Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

April 5, 2019

Melanie Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Notice of Exempt Modification
515 Post Road East, Westport, CT 06880
Latitude- 41.140000
Longitude- -73.347778

Dear Ms. Bachman,

Sprint currently maintains (6) existing antennas and (2) microwave dishes at the 148' level of the existing 148' monopole at 515 Post Road East in Westport, Connecticut. The tower and property are owned by the Town of Westport. Sprint now intends to remove the (6) existing antennas and add (6) 800/1900/2500 MHz antennas. These antennas would be installed at the same 148' level of the tower. Sprint also intends to swap (3) remote radio heads, and add (3) hybrid cables.

This tower facility was originally approved on January 27, 1997 by the Town of Westport's Planning & Zoning Commission. A copy of this original approval is enclosed with this submission. This proposed modification complies with the original approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. 16-50j-72(b)(2). In accordance with R.C.S.A. 16-50j-73, a copy of this letter is being sent to James Marpe, First Selectmen of the Town of Westport, and Mary Young, Planning and Zoning Director for the Town of Westport.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-72(b)(2).

1. The proposed modification will not result in an increase in the height of the existing structure

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

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

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

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

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

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

Sincerely,

Kyle Richers

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
908-447-4716
krichers@transcendwireless.com

cc: James Marpe- as elected official
Mary Young- as zoning official

Kyle Richers

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, April 5, 2019 10:33 AM
To: krichers@transcendwireless.com
Subject: UPS Ship Notification, Reference Number 1: CT03XC355 CSC EO

You have a package coming.

Scheduled Delivery Date: Monday, 04/08/2019

This message was sent to you at the request of TRANSCEND WIRELESS to notify you that the shipment information below has been transmitted to UPS. The physical package may or may not have actually been tendered to UPS for shipment. To verify the actual transit status of your shipment, click on the tracking link below.

Shipment Details

From:	TRANSCEND WIRELESS
Tracking Number:	1ZV257424294308644
Ship To:	Jim Marpe Town of Westport 110 Myrtle Ave. Room 310 WESTPORT, CT 068803514 US
UPS Service:	UPS GROUND
Number of Packages:	1
Scheduled Delivery:	04/08/2019
Signature Required:	A signature is required for package delivery
Weight:	1.0 LBS
Reference Number 1:	CT03XC355 CSC EO

Download the UPS mobile app

Kyle Richers

From: UPS Quantum View <pkginfo@ups.com>
Sent: Friday, April 5, 2019 10:35 AM
To: krichers@transcendwireless.com
Subject: UPS Ship Notification, Reference Number 1: CT03XC355 CSC ZO

You have a package coming.

Scheduled Delivery Date: Monday, 04/08/2019

This message was sent to you at the request of TRANSCEND WIRELESS to notify you that the shipment information below has been transmitted to UPS. The physical package may or may not have actually been tendered to UPS for shipment. To verify the actual transit status of your shipment, click on the tracking link below.

Shipment Details

From:	TRANSCEND WIRELESS
Tracking Number:	1ZV257424292770657
Ship To:	Mary Young Town of Westport 110 Myrtle Ave. Room 203 WESTPORT, CT 068803514 US
UPS Service:	UPS GROUND
Number of Packages:	1
Scheduled Delivery:	04/08/2019
Signature Required:	A signature is required for package delivery
Weight:	1.0 LBS
Reference Number 1:	CT03XC355 CSC ZO

Download the UPS mobile app

515 POST RD E

Location	515 POST RD E	**Mblu**	E09/ / 064/000 /
Acct#	531816	**Owner**	WESTPORT TOWN OF
Assessment	$4,161,200	**Appraisal**	$5,944,600
PID	10376	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$3,167,800	$2,776,800	$5,944,600
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$2,217,400	$1,943,800	$4,161,200

Owner of Record

Owner	WESTPORT TOWN OF
Co-Owner	FIRE HOUSE
Address	110 MYRTLE AVE WESTPORT, CT 06880

Sale Price	$0
Certificate	1
Book & Page	523/ 172
Sale Date	09/17/1979
Instrument	29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
WESTPORT TOWN OF	$0	1	523/ 172	29	09/17/1979

Building Information

Building 1 : Section 1

Year Built:	1900
Living Area:	19,523
Replacement Cost:	$3,901,085
Building Percent Good:	80
Replacement Cost Less Depreciation:	$3,120,900

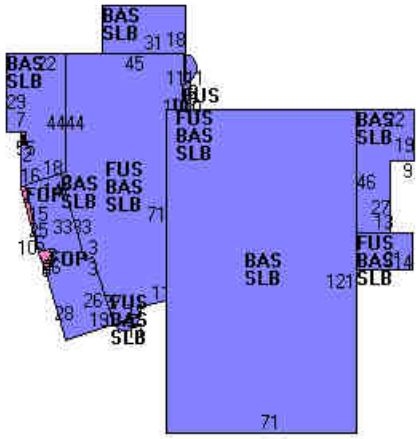
Building Attributes

Building Photo

Building Photo
(http://images.vgsi.com/photos2/WestportCTPhotos//\00\03\19/

No Data for Building Attributes

Building Layout



(http://images.vgsi.com/photos2/WestportCTPhotos//Sketches/1

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	15,653	15,653
FUS	Upper Story, Finished	3,870	3,870
FOP	Porch, Open	60	0
SLB	Slab	15,653	0
		35,236	19,523

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	928
Description	Fire Dept
Zone	GBD
Neighborhood	I
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1.28
Frontage	0
Depth	0
Assessed Value	$1,943,800
Appraised Value	$2,776,800

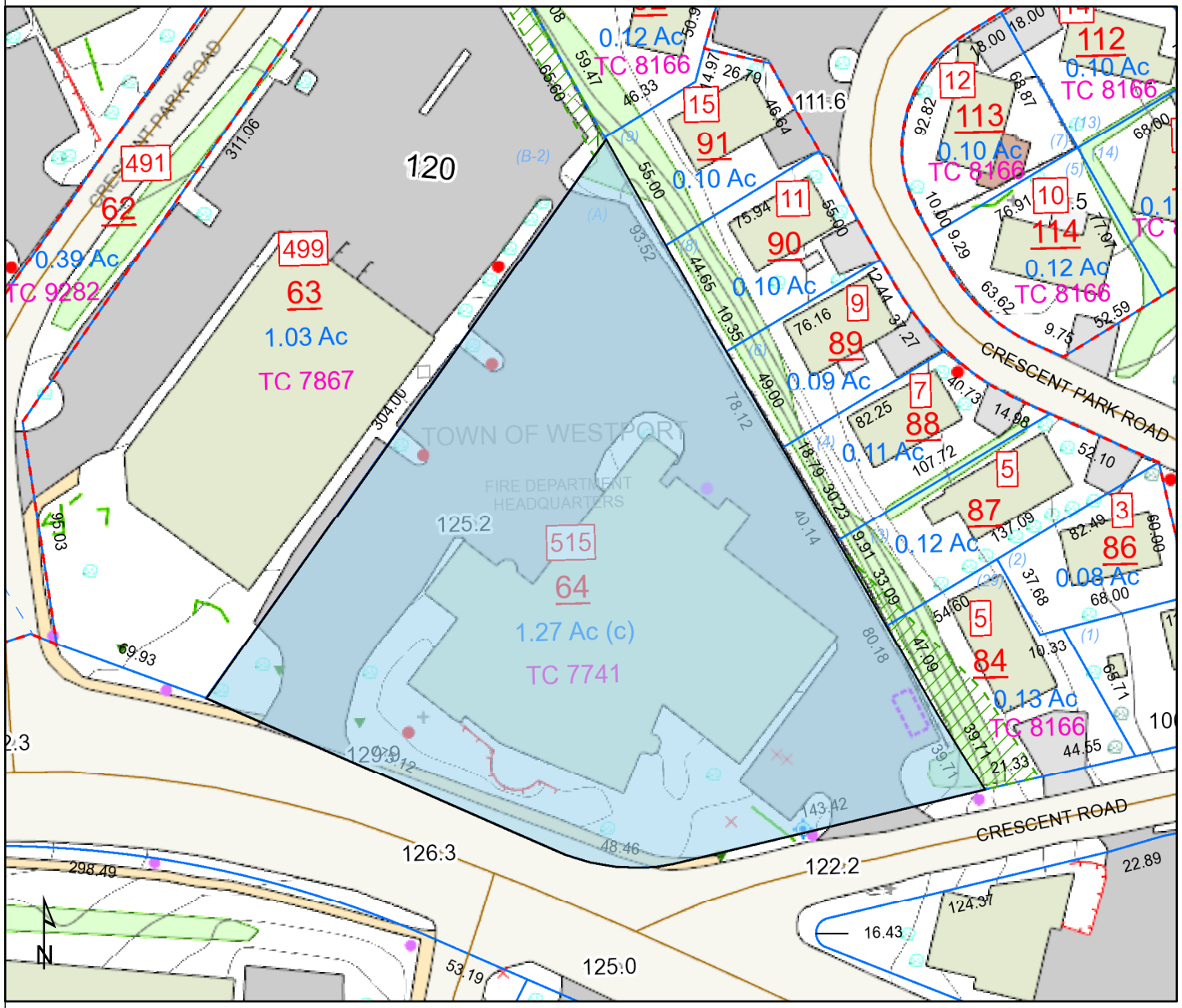
Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving Asph.			25000 S.F.	$46,900	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$3,167,800	$2,776,800	$5,944,600
2017	$3,167,800	$2,776,800	$5,944,600
2016	$3,167,800	$2,776,800	$5,944,600

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$2,217,400	$1,943,800	$4,161,200
2017	$2,217,400	$1,943,800	$4,161,200
2016	$2,217,400	$1,943,800	$4,161,200



1 inch = 71 feet

Westport and its mapping contractors assume no legal responsibility for the information contained herein.

Westport CT Web GIS Map Legend

- CAM_line
- Deleted_Wetland
- Amended_Wetland
- dot_line
- Tidal_Wetland
- Waterbody_Watercourse
- wet_text_line
- Wetland
- 100 Year Flood Zone
- 500 Year Flood Zone
- Floodway in Zone AE
- Basins
- Spot Elevation
- Water Spot Elevation
- bulkhead_polylines
- landhook_polylines
- original_parcel_polylines
- Index
- Index Depression
- Index Obscured
- Index Depression Obscured
- Intermediate
- Intermediate Depression
- Intermediate Obscured
- Intermediate Depression (Obs)
- Tree
- Pipe
- Outfall
- Catchbasin
- Manhole
- Electrical Box
- Hydrant
- Light Pole
- Utility Pole
- Sign
- Unknown
- Billboard
- Pipeline Above Ground
- Tower
- townline_polyline
- Unknown Lines
- Culvert
- Dam
- Ditch
- Rip Rap
- Elevation Well
- Fence
- Guardrail
- Hedge
- Retaining Wall
- Stone Wall
- Trails
- Abandoned Railroad Tracks
- Railroad Tracks
- Paved Road Centerline
- Unpaved Road Centerline
- Stream
- Coast Line
- Easement
- Utility Right of Way
- Private Right of Way
- Proposed Right of Way
- Public Right of Way
- Parcel
- Fuel Tank
- Water Tank
- Quarry or Pit
- Building
- Building Construction
- Cement Pad
- Deck
- Foundation
- Greenhouse
- Mobile Home
- Ruins
- Silo
- Somkestack
- Substation
- Bridge
- Paved Road
- Runway
- Unpaved Road
- Golf Path
- Paved Parking
- Unpaved Parking
- Paved Driveway
- Unpaved Driveway
- Public Sidewalk
- Treeline
- Wet Area
- Sound, Lake, Pond, or River
- Pool
- Golf Green
- Golf Bunker
- Tennis Court
- Golf Tee
- Wharf, Dock, or Pier
- Park
- Athletic Field
- Golf Course
- index_polygon
- HYDRIC SOILS
- NON-HYDRIC SOILS
- WATER
- A
- AA
- AAA
- B
- BCD
- BPD
- CPD
- DDD4
- GBD
- GBD/S
- HDD
- HSD
- MHP
- OSRD
- PRD
- RBD
- RORD
- RPOD

#355

WESTPORT CONNECTICUT
PLANNING & ZONING DEPARTMENT
TOWN HALL, 110 MYRTLE AVENUE
WESTPORT, CONNNECTICUT 06880
(203) 226-8311

Hearing: January 23, 1997
Decision: January 23, 1997

January 27, 1997

Richard Gough, Fire Chief/Fire Marshall
Town of Westport Fire Department
515 Post Road East
Westport, CT 06880

Re: 515 Post Road East, Appl. #96-130

Dear Mr. Gough:

This is to certify that at a meeting of the Westport Planning and Zoning Commission held on January 23, 1997 it was moved by Bill Crowther and seconded by David Marks to adopt the following resolution.

RESOLUTION #96-130

WHEREAS, the Planning and Zoning Commission met on January 23, 1997 and made the following findings:

1. The Communications Tower will provide enhanced transmission service to the citizens of this town, and the region.

2. The Town of Westport will be able to locate its own transmission equipment on the Tower.

3. The tower will be constructed at no cost to the Town.

4. The tower has received a height variance from the Zoning Board of Appeals.

NOW THEREFORE, BE IT RESOLVED that Application #96-130 by the Westport Fire Department & Sprint for property owned by the Town of Westport for a Special Permit and Site Plan review to replace existing 100' monopole tower with new 150' monopole tower to improve communications; in a GBD.

WESTPORT CONNECTICUT
PLANNING & ZONING DEPARTMENT
TOWN HALL, 110 MYRTLE AVENUE
WESTPORT, CONNNECTICUT 06880
(203) 226-8311

Hearing: January 23, 1997
Decision: January 23, 1997

January 27, 1997

Honorable Joseph Arcudi, First Selectman
110 Myrtle Avenue
Town Hall
Westport, CT 06880

Re: §8-24 Report, Leasing of portion of Fire Station premises for siting of a telecommunications tower

Dear Mr. Arcudi:

In response to your request for an §8-24 report on the leasing of a telecommunications tower to Sprint Spectrum for telecommunications purposes the Planning and Zoning Commission offers the following findings and recommendations for your consideration:

I. BACKGROUND:

A. 1987 Town Plan of Development: No particular comments

B. Existing Zoning: GBD

C. Existing Land Use: Municipal, Fire and Building Departments, plus existing telecommunications tower.

D. Public Utilities: All public utilities exist on site.

E. Description: The proposed tower will be constructed by and leased to Sprint Spectrum, as per conditions outlined in the lease. Town telecommunications equipment will also be located on the tower. The tower will become the property of the Town upon conclusion of the lease and extension periods. Construction of the tower will be at Sprint Spectrum's expense.

Map 5318-1, Lot 6 be Granted for the following reasons and subject to the conditions listed below:

Reasons:

Whereas, the proposed use has been found to be in conformance with the Town Plan of Development; and it will

1. be in conformance with the applicable zoning regulations of the Town of Westport; and

2. not prevent or inhibit the orderly growth and development of the area; and

3. not have a significant adverse affect on adjacent areas located within the close proximity to the use, and

4. not obstruct significant views which are important elements in maintaining the character of the Town or neighborhood for the purpose of promoting the general welfare and conserving the value of buildings; and

5. be in scale with and compatible with surrounding uses, buildings, streets and open spaces.

Conditions:

1. Conformance to ZBA Variance #5347 which states:

   - Mindful of the mandate of the Telecommunications Act of 1996, The Town shall not unreasonably discriminate among providers of functionally equivalent services; The Town shall encourage co-location of other commercial providers of such services on this monopole. The Town shall retain the discretion to allow additional commercial users licensed by the FCC on this monopole.

   - The proposed tower can not exceed 150' in total height

2. Conformance to Existing Conditions Map prepared by Christopher Moomaw, dated 3/23/81, revised to 8/3/81 and received by P&Z on 11/22/96.

3. Conformance to Preliminary Site Plan and Base Equipment, prepared by Jerry Gore, dated 9/27, and

labelled Exhibit A in the material supplied by the applicant.

4. A zoning permit shall be obtained within one year of this approval or said approval shall become null and void.

5. All work approved pursuant to this Site Plan and Special Permit shall be completed within 5 years of date of approval, by January 23, 2001.

6. This is a conditional approval. Each and every condition is an integral part of the Commission decision. Should any of the conditions, on appeal from this decision, be found to be void or of no legal effect, then this conditional approval is likewise void. The applicant may refile another application for review.

VOTE:	Ayes:	-7-	(Lowenstein, Graham, Porro, MacLachlan, Crowther, Marks, Mimms)
	Nays:	-0-	
	Abstentions:	-0-	

If you have any questions, please call this office.

Very truly yours,

Eleanor Lowenstein nc

Eleanor Lowenstein
Chairman,
Planning & Zoning Commission

cc: Kenneth Carvell, Assessor
Alicia Mozian (commercial list)
Town Attorney's Office

F. Other Information: The Zoning Board of Appeals granted a height variance on January 21, 1997, that allows the monopole tower to be up to 150' in height, measured from ground level.

II. FINDINGS

a. The required variance has been received from the Zoning Board of Appeals, and the Special Permit/Site Plan Approval has been approved by the Planning and Zoning Commission.

b. The Town Attorney has reviewed the lease and his revisions should be incorporated into the final version.

c. The Board of Selectman will vote on the lease.

After discussion, it was moved by William Crowther and seconded by David Marks to issue a positive report to the First Selectman on the lease of this property.

VOTE:

Ayes:	-7-	(Lowenstein, Graham, Porro, MacLachlan, Marks, Mimms, Crowther)
Nays:	-0-	
Abstentions:	-0-	

Sincerely,

Eleanor Lowenstein

Eleanor Lowenstein,
Chairman;
Planning and Zoning Commission

cc: Board of Selectman
Chairman, Board of Finance
RTM Moderator
Chairman, P&Z Study Committee
Director of Public Works
Conservation Director
Chief, Fire Department
Town Attorney

824\pre515

TOWN OF WESTPORT
ZONING BOARD OF APPEALS
TOWN HALL, 110 MYRTLE AVENUE
WESTPORT, CT 06880
(203) 341-1081

January 23, 1997

ZONING BOARD OF APPEALS

APPL. # 5347

Filing Fee: n/a

APPLICANT/OWNER: Chief Richard Gough, Fire Chief/Fire Marshall

ADDRESS: 515 Post Road East, Westport, CT 06880

OWNER: Town of Westport/Fire Department

OWNER'S ADDRESS: 110 Myrtle Ave, Westport, CT 06880

ASSESSOR'S MAP # 5318-1

ASSESSOR'S LOT # 6

Pursuant to Public Act No. 75-317, special permit or special exception granted pursuant to Chapter 124 of the Connecticut General Statutes shall be effective until a copy thereof, certified by the Zoning Board of Appeals is recorded in the land records of the town. The Town Clerk shall index the same in the grantor's index under the name of the then record owner and the record owner shall pay for such recording.

When filing the enclosed resolution with the Town Clerk, please have this form stamped by the Town Clerk and return to the Zoning Board of Appeals. This form must be returned in order to secure a ZONING PERMIT.

TOWN OF WESTPORT
ZONING BOARD OF APPEALS
TOWN HALL, 110 MYRTLE AVENUE
WESTPORT, CT 06880
(203) 341-1081

January 23, 1997

Chief Richard Gough
Fire Chief/Fire Marshall
515 Post Road East
Westport, CT 06880

RE: ZBA CASE # 5347
ADDRESS: 515 POST ROAD EAST
OWNER OF PROPERTY: TOWN OF WESTPORT/FIRE DEPARTMENT

Dear Chief Gough:

This is to certify that at the work session of the Zoning Board of Appeals held on January 21, 1997, the Board voted 5-0 (Leaman, Herman, Altschuh, Ezzes & McCarthy) in favor to GRANT WITH CONDITIONS your request for variance. and the following resolution was adopted:

RESOLVED: "That the request of Westport Fire Department/Sprint at 515 Post Road East for Variance of Sec. 24-5 (height) to permit 150' new tower (to replace existing 100' tower) for municipal & commercial purposes with panel type antennas in a GBD zone, (Assessor's Map #5318-1, lot 6), be GRANTED WITH CONDITION in accordance with the plans submitted with the application ("TOWN OF WESTPORT CONNECTICUT; CENTRAL FIRE STATION, 515 POST ROAD EAST, WESTPORT CT.; SCALE 1"=20' 0"; DATE 23, MARCH, '81; REVISED 3, AUG., '81; SITE PLAN: LAYOUT & PLANTING; DRAWN BY CHRISTOPHER S. MOOMAW - ARCHITECT, 134 MAIN STREET., NEW CANAAN, CT 06840; DRAWING NO. SL-1; & ATTACHED MONOPOLE DRAWING BY ROHN FOR 150' STEEL POLE DESIGN FOR SPRINT SPECTRUM AND 90 DEGREES, 15 dBd DIRECTIONAL ANTENNA BY DECIBEL PRODUCTS; ALLEN TELECOM GROUP."), and said Plan stamped "APPROVED WITH CONDITIONS" by the Zoning Board of Appeals on January 21, 1997, subject to the following:

CONDITIONS:

- Mindful of the mandate of the Telecommunications Act of 1996, The Town shall not unreasonably discriminate among providers of functionally equivalent services; The Town shall encourage co-location of other commercial providers of such services on this monopole. The Town shall retain the discretion to allow additional commercial users licensed by the PCC on this monopole.

- The proposed tower can not exceed 150' in total height

CASE #5347

Effective Date: Contingent upon applicant filing this resolution with the Town Clerk no later than February 21, 1997.

A Zoning Permit must be obtained within one year of the effective date of this variance, or it becomes null and void.

The project must be built in conformance with the approved plans. The structure cannot be demolished unless it has been specifically requested on the application.

After this variance has been filed with the Town Clerk you must then file an application for a Site Plan Review by the Planning and Zoning Commission. This may also include a review by the Architectural Review Board. The required Zoning Permit and Building Permit can only be obtained after a review of the project by the Planning and Zoning Commission.

Execution of this variance by filing with the Town Clerk authorizes you to obtain the necessary permits. Before you can proceed with your project you must obtain a Zoning and Building Permit.

Yours Truly,

Joanne Leaman

Joanne Leaman, Chairman
Zoning Board of Appeals

JL:RZ
Certified Mail:RRR
cc: ZEO
enc.

RAMAKER & ASSOCIATES, INC.
100% EMPLOYEE-OWNED

April 2, 2019

Mike Kithcart
Transcend Wireless
10 Industrial Avenue, Suite 3
Mahwah, NJ 07430

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

SUBJECT: **MOUNT ASSESSMENT**

CARRIER: **SPRINT**

SITE: **CT03XC355**
515 POST ROAD EAST
WESTPORT, FAIRFIELD COUNTY, CONNECTICUT 06880
RAMAKER & ASSOCIATES PROJECT NUMBER: 39392

RESULTS: **MOUNT:** **PASS WITH MODIFICATIONS**

Dear Mike Kithcart:

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this mount assessment for the above-mentioned site. The purpose of this report is to determine the structural integrity of the mounting structure with the proposed loading configurations. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the mount(s) using RISA analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the mount loading occur.

