ST. MARY'S COUNTY GOVERNMENT

ST. MARY'S COUNTY PROCUREMENT REGULATIONS: 1-6-4.1; 11-8-9.4; 11-3-1.7

AMENDMENT OF SOLICITATION / MODIFICATION OF CONTRACT	1. CONTRACT	PAGE	OF PAGES
		01	234

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
005	10 November 11		

6. ISSUED BY

OFFICE OF PROCUREMENT
P. O. BOX 653
LEONARDTOWN, MD 20650

7. ADMINISTERED BY (If other than item 6)

OFFICE OF PROCUREMENT
PO BOX 653
LEONARDTOWN, MD 20650

8. NAME AND ADDRESS OF CONTRACTOR (No., Town, County, State and ZIP Code)

ALL BIDDERS

(X)	
	9A. AMENDMENT OF SOLICITATION NO. **12-PSIT-61051**
X	9B. DATED (SEE ITEM 11) **13 September 11**
	10A. MODIFICATION OF CONTRACT/ORDER NO.
	10B. DATED (SEE ITEM 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of offers ☐ is extended ☒ is not extended.

Offers must acknowledge receipts of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:

a.) by completing Items 8 and 15 and returning **one (1)** copy of the amendment: b.) By acknowledging receipt of this amendment on each copy of the offer submitted: or c.) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted such change may be made by telegram or letter provided each telegram or letter makes reference to the solicitation and this amendment and is received prior to the opening hour and dated specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X)	A. THIS CHANGE IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14.
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) QUESTIONS & ANSWERS

E. IMPORTANT: **Contractor** ☐ is not, ☒ **is required to sign this document and return 1 copy to the issuing office.**

14. DESCRIPTION OF AMENDMENT, MODIFICATION

This Amendment answers questions unanswered from prior amendments and responds to questions submitted up to the final cut-off date of 10/28/2011. Specific questions and answers relating to proprietary requirements are bolded.

All other terms and conditions remain unchanged.

Except as provided herein, all items and conditions of the document referenced in item 9A or 10A, as heretofore change, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (type or print)		16A. NAME AND TITLE OF CONTRACTNG OFFICER (Type or print)	
		Elaine M. Kramer	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. ST. MARY'S COUNTY BY	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	11/10/2011

Final Vendor Questions/Answers
12-PSIT-61051 Amendment 005
800 MHz Radio Communications System Procurement

Q	Is the county planning shared shelter and tower locations with the State? If so, can the county specify the tower heights, shelter sizes and generator location for these sites?
A	At this time the County currently has plans to co-locate with the state at Bethune, Valley Lee, and Three Notch. There are no current discussions with the state for any other locations. The bidder shall provide the second shelter at Three Notch to house STMC NextGen Radio equipment. The Three Notch site has existing underground cable paths and a shelter foundation that would accommodate a shelter that meets the state requirements (identical to the Bethune shelters) for a second shelter. Although Valley Lee is in the initial stages of design, it is our expectation that this site will be utilizing the Bethune template for shelter and tower design. Each of the SOM tower sites have a 75Kw generator included in their design. The generator is connected to Shelter 1 with underground cable paths to the second shelter installed. Shelter 2 can be connected to the generator feed via an existing 200 Amp sub feed panel located within Shelter 1. This is already installed at the Bethune site (and would be completed for the Valley Lee site at construction) but, the connectivity requirements for the Three Notch site would be the responsibility of the bidder. The towers located at Bethune and Three Notch are 330' and are recorded with the FCC as 348' AGL to accommodate for the beacon extensions installed. Valley Lee tower height and ALG will be identical to the two existing SOM towers already installed in St. Mary's County. The Bethune shelter specifications are listed in the exhibits of this amendment.
	Country Lakes/Dillion Rd Water Tank Site STMC utilizes DataNet Engineering to provide consulting and engineering services for their county-owned/operated tanks. The water tank installations will likely require an installation similar to those deployed on a water tank in Maryland City, Md. See attached file (P-1) Maryland City Roof Config (Profile).pdf for conceptual ideas. This installation provided sufficient antenna isolation between the 800 MHz TX and RX antennas. MW dishes can be deployed in vertical poles or a basic railing system can be deployed to support the MW dishes and possibly support future cellular installations. Microwave Link Parameters

	Within the confines of the existing Crown Castle-STMC agreement, STMC has reserved the following MW dish loads on each of the three Crown towers for the deployment of the new radio system. Vendors can utilize these antenna loads as necessary. This information can be confirmed in the structural analyses attached to this Amendment. California 801524 Existing Dishes in Use PAD6-65 AC at 161' PAD6-65AC at 174' Future Loads Two PAD6-59B antennas at 145' Two PAD6-59B antennas at 110' Mechanicsville 801527 Existing Dishes PAR6-65A at 188' to Leonardtown 911 tower Future Dishes PAD8-59A at 269' SU4 at 101' SU3 at 147' PAD8-59A at 175' Leonardtown 801526 Existing Dishes PAR6-59W at 187' to Mechanicsville PAD6-65AC at 172' to California Future Dishes PAD6-59B at 162' PAD6-59B at 132' PAD6-59B at 131' PAD6-59B at 193' PAD6-59B at 167' Updates on MW Licensing In an effort to acquire MW link frequencies and preserve them for Bidders to utilize in their designs, the following MW call signs have been secured. The licensing parameters are available on the FCC webpage.

	WQNS670 Charlotte Hall/Veterans Home Water Tank WQNS671 Dillion Rd/Country Lakes Water Tank WQNS678 SOM-Bethune WQNS674 Golden Beach WQNS675 Mechanicsville WQOG580 California WQOG581 Leonardtown HS WQOG583 Ridge WQOG585 Sandgate WQOG587 SOM Valley Lee WQOG588 SOM Three Notch WQOG592 Leonardtown 911/PSAP PENDING Hollywood
Q	At sites with septic systems, can the county provide information regarding septic tank and drain field location?
A	The documentation on septic fields at Ridge, Golden Beach and Hollywood are included with this amendment.
Q	How many of each type of subscriber unit are required and can the County break them down by department and tier type for each?
A	An updated subscriber list is included with this amendment.
Q	For reference, the County has supplied a matrix of Subscriber Radio Equipment required functionality and equipment in the Appendix section of this document. Can the County please provide this matrix?
A	An updated subscriber list is included with this amendment.
Q	B.4 Section 4, Compliance, Acceptable compliance statements include only the following responses: Comply. Offeror complies with the requirement fully. Does Not Comply. Offeror does not comply with the requirement and provides a detailed explanation as to what portion(s) of the requirement cannot be met and why. Question: Will the County accept a "comply with clarification" as there are some items that require more elaboration than a simple yes or no for what we are proposing to the County?
A	Comply with Clarification will be acceptable however; if the county interprets the response to be non-compliant it will be graded accordingly

	in the evaluation process.
Q	***5.1.9,* This is a proprietary feature. Please remove this requirement.**
A	**The specific feature that is proprietary is not presented in the question. The feature of interference control is especially critical to reliable communications and should be standard in all radio system designs, especially in the 800 MHz bands in which channels are tightly coordinated and short-spaced on a regular basis. Interference control allows the system to recognize interference on the system channels and to take that channel out of service and alarm the condition.**
Q	***6.3,* Console to console intercom and console to base station transceiver site intercom.** **This is a proprietary feature. Please remove this requirement.**
A	**Console to console intercom is a basic feature convenient for dispatchers to communicate with supervisor during active dispatch times. This is a feature that is very useful if the county needs to man both the backup and main center simultaneously. The console to base station intercom feature is removed.**
Q	*6.5.5,* Number of Fire/EMS pages by position. This is a proprietary feature. Please remove this requirement.
A	Bidder does not clarify what is proprietary.
Q	***8.1,* OTAP of internal operating software** **This is a proprietary feature. Please remove this requirement.**
A	**Both primary P25 radio system manufacturers provide Over-the-air-programming in at least one of their public safety grade subscribers. This requirement cannot be considered proprietary.**
Q	***8.1,* password protection for subscribers** **This is a proprietary feature. Please remove this requirement.**
A	**"All proposed subscriber radios shall be equipped to provide password-protection (on a configurable radio programming basis) to gain access to the radio for normal system usage." Both primary P25 radio system manufacturers provide password protection in at least one of their public safety grade subscribers. This requirement cannot be considered proprietary.**
Q	***8.1,* All portables shall be equipped to operate in a trichemistry, ruggedized, pocketstyle portable vehicular adapter that converts the portable radio into a quasimobile radio configuration as required by**

	St. Mary's County. **This is a proprietary feature. Please remove this requirement.**
A	**STMC will remove the requirement that a vendor must have a vehicular adapter available for the proposed subscribers.**
Q	***G-6, B,*** Please provide a copy of requirements for the "Earnings Report".
A	The reference to "Earnings Report" in this section is erroneous and will be deleted.
Q	***H-11,*** Please specify the quantity of manuals and drawings required.
A	System Maintenance documentation and the quantities can be explained in this way. (1) There should be one complete set of manuals for the entire system and those should be located at the 911 center. (2) There should be one complete set of maintenance documentation labeled "contractor" for future system upgrades, etc. (3) For each particular site, there should be sufficient documentation to properly troubleshoot outages. For instance, no need to have site documentation about remote site #3 at remote site #5. However, there should be sufficient documentation at the prime site/master sites about all other sites connected to those sites.
Q	***I-1.13, B,*** Please provide a list of samples.
A	'Samples' as stated in this section will be any product that the COR may deem 'out-of-the-ordinary' for the applicable purpose. These are not known at this time and may not occur. This may be identifiable in the DDR process.
Q	***1.1.14,*** Please provide frequency and dates of the mentioned safety training program.
A	The frequency and dates are determined by the applicable Federal, State, and County regulations annotated in this section.
Q	***7.1.17,*** In section 7.1.17 there is a line that reads "--System License Matrix/Structure". Please explain as it is not understood what is requested.
A	The County has initiated licensing of speculative microwave channels for Bidders to have available for their designs. Bidders should provide a matrix showing existing licensing parameters against proposed add/modifications necessary for the Bidder design to be feasible.
Q	***10.5.4.5 / 10.7.1.1,*** Section 10.5.4.5 reads "Generator power shall be supplied by a properly sized external diesel genset that sits above an elevated fuel tank sized to provide seven (7) days of continuous backup power."

	And Section 10.7.1.1 reads "The proposed generators should be designed to continuously operate under full load for a period of up to fourteen days with a fuel tank capacity for seven days of continuous duty at full load." The largest standard size diesel fuel tank is 211 gallons. A seven day fuel tank may not be reasonably or physically achievable. Please relax this requirement to allow for a standard size fuel tank or provide fuel tank size desired.
A	The County understands that standard belly tanks have limited capacity and that higher capacity tanks for public safety critical communications are necessary. The requirement is retained to ensure that during a major emergency with significant commercial power outages, and when commercial fuel carriers cannot access remote tower sites, that critical communications will remain in service.
Q	***2.5, Item 11,*** "Can the County provide the measurement methodology used to produce the power measurements recorded for the building analysis' provided? Specifically, what type of sampling was done to produce the power levels recorded: over what time period and at what sample rate?"
A	A handheld Berkeley Varitronics Coyote receiver was used for all measurements. This receiver was held in the hand as the tester walked the interior spaces of a building. The measurement would be started at the beginning of a corridor, for example, and stopped at the end. Multiple channels were sampled during each segment walked at 128 samples / sec / channel. Through internal filtering and decimation the output rate was reduced to 1 report / second.
Q	***3.1,*** Section 3.1 of the RFP states that, "*Element 1 requires a 95% service area reliability using a portable on-the-hip with 6 dB in-building loss over the entire STMC County landmass and political territory, for both talk-in and talk-out configurations."* This implies a bounded area design. However, the statement in section 4.1.3, "*The supplier shall provide coverage prediction maps indicating a service area reliability of 95% RF coverage for all required scenarios",* may be perceived as an allowance for a covered area design. Can the County please confirm that it is requiring A **Bounded Area Design**, in which **95% of the entire county boundary** is **guaranteed** to be covered with **95% reliability**?
A	Yes, the County requires a bounded area design for the purposes of CATP. However, the County requires prediction maps to determine areas that are not predicted to have reliable coverage.
Q	***5.1.3.1,*** **Please remove the analog requirement. This is a proprietary requirement.**
A	**The County will remove the requirement for analog transmissions**

	associated with the VRS.
Q	***10.5.4.1,*** Reference Section 10.5.4.1 – "All shelters shall provide a minimum of 9.5-foot interior ceilings." Is it permissible to provide a shelter with a standard 9'2" interior ceiling?
A	This reduction in ceiling height is acceptable.
Q	***15.4,*** Subscriber Units - Please change requirement for 2 hour repair to 4 hour repair.
A	The RFP currently requires the following maintenance response for subscribers: 10-hour by 5-day – 4-Hour On-Site Response, 8-Hour repair.
Q	***8.1.4,*** Can the County please reduce the current duty cycle requirement of 10/10/80 to the industry standard 5/5/90?
A	The County will reduce the duty cycle to 5/5/90.
Q	***4.1.3,*** Could the County please identify which mapping package they would like us to use in order to provide 1 arcsecond granularity?
A	The primary radio manufactures utilize 1 arcsecond = 30 meter terrain databases. The County has no preference for undelaying mapping database that is utilized.
Q	***Appendix VII,*** Please provide the coordinates for Loveville Elementary.
A	There are two schools on this property. The attached document identifies the center coordinates that were reported in the RFP for the entire complex in addition it specifically identifies the coordinates for the two critical buildings that require coverage.
Q	How long will existing Microwave be in place?
A	The microwave system from Mechanicsville to Leonardtown is 28 DS1 system that is intended to stay in service and is available for short term use to close a northern loop during an interim phase of the project. The Leonardtown to California link will not be necessary long term. The California to Dameron link will remain in service indefinitely and will require connectivity to the Leonardtown PSAP throughout the project deployment.
Q	Is County going to re-use EDACS components to build the 800 MHz ITAC System?

	What date will this go online?
A	Once phase one has been completed the EDACS simulcast control\voting\base station equipment will be dismantled by the county. The equipment will be modified for conventional ITAC simulcast operation and redeployed as sites expand from 6 to the final number. This work is not part of this contract.
Q	The supplier shall provide the most cost effective solution to the County, providing that such a solution meets the reliability and availability criteria of a public safety communications system. The transmission network shall be designed with the maximum redundant path capability, such as path diversity or loop switching, etc., to insure the highest levels of availability. We feel this is best accomplished with an All IP, MPLS solution. Is this acceptable to the county?
A	Vendors shall propose a microwave system that meets the RFP requirements; however, an alternative similar to an All IP solution would be considered and is encouraged.
Q	The RFP states: Additionally, the microwave transport system shall be equipped to multiplex/demultiplex standard DS1 (T1) and DS3 (T3) asynchronous hierarchical signals. The County also requires that the proposed digital microwave backbone be equipped to multiplex/demultiplex 10/100BaseT Ethernet at each node over the SONET backbone using a configurable number of Virtual Tributaries (VTs). We are providing IP, MPLS solution and will provide ethernet at each site to transport the LMR. Does the county need DSO,T1's, DS3's, or OC3 interfaces?
A	As stated in Amendment 2 – For the three existing sites in the Preliminary Design, at least two DS1s should be provided between each site and the Leonardtown Prime site. For any new sites, at least one DS1 should be provided between each site and the prime site.

BETHUNE SHELTER

CODE SUMMARY

1996	UNIFORM BUILDING CODE
1998	BOCA NATIONAL BUILDING CODE
1997	INTERNATIONAL BUILDING CODE
1997	STANDARD BUILDING CODE
1997	UNIFORM BUILDING CODE
2000	INTERNATIONAL BUILDING CODE
2000	STANDARD BUILDING CODE
2003	INTERNATIONAL BUILDING CODE
2006	INTERNATIONAL BUILDING CODE
2009	INTERNATIONAL BUILDING CODE
1994	UNIFORM MECHANICAL CODE
1998	BOCA MECHANICAL CODE
1997	INTERNATIONAL MECHANICAL CODE
1997	STANDARD MECHANICAL CODE
1997	UNIFORM MECHANICAL CODE
2000	INTERNATIONAL MECHANICAL CODE
2000	STANDARD MECHANICAL CODE
2003	INTERNATIONAL MECHANICAL CODE
2006	INTERNATIONAL MECHANICAL CODE
2009	INTERNATIONAL MECHANICAL CODE
2010	CALIFORNIA BUILDING CODE
2007	BUILDING CODE OF NEW YORK STATE
2008	BUILDING CODE OF NEW YORK CITY
2008	ELECTRICAL CODE OF NEW YORK STATE
2007	MECHANICAL CODE OF NEW YORK STATE
2009	NORTH CAROLINA BUILDING CODE
2008	NORTH CAROLINA ELECTRICAL CODE
2009	NORTH CAROLINA MECHANICAL CODE
2009	NORTH CAROLINA ENERGY CONSERVATION CODE
	NORTH DAKOTA ELECTRICAL WIRING STANDARDS
2006	MICHIGAN BUILDING CODE
2009	MICHIGAN MECHANICAL CODE
2000	MINNESOTA STATE ENERGY CODE
2007	MINNESOTA STATE MECHANICAL CODE (CH. 1346-2000 IMC & 2000 IFGC W/ AMEND.)
2007	MINNESOTA STATE BUILDING CODE
2006	NEW MEXICO COMMERCIAL BUILDING CODE
2008	NEW MEXICO ELECTRICAL CODE
2006	NEW MEXICO MECHANICAL CODE
2004	CHICAGO BUILDING CODE
2007	FLORIDA BUILDING CODE WITH 2009 SUPPLEMENTS 1 & 2
2008	MASSACHUSETTS ELECTRICAL CODE
8TH	MASSACHUSETTS STATE BUILDING CODE
2007	OHIO BUILDING CODE
2007	OHIO MECHANICAL CODE
	CALIFORNIA TITLE 25
2010	OREGON STRUCTURAL SPECIALITY CODE
2010	OREGON MECHANICAL SPECIALITY CODE
2010	OREGON ENERGY EFFICIENCY SPECIALITY CODE
2007	KENTUCKY BUILDING CODE
1996-2008	NATIONAL ELECTRICAL CODE
1989,1999,2001,2004,2007	ASHRAE 90.1
2000,2003,2006,2009	INTERNATIONAL ENERGY CONSERVATION CODE
2000,2003,2005,2006,2009	NFPA 101 LIFE SAFETY CODE
2002	ARKANSAS FIRE PREVENTION CODE
2009	NORTH CAROLINA FIRE PREVENTION CODE

NOTES

1. LISTED CODES INCLUDE LATEST STATE ADOPTED AMENDMENTS.
2. THIS SHELTER NOT INTENDED FOR HUMAN HABITATION.
3. APPROVED MODEL MAY BE MIRROR IMAGE.
4. OCCUPANT LOAD = 0, OHIO = 2
5. SPECIAL CONDITIONS AND PERMISSIBLE TYPES OF GASES: N/A
6. SHELTER HAS NO COUNTY PLACEMENT RESTRICTION IN THE STATE OF MARYLAND.
7. STATE INSIGNIA LABEL/DECAL IS LOCATED NEAR MAIN ELECTRICAL SERVICE PANEL.
8. DOOR MUST BE MINIMUM 90 MINUTE FIRE RATED IF USED IN 2 HOUR FIRE RATED SHELTER AND MINIMUM 45 MINUTE FIRE RATED IF USED IN 1 HOUR FIRE RATED SHELTER.
9. ENERGY CODE EVALUATION BASED ON COMCHECK-EZ AND ENERGY GAUGE FLACOM SOFTWARE.
10. NOT SUBJECT TO FLORIDA FIRE SAFETY CODE, COMPLIANCE IS THE RESPONSIBILITY OF THE LOCAL JURISDICTION CODE OFFICIAL.
11. ACCESS TO SHELTER SHALL COMPLY WITH MARYLAND ACCESSIBILITY CODE COMAR .05.02.02.07/ADAAG SECTION 4.1.2.
12. ALL WELDS SHALL BE VERIFIED BY SPECIAL INSPECTION SHOWING CONFORMANCE TO THE DESIGN DRAWINGS AND SPECIFICATIONS.
13. BUILDING CATEGORY II. 1609.1.1 ALLOWS CHAPTER 6 OF ASCE 7; PER SEC 6.5.5, USE TABLE 1-1.
14. APPLICABLE INTERNAL PRESSURE COEFFICIENT (NOT APPLICABLE) - THESE SHELTERS CONFORM TO THE REQUIREMENTS OF SECTION 1609.1.1 WHICH ALLOWS CHAPTER 6 OF ASCE 7; USE SEC 6.4; METHOD I SIMPLIFIED PROCEDURE.
15. WIND IMPORTANCE FACTOR - IW = 1.00
16. THIS SHELTER IS AN "ENCLOSED STRUCTURE".
17. THESE PLANS ARE DESIGNED TO BE USED FOR THE CONSTRUCTION OF COMMERCIAL MODULAR UNITS, IN ACCORDANCE WITH CA HEALTH AND SAFETY CODE SECTION 18028, 1991 UBC, 1993 NEC, ANSI A117.1-1986.
18. THE 2005 NEC IS MORE STRINGENT THAN THE 2002 NEC, 2008 NEC.
19. HVAC UNITS ARE SIZED PER CUSTOMER REQUIREMENTS.
20. EXTERNAL GROUNDING BY OTHERS.
21. SHELTER CONSTRUCTED IN ACCORDANCE WITH 9N-3.
22. SHELTERS AND VENTS ARE DESIGNED FOR AND DO MEET THE HVHZ REQUIREMENTS.
23. THIS BUILDING DOES NOT CONTAIN PLUMBING FACILITIES.

EXTERIOR COMPONENTS AND CLADDING POSITIVE AND NEGATIVE PRESSURES IN TERMS OF PSF

ZONE	2000 IBC, 120 MPH WIND SPEED	2003 IBC, 2006 IBC, 120 MPH WIND SPEED	2000,2003,2006 IBC, 2004 FBC, 150 MPH WIND SPEED
ROOF ZONE 1 (100 SF EFFECTIVE WIND AREA)	+12.1/-28.7	+10.0/-28.7	+15.7/-44.8
ROOF ZONE 2 (20 SF EFFECTIVE WIND AREA)	+12.1/-46.9	+12.0/-46.9	+18.6/-73.4
ROOF ZONE 3 (10 SF EFFECTIVE WIND AREA)	+12.7/-79.1	+12.7/-79.1	+20.0/-123.7
WALL ZONE 4 (200 SF EFFECTIVE WIND AREA)	+25.8/-28.4	+25.8/-28.4	+39.6/-43.4
WALL ZONE 5 (30 SF EFFECTIVE WIND AREA)	+29.3/-38.0	+29.3/-38.0	+45.9/-59.2

INDEX OF SHEETS

DESIGN PARAMETERS

USE GROUP: B (BOCA, MASBC)
S-2 (FBC, IBC, SBC, UBC)
U (OBC)

CONSTRUCTION TYPE: 5B (BOCA, MASBC)
IV-UNP (SBC)
V-B (IBC, FBC)
V-N (UBC)

ROOF LIVE LOAD: 105 PSF
FLOOR LIVE LOAD: 196 PSF
GROUND SNOW LOAD: 125 PSF (N/A FOR FBC 2007)

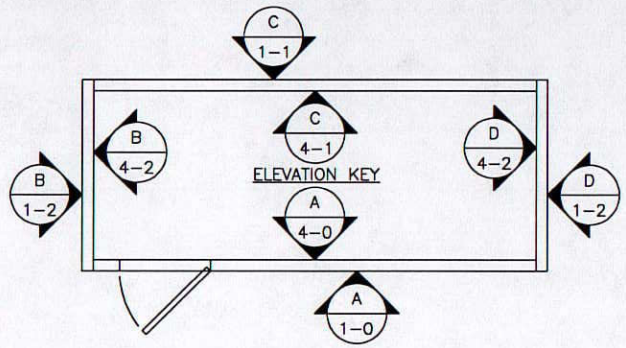
WIND SPEED: 150 MPH/EXPOSURE C

SEISMIC ZONE FOR SBC & UBC: 4
SEISMIC DESIGN CATEGORY FOR IBC: E (IBC)
USE GROUP-III (OBC)
SITE CLASS-D (OBC)

CONCRETE f'c: 5000 PSI AT 28 DAYS
CONCRETE UNIT WEIGHT: 110 PCF
FIRE RATING: 2 HOUR WALL AND ROOF (LIMITATIONS MAY APPLY DUE TO OPENINGS AND PROXIMITY ON SITE)

PHYSICAL PROPERTIES

SHELTER DIMENSIONS: 11'-8"W X 38'-0"L
SHIPPING DIMENSIONS: 11'-11"W X 39'-11 15/16"L X 10'-10"H
SHELTER WEIGHT: 82,500 # (SHELTER ONLY)



CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER COVER SHEET

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 0-0	
DRAWING NO.: SSAB36	B

PARTS LIST

ITEM	U/M	QTY	P/N	DESCRIPTION
1	EA.	1.0000	350002	PLYWOOD,3/4"X4'X8',AC
2	EA.	1.0000	168283	BUSHING,PLASTIC,1/2",SNAP-IN,HEYCO
3	EA.	4.0000	170113	PIPE CAP,PLASTIC,NPT,NIAGARA #205
4	EA.	1.0000	170122	PIPE CAP,PLASTIC,NPT,NIAGARA #188
5	EA.	1.0000	170124	PIPE CAP,PLASTIC,NPT,NIAGARA #340
6	EA.	2.0000	170125	PIPE CAP,PLASTIC,NPT,NIAGARA #257
7	EA.	2.0000	410063	NIPPLE,EMT,1/2",CHASE
8	EA.	1.0000	410075	BUSHING,EMT,1/2",PLASTIC
9	EA.	4.0000	410078	BUSHING,EMT,1 1/4",PLASTIC
10	EA.	2.0000	410080	BUSHING,EMT,2",PLASTIC
11	EA.	1.0000	410100	NIPPLE,EMT,3/4",CHASE
12	EA.	2.0000	410113	NIPPLE,EMT,1/2",OFFSET
13	EA.	1.0000	410134	NIPPLE,RIGID,1/2",CLOSE
14	EA.	2.0000	410140	NIPPLE,RIGID,2",CLOSE
15	EA.	2.0000	410181	NIPPLE,RIGID,2"X8 1/2"
16	EA.	4.0000	410182	NIPPLE,RIGID,3/4"X8 1/2"
17	EA.	3.0000	410184	NIPPLE,RIGID,1/2"X7 1/2"
18	EA.	1.0000	410239	BUSHING,EMT,4",PLASTIC
19	EA.	1.0000	410298	NIPPLE,RIGID,4"X8 1/2"
20	EA.	61.0000	430005	BOX,JUNCT,4"X4",2-1/8D,1/2"-3/4KO
21	EA.	1.0000	430017	BOX,GEN RECPT BACK,200A,APT,AJA820 (REMOVE FOR SHIPPING)
22	EA.	4.0000	430029	BOX,JUNCT,4-11/16"X4-11/16"D-2 1/8"
23	EA.	2.0000	430030	BOX,JUNCT,2X4,WP,(3) 1/2"HOLES
24	FT.	2.0000	430048	WIREWAY,GALV,4"X4"X60",W/O KO'S
25	EA.	2.0000	430049	WIREWAY,GALV,4"X4",CLOSURE PLATE,NO
26	EA.	12.0000	430050	WIREWAY,GALV,4"X4",U-CONNECTOR
27	EA.	1.0000	430053	PLUG,2",BLK PLASTIC (REMOVE FOR SHIPPING)
28	EA.	2.0000	430056	BOX,JUNCT,4 OCT,DEEP BOX,2-1/8"
29	EA.	5.0000	430061	WIREWAY,GALV,4"X4",90D ELBOW
30	EA.	1.0000	430075	ALARM BLOCK,SIEMON,S56M1-50
31	EA.	1.0000	430089	ALARM BLOCK,MOUNTING BRACKET,S89D
32	FT.	3.0000	430268	WIREWAY,GALV,4"X4"X48",W/O KO'S
33	FT.	4.0000	430269	WIREWAY,GALV,4"X4"X120",W/O KO'S
34	EA.	1.0000	430282	DISCONNECT,SQD,200A,FUSED,D224NRB (REMOVE FOR SHIPPING)
35	FT.	2.0000	430319	WIREWAY,GALV,4"X4"X36",W/O KO'S
36	FT.	1.0000	430336	WIREWAY,GALV,4"X4"X12",W/O KO'S
37	EA.	1.0000	430423	LOADCENTER,SQD,200A,40P,QO140L200G
38	EA.	1.0000	430541	LOADCENTER,TRANSTEC,1101-602-123644
39	EA.	1.0000	430550	BOX,8X8X4,SCREW COVER,NEMA 1,NKO
40	EA.	1.0000	460002	THERMOSTAT,HI/LOW TEMP
41	EA.	1.0000	460122	CONTROLLER,LEAD LAG,BARD,MC3000-B
42	EA.	1.0000	470006	MOTION DETECTOR,LIGHT MS108W (REMOVE FOR SHIPPING)
43	EA.	1.0000	470012	BOX,MOUNTING FOR KENALL 3636 LIGHT (REMOVE FOR SHIPPING)
44	EA.	1.0000	470036	SHUTTER,16" SINGLE PANEL EXH,4C557
45	EA.	10.0000	470057	LIGHT FIXTURE,32W,2 BULB,4FT,WR,T-8
46	EA.	1.0000	470063	FILTER FRAME,18",P&S SHEETMETAL
47	EA.	1.0000	470092	FAN,16",EXHAUST,DAYTON,1HLA3
48	EA.	1.0000	470368	FILTER,18"X18"X1"
49	EA.	3.0000	510114	UNISTRUT,1 5/8"CHANNEL,GOLDGALV,18"
50	EA.	4.0000	510115	UNISTRUT,1 5/8"CHANNEL,GOLDGALV,6"
51	EA.	3.0000	510144	UNISTRUT,1 5/8"CHANNEL,GOLDGALV,12"
52	EA.	1.0000	550425	WALL MOUNT POWER CORD HANGER
53	EA.	1.0000	390009	DETECTOR,SMOKE,120V,ION,KIDDE/FYRN
54	EA.	2.0000	390020	RELAY,SMOKE DETECTOR,RM3
55	EA.	1.0000	390032	DETECTOR,HEAT,120V,9V BU,KIDDE/FYR
56	EA.	2.0000	400077	BREAKER,SQD,2P,60A,PLUG IN QO260
57	EA.	3.0000	400078	BREAKER,SQD,2P 20A,PLUG IN,QO220
58	EA.	1.0000	400079	BREAKER,SQD,2P 100A,PLUG IN,QO2100
59	EA.	10.0000	400080	BREAKER,SQD,1P 20A,PLUG IN,QO120
60	EA.	2.0000	400181	BREAKER,SQD,1P 15A,PLUG IN,QO115
61	FT.	50.0000	400436	WIRE,1/0-4,TYPE W,600-1200V (REMOVE FOR SHIPPING)
62	EA.	24.0000	400463	BREAKER,SQD,1P,20/20A TANDEM QOT200
63	EA.	3.0000	400530	FUSE,HOLDER,IN-LINE,HLR2
64	EA.	2.0000	400533	FUSE,1 AMP,SMALL DIN BUSS,GLR1
65	EA.	2.0000	400563	RELAY,COIL,11-PIN OCT,120VAC,3P0T
66	EA.	2.0000	400564	RELAY,BASE,11-PIN,OCT,10A,DBL TIER
67	EA.	1.0000	400595	FUSE,10 AMP,SMALL DIN BUSS,GLR10
	FT.	145.5000	410112	CONDUIT,LFMC,1/2",SEALTITE
70	EA.	24.0000	410117	CONNECTOR,LFMC,1/2",STRAIGHT,ST
71	EA.	13.0000	410118	CONNECTOR,LFMC,1/2",90D,SEALTITE
72	EA.	3.0000	410135	NIPPLE,RIGID,3/4",CLOSE
73	EA.	2.0000	410146	CONNECTOR,LFMC,1/2",45D,SEALTITE
74	EA.	2.0000	420006	LABEL,BLK,ELECT,"GFCI"
75	EA.	1.0000	420007	LABEL,BLK,ELECT,"ALARM BLOCK"
76	EA.	1.0000	420008	LABEL,BLK,ELECT,"SERVICE DISCONNEC"
77	EA.	2.0000	420009	LABEL,BLK,ELECT,"INTERIOR LIGHT"
78	EA.	1.0000	420010	LABEL,BLK,ELECT,"AC PANEL"
79	EA.	1.0000	420011	LABEL,BLK,ELECT,"LOW TEMP"
80	EA.	1.0000	420015	LABEL,BLK,ELECT,"HIGH TEMP"
81	EA.	1.0000	420017	LABEL,BLK,ELECT,"HVAC #2"
82	EA.	1.0000	420018	LABEL,BLK,ELECT,"HVAC #1"
83	EA.	1.0000	420021	LABEL,BLK,ELECT,"COMMERICAL POWER"
84	EA.	1.0000	420024	LABEL,BLK,ELECT,"EXTERIOR LIGHT"
85	EA.	32.0000	420033	LABEL,SELF TRANSFER,PANDUIT TTSL2
86	EA.	2.0000	420040	LABEL,EXHAUST FAN THERMOSTAT
87	EA.	3.0000	420041	LABEL,"ARC FLASH AND SHOCK WARNING"
88	EA.	1.0000	420052	LABEL,BLK,ELECT,"GENERATOR RECPTACL
89	EA.	1.0000	420094	LABEL,BLK,ELECT,"AUTOMATIC XFER SWI
90	EA.	1.0000	420112	LABEL,BLK,ELECT,"PANEL B"
91	EA.	1.0000	420143	LABEL,RED,ELECT,BONDING TAG
92	EA.	1.0000	430006	COVER,SWITCH PLATE,4X4,1 SWITCH
93	EA.	25.0000	430010	COVER,RECPT PLATE,4X4,4 RECPT
94	EA.	17.0000	430012	COVER,BLANK PLATE,4X4
95	EA.	1.0000	430013	COVER,PLAST RING,4X4,1/4" RISE
96	EA.	4.0000	430014	COVER,BLANK PLATE,4 11/16
97	EA.	1.0000	430021	RECEPTACLE,GEN,200A,4W4P,AR20044RS (REMOVE FOR SHIPPING)
98	EA.	14.0000	430025	COVER,RECPT PLATE,4X4,2R
99	EA.	2.0000	430033	RECEPTACLE,GFCI,120V,20A,NEMA5
100	EA.	64.0000	430034	RECEPTACLE,DUPLEX,125V,20A,IVORY
101	EA.	1.0000	430078	LOADCENTER,SQD,COVER,QOC40US
102	EA.	1.0000	430084	SWITCH,SPST,20A,120V,IVORY
103	EA.	2.0000	430127	FUSE,200 AMP,FLNR200ID (REMOVE FOR SHIPPING)
104	EA.	3.0000	430169	COVER,RECPT PLATE,4X4,1R,250V,20A
105	EA.	2.0000	430384	COVER,GFCI,2 REC,HORZ,WTSG15A-C
106	EA.	1.0000	430392	PLUG,200A,4W4P,AP20044CDRS (REMOVE FOR SHIPPING)
107	EA.	3.0000	430462	RECEPTACLE,SINGLE,250V,20A,TURNLOCK
108	EA.	1.0000	470011	LIGHT FIXTURE,100W,KENALL 3636 (REMOVE FOR SHIPPING)
109	EA.	11.0000	470047	LIGHT FIXTURE,LENS,2-BULB T-8
110	EA.	20.0000	470058	LIGHT BULB,F32 T-8 MED BIPIN
111	EA.	1.0000	470311	TIMER,12HR,SPR WOUND,SPST,FD12HC
112	EA.	1.0000	490000	ALARM,MAGNETIC DOOR CONTACT
113	EA.	1.0000	490049	DETECTOR,HUMIDITY,HA-1,WINLAND
114	EA.	1.0000	540104	C-BAR KIT,SQUARE D,PTOGTA-6 (REMOVE FOR SHIPPING)
115	EA.	2.0000	168123	BOLT,1/4"-20X1/2",STAINLESS STEEL
116	FT.	2.0000	170000	PIPE,PVC,SCH 40,1"
117	FT.	48.0000	400030	WIRE,#6 THHN,STRAND,GRN
	FT.	197.0000	400050	WIRE,#2 THHN,STRAND,GRN
121	EA.	11.0000	400051	C-TAP,ORANGE,54740
122	EA.	10.0000	400174	C-TAP,PINK,54730
123	EA.	9.0000	400259	LUG,2H,#2,BRN,3/8"BOLT,1"C/C,LBFW
124	EA.	14.0000	400371	LUG,2H,#6,BLU,1/4"BOLT,3/4"C/C,LBFW
125	EA.	1.0000	400390	LUG,2H,#2,BRN,1/4"BOLT,3/4"C/C,LBFW
126	EA.	104.0000	410343	WIRE STANDOFF, 1 3/4"
127	EA.	1.0000	480005	CELLXION BRASS GREEN SERIAL NO.PLAT
128	EA.	10.0000	504108	KEY,OPERATING BEST "A" CORE,GREEN
129	FT.	1.0000	510001	CABLE LADDER,6"X9'8 1/2",YELLOW ZI
130	EA.	33.0000	510027	CABLE LADDER,AUX CABLE BRK,ACB2SZY
	FT.	10.0000	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI
135	EA.	7.0000	510053	CABLE LADDER,24",CLOSING BRACKET,YZ
136	EA.	30.0000	510062	UNISTRUT,1 5/8"CHANNEL,GOLDGALV,30"

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER
PARTS LIST

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 0-1	
DRAWING NO.: SSAB36	B

PARTS LIST (CONTINUED)

ITEM	U/M	QTY	P/N	DESCRIPTION
137	EA.	1.0000	510153	CABLE LADDER,6",CLOSING BRACKET,YZ
138	EA.	9.0000	510201	CAP,WIRE,5/16",BLACK,RUBBER
139	EA.	2.0000	521002	HVAC,GRILL,SUPPLY,10"X30"
140	EA.	2.0000	521102	HVAC,GRILL,RETURN,16"X30"
141	EA.	2.0000	522001-00006	HVAC,SLEEVE,10"X30"X6"
142	EA.	2.0000	522001-00012	HVAC,SLEEVE,16"X30"X6"
143	EA.	40.0000	530005	CAP,WAVEGUIDE ENTRY,4",EPCAP4
144	EA.	1.0000	530010	WAVEGUIDE ENTRY,16 PORT,4",4X4
145	EA.	1.0000	530023	WAVEGUIDE ENTRY,24 PORT,4",4X6
146	EA.	13.0000	540218	GROUND STRAP ASSY,#6 THHN,14 1/2"
147	EA.	1.0000	540238	GROUND,CONDUIT KIT,#6 THHN,12"SINGL
148	EA.	1.0000	540239	GROUND,CONDUIT KIT,#6 THHN,12"DUAL
	EA.	2.0000	540316	C-BAR KIT,HARGER,EPK16MOT
151	EA.	1.0000	500098	DOOR,3670,CURRIES,LH,16GA,REINFO,3P
152	EA.	3.0000	504000	DOOR,HINGES,STAINLESS STEEL 32D
153	EA.	1.0000	504100	DOOR,CLOSER,SARGENT 1104,ALUM
154	EA.	1.0000	504102	DOOR,BUMPER,SS RUBBER STOP,BLACK
155	EA.	1.0000	504218	DOOR,HOLD OPEN,PLASTIC 10"
156	EA.	1.0000	504300	DOOR,LOCKGUARD,10" 32D
157	EA.	1.0000	504400	DOOR,DRIP CAP,NGF16A-48"
158	EA.	1.0000	504406	DOOR,THRESHOLD 54"X4.75",.090 ALUM
159	EA.	1.0000	504435	DOOR,THRESHOLD 48"X6.25",.090 ALUM
160	EA.	1.0000	504501	CORE,LOCKSET,BEST,CONSTRUCT,GREEN
161	EA.	1.0000	504536	LOCKSET,IC CORE RIM CYLINDER
162	EA.	1.0000	504555	DOOR,STRIKER PLATE,STANDARD
163	EA.	1.0000	504629	LOCKSET,RIM PANIC BAR,LH,3 POINT
164	EA.	1.0000	540260	1/0 GROUNDING CABLE,18 IN - BLACK
165	EA.	2.0000	146514-005	DRIP CAP,48"X3",HVAC
166	EA.	2.0000	520309 -520248 (1)	HVAC,WALL,5T 9KW,BARD,RH,COATED,3PH
167	EA.	4.0000	168375	ANCHOR,CONCRETE WEDGE,1/2"X2-3/4" S
168	EA.	1.0000	400420	T-TAP,250-1/0MAIN,1/0-14,GP-250-0WC
169	EA.	1.0000	430000	COVER,RECPT PLATE,4X2,2 REC,HANDY
170	EA.	1.0000	430034	RECEPTACLE,DUPLEX,125V,20A,IVORY
171	EA.	1.0000	430054	RECEPTACLE,DUPLEX,125V,20A,IVORY
172	EA.	1.0000	550114	MUFFLER,WRAP,P&S
173	EA.	1.0000	420048	LABEL,DATA,STANDARD SHELTER
174	EA.	1.0000	480001	PLATE,DATA,ALUM,8"X12",GRAY
175	FT.	3.5000	504216	DOOR,WEATHERSTRIP,SPONGE NEOPRENE
176	EA.	1.0000	504222	DOOR,WEATHERSTRIPPING,303-TF-3670
177	EA.	1.0000	900113	SIGN,EME RADIATION WARNING
178	EA.	1.0000	050080	WASTE BASKET,32 GALLON (PACKING LIST ITEM)
179	EA.	1.0000	390001	EXTINGUISHER,10# CO2 FIRE,BADGER (PACKING LIST ITEM)
180	EA.	1.0000	390014	EXTINGUISHER,10#DRY CHEM,51-190,ABC (PACKING LIST)
181	EA.	2.0000	420061	DIAMOND WARRANTY FOR MARVAIR (PACKING LIST ITEM)
182	EA.	1.0000	430943	BOX,ENCLOSURE,18"X16"X10",HINGED,H1 (PACKING LIST ITEM)
183	EA.	1.0000	470111	LIGHT BULB,100W,INCANDESCENT,120V (REMOVE FOR SHIPPING)
184	EA.	2.0000	470403	VENT HOOD,19",90 DEG,COMPOSITE (PACKING LIST ITEM)
185	EA.	1.0000	480000	TRAY,WALL FILE PLASTIC,LR-SMOKE (PACKING LIST ITEM)
186	EA.	1.0000	480002	FIRST AID KIT,01-03-24,5M584 (PACKING LIST ITEM)
187	EA.	1.0000	480003	EYE WASH STATION,SINGLE 32OZ (PACKING LIST ITEM)
188	EA.	1.0000	480022	BROOM,WITH CLIP,258481 (PACKING LIST ITEM)
189	EA.	1.0000	480023	PAN,DUST WITH HOOK,418929 (PACKING LIST ITEM)
190	FT.	1.0000	480055	LADDER,STEP,6',FIBERGLASS,300LBS (PACKING LIST ITEM)
191	EA.	1.0000	480087-02	PACKING KIT,TYP SHELTER W/8 LUGS (PACKING LIST ITEM)
192	EA.	1.0000	570006	DOOR,CANOPY,48",COMPOSITE,24"X48" (PACKING LIST ITEM)

(1) EN-01 HVAC/INVT GAB 02/01/11

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER PARTS LIST CONT'D

FILENAME: SSAB36	
SCALE: W.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 0-2	
DRAWING NO.: SSAB36	B

CUT LIST

ITEM	P/N	DESCRIPTION	CUT	PCS
24	430048	WIREWAY,GALV,4"X4"X60",W/O KO'S	60"	2
32	430268	WIREWAY,GALV,4"X4"X48",W/O KO'S	48"	3
33	430269	WIREWAY,GALV,4"X4"X120",W/O KO'S	120"	4
35	430319	WIREWAY,GALV,4"X4"X36",W/O KO'S	36"	2
36	430336	WIREWAY,GALV,4"X4"X12",W/O KO'S	12"	1
61	400436	WIRE,1/0-4,TYPE W,600-1200V (REMOVE FOR SHIPPING)	600"	1
68	410112	CONDUIT,LFMC,1/2",SEALTITE	18"	1
69	410112	CONDUIT,LFMC,1/2",SEALTITE	72"	24
116	170000	PIPE,PVC,SCH 40,1"	6"	4
117	400030	WIRE,#6 THHN,STRAND,GRN	576"	1
118	400050	WIRE,#2 THHN,STRAND,GRN	84"	1
119	400050	WIRE,#2 THHN,STRAND,GRN	1380"	1
120	400050	WIRE,#2 THHN,STRAND,GRN	900"	1
129	510001	CABLE LADDER,6"X9'8 1/2",YELLOW ZI	115 1/8"	1
131	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	95 1/8"	5
132	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	116 1/2"	3
133	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	79 1/8"	1
134	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	88 1/8"	1
157	504400	DOOR,DRIP CAP,NGF16A-48"	48"	1
175	504216	DOOR,WEATHERSTRIP,SPONGE NEOPRENE	42"	1

SHOP DETAILS

DWG NO.	DESCRIPTION
30-001	THRU WALL CONDUIT PENETRATION DETAIL
30-002	BOX TO BOX PENETRATION DETAIL
30-004	BOX TO GFCI PENETRATION DETAIL
30-011	PLASTIC CAP DETAIL
30-012	RIGID, CLOSE, AND CHASE NIPPLE APPLICATION
30-022	HVAC PENETRATION DETAIL
40-008	ELECTRICAL BONDING DETAIL
50-001	GROUND BAR MOUNTING DETAILS
50-013	HALO GROUND TO DOOR FRAME DETAIL
50-016	HALO GROUND TO EXHAUST FAN
50-017	HALO GROUND TO INTAKE LOUVER
50-036	HALO GROUND TO HVAC GRILLE (SINGLE)
50-042	WIRE STANDOFF INSTALLATION
50-049	LUG DETAIL
50-072	LUG TO GROUND BAR CONNECTION
50-073	THRU WALL GROUND BAR PVC PENETRATION DETAIL
51-003	2 PC THRESHOLD INSTALLATION
51-005	WEATHERSTRIP INSTALLATION
51-006	DOOR DRIP CAP INSTALLATION
51-007	DOOR LOCKGUARD INSTALLATION
51-008	DOOR PULL HANDLE INSTALLTION
51-009	DOOR HOLD OPEN INSTALLATION
51-010	DOOR CLOSER DETAIL
51-012	DOOR CANOPY INSTALLATION
51-013	ID SIGN LOCATION
51-014	GENERAL DOOR HARDWARE INSTALLATION
52-003	STRAIGHT CLAMP INSTALLATION
52-004	CORNER CLAMP INSTALLATION
52-016	WALL BRACKET INSTALLATION
52-018	HANGER BAR CONNECTION
52-021	HANGER BRACKET 1-LAYER INSTALLATION
53-001	WAVEGUIDE ENTRY INSTALLATION
54-011	GENERATOR INSTALLATION DETAILS
55-006	HVAC INSTALLATION & CONNECTIONS
55-010	HVAC DRIP CAP INSTALLATION

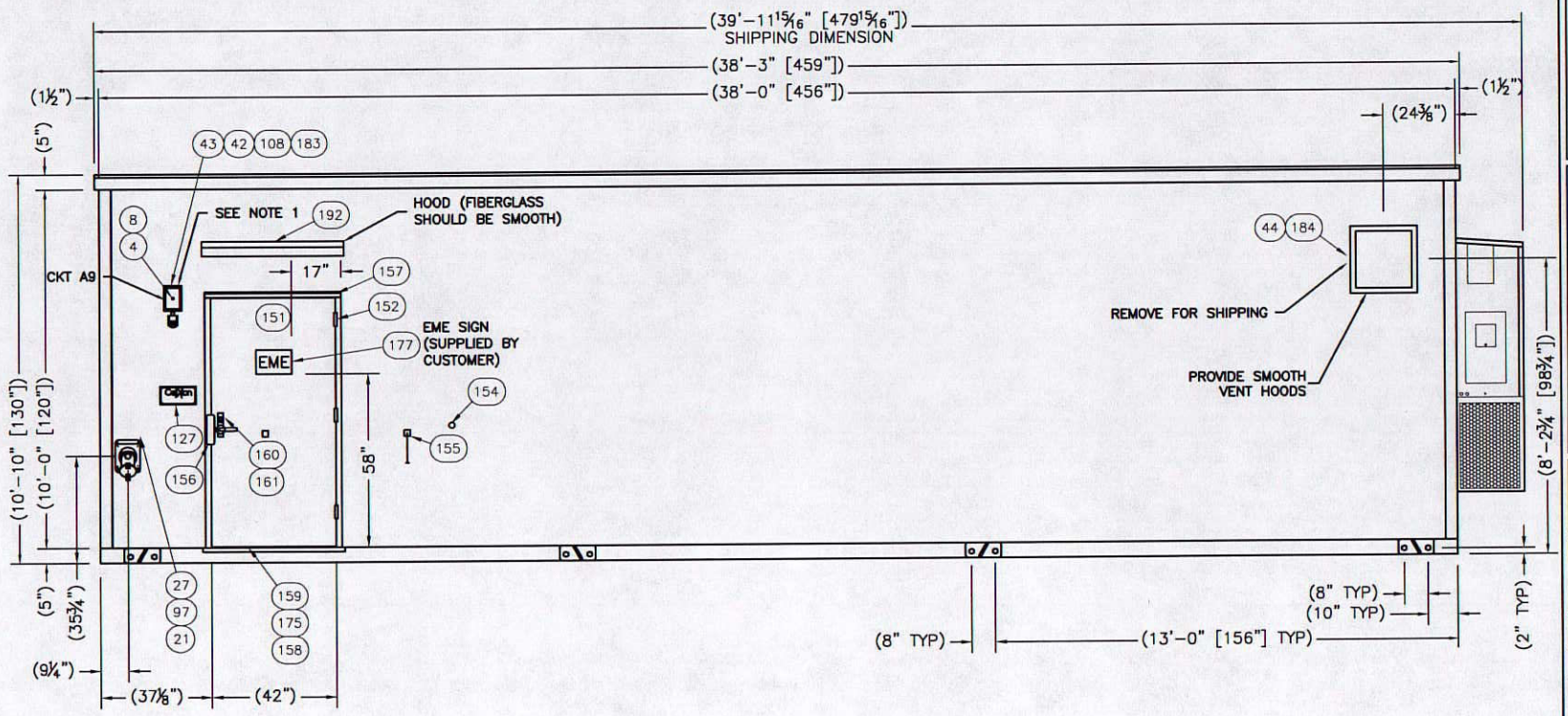
CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER CUT LIST/ SHOP DETAILS

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 0-3	
DRAWING NO.: SSAB36	B

SUB–PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
157	504400	DOOR,DRIP CAP,NGF16A–48"	46"
175	504216	DOOR,WEATHERSTRIP,SPONGE NEOPRENE	42"



EXTERIOR ELEVATION "A"

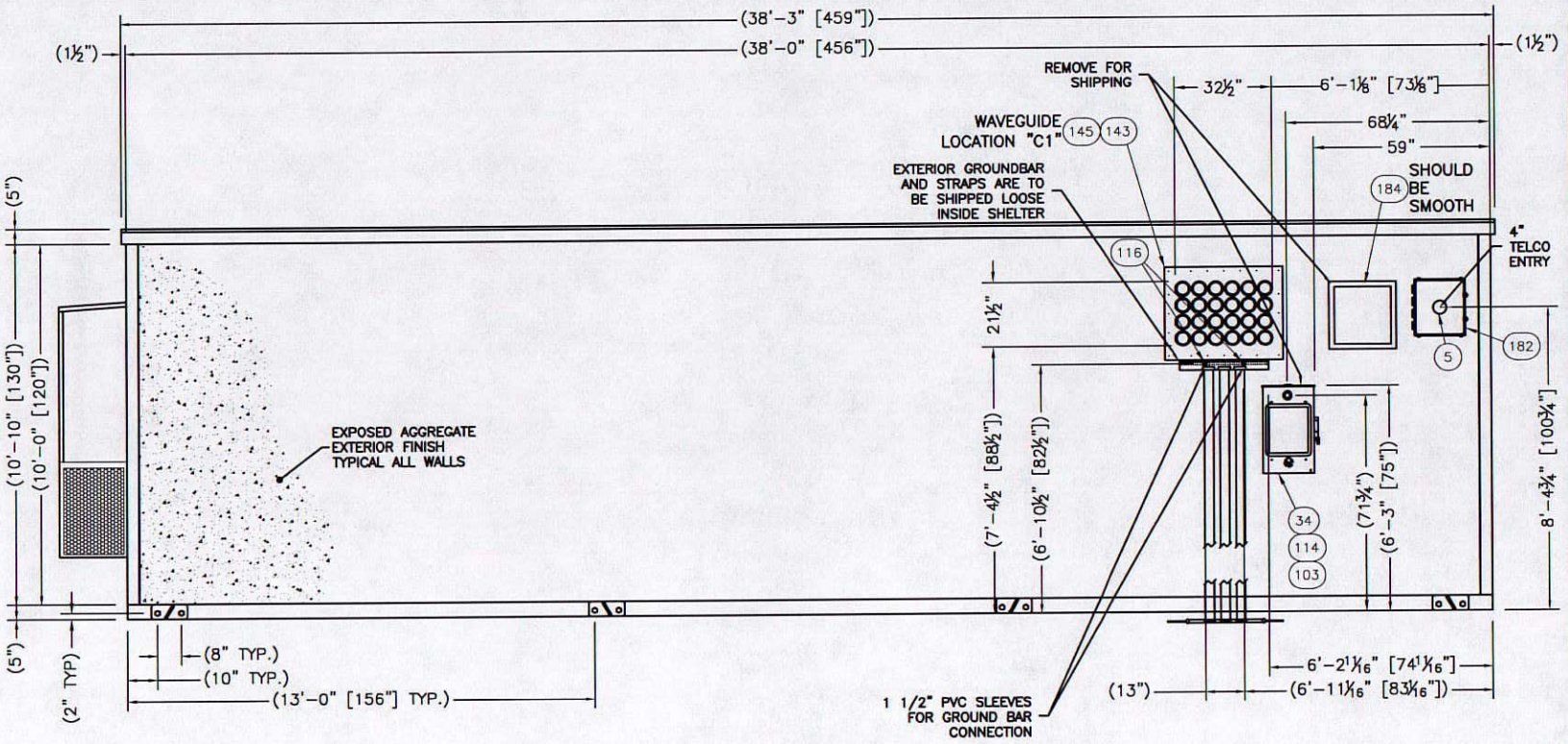
NOTE:
1. LIGHT FIXTURE TO BE INSTALLED AT MANUFACTURER, TESTED FOR FUNCTION, REMOVED AND PACKED INSIDE FOR SHIPMENT.

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'–8" X 38'–0" CONCRETE SHELTER
EXTERIOR ELEVATION "A"

FILENAME: SSAB36	
SCALE: 5/16"=1'–0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 1–0	
DRAWING NO.: SSAB36	B



EXTERIOR ELEVATION "C"

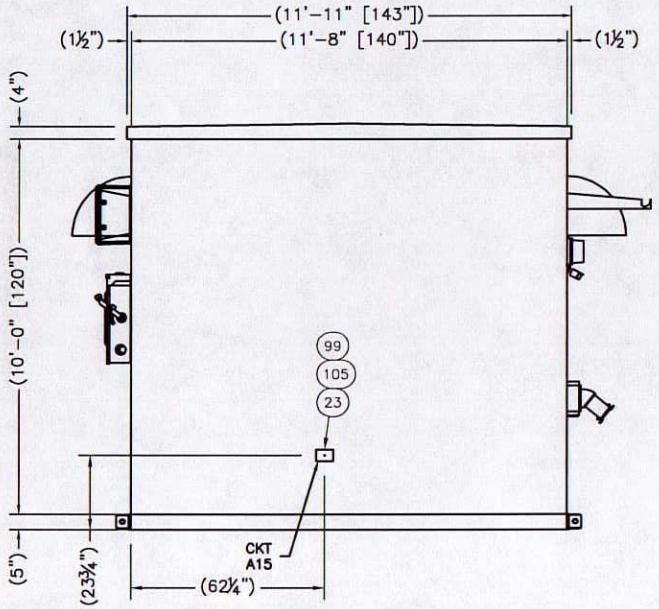
REV	BY	DATE	DESCRIPTION	APP.BY	DATE
B	JFA	1/28/11	ADDED TELCO BOX ADJUSTED W/G & GRD BAR	LJL	1/28/11

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

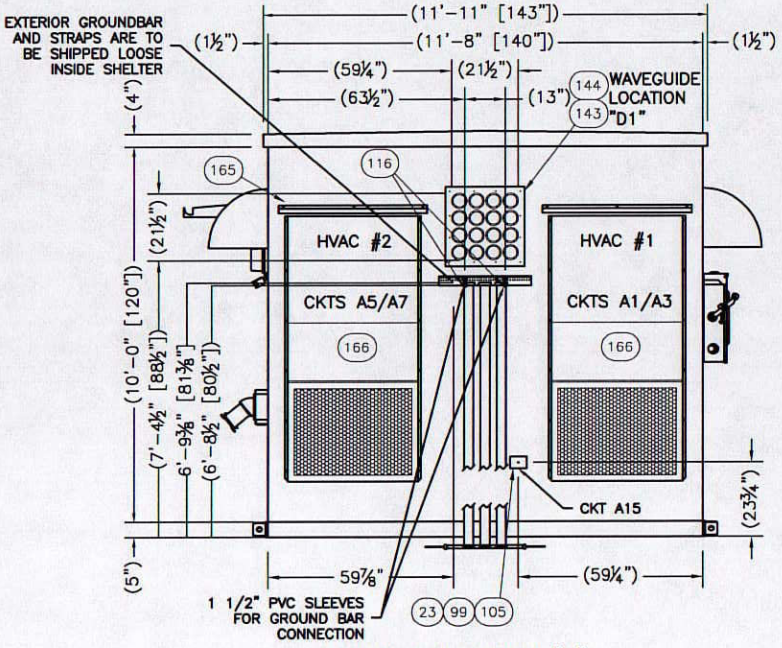
CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
EXTERIOR ELEVATION "C"

FILENAME: SSAB36	
SCALE: 5/16"=1'-0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 1-1	
DRAWING NO.: SSAB36	B



EXTERIOR ELEVATION "B"



EXTERIOR ELEVATION "D"

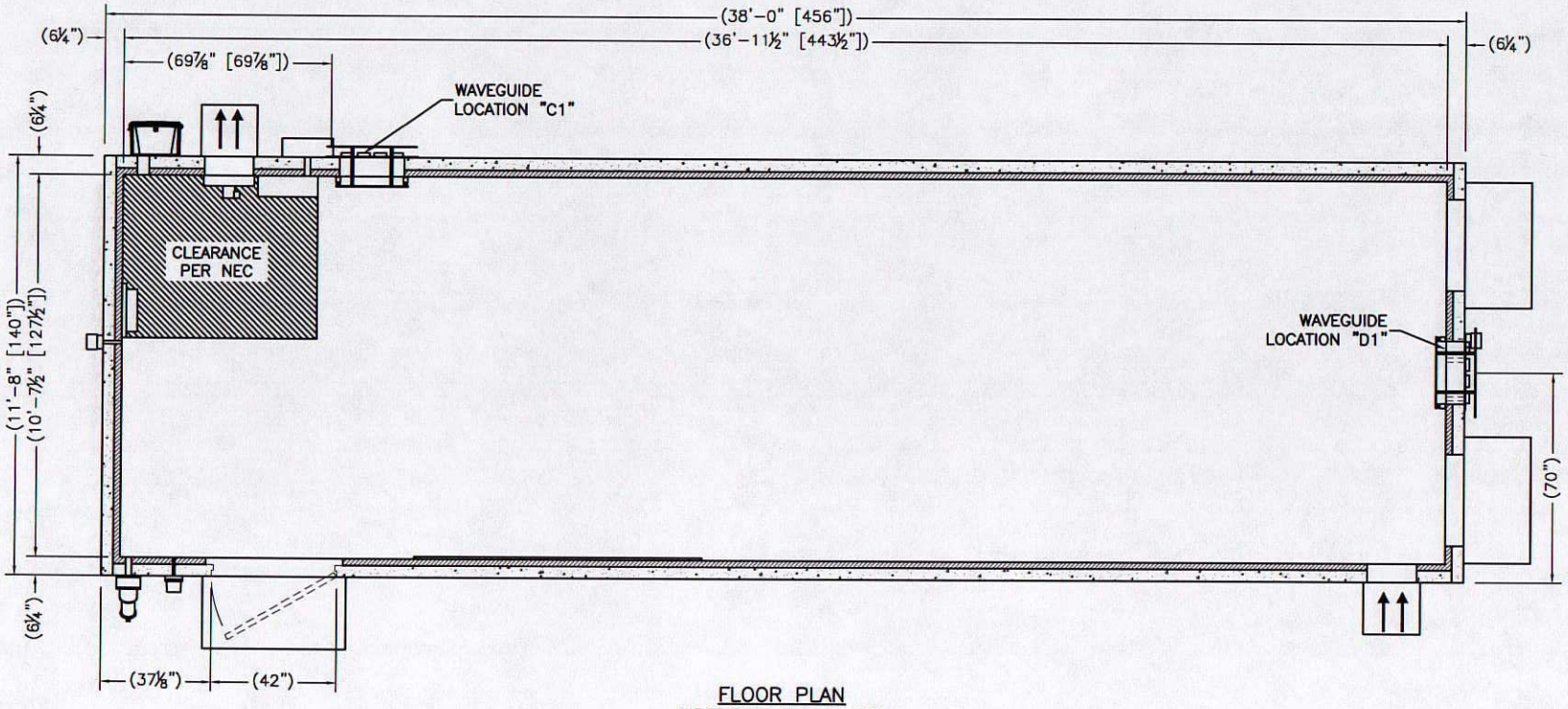
REV	BY	DATE	DESCRIPTION	APP.BY	DATE
B	JFA	1/28/11	ADJUSTED W/G TO STANDARDS	LJL	1/28/11

Cellxion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
EXTERIOR ELEVATIONS
"B" & "D"

FILENAME: SSAB36	
SCALE: 5/16"=1'-0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 1-2	
DRAWING NO.: SSAB36	B



FLOOR PLAN

443.33 SQ.FT. EXTERIOR AREA
392.68 SQ.FT. INTERIOR AREA

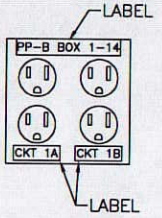
REV	BY	DATE	DESCRIPTION	APP.BY	DATE
A	DJC	10/13/10	REVISED SET	BDB	10/13/10

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
FLOOR PLAN

FILENAME: SSAB36	
SCALE: 5/16"=1'-0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 2-0	
DRAWING NO.: SSAB36	B

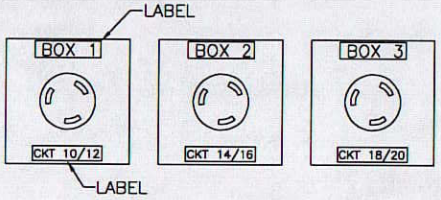


CEILING RECEPTACLES

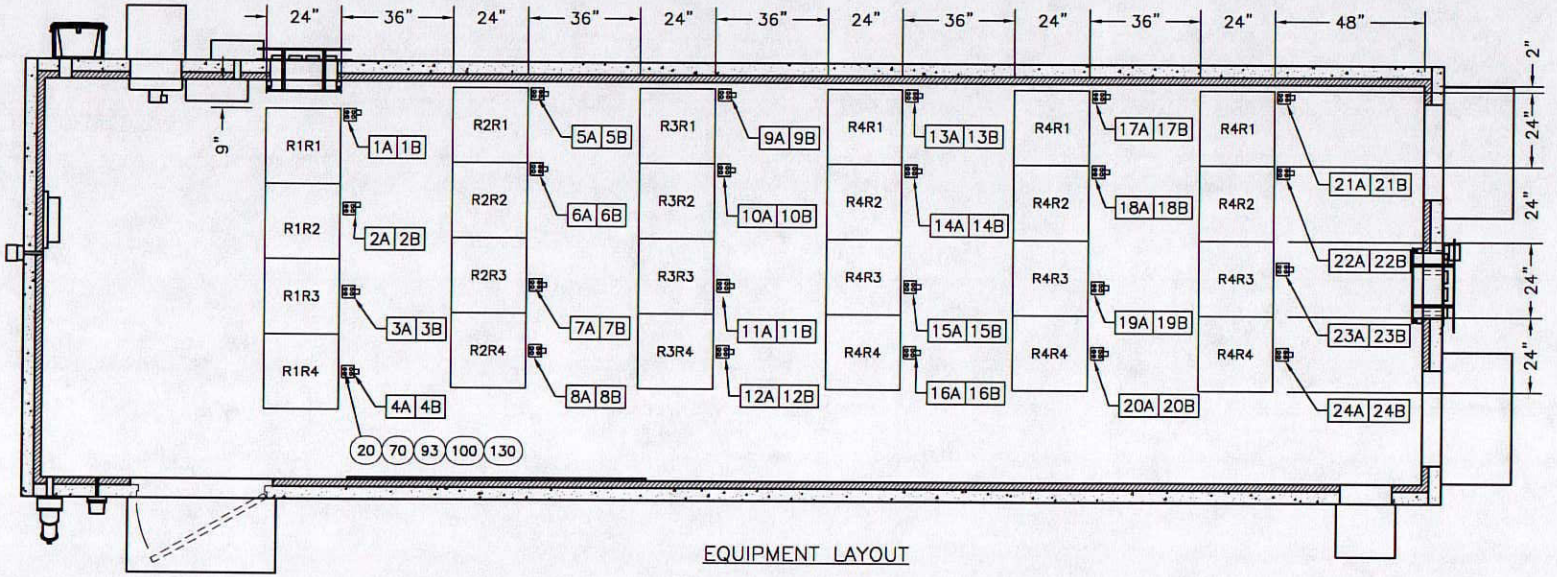
CEILING RECEPTACLES PANEL B	
BOX	CIRCUIT
1	1a
1	1b
2	2a
2	2b
3	3a
3	3b
4	4a
4	4b
5	5a
5	5b
6	6a
6	6b
7	7a
7	7b
8	8a
8	8b
9	9a
9	9b
10	10a
10	10b
11	11a
11	11b
12	12a
12	12b

CEILING RECEPTACLES PANEL B	
BOX	CIRCUIT
13	13a
13	13b
14	14a
14	14b
15	15a
15	15b
16	16a
16	16b
17	17a
17	17b
18	18a
18	18b
19	19a
19	19b
20	20a
20	20b
21	21a
21	21b
22	22a
22	22b
23	23a
23	23b
24	24a
24	24b

ALL QUAD BOXES COME FROM PANEL B.
ALL BREAKERS FOR QUAD BOXES ARE TANDEM TYPE.



TWISTLOK RECEPTACLES
(WALL "C")



EQUIPMENT LAYOUT

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

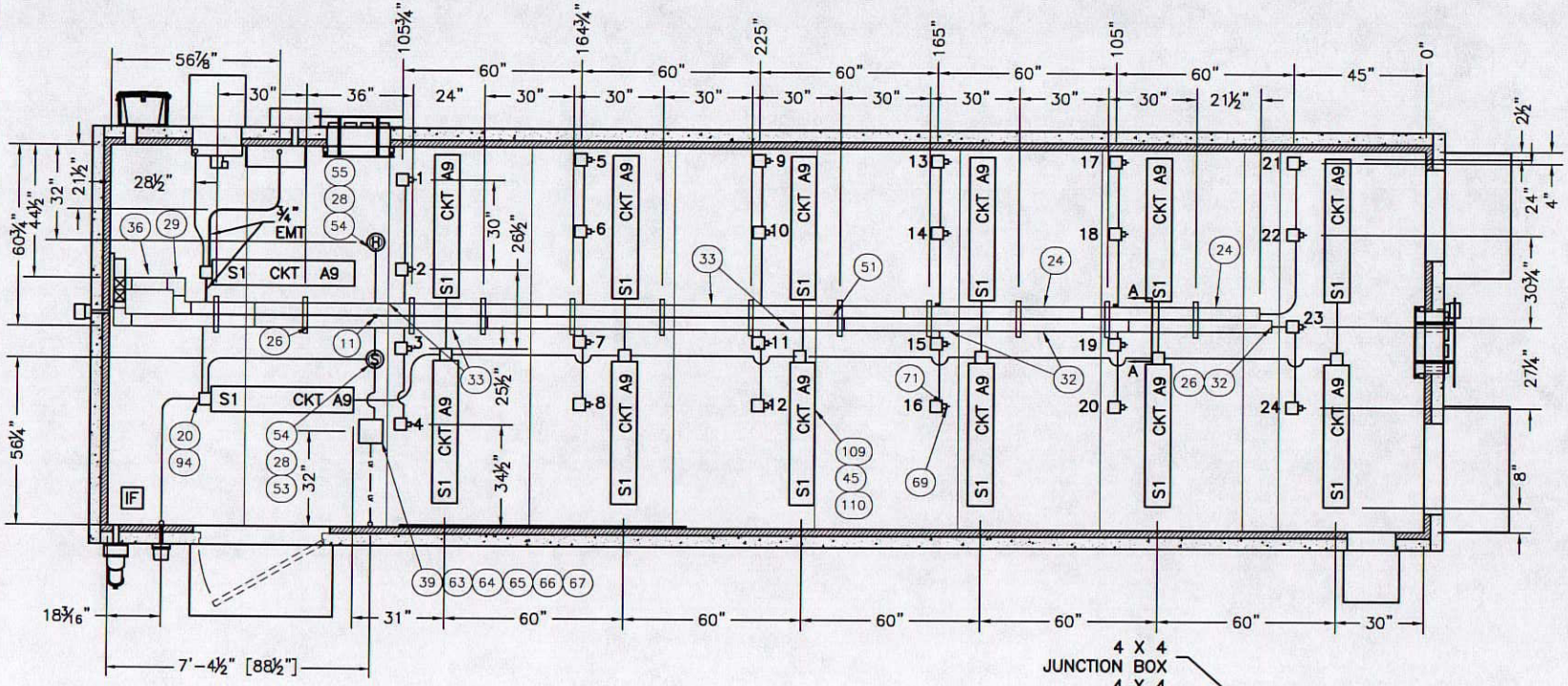
CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

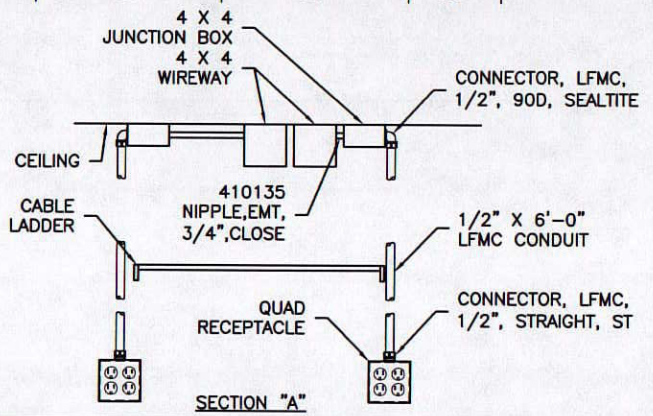
PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
EQUIPMENT LAYOUT

FILENAME: SSAB36	
SCALE: 5/16"=1'-0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 2-1	
DRAWING NO.: SSAB36	B

SUB-PARTS LIST

ITEM	P/N	DESCRIPTION	CUT	ITEM	P/N	DESCRIPTION	CUT
24	430048	WIREWAY,GALV,4"X4"X60",W/O KO'S	60"	36	430336	WIREWAY,GALV,4"X4"X12",W/O KO'S	12"
32	430268	WIREWAY,GALV,4"X4"X48",W/O KO'S	48"	69	410112	CONDUIT,LFMC,1/2",SEALTITE	72"
33	430269	WIREWAY,GALV,4"X4"X120",W/O KO'S	120"				





SECTION "A"

REFLECTED CEILING PLAN
ELECTRICAL

NOTES:

1. RECEPTACLES WILL HANG FROM CEILING MOUNTED BOXES AND WIREWAY AS SHOWN IN SECTION "A"
2. COIL AND SECURE LFMC/RECEPTACLES TO CABLE LADDER
3. SEE SHEET 5-0 FOR CEILING RECEPTACLE CKTS.

LEGEND:

IF = INTERIOR FINISH PANEL START.

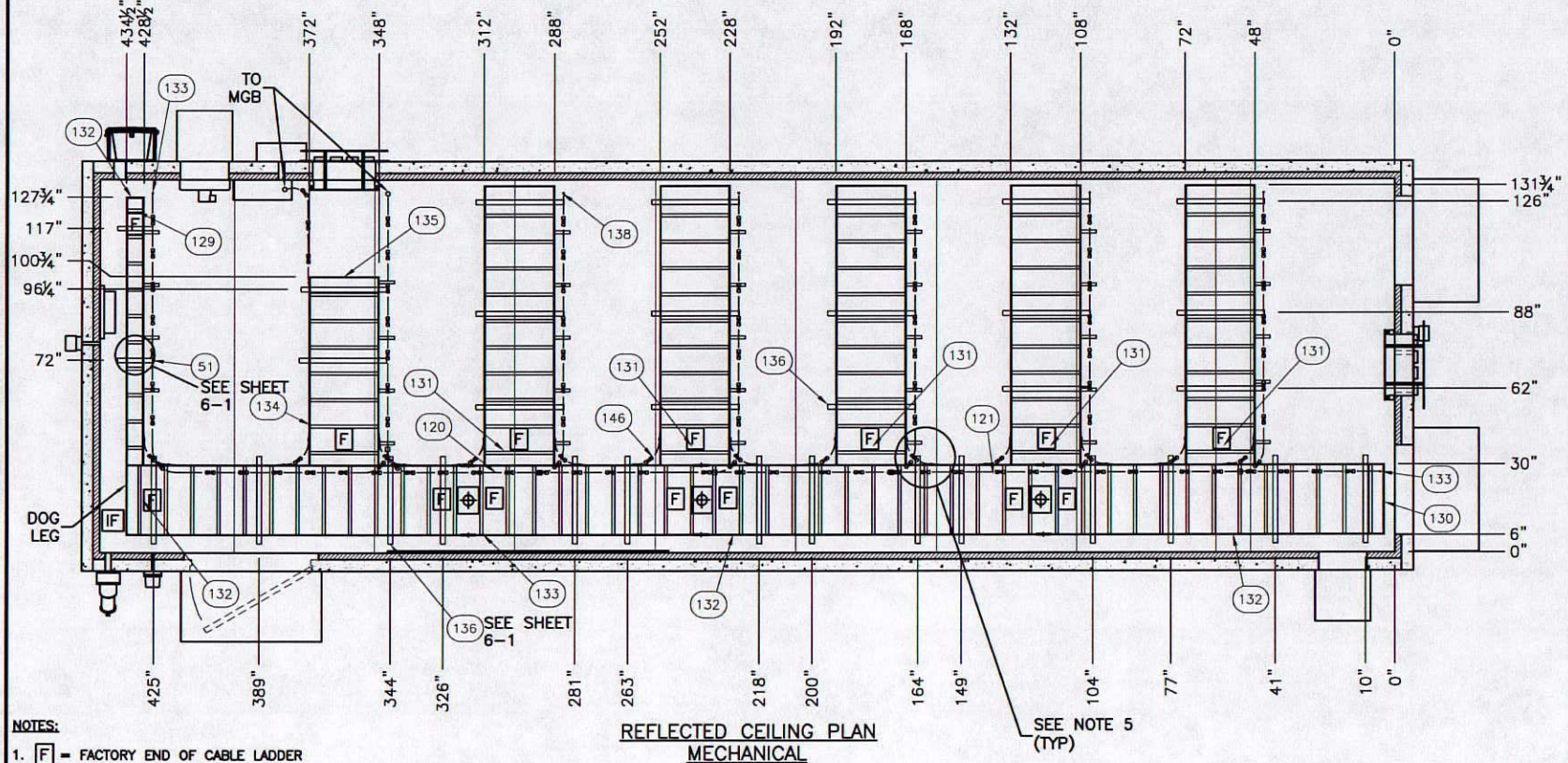
CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER
REFLECTED CEILING PLAN - ELECTRICAL

FILENAME: SSAB36	
SCALE: 5/16"=1'-0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 3-0	
DRAWING NO.: SSAB36	B

SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
129	510001	CABLE LADDER,6"X9'8 1/2",YELLOW ZI	115 1/8"
131	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	95 1/8"
132	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	116 1/2"
133	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	79 1/8"
134	510052	CABLE LADDER,24"X9'8 1/2",YELLOW ZI	88 1/8"



REFLECTED CEILING PLAN
MECHANICAL

NOTES:

1. [F] = FACTORY END OF CABLE LADDER
2. [⊕] = CABLE LADDER SPLICE
3. [IF] = INTERIOR FINISH START PANEL
4. CABLE LADDER TO BE MOUNTED 8'-1/2" [96 1/2"] A.F.F.
5. GROUND WIRE MUST HAVE MIN 8" BEND RADIUS.

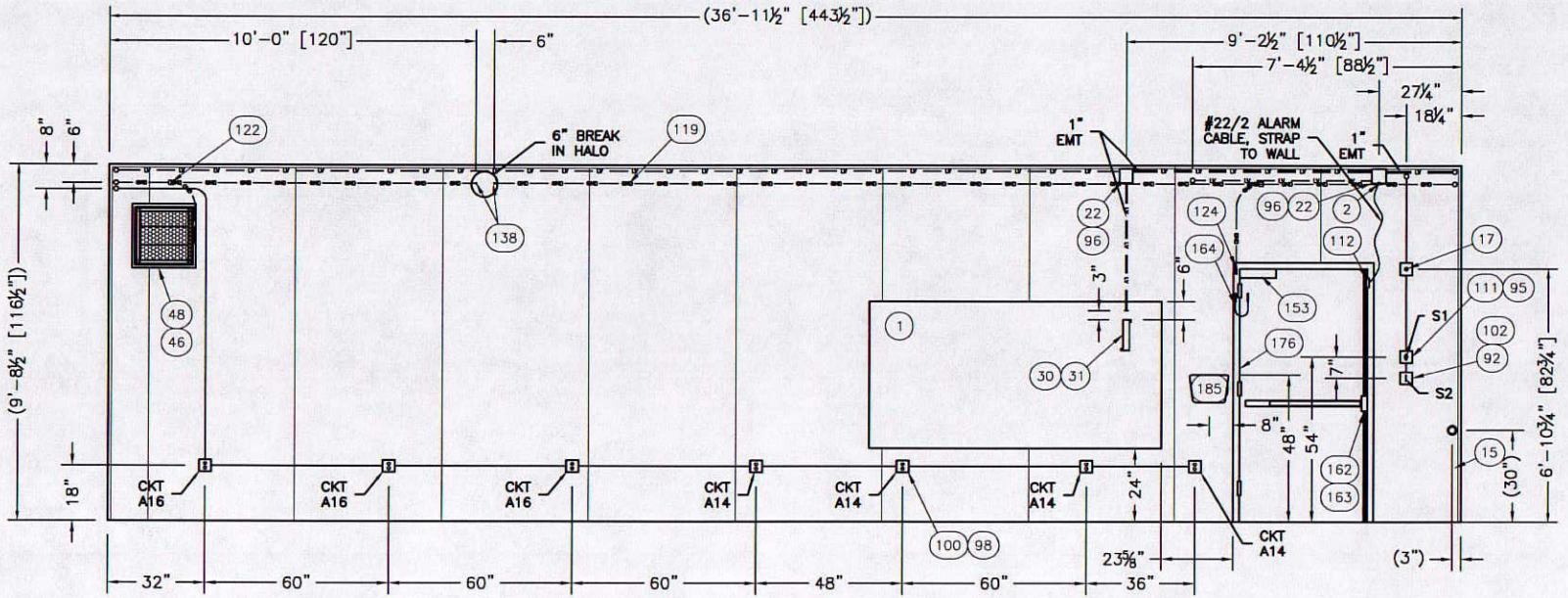
CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
REFLECTED CEILING PLAN – MECHANICAL

FILENAME: SSAB36	
SCALE: 5/16"=1'-0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 3-1	
DRAWING NO.: SSAB36	B

SUB–PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
119	400050	WIRE,#2 THHN,STRAND,GRN	1380"



INTERIOR ELEVATION "A"

NOTES:

1. ANY HALO CRIMP THAT IS DISSIMILAR METAL NEEDS TO BE WRAPPED WITH GREEN TAPE (ie. LADDER RACK,ANY ON THE WALLS WHERE CONDUITS ARE NEAR CRIMPS).

