - 68.25	1.0000	1.0000
L37	58	PL1x4 Reinforcement - Wind Area	63.25 - 68.25	1.0000	1.0000
L37	59	PL1x4 Reinforcement - Wind Area	63.25 - 68.25	1.0000	1.0000
L37	76	CCI-SFP-045100	63.25 - 68.25	1.0000	1.0000
L37	77	CCI-SFP-045100	63.25 - 68.25	1.0000	1.0000
L37	78	CCI-SFP-045100	63.25 - 68.25	1.0000	1.0000
L38	6	FB-L98B-034-XXX(3/8)	60.50 - 63.25	1.0000	1.0000
L38	7	WR-VG86ST-BRD(3/4)	60.50 - 63.25	1.0000	1.0000
L38	9	7983A(ELLIPTICAL)	60.50 - 63.25	1.0000	1.0000
L38	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	60.50 - 63.25	1.0000	1.0000
L38	41	PL1.25x5.5 Reinforcement - Wind Area	60.50 - 63.25	1.0000	1.0000
L38	42	PL1.25x5.5 Reinforcement - Wind Area	60.50 - 63.25	1.0000	1.0000
L38	43	PL1.25x5.5 Reinforcement - Wind Area	60.50 - 63.25	1.0000	1.0000
L38	53	PL1x4 Reinforcement - Wind Area	60.50 - 62.25	1.0000	1.0000
L38	54	PL1x4 Reinforcement - Wind Area	60.50 - 62.25	1.0000	1.0000
L38	55	PL1x4 Reinforcement - Wind Area	60.50 - 62.25	1.0000	1.0000
L38	57	PL1x4 Reinforcement - Wind Area	60.50 - 63.25	1.0000	1.0000
L38	58	PL1x4 Reinforcement - Wind Area	60.50 - 63.25	1.0000	1.0000
L38	59	PL1x4 Reinforcement - Wind Area	60.50 - 63.25	1.0000	1.0000
L38	76	CCI-SFP-045100	60.50 - 63.25	1.0000	1.0000
L38	77	CCI-SFP-045100	60.50 - 63.25	1.0000	1.0000
L38	78	CCI-SFP-045100	60.50 - 63.25	1.0000	1.0000
L39	6	FB-L98B-034-XXX(3/8)	60.25 - 60.50	1.0000	1.0000
L39	7	WR-VG86ST-BRD(3/4)	60.25 - 60.50	1.0000	1.0000
L39	9	7983A(ELLIPTICAL)	60.25 - 60.50	1.0000	1.0000
L39	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	60.25 - 60.50	1.0000	1.0000
L39	41	PL1.25x5.5 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	42	PL1.25x5.5 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	43	PL1.25x5.5 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	53	PL1x4 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	54	PL1x4 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	55	PL1x4 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	57	PL1x4 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	58	PL1x4 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	59	PL1x4 Reinforcement - Wind Area	60.25 - 60.50	1.0000	1.0000
L39	76	CCI-SFP-045100	60.25 - 60.50	1.0000	1.0000
L39	77	CCI-SFP-045100	60.25 - 60.50	1.0000	1.0000
L39	78	CCI-SFP-045100	60.25 - 60.50	1.0000	1.0000
L40	6	FB-L98B-034-XXX(3/8)	59.50 - 60.25	1.0000	1.0000
L40	7	WR-VG86ST-BRD(3/4)	59.50 - 60.25	1.0000	1.0000
L40	9	7983A(ELLIPTICAL)	59.50 - 60.25	1.0000	1.0000
L40	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	59.50 - 60.25	1.0000	1.0000
L40	41	PL1.25x5.5 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	42	PL1.25x5.5 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	43	PL1.25x5.5 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	53	PL1x4 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	54	PL1x4 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	55	PL1x4 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	57	PL1x4 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	58	PL1x4 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	59	PL1x4 Reinforcement - Wind Area	59.50 - 60.25	1.0000	1.0000
L40	76	CCI-SFP-045100	59.50 - 60.25	1.0000	1.0000
L40	77	CCI-SFP-045100	59.50 - 60.25	1.0000	1.0000
L40	78	CCI-SFP-045100	59.50 - 60.25	1.0000	1.0000
L41	6	FB-L98B-034-XXX(3/8)	59.25 - 59.50	1.0000	1.0000
L41	7	WR-VG86ST-BRD(3/4)	59.25 - 59.50	1.0000	1.0000
L41	9	7983A(ELLIPTICAL)	59.25 - 59.50	1.0000	1.0000
L41	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	59.25 - 59.50	1.0000	1.0000
L41	37	PL1.25x6.625 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	38	PL1.25x6.625 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	39	PL1.25x6.625 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	53	PL1x4 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	54	PL1x4 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	55	PL1x4 Reinforcement - Wind Area	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
L41	57	PL1x4 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	58	PL1x4 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	59	PL1x4 Reinforcement - Wind Area	59.25 - 59.50	1.0000	1.0000
L41	76	CCI-SFP-045100	59.25 - 59.50	1.0000	1.0000
L41	77	CCI-SFP-045100	59.25 - 59.50	1.0000	1.0000
L41	78	CCI-SFP-045100	59.25 - 59.50	1.0000	1.0000
L42	6	FB-L98B-034-XXX(3/8)	54.25 - 59.25	1.0000	1.0000
L42	7	WR-VG86ST-BRD(3/4)	54.25 - 59.25	1.0000	1.0000
L42	9	7983A(ELLIPTICAL)	54.25 - 59.25	1.0000	1.0000
L42	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	54.25 - 59.25	1.0000	1.0000
L42	37	PL1.25x6.625 Reinforcement - Wind Area	54.25 - 59.25	1.0000	1.0000
L42	38	PL1.25x6.625 Reinforcement - Wind Area	54.25 - 59.25	1.0000	1.0000
L42	39	PL1.25x6.625 Reinforcement - Wind Area	54.25 - 59.25	1.0000	1.0000
L42	53	PL1x4 Reinforcement - Wind Area	54.25 - 59.25	1.0000	1.0000
L42	54	PL1x4 Reinforcement - Wind Area	54.25 - 59.25	1.0000	1.0000
L42	55	PL1x4 Reinforcement - Wind Area	54.25 - 59.25	1.0000	1.0000
L42	57	PL1x4 Reinforcement - Wind Area	58.75 - 59.25	1.0000	1.0000
L42	58	PL1x4 Reinforcement - Wind Area	58.75 - 59.25	1.0000	1.0000
L42	59	PL1x4 Reinforcement - Wind Area	58.75 - 59.25	1.0000	1.0000
L42	76	CCI-SFP-045100	54.25 - 59.25	1.0000	1.0000
L42	77	CCI-SFP-045100	54.25 - 59.25	1.0000	1.0000
L42	78	CCI-SFP-045100	54.25 - 59.25	1.0000	1.0000
L43	6	FB-L98B-034-XXX(3/8)	45.25 - 54.25	1.0000	1.0000
L43	7	WR-VG86ST-BRD(3/4)	45.25 - 54.25	1.0000	1.0000
L43	9	7983A(ELLIPTICAL)	45.25 - 54.25	1.0000	1.0000
L43	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	45.25 - 54.25	1.0000	1.0000
L43	37	PL1.25x6.625 Reinforcement - Wind Area	45.25 - 54.25	1.0000	1.0000
L43	38	PL1.25x6.625 Reinforcement - Wind Area	45.25 - 54.25	1.0000	1.0000
L43	39	PL1.25x6.625 Reinforcement - Wind Area	45.25 - 54.25	1.0000	1.0000
L43	53	PL1x4 Reinforcement - Wind Area	45.25 - 54.25	1.0000	1.0000
L43	54	PL1x4 Reinforcement - Wind Area	45.25 - 54.25	1.0000	1.0000
L43	55	PL1x4 Reinforcement - Wind Area	45.25 - 54.25	1.0000	1.0000
L43	76	CCI-SFP-045100	45.25 - 54.25	1.0000	1.0000
L43	77	CCI-SFP-045100	45.25 - 54.25	1.0000	1.0000
L43	78	CCI-SFP-045100	45.25 - 54.25	1.0000	1.0000
L43	73	CCI-SFP-045100	45.25 - 45.08	1.0000	1.0000
L43	74	CCI-SFP-060100	45.25 - 45.17	1.0000	1.0000
L43	75	CCI-SFP-060100	45.25 - 45.17	1.0000	1.0000
L45	6	FB-L98B-034-XXX(3/8)	43.50 - 44.25	1.0000	1.0000
L45	7	WR-VG86ST-BRD(3/4)	43.50 - 44.25	1.0000	1.0000
L45	9	7983A(ELLIPTICAL)	43.50 - 44.25	1.0000	1.0000
L45	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	43.50 - 44.25	1.0000	1.0000
L45	37	PL1.25x6.625 Reinforcement - Wind Area	43.50 - 44.25	1.0000	1.0000
L45	38	PL1.25x6.625 Reinforcement - Wind Area	43.50 - 44.25	1.0000	1.0000
L45	39	PL1.25x6.625 Reinforcement - Wind Area	43.50 - 44.25	1.0000	1.0000
L45	53	PL1x4 Reinforcement - Wind Area	43.50 - 44.25	1.0000	1.0000
L45	54	PL1x4 Reinforcement - Wind Area	43.50 - 44.25	1.0000	1.0000
L45	55	PL1x4 Reinforcement - Wind Area	43.50 - 44.25	1.0000	1.0000
L45	73	CCI-SFP-045100	43.50 - 44.25	1.0000	1.0000
L45	74	CCI-SFP-060100	43.50 - 44.25	1.0000	1.0000
L45	75	CCI-SFP-060100	43.50 - 44.25	1.0000	1.0000
L46	6	FB-L98B-034-XXX(3/8)	43.25 - 43.50	1.0000	1.0000
L46	7	WR-VG86ST-BRD(3/4)	43.25 - 43.50	1.0000	1.0000
L46	9	7983A(ELLIPTICAL)	43.25 - 43.50	1.0000	1.0000
L46	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	43.25 - 43.50	1.0000	1.0000
L46	37	PL1.25x6.625 Reinforcement - Wind Area	43.25 - 43.50	1.0000	1.0000
L46	38	PL1.25x6.625 Reinforcement - Wind Area	43.25 - 43.50	1.0000	1.0000
L46	39	PL1.25x6.625 Reinforcement - Wind Area	43.25 - 43.50	1.0000	1.0000
L46	53	PL1x4 Reinforcement - Wind Area	43.25 - 43.50	1.0000	1.0000
L46	54	PL1x4 Reinforcement - Wind Area	43.25 - 43.50	1.0000	1.0000
L46	55	PL1x4 Reinforcement - Wind Area	43.25 - 43.50	1.0000	1.0000
L46	73	CCI-SFP-045100	43.25 - 43.50	1.0000	1.0000
L46	74	CCI-SFP-060100	43.25 - 43.50	1.0000	1.0000
L46	75	CCI-SFP-060100	43.25 - 43.50	1.0000	1.0000
L47	6	FB-L98B-034-XXX(3/8)	39.00 - 43.25	1.0000	1.0000
L47	7	WR-VG86ST-BRD(3/4)	39.00 - 43.25	1.0000	1.0000
L47	9	7983A(ELLIPTICAL)	39.00 - 43.25	1.0000	1.0000
L47	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	39.00 - 43.25	1.0000	1.0000
L47	37	PL1.25x6.625 Reinforcement - Wind Area	39.00 - 43.25	1.0000	1.0000
L47	38	PL1.25x6.625 Reinforcement - Wind Area	39.00 - 43.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L47	39	PL1.25x6.625 Reinforcement - Wind Area	39.00 - 43.25	1.0000	1.0000
L47	51	PL1x4 Reinforcement - Wind Area	39.00 - 40.75	1.0000	1.0000
L47	53	PL1x4 Reinforcement - Wind Area	39.00 - 43.25	1.0000	1.0000
L47	54	PL1x4 Reinforcement - Wind Area	39.00 - 43.25	1.0000	1.0000
L47	55	PL1x4 Reinforcement - Wind Area	39.00 - 43.25	1.0000	1.0000
L47	73	CCI-SFP-045100	39.00 - 43.25	1.0000	1.0000
L47	74	CCI-SFP-060100	39.00 - 43.25	1.0000	1.0000
L47	75	CCI-SFP-060100	39.00 - 43.25	1.0000	1.0000
L48	6	FB-L98B-034-XXX(3/8)	38.75 - 39.00	1.0000	1.0000
L48	7	WR-VG86ST-BRD(3/4)	38.75 - 39.00	1.0000	1.0000
L48	9	7983A(ELLIPTICAL)	38.75 - 39.00	1.0000	1.0000
L48	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	38.75 - 39.00	1.0000	1.0000
L48	37	PL1.25x6.625 Reinforcement - Wind Area	38.75 - 39.00	1.0000	1.0000
L48	38	PL1.25x6.625 Reinforcement - Wind Area	38.75 - 39.00	1.0000	1.0000
L48	39	PL1.25x6.625 Reinforcement - Wind Area	38.75 - 39.00	1.0000	1.0000
L48	51	PL1x4 Reinforcement - Wind Area	38.75 - 39.00	1.0000	1.0000
L48	53	PL1x4 Reinforcement - Wind Area	38.75 - 39.00	1.0000	1.0000
L48	54	PL1x4 Reinforcement - Wind Area	38.75 - 39.00	1.0000	1.0000
L48	55	PL1x4 Reinforcement - Wind Area	38.75 - 39.00	1.0000	1.0000
L48	73	CCI-SFP-045100	38.75 - 39.00	1.0000	1.0000
L48	74	CCI-SFP-060100	38.75 - 39.00	1.0000	1.0000
L48	75	CCI-SFP-060100	38.75 - 39.00	1.0000	1.0000
L49	6	FB-L98B-034-XXX(3/8)	35.00 - 38.75	1.0000	1.0000
L49	7	WR-VG86ST-BRD(3/4)	35.00 - 38.75	1.0000	1.0000
L49	9	7983A(ELLIPTICAL)	35.00 - 38.75	1.0000	1.0000
L49	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	35.00 - 38.75	1.0000	1.0000
L49	37	PL1.25x6.625 Reinforcement - Wind Area	35.00 - 38.75	1.0000	1.0000
L49	38	PL1.25x6.625 Reinforcement - Wind Area	35.00 - 38.75	1.0000	1.0000
L49	39	PL1.25x6.625 Reinforcement - Wind Area	35.00 - 38.75	1.0000	1.0000
L49	49	PL1x4 Reinforcement - Wind Area	35.00 - 35.75	1.0000	1.0000
L49	50	PL1x4 Reinforcement - Wind Area	35.00 - 35.75	1.0000	1.0000
L49	51	PL1x4 Reinforcement - Wind Area	35.00 - 38.75	1.0000	1.0000
L49	53	PL1x4 Reinforcement - Wind Area	35.00 - 38.75	1.0000	1.0000
L49	54	PL1x4 Reinforcement - Wind Area	35.00 - 38.75	1.0000	1.0000
L49	55	PL1x4 Reinforcement - Wind Area	35.00 - 38.75	1.0000	1.0000
L49	71	CCI-SFP-045100	35.00 - 35.08	1.0000	1.0000
L49	72	CCI-SFP-045100	35.00 - 35.08	1.0000	1.0000
L49	73	CCI-SFP-045100	35.00 - 38.75	1.0000	1.0000
L49	74	CCI-SFP-060100	35.08 - 38.75	1.0000	1.0000
L49	75	CCI-SFP-060100	35.08 - 38.75	1.0000	1.0000
L50	6	FB-L98B-034-XXX(3/8)	34.75 - 35.00	1.0000	1.0000
L50	7	WR-VG86ST-BRD(3/4)	34.75 - 35.00	1.0000	1.0000
L50	9	7983A(ELLIPTICAL)	34.75 - 35.00	1.0000	1.0000
L50	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	34.75 - 35.00	1.0000	1.0000
L50	37	PL1.25x6.625 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	38	PL1.25x6.625 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	39	PL1.25x6.625 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	49	PL1x4 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	50	PL1x4 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	51	PL1x4 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	53	PL1x4 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	54	PL1x4 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	55	PL1x4 Reinforcement - Wind Area	34.75 - 35.00	1.0000	1.0000
L50	71	CCI-SFP-045100	34.75 - 35.00	1.0000	1.0000
L50	72	CCI-SFP-045100	34.75 - 35.00	1.0000	1.0000
L50	73	CCI-SFP-045100	34.75 - 35.00	1.0000	1.0000
L51	6	FB-L98B-034-XXX(3/8)	34.00 - 34.75	1.0000	1.0000
L51	7	WR-VG86ST-BRD(3/4)	34.00 - 34.75	1.0000	1.0000
L51	9	7983A(ELLIPTICAL)	34.00 - 34.75	1.0000	1.0000
L51	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	34.00 - 34.75	1.0000	1.0000
L51	37	PL1.25x6.625 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	38	PL1.25x6.625 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	39	PL1.25x6.625 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	49	PL1x4 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	50	PL1x4 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	51	PL1x4 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	53	PL1x4 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	54	PL1x4 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	55	PL1x4 Reinforcement - Wind Area	34.00 - 34.75	1.0000	1.0000
L51	71	CCI-SFP-045100	34.00 - 34.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L51	72	CCI-SFP-045100	34.00 - 34.75	1.0000	1.0000
L51	73	CCI-SFP-045100	34.00 - 34.75	1.0000	1.0000
L52	6	FB-L98B-034-XXX(3/8)	33.75 - 34.00	1.0000	1.0000
L52	7	WR-VG86ST-BRD(3/4)	33.75 - 34.00	1.0000	1.0000
L52	9	7983A(ELLIPTICAL)	33.75 - 34.00	1.0000	1.0000
L52	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	33.75 - 34.00	1.0000	1.0000
L52	37	PL1.25x6.625 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	38	PL1.25x6.625 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	39	PL1.25x6.625 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	49	PL1x4 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	50	PL1x4 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	51	PL1x4 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	53	PL1x4 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	54	PL1x4 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	55	PL1x4 Reinforcement - Wind Area	33.75 - 34.00	1.0000	1.0000
L52	71	CCI-SFP-045100	33.75 - 34.00	1.0000	1.0000
L52	72	CCI-SFP-045100	33.75 - 34.00	1.0000	1.0000
L52	73	CCI-SFP-045100	33.75 - 34.00	1.0000	1.0000
L53	6	FB-L98B-034-XXX(3/8)	29.75 - 33.75	1.0000	1.0000
L53	7	WR-VG86ST-BRD(3/4)	29.75 - 33.75	1.0000	1.0000
L53	9	7983A(ELLIPTICAL)	29.75 - 33.75	1.0000	1.0000
L53	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	29.75 - 33.75	1.0000	1.0000
L53	37	PL1.25x6.625 Reinforcement - Wind Area	29.75 - 33.75	1.0000	1.0000
L53	38	PL1.25x6.625 Reinforcement - Wind Area	29.75 - 33.75	1.0000	1.0000
L53	39	PL1.25x6.625 Reinforcement - Wind Area	29.75 - 33.75	1.0000	1.0000
L53	49	PL1x4 Reinforcement - Wind Area	29.75 - 33.75	1.0000	1.0000
L53	50	PL1x4 Reinforcement - Wind Area	29.75 - 33.75	1.0000	1.0000
L53	51	PL1x4 Reinforcement - Wind Area	29.75 - 33.75	1.0000	1.0000
L53	53	PL1x4 Reinforcement - Wind Area	32.25 - 33.75	1.0000	1.0000
L53	54	PL1x4 Reinforcement - Wind Area	32.25 - 33.75	1.0000	1.0000
L53	55	PL1x4 Reinforcement - Wind Area	32.25 - 33.75	1.0000	1.0000
L53	71	CCI-SFP-045100	29.75 - 33.75	1.0000	1.0000
L53	72	CCI-SFP-045100	29.75 - 33.75	1.0000	1.0000
L53	73	CCI-SFP-045100	29.75 - 33.75	1.0000	1.0000
L54	6	FB-L98B-034-XXX(3/8)	29.50 - 29.75	1.0000	1.0000
L54	7	WR-VG86ST-BRD(3/4)	29.50 - 29.75	1.0000	1.0000
L54	9	7983A(ELLIPTICAL)	29.50 - 29.75	1.0000	1.0000
L54	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	29.50 - 29.75	1.0000	1.0000
L54	31	PL1.25x6.875 Reinforcement - Wind Area	29.50 - 29.75	1.0000	1.0000
L54	32	PL1.25x6.875 Reinforcement - Wind Area	29.50 - 29.75	1.0000	1.0000
L54	33	PL1.25x6.875 Reinforcement - Wind Area	29.50 - 29.75	1.0000	1.0000
L54	49	PL1x4 Reinforcement - Wind Area	29.50 - 29.75	1.0000	1.0000
L54	50	PL1x4 Reinforcement - Wind Area	29.50 - 29.75	1.0000	1.0000
L54	51	PL1x4 Reinforcement - Wind Area	29.50 - 29.75	1.0000	1.0000
L54	71	CCI-SFP-045100	29.50 - 29.75	1.0000	1.0000
L54	72	CCI-SFP-045100	29.50 - 29.75	1.0000	1.0000
L54	73	CCI-SFP-045100	29.50 - 29.75	1.0000	1.0000
L55	6	FB-L98B-034-XXX(3/8)	25.00 - 29.50	1.0000	1.0000
L55	7	WR-VG86ST-BRD(3/4)	25.00 - 29.50	1.0000	1.0000
L55	9	7983A(ELLIPTICAL)	25.00 - 29.50	1.0000	1.0000
L55	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	25.00 - 29.50	1.0000	1.0000
L55	31	PL1.25x6.875 Reinforcement - Wind Area	25.00 - 29.50	1.0000	1.0000
L55	32	PL1.25x6.875 Reinforcement - Wind Area	25.00 - 29.50	1.0000	1.0000
L55	33	PL1.25x6.875 Reinforcement - Wind Area	25.00 - 29.50	1.0000	1.0000
L55	49	PL1x4 Reinforcement - Wind Area	25.00 - 29.50	1.0000	1.0000
L55	50	PL1x4 Reinforcement - Wind Area	25.00 - 29.50	1.0000	1.0000
L55	51	PL1x4 Reinforcement - Wind Area	25.00 - 29.50	1.0000	1.0000
L55	71	CCI-SFP-045100	25.00 - 29.50	1.0000	1.0000
L55	72	CCI-SFP-045100	25.00 - 29.50	1.0000	1.0000
L55	73	CCI-SFP-045100	25.00 - 29.50	1.0000	1.0000
L56	6	FB-L98B-034-XXX(3/8)	24.75 - 25.00	1.0000	1.0000
L56	7	WR-VG86ST-BRD(3/4)	24.75 - 25.00	1.0000	1.0000
L56	9	7983A(ELLIPTICAL)	24.75 - 25.00	1.0000	1.0000
L56	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	24.75 - 25.00	1.0000	1.0000
L56	31	PL1.25x6.875 Reinforcement - Wind Area	24.75 - 25.00	1.0000	1.0000
L56	32	PL1.25x6.875 Reinforcement - Wind Area	24.75 - 25.00	1.0000	1.0000
L56	33	PL1.25x6.875 Reinforcement - Wind Area	24.75 - 25.00	1.0000	1.0000
L56	49	PL1x4 Reinforcement - Wind Area	24.75 - 25.00	1.0000	1.0000
L56	50	PL1x4 Reinforcement - Wind Area	24.75 - 25.00	1.0000	1.0000
L56	51	PL1x4 Reinforcement - Wind Area	24.75 - 25.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L56	68	CCI-SFP-060100	24.75 - 25.00	1.0000	1.0000
L56	69	CCI-SFP-060100	24.75 - 25.00	1.0000	1.0000
L56	70	CCI-SFP-060100	24.75 - 25.00	1.0000	1.0000
L56	71	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L57	6	FB-L98B-034-XXX(3/8)	23.50 - 24.75	1.0000	1.0000
L57	7	WR-VG86ST-BRD(3/4)	23.50 - 24.75	1.0000	1.0000
L57	9	7983A(ELLIPTICAL)	23.50 - 24.75	1.0000	1.0000
L57	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	23.50 - 24.75	1.0000	1.0000
L57	31	PL1.25x6.875 Reinforcement - Wind Area	23.50 - 24.75	1.0000	1.0000
L57	32	PL1.25x6.875 Reinforcement - Wind Area	23.50 - 24.75	1.0000	1.0000
L57	33	PL1.25x6.875 Reinforcement - Wind Area	23.50 - 24.75	1.0000	1.0000
L57	49	PL1x4 Reinforcement - Wind Area	23.50 - 24.75	1.0000	1.0000
L57	50	PL1x4 Reinforcement - Wind Area	23.50 - 24.75	1.0000	1.0000
L57	51	PL1x4 Reinforcement - Wind Area	23.50 - 24.75	1.0000	1.0000
L57	68	CCI-SFP-060100	23.50 - 24.75	1.0000	1.0000
L57	69	CCI-SFP-060100	23.50 - 24.75	1.0000	1.0000
L57	70	CCI-SFP-060100	23.50 - 24.75	1.0000	1.0000
L57	71	CCI-SFP-045100	23.50 - 24.75	1.0000	1.0000
L58	6	FB-L98B-034-XXX(3/8)	23.25 - 23.50	1.0000	1.0000
L58	7	WR-VG86ST-BRD(3/4)	23.25 - 23.50	1.0000	1.0000
L58	9	7983A(ELLIPTICAL)	23.25 - 23.50	1.0000	1.0000
L58	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	23.25 - 23.50	1.0000	1.0000
L58	31	PL1.25x6.875 Reinforcement - Wind Area	23.25 - 23.50	1.0000	1.0000
L58	32	PL1.25x6.875 Reinforcement - Wind Area	23.25 - 23.50	1.0000	1.0000
L58	33	PL1.25x6.875 Reinforcement - Wind Area	23.25 - 23.50	1.0000	1.0000
L58	49	PL1x4 Reinforcement - Wind Area	23.25 - 23.50	1.0000	1.0000
L58	50	PL1x4 Reinforcement - Wind Area	23.25 - 23.50	1.0000	1.0000
L58	51	PL1x4 Reinforcement - Wind Area	23.25 - 23.50	1.0000	1.0000
L58	68	CCI-SFP-060100	23.25 - 23.50	1.0000	1.0000
L58	69	CCI-SFP-060100	23.25 - 23.50	1.0000	1.0000
L58	70	CCI-SFP-060100	23.25 - 23.50	1.0000	1.0000
L58	71	CCI-SFP-045100	23.25 - 23.50	1.0000	1.0000
L59	6	FB-L98B-034-XXX(3/8)	21.50 - 23.25	1.0000	1.0000
L59	7	WR-VG86ST-BRD(3/4)	21.50 - 23.25	1.0000	1.0000
L59	9	7983A(ELLIPTICAL)	21.50 - 23.25	1.0000	1.0000
L59	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	21.50 - 23.25	1.0000	1.0000
L59	31	PL1.25x6.875 Reinforcement - Wind Area	21.50 - 23.25	1.0000	1.0000
L59	32	PL1.25x6.875 Reinforcement - Wind Area	21.50 - 23.25	1.0000	1.0000
L59	33	PL1.25x6.875 Reinforcement - Wind Area	21.50 - 23.25	1.0000	1.0000
L59	49	PL1x4 Reinforcement - Wind Area	21.50 - 23.25	1.0000	1.0000
L59	50	PL1x4 Reinforcement - Wind Area	21.50 - 23.25	1.0000	1.0000
L59	51	PL1x4 Reinforcement - Wind Area	21.50 - 23.25	1.0000	1.0000
L59	68	CCI-SFP-060100	21.50 - 23.25	1.0000	1.0000
L59	69	CCI-SFP-060100	21.50 - 23.25	1.0000	1.0000
L59	70	CCI-SFP-060100	21.50 - 23.25	1.0000	1.0000
L59	71	CCI-SFP-045100	21.50 - 23.25	1.0000	1.0000
L60	6	FB-L98B-034-XXX(3/8)	21.25 - 21.50	1.0000	1.0000
L60	7	WR-VG86ST-BRD(3/4)	21.25 - 21.50	1.0000	1.0000
L60	9	7983A(ELLIPTICAL)	21.25 - 21.50	1.0000	1.0000
L60	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	21.25 - 21.50	1.0000	1.0000
L60	31	PL1.25x6.875 Reinforcement - Wind Area	21.25 - 21.50	1.0000	1.0000
L60	32	PL1.25x6.875 Reinforcement - Wind Area	21.25 - 21.50	1.0000	1.0000
L60	33	PL1.25x6.875 Reinforcement - Wind Area	21.25 - 21.50	1.0000	1.0000
L60	49	PL1x4 Reinforcement - Wind Area	21.25 - 21.50	1.0000	1.0000
L60	50	PL1x4 Reinforcement - Wind Area	21.25 - 21.50	1.0000	1.0000
L60	51	PL1x4 Reinforcement - Wind Area	21.25 - 21.50	1.0000	1.0000
L60	68	CCI-SFP-060100	21.25 - 21.50	1.0000	1.0000
L60	69	CCI-SFP-060100	21.25 - 21.50	1.0000	1.0000
L60	70	CCI-SFP-060100	21.25 - 21.50	1.0000	1.0000
L60	71	CCI-SFP-045100	21.25 - 21.50	1.0000	1.0000
L61	6	FB-L98B-034-XXX(3/8)	16.25 - 21.25	1.0000	1.0000
L61	7	WR-VG86ST-BRD(3/4)	16.25 - 21.25	1.0000	1.0000
L61	9	7983A(ELLIPTICAL)	16.25 - 21.25	1.0000	1.0000
L61	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	16.25 - 21.25	1.0000	1.0000
L61	31	PL1.25x6.875 Reinforcement - Wind Area	16.25 - 21.25	1.0000	1.0000
L61	32	PL1.25x6.875 Reinforcement - Wind Area	16.25 - 21.25	1.0000	1.0000
L61	33	PL1.25x6.875 Reinforcement - Wind Area	16.25 - 21.25	1.0000	1.0000
L61	34	PL1.25x6.875 Reinforcement - Wind Area	16.25 - 16.42	1.0000	1.0000
L61	35	PL1.25x6.875 Reinforcement - Wind Area	16.25 - 16.42	1.0000	1.0000
L61	49	PL1x4 Reinforcement - Wind Area	16.25 - 21.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L61	50	PL1x4 Reinforcement - Wind Area	16.25 - 21.25	1.0000	1.0000
L61	51	PL1x4 Reinforcement - Wind Area	16.25 - 21.25	1.0000	1.0000
L61	68	CCI-SFP-060100	16.25 - 21.25	1.0000	1.0000
L61	69	CCI-SFP-060100	16.25 - 21.25	1.0000	1.0000
L61	70	CCI-SFP-060100	16.25 - 21.25	1.0000	1.0000
L61	71	CCI-SFP-045100	20.00 - 21.25	1.0000	1.0000
L62	6	FB-L98B-034-XXX(3/8)	12.92 - 16.25	1.0000	1.0000
L62	7	WR-VG86ST-BRD(3/4)	12.92 - 16.25	1.0000	1.0000
L62	9	7983A(ELLIPTICAL)	12.92 - 16.25	1.0000	1.0000
L62	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	12.92 - 16.25	1.0000	1.0000
L62	31	PL1.25x6.875 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	32	PL1.25x6.875 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	33	PL1.25x6.875 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	34	PL1.25x6.875 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	35	PL1.25x6.875 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	49	PL1x4 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	50	PL1x4 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	51	PL1x4 Reinforcement - Wind Area	12.92 - 16.25	1.0000	1.0000
L62	68	CCI-SFP-060100	12.92 - 16.25	1.0000	1.0000
L62	69	CCI-SFP-060100	12.92 - 16.25	1.0000	1.0000
L62	70	CCI-SFP-060100	12.92 - 16.25	1.0000	1.0000
L63	6	FB-L98B-034-XXX(3/8)	12.67 - 12.92	1.0000	1.0000
L63	7	WR-VG86ST-BRD(3/4)	12.67 - 12.92	1.0000	1.0000
L63	9	7983A(ELLIPTICAL)	12.67 - 12.92	1.0000	1.0000
L63	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	12.67 - 12.92	1.0000	1.0000
L63	31	PL1.25x6.875 Reinforcement - Wind Area	12.67 - 12,92	1.0000	1.0000
L63	32	PL1.25x6.875 Reinforcement - Wind Area	12.67 - 12.92	1.0000	1.0000
L63	33	PL1.25x6.875 Reinforcement - Wind Area	12.67 - 12.92	1.0000	1.0000
L63	34	PL1.25x6.875 Reinforcement - Wind Area	12.67 - 12.92	1.0000	1.0000
L63	35	PL1.25x6.875 Reinforcement - Wind Area	12.67 - 12.92	1.0000	1.0000
L63	49	PL1x4 Reinforcement - Wind Area	12.67 - 12.92	1.0000	1.0000
L63	50	PL1x4 Reinforcement - Wind Area	12.67 - 12.92	1.0000	1.0000
L63	51	PL1x4 Reinforcement - Wind Area	12.67 - 12.92	1.0000	1.0000
L63	68	CCI-SFP-060100	12.67 - 12.92	1.0000	1.0000
L63	69	CCI-SFP-060100	12.67 - 12.92	1.0000	1.0000
L63	70	CCI-SFP-060100	12.67 - 12.92	1.0000	1.0000
L64	6	FB-L98B-034-XXX(3/8)	12.50 - 12.67	1.0000	1.0000
L64	7	WR-VG86ST-BRD(3/4)	12.50 - 12.67	1.0000	1.0000
L64	9	7983A(ELLIPTICAL)	12.50 - 12.67	1.0000	1.0000
L64	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	12.50 - 12.67	1.0000	1.0000
L64	31	PL1.25x6.875 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	32	PL1.25x6.875 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	33	PL1.25x6.875 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	34	PL1.25x6.875 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	35	PL1.25x6.875 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	49	PL1x4 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	50	PL1x4 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	51	PL1x4 Reinforcement - Wind Area	12.50 - 12.67	1.0000	1.0000
L64	68	CCI-SFP-060100	12.50 - 12.67	1.0000	1.0000
L64	69	CCI-SFP-060100	12.50 - 12.67	1.0000	1.0000
L64	70	CCI-SFP-060100	12.50 - 12.67	1.0000	1.0000
L65	6	FB-L98B-034-XXX(3/8)	12.15 - 12.50	1.0000	1.0000
L65	7	WR-VG86ST-BRD(3/4)	12.15 - 12.50	1.0000	1.0000
L65	9	7983A(ELLIPTICAL)	12.15 - 12.50	1.0000	1.0000
L65	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	12.15 - 12.50	1.0000	1.0000
L65	31	PL1.25x6.875 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	32	PL1.25x6.875 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	33	PL1.25x6.875 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	34	PL1.25x6.875 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	35	PL1.25x6.875 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	49	PL1x4 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	50	PL1x4 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	51	PL1x4 Reinforcement - Wind Area	12.15 - 12.50	1.0000	1.0000
L65	68	CCI-SFP-060100	12.15 - 12.50	1.0000	1.0000
L65	69	CCI-SFP-060100	12.15 - 12.50	1.0000	1.0000
L65	70	CCI-SFP-060100	12.15 - 12.50	1.0000	1.0000
L66	6	FB-L98B-034-XXX(3/8)	11.90 - 12.15	1.0000	1.0000
L66	7	WR-VG86ST-BRD(3/4)	11.90 - 12.15	1.0000	1.0000
L66	9	7983A(ELLIPTICAL)	11.90 - 12.15	1.0000	1.0000
L66	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	11.90 - 12.15	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L66	31	PL1.25x6.875 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	32	PL1.25x6.875 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	33	PL1.25x6.875 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	34	PL1.25x6.875 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	35	PL1.25x6.875 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	49	PL1x4 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	50	PL1x4 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	51	PL1x4 Reinforcement - Wind Area	11.90 - 12.15	1.0000	1.0000
L66	68	CCI-SFP-060100	11.90 - 12.15	1.0000	1.0000
L66	69	CCI-SFP-060100	11.90 - 12.15	1.0000	1.0000
L66	70	CCI-SFP-060100	11.90 - 12.15	1.0000	1.0000
L67	6	FB-L98B-034-XXX(3/8)	11.75 - 11.90	1.0000	1.0000
L67	7	WR-VG86ST-BRD(3/4)	11.75 - 11.90	1.0000	1.0000
L67	9	7983A(ELLIPTICAL)	11.75 - 11.90	1.0000	1.0000
L67	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	11.75 - 11.90	1.0000	1.0000
L67	31	PL1.25x6.875 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	32	PL1.25x6.875 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	33	PL1.25x6.875 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	34	PL1.25x6.875 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	35	PL1.25x6.875 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	49	PL1x4 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	50	PL1x4 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	51	PL1x4 Reinforcement - Wind Area	11.75 - 11.90	1.0000	1.0000
L67	68	CCI-SFP-060100	11.75 - 11.90	1.0000	1.0000
L67	69	CCI-SFP-060100	11.75 - 11.90	1.0000	1.0000
L67	70	CCI-SFP-060100	11.75 - 11.90	1.0000	1.0000
L68	6	FB-L98B-034-XXX(3/8)	8.50 - 11.75	1.0000	1.0000
L68	7	WR-VG86ST-BRD(3/4)	8.50 - 11.75	1.0000	1.0000
L68	9	7983A(ELLIPTICAL)	8.50 - 11.75	1.0000	1.0000
L68	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	8.50 - 11.75	1.0000	1.0000
L68	31	PL1.25x6.875 Reinforcement - Wind Area	8.50 - 11.75	1.0000	1.0000
L68	32	PL1.25x6.875 Reinforcement - Wind Area	8.50 - 11.75	1.0000	1.0000
L68	33	PL1.25x6.875 Reinforcement - Wind Area	9.17 - 11.75	1.0000	1.0000
L68	34	PL1.25x6.875 Reinforcement - Wind Area	8.50 - 11.75	1.0000	1.0000
L68	35	PL1.25x6.875 Reinforcement - Wind Area	8.50 - 11.75	1.0000	1.0000
L68	49	PL1x4 Reinforcement - Wind Area	10.75 - 11.75	1.0000	1.0000
L68	50	PL1x4 Reinforcement - Wind Area	10.75 - 11.75	1.0000	1.0000
L68	51	PL1x4 Reinforcement - Wind Area	10.75 - 11.75	1.0000	1.0000
L68	65	Transition Stiffener 1x7	8.50 - 10.50	1.0000	1.0000
L68	66	Transition Stiffener 1x7	8.50 - 10.50	1.0000	1.0000
L68	67	Transition Stiffener 1x7	8.50 - 10.50	1.0000	1.0000
L68	68	CCI-SFP-060100	8.50 - 11.75	1.0000	1.0000
L68	69	CCI-SFP-060100	8.50 - 11.75	1.0000	1.0000
L68	70	CCI-SFP-060100	10.00 - 11.75	1.0000	1.0000
L69	6	FB-L98B-034-XXX(3/8)	8.25 - 8.50	1.0000	1.0000
L69	7	WR-VG86ST-BRD(3/4)	8.25 - 8.50	1.0000	1.0000
L69	9	7983A(ELLIPTICAL)	8.25 - 8.50	1.0000	1.0000
L69	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	8.25 - 8.50	1.0000	1.0000
L69	31	PL1.25x6.875 Reinforcement - Wind Area	8.25 - 8.50	1.0000	1.0000
L69	32	PL1.25x6.875 Reinforcement - Wind Area	8.25 - 8.50	1.0000	1.0000
L69	34	PL1.25x6.875 Reinforcement - Wind Area	8.25 - 8.50	1.0000	1.0000
L69	35	PL1.25x6.875 Reinforcement - Wind Area	8.25 - 8.50	1.0000	1.0000
L69	65	Transition Stiffener 1x7	8.25 - 8.50	1.0000	1.0000
L69	66	Transition Stiffener 1x7	8.25 - 8.50	1.0000	1.0000
L69	67	Transition Stiffener 1x7	8.25 - 8.50	1.0000	1.0000
L69	68	CCI-SFP-060100	8.25 - 8.50	1.0000	1.0000
L69	69	CCI-SFP-060100	8.25 - 8.50	1.0000	1.0000
L70	6	FB-L98B-034-XXX(3/8)	6.50 - 8.25	1.0000	1.0000
L70	7	WR-VG86ST-BRD(3/4)	6.50 - 8.25	1.0000	1.0000
L70	9	7983A(ELLIPTICAL)	6.50 - 8.25	1.0000	1.0000
L70	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	6.50 - 8.25	1.0000	1.0000
L70	31	PL1.25x6.875 Reinforcement - Wind Area	6.50 - 8.25	1.0000	1.0000
L70	32	PL1.25x6.875 Reinforcement - Wind Area	6.50 - 8.25	1.0000	1.0000
L70	34	PL1.25x6.875 Reinforcement - Wind Area	6.50 - 8.25	1.0000	1.0000
L70	35	PL1.25x6.875 Reinforcement - Wind Area	6.50 - 8.25	1.0000	1.0000
L70	65	Transition Stiffener 1x7	6.50 - 8.25	1.0000	1.0000
L70	66	Transition Stiffener 1x7	6.50 - 8.25	1.0000	1.0000
L70	67	Transition Stiffener 1x7	6.50 - 8.25	1.0000	1.0000
L70	68	CCI-SFP-060100	6.50 - 8.25	1.0000	1.0000
L70	69	CCI-SFP-060100	6.50 - 8.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L71	6	FB-L98B-034-XXX(3/8)	6.25 - 6.50	1.0000	1.0000
L71	7	WR-VG86ST-BRD(3/4)	6.25 - 6.50	1.0000	1.0000
L71	9	7983A(ELLIPTICAL)	6.25 - 6.50	1.0000	1.0000
L71	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	6.25 - 6.50	1.0000	1.0000
L71	31	PL1.25x6.875 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L71	32	PL1.25x6.875 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L71	34	PL1.25x6.875 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L71	35	PL1.25x6.875 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L71	65	Transition Stiffener 1x7	6.25 - 6.50	1.0000	1.0000
L71	66	Transition Stiffener 1x7	6.25 - 6.50	1.0000	1.0000
L71	67	Transition Stiffener 1x7	6.25 - 6.50	1.0000	1.0000
L71	68	CCI-SFP-060100	6.25 - 6.50	1.0000	1.0000
L71	69	CCI-SFP-060100	6.25 - 6.50	1.0000	1.0000
L72	6	FB-L98B-034-XXX(3/8)	1.25 - 6.25	1.0000	1.0000
L72	7	WR-VG86ST-BRD(3/4)	1.25 - 6.25	1.0000	1.0000
L72	9	7983A(ELLIPTICAL)	1.25 - 6.25	1.0000	1.0000
L72	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	1.25 - 6.25	1.0000	1.0000
L72	31	PL1.25x6.875 Reinforcement - Wind Area	1.25 - 6.25	1.0000	1.0000
L72	32	PL1.25x6.875 Reinforcement - Wind Area	1.25 - 6.25	1.0000	1.0000
L72	34	PL1.25x6.875 Reinforcement - Wind Area	1.25 - 6.25	1.0000	1.0000
L72	35	PL1.25x6.875 Reinforcement - Wind Area	1.25 - 6.25	1.0000	1.0000
L72	65	Transition Stiffener 1x7	1.25 - 6.25	1.0000	1.0000
L72	66	Transition Stiffener 1x7	1.25 - 6.25	1.0000	1.0000
L72	67	Transition Stiffener 1x7	1.25 - 6.25	1.0000	1.0000
L72	68	CCI-SFP-060100	5.00 - 6.25	1.0000	1.0000
L72	69	CCI-SFP-060100	5.00 - 6.25	1.0000	1.0000
L73	6	FB-L98B-034-XXX(3/8)	0.00 - 1.25	1.0000	1.0000
L73	7	WR-VG86ST-BRD(3/4)	0.00 - 1.25	1.0000	1.0000
L73	9	7983A(ELLIPTICAL)	0.00 - 1.25	1.0000	1.0000
L73	22	MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	0.00 - 1.25	1.0000	1.0000
L73	31	PL1.25x6.875 Reinforcement - Wind Area	0.00 - 1.25	1.0000	1.0000
L73	32	PL1.25x6.875 Reinforcement - Wind Area	0.00 - 1.25	1.0000	1.0000
L73	34	PL1.25x6.875 Reinforcement - Wind Area	0.00 - 1.25	1.0000	1.0000
L73	35	PL1.25x6.875 Reinforcement - Wind Area	0.00 - 1.25	1.0000	1.0000
L73	65	Transition Stiffener 1x7	0.00 - 1.25	1.0000	1.0000
L73	66	Transition Stiffener 1x7	0.00 - 1.25	1.0000	1.0000
L73	67	Transition Stiffener 1x7	0.00 - 1.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
****									
Lightning Rod 5/8"x5'	C	From Face	0.00 0.00 2.50	0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.83 1.32 1.96	0.31 0.83 1.32 1.96	0.01 0.01 0.02 0.04
142									
Platform Mount [LP 301-1]	C	None		0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	30.10 40.80 51.50 72.90	30.10 40.80 51.50 72.90	1.59 2.03 2.47 3.35
EPBQ-654L8H8-L2	A	From Face	3.00 6.00 1.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	18.09 18.72 19.36 20.66	7.03 7.62 8.21 9.42	0.09 0.18 0.28 0.51
EPBQ-654L8H8-L2	B	From Face	3.00 6.00	0.0000	142.00	No Ice 1/2" Ice	18.09 18.72	7.03 7.62	0.09 0.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.00			1" Ice	19.36	8.21	0.28
						2" Ice	20.66	9.42	0.51
EPBQ-654L8H8-L2	C	From Face	3.00	0.0000	142.00	No Ice	18.09	7.03	0.09
			6.00			1/2" Ice	18.72	7.62	0.18
			1.00			1" Ice	19.36	8.21	0.28
						2" Ice	20.66	9.42	0.51
HPA65R-BU8A	A	From Face	3.00	0.0000	142.00	No Ice	11.23	8.04	0.05
			-2.00			1/2" Ice	11.85	8.64	0.12
			1.00			1" Ice	12.47	9.24	0.20
						2" Ice	13.72	10.46	0.37
HPA65R-BU8A	B	From Face	3.00	0.0000	142.00	No Ice	11.23	8.04	0.05
			-6.00			1/2" Ice	11.85	8.64	0.12
			1.00			1" Ice	12.47	9.24	0.20
						2" Ice	13.72	10.46	0.37
HPA65R-BU8A	C	From Face	3.00	0.0000	142.00	No Ice	11.23	8.04	0.05
			-6.00			1/2" Ice	11.85	8.64	0.12
			1.00			1" Ice	12.47	9.24	0.20
						2" Ice	13.72	10.46	0.37
EPBQ-654L8H8-L2	A	From Face	3.00	0.0000	142.00	No Ice	18.09	7.03	0.09
			-6.00			1/2" Ice	18.72	7.62	0.18
			1.00			1" Ice	19.36	8.21	0.28
						2" Ice	20.66	9.42	0.51
EPBQ-654L8H8-L2	B	From Face	3.00	0.0000	142.00	No Ice	18.09	7.03	0.09
			-2.00			1/2" Ice	18.72	7.62	0.18
			1.00			1" Ice	19.36	8.21	0.28
						2" Ice	20.66	9.42	0.51
EPBQ-654L8H8-L2	C	From Face	3.00	0.0000	142.00	No Ice	18.09	7.03	0.09
			-2.00			1/2" Ice	18.72	7.62	0.18
			1.00			1" Ice	19.36	8.21	0.28
						2" Ice	20.66	9.42	0.51
RRUS 4478 B14	A	From Face	3.00	0.0000	142.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			1.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
RRUS 4478 B14	B	From Face	3.00	0.0000	142.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			1.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
RRUS 4478 B14	C	From Face	3.00	0.0000	142.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			1.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
RADIO 4415 B30	A	From Face	3.00	0.0000	142.00	No Ice	1.64	0.64	0.04
			0.00			1/2" Ice	1.80	0.75	0.05
			1.00			1" Ice	1.97	0.87	0.07
						2" Ice	2.33	1.13	0.11
RADIO 4415 B30	B	From Face	3.00	0.0000	142.00	No Ice	1.64	0.64	0.04
			0.00			1/2" Ice	1.80	0.75	0.05
			1.00			1" Ice	1.97	0.87	0.07
						2" Ice	2.33	1.13	0.11
RADIO 4415 B30	C	From Face	3.00	0.0000	142.00	No Ice	1.64	0.64	0.04
			0.00			1/2" Ice	1.80	0.75	0.05
			1.00			1" Ice	1.97	0.87	0.07
						2" Ice	2.33	1.13	0.11
RRUS 4449 B5/B12	A	From Face	3.00	0.0000	142.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4449 B5/B12	B	From Face	3.00	0.0000	142.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4449 B5/B12	C	From Face	3.00	0.0000	142.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	2.72	2.07	0.16
RRUS 8843 B2/B66A	A	From Face	3.00 0.00 1.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.32	1.35 1.50 1.65 1.99	0.07 0.09 0.11 0.16
RRUS 8843 B2/B66A	B	From Face	3.00 0.00 1.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.32	1.35 1.50 1.65 1.99	0.07 0.09 0.11 0.16
RRUS 8843 B2/B66A	C	From Face	3.00 0.00 1.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.32	1.35 1.50 1.65 1.99	0.07 0.09 0.11 0.16
DC6-48-60-18-8F	A	From Face	1.00 0.00 1.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
DC6-48-60-18-8F	B	From Face	1.00 0.00 1.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
DC6-48-60-18-8F	C	From Face	1.00 0.00 1.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
133 Platform Mount [LP 602-1]	C	None		0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	32.03 38.71 45.39 58.75	32.03 38.71 45.39 58.75	1.34 1.80 2.26 3.17
6'x4" Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.92 2.62 3.00 3.78	1.92 2.62 3.00 3.78	0.06 0.08 0.11 0.17
6'x4" Mount Pipe	B	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.92 2.62 3.00 3.78	1.92 2.62 3.00 3.78	0.06 0.08 0.11 0.17
6'x4" Mount Pipe	C	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.92 2.62 3.00 3.78	1.92 2.62 3.00 3.78	0.06 0.08 0.11 0.17
6'x4" Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.97 2.62 3.00 3.78	0.06 0.08 0.11 0.17
6'x4" Mount Pipe	B	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.97 2.62 3.00 3.78	0.06 0.08 0.11 0.17
6'x4" Mount Pipe	C	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.97 2.62 3.00 3.78	0.06 0.08 0.11 0.17
(3) 5' x 2" Pipe Mount	B	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.00 1.39 1.70 2.35	0.03 0.04 0.05 0.08
(3) 5' x 2" Pipe Mount	C	From Face	3.00 2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.00 1.39 1.70 2.35	0.03 0.04 0.05 0.08
(3) 5' x 2" Pipe Mount	A	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.00 1.39 1.70	1.00 1.39 1.70	0.03 0.04 0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	2.35	2.35	0.08
(3) 5' x 2" Pipe Mount	B	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
(3) 5' x 2" Pipe Mount	C	From Face	3.00 -2.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
AAHC w/ Mount Pipe	A	From Face	3.00 2.00 -3.00	0.0000	133.00	No Ice	4.41	2.69	0.12
						1/2" Ice	4.73	3.08	0.16
						1" Ice	5.06	3.49	0.20
						2" Ice	5.74	4.36	0.31
AAHC w/ Mount Pipe	B	From Face	3.00 6.00 -3.00	0.0000	133.00	No Ice	4.41	2.69	0.12
						1/2" Ice	4.73	3.08	0.16
						1" Ice	5.06	3.49	0.20
						2" Ice	5.74	4.36	0.31
AAHC w/ Mount Pipe	C	From Face	3.00 6.00 -3.00	0.0000	133.00	No Ice	4.41	2.69	0.12
						1/2" Ice	4.73	3.08	0.16
						1" Ice	5.06	3.49	0.20
						2" Ice	5.74	4.36	0.31
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	3.00 -6.00 -3.00	0.0000	133.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
						2" Ice	10.42	10.84	0.41
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	3.00 6.00 -3.00	0.0000	133.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
						2" Ice	10.42	10.84	0.41
APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	3.00 2.00 -3.00	0.0000	133.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
						2" Ice	10.42	10.84	0.41
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	3.00 -6.00 -3.00	0.0000	133.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
						2" Ice	10.42	10.84	0.41
IBC1900HB-2	A	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice	1.13	0.28	0.04
						1/2" Ice	1.27	0.35	0.05
						1" Ice	1.42	0.43	0.06
						2" Ice	1.75	0.61	0.09
(2) IBC1900HB-2	B	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice	1.13	0.28	0.04
						1/2" Ice	1.27	0.35	0.05
						1" Ice	1.42	0.43	0.06
						2" Ice	1.75	0.61	0.09
IBC1900HB-2	C	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice	1.13	0.28	0.04
						1/2" Ice	1.27	0.35	0.05
						1" Ice	1.42	0.43	0.06
						2" Ice	1.75	0.61	0.09
800 EXTERNAL NOTCH FILTER	A	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice	0.66	0.32	0.01
						1/2" Ice	0.76	0.40	0.02
						1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	B	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice	0.66	0.32	0.01
						1/2" Ice	0.76	0.40	0.02
						1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	C	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice	0.66	0.32	0.01
						1/2" Ice	0.76	0.40	0.02
						1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
800MHZ RRH	A	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice	2.13	1.77	0.05
						1/2" Ice	2.32	1.95	0.07
						1" Ice	2.51	2.13	0.10
						2" Ice	2.92	2.51	0.16