If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Tucker Schwab
Structural Designer

James R. Skowronski, P.E.
Supervising Engineer

ANALYSIS CRITERIA

State Building Code	2018 CT State building Code
Adopted Building Code	2015 IBC
Referenced Standard	TIA-222-G
Risk Category	II
Ultimate Design Wind Speed, V_{ult}	120 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	93 mph (3 sec. gust)
Design Wind Speed w/ Ice	50 mph (3 sec. gust)
Ice Thickness	3/4 inch
Exposure Category	B
Topographic Feature	None

SUPPORTING DOCUMENTATION

- Previous mount analysis by Tectonic, dated October 23, 2014
- Construction drawings by RAMAKER, project number 39392
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

MOUNT LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antennas and equipment configurations as shown in the following chart(s):

Antenna Mount – Alpha Sector				
Elevation	**Position**	**Appurtenance**	**Mount Type**	**Status**
148	1	--	Platform **w/Handrail**	--
	2	(1) Andrew VHLP800-11		Existing
	3	**(1) CW Panel Antenna**		**Remove**
		(1) CW RRH		
		(1) Nokia AAHC		**Proposed**
	4	--		--
	5	**(1) Panel Antenna**		**Remove**
		(1) Commscope NNVV-65B-R4		**Proposed**
		(1) ALU 800 MHz 2x50W RRH		
		(1) ALU 800 MHz 2x50W RRH		Existing

Antenna Mount – Beta Sector				
Elevation	**Position**	**Appurtenance**	**Mount Type**	**Status**
148	1	**(1) Panel Antenna**	Platform **w/Handrail**	**Remove**
		(1) Commscope NNVV-65B-R4		**Proposed**
	2	**(1) ALU 800 MHz 2x50W RRH**		**Proposed**
		(1) ALU 800 MHz 2x50W RRH		Existing
	3	**(1) CW Panel Antenna**		**Remove**
		(1) CW RRH		
		(1) Nokia AAHC		**Proposed**
	4	--		--
	5	--		--

Antenna Mount – Gamma Sector				
Elevation	**Position**	**Appurtenance**	**Mount Type**	**Status**
148	1	**(1) Panel Antenna**	Platform **w/Handrail**	**Remove**
		(1) Commscope NNVV-65B-R4		**Proposed**
		(1) ALU 800 MHz 2x50W RRH		
		(1) ALU 800 MHz 2x50W RRH		Existing
	2	--		--
	3	**(1) CW Panel Antenna**		**Remove**
		(1) CW RRH		
		(1) Nokia AAHC		**Proposed**
	4	(1) Andrew VHLP800-11		Existing
	5	--		--

Universal Ring Mount		
Elevation	**Appurtenance**	**Status**
148	(3) ALU 1900 MHz 4x45W RRH	Existing

MOUNT RESULTS

By engineering calculation and inspection, the ***modified*** antenna and equipment mounting structure(s) are capable of supporting the proposed loading configurations without causing an overstress condition in the antenna and equipment mounting structure(s), ***provided the proposed structural modifications are completed prior to antenna and equipment installation. See attached modification details for required modifications.***

LIMITATIONS

The recommendations contained within this report were developed using the supporting documentation as previously described. All recommendations pertain only to the proposed antenna installation activities as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

- Missing, corroding, and/or deteriorating members
- Improper manufacturing and/or construction
- Improper maintenance
- Member grades less than assumed grades show below:

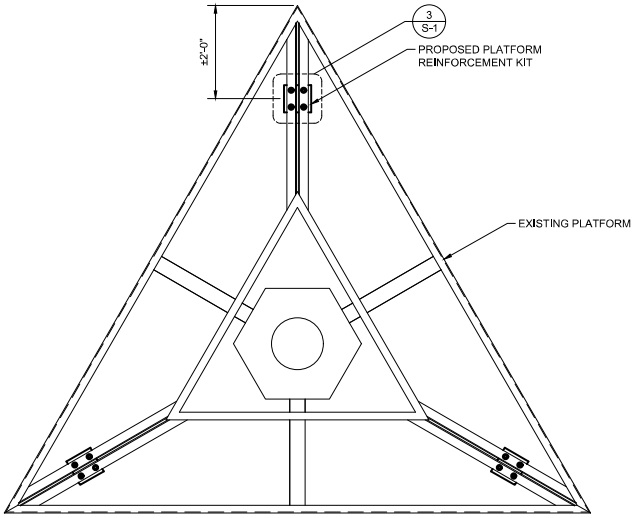
Assumed Steel Member Grades	
Angles/Plates/Channels/Solid Rods	ASTM A36, 36 ksi
Pipes	ASTM A53 Gr. B, 35 ksi

RAMAKER is not responsible for verifying that the loading on the structure is consistent with the loading applied to the structure within this report. If there is any information contrary to that contained herein, or if there are any defects arising from the original design, material, fabrication and erection deficiencies, this report should be disregarded and RAMAKER should be contacted immediately. RAMAKER is not liable for any representation, recommendation, or conclusion not expressly stated herein.

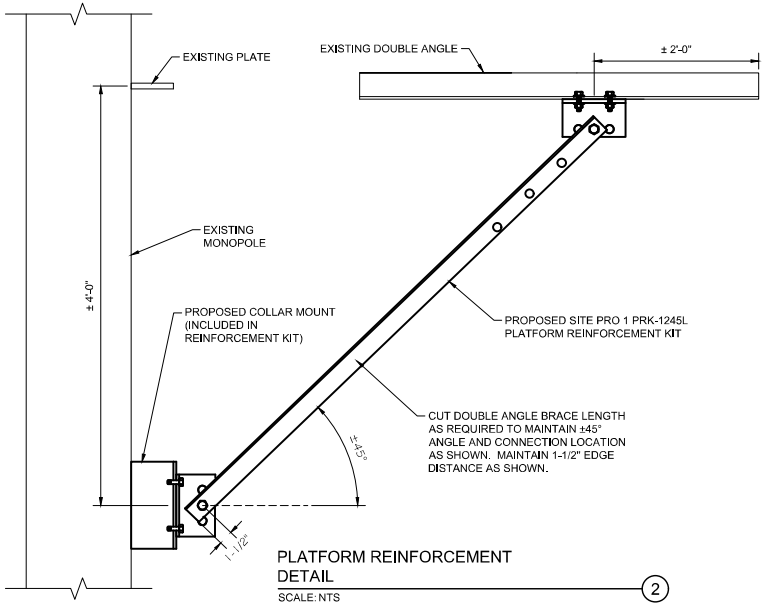
This analysis pertains only to the mounting structure, and no analyses or conclusions were made regarding the supporting structure. Analysis and certification of the supporting structure is performed and submitted separately.

ATTACHMENTS

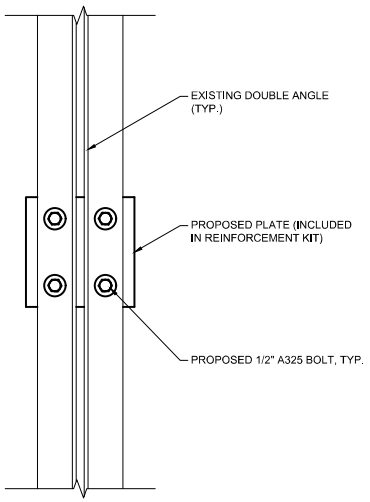
- Modification Details
- Analysis Figures
- Analysis Calculations



PLATFORM MODIFICATION PLAN
VIEW
SCALE: NTS
1



PLATFORM REINFORCEMENT
DETAIL
SCALE: NTS
2



CONNECTION DETAIL
SCALE: NTS
3

Sprint
6391 SPRINT PARKWAY
OVERLAND PARK, KS 66251

KGPCo
3305 MN-60
FARIBAULT, MN 55021
OFFICE: (507) 334-2268

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608-643-4100 www.Ramaker.com
Sauk City, WI • Willmar, MN
Woodcliff Lake, NJ • Bayamon, PR

Certification # Seal:

MARK	DATE	DESCRIPTION
A	4/5/18	PRELIMINARY CONSTRUCTION DRAWINGS

ISSUE PHASE: PRELIMINARY
DATE ISSUED: 04/05/2018

PROJECT TITLE:
CROSS COUNTRY /
EVERCLEAR
CI23XC211

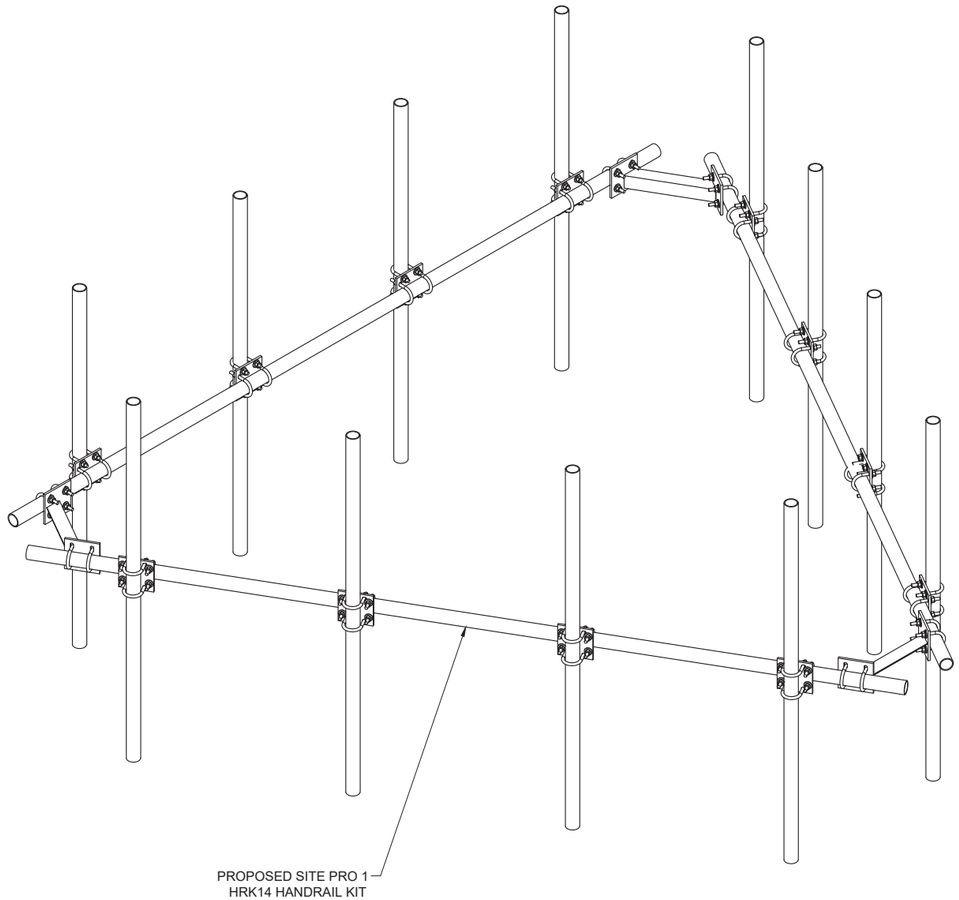
PROJECT INFORMATION:
320 S. WAYNE AVENUE
LOCKLAND, OH 45215
HAMILTON COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 38102
SHEET NUMBER: S-1

DRAWN BY: CMJ CHECKED BY: PJP



PROPOSED HANDRAIL DETAIL (1)
SCALE: NTS

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Certification & Seal:
I hereby certify that this plan set was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Ohio.

STATE OF OHIO
MICHAEL L. PINSKE
E-73441
REGISTERED PROFESSIONAL ENGINEER

Signature: Date: 3/26/2018

MARK	DATE	DESCRIPTION
0	3/26/18	FINAL CONSTRUCTION DRAWINGS
A	3/20/18	PRELIMINARY CONSTRUCTION DRAWINGS

ISSUE PHASE: FINAL
DATE ISSUED: 03/26/2018

PROJECT TITLE:
AMELIA NORTHWEST OSD
CI60XC809

PROJECT INFORMATION:
1354 OH-125
AMELIA, OH 45102
CLERMONT COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 38022
SHEET NUMBER: S-1

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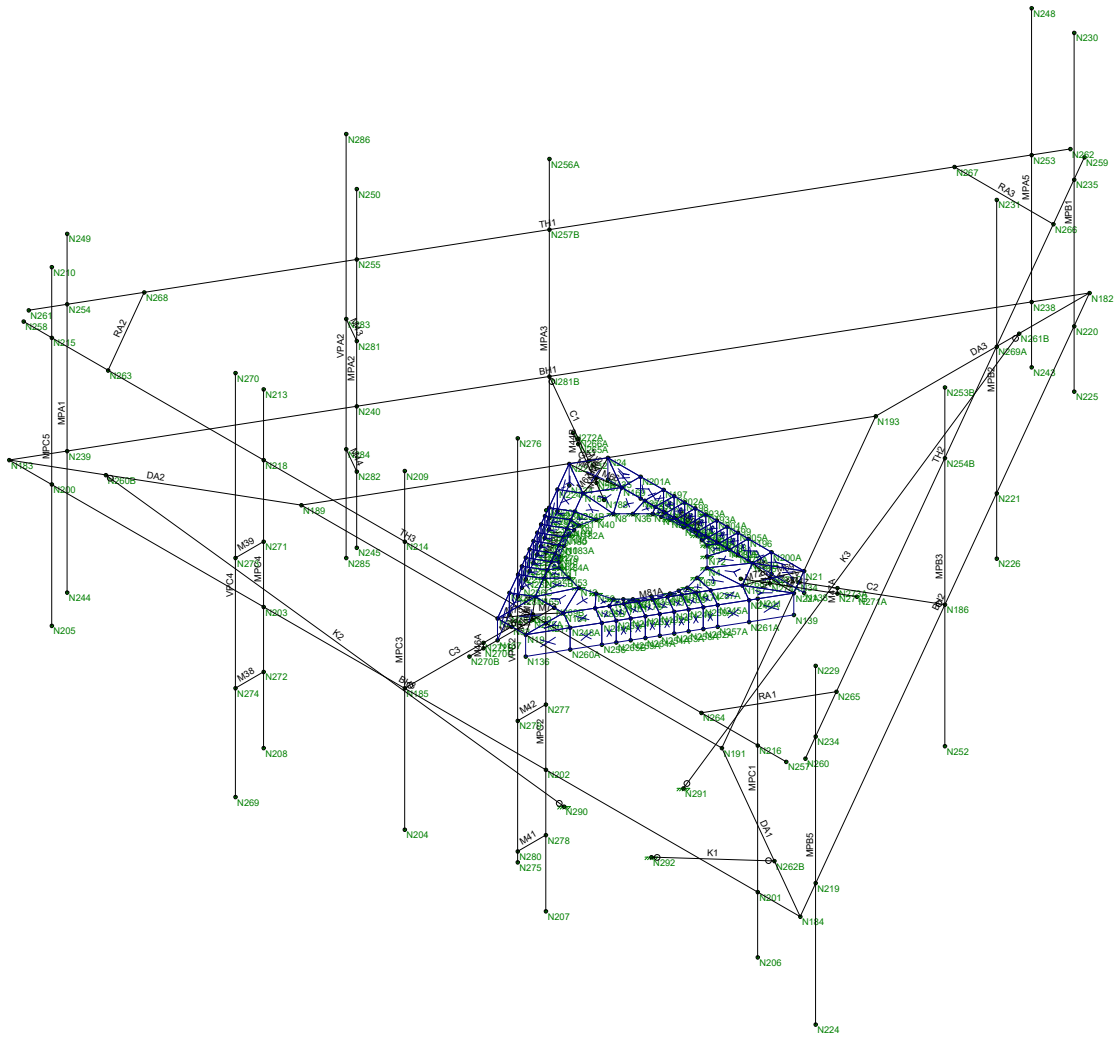
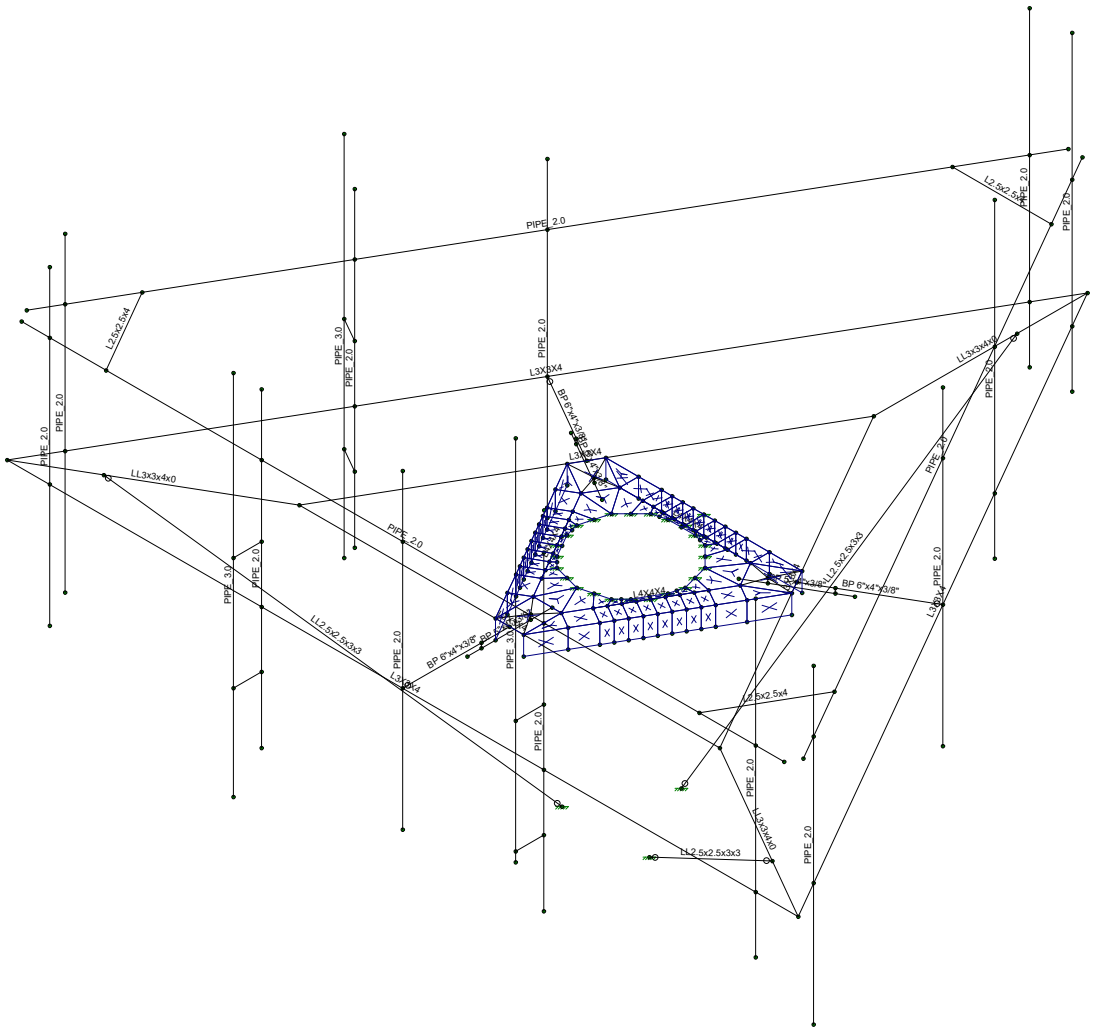


Ramaker & Associates, Inc.	CT03XC355	SK - 1
TJS		Apr 2, 2019 at 10:29 AM
39392		39392 Rev2 Mount.r3d



Ramaker & Associates, Inc.	CT03XC355	SK - 2
TJS		Apr 2, 2019 at 10:29 AM
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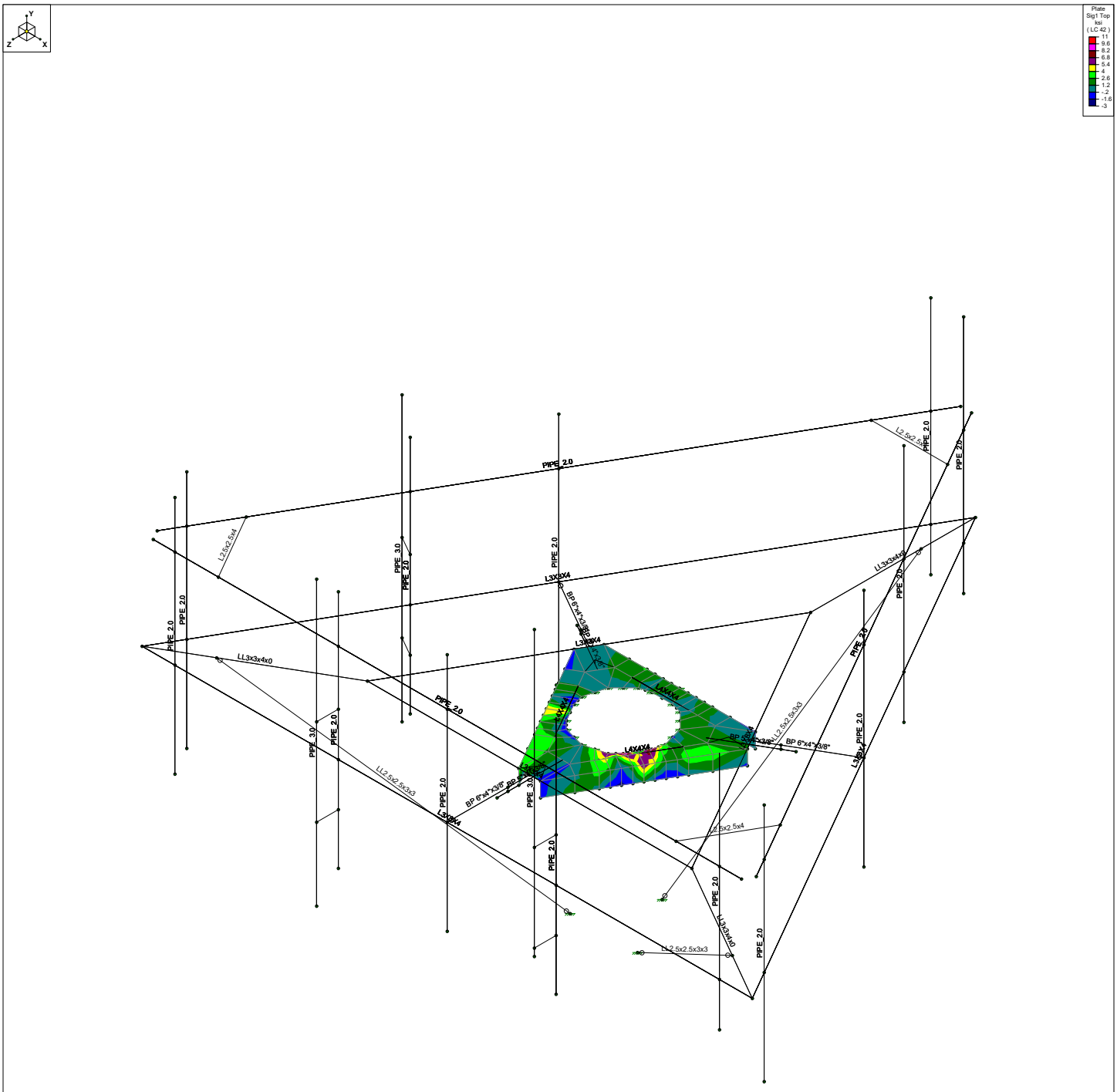