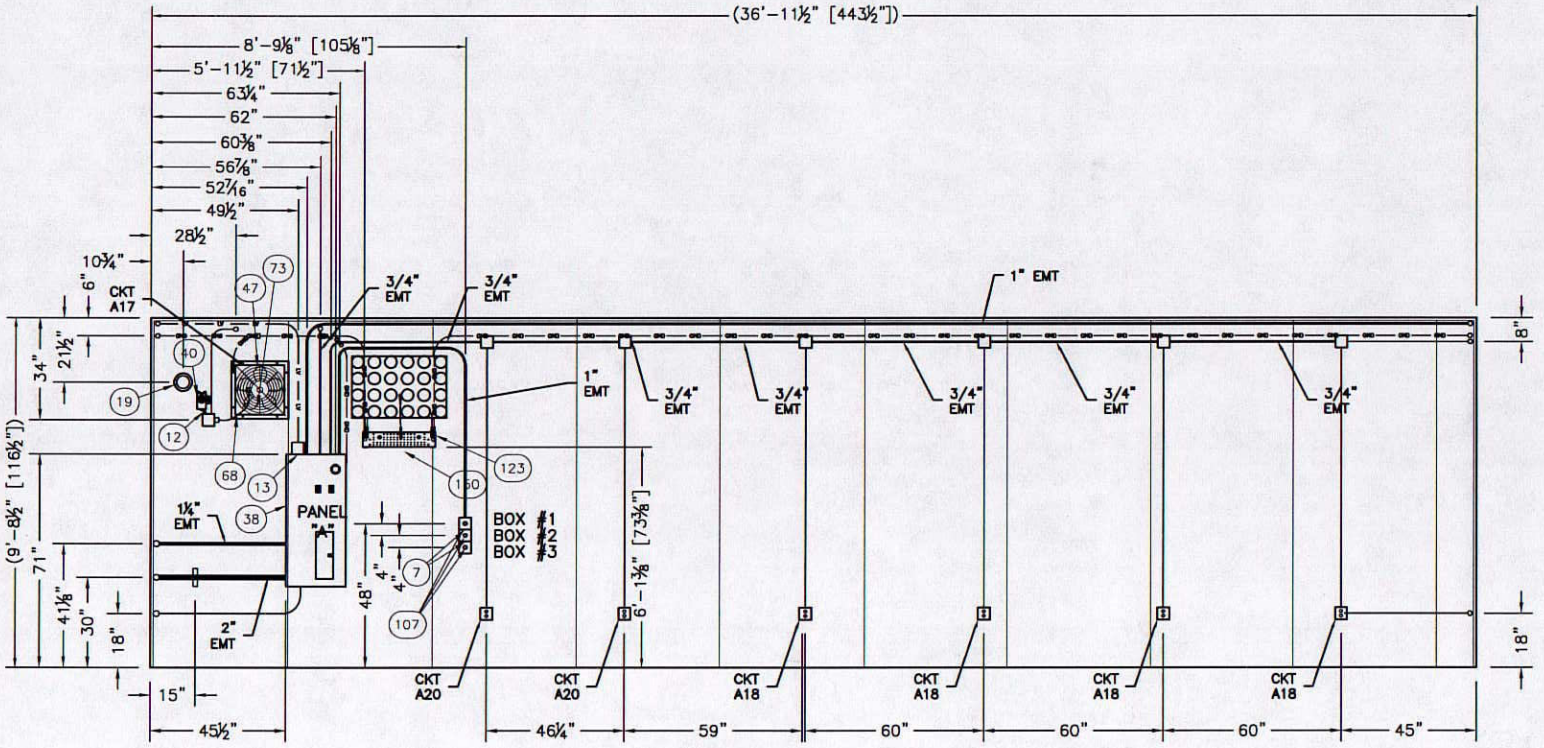
CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213–2900
fax: (318) 213–2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'–8" X 38'–0"
CONCRETE SHELTER
INTERIOR ELEVATION "A"

FILENAME: SSAB36	
SCALE: 5/16"=1'–0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 4–0	
DRAWING NO.: SSAB36	B

SUB-PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
68	410112	CONDUIT,LFMC,1/2",SEALTITE	18"



NOTES:

1. ANY HALO CRIMP THAT IS DISSIMILAR METAL NEEDS TO BE WRAPPED WITH GREEN TAPE (ie. LADDER RACK,ANY ON THE WALLS WHERE CONDUITS ARE NEAR CRIMPS).

INTERIOR ELEVATION "C"

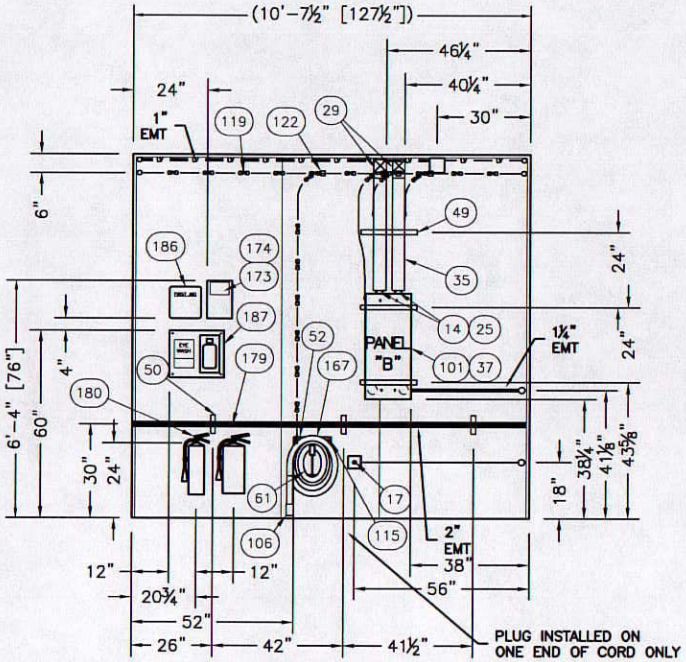
CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

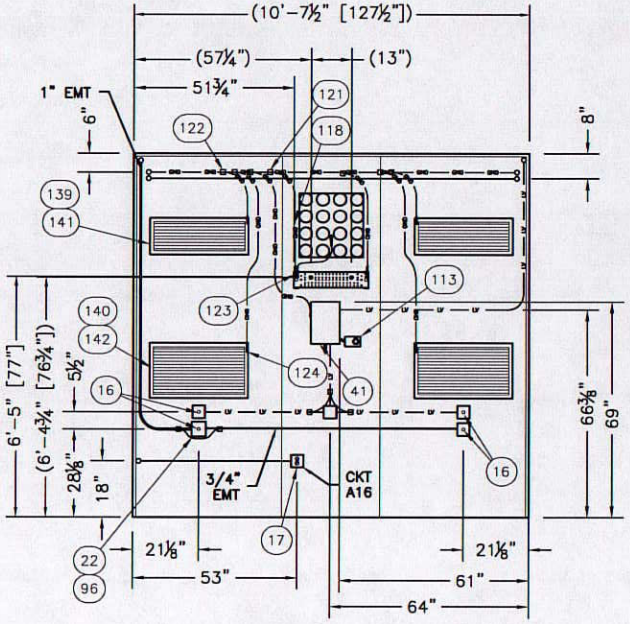
PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
INTERIOR ELEVATION "C"

FILENAME: SSAB36	
SCALE: 5/16"=1'-0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 4-1	
DRAWING NO.: SSAB36	B

SUB–PARTS LIST			
ITEM	P/N	DESCRIPTION	CUT
119	400050	WIRE,#2 THHN,STRAND,GRN	1380"



INTERIOR ELEVATION "B"



INTERIOR ELEVATION "D"

NOTES:

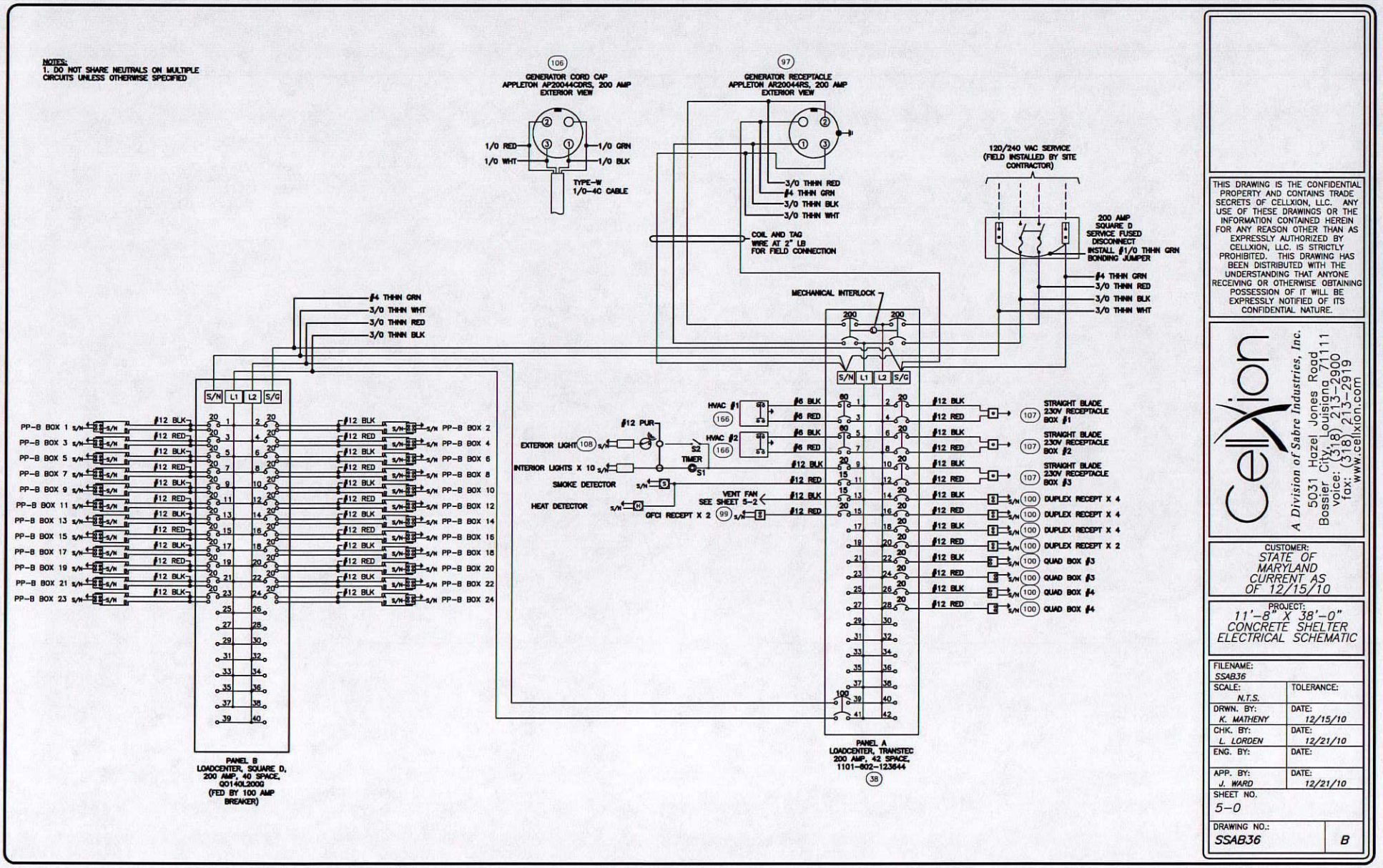
1. ANY HALO CRIMP THAT IS DISSIMILAR METAL NEEDS TO BE WRAPPED WITH GREEN TAPE (ie. LADDER RACK,ANY ON THE WALLS WHERE CONDUITS ARE NEAR CRIMPS).

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213–2900
fax: (318) 213–2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'–8" X 38'–0" CONCRETE SHELTER INTERIOR ELEVATIONS "B" & "D"

FILENAME: SSAB36	
SCALE: 5/16"=1'–0"	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 4–2	
DRAWING NO.: SSAB36	B

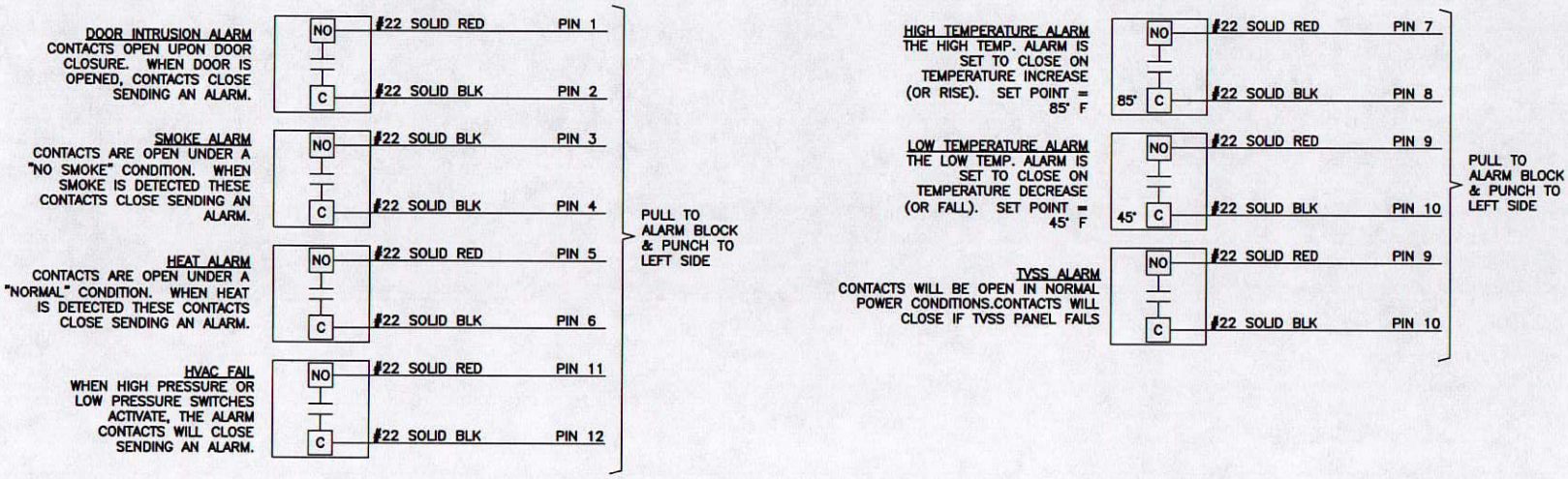


CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
ELECTRICAL SCHEMATIC

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 5-0	
DRAWING NO.: SSAB36	B

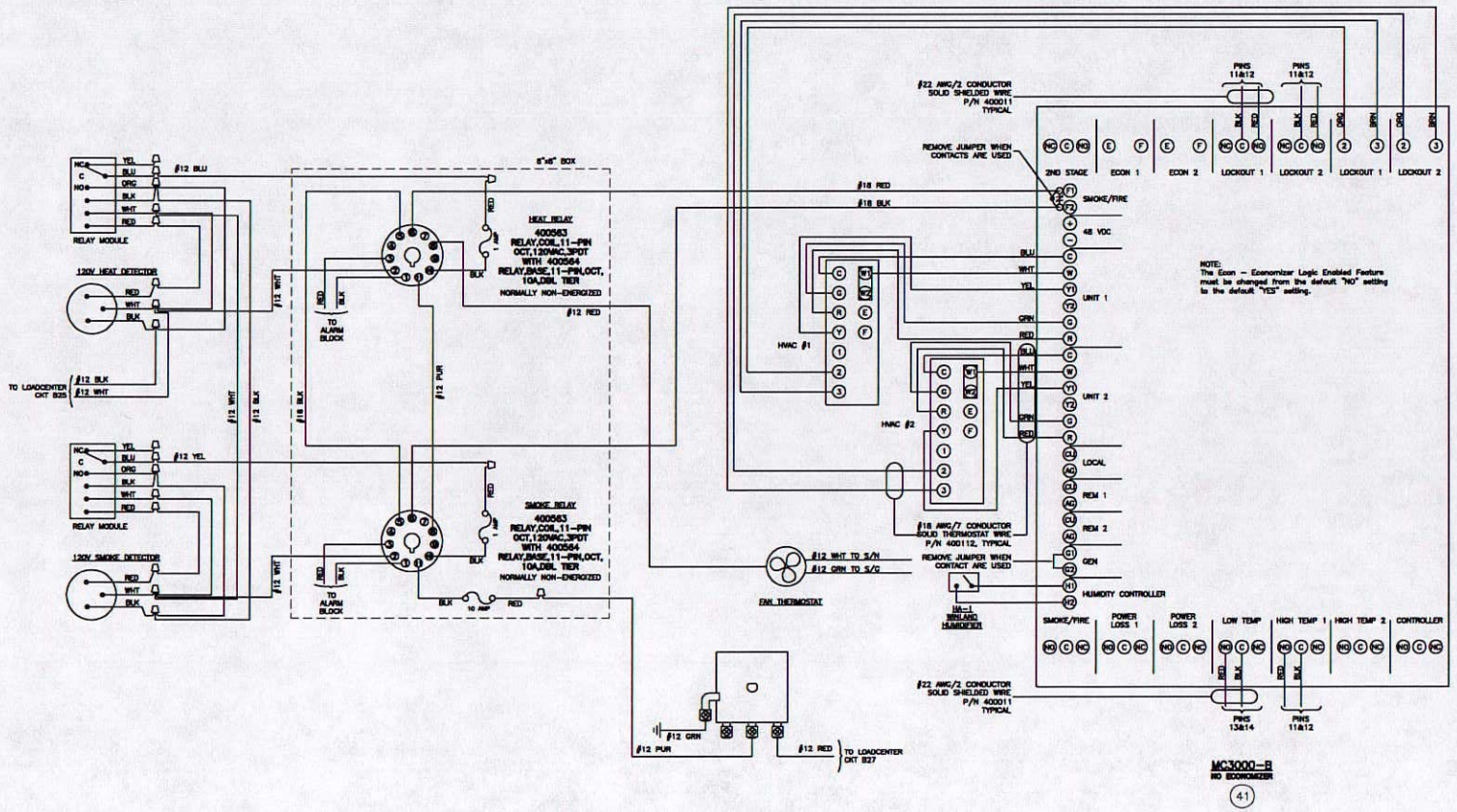


CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER LOW VOLTAGE WIRING SCHEMATIC

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 5-1	
DRAWING NO.: SSAB36	B

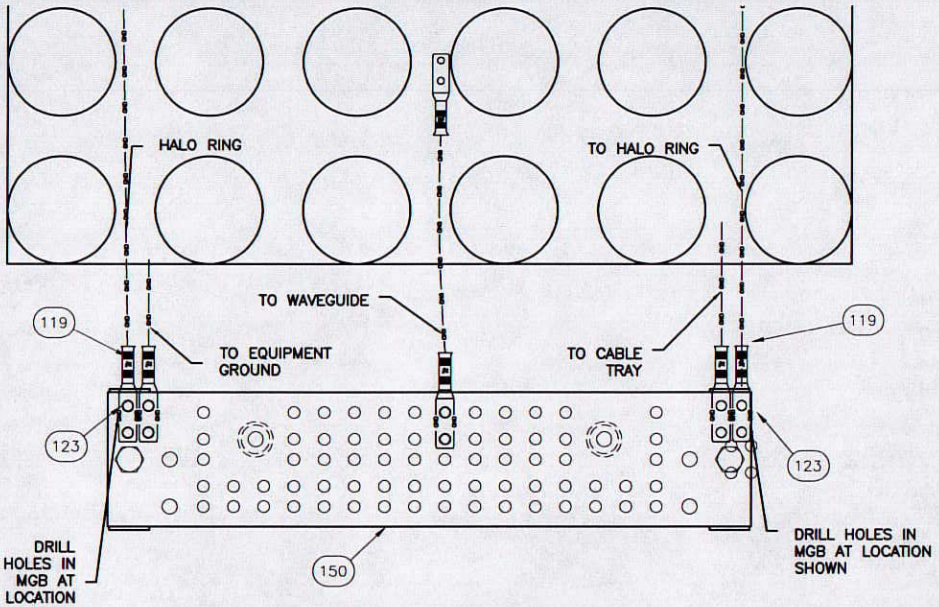


Cellxion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

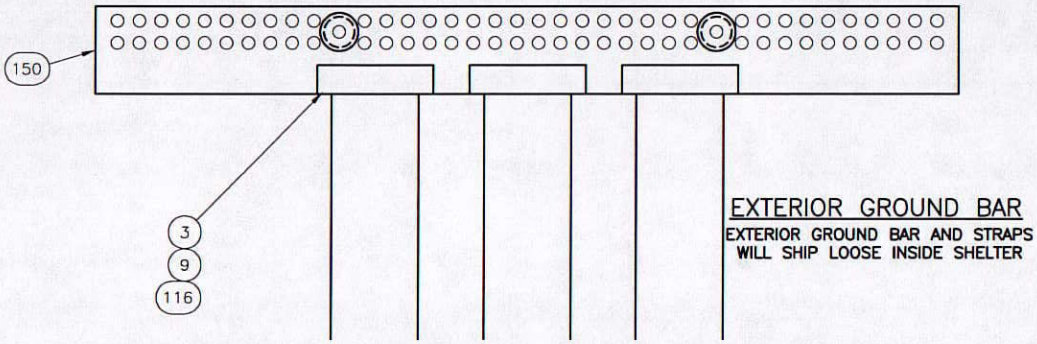
CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER HVAC WIRING SCHEMATIC

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 5-2	
DRAWING NO.: SSAB36	B



INTERIOR GROUND BAR



EXTERIOR GROUND BAR

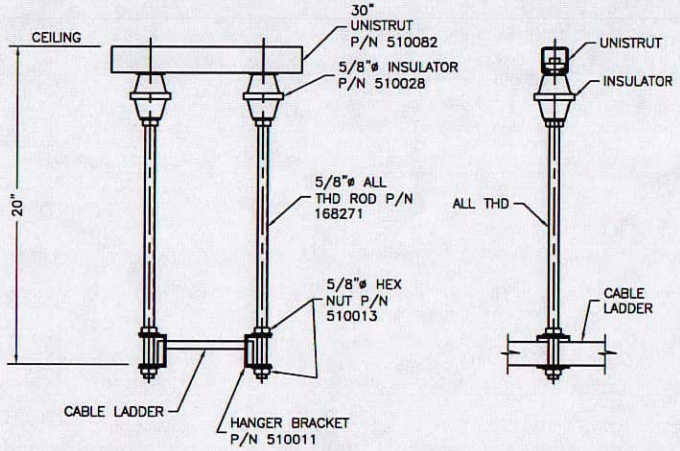
EXTERIOR GROUND BAR AND STRAPS WILL SHIP LOOSE INSIDE SHELTER

CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

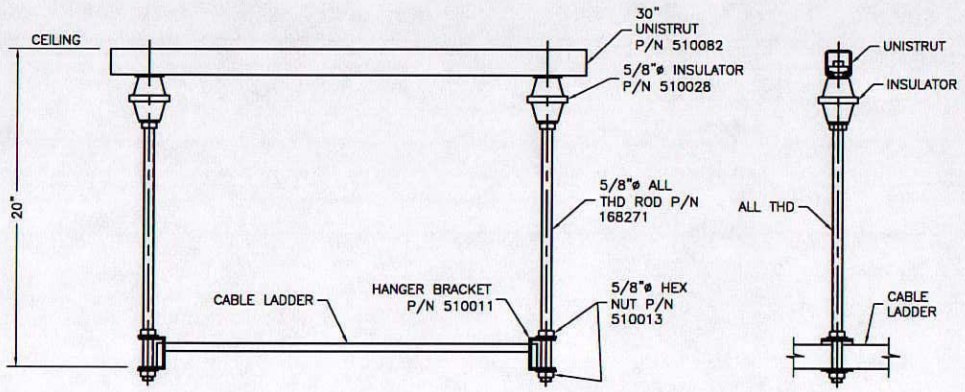
CUSTOMER:
STATE OF MARYLAND
CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0"
CONCRETE SHELTER
GROUND BAR DETAILS

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 6-0	
DRAWING NO.: SSAB36	B



SUPPORT @ 6" CABLE LADDER



SUPPORT @ 24" CABLE LADDER

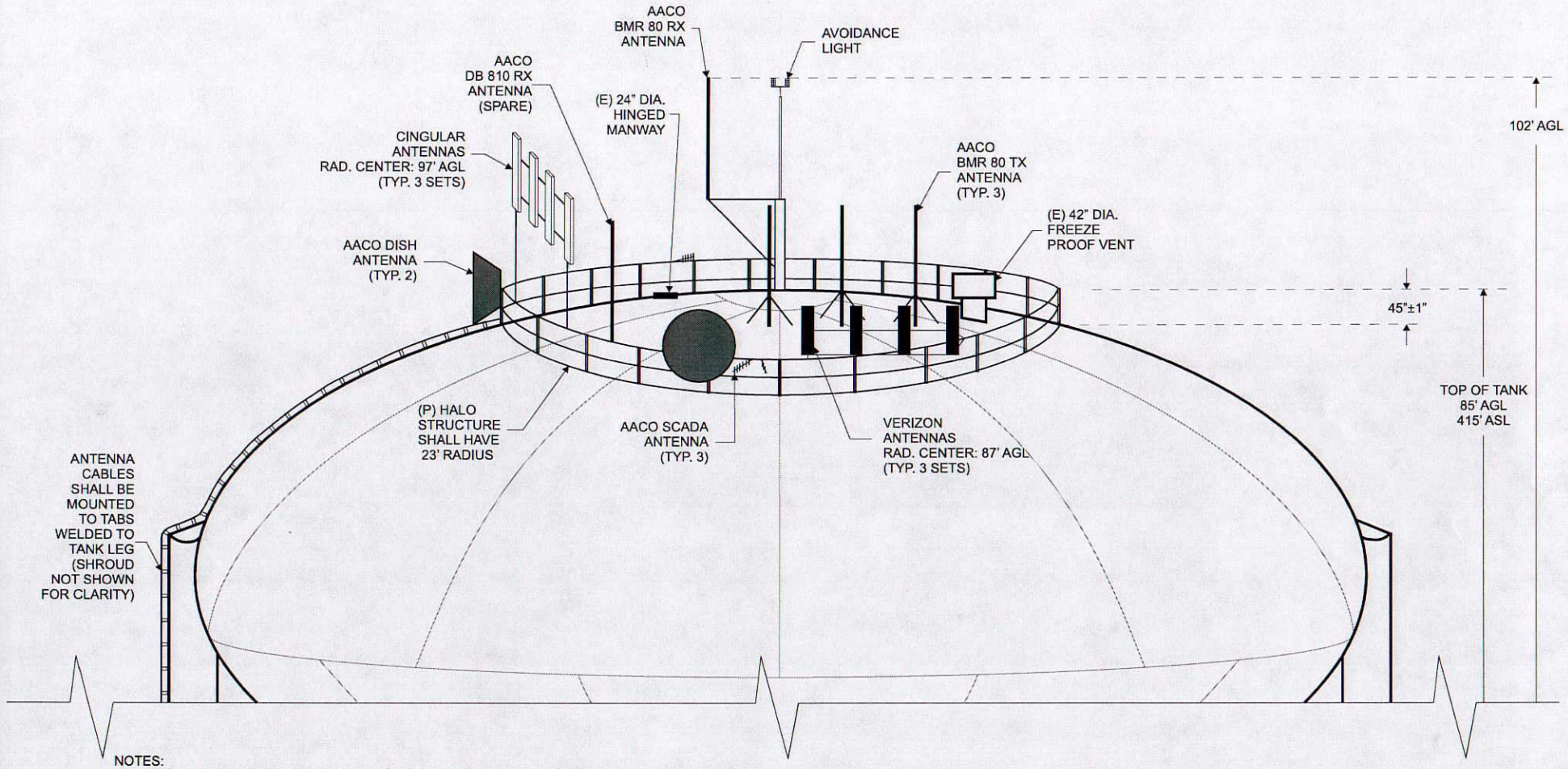
CellXion
A Division of Sabre Industries, Inc.
5031 Hazel Jones Road
Bossier City, Louisiana 71111
voice: (318) 213-2900
fax: (318) 213-2919
www.cellxion.com

CUSTOMER:
STATE OF MARYLAND CURRENT AS OF 12/15/10

PROJECT:
11'-8" X 38'-0" CONCRETE SHELTER CABLE LADDER DETAILS

FILENAME: SSAB36	
SCALE: N.T.S.	TOLERANCE:
DRWN. BY: K. MATHENY	DATE: 12/15/10
CHK. BY: L. LORDEN	DATE: 12/21/10
ENG. BY:	DATE:
APP. BY: J. WARD	DATE: 12/21/10
SHEET NO. 6-1	
DRAWING NO.: SSAB36	B

(P-1) Maryland CItyRoof Config (Profile).pdf



NOTES:
1. FOR PURPOSES OF CLARITY, ONLY ONE SET OF VERIZON AND CINGULAR ANTENNAS IS SHOWN. SEE PLAN VIEW DRAWING FOR LOCATIONS OF REMAINING SETS.
2. FOR PURPOSES OF CLARITY, AZIMUTHS OF ANTENNAS ARE NOT GIVEN. SEE PLAN VIEW DRAWING FOR PROPOSED AZIMUTHS.

SCALE: 1/8" = 1'

Rev.	Date	MARYLAND CITY, 1.5 MG ELEVATED WATER STORAGE TOWER ANNE ARUNDEL COUNTY, MARYLAND	PROPOSED HALO & ANTENNA CONFIGURATION (PROPOSAL 1) VIEW: FROM NNE			
		DATANET ENGINEERING, INC.	Date 04/04/05	Dwn. DL	05-153	
			Fig. XX of XX	Chk. AVC		

Maryland Department of Assessments and Taxation
Real Property Data Search (vw1.1A)
ST. MARY'S COUNTY

Go Back
View Map
New Search
GroundRent Redemption
GroundRent Registration

Account Identifier: District - 04 Account Number - 055764

Owner Information

Owner Name:	ST MARY'S COUNTY METROPOLITAN COMMISSION	**Use:**	EXEMPT COMMERCIAL
		Principal Residence:	NO
Mailing Address:	43990 COMMERCE AVE HOLLYWOOD MD 20636-3108	**Deed Reference:**	1) /00507/ 00062 2)

Location & Structure Information

Premises Address
36981 DILLON CT
MECHANICSVILLE 20659-0000

Legal Description
LOT 500-3 & PARCEL A
SECTION 1 BLOCK G
COUNTRY LAKES

Map	Grid	Parcel	Sub District	Subdivision	Section	Block	Lot	Assessment Area	Plat No:	44 26
0012	0014	0079		0008	1	G	500 3	1	Plat Ref:	

Special Tax Areas Town NONE
Ad Valorem
Tax Class

Primary Structure Built	Enclosed Area	Property Land Area	County Use
		36,540 SF	000000

Stories	Basement	Type	Exterior

Value Information

	Base Value	Value As Of 01/01/2010	Phase-in Assessments As Of 07/01/2011	As Of 07/01/2012
Land	500	500		
Improvements:	2,700	2,800		
Total:	3,200	3,300	3,267	3,300
Preferential Land:	0			0

Transfer Information

Seller:		Date:	Price:
Type:		Deed1:	Deed2:
Seller:		Date:	Price:
Type:		Deed1:	Deed2:
Seller:		Date:	Price:
Type:		Deed1:	Deed2:

Exemption Information

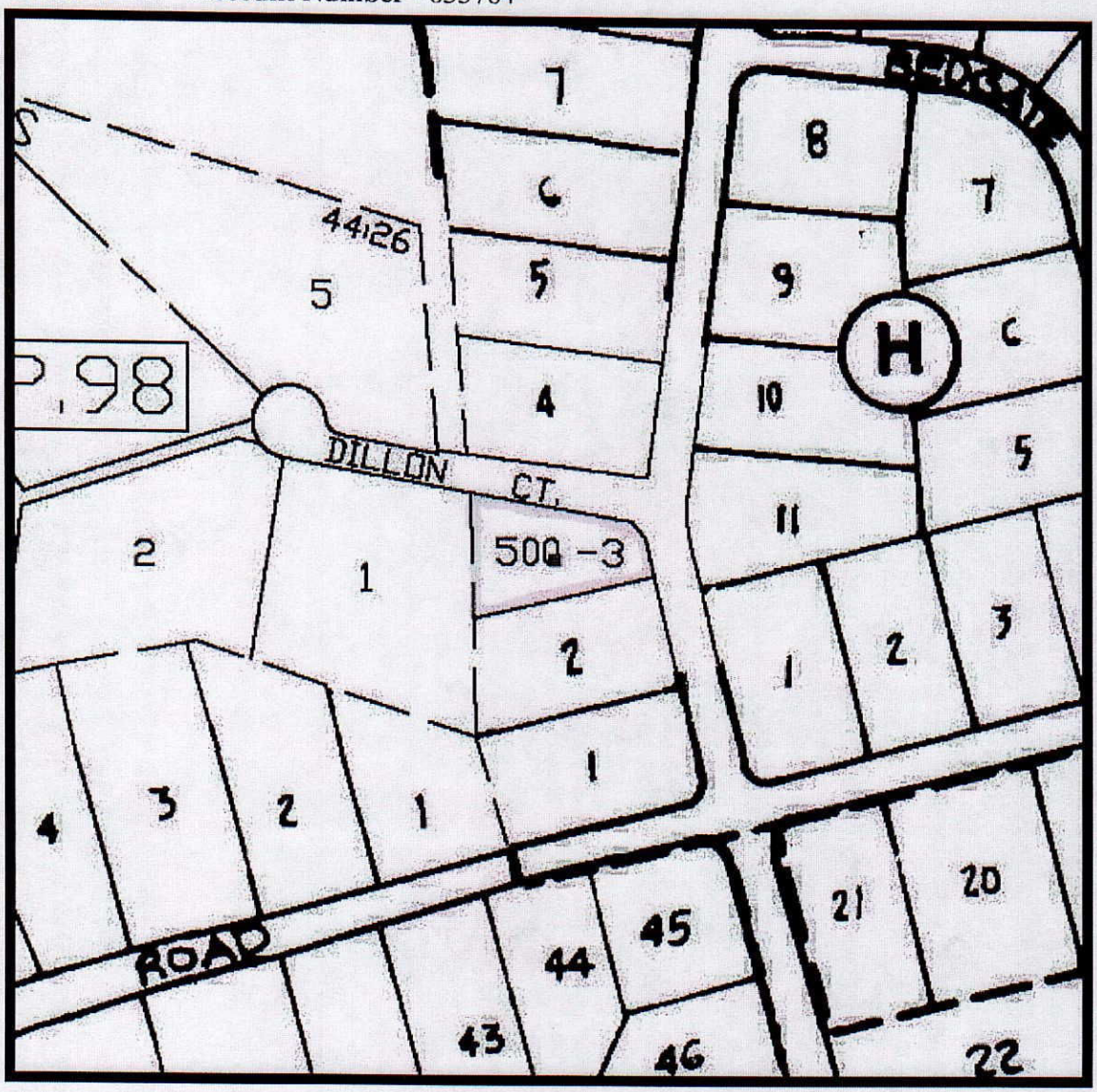
Partial Exempt Assessments	Class	07/01/2011	07/01/2012
County	500	3,300.00	3,300.00
State	500	3,300.00	3,300.00
Municipal	500	0.00	0.00

Tax Exempt:
Special Tax Recapture:
Exempt Class: PUBLIC WORKS PROPERTIES

Maryland Department of Assessments and Taxation
ST. MARY'S COUNTY
Real Property Data Search

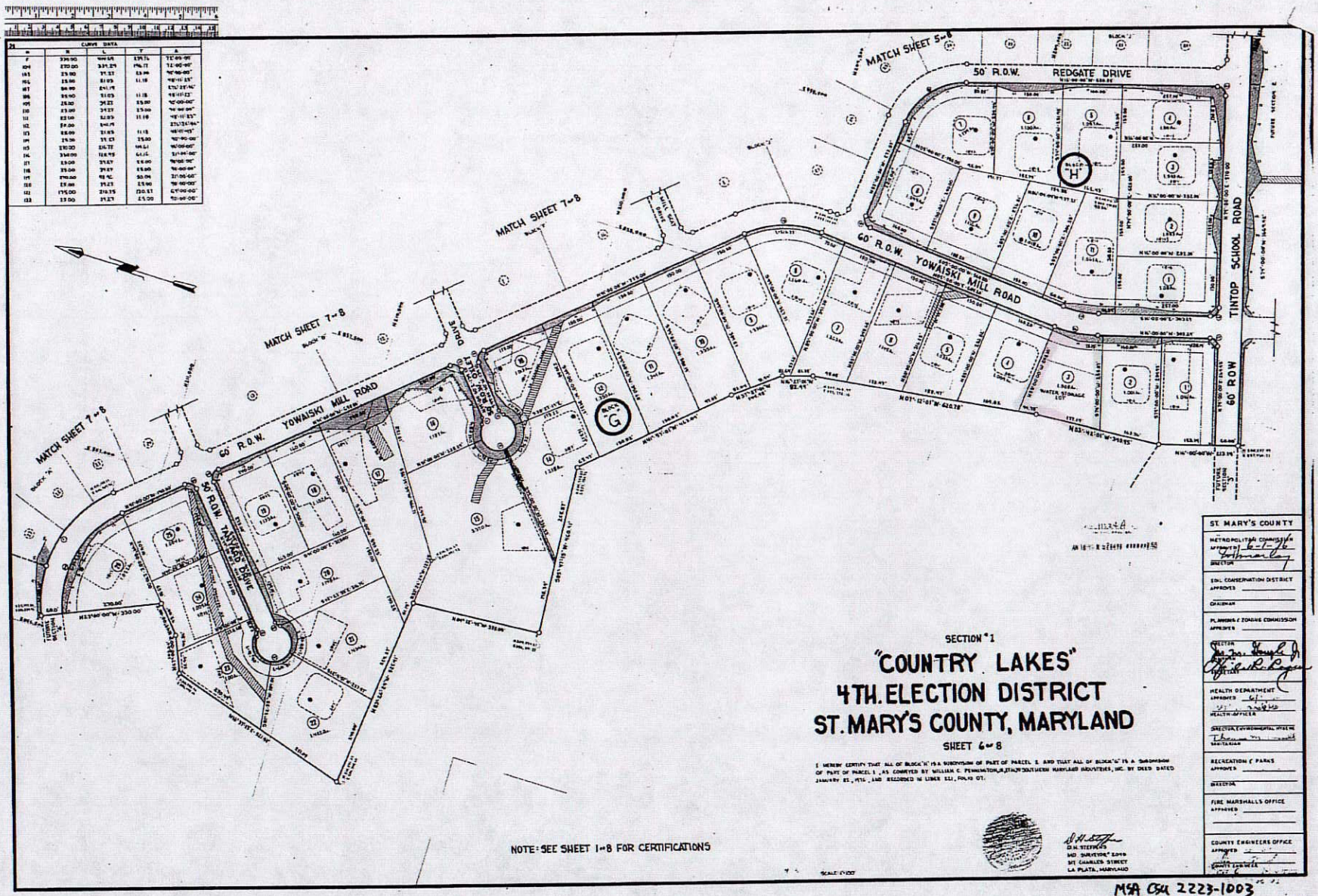
Go Back
View Map
New Search

District - 04 **Account Number** - 055764



The information shown on this map has been compiled from deed descriptions and plats and is not a property survey. The map should not be used for legal descriptions. Users noting errors are urged to notify the Maryland Department of Planning Mapping, 301 W. Preston Street, Baltimore MD 21201.

If a plat for a property is needed, contact the local Land Records office where the property is located. Plats are also available online through the Maryland State Archives at www.plats.net.



SECTION #1

"COUNTRY LAKES"

4TH. ELECTION DISTRICT

ST. MARY'S COUNTY, MARYLAND

SHEET 6-8

I HEREBY CERTIFY THAT ALL OF BLOCK "G" IS A SUBDIVISION OF PART OF PARCEL 2 AND THAT ALL OF BLOCK "H" IS A SUBDIVISION OF PART OF PARCEL 1, AS CONVEYED BY WILLIAM C. PENNINGTON, JR. ETAL TO SOUTHERN MARYLAND INDUSTRIES, INC. BY DEED DATED JANUARY 21, 1976, AND RECORDED IN LIBER 211, FOLIO 171.

D.H. STEPHENS
MD. SURVEYOR #2010
311 CHARLES STREET
LA PLATA, MARYLAND

ST. MARY'S COUNTY

METROPOLITAN COMMISSION
APPROVED 6-1-76
DIRECTOR

SOIL CONSERVATION DISTRICT
APPROVED
CHAIRMAN

PLANNING & ZONING COMMISSION
APPROVED
DIRECTOR
SECRETARY

HEALTH DEPARTMENT
APPROVED
HEALTH OFFICER
DIRECTOR, ENVIRONMENTAL HEALTH
SANITARIAN

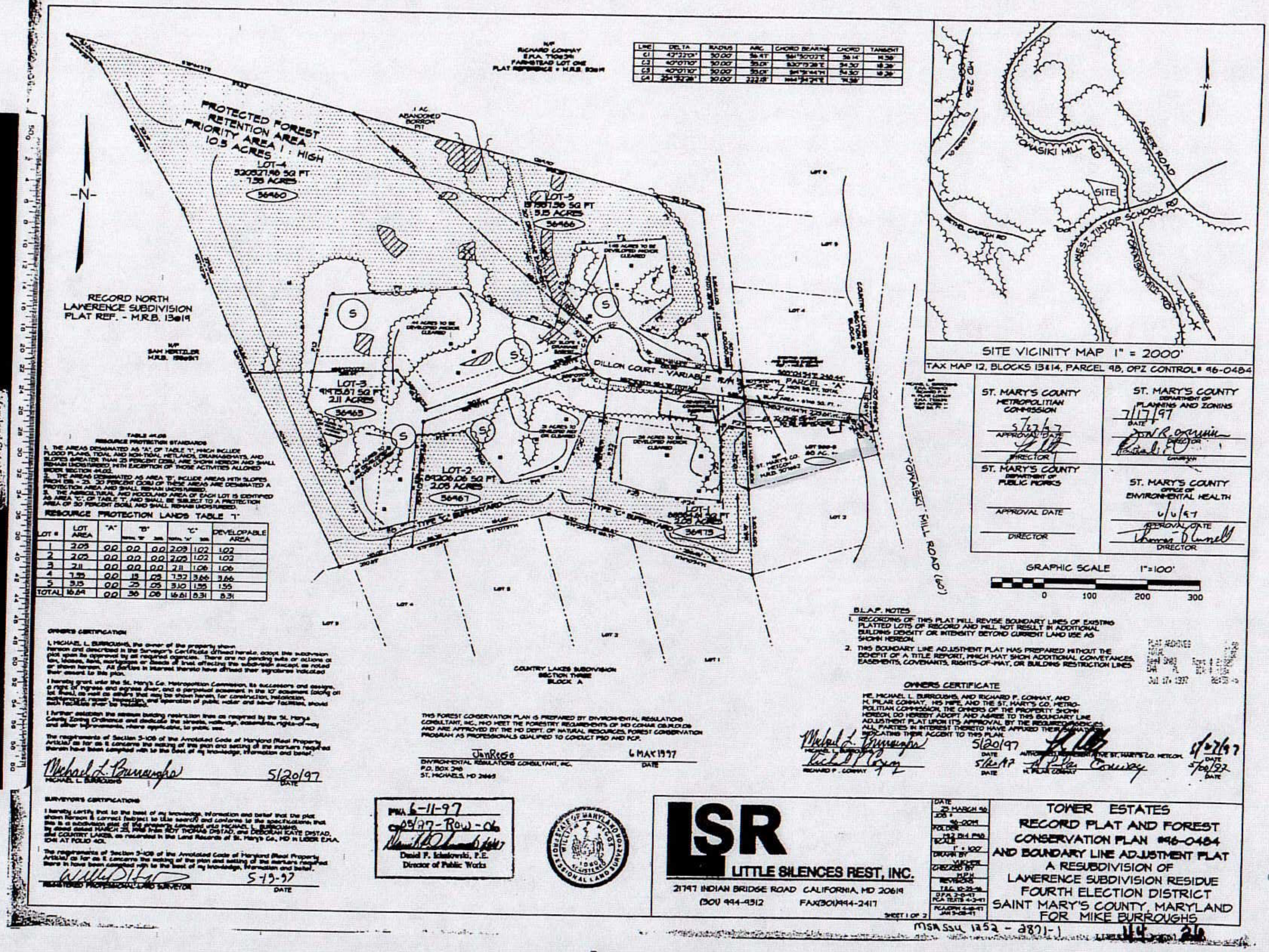
RECREATION & PARKS
APPROVED
DIRECTOR

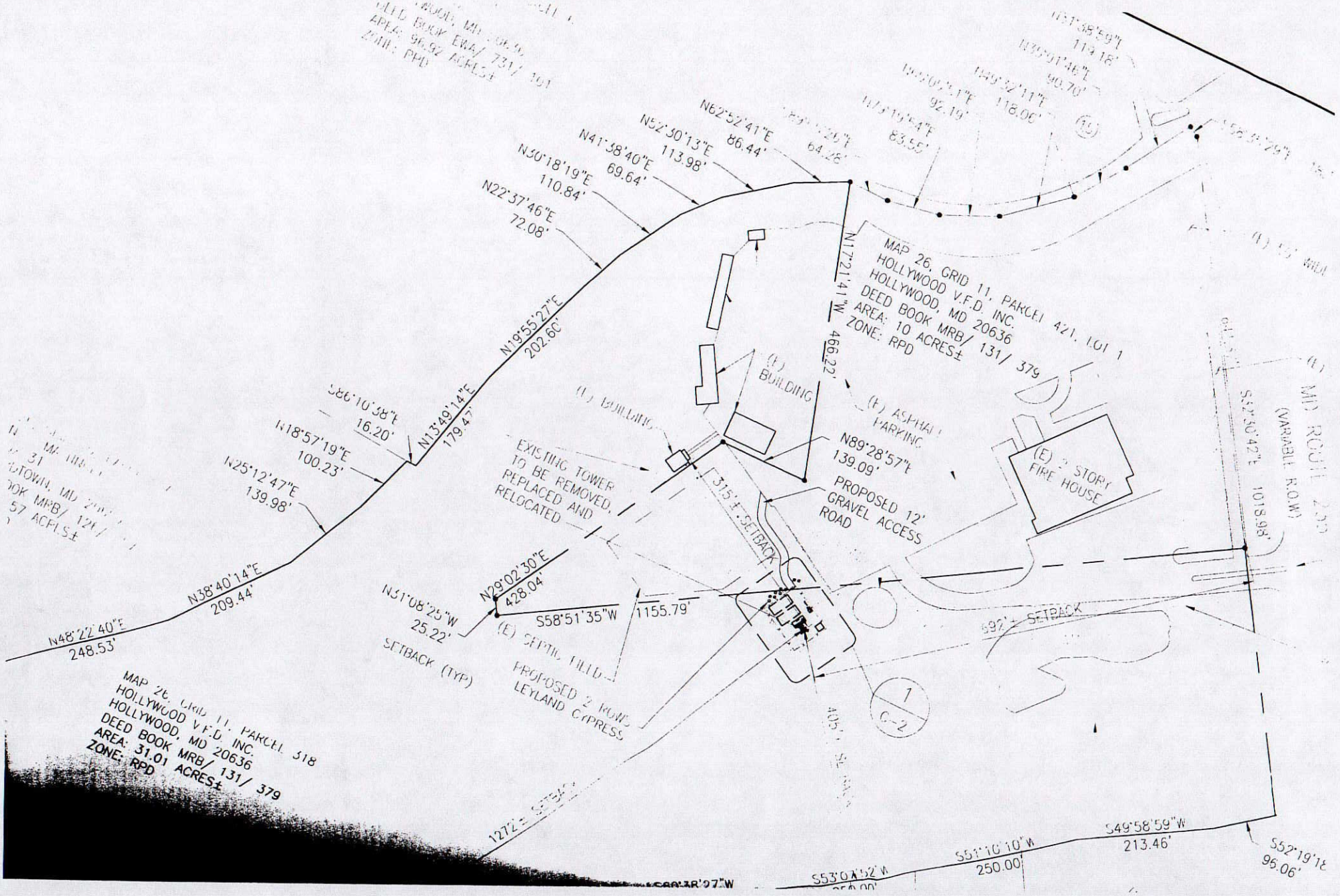
FIRE MARSHALL'S OFFICE
APPROVED

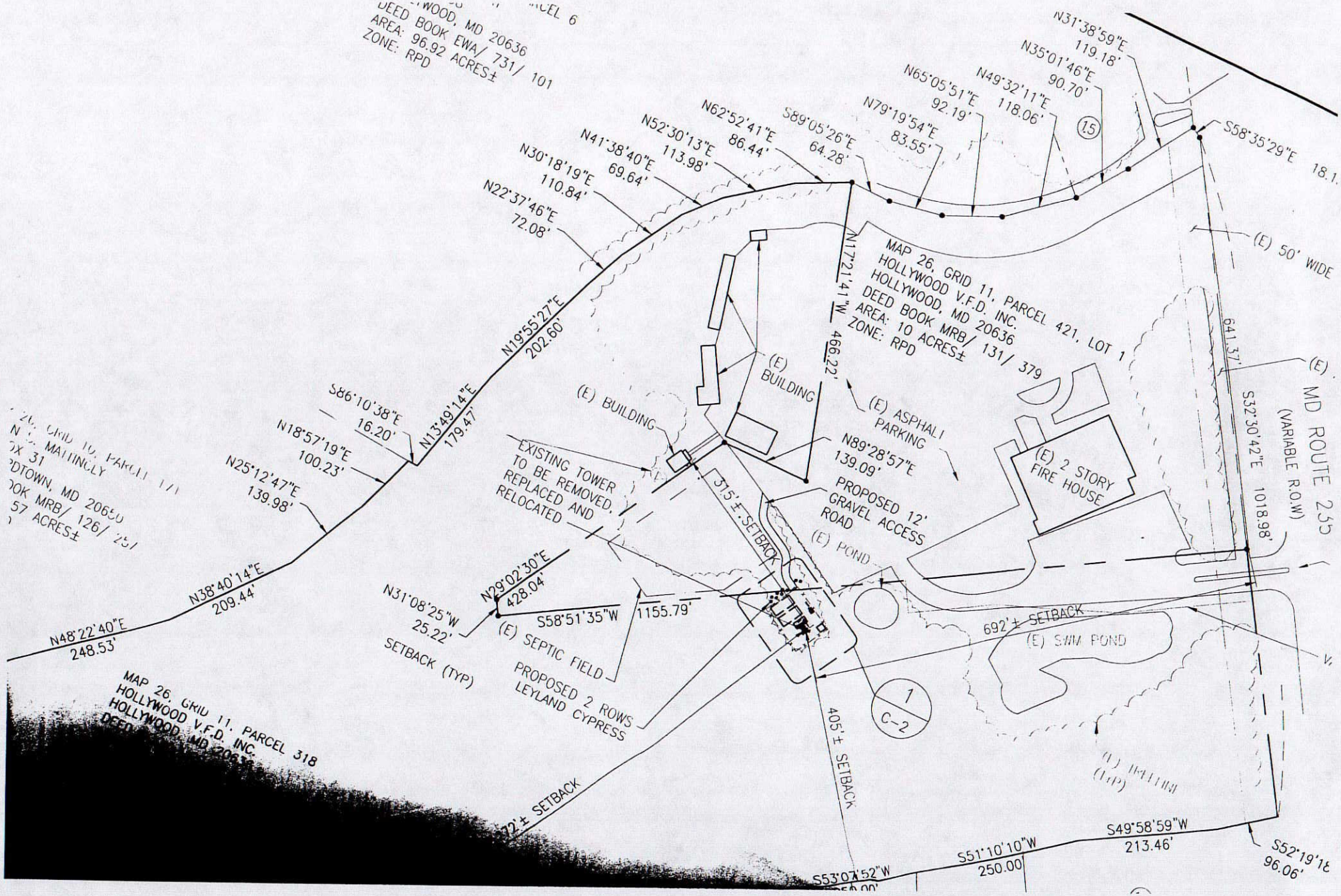
COUNTY ENGINEERS OFFICE
APPROVED
COUNTY ENGINEER

MSA CSM 2223-1003
OBK Liber 12 Folio 64

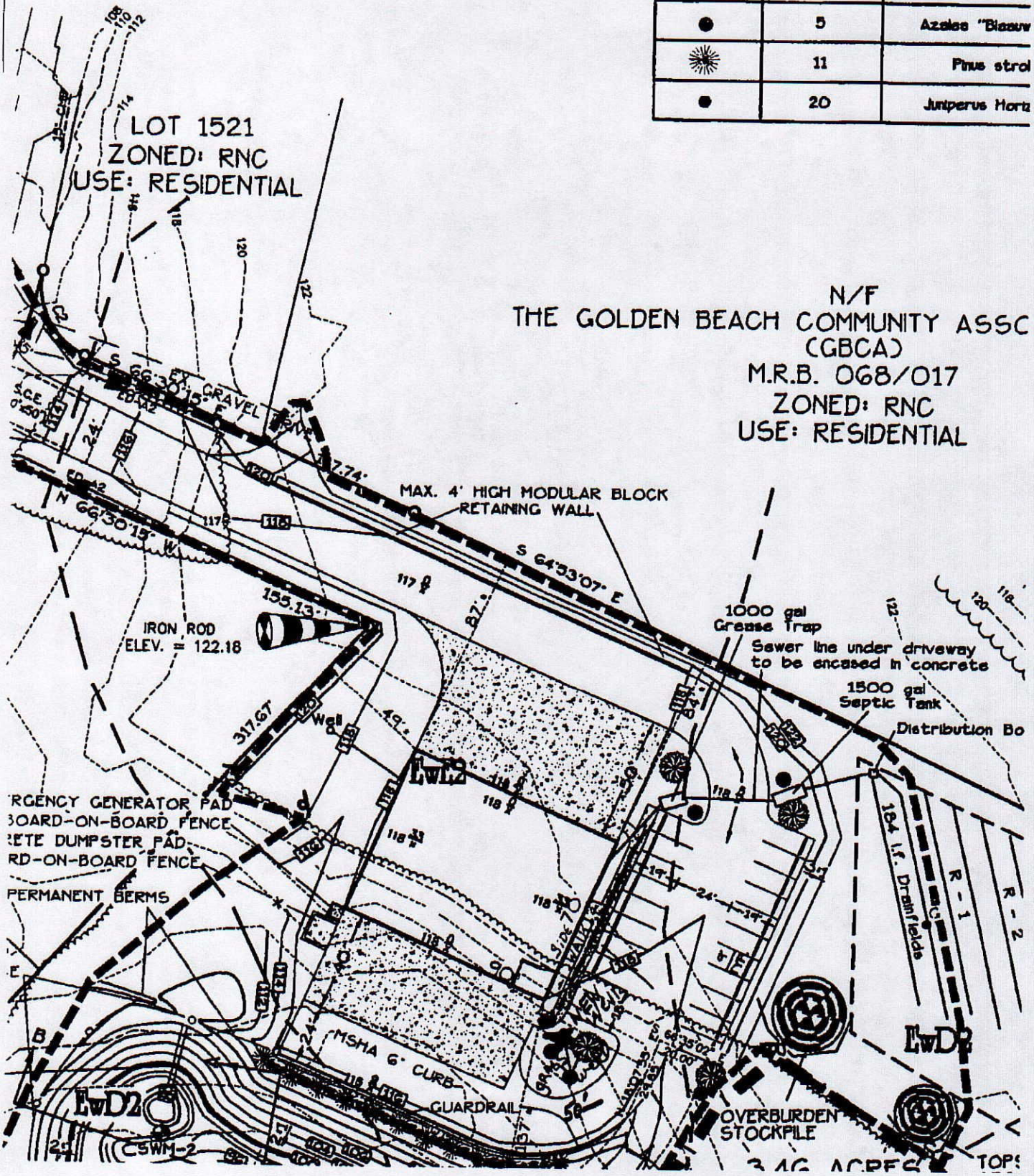
12/64


PROTECTED FOREST RETENTION AREA PRIORITY AREA 1 : HIGH 10.3 ACRES
LOT-4
7.35 ACRES
36460
LOT-5
3.15 ACRES
36466
LOT-3
211 ACRES
36465
LOT-2
2.05 ACRES
36467
LOT-1
36473
DILLON COURT - VARIABLE R/W
PARCEL "A"
YOWAISKI MILL ROAD (60')
1 AC. ABANDONED BORROW PIT
RECORD NORTH LAWERENCE SUBDIVISION PLAT REF. - M.R.B. 13@19
COUNTRY LAKES SUBDIVISION SECTION THREE BLOCK A
TYPE "C" BUFFERYARD
SITE VICINITY MAP 1" = 2000'
TAX MAP 12, BLOCKS 13&14, PARCEL 9B, OPZ CONTROL# 96-0484
ASHER ROAD
YOWAISKI MILL RD
WEST TINTOP SCHOOL RD
BETHEL CHURCH RD
MD 236
SITE
ST. MARY'S COUNTY METROPOLITAN COMMISSION
APPROVAL DATE
DIRECTOR
ST. MARY'S COUNTY DEPARTMENT OF PLANNING AND ZONING
7/17/97
DATE
DIRECTOR
ST. MARY'S COUNTY DEPARTMENT OF PUBLIC WORKS
APPROVAL DATE
DIRECTOR
ST. MARY'S COUNTY OFFICE OF ENVIRONMENTAL HEALTH
APPROVAL DATE
DIRECTOR
GRAPHIC SCALE 1"=100'
0 100 200 300
TABLE 44.08 RESOURCE PROTECTION STANDARDS
RESOURCE PROTECTION LANDS TABLE "1"
LOT # | LOT AREA | "A" | "B" | "C" | DEVELOPABLE AREA
1 | 2.05 | 0.0 | 0.0 | 0.0 | 2.03 | 1.02 | 1.02
2 | 2.05 | 0.0 | 0.0 | 0.0 | 2.05 | 1.02 | 1.02
3 | 2.11 | 0.0 | 0.0 | 0.0 | 2.11 | 1.06 | 1.06
4 | 7.35 | 0.0 | .13 | .03 | 7.32 | 3.66 | 3.66
5 | 3.15 | 0.0 | .25 | .05 | 3.10 | 1.55 | 1.55
TOTAL | 16.84 | 0.0 | .38 | .08 | 16.81 | 8.31 | 8.31
OWNER'S CERTIFICATION
MICHAEL L. BURROUGHS
5/20/97
DATE
SURVEYOR'S CERTIFICATIONS
REGISTERED PROFESSIONAL LAND SURVEYOR
5-19-97
DATE
B.L.A.P. NOTES
1. RECORDING OF THIS PLAT WILL REVISE BOUNDARY LINES OF EXISTING PLATTED LOTS OF RECORD AND WILL NOT RESULT IN ADDITIONAL BUILDING DENSITY OR INTENSITY BEYOND CURRENT LAND USE AS SHOWN HEREON.
2. THIS BOUNDARY LINE ADJUSTMENT PLAT WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT, WHICH MAY SHOW ADDITIONAL CONVEYANCES, EASEMENTS, COVENANTS, RIGHTS-OF-WAY, OR BUILDING RESTRICTION LINES
OWNERS CERTIFICATE
WE, MICHAEL L. BURROUGHS, AND RICHARD P. CONWAY, AND M. PILAR CONWAY, HIS WIFE, AND THE ST. MARY'S CO. METROPOLITAN COMMISSION, THE OWNERS OF THE PROPERTY SHOWN HEREON, DO HEREBY ADOPT AND AGREE TO THIS BOUNDARY LINE ADJUSTMENT PLAT UPON IT'S APPROVAL BY THE REQUIRED AGENCIES. ALL PARTIES IN INTEREST THERETO HAVE AFFIXED THEIR SIGNATURES INDICATING THEIR ASSENT TO THIS PLAN.
5/20/97
DATE
RICHARD P. CONWAY
M. PILAR CONWAY
DATE
THIS FOREST CONSERVATION PLAN IS PREPARED BY ENVIRONMENTAL REGULATIONS CONSULTANT, INC., WHO MEET THE FORESTRY REQUIREMENTS OF MD COMAR 08.19.06.01 AND ARE APPROVED BY THE MD DEPT. OF NATURAL RESOURCES, FOREST CONSERVATION PROGRAM AS PROFESSIONALS QUALIFIED TO CONDUCT FSD AND FCP.
6 MAY 1997
DATE
ENVIRONMENTAL REGULATIONS CONSULTANT, INC.
P.O. BOX 398
ST. MICHAELS, MD 21663
6-11-97
Daniel F. Ichniowski, P.E.
Director of Public Works
LSR
LITTLE SILENCES REST, INC.
21797 INDIAN BRIDGE ROAD CALIFORNIA, MD 20619
(301) 994-9312 FAX(301)994-2417
SHEET 1 OF 2
DATE 25 MARCH 96
SCALE 1" = 100'
TOWER ESTATES
RECORD PLAT AND FOREST CONSERVATION PLAN #96-0484
AND BOUNDARY LINE ADJUSTMENT PLAT
A RESUBDIVISION OF
LAWERENCE SUBDIVISION RESIDUE
FOURTH ELECTION DISTRICT
SAINT MARY'S COUNTY, MARYLAND
FOR MIKE BURROUGHS
MSA SSU 1252 - 2871-1
Maryland State Archives


MAP 26, GRID 11, PARCEL 421, LOT 1
HOLLYWOOD V.F.D. INC.
HOLLYWOOD, MD 20636
DEED BOOK MRB/ 131/ 379
AREA: 10 ACRES±
ZONE: RPD
MAP 26, GRID 11, PARCEL 318
HOLLYWOOD V.F.D. INC.
HOLLYWOOD, MD 20636
DEED BOOK MRB/ 131/ 379
AREA: 31.01 ACRES±
ZONE: RPD
(E) BUILDING
(E) ASPHALT PARKING
(E) 2 STORY FIRE HOUSE
(E) MD ROUTE 235 (VARIABLE R.O.W)
EXISTING TOWER TO BE REMOVED, REPLACED AND RELOCATED
PROPOSED 12' GRAVEL ACCESS ROAD
315' F. SETBACK
(E) SEPTIC FIELD
PROPOSED 2 ROWS LEYLAND CYPRESS
SETBACK (TYP)
N62°52'41"E 86.44'
N52°30'13"E 113.98'
N41°38'40"E 69.64'
N30°18'19"E 110.84'
N22°37'46"E 72.08'
N19°55'27"E 202.60'
N13°49'14"E 179.47'
S86°10'38"E 16.20'
N18°57'19"E 100.23'
N25°12'47"E 139.98'
N38°40'14"E 209.44'
N48°22'40"E 248.53'
N17°21'41"W 466.22'
N89°28'57"E 139.09'
N29°02'30"E 428.04'
S58°51'35"W 1155.79'
N31°08'25"W 25.22'
S42°30'42"E 1015.98'
S49°58'59"W 213.46'
S52°19'18" 95.06'
S51°10'10"W 250.00'
1
C-2


MAP 26, GRID 11, PARCEL 421, LOT 1
HOLLYWOOD V.F.D. INC.
HOLLYWOOD, MD 20636
DEED BOOK MRB/ 131/ 379
AREA: 10 ACRES±
ZONE: RPD
MAP 26, GRID 11, PARCEL 318
HOLLYWOOD V.F.D. INC.
DEED BOOK EWA/ 731/ 101
AREA: 96.92 ACRES±
ZONE: RPD
(E) MD ROUTE 235
(VARIABLE R.O.W)
(E) 50' WIDE
(E) BUILDING
(E) BUILDING
(E) ASPHALT PARKING
(E) 2 STORY FIRE HOUSE
(E) POND
(E) SWM POND
EXISTING TOWER TO BE REMOVED, REPLACED AND RELOCATED
PROPOSED 12' GRAVEL ACCESS ROAD
(E) SEPTIC FIELD
PROPOSED 2 ROWS LEYLAND CYPRESS
315'± SETBACK
405'± SETBACK
692'± SETBACK
SETBACK (TYP)
1
C-2
N31°38'59"E 119.18'
N35°01'46"E 90.70'
N49°32'11"E 118.06'
N65°05'51"E 92.19'
N79°19'54"E 83.55'
S89°05'26"E 64.28'
N62°52'41"E 86.44'
N52°30'13"E 113.98'
N41°38'40"E 69.64'
N30°18'19"E 110.84'
N22°37'46"E 72.08'
N19°55'27"E 202.60'
N13°49'14"E 179.47'
S86°10'38"E 16.20'
N18°57'19"E 100.23'
N25°12'47"E 139.98'
N38°40'14"E 209.44'
N48°22'40"E 248.53'
N17°21'41"W 466.22'
N89°28'57"E 139.09'
S58°35'29"E 18.1.
641.37'
S32°30'42"E 1018.98'
N29°02'30"E 428.04'
N31°08'25"W 25.22'
S58°51'35"W 1155.79'
S53°07'52"W
S51°10'10"W 250.00'
S49°58'59"W 213.46'
S52°19'18"
96.06'

SYMBOL	QUANTITY	LANDSCAPE BOTANIC
	4	Acer rubrum 'Oct
	5	Azalea "Blauv
	11	Pinus strol
	20	Juniperus Horiz



December 30, 2010

Ms. Molly Carder
Crown Castle USA Inc.
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704)405-6596

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
ctuttle@btengineering.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***St. Mary's County Government* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	801524
	Crown Castle Site Name:	California
	Crown Castle JDE Job Number:	147625
	Crown Castle Work Order Number:	378398
Engineering Firm Designation:	**B&T Engineering, Inc. Project Number:**	79282
Site Data:	**45774 Fire Dept Lane, Lexington Park, MD, St. Mary's County**	
	Latitude *38° 17' 19.55"*, Longitude *-76° 29' 33.99"*	
	220 Foot - Self Support Tower	

Dear Ms. Carder,

B&T Engineering, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 399587, in accordance with application 114083, revision 4.

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:

LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA-222-G standard and the 2009 International Building Code based upon a wind speed of 95 mph 3-second gust.

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

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

Respectfully submitted by:

Kristin Mears, E.I.
Project Engineer

Chad E. Tuttle, P.E.
President

I hereby certify these documents were reviewed by me and I am a duly licensed professional engineer under the laws of the State of Maryland.

RISA Tower Report - version 5.4.2.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 220 ft. Self-Support tower designed by PiRod, Inc. in June of 2001. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 95 mph with no ice, 40 mph with 0.5 inch ice thickness and 60 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
215	205	2	Celwave	BMR12-H-B1	3	1 5/8	--
	215	2	--	Side Arm [SO 303-1]			
199	219	2	Decibel	DBB2702RA	2	3/8	--
	209	2	Celwave	BMR12-H-B1	2	7/8	
145	145	1	Celwave	PAD6-59AC	2	EP60	--
		1	Celwave	PAD6-59BC			
		2	--	Pipe Mount [PM 601-1]			
110	110	2	Celwave	PAD6-59BC	1	EP60	--
		2	--	Pipe Mount [PM 601-1]	1	E60	

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
215	215	3	--	Side Arm [SO 303-1]	1	7/8	1
	205	1	Decibel	DB616-AB	1	1 5/8	
		2	Decibel	DB812KF-XT			
		1	**Decibel**	**DB224-A**	**1**	**7/8**	**5**
		1	**Decibel**	**DBB2702RA**			
199	209	**2**	**Celwave**	**PD220-1**	**2**	**1 5/8**	**5**
	199	2	--	Side Arm [SO 308-1]	--	--	1
192	192	**6**	**ADC**	**DB 800/1900 FB Masthead**	**--**	**--**	**4,5**
		3	**Allgon**	**7251.02**			
		3	**--**	**Pipe Mount [PM 601-1]**			
188	198	1	Celwave	BPR12-A-B1	1	7/8	2
	188	1	--	Pipe Mount [PM 601-1]			
182	182	6	Antel	LPA-185080/12CF	12	1 5/8	1
		6	Antel	LPA-80063/8CF			
		3	--	Sector Mount [SM 201-1]			
174	174	1	Celwave	PAD6-65AC	1	WE65	1
		1	--	Pipe Mount [PM 601-1]			
		1	Celwave	PAD8-59AC	1	E60	2
		1	--	Pipe Mount [PM 602-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
168	171	2	Maxrad	MSP24013MB	2	7/8	1
	168	2	--	Pipe Mount [PM 601-1]			
161	161	1	Celwave	PAD6-65AC	1	WEP65	1
		1	--	Pipe Mount [PM 601-1]			
156	160	1	Celwave	BPR8-A-B1	1	7/8	2
	156	1	--	Pipe Mount [PM 601-1]			
145	155	1	Telewave	ANT150D6-9	4	7/8	1
	150	1	Telewave	ANT150D3			
	146	1	Maxrad	MSP24013MB			
	145	2	--	Side Arm [SO 203-1]			
136	136	--	--	--	6	1 1/4	4
		6	EMS Wireless	RR90-18-00DP	6	1 1/4	1
		4	Ericsson	KRY 112 71/2			
		3	--	Sector Mount [SM 405-1]			
95	105	2	Decibel	DB408	2 1	7/8 1/2	1
	96	1	Decibel	DB292-A			
	95	3	--	Side Arm [SO 201-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) MLA Equipment
4) Abandoned Equipment
5) Equipment to be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
230	230	3	--	Bougner Mount	3	1 5/8
		1	Decibel	DB812KF-X		
		2	Sinclair	SRL 410C4		
220	220	3	--	T-Frame	12	1 5/8
		12	Swedcom	ALP9212		
205	205	3	--	T-Frame	12	1 5/8
		12	Swedcom	ALP9212		
190	190	3	--	T-Frame	12	1 5/8
		12	Swedcom	ALP9212		
135	135	3	--	T-Frame	12	1 5/8
		12	Swedcom	ALP9212		
110	110	2	--	8' Dish	2	EW63
		2	--	Pipe Mount		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	St. Mary's County Government Co-Locate Revision # 4	114083	Crown OTG
Tower Manufacturer Drawings	PiRod, Inc. Date: 6/12/2001	681914	Crown OTG
Tower Height	SA by CCI Dated: 10/20/2010	2739928	Crown OTG
Foundation Drawings	PiRod, Inc. Date: 12/13/2000	727952	Crown OTG
Geotech Report	Geo-Technology Associates, Inc. Job No. 00353.V	681854	Crown OTG
Antenna Configuration	Crown CAD Package	Date:12/28/2010	Crown OTG

3.1) Analysis Method

RISA Tower (version 5.4.2.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	220 - 210	Leg	Pirod 105979	2	-1.793	142.493	8.5	Pass
T2	210 - 200	Leg	Pirod 105244	14	-4.621	142.493	14.1	Pass
T3	200 - 180	Leg	Pirod 105216	31	-20.956	142.493	36.2	Pass
T4	180 - 160	Leg	Pirod 105218	51	-33.362	300.681	18.3	Pass
T5	160 - 140	Leg	Pirod 105219	66	-77.534	399.868	19.4	Pass
T6	140 - 130	Leg	Pirod 105220	81	-94.018	512.375	18.3	Pass
T7	130 - 120	Leg	Pirod 105220	99	-111.924	512.375	21.8	Pass
T8	120 - 100	Leg	Pirod 112743	108	-134.826	639.638	21.1	Pass
T9	100 - 80	Leg	Pirod 112743	126	-171.989	613.145	28.1	Pass
T10	80 - 60	Leg	Pirod 112744	135	-206.864	741.993	27.9	Pass
T11	60 - 40	Leg	Pirod 112745	144	-238.179	883.145	27.0	Pass
T12	40 - 20	Leg	Pirod 114683	153	-274.393	1036.610	26.5	Pass
T13	20 - 0	Leg	Pirod 113138	162	-316.164	1202.710	26.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	220 - 210	Diagonal	L2 1/2x2 1/2x3/16	7	-0.753	12.532	6.0	Pass
T2	210 - 200	Diagonal	L3x3x3/16	17	-2.567	17.854	14.4	Pass
T3	200 - 180	Diagonal	L3x3x5/16	40	-4.019	22.680	17.7	Pass
T4	180 - 160	Diagonal	L3 1/2x3 1/2x5/16	57	-6.325	29.052	21.8	Pass
T5	160 - 140	Diagonal	L3 1/2x3 1/2x5/16	69	-7.204	23.850	30.2	Pass
T6	140 - 130	Diagonal	L4x4x3/8	86	-8.665	39.042	22.2	Pass
T7	130 - 120	Diagonal	L4x4x3/8	102	-8.409	34.964	24.1	Pass
T8	120 - 100	Diagonal	2L3 1/2x3 1/2x5/16x3/8	117	-13.410	50.264	26.7	Pass
T9	100 - 80	Diagonal	2L3 1/2x3 1/2x5/16x3/8	132	-12.907	39.683	32.5	Pass
T10	80 - 60	Diagonal	2L4x4x1/4x1/2	141	-12.694	43.823	29.0	Pass
T11	60 - 40	Diagonal	2L4x4x1/4x1/2	150	-13.431	39.506	34.0	Pass
T12	40 - 20	Diagonal	2L4x4x3/8x3/8	159	-12.450	51.494	24.2	Pass
T13	20 - 0	Diagonal	2L5x5x3/8x3/8	168	-22.973	102.078	22.5	Pass
T2	210 - 200	Horizontal	L3x3x5/16	19	-0.559	45.785	1.2	Pass
T6	140 - 130	Horizontal	L3x3x5/16	85	-1.630	21.263	7.7	Pass
T8	120 - 100	Horizontal	L3x3x5/16	112	-2.338	16.130	14.5	Pass
T1	220 - 210	Top Girt	L3x3x1/4	5	0.074	46.656	0.3	Pass
T3	200 - 180	Mid Girt	L3x3x3/16	35	-0.820	9.491	8.6	Pass
							Summary	
						Leg (T3)	36.2	Pass
						Diagonal (T11)	34.0	Pass
						Horizontal (T8)	14.5	Pass
						Top Girt (T1)	0.3	Pass
						Mid Girt (T3)	8.6	Pass
						Bolt Checks	27.5	Pass
						RATING =	**36.2**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
	Anchor Rods	Base	13.2	Pass
	Base Foundation (Compared w/ Design Loads)	Base	25.3	Pass

Structure Rating (max from all components) =	36.2%

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Capacities up to 105% are considered acceptable based on analysis procedures used.