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
800MHZ RRH	B	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	C	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
(2) 1900MHz RRH (65MHz)	A	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
(2) 1900MHz RRH (65MHz)	B	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
(2) 1900MHz RRH (65MHz)	C	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
PD2DE-700/2700	B	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.11 0.18 0.25 0.41	0.11 0.18 0.25 0.41	0.00 0.00 0.00 0.01
PD2DE-700/2700	C	From Face	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.11 0.18 0.25 0.41	0.11 0.18 0.25 0.41	0.00 0.00 0.00 0.01
110 Platform Mount [LP 602-1]	C	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	32.03 38.71 45.39 58.75	32.03 38.71 45.39 58.75	1.34 1.80 2.26 3.17
(3) 6' x 2" Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(3) 6' x 2" Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(3) 6' x 2" Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
SBNHH-1D65B w/ Mount Pipe	A	From Face	3.00 -6.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.43 8.99 9.52 10.60	7.10 8.29 9.20 11.04	0.07 0.14 0.22 0.40
SBNHH-1D65B w/ Mount Pipe	B	From Face	3.00 -6.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.43 8.99 9.52 10.60	7.10 8.29 9.20 11.04	0.07 0.14 0.22 0.40
SBNHH-1D65B w/ Mount Pipe	C	From Face	3.00 -6.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.43 8.99 9.52 10.60	7.10 8.29 9.20 11.04	0.07 0.14 0.22 0.40
SBNHH-1D65B w/ Mount Pipe	A	From Face	3.00 2.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.43 8.99 9.52 10.60	7.10 8.29 9.20 11.04	0.07 0.14 0.22 0.40
SBNHH-1D65B w/ Mount Pipe	B	From Face	3.00 -2.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.43 8.99 9.52 10.60	7.10 8.29 9.20 11.04	0.07 0.14 0.22 0.40

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
SBNHH-1D65B w/ Mount Pipe	C	From Face	3.00 -2.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.43 8.99 9.52 10.60	7.10 8.29 9.20 11.04	0.07 0.14 0.22 0.40
BXA-80063/4CF w/ Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	B	From Face	3.00 2.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	A	From Face	3.00 6.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	B	From Face	3.00 6.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	C	From Face	3.00 6.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BULLET III	C	From Face	3.00 2.00 3.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.07 0.10 0.14 0.25	0.07 0.10 0.14 0.25	0.00 0.00 0.00 0.01
RFV01U-D2A	A	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	B	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	C	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D1A	A	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	B	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	C	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RVZDC-6627-PF-48	C	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	0.03 0.06 0.10 0.18
DB-T1-6Z-8AB-0Z	A	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21

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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
Platform Mount [LP 303-1]	C	None		0.0000	100.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	3.00 -6.00 0.00	0.0000	100.00	No Ice	20.48	11.02	0.16
						1/2" Ice	21.23	12.55	0.30
						1" Ice	21.99	14.10	0.44
						2" Ice	23.44	16.45	0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	3.00 -6.00 0.00	0.0000	100.00	No Ice	20.48	11.02	0.16
						1/2" Ice	21.23	12.55	0.30
						1" Ice	21.99	14.10	0.44
						2" Ice	23.44	16.45	0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	3.00 -6.00 0.00	0.0000	100.00	No Ice	20.48	11.02	0.16
						1/2" Ice	21.23	12.55	0.30
						1" Ice	21.99	14.10	0.44
						2" Ice	23.44	16.45	0.78
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	6.33	5.64	0.11
						1/2" Ice	6.78	6.43	0.17
						1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	6.33	5.64	0.11
						1/2" Ice	6.78	6.43	0.17
						1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	6.33	5.64	0.11
						1/2" Ice	6.78	6.43	0.17
						1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
AIR 32 B2A B66AA w/ Mount Pipe	A	From Face	3.00 6.00 0.00	0.0000	100.00	No Ice	7.09	6.37	0.16
						1/2" Ice	7.56	7.23	0.23
						1" Ice	8.02	7.97	0.30
						2" Ice	8.97	9.51	0.46
AIR 32 B2A B66AA w/ Mount Pipe	B	From Face	3.00 6.00 0.00	0.0000	100.00	No Ice	7.09	6.37	0.16
						1/2" Ice	7.56	7.23	0.23
						1" Ice	8.02	7.97	0.30
						2" Ice	8.97	9.51	0.46
AIR 32 B2A B66AA w/ Mount Pipe	C	From Face	3.00 6.00 0.00	0.0000	100.00	No Ice	7.09	6.37	0.16
						1/2" Ice	7.56	7.23	0.23
						1" Ice	8.02	7.97	0.30
						2" Ice	8.97	9.51	0.46
RADIO 4449 B12/B71	A	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	1.65	1.30	0.08
						1/2" Ice	1.81	1.44	0.09
						1" Ice	1.98	1.60	0.11
						2" Ice	2.34	1.92	0.16
RADIO 4449 B12/B71	B	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	1.65	1.30	0.08
						1/2" Ice	1.81	1.44	0.09
						1" Ice	1.98	1.60	0.11
						2" Ice	2.34	1.92	0.16
RADIO 4449 B12/B71	C	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	1.65	1.30	0.08
						1/2" Ice	1.81	1.44	0.09
						1" Ice	1.98	1.60	0.11
						2" Ice	2.34	1.92	0.16
ATMAA1412D-1A20	A	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	1.00	0.41	0.01
						1/2" Ice	1.13	0.50	0.02
						1" Ice	1.26	0.59	0.03
						2" Ice	1.55	0.81	0.06
ATMAA1412D-1A20	B	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	1.00	0.41	0.01
						1/2" Ice	1.13	0.50	0.02
						1" Ice	1.26	0.59	0.03
						2" Ice	1.55	0.81	0.06
ATMAA1412D-1A20	C	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice	1.00	0.41	0.01
						1/2" Ice	1.13	0.50	0.02
						1" Ice	1.26	0.59	0.03
						2" Ice	1.55	0.81	0.06

90

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
50									
Side Arm Mount [SO 701-1]	C	From Face	0.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
KS24019-L112A	C	From Face	3.00 0.00 1.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.20 0.26 0.41	0.14 0.20 0.26 0.41	0.01 0.01 0.01 0.02
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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-23	A	Paraboloid w/Shroud (HP)	From Face	3.00 -2.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.70 3.99 4.28 4.86	0.04 0.06 0.08 0.12
VHLP2-23	B	Paraboloid w/Shroud (HP)	From Face	3.00 -2.00 2.00	-30.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.70 3.99 4.28 4.86	0.04 0.06 0.08 0.12
VHLP2-18	C	Paraboloid w/Shroud (HP)	From Face	3.00 -2.00 2.00	-60.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.69 3.98 4.27 4.84	0.04 0.06 0.08 0.12
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Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice

Comb. No.	Description
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 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	143 - 138	Pole	Max Tension	2	0.00	-0.00	-0.00
			Max. Compression	26	-8.85	0.22	-0.51
			Max. Mx	20	-2.88	31.67	-0.05
			Max. My	14	-2.88	-0.02	-31.75
			Max. Vy	8	6.76	-31.48	-0.08
			Max. Vx	14	6.76	-0.02	-31.75
			Max. Torque	10			-1.07
L2	138 - 133	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.68	0.20	-0.61
			Max. Mx	20	-3.27	66.83	0.01
			Max. My	14	-3.27	-0.31	-66.88
			Max. Vy	20	-7.40	66.83	0.01
			Max. Vx	14	7.37	-0.31	-66.88
			Max. Torque	20			1.37
L3	133 - 128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.90	-1.26	-2.28
			Max. Mx	8	-7.06	-124.73	-1.40
			Max. My	14	-7.08	-1.31	-124.87
			Max. Vy	20	-12.46	124.03	-0.42
			Max. Vx	14	12.35	-1.31	-124.87
			Max. Torque	6			-2.39
L4	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.44	-1.28	-2.39
			Max. Mx	8	-7.45	-187.38	-1.99
			Max. My	14	-7.45	-2.11	-187.19
			Max. Vy	20	-12.64	186.72	-0.12
			Max. Vx	14	12.59	-2.11	-187.19
			Max. Torque	6			-2.39

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	123 - 122.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.49	-1.28	-2.39
			Max. Mx	8	-7.50	-190.54	-2.02
			Max. My	14	-7.50	-2.15	-190.34
			Max. Vy	20	-12.64	189.87	-0.11
			Max. Vx	14	12.60	-2.15	-190.34
			Max. Torque	6			-2.38
L6	122.75 - 117.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.39	-1.28	-2.49
			Max. Mx	8	-8.04	-254.59	-2.61
			Max. My	14	-8.04	-2.94	-254.29
			Max. Vy	20	-13.00	253.95	0.20
			Max. Vx	14	12.99	-2.94	-254.29
			Max. Torque	6			-2.38
L7	117.75 - 112.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.31	-1.28	-2.59
			Max. Mx	8	-8.63	-320.40	-3.19
			Max. My	14	-8.62	-3.74	-320.15
			Max. Vy	20	-13.35	319.80	0.50
			Max. Vx	14	13.37	-3.74	-320.15
			Max. Torque	6			-2.38
L8	112.75 - 109.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.64	-1.33	-2.39
			Max. Mx	8	-11.64	-366.54	-3.49
			Max. My	14	-11.64	-4.25	-366.27
			Max. Vy	8	18.35	-366.54	-3.49
			Max. Vx	14	18.39	-4.25	-366.27
			Max. Torque	6			-2.38
L9	109.5 - 109.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.70	-1.33	-2.39
			Max. Mx	8	-11.70	-371.13	-3.53
			Max. My	14	-11.69	-4.30	-370.87
			Max. Vy	8	18.37	-371.13	-3.53
			Max. Vx	14	18.40	-4.30	-370.87
			Max. Torque	6			-2.37
L10	109.25 - 104.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.83	-1.30	-2.46
			Max. Mx	8	-12.40	-454.58	-4.24
			Max. My	14	-12.40	-5.20	-454.56
			Max. Vy	8	18.74	-454.58	-4.24
			Max. Vx	14	18.80	-5.20	-454.56
			Max. Torque	6			-2.37
L11	104.75 - 104.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.91	-1.30	-2.46
			Max. Mx	8	-12.47	-459.27	-4.28
			Max. My	14	-12.46	-5.25	-459.26
			Max. Vy	8	18.75	-459.27	-4.28
			Max. Vx	14	18.82	-5.25	-459.26
			Max. Torque	6			-2.37
L12	104.5 - 102.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.55	-1.29	-2.49
			Max. Mx	8	-12.87	-496.95	-4.59
			Max. My	14	-12.86	-5.65	-497.10
			Max. Vy	8	18.94	-496.95	-4.59
			Max. Vx	14	19.02	-5.65	-497.10
			Max. Torque	6			-2.37
L13	102.5 - 102.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.62	-1.29	-2.49
			Max. Mx	8	-12.93	-501.69	-4.63
			Max. My	14	-12.92	-5.70	-501.85
			Max. Vy	8	18.96	-501.69	-4.63
			Max. Vx	14	19.04	-5.70	-501.85
			Max. Torque	6			-2.37
L14	102.25 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.27	-1.28	-2.53
			Max. Mx	8	-13.34	-544.57	-4.98
			Max. My	14	-13.33	-6.15	-544.92
			Max. Vy	8	19.16	-544.57	-4.98
			Max. Vx	14	19.25	-6.15	-544.92

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	6			-2.37
L15	100 - 99.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.09	-1.28	-2.54
			Max. Mx	8	-16.39	-550.29	-5.02
			Max. My	14	-16.38	-6.20	-550.66
			Max. Vy	8	22.90	-550.29	-5.02
			Max. Vx	14	22.99	-6.20	-550.66
			Max. Torque	6			-2.37
L16	99.75 - 98.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.39	-1.28	-2.57
			Max. Mx	8	-16.56	-573.23	-5.18
			Max. My	14	-16.55	-6.41	-573.69
			Max. Vy	8	22.99	-573.23	-5.18
			Max. Vx	14	23.08	-6.41	-573.69
			Max. Torque	6			-2.37
L17	98.75 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.48	-1.28	-2.58
			Max. Mx	8	-16.64	-578.97	-5.22
			Max. My	14	-16.63	-6.46	-579.47
			Max. Vy	8	23.01	-578.97	-5.22
			Max. Vx	14	23.09	-6.46	-579.47
			Max. Torque	6			-2.37
L18	98.5 - 91.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.72	-1.27	-2.68
			Max. Mx	8	-17.45	-660.07	-5.79
			Max. My	14	-17.44	-7.17	-660.89
			Max. Vy	8	23.35	-660.07	-5.79
			Max. Vx	14	23.44	-7.17	-660.89
			Max. Torque	6			-2.37
L19	91.33 - 91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.09	-1.27	-2.80
			Max. Mx	8	-19.14	-754.43	-6.43
			Max. My	14	-19.13	-7.98	-755.63
			Max. Vy	8	23.84	-754.43	-6.43
			Max. Vx	14	23.93	-7.98	-755.63
			Max. Torque	6			-2.37
L20	91 - 90.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.18	-1.27	-2.80
			Max. Mx	8	-19.20	-760.39	-6.47
			Max. My	14	-19.19	-8.03	-761.62
			Max. Vy	8	23.86	-760.39	-6.47
			Max. Vx	14	23.95	-8.03	-761.62
			Max. Torque	6			-2.37
L21	90.75 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.72	-1.27	-2.85
			Max. Mx	8	-19.56	-796.28	-6.72
			Max. My	14	-19.55	-8.34	-797.65
			Max. Vy	8	24.01	-796.28	-6.72
			Max. Vx	14	24.10	-8.34	-797.65
			Max. Torque	6			-2.37
L22	89.25 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.82	-1.27	-2.86
			Max. Mx	8	-19.64	-802.28	-6.76
			Max. My	14	-19.63	-8.39	-803.68
			Max. Vy	8	24.02	-802.28	-6.76
			Max. Vx	14	24.11	-8.39	-803.68
			Max. Torque	6			-2.37
L23	89 - 88.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.02	-1.26	-2.88
			Max. Mx	8	-19.78	-814.31	-6.84
			Max. My	14	-19.77	-8.49	-815.74
			Max. Vy	8	24.08	-814.31	-6.84
			Max. Vx	14	24.16	-8.49	-815.74
			Max. Torque	6			-2.37
L24	88.5 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.13	-1.26	-2.89
			Max. Mx	8	-19.85	-820.33	-6.88
			Max. My	14	-19.84	-8.54	-821.79
			Max. Vy	8	24.10	-820.33	-6.88

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	24.18	-8.54	-821.79
			Max. Torque	6			-2.36
L25	88.25 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.22	-1.26	-2.90
			Max. Mx	8	-19.91	-826.35	-6.92
			Max. My	14	-19.91	-8.59	-827.84
			Max. Vy	8	24.12	-826.35	-6.92
			Max. Vx	14	24.20	-8.59	-827.84
			Max. Torque	6			-2.36
L26	88 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.96	-1.24	-3.08
			Max. Mx	8	-21.14	-948.02	-7.72
			Max. My	14	-21.14	-9.61	-949.86
			Max. Vy	8	24.57	-948.02	-7.72
			Max. Vx	14	24.62	-9.61	-949.86
			Max. Torque	6			-2.36
L27	83 - 78	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.70	-1.21	-3.26
			Max. Mx	8	-22.42	-1071.80	-8.52
			Max. My	14	-22.42	-10.62	-1073.84
			Max. Vy	8	24.98	-1071.80	-8.52
			Max. Vx	14	25.00	-10.62	-1073.84
			Max. Torque	6			-2.36
L28	78 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.07	-1.20	-3.30
			Max. Mx	8	-22.68	-1096.81	-8.68
			Max. My	14	-22.68	-10.82	-1098.87
			Max. Vy	8	25.07	-1096.81	-8.68
			Max. Vx	14	25.08	-10.82	-1098.87
			Max. Torque	6			-2.36
L29	77 - 76.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.18	-1.20	-3.31
			Max. Mx	8	-22.77	-1103.08	-8.72
			Max. My	14	-22.77	-10.87	-1105.14
			Max. Vy	8	25.08	-1103.08	-8.72
			Max. Vx	14	25.09	-10.87	-1105.14
			Max. Torque	6			-2.36
L30	76.75 - 76.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.29	-1.20	-3.32
			Max. Mx	8	-22.84	-1109.35	-8.76
			Max. My	14	-22.84	-10.92	-1111.41
			Max. Vy	8	25.10	-1109.35	-8.76
			Max. Vx	14	25.11	-10.92	-1111.41
			Max. Torque	6			-2.36
L31	76.5 - 76.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.39	-1.20	-3.33
			Max. Mx	8	-22.92	-1115.63	-8.80
			Max. My	14	-22.92	-10.97	-1117.69
			Max. Vy	8	25.13	-1115.63	-8.80
			Max. Vx	14	25.13	-10.97	-1117.69
			Max. Torque	6			-2.36
L32	76.25 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.90	-1.19	-3.37
			Max. Mx	8	-23.26	-1147.11	-9.00
			Max. My	14	-23.26	-11.23	-1149.18
			Max. Vy	8	25.26	-1147.11	-9.00
			Max. Vx	14	25.26	-11.23	-1149.18
			Max. Torque	6			-2.36
L33	75 - 74.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.01	-1.19	-3.38
			Max. Mx	8	-23.35	-1153.42	-9.04
			Max. My	14	-23.35	-11.28	-1155.50
			Max. Vy	8	25.27	-1153.42	-9.04
			Max. Vx	14	25.27	-11.28	-1155.50
			Max. Torque	6			-2.36
L34	74.75 - 73.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.53	-1.20	-3.42
			Max. Mx	8	-23.72	-1185.07	-9.24
			Max. My	14	-23.72	-11.53	-1187.16

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	25.40	-1185.07	-9.24
			Max. Vx	14	25.40	-11.53	-1187.16
			Max. Torque	6			-2.36
L35	73.5 - 73.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.64	-1.20	-3.43
			Max. Mx	8	-23.81	-1191.42	-9.28
			Max. My	14	-23.81	-11.58	-1193.51
			Max. Vy	8	25.41	-1191.42	-9.28
			Max. Vx	14	25.41	-11.58	-1193.51
			Max. Torque	6			-2.36
L36	73.25 - 68.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.83	-1.19	-3.58
			Max. Mx	8	-25.36	-1319.65	-10.07
			Max. My	14	-25.36	-12.58	-1321.74
			Max. Vy	8	25.90	-1319.65	-10.07
			Max. Vx	14	25.90	-12.58	-1321.74
			Max. Torque	6			-2.36
L37	68.25 - 63.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.04	-1.18	-3.73
			Max. Mx	8	-26.95	-1450.28	-10.86
			Max. My	14	-26.95	-13.58	-1452.35
			Max. Vy	8	26.38	-1450.28	-10.86
			Max. Vx	14	26.37	-13.58	-1452.35
			Max. Torque	6			-2.36
L38	63.25 - 60.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.32	-1.17	-3.81
			Max. Mx	8	-27.83	-1523.15	-11.30
			Max. My	14	-27.84	-14.13	-1525.20
			Max. Vy	8	26.65	-1523.15	-11.30
			Max. Vx	14	26.64	-14.13	-1525.20
			Max. Torque	6			-2.35
L39	60.5 - 60.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.44	-1.17	-3.82
			Max. Mx	8	-27.93	-1529.81	-11.34
			Max. My	14	-27.93	-14.18	-1531.86
			Max. Vy	8	26.66	-1529.81	-11.34
			Max. Vx	14	26.64	-14.18	-1531.86
			Max. Torque	6			-2.35
L40	60.25 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.79	-1.17	-3.84
			Max. Mx	8	-28.17	-1549.83	-11.46
			Max. My	14	-28.17	-14.33	-1551.87
			Max. Vy	8	26.74	-1549.83	-11.46
			Max. Vx	14	26.72	-14.33	-1551.87
			Max. Torque	6			-2.35
L41	59.5 - 59.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.92	-1.17	-3.85
			Max. Mx	8	-28.26	-1556.51	-11.50
			Max. My	14	-28.26	-14.38	-1558.55
			Max. Vy	8	26.76	-1556.51	-11.50
			Max. Vx	14	26.74	-14.38	-1558.55
			Max. Torque	6			-2.35
L42	59.25 - 54.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.28	-1.15	-4.00
			Max. Mx	8	-29.96	-1691.47	-12.28
			Max. My	14	-29.96	-15.37	-1693.43
			Max. Vy	8	27.25	-1691.47	-12.28
			Max. Vx	14	27.22	-15.37	-1693.43
			Max. Torque	6			-2.35
L43	54.25 - 45.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.29	-1.13	-4.12
			Max. Mx	8	-31.43	-1808.04	-12.95
			Max. My	14	-31.43	-16.21	-1809.88
			Max. Vy	8	27.64	-1808.04	-12.95
			Max. Vx	14	27.60	-16.21	-1809.88
			Max. Torque	6			-2.35
L44	45.25 - 44.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.97	-1.10	-4.46
			Max. Mx	8	-35.00	-1969.24	-13.97

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-35.00	-17.35	-1970.85
			Max. Vy	8	28.38	-1969.24	-13.97
			Max. Vx	14	28.30	-17.35	-1970.85
			Max. Torque	6			-2.43
L45	44.25 - 43.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.35	-1.10	-4.49
			Max. Mx	8	-35.29	-1990.53	-14.09
			Max. My	14	-35.29	-17.50	-1992.08
			Max. Vy	8	28.44	-1990.53	-14.09
			Max. Vx	14	28.36	-17.50	-1992.08
			Max. Torque	6			-2.43
L46	43.5 - 43.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.48	-1.09	-4.49
			Max. Mx	8	-35.39	-1997.64	-14.13
			Max. My	14	-35.40	-17.55	-1999.17
			Max. Vy	8	28.45	-1997.64	-14.13
			Max. Vx	14	28.37	-17.55	-1999.17
			Max. Torque	6			-2.43
L47	43.25 - 39	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.72	-1.08	-4.64
			Max. Mx	8	-37.06	-2119.31	-14.79
			Max. My	14	-37.06	-18.38	-2120.49
			Max. Vy	8	28.83	-2119.31	-14.79
			Max. Vx	14	28.73	-18.38	-2120.49
			Max. Torque	6			-2.43
L48	39 - 38.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.86	-1.08	-4.65
			Max. Mx	8	-37.18	-2126.52	-14.83
			Max. My	14	-37.18	-18.43	-2127.67
			Max. Vy	8	28.84	-2126.52	-14.83
			Max. Vx	14	28.74	-18.43	-2127.67
			Max. Torque	6			-2.43
L49	38.75 - 35	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.94	-1.07	-4.80
			Max. Mx	8	-38.72	-2235.26	-15.42
			Max. My	14	-38.72	-19.17	-2236.02
			Max. Vy	8	29.18	-2235.26	-15.42
			Max. Vx	14	29.06	-19.17	-2236.02
			Max. Torque	6			-2.43
L50	35 - 34.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.08	-1.07	-4.80
			Max. Mx	8	-38.83	-2242.55	-15.46
			Max. My	14	-38.84	-19.22	-2243.28
			Max. Vy	8	29.18	-2242.55	-15.46
			Max. Vx	14	29.06	-19.22	-2243.28
			Max. Torque	6			-2.43
L51	34.75 - 34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.49	-1.07	-4.82
			Max. Mx	8	-39.13	-2264.46	-15.57
			Max. My	14	-39.13	-19.36	-2265.10
			Max. Vy	8	29.26	-2264.46	-15.57
			Max. Vx	14	29.14	-19.36	-2265.10
			Max. Torque	6			-2.43
L52	34 - 33.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.63	-1.06	-4.83
			Max. Mx	8	-39.23	-2271.77	-15.61
			Max. My	14	-39.24	-19.41	-2272.39
			Max. Vy	8	29.27	-2271.77	-15.61
			Max. Vx	14	29.15	-19.41	-2272.39
			Max. Torque	6			-2.43
L53	33.75 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.72	-1.04	-4.93
			Max. Mx	8	-40.79	-2389.45	-16.23
			Max. My	14	-40.80	-20.19	-2389.59
			Max. Vy	8	29.60	-2389.45	-16.23
			Max. Vx	14	29.47	-20.19	-2389.59
			Max. Torque	6			-2.43
L54	29.75 - 29.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.85	-1.04	-4.94

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-40.90	-2396.84	-16.27
			Max. My	14	-40.91	-20.24	-2396.96
			Max. Vy	8	29.60	-2396.84	-16.27
			Max. Vx	14	29.47	-20.24	-2396.96
			Max. Torque	6			-2.42
L55	29.5 - 25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.20	-1.02	-5.06
			Max. Mx	8	-42.69	-2530.79	-16.97
			Max. My	14	-42.70	-21.11	-2530.33
			Max. Vy	8	29.96	-2530.79	-16.97
			Max. Vx	14	29.82	-21.11	-2530.33
			Max. Torque	6			-2.42
L56	25 - 24.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.34	-1.02	-5.06
			Max. Mx	8	-42.81	-2538.28	-17.00
			Max. My	14	-42.81	-21.16	-2537.78
			Max. Vy	8	29.96	-2538.28	-17.00
			Max. Vx	14	29.82	-21.16	-2537.78
			Max. Torque	6			-2.42
L57	24.75 - 23.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.03	-1.04	-5.10
			Max. Mx	8	-43.31	-2575.78	-17.20
			Max. My	14	-43.32	-21.40	-2575.12
			Max. Vy	8	30.07	-2575.78	-17.20
			Max. Vx	14	29.94	-21.40	-2575.12
			Max. Torque	6			-2.42
L58	23.5 - 23.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.17	-1.05	-5.10
			Max. Mx	8	-43.44	-2583.30	-17.23
			Max. My	14	-43.44	-21.45	-2582.61
			Max. Vy	8	30.07	-2583.30	-17.23
			Max. Vx	14	29.94	-21.45	-2582.61
			Max. Torque	6			-2.42
L59	23.25 - 21.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.18	-1.08	-5.15
			Max. Mx	8	-44.19	-2636.04	-17.50
			Max. My	14	-44.19	-21.78	-2635.14
			Max. Vy	8	30.24	-2636.04	-17.50
			Max. Vx	14	30.12	-21.78	-2635.14
			Max. Torque	6			-2.42
L60	21.5 - 21.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.32	-1.09	-5.15
			Max. Mx	8	-44.31	-2643.59	-17.54
			Max. My	14	-44.32	-21.83	-2642.66
			Max. Vy	8	30.23	-2643.59	-17.54
			Max. Vx	14	30.11	-21.83	-2642.66
			Max. Torque	6			-2.42
L61	21.25 - 16.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.07	-1.14	-5.30
			Max. Mx	8	-46.43	-2795.60	-18.31
			Max. My	14	-46.43	-22.79	-2794.17
			Max. Vy	8	30.60	-2795.60	-18.31
			Max. Vx	14	30.50	-22.79	-2794.17
			Max. Torque	6			-2.42
L62	16.25 - 12.916	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.96	-1.12	-5.51
			Max. Mx	8	-47.87	-2897.98	-18.81
			Max. My	14	-47.87	-23.42	-2896.23
			Max. Vy	8	30.86	-2897.98	-18.81
			Max. Vx	14	30.75	-23.42	-2896.23
			Max. Torque	6			-2.42
L63	12.916 - 12.666	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.12	-1.12	-5.52
			Max. Mx	8	-48.00	-2905.70	-18.85
			Max. My	14	-48.00	-23.47	-2903.91
			Max. Vy	8	30.86	-2905.70	-18.85
			Max. Vx	14	30.75	-23.47	-2903.91
			Max. Torque	6			-2.42
L64	12.666 - 12.5	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-82.23	-1.12	-5.53
			Max. Mx	8	-48.09	-2910.82	-18.87
			Max. My	14	-48.09	-23.50	-2909.02
			Max. Vy	8	30.88	-2910.82	-18.87
			Max. Vx	14	30.76	-23.50	-2909.02
			Max. Torque	6			-2.42
L65	12.5 - 12.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.42	-1.12	-5.55
			Max. Mx	8	-48.23	-2921.63	-18.93
			Max. My	14	-48.23	-23.57	-2919.79
			Max. Vy	8	30.91	-2921.63	-18.93
			Max. Vx	14	30.79	-23.57	-2919.79
			Max. Torque	6			-2.42
L66	12.15 - 11.9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.55	-1.11	-5.57
			Max. Mx	8	-48.33	-2929.36	-18.96
			Max. My	14	-48.33	-23.61	-2927.49
			Max. Vy	8	30.92	-2929.36	-18.96
			Max. Vx	14	30.81	-23.61	-2927.49
			Max. Torque	6			-2.42
L67	11.9 - 11.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.63	-1.11	-5.58
			Max. Mx	8	-48.39	-2934.00	-18.99
			Max. My	14	-48.40	-23.64	-2932.11
			Max. Vy	8	30.93	-2934.00	-18.99
			Max. Vx	14	30.82	-23.64	-2932.11
			Max. Torque	6			-2.42
L68	11.75 - 8.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.34	-1.08	-5.76
			Max. Mx	8	-49.69	-3035.02	-19.48
			Max. My	14	-49.69	-24.25	-3032.59
			Max. Vy	8	31.28	-3035.02	-19.48
			Max. Vx	14	31.03	-24.25	-3032.59
			Max. Torque	6			-2.42
L69	8.5 - 8.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.49	-1.08	-5.77
			Max. Mx	8	-49.82	-3042.84	-19.51
			Max. My	14	-49.83	-24.30	-3040.34
			Max. Vy	8	31.28	-3042.84	-19.51
			Max. Vx	14	31.02	-24.30	-3040.34
			Max. Torque	6			-2.42
L70	8.25 - 6.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.55	-1.06	-5.84
			Max. Mx	8	-50.65	-3097.75	-19.78
			Max. My	14	-50.65	-24.63	-3094.75
			Max. Vy	8	31.52	-3097.75	-19.78
			Max. Vx	14	31.18	-24.63	-3094.75
			Max. Torque	6			-2.42
L71	6.5 - 6.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.68	-1.05	-5.85
			Max. Mx	8	-50.78	-3105.62	-19.81
			Max. My	14	-50.78	-24.68	-3102.54
			Max. Vy	8	31.51	-3105.62	-19.81
			Max. Vx	14	31.17	-24.68	-3102.54
			Max. Torque	6			-2.42
L72	6.25 - 1.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.35	-0.99	-6.07
			Max. Mx	8	-52.96	-3264.49	-20.56
			Max. My	14	-52.96	-25.60	-3259.18
			Max. Vy	8	32.07	-3264.49	-20.56
			Max. Vx	14	31.50	-25.60	-3259.18
			Max. Torque	6			-2.43
L73	1.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.00	-0.97	-6.11
			Max. Mx	8	-53.51	-3304.62	-20.74
			Max. My	14	-53.51	-25.84	-3298.58
			Max. Vy	8	32.20	-3304.62	-20.74
			Max. Vx	14	31.56	-25.84	-3298.58
			Max. Torque	6			-2.43

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	89.00	-6.72	-0.03
	Max. H_x	20	53.53	31.92	0.10
	Max. H_z	2	53.53	0.20	31.47
	Max. M_x	2	3264.75	0.20	31.47
	Max. M_z	8	3304.62	-32.17	-0.14
	Max. Torsion	18	2.31	27.36	-15.57
	Min. Vert	13	40.14	-16.00	-27.49
	Min. H_x	8	53.53	-32.17	-0.14
	Min. H_z	14	53.53	-0.19	-31.53
	Min. M_x	14	-3298.58	-0.19	-31.53
	Min. M_z	20	-3291.48	31.92	0.10
	Min. Torsion	6	-2.43	-27.78	15.81

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	44.60	0.00	0.00	1.53	-0.30	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	53.53	-0.20	-31.47	-3264.75	26.77	0.65
0.9 Dead+1.0 Wind 0 deg - No Ice	40.14	-0.20	-31.47	-3215.05	26.41	0.64
1.2 Dead+1.0 Wind 30 deg - No Ice	53.53	15.77	-27.31	-2829.27	-1635.26	1.78
0.9 Dead+1.0 Wind 30 deg - No Ice	40.14	15.77	-27.31	-2786.31	-1610.05	1.74
1.2 Dead+1.0 Wind 60 deg - No Ice	53.53	27.78	-15.81	-1624.48	-2872.22	2.43
0.9 Dead+1.0 Wind 60 deg - No Ice	40.14	27.78	-15.81	-1600.06	-2827.98	2.39
1.2 Dead+1.0 Wind 90 deg - No Ice	53.53	32.17	0.14	20.74	-3304.62	2.10
0.9 Dead+1.0 Wind 90 deg - No Ice	40.14	32.17	0.14	19.91	-3253.78	2.06
1.2 Dead+1.0 Wind 120 deg - No Ice	53.53	27.66	15.94	1646.87	-2854.94	1.29
0.9 Dead+1.0 Wind 120 deg - No Ice	40.14	27.66	15.94	1621.04	-2810.88	1.26
1.2 Dead+1.0 Wind 150 deg - No Ice	53.53	16.00	27.49	2841.70	-1655.86	0.45
0.9 Dead+1.0 Wind 150 deg - No Ice	40.14	16.00	27.49	2797.47	-1630.25	0.44
1.2 Dead+1.0 Wind 180 deg - No Ice	53.53	0.19	31.53	3298.58	-25.84	-0.78
0.9 Dead+1.0 Wind 180 deg - No Ice	40.14	0.19	31.53	3247.35	-25.30	-0.77
1.2 Dead+1.0 Wind 210 deg - No Ice	53.53	-15.81	27.37	2839.77	1638.39	-1.77
0.9 Dead+1.0 Wind 210 deg - No Ice	40.14	-15.81	27.37	2795.69	1613.33	-1.74
1.2 Dead+1.0 Wind 240 deg - No Ice	53.53	-27.36	15.57	1612.09	2839.99	-2.31
0.9 Dead+1.0 Wind 240 deg - No Ice	40.14	-27.36	15.57	1586.83	2796.35	-2.27
1.2 Dead+1.0 Wind 270 deg - No Ice	53.53	-31.92	-0.10	-11.61	3291.48	-2.19
0.9 Dead+1.0 Wind 270 deg - No Ice	40.14	-31.92	-0.10	-11.90	3240.96	-2.15
1.2 Dead+1.0 Wind 300 deg - No Ice	53.53	-28.06	-16.21	-1664.82	2882.16	-1.29
0.9 Dead+1.0 Wind 300 deg - No Ice	40.14	-28.06	-16.21	-1639.73	2838.01	-1.26
1.2 Dead+1.0 Wind 330 deg - No Ice	53.53	-16.28	-27.90	-2848.57	1667.41	-0.37
0.9 Dead+1.0 Wind 330 deg - No Ice	40.14	-16.28	-27.90	-2805.38	1641.90	-0.36
1.2 Dead+1.0 Ice+1.0 Temp	89.00	0.00	0.00	6.11	-0.97	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	89.00	-0.04	-6.55	-757.20	4.89	0.19
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	89.00	3.28	-5.68	-655.05	-383.08	0.44
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	89.00	5.77	-3.28	-372.75	-669.77	0.58
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	89.00	6.72	0.03	10.43	-772.72	0.49
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	89.00	5.77	3.32	390.77	-668.39	0.28
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	89.00	3.33	5.73	670.06	-387.94	0.06
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	89.00	0.04	6.56	774.15	-6.55	-0.22
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	89.00	-3.29	5.69	668.95	381.82	-0.44
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	89.00	-5.71	3.25	383.15	663.23	-0.55
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	89.00	-6.68	-0.02	3.30	768.46	-0.51
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	89.00	-5.83	-3.37	-381.57	670.18	-0.28

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
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	89.00	-3.38	-5.80	-659.20	388.23	-0.05
Dead+Wind 0 deg - Service	44.60	-0.04	-6.84	-703.55	5.52	0.14
Dead+Wind 30 deg - Service	44.60	3.43	-5.94	-609.54	-353.23	0.39
Dead+Wind 60 deg - Service	44.60	6.04	-3.44	-349.49	-620.25	0.54
Dead+Wind 90 deg - Service	44.60	6.99	0.03	5.66	-713.60	0.47
Dead+Wind 120 deg - Service	44.60	6.01	3.47	356.71	-616.53	0.28
Dead+Wind 150 deg - Service	44.60	3.48	5.98	614.63	-357.67	0.10
Dead+Wind 180 deg - Service	44.60	0.04	6.85	713.25	-5.80	-0.17
Dead+Wind 210 deg - Service	44.60	-3.44	5.95	614.20	353.43	-0.39
Dead+Wind 240 deg - Service	44.60	-5.95	3.39	349.20	612.80	-0.51
Dead+Wind 270 deg - Service	44.60	-6.94	-0.02	-1.30	710.29	-0.48
Dead+Wind 300 deg - Service	44.60	-6.10	-3.52	-358.20	621.95	-0.28
Dead+Wind 330 deg - Service	44.60	-3.54	-6.06	-613.73	359.70	-0.08

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-44.60	0.00	0.00	44.60	0.00	0.000%
2	-0.20	-53.53	-31.47	0.20	53.53	31.47	0.000%
3	-0.20	-40.14	-31.47	0.20	40.14	31.47	0.000%
4	15.77	-53.53	-27.31	-15.77	53.53	27.31	0.000%
5	15.77	-40.14	-27.31	-15.77	40.14	27.31	0.000%
6	27.78	-53.53	-15.81	-27.78	53.53	15.81	0.000%
7	27.78	-40.14	-15.81	-27.78	40.14	15.81	0.000%
8	32.17	-53.53	0.14	-32.17	53.53	-0.14	0.000%
9	32.17	-40.14	0.14	-32.17	40.14	-0.14	0.000%
10	27.66	-53.53	15.94	-27.66	53.53	-15.94	0.000%
11	27.66	-40.14	15.94	-27.66	40.14	-15.94	0.000%
12	16.00	-53.53	27.49	-16.00	53.53	-27.49	0.000%
13	16.00	-40.14	27.49	-16.00	40.14	-27.49	0.000%
14	0.19	-53.53	31.53	-0.19	53.53	-31.53	0.000%
15	0.19	-40.14	31.53	-0.19	40.14	-31.53	0.000%
16	-15.81	-53.53	27.37	15.81	53.53	-27.37	0.000%
17	-15.81	-40.14	27.37	15.81	40.14	-27.37	0.000%
18	-27.36	-53.53	15.57	27.36	53.53	-15.57	0.000%
19	-27.36	-40.14	15.57	27.36	40.14	-15.57	0.000%
20	-31.92	-53.53	-0.10	31.92	53.53	0.10	0.000%
21	-31.92	-40.14	-0.10	31.92	40.14	0.10	0.000%
22	-28.06	-53.53	-16.21	28.06	53.53	16.21	0.000%
23	-28.06	-40.14	-16.21	28.06	40.14	16.21	0.000%
24	-16.28	-53.53	-27.90	16.28	53.53	27.90	0.000%
25	-16.28	-40.14	-27.90	16.28	40.14	27.90	0.000%
26	0.00	-89.00	0.00	-0.00	89.00	-0.00	0.000%
27	-0.04	-89.00	-6.55	0.04	89.00	6.55	0.000%
28	3.28	-89.00	-5.68	-3.28	89.00	5.68	0.000%
29	5.77	-89.00	-3.28	-5.77	89.00	3.28	0.000%
30	6.72	-89.00	0.03	-6.72	89.00	-0.03	0.000%
31	5.77	-89.00	3.32	-5.77	89.00	-3.32	0.000%
32	3.33	-89.00	5.73	-3.33	89.00	-5.73	0.000%
33	0.04	-89.00	6.56	-0.04	89.00	-6.56	0.000%
34	-3.29	-89.00	5.69	3.29	89.00	-5.69	0.000%
35	-5.71	-89.00	3.25	5.71	89.00	-3.25	0.000%
36	-6.68	-89.00	-0.02	6.68	89.00	0.02	0.000%
37	-5.83	-89.00	-3.37	5.83	89.00	3.37	0.000%
38	-3.38	-89.00	-5.80	3.38	89.00	5.80	0.000%
39	-0.04	-44.60	-6.84	0.04	44.60	6.84	0.000%
40	3.43	-44.60	-5.94	-3.43	44.60	5.94	0.000%
41	6.04	-44.60	-3.44	-6.04	44.60	3.44	0.000%
42	6.99	-44.60	0.03	-6.99	44.60	-0.03	0.000%
43	6.01	-44.60	3.47	-6.01	44.60	-3.47	0.000%
44	3.48	-44.60	5.98	-3.48	44.60	-5.98	0.000%
45	0.04	-44.60	6.85	-0.04	44.60	-6.85	0.000%
46	-3.44	-44.60	5.95	3.44	44.60	-5.95	0.000%
47	-5.95	-44.60	3.39	5.95	44.60	-3.39	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
48	-6.94	-44.60	-0.02	6.94	44.60	0.02	0.000%
49	-6.10	-44.60	-3.52	6.10	44.60	3.52	0.000%
50	-3.54	-44.60	-6.06	3.54	44.60	6.06	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000391
2	Yes	5	0.00000001	0.00098077
3	Yes	5	0.00000001	0.00039815
4	Yes	7	0.00000001	0.00044918
5	Yes	7	0.00000001	0.00009722
6	Yes	7	0.00000001	0.00042104
7	Yes	7	0.00000001	0.00008935
8	Yes	6	0.00000001	0.00044667
9	Yes	6	0.00000001	0.00014245
10	Yes	7	0.00000001	0.00044993
11	Yes	7	0.00000001	0.00009642
12	Yes	7	0.00000001	0.00043860
13	Yes	7	0.00000001	0.00009341
14	Yes	6	0.00000001	0.00028460
15	Yes	6	0.00000001	0.00009055
16	Yes	7	0.00000001	0.00042413
17	Yes	7	0.00000001	0.00009039
18	Yes	7	0.00000001	0.00045308
19	Yes	7	0.00000001	0.00009832
20	Yes	6	0.00000001	0.00027268
21	Yes	6	0.00000001	0.00008744
22	Yes	7	0.00000001	0.00043534
23	Yes	7	0.00000001	0.00009203
24	Yes	7	0.00000001	0.00044181
25	Yes	7	0.00000001	0.00009434
26	Yes	5	0.00000001	0.00035295
27	Yes	7	0.00000001	0.00059633
28	Yes	7	0.00000001	0.00081570
29	Yes	7	0.00000001	0.00080326
30	Yes	7	0.00000001	0.00061553
31	Yes	7	0.00000001	0.00084908
32	Yes	7	0.00000001	0.00084265
33	Yes	7	0.00000001	0.00061668
34	Yes	7	0.00000001	0.00081766
35	Yes	7	0.00000001	0.00083245
36	Yes	7	0.00000001	0.00060791
37	Yes	7	0.00000001	0.00081413
38	Yes	7	0.00000001	0.00081344
39	Yes	5	0.00000001	0.00013015
40	Yes	6	0.00000001	0.00009479
41	Yes	6	0.00000001	0.00008057
42	Yes	5	0.00000001	0.00030335
43	Yes	6	0.00000001	0.00009619
44	Yes	6	0.00000001	0.00008998
45	Yes	5	0.00000001	0.00017431
46	Yes	6	0.00000001	0.00008249
47	Yes	6	0.00000001	0.00009822
48	Yes	5	0.00000001	0.00028225
49	Yes	6	0.00000001	0.00008726
50	Yes	6	0.00000001	0.00009048