Results for LC 42, 1.2D + 1.0Di + 1.0 (180-Wind Ice)

Ramaker & Associates, Inc.		SK - 3
TJS	CT03XC355	Apr 2, 2019 at 10:59 AM
39392		39392 Rev2 Mount.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E..Density[k/f...		Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	L3X3X4	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
2	LL3X3X4X0	LL3x3x4x0	Beam	Double Angle (..	A36 Gr.36	Typical	2.88	4.5	2.46	.063
3	LL2.5X2.5X3/16X3/8	LL2.5x2.5x3x3	Beam	Double Angle (..	A36 Gr.36	Typical	1.8	2.46	1.07	.023
4	BP 6X4X3/8	BP 6"x4"x3/8"	Beam	Channel	A36 Gr.36	Typical	4.969	7.928	28.288	.22
5	BP 5X4X3/8	BP 5"x4"x3/8"	Beam	Channel	A36 Gr.36	Typical	4.594	7.438	18.477	.203
6	PIPE_2	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	PIPE_3	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
8	L2.5X2.5X4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
9	L4X4X4	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	BH3	N183	N184		270	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
2	BH2	N184	N182		270	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
3	BH1	N182	N183		270	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
4	GA3	N189	N191			L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
5	GA2	N191	N193			L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
6	GA1	N193	N189			L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
7	DA2	N189	N183		180	LL3X3X4X0	Beam	Double Angle (...	A36 Gr.36	Typical
8	DA3	N193	N182		180	LL3X3X4X0	Beam	Double Angle (...	A36 Gr.36	Typical
9	DA1	N191	N184		180	LL3X3X4X0	Beam	Double Angle (...	A36 Gr.36	Typical
10	C3	N185	N33		90	BP 6X4X3/8	Beam	Channel	A36 Gr.36	Typical
11	C2	N186	N34		90	BP 6X4X3/8	Beam	Channel	A36 Gr.36	Typical
12	C1	N281B	N32		90	BP 6X4X3/8	Beam	Channel	A36 Gr.36	Typical
13	MPC5	N205	N210			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
14	MPC4	N208	N213			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
15	MPC3	N204	N209			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
16	MPC2	N207	N212			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
17	MPC1	N206	N211			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
18	MPB5	N224	N229			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
19	MPB2	N226	N231			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
20	MPB1	N225	N230			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
21	MPA5	N243	N248			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
22	MPA2	N245	N250			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
23	MPA1	N244	N249			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
24	TH3	N258	N257			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
25	TH2	N260	N259			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
26	TH1	N262	N261			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
27	RA2	N263	N268		180	L2.5X2.5X4	Beam	Single Angle	A36 Gr.36	Typical
28	RA3	N266	N267		90	L2.5X2.5X4	Beam	Single Angle	A36 Gr.36	Typical
29	RA1	N265	N264		180	L2.5X2.5X4	Beam	Single Angle	A36 Gr.36	Typical
30	VPC4	N269	N270			PIPE_3	Beam	Pipe	A53 Gr.B	Typical
31	M38	N274	N272			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
32	M39	N273	N271			RIGID	None	None	RIGID	Typical
33	VPC2	N275	N276			PIPE_3	Beam	Pipe	A53 Gr.B	Typical
34	M41	N280	N278			RIGID	None	None	RIGID	Typical
35	M42	N279	N277			RIGID	None	None	RIGID	Typical
36	M43	N281	N283			RIGID	None	None	RIGID	Typical
37	M44	N282	N284			RIGID	None	None	RIGID	Typical
38	VPA2	N285	N286			PIPE_3	Beam	Pipe	A53 Gr.B	Typical
39	M44B	N265A	N266A			RIGID	None	None	RIGID	Typical
40	M45	N267A	N86			RIGID	None	None	RIGID	Typical
41	M46	N270B	N269B		90	BP 5X4X3/8	Beam	Channel	A36 Gr.36	Typical
42	M47	N271A	N268A		90	BP 5X4X3/8	Beam	Channel	A36 Gr.36	Typical
43	M46A	N270C	N272B			RIGID	None	None	RIGID	Typical
44	M47A	N271B	N273A			RIGID	None	None	RIGID	Typical
45	M48	N275A	N89			RIGID	None	None	RIGID	Typical
46	M49	N274A	N83			RIGID	None	None	RIGID	Typical
47	M80A	N283B	N282B		270	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical
48	M81A	N287A	N286B		270	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical
49	M82A	N285B	N284B		270	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical
50	M64	N272A	N188		90	BP 5X4X3/8	Beam	Channel	A36 Gr.36	Typical
51	M65	N86	N24			RIGID	None	None	RIGID	Typical
52	M66	N86	N169			RIGID	None	None	RIGID	Typical
53	M67	N86	N168			RIGID	None	None	RIGID	Typical
54	M68	N86	N22			RIGID	None	None	RIGID	Typical
55	M69	N83	N21			RIGID	None	None	RIGID	Typical
56	M70	N83	N22A			RIGID	None	None	RIGID	Typical
57	M71	N83	N166			RIGID	None	None	RIGID	Typical
58	M72	N83	N167			RIGID	None	None	RIGID	Typical
59	M73	N89	N164			RIGID	None	None	RIGID	Typical
60	M74	N89	N165			RIGID	None	None	RIGID	Typical
61	M75	N89	N20A			RIGID	None	None	RIGID	Typical
62	M76	N89	N19			RIGID	None	None	RIGID	Typical
63	K2	N290	N260B			LL2.5X2.5X3/1...	Beam	Double Angle (...	A36 Gr.36	Typical
64	K1	N292	N262B			LL2.5X2.5X3/1...	Beam	Double Angle (...	A36 Gr.36	Typical
65	K3	N291	N261B			LL2.5X2.5X3/1...	Beam	Double Angle (...	A36 Gr.36	Typical
66	MPB3	N252	N253B			PIPE_2	Beam	Pipe	A53 Gr.B	Typical
67	MPA3	N255A	N256A			PIPE_2	Beam	Pipe	A53 Gr.B	Typical

Plate Primary Data

	Label	A Joint	B Joint	C Joint	D Joint	Material	Thickness[in]
1	P1	N40	N9	N181	N284B	gen_Steel	.375
2	P3	N181	N163	N182A	N9	gen_Steel	.375
3	P4	N163	N180	N45	N182A	gen_Steel	.375
4	P5	N180	N10	N183A	N45	gen_Steel	.375
5	P6	N10	N179	N48	N183A	gen_Steel	.375
6	P7	N179	N162	N184A	N48	gen_Steel	.375
7	P8	N162	N178	N11	N184A	gen_Steel	.375
8	P8A	N178	N285B	N53	N11	gen_Steel	.375
9	P9	N40	N8	N168	N284B	gen_Steel	.375
10	P10	N283B	N169	N8	N36	gen_Steel	.375
11	P11	N168	N169	N8		gen_Steel	.375
12	P12	N36	N7	N170A	N283B	gen_Steel	.375
13	P14	N170A	N158	N185A	N7	gen_Steel	.375
14	P15	N158	N171	N80	N185A	gen_Steel	.375
15	P16	N171	N6	N186A	N80	gen_Steel	.375
16	P17	N6	N172	N77	N186A	gen_Steel	.375

Plate Primary Data (Continued)

	Label	A Joint	B Joint	C Joint	D Joint	Material	Thickness[in]
17	P18	N282B	N173	N5	N72	gen_Steel	.375
18	P19	N173	N159	N187	N5	gen_Steel	.375
19	P20	N159	N172	N77	N187	gen_Steel	.375
20	P20A	N166	N4	N72	N282B	gen_Steel	.375
21	P21	N4	N69	N287A	N167	gen_Steel	.375
22	P22	N166	N167	N4		gen_Steel	.375
23	P23	N69	N3	N174	N287A	gen_Steel	.375
24	P27	N177	N286B	N56	N13	gen_Steel	.375
25	P28	N286B	N164	N12	N56	gen_Steel	.375
26	P29	N12	N53	N285B	N165	gen_Steel	.375
27	P30	N165	N164	N12		gen_Steel	.375
28	P31	N175	N2	N190	N64	gen_Steel	.375
29	P32	N2	N176	N61	N190	gen_Steel	.375
30	P32A	N174	N160	N191A	N3	gen_Steel	.375
31	P33	N160	N175	N64	N191A	gen_Steel	.375
32	P33A	N176	N161	N192	N61	gen_Steel	.375
33	P34	N161	N177	N13	N192	gen_Steel	.375
34	P34A	N21	N22A	N167	N166	gen_Steel	.375
35	P35	N22	N168	N169	N24	gen_Steel	.375
36	P36	N165	N20A	N19	N164	gen_Steel	.375
37	P37	N6	N193A	N204A	N172	gen_Steel	.375
38	P38	N159	N199	N204A	N172	gen_Steel	.375
39	P39	N173	N205A	N199	N159	gen_Steel	.375
40	P40	N173	N205A	N196	N282B	gen_Steel	.375
41	P41	N282B	N166	N200A	N196	gen_Steel	.375
42	P42	N21	N200A	N166		gen_Steel	.375
43	P43	N193A	N6	N171	N203A	gen_Steel	.375
44	P44	N203A	N171	N158	N198	gen_Steel	.375
45	P45	N198	N202A	N170A	N158	gen_Steel	.375
46	P46	N202A	N170A	N283B	N197	gen_Steel	.375
47	P47	N197	N283B	N169	N201A	gen_Steel	.375
48	P48	N201A	N169	N24		gen_Steel	.375
49	P49	N10	N194	N228A	N180	gen_Steel	.375
50	P50	N163	N223A	N228A	N180	gen_Steel	.375
51	P51	N181	N229A	N223A	N163	gen_Steel	.375
52	P52	N181	N229A	N220A	N284B	gen_Steel	.375
53	P53	N284B	N168	N224A	N220A	gen_Steel	.375
54	P54	N22	N224A	N168		gen_Steel	.375
55	P55	N194	N10	N179	N227	gen_Steel	.375
56	P56	N227	N179	N162	N222	gen_Steel	.375
57	P57	N222	N226A	N178	N162	gen_Steel	.375
58	P58	N226A	N178	N285B	N221A	gen_Steel	.375
59	P59	N221A	N285B	N165	N225A	gen_Steel	.375
60	P60	N225A	N165	N20A		gen_Steel	.375
61	P61	N2	N192A	N252A	N176	gen_Steel	.375
62	P62	N161	N247A	N252A	N176	gen_Steel	.375
63	P63	N177	N253A	N247A	N161	gen_Steel	.375
64	P64	N177	N253A	N244A	N286B	gen_Steel	.375
65	P65	N286B	N164	N248A	N244A	gen_Steel	.375
66	P66	N19	N248A	N164		gen_Steel	.375
67	P67	N192A	N2	N175	N251	gen_Steel	.375
68	P68	N251	N175	N160	N246	gen_Steel	.375
69	P69	N246	N250A	N174	N160	gen_Steel	.375
70	P70	N250A	N174	N287A	N245A	gen_Steel	.375
71	P71	N245A	N287A	N167	N249A	gen_Steel	.375
72	P72	N249A	N167	N22A		gen_Steel	.375
73	P73	N19	N136	N260A	N248A	gen_Steel	.375

Plate Primary Data (Continued)

	Label	A Joint	B Joint	C Joint	D Joint	Material	Thickness[in]
74	P74	N248A	N260A	N256	N244A	gen_Steel	.375
75	P75	N244A	N256	N265B	N253A	gen_Steel	.375
76	P76	N253A	N265B	N259A	N247A	gen_Steel	.375
77	P77	N247A	N259A	N264A	N252A	gen_Steel	.375
78	P78	N252A	N264A	N254A	N192A	gen_Steel	.375
79	P79	N192A	N254A	N263A	N251	gen_Steel	.375
80	P80	N251	N263A	N258A	N246	gen_Steel	.375
81	P81	N246	N258A	N262A	N250A	gen_Steel	.375
82	P82	N250A	N262A	N257A	N245A	gen_Steel	.375
83	P83	N245A	N257A	N261A	N249A	gen_Steel	.375
84	P84	N249A	N261A	N139	N22A	gen_Steel	.375
85	P85	N134	N22	N224A	N284C	gen_Steel	.375
86	P86	N284C	N224A	N220A	N280A	gen_Steel	.375
87	P87	N280A	N220A	N229A	N289	gen_Steel	.375
88	P88	N289	N229A	N223A	N283C	gen_Steel	.375
89	P89	N283C	N223A	N228A	N288	gen_Steel	.375
90	P90	N228A	N288	N279A	N194	gen_Steel	.375
91	P91	N194	N227	N287B	N279A	gen_Steel	.375
92	P92	N227	N222	N282C	N287B	gen_Steel	.375
93	P93	N282C	N222	N226A	N286C	gen_Steel	.375
94	P94	N286C	N226A	N221A	N281A	gen_Steel	.375
95	P95	N281A	N221A	N225A	N285C	gen_Steel	.375
96	P96	N285C	N225A	N20A	N137	gen_Steel	.375
97	P97	N138	N21	N200A	N271C	gen_Steel	.375
98	P98	N271C	N200A	N196	N267B	gen_Steel	.375
99	P99	N196	N267B	N276A	N205A	gen_Steel	.375
100	P100	N205A	N276A	N270A	N199	gen_Steel	.375
101	P101	N199	N270A	N275B	N204A	gen_Steel	.375
102	P102	N204A	N275B	N266B	N193A	gen_Steel	.375
103	P103	N193A	N266B	N274B	N203A	gen_Steel	.375
104	P104	N203A	N274B	N269C	N198	gen_Steel	.375
105	P105	N198	N269C	N273B	N202A	gen_Steel	.375
106	P106	N202A	N273B	N268B	N197	gen_Steel	.375
107	P107	N197	N268B	N272C	N201A	gen_Steel	.375
108	P108	N201A	N272C	N135	N24	gen_Steel	.375

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface(...
1	Dead Load	None		-1			26		3	
2	Antenna Wind 0	None					52			
3	Antenna Wind 30	None					52			
4	Antenna Wind 45	None					52			
5	Antenna Wind 60	None					52			
6	Antenna Wind 90	None					52			
7	Antenna Wind 120	None					52			
8	Antenna Wind 135	None					52			
9	Antenna Wind 150	None					52			
10	Antenna Wind 180	None					52			
11	Antenna Wind 210	None					52			
12	Antenna Wind 225	None					52			
13	Antenna Wind 240	None					52			
14	Antenna Wind 270	None					52			
15	Antenna Wind 300	None					52			
16	Antenna Wind 315	None					52			
17	Antenna Wind 330	None					52			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface(...
18	Antenna Ice Dead Load	None					26		3	
19	Antenna Wind w/Ice 0	None					52			
20	Antenna Wind w/Ice 30	None					52			
21	Antenna Wind w/Ice 45	None					52			
22	Antenna Wind w/Ice 60	None					52			
23	Antenna Wind w/Ice 90	None					52			
24	Antenna Wind w/Ice 120	None					52			
25	Antenna Wind w/Ice 135	None					52			
26	Antenna Wind w/Ice 150	None					52			
27	Antenna Wind w/Ice 180	None					52			
28	Antenna Wind w/Ice 210	None					52			
29	Antenna Wind w/Ice 225	None					52			
30	'Antenna Wind w/Ice 240	None					52			
31	Antenna Wind w/Ice 270	None					52			
32	Antenna Wind w/Ice 300	None					52			
33	Antenna Wind w/Ice 315	None					52			
34	Antenna Wind w/Ice 330	None					52			
35	Member Wind 0	None						74		
36	Member Wind 30	None						74		
37	Member Wind 45	None						74		
38	Member Wind 60	None						74		
39	Member Wind 90	None						74		
40	Member Wind 120	None						74		
41	Member Wind 135	None						74		
42	Member Wind 150	None						74		
43	Member Wind 180	None						74		
44	Member Wind 210	None						74		
45	Member Wind 225	None						74		
46	Member Wind 240	None						74		
47	Member Wind 270	None						74		
48	Member Wind 300	None						74		
49	Member Wind 315	None						74		
50	Member Wind 330	None						74		
51	Member Ice Dead Load	None						37		
52	Member Wind w/Ice 0	None						74		
53	Member Wind w/Ice 30	None						74		
54	Member Wind w/Ice 45	None						74		
55	Member Wind w/Ice 60	None						74		
56	Member Wind w/Ice 90	None						74		
57	Member Wind w/Ice 120	None						74		
58	Member Wind w/Ice 135	None						74		
59	Member Wind w/Ice 150	None						74		
60	Member Wind w/Ice 180	None						74		
61	Member Wind w/Ice 210	None						74		
62	Member Wind w/Ice 225	None						74		
63	Member Wind w/Ice 240	None						74		
64	Member Wind w/Ice 270	None						74		
65	Member Wind w/Ice 300	None						74		
66	Member Wind w/Ice 315	None						74		
67	Member Wind w/Ice 330	None						74		
68	LV-1	None					1			
69	LV-2	None					1			
70	LV-3	None					1			
71	LV-4	None					1			
72	LV-5	None					1			
73	LV-6	None					1			
74	LV-7	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface(...
75	LV-8	None					1			
76	LV-9	None					1			
77	LV-10	None								
78	LV-11	None								
79	LV-12	None								
80	LV-13	None								
81	LV-14	None								
82	LV-15	None								
83	LM-1	None					1			
84	LM-2	None					1			
85	LM-3	None					1			
86	LM-4	None					1			
87	LM-5	None					1			
88	LM-6	None					1			
89	LM-7	None					1			
90	LM-8	None					1			
91	LM-9	None					1			
92	LM-10	None					1			
93	LM-11	None					1			
94	LM-12	None					1			
95	LM-13	None					1			
96	LM-14	None								
97	LM-15	None								
98	BLC 1 Transient Area L...	None						72		
99	BLC 18 Transient Area ...	None						72		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4D	Yes	Y		1	1.4																				
2	0.9D + 1.6 (0-Wind)	Yes	Y		1	.9	2	1.6	35	1.6																
3	0.9D + 1.6 (30-Wind)	Yes	Y		1	.9	3	1.6	36	1.6																
4	0.9D + 1.6 (45-Wind)	Yes	Y		1	.9	4	1.6	37	1.6																
5	0.9D + 1.6 (60-Wind)	Yes	Y		1	.9	5	1.6	38	1.6																
6	0.9D + 1.6 (90-Wind)	Yes	Y		1	.9	6	1.6	39	1.6																
7	0.9D + 1.6 (120-Wind)	Yes	Y		1	.9	7	1.6	40	1.6																
8	0.9D + 1.6 (135-Wind)	Yes	Y		1	.9	8	1.6	41	1.6																
9	0.9D + 1.6 (150-Wind)	Yes	Y		1	.9	9	1.6	42	1.6																
10	0.9D + 1.6 (180-Wind)	Yes	Y		1	.9	10	1.6	43	1.6																
11	0.9D + 1.6 (210-Wind)	Yes	Y		1	.9	11	1.6	44	1.6																
12	0.9D + 1.6 (225-Wind)	Yes	Y		1	.9	12	1.6	45	1.6																
13	0.9D + 1.6 (240-Wind)	Yes	Y		1	.9	13	1.6	46	1.6																
14	0.9D + 1.6 (270-Wind)	Yes	Y		1	.9	14	1.6	47	1.6																
15	0.9D + 1.6 (300-Wind)	Yes	Y		1	.9	15	1.6	48	1.6																
16	0.9D + 1.6 (315-Wind)	Yes	Y		1	.9	16	1.6	49	1.6																
17	0.9D + 1.6 (330-Wind)	Yes	Y		1	.9	17	1.6	50	1.6																
18	1.2D + 1.6 (0-Wind)	Yes	Y		1	1.2	2	1.6	35	1.6																
19	1.2D + 1.6 (30-Wind)	Yes	Y		1	1.2	3	1.6	36	1.6																
20	1.2D + 1.6 (45-Wind)	Yes	Y		1	1.2	4	1.6	37	1.6																
21	1.2D + 1.6 (60-Wind)	Yes	Y		1	1.2	5	1.6	38	1.6																
22	1.2D + 1.6 (90-Wind)	Yes	Y		1	1.2	6	1.6	39	1.6																
23	1.2D + 1.6 (120-Wind)	Yes	Y		1	1.2	7	1.6	40	1.6																
24	1.2D + 1.6 (135-Wind)	Yes	Y		1	1.2	8	1.6	41	1.6																
25	1.2D + 1.6 (150-Wind)	Yes	Y		1	1.2	9	1.6	42	1.6																
26	1.2D + 1.6 (180-Wind)	Yes	Y		1	1.2	10	1.6	43	1.6																
27	1.2D + 1.6 (210-Wind)	Yes	Y		1	1.2	11	1.6	44	1.6																