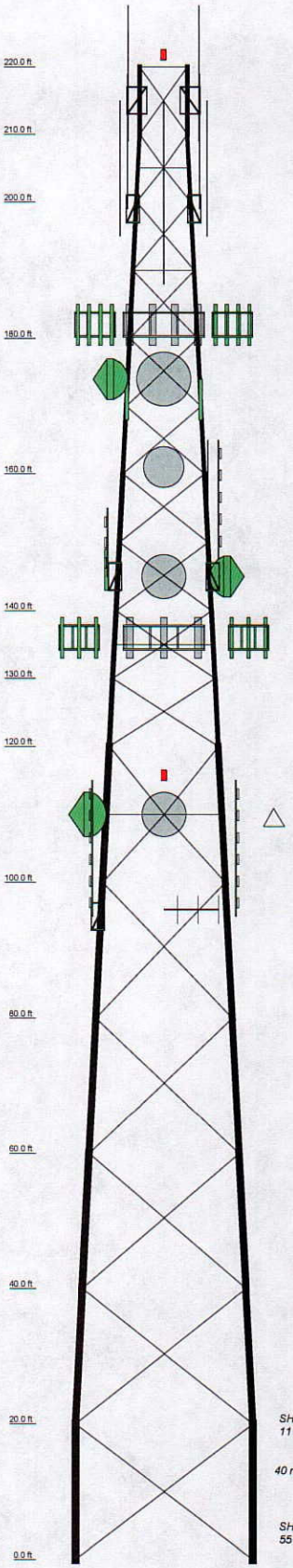
4.1) Recommendations

N/A

APPENDIX A

RISA TOWER OUTPUT

Section	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirod 113138	Pirod 114683	Pirod 112745	Pirod 112744	Pirod 112743		Pirod 105220	Pirod 105219		Pirod 105218	Pirod 105216	Pirod 105244	Pirod 105979
Leg Grade	A572-50												
Diagonals	2L5x5x3/8x3/8	2L4x4x3/8x3/8	2L4x4x1/4x1/2		2L3 1/2x3 1/2x5/16x3/8		L4x4x3/8	L3 1/2x3 1/2x5/16			L3x3x5/16	L3x3x3/16	A
Diagonal Grade	A36												
Top Girts	N.A.												L3x3x1/4
Mid Girts	N.A.										L3x3x3/16	N.A.	
Horizontals	N.A.				L3x3x5/16		N.A.	L3x3x5/16		N.A.		L3x3x5/16	N.A.
Face Width (ft)	26	24	22	20	18	16	15	14	12	10	8	7	
# Panels @ (ft)	5 @ 20				3 @ 10		2 @ 5		6 @ 10		2 @ 5		1 @ 10
Weight (K) 77.8	13.5	13.5	9.3	9.4	7.8	8.9	3.0	3.3	4.7	3.5	2.8	1.3	1.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon (E)	221	Pipe Mount [PM 601-1] (E)	168
DB82702RA (P)	219	Pipe Mount [PM 601-1] (E)	168
DB82702RA (P)	219	Pipe Mount [PM 601-1] (E)	161
Side Arm Mount [SO 303-1] (E)	215	Celwave PAD6-65AC (E)	161
Side Arm Mount [SO 303-1] (E)	215	BPR8-A-B1 (R)	160
Side Arm Mount [SO 303-1] (E)	215	Pipe Mount [PM 601-1] (R)	156
Side Arm Mount [SO 303-1] (P)	215	ANT150D6-9 (E)	155
Side Arm Mount [SO 303-1] (P)	215	ANT150D3 (E)	150
BMR12-H-B1 (P)	209	MSP24013MB (E)	146
BMR12-H-B1 (P)	209	Side Arm Mount [SO 203-1] (E)	145
BMR12-H-B1 (P)	205	Side Arm Mount [SO 203-1] (E)	145
BMR12-H-B1 (P)	205	Pipe Mount [PM 601-1] (P)	145
DB812KF-XT (E)	205	Pipe Mount [PM 601-1] (P)	145
DB616-AB (E)	205	Celwave PAD6-59BC (P)	145
DB812KF-XT (E)	205	Celwave PAD6-59AC (P)	145
Side Arm Mount [SO 308-1] (E)	199	KRY 112 71/2 TMA (E)	136
Side Arm Mount [SO 308-1] (E)	199	(2) KRY 112 71/2 TMA (E)	136
BPR12-A-B1 Omni (R)	198	Sector Mount [SM 405-3] (E)	136
Pipe Mount [PM 601-1] (R)	186	(2) RR90-18-00DP w/Mount Pipe (E)	136
(2) LPA-80063/6CF (E)	182	(2) RR90-18-00DP w/Mount Pipe (E)	136
(2) LPA-80063/6CF (E)	182	(2) RR90-18-00DP w/Mount Pipe (E)	136
(2) LPA-80063/6CF (E)	182	KRY 112 71/2 TMA (E)	136
(2) LPA-185080/12CF (E)	182	Side Lights (E)	115
(2) LPA-185080/12CF (E)	182	Pipe Mount [PM 601-1] (P)	110
(2) LPA-185080/12CF (E)	182	Pipe Mount [PM 601-1] (P)	110
Sector Mount [SM 201-3] (E)	182	Celwave PAD6-59BC (P)	110
Pipe Mount [PM 601-1] (E)	174	Celwave PAD6-59BC (P)	110
Pipe Mount [PM 602-1] (R)	174	DB408 (E)	105
Celwave PAD6-65AC (E)	174	DB408 (E)	105
Celwave PAD6-59AC (R)	174	DB292-A (E)	96
MSP24013MB (E)	171	Side Arm Mount [SO 201-3] (E)	95
MSP24013MB (E)	171		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2 1/2x2 1/2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Saint Marys County, Maryland.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 95 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 36.2%

ALL REACTIONS ARE FACTORED

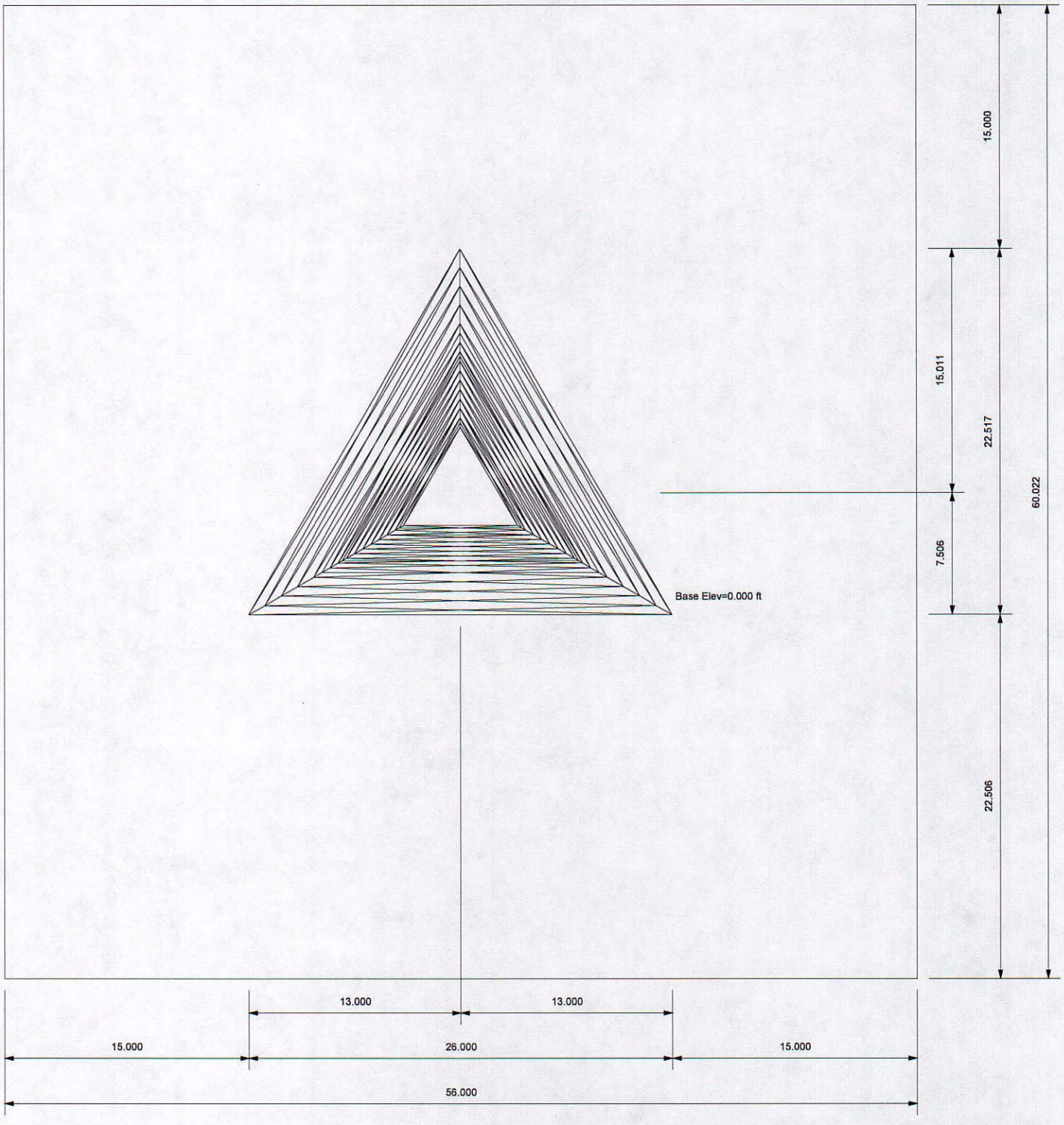
MAX. CORNER REACTIONS AT BASE:
DOWN: 341 K
UPLIFT: -261 K
SHEAR: 28 K

AXIAL 228 K
SHEAR 11 K *MOMENT 1345 kip-ft*
TORQUE 2 kip-ft
40 mph WIND - 0.500 in ICE
AXIAL 114 K
SHEAR 55 K *MOMENT 6826 kip-ft*
TORQUE 13 kip-ft
REACTIONS - 95 mph WIND

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	79282 - California, MD (BU# 801524)
Project:	225' PiRod SST / App ID: 114083, Rev: 4
Client: Crown Castle USA, Inc.	Drawn by: K. Mears / Appd:
Code: TIA-222-G	Date: 12/30/10 / Scale: NTS
Path:	Dwg No: E-1

Plot Plan
Total Area - 0.08 Acres

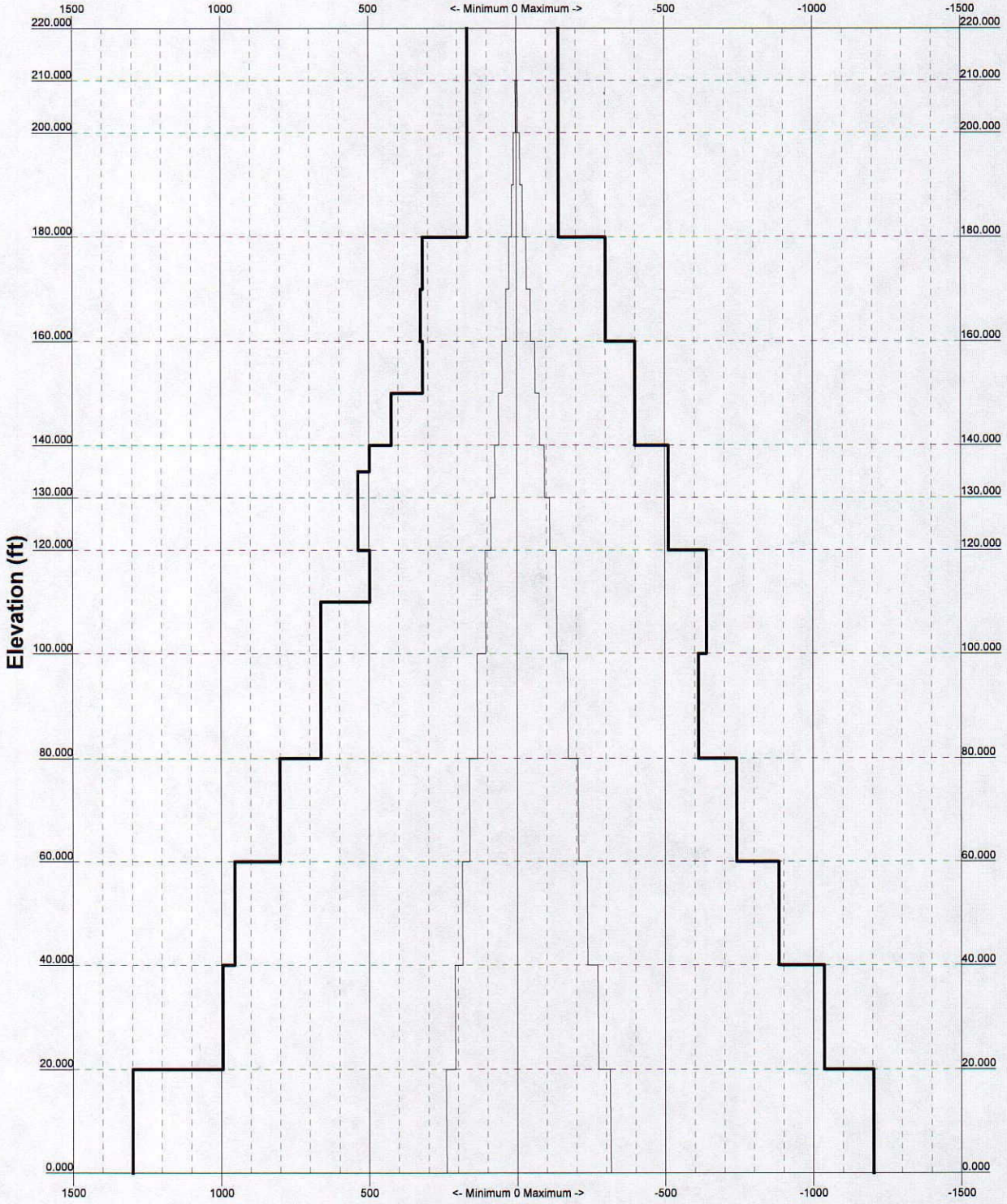


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***79282 - California, MD (BU# 801524)***		
Project:	***225' PiRod SST / App ID: 114083, Rev: 4***		
Client: Crown Castle USA, Inc.		Drawn by: K. Mears	App'd:
Code: TIA-222-G		Date: 12/30/10	Scale: NTS
Path:			Dwg No. E-2

TIA-222-G - 95 mph/40 mph 0.500 in Ice Exposure B

Leg Capacity ——— Leg Compression (K)



B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

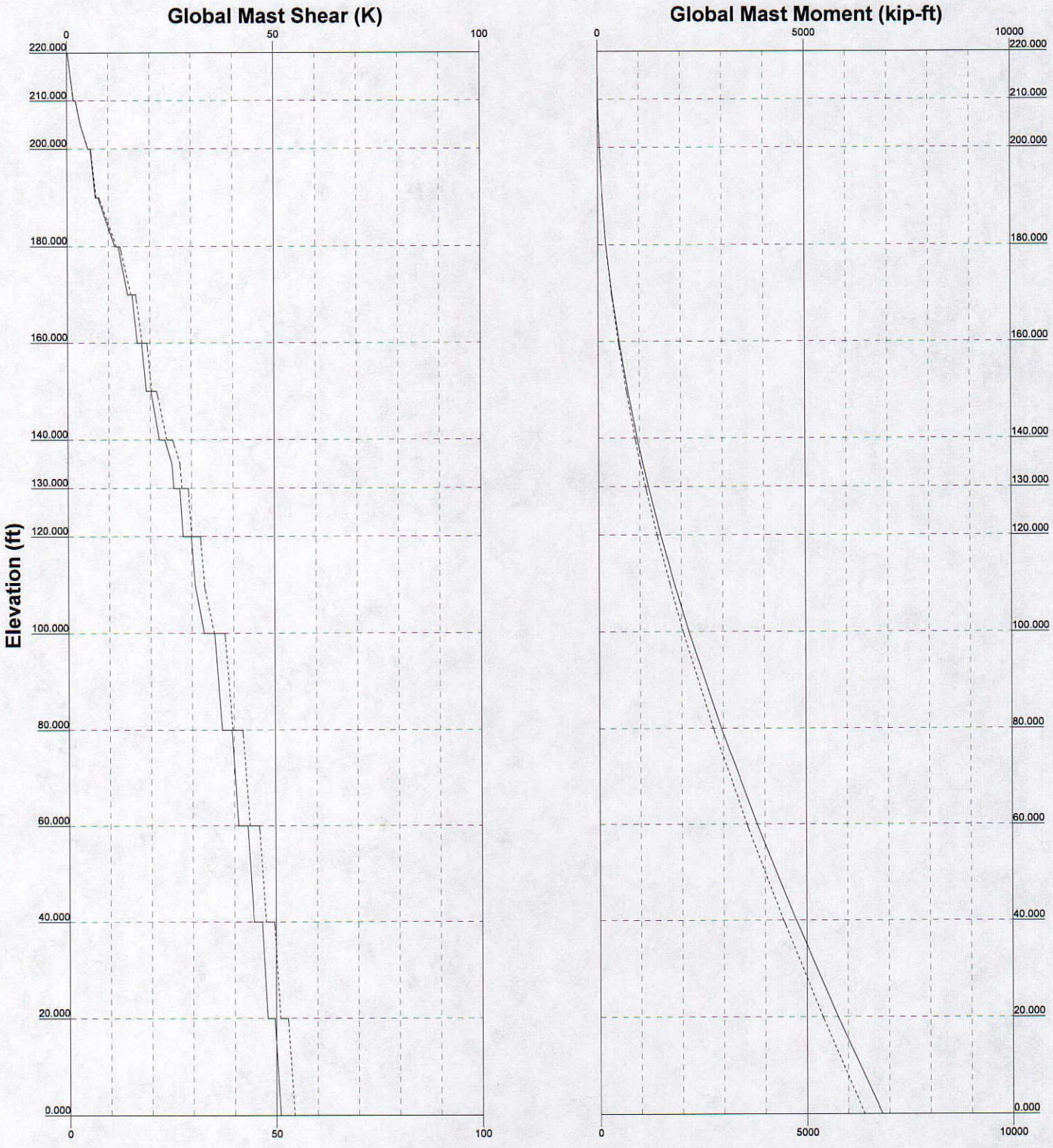
Job:	79282 - California, MD (BU# 801524)		
Project:	225' PiRod SST / App ID: 114083, Rev: 4		
Client:	Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:
Code:	TIA-222-G	Date: 12/30/10	Scale: NTS
Path:	S:\B&T Engineering\Projects\Crown Castle\79282_801524_California\Engineering\RISA\79282_001_CaliforniaMD.en		Dwg No. E-3

TIA-222-G - 95 mph/40 mph 0.500 in Ice Exposure B

Vx Vz

Maximum Values

Mx Mz

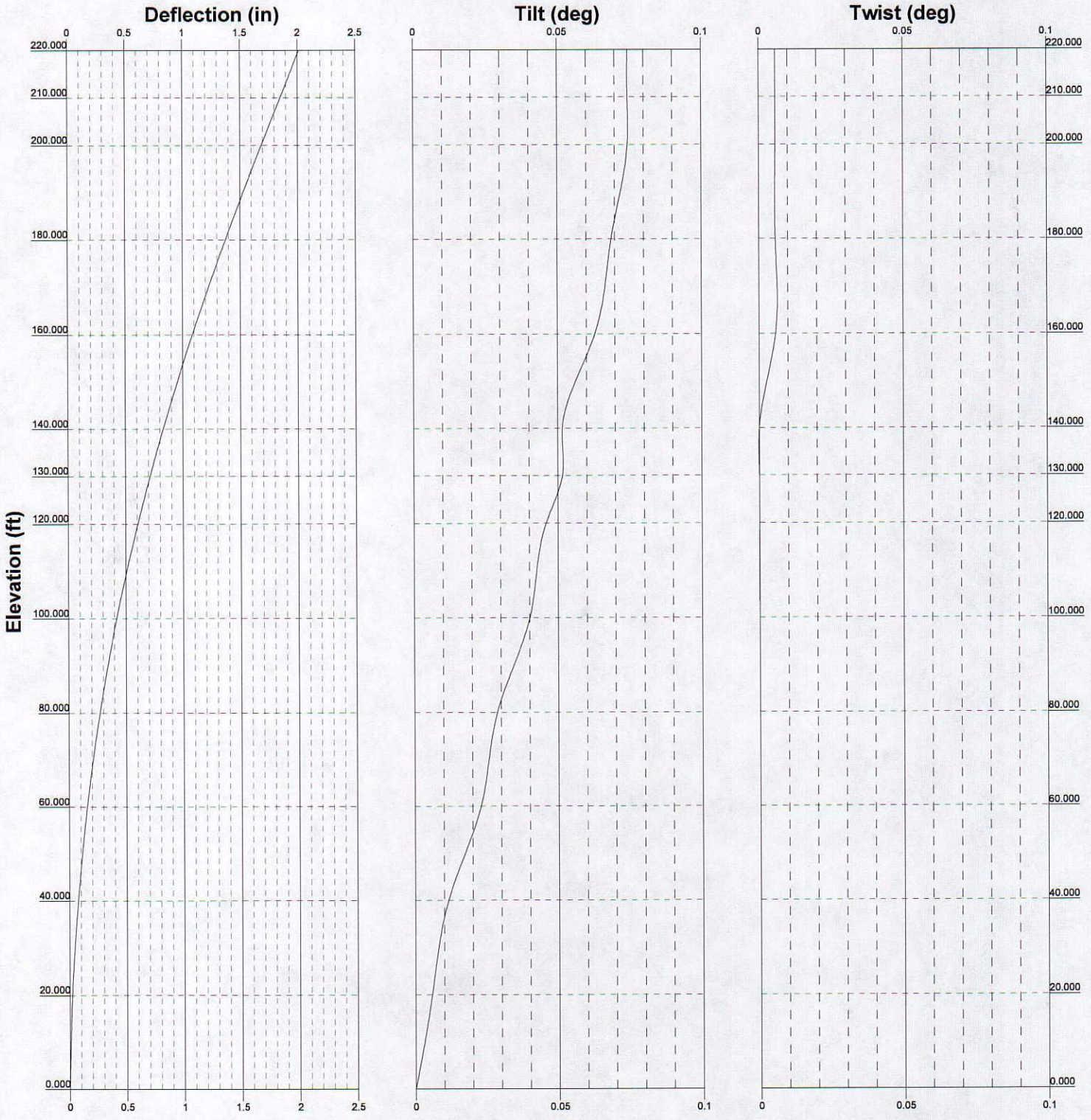


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 79282 - California, MD (BU# 801524)			
Project: 225' PiRod SST / App ID: 114083, Rev: 4			
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 12/30/10	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-G - Service - 60 mph

Maximum Values

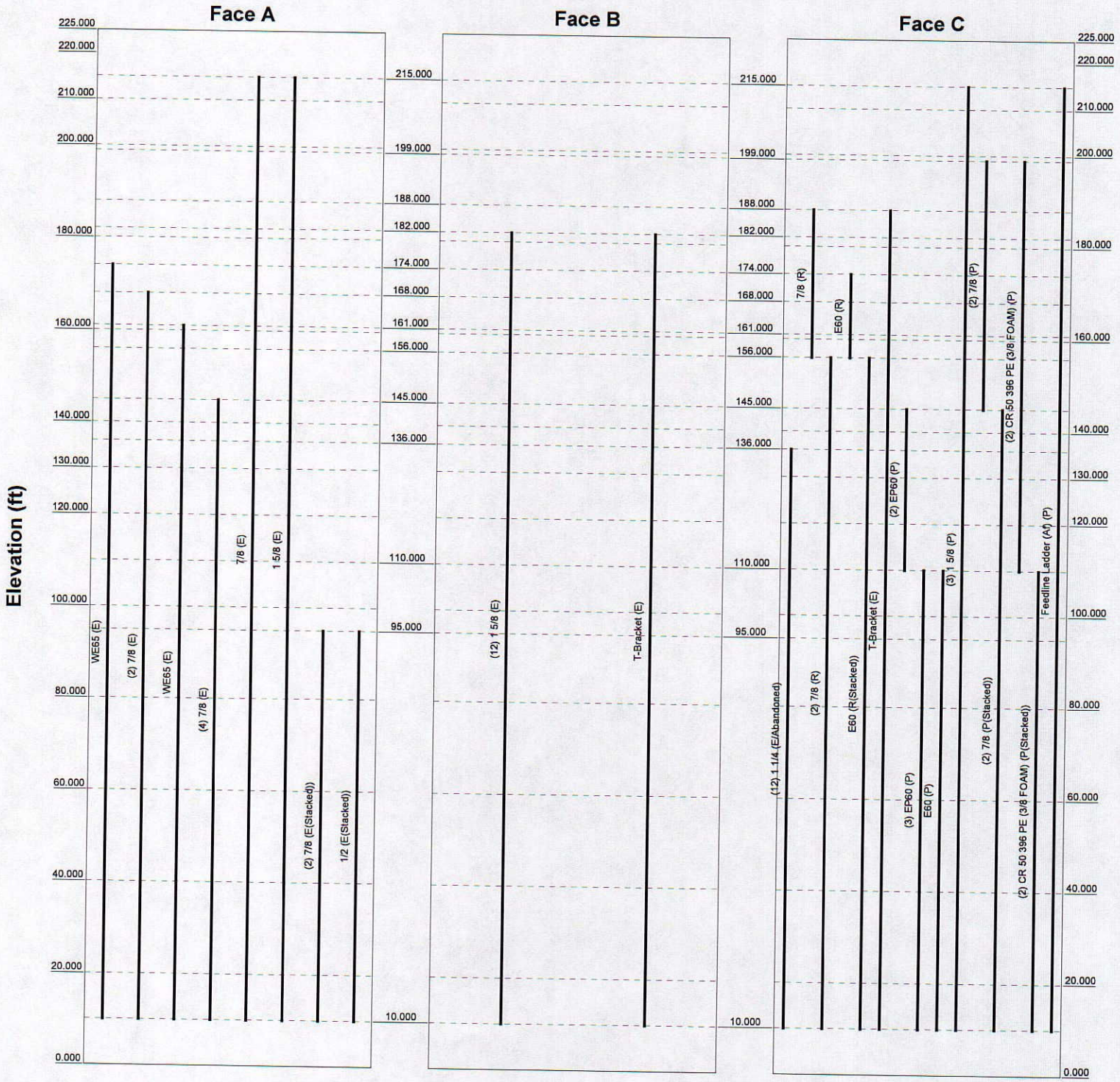


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 79282 - California, MD (BU# 801524)			
Project: 225' PiRod SST / App ID: 114083, Rev: 4			
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 12/30/10	Scale: NTS	
Path: S:\B&T Engineering\Projects\Crown Castle\79282_801524_California\Engineering\RISA\79282_001_California\Mo		Dwg No. E-5	

Feedline Distribution Chart
0' - 225'

Round — Flat — App In Face — App Out Face — Truss Leg



B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	79282 - California, MD (BU# 801524)		
Project:	225' PiRod SST / App ID: 114083, Rev: 4		
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 12/30/10	Scale: NTS	
Path:		Dwg No. E-7	

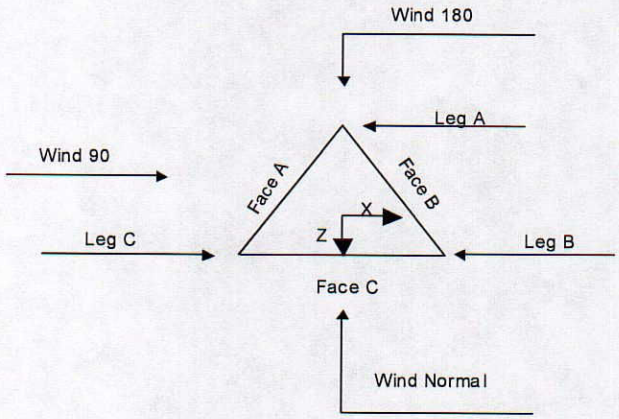
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 220.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 7.000 ft at the top and 26.000 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Saint Marys County, Maryland.
Basic wind speed of 95 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 40 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	220.000-210.000			7.000	1	10.000
T2	210.000-200.000			7.000	1	10.000
T3	200.000-180.000			8.000	1	20.000
T4	180.000-160.000			10.000	1	20.000
T5	160.000-140.000			12.000	1	20.000
T6	140.000-130.000			14.000	1	10.000
T7	130.000-120.000			15.000	1	10.000
T8	120.000-100.000			16.000	1	20.000
T9	100.000-80.000			18.000	1	20.000
T10	80.000-60.000			20.000	1	20.000
T11	60.000-40.000			22.000	1	20.000
T12	40.000-20.000			24.000	1	20.000
T13	20.000-0.000			26.000	1	20.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	220.000-210.000	10.000	X Brace	No	No	0.000	0.000
T2	210.000-200.000	5.000	Double K	No	Yes	0.000	0.000
T3	200.000-180.000	10.000	X Brace	No	No	0.000	0.000
T4	180.000-160.000	10.000	X Brace	No	No	0.000	0.000
T5	160.000-140.000	10.000	X Brace	No	No	0.000	0.000
T6	140.000-130.000	5.000	Double K	No	Yes	0.000	0.000
T7	130.000-120.000	10.000	X Brace	No	No	0.000	0.000
T8	120.000-100.000	10.000	Double K	No	Yes	0.000	0.000
T9	100.000-80.000	20.000	X Brace	No	No	0.000	0.000
T10	80.000-60.000	20.000	X Brace	No	No	0.000	0.000
T11	60.000-40.000	20.000	X Brace	No	No	0.000	0.000
T12	40.000-20.000	20.000	X Brace	No	No	0.000	0.000
T13	20.000-0.000	20.000	X Brace	No	No	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 220.000-210.000	Truss Leg	Pirod 105979	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 210.000-200.000	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T3 200.000-180.000	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T4 180.000-160.000	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T5 160.000-140.000	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T6 140.000-130.000	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Single Angle	L4x4x3/8	A36 (36 ksi)
T7 130.000-120.000	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Single Angle	L4x4x3/8	A36 (36 ksi)
T8 120.000-100.000	Truss Leg	Pirod 112743	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x5/16x3/8	A36 (36 ksi)
T9 100.000-80.000	Truss Leg	Pirod 112743	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x5/16x3/8	A36 (36 ksi)
T10 80.000-60.000	Truss Leg	Pirod 112744	A572-50 (50 ksi)	Double Angle	2L4x4x1/4x1/2	A36 (36 ksi)
T11 60.000-40.000	Truss Leg	Pirod 112745	A572-50 (50 ksi)	Double Angle	2L4x4x1/4x1/2	A36 (36 ksi)
T12 40.000-20.000	Truss Leg	Pirod 114683	A572-50 (50 ksi)	Double Angle	2L4x4x3/8x3/8	A36 (36 ksi)
T13 20.000-0.000	Truss Leg	Pirod 113138	A572-50 (50 ksi)	Double Angle	2L5x5x3/8x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T2 210.000-200.000	None	Single Angle		A36 (36 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T3 200.000-180.000	1	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 140.000-130.000	None	Single Angle		A36 (36 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T8 120.000-100.000	None	Single Angle		A36 (36 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

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
T1 220.000-210.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T2 210.000-200.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T3 200.000-180.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T4 180.000-160.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T5 160.000-140.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T6 140.000-130.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T7 130.000-120.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T8 120.000-100.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	36.000	36.000
T9 100.000-80.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	Mid-Pt	36.000
T10 80.000-60.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	Mid-Pt	36.000
T11 60.000-40.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	Mid-Pt	36.000
T12 40.000-20.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	Mid-Pt	36.000
T13 20.000-0.000	0.000	0.000	A36 (36 ksi)	1	1	1.05	Mid-Pt	36.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	1	1	1	1	1	1	1
220.000-210.000				1	1	1	1	1	1	1
T2	No	No	1	1	1	1	1	1	1	1
210.000-200.000				1	1	1	1	1	1	1
T3	No	No	1	1	1	1	1	1	1	1
200.000-180.000				1	1	1	1	1	1	1
T4	No	No	1	1	1	1	1	1	1	1
180.000-160.000				1	1	1	1	1	1	1
T5	No	No	1	1	1	1	1	1	1	1
160.000-140.000				1	1	1	1	1	1	1
T6	No	No	1	1	1	1	1	1	1	1
140.000-130.000				1	1	1	1	1	1	1
T7	No	No	1	1	1	1	1	1	1	1
130.000-120.000				1	1	1	1	1	1	1
T8	No	No	1	1	1	1	1	1	1	1
120.000-100.000				1	1	1	1	1	1	1
T9	No	No	1	1	1	1	1	1	1	1
100.000-80.000				1	1	1	1	1	1	1
T10	No	No	1	1	1	1	1	1	1	1
80.000-60.000				1	1	1	1	1	1	1
T11	No	No	1	1	1	1	1	1	1	1
60.000-40.000				1	1	1	1	1	1	1
T12	No	No	1	1	1	1	1	1	1	1
40.000-20.000				1	1	1	1	1	1	1
T13	No	No	1	1	1	1	1	1	1	1
20.000-0.000				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T1 220.000-210.000	1	0.5	0.85	1	0.5	0.85
T2 210.000-200.000	1	0.5	0.85	1	0.5	0.85
T3 200.000-180.000	1	0.5	0.85	1	0.5	0.85
T4 180.000-160.000	1	0.5	0.85	1	0.5	0.85
T5 160.000-140.000	1	0.5	0.85	1	0.5	0.85
T6 140.000-130.000	1	0.5	0.85	1	0.5	0.85
T7 130.000-120.000	1	0.5	0.85	1	0.5	0.85
T8 120.000-100.000	1	0.5	0.85	1	0.5	0.85
T9 100.000-80.000	1	0.5	0.85	1	0.5	0.85
T10 80.000-60.000	1	0.5	0.85	1	0.5	0.85
T11 60.000-40.000	1	0.5	0.85	1	0.5	0.85
T12 40.000-20.000	1	0.5	0.85	1	0.5	0.85
T13 20.000-0.000	1	0.5	0.85	1	0.5	0.85

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 220.000-210.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T2 210.000-200.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T3 200.000-180.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T4 180.000-160.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T5 160.000-140.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T6 140.000-130.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T7 130.000-120.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T8 120.000-100.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T9 100.000-80.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T10 80.000-60.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T11 60.000-40.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T12 40.000-20.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T13 20.000-0.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 220.000-210.000	Flange	1.000 A325N	6	1.000 A325N	1	1.000 A325N	1	1.000 A325N	1	1.000 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 210.000-200.000	Flange	1.000 A325N	6	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	1.000 A325N	0	0.625 A325N	0	0.625 A325N	0
T3 200.000-180.000	Flange	1.000 A325N	6	1.000 A325N	1	1.000 A325N	0	1.000 A325N	0	1.000 A325N	0	1.000 A325N	2	1.000 A325N	0
T4 180.000-160.000	Flange	1.000 A325N	6	1.000 A325N	1	1.000 A325N	0	0.625 A325N	0	1.000 A325N	1	0.625 A325N	0	1.000 A325N	0
T5 160.000-140.000	Flange	1.000 A325N	6	1.000 A325N	1	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0
T6 140.000-130.000	Flange	1.250 A325N	6	1.250 A325N	1	1.000 A325N	0	0.000 A325N	0	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T7 130.000-120.000	Flange	1.250 A325N	0	1.250 A325N	1	1.000 A325N	0	0.000 A325N	0	1.000 A325N	0	1.000 A325N	2	1.000 A325N	0
T8 120.000-100.000	Flange	1.250 A325N	6	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0
T9 100.000-80.000	Flange	1.250 A325N	12	1.000 A325N	2	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0	1.000 A325N	2	1.000 A325N	0
T10 80.000-60.000	Flange	1.250 A325N	12	1.000 A325N	2	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0
T11 60.000-40.000	Flange	1.250 A325N	12	1.000 A325N	2	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0
T12 40.000-20.000	Flange	1.250 A325N	12	1.000 A325N	2	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0
T13 20.000-0.000	Flange	1.250 A325N	22	1.000 A325N	2	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0	0.625 A325N	0	1.000 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
1 5/8 (E)	B	No	Ar (CaAa)	182.000 - 10.000	0.000	-0.45	12	6	0.850 0.750	1.980		0.001
T-Bracket (E) *	B	No	Af (CaAa)	182.000 - 10.000	0.000	-0.45	1	1	0.850 0.750	1.500		0.008
1 1/4 (E/Abandoned)	C	No	Ar (CaAa)	136.000 - 10.000	0.000	-0.45	12	6	0.850 0.750	1.550		0.001
7/8 (R)	C	No	Ar (CaAa)	188.000 - 156.000	0.000	-0.42	1	1	0.850 0.750	1.110		0.001
7/8 (R)	C	No	Ar (CaAa)	156.000 - 10.000	0.000	-0.42	2	2	0.850 0.750	1.110		0.001
E60 (R)	C	No	Af (CaAa)	174.000 - 156.000	-1.000	-0.42	1	1	0.850 0.750	1.300		0.001
E60 (R(Stacked))	C	No	Af (CaAa)	156.000 - 10.000	-1.000	-0.42	1	1	0.850 0.750	0.000		0.001
T-Bracket (E) *	C	No	Af (CaAa)	188.000 - 10.000	0.000	-0.45	1	1	0.850 0.750	1.500		0.008
EP60 (P)	C	No	Af (CaAa)	145.000 - 110.000	0.000	0.45	2	2	0.850 0.750	1.300		0.001
EP60 (P)	C	No	Af (CaAa)	110.000 - 10.000	0.000	0.45	3	3	0.850 0.750	1.300		0.001
E60 (P)	C	No	Af (CaAa)	110.000 - 10.000	0.000	0.43	1	1	0.850 0.750	1.300		0.001
1 5/8 (P)	C	No	Ar (CaAa)	215.000 - 10.000	0.000	0.415	3	2	0.850 0.750	1.980		0.001
7/8 (P)	C	No	Ar (CaAa)	199.000 - 145.000	0.000	0.45	2	2	0.850 0.750	1.110		0.001
7/8 (P(Stacked))	C	No	Ar (CaAa)	145.000 - 10.000	0.000	0.45	2	2	0.850 0.750	0.000		0.001
CR 50 396 PE (3/8 FOAM) (P)	C	No	Ar (CaAa)	199.000 - 110.000	0.000	0.45	2	2	0.850 0.750	0.450		0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
CR 50 396 PE (3/8 FOAM) (P(Stacked))	C	No	Ar (CaAa)	110.000 - 10.000	0.000	0.45	2	2	0.850 0.750	0.000		0.000
Feedline Ladder (Af) (P) *	C	No	Af (CaAa)	215.000 - 10.000	0.000	0.4325	1	1	0.850 0.750	1.500		0.008
WE65 (E)	A	No	Af (CaAa)	174.000 - 10.000	0.000	-0.445	1	1	0.850 0.750	1.584		0.001
7/8 (E)	A	No	Ar (CaAa)	168.000 - 10.000	0.000	-0.43	2	2	0.850 0.750	1.110		0.001
WE65 (E)	A	No	Af (CaAa)	161.000 - 10.000	0.000	-0.455	1	1	0.850 0.750	1.584		0.001
7/8 (E)	A	No	Ar (CaAa)	145.000 - 10.000	0.000	-0.41	4	4	0.850 0.750	1.110		0.001
7/8 (E)	A	No	Ar (CaAa)	215.000 - 10.000	0.000	-0.395	1	1	0.850 0.750	1.110		0.001
1 5/8 (E)	A	No	Ar (CaAa)	215.000 - 10.000	0.000	-0.385	1	1	0.850 0.750	1.980		0.001
7/8 (E(Stacked))	A	No	Ar (CaAa)	95.000 - 10.000	0.000	-0.385	2	1	0.850 0.750	0.000		0.001
1/2 (E(Stacked))	A	No	Ar (CaAa)	95.000 - 10.000	0.000	-0.43	1	1	0.850 0.750	0.000		0.000

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
T1	220.000-210.000	A	0.000	0.000	1.545	0.000	0.008
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.907	0.000	0.058
T2	210.000-200.000	A	0.000	0.000	3.090	0.000	0.016
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	7.815	0.000	0.115
T3	200.000-180.000	A	0.000	0.000	6.180	0.000	0.032
		B	0.000	0.000	5.127	0.000	0.042
		C	0.000	0.000	23.946	0.000	0.326
T4	180.000-160.000	A	0.000	0.000	10.925	0.000	0.048
		B	0.000	0.000	51.270	0.000	0.418
		C	0.000	0.000	30.115	0.000	0.443
T5	160.000-140.000	A	0.000	0.000	20.758	0.000	0.085
		B	0.000	0.000	51.270	0.000	0.418
		C	0.000	0.000	31.312	0.000	0.461
T6	140.000-130.000	A	0.000	0.000	13.709	0.000	0.059
		B	0.000	0.000	25.635	0.000	0.209
		C	0.000	0.000	28.282	0.000	0.288
T7	130.000-120.000	A	0.000	0.000	13.709	0.000	0.059
		B	0.000	0.000	25.635	0.000	0.209
		C	0.000	0.000	35.722	0.000	0.320
T8	120.000-100.000	A	0.000	0.000	27.418	0.000	0.118
		B	0.000	0.000	51.270	0.000	0.418
		C	0.000	0.000	75.399	0.000	0.652
T9	100.000-80.000	A	0.000	0.000	27.418	0.000	0.138
		B	0.000	0.000	51.270	0.000	0.418
		C	0.000	0.000	79.353	0.000	0.664
T10	80.000-60.000	A	0.000	0.000	27.418	0.000	0.144
		B	0.000	0.000	51.270	0.000	0.418
		C	0.000	0.000	79.353	0.000	0.664

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
T11	60.000-40.000	A	0.000	0.000	27.418	0.000	0.144
		B	0.000	0.000	51.270	0.000	0.418
		C	0.000	0.000	79.353	0.000	0.664
T12	40.000-20.000	A	0.000	0.000	27.418	0.000	0.144
		B	0.000	0.000	51.270	0.000	0.418
		C	0.000	0.000	79.353	0.000	0.664
T13	20.000-0.000	A	0.000	0.000	13.709	0.000	0.072
		B	0.000	0.000	25.635	0.000	0.209
		C	0.000	0.000	39.677	0.000	0.332

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
T1	220.000-210.000	A	1.206	0.000	0.000	3.957	0.000	0.048
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	8.785	0.000	0.133
T2	210.000-200.000	A	1.200	0.000	0.000	7.892	0.000	0.096
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	17.535	0.000	0.266
T3	200.000-180.000	A	1.191	0.000	0.000	15.710	0.000	0.191
		B		0.000	0.000	5.927	0.000	0.119
		C		0.000	0.000	68.915	0.000	0.860
T4	180.000-160.000	A	1.178	0.000	0.000	29.431	0.000	0.315
		B		0.000	0.000	59.118	0.000	1.188
		C		0.000	0.000	86.304	0.000	1.124
T5	160.000-140.000	A	1.163	0.000	0.000	57.243	0.000	0.571
		B		0.000	0.000	58.950	0.000	1.181
		C		0.000	0.000	95.232	0.000	1.178
T6	140.000-130.000	A	1.151	0.000	0.000	37.741	0.000	0.372
		B		0.000	0.000	29.405	0.000	0.588
		C		0.000	0.000	63.774	0.000	0.836
T7	130.000-120.000	A	1.142	0.000	0.000	37.602	0.000	0.369
		B		0.000	0.000	29.354	0.000	0.586
		C		0.000	0.000	72.036	0.000	0.974
T8	120.000-100.000	A	1.128	0.000	0.000	74.750	0.000	0.728
		B		0.000	0.000	58.543	0.000	1.165
		C		0.000	0.000	149.149	0.000	1.997
T9	100.000-80.000	A	1.106	0.000	0.000	84.295	0.000	0.800
		B		0.000	0.000	58.286	0.000	1.154
		C		0.000	0.000	153.706	0.000	2.033
T10	80.000-60.000	A	1.078	0.000	0.000	86.550	0.000	0.806
		B		0.000	0.000	57.972	0.000	1.142
		C		0.000	0.000	152.104	0.000	1.998
T11	60.000-40.000	A	1.042	0.000	0.000	85.042	0.000	0.777
		B		0.000	0.000	57.565	0.000	1.126
		C		0.000	0.000	150.022	0.000	1.954
T12	40.000-20.000	A	0.991	0.000	0.000	82.850	0.000	0.736
		B		0.000	0.000	56.971	0.000	1.102
		C		0.000	0.000	146.994	0.000	1.890
T13	20.000-0.000	A	0.887	0.000	0.000	39.252	0.000	0.329
		B		0.000	0.000	27.898	0.000	0.529
		C		0.000	0.000	70.495	0.000	0.884

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	220.000-210.000	-1.792	1.154	-1.277	0.766
T2	210.000-200.000	-3.159	2.028	-2.339	1.400
T3	200.000-180.000	-3.479	1.960	-2.291	1.743
T4	180.000-160.000	-2.083	-2.818	-1.440	-0.223
T5	160.000-140.000	-3.682	-2.288	-3.211	0.416
T6	140.000-130.000	-2.205	-0.232	-2.525	1.130
T7	130.000-120.000	-0.980	0.628	-2.034	1.620
T8	120.000-100.000	-1.404	0.900	-2.443	1.898
T9	100.000-80.000	-1.958	1.253	-3.599	2.572
T10	80.000-60.000	-2.116	1.343	-4.061	2.845
T11	60.000-40.000	-2.286	1.441	-4.381	3.060
T12	40.000-20.000	-2.456	1.539	-4.669	3.247
T13	20.000-0.000	-1.799	1.125	-3.374	2.329

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	15	1 5/8	210.00 - 215.00	0.6000	0.4624
T1	20	Feedline Ladder (Af)	210.00 - 215.00	0.6000	0.4624
T1	26	7/8	210.00 - 215.00	0.6000	0.4624
T1	27	1 5/8	210.00 - 215.00	0.6000	0.4624
T2	15	1 5/8	200.00 - 210.00	0.6000	0.4714
T2	20	Feedline Ladder (Af)	200.00 - 210.00	0.6000	0.4714
T2	26	7/8	200.00 - 210.00	0.6000	0.4714
T2	27	1 5/8	200.00 - 210.00	0.6000	0.4714
T3	1	1 5/8	180.00 - 182.00	0.6000	0.5546
T3	2	T-Bracket	180.00 - 182.00	0.6000	0.5546
T3	6	7/8	180.00 - 188.00	0.6000	0.5546
T3	10	T-Bracket	180.00 - 188.00	0.6000	0.5546
T3	15	1 5/8	180.00 - 200.00	0.6000	0.5546
T3	16	7/8	180.00 - 199.00	0.6000	0.5546
T3	18	CR 50 396 PE (3/8 FOAM)	180.00 - 199.00	0.6000	0.5546
T3	20	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.5546
T3	26	7/8	180.00 - 200.00	0.6000	0.5546
T3	27	1 5/8	180.00 - 200.00	0.6000	0.5546
T4	1	1 5/8	160.00 - 180.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	2	T-Bracket	160.00 - 180.00	0.6000	0.6000
T4	6	7/8	160.00 - 180.00	0.6000	0.6000
T4	8	E60	160.00 - 174.00	0.6000	0.6000
T4	10	T-Bracket	160.00 - 180.00	0.6000	0.6000
T4	15	1 5/8	160.00 - 180.00	0.6000	0.6000
T4	16	7/8	160.00 - 180.00	0.6000	0.6000
T4	18	CR 50 396 PE (3/8 FOAM)	160.00 - 180.00	0.6000	0.6000
T4	20	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T4	22	WE65	160.00 - 174.00	0.6000	0.6000
T4	23	7/8	160.00 - 168.00	0.6000	0.6000
T4	24	WE65	160.00 - 161.00	0.6000	0.6000
T4	26	7/8	160.00 - 180.00	0.6000	0.6000
T4	27	1 5/8	160.00 - 180.00	0.6000	0.6000
T5	1	1 5/8	140.00 - 160.00	0.6000	0.6000
T5	2	T-Bracket	140.00 - 160.00	0.6000	0.6000
T5	6	7/8	156.00 - 160.00	0.6000	0.6000
T5	7	7/8	140.00 - 156.00	0.6000	0.6000
T5	8	E60	156.00 - 160.00	0.6000	0.6000
T5	9	E60	140.00 - 156.00	0.6000	0.6000
T5	10	T-Bracket	140.00 - 160.00	0.6000	0.6000
T5	12	EP60	140.00 - 145.00	0.6000	0.6000
T5	15	1 5/8	140.00 - 160.00	0.6000	0.6000
T5	16	7/8	145.00 - 160.00	0.6000	0.6000
T5	17	7/8	140.00 - 145.00	0.6000	0.6000
T5	18	CR 50 396 PE (3/8 FOAM)	140.00 - 160.00	0.6000	0.6000
T5	20	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T5	22	WE65	140.00 - 160.00	0.6000	0.6000
T5	23	7/8	140.00 - 160.00	0.6000	0.6000
T5	24	WE65	140.00 - 160.00	0.6000	0.6000
T5	25	7/8	140.00 - 145.00	0.6000	0.6000
T5	26	7/8	140.00 - 160.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	27	1 5/8	140.00 - 160.00	0.6000	0.6000
T6	1	1 5/8	130.00 - 140.00	0.6000	0.6000
T6	2	T-Bracket	130.00 - 140.00	0.6000	0.6000
T6	5	1 1/4	130.00 - 136.00	0.6000	0.6000
T6	7	7/8	130.00 - 140.00	0.6000	0.6000
T6	9	E60	130.00 - 140.00	0.6000	0.6000
T6	10	T-Bracket	130.00 - 140.00	0.6000	0.6000
T6	12	EP60	130.00 - 140.00	0.6000	0.6000
T6	15	1 5/8	130.00 - 140.00	0.6000	0.6000
T6	17	7/8	130.00 - 140.00	0.6000	0.6000
T6	18	CR 50 396 PE (3/8 FOAM)	130.00 - 140.00	0.6000	0.6000
T6	20	Feedline Ladder (Af)	130.00 - 140.00	0.6000	0.6000
T6	22	WE65	130.00 - 140.00	0.6000	0.6000
T6	23	7/8	130.00 - 140.00	0.6000	0.6000
T6	24	WE65	130.00 - 140.00	0.6000	0.6000
T6	25	7/8	130.00 - 140.00	0.6000	0.6000
T6	26	7/8	130.00 - 140.00	0.6000	0.6000
T6	27	1 5/8	130.00 - 140.00	0.6000	0.6000
T7	1	1 5/8	120.00 - 130.00	0.6000	0.6000
T7	2	T-Bracket	120.00 - 130.00	0.6000	0.6000
T7	5	1 1/4	120.00 - 130.00	0.6000	0.6000
T7	7	7/8	120.00 - 130.00	0.6000	0.6000
T7	9	E60	120.00 - 130.00	0.6000	0.6000
T7	10	T-Bracket	120.00 - 130.00	0.6000	0.6000
T7	12	EP60	120.00 - 130.00	0.6000	0.6000
T7	15	1 5/8	120.00 - 130.00	0.6000	0.6000
T7	17	7/8	120.00 - 130.00	0.6000	0.6000
T7	18	CR 50 396 PE (3/8 FOAM)	120.00 - 130.00	0.6000	0.6000
T7	20	Feedline Ladder (Af)	120.00 - 130.00	0.6000	0.6000
T7	22	WE65	120.00 - 130.00	0.6000	0.6000
T7	23	7/8	120.00 - 130.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	24	WE65	120.00 - 130.00	0.6000	0.6000
T7	25	7/8	120.00 - 130.00	0.6000	0.6000
T7	26	7/8	120.00 - 130.00	0.6000	0.6000
T7	27	1 5/8	120.00 - 130.00	0.6000	0.6000
T8	1	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	2	T-Bracket	100.00 - 120.00	0.6000	0.6000
T8	5	1 1/4	100.00 - 120.00	0.6000	0.6000
T8	7	7/8	100.00 - 120.00	0.6000	0.6000
T8	9	E60	100.00 - 120.00	0.6000	0.6000
T8	10	T-Bracket	100.00 - 120.00	0.6000	0.6000
T8	12	EP60	110.00 - 120.00	0.6000	0.6000
T8	13	EP60	100.00 - 110.00	0.6000	0.6000
T8	14	E60	100.00 - 110.00	0.6000	0.6000
T8	15	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	17	7/8	100.00 - 120.00	0.6000	0.6000
T8	18	CR 50 396 PE (3/8 FOAM)	110.00 - 120.00	0.6000	0.6000
T8	19	CR 50 396 PE (3/8 FOAM)	100.00 - 110.00	0.6000	0.6000
T8	20	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T8	22	WE65	100.00 - 120.00	0.6000	0.6000
T8	23	7/8	100.00 - 120.00	0.6000	0.6000
T8	24	WE65	100.00 - 120.00	0.6000	0.6000
T8	25	7/8	100.00 - 120.00	0.6000	0.6000
T8	26	7/8	100.00 - 120.00	0.6000	0.6000
T8	27	1 5/8	100.00 - 120.00	0.6000	0.6000
T9	1	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	2	T-Bracket	80.00 - 100.00	0.6000	0.6000
T9	5	1 1/4	80.00 - 100.00	0.6000	0.6000
T9	7	7/8	80.00 - 100.00	0.6000	0.6000
T9	9	E60	80.00 - 100.00	0.6000	0.6000
T9	10	T-Bracket	80.00 - 100.00	0.6000	0.6000
T9	13	EP60	80.00 - 100.00	0.6000	0.6000
T9	14	E60	80.00 - 100.00	0.6000	0.6000
T9	15	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	17	7/8	80.00 - 100.00	0.6000	0.6000
T9	19	CR 50 396 PE (3/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T9	20	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T9	22	WE65	80.00 - 100.00	0.6000	0.6000
T9	23	7/8	80.00 - 100.00	0.6000	0.6000

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
(E)		w/Radome	Leg	0.000 0.000					1/2" Ice	29.050	0.334
*											
Celwave PAD6-59BC	A	Paraboloid	From	0.000	0.000		145.000	6.583	No Ice	34.040	0.140
(P)		w/Radome	Leg	0.000 0.000					1/2" Ice	34.910	0.280
Celwave PAD6-59AC	B	Paraboloid	From	0.000	0.000		145.000	6.000	No Ice	28.270	0.185
(P)		w/Radome	Leg	0.000 0.000					1/2" Ice	29.050	0.334
*											
Celwave PAD6-59BC	C	Paraboloid	From	0.000	0.000		110.000	6.583	No Ice	34.040	0.140
(P)		w/Radome	Leg	0.000 0.000					1/2" Ice	34.910	0.280
Celwave PAD6-59BC	A	Paraboloid	From	0.000	0.000		110.000	6.583	No Ice	34.040	0.140
(P)		w/Radome	Leg	0.000 0.000					1/2" Ice	34.910	0.280

Truss-Leg Properties

Section Designation	Area in²	Area Ice in²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in²
Pirod 105979	2195.838	5767.202	0.485	1.753	7.624	20.025	3.682
Pirod 105244	1026.861	2920.936	0.563	0.849	7.131	20.284	3.682
Pirod 105216	2169.031	5756.662	0.473	1.630	7.531	19.988	3.682
Pirod 105218	2425.314	5891.289	0.722	1.658	8.421	20.456	7.216
Pirod 105219	2597.910	5952.865	1.086	1.698	9.021	20.670	9.425
Pirod 105220	2735.069	6016.191	1.263	1.698	9.497	20.890	11.928
Pirod 105220	2735.069	6009.912	1.263	1.676	9.497	20.868	11.928
Pirod 112743	3389.348	8066.912	1.762	2.215	11.769	28.010	14.726
Pirod 112743	3389.348	8050.972	1.762	2.145	11.769	27.955	14.726
Pirod 112744	3520.470	8103.455	1.978	2.083	12.224	28.137	17.819
Pirod 112745	3701.541	8150.081	2.260	2.024	12.853	28.299	21.206
Pirod 114683	3838.883	8185.153	2.517	1.891	13.329	28.421	24.887
Pirod 113138	3979.461	8009.649	2.795	1.619	13.818	27.811	28.863

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice

Comb. No.	Description
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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
T1	220 - 210	Leg	Max Tension	7	0.457	0.000	-0.000
			Max. Compression	31	-1.793	0.072	0.020
			Max. Mx	18	-1.004	-0.603	-0.070
			Max. My	4	-0.615	0.006	0.879
			Max. Vy	18	-0.277	0.503	-0.070
			Max. Vx	4	-0.264	0.000	0.000
		Diagonal	Max Tension	7	0.612	0.000	0.000
			Max. Compression	18	-0.753	0.000	0.000
			Max. Mx	37	-0.239	0.029	-0.000
			Max. My	18	-0.677	0.011	0.001
			Max. Vy	36	0.024	0.029	-0.000
			Max. Vx	18	0.000	0.000	0.000
		Top Girt	Max Tension	27	0.075	0.000	0.000
			Max. Compression	1	0.000	0.000	0.000
			Max. Mx	26	0.068	-0.087	0.000
			Max. My	24	0.027	0.000	-0.000
			Max. Vy	26	0.050	0.000	0.000
			Max. Vx	24	-0.000	0.000	0.000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	24	WE65	80.00 - 100.00	0.6000	0.6000
T9	25	7/8	80.00 - 100.00	0.6000	0.6000
T9	26	7/8	80.00 - 100.00	0.6000	0.6000
T9	27	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	28	7/8	80.00 - 95.00	0.6000	0.6000
T9	29	1/2	80.00 - 95.00	0.6000	0.6000
T10	1	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	2	T-Bracket	60.00 - 80.00	0.6000	0.6000
T10	5	1 1/4	60.00 - 80.00	0.6000	0.6000
T10	7	7/8	60.00 - 80.00	0.6000	0.6000
T10	9	E60	60.00 - 80.00	0.6000	0.6000
T10	10	T-Bracket	60.00 - 80.00	0.6000	0.6000
T10	13	EP60	60.00 - 80.00	0.6000	0.6000
T10	14	E60	60.00 - 80.00	0.6000	0.6000
T10	15	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	17	7/8	60.00 - 80.00	0.6000	0.6000
T10	19	CR 50 396 PE (3/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T10	20	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T10	22	WE65	60.00 - 80.00	0.6000	0.6000
T10	23	7/8	60.00 - 80.00	0.6000	0.6000
T10	24	WE65	60.00 - 80.00	0.6000	0.6000
T10	25	7/8	60.00 - 80.00	0.6000	0.6000
T10	26	7/8	60.00 - 80.00	0.6000	0.6000
T10	27	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	28	7/8	60.00 - 80.00	0.6000	0.6000
T10	29	1/2	60.00 - 80.00	0.6000	0.6000
T11	1	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	2	T-Bracket	40.00 - 60.00	0.6000	0.6000
T11	5	1 1/4	40.00 - 60.00	0.6000	0.6000
T11	7	7/8	40.00 - 60.00	0.6000	0.6000
T11	9	E60	40.00 - 60.00	0.6000	0.6000
T11	10	T-Bracket	40.00 - 60.00	0.6000	0.6000
T11	13	EP60	40.00 - 60.00	0.6000	0.6000
T11	14	E60	40.00 - 60.00	0.6000	0.6000
T11	15	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	17	7/8	40.00 - 60.00	0.6000	0.6000
T11	19	CR 50 396 PE (3/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T11	20	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T11	22	WE65	40.00 - 60.00	0.6000	0.6000
T11	23	7/8	40.00 - 60.00	0.6000	0.6000
T11	24	WE65	40.00 - 60.00	0.6000	0.6000
T11	25	7/8	40.00 - 60.00	0.6000	0.6000
T11	26	7/8	40.00 - 60.00	0.6000	0.6000
T11	27	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	28	7/8	40.00 - 60.00	0.6000	0.6000
T11	29	1/2	40.00 - 60.00	0.6000	0.6000
T12	1	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	2	T-Bracket	20.00 - 40.00	0.6000	0.6000
T12	5	1 1/4	20.00 - 40.00	0.6000	0.6000
T12	7	7/8	20.00 - 40.00	0.6000	0.6000
T12	9	E60	20.00 - 40.00	0.6000	0.6000
T12	10	T-Bracket	20.00 - 40.00	0.6000	0.6000
T12	13	EP60	20.00 - 40.00	0.6000	0.6000
T12	14	E60	20.00 - 40.00	0.6000	0.6000
T12	15	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	17	7/8	20.00 - 40.00	0.6000	0.6000
T12	19	CR 50 396 PE (3/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T12	20	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T12	22	WE65	20.00 - 40.00	0.6000	0.6000
T12	23	7/8	20.00 - 40.00	0.6000	0.6000
T12	24	WE65	20.00 - 40.00	0.6000	0.6000
T12	25	7/8	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	26	7/8	20.00 - 40.00	0.6000	0.6000
T12	27	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	28	7/8	20.00 - 40.00	0.6000	0.6000
T12	29	1/2	20.00 - 40.00	0.6000	0.6000
T13	1	1 5/8	10.00 - 20.00	0.6000	0.6000
T13	2	T-Bracket	10.00 - 20.00	0.6000	0.6000
T13	5	1 1/4	10.00 - 20.00	0.6000	0.6000
T13	7	7/8	10.00 - 20.00	0.6000	0.6000
T13	9	E60	10.00 - 20.00	0.6000	0.6000
T13	10	T-Bracket	10.00 - 20.00	0.6000	0.6000
T13	13	EP60	10.00 - 20.00	0.6000	0.6000
T13	14	E60	10.00 - 20.00	0.6000	0.6000
T13	15	1 5/8	10.00 - 20.00	0.6000	0.6000
T13	17	7/8	10.00 - 20.00	0.6000	0.6000
T13	19	CR 50 396 PE (3/8 FOAM)	10.00 - 20.00	0.6000	0.6000
T13	20	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T13	22	WE65	10.00 - 20.00	0.6000	0.6000
T13	23	7/8	10.00 - 20.00	0.6000	0.6000
T13	24	WE65	10.00 - 20.00	0.6000	0.6000
T13	25	7/8	10.00 - 20.00	0.6000	0.6000
T13	26	7/8	10.00 - 20.00	0.6000	0.6000
T13	27	1 5/8	10.00 - 20.00	0.6000	0.6000
T13	28	7/8	10.00 - 20.00	0.6000	0.6000
T13	29	1/2	10.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Beacon	C	None			0.000	221.000	No Ice	1.500	1.500	0.020
(E)							1/2" Ice	2.250	2.250	0.030
Side Lights	C	None			0.000	115.000	No Ice	1.500	1.500	0.020
(E)							1/2" Ice	2.250	2.250	0.030
*										
DB812KF-XT	C	From Leg	3.000		0.000	205.000	No Ice	7.290	7.290	0.072
(E)			0.000				1/2" Ice	9.753	9.753	0.124
			0.000							
BMR12-H-B1	B	From Leg	3.000		0.000	205.000	No Ice	13.250	13.250	0.092
(P)			0.000				1/2" Ice	15.314	15.314	0.181
			0.000							
DB812KF-XT	B	From Leg	3.000		0.000	205.000	No Ice	7.290	7.290	0.072
(E)			0.000				1/2" Ice	9.753	9.753	0.124
			0.000							
DB616-AB	A	From Leg	3.000		0.000	205.000	No Ice	5.100	5.100	0.051
(E)			0.000				1/2" Ice	7.169	7.169	0.089
			0.000							
BMR12-H-B1	A	From Leg	3.000		0.000	205.000	No Ice	13.250	13.250	0.092
(P)			0.000				1/2" Ice	15.314	15.314	0.181
			0.000							
Side Arm Mount [SO 303-1]	C	From Leg	0.500		0.000	215.000	No Ice	2.240	5.320	0.115
(E)			0.000				1/2" Ice	3.190	7.690	0.159
			0.000							
Side Arm Mount [SO 303-1]	B	From Leg	0.500		0.000	215.000	No Ice	2.240	5.320	0.115
(E)			0.000				1/2" Ice	3.190	7.690	0.159

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
			0.000						
Side Arm Mount [SO 303-1]	A	From Leg	0.500	0.000	215.000	No Ice	2.240	5.320	0.115
(E)			0.000			1/2" Ice	3.190	7.690	0.159
			0.000						
Side Arm Mount [SO 303-1]	B	From Leg	0.500	0.000	215.000	No Ice	2.240	5.320	0.115
(P)			0.000			1/2" Ice	3.190	7.690	0.159
			0.000						
Side Arm Mount [SO 303-1]	A	From Leg	0.500	0.000	215.000	No Ice	2.240	5.320	0.115
(P)			0.000			1/2" Ice	3.190	7.690	0.159
			0.000						
*									
BMR12-H-B1	C	From Leg	2.000	0.000	209.000	No Ice	13.250	13.250	0.092
(P)			0.000			1/2" Ice	15.314	15.314	0.181
			0.000						
BMR12-H-B1	B	From Leg	2.000	0.000	209.000	No Ice	13.250	13.250	0.092
(P)			0.000			1/2" Ice	15.314	15.314	0.181
			0.000						
DBB2702RA	C	From Leg	2.000	0.000	219.000	No Ice	2.085	0.481	0.020
(P)			0.000			1/2" Ice	2.281	0.612	0.031
			0.000						
DBB2702RA	B	From Leg	2.000	0.000	219.000	No Ice	2.085	0.481	0.020
(P)			0.000			1/2" Ice	2.281	0.612	0.031
			0.000						
Side Arm Mount [SO 308-1]	C	From Leg	0.500	0.000	199.000	No Ice	0.980	3.030	0.053
(E)			0.000			1/2" Ice	1.700	5.220	0.079
			0.000						
Side Arm Mount [SO 308-1]	B	From Leg	0.500	0.000	199.000	No Ice	0.980	3.030	0.053
(E)			0.000			1/2" Ice	1.700	5.220	0.079
			0.000						
*									
*									
BPR12-A-B1 Omni	A	From Leg	0.500	0.000	198.000	No Ice	13.250	13.250	0.092
(R)			0.000			1/2" Ice	15.314	15.314	0.181
			0.000						
Pipe Mount [PM 601-1]	A	From Leg	0.000	0.000	188.000	No Ice	3.000	0.900	0.065
(R)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
*									
(2) LPA-80063/8CF	C	From Face	0.000	0.000	182.000	No Ice	13.965	12.173	0.038
(E)			0.000			1/2" Ice	14.680	12.830	0.135
			0.000						
(2) LPA-80063/8CF	B	From Face	0.000	0.000	182.000	No Ice	13.965	12.173	0.038
(E)			0.000			1/2" Ice	14.680	12.830	0.135
			0.000						
(2) LPA-80063/8CF	A	From Face	0.000	0.000	182.000	No Ice	13.965	12.173	0.038
(E)			0.000			1/2" Ice	14.680	12.830	0.135
			0.000						
(2) LPA-185080/12CF	C	From Face	0.000	0.000	182.000	No Ice	3.532	4.569	0.011
(E)			0.000			1/2" Ice	3.964	5.010	0.037
			0.000						
(2) LPA-185080/12CF	B	From Face	0.000	0.000	182.000	No Ice	3.532	4.569	0.011
(E)			0.000			1/2" Ice	3.964	5.010	0.037
			0.000						
(2) LPA-185080/12CF	A	From Face	0.000	0.000	182.000	No Ice	3.532	4.569	0.011
(E)			0.000			1/2" Ice	3.964	5.010	0.037
			0.000						
Sector Mount [SM 201-3]	C	None		0.000	182.000	No Ice	26.690	26.690	1.083

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
(E)						1/2" Ice	37.600	37.600	1.490
*									
Pipe Mount [PM 601-1]	C	From Leg	0.000	0.000	174.000	No Ice	3.000	0.900	0.065
(E)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
Pipe Mount [PM 602-1]	A	From Leg	0.000	0.000	174.000	No Ice	5.250	1.580	0.093
(R)			0.000			1/2" Ice	6.500	1.950	0.118
			0.000						
*									
*									
MSP24013MB	C	From Leg	0.000	0.000	171.000	No Ice	1.359	0.595	0.004
(E)			0.000			1/2" Ice	1.544	0.747	0.012
			0.000						
MSP24013MB	B	From Leg	0.000	0.000	171.000	No Ice	1.359	0.595	0.004
(E)			0.000			1/2" Ice	1.544	0.747	0.012
			0.000						
Pipe Mount [PM 601-1]	C	From Leg	0.000	0.000	168.000	No Ice	3.000	0.900	0.065
(E)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
Pipe Mount [PM 601-1]	B	From Leg	0.000	0.000	168.000	No Ice	3.000	0.900	0.065
(E)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
*									
Pipe Mount [PM 601-1]	A	From Leg	0.000	0.000	161.000	No Ice	3.000	0.900	0.065
(E)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
*									
BPR8-A-B1	B	From Leg	0.500	0.000	160.000	No Ice	5.400	5.400	0.050
(R)			0.000			1/2" Ice	6.220	6.220	0.058
			0.000						
Pipe Mount [PM 601-1]	B	From Leg	0.000	0.000	156.000	No Ice	3.000	0.900	0.065
(R)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
*									
MSP24013MB	C	From Leg	2.000	0.000	146.000	No Ice	1.359	0.595	0.004
(E)			0.000			1/2" Ice	1.544	0.747	0.012
			0.000						
ANT150D3	C	From Leg	2.000	0.000	150.000	No Ice	1.600	1.600	0.018
(E)			0.000			1/2" Ice	2.880	2.880	0.023
			0.000						
ANT150D6-9	B	From Leg	2.000	0.000	155.000	No Ice	3.200	3.200	0.026
(E)			0.000			1/2" Ice	6.080	6.080	0.047
			0.000						
Pipe Mount [PM 601-1]	B	From Leg	0.000	0.000	145.000	No Ice	3.000	0.900	0.065
(P)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
Pipe Mount [PM 601-1]	A	From Leg	0.000	0.000	145.000	No Ice	3.000	0.900	0.065
(P)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
Side Arm Mount [SO 203-1]	C	From Leg	0.500	0.000	145.000	No Ice	2.960	3.360	0.125
(E)			0.000			1/2" Ice	4.100	4.680	0.154
			0.000						
Side Arm Mount [SO 203-1]	B	From Leg	0.500	0.000	145.000	No Ice	2.960	3.360	0.125
(E)			0.000			1/2" Ice	4.100	4.680	0.154
			0.000						
*									
(2) RR90-18-00DP w/Mount	C	From Face	0.000	0.000	136.000	No Ice	6.104	4.412	0.049

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
Pipe			0.000			1/2" Ice	6.666	5.624	0.093
(E)			0.000						
(2) RR90-18-00DP w/Mount	B	From Face	0.000	0.000	136.000	No Ice	6.104	4.412	0.049
Pipe			0.000			1/2" Ice	6.666	5.624	0.093
(E)			0.000						
(2) RR90-18-00DP w/Mount	A	From Face	0.000	0.000	136.000	No Ice	6.104	4.412	0.049
Pipe			0.000			1/2" Ice	6.666	5.624	0.093
(E)			0.000						
KRY 112 71/2 TMA	C	From Face	0.000	0.000	136.000	No Ice	0.681	0.450	0.013
(E)			0.000			1/2" Ice	0.802	0.559	0.018
			0.000						
KRY 112 71/2 TMA	B	From Face	0.000	0.000	136.000	No Ice	0.681	0.450	0.013
(E)			0.000			1/2" Ice	0.802	0.559	0.018
			0.000						
(2) KRY 112 71/2 TMA	A	From Face	0.000	0.000	136.000	No Ice	0.681	0.450	0.013
(E)			0.000			1/2" Ice	0.802	0.559	0.018
			0.000						
Sector Mount [SM 405-3]	C	None		0.000	136.000	No Ice	18.730	18.730	0.861
(E)						1/2" Ice	27.190	27.190	1.262
*									
Pipe Mount [PM 601-1]	C	From Leg	0.000	0.000	110.000	No Ice	3.000	0.900	0.065
(P)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
Pipe Mount [PM 601-1]	A	From Leg	0.000	0.000	110.000	No Ice	3.000	0.900	0.065
(P)			0.000			1/2" Ice	3.740	1.120	0.079
			0.000						
*									
DB408	C	From Leg	2.000	0.000	105.000	No Ice	1.649	1.649	0.017
(E)			0.000			1/2" Ice	2.613	2.613	0.030
			0.000						
DB408	B	From Leg	2.000	0.000	105.000	No Ice	1.649	1.649	0.017
(E)			0.000			1/2" Ice	2.613	2.613	0.030
			0.000						
DB292-A	A	From Leg	2.000	0.000	96.000	No Ice	1.800	1.800	0.015
(E)			0.000			1/2" Ice	3.240	3.240	0.020
			0.000						
Side Arm Mount [SO 201-3]	C	From Leg	0.500	0.000	95.000	No Ice	5.710	5.710	0.288
(E)			0.000			1/2" Ice	7.910	7.910	0.351
			0.000						

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
Celwave PAD6-65AC	C	Paraboloid	From	0.000	0.000		174.000	6.000	No Ice	28.260	0.185
(E)		w/Radome	Leg	0.000					1/2" Ice	29.050	0.334
				0.000							
Celwave PAD8-59AC	A	Paraboloid	From	0.000	0.000		174.000	8.000	No Ice	50.270	0.285
(R)		w/Radome	Leg	0.000					1/2" Ice	51.292	0.548
				0.000							
*											
Celwave PAD6-65AC	A	Paraboloid	From	0.000	0.000		161.000	6.000	No Ice	28.260	0.185

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T2	210 - 200	Leg	Max Tension	7	2.966	-0.508	0.067
			Max. Compression	10	-5.021	0.197	0.042
			Max. Mx	29	-2.851	-0.690	-0.031
			Max. My	16	-1.328	-0.209	1.047
			Max. Vy	18	0.540	0.179	-0.046
			Max. Vx	2	-0.439	0.190	0.284
		Diagonal	Max Tension	9	2.371	0.000	0.000
			Max. Compression	18	-2.567	0.000	0.000
			Max. Mx	36	0.313	-0.041	0.000
			Max. My	35	-0.114	0.000	0.002
			Max. Vy	36	0.025	0.000	0.000
			Max. Vx	35	-0.001	0.000	0.000
		Horizontal	Max Tension	14	0.642	0.016	0.006
			Max. Compression	3	-0.559	0.002	0.004
			Max. Mx	18	0.197	0.023	0.006
			Max. My	35	0.197	0.022	0.012
			Max. Vy	35	-0.035	0.022	0.012
			Max. Vx	35	-0.004	0.000	0.000
T3	200 - 180	Leg	Max Tension	7	15.592	-0.879	0.042
			Max. Compression	18	-20.956	1.728	-0.115
			Max. Mx	14	14.147	-2.028	-0.067
			Max. My	8	-2.921	-0.180	1.944
			Max. Vy	14	1.167	-2.028	-0.067
			Max. Vx	12	1.156	-0.158	-1.923
		Diagonal	Max Tension	15	3.475	0.000	0.000
			Max. Compression	2	-4.019	0.000	0.000
			Max. Mx	33	0.116	0.065	-0.011
			Max. My	33	-0.987	0.057	0.012
			Max. Vy	33	0.048	0.065	-0.011
			Max. Vx	34	-0.003	0.000	0.000
		Mid Girt	Max Tension	6	1.147	0.000	0.000
			Max. Compression	19	-0.820	0.000	0.000
			Max. Mx	26	0.574	-0.127	0.000
			Max. My	28	0.435	0.000	0.004
			Max. Vy	26	0.057	0.000	0.000
			Max. Vx	28	-0.002	0.000	0.000
T4	180 - 160	Leg	Max Tension	7	36.729	-1.195	0.227
			Max. Compression	2	-47.346	1.246	0.010
			Max. Mx	14	24.127	-2.028	-0.067
			Max. My	8	-3.720	-0.180	1.944
			Max. Vy	14	-0.459	-2.028	-0.067
			Max. Vx	18	0.553	-0.721	-1.472
		Diagonal	Max Tension	16	6.106	0.000	0.000
			Max. Compression	16	-6.325	0.000	0.000
			Max. Mx	35	0.640	0.106	-0.015
			Max. My	35	-0.057	0.095	-0.016
			Max. Vy	37	0.066	0.103	-0.015
			Max. Vx	35	0.004	0.000	0.000
T5	160 - 140	Leg	Max Tension	15	61.603	-1.767	0.080
			Max. Compression	2	-77.534	1.563	-0.104
			Max. Mx	14	58.993	-1.899	0.075
			Max. My	20	-7.053	-0.246	-2.601
			Max. Vy	14	0.407	-1.899	0.075
			Max. Vx	20	0.456	-0.246	-2.601
		Diagonal	Max Tension	12	7.024	0.000	0.000
			Max. Compression	12	-7.204	0.000	0.000
			Max. Mx	37	0.829	0.133	0.018
			Max. My	38	0.582	0.126	-0.019
			Max. Vy	37	0.077	0.133	0.018
			Max. Vx	38	-0.004	0.000	0.000
T6	140 - 130	Leg	Max Tension	15	74.715	-1.850	0.075

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-94.018	1.463	0.005
			Max. Mx	2	-93.676	4.698	-0.026
			Max. My	20	-7.293	-0.246	-2.601
			Max. Vy	18	-1.018	4.678	0.003
			Max. Vx	20	-0.617	-0.246	-2.601
		Diagonal	Max Tension	13	8.166	0.000	0.000
			Max. Compression	12	-8.665	0.000	0.000
			Max. Mx	36	0.914	-0.185	0.000
			Max. My	35	-0.367	0.000	0.006
			Max. Vy	36	0.082	0.000	0.000
			Max. Vx	35	0.003	0.000	0.000
		Horizontal	Max Tension	2	1.630	0.000	0.000
			Max. Compression	2	-1.630	0.049	0.029
			Max. Mx	31	-0.283	0.100	0.053
			Max. My	35	0.261	0.100	0.053
			Max. Vy	31	-0.069	0.100	0.053
			Max. Vx	35	-0.009	0.000	0.000
T7	130 - 120	Leg	Max Tension	15	88.653	-1.440	-0.004
			Max. Compression	2	-111.924	-0.504	0.077
			Max. Mx	3	-108.338	1.468	0.005
			Max. My	13	-8.366	-0.401	-3.928
			Max. Vy	2	0.310	1.463	0.005
			Max. Vx	13	0.385	-0.401	-3.928
		Diagonal	Max Tension	12	8.463	0.000	0.000
			Max. Compression	12	-8.409	0.000	0.000
			Max. Mx	27	1.589	0.201	0.025
			Max. My	37	-0.995	0.182	-0.028
			Max. Vy	37	0.108	0.199	-0.026
			Max. Vx	37	-0.006	0.000	0.000
T8	120 - 100	Leg	Max Tension	15	107.143	-0.419	-0.051
			Max. Compression	2	-134.826	-0.685	0.188
			Max. Mx	2	-133.656	16.334	-0.359
			Max. My	12	-14.044	-1.531	-9.077
			Max. Vy	2	2.268	16.334	-0.359
			Max. Vx	12	1.024	-1.531	-9.077
		Diagonal	Max Tension	17	12.098	0.000	0.000
			Max. Compression	18	-13.410	0.000	0.000
			Max. Mx	34	1.168	0.449	0.000
			Max. My	35	-0.618	0.000	-0.020
			Max. Vy	34	0.133	0.000	0.000
			Max. Vx	35	-0.006	0.000	0.000
		Horizontal	Max Tension	2	2.414	0.064	0.080
			Max. Compression	2	-2.338	0.064	0.080
			Max. Mx	27	-0.354	0.133	0.115
			Max. My	37	-0.775	0.131	0.119
			Max. Vy	27	-0.080	0.133	0.115
			Max. Vx	37	0.016	0.000	0.000
T9	100 - 80	Leg	Max Tension	15	135.492	-1.893	-0.165
			Max. Compression	2	-171.989	8.230	0.046
			Max. Mx	2	-171.989	8.230	0.046
			Max. My	12	-15.877	-1.531	-9.077
			Max. Vy	2	-0.674	8.230	0.046
			Max. Vx	12	-0.555	-1.531	-9.077
		Diagonal	Max Tension	16	12.468	0.000	0.000
			Max. Compression	16	-12.907	0.000	0.000
			Max. Mx	37	1.493	-0.531	-0.082
			Max. My	27	-0.293	-0.522	-0.083
			Max. Vy	37	-0.183	-0.531	-0.082
			Max. Vx	27	-0.012	0.000	0.000
T10	80 - 60	Leg	Max Tension	15	161.770	-6.885	-0.064
			Max. Compression	2	-206.864	3.443	0.030

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	2	-204.460	8.230	0.046
			Max. My	16	-21.864	-1.469	8.625
			Max. Vy	2	0.444	8.230	0.046
			Max. Vx	12	0.446	-1.454	-8.581
		Diagonal	Max Tension	16	12.767	0.000	0.000
			Max. Compression	16	-12.694	0.000	0.000
			Max. Mx	37	1.932	-0.602	0.089
			Max. My	34	1.174	-0.599	0.090
			Max. Vy	37	-0.200	-0.602	0.089
			Max. Vx	34	0.012	0.000	0.000
T11	60 - 40	Leg	Max Tension	15	185.944	-5.722	-0.031
			Max. Compression	2	-238.179	12.952	0.072
			Max. Mx	2	-238.179	12.952	0.072
			Max. My	16	-22.606	-1.469	8.625
			Max. Vy	2	-0.659	12.952	0.072
			Max. Vx	12	-0.645	-1.454	-8.581
		Diagonal	Max Tension	17	12.379	0.000	0.000
			Max. Compression	16	-13.431	0.000	0.000
			Max. Mx	37	1.000	-0.692	0.101
			Max. My	27	0.713	-0.688	-0.102
			Max. Vy	37	-0.216	-0.692	0.101
			Max. Vx	38	-0.013	0.000	0.000
T12	40 - 20	Leg	Max Tension	15	210.626	-9.153	-0.066
			Max. Compression	2	-274.393	0.412	0.064
			Max. Mx	2	-271.346	12.952	0.072
			Max. My	16	-31.193	-2.698	17.141
			Max. Vy	2	0.775	12.952	0.072
			Max. Vx	12	1.043	-2.697	-17.054
		Diagonal	Max Tension	16	13.034	0.000	0.000
			Max. Compression	16	-12.450	0.000	0.000
			Max. Mx	34	1.327	-0.943	0.128
			Max. My	16	-11.704	-0.491	0.147
			Max. Vy	33	-0.290	-0.942	0.125
			Max. Vx	33	0.017	0.000	0.000
T13	20 - 0	Leg	Max Tension	15	240.888	-4.912	-0.056
			Max. Compression	2	-316.164	0.000	-0.000
			Max. Mx	33	-18.137	-5.916	-0.131
			Max. My	16	-33.550	-2.697	17.112
			Max. Vy	14	-0.504	-5.578	-0.062
			Max. Vx	12	-1.089	-2.697	-17.026
		Diagonal	Max Tension	16	23.860	0.000	0.000
			Max. Compression	16	-22.973	0.000	0.000
			Max. Mx	34	3.818	-1.286	0.010
			Max. My	12	-22.190	-0.687	0.129
			Max. Vy	34	0.359	-1.286	0.010
			Max. Vx	12	-0.008	-0.731	0.129

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	340.159	23.781	-14.122
	Max. H_x	18	340.159	23.781	-14.122
	Max. H_z	5	-221.348	-17.389	15.373
	Min. Vert	7	-252.206	-22.022	13.016
	Min. H_x	7	-252.206	-22.022	13.016
	Min. H_z	16	293.305	17.814	-15.631
Leg B	Max. Vert	10	338.408	-23.826	-13.914
	Max. H_x	23	-249.119	21.870	12.724
	Max. H_z	25	-218.167	17.299	14.963
	Min. Vert	23	-249.119	21.870	12.724
	Min. H_x	10	338.408	-23.826	-13.914
	Min. H_z	12	291.127	-17.891	-15.306
Leg A	Max. Vert	2	341.054	-0.206	27.740
	Max. H_x	20	33.634	8.593	-0.226
	Max. H_z	2	341.054	-0.206	27.740
	Min. Vert	15	-261.005	0.181	-26.217
	Min. H_x	8	34.802	-8.636	-0.153
	Min. H_z	15	-261.005	0.181	-26.217

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	94.794	0.000	0.000	-2.769	7.528	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	113.752	0.157	-55.006	-6825.632	-15.798	-8.157
0.9 Dead+1.6 Wind 0 deg - No Ice	85.314	0.157	-55.006	-6820.345	-18.049	-8.152
1.2 Dead+1.6 Wind 30 deg - No Ice	113.752	26.064	-45.522	-5662.400	-3227.724	-13.235
0.9 Dead+1.6 Wind 30 deg - No Ice	85.314	26.064	-45.522	-5657.864	-3227.877	-13.230
1.2 Dead+1.6 Wind 60 deg - No Ice	113.752	44.165	-25.456	-3162.736	-5473.721	-11.978
0.9 Dead+1.6 Wind 60 deg - No Ice	85.314	44.165	-25.456	-3159.832	-5472.406	-11.972
1.2 Dead+1.6 Wind 90 deg - No Ice	113.752	51.695	0.499	70.144	-6393.321	-7.574
0.9 Dead+1.6 Wind 90 deg - No Ice	85.314	51.695	0.499	70.934	-6391.410	-7.569
1.2 Dead+1.6 Wind 120 deg - No Ice	113.752	47.221	27.620	3424.966	-5835.339	-3.914
0.9 Dead+1.6 Wind 120 deg - No Ice	85.314	47.221	27.620	3423.569	-5833.798	-3.914
1.2 Dead+1.6 Wind 150 deg - No Ice	113.752	26.513	45.777	5699.601	-3292.778	0.476
0.9 Dead+1.6 Wind 150 deg - No Ice	85.314	26.513	45.777	5696.713	-3292.890	0.472
1.2 Dead+1.6 Wind 180 deg - No Ice	113.752	-0.018	52.237	6520.729	14.726	7.954
0.9 Dead+1.6 Wind 180 deg - No Ice	85.314	-0.018	52.237	6517.297	12.450	7.949
1.2 Dead+1.6 Wind 210 deg -	113.752	-26.593	46.030	5737.716	3327.398	12.652