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	143 - 138	28.725	45	2.1504	0.0167
L2	138 - 133	26.479	45	2.1337	0.0161
L3	133 - 128	24.292	49	2.0793	0.0150
L4	128 - 123	22.204	49	1.9331	0.0105
L5	123 - 122.75	20.287	49	1.7375	0.0068
L6	122.75 - 117.75	20.196	49	1.7335	0.0067
L7	117.75 - 112.75	18.429	49	1.6454	0.0056
L8	112.75 - 109.5	16.758	49	1.5476	0.0046
L9	109.5 - 109.25	15.727	49	1.4810	0.0040
L10	109.25 - 104.75	15.650	49	1.4769	0.0039
L11	104.75 - 104.5	14.296	49	1.3956	0.0034
L12	104.5 - 102.5	14.223	49	1.3921	0.0033
L13	102.5 - 102.25	13.646	49	1.3630	0.0031
L14	102.25 - 100	13.575	49	1.3591	0.0031
L15	100 - 99.75	12.943	49	1.3227	0.0029
L16	99.75 - 98.75	12.874	49	1.3179	0.0029
L17	98.75 - 98.5	12.600	49	1.2989	0.0028
L18	98.5 - 91.33	12.532	49	1.2955	0.0028
L19	95 - 91	11.601	49	1.2462	0.0025
L20	91 - 90.75	10.569	49	1.2150	0.0024
L21	90.75 - 89.25	10.505	49	1.2109	0.0024
L22	89.25 - 89	10.129	49	1.1868	0.0023
L23	89 - 88.5	10.067	49	1.1833	0.0023
L24	88.5 - 88.25	9.943	49	1.1762	0.0023
L25	88.25 - 88	9.881	49	1.1727	0.0022
L26	88 - 83	9.820	49	1.1681	0.0022
L27	83 - 78	8.647	49	1.0730	0.0019
L28	78 - 77	7.575	49	0.9749	0.0016
L29	77 - 76.75	7.373	49	0.9552	0.0016
L30	76.75 - 76.5	7.323	49	0.9514	0.0015
L31	76.5 - 76.25	7.273	49	0.9476	0.0015
L32	76.25 - 75	7.224	49	0.9437	0.0015
L33	75 - 74.75	6.979	49	0.9246	0.0015
L34	74.75 - 73.5	6.931	49	0.9207	0.0015
L35	73.5 - 73.25	6.692	49	0.9019	0.0014
L36	73.25 - 68.25	6.645	49	0.8984	0.0014
L37	68.25 - 63.25	5.742	49	0.8268	0.0012
L38	63.25 - 60.5	4.914	49	0.7547	0.0011
L39	60.5 - 60.25	4.491	49	0.7147	0.0010
L40	60.25 - 59.5	4.453	49	0.7111	0.0010
L41	59.5 - 59.25	4.343	49	0.7004	0.0010
L42	59.25 - 54.25	4.306	49	0.6971	0.0010
L43	54.25 - 45.25	3.612	49	0.6290	0.0008
L44	50 - 44.25	3.078	49	0.5710	0.0007
L45	44.25 - 43.5	2.413	49	0.5271	0.0007
L46	43.5 - 43.25	2.331	49	0.5176	0.0006
L47	43.25 - 39	2.304	49	0.5146	0.0006
L48	39 - 38.75	1.870	49	0.4616	0.0005
L49	38.75 - 35	1.846	49	0.4586	0.0005
L50	35 - 34.75	1.503	49	0.4142	0.0005
L51	34.75 - 34	1.482	49	0.4111	0.0005
L52	34 - 33.75	1.418	49	0.4020	0.0005
L53	33.75 - 29.75	1.397	49	0.3989	0.0005
L54	29.75 - 29.5	1.083	49	0.3493	0.0004
L55	29.5 - 25	1.065	49	0.3463	0.0004
L56	25 - 24.75	0.765	49	0.2920	0.0003
L57	24.75 - 23.5	0.749	49	0.2892	0.0003
L58	23.5 - 23.25	0.675	49	0.2749	0.0003
L59	23.25 - 21.5	0.661	49	0.2723	0.0003
L60	21.5 - 21.25	0.565	49	0.2540	0.0003
L61	21.25 - 16.25	0.551	49	0.2511	0.0003
L62	16.25 - 12.916	0.319	49	0.1923	0.0002
L63	12.916 - 12.666	0.199	49	0.1530	0.0002
L64	12.666 - 12.5	0.191	49	0.1507	0.0002
L65	12.5 - 12.15	0.186	49	0.1492	0.0002
L66	12.15 - 11.9	0.175	49	0.1449	0.0001
L67	11.9 - 11.75	0.168	49	0.1414	0.0001
L68	11.75 - 8.5	0.163	49	0.1393	0.0001
L69	8.5 - 8.25	0.084	49	0.0932	0.0001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L70	8.25 - 6.5	0.079	49	0.0906	0.0001
L71	6.5 - 6.25	0.049	49	0.0727	0.0001
L72	6.25 - 1.25	0.046	49	0.0699	0.0001
L73	1.25 - 0	0.002	49	0.0138	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	Lightning Rod 5/8"x5'	45	28.725	2.1504	0.0167	8037
142.00	Platform Mount [LP 301-1]	45	28.275	2.1481	0.0166	8037
135.00	VHLP2-23	49	25.159	2.1087	0.0158	4107
133.00	Platform Mount [LP 602-1]	49	24.292	2.0793	0.0150	2906
110.00	Platform Mount [LP 602-1]	49	15.883	1.4900	0.0041	2935
100.00	Platform Mount [LP 303-1]	49	12.943	1.3227	0.0029	3569
50.00	Side Arm Mount [SO 701-1]	49	3.078	0.5710	0.0007	5756

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	143 - 138	132.896	22	9.9112	0.0757
L2	138 - 133	122.629	22	9.8373	0.0728
L3	133 - 128	112.526	22	9.5887	0.0678
L4	128 - 123	102.871	22	8.9424	0.0469
L5	123 - 122.75	94.009	22	8.0615	0.0301
L6	122.75 - 117.75	93.590	22	8.0435	0.0299
L7	117.75 - 112.75	85.418	22	7.6429	0.0246
L8	112.75 - 109.5	77.685	22	7.1923	0.0201
L9	109.5 - 109.25	72.916	22	6.8825	0.0175
L10	109.25 - 104.75	72.557	22	6.8630	0.0174
L11	104.75 - 104.5	66.290	22	6.4849	0.0148
L12	104.5 - 102.5	65.952	22	6.4686	0.0147
L13	102.5 - 102.25	63.281	22	6.3333	0.0139
L14	102.25 - 100	62.951	22	6.3150	0.0138
L15	100 - 99.75	60.025	22	6.1457	0.0129
L16	99.75 - 98.75	59.705	22	6.1235	0.0128
L17	98.75 - 98.5	58.436	22	6.0352	0.0123
L18	98.5 - 91.33	58.121	22	6.0195	0.0123
L19	95 - 91	53.805	22	5.7904	0.0112
L20	91 - 90.75	49.024	22	5.6451	0.0106
L21	90.75 - 89.25	48.730	22	5.6261	0.0106
L22	89.25 - 89	46.984	22	5.5139	0.0102
L23	89 - 88.5	46.697	22	5.4976	0.0101
L24	88.5 - 88.25	46.124	22	5.4646	0.0100
L25	88.25 - 88	45.840	22	5.4483	0.0099
L26	88 - 83	45.556	22	5.4270	0.0099
L27	83 - 78	40.117	22	4.9850	0.0084
L28	78 - 77	35.146	22	4.5288	0.0071
L29	77 - 76.75	34.208	22	4.4375	0.0069
L30	76.75 - 76.5	33.977	22	4.4197	0.0069
L31	76.5 - 76.25	33.746	22	4.4018	0.0068
L32	76.25 - 75	33.517	22	4.3840	0.0068
L33	75 - 74.75	32.382	22	4.2948	0.0065
L34	74.75 - 73.5	32.158	22	4.2771	0.0065
L35	73.5 - 73.25	31.052	22	4.1896	0.0063
L36	73.25 - 68.25	30.833	22	4.1734	0.0062
L37	68.25 - 63.25	26.644	22	3.8402	0.0055
L38	63.25 - 60.5	22.803	22	3.5053	0.0048

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L39	60.5 - 60.25	20.840	22	3.3194	0.0044
L40	60.25 - 59.5	20.666	22	3.3026	0.0044
L41	59.5 - 59.25	20.152	22	3.2528	0.0043
L42	59.25 - 54.25	19.982	22	3.2375	0.0043
L43	54.25 - 45.25	16.761	22	2.9210	0.0037
L44	50 - 44.25	14.283	22	2.6515	0.0032
L45	44.25 - 43.5	11.200	22	2.4473	0.0029
L46	43.5 - 43.25	10.819	22	2.4035	0.0029
L47	43.25 - 39	10.693	22	2.3892	0.0028
L48	39 - 38.75	8.678	22	2.1429	0.0025
L49	38.75 - 35	8.566	22	2.1294	0.0025
L50	35 - 34.75	6.975	22	1.9228	0.0022
L51	34.75 - 34	6.875	22	1.9085	0.0021
L52	34 - 33.75	6.579	22	1.8661	0.0021
L53	33.75 - 29.75	6.481	22	1.8519	0.0021
L54	29.75 - 29.5	5.027	22	1.6215	0.0018
L55	29.5 - 25	4.943	22	1.6075	0.0017
L56	25 - 24.75	3.547	22	1.3555	0.0014
L57	24.75 - 23.5	3.477	22	1.3420	0.0014
L58	23.5 - 23.25	3.134	22	1.2759	0.0013
L59	23.25 - 21.5	3.067	22	1.2636	0.0013
L60	21.5 - 21.25	2.620	22	1.1789	0.0012
L61	21.25 - 16.25	2.558	22	1.1652	0.0012
L62	16.25 - 12.916	1.482	22	0.8922	0.0009
L63	12.916 - 12.666	0.923	22	0.7097	0.0007
L64	12.666 - 12.5	0.886	22	0.6991	0.0007
L65	12.5 - 12.15	0.862	22	0.6921	0.0007
L66	12.15 - 11.9	0.812	22	0.6721	0.0007
L67	11.9 - 11.75	0.777	22	0.6558	0.0006
L68	11.75 - 8.5	0.757	22	0.6461	0.0006
L69	8.5 - 8.25	0.390	22	0.4325	0.0004
L70	8.25 - 6.5	0.367	22	0.4204	0.0004
L71	6.5 - 6.25	0.228	22	0.3372	0.0003
L72	6.25 - 1.25	0.211	22	0.3242	0.0003
L73	1.25 - 0	0.008	22	0.0641	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	Lightning Rod 5/8"x5'	22	132.896	9.9112	0.0757	1873
142.00	Platform Mount [LP 301-1]	22	130.838	9.9018	0.0750	1873
135.00	VHLP2-23	22	116.532	9.7215	0.0713	962
133.00	Platform Mount [LP 602-1]	22	112.526	9.5887	0.0678	681
110.00	Platform Mount [LP 602-1]	22	73.636	6.9241	0.0180	659
100.00	Platform Mount [LP 303-1]	22	60.025	6.1457	0.0129	793
50.00	Side Arm Mount [SO 701-1]	22	14.283	2.6515	0.0032	1245

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	143 - 138 (1)	TP12.75x12.75x0.375	5.00	0.00	0.0	14.5790	-2.88	603.57	0.005
L2	138 - 133 (2)	TP12.75x12.75x0.375	5.00	0.00	0.0	14.5790	-3.27	603.57	0.005

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	
L3	133 - 128 (3)	TP14.4795x13.48x0.1875	5.00	0.00	0.0	8.6288	-7.06	504.79	0.014
L4	128 - 123 (4)	TP15.479x14.4795x0.1875	5.00	0.00	0.0	9.2323	-7.44	540.09	0.014
L5	123 - 122.75 (5)	TP15.529x15.479x0.5375	0.25	0.00	0.0	25.9466	-7.49	1517.87	0.005
L6	122.75 - 117.75 (6)	TP16.5285x15.529x0.5125	5.00	0.00	0.0	26.4305	-8.04	1546.18	0.005
L7	117.75 - 112.75 (7)	TP17.5281x16.5285x0.4875	5.00	0.00	0.0	26.7494	-8.62	1564.84	0.006
L8	112.75 - 109.5 (8)	TP18.1777x17.5281x0.475	3.25	0.00	0.0	27.0763	-11.60	1583.97	0.007
L9	109.5 - 109.25 (9)	TP18.2277x18.1777x0.6	0.25	0.00	0.0	34.0568	-11.66	1992.32	0.006
L10	109.25 - 104.75 (10)	TP19.1273x18.2277x0.575	4.50	0.00	0.0	34.3496	-12.37	2009.45	0.006
L11	104.75 - 104.5 (11)	TP19.1773x19.1273x0.7875	0.25	0.00	0.0	46.6318	-12.43	2727.96	0.005
L12	104.5 - 102.5 (12)	TP19.5771x19.1773x0.7625	2.00	0.00	0.0	46.1945	-12.84	2702.38	0.005
L13	102.5 - 102.25 (13)	TP19.627x19.5771x0.7	0.25	0.00	0.0	42.6616	-12.89	2495.70	0.005
L14	102.25 - 100 (14)	TP20.0768x19.627x0.6875	2.25	0.00	0.0	42.9231	-13.30	2511.00	0.005
L15	100 - 99.75 (15)	TP20.1268x20.0768x0.575	0.25	0.00	0.0	36.2002	-16.35	2117.71	0.008
L16	99.75 - 98.75 (16)	TP20.3267x20.1268x0.575	1.00	0.00	0.0	36.5703	-16.52	2139.36	0.008
L17	98.75 - 98.5 (17)	TP20.3767x20.3267x0.8625	0.25	0.00	0.0	54.1958	-16.60	3170.45	0.005
L18	98.5 - 91.33 (18)	TP21.81x20.3767x0.8375	7.17	0.00	0.0	54.5791	-17.41	3192.88	0.005
L19	91.33 - 91 (19)	TP21.5004x20.7014x0.8875	4.00	0.00	0.0	58.9066	-19.10	3446.04	0.006
L20	91 - 90.75 (20)	TP21.5504x21.5004x0.775	0.25	0.00	0.0	51.8450	-19.16	3032.93	0.006
L21	90.75 - 89.25 (21)	TP21.85x21.5504x0.775	1.50	0.00	0.0	52.5928	-19.52	3076.68	0.006
L22	89.25 - 89 (22)	TP21.9x21.85x0.925	0.25	0.00	0.0	62.4740	-19.61	3654.73	0.005
L23	89 - 88.5 (23)	TP21.9999x21.9x0.9125	0.50	0.00	0.0	61.9600	-19.74	3624.66	0.005
L24	88.5 - 88.25 (24)	TP22.0498x21.9999x0.925	0.25	0.00	0.0	62.9203	-19.82	3680.83	0.005
L25	88.25 - 88 (25)	TP22.0998x22.0498x0.6875	0.25	0.00	0.0	47.4014	-19.88	2772.98	0.007
L26	88 - 83 (26)	TP23.0986x22.0998x0.6625	5.00	0.00	0.0	47.8618	-21.11	2799.92	0.008
L27	83 - 78 (27)	TP24.0975x23.0986x0.6375	5.00	0.00	0.0	48.1575	-22.39	2817.21	0.008
L28	78 - 77 (28)	TP24.2972x24.0975x0.625	1.00	0.00	0.0	47.6404	-22.65	2786.96	0.008
L29	77 - 76.75 (29)	TP24.3472x24.2972x0.825	0.25	0.00	0.0	62.4867	-22.74	3655.47	0.006
L30	76.75 - 76.5 (30)	TP24.3971x24.3472x0.825	0.25	0.00	0.0	62.6194	-22.81	3663.23	0.006
L31	76.5 - 76.25 (31)	TP24.4471x24.3971x0.825	0.25	0.00	0.0	62.7520	-22.89	3670.99	0.006
L32	76.25 - 75 (32)	TP24.6968x24.4471x0.8125	1.25	0.00	0.0	62.4873	-23.23	3655.51	0.006
L33	75 - 74.75 (33)	TP24.7467x24.6968x0.825	0.25	0.00	0.0	63.5481	-23.32	3717.56	0.006
L34	74.75 - 73.5 (34)	TP24.9964x24.7467x0.825	1.25	0.00	0.0	64.2114	-23.69	3756.37	0.006
L35	73.5 - 73.25 (35)	TP25.0464x24.9964x0.9125	0.25	0.00	0.0	70.9114	-23.78	4148.32	0.006
L36	73.25 - 68.25 (36)	TP26.0452x25.0464x0.875	5.00	0.00	0.0	70.9172	-25.34	4148.65	0.006
L37	68.25 - 63.25 (37)	TP27.0441x26.0452x0.85	5.00	0.00	0.0	71.6933	-26.93	4194.06	0.006
L38	63.25 - 60.5 (38)	TP27.5935x27.0441x0.825	2.75	0.00	0.0	71.1105	-27.81	4159.96	0.007
L39	60.5 - 60.25 (39)	TP27.6434x27.5935x0.825	0.25	0.00	0.0	71.2431	-27.91	4167.72	0.007
L40	60.25 - 59.5 (40)	TP27.7933x27.6434x0.825	0.75	0.00	0.0	71.6412	-28.15	4191.01	0.007
L41	59.5 - 59.25 (41)	TP27.8432x27.7933x0.9	0.25	0.00	0.0	78.0814	-28.24	4567.76	0.006
L42	59.25 - 54.25 (42)	TP28.8421x27.8432x0.8625	5.00	0.00	0.0	77.7062	-29.94	4545.81	0.007
L43	54.25 - 45.25 (43)	TP30.64x28.8421x0.8375	9.00	0.00	0.0	77.8109	-31.41	4551.94	0.007
L44	45.25 - 44.25 (44)	TP30.3421x29.1911x0.9125	5.75	0.00	0.0	86.4715	-34.99	5058.59	0.007
L45	44.25 - 43.5 (45)	TP30.4922x30.3421x0.9125	0.75	0.00	0.0	86.9127	-35.27	5084.39	0.007
L46	43.5 - 43.25 (46)	TP30.5423x30.4922x0.9375	0.25	0.00	0.0	89.3695	-35.38	5228.11	0.007
L47	43.25 - 39 (47)	TP31.393x30.5423x0.9125	4.25	0.00	0.0	89.5595	-37.05	5239.23	0.007
L48	39 - 38.75 (48)	TP31.4431x31.393x0.9625	0.25	0.00	0.0	94.4670	-37.16	5526.32	0.007
L49	38.75 - 35 (49)	TP32.1938x31.4431x0.9375	3.75	0.00	0.0	94.3548	-38.70	5519.76	0.007
L50	35 - 34.75 (50)	TP32.2438x32.1938x0.8875	0.25	0.00	0.0	89.6085	-38.82	5242.10	0.007
L51	34.75 - 34 (51)	TP32.3939x32.2438x0.8875	0.75	0.00	0.0	90.0375	-39.12	5267.20	0.007
L52	34 - 33.75 (52)	TP32.444x32.3939x0.8875	0.25	0.00	0.0	90.1805	-39.22	5275.56	0.007
L53	33.75 - 29.75 (53)	TP33.2447x32.444x0.8625	4.00	0.00	0.0	88.2656	-39.63	5163.54	0.008
L54	29.75 - 29.5 (54)	TP33.2947x33.2447x0.875	0.25	0.00	0.0	91.2016	-40.80	5335.29	0.008
L55	29.5 - 25 (55)	TP34.1955x33.2947x0.8625	4.50	0.00	0.0	90.0724	-40.91	5269.24	0.008
L56	25 - 24.75 (56)	TP34.2456x34.1955x0.8875	0.25	0.00	0.0	95.1861	-42.70	5568.38	0.008
L57	24.75 - 23.5 (57)	TP34.4958x34.2456x0.8875	1.25	0.00	0.0	95.3291	-42.82	5576.75	0.008
L58	23.5 - 23.25 (58)	TP34.5459x34.4958x0.9625	0.25	0.00	0.0	103.9280	-43.33	6079.79	0.007
L59	23.25 - 21.5 (59)	TP34.8962x34.5459x0.9625	1.75	0.00	0.0	104.0830	-43.46	6088.87	0.007
L60	21.5 - 21.25 (60)	TP34.9462x34.8962x0.85	0.25	0.00	0.0	93.1844	-44.21	5451.29	0.008
L61	21.25 - 16.25 (61)	TP35.9471x34.9462x0.8375	5.00	0.00	0.0	91.9827	-44.32	5380.99	0.008
L62	16.25 - 12.916 (62)	TP36.6145x35.9471x0.8125	3.33	0.00	0.0	91.9209	-46.45	5377.37	0.009
L63	12.916 - 12.666 (63)	TP36.6645x36.6145x1.0625	0.25	0.00	0.0	121.6320	-47.88	7115.49	0.007
L64	12.666 - 12.5 (64)	TP36.6978x36.6645x1.0625	0.17	0.00	0.0	121.8030	-48.00	7125.50	0.007
L65	12.5 - 12.15 (65)	TP36.7678x36.6978x0.7625	0.35	0.00	0.0	88.2301	-48.09	5161.46	0.009
L66	12.15 - 11.9 (66)	TP36.8179x36.7678x0.6625	0.25	0.00	0.0	77.0217	-48.24	4505.77	0.011
L67	11.9 - 11.75 (67)	TP36.8479x36.8179x0.6625	0.15	0.00	0.0	77.1285	-48.33	4512.02	0.011
L68	11.75 - 8.5 (68)	TP37.4985x36.8479x0.65	3.25	0.00	0.0	75.7622	-48.41	4432.09	0.011
L69	8.5 - 8.25 (69)	TP37.5485x37.4985x0.8875	0.25	0.00	0.0	104.6250	-49.71	6120.57	0.008
L70	8.25 - 6.5 (70)	TP37.8988x37.5485x0.8875	1.75	0.00	0.0	104.7680	-49.85	6128.93	0.008
L71	6.5 - 6.25 (71)	TP37.9489x37.8988x0.8125	0.25	0.00	0.0	97.0271	-50.67	5676.09	0.009

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	
L72	6.25 - 1.25 (72)	TP38.9498x37.9489x0.8	5.00	0.00	0.0	95.6955	-50.79	5598.19	0.009
L73	1.25 - 0 (73)	TP39.2x38.9498x0.7875	1.25	0.00	0.0	96.7700	-52.99	5661.04	0.009

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	143 - 138 (1)	TP12.75x12.75x0.375	31.75	198.19	0.160	0.00	198.19	0.000
L2	138 - 133 (2)	TP12.75x12.75x0.375	66.86	198.19	0.337	0.00	198.19	0.000
L3	133 - 128 (3)	TP14.4795x13.48x0.1875	125.37	184.24	0.680	0.00	184.24	0.000
L4	128 - 123 (4)	TP15.479x14.4795x0.1875	188.19	211.09	0.892	0.00	211.09	0.000
L5	123 - 122.75 (5)	TP15.529x15.479x0.5375	191.36	568.37	0.337	0.00	568.37	0.000
L6	122.75 - 117.75 (6)	TP16.5285x15.529x0.5125	255.56	620.84	0.412	0.00	620.84	0.000
L7	117.75 - 112.75 (7)	TP17.5281x16.5285x0.4875	321.53	670.73	0.479	0.00	670.73	0.000
L8	112.75 - 109.5 (8)	TP18.1777x17.5281x0.475	367.94	706.53	0.521	0.00	706.53	0.000
L9	109.5 - 109.25 (9)	TP18.2277x18.1777x0.6	372.58	878.75	0.424	0.00	878.75	0.000
L10	109.25 - 104.75 (10)	TP19.1273x18.2277x0.575	456.99	935.54	0.488	0.00	935.54	0.000
L11	104.75 - 104.5 (11)	TP19.1773x19.1273x0.7875	461.72	1244.66	0.371	0.00	1244.66	0.000
L12	104.5 - 102.5 (12)	TP19.5771x19.1773x0.7625	499.84	1264.25	0.395	0.00	1264.25	0.000
L13	102.5 - 102.25 (13)	TP19.627x19.5771x0.7	504.63	1178.55	0.428	0.00	1178.55	0.000
L14	102.25 - 100 (14)	TP20.0768x19.627x0.6875	548.00	1216.53	0.450	0.00	1216.53	0.000
L15	100 - 99.75 (15)	TP20.1268x20.0768x0.575	553.78	1040.67	0.532	0.00	1040.67	0.000
L16	99.75 - 98.75 (16)	TP20.3267x20.1268x0.575	576.94	1062.36	0.543	0.00	1062.36	0.000
L17	98.75 - 98.5 (17)	TP20.3767x20.3267x0.8625	582.74	1532.97	0.380	0.00	1532.97	0.000
L18	98.5 - 91.33 (18)	TP21.81x20.3767x0.8375	664.62	1605.47	0.414	0.00	1605.47	0.000
L19	91.33 - 91 (19)	TP21.5004x20.7014x0.8875	759.89	1761.97	0.431	0.00	1761.97	0.000
L20	91 - 90.75 (20)	TP21.5504x21.5004x0.775	765.91	1571.63	0.487	0.00	1571.63	0.000
L21	90.75 - 89.25 (21)	TP21.85x21.5504x0.775	802.15	1618.13	0.496	0.00	1618.13	0.000
L22	89.25 - 89 (22)	TP21.9x21.85x0.925	808.21	1899.59	0.425	0.00	1899.59	0.000
L23	89 - 88.5 (23)	TP21.9999x21.9x0.9125	820.34	1895.56	0.433	0.00	1895.56	0.000
L24	88.5 - 88.25 (24)	TP22.0498x21.9999x0.925	826.42	1927.40	0.429	0.00	1927.40	0.000
L25	88.25 - 88 (25)	TP22.0998x22.0498x0.6875	832.51	1488.43	0.559	0.00	1488.43	0.000
L26	88 - 83 (26)	TP23.0986x22.0998x0.6625	955.29	1578.70	0.605	0.00	1578.70	0.000
L27	83 - 78 (27)	TP24.0975x23.0986x0.6375	1080.16	1664.75	0.649	0.00	1664.75	0.000
L28	78 - 77 (28)	TP24.2972x24.0975x0.625	1105.38	1663.03	0.665	0.00	1663.03	0.000
L29	77 - 76.75 (29)	TP24.3472x24.2972x0.825	1111.69	2149.29	0.517	0.00	2149.29	0.000
L30	76.75 - 76.5 (30)	TP24.3971x24.3472x0.825	1118.02	2158.58	0.518	0.00	2158.58	0.000
L31	76.5 - 76.25 (31)	TP24.4471x24.3971x0.825	1124.34	2167.89	0.519	0.00	2167.89	0.000
L32	76.25 - 75 (32)	TP24.6968x24.4471x0.8125	1156.08	2184.63	0.529	0.00	2184.63	0.000
L33	75 - 74.75 (33)	TP24.7467x24.6968x0.825	1162.44	2224.18	0.523	0.00	2224.18	0.000
L34	74.75 - 73.5 (34)	TP24.9964x24.7467x0.825	1194.36	2271.65	0.526	0.00	2271.65	0.000
L35	73.5 - 73.25 (35)	TP25.0464x24.9964x0.9125	1200.76	2495.90	0.481	0.00	2495.90	0.000
L36	73.25 - 68.25 (36)	TP26.0452x25.0464x0.875	1330.05	2610.96	0.509	0.00	2610.96	0.000
L37	68.25 - 63.25 (37)	TP27.0441x26.0452x0.85	1461.72	2753.05	0.531	0.00	2753.05	0.000
L38	63.25 - 60.5 (38)	TP27.5935x27.0441x0.825	1535.16	2794.96	0.549	0.00	2794.96	0.000
L39	60.5 - 60.25 (39)	TP27.6434x27.5935x0.825	1541.87	2805.56	0.550	0.00	2805.56	0.000
L40	60.25 - 59.5 (40)	TP27.7933x27.6434x0.825	1562.03	2837.47	0.551	0.00	2837.47	0.000
L41	59.5 - 59.25 (41)	TP27.8432x27.7933x0.9	1568.78	3081.26	0.509	0.00	3081.26	0.000
L42	59.25 - 54.25 (42)	TP28.8421x27.8432x0.8625	1704.71	3192.37	0.534	0.00	3192.37	0.000
L43	54.25 - 45.25 (43)	TP30.64x28.8421x0.8375	1822.06	3302.29	0.552	0.00	3302.29	0.000
L44	45.25 - 44.25 (44)	TP30.3421x29.1911x0.9125	1984.17	3735.93	0.531	0.00	3735.93	0.000
L45	44.25 - 43.5 (45)	TP30.4922x30.3421x0.9125	2005.58	3774.72	0.531	0.00	3774.72	0.000
L46	43.5 - 43.25 (46)	TP30.5423x30.4922x0.9375	2012.73	3881.62	0.519	0.00	3881.62	0.000
L47	43.25 - 39 (47)	TP31.393x30.5423x0.9125	2135.13	4011.67	0.532	0.00	4011.67	0.000
L48	39 - 38.75 (48)	TP31.4431x31.393x0.9625	2142.38	4224.77	0.507	0.00	4224.77	0.000
L49	38.75 - 35 (49)	TP32.1938x31.4431x0.9375	2251.81	4333.79	0.520	0.00	4333.79	0.000
L50	35 - 34.75 (50)	TP32.2438x32.1938x0.8875	2259.14	4135.75	0.546	0.00	4135.75	0.000
L51	34.75 - 34 (51)	TP32.3939x32.2438x0.8875	2281.19	4175.99	0.546	0.00	4175.99	0.000
L52	34 - 33.75 (52)	TP32.444x32.3939x0.8875	2288.55	4189.45	0.546	0.00	4189.45	0.000
L53	33.75 - 29.75 (53)	TP33.2447x32.444x0.8625	2318.04	4133.72	0.561	0.00	4133.72	0.000
L54	29.75 - 29.5 (54)	TP33.2947x33.2447x0.875	2406.96	4350.70	0.553	0.00	4350.70	0.000
L55	29.5 - 25 (55)	TP34.1955x33.2947x0.8625	2414.40	4306.97	0.561	0.00	4306.97	0.000
L56	25 - 24.75 (56)	TP34.2456x34.1955x0.8875	2549.13	4674.16	0.545	0.00	4674.16	0.000
L57	24.75 - 23.5 (57)	TP34.4958x34.2456x0.8875	2556.66	4688.40	0.545	0.00	4688.40	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 $\frac{M_{uy}}{\phi M_{ny}}$
L58	23.5 - 23.25 (58)	TP34.5459x34.4958x0.9625	2594.38	5127.68	0.506	0.00	5127.68	0.000
L59	23.25 - 21.5 (59)	TP34.8962x34.5459x0.9625	2601.94	5143.21	0.506	0.00	5143.21	0.000
L60	21.5 - 21.25 (60)	TP34.9462x34.8962x0.85	2655.01	4684.93	0.567	0.00	4684.93	0.000
L61	21.25 - 16.25 (61)	TP35.9471x34.9462x0.8375	2662.61	4634.88	0.574	0.00	4634.88	0.000
L62	16.25 - 12.916 (62)	TP36.6145x35.9471x0.8125	2815.67	4777.73	0.589	0.00	4777.73	0.000
L63	12.916 - 12.666 (63)	TP36.6645x36.6145x1.0625	2918.82	6355.14	0.459	0.00	6355.14	0.000
L64	12.666 - 12.5 (64)	TP36.6978x36.6645x1.0625	2926.59	6373.30	0.459	0.00	6373.30	0.000
L65	12.5 - 12.15 (65)	TP36.7678x36.6978x0.7625	2931.75	4699.16	0.624	0.00	4699.16	0.000
L66	12.15 - 11.9 (66)	TP36.8179x36.7678x0.6625	2942.65	4133.23	0.712	0.00	4133.23	0.000
L67	11.9 - 11.75 (67)	TP36.8479x36.8179x0.6625	2950.43	4144.79	0.712	0.00	4144.79	0.000
L68	11.75 - 8.5 (68)	TP37.4985x36.8479x0.65	2955.11	4077.63	0.725	0.00	4077.63	0.000
L69	8.5 - 8.25 (69)	TP37.5485x37.4985x0.8875	3056.90	5660.38	0.540	0.00	5660.38	0.000
L70	8.25 - 6.5 (70)	TP37.8988x37.5485x0.8875	3064.78	5676.06	0.540	0.00	5676.06	0.000
L71	6.5 - 6.25 (71)	TP37.9489x37.8988x0.8125	3120.08	5329.63	0.585	0.00	5329.63	0.000
L72	6.25 - 1.25 (72)	TP38.9498x37.9489x0.8	3128.01	5267.27	0.594	0.00	5267.27	0.000
L73	1.25 - 0 (73)	TP39.2x38.9498x0.7875	3288.02	5476.53	0.600	0.00	5476.53	0.000

Pole Shear Design Data

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 $\frac{T_u}{\phi T_n}$
L1	143 - 138 (1)	TP12.75x12.75x0.375	6.76	181.07	0.037	0.54	197.00	0.003
L2	138 - 133 (2)	TP12.75x12.75x0.375	7.40	181.07	0.041	1.36	197.00	0.007
L3	133 - 128 (3)	TP14.4795x13.48x0.1875	12.49	151.44	0.082	1.44	190.38	0.008
L4	128 - 123 (4)	TP15.479x14.4795x0.1875	12.66	162.03	0.078	1.43	217.94	0.007
L5	123 - 122.75 (5)	TP15.529x15.479x0.5375	12.67	455.36	0.028	1.43	600.49	0.002
L6	122.75 - 117.75 (6)	TP16.5285x15.529x0.5125	13.02	463.86	0.028	1.43	653.49	0.002
L7	117.75 - 112.75 (7)	TP17.5281x16.5285x0.4875	13.38	469.45	0.028	1.43	703.68	0.002
L8	112.75 - 109.5 (8)	TP18.1777x17.5281x0.475	18.57	475.19	0.039	1.43	739.96	0.002
L9	109.5 - 109.25 (9)	TP18.2277x18.1777x0.6	18.58	597.70	0.031	1.11	926.78	0.001
L10	109.25 - 104.75 (10)	TP19.1273x18.2277x0.575	18.95	602.84	0.031	1.11	983.77	0.001
L11	104.75 - 104.5 (11)	TP19.1773x19.1273x0.7875	18.97	818.39	0.023	1.11	1323.84	0.001
L12	104.5 - 102.5 (12)	TP19.5771x19.1773x0.7625	19.16	810.71	0.024	1.11	1341.72	0.001
L13	102.5 - 102.25 (13)	TP19.627x19.5771x0.7	19.18	748.71	0.026	1.11	1246.52	0.001
L14	102.25 - 100 (14)	TP20.0768x19.627x0.6875	19.39	753.30	0.026	1.11	1284.78	0.001
L15	100 - 99.75 (15)	TP20.1268x20.0768x0.575	23.13	635.31	0.036	1.11	1092.63	0.001
L16	99.75 - 98.75 (16)	TP20.3267x20.1268x0.575	23.22	641.81	0.036	1.11	1115.09	0.001
L17	98.75 - 98.5 (17)	TP20.3767x20.3267x0.8625	23.24	951.14	0.024	1.11	1632.65	0.001
L18	98.5 - 91.33 (18)	TP21.81x20.3767x0.8375	23.58	957.86	0.025	1.11	1705.26	0.001
L19	91.33 - 91 (19)	TP21.5004x20.7014x0.8875	24.07	1033.81	0.023	1.11	1874.48	0.001
L20	91 - 90.75 (20)	TP21.5504x21.5004x0.775	24.10	909.88	0.026	1.11	1662.78	0.001
L21	90.75 - 89.25 (21)	TP21.85x21.5504x0.775	24.25	923.00	0.026	1.11	1711.08	0.001
L22	89.25 - 89 (22)	TP21.9x21.85x0.925	24.26	1096.42	0.022	1.10	2022.92	0.001
L23	89 - 88.5 (23)	TP21.9999x21.9x0.9125	24.31	1087.40	0.022	1.10	2017.03	0.001
L24	88.5 - 88.25 (24)	TP22.0498x21.9999x0.925	24.33	1104.25	0.022	1.10	2051.92	0.001
L25	88.25 - 88 (25)	TP22.0998x22.0498x0.6875	24.36	831.89	0.029	1.10	1566.86	0.001
L26	88 - 83 (26)	TP23.0986x22.0998x0.6625	24.79	839.98	0.030	1.10	1657.73	0.001
L27	83 - 78 (27)	TP24.0975x23.0986x0.6375	25.20	845.16	0.030	1.10	1744.08	0.001
L28	78 - 77 (28)	TP24.2972x24.0975x0.625	25.28	836.09	0.030	1.10	1740.97	0.001
L29	77 - 76.75 (29)	TP24.3472x24.2972x0.825	25.29	1096.64	0.023	1.10	2269.04	0.000
L30	76.75 - 76.5 (30)	TP24.3971x24.3472x0.825	25.32	1098.97	0.023	1.10	2278.68	0.000
L31	76.5 - 76.25 (31)	TP24.4471x24.3971x0.825	25.34	1101.30	0.023	1.10	2288.35	0.000
L32	76.25 - 75 (32)	TP24.6968x24.4471x0.8125	25.47	1096.65	0.023	1.10	2303.99	0.000
L33	75 - 74.75 (33)	TP24.7467x24.6968x0.825	25.48	1115.27	0.023	1.10	2346.78	0.000
L34	74.75 - 73.5 (34)	TP24.9964x24.7467x0.825	25.61	1126.91	0.023	1.10	2396.03	0.000
L35	73.5 - 73.25 (35)	TP25.0464x24.9964x0.9125	25.63	1244.50	0.021	1.10	2641.93	0.000
L36	73.25 - 68.25 (36)	TP26.0452x25.0464x0.875	26.12	1244.60	0.021	1.10	2755.60	0.000
L37	68.25 - 63.25 (37)	TP27.0441x26.0452x0.85	26.59	1258.22	0.021	1.10	2899.07	0.000
L38	63.25 - 60.5 (38)	TP27.5935x27.0441x0.825	26.86	1247.99	0.022	1.10	2938.56	0.000
L39	60.5 - 60.25 (39)	TP27.6434x27.5935x0.825	26.87	1250.32	0.021	1.10	2949.53	0.000
L40	60.25 - 59.5 (40)	TP27.7933x27.6434x0.825	26.94	1257.30	0.021	1.10	2982.58	0.000
L41	59.5 - 59.25 (41)	TP27.8432x27.7933x0.9	26.96	1370.33	0.020	1.10	3247.68	0.000
L42	59.25 - 54.25 (42)	TP28.8421x27.8432x0.8625	27.44	1363.74	0.020	1.10	3356.40	0.000
L43	54.25 - 45.25 (43)	TP30.64x28.8421x0.8375	27.82	1365.58	0.020	1.10	3465.91	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 $\frac{T_u}{\phi T_n}$
L44	45.25 - 44.25 (44)	TP30.3421x29.1911x0.9125	28.54	1517.58	0.019	1.17	3928.57	0.000
L45	44.25 - 43.5 (45)	TP30.4922x30.3421x0.9125	28.61	1525.32	0.019	1.17	3968.76	0.000
L46	43.5 - 43.25 (46)	TP30.5423x30.4922x0.9375	28.62	1568.43	0.018	1.17	4084.40	0.000
L47	43.25 - 39 (47)	TP31.393x30.5423x0.9125	29.01	1571.77	0.018	1.17	4214.16	0.000
L48	39 - 38.75 (48)	TP31.4431x31.393x0.9625	29.02	1657.90	0.018	1.17	4445.09	0.000
L49	38.75 - 35 (49)	TP32.1938x31.4431x0.9375	29.37	1655.93	0.018	1.17	4552.79	0.000
L50	35 - 34.75 (50)	TP32.2438x32.1938x0.8875	29.38	1572.63	0.019	1.17	4337.62	0.000
L51	34.75 - 34 (51)	TP32.3939x32.2438x0.8875	29.45	1580.16	0.019	1.17	4379.25	0.000
L52	34 - 33.75 (52)	TP32.444x32.3939x0.8875	29.46	1582.67	0.019	1.17	4393.18	0.000
L53	33.75 - 29.75 (53)	TP33.2447x32.444x0.8625	29.63	1558.82	0.019	1.17	4330.57	0.000
L54	29.75 - 29.5 (54)	TP33.2947x33.2447x0.875	29.78	1603.06	0.019	1.17	4557.41	0.000
L55	29.5 - 25 (55)	TP34.1955x33.2947x0.8625	29.88	1591.75	0.019	1.17	4509.68	0.000
L56	25 - 24.75 (56)	TP34.2456x34.1955x0.8875	30.13	1673.03	0.018	1.17	4894.40	0.000
L57	24.75 - 23.5 (57)	TP34.4958x34.2456x0.8875	30.26	1685.57	0.018	1.17	4909.12	0.000
L58	23.5 - 23.25 (58)	TP34.5459x34.4958x0.9625	30.26	1826.66	0.017	1.17	5380.05	0.000
L59	23.25 - 21.5 (59)	TP34.8962x34.5459x0.9625	30.44	1845.71	0.016	1.17	5396.13	0.000
L60	21.5 - 21.25 (60)	TP34.9462x34.8962x0.85	30.43	1637.79	0.019	1.17	4897.66	0.000
L61	21.25 - 16.25 (61)	TP35.9471x34.9462x0.8375	30.52	1623.77	0.019	1.17	4843.38	0.000
L62	16.25 - 12.916 (62)	TP36.6145x35.9471x0.8125	30.92	1623.43	0.019	1.17	4985.70	0.000
L63	12.916 - 12.666 (63)	TP36.6645x36.6145x1.0625	31.10	2137.65	0.015	1.17	6675.59	0.000
L64	12.666 - 12.5 (64)	TP36.6978x36.6645x1.0625	31.12	2139.65	0.015	1.17	6694.40	0.000
L65	12.5 - 12.15 (65)	TP36.7678x36.6978x0.7625	31.15	1551.46	0.020	1.17	4894.57	0.000
L66	12.15 - 11.9 (66)	TP36.8179x36.7678x0.6625	31.17	1353.60	0.023	1.17	4293.01	0.000
L67	11.9 - 11.75 (67)	TP36.8479x36.8179x0.6625	31.18	1354.73	0.023	1.17	4304.92	0.000
L68	11.75 - 8.5 (68)	TP37.4985x36.8479x0.65	31.30	1337.59	0.023	1.18	4233.63	0.000
L69	8.5 - 8.25 (69)	TP37.5485x37.4985x0.8875	31.51	1838.68	0.017	1.21	5913.22	0.000
L70	8.25 - 6.5 (70)	TP37.8988x37.5485x0.8875	31.75	1856.25	0.017	1.23	5929.40	0.000
L71	6.5 - 6.25 (71)	TP37.9489x37.8988x0.8125	31.74	1705.12	0.019	1.23	5555.00	0.000
L72	6.25 - 1.25 (72)	TP38.9498x37.9489x0.8	31.87	1688.51	0.019	1.24	5488.00	0.000
L73	1.25 - 0 (73)	TP39.2x38.9498x0.7875	32.44	1709.45	0.019	1.29	5701.01	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
L1	143 - 138 (1)	0.005	0.160	0.000	0.037	0.003	0.167	1.050	4.8.2
L2	138 - 133 (2)	0.005	0.337	0.000	0.041	0.007	0.345	1.050	4.8.2
L3	133 - 128 (3)	0.014	0.680	0.000	0.082	0.008	0.703	1.050	4.8.2
L4	128 - 123 (4)	0.014	0.892	0.000	0.078	0.007	0.912	1.050	4.8.2
L5	123 - 122.75 (5)	0.005	0.337	0.000	0.028	0.002	0.343	1.050	4.8.2
L6	122.75 - 117.75 (6)	0.005	0.412	0.000	0.028	0.002	0.418	1.050	4.8.2
L7	117.75 - 112.75 (7)	0.006	0.479	0.000	0.028	0.002	0.486	1.050	4.8.2
L8	112.75 - 109.5 (8)	0.007	0.521	0.000	0.039	0.002	0.530	1.050	4.8.2
L9	109.5 - 109.25 (9)	0.006	0.424	0.000	0.031	0.001	0.431	1.050	4.8.2
L10	109.25 - 104.75 (10)	0.006	0.488	0.000	0.031	0.001	0.496	1.050	4.8.2
L11	104.75 - 104.5 (11)	0.005	0.371	0.000	0.023	0.001	0.376	1.050	4.8.2
L12	104.5 - 102.5 (12)	0.005	0.395	0.000	0.024	0.001	0.401	1.050	4.8.2
L13	102.5 - 102.25 (13)	0.005	0.428	0.000	0.026	0.001	0.434	1.050	4.8.2
L14	102.25 - 100 (14)	0.005	0.450	0.000	0.026	0.001	0.456	1.050	4.8.2
L15	100 - 99.75 (15)	0.008	0.532	0.000	0.036	0.001	0.541	1.050	4.8.2
L16	99.75 - 98.75 (16)	0.008	0.543	0.000	0.036	0.001	0.552	1.050	4.8.2
L17	98.75 - 98.5 (17)	0.005	0.380	0.000	0.024	0.001	0.386	1.050	4.8.2
L18	98.5 - 91.33 (18)	0.005	0.414	0.000	0.025	0.001	0.420	1.050	4.8.2
L19	91.33 - 91 (19)	0.006	0.431	0.000	0.023	0.001	0.437	1.050	4.8.2
L20	91 - 90.75 (20)	0.006	0.487	0.000	0.026	0.001	0.494	1.050	4.8.2
L21	90.75 - 89.25 (21)	0.006	0.496	0.000	0.026	0.001	0.503	1.050	4.8.2
L22	89.25 - 89 (22)	0.005	0.425	0.000	0.022	0.001	0.431	1.050	4.8.2
L23	89 - 88.5 (23)	0.005	0.433	0.000	0.022	0.001	0.439	1.050	4.8.2
L24	88.5 - 88.25 (24)	0.005	0.429	0.000	0.022	0.001	0.435	1.050	4.8.2
L25	88.25 - 88 (25)	0.007	0.559	0.000	0.029	0.001	0.567	1.050	4.8.2
L26	88 - 83 (26)	0.008	0.605	0.000	0.030	0.001	0.614	1.050	4.8.2
L27	83 - 78 (27)	0.008	0.649	0.000	0.030	0.001	0.658	1.050	4.8.2