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
28	1.2D + 1.6 (225-Wind)	Yes	Y		1	1.2	12	1.6	45	1.6														
29	1.2D + 1.6 (240-Wind)	Yes	Y		1	1.2	13	1.6	46	1.6														
30	1.2D + 1.6 (270-Wind)	Yes	Y		1	1.2	14	1.6	47	1.6														
31	1.2D + 1.6 (300-Wind)	Yes	Y		1	1.2	15	1.6	48	1.6														
32	1.2D + 1.6 (315-Wind)	Yes	Y		1	1.2	16	1.6	49	1.6														
33	1.2D + 1.6 (330-Wind)	Yes	Y		1	1.2	17	1.6	50	1.6														
34	1.2D + 1.0Di + 1.0 (0-Wind Ice)	Yes	Y		1	1.2	18	1	51	1	19	1	52	1										
35	1.2D + 1.0Di + 1.0 (30-Wind I...	Yes	Y		1	1.2	18	1	51	1	20	1	53	1										
36	1.2D + 1.0Di + 1.0 (45-Wind I...	Yes	Y		1	1.2	18	1	51	1	21	1	54	1										
37	1.2D + 1.0Di + 1.0 (60-Wind I...	Yes	Y		1	1.2	18	1	51	1	22	1	55	1										
38	1.2D + 1.0Di + 1.0 (90-Wind I...	Yes	Y		1	1.2	18	1	51	1	23	1	56	1										
39	1.2D + 1.0Di + 1.0 (120-Wind ...	Yes	Y		1	1.2	18	1	51	1	24	1	57	1										
40	1.2D + 1.0Di + 1.0 (135-Wind ...	Yes	Y		1	1.2	18	1	51	1	25	1	58	1										
41	1.2D + 1.0Di + 1.0 (150-Wind ...	Yes	Y		1	1.2	18	1	51	1	26	1	59	1										
42	1.2D + 1.0Di + 1.0 (180-Wind ...	Yes	Y		1	1.2	18	1	51	1	27	1	60	1										
43	1.2D + 1.0Di + 1.0 (210-Wind ...	Yes	Y		1	1.2	18	1	51	1	28	1	61	1										
44	1.2D + 1.0Di + 1.0 (225-Wind ...	Yes	Y		1	1.2	18	1	51	1	29	1	62	1										
45	1.2D + 1.0Di + 1.0 (240-Wind ...	Yes	Y		1	1.2	18	1	51	1	30	1	63	1										
46	1.2D + 1.0Di + 1.0 (270-Wind ...	Yes	Y		1	1.2	18	1	51	1	31	1	64	1										
47	1.2D + 1.0Di + 1.0 (300-Wind ...	Yes	Y		1	1.2	18	1	51	1	32	1	65	1										
48	1.2D + 1.0Di + 1.0 (315-Wind ...	Yes	Y		1	1.2	18	1	51	1	33	1	66	1										
49	1.2D + 1.0Di + 1.0 (330-Wind ...	Yes	Y		1	1.2	18	1	51	1	34	1	67	1										
50	1.2D + 1.5LV-1	Yes	Y		1	1.2	68	1.5																
51	1.2D + 1.5LV-2	Yes	Y		1	1.2	69	1.5																
52	1.2D + 1.5LV-3	Yes	Y		1	1.2	70	1.5																
53	1.2D + 1.5LV-4	Yes	Y		1	1.2	71	1.5																
54	1.2D + 1.5LV-5	Yes	Y		1	1.2	72	1.5																
55	1.2D + 1.5LV-6	Yes	Y		1	1.2	73	1.5																
56	1.2D + 1.5LV-7	Yes	Y		1	1.2	74	1.5																
57	1.2D + 1.5LV-8	Yes	Y		1	1.2	75	1.5																
58	1.2D + 1.5LV-9	Yes	Y		1	1.2	76	1.5																
59	1.2D + 1.5LV-10	Yes	Y		1	1.2	77	1.5																
60	1.2D + 1.5LV-11	Yes	Y		1	1.2	78	1.5																
61	1.2D + 1.5LV-12	Yes	Y		1	1.2	79	1.5																
62	1.2D + 1.5LV-13	Yes	Y		1	1.2	80	1.5																
63	1.2D + 1.5LV-14	Yes	Y		1	1.2	81	1.5																
64	1.2D + 1.5LV-15	Yes	Y		1	1.2	82	1.5																
65	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	2	.104	35	.104												
66	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	3	.104	36	.104												
67	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	4	.104	37	.104												
68	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	5	.104	38	.104												
69	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	6	.104	39	.104												
70	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	7	.104	40	.104												
71	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	8	.104	41	.104												
72	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	9	.104	42	.104												
73	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	10	.104	43	.104												
74	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	11	.104	44	.104												
75	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	12	.104	45	.104												
76	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	13	.104	46	.104												
77	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	14	.104	47	.104												
78	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	15	.104	48	.104												
79	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	16	.104	49	.104												
80	1.2D + 1.5LM-1 + Maintenanc...	Yes	Y		1	1.2	83	1.5	17	.104	50	.104												
81	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	2	.104	35	.104												
82	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	3	.104	36	.104												
83	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	4	.104	37	.104												
84	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	5	.104	38	.104												

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
85	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	6	.104	39	.104												
86	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	7	.104	40	.104												
87	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	8	.104	41	.104												
88	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	9	.104	42	.104												
89	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	10	.104	43	.104												
90	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	11	.104	44	.104												
91	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	12	.104	45	.104												
92	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	13	.104	46	.104												
93	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	14	.104	47	.104												
94	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	15	.104	48	.104												
95	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	16	.104	49	.104												
96	1.2D + 1.5LM-2 + Maintenanc...	Yes	Y		1	1.2	84	1.5	17	.104	50	.104												
97	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	2	.104	35	.104												
98	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	3	.104	36	.104												
99	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	4	.104	37	.104												
100	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	5	.104	38	.104												
101	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	6	.104	39	.104												
102	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	7	.104	40	.104												
103	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	8	.104	41	.104												
104	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	9	.104	42	.104												
105	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	10	.104	43	.104												
106	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	11	.104	44	.104												
107	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	12	.104	45	.104												
108	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	13	.104	46	.104												
109	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	14	.104	47	.104												
110	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	15	.104	48	.104												
111	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	16	.104	49	.104												
112	1.2D + 1.5LM-3 + Maintenanc...	Yes	Y		1	1.2	85	1.5	17	.104	50	.104												
113	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	2	.104	35	.104												
114	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	3	.104	36	.104												
115	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	4	.104	37	.104												
116	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	5	.104	38	.104												
117	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	6	.104	39	.104												
118	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	7	.104	40	.104												
119	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	8	.104	41	.104												
120	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	9	.104	42	.104												
121	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	10	.104	43	.104												
122	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	11	.104	44	.104												
123	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	12	.104	45	.104												
124	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	13	.104	46	.104												
125	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	14	.104	47	.104												
126	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	15	.104	48	.104												
127	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	16	.104	49	.104												
128	1.2D + 1.5LM-4 + Maintenanc...	Yes	Y		1	1.2	86	1.5	17	.104	50	.104												
129	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	2	.104	35	.104												
130	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	3	.104	36	.104												
131	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	4	.104	37	.104												
132	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	5	.104	38	.104												
133	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	6	.104	39	.104												
134	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	7	.104	40	.104												
135	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	8	.104	41	.104												
136	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	9	.104	42	.104												
137	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	10	.104	43	.104												
138	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	11	.104	44	.104												
139	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	12	.104	45	.104												
140	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	13	.104	46	.104												
141	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	14	.104	47	.104												

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
142	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	15	.104	48	.104												
143	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	16	.104	49	.104												
144	1.2D + 1.5LM-5 + Maintenanc...	Yes	Y		1	1.2	87	1.5	17	.104	50	.104												
145	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	2	.104	35	.104												
146	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	3	.104	36	.104												
147	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	4	.104	37	.104												
148	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	5	.104	38	.104												
149	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	6	.104	39	.104												
150	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	7	.104	40	.104												
151	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	8	.104	41	.104												
152	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	9	.104	42	.104												
153	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	10	.104	43	.104												
154	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	11	.104	44	.104												
155	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	12	.104	45	.104												
156	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	13	.104	46	.104												
157	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	14	.104	47	.104												
158	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	15	.104	48	.104												
159	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	16	.104	49	.104												
160	1.2D + 1.5LM-6 + Maintenanc...	Yes	Y		1	1.2	88	1.5	17	.104	50	.104												
161	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	2	.104	35	.104												
162	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	3	.104	36	.104												
163	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	4	.104	37	.104												
164	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	5	.104	38	.104												
165	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	6	.104	39	.104												
166	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	7	.104	40	.104												
167	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	8	.104	41	.104												
168	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	9	.104	42	.104												
169	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	10	.104	43	.104												
170	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	11	.104	44	.104												
171	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	12	.104	45	.104												
172	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	13	.104	46	.104												
173	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	14	.104	47	.104												
174	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	15	.104	48	.104												
175	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	16	.104	49	.104												
176	1.2D + 1.5LM-7 + Maintenanc...	Yes	Y		1	1.2	89	1.5	17	.104	50	.104												
177	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	2	.104	35	.104												
178	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	3	.104	36	.104												
179	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	4	.104	37	.104												
180	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	5	.104	38	.104												
181	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	6	.104	39	.104												
182	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	7	.104	40	.104												
183	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	8	.104	41	.104												
184	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	9	.104	42	.104												
185	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	10	.104	43	.104												
186	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	11	.104	44	.104												
187	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	12	.104	45	.104												
188	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	13	.104	46	.104												
189	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	14	.104	47	.104												
190	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	15	.104	48	.104												
191	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	16	.104	49	.104												
192	1.2D + 1.5LM-8 + Maintenanc...	Yes	Y		1	1.2	90	1.5	17	.104	50	.104												
193	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	2	.104	35	.104												
194	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	3	.104	36	.104												
195	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	4	.104	37	.104												
196	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	5	.104	38	.104												
197	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	6	.104	39	.104												
198	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	7	.104	40	.104												

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
199	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	8	.104	41	.104												
200	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	9	.104	42	.104												
201	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	10	.104	43	.104												
202	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	11	.104	44	.104												
203	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	12	.104	45	.104												
204	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	13	.104	46	.104												
205	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	14	.104	47	.104												
206	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	15	.104	48	.104												
207	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	16	.104	49	.104												
208	1.2D + 1.5LM-9 + Maintenanc...	Yes	Y		1	1.2	91	1.5	17	.104	50	.104												
209	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	2	.104	35	.104												
210	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	3	.104	36	.104												
211	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	4	.104	37	.104												
212	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	5	.104	38	.104												
213	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	6	.104	39	.104												
214	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	7	.104	40	.104												
215	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	8	.104	41	.104												
216	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	9	.104	42	.104												
217	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	10	.104	43	.104												
218	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	11	.104	44	.104												
219	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	12	.104	45	.104												
220	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	13	.104	46	.104												
221	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	14	.104	47	.104												
222	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	15	.104	48	.104												
223	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	16	.104	49	.104												
224	1.2D + 1.5LM-10 + Maintenan...	Yes	Y		1	1.2	92	1.5	17	.104	50	.104												
225	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	2	.104	35	.104												
226	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	3	.104	36	.104												
227	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	4	.104	37	.104												
228	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	5	.104	38	.104												
229	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	6	.104	39	.104												
230	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	7	.104	40	.104												
231	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	8	.104	41	.104												
232	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	9	.104	42	.104												
233	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	10	.104	43	.104												
234	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	11	.104	44	.104												
235	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	12	.104	45	.104												
236	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	13	.104	46	.104												
237	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	14	.104	47	.104												
238	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	15	.104	48	.104												
239	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	16	.104	49	.104												
240	1.2D + 1.5LM-11 + Maintenan...	Yes	Y		1	1.2	93	1.5	17	.104	50	.104												
241	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	2	.104	35	.104												
242	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	3	.104	36	.104												
243	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	4	.104	37	.104												
244	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	5	.104	38	.104												
245	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	6	.104	39	.104												
246	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	7	.104	40	.104												
247	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	8	.104	41	.104												
248	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	9	.104	42	.104												
249	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	10	.104	43	.104												
250	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	11	.104	44	.104												
251	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	12	.104	45	.104												
252	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	13	.104	46	.104												
253	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	14	.104	47	.104												
254	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	15	.104	48	.104												
255	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	16	.104	49	.104												

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
256	1.2D + 1.5LM-12 + Maintenan...	Yes	Y		1	1.2	94	1.5	17	.104	50	.104												
257	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	2	.104	35	.104												
258	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	3	.104	36	.104												
259	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	4	.104	37	.104												
260	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	5	.104	38	.104												
261	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	6	.104	39	.104												
262	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	7	.104	40	.104												
263	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	8	.104	41	.104												
264	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	9	.104	42	.104												
265	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	10	.104	43	.104												
266	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	11	.104	44	.104												
267	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	12	.104	45	.104												
268	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	13	.104	46	.104												
269	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	14	.104	47	.104												
270	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	15	.104	48	.104												
271	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	16	.104	49	.104												
272	1.2D + 1.5LM-13 + Maintenan...	Yes	Y		1	1.2	95	1.5	17	.104	50	.104												
273	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	2	.104	35	.104												
274	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	3	.104	36	.104												
275	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	4	.104	37	.104												
276	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	5	.104	38	.104												
277	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	6	.104	39	.104												
278	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	7	.104	40	.104												
279	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	8	.104	41	.104												
280	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	9	.104	42	.104												
281	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	10	.104	43	.104												
282	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	11	.104	44	.104												
283	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	12	.104	45	.104												
284	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	13	.104	46	.104												
285	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	14	.104	47	.104												
286	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	15	.104	48	.104												
287	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	16	.104	49	.104												
288	1.2D + 1.5LM-14 + Maintenan...	Yes	Y		1	1.2	96	1.5	17	.104	50	.104												
289	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	2	.104	35	.104												
290	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	3	.104	36	.104												
291	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	4	.104	37	.104												
292	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	5	.104	38	.104												
293	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	6	.104	39	.104												
294	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	7	.104	40	.104												
295	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	8	.104	41	.104												
296	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	9	.104	42	.104												
297	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	10	.104	43	.104												
298	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	11	.104	44	.104												
299	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	12	.104	45	.104												
300	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	13	.104	46	.104												
301	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	14	.104	47	.104												
302	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	15	.104	48	.104												
303	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	16	.104	49	.104												
304	1.2D + 1.5LM-15 + Maintenan...	Yes	Y		1	1.2	97	1.5	17	.104	50	.104												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N2	max	380.378	11	3182.459	41	1410.395	3	275.334	246	200.031	246	300.351	246
2		min	-1157.652	35	56.305	17	-1731.506	27	-399.886	109	-194.341	110	-105.085	110
3	N3	max	88.976	6	182.37	242	783.763	31	11.972	247	0	304	44.861	246

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
4		min	-615.544	46	-119.141	108	-462.621	7	-.603	16	0	1	-.15	15
5	N4	max	-272.632	12	52.26	11	1020.579	38	-19.941	12	0	304	8.695	12
6		min	-1629.842	36	-720.206	178	-368.936	14	-228.325	36	0	1	-100.177	178
7	N5	max	611.683	14	263.359	248	380.137	38	20.626	248	0	304	21.581	248
8		min	-1361.123	22	-87.108	17	.341	14	-8.044	17	0	1	-6.955	17
9	N6	max	1581.688	14	100.829	34	1097.736	39	2.472	246	218.028	192	480.596	248
10		min	-1625.279	22	-9.002	10	59.227	15	.22	14	-219.664	248	-471.074	192
11	N7	max	1012.336	45	258.571	192	377.693	35	19.873	192	0	304	6.101	249
12		min	-209.02	5	-35.2	248	38.352	11	-6.341	248	0	1	-21.106	177
13	N8	max	1707.05	34	-61.346	14	946.92	46	-29.173	12	0	304	94.412	247
14		min	85.151	13	-786.524	245	-198.865	6	-275.455	36	0	1	.48	2
15	N9	max	704.816	37	197.316	178	760.083	18	11.446	177	0	304	5.344	10
16		min	-214.158	13	-123.762	106	-419.074	13	-.688	10	0	1	-45.949	177
17	N10	max	1155.177	49	3135.638	49	623.612	17	274.252	177	208.583	105	119.109	105
18		min	-383.621	9	601.851	9	-1211.319	184	-422.478	105	-198.621	177	-296.033	177
19	N11	max	270.908	12	141.126	103	258.065	12	-6.361	2	0	304	-.98	192
20		min	-409.704	179	-120.717	192	-976.011	36	-40.221	105	0	1	-10.401	104
21	N12	max	217.571	24	504.088	46	-134.296	2	-3.581	246	0	304	25.097	141
22		min	-189.278	11	155.358	5	-1820.257	42	-64.957	109	0	1	-33.055	261
23	N13	max	512.796	27	108.174	109	493.131	3	-4.098	4	0	304	9.868	108
24		min	-416.802	3	-144.649	245	-974.843	27	-38.058	108	0	1	.224	5
25	N36	max	1232.995	188	139.908	10	546.256	34	10.258	10	0	304	8.331	19
26		min	-396.973	5	-606.513	177	48.222	10	-60.379	177	0	1	-3.968	11
27	N40	max	1110.564	37	20.123	248	1000.747	20	22.875	178	0	304	68.45	192
28		min	-290.159	13	-760.773	192	-595.724	13	-4.784	10	0	1	-1.242	248
29	N45	max	672.092	34	-85.501	3	303.587	21	10.041	105	0	304	-.84	10
30		min	-226.569	12	-448.62	44	-177.217	13	-10.843	177	0	1	-34.891	177
31	N48	max	195.222	111	-10.791	10	202.519	12	-6.637	8	0	304	-1.166	178
32		min	-29.931	183	-443.559	177	-743.652	36	-28.073	48	0	1	-27.531	105
33	N53	max	356.105	12	-156.403	5	212.871	12	62.099	45	0	304	56.627	106
34		min	-454.292	20	-924.32	45	-1389.871	36	9.455	5	0	1	7.986	3
35	N56	max	464.574	28	-113.283	17	540.969	3	68.527	40	0	304	-8.52	2
36		min	-429.308	4	-982.99	41	-1268.446	27	6.554	16	0	1	-58.138	105
37	N61	max	70.763	11	42.519	16	348.119	3	-1.935	17	0	304	26.926	109
38		min	-199.011	98	-457.01	247	-709.618	27	-28.09	41	0	1	1.179	244
39	N64	max	99.475	6	-48.817	17	361.557	31	9.436	110	0	304	35.576	247
40		min	-561.525	46	-450.652	41	-241.163	7	-10.837	246	0	1	-2.106	16
41	N69	max	34.227	7	158.786	17	917.615	31	22.921	246	0	304	13.479	17
42		min	-975.661	34	-835.219	248	-541.584	7	-1.643	110	0	1	-75.23	247
43	N72	max	867.999	15	6.298	17	568.723	38	.584	16	0	304	.72	72
44		min	-1762.345	23	-619.734	247	-39.675	14	-64.215	247	0	1	-7.685	256
45	N77	max	325.623	14	178.825	247	637.094	38	18.163	248	0	304	.633	17
46		min	-806.061	22	-7.032	16	-177.132	14	-6.109	192	0	1	-4.048	248
47	N80	max	656.295	252	175.264	177	568.797	188	17.613	177	0	304	3.906	177
48		min	-66.435	5	-8.247	10	67.722	5	-6.332	249	0	1	-.813	10
49	N193A	max	1346.45	14	2223.811	37	55.783	2	6.459	37	1.45	249	112.888	249
50		min	-1313.674	22	258.584	13	-57.251	26	.699	13	-1.356	177	-109.02	177
51	N290	max	370.606	5	1620.415	45	1140.402	45	.358	17	.313	25	.232	25
52		min	-1975.205	45	-268.533	5	-213.944	5	-.403	25	-.278	17	-.207	17
53	N291	max	55.163	14	2416.781	34	10.461	10	0	304	.301	31	.447	7
54		min	-55.308	6	12.69	10	-3464.168	34	0	1	-.301	7	-.447	31
55	N292	max	2465.354	39	2001.322	39	1423.443	39	.311	2	.242	2	.179	2
56		min	33.981	15	46.165	15	19.615	15	-.519	26	-.403	26	-.3	26
57	Totals:	max	4185.811	30	8442.549	41	4279.062	18						
58		min	-4247.734	6	2491.272	17	-4231.899	10						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Che...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	BH3	L3X3X4	.452	14	39	.122	14	z	72	15778.129	46656	1688.138	2274.672	1	H2-1
2	BH2	L3X3X4	.559	14	34	.102	14	z	210	15778.129	46656	1688.138	2274.672	1	H2-1
3	BH1	L3X3X4	.570	0	49	.112	0	z	207	15778.129	46656	1688.138	2274.672	1	H2-1
4	GA3	L3X3X4	.126	0	5	.118	3.49	z	41	13943.126	46656	1688.138	3696.902	2....	H2-1
5	GA2	L3X3X4	.168	3.723	22	.122	3.49	z	242	13943.126	46656	1688.138	3387.179	1....	H2-1
6	GA1	L3X3X4	.156	3.723	22	.122	3.723	z	37	13943.126	46656	1688.138	3433.398	1....	H2-1
7	DA2	LL3x3x4x0	.294	3.784	46	.045	2.562	y	139	79088.491	93312	6480	3069.316	1....	H1-1b
8	DA3	LL3x3x4x0	.473	3.784	47	.066	2.562	y	48	79088.491	93312	6480	3069.316	1....	H1-1b
9	DA1	LL3x3x4x0	.373	3.784	41	.061	2.562	y	40	79088.491	93312	6480	3069.316	1....	H1-1b
10	C3	BP 6"x4"x3/8"	.088	1.38	41	.025	1.38	z	85	153948.12	160987.5	12600.16	29758.008	1....	H1-1b
11	C2	BP 6"x4"x3/8"	.093	1.38	242	.030	1.38	y	31	153948.12	160987.5	12600.16	29758.008	1....	H1-1b
12	C1	BP 6"x4"x3/8"	.092	1.38	37	.029	1.38	y	21	153948.12	160987.5	12600.16	29758.008	2....	H1-1b
13	MPC5	PIPE_2.0	.255	2.177	122	.193	2.177		26	22356.067	32130	1871.625	1871.625	1....	H1-1b
14	MPC4	PIPE_2.0	.314	3.208	2	.182	4.411		27	22356.067	32130	1871.625	1871.625	2....	H1-1b
15	MPC3	PIPE_2.0	.194	2.177	22	.100	2.177		31	22356.067	32130	1871.625	1871.625	1....	H1-1b
16	MPC2	PIPE_2.0	.205	2.177	22	.175	3.208		25	22356.067	32130	1871.625	1871.625	2....	H1-1b
17	MPC1	PIPE_2.0	.330	3.266	26	.105	3.208		26	22356.067	32130	1871.625	1871.625	2....	H1-1b
18	MPB5	PIPE_2.0	.173	2.177	31	.110	2.177		5	22356.067	32130	1871.625	1871.625	1....	H1-1b
19	MPB2	PIPE_2.0	.305	1.031	32	.139	1.031		18	22356.067	32130	1871.625	1871.625	1....	H1-1b
20	MPB1	PIPE_2.0	.286	3.266	21	.103	3.208		21	22356.067	32130	1871.625	1871.625	1....	H1-1b
21	MPA5	PIPE_2.0	.330	3.266	23	.092	3.208		6	22356.067	32130	1871.625	1871.625	1....	H1-1b
22	MPA2	PIPE_2.0	.320	3.208	8	.209	4.411		30	22356.067	32130	1871.625	1871.625	2....	H1-1b
23	MPA1	PIPE_2.0	.258	2.177	29	.197	2.177		31	22356.067	32130	1871.625	1871.625	2....	H1-1b
24	TH3	PIPE_2.0	.449	4.219	26	.268	1.547		26	5397.31	32130	1871.625	1871.625	2....	H3-6
25	TH2	PIPE_2.0	.322	12.094	6	.206	12.094		21	5397.31	32130	1871.625	1871.625	2....	H1-1b
26	TH1	PIPE_2.0	.455	9.281	31	.272	11.953		7	5397.31	32130	1871.625	1871.625	2....	H3-6
27	RA2	L2.5x2.5x4	.369	0	26	.073	1.75	y	33	34889.013	38556	1113.554	2537.388	2....	H2-1
28	RA3	L2.5x2.5x4	.399	1.75	31	.081	1.75	z	30	34889.013	38556	1113.554	2537.388	2....	H2-1
29	RA1	L2.5x2.5x4	.440	1.75	18	.068	0	y	18	34889.013	38556	1113.554	2537.388	2....	H2-1
30	VPC4	PIPE_3.0	.106	3.724	18	.036	3.656		29	52006.429	65205	5748.75	5748.75	2....	H1-1b
31	VPC2	PIPE_3.0	.047	2.167	22	.029	2.167		23	52006.429	65205	5748.75	5748.75	2....	H1-1b
32	VPA2	PIPE_3.0	.106	3.724	24	.046	3.656		28	52006.429	65205	5748.75	5748.75	2....	H1-1b
33	M46	BP 5"x4"x3/8"	.142	1.111	41	.014	1.033	z	43	143111.6...	148837.5	12222.875	23303.32	1....	H1-1b
34	M47	BP 5"x4"x3/8"	.148	1.111	242	.015	.814	z	35	143111.6...	148837.5	12222.875	23303.32	1....	H1-1b
35	M80A	L4X4X4	.097	.938	248	.058	1.125	z	248	55574.496	62532	3137.597	6714.886	1....	H2-1
36	M81A	L4X4X4	.176	.75	248	.118	.75	z	41	55574.496	62532	3137.597	6714.886	1....	H2-1
37	M82A	L4X4X4	.174	.75	178	.117	.75	z	47	55574.496	62532	3137.597	6714.886	1....	H2-1
38	M64	BP 5"x4"x3/8"	.150	1.111	37	.015	.861	z	37	143111.6...	148837.5	12222.875	23303.32	1....	H1-1b
39	K2	LL2.5x2.5x3x3	.101	3.58	42	.005	0	z	25	30145.577	58320	3954.307	2549.586	1....	H1-1b
40	K1	LL2.5x2.5x3x3	.115	0	39	.007	7.16	y	42	30145.577	58320	3954.307	2549.586	1	H1-1b*
41	K3	LL2.5x2.5x3x3	.140	0	34	.005	7.16	z	6	30145.577	58320	3954.307	2549.586	1	H1-1b*
42	MPB3	PIPE_2.0	.391	2.177	25	.150	2.177		24	22356.067	32130	1871.625	1871.625	1....	H1-1b
43	MPA3	PIPE_2.0	.338	2.177	20	.135	2.177		19	22356.067	32130	1871.625	1871.625	1....	H1-1b