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
No Ice						
0.9 Dead+1.6 Wind 210 deg - No Ice	85.314	-26.593	46.030	5734.800	3322.956	12.648
1.2 Dead+1.6 Wind 240 deg - No Ice	113.752	-47.257	27.822	3458.371	5861.600	11.900
0.9 Dead+1.6 Wind 240 deg - No Ice	85.314	-47.257	27.822	3456.948	5855.512	11.893
1.2 Dead+1.6 Wind 270 deg - No Ice	113.752	-51.426	0.644	96.446	6374.278	7.647
0.9 Dead+1.6 Wind 270 deg - No Ice	85.314	-51.426	0.644	97.214	6367.851	7.641
1.2 Dead+1.6 Wind 300 deg - No Ice	113.752	-43.699	-25.165	-3117.169	5424.252	4.197
0.9 Dead+1.6 Wind 300 deg - No Ice	85.314	-43.699	-25.165	-3114.299	5418.443	4.197
1.2 Dead+1.6 Wind 330 deg - No Ice	113.752	-25.625	-45.165	-5610.018	3179.728	0.034
0.9 Dead+1.6 Wind 330 deg - No Ice	85.314	-25.625	-45.165	-5605.519	3175.389	0.039
1.2 Dead+1.0 Ice	227.780	0.000	-0.000	5.921	45.685	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	227.780	0.024	-10.692	-1300.560	41.922	-2.095
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	227.780	5.200	-9.061	-1103.579	-589.909	-1.839
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	227.780	8.906	-5.149	-623.335	-1041.487	-0.741
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	227.780	10.341	0.053	13.637	-1215.970	0.487
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	227.780	9.194	5.355	660.124	-1074.919	1.296
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	227.780	5.244	9.085	1119.367	-595.953	1.724
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	227.780	-0.007	10.443	1286.378	47.696	2.072
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	227.780	-5.262	9.120	1124.619	691.773	1.773
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	227.780	-9.203	5.388	665.941	1168.832	0.734
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	227.780	-10.310	0.080	18.906	1303.464	-0.479
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	227.780	-8.846	-5.106	-616.089	1124.329	-1.264
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	227.780	-5.140	-9.014	-1096.378	672.453	-1.664
Dead+Wind 0 deg - Service	94.794	0.039	-13.713	-1702.905	1.353	-2.036
Dead+Wind 30 deg - Service	94.794	6.498	-11.349	-1413.029	-799.053	-3.302
Dead+Wind 60 deg - Service	94.794	11.011	-6.346	-790.121	-1358.802	-2.986
Dead+Wind 90 deg - Service	94.794	12.888	0.124	15.548	-1587.931	-1.884
Dead+Wind 120 deg - Service	94.794	11.773	6.886	851.562	-1448.883	-0.973
Dead+Wind 150 deg - Service	94.794	6.610	11.413	1418.391	-815.286	0.115
Dead+Wind 180 deg - Service	94.794	-0.005	13.023	1623.067	8.957	1.982
Dead+Wind 210 deg - Service	94.794	-6.630	11.476	1427.892	834.489	3.157
Dead+Wind 240 deg - Service	94.794	-11.782	6.936	859.884	1466.006	2.969
Dead+Wind 270 deg - Service	94.794	-12.821	0.161	22.101	1593.762	1.902
Dead+Wind 300 deg - Service	94.794	-10.894	-6.274	-778.767	1357.050	1.047
Dead+Wind 330 deg - Service	94.794	-6.388	-11.260	-1399.975	797.670	0.013

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-94.794	0.000	0.000	94.794	0.000	0.000%
2	0.157	-113.752	-55.006	-0.157	113.752	55.006	0.000%
3	0.157	-85.314	-55.006	-0.157	85.314	55.006	0.000%
4	26.064	-113.752	-45.522	-26.064	113.752	45.522	0.000%
5	26.064	-85.314	-45.522	-26.064	85.314	45.522	0.000%
6	44.165	-113.752	-25.456	-44.165	113.752	25.456	0.000%
7	44.165	-85.314	-25.456	-44.165	85.314	25.456	0.000%
8	51.695	-113.752	0.499	-51.695	113.752	-0.499	0.000%
9	51.695	-85.314	0.499	-51.695	85.314	-0.499	0.000%
10	47.221	-113.752	27.620	-47.221	113.752	-27.620	0.000%
11	47.221	-85.314	27.620	-47.221	85.314	-27.620	0.000%
12	26.513	-113.752	45.777	-26.513	113.752	-45.777	0.000%
13	26.513	-85.314	45.777	-26.513	85.314	-45.777	0.000%
14	-0.018	-113.752	52.237	0.018	113.752	-52.237	0.000%
15	-0.018	-85.314	52.237	0.018	85.314	-52.237	0.000%
16	-26.593	-113.752	46.030	26.593	113.752	-46.030	0.000%
17	-26.593	-85.314	46.030	26.593	85.314	-46.030	0.000%
18	-47.257	-113.752	27.822	47.257	113.752	-27.822	0.000%
19	-47.257	-85.314	27.822	47.257	85.314	-27.822	0.000%
20	-51.426	-113.752	0.644	51.426	113.752	-0.644	0.000%
21	-51.426	-85.314	0.644	51.426	85.314	-0.644	0.000%
22	-43.699	-113.752	-25.165	43.699	113.752	25.165	0.000%
23	-43.699	-85.314	-25.165	43.699	85.314	25.165	0.000%
24	-25.625	-113.752	-45.165	25.625	113.752	45.165	0.000%
25	-25.625	-85.314	-45.165	25.625	85.314	45.165	0.000%
26	0.000	-227.780	0.000	-0.000	227.780	0.000	0.000%
27	0.024	-227.780	-10.692	-0.024	227.780	10.692	0.000%
28	5.200	-227.780	-9.061	-5.200	227.780	9.061	0.000%
29	8.906	-227.780	-5.149	-8.906	227.780	5.149	0.000%
30	10.341	-227.780	0.053	-10.341	227.780	-0.053	0.000%
31	9.194	-227.780	5.355	-9.194	227.780	-5.355	0.000%
32	5.244	-227.780	9.085	-5.244	227.780	-9.085	0.000%
33	-0.007	-227.780	10.443	0.007	227.780	-10.443	0.000%
34	-5.262	-227.780	9.120	5.262	227.780	-9.120	0.000%
35	-9.203	-227.780	5.388	9.203	227.780	-5.388	0.000%
36	-10.310	-227.780	0.080	10.310	227.780	-0.080	0.000%
37	-8.847	-227.780	-5.106	8.846	227.780	5.106	0.000%
38	-5.140	-227.780	-9.014	5.140	227.780	9.014	0.000%
39	0.039	-94.794	-13.713	-0.039	94.794	13.713	0.000%
40	6.498	-94.794	-11.349	-6.498	94.794	11.349	0.000%
41	11.011	-94.794	-6.346	-11.011	94.794	6.346	0.000%
42	12.888	-94.794	0.124	-12.888	94.794	-0.124	0.000%
43	11.773	-94.794	6.886	-11.773	94.794	-6.886	0.000%
44	6.610	-94.794	11.413	-6.610	94.794	-11.413	0.000%
45	-0.005	-94.794	13.023	0.005	94.794	-13.023	0.000%
46	-6.630	-94.794	11.476	6.630	94.794	-11.476	0.000%
47	-11.782	-94.794	6.936	11.782	94.794	-6.936	0.000%
48	-12.821	-94.794	0.161	12.821	94.794	-0.161	0.000%
49	-10.894	-94.794	-6.274	10.894	94.794	6.274	0.000%
50	-6.388	-94.794	-11.260	6.388	94.794	11.260	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000988
3	Yes	4	0.00000001	0.00000693
4	Yes	4	0.00000001	0.00001120
5	Yes	4	0.00000001	0.00000822
6	Yes	4	0.00000001	0.00001230
7	Yes	4	0.00000001	0.00000927
8	Yes	4	0.00000001	0.00001116
9	Yes	4	0.00000001	0.00000818
10	Yes	4	0.00000001	0.00000989
11	Yes	4	0.00000001	0.00000694
12	Yes	4	0.00000001	0.00001122
13	Yes	4	0.00000001	0.00000824
14	Yes	4	0.00000001	0.00001236
15	Yes	4	0.00000001	0.00000931
16	Yes	4	0.00000001	0.00001121
17	Yes	4	0.00000001	0.00000823
18	Yes	4	0.00000001	0.00000989
19	Yes	4	0.00000001	0.00000694
20	Yes	4	0.00000001	0.00001114
21	Yes	4	0.00000001	0.00000816
22	Yes	4	0.00000001	0.00001230
23	Yes	4	0.00000001	0.00000926
24	Yes	4	0.00000001	0.00001119
25	Yes	4	0.00000001	0.00000822
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00001526
28	Yes	4	0.00000001	0.00001485
29	Yes	4	0.00000001	0.00001460
30	Yes	4	0.00000001	0.00001428
31	Yes	4	0.00000001	0.00001451
32	Yes	4	0.00000001	0.00001584
33	Yes	4	0.00000001	0.00001512
34	Yes	4	0.00000001	0.00001529
35	Yes	4	0.00000001	0.00001549
36	Yes	4	0.00000001	0.00001533
37	Yes	4	0.00000001	0.00001542
38	Yes	4	0.00000001	0.00001536
39	Yes	4	0.00000001	0.00000790
40	Yes	4	0.00000001	0.00000805
41	Yes	4	0.00000001	0.00000827
42	Yes	4	0.00000001	0.00000803
43	Yes	4	0.00000001	0.00000787
44	Yes	4	0.00000001	0.00000809
45	Yes	4	0.00000001	0.00000834
46	Yes	4	0.00000001	0.00000812
47	Yes	4	0.00000001	0.00000783
48	Yes	4	0.00000001	0.00000804
49	Yes	4	0.00000001	0.00000825
50	Yes	4	0.00000001	0.00000807

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	220 - 210	2.013	39	0.077	0.004
T2	210 - 200	1.851	39	0.077	0.004
T3	200 - 180	1.686	39	0.076	0.004
T4	180 - 160	1.373	39	0.069	0.004
T5	160 - 140	1.084	39	0.062	0.004
T6	140 - 130	0.827	39	0.054	0.003
T7	130 - 120	0.712	39	0.050	0.002
T8	120 - 100	0.605	39	0.045	0.002
T9	100 - 80	0.418	39	0.037	0.001
T10	80 - 60	0.269	39	0.028	0.001
T11	60 - 40	0.156	39	0.020	0.001
T12	40 - 20	0.075	39	0.013	0.000
T13	20 - 0	0.022	39	0.006	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
221.000	Beacon	39	2.013	0.077	0.004	399495
219.000	DBB2702RA	39	1.996	0.077	0.004	399495
215.000	Side Arm Mount [SO 303-1]	39	1.932	0.077	0.004	399495
209.000	BMR12-H-B1	39	1.834	0.077	0.004	310363
205.000	DB812KF-XT	39	1.768	0.077	0.004	Inf
199.000	Side Arm Mount [SO 308-1]	39	1.670	0.076	0.004	170084
198.000	BPR12-A-B1 Omni	39	1.653	0.076	0.004	163807
188.000	Pipe Mount [PM 601-1]	39	1.495	0.073	0.004	180015
182.000	(2) LPA-80063/8CF	39	1.403	0.070	0.004	195289
174.000	Celwave PAD6-65AC	39	1.283	0.067	0.004	185207
171.000	MSP24013MB	39	1.240	0.066	0.004	177632
168.000	Pipe Mount [PM 601-1]	39	1.196	0.065	0.004	170653
161.000	Celwave PAD6-65AC	39	1.098	0.063	0.004	154779
160.000	BPR8-A-B1	39	1.084	0.062	0.004	152765
156.000	Pipe Mount [PM 601-1]	39	1.030	0.061	0.003	145919
155.000	ANT150D6-9	39	1.017	0.060	0.003	144393
150.000	ANT150D3	39	0.951	0.058	0.003	137231
146.000	MSP24013MB	39	0.901	0.056	0.003	131994
145.000	Celwave PAD6-59BC	39	0.888	0.056	0.003	130746
136.000	(2) RR90-18-00DP w/Mount Pipe	39	0.780	0.052	0.002	134615
115.000	Side Lights	39	0.555	0.043	0.002	134920
110.000	Celwave PAD6-59BC	39	0.507	0.041	0.002	129715
105.000	DB408	39	0.461	0.039	0.002	124896
96.000	DB292-A	39	0.385	0.036	0.001	123341
95.000	Side Arm Mount [SO 201-3]	39	0.377	0.035	0.001	124078

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	220 - 210	8.052	2	0.309	0.015
T2	210 - 200	7.403	2	0.308	0.015
T3	200 - 180	6.744	2	0.305	0.016
T4	180 - 160	5.491	2	0.277	0.017
T5	160 - 140	4.340	2	0.249	0.014
T6	140 - 130	3.312	2	0.216	0.010
T7	130 - 120	2.852	2	0.200	0.009
T8	120 - 100	2.424	2	0.182	0.008
T9	100 - 80	1.675	2	0.150	0.006
T10	80 - 60	1.078	2	0.113	0.004
T11	60 - 40	0.624	2	0.080	0.003
T12	40 - 20	0.300	2	0.052	0.001
T13	20 - 0	0.090	2	0.025	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
221.000	Beacon	2	8.052	0.309	0.015	100252
219.000	DBB2702RA	2	7.987	0.309	0.015	100252
215.000	Side Arm Mount [SO 303-1]	2	7.729	0.309	0.015	100252
209.000	BMR12-H-B1	2	7.338	0.308	0.015	79360
205.000	DB812KF-XT	2	7.073	0.307	0.016	332245
199.000	Side Arm Mount [SO 308-1]	2	6.679	0.304	0.017	42528
198.000	BPR12-A-B1 Omni	2	6.614	0.303	0.017	40978
188.000	Pipe Mount [PM 601-1]	2	5.980	0.290	0.017	45300
182.000	(2) LPA-80063/8CF	2	5.612	0.281	0.017	49351
174.000	Celwave PAD6-65AC	2	5.135	0.269	0.017	46670
171.000	MSP24013MB	2	4.960	0.265	0.016	44667
168.000	Pipe Mount [PM 601-1]	2	4.787	0.260	0.016	42828
161.000	Celwave PAD6-65AC	2	4.395	0.250	0.015	39091
160.000	BPR8-A-B1	2	4.340	0.249	0.014	38623
156.000	Pipe Mount [PM 601-1]	2	4.123	0.243	0.014	36908
155.000	ANT150D6-9	2	4.070	0.241	0.013	36509
150.000	ANT150D3	2	3.808	0.232	0.012	34612
146.000	MSP24013MB	2	3.605	0.226	0.011	33224
145.000	Celwave PAD6-59BC	2	3.556	0.224	0.011	32894
136.000	(2) RR90-18-00DP w/Mount Pipe	2	3.123	0.209	0.010	33791
115.000	Side Lights	2	2.223	0.173	0.007	33816
110.000	Celwave PAD6-59BC	2	2.031	0.166	0.007	32504
105.000	DB408	2	1.848	0.158	0.006	31291
96.000	DB292-A	2	1.543	0.143	0.006	30881
95.000	Side Arm Mount [SO 201-3]	2	1.511	0.141	0.005	31062

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	220	Leg	A325N	1.000	6	0.100	53.014	0.002 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	0.612	15.334	0.040 ✔	1	Member Bearing
		Top Girt	A325N	1.000	1	0.075	20.445	0.004 ✔	1	Member Bearing
T2	210	Leg	A325N	1.000	6	0.449	53.014	0.008 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	2.371	15.334	0.155 ✔	1	Member Bearing
T3	200	Leg	A325N	1.000	6	2.599	53.014	0.049 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	3.475	25.556	0.136 ✔	1	Member Bearing
T4	180	Leg	A325N	1.000	6	6.121	53.014	0.115 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	6.106	25.556	0.239 ✔	1	Member Bearing
T5	160	Leg	A325N	1.000	6	10.268	53.014	0.194 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	7.024	25.556	0.275 ✔	1	Member Bearing
T6	140	Leg	A325N	1.250	6	12.331	82.835	0.149 ✔	1	Bolt Tension
		Diagonal	A325N	1.250	1	8.166	39.803	0.205 ✔	1	Member Bearing
T7	130	Diagonal	A325N	1.250	1	8.463	39.803	0.213 ✔	1	Member Bearing
T8	120	Leg	A325N	1.250	6	17.664	82.835	0.213 ✔	1	Bolt Tension
		Diagonal	A325N	1.250	1	12.098	66.338	0.182 ✔	1	Member Bearing
T9	100	Leg	A325N	1.250	12	11.291	82.835	0.136 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	2	6.234	60.356	0.103 ✔	1	Member Bearing
T10	80	Leg	A325N	1.250	12	13.481	82.835	0.163 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	2	6.383	48.285	0.132 ✔	1	Member Bearing
T11	60	Leg	A325N	1.250	12	15.495	82.835	0.187 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	2	6.189	48.285	0.128 ✔	1	Member Bearing
T12	40	Leg	A325N	1.250	12	17.552	82.835	0.212 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	2	6.517	63.617	0.102 ✔	1	Bolt Shear
T13	20	Leg	A325N	1.250	22	10.949	82.835	0.132 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	2	11.930	63.617	0.188 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	220 - 210	Pirod 105979	10.000	10.000	45.4 K=1.00	3.682	-1.793	142.493	0.013 [1] ✓
T2	210 - 200	Pirod 105244	10.017	5.008	45.4 K=1.00	3.682	-5.021	142.493	0.035 [1] ✓
T3	200 - 180	Pirod 105216	20.033	10.017	45.4 K=1.00	3.682	-20.956	142.493	0.147 [1] ✓
T4	180 - 160	Pirod 105218	20.033	10.017	32.4 K=1.00	7.216	-47.346	300.681	0.157 [1] ✓
T5	160 - 140	Pirod 105219	20.033	10.017	28.4 K=1.00	9.425	-77.534	399.868	0.194 [1] ✓
T6	140 - 130	Pirod 105220	10.017	5.008	25.2 K=1.00	11.928	-94.018	512.375	0.183 [1] ✓
T7	130 - 120	Pirod 105220	10.017	10.017	25.2 K=1.00	11.928	-111.924	512.375	0.218 [1] ✓
T8	120 - 100	Pirod 112743	20.033	10.017	22.0 K=1.00	14.726	-134.826	639.638	0.211 [1] ✓
T9	100 - 80	Pirod 112743	20.033	20.033	32.6 K=1.00	14.726	-171.989	613.145	0.281 [1] ✓
T10	80 - 60	Pirod 112744	20.033	20.033	32.6 K=1.00	17.819	-206.864	741.993	0.279 [1] ✓
T11	60 - 40	Pirod 112745	20.033	20.033	32.5 K=1.00	21.206	-238.179	883.145	0.270 [1] ✓
T12	40 - 20	Pirod 114683	20.033	20.033	32.5 K=1.00	24.887	-274.393	1036.610	0.265 [1] ✓
T13	20 - 0	Pirod 113138	20.000	20.000	32.4 K=1.00	28.863	-316.164	1202.710	0.263 [1] ✓

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T1	220 - 210	0.5	1.483	121.0	165.670	0.196	0.280	3.292	0.085 ✓
T2	210 - 200	0.5	1.483	121.0	165.670	0.196	0.479	3.389	0.141 ✓
T3	200 - 180	0.5	1.483	121.0	165.670	0.196	1.191	3.292	0.362 ✓
T4	180 - 160	0.5	1.459	119.0	324.713	0.196	0.617	3.378	0.183 ✓
T5	160 - 140	0.625	1.446	94.4	424.115	0.307	0.520	6.958	0.075 ✓
T6	140 - 130	0.625	1.435	93.6	536.771	0.307	1.018	7.011	0.145 ✓

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T7	130 - 120	0.625	1.435	93.6	536.771	0.307	0.392	7.011	0.056 ✓
T8	120 - 100	0.75	1.727	93.9	662.680	0.442	1.833	14.364	0.128 ✓
T9	100 - 80	0.75	1.727	93.9	662.680	0.442	0.676	14.364	0.047 ✓
T10	80 - 60	0.75	1.711	93.1	801.842	0.442	0.477	14.531	0.033 ✓
T11	60 - 40	0.875	1.696	79.1	954.259	0.601	0.690	23.594	0.029 ✓
T12	40 - 20	0.875	1.680	78.4	1119.930	0.601	1.090	23.789	0.046 ✓
T13	20 - 0	0.875	1.665	77.6	1298.850	0.601	1.097	23.982	0.058 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	220 - 210	L2 1/2x2 1/2x3/16	12.207	5.231	126.8 K=1.00	0.902	-0.753	12.532	0.060 [1] ✓
T2	210 - 200	L3x3x3/16	6.405	5.605	112.8 K=1.00	1.090	-2.567	17.854	0.144 [1] ✓
T3	200 - 180	L3x3x5/16	13.796	6.535	133.1 K=1.00	1.780	-4.019	22.680	0.177 [1] ✓
T4	180 - 160	L3 1/2x3 1/2x5/16	15.243	7.290	126.8 K=1.00	2.090	-6.325	29.052	0.218 [1] ✓
T5	160 - 140	L3 1/2x3 1/2x5/16	16.803	8.090	140.7 K=1.00	2.090	-7.204	23.850	0.302 [1] ✓
T6	140 - 130	L4x4x3/8	9.015	8.414	128.1 K=1.00	2.860	-8.665	39.042	0.222 [1] ✓
T7	130 - 120	L4x4x3/8	18.448	8.927	135.9 K=1.00	2.860	-8.409	34.964	0.241 [1] ✓
T8	120 - 100	2L3 1/2x3 1/2x5/16x3/8	13.457	12.336	137.1 K=1.00	4.180	-13.410	50.264	0.267 [1] ✓
T9	100 - 80	2L3 1/2x3 1/2x5/16x3/8	27.592	13.434	154.3 K=1.00	4.180	-12.907	39.683	0.325 [1] ✓
T10	80 - 60	2L 'a' > 77.243 in - 132 2L4x4x1/4x1/2	29.006	14.158	141.3 K=1.00	3.875	-12.694	43.823	0.290 [1] ✓
T11	60 - 40	2L 'a' > 80.889 in - 141 2L4x4x1/4x1/2	30.485	14.911	148.9 K=1.00	3.875	-13.431	39.506	0.340 [1] ✓
T12	40 - 20	2L 'a' > 85.194 in - 150 2L4x4x3/8x3/8	32.021	15.690	158.4 K=1.00	5.720	-12.450	51.494	0.242 [1] ✓
T13	20 - 0	2L 'a' > 90.469 in - 159 2L5x5x3/8x3/8	32.802	15.455	125.5 K=1.00	7.220	-22.973	102.078	0.225 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
		2L 'a' > 88.272 in - 168							

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	210 - 200	L3x3x5/16	7.500	3.250	66.2 K=1.00	1.780	-0.559	45.785	0.012 [1] ✔
T6	140 - 130	L3x3x5/16	14.500	6.750	137.5 K=1.00	1.780	-1.630	21.263	0.077 [1] ✔
T8	120 - 100	L3x3x5/16	17.000	7.750	157.9 K=1.00	1.780	-2.338	16.130	0.145 [1] ✔

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	200 - 180	L3x3x3/16	9.000	8.000	161.1 K=1.00	1.090	-0.820	9.491	0.086 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	220 - 210	Pirod 105979	10.000	10.000	45.4	3.682	0.457	165.670	0.003 [1] ✔
T2	210 - 200	Pirod 105244	10.017	5.008	45.4	3.682	2.966	165.670	0.018 [1] ✔
T3	200 - 180	Pirod 105216	20.033	10.017	45.4	3.682	15.592	165.670	0.094 [1] ✔
T4	180 - 160	Pirod 105218	20.033	10.017	32.4	7.216	36.729	324.713	0.113 [1] ✔
T5	160 - 140	Pirod 105219	20.033	10.017	28.4	9.425	61.605	424.115	0.145 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	140 - 130	Pirod 105220	10.017	5.008	25.2	11.928	74.715	536.771	0.139 [1] ✔
T7	130 - 120	Pirod 105220	10.017	10.017	25.2	11.928	88.653	536.771	0.165 [1] ✔
T8	120 - 100	Pirod 112743	20.033	10.017	22.0	14.726	107.143	662.680	0.162 [1] ✔
T9	100 - 80	Pirod 112743	20.033	20.033	32.6	14.726	135.492	662.680	0.204 [1] ✔
T10	80 - 60	Pirod 112744	20.033	20.033	32.6	17.819	161.770	801.842	0.202 [1] ✔
T11	60 - 40	Pirod 112745	20.033	20.033	32.5	21.206	185.944	954.259	0.195 [1] ✔
T12	40 - 20	Pirod 114683	20.033	20.033	32.5	24.887	210.626	1119.930	0.188 [1] ✔
T13	20 - 0	Pirod 113138	20.000	20.000	32.4	28.863	240.888	1298.850	0.185 [1] ✔

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T1	220 - 210	0.5	1.483	121.0	165.670	0.196	0.280	3.292	0.085 ✔
T2	210 - 200	0.5	1.483	121.0	165.670	0.196	0.479	3.389	0.141 ✔
T3	200 - 180	0.5	1.483	121.0	165.670	0.196	1.191	3.292	0.362 ✔
T4	180 - 160	0.5	1.459	119.0	324.713	0.196	0.617	3.378	0.183 ✔
T5	160 - 140	0.625	1.446	94.4	424.115	0.307	0.520	6.958	0.075 ✔
T6	140 - 130	0.625	1.435	93.6	536.771	0.307	1.018	7.011	0.145 ✔
T7	130 - 120	0.625	1.435	93.6	536.771	0.307	0.392	7.011	0.056 ✔
T8	120 - 100	0.75	1.727	93.9	662.680	0.442	1.833	14.364	0.128 ✔
T9	100 - 80	0.75	1.727	93.9	662.680	0.442	0.676	14.364	0.047 ✔
T10	80 - 60	0.75	1.711	93.1	801.842	0.442	0.477	14.531	0.033 ✔
T11	60 - 40	0.875	1.696	79.1	954.259	0.601	0.690	23.594	0.029 ✔
T12	40 - 20	0.875	1.680	78.4	1119.930	0.601	1.090	23.789	0.046 ✔
T13	20 - 0	0.875	1.665	77.6	1298.850	0.601	1.097	23.982	0.058 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	220 - 210	L2 1/2x2 1/2x3/16	12.207	5.231	80.7	0.902	0.612	29.225	0.021 [1] ✓
T2	210 - 200	L3x3x3/16	6.405	5.605	71.6	1.090	2.371	35.316	0.067 [1] ✓
T3	200 - 180	L3x3x5/16	13.796	6.535	85.1	1.780	3.475	57.672	0.060 [1] ✓
T4	180 - 160	L3 1/2x3 1/2x5/16	15.243	7.290	81.0	2.090	6.106	67.716	0.090 [1] ✓
T5	160 - 140	L3 1/2x3 1/2x5/16	16.803	8.090	89.9	2.090	7.024	67.716	0.104 [1] ✓
T6	140 - 130	L4x4x3/8	9.015	8.414	82.1	2.860	8.166	92.664	0.088 [1] ✓
T7	130 - 120	L4x4x3/8	18.448	8.927	87.1	2.860	8.463	92.664	0.091 [1] ✓
T8	120 - 100	2L3 1/2x3 1/2x5/16x3/8	13.457	12.336	137.1	4.180	12.098	135.432	0.089 [1] ✓
T9	100 - 80	2L3 1/2x3 1/2x5/16x3/8	27.592	13.434	149.3	4.180	12.468	135.432	0.092 [1] ✓
T10	80 - 60	2L 'a' > 77.243 in - 131 2L4x4x1/4x1/2	29.006	14.158	135.6	3.875	12.767	125.550	0.102 [1] ✓
T11	60 - 40	2L 'a' > 80.889 in - 140 2L4x4x1/4x1/2	30.485	14.911	142.9	3.875	12.379	125.550	0.099 [1] ✓
T12	40 - 20	2L 'a' > 85.194 in - 149 2L4x4x3/8x3/8	32.021	15.690	153.1	5.720	13.034	185.328	0.070 [1] ✓
T13	20 - 0	2L 'a' > 90.469 in - 158 2L5x5x3/8x3/8 2L 'a' > 88.272 in - 167	32.802	15.455	118.9	7.220	23.860	233.928	0.102 [1] ✓

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	210 - 200	L3x3x5/16	7.500	3.250	63.4	1.780	0.642	57.672	0.011 [1] ✓
T6	140 - 130	L3x3x5/16	14.500	6.750	131.8	1.780	1.630	57.672	0.028 [1] ✓
T8	120 - 100	L3x3x5/16	17.000	7.750	151.3	1.780	2.414	57.672	0.042 [1] ✓

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

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	
T1	220 - 210	L3x3x1/4	7.000	6.000	77.4	1.440	0.075	46.656	0.002 [1] ✔

[1] P_u / ϕP_n controls

Mid Girt Design Data (Tension)

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	
T3	200 - 180	L3x3x3/16	9.000	8.000	102.2	1.090	1.147	35.316	0.032 [1] ✔

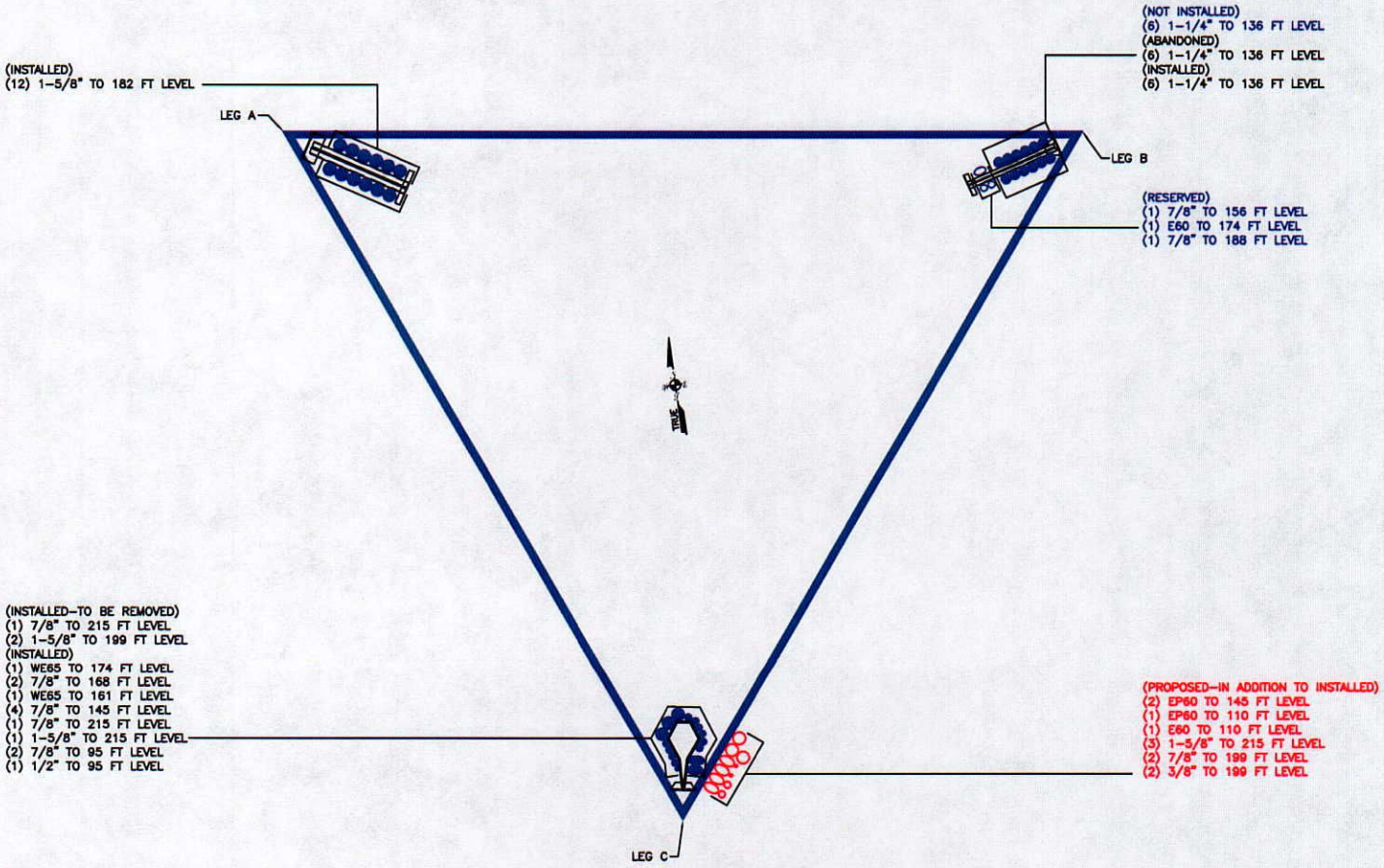
[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	220 - 210	Leg	Pirod 105979	2	-1.793	142.493	8.5	Pass
T2	210 - 200	Leg	Pirod 105244	14	-4.621	142.493	14.1	Pass
T3	200 - 180	Leg	Pirod 105216	31	-20.956	142.493	36.2	Pass
T4	180 - 160	Leg	Pirod 105218	51	-33.362	300.681	18.3	Pass
T5	160 - 140	Leg	Pirod 105219	66	-77.534	399.868	19.4	Pass
T6	140 - 130	Leg	Pirod 105220	81	-94.018	512.375	18.3	Pass
T7	130 - 120	Leg	Pirod 105220	99	-111.924	512.375	21.8	Pass
T8	120 - 100	Leg	Pirod 112743	108	-134.826	639.638	21.1	Pass
T9	100 - 80	Leg	Pirod 112743	126	-171.989	613.145	28.1	Pass
T10	80 - 60	Leg	Pirod 112744	135	-206.864	741.993	27.9	Pass
T11	60 - 40	Leg	Pirod 112745	144	-238.179	883.145	27.0	Pass
T12	40 - 20	Leg	Pirod 114683	153	-274.393	1036.610	26.5	Pass
T13	20 - 0	Leg	Pirod 113138	162	-316.164	1202.710	26.3	Pass
T1	220 - 210	Diagonal	L2 1/2x2 1/2x3/16	7	-0.753	12.532	6.0	Pass
T2	210 - 200	Diagonal	L3x3x3/16	17	-2.567	17.854	14.4	Pass
T3	200 - 180	Diagonal	L3x3x5/16	40	-4.019	22.680	17.7	Pass
T4	180 - 160	Diagonal	L3 1/2x3 1/2x5/16	57	-6.325	29.052	21.8	Pass
T5	160 - 140	Diagonal	L3 1/2x3 1/2x5/16	69	-7.204	23.850	30.2	Pass
T6	140 - 130	Diagonal	L4x4x3/8	86	-8.665	39.042	22.2	Pass
T7	130 - 120	Diagonal	L4x4x3/8	102	-8.409	34.964	24.1	Pass
T8	120 - 100	Diagonal	2L3 1/2x3 1/2x5/16x3/8	117	-13.410	50.264	26.7	Pass
T9	100 - 80	Diagonal	2L3 1/2x3 1/2x5/16x3/8	132	-12.907	39.683	32.5	Pass
T10	80 - 60	Diagonal	2L4x4x1/4x1/2	141	-12.694	43.823	29.0	Pass
T11	60 - 40	Diagonal	2L4x4x1/4x1/2	150	-13.431	39.506	34.0	Pass
T12	40 - 20	Diagonal	2L4x4x3/8x3/8	159	-12.450	51.494	24.2	Pass
T13	20 - 0	Diagonal	2L5x5x3/8x3/8	168	-22.973	102.078	22.5	Pass
T2	210 - 200	Horizontal	L3x3x5/16	19	-0.559	45.785	1.2	Pass
T6	140 - 130	Horizontal	L3x3x5/16	85	-1.630	21.263	7.7	Pass
T8	120 - 100	Horizontal	L3x3x5/16	112	-2.338	16.130	14.5	Pass
T1	220 - 210	Top Girt	L3x3x1/4	5	0.074	46.656	0.3	Pass
T3	200 - 180	Mid Girt	L3x3x3/16	35	-0.820	9.491	8.6	Pass
							Summary	
						Leg (T3)	36.2	Pass
						Diagonal (T11)	34.0	Pass
						Horizontal (T8)	14.5	Pass
						Top Girt (T1)	0.3	Pass
						Mid Girt (T3)	8.6	Pass
						Bolt Checks	27.5	Pass
						RATING =	**36.2**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 801524 TOWER ID: C_BASELEVEL

January 07, 2011

Ms. Molly Carder
Crown Castle USA Inc.
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6596

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
ctuttle@btengineering.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***St. Mary's County Government* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	Leonardtown
Crown Castle Designation:	**Crown Castle BU Number:**	801526
	Crown Castle Site Name:	Government Center
	Crown Castle JDE Job Number:	147624
	Crown Castle Work Order Number:	378062
Engineering Firm Designation:	**B&T Engineering, Inc. Project Number:**	82420
Site Data:	**41875 Baldridge Street, Leonardtown, MD, St. Mary's County** **Latitude *38° 18' 3.37"*, Longitude *-76° 37' 44.57"*** **300 Foot - Self Support Tower**	

Dear Ms. Carder,

B&T Engineering, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 399471, in accordance with application 114068, revision 2.

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:

LC1: Existing + Reserved + Proposed Equipment **Insufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA-222-G standard and the 2009 International Building Code based upon a wind speed of 95 mph 3-second gust.

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

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

Respectfully submitted by:

Kristin Mears, E.I.
Project Engineer

Chad E. Tuttle, P.E
President

I hereby certify these documents were reviewed by me and I am a duly licensed professional engineer under the laws of the State of Maryland.

RISA Tower Report - version 5.4.2.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 300 ft. Self Support tower designed by Central Tower, Inc. in November of 2000. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 95 mph with no ice, 40 mph with 0.5 inch ice thickness and 60 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
297	306	3	Celwave	BMR12-H-B1	2	3/8	--
	297	2	--	Side Arm Mount [SO 306-1]	1	7/8	
	295	1	Decibel	DBD2702DA	1	1 5/8	
291	295	1	Celwave	BMR12-H-B1	1	1 5/8	--
193	193	1	Celwave	PAD6-59BC	1	E60	--
		1	--	Side Arm Mount [SO 302-1]			
167	167	1	Celwave	PAD6-59BC	1	E60	--
		1	--	Pipe Mount [PM 602-1]			
162	162	1	Celwave	PAD6-59BC	1	E60	--
		1	--	Pipe Mount [PM 602-1]			
132	132	1	Celwave	PAD6-59BC	1	E60	--
		1	--	Pipe Mount [PM 602-1]			
131	131	1	Celwave	PAD6-59BC	1	E60	--
		1	--	Pipe Mount [PM 602-1]			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
297	306	**1**	**Decibel**	**DB812K-Y**	--	--	**2**
	297	1	Decibel	DBB2702RA	1	1 5/8	1
		1	--	Side Arm Mount [SO 306-1]			
292	302	1	Celwave	BMR12	1	1 5/8	1
	292	1	--	Side Arm Mount [SO 305-1]			
291	295	**1**	**Decibel**	**DB806-Y**	**1**	**7/8**	**2**
	291	1	--	Side Arm Mount [SO 305-1]	--	--	1
290	300	1	Celwave	BMR12	1	1 5/8	1
	290	1	--	Side Arm Mount [SO 305-1]			
283	283	3	Allgon	7251.01	6	1 5/8	3
		6	Ericsson	KRY 112 71 TMA			
		1	--	Side Arm Mount [SO 702-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
279	279	6	Antel	LPA-185080/8CF	12	1 5/8	1
		2	Css	SA13-86-2D			
		4	Css	SA14-60			
		1	--	Sector Mount [SM 406-3]			
250	260	2	Decibel	DB420-B	5	7/8	1
		1	Decibel	DB616-AB			
	250	1	--	Side Arm Mount [SO 303-3]			
224	234	1	Telewave	ANT150D6-9	4	7/8	1
		1	Celwave	PD220-1			
	232	1	Celwave	PD1110			
	224	1	--	Side Arm Mount [SO 303-3]			
203	210	1	Decibel	DB810T3E-XC	1	1/2	1
	203	1	--	Side Arm Mount [SO 303-1]			
199	209	1	Telewave	ANT150D6-9	2	7/8	1
		1	Celwave	PD220-1			
	199	2	--	Side Arm Mount [SO 305-1]			
187	187	1	Andrew	PAR6-59W	1	EW63	1
		1	--	Pipe Mount [PM 601-1]			
180	191	1	Celwave	PD220-1	3	7/8	1
	180	1	Maxrad	MSP24013-120			
		1	--	Side Arm Mount [SO 303-1]			
	179	1	Maxrad	MSP24013-120			
172	172	1	Celwave	PAD6-65AC	1	EW63	1
		1	--	Pipe Mount [PM 601-1]			
170	175	1	Telewave	ANT450F6	2	7/8	1
	170	1	Maxrad	MSP24013-120			
		1	--	Side Arm Mount [SO 305-1]			
155	157	6	Kathrein/Scala	800 10122	3 12	5/16 7/8	1
		6	Powerwave	LGP21401 TMA			
		3	Powerwave	LGP219nn Diplexer			
	155	1	--	Sector Mount [SM 406-3]			
147	147	6	Ems Wireless	RR90-18-00DP	12	1 5/8	1
		6	Ericsson	KRY 112 71/1 TMA			
		1	--	Sector Mount [SM 402-3]			
137	137	9	Celwave	AP859012-42T0	15	1 5/8	1
		3	RFS	APXV18-206516L-C			
		1	--	Sector Mount [SM 402-3]			
125	126	1	Decibel	DB492A	2	7/8	1
	125	1	Decibel	DB492A			
		1	--	Side Arm Mount [SO 303-1]			
124	124	2	--	Side Arm Mount [SO 305-1]	2	7/8	1
	119	1	Decibel	DB810M-XC			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	114	1	Celwave	PD220-1			

Notes:
1) Existing Equipment
2) **Equipment to be Removed**
3) Abandoned Equipment; Considered in this Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
300	300	1	Decibel	DB812K-XT	3	1 5/8
		2	Sinclair	SRL410-C18		
285	285	12	Swedcom	ALP9212	12	1 5/8
260	260	12	Swedcom	ALP9212	12	1 5/8
230	230	12	Swedcom	ALP9212	12	1 5/8
110	110	12	Swedcom	ALP9212	12	1 5/8
100	100	2	--	8' HP Dish	2	EW63

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	St. Mary's County Government Co-Locate Revision#2	114068	Crown OTG
Tower Manufacturer Drawings	Central Tower, Inc. Project No. SS-922-1	682041	Crown OTG
Foundation Drawings	FDH, Inc. Project No. 02-0810	682046	Crown OTG
Geotech Report	GTA, Inc Job No. 00355.V	682038	Crown OTG
	FDH Project No. 11-01001E G1	Date: 01/06/2011	
Antenna Configuration	Crown CAD Package	Date: 12/23/2010	Crown OTG

3.1) Analysis Method

RISA Tower (version 5.4.2.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary) – LC1

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_ allow (K)	% Capacity	Pass / Fail
T1	300 - 280	Leg	2 3/4	3	-32.251	212.513	15.2	Pass
T2	280 - 260	Leg	2 3/4	47	-96.602	212.513	45.5	Pass
T3	260 - 240	Leg	3 1/2	89	-127.215	256.191	49.7	Pass
T4	240 - 220	Leg	4	113	-158.629	378.404	41.9	Pass
T5	220 - 200	Leg	4 1/4	134	-191.474	447.234	42.8	Pass
T6	200 - 180	Leg	4 1/2	155	-228.757	521.047	43.9	Pass
T7	180 - 160	Leg	4 3/4	176	-271.610	599.747	45.3	Pass
T8	160 - 140	Leg	5	197	-323.346	683.256	47.3	Pass
T9	140 - 120	Leg	5 1/4	218	-381.820	771.513	49.5	Pass
T10	120 - 100	Leg	5 1/2	239	-442.721	864.466	51.2	Pass
T11	100 - 80	Leg	5 3/4	260	-503.204	962.073	52.3	Pass
T12	80 - 60	Leg	6	281	-504.540	1032.710	48.9	Pass
T13	60 - 40	Leg	6 1/4	320	-561.757	1139.050	49.3	Pass
T14	40 - 20	Leg	6 1/2	359	-618.591	1250.000	49.5	Pass
T15	20 - 0	Leg	6 3/4	398	-675.654	1365.540	49.5	Pass
T1	300 - 280	Diagonal	1 1/8	14	-3.802	21.380	17.8	Pass
T2	280 - 260	Diagonal	1 1/8	56	-6.633	21.380	31.0	Pass
T3	260 - 240	Diagonal	L2 1/2x2 1/2x1/4	99	-4.303	22.234	19.4	Pass
T4	240 - 220	Diagonal	L2 1/2x2 1/2x5/16	120	-5.008	22.201	22.6	Pass
T5	220 - 200	Diagonal	L2 1/2x2 1/2x5/16	139	-6.270	16.944	37.0	Pass
T6	200 - 180	Diagonal	L3x3x5/16	158	-8.568	22.657	37.8	Pass
T7	180 - 160	Diagonal	L3x3x3/8	178	-11.034	20.681	53.4	Pass
T8	160 - 140	Diagonal	L3 1/2x3 1/2x3/8	199	-14.255	26.418	54.0	Pass
T9	140 - 120	Diagonal	L4x4x5/16	220	-18.131	27.448	66.1	Pass
T10	120 - 100	Diagonal	L5x5x5/16	241	-19.907	43.840	45.4	Pass
T11	100 - 80	Diagonal	L5x5x5/16	262	-20.258	37.733	53.7	Pass
T12	80 - 60	Diagonal	2L3x3x5/16x3/8	284	-37.113	19.798	187.5	Fail ✗
T13	60 - 40	Diagonal	2L3x3x5/16x3/8	323	-36.220	18.890	191.7	Fail ✗
T14	40 - 20	Diagonal	2L3x3x5/16x3/8	362	-35.935	18.002	199.6	Fail ✗
T15	20 - 0	Diagonal	2L3x3x5/16x3/8	401	-36.000	17.139	210.1	Fail ✗
T12	80 - 60	Horizontal	2L3 1/2x3 1/2x3/8x3/8	283	-19.245	77.098	25.0	Pass
T13	60 - 40	Horizontal	2L3 1/2x3 1/2x3/8x3/8	322	-19.811	64.659	30.6	Pass
T14	40 - 20	Horizontal	2L3 1/2x3 1/2x3/8x3/8	361	-20.634	55.004	37.5	Pass
T15	20 - 0	Horizontal	2L3 1/2x3 1/2x3/8x3/8	400	-21.439	47.360	45.3	Pass
T1	300 - 280	Top Girt	1 1/8	5	-0.608	16.518	3.7	Pass
T2	280 - 260	Top Girt	1 1/8	51	-1.010	16.518	6.1	Pass
T3	260 - 240	Top Girt	1 1/8	93	-0.850	16.445	5.2	Pass
T1	300 - 280	Bottom Girt	1 1/8	7	-1.015	16.518	6.1	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_ allow (K)	% Capacity	Pass / Fail
T12	80 - 60	Redund Horz 1 Bracing	2L2x2x1/4x3/8	296	-11.043	40.510	27.3	Pass
T13	60 - 40	Redund Horz 1 Bracing	2L2x2x1/4x3/8	329	-11.904	37.291	31.9	Pass
T14	40 - 20	Redund Horz 1 Bracing	2L2x2x1/4x3/8	368	-12.716	34.057	37.3	Pass
T15	20 - 0	Redund Horz 1 Bracing	2L2x2x1/4x3/8	413	-11.717	30.865	38.0	Pass
T12	80 - 60	Redund Horz 2 Bracing	2L2x2x1/4x3/8	291	-11.043	21.802	50.6	Pass
T13	60 - 40	Redund Horz 2 Bracing	2L2x2x1/4x3/8	336	-11.904	18.261	65.2	Pass
T14	40 - 20	Redund Horz 2 Bracing	2L2x2x1/4x3/8	369	-12.716	15.518	81.9	Pass
T15	20 - 0	Redund Horz 2 Bracing	2L2x2x1/4x3/8	408	-11.717	13.350	87.8	Pass
T12	80 - 60	Redund Diag 1 Bracing	2L2x2x1/4x3/8	292	-11.227	22.991	48.8	Pass
T13	60 - 40	Redund Diag 1 Bracing	2L2x2x1/4x3/8	331	-11.325	21.877	51.8	Pass
T14	40 - 20	Redund Diag 1 Bracing	2L2x2x1/4x3/8	370	-11.410	20.805	54.8	Pass
T15	20 - 0	Redund Diag 1 Bracing	2L2x2x1/4x3/8	409	-9.985	19.773	50.5	Pass
T12	80 - 60	Redund Diag 2 Bracing	2L2x2x1/4x3/8	293	-7.279	12.545	58.0	Pass
T13	60 - 40	Redund Diag 2 Bracing	2L2x2x1/4x3/8	338	-7.560	11.320	66.8	Pass
T14	40 - 20	Redund Diag 2 Bracing	2L2x2x1/4x3/8	371	-7.830	10.231	76.5	Pass
T15	20 - 0	Redund Diag 2 Bracing	2L2x2x1/4x3/8	410	-7.631	9.267	82.3	Pass
T12	80 - 60	Inner Bracing	2L3x3x3/16x3/8	316	-0.032	24.922	0.5	Pass
T13	60 - 40	Inner Bracing	2L3x3x3/16x3/8	356	-0.031	20.941	0.5	Pass
T14	40 - 20	Inner Bracing	2L3x3x3/16x3/8	394	-0.029	17.843	0.5	Pass
T15	20 - 0	Inner Bracing	2L3x3x3/16x3/8	433	-0.028	15.385	0.5	Pass
							Summary	
						Leg (T11)	52.3	Pass
						Diagonal (T15)	210.1	Fail ✗
						Horizontal (T15)	45.3	Pass
						Top Girt (T2)	6.1	Pass
						Bottom Girt (T1)	6.1	Pass
						Redund Horz 1 Bracing (T15)	38.0	Pass
						Redund Horz 2 Bracing (T15)	87.8	Pass
						Redund Diag 1 Bracing (T14)	54.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Redund Diag 2 Bracing (T15)	82.3	Pass
						Inner Bracing (T15)	0.5	Pass
						Bolt Checks	61.9	Pass
						RATING =	**210.1**	**Fail** ✗

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
	Anchor Rods	Base	33.7	Pass
1	Base Foundation	Base	45.1	Pass

Structure Rating (max from all components) =	210.1%

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Capacities up to 105% are considered acceptable based on analysis procedures used.

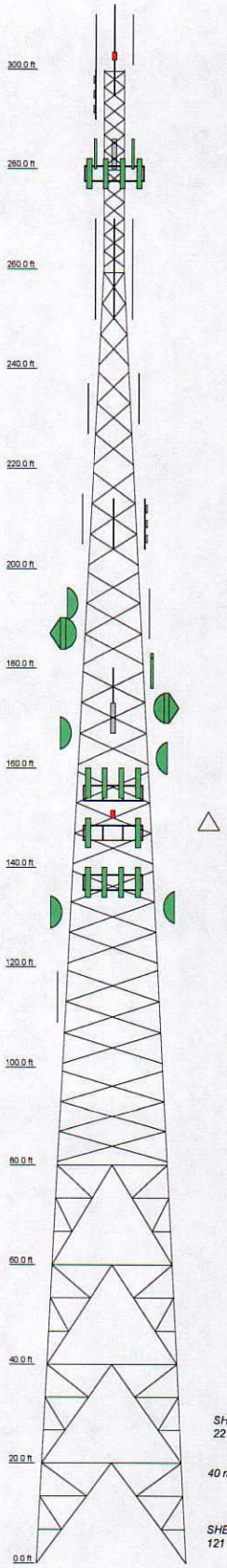
4.1) Recommendations

1) The tower structure has insufficient capacity to support the proposed appurtenances therefore the tower must be reinforced prior to their installation.
2) Reinforce the diagonals from 0'-80'.
3) Further design and analysis will be required to determine the most feasible method of reinforcement.

APPENDIX A

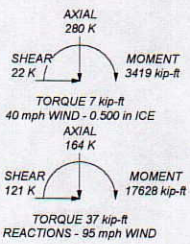
RISA TOWER OUTPUT

Section	T18	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 6 3/4	SR 6 1/2	SR 6 1/4	SR 6	SR 5 3/4	SR 5 1/2	SR 5 1/4	SR 5	SR 4 3/4	SR 4 1/2	SR 4 1/4	SR 4	SR 3 1/2	SR 2 3/4	
Leg Grade	A572-50														
Diagonals	2L3x3x5/16x3/8				L5x5x5/16		L4x4x5/16		L3 1/2x3 1/2x3/8		L3x3x5/16		L2 1/2x2 1/2x1/4		SR 1 1/8
Diagonal Grade	A36														
Top Girts	N.A.														SR 1 1/8
Bottom Girts	N.A.														SR 1 1/8
Horizontals	2L3 1/2x3 1/2x3/8x3/8								N.A.						
Red. Horizontals	2L2x2x1/4x3/8								N.A.						
Red. Diagonals	2L2x2x1/4x3/8								N.A.						
Inner Bracing	2L3x3x3x5/16x3/8								N.A.						
Face Width (ft)	30	26		24		22		20		18		16		14	12
# Panels @ (ft)		4 @ 20							27 @ 6.1667						12 @ 3.20833
Weight (K)	99.3	13.1	11.4	10.8	9.8	9.3	8.4	8.0	7.5	7.1	6.5	5.9	5.4	4.8	2.5	1.9	1.8

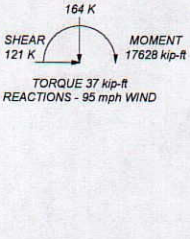


ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 726 K
UPLIFT: -608 K
SHEAR: 73 K



TORQUE 7 kip-ft
40 mph WIND - 0.500 in ICE



TORQUE 37 kip-ft
REACTIONS - 95 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod (E)	308	Side Arm Mount [SO 303-1] (E)	180
BMR12-H-B1 (P)	306	MSP24013-120 w/Mount Pipe (E)	179
BMR12-H-B1 (P)	306	ANT450F6 (E)	175
BMR12-H-B1 (P)	306	Pipe Mount [PM 601-1] (E)	172
Beacon (E)	302	PAD6-65AC (E)	172
BMR12 (E)	302	MSP24013-120 w/Mount Pipe (E)	170
BMR12 (E)	300	Side Arm Mount [SO 305-1] (E)	170
DBB2702RA (E)	297	Pipe Mount [PM 602-1] (P)	167
Side Arm Mount [SO 306-1] (P)	297	PAD6-59BC (P)	167
Side Arm Mount [SO 306-1] (E)	297	Pipe Mount [PM 602-1] (P)	162
Side Arm Mount [SO 306-1] (P)	297	PAD6-59BC (P)	162
BMR12-H-B1 (P)	295	LGP219nn Diplexer (E)	157
DBD2702DA (P)	295	LGP219nn Diplexer (E)	157
Side Arm Mount [SO 305-1] (E)	292	(2) LGP21401 TMA (E)	157
Side Arm Mount [SO 305-1] (E)	291	(2) LGP21401 TMA (E)	157
Side Arm Mount [SO 305-1] (E)	290	(2) LGP21401 TMA (E)	157
7251.01 w/Mount Pipe (Abandoned)	283	(2) 800 10122 w/Mount Pipe (E)	157
7251.01 w/Mount Pipe (Abandoned)	283	(2) 800 10122 w/Mount Pipe (E)	157
7251.01 w/Mount Pipe (Abandoned)	283	(2) 800 10122 w/Mount Pipe (E)	157
(2) KRY 112 71 TMA (Abandoned)	283	LGP219nn Diplexer (E)	157
(2) KRY 112 71 TMA (Abandoned)	283	(2) 6' x 2" Mount Pipe (E)	155
(2) KRY 112 71 TMA (Abandoned)	283	(2) 6' x 2" Mount Pipe (E)	155
Side Arm Mount [SO 702-3] (Abandoned)	283	(2) 6' x 2" Mount Pipe (E)	155
(2) LPA-185080/6CF w/Mount Pipe (E)	279	Sector Mount [SM 406-3] (E)	155
(2) LPA-185080/6CF w/Mount Pipe (E)	279	Side Lights (E)	150
(2) LPA-185080/6CF w/Mount Pipe (E)	279	(2) KRY 112 71/1 TMA (E)	147
(2) SA13-86-2D w/Mount Pipe (E)	279	Sector Mount [SM 402-3] (E)	147
(2) SA14-60 w/Mount Pipe (E)	279	(2) KRY 112 71/1 TMA (E)	147
(2) SA14-60 w/Mount Pipe (E)	279	(2) RR90-18-00DP (E)	147
Sector Mount [SM 406-3] (E)	279	(2) RR90-18-00DP (E)	147
DB420-B (E)	260	(2) RR90-18-00DP (E)	147
DB616-AB (20' Omni) (E)	260	(2) KRY 112 71/1 TMA (E)	147
DB420-B (E)	260	(3) AP859012-42T0 w/Mount Pipe (E)	137
Side Arm Mount [SO 303-3] (E)	250	Sector Mount [SM 402-3] (E)	137
PD220-1 (E)	234	APXV18-206516L-C w/Mount Pipe (E)	137
ANT150D6-9 (E)	234	APXV18-206516L-C w/Mount Pipe (E)	137
PD1110 (E)	232	APXV18-206516L-C w/Mount Pipe (E)	137
Side Arm Mount [SO 303-3] (E)	224	(3) AP859012-42T0 w/Mount Pipe (E)	137
DB810T3E-XC (E)	210	(3) AP859012-42T0 w/Mount Pipe (E)	137
ANT150D6-9 (E)	209	Pipe Mount [PM 602-1] (P)	132
PD220-1 (E)	209	PAD6-59BC (P)	132
Side Arm Mount [SO 303-1] (E)	203	Pipe Mount [PM 602-1] (P)	131
Side Arm Mount [SO 305-1] (E)	199	PAD6-59BC (P)	131
Side Arm Mount [SO 305-1] (E)	199	DB492A (E)	126
Side Arm Mount [SO 302-1] (P)	193	DB492A (E)	125
PAD6-59BC (P)	193	Side Arm Mount [SO 303-1] (E)	125
PD220-1 (E)	191	Side Arm Mount [SO 305-1] (E)	124
Pipe Mount [PM 601-1] (E)	187	Side Arm Mount [SO 305-1] (E)	124
PAR6-59W (E)	187	DB810M-XC (E)	119
MSP24013-120 w/Mount Pipe (E)	180	PD220-1 (E)	114

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

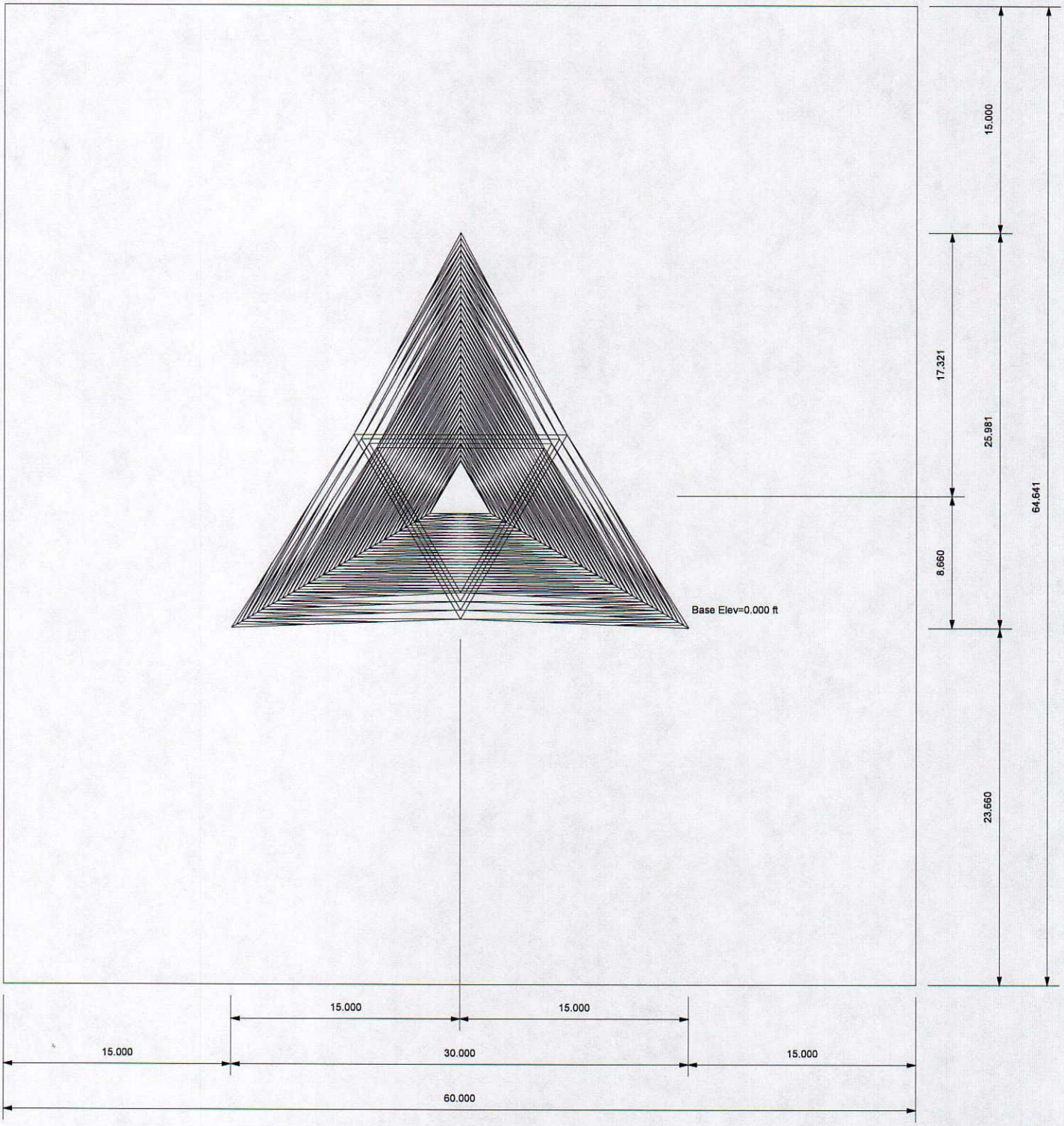
TOWER DESIGN NOTES

1. Tower is located in Saint Marys County, Maryland.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 95 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. LC1
9. TOWER RATING: 210.1%

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

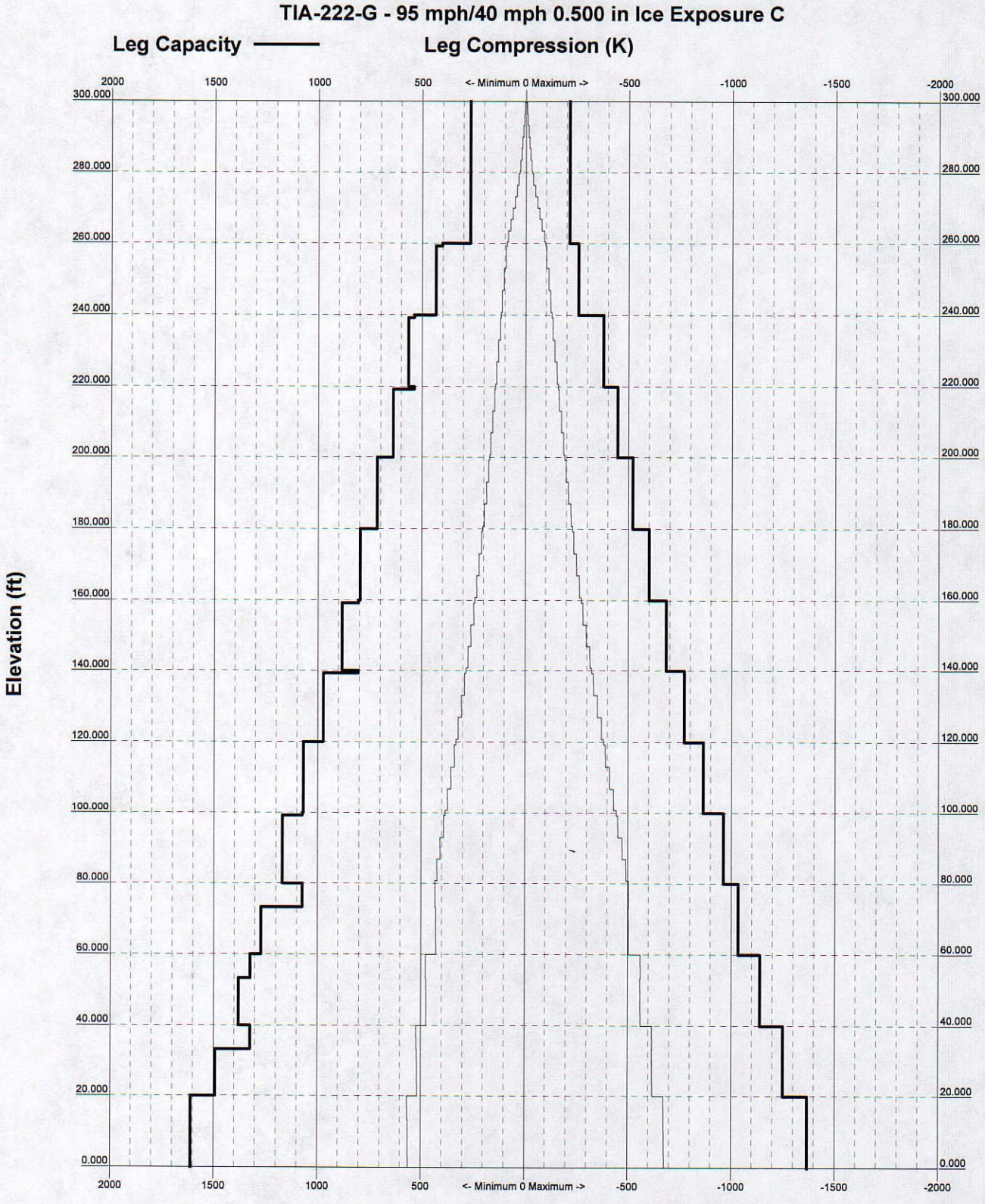
Job: 82420 - Government Center, MD (BU# 801526)			
Project: 300' Central SST / App ID:114068, Rev: 2			
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 01/07/11	Scale: NTS	
Path:		Dwg No. E-1	

Plot Plan
Total Area - 0.09 Acres



B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	82420 - Government Center, MD (BU# 801526)		
Project:	300' Central SST / App ID:114068, Rev: 2		
Client:	Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:
Code:	TIA-222-G	Date: 01/07/11	Scale: NTS
Path:	S:\B&T Engineering\Projects\Crown Castle\82420_801526_Government Center\Engineering\BU\82420_001_Government center\801526		Dwg No. E-2



B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

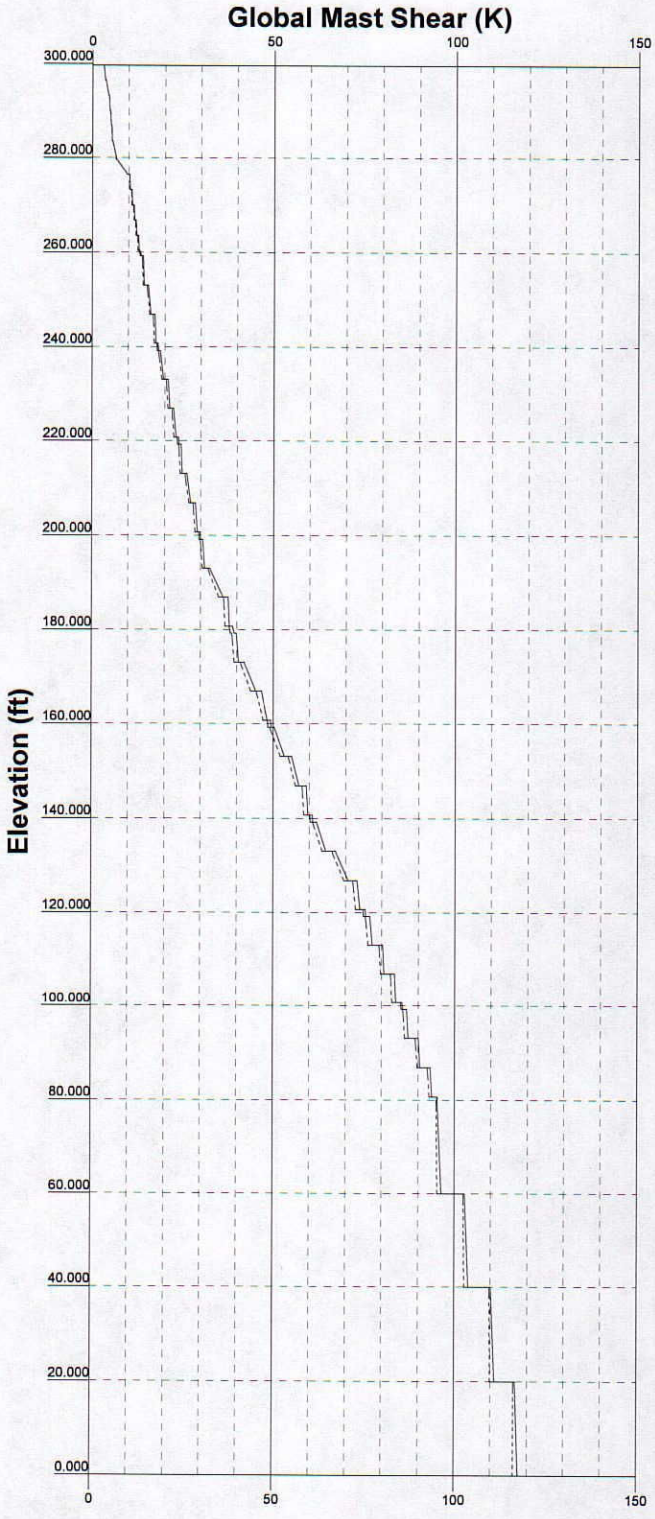
Job: 82420 - Government Center, MD (BU# 801526)			
Project: 300' Central SST / App ID:114068, Rev: 2			
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 01/07/11	Scale: NTS	
Path: S:\B&T Engineering\Projects\Crown Castle\82420_801526_Government Center\Engineering\RISA\82420_001_GovernmentCenterMD.eri		Dwg No. E-3	

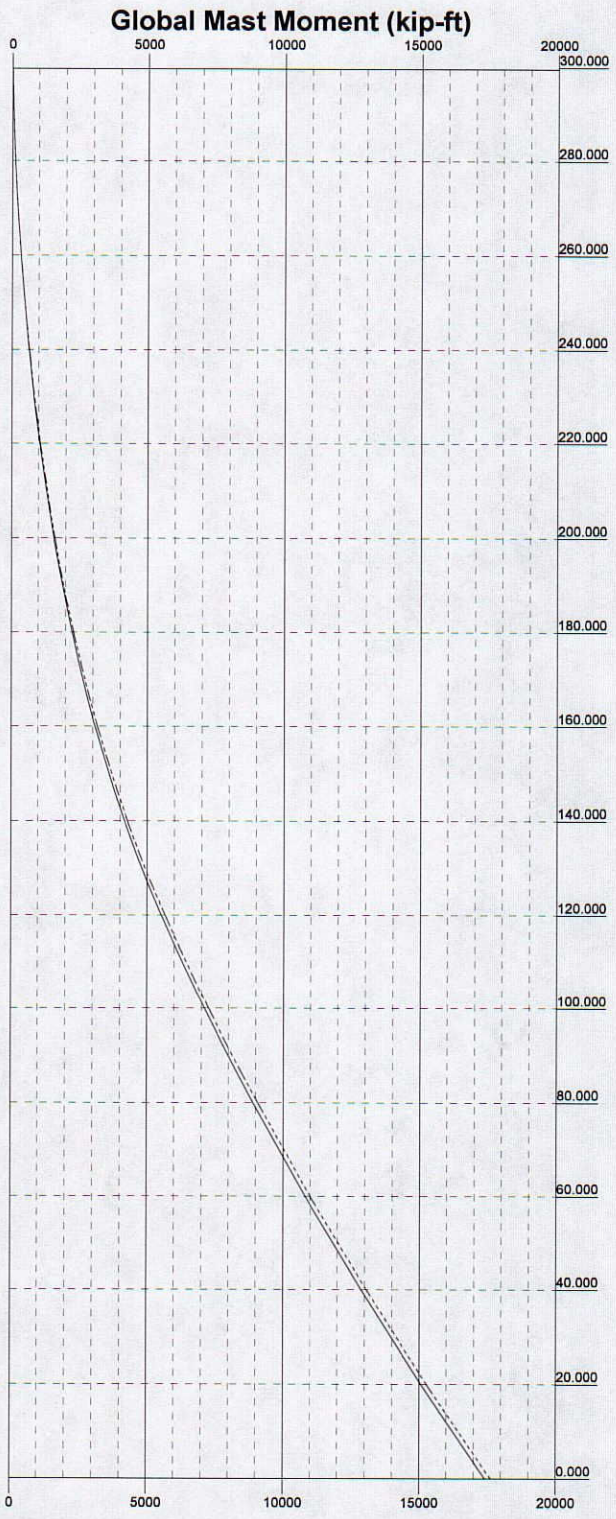
TIA-222-G - 95 mph/40 mph 0.500 in Ice Exposure C

Vx Vz

Maximum Values

Mx Mz



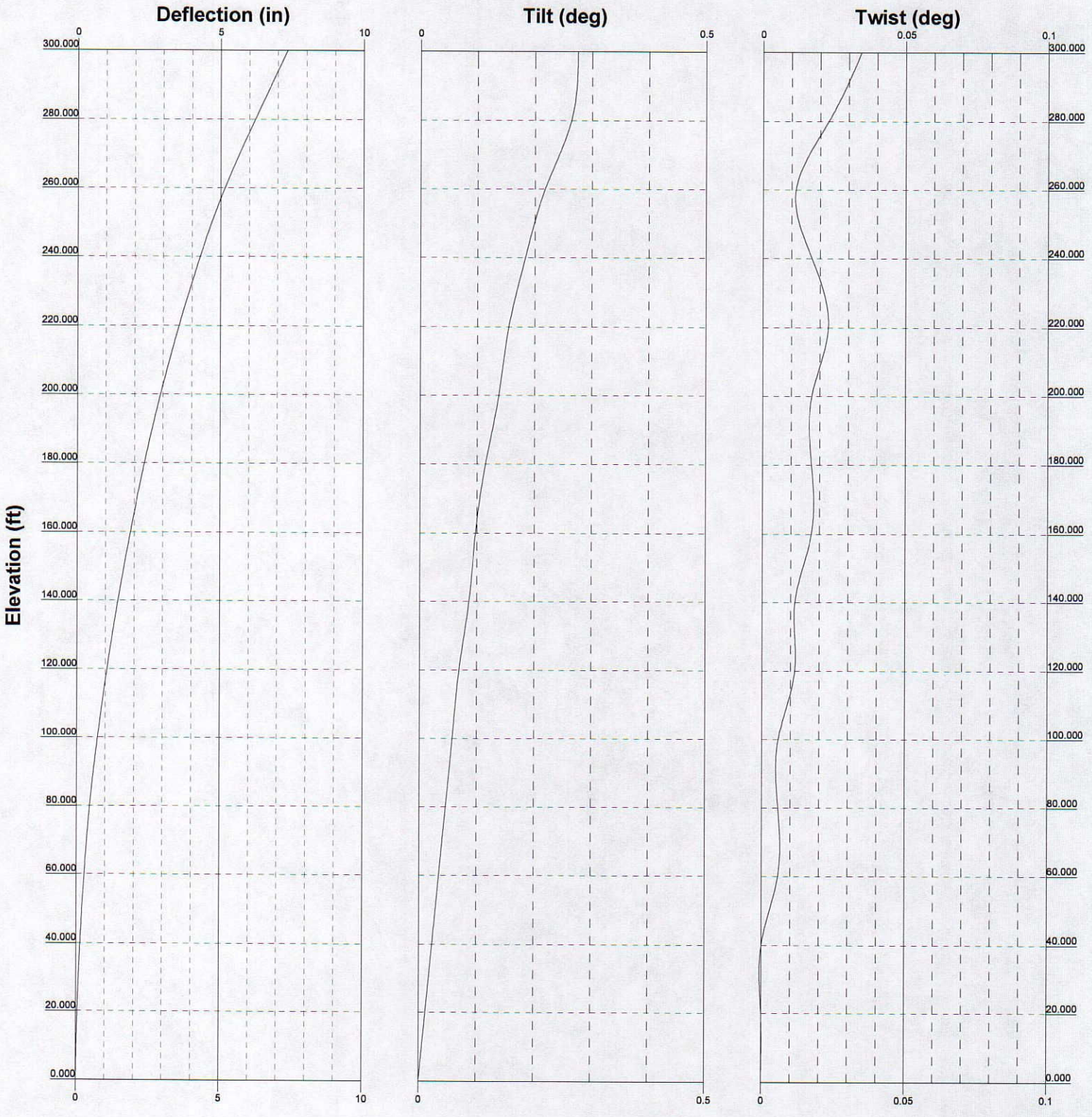


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 82420 - Government Center, MD (BU# 801526)			
Project: 300' Central SST / App ID:114068, Rev: 2			
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 01/07/11	Scale: NTS	
Path: S:\B&T Engineering\Projects\Crown Castle\82420_801526_Government Center\Engineering\RISA\82420_001_GovernmentCenterMD.ei		Dwg No. E-4	