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L28	78 - 77 (28)	0.008	0.665	0.000	0.030	0.001	0.674	1.050	4.8.2
L29	77 - 76.75 (29)	0.006	0.517	0.000	0.023	0.000	0.524	1.050	4.8.2
L30	76.75 - 76.5 (30)	0.006	0.518	0.000	0.023	0.000	0.525	1.050	4.8.2
L31	76.5 - 76.25 (31)	0.006	0.519	0.000	0.023	0.000	0.525	1.050	4.8.2
L32	76.25 - 75 (32)	0.006	0.529	0.000	0.023	0.000	0.536	1.050	4.8.2
L33	75 - 74.75 (33)	0.006	0.523	0.000	0.023	0.000	0.529	1.050	4.8.2
L34	74.75 - 73.5 (34)	0.006	0.526	0.000	0.023	0.000	0.533	1.050	4.8.2
L35	73.5 - 73.25 (35)	0.006	0.481	0.000	0.021	0.000	0.487	1.050	4.8.2
L36	73.25 - 68.25 (36)	0.006	0.509	0.000	0.021	0.000	0.516	1.050	4.8.2
L37	68.25 - 63.25 (37)	0.006	0.531	0.000	0.021	0.000	0.538	1.050	4.8.2
L38	63.25 - 60.5 (38)	0.007	0.549	0.000	0.022	0.000	0.556	1.050	4.8.2
L39	60.5 - 60.25 (39)	0.007	0.550	0.000	0.021	0.000	0.557	1.050	4.8.2
L40	60.25 - 59.5 (40)	0.007	0.551	0.000	0.021	0.000	0.558	1.050	4.8.2
L41	59.5 - 59.25 (41)	0.006	0.509	0.000	0.020	0.000	0.516	1.050	4.8.2
L42	59.25 - 54.25 (42)	0.007	0.534	0.000	0.020	0.000	0.541	1.050	4.8.2
L43	54.25 - 45.25 (43)	0.007	0.552	0.000	0.020	0.000	0.559	1.050	4.8.2
L44	45.25 - 44.25 (44)	0.007	0.531	0.000	0.019	0.000	0.538	1.050	4.8.2
L45	44.25 - 43.5 (45)	0.007	0.531	0.000	0.019	0.000	0.539	1.050	4.8.2
L46	43.5 - 43.25 (46)	0.007	0.519	0.000	0.018	0.000	0.526	1.050	4.8.2
L47	43.25 - 39 (47)	0.007	0.532	0.000	0.018	0.000	0.540	1.050	4.8.2
L48	39 - 38.75 (48)	0.007	0.507	0.000	0.018	0.000	0.514	1.050	4.8.2
L49	38.75 - 35 (49)	0.007	0.520	0.000	0.018	0.000	0.527	1.050	4.8.2
L50	35 - 34.75 (50)	0.007	0.546	0.000	0.019	0.000	0.554	1.050	4.8.2
L51	34.75 - 34 (51)	0.007	0.546	0.000	0.019	0.000	0.554	1.050	4.8.2
L52	34 - 33.75 (52)	0.007	0.546	0.000	0.019	0.000	0.554	1.050	4.8.2
L53	33.75 - 29.75 (53)	0.008	0.561	0.000	0.019	0.000	0.569	1.050	4.8.2
L54	29.75 - 29.5 (54)	0.008	0.553	0.000	0.019	0.000	0.561	1.050	4.8.2
L55	29.5 - 25 (55)	0.008	0.561	0.000	0.019	0.000	0.569	1.050	4.8.2
L56	25 - 24.75 (56)	0.008	0.545	0.000	0.018	0.000	0.553	1.050	4.8.2
L57	24.75 - 23.5 (57)	0.008	0.545	0.000	0.018	0.000	0.553	1.050	4.8.2
L58	23.5 - 23.25 (58)	0.007	0.506	0.000	0.017	0.000	0.513	1.050	4.8.2
L59	23.25 - 21.5 (59)	0.007	0.506	0.000	0.016	0.000	0.513	1.050	4.8.2
L60	21.5 - 21.25 (60)	0.008	0.567	0.000	0.019	0.000	0.575	1.050	4.8.2
L61	21.25 - 16.25 (61)	0.008	0.574	0.000	0.019	0.000	0.583	1.050	4.8.2
L62	16.25 - 12.916 (62)	0.009	0.589	0.000	0.019	0.000	0.598	1.050	4.8.2
L63	12.916 - 12.666 (63)	0.007	0.459	0.000	0.015	0.000	0.466	1.050	4.8.2
L64	12.666 - 12.5 (64)	0.007	0.459	0.000	0.015	0.000	0.466	1.050	4.8.2
L65	12.5 - 12.15 (65)	0.009	0.624	0.000	0.020	0.000	0.634	1.050	4.8.2
L66	12.15 - 11.9 (66)	0.011	0.712	0.000	0.023	0.000	0.723	1.050	4.8.2
L67	11.9 - 11.75 (67)	0.011	0.712	0.000	0.023	0.000	0.723	1.050	4.8.2
L68	11.75 - 8.5 (68)	0.011	0.725	0.000	0.023	0.000	0.736	1.050	4.8.2
L69	8.5 - 8.25 (69)	0.008	0.540	0.000	0.017	0.000	0.548	1.050	4.8.2
L70	8.25 - 6.5 (70)	0.008	0.540	0.000	0.017	0.000	0.548	1.050	4.8.2
L71	6.5 - 6.25 (71)	0.009	0.585	0.000	0.019	0.000	0.595	1.050	4.8.2
L72	6.25 - 1.25 (72)	0.009	0.594	0.000	0.019	0.000	0.603	1.050	4.8.2
L73	1.25 - 0 (73)	0.009	0.600	0.000	0.019	0.000	0.610	1.050	4.8.2

Section Capacity Table

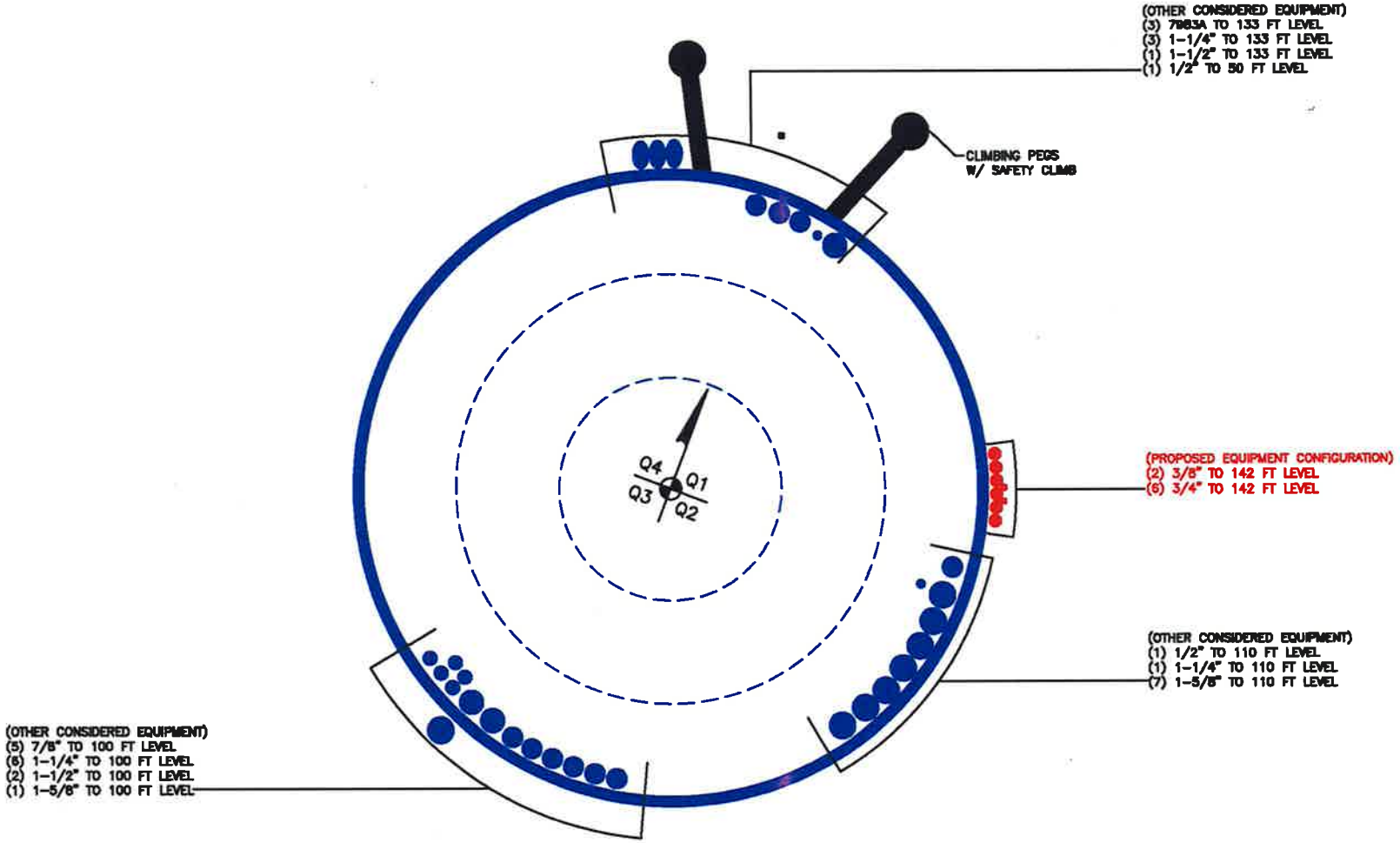
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	143 - 138	Pole	TP12.75x12.75x0.375	1	-2.88	633.75	15.9	Pass
L2	138 - 133	Pole	TP12.75x12.75x0.375	2	-3.27	633.75	32.9	Pass
L3	133 - 128	Pole	TP14.4795x13.48x0.1875	3	-7.06	530.02	66.9	Pass
L4	128 - 123	Pole	TP15.479x14.4795x0.1875	4	-7.44	567.09	86.9	Pass
L5	123 - 122.75	Pole	TP15.529x15.479x0.5375	5	-7.49	1593.76	32.6	Pass
L6	122.75 - 117.75	Pole	TP16.5285x15.529x0.5125	6	-8.04	1623.49	39.8	Pass
L7	117.75 - 112.75	Pole	TP17.5281x16.5285x0.4875	7	-8.62	1643.08	46.3	Pass
L8	112.75 - 109.5	Pole	TP18.1777x17.5281x0.475	8	-11.60	1663.17	50.5	Pass
L9	109.5 - 109.25	Pole	TP18.2277x18.1777x0.6	9	-11.66	2091.94	41.0	Pass
L10	109.25 - 104.75	Pole	TP19.1273x18.2277x0.575	10	-12.37	2109.92	47.2	Pass
L11	104.75 - 104.5	Pole	TP19.1773x19.1273x0.7875	11	-12.43	2864.36	35.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L12	104.5 - 102.5	Pole	TP19.5771x19.1773x0.7625	12	-12.84	2837.50	38.2	Pass
L13	102.5 - 102.25	Pole	TP19.627x19.5771x0.7	13	-12.89	2620.48	41.3	Pass
L14	102.25 - 100	Pole	TP20.0768x19.627x0.6875	14	-13.30	2636.55	43.5	Pass
L15	100 - 99.75	Pole	TP20.1268x20.0768x0.575	15	-16.35	2223.60	51.5	Pass
L16	99.75 - 98.75	Pole	TP20.3267x20.1268x0.575	16	-16.52	2246.33	52.6	Pass
L17	98.75 - 98.5	Pole	TP20.3767x20.3267x0.8625	17	-16.60	3328.97	36.8	Pass
L18	98.5 - 91.33	Pole	TP21.81x20.3767x0.8375	18	-17.41	3352.52	40.0	Pass
L19	91.33 - 91	Pole	TP21.5004x20.7014x0.8875	19	-19.10	3618.34	41.7	Pass
L20	91 - 90.75	Pole	TP21.5504x21.5004x0.775	20	-19.16	3184.58	47.1	Pass
L21	90.75 - 89.25	Pole	TP21.85x21.5504x0.775	21	-19.52	3230.51	47.9	Pass
L22	89.25 - 89	Pole	TP21.9x21.85x0.925	22	-19.61	3837.47	41.1	Pass
L23	89 - 88.5	Pole	TP21.9999x21.9x0.9125	23	-19.74	3805.89	41.8	Pass
L24	88.5 - 88.25	Pole	TP22.0498x21.9999x0.925	24	-19.82	3864.87	41.4	Pass
L25	88.25 - 88	Pole	TP22.0998x22.0498x0.6875	25	-19.88	2911.63	54.0	Pass
L26	88 - 83	Pole	TP23.0986x22.0998x0.6625	26	-21.11	2939.92	58.4	Pass
L27	83 - 78	Pole	TP24.0975x23.0986x0.6375	27	-22.39	2958.07	62.6	Pass
L28	78 - 77	Pole	TP24.2972x24.0975x0.625	28	-22.65	2926.31	64.2	Pass
L29	77 - 76.75	Pole	TP24.3472x24.2972x0.825	29	-22.74	3838.24	49.9	Pass
L30	76.75 - 76.5	Pole	TP24.3971x24.3472x0.825	30	-22.81	3846.39	50.0	Pass
L31	76.5 - 76.25	Pole	TP24.4471x24.3971x0.825	31	-22.89	3854.54	50.0	Pass
L32	76.25 - 75	Pole	TP24.6968x24.4471x0.8125	32	-23.23	3838.29	51.1	Pass
L33	75 - 74.75	Pole	TP24.7467x24.6968x0.825	33	-23.32	3903.44	50.4	Pass
L34	74.75 - 73.5	Pole	TP24.9964x24.7467x0.825	34	-23.69	3944.19	50.7	Pass
L35	73.5 - 73.25	Pole	TP25.0464x24.9964x0.9125	35	-23.78	4355.74	46.4	Pass
L36	73.25 - 68.25	Pole	TP26.0452x25.0464x0.875	36	-25.34	4356.08	49.1	Pass
L37	68.25 - 63.25	Pole	TP27.0441x26.0452x0.85	37	-26.93	4403.76	51.2	Pass
L38	63.25 - 60.5	Pole	TP27.5935x27.0441x0.825	38	-27.81	4367.96	53.0	Pass
L39	60.5 - 60.25	Pole	TP27.6434x27.5935x0.825	39	-27.91	4376.11	53.0	Pass
L40	60.25 - 59.5	Pole	TP27.7933x27.6434x0.825	40	-28.15	4400.56	53.1	Pass
L41	59.5 - 59.25	Pole	TP27.8432x27.7933x0.9	41	-28.24	4796.15	49.1	Pass
L42	59.25 - 54.25	Pole	TP28.8421x27.8432x0.8625	42	-29.94	4773.10	51.5	Pass
L43	54.25 - 45.25	Pole	TP30.64x28.8421x0.8375	43	-31.41	4779.54	53.2	Pass
L44	45.25 - 44.25	Pole	TP30.3421x29.1911x0.9125	44	-34.99	5311.52	51.3	Pass
L45	44.25 - 43.5	Pole	TP30.4922x30.3421x0.9125	45	-35.27	5338.61	51.3	Pass
L46	43.5 - 43.25	Pole	TP30.5423x30.4922x0.9375	46	-35.38	5489.52	50.1	Pass
L47	43.25 - 39	Pole	TP31.393x30.5423x0.9125	47	-37.05	5501.19	51.4	Pass
L48	39 - 38.75	Pole	TP31.4431x31.393x0.9625	48	-37.16	5802.64	49.0	Pass
L49	38.75 - 35	Pole	TP32.1938x31.4431x0.9375	49	-38.70	5795.75	50.2	Pass
L50	35 - 34.75	Pole	TP32.2438x32.1938x0.8875	50	-38.82	5504.20	52.8	Pass
L51	34.75 - 34	Pole	TP32.3939x32.2438x0.8875	51	-39.12	5530.56	52.8	Pass
L52	34 - 33.75	Pole	TP32.444x32.3939x0.8875	52	-39.22	5539.34	52.8	Pass
L53	33.75 - 29.75	Pole	TP33.2447x32.444x0.8625	53	-39.63	5421.72	54.2	Pass
L54	29.75 - 29.5	Pole	TP33.2947x33.2447x0.875	54	-40.80	5602.05	53.5	Pass
L55	29.5 - 25	Pole	TP34.1955x33.2947x0.8625	55	-40.91	5532.70	54.2	Pass
L56	25 - 24.75	Pole	TP34.2456x34.1955x0.8875	56	-42.70	5846.80	52.7	Pass
L57	24.75 - 23.5	Pole	TP34.4958x34.2456x0.8875	57	-42.82	5855.59	52.7	Pass
L58	23.5 - 23.25	Pole	TP34.5459x34.4958x0.9625	58	-43.33	6383.78	48.9	Pass
L59	23.25 - 21.5	Pole	TP34.8962x34.5459x0.9625	59	-43.46	6393.31	48.9	Pass
L60	21.5 - 21.25	Pole	TP34.9462x34.8962x0.85	60	-44.21	5723.85	54.8	Pass
L61	21.25 - 16.25	Pole	TP35.9471x34.9462x0.8375	61	-44.32	5650.04	55.5	Pass
L62	16.25 - 12.916	Pole	TP36.6145x35.9471x0.8125	62	-46.45	5646.24	57.0	Pass
L63	12.916 - 12.666	Pole	TP36.6645x36.6145x1.0625	63	-47.88	7471.26	44.4	Pass
L64	12.666 - 12.5	Pole	TP36.6978x36.6645x1.0625	64	-48.00	7481.77	44.4	Pass
L65	12.5 - 12.15	Pole	TP36.7678x36.6978x0.7625	65	-48.09	5419.53	60.3	Pass
L66	12.15 - 11.9	Pole	TP36.8179x36.7678x0.6625	66	-48.24	4731.06	68.9	Pass
L67	11.9 - 11.75	Pole	TP36.8479x36.8179x0.6625	67	-48.33	4737.62	68.9	Pass
L68	11.75 - 8.5	Pole	TP37.4985x36.8479x0.65	68	-48.41	4653.69	70.1	Pass
L69	8.5 - 8.25	Pole	TP37.5485x37.4985x0.8875	69	-49.71	6426.60	52.2	Pass
L70	8.25 - 6.5	Pole	TP37.8988x37.5485x0.8875	70	-49.85	6435.38	52.2	Pass
L71	6.5 - 6.25	Pole	TP37.9489x37.8988x0.8125	71	-50.67	5959.89	56.6	Pass
L72	6.25 - 1.25	Pole	TP38.9498x37.9489x0.8	72	-50.79	5878.10	57.5	Pass
L73	1.25 - 0	Pole	TP39.2x38.9498x0.7875	73	-52.99	5944.09	58.1	Pass
							Summary	
						Pole (L4)	86.9	Pass
						RATING =	**86.9**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 676317 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222-H

Site BU: 876317

Work Order: 1673707

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	143	10	0	0	12.75	12.75	0.375		A500-46
2	133	41.67	3.67	12	13.48	21.85	0.1875	Auto	A572-65
3	95	49.75	4.75	12	20.70	30.64	0.25	Auto	A572-65
4	50	50	0	12	29.19	39.2	0.3125	Auto	A572-65
5									

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Pole Flat Width (in)	1	2	3	4	5	6	7	8	9	10	11	12
1	0	29.75	plate	R/F Bar #1	8.91				E1								E1
2	0	12.916	plate	R/F Bar #1A	9.81							E1		E1			
3	12.167	29.75	plate	R/F Bar #1B	8.91								E1				
4	29.75	59.5	plate	R/F Bar #2	7.45				E1				E1				E1
5	59.5	89.25	plate	R/F Bar #3	5.85				E1				E1				E1
6	89.25	98.75	plate	R/F Bar #4	5.45				E1				E1				E1
7	12.5	39	plate	PJF R/F Plate	8.41	1											
8	12.5	34	plate	PJF R/F Plate	8.68						E2				E2		
9	34	60.5	plate	PJF R/F Plate	7.39			E2				E2				E2	
10	60.5	77	plate	PJF R/F Plate	6.51		E2				E2				E2		
11	88.25	104.75	plate	PJF R/F Plate	5.13		E2				E2				E2		
12																	
13	0	8.5	plate	TS 1 x 7	10.05			P			P				P		
14	6.5	23.3	plate	CO-SFP-060100	9.24											P	
15	6.5	25	plate	CO-SFP-060100	9.16					P							
16	12	25	plate	CO-SFP-060100	9.16		P										
17	21.5	35	plate	CO-SFP-045100	8.63									P			
18	25	35	plate	CO-SFP-045100	8.63					P							
19	25	43.5	plate	CO-SFP-045100	8.17		P										
20	35	45	plate	CO-SFP-060100	8.09					P				P			
21	46.5	75	plate	CO-SFP-045100	6.62	P											
22	45	75	plate	CO-SFP-045100	6.62									P			
23	45	73.5	plate	CO-SFP-040075	6.7					P							
24	75	100	plate	CO-SFP-040075	5.38	P								P			
25	76.5	88.5	plate	CO-SFP-040075	5.89			P									
26	91	100	plate	CO-AFP-040075	5.38					P							
27	100	123	plate	CO-AFP-045100	4.15	P				P				P			
28	102.5	109.5	plate	CO-AFP-040075	4.87			P								P	
29																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_c (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	6.953	1.2500	A572-65
2	6.875	1.25	8.59375	0.625	n/a	42.000	15.000	6.953	1.2500	A572-65
3	6.875	1.25	8.59375	0.625	36.000	36.000	15.000	6.953	1.2500	A572-65
4	6.625	1.25	8.28125	0.625	n/a	30.000	18.000	6.641	1.2500	A572-65
5	5.5	1.25	6.875	0.625	n/a	18.000	18.000	5.234	1.2500	A572-65
6	3.625	1.25	4.53125	0.625	n/a	15.000	24.000	2.891	1.2500	A572-65
7	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A572-65
8	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A572-65
9	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A572-65
10	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A572-65
11	4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A572-65
13	1	7	7	3.5	n/a	n/a	0.000	7.000	0.0000	A572-65
14	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
15	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
16	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
17	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
18	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
19	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
20	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
21	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
22	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
23	4	0.75	3	0.375	12.000	12.000	16.000	2.063	1.1875	A572-65
24	4	0.75	3	0.375	12.000	12.000	16.000	2.063	1.1875	A572-65
25	4	0.75	3	0.375	12.000	12.000	16.000	2.063	1.1875	A572-65
26	4	0.75	3	0.375	18.000	18.000	16.000	2.063	1.1875	A572-65
27	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
28	4	0.75	3	0.375	18.000	18.000	16.000	2.063	1.1875	A572-65

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	143 - 138	5		0	12.750	12.750	0.375	A500-46	1.000
2	138 - 133	5	0	0	12.750	12.750	0.375	A500-46	1.000
3	133 - 128	5		12	13.480	14.480	0.1875	A572-65	1.000
4	128 - 123	5		12	14.480	15.479	0.1875	A572-65	1.000
5	123 - 122.75	0.25		12	15.479	15.529	0.5375	A572-65	0.878
6	122.75 - 117.75	5		12	15.529	16.529	0.5125	A572-65	0.885
7	117.75 - 112.75	5		12	16.529	17.528	0.4875	A572-65	0.897
8	112.75 - 109.5	3.25		12	17.528	18.178	0.475	A572-65	0.900
9	109.5 - 109.25	0.25		12	18.178	18.228	0.6	A572-65	0.893
10	109.25 - 104.75	4.5		12	18.228	19.127	0.575	A572-65	0.901
11	104.75 - 104.5	0.25		12	19.127	19.177	0.7875	A572-65	0.922
12	104.5 - 102.5	2		12	19.177	19.577	0.7625	A572-65	0.936
13	102.5 - 102.25	0.25		12	19.577	19.627	0.7	A572-65	0.874
14	102.25 - 100	2.25		12	19.627	20.077	0.6875	A572-65	0.875
15	100 - 99.75	0.25		12	20.077	20.127	0.575	A572-65	0.913
16	99.75 - 98.75	1		12	20.127	20.327	0.575	A572-65	0.908
17	98.75 - 98.5	0.25		12	20.327	20.377	0.8625	A572-65	0.864
18	98.5 - 95	7.17	3.67	12	20.377	21.810	0.8375	A572-65	0.866
19	95 - 91	4		12	20.701	21.500	0.8875	A572-65	0.879
20	91 - 90.75	0.25		12	21.500	21.550	0.775	A572-65	0.941
21	90.75 - 89.25	1.5		12	21.550	21.850	0.775	A572-65	0.932
22	89.25 - 89	0.25		12	21.850	21.900	0.925	A572-65	0.898
23	89 - 88.5	0.5		12	21.900	22.000	0.9125	A572-65	0.907
24	88.5 - 88.25	0.25		12	22.000	22.050	0.925	A572-65	0.941
25	88.25 - 88	0.25		12	22.050	22.100	0.6875	A572-65	0.997
26	88 - 83	5		12	22.100	23.099	0.6625	A572-65	1.004
27	83 - 78	5		12	23.099	24.097	0.6375	A572-65	1.015
28	78 - 77	1		12	24.097	24.297	0.625	A572-65	1.029
29	77 - 76.75	0.25		12	24.297	24.347	0.825	A572-65	0.978
30	76.75 - 76.5	0.25		12	24.347	24.397	0.825	A572-65	0.976
31	76.5 - 76.25	0.25		12	24.397	24.447	0.825	A572-65	0.927
32	76.25 - 75	1.25		12	24.447	24.697	0.8125	A572-65	0.934
33	75 - 74.75	0.25		12	24.697	24.747	0.825	A572-65	0.966
34	74.75 - 73.5	1.25		12	24.747	24.996	0.825	A572-65	0.959
35	73.5 - 73.25	0.25		12	24.996	25.046	0.9125	A572-65	0.912
36	73.25 - 68.25	5		12	25.046	26.045	0.875	A572-65	0.923
37	68.25 - 63.25	5		12	26.045	27.044	0.85	A572-65	0.924
38	63.25 - 60.5	2.75		12	27.044	27.593	0.825	A572-65	0.938
39	60.5 - 60.25	0.25		12	27.593	27.643	0.825	A572-65	0.937
40	60.25 - 59.5	0.75		12	27.643	27.793	0.825	A572-65	0.933
41	59.5 - 59.25	0.25		12	27.793	27.843	0.9	A572-65	0.911
42	59.25 - 54.25	5		12	27.843	28.842	0.8625	A572-65	0.926
43	54.25 - 50	9	4.75	12	28.842	30.640	0.8375	A572-65	0.933
44	50 - 44.25	5.75		12	29.191	30.342	0.9125	A572-65	0.915
45	44.25 - 43.5	0.75		12	30.342	30.492	0.9125	A572-65	0.912
46	43.5 - 43.25	0.25		12	30.492	30.542	0.9375	A572-65	0.938
47	43.25 - 39	4.25		12	30.542	31.393	0.9125	A572-65	0.946
48	39 - 38.75	0.25		12	31.393	31.443	0.9625	A572-65	0.939
49	38.75 - 35	3.75		12	31.443	32.194	0.9375	A572-65	0.949
50	35 - 34.75	0.25		12	32.194	32.244	0.8875	A572-65	0.966
51	34.75 - 34	0.75		12	32.244	32.394	0.8875	A572-65	0.963
52	34 - 33.75	0.25		12	32.394	32.444	0.8875	A572-65	0.918
53	33.75 - 29.75	4		12	32.444	33.245	0.8625	A572-65	0.929
54	29.75 - 29.5	0.25		12	33.245	33.295	0.875	A572-65	0.926
55	29.5 - 25	4.5		12	33.295	34.196	0.8625	A572-65	0.923
56	25 - 24.75	0.25		12	34.196	34.246	0.8875	A572-65	0.928
57	24.75 - 23.5	1.25		12	34.246	34.496	0.8875	A572-65	0.924
58	23.5 - 23.25	0.25		12	34.496	34.546	0.9625	A572-65	0.911
59	23.25 - 21.5	1.75		12	34.546	34.896	0.9625	A572-65	0.905
60	21.5 - 21.25	0.25		12	34.896	34.946	0.85	A572-65	0.972
61	21.25 - 16.25	5		12	34.946	35.947	0.8375	A572-65	0.969
62	16.25 - 12.916	3.334		12	35.947	36.614	0.8125	A572-65	0.986
63	12.916 - 12.666	0.25		12	36.614	36.665	1.0625	A572-65	0.900
64	12.666 - 12.5	0.166		12	36.665	36.698	1.0625	A572-65	0.900
65	12.5 - 12.15	0.35		12	36.698	36.768	0.7625	A572-65	1.008
66	12.15 - 11.9	0.25		12	36.768	36.818	0.6625	A572-65	1.078
67	11.9 - 11.75	0.15		12	36.818	36.848	0.6625	A572-65	1.078
68	11.75 - 8.5	3.25		12	36.848	37.498	0.65	A572-65	1.087
69	8.5 - 8.25	0.25		12	37.498	37.549	0.8875	A572-65	1.002
70	8.25 - 6.5	1.75		12	37.549	37.899	0.8875	A572-65	0.995
71	6.5 - 6.25	0.25		12	37.899	37.949	0.8125	A572-65	0.961
72	6.25 - 1.25	5		12	37.949	38.950	0.8	A572-65	0.960
73	1.25 - 0	1.25		12	38.950	39.200	0.7875	A572-65	0.971

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{uu} (kip-ft)	V_u (K)
1	143 - 138	2.89	31.76	6.76
2	138 - 133	3.27	66.88	7.37
3	133 - 128	7.07	125.37	12.44
4	128 - 123	7.44	188.19	12.66
5	123 - 122.75	7.49	191.36	12.67
6	122.75 - 117.75	8.04	255.56	13.02
7	117.75 - 112.75	8.62	321.53	13.38
8	112.75 - 109.5	11.60	367.94	18.57
9	109.5 - 109.25	11.66	372.58	18.58
10	109.25 - 104.75	12.37	456.99	18.95
11	104.75 - 104.5	12.43	461.72	18.97
12	104.5 - 102.5	12.84	499.84	19.16
13	102.5 - 102.25	12.89	504.63	19.18
14	102.25 - 100	13.30	548.00	19.39
15	100 - 99.75	16.35	553.78	23.13
16	99.75 - 98.75	16.52	576.94	23.22
17	98.75 - 98.5	16.60	582.74	23.24
18	98.5 - 95	17.41	664.62	23.58
19	95 - 91	19.10	759.89	24.07
20	91 - 90.75	19.16	765.91	24.10
21	90.75 - 89.25	19.52	802.15	24.25
22	89.25 - 89	19.61	808.21	24.26
23	89 - 88.5	19.74	820.34	24.31
24	88.5 - 88.25	19.82	826.42	24.33
25	88.25 - 88	19.88	832.51	24.36
26	88 - 83	21.11	955.29	24.79
27	83 - 78	22.39	1080.15	25.20
28	78 - 77	22.65	1105.37	25.28
29	77 - 76.75	22.74	1111.69	25.29
30	76.75 - 76.5	22.81	1118.01	25.32
31	76.5 - 76.25	22.89	1124.34	25.34
32	76.25 - 75	23.23	1156.08	25.47
33	75 - 74.75	23.32	1162.45	25.48
34	74.75 - 73.5	23.69	1194.36	25.61
35	73.5 - 73.25	23.78	1200.76	25.63
36	73.25 - 68.25	25.34	1330.05	26.12
37	68.25 - 63.25	26.93	1461.73	26.59
38	63.25 - 60.5	27.81	1535.16	26.86
39	60.5 - 60.25	27.91	1541.87	26.87
40	60.25 - 59.5	28.15	1562.04	26.94
41	59.5 - 59.25	28.24	1568.77	26.96
42	59.25 - 54.25	29.94	1704.71	27.44
43	54.25 - 50	31.41	1822.06	27.82
44	50 - 44.25	34.99	1984.17	28.54
45	44.25 - 43.5	35.27	2005.58	28.61
46	43.5 - 43.25	35.38	2012.73	28.62
47	43.25 - 39	37.05	2135.13	29.01
48	39 - 38.75	37.16	2142.38	29.02
49	38.75 - 35	38.70	2251.80	29.37
50	35 - 34.75	38.82	2259.14	29.38
51	34.75 - 34	39.12	2281.19	29.45
52	34 - 33.75	39.22	2288.55	29.46
53	33.75 - 29.75	40.78	2406.96	29.78
54	29.75 - 29.5	40.89	2414.40	29.78
55	29.5 - 25	42.68	2549.13	30.13
56	25 - 24.75	42.80	2556.66	30.13
57	24.75 - 23.5	43.31	2594.38	30.26
58	23.5 - 23.25	43.43	2601.94	30.26
59	23.25 - 21.5	44.18	2655.01	30.44
60	21.5 - 21.25	44.30	2662.61	30.43
61	21.25 - 16.25	46.42	2815.67	30.83
62	16.25 - 12.916	47.86	2918.82	31.10
63	12.916 - 12.666	48.00	2926.59	31.10
64	12.666 - 12.5	48.08	2931.75	31.12
65	12.5 - 12.15	48.23	2942.65	31.15
66	12.15 - 11.9	48.33	2950.43	31.17
67	11.9 - 11.75	48.39	2955.11	31.18
68	11.75 - 8.5	49.68	3056.90	31.51
69	8.5 - 8.25	49.82	3064.77	31.51
70	8.25 - 6.5	50.65	3120.08	31.75
71	6.5 - 6.25	50.78	3128.01	31.74
72	6.25 - 1.25	52.96	3288.02	32.30
73	1.25 - 0	53.51	3328.44	32.44

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
143 - 138	Pole	TP12.75x12.75x0.375	Pole	15.8%	Pass
138 - 133	Pole	TP12.75x12.75x0.375	Pole	32.7%	Pass
133 - 128	Pole	TP14.48x13.48x0.1875	Pole	65.8%	Pass
128 - 123	Pole	TP15.479x14.48x0.1875	Pole	85.8%	Pass
123 - 122.75	Pole + Reinf.	TP15.529x15.479x0.5375	Reinf. 27 Tension Rupture	56.1%	Pass
122.75 - 117.75	Pole + Reinf.	TP16.529x15.529x0.5125	Reinf. 27 Tension Rupture	68.7%	Pass
117.75 - 112.75	Pole + Reinf.	TP17.528x16.529x0.4875	Reinf. 27 Tension Rupture	79.7%	Pass
112.75 - 109.5	Pole + Reinf.	TP18.178x17.528x0.475	Reinf. 27 Tension Rupture	86.9%	Pass
109.5 - 109.25	Pole + Reinf.	TP18.228x18.178x0.6	Reinf. 27 Tension Rupture	73.2%	Pass
109.25 - 104.75	Pole + Reinf.	TP19.127x18.228x0.575	Reinf. 27 Tension Rupture	84.0%	Pass
104.75 - 104.5	Pole + Reinf.	TP19.177x19.127x0.7875	Reinf. 11 Tension Rupture	67.7%	Pass
104.5 - 102.5	Pole + Reinf.	TP19.577x19.177x0.7625	Reinf. 11 Tension Rupture	71.4%	Pass
102.5 - 102.25	Pole + Reinf.	TP19.627x19.577x0.7	Reinf. 11 Tension Rupture	74.9%	Pass
102.25 - 100	Pole + Reinf.	TP20.077x19.627x0.6875	Reinf. 11 Tension Rupture	79.0%	Pass
100 - 99.75	Pole + Reinf.	TP20.127x20.077x0.575	Reinf. 11 Tension Rupture	91.7%	Pass
99.75 - 98.75	Pole + Reinf.	TP20.327x20.127x0.575	Reinf. 11 Tension Rupture	94.3%	Pass
98.75 - 98.5	Pole + Reinf.	TP20.377x20.327x0.8625	Reinf. 6 Tension Rupture	72.0%	Pass
98.5 - 95	Pole + Reinf.	TP21.81x20.377x0.8375	Reinf. 6 Tension Rupture	78.7%	Pass
95 - 91	Pole + Reinf.	TP21.5x20.701x0.8875	Reinf. 6 Tension Rupture	81.2%	Pass
91 - 90.75	Pole + Reinf.	TP21.55x21.5x0.775	Reinf. 6 Tension Rupture	95.3%	Pass
90.75 - 89.25	Pole + Reinf.	TP21.85x21.55x0.775	Reinf. 6 Tension Rupture	97.9%	Pass
89.25 - 89	Pole + Reinf.	TP21.9x21.85x0.925	Reinf. 5 Bolt Shear	79.4%	Pass
89 - 88.5	Pole + Reinf.	TP22x21.9x0.9125	Reinf. 11 Tension Rupture	77.9%	Pass
88.5 - 88.25	Pole + Reinf.	TP22.05x22x0.925	Reinf. 11 Tension Rupture	77.5%	Pass
88.25 - 88	Pole + Reinf.	TP22.1x22.05x0.6875	Reinf. 5 Tension Rupture	83.8%	Pass
88 - 83	Pole + Reinf.	TP23.099x22.1x0.6625	Reinf. 5 Tension Rupture	90.5%	Pass
83 - 78	Pole + Reinf.	TP24.097x23.099x0.6375	Reinf. 5 Tension Rupture	96.5%	Pass
78 - 77	Pole + Reinf.	TP24.297x24.097x0.625	Reinf. 5 Tension Rupture	97.7%	Pass
77 - 76.75	Pole + Reinf.	TP24.347x24.297x0.825	Reinf. 10 Tension Rupture	91.6%	Pass
76.75 - 76.5	Pole + Reinf.	TP24.397x24.347x0.825	Reinf. 10 Tension Rupture	91.9%	Pass
76.5 - 76.25	Pole + Reinf.	TP24.447x24.397x0.825	Reinf. 10 Tension Rupture	93.0%	Pass
76.25 - 75	Pole + Reinf.	TP24.697x24.447x0.8125	Reinf. 10 Tension Rupture	94.4%	Pass
75 - 74.75	Pole + Reinf.	TP24.747x24.697x0.825	Reinf. 10 Tension Rupture	93.5%	Pass
74.75 - 73.5	Pole + Reinf.	TP24.996x24.747x0.825	Reinf. 10 Tension Rupture	94.8%	Pass
73.5 - 73.25	Pole + Reinf.	TP25.046x24.996x0.9125	Reinf. 23 Tension Rupture	83.7%	Pass
73.25 - 68.25	Pole + Reinf.	TP26.045x25.046x0.875	Reinf. 23 Tension Rupture	88.2%	Pass
68.25 - 63.25	Pole + Reinf.	TP27.044x26.045x0.85	Reinf. 23 Tension Rupture	92.4%	Pass
63.25 - 60.5	Pole + Reinf.	TP27.593x27.044x0.825	Reinf. 23 Tension Rupture	94.5%	Pass
60.5 - 60.25	Pole + Reinf.	TP27.643x27.593x0.825	Reinf. 23 Tension Rupture	94.7%	Pass
60.25 - 59.5	Pole + Reinf.	TP27.793x27.643x0.825	Reinf. 23 Tension Rupture	95.3%	Pass
59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.9	Reinf. 23 Tension Rupture	89.2%	Pass
59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.8625	Reinf. 23 Tension Rupture	92.6%	Pass
54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.8375	Reinf. 23 Tension Rupture	95.4%	Pass
50 - 44.25	Pole + Reinf.	TP30.342x29.191x0.9125	Reinf. 9 Tension Rupture	92.8%	Pass
44.25 - 43.5	Pole + Reinf.	TP30.492x30.342x0.9125	Reinf. 9 Tension Rupture	93.1%	Pass
43.5 - 43.25	Pole + Reinf.	TP30.542x30.492x0.9375	Reinf. 9 Tension Rupture	91.6%	Pass
43.25 - 39	Pole + Reinf.	TP31.393x30.542x0.9125	Reinf. 9 Tension Rupture	93.7%	Pass
39 - 38.75	Pole + Reinf.	TP31.443x31.393x0.9625	Reinf. 9 Tension Rupture	87.1%	Pass
38.75 - 35	Pole + Reinf.	TP32.194x31.443x0.9375	Reinf. 9 Tension Rupture	88.8%	Pass
35 - 34.75	Pole + Reinf.	TP32.244x32.194x0.8875	Reinf. 9 Tension Rupture	92.2%	Pass
34.75 - 34	Pole + Reinf.	TP32.394x32.244x0.8875	Reinf. 9 Tension Rupture	92.5%	Pass
34 - 33.75	Pole + Reinf.	TP32.444x32.394x0.8875	Reinf. 7 Tension Rupture	94.5%	Pass
33.75 - 29.75	Pole + Reinf.	TP33.245x32.444x0.8625	Reinf. 7 Tension Rupture	96.1%	Pass
29.75 - 29.5	Pole + Reinf.	TP33.295x33.245x0.875	Reinf. 7 Tension Rupture	95.1%	Pass
29.5 - 25	Pole + Reinf.	TP34.196x33.295x0.8625	Reinf. 7 Tension Rupture	96.8%	Pass
25 - 24.75	Pole + Reinf.	TP34.246x34.196x0.8875	Reinf. 8 Tension Rupture	94.3%	Pass
24.75 - 23.5	Pole + Reinf.	TP34.496x34.246x0.8875	Reinf. 8 Tension Rupture	94.7%	Pass
23.5 - 23.25	Pole + Reinf.	TP34.546x34.496x0.9625	Reinf. 8 Tension Rupture	89.3%	Pass
23.25 - 21.5	Pole + Reinf.	TP34.896x34.546x0.9625	Reinf. 8 Tension Rupture	89.9%	Pass
21.5 - 21.25	Pole + Reinf.	TP34.946x34.896x0.85	Reinf. 8 Tension Rupture	95.3%	Pass
21.25 - 16.25	Pole + Reinf.	TP35.947x34.946x0.8375	Reinf. 8 Tension Rupture	96.9%	Pass
16.25 - 12.92	Pole + Reinf.	TP36.614x35.947x0.8125	Reinf. 8 Tension Rupture	98.0%	Pass
12.92 - 12.67	Pole + Reinf.	TP36.665x36.614x1.0625	Reinf. 7 Tension Rupture	83.1%	Pass
12.67 - 12.5	Pole + Reinf.	TP36.698x36.665x1.0625	Reinf. 7 Tension Rupture	83.2%	Pass
12.5 - 12.15	Pole + Reinf.	TP36.768x36.698x0.7625	Reinf. 16 Tension Rupture	92.3%	Pass
12.15 - 11.9	Pole + Reinf.	TP36.818x36.768x0.6625	Reinf. 2 Tension Rupture	94.4%	Pass
11.9 - 11.75	Pole + Reinf.	TP36.848x36.818x0.6625	Reinf. 2 Tension Rupture	94.4%	Pass
11.75 - 8.5	Pole + Reinf.	TP37.498x36.848x0.65	Reinf. 2 Tension Rupture	95.2%	Pass
8.5 - 8.25	Pole + Reinf.	TP37.549x37.498x0.8875	Reinf. 13 Weldment	79.4%	Pass
8.25 - 6.5	Pole + Reinf.	TP37.899x37.549x0.8875	Reinf. 1 Tension Rupture	78.9%	Pass
6.5 - 6.25	Pole + Reinf.	TP37.949x37.899x0.8125	Reinf. 1 Tension Rupture	90.5%	Pass
6.25 - 1.25	Pole + Reinf.	TP38.95x37.949x0.8	Reinf. 1 Tension Rupture	91.8%	Pass
1.25 - 0	Pole + Reinf.	TP39.2x38.95x0.7875	Reinf. 1 Tension Rupture	92.1%	Pass
				Summary	
			Pole	85.8%	Pass
			Reinforcement	98.0%	Pass
			Overall	98.0%	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	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	R24	R25	R26	R27	R28
140 - 138	279	n/a	279	14.58	n/a	14.58	35.8%																												
138 - 133	279	n/a	279	14.58	n/a	14.58	32.7%																												
133 - 128	225	n/a	225	8.62	n/a	8.62	65.6%																												
128 - 123	276	n/a	276	9.22	n/a	9.22	85.9%																										68.1%		
123 - 122.75	279	473	752	9.25	13.00	22.25	51.2%																										68.7%		
122.75 - 117.25	337	548	885	9.85	12.50	22.35	39.1%																										79.7%		
117.75 - 112.75	402	551	954	10.45	12.50	22.95	46.3%																										86.3%		
112.75 - 109.5	449	633	1082	10.85	12.50	24.35	51.3%																										73.2%	86.5%	
109.5 - 109.25	454	892	1350	10.88	19.50	30.38	48.2%																										84.0%	76.6%	
109.25 - 104.75	530	976	1506	11.42	19.50	30.92	54.1%																										59.0%	56.7%	
104.75 - 104.5	533	1484	2018	11.45	31.50	42.95	40.7%											87.7%															62.2%	59.3%	
104.5 - 102.5	568	1543	2110	11.65	31.50	43.15	42.3%											71.4%															71.3%		
102.5 - 102.25	567	1377	1944	11.72	25.50	37.22	45.5%											74.9%															75.3%		
102.25 - 100	607	1436	2044	11.99	25.50	37.49	46.3%											78.0%																	
100 - 99.75	612	1175	1786	12.02	21.00	33.02	53.9%											91.7%												90.6%		98.6%			
99.75 - 98.75	628	1197	1827	12.14	21.00	33.14	55.7%											94.3%												90.2%		92.2%			
98.75 - 98.5	635	2005	2640	12.17	34.59	46.77	39.1%						72.0%					68.1%												85.3%		85.3%			
98.5 - 95	703	2137	2840	12.55	34.59	47.19	40.4%						78.7%					72.3%												71.5%		71.5%			
95 - 91	787	2219	3206	13.08	34.59	51.68	46.6%						81.2%					74.6%												73.7%		73.7%			
91 - 90.75	1005	1896	2897	17.32	21.59	48.72	48.8%						95.5%					87.9%												74.3%					
90.75 - 89.25	1044	1546	2590	17.34	21.59	48.96	56.4%						97.9%					90.9%												76.4%					
89.25 - 88	1049	2488	3498	17.40	38.61	56.01	40.3%					78.4%						77.2%												66.9%					
88 - 88.5	1064	2803	3533	17.48	24.61	56.11	40.7%					71.1%						77.9%												67.5%					
88.5 - 88.25	1070	2492	3562	17.52	41.63	59.15	40.5%					65.2%						77.5%												65.6%	62.2%				
88.25 - 88	1073	1688	2761	17.56	23.63	41.19	57.1%					63.8%																		82.8%	77.2%				
88 - 83	1234	1833	3067	18.27	23.63	41.99	62.6%					90.5%																		69.6%	62.8%				
83 - 78	1402	1964	3387	19.17	23.63	42.79	67.8%					96.5%																		95.8%	89.7%				
78 - 77	1438	2015	3454	19.33	23.63	42.96	68.9%					97.7%																		97.0%	90.8%				
77 - 76.75	1445	3002	4446	19.37	41.63	61.00	52.4%					77.5%					91.6%													78.0%	74.0%				
76.25 - 76.5	1454	3013	4467	19.41	41.63	61.04	53.0%					77.5%					91.9%													78.2%	74.2%				
76.5 - 76.25	1464	3011	4474	19.45	23.63	58.08	54.4%					94.9%					93.8%													91.1%					
76.25 - 75	1510	3070	4580	19.65	24.63	59.28	55.4%					96.1%					94.4%													92.2%					
75 - 74.75	1524	3180	4704	19.69	41.63	61.32	56.1%					85.2%					93.5%										73.8%	73.8%								
74.75 - 73.5	1535	3240	4815	19.83	41.63	61.52	57.1%					86.4%					94.8%										74.9%	74.9%								
73.5 - 73.25	1571	3721	5291	19.90	44.63	64.54	48.8%					75.9%					93.3%										74.9%	74.9%	80.7%							
73.25 - 68.25	1768	4007	5775	20.24	44.63	65.86	52.2%					80.0%					87.7%										79.0%	79.0%	88.2%							
68.25 - 63.25	1981	4304	6285	21.54	44.63	66.16	55.8%					87.7%					91.8%										82.7%	82.7%	92.4%							
63.25 - 60.5	2106	4472	6577	21.98	44.63	66.60	57.4%					85.6%					94.0%										84.1%	84.7%	94.5%							
60.5 - 60.25	2117	4487	6604	22.02	44.63	66.65	57.6%					85.8%				91.3%											84.9%	84.9%	94.7%							
60.25 - 59.5	2152	4534	6686	22.14	44.63	66.77	58.0%					86.1%				91.9%											85.4%	85.4%	95.3%							
59.5 - 59.25	2164	5016	7180	22.18	48.84	71.02	54.4%				76.0%					86.2%											80.2%	80.2%	89.2%							
59.25 - 54.25	2407	5363	7771	22.98	48.84	71.83	57.4%				79.7%					89.5%											83.4%	83.4%	92.6%							
54.25 - 50	2628	5668	8296	23.67	48.84	72.51	60.0%				82.1%					91.2%											85.9%	85.9%	95.4%							
50 - 44.25	3504	6043	9547	30.17	48.84	79.02	56.8%				88.6%					92.0%										72.4%									
44.25 - 43.5	3557	6100	9657	30.32	48.84	79.17	57.2%				88.9%					93.1%										73.5%									
43.5 - 43.25	3568	6428	9991	30.38	53.34	83.72	53.9%				82.3%					91.6%									82.2%	74.1%									
43.25 - 39	3872	6774	10646	31.23	53.34	84.57	55.7%				84.1%					93.7%									84.1%	75.8%									
39 - 38.75	3880	7339	11220	31.28	57.34	88.62	50.7%				74.2%			83.8%		87.1%									75.6%	74.0%									
38.75 - 35	4168	7674	11842	32.03	57.34	89.38	52.9%				75.6%			85.4%		88.9%									77.1%	74.3%									
35 - 34.75	4187	7172	11360	32.08	54.34	86.43	54.5%				77.4%			85.8%		92.2%							86.2%	80.1%	78.1%										
34.75 - 34	4247	7236	11482	32.24	54.34	86.58	54.8%				77.7%			86.1%		92.5%							86.5%	80.4%	78.4%										
34 - 33.75	4266	7137	11404	32.29	50.34	82.63	56.4%				81.4%			94.5%	90.3%								83.2%	80.6%	80.0%										
33.75 - 29.75	4591	7478	12072	33.05	50.34	83.43	58.0%				83.3%			96.1%	84.9%								90.7%	86.2%	81.5%										
29.75 - 29.5	4614	7645	12259	33.14	51.28	84.42	57.4%	80.6%		81.1%				95.1%	83.9%								83.9%	83.2%	80.9%										
29.5 - 25	5003	8046	13049	34.05	51.28	85.33	59.2%	82.1%		82.6%				96.8%	85.0%								91.4%	86.3%	82.1%										
25 - 24.75	5030	8607	13637	34.10	54.28	88.38	57.0%	79.6%		81.1%				93.1%	84.3%						78.8%	79.3%	90.4%												
24.75 - 23.5	5142	8728	13870	34.35	54.28	88.63	57.5%	80.0%		81.5%				93.5%	84.7%						79.2%	80.2%	90.9%												
23.5 - 23.25	5185	9932	15117	34.40	60.28	94.68	55.4%	75.1%		81.2%				87.2%	89.3%					67.8%	74.1%	80.3%	86.0%												
23.25 - 21.5	5348	10126	15471	34.75	60.28	95.03	56.1%	75.6%		81.9%				87.8%	89.9%					68.3%	75.2%	80.8%	86.5%												
21.5 - 21.25	5348	8522	13870	34.80	55.78	90.58	62.1%	78.6%		83.1%				88.5%	95.3%					72.3%	75.2%	84.7%													
21.25 - 16.25	5826	8957	14823	35.81	55.78	91.59	64.1%	79.9%		84.5%				90.1%	96.9%					73.7%	76.6%	86.1%													
16.25 - 12.92	6159	9322	15481	36.48	55.78	92.26	65.1%	80.7%		85.5%				91.2%	98.0%					74.6%	77.5%	87.0%													
12.92 - 12.67	6235	13528	19762	36.63	72.97	109.59	52.0%	75.8%	65.4%	63.4%				85.1%	77.6%					67.8%	71.8%	77.8%													
12.67 - 12.5	6252	13551	19803	36.66	72.97	109.63	52.0%	75.8%	65.4%	63.4%				85.2%	77.7%					67.9%	71.8%	77.8%													
12.5 - 12.15	6231	8456	14687	36.60	52.38	89.01	66.2%	82.5%	87.7%											80.5%	80.5%	90.3%													
12.15 - 11.9	6324	8611	14935	36.68	46.28	83.06	80.1%	93.0%	94.4%											81.1%	81.1%														
11.9 - 11.75	6340	8621	14961	36.71	46.38	83.09	80.1%	93.6%	94.4%											81.2%	81.2%														
11.75 - 8.5	6683	6847	13530	37.36	46.38	83.74	84.5%	84.4%	95.2%											82.0%	82.0%														
8.5 - 8.25	6695	11447	18142	37.42	67.38	104.79	80.1%	78.4%	75.2%										78.4%	65.8%	58.9%														
8.25 - 6.5	6918	11882	18800	37.77	67.38	105.14	82.8%	78.9%	75.7%										74.4%	68.2%	59.2%														
6.5 - 6.25	6958	10305	17260	37.82	55.38	93.19	70.2%	90.5%	79.3%										78.2%																
6.25 - 1.25	7526	10806	18331	38.82	55.38	94.20	72.2%	91.8%	80.8%										77.2%																
1.25 - 0	7672	10934	18606	39.07	55.38	94.45	72.7%	92.1%	80.9%										77.4%																