Envelope Plate/Shell Principal Stresses

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
1	P1	max	T	5.315	177	1.853	177	1.731	177	1.88	10	4.673	177
2		min		.013	10	-.579	10	.192	7	.847	6	.35	8
3		max	B	.281	10	-.194	8	1.688	177	2.001	28	4.096	177
4		min		-1.206	189	-4.556	177	.063	8	-.769	29	.171	8
5	P3	max	T	.088	10	-.176	10	2.401	177	.65	10	5.706	177
6		min		-1.506	177	-6.308	177	.129	11	-.419	101	.233	10
7		max	B	6.669	177	1.692	177	2.489	177	1.636	6	6.004	177
8		min		.436	10	-.152	10	.255	8	.8	10	.529	10

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
9	P4	max	T	-.147	6	-.807	10	2.61	34	.251	10	6.669	177
10		min		-2.317	189	-7.516	177	.192	10	-.277	101	.699	10
11		max	B	8.487	177	3.057	34	2.785	177	1.857	5	7.469	177
12		min		.678	10	-.345	10	.391	8	1.004	10	.843	9
13	P5	max	T	.081	10	-.139	9	1.214	177	.971	10	3.068	177
14		min		-1.019	177	-3.448	177	.066	8	-.026	6	.149	9
15		max	B	3.899	177	1.156	177	1.371	177	2.142	102	3.469	177
16		min		0	10	-.119	10	.019	9	.821	10	.037	9
17	P6	max	T	-.09	3	-.648	3	1.199	44	.112	4	3.022	44
18		min		-.997	106	-3.395	44	.264	2	-.367	12	.608	3
19		max	B	3.83	105	1.139	105	1.348	42	1.46	12	3.407	105
20		min		.936	2	.159	3	.342	242	.949	3	.851	2
21	P7	max	T	-.033	4	-1.869	5	2.814	46	.329	3	7.082	45
22		min		-2.355	44	-7.958	45	.707	244	-.157	11	1.773	6
23		max	B	8.992	46	3.29	35	2.89	46	1.673	12	7.892	46
24		min		2.173	246	.694	250	.727	243	1.294	4	1.918	246
25	P8	max	T	-.271	3	-1.602	242	2.472	42	.452	3	5.848	42
26		min		-1.521	44	-6.454	42	.605	242	.082	12	1.446	242
27		max	B	6.601	44	1.64	44	2.48	44	1.86	12	5.953	44
28		min		1.529	3	.329	4	.592	2	1.455	4	1.393	3
29	P8A	max	T	.383	4	-.96	2	1.766	36	.857	3	4.008	105
30		min		-1.061	107	-4.426	105	.331	255	.357	12	.92	241
31		max	B	5.062	105	1.927	36	1.635	106	2.22	12	4.444	105
32		min		1.131	2	.197	12	.301	2	1.475	4	.98	2
33	P9	max	T	.467	6	-.119	7	.672	20	2.356	233	2.275	177
34		min		-2.154	189	-2.414	177	.032	172	-.768	232	.246	7
35		max	B	4.348	177	2.367	177	.991	177	2.354	42	3.77	177
36		min		-.049	10	-1.024	10	.173	7	-.785	262	.41	7
37	P10	max	T	1.259	10	.303	249	.566	29	2.355	2	1.773	177
38		min		-1.758	177	-1.789	177	.012	181	-.782	3	.111	7
39		max	B	4.315	190	1.821	177	1.262	189	1.923	6	3.754	190
40		min		.233	7	-.459	10	.158	6	.836	10	.309	7
41	P11	max	T	4.577	177	1.367	177	1.605	177	2.286	10	4.069	177
42		min		-.056	10	-.244	10	.046	9	-.439	11	.103	26
43		max	B	.725	249	.218	249	.594	177	2.345	300	1.508	177
44		min		-.509	177	-1.697	177	0	133	-.777	46	.001	133
45	P12	max	T	1.7	249	.562	249	1.103	189	1.823	6	2.266	192
46		min		-.471	2	-2.332	177	.01	22	-.664	5	.103	97
47		max	B	3.344	177	1.284	190	1.032	177	1.473	6	2.923	177
48		min		.105	7	-.829	249	.111	118	.083	10	.247	118
49	P14	max	T	2.929	177	.546	177	1.192	177	2.314	29	2.698	177
50		min		-.115	247	-1.36	249	.071	105	-.767	13	.127	118
51		max	B	1.431	249	.208	247	1.045	192	2.356	135	2.373	177
52		min		-.49	177	-2.58	177	.004	101	-.785	212	.007	101
53	P15	max	T	3.68	192	.834	177	1.426	190	2.354	125	3.343	191
54		min		.105	7	-.939	249	.066	6	-.753	124	.132	6
55		max	B	2.581	249	.727	249	.927	249	2.356	262	2.305	249
56		min		-.317	2	-1.566	177	.009	101	-.778	84	.018	100
57	P16	max	T	1.742	177	.441	192	.65	177	2.356	149	1.569	177
58		min		-.081	248	-.992	248	.032	100	-.785	273	.059	101
59		max	B	1.37	249	.353	249	.509	249	2.351	85	1.232	249
60		min		-.27	177	-1.156	177	.003	111	-.784	137	.005	99
61	P17	max	T	1.812	248	.455	248	.679	248	1.076	253	1.633	248
62		min		-.197	17	-.958	192	.033	112	-.552	14	.074	112
63		max	B	1.332	177	.345	177	.494	177	2.289	14	1.198	177
64		min		-.268	249	-1.194	249	.003	112	-.709	30	.006	97
65	P18	max	T	1.71	180	.542	192	1.168	247	2.349	26	2.369	248

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
66		min		-.219	13	-2.403	248	.055	109	-.778	27	.105	109
67		max	B	3.448	247	1.351	247	1.048	247	2.33	3	3.009	247
68		min		-.425	17	-.981	15	.084	3	-.067	18	.192	19
69	P19	max	T	1.397	192	.204	192	1.1	248	2.353	49	2.485	248
70		min		-.496	248	-2.695	248	.029	112	-.783	34	.064	112
71		max	B	3.019	248	.551	249	1.234	248	2.315	4	2.784	248
72		min		-.189	2	-1.308	192	.112	207	-.768	57	.211	208
73	P20	max	T	2.521	180	.692	177	.921	181	2.356	202	2.259	180
74		min		-.149	253	-1.612	249	.013	112	-.785	160	.023	112
75		max	B	3.866	247	.881	248	1.494	246	2.351	5	3.51	247
76		min		-.297	17	-1.202	16	.098	110	-.722	20	.225	111
77	P20A	max	T	4.546	246	1.861	248	1.345	246	2.353	196	3.959	246
78		min		-.305	17	-1.256	15	.122	13	-.784	202	.283	3
79		max	B	1.018	181	.292	192	.622	23	2.345	162	1.757	248
80		min		-1.745	253	-1.818	248	.005	253	-.783	173	.285	160
81	P21	max	T	1.443	15	.151	16	.695	31	1.959	12	2.362	247
82		min		-2.313	246	-2.41	247	.002	28	-.084	249	.341	175
83		max	B	4.374	247	2.38	248	.998	242	1.244	6	3.793	247
84		min		.629	17	-.293	16	.18	12	.141	15	.753	175
85	P22	max	T	4.707	247	1.408	246	1.65	247	.586	6	4.185	247
86		min		.114	16	-.407	15	.216	17	-.485	16	.384	17
87		max	B	.663	192	.199	192	.615	248	2.353	13	1.562	248
88		min		-.527	248	-1.757	248	.005	49	-.765	48	.013	49
89	P23	max	T	.914	15	.102	16	1.667	248	.397	16	4.102	247
90		min		-1.248	246	-4.58	247	.09	191	-.43	181	.402	191
91		max	B	5.349	247	1.806	248	1.772	247	1.426	6	4.713	247
92		min		.611	17	-.386	16	.296	13	.193	16	.738	191
93	P27	max	T	5.001	105	1.812	43	1.617	103	2.342	2	4.391	105
94		min		.714	2	-.289	3	.231	17	-.769	4	.683	17
95		max	B	.257	11	-.638	17	1.69	43	.858	250	3.959	105
96		min		-1.05	99	-4.366	105	.191	5	-.168	3	.593	17
97	P28	max	T	4.41	106	2.504	106	1.014	43	2.32	3	3.831	106
98		min		.521	2	-.277	3	.206	2	1.064	14	.476	2
99		max	B	.165	12	-.395	17	.591	27	2.329	5	2.408	103
100		min		-2.316	102	-2.494	104	.025	193	-.764	20	.344	17
101	P29	max	T	.577	4	-.537	2	.624	20	1.985	33	2.413	107
102		min		-2.281	107	-2.528	106	.042	50	-.726	123	.545	2
103		max	B	4.481	40	2.512	104	1.062	40	1.271	16	3.882	40
104		min		.646	17	.38	16	.107	17	.195	3	.57	17
105	P30	max	T	0	242	-.089	179	.74	109	2.311	170	1.88	109
106		min		-.635	109	-2.116	109	.039	178	-.757	189	.084	178
107		max	B	4.563	105	1.369	105	1.597	105	.687	3	4.056	105
108		min		.599	2	.173	3	.212	2	.288	17	.533	2
109	P31	max	T	3.965	247	1.178	247	1.394	247	2.319	30	3.527	247
110		min		.076	17	-.374	16	.164	2	-.769	18	.283	2
111		max	B	.447	16	.048	16	1.243	247	2.313	15	3.143	247
112		min		-1.048	247	-3.533	247	.119	2	-.679	2	.222	2
113	P32	max	T	3.836	105	1.14	105	1.348	105	1.548	3	3.412	105
114		min		.517	2	.138	2	.19	2	1.072	251	.464	2
115		max	B	-.112	16	-.428	17	1.196	104	.007	15	3.018	104
116		min		-.998	104	-3.39	104	.158	17	-.468	3	.384	17
117	P32A	max	T	6.8	247	1.711	247	2.545	247	2.256	2	6.126	247
118		min		.154	16	-.722	16	.366	14	-.748	15	.66	14
119		max	B	.498	16	-.236	16	2.441	247	2.347	31	5.798	247
120		min		-1.527	247	-6.408	247	.299	191	-.745	14	.61	17
121	P33	max	T	8.622	247	2.948	248	2.838	247	2.262	32	7.59	247
122		min		.592	17	-.337	16	.461	2	-.757	2	.811	17

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
123		max	B	1.148	15	.091	16	2.662	247	2.328	15	6.858	247
124		min		-2.415	247	-7.739	247	.446	191	-.704	2	.916	2
125	P33A	max	T	9.012	42	3.24	42	2.896	41	1.91	3	7.906	42
126		min		.935	2	.003	3	.325	17	1.28	15	.86	17
127		max	B	-.163	16	-.726	17	2.838	42	.261	11	7.173	41
128		min		-2.423	40	-8.067	41	.265	17	-.413	2	.65	17
129	P34	max	T	6.559	41	1.613	41	2.473	41	2.068	3	5.919	41
130		min		.855	17	.186	3	.306	17	1.507	12	.763	17
131		max	B	-.052	2	-.737	17	2.475	42	.412	11	5.846	42
132		min		-1.507	41	-6.449	42	.304	17	-.174	3	.681	17
133	P34A	max	T	0	304	0	304	0	304	0	304	0	304
134		min		0	1	0	1	0	1	0	1	0	1
135		max	B	0	304	0	304	0	304	0	304	0	304
136		min		0	1	0	1	0	1	0	1	0	1
137	P35	max	T	0	304	0	304	0	304	0	304	0	304
138		min		0	1	0	1	0	1	0	1	0	1
139		max	B	0	304	0	304	0	304	0	304	0	304
140		min		0	1	0	1	0	1	0	1	0	1
141	P36	max	T	0	304	0	304	0	304	0	304	0	304
142		min		0	1	0	1	0	1	0	1	0	1
143		max	B	0	304	0	304	0	304	0	304	0	304
144		min		0	1	0	1	0	1	0	1	0	1
145	P37	max	T	4.071	247	.862	247	1.604	247	2.068	13	3.715	247
146		min		-.186	16	-.899	16	.081	3	-.227	30	.145	3
147		max	B	2.962	177	.613	179	1.174	177	2.213	15	2.708	177
148		min		-.267	253	-1.825	249	.021	111	.013	14	.038	112
149	P38	max	T	1.676	247	-.068	78	1.311	248	2.177	13	2.3	248
150		min		-.084	30	-.947	249	.047	112	-.195	30	.094	112
151		max	B	2.474	246	.158	165	1.598	247	2.238	16	2.901	246
152		min		.039	14	-.734	249	.085	31	-.758	31	.154	31
153	P39	max	T	1.601	181	.053	180	1.057	247	2.314	13	1.959	248
154		min		-.128	30	-1.754	248	.059	111	-.2	30	.15	112
155		max	B	3.488	246	.198	10	1.679	246	1.139	181	3.426	246
156		min		-.165	17	-.751	15	.182	2	-.117	15	.412	2
157	P40	max	T	5.17	246	.791	248	2.19	246	2.355	64	4.824	246
158		min		-.067	16	-.668	15	.217	17	-.785	274	.447	2
159		max	B	1.041	180	-.353	187	1.372	248	2.251	19	3.022	248
160		min		-.562	254	-3.238	248	.052	112	-.725	3	.362	96
161	P41	max	T	.793	181	-.315	191	1.492	246	2.253	19	3.996	247
162		min		-1.642	253	-4.541	247	.077	13	-.75	190	.68	3
163		max	B	5.373	246	2.73	247	1.327	243	2.347	4	4.653	246
164		min		-.244	16	-1.249	15	.252	12	-.769	52	.786	13
165	P42	max	T	.621	16	-.292	192	2.201	248	1.332	6	5.576	248
166		min		-1.868	248	-6.27	248	.218	182	.27	192	.39	181
167		max	B	4.821	248	1.396	248	1.713	248	2.315	6	4.296	248
168		min		-.28	192	-1.333	17	.187	57	-.78	7	.327	57
169	P43	max	T	3.882	177	.816	177	1.533	177	2.278	10	3.545	177
170		min		.097	10	-.382	10	.089	121	1.098	5	.164	7
171		max	B	3.086	249	.646	249	1.22	249	2.212	193	2.819	249
172		min		-.295	2	-1.755	177	.019	98	-.692	57	.034	98
173	P44	max	T	2.414	178	.141	226	1.553	177	1.669	10	2.824	177
174		min		.349	106	-.692	177	.164	105	.587	2	.34	105
175		max	B	1.517	190	-.027	14	1.229	177	2.202	5	2.148	177
176		min		-.102	6	-.948	177	.015	101	.465	6	.063	101
177	P45	max	T	1.661	249	.178	10	1.018	177	.601	7	1.866	177
178		min		-.2	5	-1.628	177	.027	6	-.638	5	.091	102
179		max	B	3.232	177	.046	15	1.612	177	1.011	5	3.228	177

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
180		min		.329	7	-.587	249	.226	121	.05	10	.407	121
181	P46	max	T	5.11	177	.829	192	2.14	177	1.528	10	4.75	177
182		min		.294	10	-.72	10	.32	121	.55	5	.611	121
183		max	B	1.304	249	.316	10	1.236	177	2.318	5	2.912	177
184		min		-.971	19	-3.209	177	.01	101	-.452	6	.189	122
185	P47	max	T	5.081	177	2.433	190	1.332	178	1.44	11	4.402	177
186		min		.379	7	-.961	10	.324	122	.248	5	.568	7
187		max	B	1.1	10	.767	10	1.435	189	1.361	189	3.82	177
188		min		-1.589	19	-4.34	177	.166	10	.47	6	.386	7
189	P48	max	T	4.711	177	1.362	177	1.674	177	2.285	121	4.199	177
190		min		-.383	249	-1.461	249	.096	137	-.639	23	.192	123
191		max	B	1.442	10	.332	10	2.21	177	2.356	241	5.571	177
192		min		-1.839	177	-6.258	177	.096	24	-.674	233	.182	24
193	P49	max	T	8.222	49	3.854	34	2.233	46	.351	9	7.126	49
194		min		1.626	9	.247	10	.404	6	-.233	2	1.463	8
195		max	B	-.226	5	-1.499	9	2.87	34	1.946	10	7.03	49
196		min		-2.223	46	-7.844	49	.464	9	1.412	178	1.31	9
197	P50	max	T	.049	6	-.855	9	2.106	34	1.752	178	4.963	49
198		min		-1.563	188	-5.475	49	.294	9	1.031	10	.758	9
199		max	B	5.582	34	2.965	34	1.388	46	.544	5	4.837	34
200		min		.953	9	-.259	10	.191	6	-.367	9	.911	7
201	P51	max	T	.479	4	-.669	8	1.995	34	1.703	178	4.06	49
202		min		-.651	29	-4.143	49	.23	248	.74	10	.602	8
203		max	B	4.325	192	1.802	35	1.603	190	.66	5	3.886	192
204		min		.637	248	-.334	10	.169	6	-.358	9	.626	7
205	P52	max	T	6.058	177	3.113	177	1.475	192	2.345	3	5.247	177
206		min		.402	248	-.504	10	.116	7	-.768	22	.463	245
207		max	B	.128	6	-.543	8	1.425	34	2.331	8	4.533	177
208		min		-2.426	189	-5.228	192	.189	13	-.766	241	.513	8
209	P53	max	T	.538	6	-.437	8	2.185	177	2.355	244	5.411	177
210		min		-1.751	189	-6.053	177	.231	8	-.778	243	.451	8
211		max	B	6.25	177	2.898	177	1.712	189	2.335	21	5.418	177
212		min		.064	10	-.939	10	.144	7	-.772	4	.394	7
213	P54	max	T	.243	10	-.377	246	2.843	192	1.442	6	7.214	192
214		min		-2.429	192	-8.115	192	.169	245	.386	10	.368	246
215		max	B	6.982	177	2.066	177	2.458	177	2.354	5	6.212	177
216		min		.074	247	-.672	10	.112	7	-.783	22	.213	244
217	P55	max	T	8.281	49	3.678	35	2.371	47	.377	9	7.194	49
218		min		1.772	248	.32	11	.442	6	-.145	2	1.571	8
219		max	B	-.191	5	-1.577	8	2.962	34	1.897	11	7.101	49
220		min		-2.028	46	-7.885	48	.609	248	1.382	178	1.46	9
221	P56	max	T	6.169	48	3.407	35	1.468	45	.583	8	5.347	48
222		min		1.442	247	.515	11	.179	5	-.114	17	1.255	246
223		max	B	.128	4	-1.36	7	2.109	35	2.049	11	5.273	48
224		min		-1.944	44	-5.951	47	.415	251	1.324	178	1.25	8
225	P57	max	T	.511	4	-1.072	7	2.39	35	.255	178	4.677	35
226		min		-.357	29	-4.67	47	.509	251	-.313	11	1.087	245
227		max	B	4.967	46	1.617	36	1.845	44	1.592	17	4.455	46
228		min		1.191	246	-.255	11	.152	3	1.017	5	1.07	6
229	P58	max	T	6.931	45	3.893	35	1.582	107	1.002	4	6.013	45
230		min		1.673	2	.821	250	.227	2	.181	16	1.479	5
231		max	B	.13	4	-1.306	5	1.636	36	2.105	11	5.25	45
232		min		-3.016	44	-6.062	45	.297	255	1.28	177	1.247	6
233	P59	max	T	6.814	44	3.276	36	1.943	44	1.182	4	5.92	44
234		min		1.47	3	.314	12	.114	6	-.007	17	1.296	2
235		max	B	.607	4	-1.316	4	2.68	36	1.414	6	6.088	46
236		min		-1.734	107	-6.719	45	.57	11	1.264	190	1.55	244