TIA-222-G - Service - 60 mph

Maximum Values

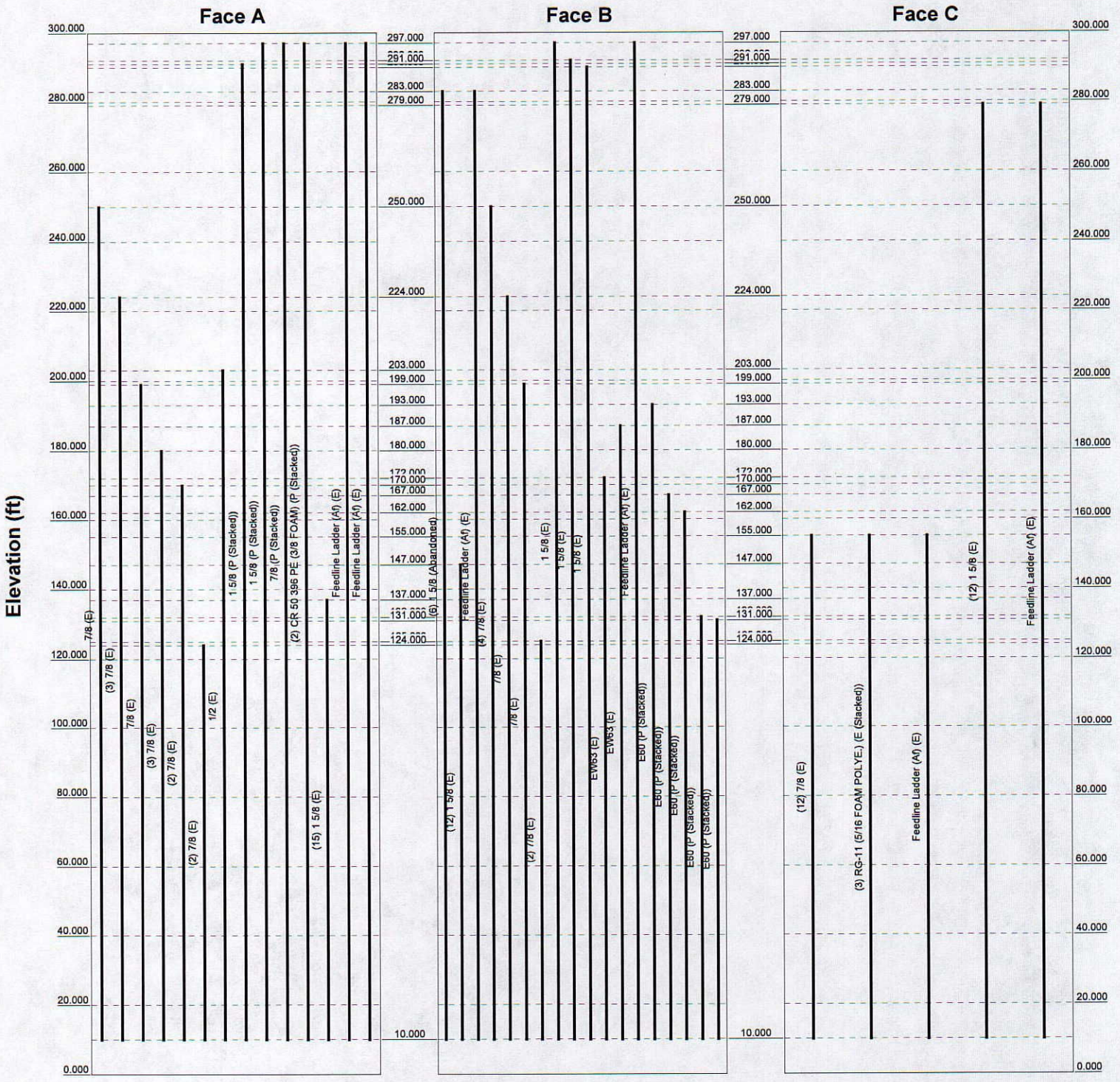


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	82420 - Government Center, MD (BU# 801526)		
Project:	300' Central SST / App ID:114068, Rev: 2		
Client:	Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:
Code:	TIA-222-G	Date: 01/07/11	Scale: NTS
Path:	S:\B&T Engineering\Projects\Crown Castle\82420_801526_Government Center\Engineering\RISA\82420_001_GovernmentCenterMD.en		Dwg No. E-5

Feedline Distribution Chart
0' - 300'

Round — Flat — App In Face — App Out Face — Truss Leg



B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***82420 - Government Center, MD (BU# 801526)***		
Project:	***300' Central SST / App ID:114068, Rev: 2***		
Client: Crown Castle USA, Inc.		Drawn by: K. Mears	App'd:
Code: TIA-222-G		Date: 01/07/11	Scale: NTS
Path:			Dwg No. E-7

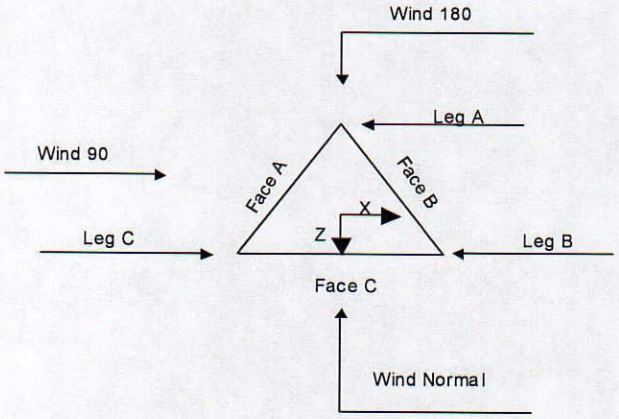
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 300.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 4.000 ft at the top and 30.000 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Saint Marys County, Maryland.
Basic wind speed of 95 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 40 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
LC1.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	300.000-280.000			4.000	1	20.000
T2	280.000-260.000			4.000	1	20.000
T3	260.000-240.000			4.000	1	20.000
T4	240.000-220.000			6.000	1	20.000
T5	220.000-200.000			8.000	1	20.000
T6	200.000-180.000			10.000	1	20.000
T7	180.000-160.000			12.000	1	20.000
T8	160.000-140.000			14.000	1	20.000
T9	140.000-120.000			16.000	1	20.000
T10	120.000-100.000			18.000	1	20.000
T11	100.000-80.000			20.000	1	20.000
T12	80.000-60.000			22.000	1	20.000
T13	60.000-40.000			24.000	1	20.000
T14	40.000-20.000			26.000	1	20.000
T15	20.000-0.000			28.000	1	20.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	300.000-280.000	3.208	X Brace	No	No	4.500	4.500
T2	280.000-260.000	3.208	X Brace	No	No	4.500	4.500
T3	260.000-240.000	6.167	X Brace	No	No	9.000	9.000
T4	240.000-220.000	6.167	X Brace	No	No	9.000	9.000
T5	220.000-200.000	6.167	X Brace	No	No	9.000	9.000
T6	200.000-180.000	6.167	X Brace	No	No	9.000	9.000
T7	180.000-160.000	6.167	X Brace	No	No	9.000	9.000
T8	160.000-140.000	6.167	X Brace	No	No	9.000	9.000
T9	140.000-120.000	6.167	X Brace	No	No	9.000	9.000
T10	120.000-100.000	6.167	X Brace	No	No	9.000	9.000
T11	100.000-80.000	6.167	X Brace	No	No	9.000	9.000
T12	80.000-60.000	20.000	K2 Down	No	Yes	0.000	0.000
T13	60.000-40.000	20.000	K2 Down	No	Yes	0.000	0.000
T14	40.000-20.000	20.000	K2 Down	No	Yes	0.000	0.000
T15	20.000-0.000	20.000	K2 Down	No	Yes	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 300.000-280.000	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T2 280.000-260.000	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T3 260.000-240.000	Solid Round	3 1/2	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T4 240.000-220.000	Solid Round	4	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T5 220.000-200.000	Solid Round	4 1/4	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T6 200.000-180.000	Solid Round	4 1/2	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T7 180.000-160.000	Solid Round	4 3/4	A572-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)
T8 160.000-140.000	Solid Round	5	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)
T9 140.000-120.000	Solid Round	5 1/4	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A36 (36 ksi)
T10 120.000-100.000	Solid Round	5 1/2	A572-50 (50 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T11 100.000-80.000	Solid Round	5 3/4	A572-50 (50 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T12 80.000-60.000	Solid Round	6	A572-50 (50 ksi)	Double Angle	2L3x3x5/16x3/8	A36 (36 ksi)
T13 60.000-40.000	Solid Round	6 1/4	A572-50 (50 ksi)	Double Angle	2L3x3x5/16x3/8	A36 (36 ksi)
T14 40.000-20.000	Solid Round	6 1/2	A572-50 (50 ksi)	Double Angle	2L3x3x5/16x3/8	A36 (36 ksi)
T15 20.000-0.000	Solid Round	6 3/4	A572-50 (50 ksi)	Double Angle	2L3x3x5/16x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 300.000-280.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T2 280.000-260.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 260.000-240.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T12 80.000-60.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3 1/2x3/8x3/8	A572-50 (50 ksi)
T13 60.000-40.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3 1/2x3/8x3/8	A572-50 (50 ksi)
T14 40.000-20.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3 1/2x3/8x3/8	A572-50 (50 ksi)
T15 20.000-0.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3 1/2x3/8x3/8	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T12 80.000-60.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T13 60.000-40.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T14 40.000-20.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T15 20.000-0.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T12	A36	Horizontal (1)	Double Equal Angle	2L2x2x1/4x3/8	1
80.000-60.000	(36 ksi)	Horizontal (2)		2L2x2x1/4x3/8	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	
T13	A36	Horizontal (1)	Double Equal Angle	2L2x2x1/4x3/8	1
60.000-40.000	(36 ksi)	Horizontal (2)		2L2x2x1/4x3/8	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	
T14	A36	Horizontal (1)	Double Equal Angle	2L2x2x1/4x3/8	1
40.000-20.000	(36 ksi)	Horizontal (2)		2L2x2x1/4x3/8	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	
T15	A36	Horizontal (1)	Double Equal Angle	2L2x2x1/4x3/8	1
20.000-0.000	(36 ksi)	Horizontal (2)		2L2x2x1/4x3/8	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	

Tower Section Geometry *(cont'd)*

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
T1	0.000	0.000	A36	1	1	1	0.000	0.000
300.000-280.000			(36 ksi)					
T2	0.000	0.000	A36	1	1	1	0.000	0.000
280.000-260.000			(36 ksi)					
T3	0.000	0.000	A36	1	1	1	0.000	0.000
260.000-240.000			(36 ksi)					
T4	0.000	0.000	A36	1	1	1	0.000	0.000
240.000-220.000			(36 ksi)					
T5	0.000	0.000	A36	1	1	1	0.000	0.000
220.000-200.000			(36 ksi)					
T6	0.000	0.000	A36	1	1	1	0.000	0.000
200.000-180.000			(36 ksi)					
T7	0.000	0.000	A36	1	1	1	0.000	0.000
180.000-160.000			(36 ksi)					
T8	0.000	0.000	A36	1	1	1	0.000	0.000
160.000-140.000			(36 ksi)					
T9	0.000	0.000	A36	1	1	1	0.000	0.000
140.000-120.000			(36 ksi)					
T10	0.000	0.000	A36	1	1	1	0.000	0.000
120.000-100.0			(36 ksi)					

Tower Elevation ft	Gusset Area (per face) ft²	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
00								
T11 100.000-80.00 0	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T12 80.000-60.000	0.000	0.000	A36 (36 ksi)	1	1	1	27.400	30.360
T13 60.000-40.000	0.000	0.000	A36 (36 ksi)	1	1	1	28.150	33.320
T14 40.000-20.000	0.000	0.000	A36 (36 ksi)	1	1	1	28.950	36.290
T15 20.000-0.000	0.000	0.000	A36 (36 ksi)	1	1	1	29.780	39.260

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 300.000-280.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 280.000-260.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 260.000-240.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 240.000-220.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 220.000-200.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 200.000-180.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 180.000-160.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 160.000-140.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 140.000-120.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 120.000-100.0 00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 100.000-80.00 0	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T12	No	Yes	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
80.000-60.000				1	1	1	1	1	1	1
T13	No	Yes	1	1	1	1	1	1	1	1
60.000-40.000				1	1	1	1	1	1	1
T14	No	Yes	1	1	1	1	1	1	1	1
40.000-20.000				1	1	1	1	1	1	1
T15	No	Yes	1	1	1	1	1	1	1	1
20.000-0.000				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 300.000-280.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 280.000-260.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 260.000-240.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 240.000-220.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 220.000-200.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 200.000-180.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 180.000-160.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 160.000-140.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 140.000-120.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 120.000-100.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 100.000-80.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 80.000-60.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T13 60.000-40.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 40.000-20.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 20.000-0.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 300.000-280.000	Flange	1.125 A325N	6	0.000 A325N	0	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T2 280.000-260.000	Flange	1.125 A325N	6	0.000 A325N	0	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T3 260.000-240.000	Flange	1.125 A325N	6	0.875 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T4 240.000-220.000	Flange	1.125 A325N	8	0.875 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T5 220.000-200.000	Flange	1.125 A325N	8	0.875 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T6 200.000-180.000	Flange	1.125 A325N	12	1.000 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T7 180.000-160.000	Flange	1.125 A325N	12	1.000 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T8 160.000-140.000	Flange	1.125 A325N	12	1.000 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0
T9 140.000-120.000	Flange	1.125 A325N	12	1.250 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.750 A325X	0	0.625 A325X	0
T10 120.000-100.000	Flange	1.125 A325N	16	1.250 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.750 A325X	0	0.625 A325X	0
T11 100.000-80.000	Flange	1.125 A325N	16	1.250 A325N	1	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.750 A325X	0	0.625 A325X	0
T12 80.000-60.000	Flange	1.125 A325N	16	0.875 A325N	2	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.875 A325X	2	0.625 A325X	0
T13 60.000-40.000	Flange	1.250 A325N	16	0.875 A325N	2	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.875 A325X	2	0.625 A325X	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T14 40.000-20.000	Flange	1.250 A325N	16	0.875 A325N	2	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.875 A325X	2	0.625 A325X	0
T15 20.000-0.000	Flange	1.500 A449	16	0.875 A325N	2	0.875 A325N	0	0.875 A325N	0	0.625 A325X	0	0.875 A325X	2	0.625 A325X	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
7/8 (E)	C	No	Ar (CaAa)	155.000 - 10.000	0.000	0.4	12	12	0.850 0.750	1.110		0.001
RG-11 (5/16 FOAM POLYE.) (E (Stacked))	C	No	Ar (CaAa)	155.000 - 10.000	1.000	0.44	3	3	0.850 0.750	0.000		0.000
Feedline Ladder (Af) (E)	C	No	Af (CaAa)	155.000 - 10.000	0.000	0.36	1	1	0.850 0.750	1.500		0.008
1 5/8 (E)	C	No	Ar (CaAa)	279.000 - 10.000	0.000	-0.4	12	12	0.850 0.750	1.980		0.001
Feedline Ladder (Af) (E)	C	No	Af (CaAa)	279.000 - 10.000	0.000	-0.36	1	1	0.850 0.750	1.500		0.008
****												
1 5/8 (Abandoned)	B	No	Ar (CaAa)	283.000 - 10.000	0.000	0.45	6	6	0.850 0.750	1.980		0.001
1 5/8 (E)	B	No	Ar (CaAa)	147.000 - 10.000	0.000	0	12	12	0.850 0.750	1.980		0.001
Feedline Ladder (Af) (E)	B	No	Af (CaAa)	283.000 - 10.000	0.000	0.3	1	1	0.850 0.750	1.500		0.008
7/8 (E)	B	No	Ar (CaAa)	250.000 - 10.000	0.000	-0.48	4	4	0.850 0.750	1.110		0.001
7/8 (E)	B	No	Ar (CaAa)	224.000 - 10.000	0.000	-0.45	1	1	0.850 0.750	1.110		0.001
7/8 (E)	B	No	Ar (CaAa)	199.000 - 10.000	0.000	-0.43	1	1	0.850 0.750	1.110		0.001
7/8 (E)	B	No	Ar (CaAa)	125.000 - 10.000	0.000	-0.4	2	2	0.850 0.750	1.110		0.001
1 5/8 (E)	B	No	Ar (CaAa)	297.000 - 10.000	0.000	-0.38	1	1	0.850 0.750	1.980		0.001
1 5/8 (E)	B	No	Ar (CaAa)	292.000 - 10.000	0.000	-0.36	1	1	0.850 0.750	1.980		0.001
1 5/8 (E)	B	No	Ar (CaAa)	290.000 - 10.000	0.000	-0.34	1	1	0.850 0.750	1.980		0.001
EW63 (E)	B	No	Af (CaAa)	172.000 - 10.000	0.000	-0.33	1	1	1.574	1.574		0.001
EW63 (E)	B	No	Af (CaAa)	187.000 - 10.000	0.000	-0.31	1	1	1.574	1.574		0.001
Feedline Ladder (Af) (E)	B	No	Af (CaAa)	297.000 - 10.000	0.000	-0.29	1	1	0.850 0.750	1.500		0.008
E60	B	No	Af (CaAa)	193.000 - 10.000	1.000	-0.3	1	1	0.850	0.000		0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
(P (Stacked))									0.750			
E60	B	No	Af (CaAa)	167.000 - 10.000	1.000	-0.32	1	1	0.850	0.000		0.000
(P (Stacked))									0.750			
E60	B	No	Af (CaAa)	162.000 - 10.000	1.000	-0.34	1	1	0.850	0.000		0.000
(P (Stacked))									0.750			
E60	B	No	Af (CaAa)	132.000 - 10.000	1.000	-0.36	1	1	0.850	0.000		0.000
(P (Stacked))									0.750			
E60	B	No	Af (CaAa)	131.000 - 10.000	1.000	-0.38	1	1	0.850	0.000		0.000
(P (Stacked))									0.750			
****												
7/8	A	No	Ar (CaAa)	250.000 - 10.000	0.000	0.48	1	1	0.850	1.110		0.001
(E)									0.750			
7/8	A	No	Ar (CaAa)	224.000 - 10.000	0.000	0.45	3	3	0.850	1.110		0.001
(E)									0.750			
7/8	A	No	Ar (CaAa)	199.000 - 10.000	0.000	0.4	1	1	0.850	1.110		0.001
(E)									0.750			
7/8	A	No	Ar (CaAa)	180.000 - 10.000	0.000	0.38	3	3	0.850	1.110		0.001
(E)									0.750			
7/8	A	No	Ar (CaAa)	170.000 - 10.000	0.000	0.35	2	2	0.850	1.110		0.001
(E)									0.750			
7/8	A	No	Ar (CaAa)	124.000 - 10.000	0.000	0.33	2	2	0.850	1.110		0.001
(E)									0.750			
1/2	A	No	Ar (CaAa)	203.000 - 10.000	0.000	0.31	1	1	0.580	0.000		0.000
(E)												
1 5/8	A	No	Ar (CaAa)	291.000 - 10.000	1.000	0.45	1	1	0.850	0.000		0.001
(P (Stacked))									0.750			
1 5/8	A	No	Ar (CaAa)	297.000 - 10.000	1.000	0.42	1	1	0.850	0.000		0.001
(P (Stacked))									0.750			
7/8	A	No	Ar (CaAa)	297.000 - 10.000	1.000	0.4	1	1	0.850	0.000		0.001
(P (Stacked))									0.750			
CR 50 396 PE	A	No	Ar (CaAa)	297.000 - 10.000	1.000	0.37	2	2	0.850	0.000		0.000
(3/8 FOAM)									0.750			
(P (Stacked))												
1 5/8	A	No	Ar (CaAa)	137.000 - 10.000	0.000	0	15	5	0.850	1.980		0.001
(E)									0.750			
Feedline Ladder (Af)	A	No	Af (CaAa)	297.000 - 10.000	0.000	0.04	1	1	0.850	1.500		0.008
(E)									0.750			
Feedline Ladder (Af)	A	No	Af (CaAa)	297.000 - 10.000	0.000	0.27	1	1	0.850	1.500		0.008
(E)									0.750			
****												

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf
****							

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
T1	300.000-280.000	A	0.000	0.000	8.500	0.000	0.327
		B	0.000	0.000	16.286	0.000	0.227
		C	0.000	0.000	0.000	0.000	0.000
T2	280.000-260.000	A	0.000	0.000	10.000	0.000	0.392
		B	0.000	0.000	45.640	0.000	0.523
		C	0.000	0.000	49.894	0.000	0.397
T3	260.000-240.000	A	0.000	0.000	11.110	0.000	0.397
		B	0.000	0.000	50.080	0.000	0.545
		C	0.000	0.000	52.520	0.000	0.418
T4	240.000-220.000	A	0.000	0.000	13.552	0.000	0.409
		B	0.000	0.000	54.964	0.000	0.569
		C	0.000	0.000	52.520	0.000	0.418
T5	220.000-200.000	A	0.000	0.000	18.880	0.000	0.436
		B	0.000	0.000	56.740	0.000	0.577
		C	0.000	0.000	52.520	0.000	0.418
T6	200.000-180.000	A	0.000	0.000	20.989	0.000	0.450
		B	0.000	0.000	60.686	0.000	0.591
		C	0.000	0.000	52.520	0.000	0.418
T7	180.000-160.000	A	0.000	0.000	29.980	0.000	0.494
		B	0.000	0.000	67.356	0.000	0.604
		C	0.000	0.000	52.520	0.000	0.418
T8	160.000-140.000	A	0.000	0.000	32.200	0.000	0.505
		B	0.000	0.000	86.087	0.000	0.696
		C	0.000	0.000	76.250	0.000	0.645
T9	140.000-120.000	A	0.000	0.000	83.578	0.000	0.775
		B	0.000	0.000	118.085	0.000	0.863
		C	0.000	0.000	84.160	0.000	0.721
T10	120.000-100.000	A	0.000	0.000	96.040	0.000	0.839
		B	0.000	0.000	121.415	0.000	0.880
		C	0.000	0.000	84.160	0.000	0.721
T11	100.000-80.000	A	0.000	0.000	96.040	0.000	0.839
		B	0.000	0.000	121.415	0.000	0.880
		C	0.000	0.000	84.160	0.000	0.721
T12	80.000-60.000	A	0.000	0.000	96.040	0.000	0.839
		B	0.000	0.000	121.415	0.000	0.880
		C	0.000	0.000	84.160	0.000	0.721
T13	60.000-40.000	A	0.000	0.000	96.040	0.000	0.839
		B	0.000	0.000	121.415	0.000	0.880
		C	0.000	0.000	84.160	0.000	0.721
T14	40.000-20.000	A	0.000	0.000	96.040	0.000	0.839
		B	0.000	0.000	121.415	0.000	0.880
		C	0.000	0.000	84.160	0.000	0.721
T15	20.000-0.000	A	0.000	0.000	48.020	0.000	0.419
		B	0.000	0.000	60.707	0.000	0.440
		C	0.000	0.000	42.080	0.000	0.360

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
T1	300.000-280.000	A	1.243	0.000	0.000	36.975	0.000	0.593
		B		0.000	0.000	34.565	0.000	0.568
		C		0.000	0.000	0.000	0.000	0.000
T2	280.000-260.000	A	1.234	0.000	0.000	45.016	0.000	0.714
		B		0.000	0.000	94.364	0.000	1.437
		C		0.000	0.000	94.594	0.000	1.336
T3	260.000-240.000	A	1.224	0.000	0.000	48.319	0.000	0.750
		B		0.000	0.000	106.727	0.000	1.556
		C		0.000	0.000	99.482	0.000	1.400
T4	240.000-220.000	A	1.214	0.000	0.000	55.691	0.000	0.824
		B		0.000	0.000	120.422	0.000	1.688
		C		0.000	0.000	99.385	0.000	1.393
T5	220.000-200.000	A	1.203	0.000	0.000	72.510	0.000	0.978
		B		0.000	0.000	125.683	0.000	1.740
		C		0.000	0.000	99.279	0.000	1.385
T6	200.000-180.000	A	1.191	0.000	0.000	82.738	0.000	1.077
		B		0.000	0.000	138.484	0.000	1.865
		C		0.000	0.000	99.165	0.000	1.377
T7	180.000-160.000	A	1.178	0.000	0.000	110.932	0.000	1.326
		B		0.000	0.000	154.468	0.000	2.010
		C		0.000	0.000	99.038	0.000	1.368
T8	160.000-140.000	A	1.163	0.000	0.000	118.113	0.000	1.376
		B		0.000	0.000	196.106	0.000	2.488
		C		0.000	0.000	162.169	0.000	2.105
T9	140.000-120.000	A	1.147	0.000	0.000	159.374	0.000	2.322
		B		0.000	0.000	262.270	0.000	3.260
		C		0.000	0.000	182.830	0.000	2.333
T10	120.000-100.000	A	1.128	0.000	0.000	177.587	0.000	2.562
		B		0.000	0.000	276.545	0.000	3.348
		C		0.000	0.000	182.335	0.000	2.309
T11	100.000-80.000	A	1.106	0.000	0.000	175.953	0.000	2.528
		B		0.000	0.000	274.733	0.000	3.294
		C		0.000	0.000	181.753	0.000	2.280
T12	80.000-60.000	A	1.078	0.000	0.000	173.953	0.000	2.487
		B		0.000	0.000	272.515	0.000	3.228
		C		0.000	0.000	181.040	0.000	2.246
T13	60.000-40.000	A	1.042	0.000	0.000	171.354	0.000	2.435
		B		0.000	0.000	269.634	0.000	3.144
		C		0.000	0.000	180.115	0.000	2.201
T14	40.000-20.000	A	0.991	0.000	0.000	167.574	0.000	2.360
		B		0.000	0.000	265.442	0.000	3.024
		C		0.000	0.000	178.770	0.000	2.136
T15	20.000-0.000	A	0.887	0.000	0.000	80.041	0.000	1.109
		B		0.000	0.000	128.565	0.000	1.397
		C		0.000	0.000	88.054	0.000	1.005

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	300.000-280.000	0.463	-1.849	0.083	-2.781
T2	280.000-260.000	3.219	1.080	2.473	0.025
T3	260.000-240.000	3.663	0.899	2.928	-0.235
T4	240.000-220.000	4.732	0.611	3.775	-0.793
T5	220.000-200.000	5.653	0.107	4.468	-1.500
T6	200.000-180.000	6.396	-0.440	5.043	-2.792
T7	180.000-160.000	6.780	-1.880	5.447	-4.492
T8	160.000-140.000	5.213	-1.225	3.786	-3.730
T9	140.000-120.000	3.888	-2.274	3.364	-4.203
T10	120.000-100.000	3.748	-2.942	3.435	-4.873
T11	100.000-80.000	4.068	-3.186	3.758	-5.262
T12	80.000-60.000	4.889	-3.822	4.333	-5.968
T13	60.000-40.000	5.273	-4.116	4.708	-6.343
T14	40.000-20.000	5.651	-4.405	5.097	-6.642
T15	20.000-0.000	4.959	-3.862	4.740	-5.755

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	8	1 5/8	280.00 - 283.00	0.6000	0.5810
T1	11	Feedline Ladder (Af)	280.00 - 283.00	0.6000	0.5810
T1	16	1 5/8	280.00 - 297.00	0.6000	0.5810
T1	17	1 5/8	280.00 - 292.00	0.6000	0.5810
T1	18	1 5/8	280.00 - 290.00	0.6000	0.5810
T1	21	Feedline Ladder (Af)	280.00 - 297.00	0.6000	0.5810
T1	35	1 5/8	280.00 - 291.00	0.6000	0.5810
T1	36	1 5/8	280.00 - 297.00	0.6000	0.5810
T1	37	7/8	280.00 - 297.00	0.6000	0.5810
T1	38	CR 50 396 PE (3/8 FOAM)	280.00 - 297.00	0.6000	0.5810
T1	40	Feedline Ladder (Af)	280.00 - 297.00	0.6000	0.5810
T1	41	Feedline Ladder (Af)	280.00 - 297.00	0.6000	0.5810
T2	5	1 5/8	260.00 - 279.00	0.6000	0.5954
T2	6	Feedline Ladder (Af)	260.00 - 279.00	0.6000	0.5954
T2	8	1 5/8	260.00 - 280.00	0.6000	0.5954
T2	11	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.5954
T2	16	1 5/8	260.00 - 280.00	0.6000	0.5954
T2	17	1 5/8	260.00 - 280.00	0.6000	0.5954

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	18	1 5/8	260.00 - 280.00	0.6000	0.5954
T2	21	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.5954
T2	35	1 5/8	260.00 - 280.00	0.6000	0.5954
T2	36	1 5/8	260.00 - 280.00	0.6000	0.5954
T2	37	7/8	260.00 - 280.00	0.6000	0.5954
T2	38	CR 50 396 PE (3/8 FOAM)	260.00 - 280.00	0.6000	0.5954
T2	40	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.5954
T2	41	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.5954
T3	5	1 5/8	240.00 - 260.00	0.6000	0.6000
T3	6	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000
T3	8	1 5/8	240.00 - 260.00	0.6000	0.6000
T3	11	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000
T3	12	7/8	240.00 - 250.00	0.6000	0.6000
T3	16	1 5/8	240.00 - 260.00	0.6000	0.6000
T3	17	1 5/8	240.00 - 260.00	0.6000	0.6000
T3	18	1 5/8	240.00 - 260.00	0.6000	0.6000
T3	21	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000
T3	28	7/8	240.00 - 250.00	0.6000	0.6000
T3	35	1 5/8	240.00 - 260.00	0.6000	0.6000
T3	36	1 5/8	240.00 - 260.00	0.6000	0.6000
T3	37	7/8	240.00 - 260.00	0.6000	0.6000
T3	38	CR 50 396 PE (3/8 FOAM)	240.00 - 260.00	0.6000	0.6000
T3	40	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000
T3	41	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000
T4	5	1 5/8	220.00 - 240.00	0.6000	0.6000
T4	6	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T4	8	1 5/8	220.00 - 240.00	0.6000	0.6000
T4	11	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T4	12	7/8	220.00 - 240.00	0.6000	0.6000
T4	13	7/8	220.00 - 224.00	0.6000	0.6000
T4	16	1 5/8	220.00 - 240.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	17	1 5/8	220.00 - 240.00	0.6000	0.6000
T4	18	1 5/8	220.00 - 240.00	0.6000	0.6000
T4	21	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T4	28	7/8	220.00 - 240.00	0.6000	0.6000
T4	29	7/8	220.00 - 224.00	0.6000	0.6000
T4	35	1 5/8	220.00 - 240.00	0.6000	0.6000
T4	36	1 5/8	220.00 - 240.00	0.6000	0.6000
T4	37	7/8	220.00 - 240.00	0.6000	0.6000
T4	38	CR 50 396 PE (3/8 FOAM)	220.00 - 240.00	0.6000	0.6000
T4	40	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T4	41	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T5	5	1 5/8	200.00 - 220.00	0.6000	0.6000
T5	6	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T5	8	1 5/8	200.00 - 220.00	0.6000	0.6000
T5	11	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T5	12	7/8	200.00 - 220.00	0.6000	0.6000
T5	13	7/8	200.00 - 220.00	0.6000	0.6000
T5	16	1 5/8	200.00 - 220.00	0.6000	0.6000
T5	17	1 5/8	200.00 - 220.00	0.6000	0.6000
T5	18	1 5/8	200.00 - 220.00	0.6000	0.6000
T5	21	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T5	28	7/8	200.00 - 220.00	0.6000	0.6000
T5	29	7/8	200.00 - 220.00	0.6000	0.6000
T5	34	1/2	200.00 - 203.00	0.6000	0.6000
T5	35	1 5/8	200.00 - 220.00	0.6000	0.6000
T5	36	1 5/8	200.00 - 220.00	0.6000	0.6000
T5	37	7/8	200.00 - 220.00	0.6000	0.6000
T5	38	CR 50 396 PE (3/8 FOAM)	200.00 - 220.00	0.6000	0.6000
T5	40	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T5	41	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T6	5	1 5/8	180.00 - 200.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	6	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T6	8	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	11	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T6	12	7/8	180.00 - 200.00	0.6000	0.6000
T6	13	7/8	180.00 - 200.00	0.6000	0.6000
T6	14	7/8	180.00 - 199.00	0.6000	0.6000
T6	16	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	17	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	18	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	20	EW63	180.00 - 187.00	0.6000	0.6000
T6	21	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T6	22	E60	180.00 - 193.00	0.6000	0.6000
T6	28	7/8	180.00 - 200.00	0.6000	0.6000
T6	29	7/8	180.00 - 200.00	0.6000	0.6000
T6	30	7/8	180.00 - 199.00	0.6000	0.6000
T6	34	1/2	180.00 - 200.00	0.6000	0.6000
T6	35	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	36	1 5/8	180.00 - 200.00	0.6000	0.6000
T6	37	7/8	180.00 - 200.00	0.6000	0.6000
T6	38	CR 50 396 PE (3/8 FOAM)	180.00 - 200.00	0.6000	0.6000
T6	40	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T6	41	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T7	5	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	6	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T7	8	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	11	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T7	12	7/8	160.00 - 180.00	0.6000	0.6000
T7	13	7/8	160.00 - 180.00	0.6000	0.6000
T7	14	7/8	160.00 - 180.00	0.6000	0.6000
T7	16	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	17	1 5/8	160.00 - 180.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	18	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	19	EW63	160.00 - 172.00	0.6000	0.6000
T7	20	EW63	160.00 - 180.00	0.6000	0.6000
T7	21	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T7	22	E60	160.00 - 180.00	0.6000	0.6000
T7	23	E60	160.00 - 167.00	0.6000	0.6000
T7	24	E60	160.00 - 162.00	0.6000	0.6000
T7	28	7/8	160.00 - 180.00	0.6000	0.6000
T7	29	7/8	160.00 - 180.00	0.6000	0.6000
T7	30	7/8	160.00 - 180.00	0.6000	0.6000
T7	31	7/8	160.00 - 180.00	0.6000	0.6000
T7	32	7/8	160.00 - 170.00	0.6000	0.6000
T7	34	1/2	160.00 - 180.00	0.6000	-11.04
T7	35	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	36	1 5/8	160.00 - 180.00	0.6000	0.6000
T7	37	7/8	160.00 - 180.00	0.6000	0.6000
T7	38	CR 50 396 PE (3/8 FOAM)	160.00 - 180.00	0.6000	0.6000
T7	40	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T7	41	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T8	1	7/8	140.00 - 155.00	0.6000	0.6000
T8	2	RG-11 (5/16 FOAM POLYE.)	140.00 - 155.00	0.6000	0.6000
T8	3	Feedline Ladder (Af)	140.00 - 155.00	0.6000	0.6000
T8	5	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	6	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T8	8	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	10	1 5/8	140.00 - 147.00	0.6000	0.6000
T8	11	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T8	12	7/8	140.00 - 160.00	0.6000	0.6000
T8	13	7/8	140.00 - 160.00	0.6000	0.6000
T8	14	7/8	140.00 - 160.00	0.6000	0.6000
T8	16	1 5/8	140.00 - 160.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	17	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	18	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	19	EW63	140.00 - 160.00	0.6000	0.6000
T8	20	EW63	140.00 - 160.00	0.6000	0.6000
T8	21	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T8	22	E60	140.00 - 160.00	0.6000	0.6000
T8	23	E60	140.00 - 160.00	0.6000	0.6000
T8	24	E60	140.00 - 160.00	0.6000	0.6000
T8	28	7/8	140.00 - 160.00	0.6000	0.6000
T8	29	7/8	140.00 - 160.00	0.6000	0.6000
T8	30	7/8	140.00 - 160.00	0.6000	0.6000
T8	31	7/8	140.00 - 160.00	0.6000	0.6000
T8	32	7/8	140.00 - 160.00	0.6000	0.6000
T8	34	1/2	140.00 - 160.00	0.6000	0.6000
T8	35	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	36	1 5/8	140.00 - 160.00	0.6000	0.6000
T8	37	7/8	140.00 - 160.00	0.6000	0.6000
T8	38	CR 50 396 PE (3/8 FOAM)	140.00 - 160.00	0.6000	0.6000
T8	40	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T8	41	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T9	1	7/8	120.00 - 140.00	0.6000	0.6000
T9	2	RG-11 (5/16 FOAM POLYE.)	120.00 - 140.00	0.6000	0.6000
T9	3	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T9	5	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	6	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T9	8	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	10	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	11	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T9	12	7/8	120.00 - 140.00	0.6000	0.6000
T9	13	7/8	120.00 - 140.00	0.6000	0.6000
T9	14	7/8	120.00 - 140.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	15	7/8	120.00 - 125.00	0.6000	0.6000
T9	16	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	17	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	18	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	19	EW63	120.00 - 140.00	0.6000	0.6000
T9	20	EW63	120.00 - 140.00	0.6000	0.6000
T9	21	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T9	22	E60	120.00 - 140.00	0.6000	0.6000
T9	23	E60	120.00 - 140.00	0.6000	0.6000
T9	24	E60	120.00 - 140.00	0.6000	0.6000
T9	25	E60	120.00 - 132.00	0.6000	0.6000
T9	26	E60	120.00 - 131.00	0.6000	0.6000
T9	28	7/8	120.00 - 140.00	0.6000	0.6000
T9	29	7/8	120.00 - 140.00	0.6000	0.6000
T9	30	7/8	120.00 - 140.00	0.6000	0.6000
T9	31	7/8	120.00 - 140.00	0.6000	0.6000
T9	32	7/8	120.00 - 140.00	0.6000	0.6000
T9	33	7/8	120.00 - 124.00	0.6000	0.6000
T9	34	1/2	120.00 - 140.00	0.6000	0.6000
T9	35	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	36	1 5/8	120.00 - 140.00	0.6000	0.6000
T9	37	7/8	120.00 - 140.00	0.6000	0.6000
T9	38	CR 50 396 PE (3/8 FOAM)	120.00 - 140.00	0.6000	0.6000
T9	39	1 5/8	120.00 - 137.00	0.6000	0.6000
T9	40	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T9	41	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T10	1	7/8	100.00 - 120.00	0.6000	0.6000
T10	2	RG-11 (5/16 FOAM POLYE.)	100.00 - 120.00	0.6000	0.6000
T10	3	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T10	5	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	6	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	8	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	10	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	11	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T10	12	7/8	100.00 - 120.00	0.6000	0.6000
T10	13	7/8	100.00 - 120.00	0.6000	0.6000
T10	14	7/8	100.00 - 120.00	0.6000	0.6000
T10	15	7/8	100.00 - 120.00	0.6000	0.6000
T10	16	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	17	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	18	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	19	EW63	100.00 - 120.00	0.6000	0.6000
T10	20	EW63	100.00 - 120.00	0.6000	0.6000
T10	21	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T10	22	E60	100.00 - 120.00	0.6000	0.6000
T10	23	E60	100.00 - 120.00	0.6000	0.6000
T10	24	E60	100.00 - 120.00	0.6000	0.6000
T10	25	E60	100.00 - 120.00	0.6000	0.6000
T10	26	E60	100.00 - 120.00	0.6000	0.6000
T10	28	7/8	100.00 - 120.00	0.6000	0.6000
T10	29	7/8	100.00 - 120.00	0.6000	0.6000
T10	30	7/8	100.00 - 120.00	0.6000	0.6000
T10	31	7/8	100.00 - 120.00	0.6000	0.6000
T10	32	7/8	100.00 - 120.00	0.6000	0.6000
T10	33	7/8	100.00 - 120.00	0.6000	0.6000
T10	34	1/2	100.00 - 120.00	0.6000	0.6000
T10	35	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	36	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	37	7/8	100.00 - 120.00	0.6000	0.6000
T10	38	CR 50 396 PE (3/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T10	39	1 5/8	100.00 - 120.00	0.6000	0.6000
T10	40	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	41	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T11	1	7/8	80.00 - 100.00	0.6000	0.6000
T11	2	RG-11 (5/16 FOAM POLYE.)	80.00 - 100.00	0.6000	0.6000
T11	3	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T11	5	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	6	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T11	8	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	10	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	11	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T11	12	7/8	80.00 - 100.00	0.6000	0.6000
T11	13	7/8	80.00 - 100.00	0.6000	0.6000
T11	14	7/8	80.00 - 100.00	0.6000	0.6000
T11	15	7/8	80.00 - 100.00	0.6000	0.6000
T11	16	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	17	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	18	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	19	EW63	80.00 - 100.00	0.6000	0.6000
T11	20	EW63	80.00 - 100.00	0.6000	0.6000
T11	21	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T11	22	E60	80.00 - 100.00	0.6000	0.6000
T11	23	E60	80.00 - 100.00	0.6000	0.6000
T11	24	E60	80.00 - 100.00	0.6000	0.6000
T11	25	E60	80.00 - 100.00	0.6000	0.6000
T11	26	E60	80.00 - 100.00	0.6000	0.6000
T11	28	7/8	80.00 - 100.00	0.6000	0.6000
T11	29	7/8	80.00 - 100.00	0.6000	0.6000
T11	30	7/8	80.00 - 100.00	0.6000	0.6000
T11	31	7/8	80.00 - 100.00	0.6000	0.6000
T11	32	7/8	80.00 - 100.00	0.6000	0.6000
T11	33	7/8	80.00 - 100.00	0.6000	0.6000
T11	34	1/2	80.00 - 100.00	0.6000	0.6000
T11	35	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	36	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	37	7/8	80.00 - 100.00	0.6000	0.6000
T11	38	CR 50 396 PE (3/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T11	39	1 5/8	80.00 - 100.00	0.6000	0.6000
T11	40	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T11	41	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T12	1	7/8	60.00 - 80.00	0.6000	0.6000
T12	2	RG-11 (5/16 FOAM POLYE.)	60.00 - 80.00	0.6000	0.6000
T12	3	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T12	5	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	6	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T12	8	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	10	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	11	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T12	12	7/8	60.00 - 80.00	0.6000	0.6000
T12	13	7/8	60.00 - 80.00	0.6000	0.6000
T12	14	7/8	60.00 - 80.00	0.6000	0.6000
T12	15	7/8	60.00 - 80.00	0.6000	0.6000
T12	16	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	17	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	18	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	19	EW63	60.00 - 80.00	0.6000	0.6000
T12	20	EW63	60.00 - 80.00	0.6000	0.6000
T12	21	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T12	22	E60	60.00 - 80.00	0.6000	0.6000
T12	23	E60	60.00 - 80.00	0.6000	0.6000
T12	24	E60	60.00 - 80.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	25	E60	60.00 - 80.00	0.6000	0.6000
T12	26	E60	60.00 - 80.00	0.6000	0.6000
T12	28	7/8	60.00 - 80.00	0.6000	0.6000
T12	29	7/8	60.00 - 80.00	0.6000	0.6000
T12	30	7/8	60.00 - 80.00	0.6000	0.6000
T12	31	7/8	60.00 - 80.00	0.6000	0.6000
T12	32	7/8	60.00 - 80.00	0.6000	0.6000
T12	33	7/8	60.00 - 80.00	0.6000	0.6000
T12	34	1/2	60.00 - 80.00	0.6000	0.6000
T12	35	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	36	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	37	7/8	60.00 - 80.00	0.6000	0.6000
T12	38	CR 50 396 PE (3/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T12	39	1 5/8	60.00 - 80.00	0.6000	0.6000
T12	40	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T12	41	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T13	1	7/8	40.00 - 60.00	0.6000	0.6000
T13	2	RG-11 (5/16 FOAM POLYE.)	40.00 - 60.00	0.6000	0.6000
T13	3	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T13	5	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	6	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T13	8	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	10	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	11	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T13	12	7/8	40.00 - 60.00	0.6000	0.6000
T13	13	7/8	40.00 - 60.00	0.6000	0.6000
T13	14	7/8	40.00 - 60.00	0.6000	0.6000
T13	15	7/8	40.00 - 60.00	0.6000	0.6000
T13	16	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	17	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	18	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	19	EW63	40.00 - 60.00	0.6000	0.6000
T13	20	EW63	40.00 - 60.00	0.6000	0.6000
T13	21	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T13	22	E60	40.00 - 60.00	0.6000	0.6000
T13	23	E60	40.00 - 60.00	0.6000	0.6000
T13	24	E60	40.00 - 60.00	0.6000	0.6000
T13	25	E60	40.00 - 60.00	0.6000	0.6000
T13	26	E60	40.00 - 60.00	0.6000	0.6000
T13	28	7/8	40.00 - 60.00	0.6000	0.6000
T13	29	7/8	40.00 - 60.00	0.6000	0.6000
T13	30	7/8	40.00 - 60.00	0.6000	0.6000
T13	31	7/8	40.00 - 60.00	0.6000	0.6000
T13	32	7/8	40.00 - 60.00	0.6000	0.6000
T13	33	7/8	40.00 - 60.00	0.6000	0.6000
T13	34	1/2	40.00 - 60.00	0.6000	0.6000
T13	35	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	36	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	37	7/8	40.00 - 60.00	0.6000	0.6000
T13	38	CR 50 396 PE (3/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T13	39	1 5/8	40.00 - 60.00	0.6000	0.6000
T13	40	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T13	41	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T14	1	7/8	20.00 - 40.00	0.6000	0.6000
T14	2	RG-11 (5/16 FOAM POLYE.)	20.00 - 40.00	0.6000	0.6000
T14	3	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	5	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	6	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	8	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	10	1 5/8	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	11	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	12	7/8	20.00 - 40.00	0.6000	0.6000
T14	13	7/8	20.00 - 40.00	0.6000	0.6000
T14	14	7/8	20.00 - 40.00	0.6000	0.6000
T14	15	7/8	20.00 - 40.00	0.6000	0.6000
T14	16	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	17	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	18	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	19	EW63	20.00 - 40.00	0.6000	0.6000
T14	20	EW63	20.00 - 40.00	0.6000	0.6000
T14	21	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	22	E60	20.00 - 40.00	0.6000	0.6000
T14	23	E60	20.00 - 40.00	0.6000	0.6000
T14	24	E60	20.00 - 40.00	0.6000	0.6000
T14	25	E60	20.00 - 40.00	0.6000	0.6000
T14	26	E60	20.00 - 40.00	0.6000	0.6000
T14	28	7/8	20.00 - 40.00	0.6000	0.6000
T14	29	7/8	20.00 - 40.00	0.6000	0.6000
T14	30	7/8	20.00 - 40.00	0.6000	0.6000
T14	31	7/8	20.00 - 40.00	0.6000	0.6000
T14	32	7/8	20.00 - 40.00	0.6000	0.6000
T14	33	7/8	20.00 - 40.00	0.6000	0.6000
T14	34	1/2	20.00 - 40.00	0.6000	0.6000
T14	35	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	36	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	37	7/8	20.00 - 40.00	0.6000	0.6000
T14	38	CR 50 396 PE (3/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	39	1 5/8	20.00 - 40.00	0.6000	0.6000
T14	40	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	41	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T15	1	7/8	10.00 - 20.00	0.6000	0.6000
T15	2	RG-11 (5/16 FOAM POLYE.)	10.00 - 20.00	0.6000	0.6000
T15	3	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T15	5	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	6	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T15	8	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	10	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	11	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T15	12	7/8	10.00 - 20.00	0.6000	0.6000
T15	13	7/8	10.00 - 20.00	0.6000	0.6000
T15	14	7/8	10.00 - 20.00	0.6000	0.6000
T15	15	7/8	10.00 - 20.00	0.6000	0.6000
T15	16	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	17	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	18	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	19	EW63	10.00 - 20.00	0.6000	0.6000
T15	20	EW63	10.00 - 20.00	0.6000	0.6000
T15	21	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T15	22	E60	10.00 - 20.00	0.6000	0.6000
T15	23	E60	10.00 - 20.00	0.6000	0.6000
T15	24	E60	10.00 - 20.00	0.6000	0.6000
T15	25	E60	10.00 - 20.00	0.6000	0.6000
T15	26	E60	10.00 - 20.00	0.6000	0.6000
T15	28	7/8	10.00 - 20.00	0.6000	0.6000
T15	29	7/8	10.00 - 20.00	0.6000	0.6000
T15	30	7/8	10.00 - 20.00	0.6000	0.6000
T15	31	7/8	10.00 - 20.00	0.6000	0.6000
T15	32	7/8	10.00 - 20.00	0.6000	0.6000
T15	33	7/8	10.00 - 20.00	0.6000	0.6000
T15	34	1/2	10.00 - 20.00	0.6000	0.6000
T15	35	1 5/8	10.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	36	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	37	7/8	10.00 - 20.00	0.6000	0.6000
T15	38	CR 50 396 PE (3/8 FOAM)	10.00 - 20.00	0.6000	0.6000
T15	39	1 5/8	10.00 - 20.00	0.6000	0.6000
T15	40	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T15	41	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000

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 (E)	C	None				0.0000	308.000	No Ice	0.500	0.500	0.100
								1/2" Ice	0.750	0.750	0.200
Beacon (E)	C	None				0.0000	302.000	No Ice	1.500	1.500	0.200
								1/2" Ice	2.250	2.250	0.300
Side Lights (E)	C	None				0.0000	150.000	No Ice	1.500	1.500	0.200
								1/2" Ice	2.250	2.250	0.300
****											
BMR12-H-B1 (P)	C	From Leg	2.000	0.000	0.000	0.0000	306.000	No Ice	13.250	13.250	0.092
								1/2" Ice	15.314	15.314	0.181
BMR12-H-B1 (P)	B	From Leg	2.000	0.000	0.000	0.0000	306.000	No Ice	13.250	13.250	0.092
								1/2" Ice	15.314	15.314	0.181
BMR12-H-B1 (P)	A	From Leg	2.000	0.000	0.000	0.0000	306.000	No Ice	13.250	13.250	0.092
								1/2" Ice	15.314	15.314	0.181
DBD2702DA (P)	A	From Leg	0.000	0.000	0.000	0.0000	295.000	No Ice	1.692	0.846	0.022
								1/2" Ice	1.868	0.983	0.034
DBB2702RA (E)	B	From Leg	0.000	0.000	0.000	0.0000	297.000	No Ice	2.085	0.481	0.020
								1/2" Ice	2.281	0.612	0.031
Side Arm Mount [SO 306-1] (P)	C	None				0.0000	297.000	No Ice	0.980	2.180	0.042
								1/2" Ice	1.700	3.800	0.062
Side Arm Mount [SO 306-1] (E)	B	None				0.0000	297.000	No Ice	0.980	2.180	0.042
								1/2" Ice	1.700	3.800	0.062
Side Arm Mount [SO 306-1] (P)	A	None				0.0000	297.000	No Ice	0.980	2.180	0.042
								1/2" Ice	1.700	3.800	0.062
****											
BMR12 (E)	C	From Leg	2.000	0.000	0.000	0.0000	302.000	No Ice	13.680	13.680	0.125
								1/2" Ice	15.740	15.740	0.144
Side Arm Mount [SO 305-1] (E)	C	None				0.0000	292.000	No Ice	0.940	1.410	0.030
								1/2" Ice	1.480	2.170	0.043
****											
BMR12-H-B1 (P)	C	From Leg	2.000	0.000	0.000	0.0000	295.000	No Ice	13.250	13.250	0.092
								1/2" Ice	15.314	15.314	0.181
Side Arm Mount [SO 305-1] (E)	C	None				0.0000	291.000	No Ice	0.940	1.410	0.030
								1/2" Ice	1.480	2.170	0.043
****											
BMR12 (E)	A	From Leg	2.000	0.000	0.000	0.0000	300.000	No Ice	13.680	13.680	0.125
								1/2" Ice	15.740	15.740	0.144

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
Side Arm Mount [SO 305-1] (E) ****	A	None		0.0000	290.000	No Ice 1/2" Ice	0.940 1.480	1.410 2.170	0.030 0.043
7251.01 w/Mount Pipe (Abandoned)	C	From Leg	2.000 0.000 0.000	0.0000	283.000	No Ice 1/2" Ice	4.507 5.045	4.897 6.073	0.043 0.082
7251.01 w/Mount Pipe (Abandoned)	B	From Leg	2.000 0.000 0.000	0.0000	283.000	No Ice 1/2" Ice	4.507 5.045	4.897 6.073	0.043 0.082
7251.01 w/Mount Pipe (Abandoned)	A	From Leg	2.000 0.000 0.000	0.0000	283.000	No Ice 1/2" Ice	4.507 5.045	4.897 6.073	0.043 0.082
(2) KRY 112 71 TMA (Abandoned)	C	From Leg	0.000 0.000 0.000	0.0000	283.000	No Ice 1/2" Ice	0.688 0.809	0.408 0.513	0.013 0.018
(2) KRY 112 71 TMA (Abandoned)	B	From Leg	0.000 0.000 0.000	0.0000	283.000	No Ice 1/2" Ice	0.688 0.809	0.408 0.513	0.013 0.018
(2) KRY 112 71 TMA (Abandoned)	A	From Leg	0.000 0.000 0.000	0.0000	283.000	No Ice 1/2" Ice	0.688 0.809	0.408 0.513	0.013 0.018
Side Arm Mount [SO 702-3] (Abandoned) ****	C	None		0.0000	283.000	No Ice 1/2" Ice	3.220 4.150	3.220 4.150	0.081 0.114
(2) LPA-185080/8CF w/Mount Pipe (E)	C	From Face	0.000 0.000 0.000	0.0000	279.000	No Ice 1/2" Ice	2.581 3.049	4.211 5.017	0.029 0.060
(2) LPA-185080/8CF w/Mount Pipe (E)	B	From Face	0.000 0.000 0.000	0.0000	279.000	No Ice 1/2" Ice	2.581 3.049	4.211 5.017	0.029 0.060
(2) LPA-185080/8CF w/Mount Pipe (E)	A	From Face	0.000 0.000 0.000	0.0000	279.000	No Ice 1/2" Ice	2.581 3.049	4.211 5.017	0.029 0.060
(2) SA13-86-2D w/Mount Pipe (E)	C	From Face	0.000 0.000 0.000	0.0000	279.000	No Ice 1/2" Ice	7.246 7.964	5.862 6.964	0.054 0.112
(2) SA14-60 w/Mount Pipe (E)	B	From Face	0.000 0.000 0.000	0.0000	279.000	No Ice 1/2" Ice	8.506 9.242	5.862 6.964	0.056 0.119
(2) SA14-60 w/Mount Pipe (E)	A	From Face	0.000 0.000 0.000	0.0000	279.000	No Ice 1/2" Ice	8.506 9.242	5.862 6.964	0.056 0.119
Sector Mount [SM 406-3] (E) ****	C	None		0.0000	279.000	No Ice 1/2" Ice	19.830 29.410	19.830 29.410	0.923 1.326
DB420-B (E)	C	From Leg	2.000 0.000 0.000	0.0000	260.000	No Ice 1/2" Ice	3.330 5.994	3.330 5.994	0.034 0.044
DB616-AB (20' Omni) (E)	B	From Leg	2.000 0.000 0.000	0.0000	260.000	No Ice 1/2" Ice	3.063 5.125	3.063 5.125	0.051 0.076
DB420-B (E)	A	From Leg	2.000 0.000 0.000	0.0000	260.000	No Ice 1/2" Ice	3.330 5.994	3.330 5.994	0.034 0.044
Side Arm Mount [SO 303-3] (E) ****	C	None		0.0000	250.000	No Ice 1/2" Ice	8.510 12.230	8.510 12.230	0.345 0.476

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
PD1110	C	From Leg	2.000	0.0000	232.000	No Ice	2.502	2.502	0.020
(E)			0.000			1/2" Ice	3.843	3.843	0.040
			0.000						
PD220-1	B	From Leg	2.000	0.0000	234.000	No Ice	5.500	5.500	0.025
(E)			0.000			1/2" Ice	7.531	7.531	0.065
			0.000						
ANT150D6-9	A	From Leg	2.000	0.0000	234.000	No Ice	8.000	8.000	0.026
(E)			0.000			1/2" Ice	10.000	10.000	0.052
			0.000						
Side Arm Mount [SO 303-3]	C	None		0.0000	224.000	No Ice	8.510	8.510	0.345
(E)						1/2" Ice	12.230	12.230	0.476
****									
DB810T3E-XC	C	From Leg	2.000	0.0000	210.000	No Ice	4.544	4.544	0.038
(E)			0.000			1/2" Ice	6.092	6.092	0.070
			0.000						
Side Arm Mount [SO 303-1]	C	None		0.0000	203.000	No Ice	2.240	5.320	0.115
(E)						1/2" Ice	3.190	7.690	0.159
****									
ANT150D6-9	B	From Leg	2.000	0.0000	209.000	No Ice	8.000	8.000	0.026
(E)			0.000			1/2" Ice	10.000	10.000	0.052
			0.000						
PD220-1	A	From Leg	2.000	0.0000	209.000	No Ice	5.500	5.500	0.025
(E)			0.000			1/2" Ice	7.531	7.531	0.065
			0.000						
Side Arm Mount [SO 305-1]	B	None		0.0000	199.000	No Ice	0.940	1.410	0.030
(E)						1/2" Ice	1.480	2.170	0.043
Side Arm Mount [SO 305-1]	A	None		0.0000	199.000	No Ice	0.940	1.410	0.030
(E)						1/2" Ice	1.480	2.170	0.043
****									
Side Arm Mount [SO 302-1]	C	None		0.0000	193.000	No Ice	1.670	3.270	0.055
(P)						1/2" Ice	2.510	4.990	0.088
****									
Pipe Mount [PM 601-1]	C	None		0.0000	187.000	No Ice	3.000	0.900	0.065
(E)						1/2" Ice	3.740	1.120	0.079
****									
MSP24013-120 w/Mount	B	From Leg	2.000	0.0000	180.000	No Ice	2.596	2.257	0.030
Pipe			0.000			1/2" Ice	3.323	3.138	0.053
(E)			0.000						
MSP24013-120 w/Mount	B	From Leg	2.000	0.0000	179.000	No Ice	2.596	2.257	0.030
Pipe			0.000			1/2" Ice	3.323	3.138	0.053
(E)			0.000						
PD220-1	B	From Leg	2.000	0.0000	191.000	No Ice	5.500	5.500	0.025
(E)			0.000			1/2" Ice	7.531	7.531	0.065
			0.000						
Side Arm Mount [SO 303-1]	B	None		0.0000	180.000	No Ice	2.240	5.320	0.115
(E)						1/2" Ice	3.190	7.690	0.159
****									
Pipe Mount [PM 601-1]	B	None		0.0000	172.000	No Ice	3.000	0.900	0.065
(E)						1/2" Ice	3.740	1.120	0.079
****									
ANT450F6	A	From Leg	2.000	0.0000	175.000	No Ice	1.900	1.900	0.008
(E)			0.000			1/2" Ice	2.728	2.728	0.022
			0.000						
MSP24013-120 w/Mount	A	From Leg	2.000	0.0000	170.000	No Ice	2.596	2.257	0.030
Pipe			0.000			1/2" Ice	3.323	3.138	0.053
(E)			0.000						
Side Arm Mount [SO 305-1]	A	None		0.0000	170.000	No Ice	0.940	1.410	0.030

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: Horz ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(E)								1/2" Ice	1.480	2.170	0.043
****											
Pipe Mount [PM 602-1]	C	None				0.0000	167.000	No Ice	5.250	1.580	0.093
(P)								1/2" Ice	6.500	1.950	0.118
****											
Pipe Mount [PM 602-1]	B	None				0.0000	162.000	No Ice	5.250	1.580	0.093
(P)								1/2" Ice	6.500	1.950	0.118
****											
(2) 800 10122 w/Mount Pipe	C	From Face	0.000			0.0000	157.000	No Ice	7.618	6.348	0.084
(E)			0.000					1/2" Ice	8.121	7.314	0.142
			0.000								
(2) 800 10122 w/Mount Pipe	B	From Face	0.000			0.0000	157.000	No Ice	7.618	6.348	0.084
(E)			0.000					1/2" Ice	8.121	7.314	0.142
			0.000								
(2) 800 10122 w/Mount Pipe	A	From Face	0.000			0.0000	157.000	No Ice	7.618	6.348	0.084
(E)			0.000					1/2" Ice	8.121	7.314	0.142
			0.000								
LGP219nn Diplexer	C	From Face	0.000			0.0000	157.000	No Ice	0.270	0.184	0.006
(E)			0.000					1/2" Ice	0.343	0.248	0.008
			0.000								
LGP219nn Diplexer	B	From Face	0.000			0.0000	157.000	No Ice	0.270	0.184	0.006
(E)			0.000					1/2" Ice	0.343	0.248	0.008
			0.000								
LGP219nn Diplexer	A	From Face	0.000			0.0000	157.000	No Ice	0.270	0.184	0.006
(E)			0.000					1/2" Ice	0.343	0.248	0.008
			0.000								
(2) LGP21401 TMA	C	From Face	0.000			0.0000	157.000	No Ice	1.288	0.233	0.014
(E)			0.000					1/2" Ice	1.445	0.313	0.021
			0.000								
(2) LGP21401 TMA	B	From Face	0.000			0.0000	157.000	No Ice	1.288	0.233	0.014
(E)			0.000					1/2" Ice	1.445	0.313	0.021
			0.000								
(2) LGP21401 TMA	A	From Face	0.000			0.0000	157.000	No Ice	1.288	0.233	0.014
(E)			0.000					1/2" Ice	1.445	0.313	0.021
			0.000								
(2) 6' x 2" Mount Pipe	C	From Face	0.000			0.0000	155.000	No Ice	1.425	1.425	0.022
(E)			0.000					1/2" Ice	1.925	1.925	0.033
			0.000								
(2) 6' x 2" Mount Pipe	B	From Face	0.000			0.0000	155.000	No Ice	1.425	1.425	0.022
(E)			0.000					1/2" Ice	1.925	1.925	0.033
			0.000								
(2) 6' x 2" Mount Pipe	A	From Face	0.000			0.0000	155.000	No Ice	1.425	1.425	0.022
(E)			0.000					1/2" Ice	1.925	1.925	0.033
			0.000								
Sector Mount [SM 406-3]	C	None				0.0000	155.000	No Ice	19.830	19.830	0.923
(E)								1/2" Ice	29.410	29.410	1.326
****											
(2) RR90-18-00DP	C	From Face	0.000			0.0000	147.000	No Ice	5.867	2.750	0.023
(E)			0.000					1/2" Ice	6.325	3.234	0.052
			0.000								
(2) RR90-18-00DP	B	From Face	0.000			0.0000	147.000	No Ice	5.867	2.750	0.023
(E)			0.000					1/2" Ice	6.325	3.234	0.052
			0.000								
(2) RR90-18-00DP	A	From Face	0.000			0.0000	147.000	No Ice	5.867	2.750	0.023
(E)			0.000					1/2" Ice	6.325	3.234	0.052
			0.000								
(2) KRY 112 71/1 TMA	C	From Face	0.000			0.0000	147.000	No Ice	0.681	0.450	0.013

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
(E)			0.000 0.000			1/2" Ice	0.802	0.559	0.018
(2) KRY 112 71/1 TMA	B	From Face	0.000	0.0000	147.000	No Ice	0.681	0.450	0.013
(E)			0.000 0.000			1/2" Ice	0.802	0.559	0.018
(2) KRY 112 71/1 TMA	A	From Face	0.000	0.0000	147.000	No Ice	0.681	0.450	0.013
(E)			0.000 0.000			1/2" Ice	0.802	0.559	0.018
Sector Mount [SM 402-3]	C	None		0.0000	147.000	No Ice	18.910	18.910	0.851
(E)						1/2" Ice	26.780	26.780	1.233
****									
APXV18-206516L-C	C	From Face	0.000	0.0000	137.000	No Ice	3.946	3.428	0.033
w/Mount Pipe			0.000			1/2" Ice	4.421	4.251	0.067
(E)			0.000						
APXV18-206516L-C	B	From Face	0.000	0.0000	137.000	No Ice	3.946	3.428	0.033
w/Mount Pipe			0.000			1/2" Ice	4.421	4.251	0.067
(E)			0.000						
APXV18-206516L-C	A	From Face	0.000	0.0000	137.000	No Ice	3.946	3.428	0.033
w/Mount Pipe			0.000			1/2" Ice	4.421	4.251	0.067
(E)			0.000						
(3) AP859012-42T0 w/Mount	C	From Face	0.000	0.0000	137.000	No Ice	3.579	5.396	0.032
Pipe			0.000			1/2" Ice	4.201	6.491	0.073
(E)			0.000						
(3) AP859012-42T0 w/Mount	B	From Face	0.000	0.0000	137.000	No Ice	3.579	5.396	0.032
Pipe			0.000			1/2" Ice	4.201	6.491	0.073
(E)			0.000						
(3) AP859012-42T0 w/Mount	A	From Face	0.000	0.0000	137.000	No Ice	3.579	5.396	0.032
Pipe			0.000			1/2" Ice	4.201	6.491	0.073
(E)			0.000						
Sector Mount [SM 402-3]	C	None		0.0000	137.000	No Ice	18.910	18.910	0.851
(E)						1/2" Ice	26.780	26.780	1.233
****									
Pipe Mount [PM 602-1]	B	None		0.0000	132.000	No Ice	5.250	1.580	0.093
(P)						1/2" Ice	6.500	1.950	0.118
****									
Pipe Mount [PM 602-1]	C	None		0.0000	131.000	No Ice	5.250	1.580	0.093
(P)						1/2" Ice	6.500	1.950	0.118
****									
DB492A	A	From Leg	2.000	0.0000	126.000	No Ice	1.100	1.100	0.006
(E)			0.000			1/2" Ice	1.980	1.980	0.008
			0.000						
DB492A	A	From Leg	2.000	0.0000	125.000	No Ice	1.100	1.100	0.006
(E)			0.000			1/2" Ice	1.980	1.980	0.008
			0.000						
Side Arm Mount [SO 303-1]	A	None		0.0000	125.000	No Ice	2.240	5.320	0.115
(E)						1/2" Ice	3.190	7.690	0.159
****									
DB810M-XC	A	From Leg	2.000	0.0000	119.000	No Ice	2.115	2.115	0.030
(E)			0.000			1/2" Ice	3.141	3.141	0.046
			0.000						
PD220-1	C	From Leg	2.000	0.0000	114.000	No Ice	5.500	5.500	0.025
(E)			0.000			1/2" Ice	7.531	7.531	0.065
			0.000						
Side Arm Mount [SO 305-1]	A	None		0.0000	124.000	No Ice	0.940	1.410	0.030
(E)						1/2" Ice	1.480	2.170	0.043
Side Arm Mount [SO 305-1]	C	None		0.0000	124.000	No Ice	0.940	1.410	0.030
(E)						1/2" Ice	1.480	2.170	0.043

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

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
PAD6-59BC (P)	C	Paraboloid w/o Radome	From Leg	2.000 0.000 0.000	0.0000		193.000	6.583	No Ice 1/2" Ice	34.036 34.903	0.141 0.282
****											
PAR6-59W (E)	C	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	0.0000		187.000	6.358	No Ice 1/2" Ice	31.749 32.587	0.143 0.286
****											
PAD6-65AC (E)	B	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	0.0000		172.000	6.000	No Ice 1/2" Ice	28.260 29.050	0.185 0.334
****											
PAD6-59BC (P)	C	Paraboloid w/o Radome	From Leg	2.000 0.000 0.000	0.0000		167.000	6.583	No Ice 1/2" Ice	34.036 34.903	0.141 0.282
****											
PAD6-59BC (P)	B	Paraboloid w/o Radome	From Leg	2.000 0.000 0.000	0.0000		162.000	6.583	No Ice 1/2" Ice	34.036 34.903	0.141 0.282
****											
PAD6-59BC (P)	B	Paraboloid w/o Radome	From Leg	2.000 0.000 0.000	0.0000		132.000	6.583	No Ice 1/2" Ice	34.036 34.903	0.141 0.282
****											
PAD6-59BC (P)	C	Paraboloid w/o Radome	From Leg	2.000 0.000 0.000	0.0000		131.000	6.583	No Ice 1/2" Ice	34.036 34.903	0.141 0.282
****											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice

Comb. No.	Description
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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
T1	300 - 280	Leg	Max Tension	23	29.736	-0.695	-0.295
			Max. Compression	2	-32.251	0.001	0.219
			Max. Mx	11	-31.413	0.702	0.295
			Max. My	2	11.821	0.001	-0.757
			Max. Vy	10	2.384	-0.192	-0.109
			Max. Vx	2	-2.594	0.001	0.219
		Diagonal	Max Tension	4	3.775	0.000	0.000
			Max. Compression	4	-3.802	0.000	0.000
			Max. Mx	27	0.584	-0.006	-0.000
			Max. My	2	-3.639	-0.001	-0.002
			Max. Vy	27	0.010	-0.006	-0.000
			Max. Vx	2	-0.001	-0.001	-0.002
		Top Girt	Max Tension	19	0.554	0.000	0.000
			Max. Compression	6	-0.608	0.000	0.000
			Max. Mx	26	-0.013	0.015	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	24	0.061	0.000	-0.000
			Max. Vy	26	-0.015	0.000	0.000
			Max. Vx	24	0.000	0.000	0.000
		Bottom Girt	Max Tension	22	1.043	0.000	0.000
			Max. Compression	3	-1.015	0.000	0.000
			Max. Mx	26	0.028	0.015	0.000
			Max. My	24	0.033	0.000	-0.000
			Max. Vy	26	-0.015	0.000	0.000
			Max. Vx	24	0.000	0.000	0.000
T2	280 - 260	Leg	Max Tension	23	91.033	-1.204	-0.587
			Max. Compression	10	-96.602	-1.023	-0.617
			Max. Mx	9	-83.883	1.295	0.272
			Max. My	3	-95.440	0.250	-1.400
			Max. Vy	10	6.146	-1.023	-0.617
			Max. Vx	2	-6.910	0.061	1.196
		Diagonal	Max Tension	5	6.687	0.000	0.000
			Max. Compression	4	-6.633	0.000	0.000
			Max. Mx	2	4.161	-0.010	-0.001
			Max. My	2	-4.779	0.001	-0.004
			Max. Vy	27	0.011	-0.008	-0.000
			Max. Vx	2	-0.002	0.001	-0.004
		Top Girt	Max Tension	10	1.026	0.000	0.000
			Max. Compression	23	-1.010	0.000	0.000
			Max. Mx	26	0.011	0.015	0.000
			Max. My	24	-0.004	0.000	-0.000
			Max. Vy	26	-0.015	0.000	0.000
			Max. Vx	24	0.000	0.000	0.000
T3	260 - 240	Leg	Max Tension	23	117.781	1.749	-0.089
			Max. Compression	10	-127.215	0.818	-0.005
			Max. Mx	10	-96.960	2.290	-0.166
			Max. My	24	-3.622	-0.013	1.632
			Max. Vy	18	-3.879	0.824	-0.008
			Max. Vx	12	2.400	-0.031	-1.631
		Diagonal	Max Tension	15	4.325	0.065	-0.022
			Max. Compression	16	-4.600	0.000	0.000
			Max. Mx	24	2.115	0.073	-0.005
			Max. My	4	-4.544	-0.043	0.032
			Max. Vy	24	-0.025	0.073	-0.005
			Max. Vx	4	-0.009	0.000	0.000
		Top Girt	Max Tension	11	0.773	0.000	0.000
			Max. Compression	22	-0.850	0.000	0.000
			Max. Mx	26	-0.049	0.016	0.000
			Max. My	4	-0.139	0.000	-0.000
			Max. Vy	26	-0.015	0.000	0.000
			Max. Vx	4	-0.000	0.000	0.000
T4	240 - 220	Leg	Max Tension	7	144.550	2.770	-0.027
			Max. Compression	10	-158.629	0.684	0.023
			Max. Mx	18	-126.091	3.720	-0.079
			Max. My	12	-4.439	0.019	-1.660
			Max. Vy	18	-5.327	0.688	0.005
			Max. Vx	20	2.020	-0.003	-0.393
		Diagonal	Max Tension	16	5.060	0.000	0.000
			Max. Compression	16	-5.008	0.000	0.000
			Max. Mx	10	2.881	0.053	0.006
			Max. My	16	-4.989	-0.017	-0.011
			Max. Vy	29	0.033	0.038	0.004
			Max. Vx	16	0.003	0.000	0.000
T5	220 - 200	Leg	Max Tension	7	172.440	3.783	0.048
			Max. Compression	10	-191.474	0.785	-0.058
			Max. Mx	18	-157.116	4.678	-0.014
			Max. My	20	-7.856	0.002	-1.915

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	18	-7.049	0.790	0.008
			Max. Vx	16	-2.712	-0.008	0.560
		Diagonal	Max Tension	24	6.353	0.000	0.000
			Max. Compression	24	-6.270	0.000	0.000
			Max. Mx	20	3.034	0.052	0.000
			Max. My	12	-6.182	-0.002	0.014
			Max. Vy	28	0.041	0.051	0.006
			Max. Vx	24	0.003	0.000	0.000
T6	200 - 180	Leg	Max Tension	7	204.760	5.675	0.141
			Max. Compression	10	-228.757	0.963	0.065
			Max. Mx	18	-226.962	-6.433	-0.167
			Max. My	4	-10.389	-0.010	-2.617
			Max. Vy	18	-9.863	0.971	-0.002
			Max. Vx	4	3.775	0.064	-0.504
		Diagonal	Max Tension	20	8.707	0.000	0.000
			Max. Compression	8	-8.568	0.000	0.000
			Max. Mx	28	0.667	0.081	0.009
			Max. My	20	-8.408	0.004	0.022
			Max. Vy	28	0.057	0.081	0.009
			Max. Vx	20	-0.004	0.000	0.000
T7	180 - 160	Leg	Max Tension	7	241.583	7.484	0.367
			Max. Compression	10	-271.610	1.612	-0.138
			Max. Mx	18	-269.154	-8.578	-0.587
			Max. My	4	-14.549	0.464	-3.447
			Max. Vy	18	-13.577	1.617	0.163
			Max. Vx	4	5.435	0.038	-1.099
		Diagonal	Max Tension	20	11.452	0.000	0.000
			Max. Compression	20	-11.034	0.000	0.000
			Max. Mx	28	0.855	0.113	0.013
			Max. My	20	-10.836	0.025	0.027
			Max. Vy	28	0.072	0.113	0.013
			Max. Vx	20	-0.005	0.000	0.000
T8	160 - 140	Leg	Max Tension	7	284.253	9.934	0.439
			Max. Compression	10	-323.346	1.451	-0.039
			Max. Mx	18	-269.247	11.787	0.910
			Max. My	4	-20.149	0.748	-5.187
			Max. Vy	18	-17.384	1.454	0.114
			Max. Vx	4	6.828	-0.019	-0.995
		Diagonal	Max Tension	20	14.572	0.000	0.000
			Max. Compression	20	-14.255	0.000	0.000
			Max. Mx	30	0.993	0.164	-0.019
			Max. My	20	-13.960	0.044	0.038
			Max. Vy	30	0.094	0.164	-0.019
			Max. Vx	20	-0.006	0.000	0.000
T9	140 - 120	Leg	Max Tension	7	333.090	12.831	0.545
			Max. Compression	10	-381.820	1.964	-0.046
			Max. Mx	18	-379.148	-14.879	-0.780
			Max. My	4	-27.155	0.590	-6.130
			Max. Vy	18	-22.432	1.967	0.051
			Max. Vx	4	8.732	0.085	-1.144
		Diagonal	Max Tension	20	18.408	0.000	0.000
			Max. Compression	20	-18.131	0.000	0.000
			Max. Mx	28	1.293	0.210	0.023
			Max. My	20	-17.776	0.059	0.044
			Max. Vy	28	0.109	0.210	0.023
			Max. Vx	20	-0.006	0.000	0.000
T10	120 - 100	Leg	Max Tension	7	384.120	14.742	0.480
			Max. Compression	10	-442.721	1.467	-0.067
			Max. Mx	18	-379.273	18.787	0.881
			Max. My	4	-34.321	1.032	-7.708
			Max. Vy	18	-25.164	1.469	0.069

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	4	9.709	0.008	-1.217
		Diagonal	Max Tension	20	20.348	0.000	0.000
			Max. Compression	20	-19.906	0.000	0.000
			Max. Mx	30	1.262	0.309	-0.035
			Max. My	20	-19.370	0.081	0.062
			Max. Vy	30	0.147	0.309	-0.035
			Max. Vx	20	-0.008	0.000	0.000
T11	100 - 80	Leg	Max Tension	7	433.520	7.983	0.150
			Max. Compression	10	-503.204	10.800	-0.305
			Max. Mx	18	-440.179	20.356	0.774
			Max. My	4	-41.264	0.918	-8.515
			Max. Vy	18	-27.353	10.844	0.476
			Max. Vx	4	10.528	0.202	-7.878
		Diagonal	Max Tension	20	20.535	0.000	0.000
			Max. Compression	20	-21.308	0.000	0.000
			Max. Mx	29	2.329	0.360	-0.043
			Max. My	20	-20.732	0.101	0.050
			Max. Vy	29	0.160	0.360	-0.043
			Max. Vx	28	-0.008	0.000	0.000
T12	80 - 60	Leg	Max Tension	7	432.428	-10.013	-0.316
			Max. Compression	10	-504.540	-3.193	0.082
			Max. Mx	19	-492.676	10.856	0.475
			Max. My	4	-48.375	0.202	-7.878
			Max. Vy	19	2.169	10.856	0.475
			Max. Vx	4	-1.553	0.202	-7.878
		Diagonal	Max Tension	21	36.591	0.000	0.000
			Max. Compression	20	-37.113	-0.092	-0.181
			Max. Mx	6	27.606	-0.181	0.018
			Max. My	20	-35.674	-0.092	-0.184
			Max. Vy	36	0.059	-0.083	-0.091
			Max. Vx	20	-0.025	0.000	0.000
		Horizontal	Max Tension	20	18.570	-0.327	0.011
			Max. Compression	21	-19.245	-0.246	0.009
			Max. Mx	29	-2.446	-0.545	0.001
			Max. My	18	1.613	-0.173	0.099
			Max. Vy	29	0.222	-0.545	0.001
			Max. Vx	18	-0.013	-0.173	0.099
		Redund Horz 1 Bracing	Max Tension	10	11.042	0.000	0.000
			Max. Compression	10	-11.042	0.000	0.000
			Max. Mx	31	0.553	0.025	0.000
			Max. My	36	2.948	0.000	-0.001
			Max. Vy	31	-0.027	0.000	0.000
			Max. Vx	36	-0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	10	11.042	0.000	0.000
			Max. Compression	10	-11.042	0.000	0.000
			Max. Mx	35	0.447	0.100	0.000
			Max. My	31	3.415	0.000	-0.003
			Max. Vy	35	-0.054	0.000	0.000
			Max. Vx	31	-0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	10	11.227	0.000	0.000
			Max. Compression	10	-11.227	0.000	0.000
			Max. Mx	30	3.183	0.046	0.000
			Max. My	27	0.508	0.000	-0.003
			Max. Vy	30	-0.025	0.000	0.000
			Max. Vx	27	-0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	10	7.279	0.000	0.000
			Max. Compression	10	-7.279	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	28	2.072	0.126	0.000
			Max. My	27	0.456	0.000	-0.005
			Max. Vy	28	0.052	0.000	0.000
			Max. Vx	27	0.002	0.000	0.000
		Inner Bracing	Max Tension	11	0.011	0.000	0.000
			Max. Compression	6	-0.032	0.000	0.000
			Max. Mx	26	-0.024	0.283	0.000
			Max. My	10	0.008	0.000	0.000
			Max. Vy	26	-0.103	0.000	0.000
			Max. Vx	10	-0.000	0.000	0.000
T13	60 - 40	Leg	Max Tension	7	478.272	3.037	-0.251
			Max. Compression	10	-561.756	-5.013	-0.162
			Max. Mx	10	-560.981	6.327	0.056
			Max. My	4	-57.446	-1.088	-7.049
			Max. Vy	10	1.752	6.327	0.056
			Max. Vx	4	1.595	-1.088	-7.049
		Diagonal	Max Tension	21	35.562	-0.137	0.005
			Max. Compression	20	-36.220	0.000	0.000
			Max. Mx	6	27.864	-0.173	0.017
			Max. My	20	-35.780	-0.102	-0.204
			Max. Vy	36	0.063	-0.091	-0.096
			Max. Vx	20	0.027	0.000	0.000
		Horizontal	Max Tension	21	18.992	-0.287	0.010
			Max. Compression	20	-19.811	-0.383	0.013
			Max. Mx	29	2.621	-0.618	0.004
			Max. My	18	2.034	-0.251	0.100
			Max. Vy	29	0.237	-0.618	0.004
			Max. Vx	18	-0.012	-0.251	0.100
		Redund Horz 1 Bracing	Max Tension	10	11.904	0.000	0.000
			Max. Compression	10	-11.904	0.000	0.000
			Max. Mx	31	0.629	0.029	0.000
			Max. My	36	3.195	0.000	-0.001
			Max. Vy	31	0.029	0.000	0.000
			Max. Vx	36	0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	10	11.904	0.000	0.000
			Max. Compression	10	-11.904	0.000	0.000
			Max. Mx	35	0.499	0.117	0.000
			Max. My	31	3.682	0.000	-0.003
			Max. Vy	35	-0.058	0.000	0.000
			Max. Vx	31	0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	10	11.325	0.000	0.000
			Max. Compression	10	-11.325	0.000	0.000
			Max. Mx	30	3.212	0.051	0.000
			Max. My	31	0.599	0.000	0.003
			Max. Vy	30	0.027	0.000	0.000
			Max. Vx	31	-0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	10	7.560	0.000	0.000
			Max. Compression	10	-7.560	0.000	0.000
			Max. Mx	28	2.161	0.142	0.000
			Max. My	32	0.379	0.000	0.005
			Max. Vy	28	-0.056	0.000	0.000
			Max. Vx	32	-0.002	0.000	0.000
		Inner Bracing	Max Tension	11	0.008	0.000	0.000
			Max. Compression	6	-0.031	0.000	0.000
			Max. Mx	26	-0.025	0.330	0.000
			Max. My	10	0.005	0.000	0.000
			Max. Vy	26	-0.110	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	10	-0.000	0.000	0.000
T14	40 - 20	Leg	Max Tension	7	522.972	2.933	-0.231
			Max. Compression	10	-618.591	-5.426	-0.138
			Max. Mx	10	-617.756	6.820	0.027
			Max. My	4	-64.360	-1.254	-7.759
			Max. Vy	10	1.881	6.820	0.027
			Max. Vx	4	1.737	-1.254	-7.759
		Diagonal	Max Tension	21	35.172	-0.133	0.004
			Max. Compression	20	-35.935	0.000	0.000
			Max. Mx	6	27.728	-0.166	0.017
			Max. My	20	-35.502	-0.109	-0.225
			Max. Vy	34	0.067	-0.098	0.101
			Max. Vx	20	0.029	0.000	0.000
		Horizontal	Max Tension	21	19.875	-0.333	0.011
			Max. Compression	20	-20.634	-0.444	0.014
			Max. Mx	29	2.812	-0.694	0.006
			Max. My	18	1.835	-0.330	0.098
			Max. Vy	29	0.251	-0.694	0.006
			Max. Vx	18	-0.012	-0.330	0.098
		Redund Horz 1 Bracing	Max Tension	10	12.716	0.000	0.000
			Max. Compression	10	-12.716	0.000	0.000
			Max. Mx	36	3.433	0.033	0.000
			Max. My	36	3.433	0.000	-0.001
			Max. Vy	36	0.031	0.000	0.000
			Max. Vx	36	-0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	10	12.716	0.000	0.000
			Max. Compression	10	-12.716	0.000	0.000
			Max. Mx	35	0.558	0.133	0.000
			Max. My	31	3.939	0.000	-0.004
			Max. Vy	35	0.061	0.000	0.000
			Max. Vx	31	0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	10	11.410	0.000	0.000
			Max. Compression	10	-11.410	0.000	0.000
			Max. Mx	38	3.267	0.055	0.000
			Max. My	27	0.350	0.000	0.003
			Max. Vy	38	-0.028	0.000	0.000
			Max. Vx	27	-0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	10	7.830	0.000	0.000
			Max. Compression	10	-7.830	0.000	0.000
			Max. Mx	27	2.458	0.158	0.000
			Max. My	27	0.447	0.000	-0.006
			Max. Vy	27	0.059	0.000	0.000
			Max. Vx	27	0.002	0.000	0.000
		Inner Bracing	Max Tension	11	0.005	0.000	0.000
			Max. Compression	12	-0.029	0.000	0.000
			Max. Mx	26	-0.026	0.376	0.000
			Max. My	10	0.002	0.000	0.000
			Max. Vy	26	-0.116	0.000	0.000
			Max. Vx	10	-0.000	0.000	0.000
T15	20 - 0	Leg	Max Tension	7	566.113	3.056	-0.224
			Max. Compression	10	-675.654	-0.000	-0.000
			Max. Mx	10	-674.668	6.058	-0.010
			Max. My	4	-68.500	-1.254	-7.759
			Max. Vy	10	0.945	6.058	-0.010
			Max. Vx	4	-1.542	-1.254	-7.759
		Diagonal	Max Tension	21	35.224	-0.126	0.005
			Max. Compression	20	-36.000	0.000	0.000