Note: Section capacity checked in 3 degree increments.
Rating per TIA-222-H Section 15.3

Monopole Flange Plate Connection

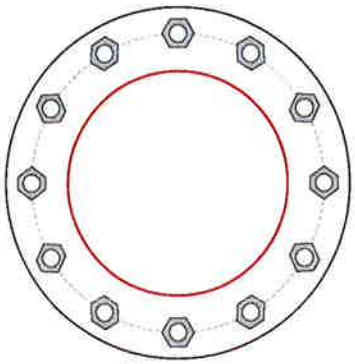
Elevation = 133 ft.

BU #	876317
Site Name	Waterbury
Order #	469368 Rev. 0
TIA-222 Revision	H

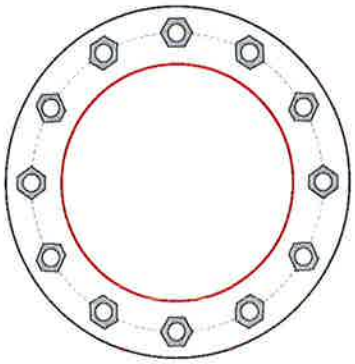
Applied Loads	
Moment (kip-ft)	66.88
Axial Force (kips)	3.27
Shear Force (kips)	7.37

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 17" BC

Top Plate Data

20" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Plate Data

20" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

12.75" x 0.375" round pole (A500-46; Fy=46 ksi, Fu=62 ksi)

Bottom Pole Data

13.48" x 0.1875" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	15.44	
Allowable (kips)	54.53	
Stress Rating:	**27.0%**	Pass

Top Plate Capacity

Max Stress (ksi):	21.83	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**46.2%**	Pass
Tension Side Stress Rating:	**29.1%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	17.55	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**37.1%**	Pass
Tension Side Stress Rating:	**21.1%**	Pass

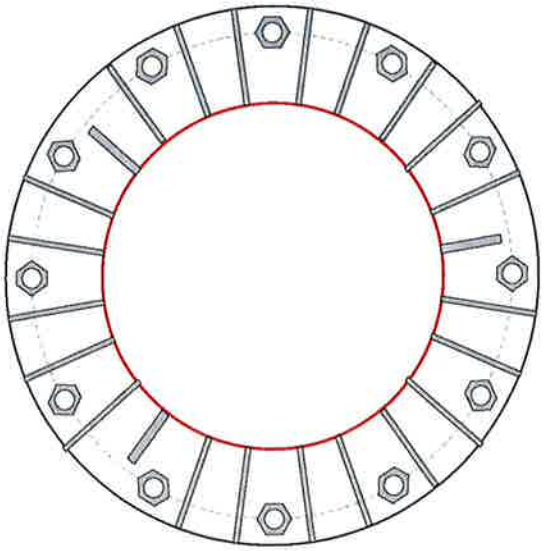
Monopole Base Plate Connection

Site Info	
BU #	876317
Site Name	Waterbury
Order #	469368 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	3328.44
Axial Force (kips)	53.51
Shear Force (kips)	32.44

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 55.16" BC

Base Plate Data

61.16" OD x 2.5" Plate (S-128; Fy=60 ksi, Fu=80 ksi)

Stiffener Data

Group 1: (21) 21.5"H x 11"W x 0.625"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.3125" groove, 45° dbl bevel, 0.5" fillet
vert. weld: 0.3125" fillet

Group 2: (3) 126"H x 7"W x 1"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.5" groove, 45° dbl bevel, 0.3125" fillet
vert. weld: 0.3125" fillet

Pole Data

39.2" x 0.3125" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_c = 245.66	ϕPn_c = 243.75	**Stress Rating**
Vu = 2.7	ϕVn = 73.13	**96.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	32.33	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**57.0%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**42.8%**	**Pass**
Vertical Weld:	**43.0%**	**Pass**
Plate Flexure+Shear:	**23.7%**	**Pass**
Plate Tension+Shear:	**44.6%**	**Pass**
Plate Compression:	**70.5%**	**Pass**

Pole Summary		
Punching Shear:	**17.4%**	**Pass**

Pier and Pad Foundation

BU # :	876317
Site Name:	Waterbury
App. Number:	469368 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☑
Block Foundation?:	☑

Superstructure Analysis Reactions

Compression, P_{comp}:	53.7	kips
Base Shear, Vu_comp:	32.4	kips
Moment, M_u:	3326.9	ft-kips
Tower Height, **H**:	143	ft
BP Dist. Above Fdn, bp_{dist}:	2.75	in
Bolt Circle / Bearing Plate Width, **BC**:	55.16	in

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	287.00	32.40	**10.8%**	**Pass**
Bearing Pressure (ksf)	22.50	7.71	**34.2%**	**Pass**
*Overturning (kip*ft)*	3902.56	3553.03	**91.0%**	**Pass**
*Pad Flexure (kip*ft)*	9014.86	2082.20	**22.0%**	**Pass**
Pad Shear - 1-way (kips)	1732.56	219.85	**12.1%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	18499.97	0.00	**0.0%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating*:	**91.0%**
Structural Rating*:	**22.0%**

Pad Properties

Depth, **D**:	6.75	ft
Pad Width, **W**:	20	ft
Pad Thickness, **T**:	6.75	ft
Pad Rebar Size (Top), Sp_{top}:	9	
Pad Top Rebar Quantity (Top), mp_{top}:	28	
Pad Rebar Size (Bottom), **Sp**:	10	
Pad Rebar Quantity (Bottom), **mp**:	21	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	4000	psi
Dry Concrete Density, δc:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	130	pcf
Ultimate Gross Bearing, Qult:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	37	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.5	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	11.5	ft

<--Toggle between Gross and Net

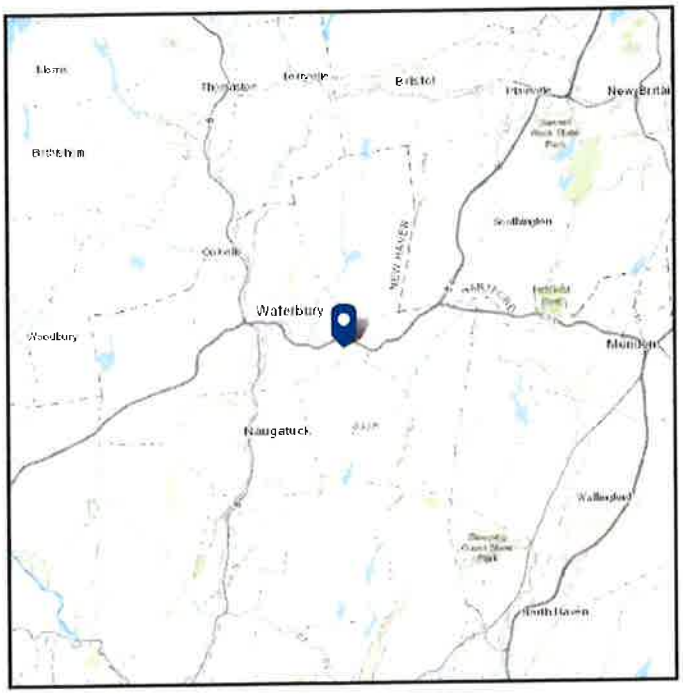
Version 3.1.0

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 660.21 ft (NAVD 88)
Latitude: 41.537861
Longitude: -72.985028



ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

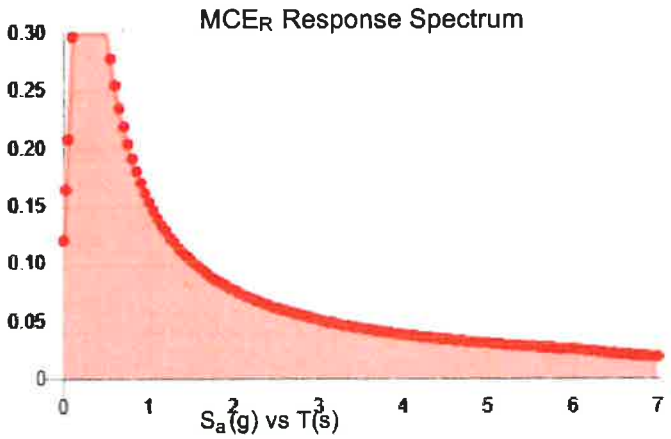
Seismic

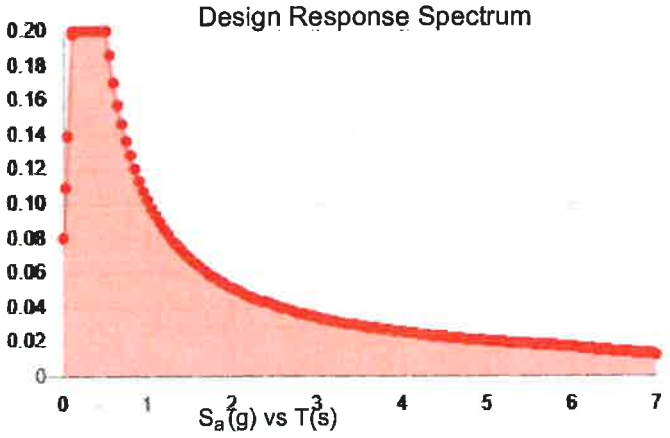
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.188	S_{DS} :	0.2
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.097
S_{MS} :	0.3	PGA_M :	0.155
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Jan 09 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

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Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Jan 09 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

APPENDIX D

STRUCTURAL DESIGN DRAWINGS

MONOPOLE REINFORCEMENT DRAWINGS

SITE NAME: WATERBURY
BU NUMBER: 876317

SITE ADDRESS:
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

HOT WORK INCLUDED	
N/A	BASE GRINDING ONLY
X	BASE WELDING (AND GRINDING)
N/A	AERIAL GRINDING ONLY
X	AERIAL WELDING (AND GRINDING)

SAFETY CLIMB: 'LOOK UP'
THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER REINFORCEMENTS AND EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS.

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE TIA-222-H STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS USING AN ULTIMATE 3-SECOND GUST WIND SPEED OF 125 MPH FROM THE 2018 CONNECTICUT STATE BUILDING CODE (2015 INTERNATIONAL BUILDING CODE), 50 MPH WITH 1.5 INCH ICE THICKNESS AND 60 MPH UNDER SERVICE LOADS, EXPOSURE CATEGORY B.

TOWER INFORMATION

TOWER MANUFACTURER / CCI DOC #:	VALMONT / CCI DOC #1530953
TOWER HEIGHT / TYPE:	133 FT MONOPOLE TOWER
TOWER LOCATION: DATUM: NAD 1983	LATITUDE 41° 32' 16.30" LONGITUDE -72° 59' 6.10"
STRUCTURAL DESIGN DRAWING:	B&V / WO #1673707
STRUCTURAL ANALYSIS REPORT:	B&V / WO #1666667
ORDER ID:	469368 REV #0

PROJECT CONTACTS

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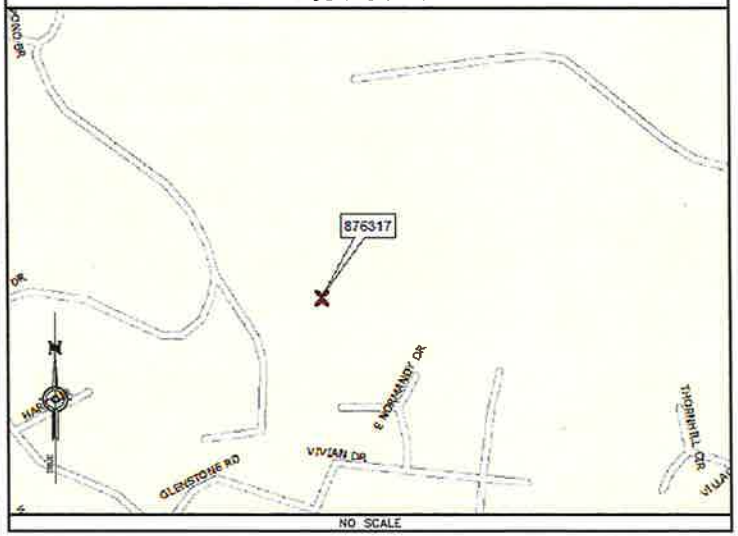
BLACK & VEATCH CONTACTS
CROWNCASTLERFI@BV.COM
PATRICK DAVIS, P.E.
(913) 458-6984

LOCATION MAP



NO SCALE

DRIVING DIRECTIONS

FROM HARTFORD, TAKE 84 WEST TO EXIT 26. TAKE LEFT ONTO WATERBURY ROAD. TURN LEFT ON AUSTIN ROAD. TURN RIGHT ON CAPTAIN NEVILLE DRIVE. PROCEED TO 150 MATTATUCK HEIGHTS RD. ACCESS ROAD IS AT THE REAR RIGHT SIDE OF PARLING LOT.

ATTENTION ALL CONTRACTORS

ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT 800-788-7011.

DRAWING INDEX

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DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TCG
CHECKED BY:	LM

REV	DATE	DESCRIPTION
0	01/11/19	ISSUED FOR CONSTRUCTION

01/11/2019

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
TITLE PAGE

SHEET NUMBER
TM-1

MI CHECKLIST

REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
		PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY/SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED-SOW-10007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			
		CONSTRUCTION	
N/A	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONCRETE COMP. STRENGTH AND SLUMP TEST	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
N/A	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
N/A	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT. ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
N/A	POST-INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMIXED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149E NC-BUL-10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
N/A	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DRAWINGS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS DESCRIPTION AND APPLICABLE STANDARDS SHALL BE APPLIED.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			
		POST-CONSTRUCTION	
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
N/A	POST-INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
X	BOLT INSTALLATION VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			

MODIFICATION INSPECTION NOTES

GENERAL

1. THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.
3. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.
4. ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR SEE CROWN CED-LST-10173, "APPROVED MI VENDORS".
5. TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).
6. REFER TO CROWN CED-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:
   - THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
   - THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
   - PRE-CONSTRUCTION GENERAL SITE CONDITION
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
     - RAW MATERIALS
     - PHOTOS OF ALL CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - WELD PREPARATION
     - BOLT INSTALLATION
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS
     - FINAL INFIELD CONDITION
2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.
3. THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED-SOW-10007.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST. SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TCG
CHECKED BY:	LM

REV	DATE	DESCRIPTION
2	01/11/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSHUA J. RILEY
33206
LICENSED PROFESSIONAL ENGINEER
01/11/2019

BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
MODIFICATION INSPECTION CHECKLIST

SHEET NUMBER
TM-2

GENERAL NOTES

1. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED, THAT HE IS PROPERLY LICENSED, AND THAT HE IS PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.
2. THE GENERAL NOTES AND TYPICAL DETAILS ARE APPLICABLE TO ALL PARTS OF THE STRUCTURE AND SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVALS FROM ALL AUTHORITIES HAVING JURISDICTION FOR THIS PROJECT AND SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY, OR CITY) ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
5. ERECT GUARDS AND BARRIERS PER APPLICABLE LABOR AND CONSTRUCTION SAFETY REGULATIONS.
6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, POSSIBLE INTERFERENCES, AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO THE ENGINEER OF RECORD (EOR) AND FIELD PERSONNEL IMMEDIATELY. ANY AND ALL FIELD CHANGES SHALL BE APPROVED AND DOCUMENTED BY THE EOR PRIOR TO FIELD IMPLEMENTATION.
7. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR TWO (2) YEARS FROM THE DATE OF COMPLETED CONSTRUCTION.
8. USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES AND SPECIFICATIONS, UNO.
9. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH ANSI, ASTM, ACI, TIA, AND AISC STANDARDS AS REFERENCED IN THE APPLICABLE CODE.
10. STRUCTURAL ELEMENTS SHOWN ON THESE DRAWINGS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE BUILDING CODES/STANDARDS. ALL CONSTRUCTION, EXCEPT WHERE NOTED OTHERWISE, SHALL COMPLY WITH THOSE CODES/STANDARDS.
11. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS, AND IN CONFORMANCE WITH THE DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE DULY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
12. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION PROCEDURES MEET THE REQUIREMENTS OF OSHA, THE OWNER, AND ALL OTHER APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. CONSTRUCTION SHALL BE PERFORMED ONLY IN "GOOD WEATHER". "GOOD WEATHER" MEANS LITTLE OR NO WIND AND RAIN AND MINIMUM TEMPERATURE OF 50 DEGREES F. CONTACT ENGINEER FOR ADDITIONAL INSTRUCTIONS IF "GOOD WEATHER" CANNOT BE ACHIEVED.
14. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIAL ACCESS, WITH THE RESIDENT LEASING AGENT.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES OR BURIED SERVICES AFFECTED BY THIS CONSTRUCTION. CONTRACTOR IS ALSO RESPONSIBLE FOR TEMPORARILY RELOCATING ANY LINES OR STRUTS AS NECESSARY TO COMPLETE THE REQUIRED WORK.
16. STRUCTURAL DESIGN IS FOR THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT OF AN EXISTING TOWER HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.
17. DO NOT SCALE DRAWINGS.
18. FOR THIS ANALYSIS AND MODIFICATION, THE TOWER HAS BEEN ASSUMED TO BE IN GOOD CONDITION WITHOUT ANY DEFECTS. IF THE CONTRACTOR DISCOVERS ANY INDICATION OF AN EXISTING STRUCTURAL DEFECT, CONTACT THE ENGINEER OF RECORD IMMEDIATELY.
19. MODIFICATION WORK SHALL BE COMPLETED IN CALM WIND CONDITIONS / OR APPROPRIATE WIND SPEED FOR THE TYPE OF MODIFICATION WORK TO BE INSTALLED.
20. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE CROWN POC. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE ENGINEER OF RECORD. IF THE GENERAL CONTRACTOR FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GENERAL CONTRACTOR SHALL CONTACT THE CROWN POC TO DETERMINE A METHOD OF RESOLUTION.
21. CONTRACTOR TO VERIFY REQUIRED STEEL PLATE LENGTHS FROM BOTTOM OF SECTION TO BOTTOM OF NEXT SECTION.
22. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
23. ALL CHANGES/ALTERNATES/REVISIONS TO THESE DRAWINGS SHALL BE DOCUMENTED BY REQUEST FOR INFORMATION (RFI) FORM APPROVED BY ENGINEER OF RECORD. FINAL WORK AUTHORIZATION AND ALL CHANGE ORDERS SHALL BE APPROVED BY CLIENT AND/OR CLIENT REPRESENTATIVE PRIOR TO PROCEEDING WITH ANY WORK THAT DEVIATES FROM THE ORIGINAL DESIGN, SCOPE, PRICE AND/OR SCHEDULE.
24. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
25. IN THE EVENT OF AN EMERGENCY, CONTRACTOR SHALL CONTACT BLACK & VEATCH AND CROWN CASTLE PERSONNEL TO REPORT ANY EVENT OR EMERGENCY INCIDENT AT ANY CROWN CASTLE TOWER SITE PER THE CONTACT INFORMATION PROVIDED ON SHEET TM-1.
26. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.
27. IF, DURING THE COURSE OF A FOUNDATION MODIFICATION, THE GC ENCOUNTERS EXISTING CONDUIT LOCATED WITHIN THE CONFINES OF THE EXISTING OR PROPOSED FOUNDATION CONCRETE, AND THIS CONDUIT IS NOT IN A LOCATION THAT IS SPECIFIED WITHIN THESE DESIGN DRAWINGS, THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE BEFORE PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS. IF CONDUIT IS TO BE INSTALLED THROUGH THE EXISTING FOUNDATION OR PROPOSED FOUNDATION MODIFICATION AND HASN'T BEEN SPECIFIED WITHIN THESE DESIGN DRAWINGS THEN THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE PRIOR TO PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS.

STRUCTURAL STEEL NOTES

1. DESIGN, FABRICATION, ERECTION, ALTERATION AND MAINTENANCE SHALL CONFORM TO THE FOLLOWING, UNLESS NOTED OTHERWISE (UNO).
   A. TIA-222: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   B. TIA-1019-A: INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   C. AISC: MANUAL OF STEEL CONSTRUCTION
2. ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS, UNO.
   A. STRUCTURAL STEEL, ASTM A572 GRADE 65 (FY = 65 KSI).
   B. ALL BOLTS, ASTM A325 TYPE 1 GALVANIZED HIGH STRENGTH BOLTS.
   C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
   D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
   E. ALL SHIMS, ASTM A36.
3. ALL HOLES SHALL BE CUT WITH A GRINDER OR DRILLED. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER OF RECORD.
4. ALL FASTENERS SHALL NOT BE REUSED.
5. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED ASTM A325 BOLTS.
6. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
7. HOT-DIP GALVANIZE ALL ITEMS, UNO.
   GALVANIZE PER ASTM A123, ASTM A153/A153M OR ASTM A653 G90, AS APPLICABLE.
8. FOR A LIST OF CROWN APPROVED COLD GALVANIZING COMPOUNDS, REFER TO CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN".
9. AFTER FINAL INSPECTION, ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING WELDS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE ACCESSIBLE), SHALL BE CLEANED AND COLD GALVANIZING APPLIED BY BRUSH IN ACCORDANCE WITH CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN". PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MI INSPECTOR.

BASE PLATE GROUT REMOVAL NOTES

1. WHEN BASE PLATE GROUT REMOVAL IS SPECIFIED IN THE POLE MODIFICATION TABLE, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS:
   A. THE GC SHALL BEGIN THIS PROCEDURE AS EARLY AS POSSIBLE DURING THE MODIFICATION PROCESS SO THAT IF ISSUES ARISE, THEY CAN BE RESOLVED WITHIN THE ANTICIPATED MODIFICATION TIMELINE.
   B. IF ANY DETERIORATED GROUT EXISTS, BEGIN AT THIS LOCATION. REMOVE DETERIORATED GROUT AND THE GROUT AROUND THE NEAREST ONE OR TWO ANCHOR RODS TO FULLY EXPOSE THE LEVELING NUT. IF THE GC DISCOVERS THAT A HALF NUT OR JAM NUT WAS USED AS A LEVELING NUT, OR IF NO LEVELING NUT IS PRESENT, IMMEDIATELY CONTACT CED AND THE CROWN POC (TYPICALLY THE MOD PM) FOR A RESOLUTION. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
   C. OTHERWISE, CHECK THE LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR". IF SEVERE CORROSION / MATERIAL LOSS IS FOUND OR CORROSION EXISTS TO THE POINT WHERE THE LEVELING NUT IS UNABLE TO BE TIGHTENED WHEN OBVIOUSLY LOOSE, IMMEDIATELY NOTIFY THE CROWN POC (TYPICALLY THE MOD PM). REFERENCE ENG-BUL-10114 "RUST CLASSIFICATION" FOR EXAMPLES OF MATERIAL LOSS. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
   D. IN THE EVENT THAT SEVERE CORROSION IS NOT ENCOUNTERED, AND BEING SURE TO CHECK EACH ANCHOR ROD FOR CORROSION PER ENG-BUL-10114 "RUST CLASSIFICATION", REMOVE ALL EXISTING BASEPLATE GROUT WHILE CHECKING EACH LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR".
   E. CONSISTENT WITH SECTION 1.3.2.4 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR", HAND TOOL CLEAN TO SSPC-SP2 AND SOLVENT CLEAN TO SSPC-SP1, ALL EXPOSED STRUCTURAL STEEL ELEMENTS, INCLUDING ANCHOR RODS, LEVELING NUTS, AND UNDERSIDE OF BASE PLATE TO THE GREATEST EXTENT POSSIBLE. ENSURE THAT ALL OLD GROUT IS REMOVED TO ALLOW COLD GALVANIZING TO ADHERE TO THE STEEL.
   F. APPLY BY BRUSH TWO COATS OF A CROWN-APPROVED COLD-GALVANIZING COMPOUND TO ALL EXPOSED STRUCTURAL STEEL ELEMENTS BENEATH THE BASE PLATE, AND ALLOW CURING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. A LIST OF CROWN-APPROVED DIRECT APPLICATION COLD-GALVANIZING COMPOUNDS CAN BE FOUND IN ENG-STD-10149 "TOWER PROTECTIVE COATINGS GUIDELINES" SECTION 2.1.1.
   G. THE GC SHALL PROVIDE PHOTOS OF EACH ANCHOR ROD WITH LEVELING NUT AFTER CLEANING BUT BEFORE COLD-GALVANIZATION, AND ALSO AGAIN AFTER COLD-GALVANIZATION, FOR INCLUSION IN THE MI REPORT.

DETAIL DRAWINGS SHALL GOVERN OVER ANY VARIANCE FROM THIS SHEET

WELDING NOTES

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE-STEEL".
2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
3. ALL ARC WELDING ON CROWN STRUCTURES SHALL BE DONE IN ACCORDANCE WITH THE CROWN ENG-PLN-10015, "CUTTING AND WELDING SAFETY PLAN" AND AWS D1.1 (LATEST EDITION). THIS SHALL INCLUDE A CERTIFIED WELDING INSPECTOR (CWI) FOR ACCEPTANCE OR REJECTION OF ALL WELDING OPERATIONS, PRE-DURING-POST, USING THE ACCEPTANCE CRITERIA OF AWS D1.1. THE CWI SHALL WORK WITH THE GC ON THE LEVEL OF INTERACTION NEEDED TO CONDUCT THE WELDING INSPECTION. THE CERTIFIED WELDING INSPECTION IS THE RESPONSIBILITY OF THE GC.
4. FOR ALL WELDING, USE E80XX ELECTRODES FOR SMAW PROCESS AND E8XT-XX ELECTRODES FOR FCAW PROCESS, UNO.
5. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING.
6. REPAIR THE GALVANIZED COATING. ALL AREAS AFFECTED BY THE FIELD DRILLING, FIELD GRINDING AND FIELD WELDING, BOTH INSIDE AND OUTSIDE THE MONOPOLE, SHALL BE REPAIRED PER CROWN DOCUMENT ENG-STD-10149. PRODUCTS TO BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. AREAS THAT HAVE BEEN TOUCHED UP SHOULD BE INSPECTED AS PART OF THE ROUTINE MAINTENANCE OF THE STRUCTURE. NO SPRAY PAINT IS ALLOWED. AFTER ZINC-RICH PAINT IS DRY, OVERCOAT WITH OWNER'S PAINT SPECIFICATIONS, APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0° F. WHEN THE TEMPERATURE IS BETWEEN 0° F AND 32° F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70° F DURING THE WELDING PROCESS.
8. DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.
9. FIELD NDE MINIMUM REQUIREMENTS
   - FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
   - FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
   - FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: TOWER BASE PLATE NDE, AND ENG-BUL-10051: NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
   - ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.
10. MOVE ALL COAX AND OTHER FLAMMABLE MATERIALS FROM ANY AREA THAT MAY BE HEATED DURING CONSTRUCTION.
11. CONTRACTOR SHALL MAKE PROPER PRECAUTIONS AND PROCEDURES TO PROTECT THE STRUCTURE FROM CATCHING FIRE DURING ALL WELDING OPERATIONS. THE FOLLOWING FIRE SAFETY PREVENTION PROTOCOL IS THE MINIMUM REQUIREMENTS DURING WELDING OPERATIONS. ALSO REFERENCE CROWN DOCUMENT ENG-BUL-10172 FOR ADDITIONAL WELDING REQUIREMENTS.
   - 500 GALLON WATER TANK WITH PUMP TO BE ON SITE AT ALL TIMES.
   - 2 FIRE EXTINGUISHERS ON SITE AT ALL TIMES.
   - 2 MAN FIRE WATCH ON ANY ADJACENT STRUCTURES, FIELDS AND POLE.
   - INTERMITTENT COOLING OF WELDED SURFACE TO REDUCE HEAT IN STRUCTURE.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TCG
CHECKED BY:	LM

REV	DATE	DESCRIPTION
0	01/11/18	ISSUED FOR CONSTRUCTION

JOSHUA J. RILEY
33208
LICENSED
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT
01/11/2019

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

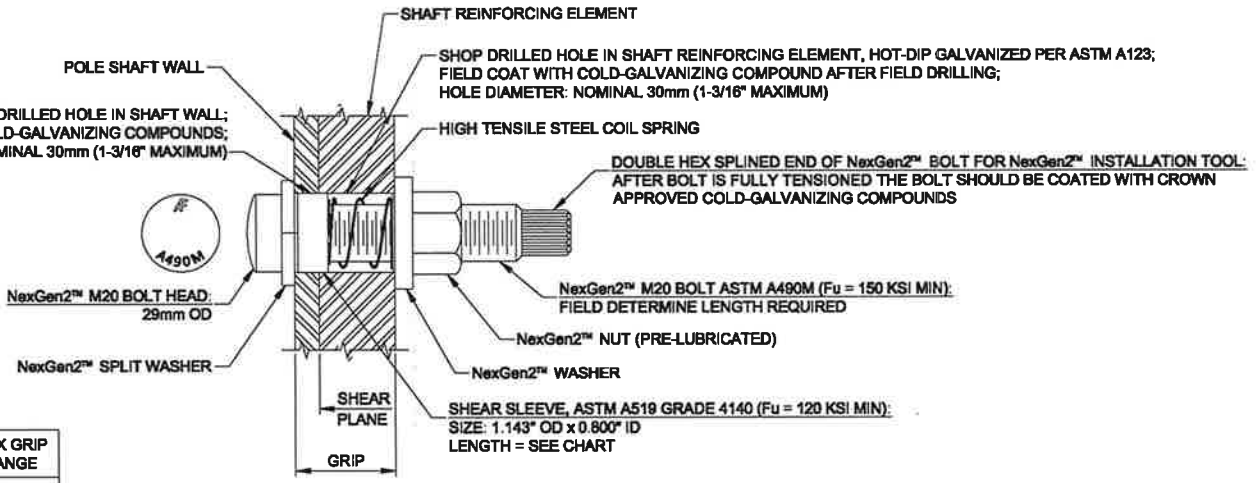
SHEET TITLE
NOTES

SHEET NUMBER
TM-3

NEXGEN2 BLIND BOLT ASSEMBLY

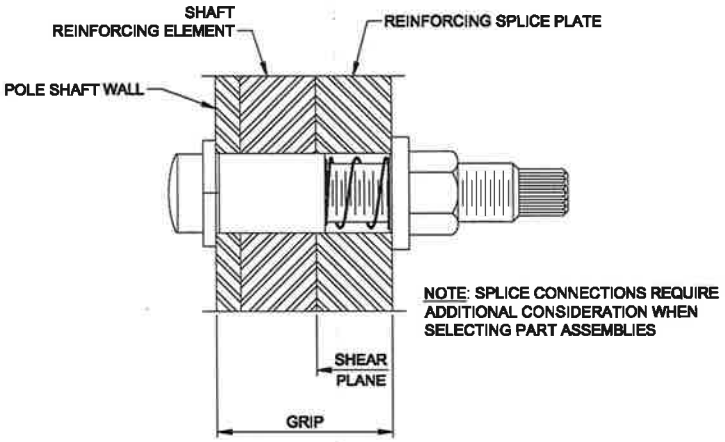
- PATENT PENDING -

INTERIOR OF POLE SHAFT | EXTERIOR OF POLE SHAFT



TYPICAL **NG2.** BOLT DETAIL

PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
2NG2038	M20x95	11/16"	15/16"	1-7/16"
2NG2048	M20x95	1-3/16"	1-7/16"	1-7/8"
2NG2057	M20x95	1-5/8"	1-7/8"	2-1/4"
2NG2068	M20x135	2"	2-1/4"	2-11/16"
2NG2098	M20x135	2-7/16"	2-11/16"	3-3/4"
2NG2127	M20x175	3"	3-3/4"	5"
2NG2212	M20x250	4"	5"	8-5/16"



NOTE: SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

MANUFACTURER:
ALLFASTENERS
959 LAKE ROAD, MEDINA, OHIO, USA 44256
PHONE: 440-232-6060 | FAX: 440-232-60625
WEBSITE: WWW.ALLFASTENERS.COM | WWW.AFTOWER.COM

NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: NexGen2™ COMPLETE ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.

NOTE: INSTALL PER MANUFACTURER'S INSTRUCTIONS.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
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CHECKED BY:	LM

REV	DATE	DESCRIPTION
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STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
01/11/2019

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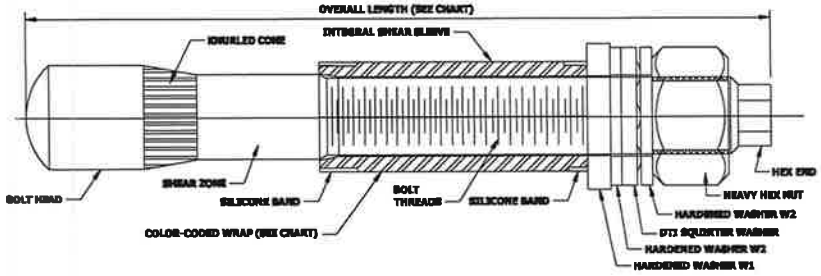
BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
NEXGEN2 BOLT SPECS & TIGHTENING PROCEDURE

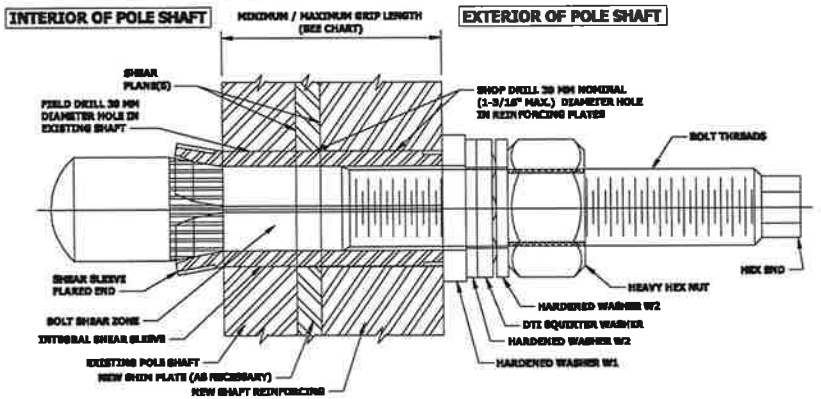
SHEET NUMBER
TM-4

FORGBolt™ NOTE SHEET: A325/PC8.8 LANDSCAPE VERSION DATE 01/29/2015; Rev. 1.0 04/23/2015

NOTES:
1. **ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**
2. **ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2

BOLT HOLE NOTES:

1. **ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".**
2. **ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.**

DISTRIBUTOR CONTACT:
PRECISION TOWER PRODUCTS
PHONE: **888-926-4857**
EMAIL: info@precisiontowerproducts.com
WEB: www.precisiontowerproducts.com

CONTAINS PROPRIETARY INFORMATION PATENT PENDING

FORGBolt™		AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 120 ksi minimum)				
GROUP A	FORGBolt™ Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code
FORGBolt™ A325 - PC8.8 1	**135**	5.31	1.3	3/8" to 1"	--	**RED**
2	**160**	6.30	1.6	3/4" to 1-1/2"	--	**GREEN**
3	**195**	7.68	1.9	1-1/4" to 2-1/4"	--	**BLUE**
4	**260**	10.24	2.6	2" to 3-1/2"	Splice Bolt	**YELLOW**
5	**365**	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	**ORANGE**
6	**440**	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	**BLACK**
DTI Note	Each Group A (A325/PC8.8) FORGBolt™ assembly shall have a 'Squirter' DTI that is compatible with a M20-PC8.8 bolt.					

FORGBolt™ Installation

Follow all Manufacturer/Distributer Recommendations for Installation, Tightening, and Inspection.

1. FIELD DRILL HOLES TO 30 MM DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
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CHECKED BY:	LM

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STATE OF CONNECTICUT
JOSHUA J. RILEY
33206
LICENSED PROFESSIONAL ENGINEER
01/11/2019

BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
FORGBOLT BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER
TM-5

AJAX FASTENERS

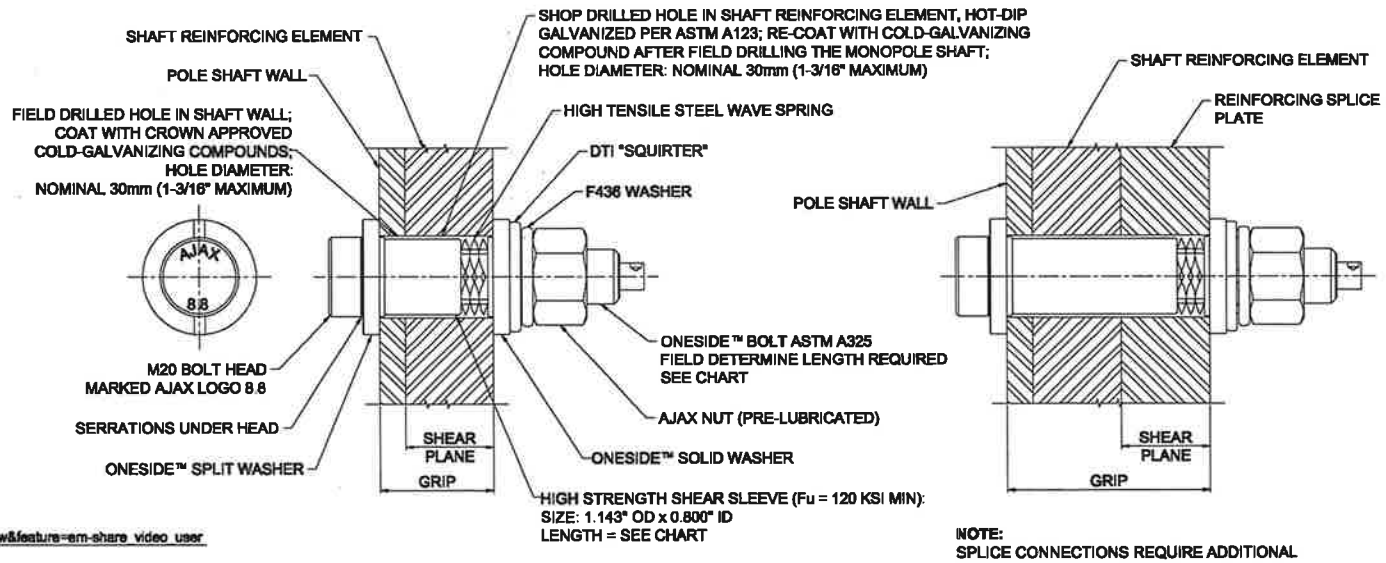
ONESIDE™

PATENT US 7,373,709B2

MANUFACTURER INSTALLATION VIDEO

https://www.youtube.com/watch?v=ZGBS0eLrZsw&feature=em-share_video_user

INTERIOR OF POLE SHAFT | EXTERIOR OF POLE SHAFT



NOTE:
SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

AJAX ONESIDE™ BOLT DETAIL

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20 x 65	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MTO	121.0 / 211.0	4.724" / 8.310"

MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

DISTRIBUTOR
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BOLT ASSEMBLY AND INSTALLATION:
1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

INSPECTION:
1. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
2. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: *MODIFICATION INSPECTION SOW*.