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
237	P60	max	T	7.916	107	2.363	107	2.776	107	1.794	16	7.039	107
238		min		1.595	3	.369	4	.578	2	1.296	4	1.443	3
239		max	B	-.332	4	-1.535	4	3.201	44	.291	4	8.106	44
240		min		-2.711	44	-9.114	44	.592	3	-.173	16	1.398	4
241	P61	max	T	8.342	41	3.511	42	2.441	40	2.301	16	7.258	41
242		min		.355	17	.104	2	.087	17	-.747	15	.308	17
243		max	B	.462	16	-.463	17	2.879	42	1.759	245	7.147	41
244		min		-2.265	40	-8	41	.444	17	.972	2	.769	17
245	P62	max	T	.221	16	-.544	17	2.085	42	2.268	2	5.366	41
246		min		-1.964	39	-6.066	41	.363	4	1.331	245	.657	17
247		max	B	6.259	41	3.143	42	1.592	40	.977	16	5.42	41
248		min		.566	17	.167	3	.131	17	-.144	3	.491	17
249	P63	max	T	.467	15	-.442	17	2.345	42	2.127	2	4.791	42
250		min		-.583	21	-4.925	41	.336	3	1.32	245	.692	2
251		max	B	5.232	41	1.539	43	1.921	40	.745	15	4.689	41
252		min		.47	17	-.294	3	.167	17	-.051	3	.419	17
253	P64	max	T	7.113	41	3.726	42	1.725	40	2.322	14	6.161	41
254		min		.903	17	.255	3	.214	17	-.766	13	.783	17
255		max	B	.009	16	-.747	17	1.743	43	1.846	245	5.458	41
256		min		-2.966	39	-6.298	41	.198	4	.827	3	.717	17
257	P65	max	T	.18	12	-.869	17	2.658	43	0	2	6.391	42
258		min		-2.077	36	-7.136	41	.107	3	-.431	4	.828	17
259		max	B	7.233	41	3.407	43	2.09	39	2.321	15	6.285	41
260		min		.934	17	-.283	3	.07	15	1.536	3	.849	17
261	P66	max	T	-.283	16	-1.128	17	3.337	40	1.303	16	8.45	41
262		min		-2.829	41	-9.502	41	.413	17	.774	3	1.012	17
263		max	B	8.089	104	2.398	105	2.847	104	-.14	3	7.197	104
264		min		1.227	17	.241	3	.441	17	-.726	16	1.096	17
265	P67	max	T	8.196	41	3.483	41	2.361	40	1.775	15	7.125	41
266		min		.524	17	.188	17	.072	33	-.446	32	.46	17
267		max	B	.597	16	-.405	17	2.799	41	1.728	245	7.024	41
268		min		-2.298	39	-7.881	41	.485	17	.974	17	.843	17
269	P68	max	T	5.611	41	2.801	248	1.458	40	1.588	16	4.861	41
270		min		.276	17	-.165	17	.068	14	-.149	191	.318	2
271		max	B	.944	16	-.139	17	1.939	41	1.763	246	4.912	41
272		min		-1.766	23	-5.523	41	.342	192	1.012	17	.921	192
273	P69	max	T	.77	15	-.098	17	2.096	248	.697	17	4.181	248
274		min		-.683	23	-4.17	247	.228	181	-.129	245	.642	192
275		max	B	4.459	248	1.494	46	1.76	247	1.739	191	4.071	247
276		min		.584	3	-.287	17	.123	3	-.015	16	.508	3
277	P70	max	T	6.522	248	3.431	248	1.547	247	1.634	17	5.651	248
278		min		.078	17	-.768	17	.155	3	-.105	191	.479	3
279		max	B	1.353	16	.424	17	1.399	248	1.84	6	4.897	247
280		min		-2.86	247	-5.655	247	.178	165	.747	192	.548	192
281	P71	max	T	6.516	247	2.76	253	1.891	247	1.489	16	5.668	247
282		min		.311	192	-.966	16	.248	13	.009	11	.503	191
283		max	B	1.319	15	.819	17	2.289	248	1.371	255	5.653	248
284		min		-1.91	23	-6.319	247	.204	17	.765	192	.61	191
285	P72	max	T	7.35	248	2.179	248	2.586	247	2.312	189	6.539	248
286		min		-.067	17	-1.309	16	.136	190	-.765	177	.237	190
287		max	B	1.782	16	.273	17	3.033	247	1.201	17	7.678	247
288		min		-2.567	247	-8.632	247	.195	191	-.397	192	.424	191
289	P73	max	T	1.526	42	-.311	17	2.741	41	.948	16	4.904	41
290		min		.184	2	-3.971	40	.279	17	.7	3	.484	17
291		max	B	.781	41	-.097	16	1.274	40	-.017	245	2.261	40
292		min		.135	2	-1.767	40	.125	16	-.503	16	.219	16
293	P74	max	T	2.204	104	.179	16	2.076	40	.362	255	3.596	40

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
294		min		.362	2	-2.058	40	.123	16	-.374	16	.343	17
295		max	B	-.235	16	-.332	17	1.148	40	1.179	16	3.382	40
296		min		-1.795	104	-3.884	40	.041	17	-.085	241	.3	17
297	P75	max	T	.58	110	-.102	16	1.837	40	.376	256	3.509	40
298		min		.092	4	-3.317	40	.229	2	-.761	16	.398	2
299		max	B	.338	246	-.368	17	2.055	40	.711	16	4.114	40
300		min		-.09	98	-4.119	40	.203	17	-.056	241	.389	17
301	P76	max	T	.358	16	-.364	17	1.647	40	2.352	15	3.914	40
302		min		-1.036	41	-4.327	40	.294	2	-.622	32	.534	2
303		max	B	1.291	41	-.195	16	2.343	40	.682	16	4.194	40
304		min		.145	2	-3.399	40	.209	17	-.168	256	.362	17
305	P77	max	T	.401	16	-.342	17	1.833	247	2.355	15	3.908	40
306		min		-.703	41	-4.211	40	.279	2	-.621	2	.501	2
307		max	B	.806	41	-.236	17	2.287	40	.821	16	4.23	40
308		min		.136	3	-3.769	40	.236	2	-.16	241	.42	2
309	P78	max	T	1.514	41	-.282	17	2.436	40	2.316	16	4.319	40
310		min		.301	3	-3.36	40	.326	2	-.774	15	.566	2
311		max	B	.287	16	-.248	17	1.775	40	.889	16	4.256	40
312		min		-1.17	41	-4.718	40	.205	2	-.25	256	.384	2
313	P79	max	T	1.606	41	-.298	17	2.478	41	2.332	15	4.38	40
314		min		.35	3	-3.351	40	.364	2	-.69	2	.633	2
315		max	B	.323	16	-.263	17	1.778	40	.96	17	4.271	40
316		min		-1.181	40	-4.737	40	.222	2	-.169	241	.409	2
317	P80	max	T	.577	16	-.27	17	1.986	41	2.343	2	4.139	41
318		min		-.417	248	-4.288	41	.365	2	-.738	32	.634	2
319		max	B	.745	105	-.206	17	2.17	40	.98	17	4.041	40
320		min		.097	3	-3.653	40	.239	2	-.182	241	.413	2
321	P81	max	T	.564	16	-.341	17	1.747	40	2.298	2	3.96	41
322		min		-.809	41	-4.302	41	.348	3	-.774	32	.668	2
323		max	B	1.173	41	-.104	15	2.144	40	1.148	17	3.838	40
324		min		.19	3	-3.117	40	.221	2	-.111	241	.399	2
325	P82	max	T	.452	247	-.331	17	1.908	41	2.302	31	3.72	41
326		min		.037	181	-3.616	41	.286	2	-.762	14	.497	2
327		max	B	.704	16	.042	16	1.865	247	1.126	16	3.758	247
328		min		-.055	247	-3.785	247	.16	14	-.234	256	.294	14
329	P83	max	T	1.987	247	-.292	14	1.859	40	2.285	18	3.269	40
330		min		.028	192	-2.42	40	.202	3	-.605	30	.362	14
331		max	B	.757	16	.359	16	1.092	40	1.517	17	3.039	247
332		min		-1.612	247	-3.506	247	.034	18	-.032	241	.098	3
333	P84	max	T	1.379	248	-.005	31	2.431	247	2.356	241	4.34	247
334		min		.025	192	-3.483	247	.065	18	-.785	238	.118	18
335		max	B	.71	247	.033	30	1.131	247	2.063	3	2.004	247
336		min		.047	192	-1.552	247	.043	3	-.238	191	.088	3
337	P85	max	T	.667	177	-.01	6	1.059	190	.246	5	1.876	189
338		min		.031	9	-1.458	189	.055	6	-.282	247	.106	6
339		max	B	1.336	177	-.338	247	2.298	192	2.356	189	4.095	192
340		min		-.024	10	-3.261	192	.173	248	-.785	185	.343	247
341	P86	max	T	.216	10	-.271	7	1.015	46	.153	9	2.839	190
342		min		-1.508	177	-3.274	190	.085	6	-.127	4	.267	6
343		max	B	1.893	177	-.268	5	1.757	47	-.161	178	3.091	46
344		min		-.06	10	-2.323	45	.31	6	-.466	8	.537	6
345	P87	max	T	.469	105	-.43	7	1.743	191	.292	9	3.495	191
346		min		-.018	192	-3.504	191	.283	6	-.243	3	.528	7
347		max	B	.365	177	-.604	5	1.802	46	-.009	178	3.543	46
348		min		.031	225	-3.479	46	.324	5	-.502	8	.627	5
349	P88	max	T	1.138	49	-.451	6	2.013	47	.36	9	3.596	47
350		min		.235	242	-2.903	46	.37	6	-.118	178	.646	6

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
351		max	B	.161	10	-.827	6	1.705	45	.186	178	3.809	46
352		min		-.801	34	-4.121	46	.306	5	-.525	9	.758	6
353	P89	max	T	.749	106	-.654	6	2.064	47	.351	9	3.846	47
354		min		.117	242	-3.483	47	.395	6	-.18	178	.732	6
355		max	B	.252	10	-.772	6	1.935	45	.121	178	3.969	45
356		min		-.361	187	-4.068	46	.363	5	-.539	9	.77	6
357	P90	max	T	1.646	48	-.528	6	2.378	46	.438	9	4.186	46
358		min		.453	6	-3.121	46	.49	6	-.186	178	.85	6
359		max	B	-.071	10	-.919	7	1.676	46	.187	3	4.1	47
360		min		-1.26	34	-4.577	47	.298	6	-.43	9	.822	6
361	P91	max	T	-.118	10	-.898	7	1.675	46	1.931	9	4.09	47
362		min		-1.226	34	-4.56	47	.294	6	1.277	3	.808	7
363		max	B	1.571	49	-.516	6	2.339	47	1.836	3	4.124	47
364		min		.427	7	-3.118	46	.472	6	1.186	10	.819	6
365	P92	max	T	.727	177	-.662	6	2.163	46	1.911	9	4.014	46
366		min		.148	244	-3.603	46	.406	6	1.382	3	.749	6
367		max	B	.053	10	-.708	7	1.769	192	2.022	3	3.702	48
368		min		-.637	46	-3.979	47	.309	6	1.169	9	.678	7
369	P93	max	T	1.26	48	-.506	6	2.226	46	.238	9	3.977	46
370		min		.278	246	-3.206	45	.409	6	-.211	3	.715	6
371		max	B	.022	10	-.783	7	1.555	46	.43	3	3.714	47
372		min		-1.008	34	-4.112	47	.266	6	-.455	9	.696	6
373	P94	max	T	.354	178	-.559	5	1.957	45	.351	9	3.915	45
374		min		-.084	107	-3.915	45	.33	5	-.077	3	.616	5
375		max	B	.597	105	-.426	8	1.758	48	.453	3	3.364	48
376		min		.05	6	-3.187	48	.278	7	-.209	9	.503	7
377	P95	max	T	-.119	3	-.443	4	1.063	47	.122	8	3.183	44
378		min		-1.776	106	-3.66	44	.125	7	-.152	3	.392	4
379		max	B	2.133	106	-.126	8	1.952	47	.428	3	3.38	47
380		min		.35	3	-1.978	48	.346	7	.054	10	.621	6
381	P96	max	T	.761	107	-.094	4	1.192	44	.002	178	2.111	44
382		min		.129	4	-1.633	44	.111	4	-.267	8	.194	4
383		max	B	1.479	105	-.721	5	2.626	45	.854	7	4.695	45
384		min		.345	2	-3.792	45	.546	5	.728	16	.962	5
385	P97	max	T	.261	248	-.257	11	1.055	242	-.021	12	1.996	242
386		min		.007	15	-1.856	242	.171	11	-.598	192	.308	11
387		max	B	1.165	247	-.5	14	2.04	246	2.35	12	3.641	246
388		min		-.008	15	-2.917	246	.256	14	-.781	6	.506	14
389	P98	max	T	.385	192	-.8	13	1.716	36	-.142	14	4.086	244
390		min		-1.356	248	-4.586	245	.247	12	-.567	10	.704	13
391		max	B	2.029	247	-.075	10	1.851	243	.103	10	3.21	243
392		min		-.037	16	-2.37	34	.324	13	-.282	192	.561	13
393	P99	max	T	.999	248	-.47	11	2.087	244	.232	16	3.842	35
394		min		-.043	177	-3.661	35	.354	13	-.358	10	.636	13
395		max	B	.237	248	-.826	14	2.879	245	.512	10	5.645	245
396		min		.003	14	-5.525	245	.415	14	.087	15	.828	14
397	P100	max	T	.235	10	-.762	13	2.344	246	.309	16	4.741	245
398		min		-.537	38	-4.797	245	.393	14	-.537	10	.791	13
399		max	B	1.114	246	-.765	13	2.896	245	.44	10	5.324	245
400		min		.053	14	-4.684	244	.447	14	.086	15	.846	13
401	P101	max	T	.104	10	-.772	13	2.387	36	.291	16	5.186	36
402		min		-.747	37	-5.518	36	.384	13	-.378	10	.77	13
403		max	B	1.402	247	-.795	14	3.182	245	.518	10	5.794	245
404		min		.083	14	-4.969	245	.439	14	-.058	16	.839	14
405	P102	max	T	.433	10	-.861	13	2.963	36	.382	16	6.026	36
406		min		-.195	37	-6.12	36	.467	14	-.425	11	.924	13
407		max	B	1.83	245	-.665	13	3.126	37	.306	10	5.623	37

Envelope Plate/Shell Principal Stresses (Continued)

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [...	LC
408		min		.162	14	-4.646	36	.461	13	.008	16	.824	13
409	P103	max	T	.45	10	-.625	14	3.017	37	.254	16	6.124	37
410		min		-.184	38	-6.211	37	.309	14	-.63	12	.622	14
411		max	B	1.8	178	-.215	13	3.268	36	.15	11	5.875	36
412		min		.118	12	-4.843	37	.174	13	-.217	15	.303	13
413	P104	max	T	.132	10	-.442	13	2.478	37	.208	15	5.349	37
414		min		-.714	37	-5.67	37	.216	14	-.62	12	.453	13
415		max	B	1.351	177	-.162	13	3.16	178	.489	11	5.765	178
416		min		.09	13	-4.971	178	.126	13	-.405	15	.221	13
417	P105	max	T	.35	10	-.422	13	2.341	178	.366	15	4.746	36
418		min		-.491	38	-4.97	36	.194	14	-.663	12	.439	14
419		max	B	1.065	178	-.022	12	2.873	35	.09	11	5.34	35
420		min		.075	12	-4.811	36	.049	12	-.4	14	.088	12
421	P106	max	T	.955	177	-.196	13	2.14	36	.181	15	4.051	37
422		min		-.093	249	-3.781	37	.115	13	-.784	12	.215	13
423		max	B	.243	192	.012	13	2.881	178	.851	12	5.645	178
424		min		.008	109	-5.52	178	.007	13	-.775	13	.022	13
425	P107	max	T	1.957	177	-.019	14	1.874	36	2.324	10	3.284	36
426		min		-.094	10	-2.398	37	.108	13	-.551	27	.189	13
427		max	B	.486	249	.127	11	1.794	37	2.349	11	4.056	178
428		min		-1.344	177	-4.556	178	.136	12	-.736	14	.3	13
429	P108	max	T	1.125	177	.014	13	2.022	178	2.296	30	3.615	178
430		min		.02	8	-2.92	178	.014	27	-.767	15	.025	27
431		max	B	.305	12	-.047	14	1.089	37	2.257	9	2.085	37
432		min		.045	106	-1.979	37	.074	14	-.761	25	.13	14

RAMAKER & ASSOCIATES, INC.
100% EMPLOYEE-OWNED

Job	CT03XC355
Project	39392
By	TJS
Date	4/2/19

Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V :	93	mph	Basic Wind Speed (Annex B)
z :	148	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	1.11		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	23.3	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
NNVV-65B-R4	72.0	19.6	3.7	Flat	1.252	9.80	285.3	
AAHC	25.6	19.7	1.3	Flat	1.200	3.51	97.9	
1900MHz 4x45W RRH	25.1	11.1	2.3	Flat	1.200	1.93	54.0	
800MHz 2x50W RRH	19.0	13.0	1.5	Flat	1.200	1.72	47.9	
VHLP800-11	35.0	0.0	1.0	Generic	1.262	6.68	196.0	
L3X3X1/4 x 14 ft	168.0	3.0	56.0	Flat	2.000	3.50	162.8	11.6
L3X3X1/4 x 7.446 ft	89.4	3.0	29.8	Flat	2.000	1.86	86.6	11.6
L6X4X3/8 x 1.892 ft	22.7	6.0	3.8	Flat	1.257	0.95	27.6	14.6
2L3X3X1/4 x 3.784 ft	45.4	6.0	7.6	Flat	1.419	1.89	62.4	16.5
Pipe2STD x 13.5 ft	162.0	2.4	68.2	Round	1.200	2.67	74.5	5.5
Pipe2STD x 5.5 ft	66.0	2.4	27.8	Round	1.200	1.09	30.4	5.5
Pipe3STD x 6.5 ft	78.0	3.5	22.3	Round	1.140	1.90	50.2	7.7
L2-1/2X2-1/2X1/4 x 1.75 ft	21.0	2.5	8.4	Flat	1.447	0.36	12.3	7.0
2L2-1/2X2-1/2X3/16X3/8 x 6.654 ft	79.8	5.4	14.9	Flat	1.662	2.98	115.2	17.3

RAMAKER & ASSOCIATES, INC.
100% EMPLOYEE-OWNED

Job	CT03XC355
Project	39392
By	TJS
Date	4/2/19

Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V :	93	mph	Basic Wind Speed (Annex B)
z :	148	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	1.11		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	23.3	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
NNVV-65B-R4	72.0	7.8	9.2	Flat	1.474	3.90	133.7	
AAHC	25.6	9.6	2.7	Flat	1.207	1.72	48.2	
1900MHz 4x45W RRH	25.1	10.7	2.3	Flat	1.200	1.86	52.0	
800MHz 2x50W RRH	19.0	12.2	1.6	Flat	1.200	1.61	44.9	
VHLP800-11	35.0	0.0	1.0	Generic	0.625	6.68	97.1	
L3X3X1/4 x 14 ft	168.0	3.0	56.0	Flat	2.000	3.50	162.8	11.6
L3X3X1/4 x 7.446 ft	89.4	3.0	29.8	Flat	2.000	1.86	86.6	11.6
L6X4X3/8 x 1.892 ft	22.7	4.0	5.7	Flat	1.341	0.63	19.7	10.4
2L3X3X1/4 x 3.784 ft	45.4	3.0	15.1	Flat	1.671	0.95	36.8	9.7
Pipe2STD x 13.5 ft	162.0	2.4	68.2	Round	1.200	2.67	74.5	5.5
Pipe2STD x 5.5 ft	66.0	2.4	27.8	Round	1.200	1.09	30.4	5.5
Pipe3STD x 6.5 ft	78.0	3.5	22.3	Round	1.140	1.90	50.2	7.7
L2-1/2X2-1/2X1/4 x 1.75 ft	21.0	2.5	8.4	Flat	1.447	0.36	12.3	7.0
2L2-1/2X2-1/2X3/16X3/8 x 6.654 ft	79.8	2.5	31.9	Flat	2.000	1.39	64.5	9.7

RAMAKER & ASSOCIATES, INC.
100% EMPLOYEE-OWNED

Job	CT03XC355
Project	39392
By	TJS
Date	4/2/19

Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V_i :	50	mph	Basic Wind Speed (Annex B)
z :	148	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	1.11		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	6.72	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections
t_{iz} :	1.74	in	Design Thickness of Radial Ice at Height z (2.6.8)

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
NNVV-65B-R4	75.5	23.1	3.3	Flat	1.234	12.10	100.4	
AAHC	29.1	23.2	1.3	Flat	1.200	4.69	37.8	
1900MHz 4x45W RRH	28.6	14.6	2.0	Flat	1.200	2.90	23.4	
800MHz 2x50W RRH	22.5	16.5	1.4	Flat	1.200	2.57	20.8	
VHLP800-11	38.5	3.5	1.0	Generic	1.262	8.08	68.5	
L3X3X1/4 x 14 ft	171.5	6.5	26.4	Flat	2.000	7.72	103.8	7.3
L3X3X1/4 x 7.446 ft	92.8	6.5	14.3	Flat	1.644	4.18	46.2	6.0
L6X4X3/8 x 1.892 ft	26.2	9.5	2.8	Flat	1.212	1.73	14.0	6.4
2L3X3X1/4 x 3.784 ft	48.9	9.5	5.2	Flat	1.318	3.22	28.5	7.0
Pipe2STD x 13.5 ft	165.5	5.9	28.2	Round	1.200	6.74	54.3	3.9
Pipe2STD x 5.5 ft	69.5	5.9	11.9	Round	0.908	2.83	17.3	3.0
Pipe3STD x 6.5 ft	81.5	7.0	11.7	Round	0.904	3.95	24.0	3.5
L2-1/2X2-1/2X1/4 x 1.75 ft	24.5	6.0	4.1	Flat	1.271	1.02	8.7	4.3
2L2-1/2X2-1/2X3/16X3/8 x 6.654 ft	83.3	8.9	9.4	Flat	1.480	5.13	51.0	7.3

RAMAKER & ASSOCIATES, INC.
100% EMPLOYEE-OWNED

Job	CT03XC355
Project	39392
By	TJS
Date	4/2/19

Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V_i :	50	mph	Basic Wind Speed (Annex B)
z :	148	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	1.11		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	6.72	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections
t_{iz} :	1.74	in	Design Thickness of Radial Ice at Height z (2.6.8)