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	18.303	-0.164	0.024
			Max. My	20	-35.369	-0.116	-0.251
			Max. Vy	32	0.068	-0.103	-0.104
			Max. Vx	20	0.032	0.000	0.000
		Horizontal	Max Tension	21	20.678	-0.382	0.012
			Max. Compression	20	-21.439	-0.510	0.016
			Max. Mx	29	2.812	-0.762	0.009
			Max. My	18	2.089	-0.411	0.099
			Max. Vy	29	0.259	-0.762	0.008
			Max. Vx	18	-0.011	-0.411	0.099
		Redund Horz 1 Bracing	Max Tension	10	11.717	0.000	0.000
			Max. Compression	10	-11.717	0.000	0.000
			Max. Mx	33	2.433	0.036	0.000
			Max. My	33	2.433	0.000	-0.001
			Max. Vy	33	-0.031	0.000	0.000
			Max. Vx	37	0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	10	11.717	0.000	0.000
			Max. Compression	10	-11.717	0.000	0.000
			Max. Mx	35	0.545	0.146	0.000
			Max. My	35	3.496	0.000	-0.004
			Max. Vy	35	-0.062	0.000	0.000
			Max. Vx	35	0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	10	9.985	0.000	0.000
			Max. Compression	10	-9.985	0.000	0.000
			Max. Mx	32	2.830	0.058	0.000
			Max. My	31	0.581	0.000	0.003
			Max. Vy	32	0.029	0.000	0.000
			Max. Vx	31	-0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	10	7.631	0.000	0.000
			Max. Compression	10	-7.631	0.000	0.000
			Max. Mx	27	2.395	0.169	0.000
			Max. My	32	0.373	0.000	0.006
			Max. Vy	27	-0.060	0.000	0.000
			Max. Vx	32	-0.002	0.000	0.000
		Inner Bracing	Max Tension	11	0.003	0.000	0.000
			Max. Compression	33	-0.029	0.000	0.000
			Max. Mx	26	-0.026	0.411	0.000
			Max. My	10	-0.001	0.000	0.000
			Max. Vy	26	-0.117	0.000	0.000
			Max. Vx	10	-0.000	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	722.638	63.116	-35.909
	Max. H_x	18	722.638	63.116	-35.909
	Max. H_z	5	-547.667	-48.142	33.054
	Min. Vert	7	-607.728	-55.734	31.670
	Min. H_x	7	-607.728	-55.734	31.670
	Min. H_z	18	722.638	63.116	-35.909
Leg B	Max. Vert	10	725.512	-62.918	-36.371
	Max. H_x	23	-596.453	54.802	31.697
	Max. H_z	25	-533.246	46.737	33.425
	Min. Vert	23	-596.453	54.802	31.697
	Min. H_x	10	725.512	-62.918	-36.371
	Min. H_z	10	725.512	-62.918	-36.371
Leg A	Max. Vert	2	724.393	0.540	72.558
	Max. H_x	21	52.511	10.462	3.878
	Max. H_z	2	724.393	0.540	72.558
	Min. Vert	15	-578.466	-0.539	-61.564
	Min. H_x	9	60.351	-10.574	4.519
	Min. H_z	15	-578.466	-0.539	-61.564

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	136.281	-0.000	0.000	-25.677	-30.619	-0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	163.524	1.710	-120.027	-17404.121	-372.661	32.798
0.9 Dead+1.6 Wind 0 deg - No Ice	122.644	1.710	-120.086	-17391.960	-363.343	32.769
1.2 Dead+1.6 Wind 30 deg - No Ice	163.525	62.098	-101.577	-14790.600	-9135.134	36.550
0.9 Dead+1.6 Wind 30 deg - No Ice	122.645	62.138	-101.630	-14779.215	-9123.674	36.456
1.2 Dead+1.6 Wind 60 deg - No Ice	163.529	99.375	-56.829	-8379.391	-14638.872	20.921
0.9 Dead+1.6 Wind 60 deg - No Ice	122.646	99.379	-56.869	-8369.594	-14626.111	20.374
1.2 Dead+1.6 Wind 90 deg - No Ice	163.523	120.604	-2.898	-513.662	-17620.021	-0.242
0.9 Dead+1.6 Wind 90 deg - No Ice	122.643	120.671	-2.907	-505.833	-17606.449	-0.121
1.2 Dead+1.6 Wind 120 deg - No Ice	163.524	106.688	55.666	7938.763	-15546.665	-19.302
0.9 Dead+1.6 Wind 120 deg - No Ice	122.644	106.741	55.694	7944.520	-15533.467	-19.255
1.2 Dead+1.6 Wind 150 deg - No Ice	163.524	58.416	100.511	14531.679	-8510.706	-28.560
0.9 Dead+1.6 Wind 150 deg - No Ice	122.644	58.442	100.571	14535.867	-8499.395	-28.617
1.2 Dead+1.6 Wind 180 deg - No Ice	163.528	-0.176	110.286	16087.278	-4.915	-28.389
0.9 Dead+1.6 Wind 180 deg - No Ice	122.646	-0.176	110.352	16091.124	4.248	-28.361
1.2 Dead+1.6 Wind 210 deg -	163.525	-58.759	101.064	14640.481	8500.520	-17.150

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
No Ice 0.9 Dead+1.6 Wind 210 deg -	122.645	-58.785	101.123	14644.607	8507.539	-17.046
No Ice 1.2 Dead+1.6 Wind 240 deg -	163.524	-105.804	57.130	8224.180	15295.655	-11.293
No Ice 0.9 Dead+1.6 Wind 240 deg -	122.644	-105.856	57.158	8229.817	15300.885	-11.311
No Ice 1.2 Dead+1.6 Wind 270 deg -	163.523	-119.946	-1.841	-309.888	17412.137	-5.669
No Ice 0.9 Dead+1.6 Wind 270 deg -	122.643	-120.012	-1.850	-302.140	17416.983	-5.796
No Ice 1.2 Dead+1.6 Wind 300 deg -	163.527	-98.343	-56.068	-8229.157	14368.504	5.817
No Ice 0.9 Dead+1.6 Wind 300 deg -	122.646	-98.402	-56.102	-8219.641	14374.436	5.768
No Ice 1.2 Dead+1.6 Wind 330 deg -	163.524	-60.546	-100.963	-14666.857	8755.407	15.076
No Ice 0.9 Dead+1.6 Wind 330 deg -	122.644	-60.586	-101.015	-14655.523	8762.453	15.116
No Ice 1.2 Dead+1.0 Ice	280.177	-0.003	0.001	-115.245	-119.957	0.002
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	280.177	0.197	-22.386	-3409.102	-160.039	5.591
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	280.177	11.367	-18.989	-2907.233	-1799.745	3.528
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	280.177	18.939	-10.876	-1729.337	-2932.054	-0.522
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	280.177	22.314	-0.341	-172.156	-3407.183	-3.990
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	280.177	19.705	10.685	1446.897	-3027.221	-6.370
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	280.177	10.931	18.869	2652.604	-1726.479	-6.853
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	280.177	-0.026	21.359	3043.834	-116.426	-5.070
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	280.177	-10.982	18.934	2665.578	1493.549	-1.251
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	280.177	-19.611	10.858	1480.771	2765.785	1.584
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	280.177	-22.245	-0.215	-147.831	3150.752	3.292
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	280.177	-18.832	-10.784	-1711.403	2668.150	4.785
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	280.177	-11.193	-18.916	-2892.537	1522.771	5.272
Dead+Wind 0 deg - Service	136.281	0.425	-29.933	-4356.945	-114.390	8.186
Dead+Wind 30 deg - Service	136.281	15.490	-25.332	-3705.180	-2298.136	9.049
Dead+Wind 60 deg - Service	136.281	24.772	-14.176	-2106.485	-3670.083	5.089
Dead+Wind 90 deg - Service	136.281	30.079	-0.726	-145.420	-4413.671	0.018
Dead+Wind 120 deg - Service	136.281	26.606	13.883	1961.244	-3897.260	-4.812
Dead+Wind 150 deg - Service	136.281	14.566	25.071	3604.084	-2143.502	-7.193
Dead+Wind 180 deg - Service	136.281	-0.044	27.508	3991.692	-22.748	-7.080
Dead+Wind 210 deg - Service	136.281	-14.652	25.208	3631.233	2097.968	-4.212
Dead+Wind 240 deg - Service	136.281	-26.387	14.247	2032.491	3791.858	-2.836
Dead+Wind 270 deg - Service	136.281	-29.916	-0.463	-94.629	4318.951	-1.501
Dead+Wind 300 deg - Service	136.281	-24.529	-13.984	-2069.100	3559.838	1.442
Dead+Wind 330 deg - Service	136.281	-15.105	-25.179	-3674.400	2160.521	3.826

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-136.281	0.000	0.000	136.281	-0.000	0.000%
2	1.711	-163.538	-120.273	-1.710	163.524	120.027	0.122%
3	1.711	-122.653	-120.273	-1.710	122.644	120.086	0.109%
4	62.242	-163.538	-101.792	-62.098	163.525	101.577	0.128%
5	62.242	-122.653	-101.792	-62.138	122.645	101.630	0.112%
6	99.542	-163.538	-56.963	-99.375	163.529	56.829	0.107%
7	99.542	-122.653	-56.963	-99.379	122.646	56.869	0.112%
8	120.866	-163.538	-2.919	-120.604	163.523	2.898	0.129%
9	120.866	-122.653	-2.919	-120.671	122.643	2.907	0.113%
10	106.907	-163.538	55.782	-106.688	163.524	-55.666	0.122%
11	106.907	-122.653	55.782	-106.741	122.644	-55.694	0.109%
12	58.530	-163.538	100.738	-58.416	163.524	-100.511	0.127%
13	58.530	-122.653	100.738	-58.442	122.644	-100.571	0.112%
14	-0.176	-163.538	110.533	0.176	163.528	-110.286	0.125%
15	-0.176	-122.653	110.533	0.176	122.646	-110.352	0.110%
16	-58.874	-163.538	101.289	58.759	163.525	-101.064	0.126%
17	-58.874	-122.653	101.289	58.785	122.645	-101.123	0.111%
18	-106.021	-163.538	57.246	105.804	163.524	-57.130	0.121%
19	-106.021	-122.653	57.246	105.856	122.644	-57.158	0.109%
20	-120.205	-163.538	-1.861	119.946	163.523	1.841	0.128%
21	-120.205	-122.653	-1.861	120.012	122.643	1.850	0.113%
22	-98.562	-163.538	-56.194	98.343	163.527	56.068	0.127%
23	-98.562	-122.653	-56.194	98.402	122.646	56.102	0.111%
24	-60.690	-163.538	-101.175	60.546	163.524	100.963	0.127%
25	-60.690	-122.653	-101.175	60.586	122.644	101.015	0.112%
26	0.000	-280.177	0.000	0.003	280.177	-0.001	0.001%
27	0.202	-280.177	-22.468	-0.197	280.177	22.386	0.030%
28	11.413	-280.177	-19.060	-11.367	280.177	18.989	0.030%
29	19.013	-280.177	-10.918	-18.939	280.177	10.876	0.030%
30	22.399	-280.177	-0.344	-22.314	280.177	0.341	0.030%
31	19.780	-280.177	10.722	-19.705	280.177	-10.685	0.030%
32	10.975	-280.177	18.935	-10.931	280.177	-18.869	0.028%
33	-0.022	-280.177	21.436	0.026	280.177	-21.359	0.027%
34	-11.017	-280.177	19.001	10.982	280.177	-18.934	0.027%
35	-19.677	-280.177	10.896	19.611	280.177	-10.858	0.027%
36	-22.321	-280.177	-0.217	22.245	280.177	0.215	0.027%
37	-18.897	-280.177	-10.826	18.832	280.177	10.784	0.027%
38	-11.229	-280.177	-18.987	11.193	280.177	18.916	0.028%
39	0.427	-136.281	-29.985	-0.425	136.281	29.933	0.038%
40	15.517	-136.281	-25.377	-15.490	136.281	25.332	0.038%
41	24.817	-136.281	-14.201	-24.772	136.281	14.176	0.037%
42	30.133	-136.281	-0.728	-30.079	136.281	0.726	0.038%
43	26.653	-136.281	13.907	-26.606	136.281	-13.883	0.038%
44	14.592	-136.281	25.115	-14.566	136.281	-25.071	0.037%
45	-0.044	-136.281	27.557	0.044	136.281	-27.508	0.035%
46	-14.678	-136.281	25.252	14.652	136.281	-25.208	0.037%
47	-26.432	-136.281	14.272	26.387	136.281	-14.247	0.037%
48	-29.968	-136.281	-0.464	29.916	136.281	0.463	0.037%
49	-24.572	-136.281	-14.010	24.529	136.281	13.984	0.036%
50	-15.130	-136.281	-25.224	15.105	136.281	25.179	0.037%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00073508	0.00065123
3	Yes	4	0.00055880	0.00050239
4	Yes	4	0.00069348	0.00061001
5	Yes	4	0.00052098	0.00046199
6	Yes	4	0.00064325	0.00057332
7	Yes	4	0.00047481	0.00042459
8	Yes	4	0.00073485	0.00060918
9	Yes	4	0.00055077	0.00046130
10	Yes	4	0.00073290	0.00065080
11	Yes	4	0.00055716	0.00050228
12	Yes	4	0.00073794	0.00061575
13	Yes	4	0.00055331	0.00046704
14	Yes	4	0.00063515	0.00057765
15	Yes	4	0.00046896	0.00042895
16	Yes	4	0.00070646	0.00061484
17	Yes	4	0.00052945	0.00046641
18	Yes	4	0.00073968	0.00065099
19	Yes	4	0.00056152	0.00050229
20	Yes	4	0.00074530	0.00061098
21	Yes	4	0.00055869	0.00046303
22	Yes	4	0.00064317	0.00057449
23	Yes	4	0.00047435	0.00042589
24	Yes	4	0.00073277	0.00061251
25	Yes	4	0.00054905	0.00046413
26	Yes	4	0.00000001	0.00005143
27	Yes	5	0.00098439	0.00075269
28	Yes	5	0.00098035	0.00075338
29	Yes	5	0.00097674	0.00075285
30	Yes	5	0.00098035	0.00075746
31	Yes	5	0.00098512	0.00075799
32	Yes	5	0.00098136	0.00073866
33	Yes	5	0.00097473	0.00072085
34	Yes	5	0.00097529	0.00071705
35	Yes	5	0.00097759	0.00072181
36	Yes	5	0.00097281	0.00071681
37	Yes	5	0.00097139	0.00071796
38	Yes	5	0.00097866	0.00073331
39	Yes	4	0.00048976	0.00049015
40	Yes	4	0.00048263	0.00048104
41	Yes	4	0.00047642	0.00047133
42	Yes	4	0.00048238	0.00048095
43	Yes	4	0.00048979	0.00049013
44	Yes	4	0.00048409	0.00048205
45	Yes	4	0.00047734	0.00047115
46	Yes	4	0.00048312	0.00048092
47	Yes	4	0.00048916	0.00048856
48	Yes	4	0.00048220	0.00048007
49	Yes	4	0.00047629	0.00047043
50	Yes	4	0.00048325	0.00048115

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	7.337	42	0.2731	0.0321
T2	280 - 260	6.196	42	0.2627	0.0209
T3	260 - 240	5.145	42	0.2197	0.0122
T4	240 - 220	4.279	42	0.1828	0.0193
T5	220 - 200	3.546	42	0.1571	0.0202
T6	200 - 180	2.907	42	0.1356	0.0193
T7	180 - 160	2.349	42	0.1169	0.0178
T8	160 - 140	1.859	42	0.1002	0.0156
T9	140 - 120	1.430	42	0.0848	0.0126
T10	120 - 100	1.051	42	0.0706	0.0095
T11	100 - 80	0.728	42	0.0570	0.0072
T12	80 - 60	0.460	42	0.0441	0.0052
T13	60 - 40	0.275	42	0.0320	0.0035
T14	40 - 20	0.139	47	0.0207	0.0022
T15	20 - 0	0.049	47	0.0100	0.0010

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
308.000	Lightning Rod	42	7.337	0.2731	0.0321	228470
306.000	BMR12-H-B1	42	7.337	0.2731	0.0321	228470
302.000	Beacon	42	7.337	0.2731	0.0321	228470
300.000	BMR12	42	7.337	0.2731	0.0321	228470
297.000	DBB2702RA	42	7.164	0.2729	0.0305	228470
295.000	DBD2702DA	42	7.049	0.2727	0.0294	228470
292.000	Side Arm Mount [SO 305-1]	42	6.876	0.2720	0.0278	142794
291.000	Side Arm Mount [SO 305-1]	42	6.819	0.2717	0.0272	126928
290.000	Side Arm Mount [SO 305-1]	42	6.762	0.2713	0.0267	114235
283.000	7251.01 w/Mount Pipe	42	6.365	0.2664	0.0227	67042
279.000	(2) LPA-185080/8CF w/Mount Pipe	42	6.141	0.2613	0.0203	51806
260.000	DB420-B	42	5.145	0.2197	0.0122	21779
250.000	Side Arm Mount [SO 303-3]	42	4.690	0.1993	0.0163	27463
234.000	PD220-1	42	4.048	0.1743	0.0201	43270
232.000	PD1110	42	3.973	0.1717	0.0202	44393
224.000	Side Arm Mount [SO 303-3]	42	3.684	0.1618	0.0203	49535
210.000	DB810T3E-XC	42	3.216	0.1460	0.0198	55761
209.000	ANT150D6-9	42	3.184	0.1449	0.0198	56100
203.000	Side Arm Mount [SO 303-1]	42	2.998	0.1386	0.0195	58092
199.000	Side Arm Mount [SO 305-1]	42	2.877	0.1346	0.0193	59481
193.000	PAD6-59BC	42	2.703	0.1288	0.0189	62442
191.000	PD220-1	42	2.647	0.1269	0.0187	63527
187.000	PAR6-59W	42	2.536	0.1232	0.0184	65816
180.000	MSP24013-120 w/Mount Pipe	42	2.349	0.1169	0.0178	69971
179.000	MSP24013-120 w/Mount Pipe	42	2.323	0.1160	0.0177	70451
175.000	ANT450F6	42	2.220	0.1126	0.0173	72023
172.000	PAD6-65AC	42	2.145	0.1100	0.0170	72871
170.000	MSP24013-120 w/Mount Pipe	42	2.096	0.1084	0.0168	73090
167.000	PAD6-59BC	42	2.023	0.1059	0.0164	73420
162.000	PAD6-59BC	42	1.905	0.1018	0.0158	74208
157.000	(2) 800 10122 w/Mount Pipe	42	1.791	0.0978	0.0151	78715
155.000	(2) 6' x 2" Mount Pipe	42	1.747	0.0962	0.0149	81902
150.000	Side Lights	42	1.638	0.0923	0.0141	91336
147.000	(2) RR90-18-00DP	42	1.575	0.0900	0.0137	97785

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
137.000	APXV18-206516L-C w/Mount Pipe	42	1.370	0.0826	0.0121	106862
132.000	PAD6-59BC	42	1.272	0.0790	0.0113	93929
131.000	PAD6-59BC	42	1.253	0.0783	0.0112	91664
126.000	DB492A	42	1.159	0.0747	0.0104	81801
125.000	DB492A	42	1.140	0.0740	0.0103	80078
124.000	Side Arm Mount [SO 305-1]	42	1.122	0.0733	0.0101	78448
119.000	DB810M-XC	42	1.033	0.0699	0.0094	75336
114.000	PD220-1	42	0.948	0.0664	0.0088	82995

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	29.242	8	1.0911	0.1286
T2	280 - 260	24.691	8	1.0477	0.0837
T3	260 - 240	20.500	8	0.8743	0.0491
T4	240 - 220	17.055	8	0.7268	0.0771
T5	220 - 200	14.139	8	0.6247	0.0808
T6	200 - 180	11.598	8	0.5391	0.0772
T7	180 - 160	9.375	8	0.4650	0.0712
T8	160 - 140	7.425	8	0.3985	0.0622
T9	140 - 120	5.716	8	0.3374	0.0504
T10	120 - 100	4.201	8	0.2810	0.0382
T11	100 - 80	2.913	8	0.2269	0.0287
T12	80 - 60	1.842	8	0.1757	0.0208
T13	60 - 40	1.102	8	0.1277	0.0141
T14	40 - 20	0.558	9	0.0824	0.0086
T15	20 - 0	0.196	18	0.0399	0.0040

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
308.000	Lightning Rod	8	29.242	1.0911	0.1286	59184
306.000	BMR12-H-B1	8	29.242	1.0911	0.1286	59184
302.000	Beacon	8	29.242	1.0911	0.1286	59184
300.000	BMR12	8	29.242	1.0911	0.1286	59184
297.000	DBB2702RA	8	28.552	1.0898	0.1221	59184
295.000	DBD2702DA	8	28.092	1.0886	0.1178	59184
292.000	Side Arm Mount [SO 305-1]	8	27.404	1.0857	0.1113	36990
291.000	Side Arm Mount [SO 305-1]	8	27.175	1.0844	0.1091	32880
290.000	Side Arm Mount [SO 305-1]	8	26.947	1.0828	0.1068	29592
283.000	7251.01 w/Mount Pipe	8	25.361	1.0626	0.0909	17361
279.000	(2) LPA-185080/8CF w/Mount Pipe	8	24.469	1.0416	0.0813	13332
260.000	DB420-B	8	20.500	0.8743	0.0491	5470
250.000	Side Arm Mount [SO 303-3]	8	18.690	0.7926	0.0653	6883
234.000	PD220-1	8	16.135	0.6930	0.0803	10890
232.000	PD1110	8	15.838	0.6825	0.0808	11176
224.000	Side Arm Mount [SO 303-3]	8	14.690	0.6432	0.0813	12485
210.000	DB810T3E-XC	8	12.826	0.5805	0.0793	14023
209.000	ANT150D6-9	8	12.699	0.5762	0.0791	14088
203.000	Side Arm Mount [SO 303-1]	8	11.958	0.5512	0.0779	14489
199.000	Side Arm Mount [SO 305-1]	8	11.480	0.5352	0.0770	14841
193.000	PAD6-59BC	8	10.786	0.5120	0.0754	15587

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
191.000	PD220-1	8	10.561	0.5045	0.0749	15860
187.000	PAR6-59W	8	10.120	0.4899	0.0736	16437
180.000	MSP24013-120 w/Mount Pipe	8	9.375	0.4650	0.0712	17487
179.000	MSP24013-120 w/Mount Pipe	8	9.272	0.4615	0.0709	17608
175.000	ANT450F6	8	8.863	0.4478	0.0693	18007
172.000	PAD6-65AC	8	8.564	0.4377	0.0680	18290
170.000	MSP24013-120 w/Mount Pipe	8	8.368	0.4310	0.0671	18372
167.000	PAD6-59BC	8	8.078	0.4211	0.0657	18453
162.000	PAD6-59BC	8	7.609	0.4049	0.0633	18650
157.000	(2) 800 10122 w/Mount Pipe	8	7.155	0.3890	0.0606	19792
155.000	(2) 6' x 2" Mount Pipe	8	6.978	0.3828	0.0595	20601
150.000	Side Lights	8	6.545	0.3673	0.0566	23012
147.000	(2) RR90-18-00DP	8	6.291	0.3582	0.0548	24747
137.000	APXV18-206516L-C w/Mount Pipe	8	5.476	0.3287	0.0485	27049
132.000	PAD6-59BC	8	5.085	0.3144	0.0453	23702
131.000	PAD6-59BC	8	5.008	0.3116	0.0447	23118
126.000	DB492A	8	4.632	0.2976	0.0416	20583
125.000	DB492A	8	4.559	0.2948	0.0410	20141
124.000	Side Arm Mount [SO 305-1]	8	4.486	0.2920	0.0404	19724
119.000	DB810M-XC	8	4.131	0.2782	0.0376	18919
114.000	PD220-1	8	3.792	0.2645	0.0350	20846

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	300	Leg	A325N	1.125	6	4.956	67.096	0.074 ✔	1	Bolt Tension
T2	280	Leg	A325N	1.125	6	15.172	67.096	0.226 ✔	1	Bolt Tension
T3	260	Leg	A325N	1.125	6	19.630	67.096	0.293 ✔	1	Bolt Tension
		Diagonal	A325N	0.875	1	4.325	17.400	0.249 ✔	1	Member Bearing
T4	240	Leg	A325N	1.125	8	18.069	67.096	0.269 ✔	1	Bolt Tension
		Diagonal	A325N	0.875	1	5.060	21.750	0.233 ✔	1	Member Bearing
T5	220	Leg	A325N	1.125	8	21.555	67.096	0.321 ✔	1	Bolt Tension
		Diagonal	A325N	0.875	1	6.353	21.750	0.292 ✔	1	Member Bearing
T6	200	Leg	A325N	1.125	12	17.063	67.096	0.254 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	8.707	25.556	0.341 ✔	1	Member Bearing
T7	180	Leg	A325N	1.125	12	20.132	67.096	0.300 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	11.452	30.668	0.373 ✔	1	Member Bearing
T8	160	Leg	A325N	1.125	12	23.688	67.096	0.353 ✔	1	Bolt Tension
		Diagonal	A325N	1.000	1	14.572	30.668	0.475 ✔	1	Member Bearing
T9	140	Leg	A325N	1.125	12	27.758	67.096	0.414 ✔	1	Bolt Tension
		Diagonal	A325N	1.250	1	18.408	33.169	0.555 ✔	1	Member Bearing
T10	120	Leg	A325N	1.125	16	24.008	67.096	0.358 ✔	1	Bolt Tension
		Diagonal	A325N	1.250	1	20.348	33.169	0.613 ✔	1	Member Bearing
T11	100	Leg	A325N	1.125	16	27.095	67.096	0.404 ✔	1	Bolt Tension
		Diagonal	A325N	1.250	1	20.535	33.169	0.619 ✔	1	Member Bearing
T12	80	Leg	A325N	1.125	16	26.734	67.096	0.398 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.875	2	18.557	48.707	0.381 ✔	1	Bolt Shear
		Horizontal	A325X	0.875	2	9.622	59.531	0.162 ✔	1	Bolt Shear
T13	60	Leg	A325N	1.250	16	29.636	82.835	0.358 ✔	1	Bolt Tension
		Diagonal	A325N	0.875	2	18.110	48.707	0.372 ✔	1	Bolt Shear
		Horizontal	A325X	0.875	2	9.905	59.531	0.166 ✔	1	Bolt Shear
T14	40	Leg	A325N	1.250	16	32.429	82.835	0.391 ✔	1	Bolt Tension
		Diagonal	A325N	0.875	2	17.968	48.707	0.369 ✔	1	Bolt Shear
		Horizontal	A325X	0.875	2	10.317	59.531	0.173 ✔	1	Bolt Shear
T15	20	Leg	A449	1.500	16	35.157	104.372	0.337 ✔	1	Bolt Tension
		Diagonal	A325N	0.875	2	18.000	48.707	0.370 ✔	1	Bolt Shear
		Horizontal	A325X	0.875	2	10.720	59.531	0.180 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	2 3/4	20.000	3.208	56.0 K=1.00	5.940	-32.251	212.513	0.152 [1] ✔
T2	280 - 260	2 3/4	20.000	3.208	56.0 K=1.00	5.940	-96.602	212.513	0.455 [1] ✔
T3	260 - 240	3 1/2	20.033	6.177	84.7 K=1.00	9.621	-127.215	256.191	0.497 [1] ✔
T4	240 - 220	4	20.033	6.177	74.1 K=1.00	12.566	-158.629	378.404	0.419 [1] ✔
T5	220 - 200	4 1/4	20.033	6.177	69.8 K=1.00	14.186	-191.474	447.234	0.428 [1] ✔
T6	200 - 180	4 1/2	20.033	6.177	65.9 K=1.00	15.904	-228.757	521.047	0.439 [1] ✔
T7	180 - 160	4 3/4	20.033	6.177	62.4 K=1.00	17.721	-271.610	599.747	0.453 [1] ✔
T8	160 - 140	5	20.033	6.177	59.3 K=1.00	19.635	-323.346	683.256	0.473 [1] ✔
T9	140 - 120	5 1/4	20.033	6.177	56.5 K=1.00	21.647	-381.820	771.513	0.495 [1] ✔
T10	120 - 100	5 1/2	20.033	6.177	53.9 K=1.00	23.758	-442.721	864.466	0.512 [1] ✔
T11	100 - 80	5 3/4	20.033	6.177	51.6 K=1.00	25.967	-503.204	962.073	0.523 [1] ✔
T12	80 - 60	6	20.033	6.678	53.4 K=1.00	28.274	-504.540	1032.710	0.489 [1] ✔
T13	60 - 40	6 1/4	20.033	6.678	51.3 K=1.00	30.680	-561.757	1139.050	0.493 [1] ✔
T14	40 - 20	6 1/2	20.033	6.678	49.3	33.183	-618.591	1250.000	0.495 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T15	20 - 0	6 3/4	20.033	6.678	K=1.00 47.5 K=1.00	35.785	-675.654	1365.540	✔ 0.495 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1 1/8	5.128	2.417	88.2 K=0.86	0.994	-3.802	21.380	0.178 [1] ✔
T2	280 - 260	1 1/8	5.128	2.417	88.2 K=0.86	0.994	-6.633	21.380	0.310 [1] ✔
T3	260 - 240	L2 1/2x2 1/2x1/4	8.343	4.184	102.3 K=1.00	1.190	-4.303	22.234	0.194 [1] ✔
T4	240 - 220	L2 1/2x2 1/2x5/16	9.802	4.885	119.9 K=1.00	1.460	-5.008	22.201	0.226 [1] ✔
T5	220 - 200	L2 1/2x2 1/2x5/16	11.425	5.686	139.5 K=1.00	1.460	-6.270	16.944	0.370 [1] ✔
T6	200 - 180	L3x3x5/16	13.153	6.539	133.2 K=1.00	1.780	-8.568	22.657	0.378 [1] ✔
T7	180 - 160	L3x3x3/8	14.949	7.426	151.8 K=1.00	2.110	-11.034	20.681	0.534 [1] ✔
T8	160 - 140	L3 1/2x3 1/2x3/8	16.791	8.337	145.6 K=1.00	2.480	-14.255	26.418	0.540 [1] ✔
T9	140 - 120	L4x4x5/16	18.666	9.264	140.5 K=1.00	2.400	-18.131	27.448	0.661 [1] ✔
T10	120 - 100	L5x5x5/16	20.564	10.203	123.2 K=1.00	3.030	-19.907	43.840	0.454 [1] ✔
T11	100 - 80	L5x5x5/16	22.480	11.151	134.6 K=1.00	3.030	-20.258	37.733	0.537 [1] ✔
T12	80 - 60	2L3x3x5/16x3/8	23.331	22.845	201.3 K=1.00	3.550	-37.113	19.798	**1.875** [1] ✘
T13	60 - 40	KL/R > 200 (C) - 284/2 2L3x3x5/16x3/8	23.861	23.383	206.0 K=1.00	3.550	-36.220	18.890	**1.917** [1] ✘
T14	40 - 20	KL/R > 200 (C) - 323 2L3x3x5/16x3/8	24.420	23.948	211.1 K=1.00	3.550	-35.935	18.002	**1.996** [1] ✘
T15	20 - 0	KL/R > 200 (C) - 362 2L3x3x5/16x3/8 KL/R > 200 (C) - 401	25.007	24.538	216.3 K=1.00	3.550	-36.000	17.139	**2.101** [1] ✘

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	80 - 60	2L3 1/2x3 1/2x3/8x3/8	22.000	10.760	120.7 K=1.00	4.970	-19.245	77.098	0.250 [1] ✔
T13	60 - 40	2L3 1/2x3 1/2x3/8x3/8	24.000	11.750	131.8 K=1.00	4.970	-19.811	64.659	0.306 [1] ✔
T14	40 - 20	2L3 1/2x3 1/2x3/8x3/8	26.000	12.740	142.9 K=1.00	4.970	-20.634	55.004	0.375 [1] ✔
T15	20 - 0	2L3 1/2x3 1/2x3/8x3/8	28.000	13.729	154.0 K=1.00	4.970	-21.439	47.360	0.453 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1 1/8	4.000	3.771	112.6 K=0.70	0.994	-0.608	16.518	0.037 [1] ✔
T2	280 - 260	1 1/8	4.000	3.771	112.6 K=0.70	0.994	-1.010	16.518	0.061 [1] ✔
T3	260 - 240	1 1/8	4.075	3.783	113.0 K=0.70	0.994	-0.850	16.445	0.052 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1 1/8	4.000	3.771	112.6 K=0.70	0.994	-1.015	16.518	0.061 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	80 - 60	2L2x2x1/4x3/8	3.667	3.417	88.0 K=1.00	1.880	-11.043	40.510	0.273 [1] ✔
T13	60 - 40	2L 'a' > 19.743 in - 290 2L2x2x1/4x3/8	4.000	3.740	96.5 K=1.00	1.880	-11.904	37.291	0.319 [1] ✔
T14	40 - 20	2L 'a' > 21.609 in - 329 2L2x2x1/4x3/8	4.333	4.063	105.1 K=1.00	1.880	-12.716	34.057	0.373 [1] ✔
T15	20 - 0	2L 'a' > 23.474 in - 368 2L2x2x1/4x3/8 2L 'a' > 25.340 in - 407	4.667	4.385	113.6 K=1.00	1.880	-11.717	30.865	0.380 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (2) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	80 - 60	2L2x2x1/4x3/8	7.333	7.083	139.6 K=1.00	1.880	-11.043	21.802	0.506 [1] ✔
T13	60 - 40	2L2x2x1/4x3/8	8.000	7.740	152.5 K=1.00	1.880	-11.904	18.261	0.652 [1] ✔
T14	40 - 20	2L2x2x1/4x3/8	8.667	8.396	165.4 K=1.00	1.880	-12.716	15.518	0.819 [1] ✔
T15	20 - 0	2L2x2x1/4x3/8	9.333	9.052	178.4 K=1.00	1.880	-11.717	13.350	0.878 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	80 - 60	2L2x2x1/4x3/8	7.456	6.898	135.9 K=1.00	1.880	-11.227	22.991	0.488 [1] ✔
T13	60 - 40	2L2x2x1/4x3/8	7.611	7.071	139.3 K=1.00	1.880	-11.325	21.877	0.518 [1] ✔
T14	40 - 20	2L2x2x1/4x3/8	7.777	7.251	142.9 K=1.00	1.880	-11.410	20.805	0.548 [1] ✔
T15	20 - 0	2L2x2x1/4x3/8	7.954	7.438	146.6 K=1.00	1.880	-9.985	19.773	0.505 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (2) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	80 - 60	2L2x2x1/4x3/8	9.669	9.338	184.0 K=1.00	1.880	-7.279	12.545	0.580 [1] ✔
T13	60 - 40	2L2x2x1/4x3/8	10.162	9.830	193.7 K=1.00	1.880	-7.560	11.320	0.668 [1] ✔
T14	40 - 20	2L2x2x1/4x3/8	10.674	10.340	203.7 K=1.00	1.880	-7.830	10.231	0.765 [1] ✔
T15	20 - 0	2L2x2x1/4x3/8	11.202	10.865	214.1 K=1.00	1.880	-7.631	9.267	0.823 [1] ✔

[1] $P_u / \phi P_n$ controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	80 - 60	2L3x3x3/16x3/8	11.000	11.000	140.6 K=1.00	2.180	-0.032	24.922	0.001 [1] ✔
T13	60 - 40	2L3x3x3/16x3/8	12.000	12.000	153.4 K=1.00	2.180	-0.031	20.941	0.001 [1] ✔
T14	40 - 20	2L3x3x3/16x3/8	13.000	13.000	166.1 K=1.00	2.180	-0.029	17.843	0.002 [1] ✔
T15	20 - 0	2L3x3x3/16x3/8	14.000	14.000	178.9 K=1.00	2.180	-0.029	15.385	0.002 [1] ✔

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	2 3/4	20.000	3.208	56.0	5.940	29.735	267.281	0.111 [1] ✔
T2	280 - 260	2 3/4	20.000	3.208	56.0	5.940	91.033	267.281	0.341 [1] ✔
T3	260 - 240	3 1/2	20.033	6.177	84.7	9.621	117.781	432.951	0.272 [1] ✔
T4	240 - 220	4	20.033	6.177	74.1	12.566	144.550	565.487	0.256 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	220 - 200	4 1/4	20.033	6.177	69.8	14.186	172.440	638.381	0.270 [1]
T6	200 - 180	4 1/2	20.033	6.177	65.9	15.904	204.760	715.694	0.286 [1]
T7	180 - 160	4 3/4	20.033	6.177	62.4	17.721	241.583	797.425	0.303 [1]
T8	160 - 140	5	20.033	6.177	59.3	19.635	284.253	883.573	0.322 [1]
T9	140 - 120	5 1/4	20.033	6.177	56.5	21.647	333.090	974.139	0.342 [1]
T10	120 - 100	5 1/2	20.033	6.177	53.9	23.758	384.120	1069.120	0.359 [1]
T11	100 - 80	5 3/4	20.033	6.177	51.6	25.967	433.520	1168.530	0.371 [1]
T12	80 - 60	6	20.033	6.678	53.4	28.274	432.428	1272.350	0.340 [1]
T13	60 - 40	6 1/4	20.033	6.678	51.3	30.680	478.272	1380.580	0.346 [1]
T14	40 - 20	6 1/2	20.033	6.678	49.3	33.183	522.972	1493.240	0.350 [1]
T15	20 - 0	6 3/4	20.033	6.678	47.5	35.785	566.113	1610.310	0.352 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1 1/8	5.128	2.417	103.1	0.994	3.775	32.206	0.117 [1]
T2	280 - 260	1 1/8	5.128	2.417	103.1	0.994	6.687	32.206	0.208 [1]
T3	260 - 240	L2 1/2x2 1/2x1/4	7.568	3.834	59.8	0.705	4.325	30.668	0.141 [1]
T4	240 - 220	L2 1/2x2 1/2x5/16	9.802	4.885	77.0	0.861	5.060	37.437	0.135 [1]
T5	220 - 200	L2 1/2x2 1/2x5/16	11.425	5.686	89.7	0.861	6.353	37.437	0.170 [1]
T6	200 - 180	L3x3x5/16	13.153	6.539	85.1	1.071	8.707	46.603	0.187 [1]
T7	180 - 160	L3x3x3/8	14.949	7.426	97.6	1.266	11.452	55.075	0.208 [1]
T8	160 - 140	L3 1/2x3 1/2x3/8	16.791	8.337	93.5	1.544	14.572	67.146	0.217 [1]
T9	140 - 120	L4x4x5/16	18.666	9.264	89.7	1.478	18.408	64.281	0.286 [1]

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	
T10	120 - 100	L5x5x5/16	20.564	10.203	78.0	1.950	20.348	84.835	0.240 [1] ✔
T11	100 - 80	L5x5x5/16	21.296	10.560	80.7	1.950	20.535	84.835	0.242 [1] ✔
T12	80 - 60	2L3x3x5/16x3/8	23.331	22.845	195.8	2.194	36.591	95.428	0.383 [1] ✔
T13	60 - 40	2L3x3x5/16x3/8	23.861	23.383	200.4	2.194	35.562	95.428	0.373 [1] ✔
T14	40 - 20	2L3x3x5/16x3/8	24.420	23.948	205.3	2.194	35.172	95.428	0.369 [1] ✔
T15	20 - 0	2L3x3x5/16x3/8	25.007	24.538	210.3	2.194	35.224	95.428	0.369 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

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	
T12	80 - 60	2L3 1/2x3 1/2x3/8x3/8	22.000	10.760	120.7	3.165	18.570	154.294	0.120 [1] ✔
T13	60 - 40	2L3 1/2x3 1/2x3/8x3/8	24.000	11.750	131.8	3.165	18.992	154.294	0.123 [1] ✔
T14	40 - 20	2L3 1/2x3 1/2x3/8x3/8	26.000	12.740	142.9	3.165	19.875	154.294	0.129 [1] ✔
T15	20 - 0	2L3 1/2x3 1/2x3/8x3/8	28.000	13.729	154.0	3.165	20.678	154.294	0.134 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

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	
T1	300 - 280	1 1/8	4.000	3.771	160.9	0.994	0.554	32.206	0.017 [1] ✔
T2	280 - 260	1 1/8	4.000	3.771	160.9	0.994	1.026	32.206	0.032 [1] ✔
T3	260 - 240	1 1/8	4.075	3.783	161.4	0.994	0.773	32.206	0.024 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

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	
T1	300 - 280	1 1/8	4.000	3.771	160.9	0.994	1.043	32.206	0.032 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (1) Design Data (Tension)

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	
T12	80 - 60	2L2x2x1/4x3/8	3.667	3.417	67.3	1.880	11.043	60.912	0.181 [1] ✔
		2L 'a' > 19.743 in - 290							
T13	60 - 40	2L2x2x1/4x3/8	4.000	3.740	73.7	1.880	11.904	60.912	0.195 [1] ✔
		2L 'a' > 21.609 in - 329							
T14	40 - 20	2L2x2x1/4x3/8	4.333	4.063	80.0	1.880	12.716	60.912	0.209 [1] ✔
		2L 'a' > 23.474 in - 374							
T15	20 - 0	2L2x2x1/4x3/8	4.667	4.385	86.4	1.880	11.717	60.912	0.192 [1] ✔
		2L 'a' > 25.340 in - 407							

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (2) Design Data (Tension)

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	
T12	80 - 60	2L2x2x1/4x3/8	7.333	7.083	139.6	1.880	11.043	60.912	0.181 [1] ✔
T13	60 - 40	2L2x2x1/4x3/8	8.000	7.740	152.5	1.880	11.904	60.912	0.195 [1] ✔
T14	40 - 20	2L2x2x1/4x3/8	8.667	8.396	165.4	1.880	12.716	60.912	0.209 [1] ✔
T15	20 - 0	2L2x2x1/4x3/8	9.333	9.052	178.4	1.880	11.717	60.912	0.192 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Diagonal (1) Design Data (Tension)

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	
T12	80 - 60	2L2x2x1/4x3/8	7.456	6.898	135.9	1.880	11.227	60.912	0.184 [1] ✓
T13	60 - 40	2L2x2x1/4x3/8	7.611	7.071	139.3	1.880	11.325	60.912	0.186 [1] ✓
T14	40 - 20	2L2x2x1/4x3/8	7.777	7.251	142.9	1.880	11.410	60.912	0.187 [1] ✓
T15	20 - 0	2L2x2x1/4x3/8	7.954	7.438	146.6	1.880	9.985	60.912	0.164 [1] ✓

[1] P_u / ϕP_n controls

Redundant Diagonal (2) Design Data (Tension)

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	
T12	80 - 60	2L2x2x1/4x3/8	9.669	9.338	184.0	1.880	7.279	60.912	0.120 [1] ✓
T13	60 - 40	2L2x2x1/4x3/8	10.162	9.830	193.7	1.880	7.560	60.912	0.124 [1] ✓
T14	40 - 20	2L2x2x1/4x3/8	10.674	10.340	203.7	1.880	7.830	60.912	0.129 [1] ✓
T15	20 - 0	2L2x2x1/4x3/8	11.202	10.865	214.1	1.880	7.631	60.912	0.125 [1] ✓

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

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	
T12	80 - 60	2L3x3x3/16x3/8	11.000	11.000	140.6	2.180	0.011	70.632	0.000 [1] ✓
T13	60 - 40	2L3x3x3/16x3/8	12.000	12.000	153.4	2.180	0.008	70.632	0.000 [1] ✓
T14	40 - 20	2L3x3x3/16x3/8	13.000	13.000	166.1	2.180	0.005	70.632	0.000 [1] ✓
T15	20 - 0	2L3x3x3/16x3/8	14.000	14.000	178.9	2.180	0.003	70.632	0.000 [1] ✓

[1] P_u / ϕP_n controls

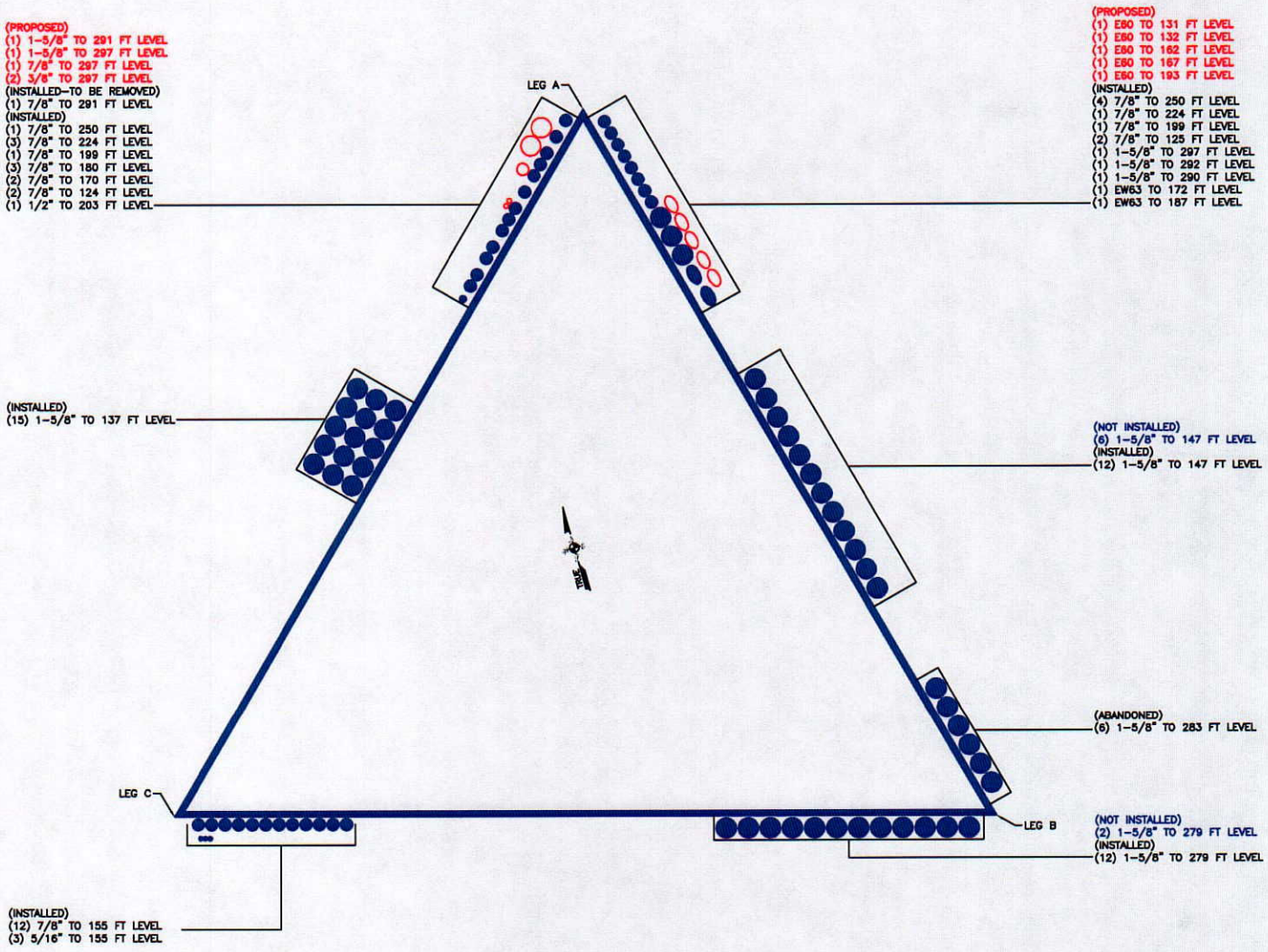
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	300 - 280	Leg	2 3/4	3	-32.251	212.513	15.2	Pass
T2	280 - 260	Leg	2 3/4	47	-96.602	212.513	45.5	Pass
T3	260 - 240	Leg	3 1/2	89	-127.215	256.191	49.7	Pass
T4	240 - 220	Leg	4	113	-158.629	378.404	41.9	Pass
T5	220 - 200	Leg	4 1/4	134	-191.474	447.234	42.8	Pass
T6	200 - 180	Leg	4 1/2	155	-228.757	521.047	43.9	Pass
T7	180 - 160	Leg	4 3/4	176	-271.610	599.747	45.3	Pass
T8	160 - 140	Leg	5	197	-323.346	683.256	47.3	Pass
T9	140 - 120	Leg	5 1/4	218	-381.820	771.513	49.5	Pass
T10	120 - 100	Leg	5 1/2	239	-442.721	864.466	51.2	Pass
T11	100 - 80	Leg	5 3/4	260	-503.204	962.073	52.3	Pass
T12	80 - 60	Leg	6	281	-504.540	1032.710	48.9	Pass
T13	60 - 40	Leg	6 1/4	320	-561.757	1139.050	49.3	Pass
T14	40 - 20	Leg	6 1/2	359	-618.591	1250.000	49.5	Pass
T15	20 - 0	Leg	6 3/4	398	-675.654	1365.540	49.5	Pass
T1	300 - 280	Diagonal	1 1/8	14	-3.802	21.380	17.8	Pass
T2	280 - 260	Diagonal	1 1/8	56	-6.633	21.380	31.0	Pass
T3	260 - 240	Diagonal	L2 1/2x2 1/2x1/4	99	-4.303	22.234	19.4	Pass
T4	240 - 220	Diagonal	L2 1/2x2 1/2x5/16	120	-5.008	22.201	22.6	Pass
T5	220 - 200	Diagonal	L2 1/2x2 1/2x5/16	139	-6.270	16.944	37.0	Pass
T6	200 - 180	Diagonal	L3x3x5/16	158	-8.568	22.657	37.8	Pass
T7	180 - 160	Diagonal	L3x3x3/8	178	-11.034	20.681	53.4	Pass
T8	160 - 140	Diagonal	L3 1/2x3 1/2x3/8	199	-14.255	26.418	54.0	Pass
T9	140 - 120	Diagonal	L4x4x5/16	220	-18.131	27.448	66.1	Pass
T10	120 - 100	Diagonal	L5x5x5/16	241	-19.907	43.840	45.4	Pass
T11	100 - 80	Diagonal	L5x5x5/16	262	-20.258	37.733	53.7	Pass
T12	80 - 60	Diagonal	2L3x3x5/16x3/8	284	-37.113	19.798	187.5	Fail
T13	60 - 40	Diagonal	2L3x3x5/16x3/8	323	-36.220	18.890	191.7	Fail
T14	40 - 20	Diagonal	2L3x3x5/16x3/8	362	-35.935	18.002	199.6	Fail
T15	20 - 0	Diagonal	2L3x3x5/16x3/8	401	-36.000	17.139	210.1	Fail
T12	80 - 60	Horizontal	2L3 1/2x3 1/2x3/8x3/8	283	-19.245	77.098	25.0	Pass
T13	60 - 40	Horizontal	2L3 1/2x3 1/2x3/8x3/8	322	-19.811	64.659	30.6	Pass
T14	40 - 20	Horizontal	2L3 1/2x3 1/2x3/8x3/8	361	-20.634	55.004	37.5	Pass
T15	20 - 0	Horizontal	2L3 1/2x3 1/2x3/8x3/8	400	-21.439	47.360	45.3	Pass
T1	300 - 280	Top Girt	1 1/8	5	-0.608	16.518	3.7	Pass
T2	280 - 260	Top Girt	1 1/8	51	-1.010	16.518	6.1	Pass
T3	260 - 240	Top Girt	1 1/8	93	-0.850	16.445	5.2	Pass
T1	300 - 280	Bottom Girt	1 1/8	7	-1.015	16.518	6.1	Pass
T12	80 - 60	Redund Horz 1 Bracing	2L2x2x1/4x3/8	296	-11.043	40.510	27.3	Pass
T13	60 - 40	Redund Horz 1 Bracing	2L2x2x1/4x3/8	329	-11.904	37.291	31.9	Pass
T14	40 - 20	Redund Horz 1 Bracing	2L2x2x1/4x3/8	368	-12.716	34.057	37.3	Pass
T15	20 - 0	Redund Horz 1 Bracing	2L2x2x1/4x3/8	413	-11.717	30.865	38.0	Pass
T12	80 - 60	Redund Horz 2 Bracing	2L2x2x1/4x3/8	291	-11.043	21.802	50.6	Pass
T13	60 - 40	Redund Horz 2 Bracing	2L2x2x1/4x3/8	336	-11.904	18.261	65.2	Pass
T14	40 - 20	Redund Horz 2 Bracing	2L2x2x1/4x3/8	369	-12.716	15.518	81.9	Pass
T15	20 - 0	Redund Horz 2 Bracing	2L2x2x1/4x3/8	408	-11.717	13.350	87.8	Pass
T12	80 - 60	Redund Diag 1 Bracing	2L2x2x1/4x3/8	292	-11.227	22.991	48.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T13	60 - 40	Redund Diag 1 Bracing	2L2x2x1/4x3/8	331	-11.325	21.877	51.8	Pass
T14	40 - 20	Redund Diag 1 Bracing	2L2x2x1/4x3/8	370	-11.410	20.805	54.8	Pass
T15	20 - 0	Redund Diag 1 Bracing	2L2x2x1/4x3/8	409	-9.985	19.773	50.5	Pass
T12	80 - 60	Redund Diag 2 Bracing	2L2x2x1/4x3/8	293	-7.279	12.545	58.0	Pass
T13	60 - 40	Redund Diag 2 Bracing	2L2x2x1/4x3/8	338	-7.560	11.320	66.8	Pass
T14	40 - 20	Redund Diag 2 Bracing	2L2x2x1/4x3/8	371	-7.830	10.231	76.5	Pass
T15	20 - 0	Redund Diag 2 Bracing	2L2x2x1/4x3/8	410	-7.631	9.267	82.3	Pass
T12	80 - 60	Inner Bracing	2L3x3x3/16x3/8	316	-0.032	24.922	0.5	Pass
T13	60 - 40	Inner Bracing	2L3x3x3/16x3/8	356	-0.031	20.941	0.5	Pass
T14	40 - 20	Inner Bracing	2L3x3x3/16x3/8	394	-0.029	17.843	0.5	Pass
T15	20 - 0	Inner Bracing	2L3x3x3/16x3/8	433	-0.028	15.385	0.5	Pass
						Summary		
						Leg (T11)	52.3	Pass
						Diagonal (T15)	210.1	Fail ✗
						Horizontal (T15)	45.3	Pass
						Top Girt (T2)	6.1	Pass
						Bottom Girt (T1)	6.1	Pass
						Redund Horz 1 Bracing (T15)	38.0	Pass
						Redund Horz 2 Bracing (T15)	87.8	Pass
						Redund Diag 1 Bracing (T14)	54.8	Pass
						Redund Diag 2 Bracing (T15)	82.3	Pass
						Inner Bracing (T15)	0.5	Pass
						Bolt Checks	61.9	Pass
						RATING =	**210.1**	**Fail ✗**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 801526 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Drilled Pier Per TIA-222-G

Client: Crown Castle, Inc. Designer: CT

Site: Government Center, MD (BU# 801526) Date: 6/1/2009

Project No.: 82420

Design Strength = Φs * Rs

Tower Leg Reactions (Factored Loads)

Compression:	726	kips
Uplift:	608	kips
Shear:	73	kips

Rs =	Ultimate Soil Resistance	
Φs =	0.75	For Pullout
Φs =	0.50	For Bearing
Dry Concrete unit wt.:	150	pcf
Bouyant Concrete unit wt.:	88.7	pcf

	Qty	Size	Yield (ksi)
Pier Rebar:	55	9	60
As =	0.34%		

Pier Diameter:	12	ft
Pier Depth:	43.5	ft

Soil Data:

Depth to Water Table: 33 ft

Ultimate End Bearing Pressure: 1.86 ksf

** Enter Ultimate Soil Values per TIA-222-G (Section 9.4)

	Depth to bottom of Strata (ft)	Soil Unit Weight (pcf)	ϕ (degrees)	Cohesion (ksf)	Uplift: Ultimate Skin Friction (ksf)	Uplift: Strata Skin Friction (kips)	Compression: Ultimate Skin Friction (ksf)	Compression: Strata Skin Friction (kips)
Soil Strata 1	5	120	0	0.00	0.000	0.00	0.000	0.00
Soil Strata 2	8	130	36	0.00	0.780	88.22	0.820	92.74
Soil Strata 3	14	130	0	1.50	0.820	185.48	0.820	185.48
Soil Strata 4	19	125	0	1.50	0.820	154.57	0.820	154.57
Soil Strata 5	24	115	30	0.00	0.220	41.47	0.220	41.47
Soil Strata 6	39	105	29	0.00	0.210	118.75	2.800	1583.36
Soil Strata 7	43	38	28	0.00	2.070	312.15	2.760	416.20
					Total:	**900.63**		**2473.82**

Concrete Wt =	673.65	kips
Bearing =	210.36	kips
Ult. Skin Friction (Comp) =	2473.82	kips
Ult. Skin Friction (Uplift) =	900.63	kips

Results

	(Φs * Rs)			Actual Load		Ratio
Allowable Compression =	**1960.54**	**kips**	>	726.00	**OK**	**37.0%**
Allowable Uplift =	**1349.12**	**kips**	>	608.00	**OK**	**45.1%**
All. Tension in Rebar =	**2952.24**	**kips**	>	608.00	**OK**	**20.6%**
Total Volume of Concrete (Each Pier):	**184.31**	**CY**				

December 30, 2010

Ms. Molly Carder
Crown Castle USA Inc.
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6596

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
ctuttle@btengineering.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***St. Mary's County Government* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	801527
	Crown Castle Site Name:	Mechanicsville
	Crown Castle JDE Job Number:	147626
	Crown Castle Work Order Number:	378216
Engineering Firm Designation:	**B&T Engineering, Inc. Project Number:**	82427
Site Data:	**28306 Flora Corner Road, Mechanicsville, MD, St. Mary's County**	
	Latitude *38° 26' 39.47"*, Longitude *-76° 43' 36.1"*	
	325 Foot - Self Support Tower	

Dear Ms. Carder,

B&T Engineering, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 399680, in accordance with application 114075, revision 3.

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:

LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA-222-G standard and the 2009 International Building Code based upon a wind speed of 95 mph 3-second gust.

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

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

Respectfully submitted by:

Kristin Mears, E.I.
Project Engineer

Chad E. Tuttle, P.E
President

I hereby certify these documents were reviewed by me and I am a duly licensed professional engineer under the laws of the State of Maryland.

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 325 ft. Self Support tower designed by Central Tower, Inc. in November of 2000. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 95 mph with no ice, 40 mph with 0.5 inch ice thickness and 60 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
322	332	1	Celwave	BMR12-H-B1	1	7/8	--
	324	1	Decibel	DBB2802RA	1	3/8	
307	314	2	Celwave	BMR12-H-B1	1	7/8	--
	307	1	--	Side Arm Mount [SO 602-1]	1	1 5/8	
269	269	1	Celwave	PAD8-59AC	1	E60	--
		1	--	Pipe Mount [PM 602-1]			
263	273	1	Telewave	ANT150D6-9	--	--	--
175	175	1	Celwave	PAD8-59AC	1	EP60	--
		1	--	Pipe Mount [PM 602-1]			
147	147	1	Celwave	SU3-107FC	1	EP105	--
		1	--	Pipe Mount [PM 601-1]			
101	101	1	Celwave	SU4-107AC	1	EP105	--
		1	--	Pipe Mount [PM 601-1]			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
322	**334**	**1**	**Decibel**	**DB812KE-XT**	**1**	**7/8**	**2**
	328	**1**	**Decibel**	**DB806M-XC**	**1**	**1 5/8**	
	322	**1**	**--**	**Side Arm Mount [SO 602-1]**			
		1	--	Side Arm Mount [SO 602-1]	--	--	1
307	314	**1**	**Decibel**	**DB806M-XC**	**1**	**7/8**	**2**
		2	Celwave	BMR12-A-B1	2	1 5/8	1
	307	1	--	Side Arm Mount [SO 602-3]			
263	**277**	**1**	**Decibel**	**DB224-A**	**--**	**--**	**2**
	263	1	--	Side Arm Mount [SO 311-1]	1	7/8	1
250	250	6	CSA Wireless	PCSA090-16-2	6	1 5/8	1
		1	--	Sector Mount [SM 302-3]	1	1/2	

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
235	235	6	Kathrein/Scala	800 10122	3 12	5/16 1 5/8	1
		6	Powerwave	LGP21401 TMA			
		6	Powerwave	LGP219nn Diplexer			
		1	--	Sector Mount [SM 402-3]			
230	230	6	EMS Wireless	RR90-18-00DP	12	1 5/8	1
		6	Ericsson	KRY 112 37 TMA			
		1	--	Sector Mount [SM 402-3]			
204	219	1	Telewave	ANT150D3D	3	7/8	1
	205	1	Telewave	ANT150D			
	204	1	--	Side Arm Mount [SO 601-1]			
		1	--	Side Arm Mount [SO 602-1]			
197	197	2	--	Side Arm Mount [SO 702-1]	4	7/8	1
	188	2	Decibel	DB420D-B			
188	188	1	Andrew	PAR6-65A	1	EWP63	1
		1	--	Pipe Mount [PM 602-1]			
184	184	1	Andrew	PAR6-59W	1	EW63	1
		1	--	Pipe Mount [PM 602-1]			
172	172	1	Radiowaves	HP4-11	1	3/8	1
		1	--	Pipe Mount [PM 602-1]			
165	167	3	Maxrad	MSP24013MB	3	7/8	1
	165	1	--	Side Arm Mount [SO 301-3]			
105	105	1	Andrew	PAR8-65	1	EW63	1
		1	--	Pipe Mount [PM 601-1]			

Notes:
1) Existing Equipment
2) Equipment to be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
300	300	1	Decibel	DB812K-XT	3	1 5/8
		2	Sinclair	SRL410-C18		
285	285	12	Swedcom	ALP9212	12	1 5/8
270	270	12	Swedcom	ALP9212	12	1 5/8
255	255	12	Swedcom	ALP9212	12	1 5/8
240	240	12	Swedcom	ALP9212	12	1 5/8
210	210	2	--	8' HP Dish	2	EW63

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Tower Drawings	MRA Job No. 01455.V	1081806	Crown OTG
Tower Geometry	Previous SA by GPD Dated: 12/13/2006	1286734	Crown OTG
Foundation Drawings	GTA Associates, Inc. Job No. 01780.V	1081806	Crown OTG
Geotech Report	GTA Associates, Inc. Job No. 01455.V	1081814	Crown OTG
Antenna Configuration	Crown CAD Package	Date: 12/28/2010	Crown OTG
Online Application	St. Mary's County Government Co-Locate Revision#3	114075	Crown OTG

3.1) Analysis Method

RISA Tower (version 5.4.2.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	325 - 320	Leg	3	3	-3.464	284.065	1.2	Pass
T2	320 - 300	Leg	3	24	-27.072	259.251	10.4	Pass
T3	300 - 280	Leg	3	69	-61.911	258.805	23.9	Pass
T4	280 - 260	Leg	3 3/4	114	-118.333	439.351	26.9	Pass
T5	260 - 240	Leg	4 1/2	159	-135.334	521.047	26.0	Pass
T6	240 - 220	Leg	5	183	-165.414	683.256	24.2	Pass
T7	220 - 200	Leg	5 1/4	204	-199.038	771.513	25.8	Pass
T8	200 - 180	Leg	5 1/2	223	-235.693	864.466	27.3	Pass
T9	180 - 160	Leg	5 1/2	244	-278.678	864.466	32.2	Pass
T10	160 - 140	Leg	5 3/4	265	-322.491	962.073	33.5	Pass
T11	140 - 120	Leg	6	286	-367.228	1064.300	34.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P _allow (K)	% Capacity	Pass / Fail
T12	120 - 100	Leg	6 1/4	307	-413.251	1171.120	35.3	Pass
T13	100 - 80	Leg	6 1/2	328	-460.625	1282.500	35.9	Pass
T14	80 - 60	Leg	6 3/4	349	-462.048	1365.540	33.8	Pass
T15	60 - 40	Leg	7	388	-507.452	1485.650	34.2	Pass
T16	40 - 20	Leg	7 1/4	427	-552.578	1610.310	34.3	Pass
T17	20 - 0	Leg	7 1/4	466	-599.521	1610.310	37.2	Pass
T1	325 - 320	Diagonal	1 1/8	15	-0.902	20.246	4.5	Pass
T2	320 - 300	Diagonal	1 1/8	36	-3.110	18.268	17.0	Pass
T3	300 - 280	Diagonal	1 1/8	81	-3.917	18.233	21.5	Pass
T4	280 - 260	Diagonal	1 1/8	126	-6.682	18.855	35.4	Pass
T5	260 - 240	Diagonal	L2 1/2x2 1/2x5/16	168	-4.224	27.602	15.3	Pass
T6	240 - 220	Diagonal	L2 1/2x2 1/2x5/16	189	-5.991	22.570	26.5	Pass
T7	220 - 200	Diagonal	L3x3x3/8	210	-6.972	33.988	20.5	Pass
T8	200 - 180	Diagonal	L3x3x3/8	226	-8.419	27.050	31.1	Pass
T9	180 - 160	Diagonal	L3 1/2x3 1/2x5/16	247	-10.784	28.367	38.0	Pass
T10	160 - 140	Diagonal	L4x4x1/4	268	-11.932	27.313	43.7	Pass
T11	140 - 120	Diagonal	L4x4x3/8	289	-13.228	32.694	40.5	Pass
T12	120 - 100	Diagonal	L5x5x5/16	315	-15.256	44.057	34.6	Pass
T13	100 - 80	Diagonal	L5x5x5/16	336	-15.816	37.935	41.7	Pass
T14	80 - 60	Diagonal	2L3x3x3/8x1	380	-29.452	32.011	92.0	Pass
T15	60 - 40	Diagonal	2L3x3x3/8x1	419	-28.954	30.543	94.8	Pass
T16	40 - 20	Diagonal	2L4x4x1/2x1	458	-30.295	81.839	37.0	Pass
T17	20 - 0	Diagonal	2L3x3x3/8x1	497	-28.902	27.678	104.4	Acceptable (Re: Note 2)
T14	80 - 60	Horizontal	2L3 1/2x3 1/2x3/8x1	374	-15.175	75.536	20.1	Pass
T15	60 - 40	Horizontal	2L3 1/2x3 1/2x3/8x1	413	-15.537	65.274	23.8	Pass
T16	40 - 20	Horizontal	2L4x4x1/2x1	452	-16.537	106.434	15.5	Pass
T17	20 - 0	Horizontal	2L3 1/2x3 1/2x3/8x1	491	-16.578	47.911	34.6	Pass
T1	325 - 320	Top Girt	1 1/8	4	-0.085	8.772	1.0	Pass
T2	320 - 300	Top Girt	1 1/8	25	-0.005	8.772	0.1	Pass
T3	300 - 280	Top Girt	1 1/8	70	-0.025	8.772	0.3	Pass
T4	280 - 260	Top Girt	1 1/8	115	-0.083	9.072	0.9	Pass
T5	260 - 240	Top Girt	1 1/8	161	-0.418	9.011	4.6	Pass
T1	325 - 320	Bottom Girt	1 1/8	7	-0.019	8.772	0.2	Pass
T2	320 - 300	Bottom Girt	1 1/8	28	-0.206	8.772	2.3	Pass
T3	300 - 280	Bottom Girt	1 1/8	73	-0.614	8.772	7.0	Pass
T4	280 - 260	Bottom Girt	1 1/8	120	-0.229	9.072	2.5	Pass
T14	80 - 60	Redund Horz 1 Bracing	2L2x2x1/4x1	354	-9.286	32.565	28.5	Pass
T15	60 - 40	Redund Horz 1 Bracing	2L2x2x1/4x1	393	-9.915	28.750	34.5	Pass
T16	40 - 20	Redund Horz 1 Bracing	2L2x2x1/4x1	459	-10.514	25.095	41.9	Pass
T17	20 - 0	Redund Horz 1 Bracing	2L2x2x1/4x1	498	-10.397	21.517	48.3	Pass
T14	80 - 60	Redund Horz 2 Bracing	2L2x2x1/4x1	355	-9.286	21.930	42.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P _allow (K)	% Capacity	Pass / Fail
T15	60 - 40	Redund Horz 2 Bracing	2L2x2x1/4x1	394	-9.915	18.355	54.0	Pass
T16	40 - 20	Redund Horz 2 Bracing	2L2x2x1/4x1	433	-10.514	15.588	67.4	Pass
T17	20 - 0	Redund Horz 2 Bracing	2L2x2x1/4x1	472	-10.397	13.371	77.8	Pass
T14	80 - 60	Redund Diag 1 Bracing	2L2x2x1/4x3/8	383	-9.441	21.750	43.4	Pass
T15	60 - 40	Redund Diag 1 Bracing	2L2x2x1/4x3/8	395	-9.433	19.048	49.5	Pass
T16	40 - 20	Redund Diag 1 Bracing	2L2x2x1/4x3/8	434	-9.435	16.788	56.2	Pass
T17	20 - 0	Redund Diag 1 Bracing	2L2x2x1/4x3/8	473	-8.860	14.864	59.6	Pass
T14	80 - 60	Redund Diag 2 Bracing	2L2x2x1/4x3/8	357	-6.121	12.662	48.3	Pass
T15	60 - 40	Redund Diag 2 Bracing	2L2x2x1/4x3/8	396	-6.297	11.416	55.2	Pass
T16	40 - 20	Redund Diag 2 Bracing	2L2x2x1/4x3/8	435	-6.474	10.311	62.8	Pass
T17	20 - 0	Redund Diag 2 Bracing	2L2x2x1/4x3/8	474	-6.309	9.333	67.6	Pass
T14	80 - 60	Inner Bracing	2L3x3x3/16x1/2	386	-0.034	24.937	0.5	Pass
T15	60 - 40	Inner Bracing	2L3x3x3/16x1/2	425	-0.033	20.954	0.5	Pass
T16	40 - 20	Inner Bracing	2L3x3x3/16x1/2	464	-0.043	17.854	0.5	Pass
T17	20 - 0	Inner Bracing	2L3x3x3/16x1/2	503	-0.031	15.395	0.5	Pass
							Summary	
						Leg (T17)	37.2	Pass
						Diagonal (T17)	104.4	Acceptable (Re: Note 2)
						Horizontal (T17)	34.6	Pass
						Top Girt (T5)	4.6	Pass
						Bottom Girt (T3)	7.0	Pass
						Redund Horz 1 Bracing (T17)	48.3	Pass
						Redund Horz 2 Bracing (T17)	77.8	Pass
						Redund Diag 1 Bracing (T17)	59.6	Pass
						Redund Diag 2 Bracing (T17)	67.6	Pass
						Inner Bracing (T17)	0.5	Pass
						RATING =	**104.4**	**Acceptable (Re: Note 2)**

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation	Base	54.0	Pass

Structure Rating (max from all components) =	104.4%

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Capacities up to 105% are considered acceptable based on analysis procedures used.
3) The percent capacities shown above (excluding foundations) include the 1/3 increase in allowable stresses as allowed by TIA/EIA-222-G.