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CROWN CASTLE

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BU #876317
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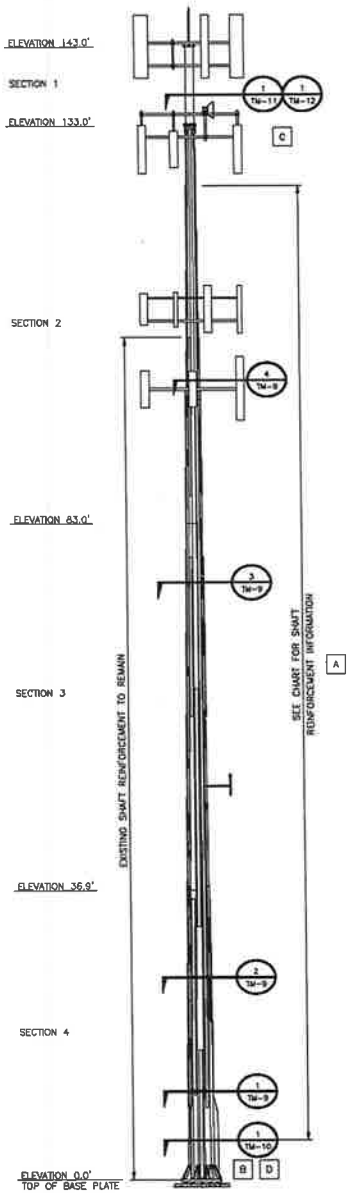
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
AJAX ONESIDE BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER
TM-6



TOWER ELEVATION
NO SCALE

POLE MODIFICATION SCHEDULE

CALLOUT	ELEVATION (FT)	MODIFICATION	REFERENCE SHEET
A	5.0 – 125.4	INSTALL NEW FLAT PLATE REINFORCEMENT	TM-8 & TM-9
B	0.0	INSTALL (3) NEW TRANSITION STIFFENER PLATES	TM-10
C	133.0 – 143.0	INSTALL NEW 10' MONOPOLE EXTENSION	TM-11 & TM 12
D	0.0	CLIMBING PATH MAY BECOME OBSTRUCTED AFTER INSTALLATION OF THE PROPOSED MODIFICATIONS. IF NOT ALREADY EXISTING ON THIS TOWER, CONTRACTOR TO PROVIDE NEW SIGNAGE PER CROWN CASTLE REQUIREMENTS.	-

FOR PARTS NOT DETAILED WITHIN THE DRAWING AND STARTING WITH "CCI-", SEE THE FOLLOWING CATALOG FOR DETAILS: CED-CAT-10300, MONOPOLE STANDARD DRAWINGS AND APPROVED REINFORCEMENT COMPONENTS

PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.

CCI FLAT PLATE (65 KSI) REINFORCEMENT SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	PART NUMBER	FLATS / DEGREES (°)	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAX INTERMEDIATE BOLT SPACING	BOLT QUANTITY PER PLATE	STEEL WEIGHT PER PLATE (BLACK)	TOTAL BOLT QUANTITY	TOTAL STEEL WEIGHT (BLACK)
5'-0"	25'-0"	CCI-SFP-06010020	5, 11	8	8	1'-4"	27	408	54	816
10'-0"	25'-0"	CCI-SFP-06010015	2	8	8	1'-4"	24	306	24	306
20'-1"	35'-1"	CCI-SFP-04510015	9	6	6	1'-8"	19	229.5	19	229.5
25'-1"	35'-1"	CCI-SFP-04510010	5	6	6	1'-8"	16	153	16	153
25'-1"	45'-1"	CCI-SFP-04510020	2	8	8	1'-8"	22	308	22	308
35'-2"	45'-2"	CCI-SFP-06010010	5, 9	8	8	1'-4"	20	204	40	408
45'-3"	75'-3"	CCI-SFP-04510030	1, 9	6	6	1'-8"	28	459	56	918
45'-3"	75'-3"	CCI-SFP-04007530	5	4	4	1'-4"	28	306	28	306
75'-4"	100'-4"	CCI-SFP-04007525	1, 9	4	4	1'-4"	25	255	50	510
75'-4"	90'-4"	CCI-SFP-04007515	3	4	4	1'-4"	17	153	17	153
90'-4"	100'-4"	CCI-AFP-04007510	5	6	6	1'-4"	17	102	17	102
100'-5"	125'-5"	CCI-AFP-04510025	1, 5, 9	8	8	1'-8"	28	382.5	84	1147.5
101'-0"	111'-0"	CCI-AFP-04007510	3, 11	6	6	1'-4"	17	102	34	204
								TOTAL	461	5959

NOTES FOR CROWN REINFORCING (65 KSI) MATERIAL

1. DO NOT WELD WITHOUT APPROVAL FROM THE EOR.
2. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESS SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. STACKED SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT EOR APPROVAL.
3. ALL FLAT PLATE REINFORCEMENT IS TO BE INSTALLED CENTERED ON ITS DESIGNATED FLAT, UNO.
4. SEE CMRP 65 KSI PARTS CATALOG 2nd EDITION FOR PART DETAILS.
5. TOWER SHAFT REINFORCEMENTS MAY BE INSTALLED WITH ALLFASTENERS NEXGEN2 BLIND BOLT ASSEMBLY, AS DETAILED ON SHEET TM-4, FORGBOLTS, AS DETAILED ON SHEET TM-5, OR AJAX ONESIDE BOLTS, AS DETAILED ON SHEET TM-6.
6. THE FOLLOWING ELEVATION TOLERANCES ARE ACCEPTABLE. ANY FURTHER DEVIATIONS REQUIRE EOR REVIEW AND APPROVAL.
   - FOR PLATE STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" ± 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE RUN SHALL BEGIN AT THE PROPOSED ELEVATION ± 3".
   - FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE BOTTOM PLATE TO THE TOP OF THE TOP PLATE.
7. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION.

MANUFACTURER POLE SPECIFICATIONS

POLE SHAFT TYPE	12 SIDED POLYGON; ROUND
SHAFT STEEL	ASTM A572 GRADE 65; A500 GRADE 46
BASE PLATE STEEL	ASTM A572 GRADE 60
ANCHOR RODS	2 1/4"ø #18J ASTM A615 GRADE 75

MANUFACTURER SHAFT SECTION DATA

SHAFT SECTION	SHAFT LENGTH (FT)	THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLAT (IN)	
				@ TOP	@ BOTTOM
1	10.00	0.3750	N/A	12.750	12.750
2	41.67	0.1875	44	13.480	21.810
3	49.75	0.2500	57	20.820	30.640
4	50.00	0.3125		29.200	39.200

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TCG
CHECKED BY:	LM

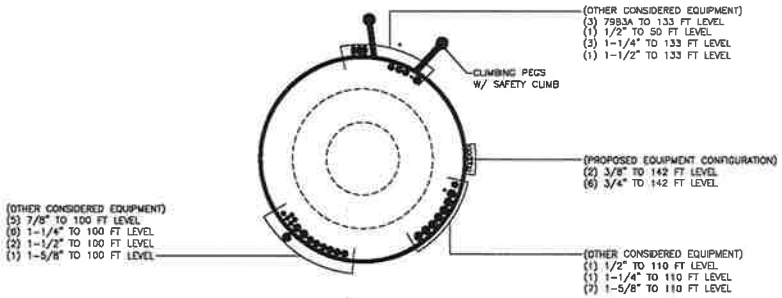
REV	DATE	DESCRIPTION
0	01/11/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSHUA J. RILEY
33201
LICENSED PROFESSIONAL ENGINEER
01/11/2019

BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
TOWER ELEVATION

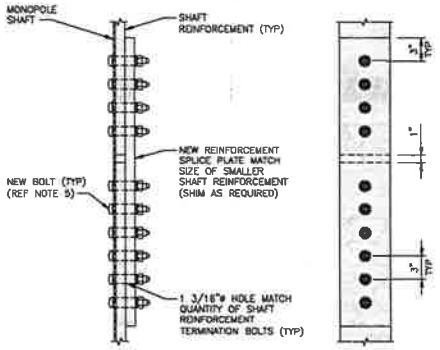
SHEET NUMBER
TM-7



COAX FEEDLINE PLAN

NO SCALE

EXISTING FEEDLINE PLAN SHOWN ON THIS DRAWING IS BASED ON CURRENT BEST KNOWLEDGE OF THE EXISTING CONDITION. IF THE EXISTING FEEDLINE LAYOUT IS NOT AS SHOWN ON THIS DRAWING CONTRACTOR SHALL NOTIFY ENGINEER.



REINFORCED SPLICE PLATE DETAIL

NO SCALE

SPLICE PLATE SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	CCI-PART # / DIMENSIONS	FLATS / DEGREES (°)	QUANTITY	QUANTITY OF BOLT HOLES PER PLATE	TOTAL BOLT HOLE QUANTITY	ADDITIONAL BOLTS*
22'-9"	26'-10"	CCI-SP-045100-6-8	2, 5	2	14	28	-
33'-4"	37'-5"	CCI-SP-045100-8-8	5, 9	2	14	28	-
42'-11"	47'-0"	CCI-SP-045100-6-8	9	1	14	14	-
42'-11"	46'-6"	CCI-SP-040075-4-8	5	1	12	12	-
73'-6"	76'-7"	CCI-SP-040075-4-6	1, 9	2	10	20	-
99'-1"	102'-8"	CCI-SP-040075-8-4	1, 9	2	12	24	-
98'-7"	102'-8"	CCI-SP-040075-8-8	5	1	14	14	-
					TOTAL	140	0

* NUMBER OF ADDITIONAL BOLTS WHEN SPLICING INTO EXISTING FLAT PLATE.

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CROWN CASTLE

BLACK & VEATCH

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STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
01/11/2019

BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

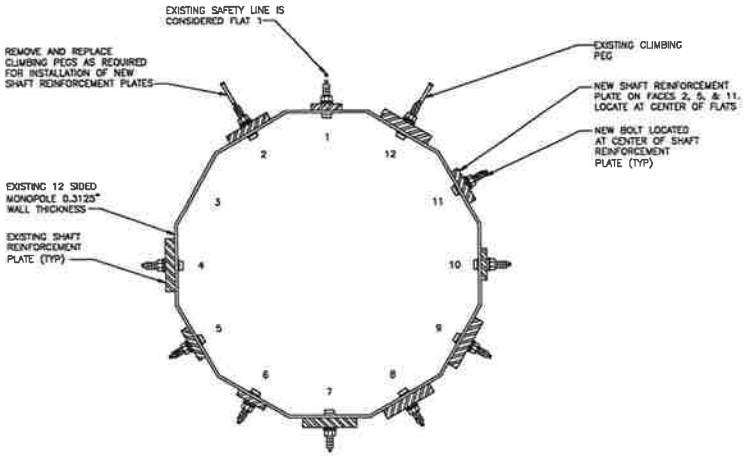
SHEET TITLE

COAX FEEDLINE PLAN & SPLICE PLATE DETAIL

SHEET NUMBER

TM-8

CLIMBING PATH MAY BECOME OBSTRUCTED AFTER INSTALLATION OF THE PROPOSED MODIFICATIONS. IF NOT ALREADY EXISTING ON THIS TOWER, CONTRACTOR TO PROVIDE NEW SIGNAGE PER CROWN CASTLE REQUIREMENTS.



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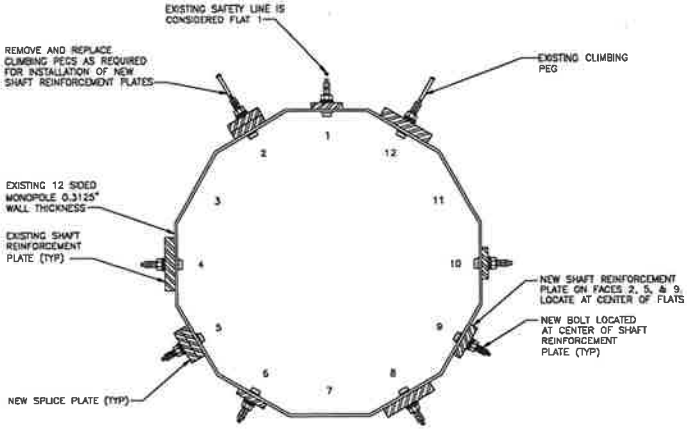

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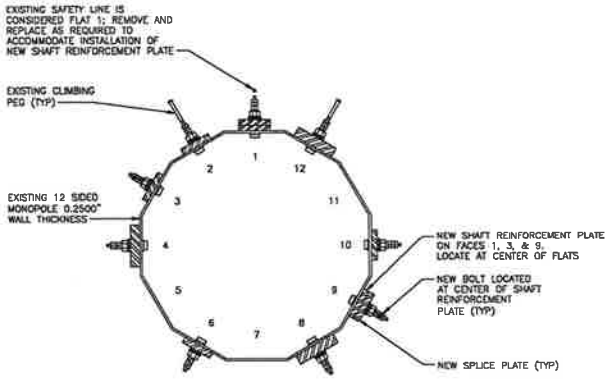

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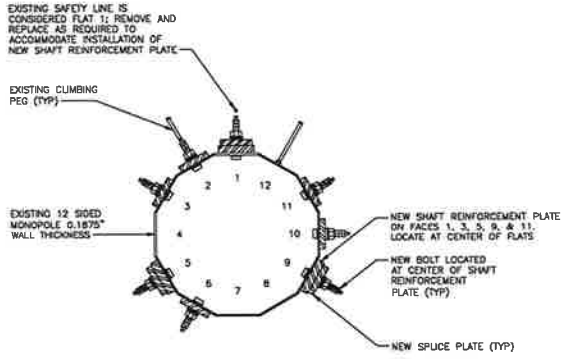

SECTION 4
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TCG
CHECKED BY:	LM

REV	DATE	DESCRIPTION
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STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
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01/11/2019

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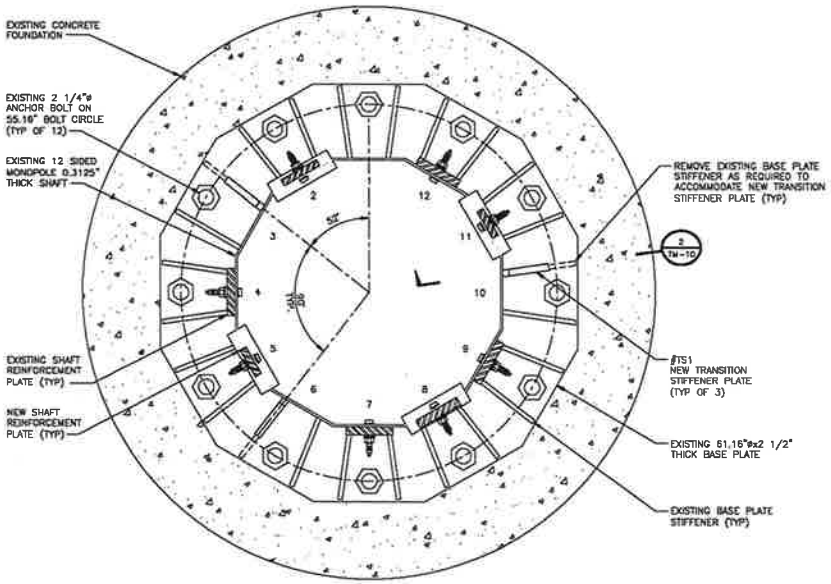
BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
TOWER SECTIONS

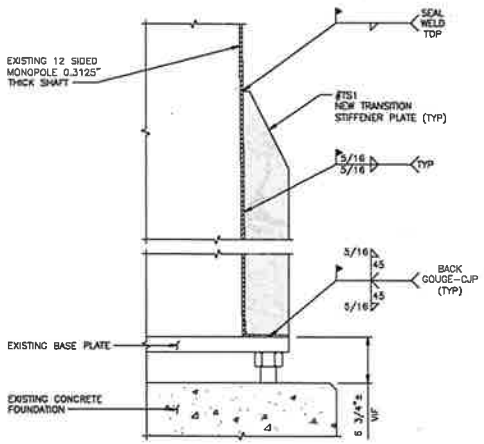
SHEET NUMBER
TM-9

NOTES

1. ALL NEW PLATES SHALL BE HOT-DIPPED GALVANIZED.



SECTION 1
TRANSITION STIFFENER PLATE PLAN
NO SCALE



SECTION 2
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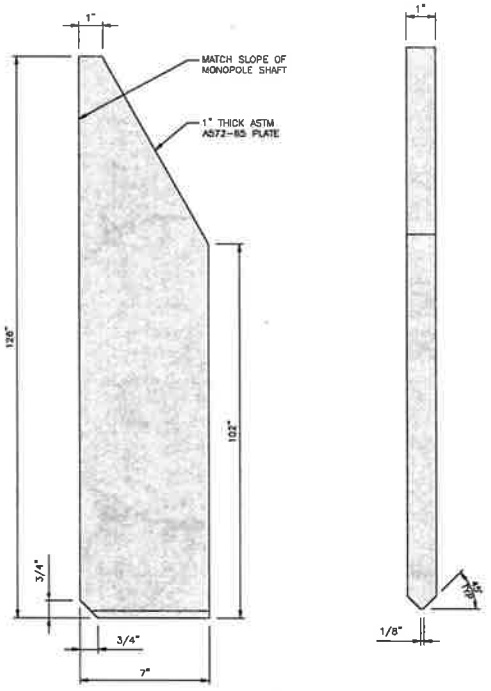

#TS1
TRANSITION STIFFENER PLATE
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
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33208
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01/11/2019

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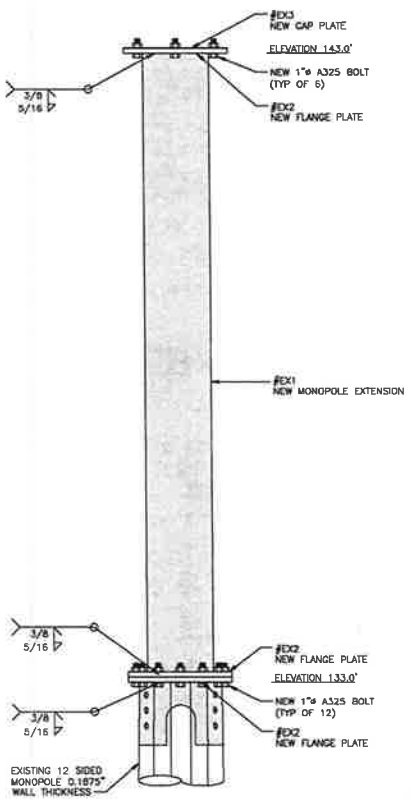
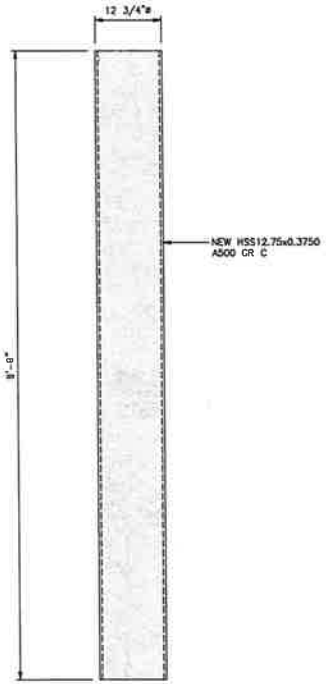
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
TRANSITION STIFFENER PLATE DETAILS

SHEET NUMBER
TM-10



DETAIL A
MONOPOLE EXTENSION ELEVATION
NO SCALE



#EX1
MONOPOLE EXTENSION
NO SCALE

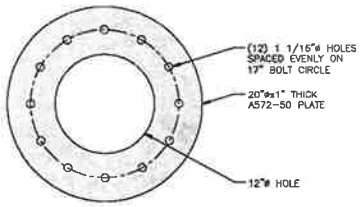
NOTES

1. INSTALL NEW SAFETY CLIMB PER MANUFACTURER'S RECOMMENDATIONS. NEW SAFETY CLIMB TO RUN FULL LENGTH OF TOWER.
2. FOR REQUIRED CLIMBING SYSTEM PARTS AND INSTALLATION INFORMATION, CONTACT:

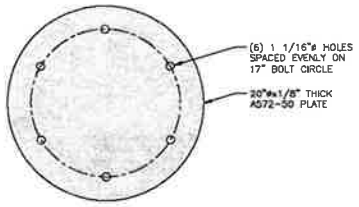
   JOEY DEUER
   TUF-TUG PRODUCTS
   3434 ENCRETE LANE
   MORAINE, OH 45439

   PHONE: (937) 299-1213
   FAX: (937) 299-0120
   WEBSITE: WWW.TUF-TUG.COM
   EMAIL: TUFTUG@AOL.COM

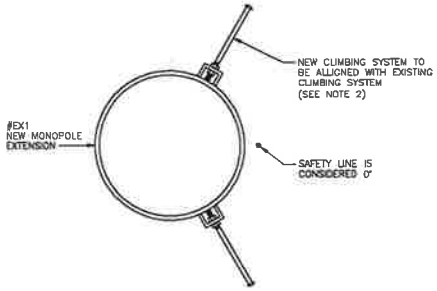
3. CONTRACTOR SHALL ENSURE THAT THE TOWER MEETS THE PLUMB TOLERANCES PRESCRIBED IN TIA-222-H SECTION 13.3.3 AFTER INSTALLATION OF THE MONOPOLE EXTENSION.
4. NEW FLANGE BOLTS TO BE INSTALLED "SNUG-TIGHT", PER AISC.



#EX2
FLANGE PLATE
NO SCALE



#EX3
CAP PLATE
NO SCALE



TYPICAL STEP BOLT
INSTALLATION DETAIL
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

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01/11/2019

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BU #876317
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WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
MONOPOLE EXTENSION DETAILS

SHEET NUMBER
TM-11

NOTES

1. INSTALL NEW SAFETY CLIMB PER MANUFACTURER'S RECOMMENDATIONS. NEW SAFETY CLIMB TO RUN FULL LENGTH OF TOWER.
2. FOR REQUIRED CLIMBING SYSTEM PARTS AND INSTALLATION INFORMATION, CONTACT:

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   TUF-TUG PRODUCTS
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   PHONE: (937) 299-1213
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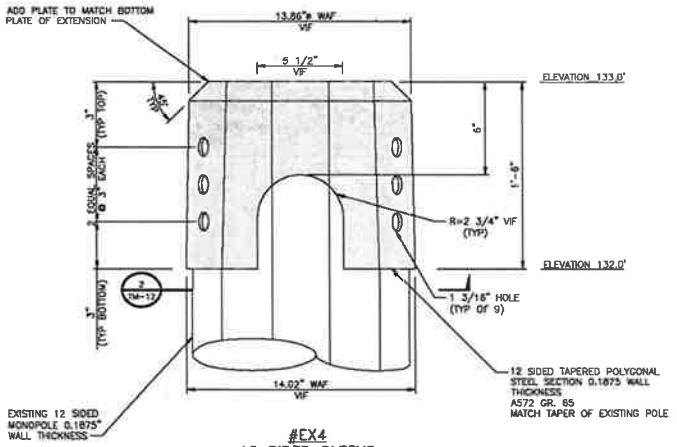
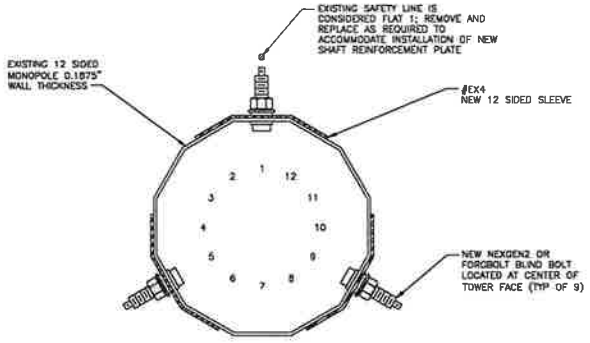
   WEBSITE: WWW.TUF-TUG.COM
   EMAIL: TUFTUG@AOL.COM

3. CONTRACTOR SHALL ENSURE THAT THE TOWER MEETS THE PLUMB TOLERANCES PRESCRIBED IN TIA-222-H SECTION 13.3.3 AFTER INSTALLATION OF THE MONOPOLE EXTENSION.
4. NEW FLANGE BOLTS TO BE INSTALLED "SNUG-TIGHT", PER AISC.
5. CONTRACTOR TO ENSURE THAT SLEEVE CAN FIT OVER TOP OF EXISTING POLE AND SEAM WELD. TAPER OF SLEEVE TO MATCH TAPER OD EXISTING POLE. CONTRACTOR TO FILED VERIFY TOP DIAMTER OF EXISTING POLE.



#EX4
12 SIDED SLEEVE
NO SCALE



SECTION 2
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
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STATE OF CONNECTICUT
JOSHUA J. RILEY
32208
LICENSED PROFESSIONAL ENGINEER
01/11/2019

BU #876317
WO #1673707
WATERBURY
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705
NEW HAVEN COUNTY, USA

SHEET TITLE
MONOPOLE EXTENSION DETAILS

SHEET NUMBER
TM-12

Date: **January 18, 2019**

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Charles McGuirt
Crown Castle
3 Corporate Dr., St 101
Clifton Park, NY 12065

Subject:	**Mount Analysis Report**	
Carrier Designation:	**AT&T Equipment Change Out**	
	Carrier Site Number:	10578275
	Carrier Site Name:	Wolcott
Crown Castle Designation:	**Crown Castle BU Number:**	876317
	Crown Castle Site Name:	Waterbury
	Crown Castle JDE Job Number:	546296
	Crown Castle Order Number:	469368, Rev. 0
Engineering Firm Designation:	**Infinigy Report Designation:**	600-002
Site Data:	**150 Mattatuck Heights, Waterbury, CT, 06705-3831**	
	Latitude 41°32'16.30" Longitude -72°59'6.10"	
Structure Information:	**Tower Height & Type:**	**133.0 ft Monopole**
	Mount Elevation:	**142.0 ft**
	Mount Type:	**12.5 ft Platform**

Dear Charles McGuirt,

Infinigy is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of AT&T's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform (typical) **Sufficient**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2015 International Building Code. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

We at Infinigy Engineering, PLLC 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.

Mount analysis prepared by: Christopher Kudlacik
Respectfully Submitted by:

Joe Johnston, P.E.
VP Structural Engineering / Principal

01-18-19

TABLE OF CONTENTS

1) INTRODUCTION

This mount is a 12.5 ft Platform designed by Valmont.This mount is installed at the 142.0 ft elevation on 3 sector(s) of the 133.0 ft Monopole.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.28 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.188
Seismic S_1:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Final Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
142.0	143.0	3	CCI	HPA65R-BU8A	Platform
		6	KMW	EPBQ-654L8H8-L2	
		3	Ericsson	4415 B30	
		3	Ericcson	RRUS 4449 B5/B12	
		3	Ericsson	RRUS 4478 B14	
		3	Ericsson	RRUS 8843 B2/B66A	
		3	Raycap	DC6-48-60-18-8F	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	AT&T Application	469368, Rev. 0	CCI Sites
Photos	--	876317	CCI Sites
Mount Desgin	--	DCA039Z	Valmont

3.1) Analysis Method

RISA-3D (Version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A53 (GR 35)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Infinigy should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform, typical)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Main Horizontal	M18	142.0	69.8	Pass
	Standoff	M15		59.5	Pass
	Mount Pipe	MP2		90.5	Pass
	Bolt Check	--		37.3	Pass

Structure Rating (max from all components) =	90.5%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical

4.1) Recommendations

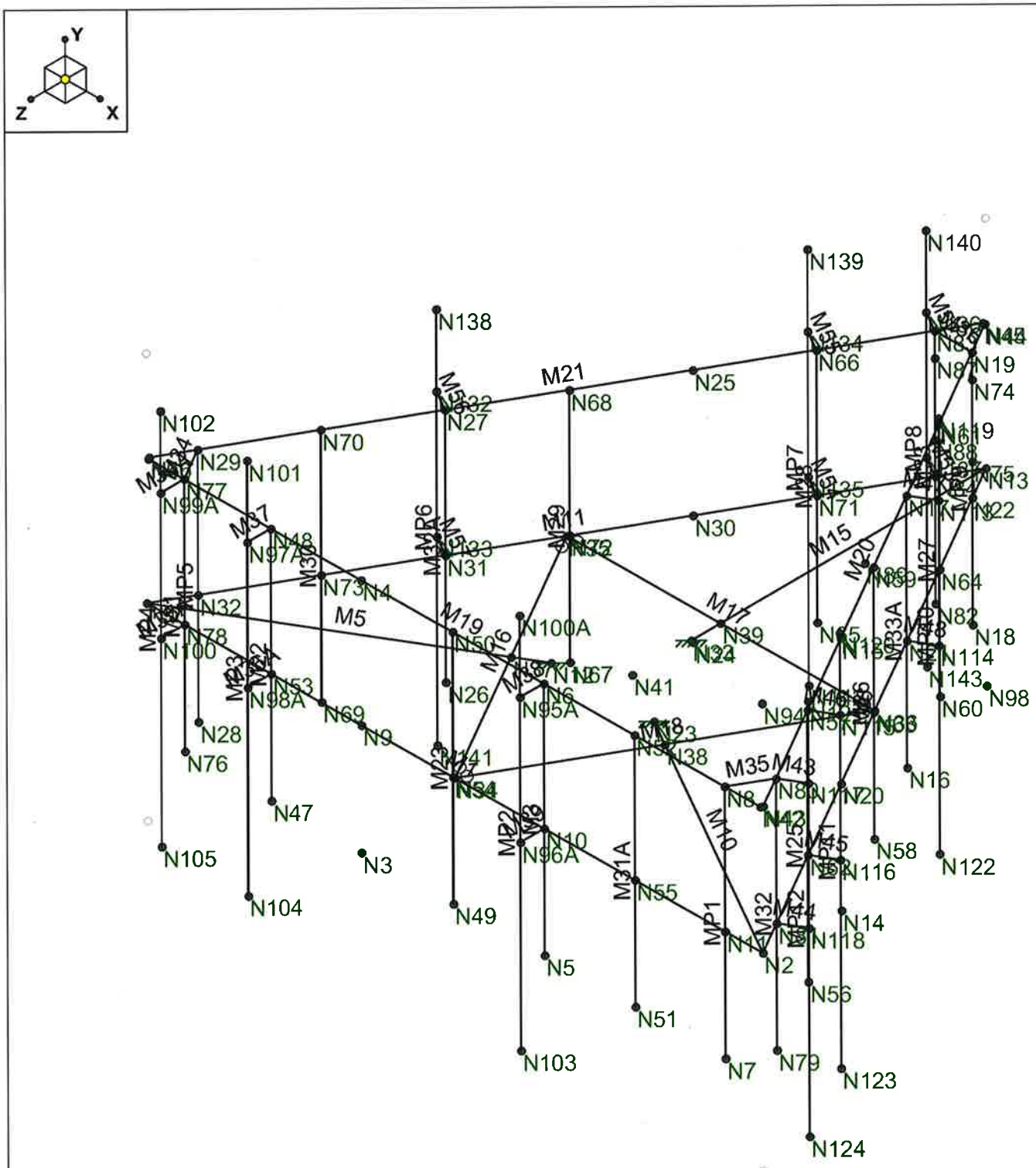
The Sector Frame Mount has sufficient capacity to support the proposed loading. No modifications are required at this time.

APPENDIX A

WIRE FRAME AND RENDERED MODELS

Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Existing Configuration
CLK		Jan 18, 2019 at 10:40 AM
600-002		Valmont_876317.r3d



Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Wireframe
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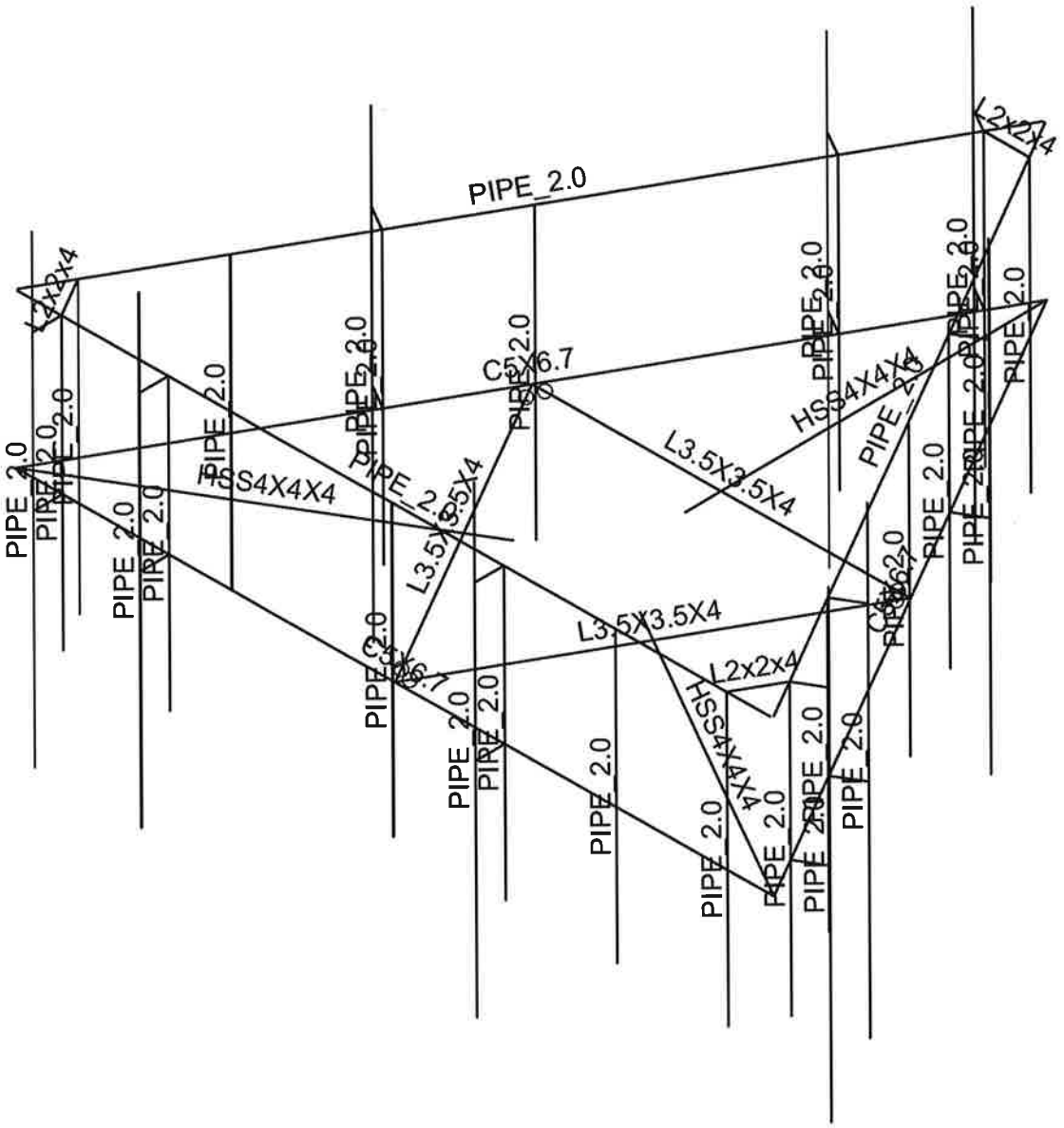

Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Member Shapes
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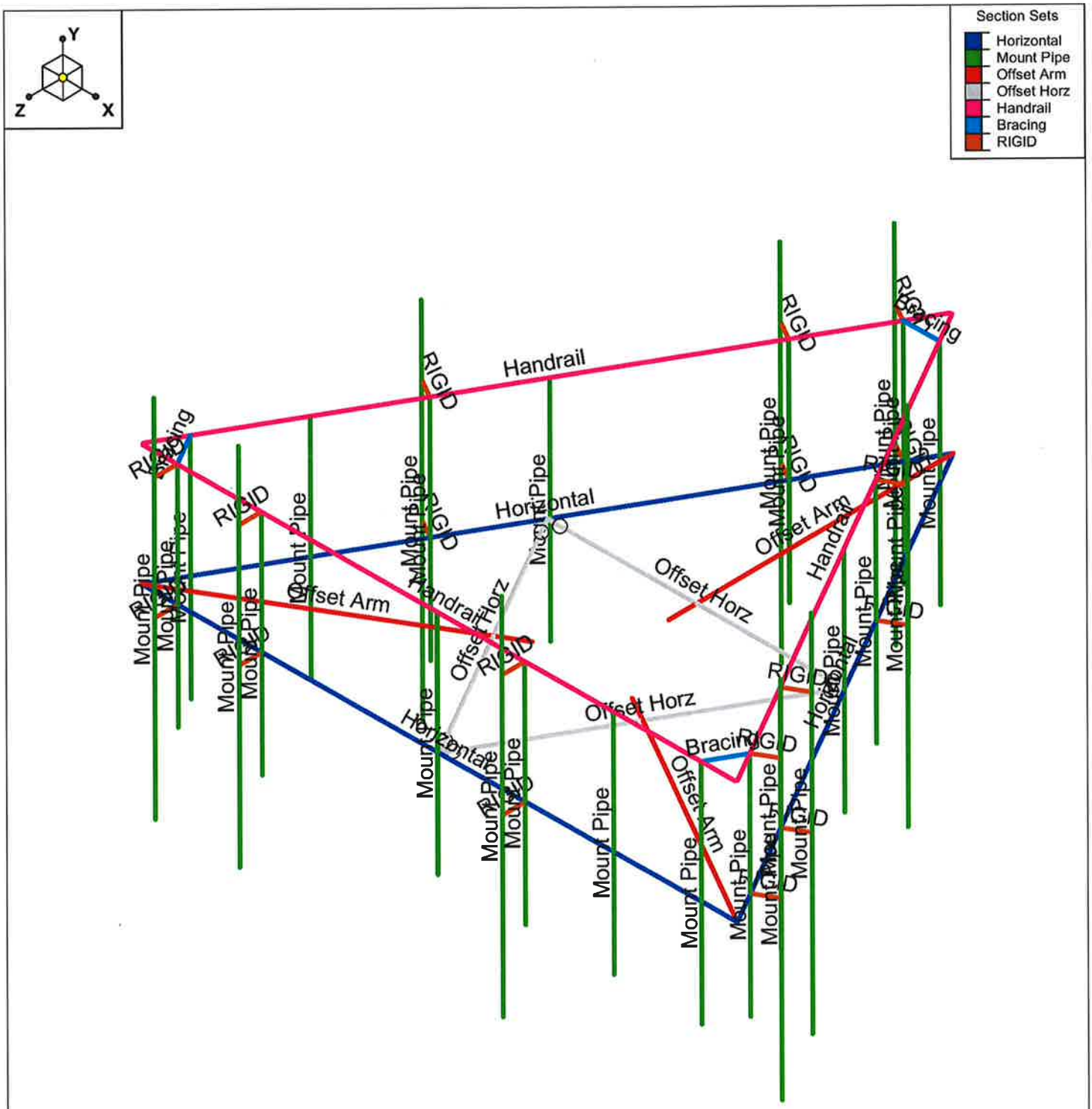

Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Section Sets
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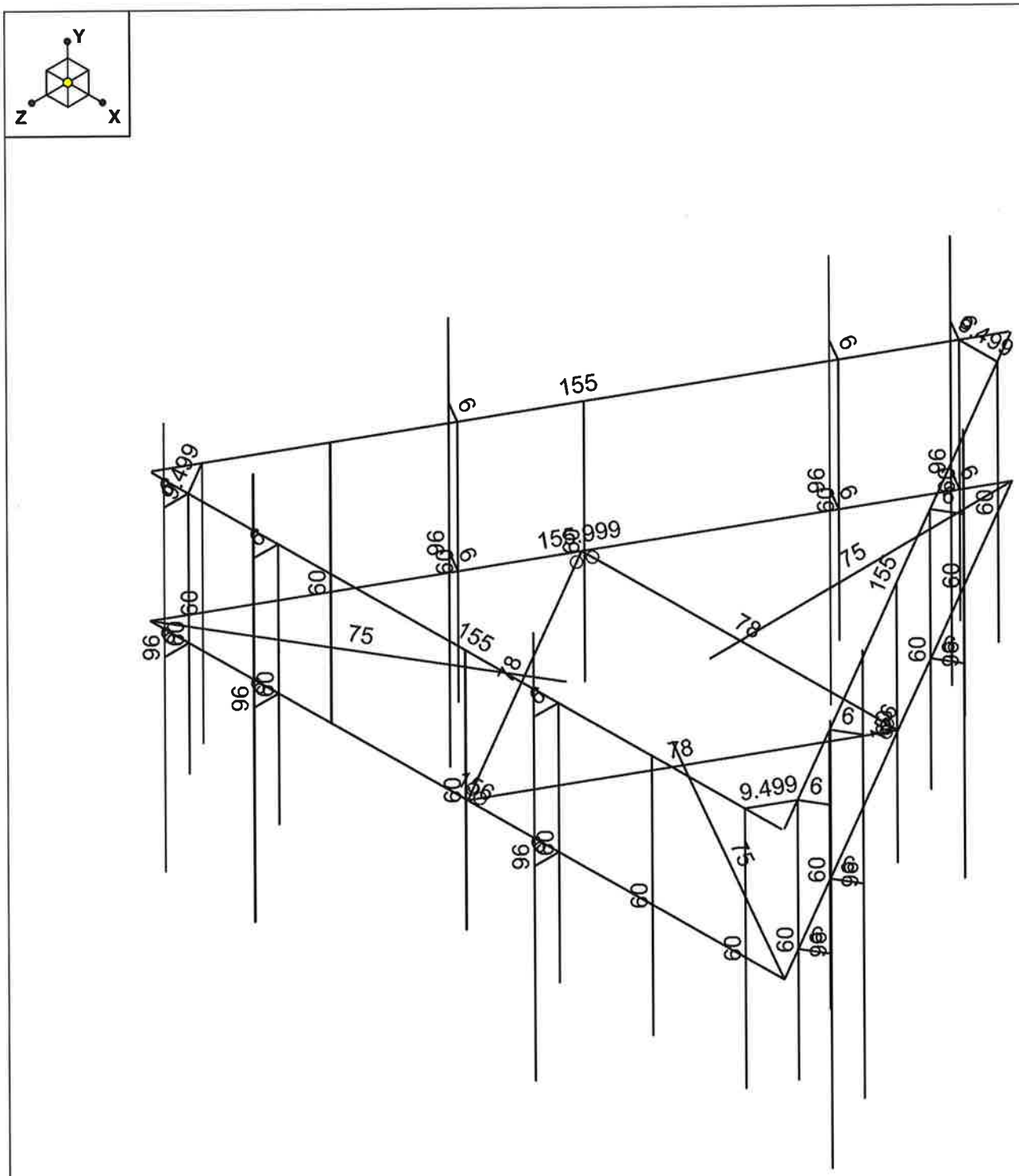

Member Length (in) Displayed
Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Member Lengths
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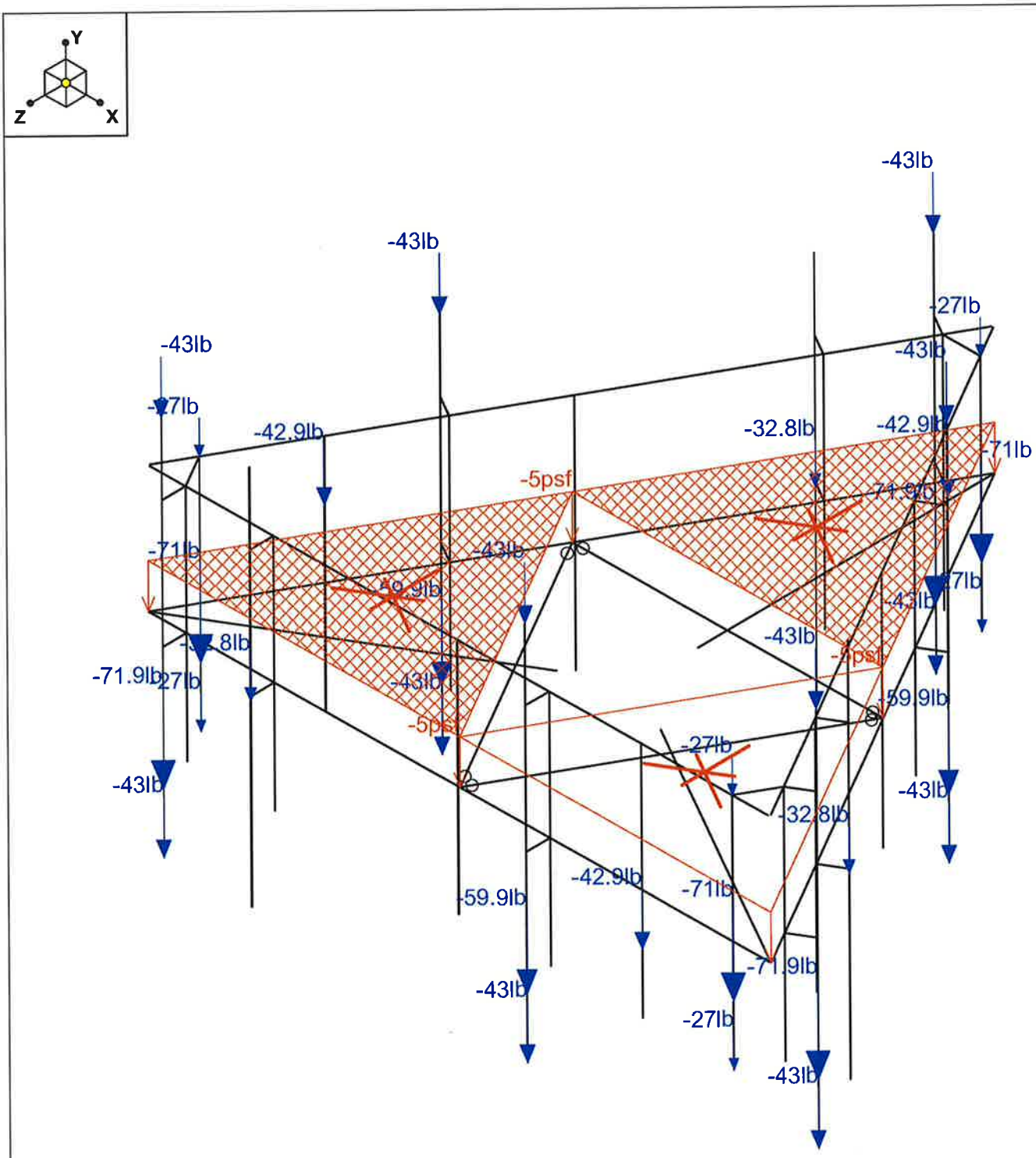