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
NNVV-65B-R4	75.5	11.3	6.7	Flat	1.386	5.92	55.1	
AAHC	29.1	13.1	2.2	Flat	1.200	2.65	21.4	
1900MHz 4x45W RRH	28.6	14.2	2.0	Flat	1.200	2.81	22.7	
800MHz 2x50W RRH	22.5	15.7	1.4	Flat	1.200	2.45	19.8	
VHLP800-11	38.5	3.5	1.0	Generic	0.625	8.08	33.9	
L3X3X1/4 x 14 ft	171.5	6.5	26.4	Flat	2.000	7.72	103.8	7.3
L3X3X1/4 x 7.446 ft	92.8	6.5	14.3	Flat	1.644	4.18	46.2	6.0
L6X4X3/8 x 1.892 ft	26.2	7.5	3.5	Flat	1.244	1.36	11.4	5.2
2L3X3X1/4 x 3.784 ft	48.9	6.5	7.5	Flat	1.418	2.20	21.0	5.2
Pipe2STD x 13.5 ft	165.5	5.9	28.2	Round	1.200	6.74	54.3	3.9
Pipe2STD x 5.5 ft	69.5	5.9	11.9	Round	0.908	2.83	17.3	3.0
Pipe3STD x 6.5 ft	81.5	7.0	11.7	Round	0.904	3.95	24.0	3.5
L2-1/2X2-1/2X1/4 x 1.75 ft	24.5	6.0	4.1	Flat	1.271	1.02	8.7	4.3
2L2-1/2X2-1/2X3/16X3/8 x 6.654 ft	83.3	6.0	13.9	Flat	1.631	3.46	38.0	5.5

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Job	CT03XC355
Project	39392
By	TJS
Date	4/2/19

Ice Load on Antennas TIA-222-G

Ice Weight :	56	pcf	Ice Density
t_i :	0.75		Design Ice Thickness
Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V_i :	50	mph	Basic Wind Speed (Annex B)
z :	148	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_{iz} :	1.16		Height Escalation Factor for Ice Thickness
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
t_{iz} :	1.74	in	Design Thickness of Radial Ice at Height z (2.6.8)

Platform Grating :	Expanded	
Ice Load :	8.1	psf

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	Depth	Diam.	Area	Perim.	Ice Weight	
	in	*in*	*in*	*in*	*sq in*	*in*	*lb*	*plf*
NNVV-65B-R4	75.5	23.1	11.3	21.10	125.05	61.77	291.8	
AAHC	29.1	23.2	13.1	21.95	129.73	65.69	107.8	
1900MHz 4x45W RRH	28.6	14.6	14.2	15.41	93.92	50.55	76.4	
800MHz 2x50W RRH	22.5	16.5	15.7	17.83	107.16	57.37	66.0	
VHLP800-11	-	-	-	-	-	-	145.6	
L3X3X1/4 x 14 ft	171.5	6.5	6.5	4.24	32.77	18.97	178.4	12.7
L3X3X1/4 x 7.446 ft	92.8	6.5	6.5	4.24	32.77	18.97	94.9	12.7
L6X4X3/8 x 1.892 ft	26.2	9.5	7.5	7.21	49.03	26.97	36.1	19.1
2L3X3X1/4 x 3.784 ft	48.9	9.5	6.5	6.71	46.27	24.97	68.1	18.0
Pipe2STD x 13.5 ft	165.5	5.9	5.9	2.38	22.55	12.94	118.4	8.8
Pipe2STD x 5.5 ft	69.5	5.9	5.9	2.38	22.55	12.94	48.2	8.8
Pipe3STD x 6.5 ft	81.5	7.0	7.0	3.50	28.71	16.47	72.6	11.2
L2-1/2X2-1/2X1/4 x 1.75 ft	24.5	6.0	6.0	3.54	28.90	16.97	19.7	11.2
2L2-1/2X2-1/2X3/16X3/8 x 6.654 ft	83.3	8.9	6.0	5.93	42.00	22.72	108.7	16.3

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

SPRINT Existing Facility

Site ID: CT03XC355

Crown Castle Westport
515 Post Road East
Westport, CT 06880

March 19, 2019

EBI Project Number: 6219000805

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	18.90 %

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

EBI Consulting
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March 19, 2019

SPRINT
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT03XC355 – Crown Castle Westport**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **515 Post Road East, Westport, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS), 2500 MHz (BRS) and 11 GHz bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **515 Post Road East, Westport, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 4 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

2) 4 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 3 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) 1 microwave channel (11 GHz) was considered each for Sectors A & C of the proposed installation. This channel has a transmit power of 1 Watt.

5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

6) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the Nokia AAHC** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands as well as the **Andrew VHLP 800-11** for transmissions in the 11 GHz band. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerlines of the proposed panel antennas and microwave dishes are **148 feet** above ground level (AGL) for **Sector A**, **148 feet** above ground level (AGL) for **Sector B** and **148 feet** above ground level (AGL) for Sector C.

9) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**148 feet**	Height (AGL):	**148 feet**	Height (AGL):	**148 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	360 Watts	Total TX Power(W):	360 Watts	Total TX Power(W):	360 Watts
ERP (W):	8,885.53	ERP (W):	8,885.53	ERP (W):	8,885.53
Antenna A1 MPE%	**2.10 %**	Antenna B1 MPE%	**2.10 %**	Antenna C1 MPE%	**2.10 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**148 feet**	Height (AGL):	**148 feet**	Height (AGL):	**148 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	3,838.67	ERP (W):	3,838.67	ERP (W):	3,838.67
Antenna A2 MPE%	**0.68 %**	Antenna B2 MPE%	**0.68 %**	Antenna C2 MPE%	**0.68 %**

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Andrew VHLP 800-11	35.25 dBd	148	11 GHz	1	1	3,349.65	**0.06**	A
Andrew VHLP 800-11	35.25 dBd	148	11 GHz	1	1	3,349.65	**0.06**	C

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Sectors A & C	**2.84 %**
Nextel	0.34 %
Westport	1.23 %
Westport Fire Dept	0.01 %
MetroPCS	5.10 %
AT&T	4.56 %
T-Mobile	4.82 %
Site Total MPE %:	**18.90 %**

SPRINT Sector A Total:	2.84 %
SPRINT Sector B Total:	2.78 %
SPRINT Sector C Total:	2.84 %
Site Total:	18.90 %

Sprint EME Power Values (Sectors A & C)

SPRINT _ Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz LTE	4	941.82	148	6.72	850 MHz	567	1.19%
Sprint 1900 MHz (PCS) LTE	4	1,279.56	148	9.13	1900 MHz (PCS)	1000	0.91%
Sprint 2500 MHz (BRS) LTE	3	1,279.56	148	6.84	2500 MHz (BRS)	1000	0.68%
Sprint 11 GHz Microwave	1	3,349.65	148	0.60	11 GHz	1000	0.06%
						Total:	**2.84%**

Summary

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

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	2.84 %
Sector B:	2.78 %
Sector C:	2.84 %
SPRINT Maximum MPE % (Sectors A & C):	2.84 %
Site Total:	18.90 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **18.90 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

RAMAKER & ASSOCIATES, INC.
100% EMPLOYEE-OWNED

April 1, 2019

Mike Kithcart
Transcend Wireless
10 Industrial Avenue, Suite 3
Mahwah, NJ 07430

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

SUBJECT: **STRUCTURAL ASSESSMENT**
148-FOOT MONOPOLE TOWER

CARRIER: **SPRINT**

SITE: **CT03XC355**
515 POST ROAD EAST
WESTPORT, FAIRFIELD COUNTY, CONNECTICUT 06880
RAMAKER & ASSOCIATES PROJECT NUMBER: 39392

RESULTS:	**TOWER:**	**56.1%**	**PASS**
	FOUNDATION:	**45.1%**	**PASS**

Dear Mike Kithcart:

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this structural assessment for the above-mentioned site. The purpose of this report is to determine the structural integrity of the existing structure with the existing and proposed loading. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the tower using tnxTower analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the tower loading occur.

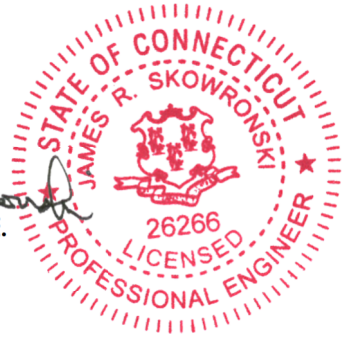
If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Thomas E. Moore
Project Engineer

James R. Skowronski, P.E.
Supervising Engineer



ANALYSIS CRITERIA

State Building Code	2018 CT State Building Code
Adopted Building Code	2015 IBC
Referenced Standard	TIA-222-G
Risk Category	II
Ultimate Design Wind Speed, V_{ult}	120 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	93 mph (3 sec. gust)
Design Wind Speed w/ Ice	50 mph (3 sec. gust)
Ice Thickness	3/4 inch
Exposure Category	B
Topographic Feature	None

SUPPORTING DOCUMENTATION

- Structural analysis by Black & Veatch, job number 182896, dated 7/5/16
- Structural analysis by FDH Velocitel, job number 15TGPG1400, dated 12/7/15
- Structural analysis by Black & Veatch, job number 182896, dated 9/30/15
- Structural analysis by PJF, job number 37513-1197.003.7805, dated 7/7/14
- Structural analysis by PJF, job number 32910-0089 Final R1, dated 4/13/11
- Construction drawings by RAMAKER, project number 39392
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

TOWER LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antenna equipment, mount, and cable configurations as shown in the following chart:

Elevation	Appurtenance	Mount	Coax	Owner	Status
148	**(3) RFS APXVSPP18-C-A20**	(1) Platform **w/Handrail & Kickers**	(3) Hybrid (6) 5/16 (2) 1/2 **(1) Hybrid**	Sprint	**Remove**
	(3) Argus LLPX310R				
	(3) CW RRH				
	(1) Decibel DB420-B				Existing
	(3) ALU 800MHz 2x50W RRH				
	(2) Andrew VHLP800-11				
	(3) Commscope NNVV-65B-R4				**Proposed**
	(3) Nokia AAHC				
	(3) ALU 800MHz 2x50W RRH				
	(3) ALU 1900MHz 4x45W RRH	(1) Collar Mount			Existing
144	(1) Andrew VHLP2.5-11	(1) Pipe Mount	(1) EW90	--	Existing
120	(3) Powerwave 7770.00	(1) Platform w/Handrail	(12) 1-5/8 (2) 3/4 (2) 5/8 (2) 3/8	AT&T	Existing
	(3) Powerwave P65-16-XLH-RR				
	(3) Quintel QS66512-3				
	(3) Ericsson RRUS-11				
	(3) Ericsson RRUS-32				
	(3) Ericsson RRUS-32 B2				
	(6) Powerwave LGP214nn				
	(6) Powerwave 7020.00				
	(2) Raycap DC6-48-60-18-8F				
96	(1) RFS PD220	(1) Low Profile Platform	(8) 7/8 (5) 1/2	--	Existing
	(2) RFS PD1110				
	(3) RFS PD83-1				
	(2) RFS PD201-1				
	(1) Decibel DB205-A				
	(1) Decibel DB224				
	(1) Decibel DB420-B				
	(1) Andrew DB806E-XT				
	(1) 6' Yagi				

Elevation	Appurtenance	Mount	Coax	Owner	Status
82	(6) RFS APXV18-206516S-C-A20	(1) Low Profile Platform	(18) 7/8 (6) 1-1/4	--	Existing
	(3) Andrew LNX-6515DS-VTM				
	(3) RFS ATMAA1412D-1A20				
	(3) Andrew ETW190VS12UB				
	(3) Commscope ATSBT-BOTTOM-FM-4G				
72	(3) Kathrein 800 10504	(3) Pipe Mount	(6) 1-5/8	--	Existing
53	(2) Radial Larsen BSA150B	(1) Standoff	(2) 1/2	--	Existing
50	(1) BULLET III	--	(1) 1/2	--	Existing

TOWER RESULTS

The maximum tower member stress capacities under the loading conditions previously described are as follows:

Component Type	Percent Capacity	Pass/Fail
Pole (overall)	56.1	Pass
Reinforcement (overall)	55.1	Pass
Anchor Rod	49.3	Pass
Stiffener	33.5	Pass
Base Plate	14.1	Pass
RATING	**56.1**	**PASS**

Results of the analysis show that the existing tower will be stressed to a maximum of 56.1 percent of capacity. Therefore, the existing tower will pass the TIA-222-G analysis requirements under proposed loading conditions.

FOUNDATION RESULTS

The maximum foundation stress capacities are as follows:

Component Type	Percent Capacity	Pass/Fail
Caisson - Soil Interaction	45.1	Pass
Caisson - Structural	36.3	Pass
RATING	**45.1**	**PASS**

The foundations were analyzed utilizing the structural reports referenced above. Results of the analysis show that the existing foundation will be stressed to a maximum of 45.1 percent of capacity. Therefore, the existing foundation will pass the TIA-222-G analysis requirements under proposed loading conditions.

LIMITATIONS

The recommendations contained within this report were developed using the supporting documentation as previously described. All recommendations pertain only to the proposed antenna installation activities as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

- Missing, corroding, and/or deteriorating members
- Improper manufacturing and/or construction
- Improper maintenance

RAMAKER assumes no responsibility for modifications completed prior to or hereafter in which RAMAKER was not directly involved. These modifications include but are not limited to the following:

- Replacing or strengthening bracing members
- Reinforcing or extending vertical members
- Installing or removing antenna mounting gates or side arms
- Changing loading configurations

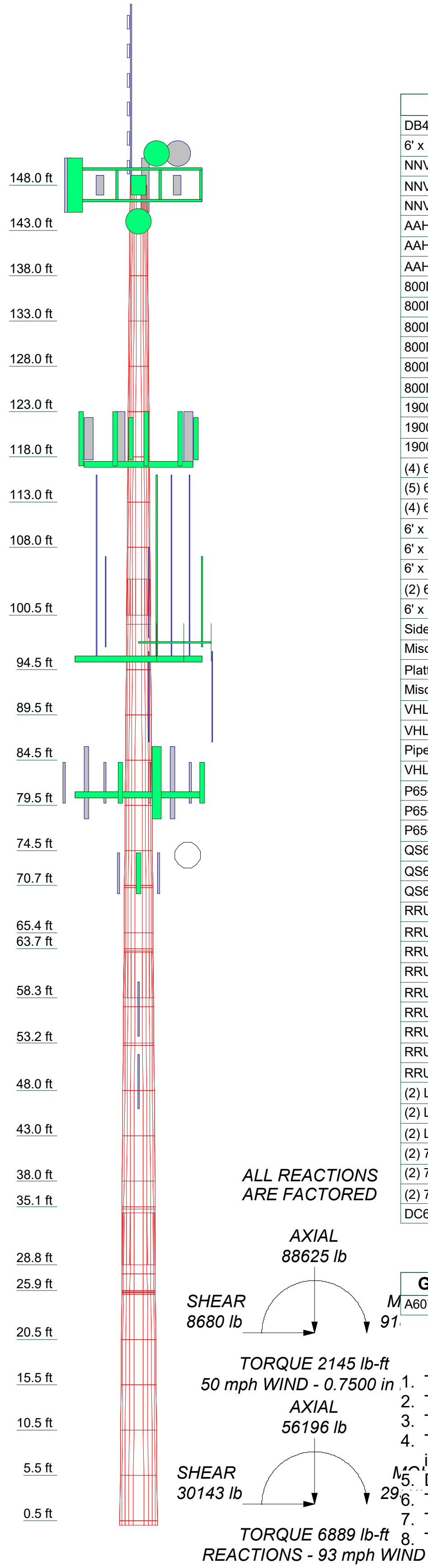
The tower owner is responsible for verifying that the existing loading on the structure is consistent with the loading applied to the structure within this report. If there is any information contrary to that contained herein, or if there are any defects arising from the original design, material, fabrication and erection deficiencies, this report should be disregarded and RAMAKER should be contacted immediately. RAMAKER is not liable for any representation, recommendation, or conclusion not expressly stated herein.

This analysis pertains only to the tower structure, and no analyses or conclusions were made regarding the antenna and equipment mounting structure(s). Analysis and certification of the antenna and equipment mounting structure(s) is performed and submitted separately.

ATTACHMENTS

- Analysis Figures
- Analysis Calculations

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	5.00	12	0.2500		22.0000	23.0151	A607-60	304.8
2	5.00	12	0.2500		23.0151	24.0302	A607-60	318.7
3	5.00	12	0.2500		24.0302	25.0452	A607-60	332.6
4	5.00	12	0.2500		25.0452	26.0602	A607-60	346.6
5	5.00	12	0.2500		26.0602	27.0753	A607-60	360.5
6	5.00	12	0.2500		27.0753	28.0903	A607-60	374.4
7	5.00	12	0.2500		28.0903	29.1054	A607-60	388.3
8	5.00	12	0.2500		29.1054	30.1204	A607-60	402.2
9	7.50	12	0.2500	4.00	30.1204	31.6430	A607-60	629.3
10	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
11	5.00	12	0.3750		31.3460	32.3610	A607-60	646.7
12	5.00	12	0.3750		32.3610	33.3761	A607-60	667.6
13	5.00	12	0.3750		33.3761	34.3911	A607-60	688.4
14	5.00	12	0.3750		34.3911	35.4061	A607-60	709.3
15	5.00	12	0.3750		35.4061	36.4211	A607-60	730.1
16	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
17	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
18	5.00	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
19	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
20	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
21	[illegible]	12	[illegible]	5.00	[illegible]	[illegible]	A607-60	[illegible]
22	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
23	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
24	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
25	5.00	12	0.4375		[illegible]	[illegible]	A607-60	961.4
26	5.00	12	0.4375		41.0552	42.0703	A607-60	985.7
27	5.00	12	0.4375		42.0703	43.0854	A607-60	1010.0
28	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
29	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
30	[illegible]	12	[illegible]	5.75	[illegible]	[illegible]	A607-60	[illegible]
31	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
32	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
33	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
34	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
35	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
36	5.00	12	0.7500		[illegible]	[illegible]	A607-60	1773.4
37	5.00	12	0.7375		45.7586	46.7736	A607-60	1801.2
38	5.00	12	0.7375		46.7736	47.7885	A607-60	1829.2
39	5.00	12	0.7250		47.7885	48.8035	A607-60	1857.1
40	5.00	12	0.7250		48.8035	49.8185	A607-60	1885.0
41	0.50	12	[illegible]		49.8[illegible]	49.9[illegible]	A607-60	[illegible]
								29569.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB420-B	148	DC6-48-60-18-8F	120
6' x 2" Pipe Mount	148	4'x2" Pipe Mount	120
NNVV-65B-R4	148	4'x2" Pipe Mount	120
NNVV-65B-R4	148	Platform Mount [LP 301-1]	120
NNVV-65B-R4	148	7770.00	120
AAHC	148	7770.00	120
AAHC	148	7770.00	120
AAHC	148	PD201-1	96
800MHz 2x50W RRH	148	PD83-1	96
800MHz 2x50W RRH	148	PD83-1	96
800MHz 2x50W RRH	148	PD83-1	96
800MHz 2x50W RRH	148	PD220	96
800MHz 2x50W RRH	148	DB205-A	96
800MHz 2x50W RRH	148	DB224	96
1900MHz 4x45W RRH	148	DB806E-XT	96
1900MHz 4x45W RRH	148	DB420-B	96
1900MHz 4x45W RRH	148	6' Yagi	96
(4) 6' x 2" Pipe Mount	148	(2) 6' x 2" Pipe Mount	96
(5) 6' x 2" Pipe Mount	148	(4) 6' x 2" Pipe Mount	96
(4) 6' x 2" Pipe Mount	148	(3) 6' x 2" Pipe Mount	96
6' x 2" Pipe Mount	148	Platform Mount [LP 1201-1]	96
6' x 2" Pipe Mount	148	PD1110	96
6' x 2" Pipe Mount	148	PD1110	96
(2) 6' x 3" Pipe Mount	148	PD201-1	96
6' x 3" Pipe Mount	148	APXV18-206516S-C w/Mount Pipe	82
Side Arm Mount [SO 102-3]	148	APXV18-206516S-C w/Mount Pipe	82
Miscellaneous [NA 510-1]	148	APXV18-206516S-C w/Mount Pipe	82
Platform Mount [LP 1201-1]	148	LNX-6515DS-A1M w/Mount Pipe	82
Miscellaneous [NA 509-3]	148	LNX-6515DS-A1M w/Mount Pipe	82
VHLP800-11	148	LNX-6515DS-A1M w/Mount Pipe	82
VHLP800-11	148	ETW190VS12UB	82
Pipe Mount [PM 601-1]	144	ETW190VS12UB	82
VHLP2.5-11	144	ETW190VS12UB	82
P65-16-XLH-RR	120	ATMAA1412D-1A20	82
P65-16-XLH-RR	120	ATMAA1412D-1A20	82
P65-16-XLH-RR	120	ATMAA1412D-1A20	82
QS66512-3	120	ATSBT-BOTTOM-FM-4G	82
QS66512-3	120	ATSBT-BOTTOM-FM-4G	82
QS66512-3	120	ATSBT-BOTTOM-FM-4G	82
RRUS-11	120	6' x 2" Pipe Mount	82
RRUS-11	120	6' x 2" Pipe Mount	82
RRUS-11	120	6' x 2" Pipe Mount	82
RRUS-32	120	Platform Mount [LP 1201-1]	82
RRUS-32	120	APXV18-206516S-C w/Mount Pipe	82
RRUS-32	120	APXV18-206516S-C w/Mount Pipe	82
RRUS-32 B2	120	APXV18-206516S-C w/Mount Pipe	82
RRUS-32 B2	120	Side Arm Mount [SO 102-3]	72
RRUS-32 B2	120	800 10504 w/Mount Pipe	72
(2) LGP214nn	120	800 10504 w/Mount Pipe	72
(2) LGP214nn	120	800 10504 w/Mount Pipe	72
(2) LGP214nn	120	Side Arm Mount [SO 702-1]	53
(2) 7020.00	120	BSA150B	53
(2) 7020.00	120	BSA150B	53
(2) 7020.00	120	8'x2" Antenna Mount Pipe	53
DC6-48-60-18-8F	120	BULLET III	50

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

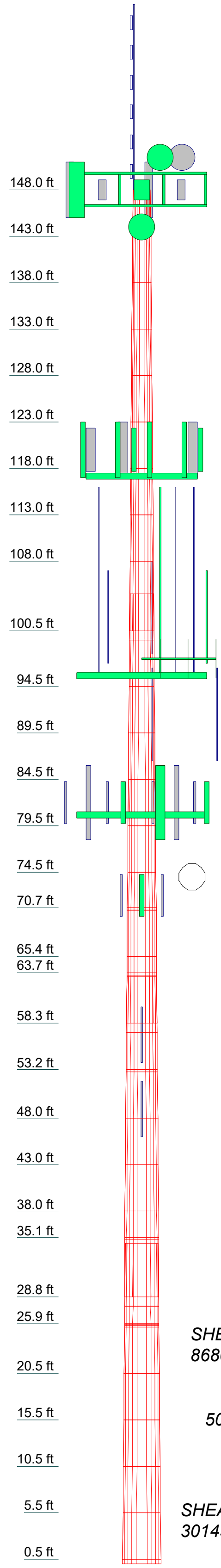
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 56.3%