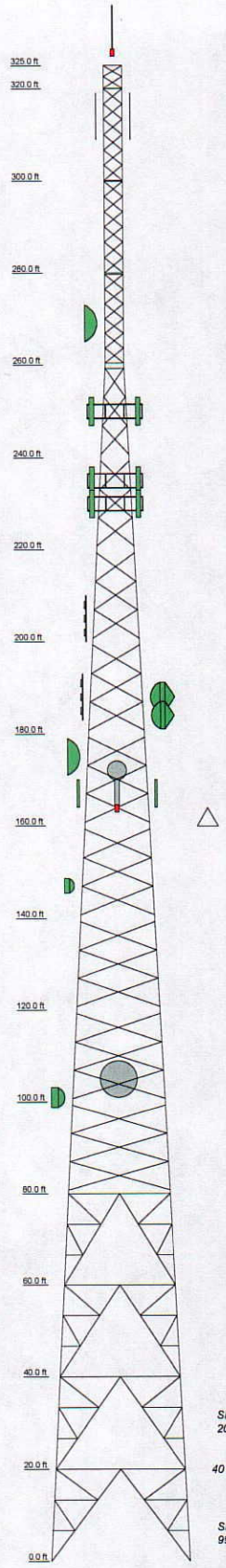
4.1) Recommendations

N/A

APPENDIX A

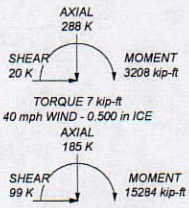
RISA TOWER OUTPUT

Section	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 7 1/4	SR 7	SR 6 3/4	SR 6 1/2	SR 6 1/4	SR 6	SR 5 3/4	SR 5 1/2	SR 5 1/4	SR 5	SR 4 1/2	SR 3 3/4	SR 3				
Leg Grade	A572-50																
Diagonals	2L3x3x3/8x1	2L3x3x3/8x1		2L4x4x1/2x1	L5x5x5/16		L4x4x3/8	L4x4x1/4	L3 1/2x3 1/2x5/16	L3x3x3/8	L3 1/2x2 1/2x5/16		SR 1 1/8				
Diagonal Grade	A36																
Top Girts	N.A.												SR 1 1/8				
Bottom Girts	N.A.																
Horizontals	2L3 1/2x3 1/2x3/8x1			2L4x4x1/2x1													
Red. Horizontals	2L2x2x1/4x1																
Red. Diagonals	2L2x2x1/4x3/8																
Inset Bracing	2L3x3x3/16x1 1/2																
Face Width (ft)	35	28		24		22		16		14		10		d			4
# Panels @ (ft)	4 @ 20	28		24		22		16		14		10		d		6 @ 3.20833	6 @ 3.31944	6 @ 3.30556	A
Weight (K)	126.4	114	15.7	12.9	11.9	10.8	10.8	9.3	7.2	6.7	27 @ 5.16667	6.5	5.9	4.9	4.5	3.9	2.2	2.2	0.6

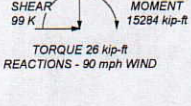


ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 638 K
UPLIFT: -513 K
SHEAR: 61 K



TORQUE 7 kip-ft
40 mph WIND - 0.500 in ICE



TORQUE 26 kip-ft
REACTIONS - 90 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod (E)	333	(2) RR90-18-00DP (E)	230
BMR12-H-B1 (P)	332	(2) RR90-18-00DP (E)	230
Beacon (E)	327	(2) KRY 112 37 TMA (E)	230
DBB2802RA (P)	324	(2) KRY 112 37 TMA (E)	230
Side Arm Mount [SO 602-1] (E)	322	(2) KRY 112 37 TMA (E)	230
BMR12-A-B1 (E)	314	Sector Mount [SM 402-3] (E)	230
BMR12-A-B1 (E)	314	ANT150D3D (E)	219
BMR12-H-B1 (P)	314	ANT150D (E)	205
BMR12-H-B1 (P)	314	Side Arm Mount [SO 601-1] (E)	204
Side Arm Mount [SO 602-3] (E)	307	Side Arm Mount [SO 602-1] (E)	204
Side Arm Mount [SO 602-1] (P)	307	Side Arm Mount [SO 702-1] (E)	197
ANT150D6-9 (P)	273	Side Arm Mount [SO 702-1] (E)	197
Pipe Mount [PM 602-1] (P)	269	DB420D-B (E)	188
PAD8-59AC (P)	269	DB420D-B (E)	188
Side Arm Mount [SO 311-1] (E)	263	Pipe Mount [PM 602-1] (E)	188
(2) PCSA090-16-2 w/Mount Pipe (E)	250	PAR6-65A (E)	188
(2) PCSA090-16-2 w/Mount Pipe (E)	250	Pipe Mount [PM 602-1] (E)	184
(2) PCSA090-16-2 w/Mount Pipe (E)	250	PAR6-59W (E)	184
6' x 2" Mount Pipe (E)	250	Pipe Mount [PM 602-1] (P)	175
6' x 2" Mount Pipe (E)	250	PAD8-59AC (P)	175
6' x 2" Mount Pipe (E)	250	Pipe Mount [PM 602-1] (E)	172
Sector Mount [SM 302-3] (E)	250	HP4-11 (E)	172
(2) 800 10122 w/Mount Pipe (E)	235	MSP24013MB w/Mount Pipe (E)	167
(2) 800 10122 w/Mount Pipe (E)	235	MSP24013MB w/Mount Pipe (E)	167
(2) 800 10122 w/Mount Pipe (E)	235	MSP24013MB w/Mount Pipe (E)	167
(2) LGP219nn Diplexer (E)	235	Side Arm Mount [SO 301-3] (E)	165
(2) LGP219nn Diplexer (E)	235	Side Lights (E)	163
(2) LGP219nn Diplexer (E)	235	Pipe Mount [PM 601-1] (P)	147
(2) LGP21401 TMA (E)	235	SU3-107FC (P)	147
(2) LGP21401 TMA (E)	235	Pipe Mount [PM 601-1] (E)	105
(2) LGP21401 TMA (E)	235	PAR8-65 (E)	105
Sector Mount [SM 402-3] (E)	235	Pipe Mount [PM 601-1] (P)	101
(2) RR90-18-00DP (E)	230	SU4-107AC (P)	101

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2 @ 2.45833		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

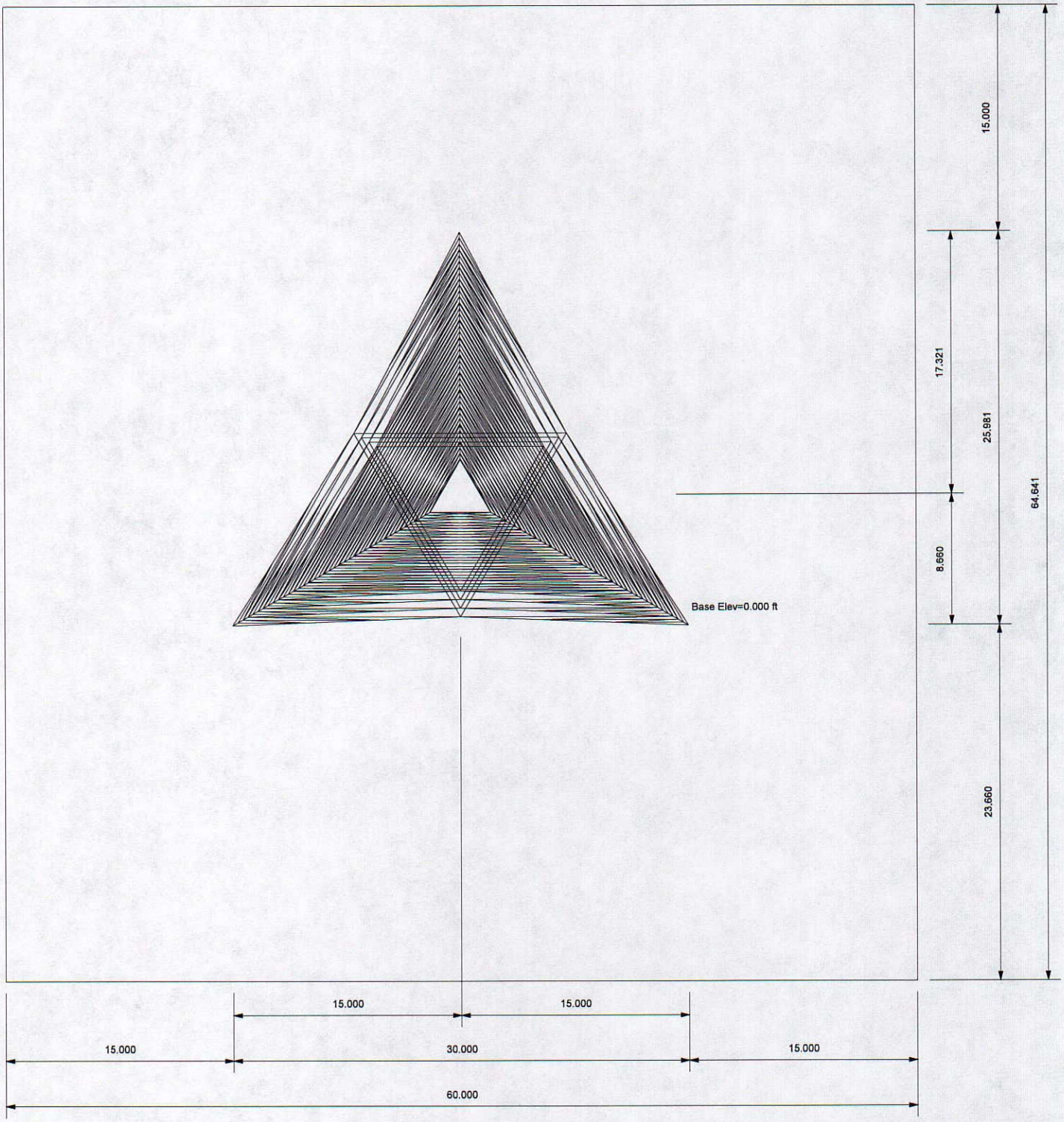
TOWER DESIGN NOTES

1. Tower is located in Saint Marys County, Maryland.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 90 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 104.4%

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	82427- Mechanicsville, MD (BU# 801527)
Project:	325' Central SST / App ID:114075, Rev: 3
Client: Crown Castle USA, Inc.	Drawn by: K. Mears / App'd:
Code: TIA-222-G	Date: 12/30/10 / Scale: NTS
Path:	Dwg No. E-1

Plot Plan
Total Area - 0.09 Acres

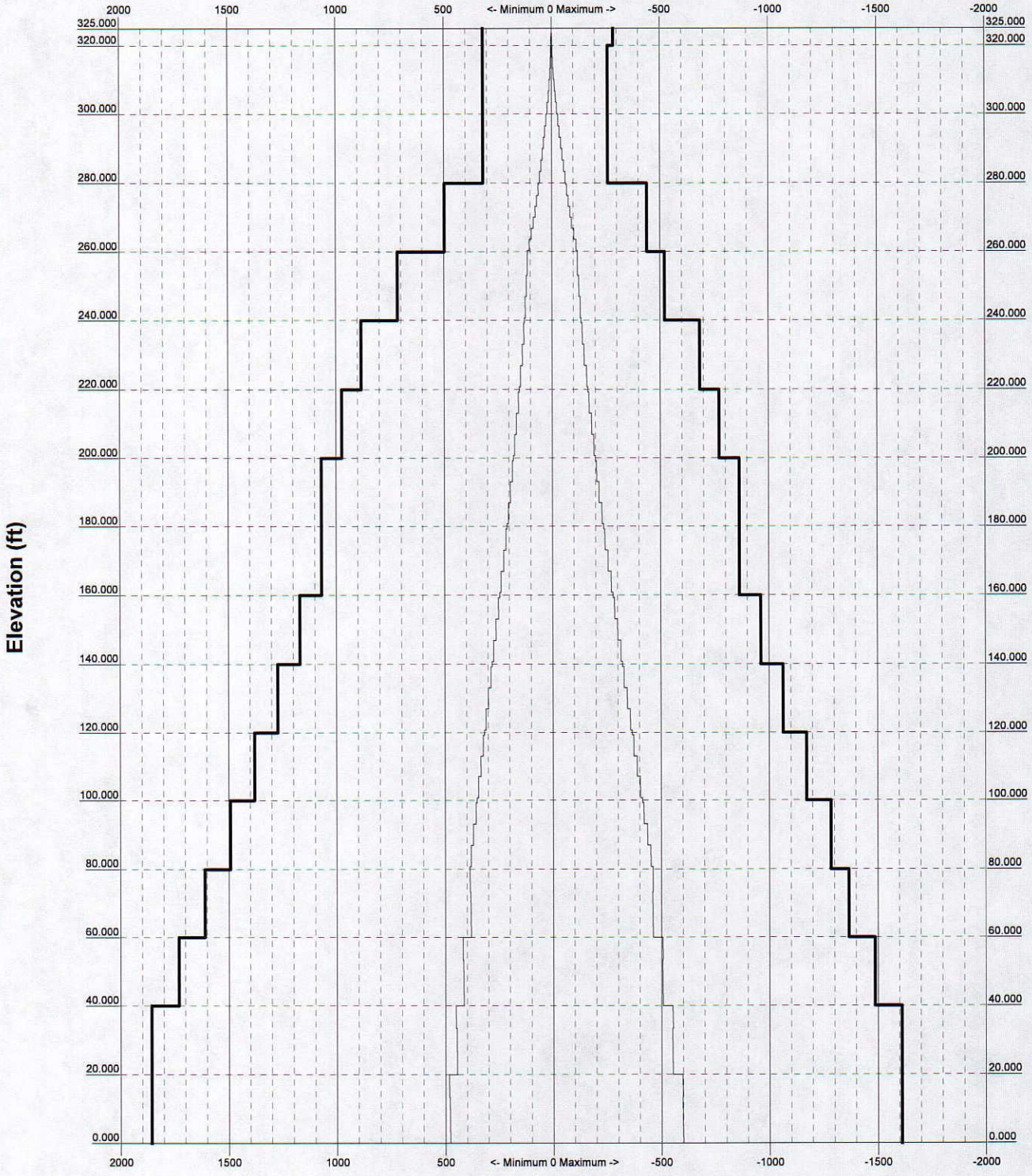


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	82427- Mechanicsville, MD (BU# 801527)		
Project:	325' Central SST / App ID:114075, Rev: 3		
Client: Crown Castle USA, Inc.		Drawn by: K. Mears	App'd:
Code: TIA-222-G		Date: 12/30/10	Scale: NTS
Path: S:\B&T Engineering\Projects\Crown Castle\82427_801527_Mechanicsville\Engineering\BU\SAU\82427_001_MechanicsvilleMD.tnt			Dwg No. E-2

TIA-222-G - 90 mph/40 mph 0.500 in Ice Exposure C

Leg Capacity ——— **Leg Compression (K)**



B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

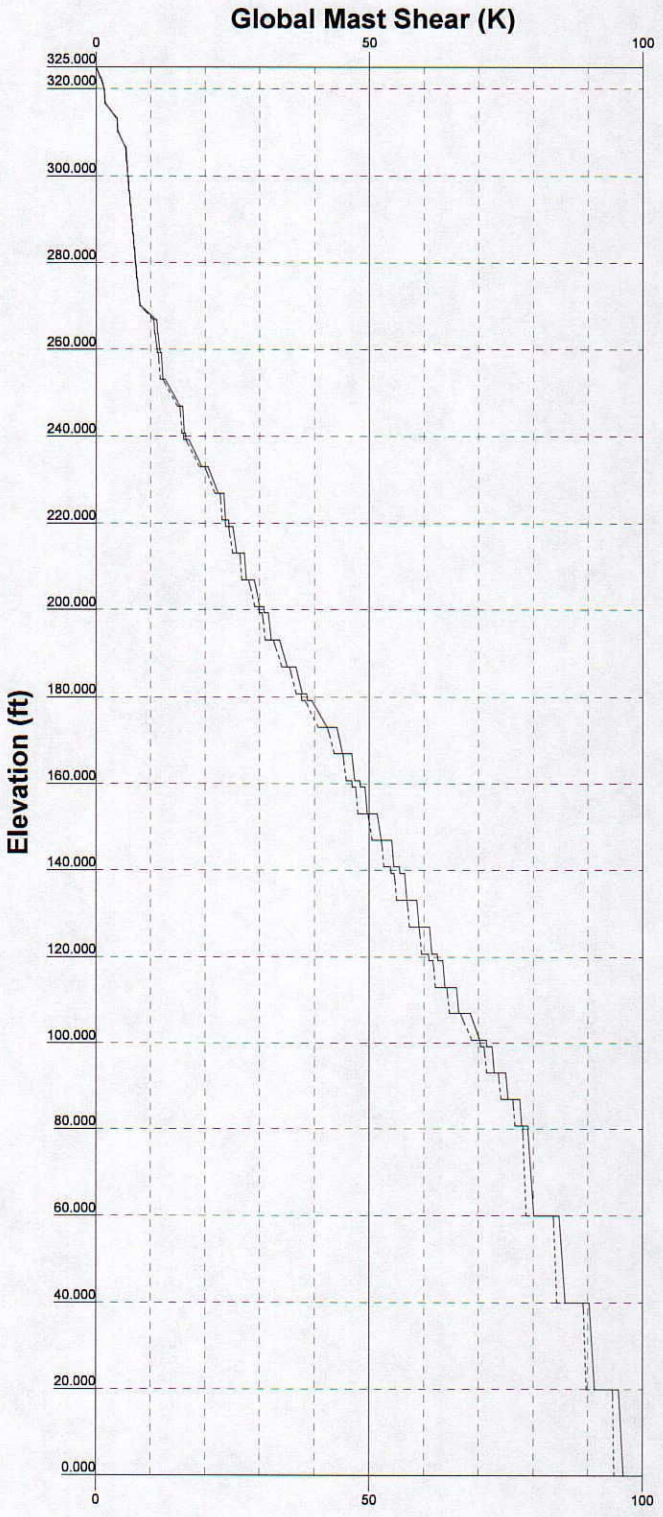
Job:	***82427- Mechanicsville, MD (BU# 801527)***		
Project:	***325' Central SST / App ID:114075, Rev: 3***		
Client: Crown Castle USA, Inc.		Drawn by: K. Mears	App'd:
Code: TIA-222-G		Date: 12/30/10	Scale: NTS
Path:			Dwg No. E-3

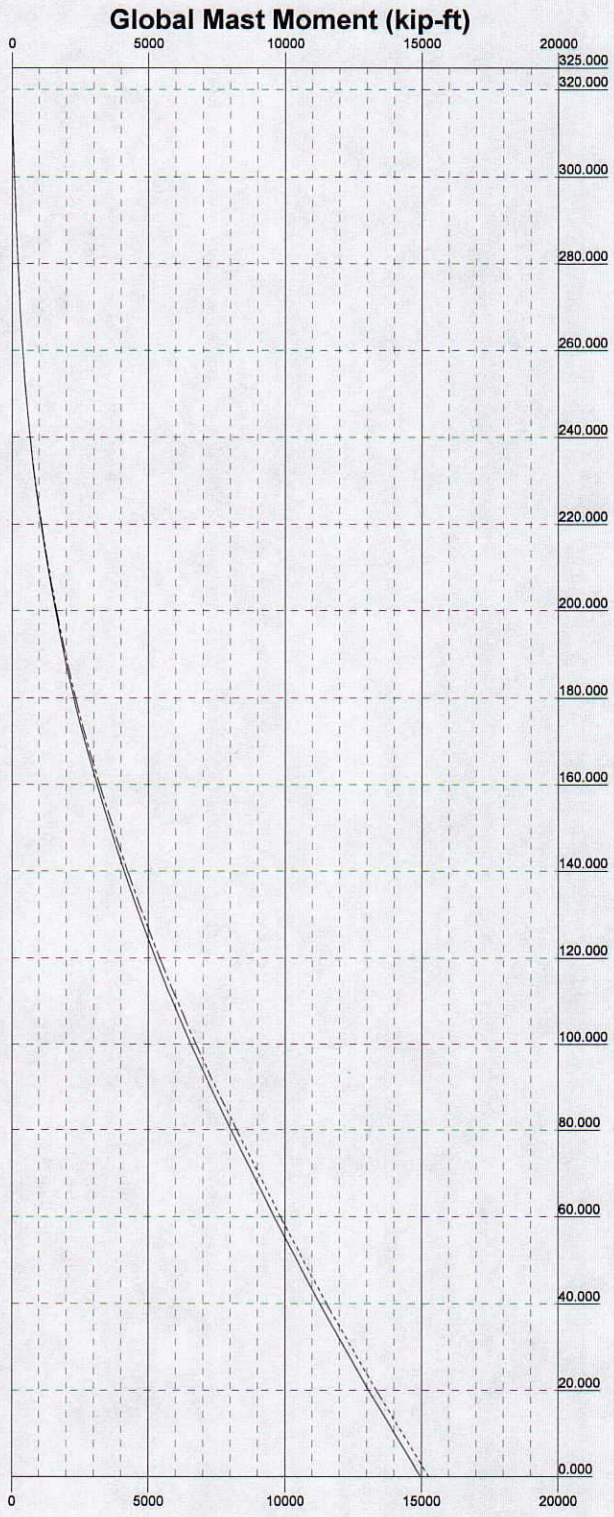
TIA-222-G - 90 mph/40 mph 0.500 in Ice Exposure C

Vx ---------- Vz

Maximum Values

Mx ---------- Mz



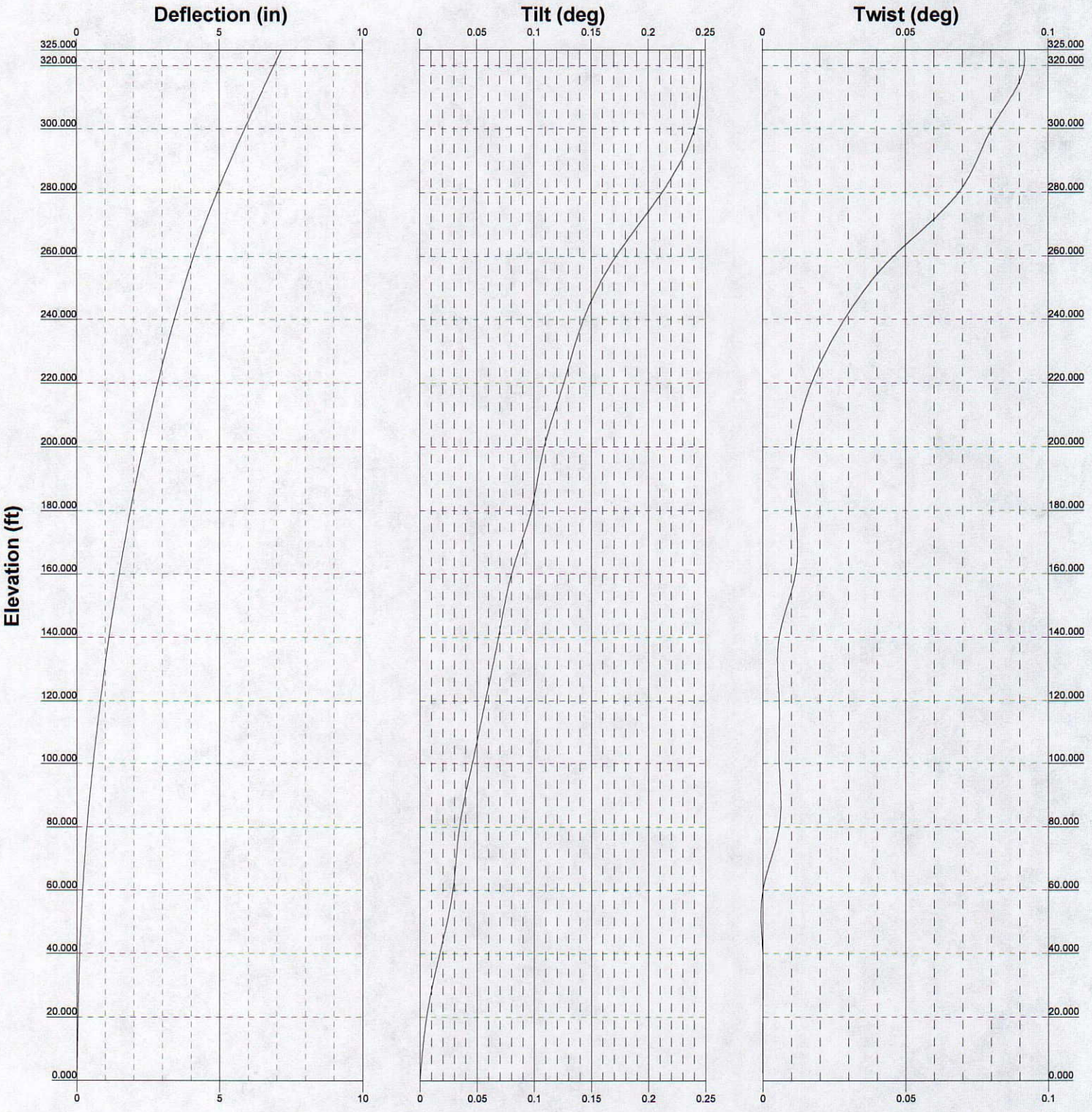


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 82427- Mechanicsville, MD (BU# 801527)			
Project: 325' Central SST / App ID:114075, Rev: 3			
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 12/30/10	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-G - Service - 60 mph

Maximum Values

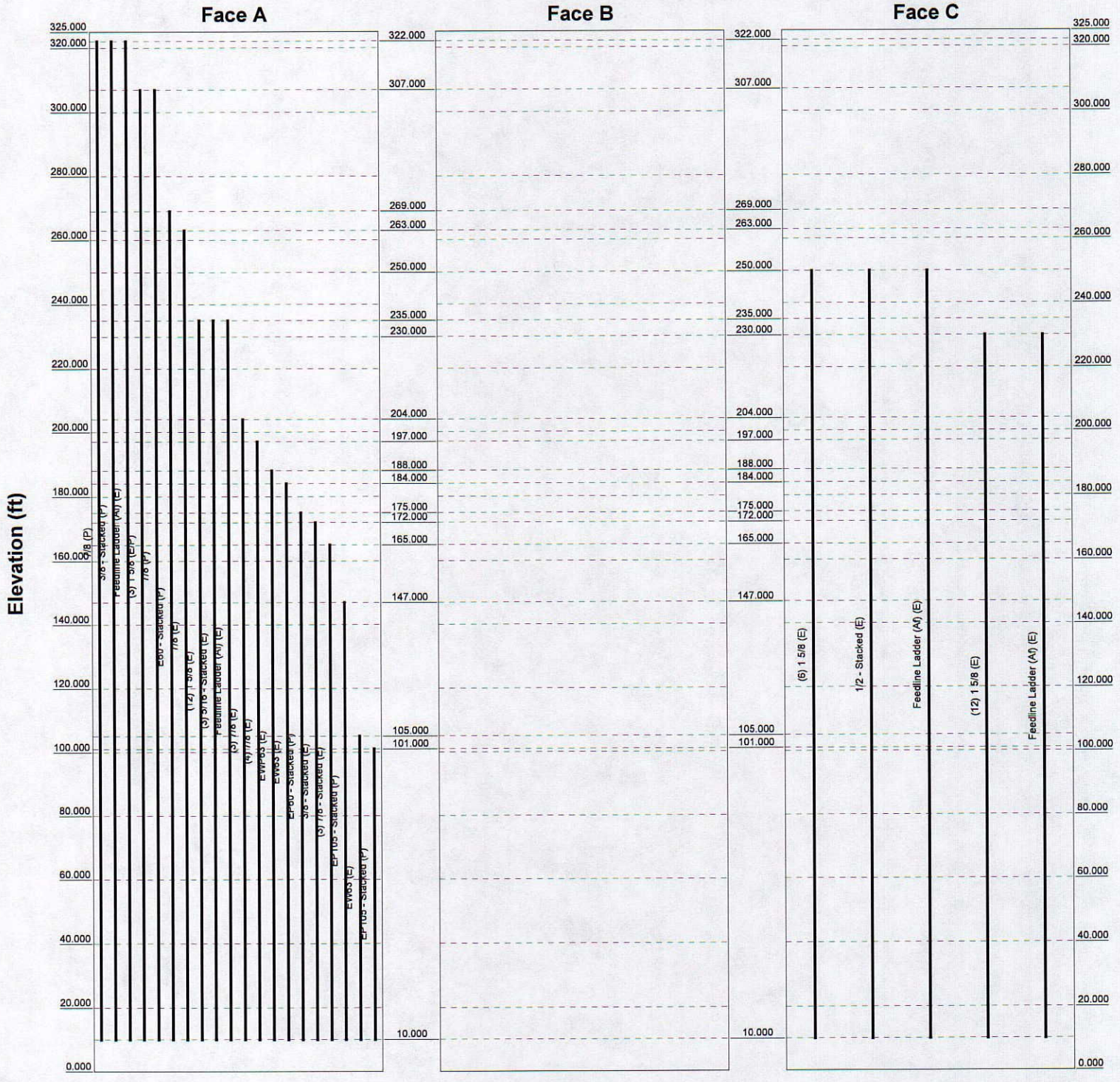


B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 82427- Mechanicsville, MD (BU# 801527)			
Project: 325' Central SST / App ID:114075, Rev: 3			
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 12/30/10	Scale: NTS	
Path: S:\B&T Engineering\Projects\Crown Castle\82427_801527_Mechanicsville\Engineering\RISA\82427_001_Mechanicsville\MD.ec		Dwg No. E-5	

Feedline Distribution Chart
0' - 325'

Round — Flat — App In Face — App Out Face — Truss Leg



B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***82427- Mechanicsville, MD (BU# 801527)***		
Project:	***325' Central SST / App ID:114075, Rev: 3***		
Client: Crown Castle USA, Inc.	Drawn by: K. Mears	App'd:	
Code: TIA-222-G	Date: 12/30/10	Scale: NTS	
Path:		Dwg No. E-7	

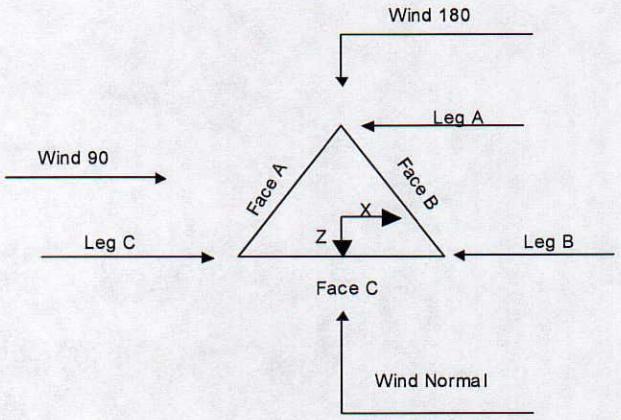
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 325.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 4.000 ft at the top and 30.000 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Saint Marys County, Maryland.
Basic wind speed of 90 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 40 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	325.000-320.000			4.000	1	5.000
T2	320.000-300.000			4.000	1	20.000
T3	300.000-280.000			4.000	1	20.000
T4	280.000-260.000			4.000	1	20.000
T5	260.000-240.000			4.000	1	20.000
T6	240.000-220.000			6.000	1	20.000
T7	220.000-200.000			8.000	1	20.000
T8	200.000-180.000			10.000	1	20.000
T9	180.000-160.000			12.000	1	20.000
T10	160.000-140.000			14.000	1	20.000
T11	140.000-120.000			16.000	1	20.000
T12	120.000-100.000			18.000	1	20.000
T13	100.000-80.000			20.000	1	20.000
T14	80.000-60.000			22.000	1	20.000
T15	60.000-40.000			24.000	1	20.000
T16	40.000-20.000			26.000	1	20.000
T17	20.000-0.000			28.000	1	20.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	325.000-320.000	2.458	X Brace	No	No	0.000	1.000
T2	320.000-300.000	3.306	X Brace	No	No	1.000	1.000
T3	300.000-280.000	3.319	X Brace	No	No	1.000	0.000
T4	280.000-260.000	3.208	X Brace	No	No	4.500	4.500
T5	260.000-240.000	6.167	X Brace	No	No	9.000	9.000
T6	240.000-220.000	6.167	X Brace	No	No	9.000	9.000
T7	220.000-200.000	6.167	X Brace	No	No	9.000	9.000
T8	200.000-180.000	6.167	X Brace	No	No	9.000	9.000
T9	180.000-160.000	6.167	X Brace	No	No	9.000	9.000
T10	160.000-140.000	6.167	X Brace	No	No	9.000	9.000
T11	140.000-120.000	6.167	X Brace	No	No	9.000	9.000
T12	120.000-100.000	6.167	X Brace	No	No	9.000	9.000
T13	100.000-80.000	6.167	X Brace	No	No	9.000	9.000
T14	80.000-60.000	20.000	K2 Down	No	Yes	0.000	0.000
T15	60.000-40.000	20.000	K2 Down	No	Yes	0.000	0.000
T16	40.000-20.000	20.000	K2 Down	No	Yes	0.000	0.000
T17	20.000-0.000	20.000	K2 Down	No	Yes	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 325.000-320.000	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T2 320.000-300.000	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T3 300.000-280.000	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T4 280.000-260.000	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T5 260.000-240.000	Solid Round	4 1/2	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T6 240.000-220.000	Solid Round	5	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T7 220.000-200.000	Solid Round	5 1/4	A572-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)
T8 200.000-180.000	Solid Round	5 1/2	A572-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)
T9 180.000-160.000	Solid Round	5 1/2	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T10 160.000-140.000	Solid Round	5 3/4	A572-50 (50 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T11 140.000-120.000	Solid Round	6	A572-50 (50 ksi)	Single Angle	L4x4x3/8	A36 (36 ksi)
T12 120.000-100.000	Solid Round	6 1/4	A572-50 (50 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T13 100.000-80.000	Solid Round	6 1/2	A572-50 (50 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T14 80.000-60.000	Solid Round	6 3/4	A572-50 (50 ksi)	Double Angle	2L3x3x3/8x1	A36 (36 ksi)
T15 60.000-40.000	Solid Round	7	A572-50 (50 ksi)	Double Angle	2L3x3x3/8x1	A36 (36 ksi)
T16	Solid Round	7 1/4	A572-50	Double Angle	2L4x4x1/2x1	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
40.000-20.000			(50 ksi)			(36 ksi)
T17 20.000-0.000	Solid Round	7 1/4	A572-50 (50 ksi)	Double Angle	2L3x3x3/8x1	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 325.000-320.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T2 320.000-300.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T3 300.000-280.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T4 280.000-260.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T5 260.000-240.000	Solid Round	1 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T14 80.000-60.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3 1/2x3/8x1	A36 (36 ksi)
T15 60.000-40.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3 1/2x3/8x1	A36 (36 ksi)
T16 40.000-20.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L4x4x1/2x1	A36 (36 ksi)
T17 20.000-0.000	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3 1/2x3/8x1	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T14 80.000-60.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x1/2	A36 (36 ksi)
T15 60.000-40.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x1/2	A36 (36 ksi)
T16 40.000-20.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x1/2	A36 (36 ksi)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T17 20.000-0.000	Solid Round		A36 (36 ksi)	Double Angle	2L3x3x3/16x1/2	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T14 80.000-60.000	A36 (36 ksi)	Horizontal (1)	Double Angle	2L2x2x1/4x1	1
		Horizontal (2)		2L2x2x1/4x1	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	
T15 60.000-40.000	A36 (36 ksi)	Horizontal (1)	Double Angle	2L2x2x1/4x1	1
		Horizontal (2)		2L2x2x1/4x1	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	
T16 40.000-20.000	A36 (36 ksi)	Horizontal (1)	Double Angle	2L2x2x1/4x1	1
		Horizontal (2)		2L2x2x1/4x1	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	
T17 20.000-0.000	A36 (36 ksi)	Horizontal (1)	Double Angle	2L2x2x1/4x1	1
		Horizontal (2)		2L2x2x1/4x1	
		Diagonal (1)	Double Angle	2L2x2x1/4x3/8	1
		Diagonal (2)		2L2x2x1/4x3/8	

Tower Section Geometry *(cont'd)*

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
T1 325.000-320.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T2 320.000-300.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T3 300.000-280.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T4 280.000-260.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T5 260.000-240.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T6 240.000-220.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T7	0.000	0.000	A36	1	1	1	0.000	0.000

Tower Elevation ft	Gusset Area (per face) ft²	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
220.000-200.000			(36 ksi)					
T8 200.000-180.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T9 180.000-160.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T10 160.000-140.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T11 140.000-120.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T12 120.000-100.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T13 100.000-80.000	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T14 80.000-60.000	0.000	0.000	A36 (36 ksi)	1	1	1	30.380	44.000
T15 60.000-40.000	0.000	0.000	A36 (36 ksi)	1	1	1	31.100	48.000
T16 40.000-20.000	0.000	0.000	A36 (36 ksi)	1	1	1	31.860	52.000
T17 20.000-0.000	0.000	0.000	A36 (36 ksi)	1	1	1	32.670	56.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 325.000-320.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 320.000-300.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 300.000-280.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 280.000-260.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 260.000-240.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 240.000-220.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T7 220.000-200.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 200.000-180.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 180.000-160.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 160.000-140.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 140.000-120.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T12 120.000-100.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T13 100.000-80.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T14 80.000-60.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T15 60.000-40.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T16 40.000-20.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T17 20.000-0.000	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 325.000-320.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 320.000-300.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 300.000-280.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 280.000-260.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T5 260.000-240.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 240.000-220.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 220.000-200.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 200.000-180.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 180.000-160.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 160.000-140.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 140.000-120.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 120.000-100.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 100.000-80.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 80.000-60.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 60.000-40.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T16 40.000-20.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T17 20.000-0.000	0.750	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
7/8 (P)	A	No	Ar (CaAa)	322.000 - 10.000	0.000	-0.21	1	1	0.850 0.750	1.110		0.001
3/8 - Stacked (P)	A	No	Ar (CaAa)	322.000 - 10.000	3.000	-0.21	1	1	0.850 0.750	0.000		0.000
Feedline Ladder (Af) (E) ****	A	No	Af (CaAa)	322.000 - 10.000	0.000	-0.2	1	1	0.850 0.750	1.500		0.008
1 5/8 (E/P)	A	No	Ar (CaAa)	307.000 - 10.000	0.000	-0.23	3	3	0.850 0.750	1.980		0.001
7/8	A	No	Ar (CaAa)	307.000 - 10.000	0.000	-0.25	1	1	0.850	1.110		0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
(P)									0.750			
****												
E60 - Stacked (P)	A	No	Af (CaAa)	269.000 - 10.000	3.000	-0.22	1	1	0.850 0.750	0.000		0.001
****												
7/8 (E)	A	No	Ar (CaAa)	263.000 - 10.000	0.000	-0.26	1	1	0.850 0.750	1.110		0.001
****												
1 5/8 (E)	C	No	Ar (CaAa)	250.000 - 10.000	0.000	0.1	6	6	0.850 0.750	1.980		0.001
1/2 - Stacked (E)	C	No	Ar (CaAa)	250.000 - 10.000	2.000	0.08	1	1	0.850 0.750	0.000		0.000
Feedline Ladder (Af) (E)	C	No	Af (CaAa)	250.000 - 10.000	0.000	0.13	1	1	0.850 0.750	1.500		0.008
****												
1 5/8 (E)	A	No	Ar (CaAa)	235.000 - 10.000	0.000	0.39	12	8	0.850 0.750	1.980		0.001
5/16 - Stacked (E)	A	No	Ar (CaAa)	235.000 - 10.000	3.000	0.4	3	3	0.850 0.750	0.000		0.000
Feedline Ladder (Af) (E)	A	No	Af (CaAa)	235.000 - 10.000	0.000	0.4333	1	1	0.850 0.750	1.500		0.008
****												
1 5/8 (E)	C	No	Ar (CaAa)	230.000 - 10.000	0.000	-0.315	12	12	0.850 0.750	1.980		0.001
Feedline Ladder (Af) (E)	C	No	Af (CaAa)	230.000 - 10.000	0.000	-0.3666	1	1	0.850 0.750	1.500		0.008
****												
7/8 (E)	A	No	Ar (CaAa)	204.000 - 10.000	0.000	-0.27	3	3	0.850 0.750	1.110		0.001
****												
7/8 (E)	A	No	Ar (CaAa)	197.000 - 10.000	0.000	-0.29	4	4	0.850 0.750	1.110		0.001
****												
EWP63 (E)	A	No	Af (CaAa)	188.000 - 10.000	0.000	-0.31	1	1	0.850 0.750	1.574		0.001
****												
EW63 (E)	A	No	Af (CaAa)	184.000 - 10.000	0.000	-0.32	1	1	0.850 0.750	1.574		0.001
****												
EP60 - Stacked (P)	A	No	Ar (CaAa)	175.000 - 10.000	3.000	-0.23	1	1	0.850 0.750	0.000		0.001
****												
3/8 - Stacked (E)	A	No	Ar (CaAa)	172.000 - 10.000	3.000	-0.24	1	1	0.850 0.750	0.000		0.000
****												
7/8 - Stacked (E)	A	No	Ar (CaAa)	165.000 - 10.000	3.000	-0.255	3	3	0.850 0.750	0.000		0.001
****												
EP105 - Stacked (P)	A	No	Af (CaAa)	147.000 - 10.000	3.000	-0.27	1	1	0.850 0.750	0.000		0.001
****												
EW63 (E)	A	No	Af (CaAa)	105.000 - 10.000	0.000	-0.33	1	1	0.850 0.750	1.574		0.001
****												
EP105 - Stacked	A	No	Af (CaAa)	101.000 - 10.000	3.000	-0.28	1	1	0.850 0.750	0.000		0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
(P) ****												

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf
****							

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
T1	325.000-320.000	A	0.000	0.000	0.722	0.000	0.018
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
T2	320.000-300.000	A	0.000	0.000	12.155	0.000	0.206
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
T3	300.000-280.000	A	0.000	0.000	21.320	0.000	0.254
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
T4	280.000-260.000	A	0.000	0.000	21.653	0.000	0.261
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
T5	260.000-240.000	A	0.000	0.000	23.540	0.000	0.276
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	14.380	0.000	0.149
T6	240.000-220.000	A	0.000	0.000	62.930	0.000	0.594
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	55.020	0.000	0.507
T7	220.000-200.000	A	0.000	0.000	77.392	0.000	0.706
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T8	200.000-180.000	A	0.000	0.000	93.416	0.000	0.775
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T9	180.000-160.000	A	0.000	0.000	102.095	0.000	0.815
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T10	160.000-140.000	A	0.000	0.000	102.095	0.000	0.849
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T11	140.000-120.000	A	0.000	0.000	102.095	0.000	0.859
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T12	120.000-100.000	A	0.000	0.000	103.407	0.000	0.862
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T13	100.000-80.000	A	0.000	0.000	107.342	0.000	0.883
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715

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
T14	80.000-60.000	A	0.000	0.000	107.342	0.000	0.883
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T15	60.000-40.000	A	0.000	0.000	107.342	0.000	0.883
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T16	40.000-20.000	A	0.000	0.000	107.342	0.000	0.883
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	81.280	0.000	0.715
T17	20.000-0.000	A	0.000	0.000	53.671	0.000	0.442
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	40.640	0.000	0.358

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
T1	325.000-320.000	A	1.256	0.000	0.000	2.229	0.000	0.037
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
T2	320.000-300.000	A	1.251	0.000	0.000	34.464	0.000	0.509
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
T3	300.000-280.000	A	1.243	0.000	0.000	56.990	0.000	0.760
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
T4	280.000-260.000	A	1.234	0.000	0.000	60.085	0.000	0.795
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
T5	260.000-240.000	A	1.224	0.000	0.000	68.592	0.000	0.892
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	31.272	0.000	0.438
T6	240.000-220.000	A	1.214	0.000	0.000	131.997	0.000	1.888
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	112.094	0.000	1.567
T7	220.000-200.000	A	1.203	0.000	0.000	156.824	0.000	2.246
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	161.527	0.000	2.250
T8	200.000-180.000	A	1.191	0.000	0.000	199.888	0.000	2.653
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	161.244	0.000	2.236
T9	180.000-160.000	A	1.178	0.000	0.000	226.045	0.000	2.886
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	160.934	0.000	2.221
T10	160.000-140.000	A	1.163	0.000	0.000	238.309	0.000	2.976
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	160.588	0.000	2.204
T11	140.000-120.000	A	1.147	0.000	0.000	239.888	0.000	2.980
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	160.198	0.000	2.185
T12	120.000-100.000	A	1.128	0.000	0.000	240.892	0.000	2.966
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	159.751	0.000	2.163
T13	100.000-80.000	A	1.106	0.000	0.000	250.359	0.000	3.039
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	159.223	0.000	2.137
T14	80.000-60.000	A	1.078	0.000	0.000	247.742	0.000	2.978

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	158.577	0.000	2.106
T15	60.000-40.000	A	1.042	0.000	0.000	244.341	0.000	2.901
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	157.738	0.000	2.065
T16	40.000-20.000	A	0.991	0.000	0.000	239.397	0.000	2.790
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	156.519	0.000	2.007
T17	20.000-0.000	A	0.887	0.000	0.000	114.799	0.000	1.290
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	77.051	0.000	0.946

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	325.000-320.000	-0.455	0.037	-0.668	0.047
T2	320.000-300.000	-1.654	0.165	-1.964	0.162
T3	300.000-280.000	-2.303	0.256	-2.177	0.212
T4	280.000-260.000	-2.171	0.244	-2.279	0.214
T5	260.000-240.000	-2.284	1.279	-2.784	1.200
T6	240.000-220.000	-0.795	-0.302	-1.248	0.508
T7	220.000-200.000	0.115	-0.085	-0.342	0.887
T8	200.000-180.000	-0.810	0.155	-1.304	1.219
T9	180.000-160.000	-1.432	0.342	-2.500	1.621
T10	160.000-140.000	-1.567	0.378	-3.028	1.829
T11	140.000-120.000	-1.720	0.419	-3.519	2.067
T12	120.000-100.000	-1.892	0.475	-3.929	2.276
T13	100.000-80.000	-2.360	0.627	-5.048	2.691
T14	80.000-60.000	-2.909	0.775	-5.843	3.150
T15	60.000-40.000	-3.116	0.834	-6.208	3.393
T16	40.000-20.000	-3.238	0.869	-6.429	3.582
T17	20.000-0.000	-2.739	0.736	-5.396	3.123

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	7/8	320.00 - 322.00	0.6000	0.4527
T1	2	3/8 - Stacked	320.00 - 322.00	0.6000	0.4527
T1	3	Feedline Ladder (Af)	320.00 - 322.00	0.6000	0.4527
T2	1	7/8	300.00 - 320.00	0.6000	0.5710
T2	2	3/8 - Stacked	300.00 - 320.00	0.6000	0.5710
T2	3	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.5710

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	5	1 5/8	300.00 - 307.00	0.6000	0.5710
T2	6	7/8	300.00 - 307.00	0.6000	0.5710
T3	1	7/8	280.00 - 300.00	0.6000	0.5722
T3	2	3/8 - Stacked	280.00 - 300.00	0.6000	0.5722
T3	3	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.5722
T3	5	1 5/8	280.00 - 300.00	0.6000	0.5722
T3	6	7/8	280.00 - 300.00	0.6000	0.5722
T4	1	7/8	260.00 - 280.00	0.6000	0.5583
T4	2	3/8 - Stacked	260.00 - 280.00	0.6000	0.5583
T4	3	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.5583
T4	5	1 5/8	260.00 - 280.00	0.6000	0.5583
T4	6	7/8	260.00 - 280.00	0.6000	0.5583
T4	8	E60 - Stacked	260.00 - 269.00	0.6000	0.5583
T4	10	7/8	260.00 - 263.00	0.6000	0.5583
T5	1	7/8	240.00 - 260.00	0.6000	0.6000
T5	2	3/8 - Stacked	240.00 - 260.00	0.6000	0.6000
T5	3	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000
T5	5	1 5/8	240.00 - 260.00	0.6000	0.6000
T5	6	7/8	240.00 - 260.00	0.6000	0.6000
T5	8	E60 - Stacked	240.00 - 260.00	0.6000	0.6000
T5	10	7/8	240.00 - 260.00	0.6000	0.6000
T5	12	1 5/8	240.00 - 250.00	0.6000	0.6000
T5	14	1/2 - Stacked	240.00 - 250.00	0.6000	0.6000
T5	15	Feedline Ladder (Af)	240.00 - 250.00	0.6000	0.6000
T6	1	7/8	220.00 - 240.00	0.6000	0.6000
T6	2	3/8 - Stacked	220.00 - 240.00	0.6000	0.6000
T6	3	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T6	5	1 5/8	220.00 - 240.00	0.6000	0.6000
T6	6	7/8	220.00 - 240.00	0.6000	0.6000
T6	8	E60 - Stacked	220.00 - 240.00	0.6000	0.6000
T6	10	7/8	220.00 - 240.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	12	1 5/8	220.00 - 240.00	0.6000	0.6000
T6	14	1/2 - Stacked	220.00 - 240.00	0.6000	0.6000
T6	15	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T6	17	1 5/8	220.00 - 235.00	0.6000	0.6000
T6	18	5/16 - Stacked	220.00 - 235.00	0.6000	0.6000
T6	19	Feedline Ladder (Af)	220.00 - 235.00	0.6000	0.6000
T6	21	1 5/8	220.00 - 230.00	0.6000	0.6000
T6	23	Feedline Ladder (Af)	220.00 - 230.00	0.6000	0.6000
T7	1	7/8	200.00 - 220.00	0.6000	0.6000
T7	2	3/8 - Stacked	200.00 - 220.00	0.6000	0.6000
T7	3	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T7	5	1 5/8	200.00 - 220.00	0.6000	0.6000
T7	6	7/8	200.00 - 220.00	0.6000	0.6000
T7	8	E60 - Stacked	200.00 - 220.00	0.6000	0.6000
T7	10	7/8	200.00 - 220.00	0.6000	0.6000
T7	12	1 5/8	200.00 - 220.00	0.6000	0.6000
T7	14	1/2 - Stacked	200.00 - 220.00	0.6000	0.6000
T7	15	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T7	17	1 5/8	200.00 - 220.00	0.6000	0.6000
T7	18	5/16 - Stacked	200.00 - 220.00	0.6000	0.6000
T7	19	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T7	21	1 5/8	200.00 - 220.00	0.6000	0.6000
T7	23	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T7	25	7/8	200.00 - 204.00	0.6000	0.6000
T8	1	7/8	180.00 - 200.00	0.6000	0.6000
T8	2	3/8 - Stacked	180.00 - 200.00	0.6000	0.6000
T8	3	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T8	5	1 5/8	180.00 - 200.00	0.6000	0.6000
T8	6	7/8	180.00 - 200.00	0.6000	0.6000
T8	8	E60 - Stacked	180.00 - 200.00	0.6000	0.6000
T8	10	7/8	180.00 - 200.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	12	1 5/8	180.00 - 200.00	0.6000	0.6000
T8	14	1/2 - Stacked	180.00 - 200.00	0.6000	0.6000
T8	15	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T8	17	1 5/8	180.00 - 200.00	0.6000	0.6000
T8	18	5/16 - Stacked	180.00 - 200.00	0.6000	0.6000
T8	19	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T8	21	1 5/8	180.00 - 200.00	0.6000	0.6000
T8	23	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T8	25	7/8	180.00 - 200.00	0.6000	0.6000
T8	27	7/8	180.00 - 197.00	0.6000	0.6000
T8	29	EWP63	180.00 - 188.00	0.6000	0.6000
T8	31	EW63	180.00 - 184.00	0.6000	0.6000
T9	1	7/8	160.00 - 180.00	0.6000	0.6000
T9	2	3/8 - Stacked	160.00 - 180.00	0.6000	0.6000
T9	3	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T9	5	1 5/8	160.00 - 180.00	0.6000	0.6000
T9	6	7/8	160.00 - 180.00	0.6000	0.6000
T9	8	E60 - Stacked	160.00 - 180.00	0.6000	0.6000
T9	10	7/8	160.00 - 180.00	0.6000	0.6000
T9	12	1 5/8	160.00 - 180.00	0.6000	0.6000
T9	14	1/2 - Stacked	160.00 - 180.00	0.6000	0.6000
T9	15	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T9	17	1 5/8	160.00 - 180.00	0.6000	0.6000
T9	18	5/16 - Stacked	160.00 - 180.00	0.6000	0.6000
T9	19	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T9	21	1 5/8	160.00 - 180.00	0.6000	0.6000
T9	23	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T9	25	7/8	160.00 - 180.00	0.6000	0.6000
T9	27	7/8	160.00 - 180.00	0.6000	0.6000
T9	29	EWP63	160.00 - 180.00	0.6000	0.6000
T9	31	EW63	160.00 - 180.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	33	EP60 - Stacked	160.00 - 175.00	0.6000	0.6000
T9	35	3/8 - Stacked	160.00 - 172.00	0.6000	0.6000
T9	37	7/8 - Stacked	160.00 - 165.00	0.6000	0.6000
T10	1	7/8	140.00 - 160.00	0.6000	0.6000
T10	2	3/8 - Stacked	140.00 - 160.00	0.6000	0.6000
T10	3	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T10	5	1 5/8	140.00 - 160.00	0.6000	0.6000
T10	6	7/8	140.00 - 160.00	0.6000	0.6000
T10	8	E60 - Stacked	140.00 - 160.00	0.6000	0.6000
T10	10	7/8	140.00 - 160.00	0.6000	0.6000
T10	12	1 5/8	140.00 - 160.00	0.6000	0.6000
T10	14	1/2 - Stacked	140.00 - 160.00	0.6000	0.6000
T10	15	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T10	17	1 5/8	140.00 - 160.00	0.6000	0.6000
T10	18	5/16 - Stacked	140.00 - 160.00	0.6000	0.6000
T10	19	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T10	21	1 5/8	140.00 - 160.00	0.6000	0.6000
T10	23	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T10	25	7/8	140.00 - 160.00	0.6000	0.6000
T10	27	7/8	140.00 - 160.00	0.6000	0.6000
T10	29	EWP63	140.00 - 160.00	0.6000	0.6000
T10	31	EW63	140.00 - 160.00	0.6000	0.6000
T10	33	EP60 - Stacked	140.00 - 160.00	0.6000	0.6000
T10	35	3/8 - Stacked	140.00 - 160.00	0.6000	0.6000
T10	37	7/8 - Stacked	140.00 - 160.00	0.6000	0.6000
T10	39	EP105 - Stacked	140.00 - 147.00	0.6000	0.6000
T11	1	7/8	120.00 - 140.00	0.6000	0.6000
T11	2	3/8 - Stacked	120.00 - 140.00	0.6000	0.6000
T11	3	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T11	5	1 5/8	120.00 - 140.00	0.6000	0.6000
T11	6	7/8	120.00 - 140.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	8	E60 - Stacked	120.00 - 140.00	0.6000	0.6000
T11	10	7/8	120.00 - 140.00	0.6000	0.6000
T11	12	1 5/8	120.00 - 140.00	0.6000	0.6000
T11	14	1/2 - Stacked	120.00 - 140.00	0.6000	0.6000
T11	15	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T11	17	1 5/8	120.00 - 140.00	0.6000	0.6000
T11	18	5/16 - Stacked	120.00 - 140.00	0.6000	0.6000
T11	19	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T11	21	1 5/8	120.00 - 140.00	0.6000	0.6000
T11	23	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T11	25	7/8	120.00 - 140.00	0.6000	0.6000
T11	27	7/8	120.00 - 140.00	0.6000	0.6000
T11	29	EWP63	120.00 - 140.00	0.6000	0.6000
T11	31	EW63	120.00 - 140.00	0.6000	0.6000
T11	33	EP60 - Stacked	120.00 - 140.00	0.6000	0.6000
T11	35	3/8 - Stacked	120.00 - 140.00	0.6000	0.6000
T11	37	7/8 - Stacked	120.00 - 140.00	0.6000	0.6000
T11	39	EP105 - Stacked	120.00 - 140.00	0.6000	0.6000
T12	1	7/8	100.00 - 120.00	0.6000	0.6000
T12	2	3/8 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	3	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T12	5	1 5/8	100.00 - 120.00	0.6000	0.6000
T12	6	7/8	100.00 - 120.00	0.6000	0.6000
T12	8	E60 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	10	7/8	100.00 - 120.00	0.6000	0.6000
T12	12	1 5/8	100.00 - 120.00	0.6000	0.6000
T12	14	1/2 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	15	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T12	17	1 5/8	100.00 - 120.00	0.6000	0.6000
T12	18	5/16 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	19	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	21	1 5/8	100.00 - 120.00	0.6000	0.6000
T12	23	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T12	25	7/8	100.00 - 120.00	0.6000	0.6000
T12	27	7/8	100.00 - 120.00	0.6000	0.6000
T12	29	EWP63	100.00 - 120.00	0.6000	0.6000
T12	31	EW63	100.00 - 120.00	0.6000	0.6000
T12	33	EP60 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	35	3/8 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	37	7/8 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	39	EP105 - Stacked	100.00 - 120.00	0.6000	0.6000
T12	41	EW63	100.00 - 105.00	0.6000	0.6000
T12	43	EP105 - Stacked	100.00 - 101.00	0.6000	0.6000
T13	1	7/8	80.00 - 100.00	0.6000	0.6000
T13	2	3/8 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	3	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T13	5	1 5/8	80.00 - 100.00	0.6000	0.6000
T13	6	7/8	80.00 - 100.00	0.6000	0.6000
T13	8	E60 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	10	7/8	80.00 - 100.00	0.6000	0.6000
T13	12	1 5/8	80.00 - 100.00	0.6000	0.6000
T13	14	1/2 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	15	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T13	17	1 5/8	80.00 - 100.00	0.6000	0.6000
T13	18	5/16 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	19	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T13	21	1 5/8	80.00 - 100.00	0.6000	0.6000
T13	23	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T13	25	7/8	80.00 - 100.00	0.6000	0.6000
T13	27	7/8	80.00 - 100.00	0.6000	0.6000
T13	29	EWP63	80.00 - 100.00	0.6000	0.6000
T13	31	EW63	80.00 - 100.00	0.6000	0.6000
T13	33	EP60 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	35	3/8 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	37	7/8 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	39	EP105 - Stacked	80.00 - 100.00	0.6000	0.6000
T13	41	EW63	80.00 - 100.00	0.6000	0.6000
T13	43	EP105 - Stacked	80.00 - 100.00	0.6000	0.6000
T14	1	7/8	60.00 - 80.00	0.6000	0.6000
T14	2	3/8 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	3	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T14	5	1 5/8	60.00 - 80.00	0.6000	0.6000
T14	6	7/8	60.00 - 80.00	0.6000	0.6000
T14	8	E60 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	10	7/8	60.00 - 80.00	0.6000	0.6000
T14	12	1 5/8	60.00 - 80.00	0.6000	0.6000
T14	14	1/2 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	15	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T14	17	1 5/8	60.00 - 80.00	0.6000	0.6000
T14	18	5/16 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	19	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	21	1 5/8	60.00 - 80.00	0.6000	0.6000
T14	23	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T14	25	7/8	60.00 - 80.00	0.6000	0.6000
T14	27	7/8	60.00 - 80.00	0.6000	0.6000
T14	29	EWP63	60.00 - 80.00	0.6000	0.6000
T14	31	EW63	60.00 - 80.00	0.6000	0.6000
T14	33	EP60 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	35	3/8 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	37	7/8 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	39	EP105 - Stacked	60.00 - 80.00	0.6000	0.6000
T14	41	EW63	60.00 - 80.00	0.6000	0.6000
T14	43	EP105 - Stacked	60.00 - 80.00	0.6000	0.6000
T15	1	7/8	40.00 - 60.00	0.6000	0.6000
T15	2	3/8 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	3	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T15	5	1 5/8	40.00 - 60.00	0.6000	0.6000
T15	6	7/8	40.00 - 60.00	0.6000	0.6000
T15	8	E60 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	10	7/8	40.00 - 60.00	0.6000	0.6000
T15	12	1 5/8	40.00 - 60.00	0.6000	0.6000
T15	14	1/2 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	15	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T15	17	1 5/8	40.00 - 60.00	0.6000	0.6000
T15	18	5/16 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	19	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T15	21	1 5/8	40.00 - 60.00	0.6000	0.6000
T15	23	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T15	25	7/8	40.00 - 60.00	0.6000	0.6000
T15	27	7/8	40.00 - 60.00	0.6000	0.6000
T15	29	EWP63	40.00 - 60.00	0.6000	0.6000
T15	31	EW63	40.00 - 60.00	0.6000	0.6000
T15	33	EP60 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	35	3/8 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	37	7/8 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	39	EP105 - Stacked	40.00 - 60.00	0.6000	0.6000
T15	41	EW63	40.00 - 60.00	0.6000	0.6000
T15	43	EP105 - Stacked	40.00 - 60.00	0.6000	0.6000
T16	1	7/8	20.00 - 40.00	0.6000	0.6000
T16	2	3/8 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	3	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T16	5	1 5/8	20.00 - 40.00	0.6000	0.6000
T16	6	7/8	20.00 - 40.00	0.6000	0.6000
T16	8	E60 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	10	7/8	20.00 - 40.00	0.6000	0.6000
T16	12	1 5/8	20.00 - 40.00	0.6000	0.6000
T16	14	1/2 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	15	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T16	17	1 5/8	20.00 - 40.00	0.6000	0.6000
T16	18	5/16 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	19	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T16	21	1 5/8	20.00 - 40.00	0.6000	0.6000
T16	23	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T16	25	7/8	20.00 - 40.00	0.6000	0.6000
T16	27	7/8	20.00 - 40.00	0.6000	0.6000
T16	29	EWP63	20.00 - 40.00	0.6000	0.6000
T16	31	EW63	20.00 - 40.00	0.6000	0.6000
T16	33	EP60 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	35	3/8 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	37	7/8 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	39	EP105 - Stacked	20.00 - 40.00	0.6000	0.6000
T16	41	EW63	20.00 - 40.00	0.6000	0.6000
T16	43	EP105 - Stacked	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	1	7/8	10.00 - 20.00	0.6000	0.6000
T17	2	3/8 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	3	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T17	5	1 5/8	10.00 - 20.00	0.6000	0.6000
T17	6	7/8	10.00 - 20.00	0.6000	0.6000
T17	8	E60 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	10	7/8	10.00 - 20.00	0.6000	0.6000
T17	12	1 5/8	10.00 - 20.00	0.6000	0.6000
T17	14	1/2 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	15	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T17	17	1 5/8	10.00 - 20.00	0.6000	0.6000
T17	18	5/16 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	19	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T17	21	1 5/8	10.00 - 20.00	0.6000	0.6000
T17	23	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T17	25	7/8	10.00 - 20.00	0.6000	0.6000
T17	27	7/8	10.00 - 20.00	0.6000	0.6000
T17	29	EWP63	10.00 - 20.00	0.6000	0.6000
T17	31	EW63	10.00 - 20.00	0.6000	0.6000
T17	33	EP60 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	35	3/8 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	37	7/8 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	39	EP105 - Stacked	10.00 - 20.00	0.6000	0.6000
T17	41	EW63	10.00 - 20.00	0.6000	0.6000
T17	43	EP105 - Stacked	10.00 - 20.00	0.6000	0.6000

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	A	From Leg	0.000	0.0000	333.000	No Ice	0.500	0.500	0.100
(E)			0.000			1/2" Ice	0.750	0.750	0.200
			0.000						
Beacon	A	From Leg	0.000	0.0000	327.000	No Ice	1.500	1.500	0.200
(E)			0.000			1/2" Ice	2.250	2.250	0.300
			0.000						
Side Lights	C	None		0.0000	163.000	No Ice	1.500	1.500	0.200
(E)						1/2" Ice	2.250	2.250	0.300
****									
BMR12-H-B1	A	From Leg	2.000	0.0000	332.000	No Ice	13.250	13.250	0.092
(P)			0.000			1/2" Ice	15.314	15.314	0.181
			0.000						
DBB2802RA	A	From Leg	0.000	0.0000	324.000	No Ice	2.020	0.620	0.020
(P)			0.000			1/2" Ice	2.213	0.756	0.031
			0.000						
Side Arm Mount [SO 602-1]	A	None		0.0000	322.000	No Ice	2.720	12.930	0.146
(E)						1/2" Ice	4.110	17.820	0.223
****									
BMR12-A-B1	C	From Leg	2.000	0.0000	314.000	No Ice	11.400	11.400	0.092
(E)			0.000			1/2" Ice	13.456	13.456	0.169

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
			0.000						
BMR12-A-B1	B	From Leg	2.000	0.0000	314.000	No Ice	11.400	11.400	0.092
(E)			0.000			1/2" Ice	13.456	13.456	0.169
			0.000						
BMR12-H-B1	A	From Leg	2.000	0.0000	314.000	No Ice	13.250	13.250	0.092
(P)			0.000			1/2" Ice	15.314	15.314	0.181
			0.000						
BMR12-H-B1	A	From Leg	2.000	0.0000	314.000	No Ice	13.250	13.250	0.092
(P)			0.000			1/2" Ice	15.314	15.314	0.181
			0.000						
Side Arm Mount [SO 602-3]	C	None		0.0000	307.000	No Ice	17.610	17.610	0.437
(E)						1/2" Ice	24.670	24.670	0.670
Side Arm Mount [SO 602-1]	A	None		0.0000	307.000	No Ice	2.720	12.930	0.146
(P)						1/2" Ice	4.110	17.820	0.223
****									
Pipe Mount [PM 602-1]	C	None		0.0000	269.000	No Ice	5.250	1.580	0.093
(P)						1/2" Ice	6.500	1.950	0.118
****									
ANT150D6-9	A	From Leg	2.000	0.0000	273.000	No Ice	3.200	3.200	0.026
(P)			0.000			1/2" Ice	6.080	6.080	0.047
			0.000						
Side Arm Mount [SO 311-1]	A	None		0.0000	263.000	No Ice	2.970	3.510	0.062
(E)						1/2" Ice	4.390	5.330	0.094
****									
(2) PCSA090-16-2 w/Mount Pipe	C	From Face	0.000	0.0000	250.000	No Ice	6.213	5.773	0.046
			0.000			1/2" Ice	6.870	6.897	0.098
(E)			0.000						
(2) PCSA090-16-2 w/Mount Pipe	B	From Face	0.000	0.0000	250.000	No Ice	6.213	5.773	0.046
			0.000			1/2" Ice	6.870	6.897	0.098
(E)			0.000						
(2) PCSA090-16-2 w/Mount Pipe	A	From Face	0.000	0.0000	250.000	No Ice	6.213	5.773	0.046
			0.000			1/2" Ice	6.870	6.897	0.098
(E)			0.000						
6' x 2" Mount Pipe	C	None		0.0000	250.000	No Ice	1.425	1.425	0.022
(E)						1/2" Ice	1.925	1.925	0.033
6' x 2" Mount Pipe	B	None		0.0000	250.000	No Ice	1.425	1.425	0.022
(E)						1/2" Ice	1.925	1.925	0.033
6' x 2" Mount Pipe	A	None		0.0000	250.000	No Ice	1.425	1.425	0.022
(E)						1/2" Ice	1.925	1.925	0.033
Sector Mount [SM 302-3]	C	None		0.0000	250.000	No Ice	32.730	32.730	1.476
(E)						1/2" Ice	43.850	43.850	2.071
****									
(2) 800 10122 w/Mount Pipe	C	From Face	0.000	0.0000	235.000	No Ice	7.618	6.348	0.084
(E)			0.000			1/2" Ice	8.121	7.314	0.142
			0.000						
(2) 800 10122 w/Mount Pipe	B	From Face	0.000	0.0000	235.000	No Ice	7.618	6.348	0.084
(E)			0.000			1/2" Ice	8.121	7.314	0.142
			0.000						
(2) 800 10122 w/Mount Pipe	A	From Face	0.000	0.0000	235.000	No Ice	7.618	6.348	0.084
(E)			0.000			1/2" Ice	8.121	7.314	0.142
			0.000						
(2) LGP219nn Diplexer	C	From Face	0.000	0.0000	235.000	No Ice	0.270	0.184	0.006
(E)			0.000			1/2" Ice	0.343	0.248	0.008
			0.000						
(2) LGP219nn Diplexer	B	From Face	0.000	0.0000	235.000	No Ice	0.270	0.184	0.006
(E)			0.000			1/2" Ice	0.343	0.248	0.008
			0.000						

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) LGP219nn Diplexer	A	From Face	0.000	0.0000	235.000	No Ice	0.270	0.184	0.006
(E)			0.000			1/2" Ice	0.343	0.248	0.008
			0.000						
(2) LGP21401 TMA	C	From Face	0.000	0.0000	235.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			0.000						
(2) LGP21401 TMA	B	From Face	0.000	0.0000	235.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			0.000						
(2) LGP21401 TMA	A	From Face	0.000	0.0000	235.000	No Ice	1.288	0.233	0.014
(E)			0.000			1/2" Ice	1.445	0.313	0.021
			0.000						
Sector Mount [SM 402-3]	C	None		0.0000	235.000	No Ice	18.910	18.910	0.851
(E)						1/2" Ice	26.780	26.780	1.233
****									
(2) RR90-18-00DP	C	From Face	0.000	0.0000	230.000	No Ice	5.867	2.750	0.023
(E)			0.000			1/2" Ice	6.325	3.234	0.052
			0.000						
(2) RR90-18-00DP	B	From Face	0.000	0.0000	230.000	No Ice	5.867	2.750	0.023
(E)			0.000			1/2" Ice	6.325	3.234	0.052
			0.000						
(2) RR90-18-00DP	A	From Face	0.000	0.0000	230.000	No Ice	5.867	2.750	0.023
(E)			0.000			1/2" Ice	6.325	3.234	0.052
			0.000						
(2) KRY 112 37 TMA	C	From Face	0.000	0.0000	230.000	No Ice	0.694	0.357	0.011
(E)			0.000			1/2" Ice	0.811	0.452	0.016
			0.000						
(2) KRY 112 37 TMA	B	From Face	0.000	0.0000	230.000	No Ice	0.694	0.357	0.011
(E)			0.000			1/2" Ice	0.811	0.452	0.016
			0.000						
(2) KRY 112 37 TMA	A	From Face	0.000	0.0000	230.000	No Ice	0.694	0.357	0.011
(E)			0.000			1/2" Ice	0.811	0.452	0.016
			0.000						
Sector Mount [SM 402-3]	C	None		0.0000	230.000	No Ice	18.910	18.910	0.851
(E)						1/2" Ice	26.780	26.780	1.233
****									
ANT150D	C	From Leg	2.000	0.0000	205.000	No Ice	0.800	0.800	0.005
(E)			0.000			1/2" Ice	1.440	1.440	0.007
			0.000						
ANT150D3D	A	From Leg	2.000	0.0000	219.000	No Ice	9.200	9.200	0.046
(E)			0.000			1/2" Ice	16.560	16.560	0.060
			0.000						
Side Arm Mount [SO 601-1]	C	None		0.0000	204.000	No Ice	1.220	6.300	0.159
(E)						1/2" Ice	1.850	8.610	0.197
Side Arm Mount [SO 602-1]	A	None		0.0000	204.000	No Ice	2.720	12.930	0.146
(E)						1/2" Ice	4.110	17.820	0.223
****									
DB420D-B	C	From Leg	2.000	0.0000	188.000	No Ice	3.330	3.330	0.034
(E)			0.000			1/2" Ice	5.994	5.994	0.044
			0.000						
DB420D-B	A	From Leg	2.000	0.0000	188.000	No Ice	3.330	3.330	0.034
(E)			0.000			1/2" Ice	5.994	5.994	0.044
			0.000						
Side Arm Mount [SO 702-1]	C	None		0.0000	197.000	No Ice	1.000	1.430	0.027
(E)						1/2" Ice	1.000	2.050	0.038
Side Arm Mount [SO 702-1]	A	None		0.0000	197.000	No Ice	1.000	1.430	0.027
(E)						1/2" Ice	1.000	2.050	0.038

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
****									
Pipe Mount [PM 602-1] (E)	B	None		0.0000	188.000	No Ice 1/2" Ice	5.250 6.500	1.580 1.950	0.093 0.118
****									
Pipe Mount [PM 602-1] (E)	B	None		0.0000	184.000	No Ice 1/2" Ice	5.250 6.500	1.580 1.950	0.093 0.118
****									
Pipe Mount [PM 602-1] (P)	C	None		0.0000	175.000	No Ice 1/2" Ice	5.250 6.500	1.580 1.950	0.093 0.118
****									
Pipe Mount [PM 602-1] (E)	A	None		0.0000	172.000	No Ice 1/2" Ice	5.250 6.500	1.580 1.950	0.093 0.118
****									
MSP24013MB w/Mount Pipe (E)	C	From Leg	2.000 0.000 0.000	0.0000	167.000	No Ice 1/2" Ice	2.596 3.323	2.257 3.138	0.030 0.053
MSP24013MB w/Mount Pipe (E)	B	From Leg	2.000 0.000 0.000	0.0000	167.000	No Ice 1/2" Ice	2.596 3.323	2.257 3.138	0.030 0.053
MSP24013MB w/Mount Pipe (E)	A	From Leg	2.000 0.000 0.000	0.0000	167.000	No Ice 1/2" Ice	2.596 3.323	2.257 3.138	0.030 0.053
Side Arm Mount [SO 301-3] (E)	C	None		0.0000	165.000	No Ice 1/2" Ice	2.140 3.160	2.140 3.160	0.069 0.098
****									
Pipe Mount [PM 601-1] (P)	C	None		0.0000	147.000	No Ice 1/2" Ice	3.000 3.740	0.900 1.120	0.065 0.079
****									
Pipe Mount [PM 601-1] (E)	A	None		0.0000	105.000	No Ice 1/2" Ice	3.000 3.740	0.900 1.120	0.065 0.079
****									
Pipe Mount [PM 601-1] (P)	C	None		0.0000	101.000	No Ice 1/2" Ice	3.000 3.740	0.900 1.120	0.065 0.079
****									

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
PAD8-59AC (P)	C	Paraboloid w/o Radome	From Leg	2.000 0.000 0.000	0.0000		269.000	8.000	No Ice 1/2" Ice	50.270 51.292	0.285 0.548
****											
PAR6-65A (E)	B	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	0.0000		188.000	6.358	No Ice 1/2" Ice	31.800 32.574	0.143 0.310
****											
PAR6-59W	B	Paraboloid	From	2.000	0.0000		184.000	6.000	No Ice	28.270	0.143

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
(E)		w/Radome	Leg	0.000 0.000					1/2" Ice	29.050	0.292
****											
PAD8-59AC	C	Paraboloid w/o	From	2.000	0.0000		175.000	8.000	No Ice	50.270	0.285
(P)		Radome	Leg	0.000 0.000					1/2" Ice	51.292	0.548
****											
HP4-11	A	Paraboloid	From	2.000	0.0000		172.000	4.167	No Ice	13.635	0.085
(E)		w/Shroud (HP)	Leg	0.000 0.000					1/2" Ice	14.186	0.170
****											
SU3-107FC	C	Paraboloid	From	2.000	0.0000		147.000	3.192	No Ice	8.001	0.051
(P)		w/Shroud (HP)	Leg	0.000 0.000					1/2" Ice	8.424	0.101
****											
PAR8-65	A	Paraboloid	From	2.000	0.0000		105.000	8.000	No Ice	50.260	0.251
(E)		w/Radome	Leg	0.000 0.000					1/2" Ice	51.292	0.514
****											
SU4-107AC	C	Paraboloid	From	2.000	0.0000		101.000	4.308	No Ice	14.578	0.077
(P)		w/Shroud (HP)	Leg	0.000 0.000					1/2" Ice	15.148	0.154
****											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	1.2D+1.6W (pattern 1) 0 deg - No Ice
4	1.2D+1.6W (pattern 2) 0 deg - No Ice
5	0.9 Dead+1.6 Wind 0 deg - No Ice
6	1.2 Dead+1.6 Wind 30 deg - No Ice
7	1.2D+1.6W (pattern 1) 30 deg - No Ice
8	1.2D+1.6W (pattern 2) 30 deg - No Ice
9	0.9 Dead+1.6 Wind 30 deg - No Ice
10	1.2 Dead+1.6 Wind 60 deg - No Ice
11	1.2D+1.6W (pattern 1) 60 deg - No Ice
12	1.2D+1.6W (pattern 2) 60 deg - No Ice
13	0.9 Dead+1.6 Wind 60 deg - No Ice
14	1.2 Dead+1.6 Wind 90 deg - No Ice
15	1.2D+1.6W (pattern 1) 90 deg - No Ice
16	1.2D+1.6W (pattern 2) 90 deg - No Ice
17	0.9 Dead+1.6 Wind 90 deg - No Ice
18	1.2 Dead+1.6 Wind 120 deg - No Ice
19	1.2D+1.6W (pattern 1) 120 deg - No Ice
20	1.2D+1.6W (pattern 2) 120 deg - No Ice
21	0.9 Dead+1.6 Wind 120 deg - No Ice
22	1.2 Dead+1.6 Wind 150 deg - No Ice
23	1.2D+1.6W (pattern 1) 150 deg - No Ice
24	1.2D+1.6W (pattern 2) 150 deg - No Ice
25	0.9 Dead+1.6 Wind 150 deg - No Ice
26	1.2 Dead+1.6 Wind 180 deg - No Ice
27	1.2D+1.6W (pattern 1) 180 deg - No Ice
28	1.2D+1.6W (pattern 2) 180 deg - No Ice

Comb. No.	Description
29	0.9 Dead+1.6 Wind 180 deg - No Ice
30	1.2 Dead+1.6 Wind 210 deg - No Ice
31	1.2D+1.6W (pattern 1) 210 deg - No Ice
32	1.2D+1.6W (pattern 2) 210 deg - No Ice
33	0.9 Dead+1.6 Wind 210 deg - No Ice
34	1.2 Dead+1.6 Wind 240 deg - No Ice
35	1.2D+1.6W (pattern 1) 240 deg - No Ice
36	1.2D+1.6W (pattern 2) 240 deg - No Ice
37	0.9 Dead+1.6 Wind 240 deg - No Ice
38	1.2 Dead+1.6 Wind 270 deg - No Ice
39	1.2D+1.6W (pattern 1) 270 deg - No Ice
40	1.2D+1.6W (pattern 2) 270 deg - No Ice
41	0.9 Dead+1.6 Wind 270 deg - No Ice
42	1.2 Dead+1.6 Wind 300 deg - No Ice
43	1.2D+1.6W (pattern 1) 300 deg - No Ice
44	1.2D+1.6W (pattern 2) 300 deg - No Ice
45	0.9 Dead+1.6 Wind 300 deg - No Ice
46	1.2 Dead+1.6 Wind 330 deg - No Ice
47	1.2D+1.6W (pattern 1) 330 deg - No Ice
48	1.2D+1.6W (pattern 2) 330 deg - No Ice
49	0.9 Dead+1.6 Wind 330 deg - No Ice
50	1.2 Dead+1.0 Ice
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
55	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
56	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
58	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
63	Dead+Wind 0 deg - Service
64	Dead+Wind 30 deg - Service
65	Dead+Wind 60 deg - Service
66	Dead+Wind 90 deg - Service
67	Dead+Wind 120 deg - Service
68	Dead+Wind 150 deg - Service
69	Dead+Wind 180 deg - Service
70	Dead+Wind 210 deg - Service
71	Dead+Wind 240 deg - Service
72	Dead+Wind 270 deg - Service
73	Dead+Wind 300 deg - Service
74	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
T1	325 - 320	Leg	Max Tension	45	2.343	-0.033	-0.064
			Max. Compression	2	-3.464	-0.001	0.002
			Max. Mx	38	-0.825	-0.078	0.002
			Max. My	26	1.232	0.000	0.065
			Max. Vy	14	0.583	0.029	0.002
			Max. Vx	2	-0.768	-0.001	0.002
		Diagonal	Max Tension	10	0.899	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	34	-0.902	0.000	0.000
			Max. Mx	52	0.174	-0.005	-0.000
			Max. My	17	-0.758	-0.001	-0.001
			Max. Vy	52	0.010	-0.005	-0.000
			Max. Vx	17	0.000	-0.001	-0.001
		Top Girt	Max Tension	19	0.061	0.000	0.000
			Max. Compression	27	-0.085	0.000	0.000
			Max. Mx	50	-0.015	0.015	0.000
			Max. My	14	0.003	0.000	-0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	14	0.000	0.000	0.000
		Bottom Girt	Max Tension	10	0.024	0.000	0.000
			Max. Compression	5	-0.019	0.000	0.000
			Max. Mx	50	0.011	0.015	0.000
			Max. My	14	0.002	0.000	-0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	14	0.000	0.000	0.000
T2	320 - 300	Leg	Max Tension	45	23.359	-0.109	-0.124
			Max. Compression	2	-27.072	-0.001	0.087
			Max. Mx	14	-1.084	0.427	-0.003
			Max. My	6	3.517	-0.095	-0.275
			Max. Vy	18	2.104	-0.073	-0.042
			Max. Vx	2	-2.810	-0.001	0.087
		Diagonal	Max Tension	10	3.084	0.000	0.000
			Max. Compression	34	-3.110	0.000	0.000
			Max. Mx	51	0.475	-0.006	0.000
			Max. My	37	-2.886	-0.000	0.002
			Max. Vy	51	0.010	-0.006	0.000
			Max. Vx	37	0.001	-0.000	0.002
		Top Girt	Max Tension	51	0.009	0.000	0.000
			Max. Compression	5	-0.005	0.000	0.000
			Max. Mx	50	0.009	0.015	0.000
			Max. My	14	0.002	0.000	-0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	14	0.000	0.000	0.000
		Bottom Girt	Max Tension	44	0.227	0.000	0.000
			Max. Compression	5	-0.206	0.000	0.000
			Max. Mx	50	0.033	0.015	0.000
			Max. My	30	0.017	0.000	0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	30	-0.000	0.000	0.000
T3	300 - 280	Leg	Max Tension	45	56.489	0.130	0.095
			Max. Compression	2	-61.911	0.003	-0.202
			Max. Mx	38	-3.123	0.273	-0.011
			Max. My	2	-27.074	-0.004	0.321
			Max. Vy	18	2.104	-0.248	-0.203
			Max. Vx	2	-2.810	-0.004	0.321
		Diagonal	Max Tension	10	3.852	0.000	0.000
			Max. Compression	34	-3.917	0.000	0.000
			Max. Mx	2	2.663	-0.008	0.000
			Max. My	38	-2.265	0.001	0.003
			Max. Vy	51	0.010	-0.007	0.000
			Max. Vx	14	0.001	0.001	-0.003
		Top Girt	Max Tension	44	0.045	0.000	0.000
			Max. Compression	5	-0.025	0.000	0.000
			Max. Mx	50	0.031	0.015	0.000
			Max. My	30	0.014	0.000	0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	30	-0.000	0.000	0.000
		Bottom Girt	Max Tension	10	0.649	0.000	0.000
			Max. Compression	5	-0.614	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	50	0.048	0.015	0.000
			Max. My	30	0.030	0.000	0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	30	-0.000	0.000	0.000
T4	280 - 260	Leg	Max Tension	13	111.778	0.409	-0.563
			Max. Compression	2	-118.333	0.072	1.961
			Max. Mx	34	-117.835	1.703	-0.950
			Max. My	2	-118.333	0.072	1.961
			Max. Vy	18	5.533	-1.643	-0.999
			Max. Vx	2	-6.432	0.072	1.961
		Diagonal	Max Tension	30	6.571	0.000	0.000
			Max. Compression	30	-6.682	0.000	0.000
			Max. Mx	2	4.881	-0.008	0.000
			Max. My	30	-5.797	0.001	0.004
			Max. Vy	59	0.010	-0.007	0.000
			Max. Vx	30	-0.002	0.001	0.004
		Top Girt	Max Tension	44	0.119	0.000	0.000
			Max. Compression	4	-0.083	0.000	0.000
			Max. Mx	50	0.043	0.015	0.000
			Max. My	30	0.017	0.000	0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	30	-0.000	0.000	0.000
		Bottom Girt	Max Tension	19	0.147	0.000	0.000
			Max. Compression	44	-0.229	0.000	0.000
			Max. Mx	50	-0.071	0.015	0.000
			Max. My	30	-0.035	0.000	0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	30	-0.000	0.000	0.000
T5	260 - 240	Leg	Max Tension	13	127.263	1.271	-0.292
			Max. Compression	2	-135.334	0.609	0.108
			Max. Mx	2	-118.507	1.961	-0.072
			Max. My	14	-8.833	0.348	1.639
			Max. Vy	11	2.754	-0.621	0.047
			Max. Vx	14	-2.243	0.348	1.639
		Diagonal	Max Tension	31	4.149	0.000	0.000
			Max. Compression	31	-4.224	0.000	0.000
			Max. Mx	2	0.796	0.059	0.010
			Max. My	30	-3.197	-0.034	-0.038
			Max. Vy	61	0.025	0.026	-0.002
			Max. Vx	30	0.011	0.000	0.000
		Top Girt	Max Tension	19	0.319	0.000	0.000
			Max. Compression	11	-0.418	0.000	0.000
			Max. Mx	50	-0.019	0.016	0.000
			Max. My	30	-0.068	0.000	0.000
			Max. Vy	50	-0.015	0.000	0.000
			Max. Vx	30	0.000	0.000	0.000
T6	240 - 220	Leg	Max Tension	13	152.227	2.839	-0.236
			Max. Compression	2	-165.414	0.827	0.079
			Max. Mx	19	-138.014	-3.169	-0.043
			Max. My	14	-15.588	0.334	1.884
			Max. Vy	19	-5.247	0.768	-0.048
			Max. Vx	14	-2.389	0.053	0.532
		Diagonal	Max Tension	31	5.991	0.000	0.000
			Max. Compression	31	-5.991	0.000	0.000
			Max. Mx	10	3.677	0.038	0.003
			Max. My	30	-5.834	-0.003	-0.012
			Max. Vy	61	0.033	0.036	-0.004
			Max. Vx	30	0.003	0.000	0.000
T7	220 - 200	Leg	Max Tension	13	180.404	3.924	-0.279
			Max. Compression	2	-199.038	0.874	0.070
			Max. Mx	19	-138.138	4.706	-0.053