Loads: BLC 1, Self Weight
Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Dead Load
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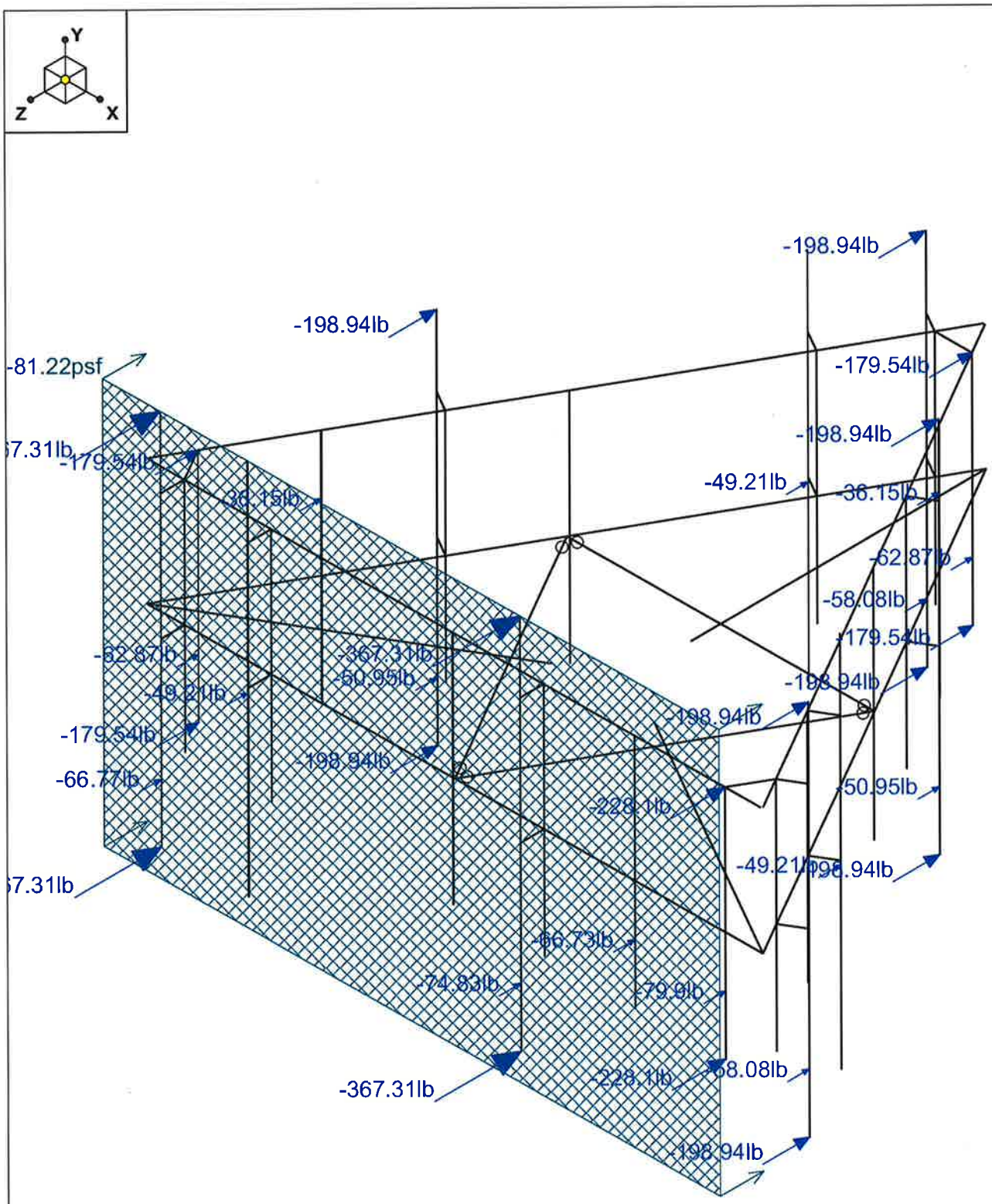

Loads: BLC 2, Wind Load AZI 000
Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Wind load 000
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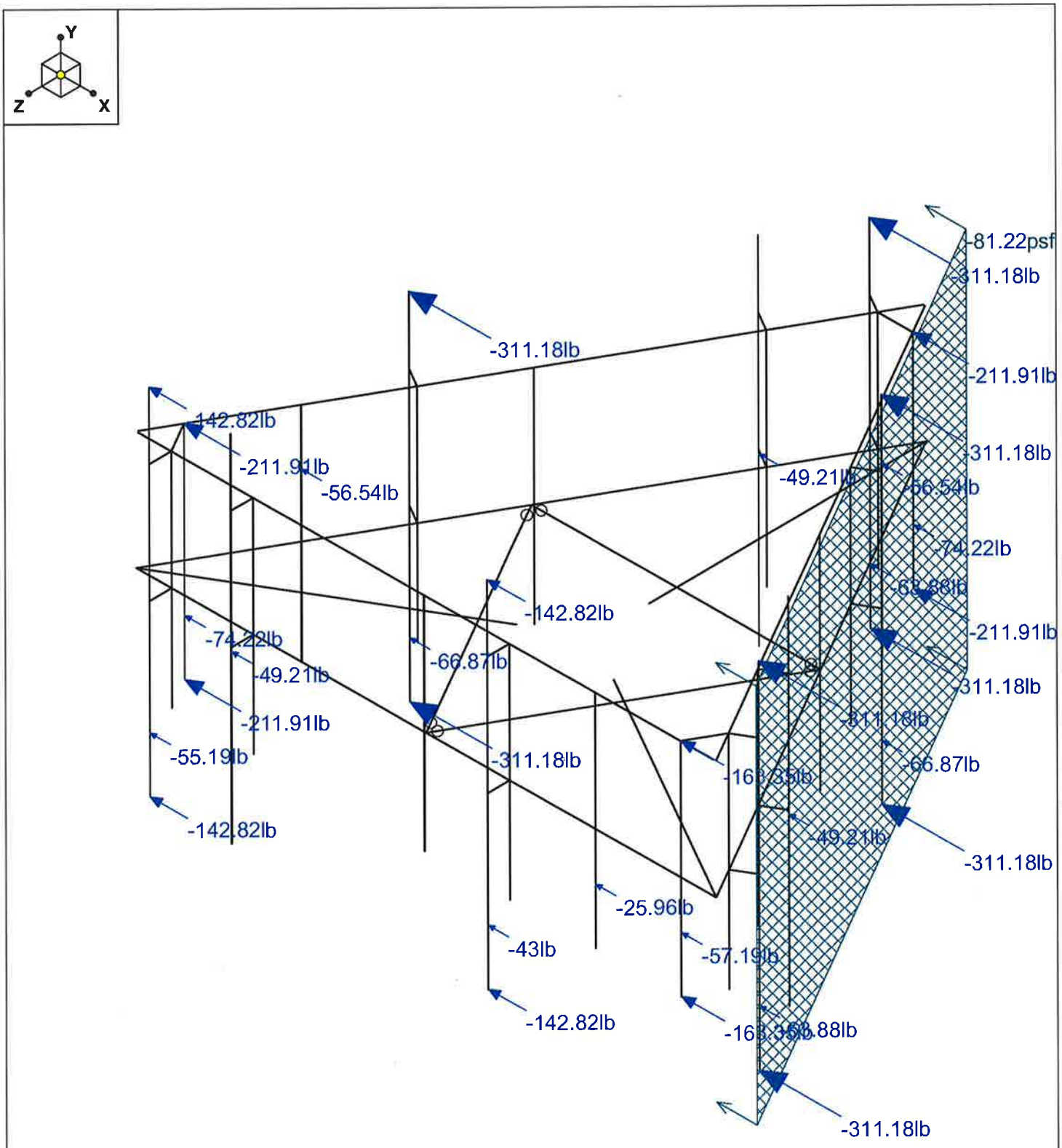
600-002		Valmont_876317.r3d



Loads: BLC 3, Wind Load AZI 090
Envelope Only Solution

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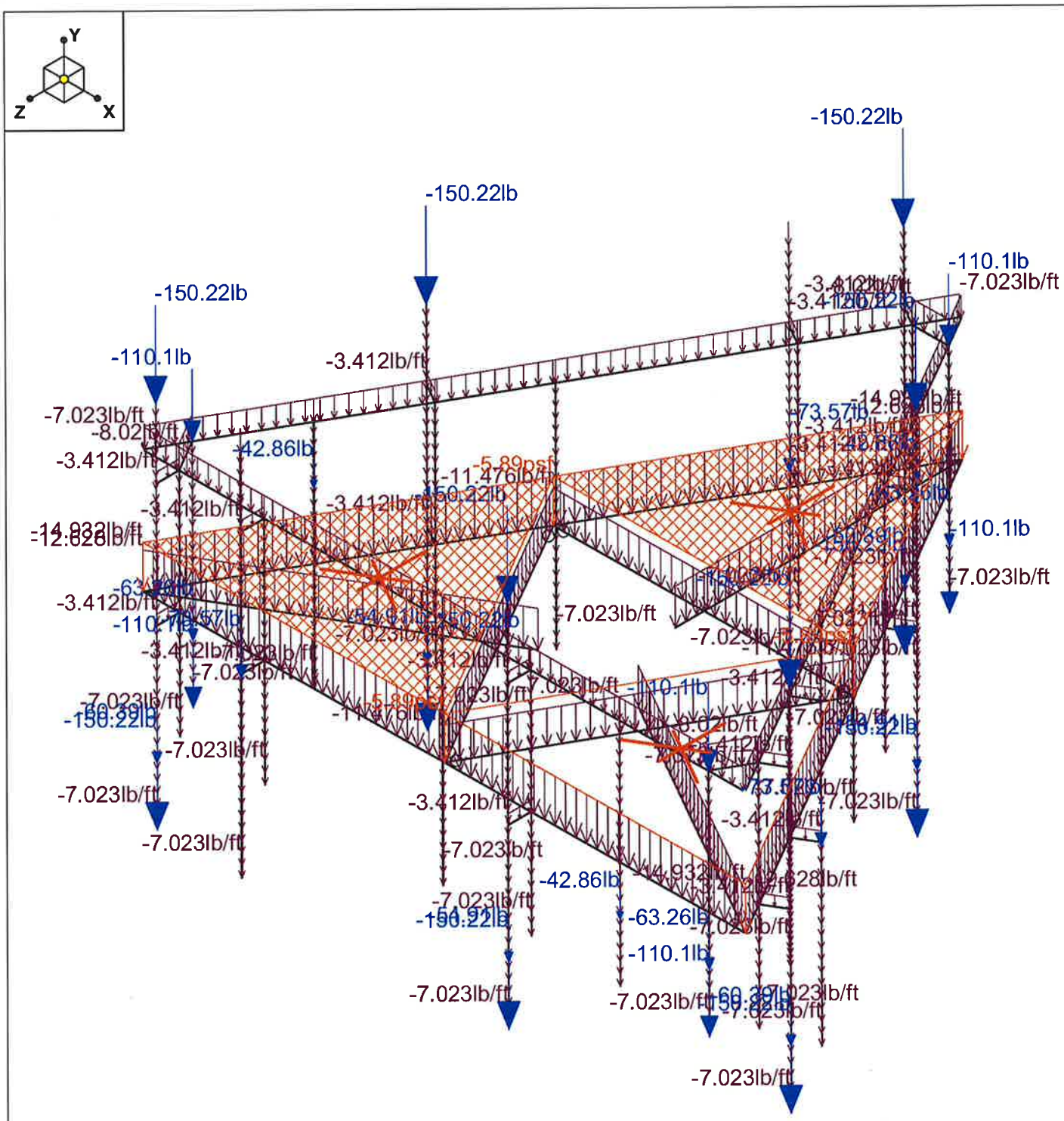
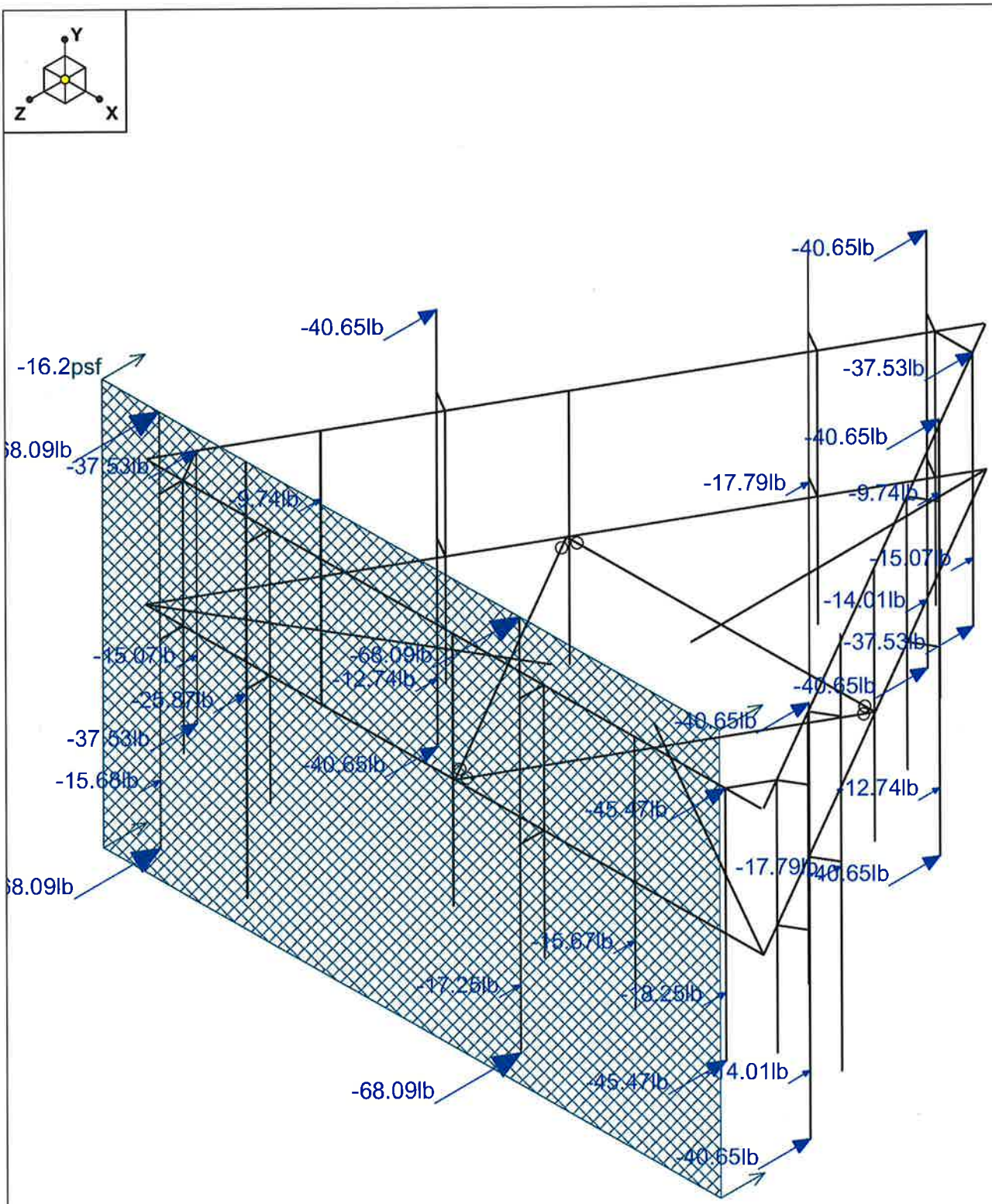


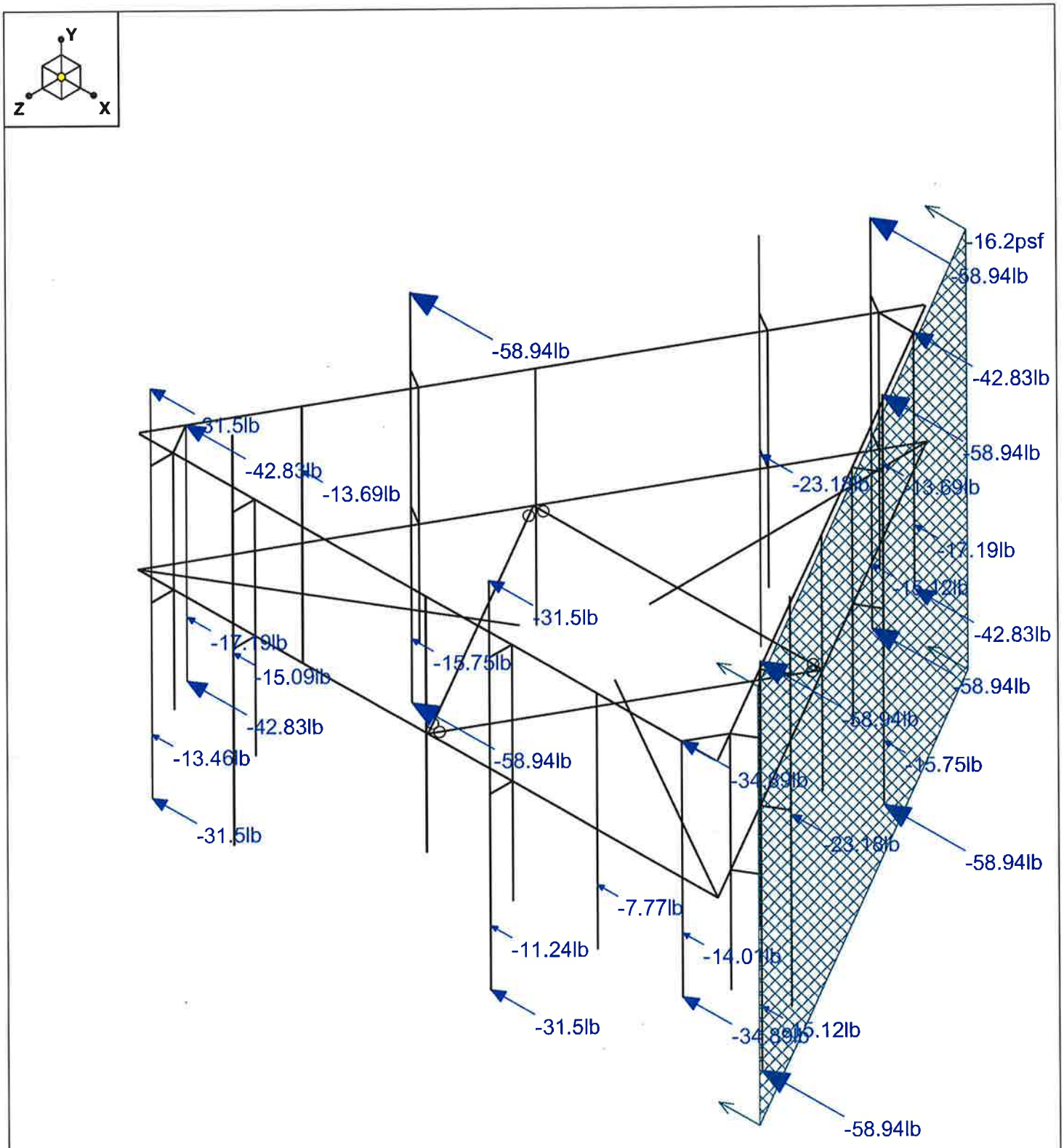
Loads: BLC 4, Ice Weight
Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Ice Load
CLK		Jan 18, 2019 at 10:42 AM
600-002		Valmont_876317.r3d



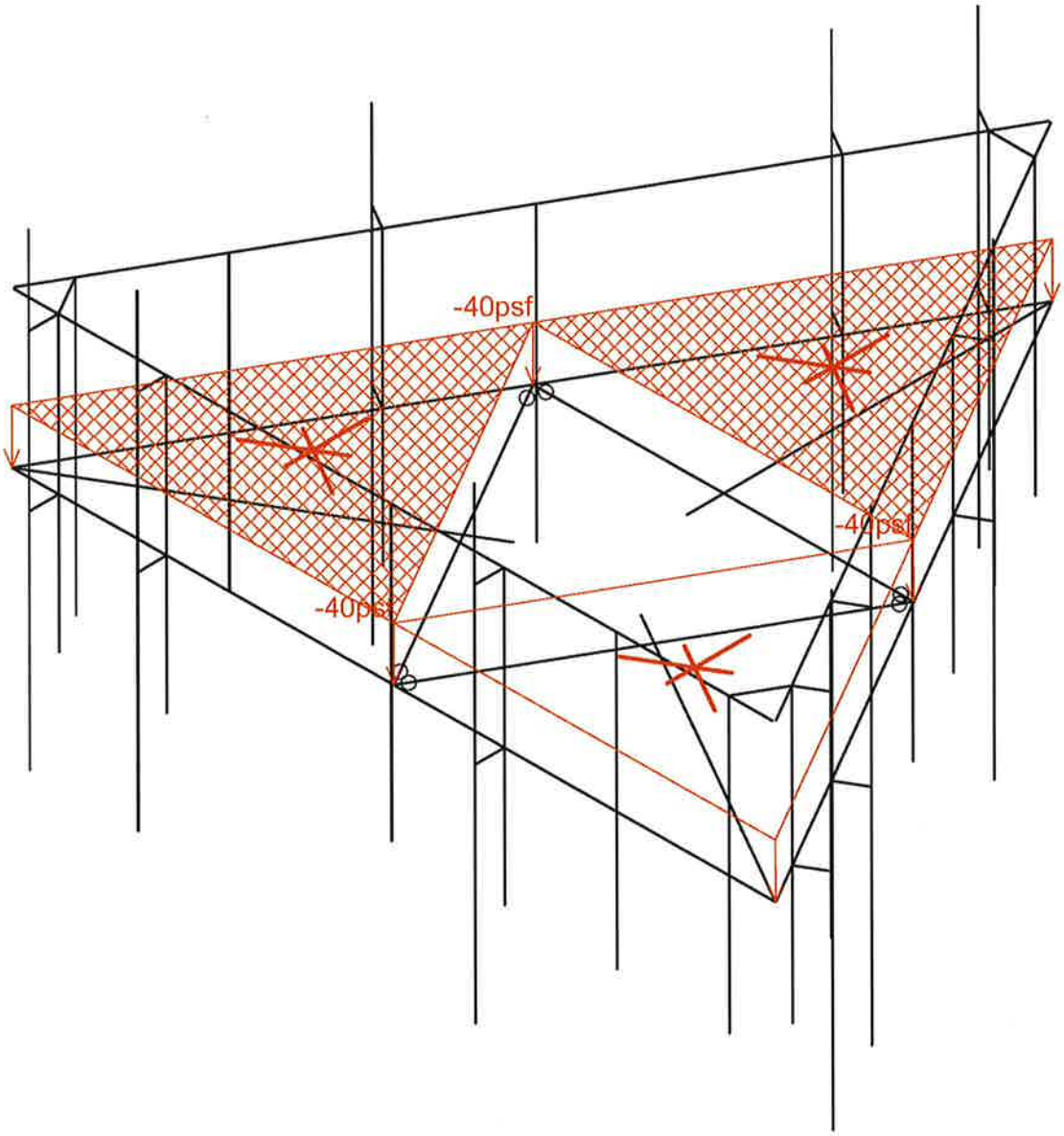
Loads: BLC 5, Wind + Ice Load AZI 000
Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Wind + Ice Load 000
CLK		Jan 18, 2019 at 10:42 AM
600-002		Valmont_876317.r3d



Loads: BLC 6, Wind + Ice Load AZI 090
Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Wind + Ice Load 090
CLK		Jan 18, 2019 at 10:43 AM
600-002		Valmont_876317.r3d



Loads: BLC 7, Service Live 1
Envelope Only Solution

Infinigy Enigneering, PLLC	876317	Service Load
CLK		Jan 18, 2019 at 10:43 AM
600-002		Valmont_876317.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Site Name:	876317
Client:	Crown Castle
Carrier:	AT&T
Engineer:	CLK
Date:	1/18/2019

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2015 IBC
Structure Load Standard:	TIA-222-H
Antenna Load Standard:	TIA-222-H
Structure Risk Category:	II
Structure Type:	Mount - Platform
Number of Sectors:	3
Structure Shape 1:	Flat

Rooftop Inputs:

Rooftop Wind Speed-Up?: No

Wind Loading Inputs:

Design Wind Velocity:	125	mph (ultimate 3-second gust)
Wind Centerline 1 (z_1):	143.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	B	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
40.61	1.00	**81.22**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
6.50	1.00	**16.20**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (ultimate 3-second gust)
Base Ice Thickness:	1.28	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
CCI HPA65R-BU8A	143.0	3	1.00	Flat	Flat	40.61	11.23	456.20	326.70	359.07	423.82
KMW EPBQ-654L8H8-L2	143.0	3	1.00	Flat	Flat	40.61	18.09	734.61	285.63	397.88	622.37
KMW EPBQ-654L8H8-L2	143.0	3	1.00	Flat	Flat	40.61	18.09	734.61	285.63	397.88	622.37
Ericsson 4415 B30	143.0	3	1.00	Flat	Flat	40.61	1.64	66.73	25.96	36.15	56.54
Ericsson RRUS 4449 B5/B12	143.0	3	1.00	Flat	Flat	40.61	1.97	79.90	57.19	62.87	74.22
Ericsson RRUS 4478 B14	143.0	3	1.00	Flat	Flat	40.61	1.84	74.83	43.00	50.95	66.87
Ericsson RRUS 8843 B2/B66A	143.0	3	1.00	Flat	Flat	40.61	1.64	66.77	55.19	58.08	63.88
Raycap DC6-48-60-18-8F	143.0	3	1.00	Round	Round	40.61	1.21	49.21	49.21	49.21	49.21

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2		180	Horizontal	Beam	Channel	A36 Gr.36	Typical
2	M3	N5	N6			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
3	MP1	N7	N8			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
4	M5	N1	N12			Offset Arm	Beam	Tube	A53 Gr. B	Typical
5	M6	N2	N13		180	Horizontal	Beam	Channel	A36 Gr.36	Typical
6	MP9	N18	N19			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
7	M10	N2	N23			Offset Arm	Beam	Tube	A53 Gr. B	Typical
8	M11	N13	N1		180	Horizontal	Beam	Channel	A36 Gr.36	Typical
9	MP5	N28	N29			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
10	M15	N13	N33			Offset Arm	Beam	Tube	A53 Gr. B	Typical
11	M16	N34	N35			Offset Horz	Beam	Tube	A36 Gr.36	Typical
12	M17	N35	N36			Offset Horz	Beam	Tube	A36 Gr.36	Typical
13	M18	N36	N34			Offset Horz	Beam	Tube	A36 Gr.36	Typical
14	M19	N40	N42			Handrail	Beam	Pipe	A53 Gr. B	Typical
15	M20	N43	N44			Handrail	Beam	Pipe	A53 Gr. B	Typical
16	M21	N45	N46			Handrail	Beam	Pipe	A53 Gr. B	Typical
17	M22	N47	N48			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
18	M23	N49	N50			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
19	M25	N56	N57			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
20	M26	N58	N59			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
21	M27	N60	N61			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
22	M28	N65	N66			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
23	M29	N67	N68			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
24	M30	N69	N70			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
25	M31	N76	N77			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
26	M32	N79	N80			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
27	M33	N82	N83			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
28	M34	N77	N29			Bracing	Beam	Single Angle	A36 Gr.36	Typical
29	M35	N80	N8			Bracing	Beam	Single Angle	A36 Gr.36	Typical
30	M36	N83	N19			Bracing	Beam	Single Angle	A36 Gr.36	Typical
31	M31A	N52	N51			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
32	M32A	N26	N27			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
33	M33A	N16	N17			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
34	M34A	N99A	N77			RIGID	None	None	RIGID	Typical
35	M35A	N100	N78			RIGID	None	None	RIGID	Typical
36	M36A	N98A	N53			RIGID	None	None	RIGID	Typical
37	M37	N97A	N48			RIGID	None	None	RIGID	Typical
38	M38	N95A	N6			RIGID	None	None	RIGID	Typical
39	M39	N96A	N10			RIGID	None	None	RIGID	Typical
40	MP4	N105	N102			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
41	MP3	N104	N101			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
42	MP2	N103	N100A			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
43	M43	N117	N80			RIGID	None	None	RIGID	Typical
44	M44	N118	N81			RIGID	None	None	RIGID	Typical
45	M45	N116	N62			RIGID	None	None	RIGID	Typical
46	M46	N115	N57			RIGID	None	None	RIGID	Typical
47	M47	N113	N17			RIGID	None	None	RIGID	Typical
48	M48	N114	N21			RIGID	None	None	RIGID	Typical
49	MP12	N124	N121			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
50	MP11	N123	N120			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
51	MP10	N122	N119			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
52	M52	N136	N83			RIGID	None	None	RIGID	Typical
53	M53	N137	N84			RIGID	None	None	RIGID	Typical
54	M54	N135	N71			RIGID	None	None	RIGID	Typical
55	M55	N134	N66			RIGID	None	None	RIGID	Typical
56	M56	N132	N27			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M57	N133	N31			RIGID	None	None	RIGID	Typical
58	MP8	N143	N140			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
59	MP7	N142	N139			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
60	MP6	N141	N138			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		18	108	0
3	Total General		18	108	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	C5X6.7	3	468	.3
7	A36 Gr.36	L3.5X3.5X4	3	234	.1
8	A36 Gr.36	L2x2x4	3	28.5	0
9	A53 Gr. B	HSS4X4X4	3	225	.2
10	A53 Gr. B	PIPE_2.0	30	2409	.7
11	Total HR Steel		42	3364.5	1.3

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL		-1			33		3	
2	Wind Load AZI 000	WLZ					33		1	
3	Wind Load AZI 090	WLX					33		1	
4	Ice Weight	OL1					33	60	3	
5	Wind + Ice Load AZI ...	OL2					33		1	
6	Wind + Ice Load AZI ...	OL3					33		1	
7	Service Live 1	LL							3	
8	BLC 1 Transient Area...	None						37		
9	BLC 2 Transient Area...	None						52		
10	BLC 3 Transient Area...	None						47		
11	BLC 4 Transient Area...	None						37		
12	BLC 5 Transient Area...	None						52		
13	BLC 6 Transient Area...	None						47		
14	BLC 7 Transient Area...	None						37		

Load Combinations

	Description	S...	PD...	S...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	F...	B...	Fa...	F...	F...	F...	F...
1	1.4D	Yes	Y		DL	1.4												
2	1.2D + 1W AZI 000	Yes	Y		DL	1.2	WLZ	1										
3	1.2D + 1W AZI 030	Yes	Y		DL	1.2	WLZ	.866	WLX	.5								
4	1.2D + 1W AZI 060	Yes	Y		DL	1.2	WLZ	.5	WLX	.866								
5	1.2D + 1W AZI 090	Yes	Y		DL	1.2			WLX	1								
6	1.2D + 1W AZI 120	Yes	Y		DL	1.2	WLZ	-.5	WLX	.866								
7	1.2D + 1W AZI 150	Yes	Y		DL	1.2	WLZ	-.866	WLX	.5								
8	1.2D + 1W AZI 180	Yes	Y		DL	1.2	WLZ	-1										
9	1.2D + 1W AZI 210	Yes	Y		DL	1.2	WLZ	-.866	WLX	-.5								
10	1.2D + 1W AZI 240	Yes	Y		DL	1.2	WLZ	-.5	WLX	-.866								
11	1.2D + 1W AZI 270	Yes	Y		DL	1.2			WLX	-1								
12	1.2D + 1W AZI 300	Yes	Y		DL	1.2	WLZ	.5	WLX	-.866								
13	1.2D + 1W AZI 330	Yes	Y		DL	1.2	WLZ	.866	WLX	-.5								
14	0.9D + 1W AZI 000	Yes	Y		DL	.9	WLZ	1										

Load Combinations (Continued)

	Description	S...	PD...	S...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	F...	B...	Fa...	F...	F...	F...	F...	F...
15	0.9D + 1W AZI 030	Yes	Y		DL	.9	WLZ	.866	WLX	.5									
16	0.9D + 1W AZI 060	Yes	Y		DL	.9	WLZ	.5	WLX	.866									
17	0.9D + 1W AZI 090	Yes	Y		DL	.9			WLX	1									
18	0.9D + 1W AZI 120	Yes	Y		DL	.9	WLZ	-.5	WLX	.866									
19	0.9D + 1W AZI 150	Yes	Y		DL	.9	WLZ	-.866	WLX	.5									
20	0.9D + 1W AZI 180	Yes	Y		DL	.9	WLZ	-1											
21	0.9D + 1W AZI 210	Yes	Y		DL	.9	WLZ	-.866	WLX	-.5									
22	0.9D + 1W AZI 240	Yes	Y		DL	.9	WLZ	-.5	WLX	-.866									
23	0.9D + 1W AZI 270	Yes	Y		DL	.9			WLX	-1									
24	0.9D + 1W AZI 300	Yes	Y		DL	.9	WLZ	.5	WLX	-.866									
25	0.9D + 1W AZI 330	Yes	Y		DL	.9	WLZ	.866	WLX	-.5									
26	1.2D + 1.0Di	Yes	Y		DL	1.2	OL1	1											
27	1.2D + 1.0Di + 1.0Wi AZI 000	Yes	Y		DL	1.2	OL1	1	OL2	1									
28	1.2D + 1.0Di + 1.0Wi AZI 030	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5							
29	1.2D + 1.0Di + 1.0Wi AZI 060	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	.8...							
30	1.2D + 1.0Di + 1.0Wi AZI 090	Yes	Y		DL	1.2	OL1	1			OL3	1							
31	1.2D + 1.0Di + 1.0Wi AZI 120	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.8...							
32	1.2D + 1.0Di + 1.0Wi AZI 150	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5							
33	1.2D + 1.0Di + 1.0Wi AZI 180	Yes	Y		DL	1.2	OL1	1	OL2	-1									
34	1.2D + 1.0Di + 1.0Wi AZI 210	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5							
35	1.2D + 1.0Di + 1.0Wi AZI 240	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-....							
36	1.2D + 1.0Di + 1.0Wi AZI 270	Yes	Y		DL	1.2	OL1	1			OL3	-1							
37	1.2D + 1.0Di + 1.0Wi AZI 300	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	-....							
38	1.2D + 1.0Di + 1.0Wi AZI 330	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5							
39	1.2D + 1.5L + 1.0WL (30 mph) AZI 000	Yes	Y		DL	1.2	LL	1.5	WLZ	.058									
40	1.2D + 1.5L + 1.0WL (30 mph) AZI 030	Yes	Y		DL	1.2	LL	1.5	WLZ	.05	W...	.0...							
41	1.2D + 1.5L + 1.0WL (30 mph) AZI 060	Yes	Y		DL	1.2	LL	1.5	WLZ	.029	W...	.05							
42	1.2D + 1.5L + 1.0WL (30 mph) AZI 090	Yes	Y		DL	1.2	LL	1.5			W...	.0...							
43	1.2D + 1.5L + 1.0WL (30 mph) AZI 120	Yes	Y		DL	1.2	LL	1.5	WLZ	-.029	W...	.05							
44	1.2D + 1.5L + 1.0WL (30 mph) AZI 150	Yes	Y		DL	1.2	LL	1.5	WLZ	-.05	W...	.0...							
45	1.2D + 1.5L + 1.0WL (30 mph) AZI 180	Yes	Y		DL	1.2	LL	1.5	WLZ	-.058									
46	1.2D + 1.5L + 1.0WL (30 mph) AZI 210	Yes	Y		DL	1.2	LL	1.5	WLZ	-.05	W...	-....							
47	1.2D + 1.5L + 1.0WL (30 mph) AZI 240	Yes	Y		DL	1.2	LL	1.5	WLZ	-.029	W...	-.05							
48	1.2D + 1.5L + 1.0WL (30 mph) AZI 270	Yes	Y		DL	1.2	LL	1.5			W...	-....							
49	1.2D + 1.5L + 1.0WL (30 mph) AZI 300	Yes	Y		DL	1.2	LL	1.5	WLZ	.029	W...	-.05							
50	1.2D + 1.5L + 1.0WL (30 mph) AZI 330	Yes	Y		DL	1.2	LL	1.5	WLZ	.05	W...	-....							

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N12	max	2425.254	17	3315.977	31	3844.249	13	-.74	24	1.705	2	-1.12	24
2		min	-3209.001	11	764.414	24	-3402.785	19	-3.391	31	-1.698	20	-5.848	31
3	N23	max	3289.483	5	3320.263	35	3458.518	3	-.638	15	1.45	20	5.849	35
4		min	-2515.131	23	767.125	16	-3003.345	21	-3.349	35	-1.437	14	1.195	16
5	N33	max	4060.779	5	3313.188	27	3323.637	14	6.746	27	2.715	23	.073	24
6		min	-4051.512	23	774.422	20	-4222.238	8	1.39	20	-2.705	17	-.092	6
7	Totals:	max	9663.87	5	9871.89	37	9480.204	2						
8		min	-9663.869	23	2773.413	19	-9480.203	20						

Envelope AISC 13th(360-05): LRFD Steel Code Checks

	Member	Shape	Code Ch...	Loc[in]	LC	Shear Check	Loc...		LC	phi*Pnc [lb]	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	MP2	PIPE_2.0	.905	45.474	20	.118	48		8	14916.096	32130	1.872	1.872	1...	H1-1b
2	MP4	PIPE_2.0	.895	45.474	20	.063	48		13	14916.096	32130	1.872	1.872	1...	H1-1b
3	M16	L3.5X3.5...	.881	39	33	.056	39	y	35	45151.353	55080	2.416	5.229	1...	H2-1
4	M18	L3.5X3.5...	.880	39	38	.056	39	y	31	45151.268	55080	2.416	5.229	1...	H2-1

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Ch...	Loc[in]	LC	Shear Check	Loc....	...	LC	phi*Pnc [lb]	phi*Pn...	phi*M...	phi*M...	...	Eqn
5	M17	L3.5X3.5...	.876	39	37	.056	36....	y	35	45151.301	55080	2.416	5.229	1..	H2-1
6	MP6	PIPE_2.0	.791	45.474	17	.104	48		4	14916.096	32130	1.872	1.872	2..	H1-1b
7	MP10	PIPE_2.0	.791	45.474	23	.103	48		12	14916.096	32130	1.872	1.872	2..	H1-1b
8	MP8	PIPE_2.0	.787	45.474	23	.058	48		34	14916.096	32130	1.872	1.872	2..	H1-1b
9	MP12	PIPE_2.0	.787	45.474	23	.059	48		30	14916.096	32130	1.872	1.872	2..	H1-1b
10	M1	C5X6.7	.700	156	8	.148	156	z	8	62569.474	63828	1.604	9.585	1..	H1-1b
11	M6	C5X6.7	.621	156	12	.121	156	y	12	62569.474	63828	1.604	9.585	1..	H1-1b
12	M11	C5X6.7	.600	155.999	4	.131	155..	z	4	62569.547	63828	1.604	9.585	1..	H1-1b
13	M15	HSS4X4X4	.595	75	36	.148	75	z	17	93738.882	106155	12.311	12.311	2..	H1-1b
14	M5	HSS4X4X4	.580	75	27	.117	75	y	36	93738.882	106155	12.311	12.311	2..	H1-1b
15	M10	HSS4X4X4	.575	75	33	.117	75	y	37	93738.882	106155	12.311	12.311	2..	H1-1b
16	M35	L2x2x4	.381	9.499	9	.048	0	y	2	29630.664	30585.6	.691	1.577	1..	H2-1
17	MP1	PIPE_2.0	.355	28.421	2	.091	28....		2	29504.097	32130	1.872	1.872	2..	H1-1b
18	M36	L2x2x4	.338	0	6	.061	0	y	6	29630.664	30585.6	.691	1.577	1..	H2-1
19	MP5	PIPE_2.0	.326	28.421	10	.056	28....		10	29504.097	32130	1.872	1.872	2..	H1-1b
20	MP9	PIPE_2.0	.324	28.421	6	.069	28....		6	31959.241	32130	1.872	1.872	1..	H1-1b
21	M34	L2x2x4	.291	9.499	5	.044	0	y	10	29630.664	30585.6	.691	1.577	1..	H2-1
22	M31	PIPE_2.0	.235	28.421	2	.067	28....		13	29504.097	32130	1.872	1.872	2..	H1-1b
23	M32	PIPE_2.0	.232	28.421	29	.064	28....		30	29504.097	32130	1.872	1.872	2..	H1-1b
24	M20	PIPE_2.0	.231	101.974	11	.107	77.5		11	5895.817	32130	1.872	1.872	2..	H1-1b
25	M33	PIPE_2.0	.228	28.421	33	.063	28....		34	31959.241	32130	1.872	1.872	1..	H1-1b
26	M19	PIPE_2.0	.220	101.974	8	.131	77.5		2	5895.817	32130	1.872	1.872	2..	H1-1b
27	M3	PIPE_2.0	.198	28.421	2	.119	28....		8	29504.097	32130	1.872	1.872	1..	H1-1b
28	M21	PIPE_2.0	.195	12.237	7	.122	77.5		11	5895.817	32130	1.872	1.872	2..	H1-1b
29	M32A	PIPE_2.0	.195	28.421	11	.104	28....		4	23808.54	32130	1.872	1.872	1..	H1-1b
30	M30	PIPE_2.0	.193	28.421	13	.062	28....		37	29504.097	32130	1.872	1.872	2..	H1-1b
31	M33A	PIPE_2.0	.189	28.421	11	.108	28....		11	23808.54	32130	1.872	1.872	1..	H1-1b
32	M27	PIPE_2.0	.189	28.421	9	.062	28....		33	29504.097	32130	1.872	1.872	2..	H1-1b
33	M28	PIPE_2.0	.183	28.421	32	.064	28....		5	29504.097	32130	1.872	1.872	2..	H1-1b
34	M25	PIPE_2.0	.180	28.421	28	.054	28....		38	29504.097	32130	1.872	1.872	2..	H1-1b
35	M22	PIPE_2.0	.174	28.421	36	.055	28....		9	29504.097	32130	1.872	1.872	2..	H1-1b
36	M31A	PIPE_2.0	.164	31.579	30	.064	31....		28	23808.54	32130	1.872	1.872	1..	H1-1b
37	M26	PIPE_2.0	.144	60	11	.073	28....		24	29504.097	32130	1.872	1.872	2..	H1-1b
38	M29	PIPE_2.0	.142	60	17	.081	28....		11	29504.097	32130	1.872	1.872	2..	H1-1b
39	M23	PIPE_2.0	.141	60	8	.095	28....		20	29504.097	32130	1.872	1.872	1..	H1-1b
40	MP11	PIPE_2.0	.137	48	4	.049	48		38	14916.096	32130	1.872	1.872	1..	H1-1b
41	MP7	PIPE_2.0	.131	48	32	.057	48		5	14916.096	32130	1.872	1.872	1..	H1-1b
42	MP3	PIPE_2.0	.126	48	37	.049	75....		34	14916.096	32130	1.872	1.872	1..	H1-1b

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Horizontal	C5X6.7	Beam	Channel	A36 Gr.36	Typical	1.97	.47	7.48	.055
2	Mount Pipe	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
3	Offset Arm	HSS4X4X4	Beam	Tube	A53 Gr. B	Typical	3.37	7.8	7.8	12.8
4	Offset Horz	L3.5X3.5...	Beam	Tube	A36 Gr.36	Typical	1.7	2	2	.039
5	Handrail	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
6	Bracing	L2x2x4	Beam	Single Angle	A36 Gr.36	Typical	.944	.346	.346	.021
7	Cross arm	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N12	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N23	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N33	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M3						Yes				None
3	MP1						Yes				None
4	M5						Yes				None
5	M6						Yes				None
6	MP9						Yes				None
7	M10						Yes				None
8	M11						Yes				None
9	MP5						Yes				None
10	M15						Yes				None
11	M16	BenPIN	BenPIN				Yes				None
12	M17	BenPIN	BenPIN				Yes				None
13	M18	BenPIN	BenPIN				Yes				None
14	M19						Yes				None
15	M20						Yes				None
16	M21						Yes				None
17	M22						Yes				None
18	M23						Yes				None
19	M25						Yes				None
20	M26						Yes				None
21	M27						Yes				None
22	M28						Yes				None
23	M29						Yes				None
24	M30						Yes				None
25	M31						Yes				None
26	M32						Yes				None
27	M33						Yes				None
28	M34						Yes				None
29	M35						Yes				None
30	M36						Yes				None
31	M31A						Yes				None
32	M32A						Yes				None
33	M33A						Yes				None
34	M34A						Yes	** NA **			None
35	M35A						Yes	** NA **			None
36	M36A						Yes	** NA **			None
37	M37						Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	MP4						Yes				None
41	MP3						Yes				None
42	MP2						Yes				None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	MP12						Yes				None
50	MP11						Yes				None
51	MP10						Yes				None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55						Yes	** NA **			None
56	M56						Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
57	M57						Yes	** NA **			None
58	MP8						Yes				None
59	MP7						Yes				None
60	MP6						Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Horizontal	156	Segment	Segment	Segment	Segment					Lateral
2	M3	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
3	MP1	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
4	M5	Offset Arm	75			Lbyy						Lateral
5	M6	Horizontal	156	Segment	Segment	Segment	Segment					Lateral
6	MP9	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
7	M10	Offset Arm	75			Lbyy						Lateral
8	M11	Horizontal	155.999	Segment	Segment	Segment	Segment					Lateral
9	MP5	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
10	M15	Offset Arm	75			Lbyy						Lateral
11	M16	Offset Horz	78	Segment	Segment	Segment	Segment					Lateral
12	M17	Offset Horz	78	Segment	Segment	Segment	Segment					Lateral
13	M18	Offset Horz	78	Segment	Segment	Segment	Segment					Lateral
14	M19	Handrail	155			Lbyy						Lateral
15	M20	Handrail	155			Lbyy						Lateral
16	M21	Handrail	155			Lbyy						Lateral
17	M22	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
18	M23	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
19	M25	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
20	M26	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
21	M27	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
22	M28	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
23	M29	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
24	M30	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
25	M31	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
26	M32	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
27	M33	Mount Pipe	60	Segment	Segment	Segment	Segment					Lateral
28	M34	Bracing	9.499			Lbyy						Lateral
29	M35	Bracing	9.499			Lbyy						Lateral
30	M36	Bracing	9.499			Lbyy						Lateral
31	M31A	Mount Pipe	60			Lbyy						Lateral
32	M32A	Mount Pipe	60			Lbyy						Lateral
33	M33A	Mount Pipe	60			Lbyy						Lateral
34	MP4	Mount Pipe	96			Lbyy						Lateral
35	MP3	Mount Pipe	96			Lbyy						Lateral
36	MP2	Mount Pipe	96			Lbyy						Lateral
37	MP12	Mount Pipe	96			Lbyy						Lateral
38	MP11	Mount Pipe	96			Lbyy						Lateral
39	MP10	Mount Pipe	96			Lbyy						Lateral
40	MP8	Mount Pipe	96			Lbyy						Lateral
41	MP7	Mount Pipe	96			Lbyy						Lateral
42	MP6	Mount Pipe	96			Lbyy						Lateral

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/...
No Data to Print ...			