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	-21.182	0.275	2.331
			Max. Vy	19	-7.041	0.822	-0.048
			Max. Vx	14	-3.062	0.021	0.631
		Diagonal	Max Tension	31	6.973	0.000	0.000
			Max. Compression	31	-6.972	0.000	0.000
			Max. Mx	6	2.999	0.068	0.004
			Max. My	30	-6.309	-0.008	-0.019
			Max. Vy	61	0.052	0.064	-0.007
			Max. Vx	30	0.004	0.000	0.000
T8	200 - 180	Leg	Max Tension	13	210.181	5.539	-0.049
			Max. Compression	34	-235.693	0.565	0.060
			Max. Mx	19	-210.042	-6.569	-0.317
			Max. My	14	-25.592	0.234	2.936
			Max. Vy	19	-9.440	0.518	-0.272
			Max. Vx	7	3.693	0.103	-0.723
		Diagonal	Max Tension	39	8.481	0.000	0.000
			Max. Compression	39	-8.419	0.000	0.000
			Max. Mx	54	0.815	0.086	-0.010
			Max. My	30	-7.349	0.009	-0.016
			Max. Vy	54	0.062	0.086	-0.010
			Max. Vx	30	0.003	0.000	0.000
T9	180 - 160	Leg	Max Tension	13	245.304	7.374	-0.093
			Max. Compression	34	-278.678	0.969	0.006
			Max. Mx	19	-252.999	-8.324	0.256
			Max. My	6	-28.980	0.202	-3.502
			Max. Vy	19	-12.324	0.929	-0.017
			Max. Vx	14	-4.931	0.064	0.591
		Diagonal	Max Tension	39	10.898	0.000	0.000
			Max. Compression	39	-10.784	0.000	0.000
			Max. Mx	62	0.784	0.118	-0.014
			Max. My	30	-10.401	0.026	-0.021
			Max. Vy	62	0.076	0.118	-0.014
			Max. Vx	57	0.004	0.000	0.000
T10	160 - 140	Leg	Max Tension	13	281.509	8.044	-0.070
			Max. Compression	34	-322.491	1.620	-0.009
			Max. Mx	19	-253.148	10.183	-0.291
			Max. My	14	-35.697	0.699	4.300
			Max. Vy	19	-14.174	1.585	-0.110
			Max. Vx	14	-5.488	0.103	1.170
		Diagonal	Max Tension	39	11.991	0.000	0.000
			Max. Compression	39	-11.932	0.000	0.000
			Max. Mx	60	0.841	0.151	0.018
			Max. My	30	-11.551	0.038	-0.022
			Max. Vy	60	0.088	0.151	0.018
			Max. Vx	57	0.005	0.000	0.000
T11	140 - 120	Leg	Max Tension	13	317.133	9.327	-0.070
			Max. Compression	34	-367.228	1.286	-0.003
			Max. Mx	19	-297.128	12.220	-0.392
			Max. My	14	-41.567	0.764	5.296
			Max. Vy	19	-15.987	1.251	-0.074
			Max. Vx	14	-6.040	0.048	0.887
		Diagonal	Max Tension	39	13.349	0.000	0.000
			Max. Compression	39	-13.228	0.000	0.000
			Max. Mx	60	0.852	0.226	0.027
			Max. My	30	-12.697	0.084	-0.029
			Max. Vy	60	0.119	0.226	0.027
			Max. Vx	57	0.006	0.000	0.000
T12	120 - 100	Leg	Max Tension	13	352.478	11.026	-0.194
			Max. Compression	34	-413.251	1.240	-0.095
			Max. Mx	18	-366.051	13.257	-0.323
			Max. My	14	-47.696	0.721	5.429

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	3	-18.806	1.206	0.051
			Max. Vx	14	-7.351	0.004	1.117
		Diagonal	Max Tension	31	15.447	0.000	0.000
			Max. Compression	31	-15.256	0.000	0.000
			Max. Mx	62	0.937	0.304	-0.035
			Max. My	30	-14.689	0.104	-0.041
			Max. Vy	62	0.147	0.304	-0.035
			Max. Vx	57	0.007	0.000	0.000
T13	100 - 80	Leg	Max Tension	13	388.087	5.386	-0.049
			Max. Compression	34	-460.625	8.500	-0.226
			Max. Mx	2	-413.030	15.332	0.457
			Max. My	14	-60.200	-0.034	7.276
			Max. Vy	3	-20.562	8.559	0.503
			Max. Vx	14	-8.135	-0.034	7.276
		Diagonal	Max Tension	31	16.160	0.000	0.000
			Max. Compression	31	-16.640	0.000	0.000
			Max. Mx	61	1.908	0.358	-0.043
			Max. My	58	1.928	0.341	-0.044
			Max. Vy	61	0.160	0.358	-0.043
			Max. Vx	58	-0.008	0.000	0.000
T14	80 - 60	Leg	Max Tension	13	387.116	-8.129	0.204
			Max. Compression	34	-462.048	-2.394	0.072
			Max. Mx	3	-436.584	8.558	0.503
			Max. My	14	-60.614	-0.034	7.276
			Max. Vy	34	2.041	7.419	0.124
			Max. Vx	14	1.417	-0.034	7.276
		Diagonal	Max Tension	33	28.890	0.000	0.000
			Max. Compression	31	-29.452	-0.091	0.105
			Max. Mx	10	21.053	-0.166	-0.031
			Max. My	30	-28.354	0.070	0.109
			Max. Vy	52	0.068	-0.093	-0.086
			Max. Vx	30	0.015	0.000	0.000
		Horizontal	Max Tension	31	14.748	0.000	0.000
			Max. Compression	33	-15.175	-0.246	0.007
			Max. Mx	61	-2.262	-0.541	-0.001
			Max. My	3	1.487	-0.222	0.103
			Max. Vy	61	0.226	-0.541	-0.001
			Max. Vx	19	-0.013	-0.222	0.103
		Redund Horz 1 Bracing	Max Tension	34	9.286	0.000	0.000
			Max. Compression	34	-9.286	0.000	0.000
			Max. Mx	55	0.512	0.026	0.000
			Max. My	56	2.758	0.000	-0.001
			Max. Vy	55	-0.029	0.000	0.000
			Max. Vx	56	0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	34	9.286	0.000	0.000
			Max. Compression	34	-9.286	0.000	0.000
			Max. Mx	59	0.394	0.105	0.000
			Max. My	62	2.806	0.000	-0.003
			Max. Vy	59	-0.057	0.000	0.000
			Max. Vx	62	0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	34	9.441	0.000	0.000
			Max. Compression	34	-9.441	0.000	0.000
			Max. Mx	60	2.957	0.046	0.000
			Max. My	51	0.432	0.000	0.003
			Max. Vy	60	-0.025	0.000	0.000
			Max. Vx	51	0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	34	6.121	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	34	-6.121	0.000	0.000
			Max. Mx	60	1.917	0.126	0.000
			Max. My	51	0.475	0.000	0.005
			Max. Vy	60	-0.052	0.000	0.000
			Max. Vx	51	0.002	0.000	0.000
		Inner Bracing	Max Tension	21	0.009	0.000	0.000
			Max. Compression	11	-0.035	0.000	0.000
			Max. Mx	50	-0.026	0.286	0.000
			Max. My	18	0.006	0.000	0.000
			Max. Vy	50	-0.104	0.000	0.000
			Max. Vx	18	-0.000	0.000	0.000
T15	60 - 40	Leg	Max Tension	13	420.239	3.558	0.177
			Max. Compression	34	-507.452	-5.473	-0.209
			Max. Mx	34	-506.461	7.070	0.120
			Max. My	14	-69.743	-1.674	7.193
			Max. Vy	34	1.922	7.070	0.120
			Max. Vx	14	-1.553	-1.674	7.193
		Diagonal	Max Tension	33	27.802	0.000	0.000
			Max. Compression	30	-28.954	0.000	0.000
			Max. Mx	10	21.109	-0.161	-0.031
			Max. My	30	-28.266	-0.103	0.119
			Max. Vy	52	0.072	-0.102	-0.091
			Max. Vx	30	-0.016	0.000	0.000
		Horizontal	Max Tension	31	14.992	0.000	0.000
			Max. Compression	31	-15.537	-0.383	0.011
			Max. Mx	61	2.344	-0.618	0.003
			Max. My	3	1.591	-0.294	0.102
			Max. Vy	61	0.242	-0.618	0.002
			Max. Vx	3	-0.012	-0.294	0.102
		Redund Horz 1 Bracing	Max Tension	34	9.915	0.000	0.000
			Max. Compression	34	-9.915	0.000	0.000
			Max. Mx	55	0.579	0.031	0.000
			Max. My	56	2.970	0.000	-0.001
			Max. Vy	55	-0.031	0.000	0.000
			Max. Vx	56	-0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	34	9.915	0.000	0.000
			Max. Compression	34	-9.915	0.000	0.000
			Max. Mx	59	0.461	0.123	0.000
			Max. My	62	3.017	0.000	-0.004
			Max. Vy	59	-0.061	0.000	0.000
			Max. Vx	62	0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	34	9.433	0.000	0.000
			Max. Compression	34	-9.433	0.000	0.000
			Max. Mx	58	2.968	0.051	0.000
			Max. My	51	0.469	0.000	0.003
			Max. Vy	58	0.027	0.000	0.000
			Max. Vx	51	-0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	34	6.297	0.000	0.000
			Max. Compression	34	-6.297	0.000	0.000
			Max. Mx	60	1.984	0.142	0.000
			Max. My	58	0.401	0.000	-0.005
			Max. Vy	60	-0.056	0.000	0.000
			Max. Vx	58	0.002	0.000	0.000
		Inner Bracing	Max Tension	21	0.006	0.000	0.000
			Max. Compression	11	-0.033	0.000	0.000
			Max. Mx	50	-0.027	0.333	0.000
			Max. My	2	0.002	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	50	-0.111	0.000	0.000
			Max. Vx	2	-0.000	0.000	0.000
T16	40 - 20	Leg	Max Tension	13	452.000	2.876	0.188
			Max. Compression	34	-552.578	0.836	0.044
			Max. Mx	34	-550.971	9.361	0.057
			Max. My	14	-73.574	-1.674	7.193
			Max. Vy	34	2.782	9.361	0.057
			Max. Vx	14	1.323	-1.674	7.193
		Diagonal	Max Tension	33	28.686	-0.376	-0.044
			Max. Compression	30	-30.295	0.000	0.000
			Max. Mx	10	20.980	-0.450	-0.064
			Max. My	52	-6.656	-0.173	-0.126
			Max. Vy	2	-0.134	-0.172	-0.098
			Max. Vx	52	0.019	0.000	0.000
		Horizontal	Max Tension	31	15.670	0.000	0.000
			Max. Compression	30	-16.537	-0.678	0.020
			Max. Mx	61	2.520	-0.983	0.011
			Max. My	19	0.518	-0.522	0.126
			Max. Vy	61	0.353	-0.983	0.011
			Max. Vx	3	-0.016	-0.521	0.126
		Redund Horz 1 Bracing	Max Tension	34	10.514	0.000	0.000
			Max. Compression	34	-10.514	0.000	0.000
			Max. Mx	54	3.210	0.035	0.000
			Max. My	58	3.335	0.000	-0.001
			Max. Vy	54	-0.032	0.000	0.000
			Max. Vx	58	0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	34	10.514	0.000	0.000
			Max. Compression	34	-10.514	0.000	0.000
			Max. Mx	50	1.534	0.140	0.000
			Max. My	56	3.181	0.000	-0.004
			Max. Vy	50	-0.065	0.000	0.000
			Max. Vx	56	0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	34	9.435	0.000	0.000
			Max. Compression	34	-9.435	0.000	0.000
			Max. Mx	58	2.993	0.055	0.000
			Max. My	62	1.482	0.000	0.003
			Max. Vy	58	0.028	0.000	0.000
			Max. Vx	62	0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	34	6.474	0.000	0.000
			Max. Compression	34	-6.474	0.000	0.000
			Max. Mx	59	2.240	0.158	0.000
			Max. My	62	1.017	0.000	0.006
			Max. Vy	59	-0.059	0.000	0.000
			Max. Vx	62	-0.002	0.000	0.000
		Inner Bracing	Max Tension	1	0.000	0.000	0.000
			Max. Compression	11	-0.043	0.000	0.000
			Max. Mx	50	-0.037	0.380	0.000
			Max. My	2	-0.006	0.000	0.000
			Max. Vy	50	-0.117	0.000	0.000
			Max. Vx	2	-0.000	0.000	0.000
T17	20 - 0	Leg	Max Tension	13	482.642	5.828	0.081
			Max. Compression	34	-599.521	-0.000	-0.000
			Max. Mx	34	-596.722	-8.960	-0.082
			Max. My	14	-81.069	-1.906	4.760
			Max. Vy	34	-1.594	1.482	0.049
			Max. Vx	14	0.983	-1.906	4.760
		Diagonal	Max Tension	33	27.828	-0.125	-0.015

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	31	-28.902	0.000	0.000
			Max. Mx	10	20.801	-0.164	-0.033
			Max. My	31	-28.247	-0.120	0.147
			Max. Vy	52	0.078	-0.117	-0.096
			Max. Vx	31	-0.019	0.000	0.000
		Horizontal	Max Tension	31	16.513	0.000	0.000
			Max. Compression	33	-16.578	-0.384	0.011
			Max. Mx	61	2.533	-0.772	0.007
			Max. My	19	0.866	-0.439	0.099
			Max. Vy	61	0.265	-0.772	0.007
			Max. Vx	3	-0.011	-0.438	0.099
		Redund Horz 1 Bracing	Max Tension	34	10.397	0.000	0.000
			Max. Compression	34	-10.397	0.000	0.000
			Max. Mx	53	2.572	0.038	0.000
			Max. My	53	2.572	0.000	-0.001
			Max. Vy	53	-0.033	0.000	0.000
			Max. Vx	53	0.001	0.000	0.000
		Redund Horz 2 Bracing	Max Tension	34	10.397	0.000	0.000
			Max. Compression	34	-10.397	0.000	0.000
			Max. Mx	59	0.595	0.153	0.000
			Max. My	51	3.556	0.000	-0.004
			Max. Vy	59	0.065	0.000	0.000
			Max. Vx	51	0.002	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	34	8.860	0.000	0.000
			Max. Compression	34	-8.860	0.000	0.000
			Max. Mx	51	3.030	0.058	0.000
			Max. My	51	0.529	0.000	0.003
			Max. Vy	51	-0.029	0.000	0.000
			Max. Vx	51	-0.002	0.000	0.000
		Redund Diag 2 Bracing	Max Tension	34	6.309	0.000	0.000
			Max. Compression	34	-6.309	0.000	0.000
			Max. Mx	59	2.183	0.169	0.000
			Max. My	51	0.401	0.000	0.006
			Max. Vy	59	-0.060	0.000	0.000
			Max. Vx	51	-0.002	0.000	0.000
		Inner Bracing	Max Tension	21	0.000	0.000	0.000
			Max. Compression	11	-0.031	0.000	0.000
			Max. Mx	50	-0.028	0.414	0.000
			Max. My	2	-0.004	0.000	0.000
			Max. Vy	50	-0.118	0.000	0.000
			Max. Vx	2	-0.000	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	34	638.461	52.486	-30.631
	Max. H_x	34	638.461	52.486	-30.631
	Max. H_z	9	-473.657	-39.385	27.769
	Min. Vert	13	-512.774	-44.360	25.930
	Min. H_x	13	-512.774	-44.360	25.930
	Min. H_z	34	638.461	52.486	-30.631

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg B	Max. Vert	18	636.207	-52.603	-30.233
	Max. H_x	45	-490.667	43.147	24.636
	Max. H_z	49	-441.118	37.458	26.143
	Min. Vert	45	-490.667	43.147	24.636
	Min. H_x	18	636.207	-52.603	-30.233
	Min. H_z	18	636.207	-52.603	-30.233
Leg A	Max. Vert	2	637.626	-0.410	60.751
	Max. H_x	41	43.412	8.109	2.809
	Max. H_z	2	637.626	-0.410	60.751
	Min. Vert	29	-488.152	0.522	-49.661
	Min. H_x	17	71.529	-8.445	4.957
	Min. H_z	29	-488.152	0.522	-49.661

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	153.770	0.000	-0.000	2.405	20.224	-0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	184.524	4.905	-97.643	-14967.976	-1041.365	-10.963
1.2D+1.6W (pattern 1) 0 deg - No Ice	184.524	4.905	-95.705	-14356.127	-1041.379	-10.951
1.2D+1.6W (pattern 2) 0 deg - No Ice	184.524	2.943	-74.098	-11462.177	-615.092	-11.479
0.9 Dead+1.6 Wind 0 deg - No Ice	138.392	4.905	-97.645	-14951.007	-1046.102	-10.939
1.2 Dead+1.6 Wind 30 deg - No Ice	184.524	51.796	-84.342	-12938.787	-8135.072	-11.048
1.2D+1.6W (pattern 1) 30 deg - No Ice	184.524	50.838	-82.664	-12408.994	-7832.744	-10.523
1.2D+1.6W (pattern 2) 30 deg - No Ice	184.524	39.863	-65.840	-10148.067	-6245.254	-10.926
0.9 Dead+1.6 Wind 30 deg - No Ice	138.392	51.797	-84.344	-12924.388	-8131.740	-11.042
1.2 Dead+1.6 Wind 60 deg - No Ice	184.524	80.099	-46.504	-7314.924	-12557.134	-13.711
1.2D+1.6W (pattern 1) 60 deg - No Ice	184.524	78.439	-45.535	-7009.102	-12033.615	-12.816
1.2D+1.6W (pattern 2) 60 deg - No Ice	184.524	61.475	-35.659	-5629.023	-9668.252	-11.255
0.9 Dead+1.6 Wind 60 deg - No Ice	138.392	80.101	-46.505	-7307.034	-12548.435	-13.698
1.2 Dead+1.6 Wind 90 deg - No Ice	184.523	98.863	-2.973	-659.849	-15267.330	-13.182
1.2D+1.6W (pattern 1) 90 deg - No Ice	184.524	96.945	-2.970	-659.817	-14662.651	-12.132
1.2D+1.6W (pattern 2) 90 deg - No Ice	184.524	76.887	-1.782	-394.740	-11898.626	-8.877
0.9 Dead+1.6 Wind 90 deg - No Ice	138.392	98.864	-2.967	-659.862	-15255.606	-13.104
1.2 Dead+1.6 Wind 120 deg - No Ice	184.524	86.782	44.738	6584.030	-13439.691	-3.104
1.2D+1.6W (pattern 1) 120 deg - No Ice	184.524	85.122	43.769	6278.112	-12915.939	-2.218
1.2D+1.6W (pattern 2) 120 deg - No Ice	184.524	65.485	34.599	5192.830	-10197.912	-0.141

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
0.9 Dead+1.6 Wind 120 deg - No Ice	138.392	86.784	44.739	6575.640	-13429.828	-3.113
1.2 Dead+1.6 Wind 150 deg - No Ice	184.524	47.689	83.243	12656.063	-7218.464	13.306
1.2D+1.6W (pattern 1) 150 deg - No Ice	184.524	46.731	81.565	12126.269	-6916.130	13.814
1.2D+1.6W (pattern 2) 150 deg - No Ice	184.524	37.399	65.181	9980.715	-5695.359	11.822
0.9 Dead+1.6 Wind 150 deg - No Ice	138.392	47.690	83.245	12640.790	-7216.064	13.274
1.2 Dead+1.6 Wind 180 deg - No Ice	184.524	-0.946	89.948	13898.014	205.194	24.280
1.2D+1.6W (pattern 1) 180 deg - No Ice	184.524	-0.946	88.009	13286.399	205.171	24.270
1.2D+1.6W (pattern 2) 180 deg - No Ice	184.524	-0.568	69.481	10822.373	132.857	19.471
0.9 Dead+1.6 Wind 180 deg - No Ice	138.393	-0.946	89.950	13881.072	198.852	24.257
1.2 Dead+1.6 Wind 210 deg - No Ice	184.524	-49.191	84.342	12917.817	7565.538	26.112
1.2D+1.6W (pattern 1) 210 deg - No Ice	184.524	-48.232	82.663	12388.036	7263.185	25.587
1.2D+1.6W (pattern 2) 210 deg - No Ice	184.524	-38.299	65.840	10137.774	5923.076	19.955
0.9 Dead+1.6 Wind 210 deg - No Ice	138.391	-49.193	84.341	12902.211	7550.506	26.121
1.2 Dead+1.6 Wind 240 deg - No Ice	184.524	-84.443	49.051	7515.163	12969.722	13.680
1.2D+1.6W (pattern 1) 240 deg - No Ice	184.524	-82.783	48.082	7209.257	12445.964	12.784
1.2D+1.6W (pattern 2) 240 deg - No Ice	184.524	-64.081	37.187	5751.517	9935.396	11.238
0.9 Dead+1.6 Wind 240 deg - No Ice	138.392	-84.444	49.052	7505.572	12948.314	13.668
1.2 Dead+1.6 Wind 270 deg - No Ice	184.524	-97.591	0.504	71.630	15026.523	-1.437
1.2D+1.6W (pattern 1) 270 deg - No Ice	184.524	-95.675	0.504	71.637	14421.850	-2.465
1.2D+1.6W (pattern 2) 270 deg - No Ice	184.524	-76.125	0.302	44.166	11773.615	0.110
0.9 Dead+1.6 Wind 270 deg - No Ice	138.392	-97.593	0.504	70.642	15002.980	-1.452
1.2 Dead+1.6 Wind 300 deg - No Ice	184.524	-78.233	-44.335	-6854.906	12170.756	-10.191
1.2D+1.6W (pattern 1) 300 deg - No Ice	184.524	-76.574	-43.365	-6549.096	11647.213	-11.078
1.2D+1.6W (pattern 2) 300 deg - No Ice	184.524	-60.355	-34.357	-5352.998	9455.882	-7.839
0.9 Dead+1.6 Wind 300 deg - No Ice	138.393	-78.235	-44.336	-6847.640	12150.450	-10.181
1.2 Dead+1.6 Wind 330 deg - No Ice	184.524	-47.952	-83.129	-12664.549	7328.062	-13.788
1.2D+1.6W (pattern 1) 330 deg - No Ice	184.524	-46.994	-81.451	-12134.758	7025.722	-14.289
1.2D+1.6W (pattern 2) 330 deg - No Ice	184.524	-37.556	-65.113	-9983.525	5780.536	-12.118
0.9 Dead+1.6 Wind 330 deg - No Ice	138.392	-47.951	-83.131	-12650.536	7313.657	-13.729
1.2 Dead+1.0 Ice	287.829	0.001	0.000	17.077	86.244	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	287.829	0.638	-20.108	-3107.900	-52.053	-5.034

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 30 deg+1.0 Ice	287.829	10.171	-16.919	-2623.123	-1526.878	-3.668
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	287.829	16.928	-9.808	-1530.406	-2581.116	-2.378
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	287.829	19.727	-0.386	-69.206	-3007.054	-0.658
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	287.829	17.703	9.524	1462.057	-2684.350	2.387
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	287.829	9.637	16.776	2619.900	-1407.583	5.419
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	287.829	-0.123	19.216	3015.604	110.441	6.767
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	287.829	-9.832	16.918	2653.764	1620.100	5.616
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	287.829	-17.398	10.085	1583.368	2790.341	2.366
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	287.829	-19.561	0.066	26.238	3142.898	-1.234
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	287.829	-16.684	-9.525	-1470.427	2698.111	-4.116
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	287.829	-9.670	-16.761	-2587.482	1589.043	-5.483
Dead+Wind 0 deg - Service	153.770	1.362	-27.121	-4152.402	-275.484	-3.038
Dead+Wind 30 deg - Service	153.770	14.387	-23.427	-3589.195	-2244.031	-3.074
Dead+Wind 60 deg - Service	153.770	22.248	-12.917	-2028.394	-3471.336	-3.808
Dead+Wind 90 deg - Service	153.770	27.459	-0.825	-181.395	-4223.454	-3.650
Dead+Wind 120 deg - Service	153.770	24.104	12.426	1828.887	-3716.349	-0.869
Dead+Wind 150 deg - Service	153.770	13.246	23.121	3513.890	-1989.835	3.684
Dead+Wind 180 deg - Service	153.770	-0.263	24.983	3858.511	70.417	6.743
Dead+Wind 210 deg - Service	153.770	-13.663	23.426	3586.511	2113.168	7.258
Dead+Wind 240 deg - Service	153.770	-23.454	13.624	2087.285	3612.951	3.797
Dead+Wind 270 deg - Service	153.770	-27.106	0.140	21.591	4183.656	-0.408
Dead+Wind 300 deg - Service	153.770	-21.729	-12.314	-1900.760	3391.114	-2.831
Dead+Wind 330 deg - Service	153.770	-13.319	-23.090	-3513.095	2047.131	-3.820

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-153.770	0.000	-0.000	153.770	0.000	0.000%
2	4.912	-184.524	-97.733	-4.905	184.524	97.643	0.043%
3	4.912	-184.524	-95.786	-4.905	184.524	95.705	0.039%
4	2.947	-184.524	-74.170	-2.943	184.524	74.098	0.036%
5	4.912	-138.393	-97.733	-4.905	138.392	97.645	0.052%
6	51.845	-184.524	-84.419	-51.796	184.524	84.342	0.044%
7	50.882	-184.524	-82.733	-50.838	184.524	82.664	0.039%
8	39.902	-184.524	-65.903	-39.863	184.524	65.840	0.037%
9	51.845	-138.393	-84.419	-51.797	138.392	84.344	0.052%
10	80.175	-184.524	-46.548	-80.099	184.524	46.504	0.042%
11	78.507	-184.524	-45.575	-78.439	184.524	45.535	0.038%
12	61.536	-184.524	-35.694	-61.475	184.524	35.659	0.036%
13	80.175	-138.393	-46.548	-80.101	138.392	46.505	0.051%
14	98.952	-184.524	-2.974	-98.863	184.523	2.973	0.043%
15	97.027	-184.524	-2.974	-96.945	184.524	2.970	0.039%
16	76.961	-184.524	-1.784	-76.887	184.524	1.782	0.037%
17	98.952	-138.393	-2.974	-98.864	138.392	2.967	0.052%
18	86.863	-184.524	44.777	-86.782	184.524	-44.738	0.043%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
19	85.196	-184.524	43.803	-85.122	184.524	-43.769	0.039%
20	65.549	-184.524	34.631	-65.485	184.524	-34.599	0.036%
21	86.863	-138.393	44.777	-86.784	138.392	-44.739	0.052%
22	47.732	-184.524	83.317	-47.689	184.524	-83.243	0.041%
23	46.769	-184.524	81.631	-46.731	184.524	-81.565	0.037%
24	37.434	-184.524	65.242	-37.399	184.524	-65.181	0.035%
25	47.732	-138.393	83.317	-47.690	138.392	-83.245	0.050%
26	-0.948	-184.524	90.030	0.946	184.524	-89.948	0.040%
27	-0.948	-184.524	88.083	0.946	184.524	-88.009	0.036%
28	-0.569	-184.524	69.549	0.568	184.524	-69.481	0.034%
29	-0.948	-138.393	90.030	0.946	138.393	-89.950	0.049%
30	-49.236	-184.524	84.418	49.191	184.524	-84.342	0.043%
31	-48.273	-184.524	82.732	48.232	184.524	-82.663	0.038%
32	-38.336	-184.524	65.902	38.299	184.524	-65.840	0.036%
33	-49.236	-138.393	84.418	49.193	138.391	-84.341	0.052%
34	-84.521	-184.524	49.096	84.443	184.524	-49.051	0.043%
35	-82.853	-184.524	48.122	82.783	184.524	-48.082	0.039%
36	-64.143	-184.524	37.223	64.081	184.524	-37.187	0.036%
37	-84.521	-138.393	49.096	84.444	138.392	-49.052	0.052%
38	-97.681	-184.524	0.505	97.591	184.524	-0.504	0.043%
39	-95.755	-184.524	0.505	95.675	184.524	-0.504	0.039%
40	-76.198	-184.524	0.303	76.125	184.524	-0.302	0.036%
41	-97.681	-138.393	0.505	97.593	138.392	-0.504	0.051%
42	-78.306	-184.524	-44.375	78.233	184.524	44.335	0.041%
43	-76.639	-184.524	-43.402	76.574	184.524	43.365	0.036%
44	-60.415	-184.524	-34.390	60.355	184.524	34.357	0.035%
45	-78.306	-138.393	-44.375	78.235	138.393	44.336	0.049%
46	-47.995	-184.524	-83.204	47.952	184.524	83.129	0.041%
47	-47.032	-184.524	-81.518	46.994	184.524	81.451	0.037%
48	-37.592	-184.524	-65.174	37.556	184.524	65.113	0.036%
49	-47.995	-138.393	-83.204	47.951	138.392	83.131	0.051%
50	0.000	-287.829	0.000	-0.001	287.829	-0.000	0.000%
51	0.639	-287.829	-20.133	-0.638	287.829	20.108	0.009%
52	10.183	-287.829	-16.940	-10.171	287.829	16.919	0.009%
53	16.948	-287.829	-9.820	-16.928	287.829	9.808	0.008%
54	19.751	-287.829	-0.387	-19.727	287.829	0.386	0.008%
55	17.724	-287.829	9.536	-17.703	287.829	-9.524	0.008%
56	9.648	-287.829	16.797	-9.637	287.829	-16.776	0.008%
57	-0.125	-287.829	19.240	0.123	287.829	-19.216	0.008%
58	-9.845	-287.829	16.939	9.832	287.829	-16.918	0.009%
59	-17.420	-287.829	10.098	17.398	287.829	-10.085	0.009%
60	-19.586	-287.829	0.066	19.561	287.829	-0.066	0.009%
61	-16.707	-287.829	-9.537	16.684	287.829	9.525	0.009%
62	-9.683	-287.829	-16.782	9.670	287.829	16.761	0.009%
63	1.364	-153.770	-27.148	-1.362	153.770	27.121	0.017%
64	14.401	-153.770	-23.450	-14.387	153.770	23.427	0.018%
65	22.271	-153.770	-12.930	-22.248	153.770	12.917	0.017%
66	27.487	-153.770	-0.826	-27.459	153.770	0.825	0.018%
67	24.129	-153.770	12.438	-24.104	153.770	-12.426	0.017%
68	13.259	-153.770	23.144	-13.246	153.770	-23.121	0.017%
69	-0.263	-153.770	25.008	0.263	153.770	-24.983	0.016%
70	-13.677	-153.770	23.449	13.663	153.770	-23.426	0.017%
71	-23.478	-153.770	13.638	23.454	153.770	-13.624	0.017%
72	-27.133	-153.770	0.140	27.106	153.770	-0.140	0.017%
73	-21.752	-153.770	-12.326	21.729	153.770	12.314	0.016%
74	-13.332	-153.770	-23.112	13.319	153.770	23.090	0.017%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00072340	0.00083013
3	Yes	5	0.00071861	0.00080412
4	Yes	5	0.00072286	0.00084149
5	Yes	4	0.00070867	0.00082304
6	Yes	5	0.00070892	0.00081228
7	Yes	5	0.00070256	0.00078546
8	Yes	5	0.00071304	0.00082712
9	Yes	4	0.00068986	0.00079817
10	Yes	5	0.00069968	0.00080578
11	Yes	5	0.00069206	0.00077793
12	Yes	5	0.00070803	0.00082583
13	Yes	4	0.00067732	0.00078608
14	Yes	5	0.00070892	0.00081057
15	Yes	5	0.00070196	0.00078388
16	Yes	5	0.00071256	0.00082545
17	Yes	4	0.00068948	0.00079649
18	Yes	5	0.00072304	0.00082863
19	Yes	5	0.00071823	0.00080264
20	Yes	5	0.00072248	0.00083974
21	Yes	4	0.00070833	0.00082184
22	Yes	5	0.00070927	0.00081072
23	Yes	5	0.00070259	0.00078179
24	Yes	5	0.00071296	0.00082557
25	Yes	4	0.00069075	0.00079806
26	Yes	5	0.00069967	0.00080498
27	Yes	5	0.00069156	0.00077496
28	Yes	5	0.00070799	0.00082553
29	Yes	4	0.00067753	0.00078605
30	Yes	5	0.00071112	0.00081392
31	Yes	5	0.00070492	0.00078641
32	Yes	5	0.00071424	0.00082788
33	Yes	4	0.00069311	0.00080111
34	Yes	5	0.00072407	0.00083030
35	Yes	5	0.00071928	0.00080429
36	Yes	5	0.00072342	0.00084140
37	Yes	4	0.00070944	0.00082346
38	Yes	5	0.00071058	0.00081267
39	Yes	5	0.00070435	0.00078543
40	Yes	5	0.00071395	0.00082696
41	Yes	4	0.00069213	0.00079976
42	Yes	5	0.00069928	0.00080400
43	Yes	5	0.00069126	0.00077442
44	Yes	5	0.00070780	0.00082495
45	Yes	4	0.00067700	0.00078475
46	Yes	5	0.00070980	0.00081163
47	Yes	5	0.00070318	0.00078301
48	Yes	5	0.00071336	0.00082661
49	Yes	4	0.00069155	0.00079874
50	Yes	4	0.00000001	0.00003236
51	Yes	6	0.00094543	0.00078538
52	Yes	6	0.00094314	0.00077573
53	Yes	6	0.00094078	0.00076967
54	Yes	6	0.00094021	0.00076372
55	Yes	6	0.00094040	0.00076436
56	Yes	6	0.00093880	0.00075267
57	Yes	6	0.00093972	0.00076401
58	Yes	6	0.00094327	0.00077854
59	Yes	6	0.00094590	0.00079310

60	Yes	6	0.00094513	0.00078948
61	Yes	6	0.00094393	0.00078406
62	Yes	6	0.00094466	0.00077755
63	Yes	4	0.00077227	0.00084059
64	Yes	4	0.00076718	0.00083552
65	Yes	4	0.00076521	0.00083345
66	Yes	4	0.00076665	0.00083315
67	Yes	4	0.00077147	0.00083692
68	Yes	4	0.00076612	0.00082560
69	Yes	4	0.00076489	0.00082644
70	Yes	4	0.00076791	0.00083285
71	Yes	4	0.00077272	0.00084029
72	Yes	4	0.00076780	0.00083345
73	Yes	4	0.00076511	0.00082849
74	Yes	4	0.00076715	0.00082949

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	325 - 320	7.172	64	0.2478	0.0937
T2	320 - 300	6.913	64	0.2473	0.0914
T3	300 - 280	5.881	64	0.2391	0.0793
T4	280 - 260	4.919	64	0.2098	0.0691
T5	260 - 240	4.090	64	0.1727	0.0484
T6	240 - 220	3.419	64	0.1441	0.0265
T7	220 - 200	2.840	64	0.1253	0.0174
T8	200 - 180	2.331	64	0.1092	0.0133
T9	180 - 160	1.880	64	0.0951	0.0112
T10	160 - 140	1.478	64	0.0813	0.0096
T11	140 - 120	1.121	64	0.0687	0.0075
T12	120 - 100	0.821	64	0.0568	0.0061
T13	100 - 80	0.565	64	0.0458	0.0048
T14	80 - 60	0.348	64	0.0357	0.0033
T15	60 - 40	0.201	64	0.0261	0.0021
T16	40 - 20	0.093	64	0.0171	0.0012
T17	20 - 0	0.036	66	0.0084	0.0007

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
333.000	Lightning Rod	64	7.172	0.2478	0.0937	392887
332.000	BMR12-H-B1	64	7.172	0.2478	0.0937	392887
327.000	Beacon	64	7.172	0.2478	0.0937	392887
324.000	DBB2802RA	64	7.120	0.2477	0.0933	392887
322.000	Side Arm Mount [SO 602-1]	64	7.016	0.2475	0.0924	392887
314.000	BMR12-A-B1	64	6.600	0.2464	0.0876	331849
307.000	Side Arm Mount [SO 602-3]	64	6.238	0.2440	0.0824	107295
273.000	ANT150D6-9	64	4.611	0.1967	0.0630	30681
269.000	PAD8-59AC	64	4.443	0.1891	0.0588	29038
263.000	Side Arm Mount [SO 311-1]	64	4.204	0.1780	0.0520	26850
250.000	(2) PCSA090-16-2 w/Mount Pipe	64	3.738	0.1570	0.0364	37313
235.000	(2) 800 10122 w/Mount Pipe	64	3.267	0.1388	0.0231	64586

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
230.000	(2) RR90-18-00DP	64	3.120	0.1340	0.0206	64456
219.000	ANT150D3D	64	2.813	0.1245	0.0172	65346
205.000	ANT150D	64	2.452	0.1131	0.0141	78560
204.000	Side Arm Mount [SO 601-1]	64	2.428	0.1123	0.0139	79745
197.000	Side Arm Mount [SO 702-1]	64	2.260	0.1070	0.0129	86530
188.000	PAR6-65A	64	2.054	0.1006	0.0118	92059
184.000	PAR6-59W	64	1.966	0.0979	0.0115	94528
175.000	PAD8-59AC	64	1.775	0.0916	0.0108	102455
172.000	HP4-11	64	1.714	0.0895	0.0106	106090
167.000	MSP24013MB w/Mount Pipe	64	1.614	0.0860	0.0102	112751
165.000	Side Arm Mount [SO 301-3]	64	1.574	0.0847	0.0100	115521
163.000	Side Lights	64	1.535	0.0833	0.0098	118159
147.000	SU3-107FC	64	1.240	0.0730	0.0082	85598
105.000	PAR8-65	64	0.625	0.0485	0.0052	156715
101.000	SU4-107AC	64	0.577	0.0464	0.0049	164982

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	325 - 320	25.901	6	0.8913	0.3375
T2	320 - 300	24.966	6	0.8901	0.3291
T3	300 - 280	21.249	6	0.8624	0.2857
T4	280 - 260	17.775	6	0.7582	0.2492
T5	260 - 240	14.779	6	0.6247	0.1744
T6	240 - 220	12.356	14	0.5213	0.0954
T7	220 - 200	10.263	14	0.4532	0.0629
T8	200 - 180	8.425	14	0.3949	0.0479
T9	180 - 160	6.794	14	0.3440	0.0403
T10	160 - 140	5.339	14	0.2941	0.0345
T11	140 - 120	4.047	14	0.2486	0.0269
T12	120 - 100	2.961	14	0.2056	0.0221
T13	100 - 80	2.036	6	0.1658	0.0175
T14	80 - 60	1.256	6	0.1289	0.0118
T15	60 - 40	0.725	6	0.0943	0.0076
T16	40 - 20	0.334	6	0.0618	0.0042
T17	20 - 0	0.131	7	0.0305	0.0025

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
333.000	Lightning Rod	6	25.901	0.8913	0.3375	131102
332.000	BMR12-H-B1	6	25.901	0.8913	0.3375	131102
327.000	Beacon	6	25.901	0.8913	0.3375	131102
324.000	DBB2802RA	6	25.714	0.8911	0.3359	131102
322.000	Side Arm Mount [SO 602-1]	6	25.340	0.8906	0.3327	131102
314.000	BMR12-A-B1	6	23.842	0.8873	0.3154	113026
307.000	Side Arm Mount [SO 602-3]	6	22.536	0.8793	0.2969	31792
273.000	ANT150D6-9	6	16.662	0.7111	0.2271	8639

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
269.000	PAD8-59AC	6	16.056	0.6838	0.2121	8166
263.000	Side Arm Mount [SO 311-1]	6	15.190	0.6438	0.1874	7503
250.000	(2) PCSA090-16-2 w/Mount Pipe	14	13.508	0.5678	0.1311	10235
235.000	(2) 800 10122 w/Mount Pipe	14	11.808	0.5019	0.0832	17747
230.000	(2) RR90-18-00DP	14	11.277	0.4845	0.0743	17735
219.000	ANT150D3D	14	10.166	0.4502	0.0620	18027
205.000	ANT150D	14	8.864	0.4088	0.0509	21678
204.000	Side Arm Mount [SO 601-1]	14	8.775	0.4060	0.0502	22006
197.000	Side Arm Mount [SO 702-1]	14	8.168	0.3869	0.0463	23877
188.000	PAR6-65A	14	7.424	0.3639	0.0427	25394
184.000	PAR6-59W	14	7.106	0.3540	0.0414	26111
175.000	PAD8-59AC	14	6.415	0.3315	0.0389	28272
172.000	HP4-11	14	6.193	0.3239	0.0381	29264
167.000	MSP24013MB w/Mount Pipe	14	5.830	0.3113	0.0367	31022
165.000	Side Arm Mount [SO 301-3]	14	5.688	0.3063	0.0361	31771
163.000	Side Lights	14	5.547	0.3014	0.0355	32485
147.000	SU3-107FC	14	4.477	0.2641	0.0295	23632
105.000	PAR8-65	6	2.256	0.1754	0.0188	43170
101.000	SU4-107AC	6	2.080	0.1677	0.0177	45443

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	325 - 320	3	5.000	2.458	39.3 K=1.00	7.069	-3.464	284.065	0.012 [1] ✔
T2	320 - 300	3	20.000	3.306	52.9 K=1.00	7.069	-27.072	259.251	0.104 [1] ✔
T3	300 - 280	3	20.000	3.319	53.1 K=1.00	7.069	-61.911	258.805	0.239 [1] ✔
T4	280 - 260	3 3/4	20.000	3.208	41.1 K=1.00	11.045	-118.333	439.351	0.269 [1] ✔
T5	260 - 240	4 1/2	20.033	6.177	65.9 K=1.00	15.904	-135.334	521.047	0.260 [1] ✔
T6	240 - 220	5	20.033	6.177	59.3 K=1.00	19.635	-165.414	683.256	0.242 [1] ✔
T7	220 - 200	5 1/4	20.033	6.177	56.5 K=1.00	21.647	-199.038	771.513	0.258 [1] ✔
T8	200 - 180	5 1/2	20.033	6.177	53.9 K=1.00	23.758	-235.693	864.466	0.273 [1] ✔
T9	180 - 160	5 1/2	20.033	6.177	53.9 K=1.00	23.758	-278.678	864.466	0.322 [1] ✔
T10	160 - 140	5 3/4	20.033	6.177	51.6 K=1.00	25.967	-322.491	962.073	0.335 [1] ✔
T11	140 - 120	6	20.033	6.177	49.4 K=1.00	28.274	-367.228	1064.300	0.345 [1] ✔
T12	120 - 100	6 1/4	20.033	6.177	47.4	30.680	-413.251	1171.120	0.353 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00				✓
T13	100 - 80	6 1/2	20.033	6.177	45.6 K=1.00	33.183	-460.625	1282.500	0.359 [1] ✓
T14	80 - 60	6 3/4	20.033	6.678	47.5 K=1.00	35.785	-462.048	1365.540	0.338 [1] ✓
T15	60 - 40	7	20.033	6.678	45.8 K=1.00	38.485	-507.452	1485.650	0.342 [1] ✓
T16	40 - 20	7 1/4	20.033	6.678	44.2 K=1.00	41.283	-552.578	1610.310	0.343 [1] ✓
T17	20 - 0	7 1/4	20.033	6.678	44.2 K=1.00	41.283	-599.521	1610.310	0.372 [1] ✓

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	325 - 320	1 1/8	4.695	2.201	93.9 K=1.00	0.994	-0.902	20.246	0.045 [1] ✓
T2	320 - 300	1 1/8	5.189	2.432	103.8 K=1.00	0.994	-3.110	18.268	0.170 [1] ✓
T3	300 - 280	1 1/8	5.198	2.437	104.0 K=1.00	0.994	-3.917	18.233	0.215 [1] ✓
T4	280 - 260	1 1/8	5.128	2.364	100.8 K=1.00	0.994	-6.682	18.855	0.354 [1] ✓
T5	260 - 240	L2 1/2x2 1/2x5/16	8.343	4.122	101.2 K=1.00	1.460	-4.224	27.602	0.153 [1] ✓
T6	240 - 220	L2 1/2x2 1/2x5/16	9.802	4.831	118.6 K=1.00	1.460	-5.991	22.570	0.265 [1] ✓
T7	220 - 200	L3x3x3/8	11.425	5.636	115.2 K=1.00	2.110	-6.972	33.988	0.205 [1] ✓
T8	200 - 180	L3x3x3/8	13.153	6.492	132.7 K=1.00	2.110	-8.419	27.050	0.311 [1] ✓
T9	180 - 160	L3 1/2x3 1/2x5/16	14.949	7.392	128.6 K=1.00	2.090	-10.784	28.367	0.380 [1] ✓
T10	160 - 140	L4x4x1/4	16.791	8.304	125.3 K=1.00	1.940	-11.932	27.313	0.437 [1] ✓
T11	140 - 120	L4x4x3/8	18.666	9.231	140.6 K=1.00	2.860	-13.228	32.694	0.405 [1] ✓
T12	120 - 100	L5x5x5/16	20.564	10.171	122.8 K=1.00	3.030	-15.256	44.057	0.346 [1] ✓
T13	100 - 80	L5x5x5/16	22.480	11.119	134.2 K=1.00	3.030	-15.816	37.935	0.417 [1] ✓
T14	80 - 60	2L3x3x3/8x1	23.331	22.785	172.5 K=1.00	4.219	-29.452	32.011	0.920 [1] ✓
T15	60 - 40	2L3x3x3/8x1	23.861	23.326	176.6 K=1.00	4.219	-28.954	30.543	0.948 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T16	40 - 20	2L4x4x1/2x1	24.420	23.893	143.9 K=1.00	7.500	-30.295	81.839	0.370 [1] ✓
T17	20 - 0	2L3x3x3/8x1 4.9-3 (1.04 CR) - 497	25.007	24.503	185.6 K=1.00	4.219	-28.902	27.678	**1.044** [1] ✗

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L3 1/2x3 1/2x3/8x1	22.000	10.729	119.9 K=1.00	4.969	-15.175	75.536	0.201 [1] ✓
T15	60 - 40	2L3 1/2x3 1/2x3/8x1	24.000	11.719	130.9 K=1.00	4.969	-15.537	65.274	0.238 [1] ✓
T16	40 - 20	2L4x4x1/2x1	26.000	12.708	125.2 K=1.00	7.500	-16.537	106.434	0.155 [1] ✓
T17	20 - 0	2L3 1/2x3 1/2x3/8x1	28.000	13.698	153.1 K=1.00	4.969	-16.578	47.911	0.346 [1] ✓

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	325 - 320	1 1/8	4.000	3.750	160.0 K=1.00	0.994	-0.085	8.772	0.010 [1] ✓
T2	320 - 300	1 1/8	4.000	3.750	160.0 K=1.00	0.994	-0.005	8.772	0.001 [1] ✓
T3	300 - 280	1 1/8	4.000	3.750	160.0 K=1.00	0.994	-0.025	8.772	0.003 [1] ✓
T4	280 - 260	1 1/8	4.000	3.688	157.3 K=1.00	0.994	-0.083	9.072	0.009 [1] ✓
T5	260 - 240	1 1/8	4.075	3.700	157.9 K=1.00	0.994	-0.418	9.011	0.046 [1] ✓

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	325 - 320	1 1/8	4.000	3.750	160.0 K=1.00	0.994	-0.019	8.772	0.002 [1] ✔
T2	320 - 300	1 1/8	4.000	3.750	160.0 K=1.00	0.994	-0.206	8.772	0.023 [1] ✔
T3	300 - 280	1 1/8	4.000	3.750	160.0 K=1.00	0.994	-0.614	8.772	0.070 [1] ✔
T4	280 - 260	1 1/8	4.000	3.688	157.3 K=1.00	0.994	-0.229	9.072	0.025 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L2x2x1/4x1	3.667	3.385	108.8 K=1.00	1.875	-9.286	32.565	0.285 [1] ✔
T15	60 - 40	2L 'a' > 19.572 in - 354 2L2x2x1/4x1	4.000	3.708	119.2 K=1.00	1.875	-9.915	28.750	0.345 [1] ✔
T16	40 - 20	2L 'a' > 21.439 in - 393 2L2x2x1/4x1	4.333	4.031	129.6 K=1.00	1.875	-10.514	25.095	0.419 [1] ✔
T17	20 - 0	2L 'a' > 23.306 in - 432 2L2x2x1/4x1 2L 'a' > 25.233 in - 471	4.667	4.365	140.3 K=1.00	1.875	-10.397	21.517	0.483 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (2) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L2x2x1/4x1	7.333	7.052	139.0 K=1.00	1.875	-9.286	21.930	0.423 [1] ✔
T15	60 - 40	2L 'a' > 40.770 in - 355 2L2x2x1/4x1	8.000	7.708	151.9 K=1.00	1.875	-9.915	18.355	0.540 [1] ✔
T16	40 - 20	2L 'a' > 44.564 in - 394 2L2x2x1/4x1	8.667	8.365	164.8 K=1.00	1.875	-10.514	15.588	0.674 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T17	20 - 0	2L 'a' > 48.358 in - 433 2L2x2x1/4x1 2L 'a' > 52.212 in - 472	9.333	9.031	178.0 K=1.00	1.875	-10.397	13.371	0.778 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L2x2x1/4x3/8	7.456	6.828	139.7 K=1.00	1.880	-9.441	21.750	0.434 [1] ✔
T15	60 - 40	2L 'a' > 39.454 in - 356 2L2x2x1/4x3/8	7.611	7.006	149.3 K=1.00	1.880	-9.433	19.048	0.495 [1] ✔
T16	40 - 20	2L 'a' > 40.485 in - 395 2L2x2x1/4x3/8	7.777	7.190	159.1 K=1.00	1.880	-9.435	16.788	0.562 [1] ✔
T17	20 - 0	2L 'a' > 41.548 in - 434 2L2x2x1/4x3/8 2L 'a' > 42.758 in - 473	7.954	7.400	169.0 K=1.00	1.880	-8.860	14.864	0.596 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (2) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L2x2x1/4x3/8	9.669	9.295	183.1 K=1.00	1.880	-6.121	12.662	0.483 [1] ✔
T15	60 - 40	2L2x2x1/4x3/8	10.162	9.789	192.9 K=1.00	1.880	-6.297	11.416	0.552 [1] ✔
T16	40 - 20	2L2x2x1/4x3/8	10.674	10.300	203.0 K=1.00	1.880	-6.474	10.311	0.628 [1] ✔
T17	20 - 0	2L2x2x1/4x3/8	11.202	10.826	213.3 K=1.00	1.880	-6.309	9.333	0.676 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L3x3x3/16x1/2	11.000	11.000	140.5 K=1.00	2.180	-0.035	24.937	0.001 [1] ✔
T15	60 - 40	2L3x3x3/16x1/2	12.000	12.000	153.3 K=1.00	2.180	-0.033	20.954	0.002 [1] ✔
T16	40 - 20	2L3x3x3/16x1/2	13.000	13.000	166.1 K=1.00	2.180	-0.043	17.854	0.002 [1] ✔
T17	20 - 0	2L3x3x3/16x1/2	14.000	14.000	178.8 K=1.00	2.180	-0.031	15.395	0.002 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	325 - 320	3	5.000	2.458	39.3	7.069	2.343	318.086	0.007 [1] ✔
T2	320 - 300	3	20.000	3.306	52.9	7.069	23.359	318.086	0.073 [1] ✔
T3	300 - 280	3	20.000	3.319	53.1	7.069	56.489	318.086	0.178 [1] ✔
T4	280 - 260	3 3/4	20.000	3.208	41.1	11.045	111.778	497.010	0.225 [1] ✔
T5	260 - 240	4 1/2	20.033	6.177	65.9	15.904	127.263	715.694	0.178 [1] ✔
T6	240 - 220	5	20.033	6.177	59.3	19.635	152.227	883.573	0.172 [1] ✔
T7	220 - 200	5 1/4	20.033	6.177	56.5	21.647	180.404	974.139	0.185 [1] ✔
T8	200 - 180	5 1/2	20.033	6.177	53.9	23.758	210.181	1069.120	0.197 [1] ✔
T9	180 - 160	5 1/2	20.033	6.177	53.9	23.758	245.304	1069.120	0.229 [1] ✔
T10	160 - 140	5 3/4	20.033	6.177	51.6	25.967	281.509	1168.530	0.241 [1] ✔
T11	140 - 120	6	20.033	6.177	49.4	28.274	317.133	1272.350	0.249 [1] ✔
T12	120 - 100	6 1/4	20.033	6.177	47.4	30.680	352.478	1380.580	0.255 [1] ✔
T13	100 - 80	6 1/2	20.033	6.177	45.6	33.183	388.087	1493.240	0.260 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	6 3/4	20.033	6.678	47.5	35.785	387.116	1610.310	0.240 [1] ✓
T15	60 - 40	7	20.033	6.678	45.8	38.485	420.239	1731.800	0.243 [1] ✓
T16	40 - 20	7 1/4	20.033	6.678	44.2	41.283	452.000	1857.710	0.243 [1] ✓
T17	20 - 0	7 1/4	20.033	6.678	44.2	41.283	482.643	1857.710	0.260 [1] ✓

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	325 - 320	1 1/8	4.695	2.201	93.9	0.994	0.899	32.206	0.028 [1] ✓
T2	320 - 300	1 1/8	5.189	2.432	103.8	0.994	3.084	32.206	0.096 [1] ✓
T3	300 - 280	1 1/8	5.198	2.437	104.0	0.994	3.852	32.206	0.120 [1] ✓
T4	280 - 260	1 1/8	5.128	2.364	100.8	0.994	6.571	32.206	0.204 [1] ✓
T5	260 - 240	L2 1/2x2 1/2x5/16	8.343	4.122	65.0	1.460	4.149	47.304	0.088 [1] ✓
T6	240 - 220	L2 1/2x2 1/2x5/16	9.802	4.831	76.2	1.460	5.991	47.304	0.127 [1] ✓
T7	220 - 200	L3x3x3/8	11.425	5.636	74.1	2.110	6.973	68.364	0.102 [1] ✓
T8	200 - 180	L3x3x3/8	13.153	6.492	85.3	2.110	8.481	68.364	0.124 [1] ✓
T9	180 - 160	L3 1/2x3 1/2x5/16	14.949	7.392	82.1	2.090	10.898	67.716	0.161 [1] ✓
T10	160 - 140	L4x4x1/4	16.791	8.304	79.7	1.940	11.991	62.856	0.191 [1] ✓
T11	140 - 120	L4x4x3/8	18.666	9.231	90.1	2.860	13.349	92.664	0.144 [1] ✓
T12	120 - 100	L5x5x5/16	20.564	10.171	77.7	3.030	15.447	98.172	0.157 [1] ✓
T13	100 - 80	L5x5x5/16	21.296	10.528	80.5	3.030	16.160	98.172	0.165 [1] ✓
T14	80 - 60	2L3x3x3/8x1	23.331	22.785	164.6	4.219	28.890	136.688	0.211 [1] ✓
T15	60 - 40	2L3x3x3/8x1	23.861	23.326	168.5	4.219	27.802	136.688	0.203 [1] ✓
T16	40 - 20	2L4x4x1/2x1	24.420	23.893	138.0	7.500	28.686	243.000	0.118 [1] ✓
T17	20 - 0	2L3x3x3/8x1	25.007	24.503	177.0	4.219	27.828	136.688	0.204 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
		4.9-3 (1.03 CR) - 492							✓

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L3 1/2x3 1/2x3/8x1	22.000	10.729	119.9	4.969	14.748	160.988	0.092 [1] ✓
T15	60 - 40	2L3 1/2x3 1/2x3/8x1	24.000	11.719	130.9	4.969	14.992	160.988	0.093 [1] ✓
T16	40 - 20	2L4x4x1/2x1	26.000	12.708	125.2	7.500	15.670	243.000	0.064 [1] ✓
T17	20 - 0	2L3 1/2x3 1/2x3/8x1	28.000	13.698	153.1	4.969	16.513	160.988	0.103 [1] ✓

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	325 - 320	1 1/8	4.000	3.750	160.0	0.994	0.061	32.206	0.002 [1] ✓
T2	320 - 300	1 1/8	4.000	3.750	160.0	0.994	0.009	32.206	0.000 [1] ✓
T3	300 - 280	1 1/8	4.000	3.750	160.0	0.994	0.045	32.206	0.001 [1] ✓
T4	280 - 260	1 1/8	4.000	3.688	157.3	0.994	0.119	32.206	0.004 [1] ✓
T5	260 - 240	1 1/8	4.075	3.700	157.9	0.994	0.319	32.206	0.010 [1] ✓

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

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	
T1	325 - 320	1 1/8	4.000	3.750	160.0	0.994	0.024	32.206	0.001 [1] ✔
T2	320 - 300	1 1/8	4.000	3.750	160.0	0.994	0.227	32.206	0.007 [1] ✔
T3	300 - 280	1 1/8	4.000	3.750	160.0	0.994	0.649	32.206	0.020 [1] ✔
T4	280 - 260	1 1/8	4.000	3.688	157.3	0.994	0.147	32.206	0.005 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (1) Design Data (Tension)

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	
T14	80 - 60	2L2x2x1/4x1	3.667	3.385	66.7	1.875	9.286	60.750	0.153 [1] ✔
T15	60 - 40	2L 'a' > 19.572 in - 381 2L2x2x1/4x1	4.000	3.708	73.1	1.875	9.915	60.750	0.163 [1] ✔
T16	40 - 20	2L 'a' > 21.439 in - 420 2L2x2x1/4x1	4.333	4.031	79.4	1.875	10.514	60.750	0.173 [1] ✔
T17	20 - 0	2L 'a' > 23.306 in - 432 2L2x2x1/4x1 2L 'a' > 25.233 in - 471	4.667	4.365	86.0	1.875	10.397	60.750	0.171 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (2) Design Data (Tension)

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	
T14	80 - 60	2L2x2x1/4x1	7.333	7.052	139.0	1.875	9.286	60.750	0.153 [1] ✔
T15	60 - 40	2L 'a' > 40.770 in - 382 2L2x2x1/4x1	8.000	7.708	151.9	1.875	9.915	60.750	0.163 [1] ✔
T16	40 - 20	2L 'a' > 44.564 in - 421 2L2x2x1/4x1 2L 'a' > 48.358 in - 433	8.667	8.365	164.8	1.875	10.514	60.750	0.173 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T17	20 - 0	2L2x2x1/4x1	9.333	9.031	178.0	1.875	10.397	60.750	0.171 [1] ✔
		2L 'a' > 52.212 in - 472							

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L2x2x1/4x3/8	7.456	6.828	134.5	1.880	9.441	60.912	0.155 [1] ✔
T15	60 - 40	2L 'a' > 39.454 in - 356 2L2x2x1/4x3/8	7.611	7.006	138.1	1.880	9.433	60.912	0.155 [1] ✔
T16	40 - 20	2L 'a' > 40.485 in - 422 2L2x2x1/4x3/8	7.777	7.190	141.7	1.880	9.435	60.912	0.155 [1] ✔
T17	20 - 0	2L 'a' > 41.548 in - 461 2L2x2x1/4x3/8	7.954	7.400	145.8	1.880	8.860	60.912	0.145 [1] ✔
		2L 'a' > 42.758 in - 500							

[1] P_u / ϕP_n controls

Redundant Diagonal (2) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L2x2x1/4x3/8	9.669	9.295	183.1	1.880	6.121	60.912	0.100 [1] ✔
T15	60 - 40	2L2x2x1/4x3/8	10.162	9.789	192.9	1.880	6.297	60.912	0.103 [1] ✔
T16	40 - 20	2L2x2x1/4x3/8	10.674	10.300	203.0	1.880	6.474	60.912	0.106 [1] ✔
T17	20 - 0	2L2x2x1/4x3/8	11.202	10.826	213.3	1.880	6.309	60.912	0.104 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	80 - 60	2L3x3x3/16x1/2	11.000	11.000	140.5	2.180	0.009	70.622	0.000 [1] ✔
T15	60 - 40	2L3x3x3/16x1/2	12.000	12.000	153.3	2.180	0.006	70.622	0.000 [1] ✔
T17	20 - 0	2L3x3x3/16x1/2	14.000	14.000	178.8	2.180	0.000	70.622	0.000 [1] ✔

[1] $P_u / \phi P_n$ controls

Section Capacity Table

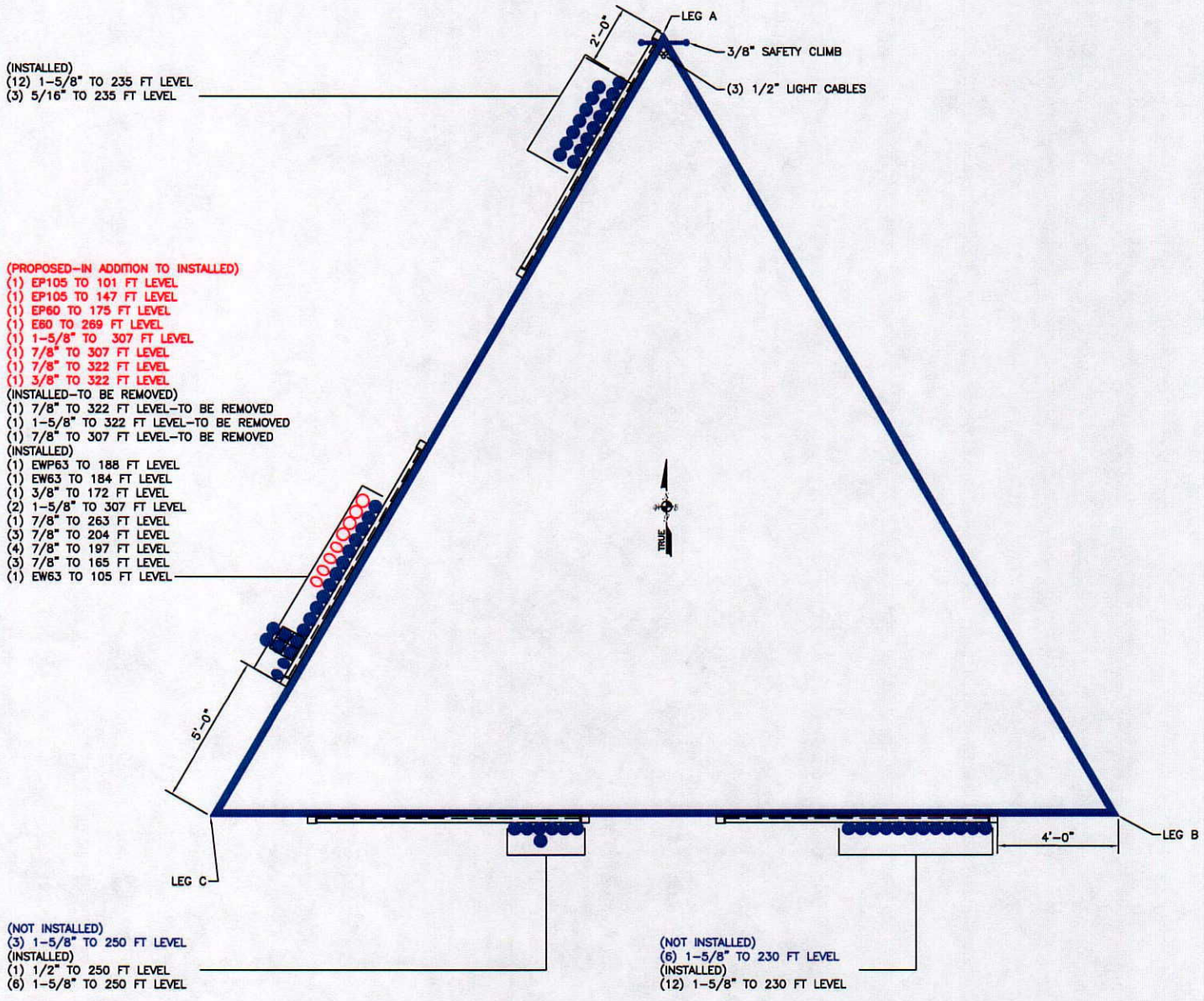
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	325 - 320	Leg	3	3	-3.464	284.065	1.2	Pass
T2	320 - 300	Leg	3	24	-27.072	259.251	10.4	Pass
T3	300 - 280	Leg	3	69	-61.911	258.805	23.9	Pass
T4	280 - 260	Leg	3 3/4	114	-118.333	439.351	26.9	Pass
T5	260 - 240	Leg	4 1/2	159	-135.334	521.047	26.0	Pass
T6	240 - 220	Leg	5	183	-165.414	683.256	24.2	Pass
T7	220 - 200	Leg	5 1/4	204	-199.038	771.513	25.8	Pass
T8	200 - 180	Leg	5 1/2	223	-235.693	864.466	27.3	Pass
T9	180 - 160	Leg	5 1/2	244	-278.678	864.466	32.2	Pass
T10	160 - 140	Leg	5 3/4	265	-322.491	962.073	33.5	Pass
T11	140 - 120	Leg	6	286	-367.228	1064.300	34.5	Pass
T12	120 - 100	Leg	6 1/4	307	-413.251	1171.120	35.3	Pass
T13	100 - 80	Leg	6 1/2	328	-460.625	1282.500	35.9	Pass
T14	80 - 60	Leg	6 3/4	349	-462.048	1365.540	33.8	Pass
T15	60 - 40	Leg	7	388	-507.452	1485.650	34.2	Pass
T16	40 - 20	Leg	7 1/4	427	-552.578	1610.310	34.3	Pass
T17	20 - 0	Leg	7 1/4	466	-599.521	1610.310	37.2	Pass
T1	325 - 320	Diagonal	1 1/8	15	-0.902	20.246	4.5	Pass
T2	320 - 300	Diagonal	1 1/8	36	-3.110	18.268	17.0	Pass
T3	300 - 280	Diagonal	1 1/8	81	-3.917	18.233	21.5	Pass
T4	280 - 260	Diagonal	1 1/8	126	-6.682	18.855	35.4	Pass
T5	260 - 240	Diagonal	L2 1/2x2 1/2x5/16	168	-4.224	27.602	15.3	Pass
T6	240 - 220	Diagonal	L2 1/2x2 1/2x5/16	189	-5.991	22.570	26.5	Pass
T7	220 - 200	Diagonal	L3x3x3/8	210	-6.972	33.988	20.5	Pass
T8	200 - 180	Diagonal	L3x3x3/8	226	-8.419	27.050	31.1	Pass
T9	180 - 160	Diagonal	L3 1/2x3 1/2x5/16	247	-10.784	28.367	38.0	Pass
T10	160 - 140	Diagonal	L4x4x1/4	268	-11.932	27.313	43.7	Pass
T11	140 - 120	Diagonal	L4x4x3/8	289	-13.228	32.694	40.5	Pass
T12	120 - 100	Diagonal	L5x5x5/16	315	-15.256	44.057	34.6	Pass
T13	100 - 80	Diagonal	L5x5x5/16	336	-15.816	37.935	41.7	Pass
T14	80 - 60	Diagonal	2L3x3x3/8x1	380	-29.452	32.011	92.0	Pass
T15	60 - 40	Diagonal	2L3x3x3/8x1	419	-28.954	30.543	94.8	Pass
T16	40 - 20	Diagonal	2L4x4x1/2x1	458	-30.295	81.839	37.0	Pass
T17	20 - 0	Diagonal	2L3x3x3/8x1	497	-28.902	27.678	104.4	Acceptable (Re: Note 2)
T14	80 - 60	Horizontal	2L3 1/2x3 1/2x3/8x1	374	-15.175	75.536	20.1	Pass
T15	60 - 40	Horizontal	2L3 1/2x3 1/2x3/8x1	413	-15.537	65.274	23.8	Pass
T16	40 - 20	Horizontal	2L4x4x1/2x1	452	-16.537	106.434	15.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T17	20 - 0	Horizontal	2L3 1/2x3 1/2x3/8x1	491	-16.578	47.911	34.6	Pass
T1	325 - 320	Top Girt	1 1/8	4	-0.085	8.772	1.0	Pass
T2	320 - 300	Top Girt	1 1/8	25	-0.005	8.772	0.1	Pass
T3	300 - 280	Top Girt	1 1/8	70	-0.025	8.772	0.3	Pass
T4	280 - 260	Top Girt	1 1/8	115	-0.083	9.072	0.9	Pass
T5	260 - 240	Top Girt	1 1/8	161	-0.418	9.011	4.6	Pass
T1	325 - 320	Bottom Girt	1 1/8	7	-0.019	8.772	0.2	Pass
T2	320 - 300	Bottom Girt	1 1/8	28	-0.206	8.772	2.3	Pass
T3	300 - 280	Bottom Girt	1 1/8	73	-0.614	8.772	7.0	Pass
T4	280 - 260	Bottom Girt	1 1/8	120	-0.229	9.072	2.5	Pass
T14	80 - 60	Redund Horz 1 Bracing	2L2x2x1/4x1	354	-9.286	32.565	28.5	Pass
T15	60 - 40	Redund Horz 1 Bracing	2L2x2x1/4x1	393	-9.915	28.750	34.5	Pass
T16	40 - 20	Redund Horz 1 Bracing	2L2x2x1/4x1	459	-10.514	25.095	41.9	Pass
T17	20 - 0	Redund Horz 1 Bracing	2L2x2x1/4x1	498	-10.397	21.517	48.3	Pass
T14	80 - 60	Redund Horz 2 Bracing	2L2x2x1/4x1	355	-9.286	21.930	42.3	Pass
T15	60 - 40	Redund Horz 2 Bracing	2L2x2x1/4x1	394	-9.915	18.355	54.0	Pass
T16	40 - 20	Redund Horz 2 Bracing	2L2x2x1/4x1	433	-10.514	15.588	67.4	Pass
T17	20 - 0	Redund Horz 2 Bracing	2L2x2x1/4x1	472	-10.397	13.371	77.8	Pass
T14	80 - 60	Redund Diag 1 Bracing	2L2x2x1/4x3/8	383	-9.441	21.750	43.4	Pass
T15	60 - 40	Redund Diag 1 Bracing	2L2x2x1/4x3/8	395	-9.433	19.048	49.5	Pass
T16	40 - 20	Redund Diag 1 Bracing	2L2x2x1/4x3/8	434	-9.435	16.788	56.2	Pass
T17	20 - 0	Redund Diag 1 Bracing	2L2x2x1/4x3/8	473	-8.860	14.864	59.6	Pass
T14	80 - 60	Redund Diag 2 Bracing	2L2x2x1/4x3/8	357	-6.121	12.662	48.3	Pass
T15	60 - 40	Redund Diag 2 Bracing	2L2x2x1/4x3/8	396	-6.297	11.416	55.2	Pass
T16	40 - 20	Redund Diag 2 Bracing	2L2x2x1/4x3/8	435	-6.474	10.311	62.8	Pass
T17	20 - 0	Redund Diag 2 Bracing	2L2x2x1/4x3/8	474	-6.309	9.333	67.6	Pass
T14	80 - 60	Inner Bracing	2L3x3x3/16x1/2	386	-0.034	24.937	0.5	Pass
T15	60 - 40	Inner Bracing	2L3x3x3/16x1/2	425	-0.033	20.954	0.5	Pass
T16	40 - 20	Inner Bracing	2L3x3x3/16x1/2	464	-0.043	17.854	0.5	Pass
T17	20 - 0	Inner Bracing	2L3x3x3/16x1/2	503	-0.031	15.395	0.5	Pass
							Summary	
						Leg (T17)	37.2	Pass
						Diagonal (T17)	104.4	Acceptable (Re: Note 2)
						Horizontal (T17)	34.6	Pass
						Top Girt (T5)	4.6	Pass
						Bottom Girt (T3)	7.0	Pass
						Redund Horz 1 Bracing (T17)	48.3	Pass
						Redund	77.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Horz 2 Bracing (T17)		
						Redund Diag 1 Bracing (T17)	59.6	Pass
						Redund Diag 2 Bracing (T17)	67.6	Pass
						Inner Bracing (T17)	0.5	Pass
						RATING =	**104.4**	**Acceptable (Re: Note 2)**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 801527 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

PROJECT	**325' Self-Supporter - Mechanicsville, MD**				
SUBJECT	**SST Pad Footing Analysis**				
DATE	**12/30/10**	PAGE	**1**	OF	**1**

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

B&T Proj. No.: 82427

Combined Footing Foundation Analysis

Design Loads:

		Factored	
Compression per leg (P_C)	=	638.0	k
Tension per leg (P_T)	=	513.0	k
Horizontal per leg (P_H)	=	61.0	k
Overturning Moment (M_O)	=	15,284.0	k-ft
Total Tower Compression Load	=	185.0	k
Total Tower Horizontal Load	=	99.0	k
Tower + Appurtenances	=	126.4	k

Saftey Factors

Uplift S.F. (Conc. Wt.)	=	**1.25**
Uplift S.F. (Soil Wt.)	=	**2.00**
Overturning S.F.	=	**1.50**

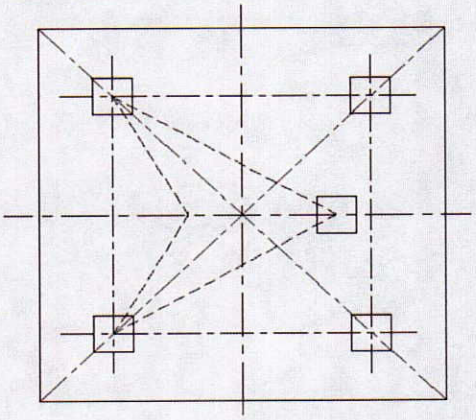
Tower Information

Tower offset from center	=	**0.00**	ft
Tower base width	=	**30.00**	ft

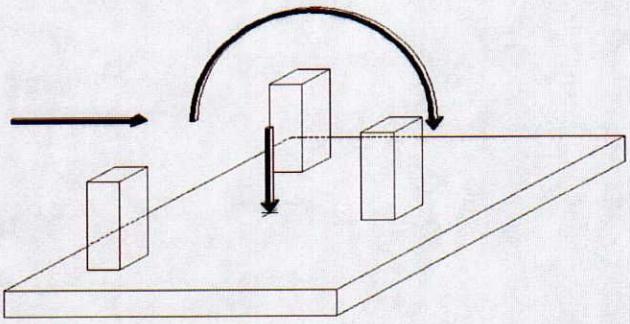
Pad & Pier Dimensions / Properties:

Tower Shape (triangle or square)	=	**T**	(T or S)
Pier Shape (round or square)	=	**R**	(R or S)
Pier Diameter (H_P)	=	**6.00**	(ft)
Pier height above grade (D_A)	=	**0.50**	(ft)
Footing Width (W_F)	=	**50.00**	(ft)
Footing Thickness (H_F)	=	**4.00**	(ft)
Footing Length (L_F)	=	**50.00**	(ft)
Depth to BOC (D)	=	**7.00**	(ft)
Concrete Strength (F'c)	=	**3.00**	(ksi)
Rebar Strength (Fy)	=	**60.00**	(ksi)
Ultimate Load Factor	=	**1.30**	
Min. Cover over Rebar	=	**3.00**	(in)
Qty of footing Rebar	=	**84**	T&B Each Way
Size of footing Rebar	=	**# 14**	(bar)
Qty of Pier Vertical Rebar	=	**44**	
Size of Pier Vertical Rebar	=	**# 9**	(bar)
Qty of Pier Rebar Ties	=	**6**	
Size of Pier Rebar Ties	=	**# 4**	(bar)
Qty of Pier Anchors	=		
Size of Pier Rebar Anchor	=		(in²)
Footing A_S min (1 layer)	=	51.840	(in²)
Pier A_S min	=	20.358	(in²)

Plan View for Triangle or Square Tower



Total Overview



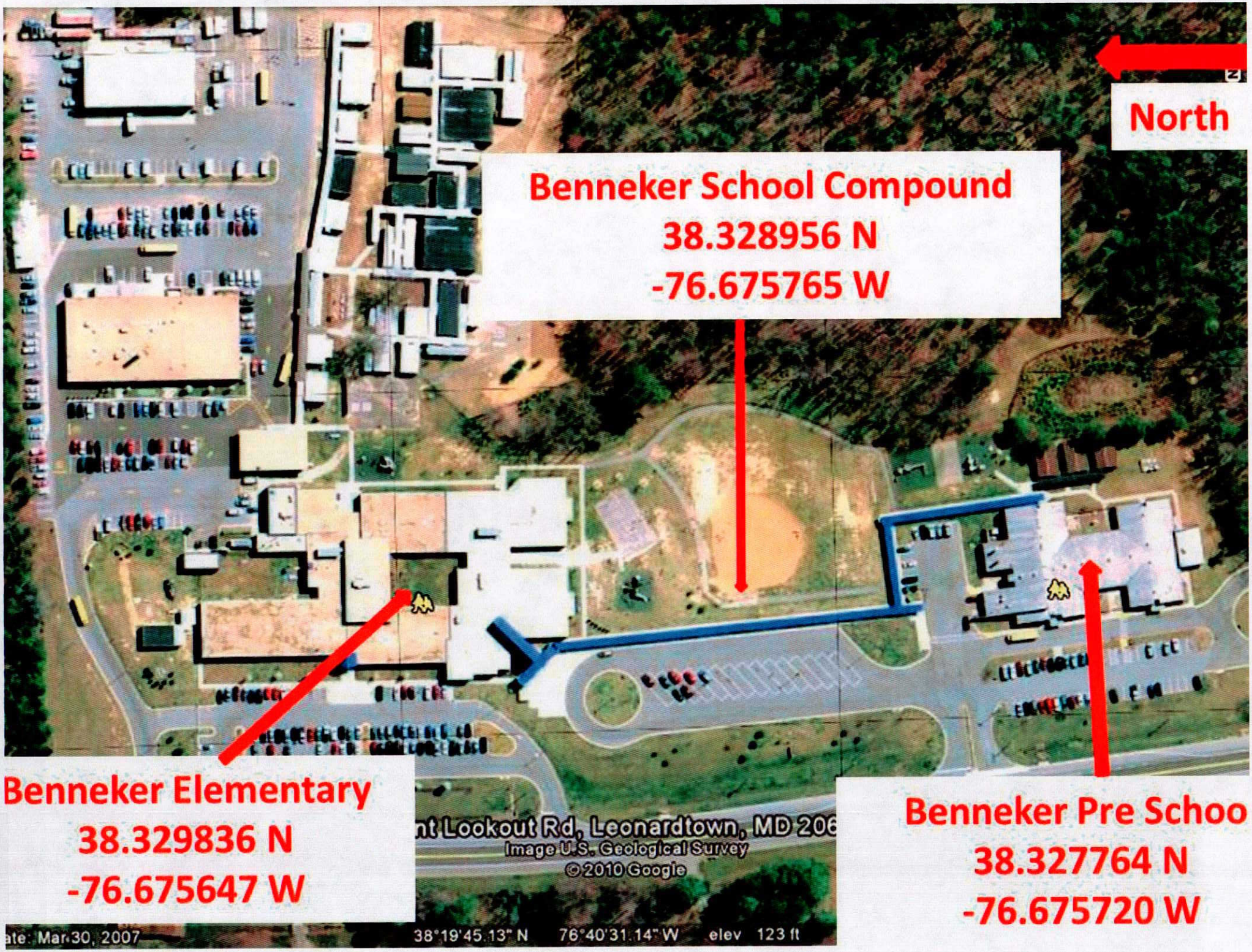
Soil Data:

		Allowable Values	
Soil bearing (Ultimate)	=	**6000**	(psf)
Soil Cone for Uplift (θ)	=	**31**	(degrees)
Depth to Water Table (D_W)	=	**20.00**	(ft)
Top Soil to Neglect (N)	=	**0.00**	(ft)
Friction Factor (Sliding)	=	**0.00**	
Skin Friction (F_S)	=	**0.00**	(ksf)
Dry Soil Density (γ_{DRY})	=	**115**	(pcf)
Saturated Soil Density (γ_{SAT})	=	**53**	(pcf)

** Notes:

Summary of Results

Pier Rebar	21.59%
Overturing	24.00%
Soil Bearing	23.61%
Bending	54.00%
Punching Shear	23.06%
One way Shear	19.45%


North
Benneker School Compound
38.328956 N
-76.675765 W
Benneker Elementary
38.329836 N
-76.675647 W
Benneker Pre Schoo
38.327764 N
-76.675720 W
nt Lookout Rd, Leonardtown, MD 206
Image U.S. Geological Survey
©2010 Google
ate: Mar 30, 2007
38°19'45.13" N
76°40'31.14" W
elev 123 ft