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	MP1	Y	-27	0
2	MP2	Y	-43	0
3	MP4	Y	-43	0
4	M31A	Y	-42.9	45
5	MP1	Y	-71	15
6	MP2	Y	-59.9	15
7	MP4	Y	-71.9	15
8	MP3	Y	-32.8	45
9	MP1	Y	-27	60
10	MP2	Y	-43	96
11	MP4	Y	-43	96
12	MP5	Y	-27	0
13	MP6	Y	-43	0
14	MP8	Y	-43	0
15	M30	Y	-42.9	45
16	MP5	Y	-71	15
17	MP6	Y	-59.9	15
18	MP8	Y	-71.9	15
19	MP7	Y	-32.8	45
20	MP5	Y	-27	60
21	MP6	Y	-43	96
22	MP8	Y	-43	96
23	MP9	Y	-27	0
24	MP10	Y	-43	0
25	MP12	Y	-43	0
26	M27	Y	-42.9	45
27	MP9	Y	-71	15
28	MP10	Y	-59.9	15
29	MP12	Y	-71.9	15
30	MP11	Y	-32.8	45
31	MP9	Y	-27	60
32	MP10	Y	-43	96
33	MP12	Y	-43	96

Member Point Loads (BLC 2 : Wind Load AZI 000)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	MP1	Z	-228.1	0
2	MP2	Z	-367.31	0
3	MP4	Z	-367.31	0
4	M31A	Z	-66.73	45
5	MP1	Z	-79.9	15
6	MP2	Z	-74.83	15
7	MP4	Z	-66.77	15
8	MP3	Z	-49.21	45
9	MP1	Z	-228.1	60
10	MP2	Z	-367.31	96
11	MP4	Z	-367.31	96
12	MP5	Z	-179.54	0
13	MP6	Z	-198.94	0
14	MP8	Z	-198.94	0
15	M30	Z	-36.15	45
16	MP5	Z	-62.87	15
17	MP6	Z	-50.95	15
18	MP8	Z	-58.08	15
19	MP7	Z	-49.21	45

Member Point Loads (BLC 2 : Wind Load AZI 000) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
20	MP5	Z	-179.54	60
21	MP6	Z	-198.94	96
22	MP8	Z	-198.94	96
23	MP9	Z	-179.54	0
24	MP10	Z	-198.94	0
25	MP12	Z	-198.94	0
26	M27	Z	-36.15	45
27	MP9	Z	-62.87	15
28	MP10	Z	-50.95	15
29	MP12	Z	-58.08	15
30	MP11	Z	-49.21	45
31	MP9	Z	-179.54	60
32	MP10	Z	-198.94	96
33	MP12	Z	-198.94	96

Member Point Loads (BLC 3 : Wind Load AZI 090)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	MP1	X	-163.35	0
2	MP2	X	-142.82	0
3	MP4	X	-142.82	0
4	M31A	X	-25.96	45
5	MP1	X	-57.19	15
6	MP2	X	-43	15
7	MP4	X	-55.19	15
8	MP3	X	-49.21	45
9	MP1	X	-163.35	60
10	MP2	X	-142.82	96
11	MP4	X	-142.82	96
12	MP5	X	-211.91	0
13	MP6	X	-311.18	0
14	MP8	X	-311.18	0
15	M30	X	-56.54	45
16	MP5	X	-74.22	15
17	MP6	X	-66.87	15
18	MP8	X	-63.88	15
19	MP7	X	-49.21	45
20	MP5	X	-211.91	60
21	MP6	X	-311.18	96
22	MP8	X	-311.18	96
23	MP9	X	-211.91	0
24	MP10	X	-311.18	0
25	MP12	X	-311.18	0
26	M27	X	-56.54	45
27	MP9	X	-74.22	15
28	MP10	X	-66.87	15
29	MP12	X	-63.88	15
30	MP11	X	-49.21	45
31	MP9	X	-211.91	60
32	MP10	X	-311.18	96
33	MP12	X	-311.18	96

Member Point Loads (BLC 4 : Ice Weight)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	MP1	Y	-110.1	0
2	MP2	Y	-150.22	0
3	MP4	Y	-150.22	0

Member Point Loads (BLC 4 : Ice Weight) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
4	M31A	Y	-42.86	45
5	MP1	Y	-63.26	15
6	MP2	Y	-54.91	15
7	MP4	Y	-60.39	15
8	MP3	Y	-73.57	45
9	MP1	Y	-110.1	60
10	MP2	Y	-150.22	96
11	MP4	Y	-150.22	96
12	MP5	Y	-110.1	0
13	MP6	Y	-150.22	0
14	MP8	Y	-150.22	0
15	M30	Y	-42.86	45
16	MP5	Y	-63.26	15
17	MP6	Y	-54.91	15
18	MP8	Y	-60.39	15
19	MP7	Y	-73.57	45
20	MP5	Y	-110.1	60
21	MP6	Y	-150.22	96
22	MP8	Y	-150.22	96
23	MP9	Y	-110.1	0
24	MP10	Y	-150.22	0
25	MP12	Y	-150.22	0
26	M27	Y	-42.86	45
27	MP9	Y	-63.26	15
28	MP10	Y	-54.91	15
29	MP12	Y	-60.39	15
30	MP11	Y	-73.57	45
31	MP9	Y	-110.1	60
32	MP10	Y	-150.22	96
33	MP12	Y	-150.22	96

Member Point Loads (BLC 5 : Wind + Ice Load AZI 000)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	MP1	Z	-45.47	0
2	MP2	Z	-68.09	0
3	MP4	Z	-68.09	0
4	M31A	Z	-15.67	45
5	MP1	Z	-18.25	15
6	MP2	Z	-17.25	15
7	MP4	Z	-15.68	15
8	MP3	Z	-25.87	45
9	MP1	Z	-45.47	60
10	MP2	Z	-68.09	96
11	MP4	Z	-68.09	96
12	MP5	Z	-37.53	0
13	MP6	Z	-40.65	0
14	MP8	Z	-40.65	0
15	M30	Z	-9.74	45
16	MP5	Z	-15.07	15
17	MP6	Z	-12.74	15
18	MP8	Z	-14.01	15
19	MP7	Z	-17.79	45
20	MP5	Z	-37.53	60
21	MP6	Z	-40.65	96
22	MP8	Z	-40.65	96
23	MP9	Z	-37.53	0

Member Point Loads (BLC 5 : Wind + Ice Load AZI 000) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
24	MP10	Z	-40.65	0
25	MP12	Z	-40.65	0
26	M27	Z	-9.74	45
27	MP9	Z	-15.07	15
28	MP10	Z	-12.74	15
29	MP12	Z	-14.01	15
30	MP11	Z	-17.79	45
31	MP9	Z	-37.53	60
32	MP10	Z	-40.65	96
33	MP12	Z	-40.65	96

Member Point Loads (BLC 6 : Wind + Ice Load AZI 090)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	MP1	X	-34.89	0
2	MP2	X	-31.5	0
3	MP4	X	-31.5	0
4	M31A	X	-7.77	45
5	MP1	X	-14.01	15
6	MP2	X	-11.24	15
7	MP4	X	-13.46	15
8	MP3	X	-15.09	45
9	MP1	X	-34.89	60
10	MP2	X	-31.5	96
11	MP4	X	-31.5	96
12	MP5	X	-42.83	0
13	MP6	X	-58.94	0
14	MP8	X	-58.94	0
15	M30	X	-13.69	45
16	MP5	X	-17.19	15
17	MP6	X	-15.75	15
18	MP8	X	-15.12	15
19	MP7	X	-23.18	45
20	MP5	X	-42.83	60
21	MP6	X	-58.94	96
22	MP8	X	-58.94	96
23	MP9	X	-42.83	0
24	MP10	X	-58.94	0
25	MP12	X	-58.94	0
26	M27	X	-13.69	45
27	MP9	X	-17.19	15
28	MP10	X	-15.75	15
29	MP12	X	-15.12	15
30	MP11	X	-23.18	45
31	MP9	X	-42.83	60
32	MP10	X	-58.94	96
33	MP12	X	-58.94	96

Member Distributed Loads (BLC 4 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	M1	Y	-14.932	-14.932	0	%100
2	M3	Y	-7.023	-7.023	0	%100
3	MP1	Y	-7.023	-7.023	0	%100
4	M5	Y	-12.628	-12.628	0	%100
5	M6	Y	-14.932	-14.932	0	%100
6	MP9	Y	-7.023	-7.023	0	%100

Member Distributed Loads (BLC 4 : Ice Weight) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
7	M10	Y	-12.628	-12.628	0	%100
8	M11	Y	-14.932	-14.932	0	%100
9	MP5	Y	-7.023	-7.023	0	%100
10	M15	Y	-12.628	-12.628	0	%100
11	M16	Y	-11.476	-11.476	0	%100
12	M17	Y	-11.476	-11.476	0	%100
13	M18	Y	-11.476	-11.476	0	%100
14	M19	Y	-7.023	-7.023	0	%100
15	M20	Y	-7.023	-7.023	0	%100
16	M21	Y	-7.023	-7.023	0	%100
17	M22	Y	-7.023	-7.023	0	%100
18	M23	Y	-7.023	-7.023	0	%100
19	M25	Y	-7.023	-7.023	0	%100
20	M26	Y	-7.023	-7.023	0	%100
21	M27	Y	-7.023	-7.023	0	%100
22	M28	Y	-7.023	-7.023	0	%100
23	M29	Y	-7.023	-7.023	0	%100
24	M30	Y	-7.023	-7.023	0	%100
25	M31	Y	-7.023	-7.023	0	%100
26	M32	Y	-7.023	-7.023	0	%100
27	M33	Y	-7.023	-7.023	0	%100
28	M34	Y	-8.02	-8.02	0	%100
29	M35	Y	-8.02	-8.02	0	%100
30	M36	Y	-8.02	-8.02	0	%100
31	M31A	Y	-7.023	-7.023	0	%100
32	M32A	Y	-7.023	-7.023	0	%100
33	M33A	Y	-7.023	-7.023	0	%100
34	M34A	Y	-3.412	-3.412	0	%100
35	M35A	Y	-3.412	-3.412	0	%100
36	M36A	Y	-3.412	-3.412	0	%100
37	M37	Y	-3.412	-3.412	0	%100
38	M38	Y	-3.412	-3.412	0	%100
39	M39	Y	-3.412	-3.412	0	%100
40	MP4	Y	-7.023	-7.023	0	%100
41	MP3	Y	-7.023	-7.023	0	%100
42	MP2	Y	-7.023	-7.023	0	%100
43	M43	Y	-3.412	-3.412	0	%100
44	M44	Y	-3.412	-3.412	0	%100
45	M45	Y	-3.412	-3.412	0	%100
46	M46	Y	-3.412	-3.412	0	%100
47	M47	Y	-3.412	-3.412	0	%100
48	M48	Y	-3.412	-3.412	0	%100
49	MP12	Y	-7.023	-7.023	0	%100
50	MP11	Y	-7.023	-7.023	0	%100
51	MP10	Y	-7.023	-7.023	0	%100
52	M52	Y	-3.412	-3.412	0	%100
53	M53	Y	-3.412	-3.412	0	%100
54	M54	Y	-3.412	-3.412	0	%100
55	M55	Y	-3.412	-3.412	0	%100
56	M56	Y	-3.412	-3.412	0	%100
57	M57	Y	-3.412	-3.412	0	%100
58	MP8	Y	-7.023	-7.023	0	%100
59	MP7	Y	-7.023	-7.023	0	%100
60	MP6	Y	-7.023	-7.023	0	%100

Member Distributed Loads (BLC 8 : BLC 1 Transient Area Loads)

Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...

Member Distributed Loads (BLC 8 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,...	End Location[in,...
1	M1	Y	-.02	-2.313	0	26
2	M1	Y	-2.313	-4.485	26	52
3	M1	Y	-4.485	-5.858	52	78
4	M5	Y	-3.679	-8.198	7.5	30
5	M5	Y	-8.198	-6.656	30	52.5
6	M5	Y	-6.656	-.731	52.5	75
7	M11	Y	-4.05	-4.036	78	104
8	M11	Y	-4.036	-2.905	104	130
9	M11	Y	-2.905	-.656	130	155.999
10	M16	Y	-3.8	-2.415	7.8	28.6
11	M16	Y	-2.415	-2.782	28.6	49.4
12	M16	Y	-2.782	-4.904	49.4	70.2
13	M35A	Y	-3.406	-3.406	0	6
14	M6	Y	-5.907	-4.533	78	104
15	M6	Y	-4.533	-2.754	104	130
16	M6	Y	-2.754	-.569	130	156
17	M11	Y	-.209	-2.836	0	39
18	M11	Y	-2.836	-5.463	39	78
19	M15	Y	-3.678	-8.198	7.5	30
20	M15	Y	-8.198	-6.656	30	52.5
21	M15	Y	-6.656	-.731	52.5	75
22	M17	Y	-4.904	-2.782	7.8	28.6
23	M17	Y	-2.782	-2.414	28.6	49.4
24	M17	Y	-2.414	-3.799	49.4	70.2
25	M53	Y	-3.408	-3.408	0	6
26	M1	Y	-4.05	-4.036	78	104
27	M1	Y	-4.036	-2.905	104	130
28	M1	Y	-2.905	-.656	130	156
29	M6	Y	-.209	-2.836	0	39
30	M6	Y	-2.836	-5.463	39	78
31	M10	Y	-2.216	-6.831	7.5	33.75
32	M10	Y	-6.831	-11.446	33.75	60
33	M18	Y	-3.746	-4.15	7.8	23.4
34	M18	Y	-4.15	-4.353	23.4	39
35	M18	Y	-4.353	-4.15	39	54.6
36	M18	Y	-4.15	-3.745	54.6	70.2
37	M44	Y	-3.408	-3.408	0	6

Member Distributed Loads (BLC 9 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,...	End Location[in,...
1	M1	Z	-33.842	-33.842	0	156
2	M3	Z	-16.075	-16.075	0	60
3	MP1	Z	-16.075	-16.075	0	60
4	M5	Z	-23.446	-23.446	0	75
5	M6	Z	-16.921	-16.921	0	156
6	MP9	Z	-16.075	-16.075	0	60
7	M10	Z	-23.446	-23.446	0	75
8	M11	Z	-16.921	-16.921	0	155.999
9	MP5	Z	-16.075	-16.075	0	60
10	M16	Z	-11.845	-11.845	0	78
11	M17	Z	-23.689	-23.689	0	78
12	M18	Z	-11.845	-11.845	0	78
13	M19	Z	-16.075	-16.075	0	155
14	M20	Z	-8.037	-8.037	0	155
15	M21	Z	-8.037	-8.037	0	155
16	M22	Z	-16.075	-16.075	0	60

Member Distributed Loads (BLC 9 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
17	M23	Z	-16.075	-16.075	0	60
18	M25	Z	-16.075	-16.075	0	60
19	M26	Z	-16.075	-16.075	0	60
20	M27	Z	-16.075	-16.075	0	60
21	M28	Z	-16.075	-16.075	0	60
22	M29	Z	-16.075	-16.075	0	60
23	M30	Z	-16.075	-16.075	0	60
24	M31	Z	-16.075	-16.075	0	60
25	M32	Z	-16.075	-16.075	0	60
26	M33	Z	-16.075	-16.075	0	60
27	M34	Z	-6.768	-6.768	0	9.499
28	M35	Z	-6.768	-6.768	0	9.499
29	M36	Z	-13.537	-13.537	0	9.499
30	M31A	Z	-16.075	-16.075	0	60
31	M32A	Z	-16.075	-16.075	0	60
32	M33A	Z	-16.075	-16.075	0	60
33	MP4	Z	-16.075	-16.075	0	96
34	MP3	Z	-16.075	-16.075	0	96
35	MP2	Z	-16.075	-16.075	0	96
36	M43	Z	0	0	.515	6
37	M44	Z	0	0	.515	6
38	M45	Z	0	0	0	6
39	M46	Z	0	0	0	6
40	M47	Z	0	0	0	6
41	M48	Z	0	0	0	6
42	MP11	Z	-16.075	-16.075	0	96
43	MP10	Z	-16.075	-16.075	0	96
44	M52	Z	0	0	0	6
45	M53	Z	0	0	0	6
46	M54	Z	0	0	0	6
47	M55	Z	0	0	0	6
48	M56	Z	0	0	0	6
49	M57	Z	0	0	0	6
50	MP8	Z	-16.075	-16.075	0	96
51	MP7	Z	-16.075	-16.075	0	96
52	MP6	Z	-16.075	-16.075	0	96

Member Distributed Loads (BLC 10 : BLC 3 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	M3	X	-18.562	-18.562	0	60
2	MP1	X	-18.562	-18.562	0	60
3	M5	X	-15.631	-15.631	0	75
4	M6	X	-33.842	-33.842	0	156
5	MP9	X	-18.562	-18.562	0	60
6	M10	X	-15.631	-15.631	0	75
7	M11	X	-33.842	-33.842	0	155.999
8	MP5	X	-18.562	-18.562	0	60
9	M15	X	-31.262	-31.262	0	75
10	M16	X	-23.689	-23.689	0	78
11	M18	X	-23.689	-23.689	0	78
12	M20	X	-16.075	-16.075	0	155
13	M21	X	-16.075	-16.075	0	155
14	M22	X	-18.562	-18.562	0	60
15	M23	X	-18.562	-18.562	0	60
16	M25	X	-18.562	-18.562	0	60
17	M26	X	-18.562	-18.562	0	60

Member Distributed Loads (BLC 10 : BLC 3 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
18	M27	X	-18.562	-18.562	0	60
19	M28	X	-18.562	-18.562	0	60
20	M29	X	-18.562	-18.562	0	60
21	M30	X	-18.562	-18.562	0	60
22	M31	X	-18.562	-18.562	0	60
23	M32	X	-18.562	-18.562	0	60
24	M33	X	-18.562	-18.562	0	60
25	M34	X	-13.537	-13.537	0	9.499
26	M35	X	-13.537	-13.537	0	9.499
27	M31A	X	-18.562	-18.562	0	60
28	M32A	X	-18.562	-18.562	0	60
29	M33A	X	-18.562	-18.562	0	60
30	M43	X	0	0	0	6
31	M44	X	0	0	0	6
32	M45	X	0	0	0	6
33	M46	X	0	0	0	6
34	M47	X	0	0	0	6
35	M48	X	0	0	0	6
36	MP12	X	-18.562	-18.562	0	96
37	MP11	X	-18.562	-18.562	0	96
38	MP10	X	-18.562	-18.562	0	96
39	M52	X	0	0	0	6
40	M53	X	0	0	0	6
41	M54	X	0	0	0	6
42	M55	X	0	0	0	6
43	M56	X	0	0	0	6
44	M57	X	0	0	0	6
45	MP8	X	-18.562	-18.562	0	96
46	MP7	X	-18.562	-18.562	0	96
47	MP6	X	-18.562	-18.562	0	96

Member Distributed Loads (BLC 11 : BLC 4 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	M1	Y	-.024	-2.725	0	26
2	M1	Y	-2.725	-5.283	26	52
3	M1	Y	-5.283	-6.901	52	78
4	M5	Y	-4.333	-9.657	7.5	30
5	M5	Y	-9.657	-7.841	30	52.5
6	M5	Y	-7.841	-.861	52.5	75
7	M11	Y	-4.771	-4.755	78	104
8	M11	Y	-4.755	-3.422	104	130
9	M11	Y	-3.422	-.773	130	155.999
10	M16	Y	-4.476	-2.844	7.8	28.6
11	M16	Y	-2.844	-3.278	28.6	49.4
12	M16	Y	-3.278	-5.776	49.4	70.2
13	M35A	Y	-4.013	-4.013	0	6
14	M6	Y	-6.958	-5.34	78	104
15	M6	Y	-5.34	-3.244	104	130
16	M6	Y	-3.244	-.67	130	156
17	M11	Y	-.246	-3.34	0	39
18	M11	Y	-3.34	-6.435	39	78
19	M15	Y	-4.333	-9.657	7.5	30
20	M15	Y	-9.657	-7.841	30	52.5
21	M15	Y	-7.841	-.861	52.5	75
22	M17	Y	-5.777	-3.278	7.8	28.6
23	M17	Y	-3.278	-2.844	28.6	49.4

Member Distributed Loads (BLC 11 : BLC 4 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
24	M17	Y	-2.844	-4.475	49.4	70.2
25	M53	Y	-4.015	-4.015	0	6
26	M1	Y	-4.771	-4.755	78	104
27	M1	Y	-4.755	-3.422	104	130
28	M1	Y	-3.422	-.773	130	156
29	M6	Y	-.246	-3.34	0	39
30	M6	Y	-3.34	-6.435	39	78
31	M10	Y	-2.61	-8.046	7.5	33.75
32	M10	Y	-8.046	-13.483	33.75	60
33	M18	Y	-4.412	-4.889	7.8	23.4
34	M18	Y	-4.889	-5.127	23.4	39
35	M18	Y	-5.127	-4.889	39	54.6
36	M18	Y	-4.889	-4.411	54.6	70.2
37	M44	Y	-4.015	-4.015	0	6

Member Distributed Loads (BLC 12 : BLC 5 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	M1	Z	-6.75	-6.75	0	156
2	M3	Z	-3.206	-3.206	0	60
3	MP1	Z	-3.206	-3.206	0	60
4	M5	Z	-4.677	-4.677	0	75
5	M6	Z	-3.375	-3.375	0	156
6	MP9	Z	-3.206	-3.206	0	60
7	M10	Z	-4.677	-4.677	0	75
8	M11	Z	-3.375	-3.375	0	155.999
9	MP5	Z	-3.206	-3.206	0	60
10	M16	Z	-2.363	-2.363	0	78
11	M17	Z	-4.725	-4.725	0	78
12	M18	Z	-2.362	-2.362	0	78
13	M19	Z	-3.206	-3.206	0	155
14	M20	Z	-1.603	-1.603	0	155
15	M21	Z	-1.603	-1.603	0	155
16	M22	Z	-3.206	-3.206	0	60
17	M23	Z	-3.206	-3.206	0	60
18	M25	Z	-3.206	-3.206	0	60
19	M26	Z	-3.206	-3.206	0	60
20	M27	Z	-3.206	-3.206	0	60
21	M28	Z	-3.206	-3.206	0	60
22	M29	Z	-3.206	-3.206	0	60
23	M30	Z	-3.206	-3.206	0	60
24	M31	Z	-3.206	-3.206	0	60
25	M32	Z	-3.206	-3.206	0	60
26	M33	Z	-3.206	-3.206	0	60
27	M34	Z	-1.35	-1.35	0	9.499
28	M35	Z	-1.35	-1.35	0	9.499
29	M36	Z	-2.7	-2.7	0	9.499
30	M31A	Z	-3.206	-3.206	0	60
31	M32A	Z	-3.206	-3.206	0	60
32	M33A	Z	-3.206	-3.206	0	60
33	MP4	Z	-3.206	-3.206	0	96
34	MP3	Z	-3.206	-3.206	0	96
35	MP2	Z	-3.206	-3.206	0	96
36	M43	Z	0	0	.515	6
37	M44	Z	0	0	.515	6
38	M45	Z	0	0	0	6
39	M46	Z	0	0	0	6

Member Distributed Loads (BLC 12 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
40	M47	Z	0	0	0	6
41	M48	Z	0	0	0	6
42	MP11	Z	-3.206	-3.206	0	96
43	MP10	Z	-3.206	-3.206	0	96
44	M52	Z	0	0	0	6
45	M53	Z	0	0	0	6
46	M54	Z	0	0	0	6
47	M55	Z	0	0	0	6
48	M56	Z	0	0	0	6
49	M57	Z	0	0	0	6
50	MP8	Z	-3.206	-3.206	0	96
51	MP7	Z	-3.206	-3.206	0	96
52	MP6	Z	-3.206	-3.206	0	96

Member Distributed Loads (BLC 13 : BLC 6 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	M3	X	-3.702	-3.702	0	60
2	MP1	X	-3.702	-3.702	0	60
3	M5	X	-3.118	-3.118	0	75
4	M6	X	-6.75	-6.75	0	156
5	MP9	X	-3.702	-3.702	0	60
6	M10	X	-3.118	-3.118	0	75
7	M11	X	-6.75	-6.75	0	155.999
8	MP5	X	-3.702	-3.702	0	60
9	M15	X	-6.235	-6.235	0	75
10	M16	X	-4.725	-4.725	0	78
11	M18	X	-4.725	-4.725	0	78
12	M20	X	-3.206	-3.206	0	155
13	M21	X	-3.206	-3.206	0	155
14	M22	X	-3.702	-3.702	0	60
15	M23	X	-3.702	-3.702	0	60
16	M25	X	-3.702	-3.702	0	60
17	M26	X	-3.702	-3.702	0	60
18	M27	X	-3.702	-3.702	0	60
19	M28	X	-3.702	-3.702	0	60
20	M29	X	-3.702	-3.702	0	60
21	M30	X	-3.702	-3.702	0	60
22	M31	X	-3.702	-3.702	0	60
23	M32	X	-3.702	-3.702	0	60
24	M33	X	-3.702	-3.702	0	60
25	M34	X	-2.7	-2.7	0	9.499
26	M35	X	-2.7	-2.7	0	9.499
27	M31A	X	-3.702	-3.702	0	60
28	M32A	X	-3.702	-3.702	0	60
29	M33A	X	-3.702	-3.702	0	60
30	M43	X	0	0	0	6
31	M44	X	0	0	0	6
32	M45	X	0	0	0	6
33	M46	X	0	0	0	6
34	M47	X	0	0	0	6
35	M48	X	0	0	0	6
36	MP12	X	-3.702	-3.702	0	96
37	MP11	X	-3.702	-3.702	0	96
38	MP10	X	-3.702	-3.702	0	96
39	M52	X	0	0	0	6
40	M53	X	0	0	0	6

Member Distributed Loads (BLC 13 : BLC 6 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
41	M54	X	0	0	0	6
42	M55	X	0	0	0	6
43	M56	X	0	0	0	6
44	M57	X	0	0	0	6
45	MP8	X	-3.702	-3.702	0	96
46	MP7	X	-3.702	-3.702	0	96
47	MP6	X	-3.702	-3.702	0	96

Member Distributed Loads (BLC 14 : BLC 7 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	M1	Y	-.162	-18.506	0	26
2	M1	Y	-18.506	-35.881	26	52
3	M1	Y	-35.881	-46.865	52	78
4	M5	Y	-29.428	-65.583	7.5	30
5	M5	Y	-65.583	-53.248	30	52.5
6	M5	Y	-53.248	-5.845	52.5	75
7	M11	Y	-32.403	-32.289	78	104
8	M11	Y	-32.289	-23.238	104	130
9	M11	Y	-23.238	-5.248	130	155.999
10	M16	Y	-30.399	-19.316	7.8	28.6
11	M16	Y	-19.316	-22.259	28.6	49.4
12	M16	Y	-22.259	-39.228	49.4	70.2
13	M35A	Y	-27.251	-27.251	0	6
14	M6	Y	-47.256	-36.265	78	104
15	M6	Y	-36.265	-22.03	104	130
16	M6	Y	-22.03	-4.552	130	156
17	M11	Y	-1.668	-22.685	0	39
18	M11	Y	-22.685	-43.701	39	78
19	M15	Y	-29.427	-65.585	7.5	30
20	M15	Y	-65.585	-53.247	30	52.5
21	M15	Y	-53.247	-5.844	52.5	75
22	M17	Y	-39.23	-22.26	7.8	28.6
23	M17	Y	-22.26	-19.314	28.6	49.4
24	M17	Y	-19.314	-30.393	49.4	70.2
25	M53	Y	-27.264	-27.264	0	6
26	M1	Y	-32.402	-32.289	78	104
27	M1	Y	-32.289	-23.237	104	130
28	M1	Y	-23.237	-5.248	130	156
29	M6	Y	-1.668	-22.685	0	39
30	M6	Y	-22.685	-43.701	39	78
31	M10	Y	-17.725	-54.645	7.5	33.75
32	M10	Y	-54.645	-91.565	33.75	60
33	M18	Y	-29.966	-33.201	7.8	23.4
34	M18	Y	-33.201	-34.82	23.4	39
35	M18	Y	-34.82	-33.201	39	54.6
36	M18	Y	-33.201	-29.959	54.6	70.2
37	M44	Y	-27.264	-27.264	0	6

Member Area Loads (BLC 1 : Self Weight)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N35	N34	N1		Y	Two Way	-5
2	N36	N35	N13		Y	Two Way	-5
3	N34	N36	N2		Y	Two Way	-5

Member Area Loads (BLC 2 : Wind Load AZI 000)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N93	N94	N97	N96	Z	Open Structure	-81.22

Member Area Loads (BLC 3 : Wind Load AZI 090)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N95	N98	N97	N94	X	Open Structure	-81.22

Member Area Loads (BLC 4 : Ice Weight)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N35	N34	N1		Y	Two Way	-5.89
2	N36	N35	N13		Y	Two Way	-5.89
3	N34	N36	N2		Y	Two Way	-5.89

Member Area Loads (BLC 5 : Wind + Ice Load AZI 000)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N93	N94	N97	N96	Z	Open Structure	-16.2

Member Area Loads (BLC 6 : Wind + Ice Load AZI 090)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N95	N98	N97	N94	X	Open Structure	-16.2

Member Area Loads (BLC 7 : Service Live 1)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N35	N34	N1		Y	Two Way	-40
2	N36	N35	N13		Y	Two Way	-40
3	N34	N36	N2		Y	Two Way	-40

APPENDIX D

ADDITIONAL CALCUATIONS

Date:	1/18/2019
Client	Crown Castle
Carrier	AT&T
Engineer:	CLK
Site:	876317
Job #:	600-002

Code:	LRFD	
Axial:	3320.00	lbs
Shear:	4222.00	lbs

Bolt Capacity (1/2" A307 Bolt)				
	Ult Load / Bolt	Factored Load (ϕ=0.75)	# of Bolts	Factor Joint Capacity
Axial (lb)	8226.7	6170.0	2	12340
Shear(lb)	5133.3	3850.0	2	7700

Interaction Check	
$T/\phi T_n$	26.9%
$V/\phi Vn$	54.8%
≤1.0	37.3%
	OK

ATTACHMENT 5

RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of AT&T Mobility, LLC

Crown Castle Site Name: WATERBURY
Crown Castle Site BU: 876317
AT&T Mobility, LLC FA #: 10578275
150 Mattatuck Heights
WATERBURY, CT
2/1/2019

Report Status:

AT&T Mobility, LLC Is Compliant

Sealed 1Feb2019 mike@h2dc.com
H2DC PLLC Ct CoA#: 0001714

Prepared By:

Sitesafe, LLC

8618 Westwood Center Drive,
Suite 315

Vienna, VA 22182

Voice 703-276-1100
Fax 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
Crown Castle
WATERBURY, CT

My signature on the cover of this document indicates:

That I, Michael A McGuire, am currently and actively licensed to provide (in this state/jurisdiction as indicated within the professional electrical engineering seal on the cover of this document) professional electrical engineering services, as an employee of Hurricane Hill Development Company, PLLC , a duly authorized/registered engineering firm (in this state, as applicable) on behalf of SiteSafe, LLC; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle (See attached Site Summary and Carrier documents), and that AT&T Mobility, LLC's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "WATERBURY" ("the site"); and

That AT&T Mobility, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by AT&T Mobility, LLC and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure and, the antennas used are highly directional oriented at angles at or just below the horizontal and, that the energy present at ground level is typically so low as to be considered insignificant and have not been included in this analysis; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for

licensees of AT&T Mobility, LLC's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is no more than 2.71% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 7.401% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that AT&T Mobility, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

Crown Castle
WATERBURY
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC (Proposed)	0.229 %
AT&T Mobility, LLC (Proposed)	0.403 %
AT&T Mobility, LLC (Proposed)	0.51 %
AT&T Mobility, LLC (Proposed)	0.548 %
AT&T Mobility, LLC (Proposed)	0.514 %
AT&T Mobility, LLC (Proposed)	0.506 %
Sprint	0.202 %
Sprint	0.462 %
Sprint	0.462 %
Sprint	0.357 %
T-Mobile	0.193 %
T-Mobile	0.41 %
T-Mobile	0.306 %
T-Mobile	0.344 %
Verizon Wireless	0.394 %
Verizon Wireless	0.867 %
Verizon Wireless	0.317 %
Verizon Wireless	0.377 %
Composite Site MPE:	7.401 %

AT&T Mobility, LLC (Proposed)
WATERBURY
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	2.28592	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.22859	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
KMW	EPBQ-654L8H8	143	50	3803	1.148211	0.114821	2.07654	0.207654
KMW	EPBQ-654L8H8	143	180	3803	1.14631	0.114631	2.07654	0.207654
KMW	EPBQ-654L8H8	143	310	3803	1.14631	0.114631	2.07654	0.207654

AT&T Mobility, LLC (Proposed)
WATERBURY
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	2.28592	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.4034	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
KMW	EPBQ-654L8H8	143	50	3803	1.148211	0.202625	2.07654	0.366448
KMW	EPBQ-654L8H8	143	180	3803	1.14631	0.20229	2.07654	0.366448
KMW	EPBQ-654L8H8	143	310	3803	1.14631	0.20229	2.07654	0.366448

AT&T Mobility, LLC (Proposed)
WATERBURY
Carrier Summary

Frequency:	2300	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	5.09545	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.50955	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	HPA65R-BU8A	143	50	2667	5.066875	0.506687	5.066875	0.506688
CCI Antennas	HPA65R-BU8A	143	180	2667	5.066875	0.506687	5.066875	0.506688
CCI Antennas	HPA65R-BU8A	143	310	2667	5.066875	0.506687	5.066875	0.506688

AT&T Mobility, LLC (Proposed)
WATERBURY
Carrier Summary

Frequency:	737	MHz
Maximum Permissible Exposure (MPE):	491.33	µW/cm^2
Maximum power density at ground level:	2.69149	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.54779	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	HPA65R-BU8A	143	50	3312	0.961188	0.195629	1.859444	0.378449
CCI Antennas	HPA65R-BU8A	143	180	3312	0.961188	0.195629	1.859444	0.378449
CCI Antennas	HPA65R-BU8A	143	310	3312	0.961188	0.195629	1.859444	0.378449

AT&T Mobility, LLC (Proposed)
WATERBURY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	5.14257	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.51426	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
KMW	EPBQ-654L8H8	143	50	5250	1.095488	0.109549	1.965282	0.196528
CCI Antennas	HPA65R-BU8A	143	50	2339	3.385606	0.338561	3.643202	0.36432
KMW	EPBQ-654L8H8	143	180	5250	1.09479	0.109479	1.965282	0.196528
CCI Antennas	HPA65R-BU8A	143	180	2339	3.367104	0.33671	3.643202	0.36432
KMW	EPBQ-654L8H8	143	310	5250	1.09479	0.109479	1.965282	0.196528
CCI Antennas	HPA65R-BU8A	143	310	2339	3.367104	0.33671	3.643202	0.36432

AT&T Mobility, LLC (Proposed)
WATERBURY
Carrier Summary

Frequency:	763	MHz
Maximum Permissible Exposure (MPE):	508.67	µW/cm^2
Maximum power density at ground level:	2.57346	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.50592	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
KMW	EPBQ-654L8H8	143	50	3549	1.244203	0.244601	2.159941	0.424628
KMW	EPBQ-654L8H8	143	180	3549	1.242935	0.244352	2.159941	0.424628
KMW	EPBQ-654L8H8	143	310	3549	1.242935	0.244352	2.159941	0.424628

Sprint
WATERBURY
Carrier Summary

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	2.02027	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.20203	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Nokia	AAHC	130	0	3389	1.343219	0.134322	1.679274	0.167927
Nokia	AAHC	130	90	3389	1.343219	0.134322	1.679274	0.167927
Nokia	AAHC	130	180	3389	1.343219	0.134322	1.679274	0.167927

Sprint
WATERBURY
Carrier Summary

Frequency:	1990	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.62047	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.46205	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVSPP18-C-A20	130	0	3804	1.032581	0.103258	2.047446	0.204745
RFS	APXVSPP18-C-A20	130	70	3804	1.037889	0.103789	2.047446	0.204745
RFS	APXVSPP18-C-A20	130	90	3804	1.032581	0.103258	2.047446	0.204745
RFS	APXVSPP18-C-A20	130	180	3804	1.032581	0.103258	2.047446	0.204745

Sprint
WATERBURY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.62047	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.46205	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVSPP18-C-A20	130	0	3804	1.032581	0.103258	2.047446	0.204745
RFS	APXVSPP18-C-A20	130	70	3804	1.037889	0.103789	2.047446	0.204745
RFS	APXVSPP18-C-A20	130	90	3804	1.032581	0.103258	2.047446	0.204745
RFS	APXVSPP18-C-A20	130	180	3804	1.032581	0.103258	2.047446	0.204745

Sprint
WATERBURY
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	2.02312	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.35702	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVSPP18-C-A20	130	0	2168	0.923081	0.162897	0.937682	0.165473
RFS	APXVSPP18-C-A20	130	70	2168	0.923081	0.162897	0.937682	0.165473
RFS	APXVSPP18-C-A20	130	90	2168	0.923081	0.162897	0.937682	0.165473
RFS	APXVSPP18-C-A20	130	180	2168	0.923081	0.162897	0.937682	0.165473

T-Mobile
WATERBURY
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.93197	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.1932	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR 32 B4A B2P	100	50	2061	1.01058	0.101058	1.191628	0.119163
Ericsson	AIR 32 B4A B2P	100	150	2061	1.010322	0.101032	1.191628	0.119163
Ericsson	AIR 32 B4A B2P	100	300	2061	1.01058	0.101058	1.191628	0.119163

T-Mobile
WATERBURY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.09955	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.40996	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR 21 B2A B4P	100	50	2061	1.01058	0.101058	1.191628	0.119163
Ericsson	AIR 32 B4A B2P	100	50	2313	1.133887	0.113389	1.337026	0.133703
Ericsson	AIR 21 B2A B4P	100	150	2061	1.010322	0.101032	1.191628	0.119163
Ericsson	AIR 32 B4A B2P	100	150	2313	1.133598	0.11336	1.337026	0.133703
Ericsson	AIR 21 B2A B4P	100	300	2061	1.01058	0.101058	1.191628	0.119163
Ericsson	AIR 32 B4A B2P	100	300	2313	1.133887	0.113389	1.337026	0.133703

T-Mobile
WATERBURY
Carrier Summary

Frequency:	700	MHz
Maximum Permissible Exposure (MPE):	466.67	µW/cm^2
Maximum power density at ground level:	1.42845	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.3061	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	100	50	1307	0.858774	0.184023	0.919939	0.19713
RFS	APXVAARR24_43-U-NA20	100	150	1307	0.858774	0.184023	0.919939	0.19713
RFS	APXVAARR24_43-U-NA20	100	300	1307	0.858446	0.183953	0.919939	0.19713

T-Mobile
WATERBURY
Carrier Summary

Frequency:	600	MHz
Maximum Permissible Exposure (MPE):	400	µW/cm^2
Maximum power density at ground level:	1.37694	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.34424	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	100	50	1251	0.894386	0.223596	0.894386	0.223596
RFS	APXVAARR24_43-U-NA20	100	150	1251	0.894386	0.223596	0.894386	0.223596
RFS	APXVAARR24_43-U-NA20	100	300	1251	0.894386	0.223596	0.894386	0.223596

Verizon Wireless
WATERBURY
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	3.93981	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.39398	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	SBNHH-1D65A	110	30	3453	2.310019	0.231002	3.896046	0.389605
ANDREW	SBNHH-1D65A	110	150	3453	2.256244	0.225624	3.896046	0.389605
ANDREW	SBNHH-1D65A	110	270	3453	2.256244	0.225624	3.896046	0.389605

Verizon Wireless
WATERBURY
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	4.91161	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.86676	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Antel	BXA-80063-4CF	110	30	1596	1.852115	0.326844	2.420899	0.427217
Antel	BXA-80063-4CF	110	30	1596	1.852115	0.326844	2.420899	0.427217
Antel	BXA-80063-4CF	110	150	1596	1.849756	0.326428	2.420899	0.427217
Antel	BXA-80063-4CF	110	150	1596	1.849756	0.326428	2.420899	0.427217
Antel	BXA-80063-4CF	110	270	1596	1.849756	0.326428	2.420899	0.427217
Antel	BXA-80063-4CF	110	270	1596	1.849756	0.326428	2.420899	0.427217

Verizon Wireless
WATERBURY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	3.17282	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.31728	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	SBNHH-1D65A	110	30	3493	1.428279	0.142828	2.553336	0.255334
ANDREW	SBNHH-1D65A	110	150	3493	1.420028	0.142003	2.553336	0.255334
ANDREW	SBNHH-1D65A	110	270	3493	1.420028	0.142003	2.553336	0.255334

Verizon Wireless
WATERBURY
Carrier Summary

Frequency:	751	MHz
Maximum Permissible Exposure (MPE):	500.67	µW/cm^2
Maximum power density at ground level:	1.88645	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.37679	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	SBNHH-1D65A	110	30	1074	1.328414	0.265329	1.805671	0.360653
ANDREW	SBNHH-1D65A	110	150	1074	1.287951	0.257247	1.805672	0.360653
ANDREW	SBNHH-1D65A	110	270	1074	1.328414	0.265329	1.805672	0.360653

ATTACHMENT 6

Photographic Documentation & Simulations

WATERBURY
10578275
876317
150 MATTATUCK HEIGHTS
WATERBURY, CT 06705-3831

Prepared in February 2019 by:
All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

ALL-POINTS
TECHNOLOGY CORPORATION

ALL-POINTS
TECHNOLOGY CORPORATION

February 15, 2019

Robinson & Cole
280 Trumbull Street
Hartford, CT 06103

APT Project No.: CT389130

Re: Proposed Collocation
150 Mattatuck Heights
Waterbury, Connecticut

All-Points Technology Corporation, P.C. ("APT") understands that Crown Castle proposes to extend an existing 133-foot tall monopole at 150 Mattatuck Heights in Waterbury, Connecticut. The existing monopole would be extended an additional 10 feet to accommodate a new antenna platform for collocation. Nine (9) new panel antennas, nine (9) remote radio heads, and appurtenances would be affixed at a centerline height of 143 feet above existing grade, such that the top of the new antennas would extend to a maximum height of 147 feet above grade. Three antenna platforms are currently mounted to the existing monopole.

APT conducted a reconnaissance of the existing tower on February 13, 2019 to evaluate and photo-document its visibility from surrounding locations. APT also prepared photo-simulations of the proposed tower extension and new antenna platform installation to provide a comparison to existing conditions at three (3) representative locations where the tower is visible. The existing conditions photographs and accompanying photo-simulations are presented in the Attachment to this report.

The existing tower is located in a mixed commercial and residential area and is visible from several locations. Based on our reconnaissance and the photo-simulations, it is APT's opinion that the proposed tower extension would not substantially change the character of existing view or have an adverse visual effect on the surrounding community.

Michael Libertine,
Director of Siting and Permitting

Attachment

PHOTO LOG

Legend

Site Visible

1 inch = 300 feet

300 150 0 300 Feet

ALL-POINTS TECHNOLOGY CORPORATION

CROWN CASTLE

PHOTOGRAPHED ON 2/13/2019

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**MATTATUCK HEIGHTS ROAD**	**SOUTHWEST**	**+/- 0.18 MILE**	**VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

CROWN CASTLE

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**MATTATUCK HEIGHTS ROAD**	**SOUTHWEST**	**+/- 0.18 MILE**	**VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

CROWN CASTLE

PHOTOGRAPHED ON 2/13/2019

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**NORMANDY DRIVE**	**NORTHWEST**	**+/- 0.11 MILE**	**VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

CROWN CASTLE

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**NORMANDY DRIVE**	**NORTHWEST**	**+/- 0.11 MILE**	**VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

CROWN CASTLE

EXISTING

PHOTOGRAPHED ON 2/13/2019

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**STONEFIELD DRIVE**	**EAST**	**+/- 0.22 MILE**	**VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

CROWN CASTLE

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**STONEFIELD DRIVE**	**EAST**	**+/- 0.22 MILE**	**VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

CROWN CASTLE

ATTACHMENT 7

Robinson + Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

February 15, 2019

Via Certificate of Mailing

Neil M. O'Leary, Mayor
City of Waterbury
235 Grand Street
Waterbury, CT 06702

Re: **Proposed Modifications to a Telecommunications Facility at 150 Mattatuck Heights Road in Waterbury, Connecticut**

Dear Mayor O'Leary:

This firm represents Crown Castle ("Crown"). Today, Crown filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to install a ten-foot extension on the existing Mattatuck Heights Road tower to accommodate AT&T's need for wireless service in eastern portions of Waterbury.

As presented in the Sub-Petition, the proposed facility modification constitutes an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

18978133-v1

Robinson + Cole

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson + Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

February 15, 2019

Via Certificate of Mailing

James Sequin, Director of City Planning
City of Waterbury
235 Grand Street
Waterbury, CT 06702

Re: **Proposed Modifications to a Telecommunications Facility at 150 Mattatuck Heights Road in Waterbury, Connecticut**

Dear Mr. Sequin:

This firm represents Crown Castle ("Crown"). Today, Crown filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to install a ten-foot extension on the existing Mattatuck Heights Road tower to accommodate AT&T's need for wireless service in eastern portions of Waterbury.

As presented in the Sub-Petition, the proposed facility modification constitutes an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

18978199-v1

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson + Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

February 15, 2019

Via Certificate of Mailing

Waterbury Twin LLC & 150 MH LLC
12 Iselin Terrace
Larchmont, NY 10538

Re: **Proposed Modifications to a Telecommunications Facility at 150 Mattatuck Heights Road in Waterbury, Connecticut**

Dear Sir or Madam:

This firm represents Crown Castle ("Crown"). Today, Crown filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to install a ten-foot extension on the existing Mattatuck Heights Road tower to accommodate AT&T's need for wireless service in eastern portions of Waterbury.

As presented in the Sub-Petition, the proposed facility modification constitutes an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

18978210-v1

Robinson + Cole

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

ATTACHMENT 8

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

February 15, 2019

Via Certificate of Mailing

«Name_and_Address»

Re: **Proposed Telecommunications Facility at 150 Mattatuck Heights Road in Waterbury, Connecticut**

Dear «Salutation»:

This firm represents Crown Castle ("Crown"). Today, Crown filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to install a ten-foot extension on the existing Mattatuck Heights Road tower to accommodate AT&T's need for wireless service in eastern portions of Waterbury.

As presented in the Sub-Petition, the proposed facility improvements at the Property constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the Sub-Petition.

This notice is being sent to you because you are listed as an owner of land that abuts the Property. If you have any questions regarding the Sub-Petition, the Council's process for reviewing the Sub-Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,

Kenneth C. Baldwin

Attachment

CROWN CASTLE

ABUTTING PROPERTY OWNERS

150 MATTATUCK HEIGHTS
WATERBURY, CONNECTICUT

	Property Address	Owner's and Mailing Address
1.	Stonefield Drive	SNP Waterbury LLC Attn: M. Goldman 200 Connecticut Avenue Norwalk, CT 06854
2.	Stonefield Drive	SNP Waterbury LLC Attn: M. Goldman 200 Connecticut Avenue Norwalk, CT 06854
3.	86 Stonefield Drive	PR Scott LLC 99 Park Avenue, Suite 1820 New York, NY 10016
4.	Mattatuck Heights	Anthony Desomma 61 Brentwood Drive #4 Waterbury, CT 06705
5.	171 Mattatuck Heights	Neo Perl Inc. 171 Mattatuck Heights Waterbury, CT 06705
6.	121 Mattatuck Heights	Tere Realty LLC 593 Park Road Ext. Middlebury, CT 06762
7.	137 Mattatuck Heights	Napoli Mattatuck LLC 10 Knotter Drive Cheshire, CT 06410