Ramaker & Associates, Inc
855 Community Drive
Sauk City, WI 53583
Phone: (608) 643-4100
FAX:

Job: **CT03XC355**		
Project: **39392**		
Client: Sprint	Drawn by: TEM	App'd:
Code: TIA-222-G	Date: 07/18/18	Scale: NTS
Path: I:\39300\39392\Structural\tnx\39392 CCI.eri		Dwg No. E-1

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	5.00	12	0.2500		22.0000	23.0151		304.8
2	5.00	12	0.2500		23.0151	24.0301		318.7
3	5.00	12	0.2500		24.0301	25.0452		332.6
4	5.00	12	0.2500		25.0452	26.0602		346.6
5	5.00	12	0.2500		26.0602	27.0753		360.5
6	5.00	12	0.2500		27.0753	28.0903		374.4
7	5.00	12	0.2500		28.0903	29.1054		388.3
8	5.00	12	0.2500		29.1054	30.1204		402.2
9	7.50	12	0.2500	4.00	30.1204	31.6430		629.3
10	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
11	5.00	12	0.3750		[illegible]	32.3610		646.7
12	5.00	12	0.3750		32.3610	33.3761		667.6
13	5.00	12	0.3750		33.3761	34.3911		688.4
14	5.00	12	0.3750		34.3911	35.4061		709.3
15	5.00	12	0.3750		35.4061	36.421		730.1
16	[illegible]	12	[illegible]		[illegible]	[illegible]	A607-60	[illegible]
17	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
18	5.00	12	[illegible]		[illegible]	[illegible]		[illegible]
19	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
20	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
21	[illegible]	12	[illegible]	5.00	[illegible]	[illegible]		[illegible]
22	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
23	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
24	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
25	5.00	12	[illegible]		[illegible]	[illegible]		961.4
26	5.00	12	0.4375		41.0552	42.0703		985.7
27	5.00	12	0.4375		42.0703	43.0854		1010.0
28	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
29	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
30	[illegible]	12	[illegible]	5.75	[illegible]	[illegible]		[illegible]
31	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
32	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
33	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
34	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
35	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
36	5.00	12	[illegible]		[illegible]	[illegible]		[illegible]
37	5.00	12	0.7375		45.7586	46.7736		1801.2
38	5.00	12	0.7375		46.7736	47.7885		1829.2
39	5.00	12	0.7250		47.7885	48.8035		1857.1
40	5.00	12	0.7250		48.8035	49.8185		1885.0
41	0.50	12	[illegible]		[illegible]	[illegible]		[illegible]
								29569



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 56.3%

ALL REACTIONS ARE FACTORED

AXIAL 88625 lb
SHEAR 8680 lb
MOMENT 918592 lb-ft
TORQUE 2145 lb-ft
50 mph WIND - 0.7500 in ICE

AXIAL 56196 lb
SHEAR 30143 lb
MOMENT 2959548 lb-ft
TORQUE 6889 lb-ft
REACTIONS - 93 mph WIND

Ramaker & Associates, Inc
855 Community Drive
Sauk City, WI 53583
Phone: (608) 643-4100
FAX:

Job: **CT03XC355**		
Project: **39392**		
Client: Sprint	Drawn by: TEM	App'd:
Code: TIA-222-G	Date: 07/18/18	Scale: NTS
Path: I:\39300\39392\Structural\tnx\39392 CCI.eri		Dwg No. E-1

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
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 pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	148.00-143.00	5.00	0.00	12	22.0000	23.0151	0.2500	1.0000	A607-60 (60 ksi)
L2	143.00-138.00	5.00	0.00	12	23.0151	24.0301	0.2500	1.0000	A607-60 (60 ksi)
L3	138.00-133.00	5.00	0.00	12	24.0301	25.0452	0.2500	1.0000	A607-60 (60 ksi)
L4	133.00-128.00	5.00	0.00	12	25.0452	26.0602	0.2500	1.0000	A607-60 (60 ksi)
L5	128.00-123.00	5.00	0.00	12	26.0602	27.0753	0.2500	1.0000	A607-60 (60 ksi)
L6	123.00-118.00	5.00	0.00	12	27.0753	28.0903	0.2500	1.0000	A607-60 (60 ksi)
L7	118.00-113.00	5.00	0.00	12	28.0903	29.1054	0.2500	1.0000	A607-60 (60 ksi)
L8	113.00-108.00	5.00	0.00	12	29.1054	30.1204	0.2500	1.0000	A607-60 (60 ksi)
L9	108.00-100.50	7.50	4.00	12	30.1204	31.6430	0.2500	1.0000	A607-60 (60 ksi)
L10	100.50-99.50	5.00	0.00	12	30.3310	31.3460	0.3750	1.5000	A607-60 (60 ksi)
L11	99.50-94.50	5.00	0.00	12	31.3460	32.3610	0.3750	1.5000	A607-60 (60 ksi)
L12	94.50-89.50	5.00	0.00	12	32.3610	33.3761	0.3750	1.5000	A607-60 (60 ksi)
L13	89.50-84.50	5.00	0.00	12	33.3761	34.3911	0.3750	1.5000	A607-60

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L14	84.50-79.50	5.00	0.00	12	34.3911	35.4061	0.3750	1.5000	(60 ksi) A607-60 (60 ksi)
L15	79.50-74.50	5.00	0.00	12	35.4061	36.4211	0.3750	1.5000	A607-60 (60 ksi)
L16	74.50-70.67	3.83	0.00	12	36.4211	37.1993	0.3750	1.5000	A607-60 (60 ksi)
L17	70.67-70.42	0.25	0.00	12	37.1993	37.2500	0.3750	1.5000	A607-60 (60 ksi)
L18	70.42-65.42	5.00	0.00	12	37.2500	38.2651	0.3750	1.5000	A607-60 (60 ksi)
L19	65.42-63.67	1.75	0.00	12	38.2651	38.6203	0.3750	1.5000	A607-60 (60 ksi)
L20	63.67-63.42	0.25	0.00	12	38.6203	38.6711	0.3750	1.5000	A607-60 (60 ksi)
L21	63.42-58.25	5.17	5.00	12	38.6711	39.7200	0.3750	1.5000	A607-60 (60 ksi)
L22	58.25-57.25	6.00	0.00	12	37.9550	39.1731	0.4375	1.7500	A607-60 (60 ksi)
L23	57.25-53.23	4.02	0.00	12	39.1731	39.9894	0.4375	1.7500	A607-60 (60 ksi)
L24	53.23-52.98	0.25	0.00	12	39.9894	40.0401	0.4375	1.7500	A607-60 (60 ksi)
L25	52.98-47.98	5.00	0.00	12	40.0401	41.0552	0.4375	1.7500	A607-60 (60 ksi)
L26	47.98-42.98	5.00	0.00	12	41.0552	42.0703	0.4375	1.7500	A607-60 (60 ksi)
L27	42.98-37.98	5.00	0.00	12	42.0703	43.0854	0.4375	1.7500	A607-60 (60 ksi)
L28	37.98-35.13	2.85	0.00	12	43.0854	43.6648	0.4375	1.7500	A607-60 (60 ksi)
L29	35.13-34.88	0.25	0.00	12	43.6648	43.7155	0.6375	2.5500	A607-60 (60 ksi)
L30	34.88-28.75	6.13	5.75	12	43.7155	44.9590	0.6375	2.5500	A607-60 (60 ksi)
L31	28.75-27.75	6.75	0.00	12	42.9167	44.2869	0.7000	2.8000	A607-60 (60 ksi)
L32	27.75-25.88	1.88	0.00	12	44.2869	44.6675	0.6875	2.7500	A607-60 (60 ksi)
L33	25.88-25.75	0.13	0.00	12	44.6675	44.6929	0.5000	2.0000	A607-60 (60 ksi)
L34	25.75-25.63	0.13	0.00	12	44.6929	44.7182	0.7500	3.0000	A607-60 (60 ksi)
L35	25.63-25.50	0.13	0.00	12	44.7182	44.7436	0.7500	3.0000	A607-60 (60 ksi)
L36	25.50-20.50	5.00	0.00	12	44.7436	45.7586	0.7500	3.0000	A607-60 (60 ksi)
L37	20.50-15.50	5.00	0.00	12	45.7586	46.7736	0.7375	2.9500	A607-60 (60 ksi)
L38	15.50-10.50	5.00	0.00	12	46.7736	47.7885	0.7375	2.9500	A607-60 (60 ksi)
L39	10.50-5.50	5.00	0.00	12	47.7885	48.8035	0.7250	2.9000	A607-60 (60 ksi)
L40	5.50-0.50	5.00	0.00	12	48.8035	49.8185	0.7250	2.9000	A607-60 (60 ksi)
L41	0.50-0.00	0.50		12	49.8185	49.9200	0.7250	2.9000	A607-60 (60 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.6879	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.7387	18.3259	1212.2378	8.1499	11.9218	101.6825	2456.3223	9.0194	5.4980	21.992
L2	23.7387	18.3259	1212.2378	8.1499	11.9218	101.6825	2456.3223	9.0194	5.4980	21.992
	24.7896	19.1430	1381.7299	8.5133	12.4476	111.0038	2799.7593	9.4216	5.7701	23.08
L3	24.7896	19.1430	1381.7299	8.5133	12.4476	111.0038	2799.7593	9.4216	5.7701	23.08
	25.8405	19.9601	1566.3271	8.8767	12.9734	120.7338	3173.8034	9.8238	6.0421	24.168
L4	25.8405	19.9601	1566.3271	8.8767	12.9734	120.7338	3173.8034	9.8238	6.0421	24.168
	26.8913	20.7772	1766.6742	9.2401	13.4992	130.8726	3579.7609	10.2259	6.3141	25.257
L5	26.8913	20.7772	1766.6742	9.2401	13.4992	130.8726	3579.7609	10.2259	6.3141	25.257
	27.9422	21.5943	1983.4160	9.6034	14.0250	141.4202	4018.9385	10.6281	6.5862	26.345
L6	27.9422	21.5943	1983.4160	9.6034	14.0250	141.4202	4018.9385	10.6281	6.5862	26.345
	28.9930	22.4115	2217.1971	9.9668	14.5508	152.3765	4492.6424	11.0302	6.8582	27.433
L7	28.9930	22.4115	2217.1971	9.9668	14.5508	152.3765	4492.6424	11.0302	6.8582	27.433
	30.0439	23.2286	2468.6624	10.3302	15.0766	163.7415	5002.1793	11.4324	7.1302	28.521
L8	30.0439	23.2286	2468.6624	10.3302	15.0766	163.7415	5002.1793	11.4324	7.1302	28.521
	31.0948	24.0457	2738.4566	10.6936	15.6024	175.5153	5548.8555	11.8346	7.4023	29.609
L9	31.0948	24.0457	2738.4566	10.6936	15.6024	175.5153	5548.8555	11.8346	7.4023	29.609
	32.6711	25.2714	3178.9251	11.2387	16.3911	193.9425	6441.3640	12.4378	7.8103	31.241
L10	32.1093	36.1718	4143.0743	10.7242	15.7114	263.6980	8394.9918	17.8027	7.1237	18.997
	32.3195	37.3975	4578.6593	11.0876	16.2372	281.9854	9277.6051	18.4059	7.3957	19.722
L11	32.3195	37.3975	4578.6593	11.0876	16.2372	281.9854	9277.6051	18.4059	7.3957	19.722
	33.3703	38.6231	5043.7523	11.4510	16.7630	300.8859	10220.0095	19.0091	7.6678	20.447
L12	33.3703	38.6231	5043.7523	11.4510	16.7630	300.8859	10220.0095	19.0091	7.6678	20.447
	34.4211	39.8488	5539.3202	11.8144	17.2888	320.3994	11224.1644	19.6124	7.9398	21.173
L13	34.4211	39.8488	5539.3202	11.8144	17.2888	320.3994	11224.1644	19.6124	7.9398	21.173
	35.4720	41.0744	6066.3302	12.1778	17.8146	340.5261	12292.0296	20.2156	8.2118	21.898
L14	35.4720	41.0744	6066.3302	12.1778	17.8146	340.5261	12292.0296	20.2156	8.2118	21.898
	36.5228	42.3001	6625.7493	12.5411	18.3404	361.2659	13425.5645	20.8188	8.4838	22.624
L15	36.5228	42.3001	6625.7493	12.5411	18.3404	361.2659	13425.5645	20.8188	8.4838	22.624
	37.5737	43.5257	7218.5447	12.9045	18.8662	382.6188	14626.7286	21.4220	8.7559	23.349
L16	37.5737	43.5257	7218.5447	12.9045	18.8662	382.6188	14626.7286	21.4220	8.7559	23.349
	38.3792	44.4653	7696.1859	13.1831	19.2692	399.4030	15594.5591	21.8845	8.9644	23.905
L17	38.3792	44.4653	7696.1859	13.1831	19.2692	399.4030	15594.5591	21.8845	8.9644	23.905
	38.4318	44.5266	7728.0506	13.2013	19.2955	400.5103	15659.1258	21.9146	8.9780	23.941
L18	38.4318	44.5266	7728.0506	13.2013	19.2955	400.5103	15659.1258	21.9146	8.9780	23.941
	39.4826	45.7522	8383.9514	13.5646	19.8213	422.9769	16988.1586	22.5179	9.2500	24.667
L19	39.4826	45.7522	8383.9514	13.5646	19.8213	422.9769	16988.1586	22.5179	9.2500	24.667
	39.8504	46.1812	8621.9958	13.6918	20.0053	430.9851	17470.5011	22.7290	9.3452	24.921
L20	39.8504	46.1812	8621.9958	13.6918	20.0053	430.9851	17470.5011	22.7290	9.3452	24.921
	39.9029	46.2425	8656.3656	13.7100	20.0316	432.1352	17540.1436	22.7592	9.3588	24.957
L21	39.9029	46.2425	8656.3656	13.7100	20.0316	432.1352	17540.1436	22.7592	9.3588	24.957
	40.9889	47.5091	9387.3225	14.0855	20.5750	456.2499	19021.2604	23.3825	9.6400	25.707
L22	40.1904	52.8527	9495.5572	13.4313	19.6607	482.9721	19240.5733	26.0125	8.9994	20.57
	40.4006	54.5687	10450.7973	13.8673	20.2916	515.0296	21176.1487	26.8571	9.3259	21.316
L23	40.4006	54.5687	10450.7973	13.8673	20.2916	515.0296	21176.1487	26.8571	9.3259	21.316
	41.2457	55.7187	11125.5494	14.1596	20.7145	537.0899	22543.3793	27.4231	9.5447	21.816
L24	41.2457	55.7187	11125.5494	14.1596	20.7145	537.0899	22543.3793	27.4231	9.5447	21.816
	41.2983	55.7902	11168.4340	14.1777	20.7408	538.4767	22630.2752	27.4582	9.5583	21.847
L25	41.2983	55.7902	11168.4340	14.1777	20.7408	538.4767	22630.2752	27.4582	9.5583	21.847
	42.3492	57.2202	12049.4271	14.5411	21.2666	566.5892	24415.4061	28.1620	9.8303	22.469
L26	42.3492	57.2202	12049.4271	14.5411	21.2666	566.5892	24415.4061	28.1620	9.8303	22.469
	43.4000	58.6502	12975.5730	14.9045	21.7924	595.4170	26292.0287	28.8658	10.1023	23.091
L27	43.4000	58.6502	12975.5730	14.9045	21.7924	595.4170	26292.0287	28.8658	10.1023	23.091
	44.4509	60.0802	13948.0001	15.2679	22.3182	624.9602	28262.4296	29.5696	10.3744	23.713
L28	44.4509	60.0802	13948.0001	15.2679	22.3182	624.9602	28262.4296	29.5696	10.3744	23.713
	45.0508	60.8964	14524.2431	15.4754	22.6184	642.1441	29430.0543	29.9714	10.5297	24.068
L29	44.9802	88.3242	20871.4966	15.4038	22.6184	922.7681	42291.3107	43.4705	9.9937	15.676
	45.0328	88.4284	20945.4422	15.4219	22.6446	924.9623	42441.1444	43.5218	10.0073	15.698
L30	45.0328	88.4284	20945.4422	15.4219	22.6446	924.9623	42441.1444	43.5218	10.0073	15.698

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	46.3201	90.9810	22812.1050	15.8671	23.2888	979.5327	46223.5093	44.7781	10.3405	16.22
L31	45.3921	95.1564	21646.6910	15.1136	22.2308	973.7239	43862.0647	46.8331	9.6257	13.751
	45.6022	98.2448	23823.5899	15.6041	22.9406	1038.4901	48273.0521	48.3531	9.9929	14.276
L32	45.6066	96.5181	23418.3051	15.6086	22.9406	1020.8234	47451.8351	47.5033	10.0264	14.584
	46.0007	97.3607	24036.9900	15.7448	23.1378	1038.8640	48705.4585	47.9180	10.1284	14.732
L33	46.0668	71.1097	17705.9879	15.8120	23.1378	765.2420	35877.1318	34.9980	10.6309	21.262
	46.0931	71.1505	17736.5219	15.8210	23.1509	766.1264	35939.0020	35.0181	10.6377	21.275
L34	46.0049	106.1220	26155.8208	15.7315	23.1509	1129.7968	52998.7842	52.2300	9.9677	13.29
	46.0312	106.1833	26201.1573	15.7406	23.1641	1131.1129	53090.6482	52.2602	9.9745	13.299
L35	46.0312	106.1833	26201.1573	15.7406	23.1641	1131.1129	53090.6482	52.2602	9.9745	13.299
	46.0574	106.2446	26246.5462	15.7497	23.1772	1132.4298	53182.6184	52.2904	9.9813	13.308
L36	46.0574	106.2446	26246.5462	15.7497	23.1772	1132.4298	53182.6184	52.2904	9.9813	13.308
	47.1082	108.6958	28105.3812	16.1131	23.7030	1185.7333	56949.1220	53.4967	10.2533	13.671
L37	47.1126	106.9138	27659.9910	16.1176	23.7030	1166.9428	56046.6407	52.6197	10.2868	13.948
	48.1634	109.3242	29573.2220	16.4809	24.2287	1220.5859	59923.3654	53.8060	10.5588	14.317
L38	48.1634	109.3242	29573.2220	16.4809	24.2287	1220.5859	59923.3654	53.8060	10.5588	14.317
	49.2142	111.7345	31572.7042	16.8443	24.7545	1275.4345	63974.8586	54.9923	10.8308	14.686
L39	49.2186	109.8699	31062.3174	16.8488	24.7545	1254.8166	62940.6764	54.0746	10.8643	14.985
	50.2694	112.2393	33115.6478	17.2121	25.2802	1309.9427	67101.2805	55.2408	11.1363	15.36
L40	50.2694	112.2393	33115.6478	17.2121	25.2802	1309.9427	67101.2805	55.2408	11.1363	15.36
	51.3202	114.6088	35257.5293	17.5755	25.8060	1366.2540	71441.3132	56.4070	11.4084	15.736
L41	51.3202	114.6088	35257.5293	17.5755	25.8060	1366.2540	71441.3132	56.4070	11.4084	15.736
	51.4252	114.8457	35476.6598	17.6118	25.8586	1371.9503	71885.3309	56.5236	11.4356	15.773

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 148.00-143.00				1	1	1			
L2 143.00-138.00				1	1	1			
L3 138.00-133.00				1	1	1			
L4 133.00-128.00				1	1	1			
L5 128.00-123.00				1	1	1			
L6 123.00-118.00				1	1	1			
L7 118.00-113.00				1	1	1			
L8 113.00-108.00				1	1	1			
L9 108.00-100.50				1	1	1			
L10 100.50-99.50				1	1	1			
L11 99.50-94.50				1	1	1			
L12 94.50-89.50				1	1	1			
L13 89.50-84.50				1	1	1			
L14 84.50-79.50				1	1	1			
L15 79.50-74.50				1	1	1			
L16 74.50-70.67				1	1	1			
L17 70.67-70.42				1	1	1			
L18 70.42-65.42				1	1	1			
L19 65.42-63.67				1	1	1			
L20 63.67-63.42				1	1	1			
L21 63.42-58.25				1	1	1			
L22 58.25-57.25				1	1	1			
L23 57.25-53.23				1	1	1			
L24 53.23-52.98				1	1	1			
L25 52.98-47.98				1	1	1			
L26 47.98-42.98				1	1	1			
L27 42.98-37.98				1	1	1			
L28 37.98-35.13				1	1	1			
L29 35.13-34.88				1	1	0.965503			
L30 34.88-28.75				1	1	0.96501			
L31 28.75-27.75				1	1	0.966024			
L32 27.75-25.88				1	1	0.98109			

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	Double Angle Stitch Bolt Spacing Redundants in
L33 25.88-25.75				1	1	1			
L34 25.75-25.63				1	1	0.976971			
L35 25.63-25.50				1	1	0.976792			
L36 25.50-20.50				1	1	0.969798			
L37 20.50-15.50				1	1	0.979171			
L38 15.50-10.50				1	1	0.972673			
L39 10.50-5.50				1	1	0.982858			
L40 5.50-0.50				1	1	0.976796			
L41 0.50-0.00				1	1	0.976203			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
**********									
CCI-WAFP-065125	A	Surface Af (CaAa)	35.13 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-WAFP-065125	B	Surface Af (CaAa)	35.13 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-WAFP-065125	C	Surface Af (CaAa)	28.50 - 0.00	1	1	0.250 0.250	6.5000	15.5000	0.00
CCI-WAFP-065125	C	Surface Af (CaAa)	28.50 - 0.00	1	1	-0.250 -0.250	6.5000	15.5000	0.00
CCI-SFP-065125	C	Surface Af (CaAa)	35.13 - 23.13	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-SFP-060100	A	Surface Af (CaAa)	55.23 - 35.13	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	Surface Af (CaAa)	55.23 - 35.13	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	55.23 - 35.13	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-045100	A	Surface Af (CaAa)	72.17 - 62.17	1	1	0.500 0.500	4.5000	11.0000	0.00
CCI-SFP-045100	C	Surface Af (CaAa)	72.17 - 62.17	1	1	0.500 0.500	4.5000	11.0000	0.00
CCI-SFP-045100	B	Surface Af (CaAa)	72.17 - 62.17	1	1	0.500 0.500	4.5000	11.0000	0.00
**********									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
**********								
Safety Line 3/8	C	No	CaAa (Out Of Face)	148.00 - 10.00	1	No Ice 1/2" Ice 1" Ice	0.04 0.14 0.24	0.22 0.75 1.28
**********								
1 1/4	C	No	Inside Pole	148.00 - 8.00	3	No Ice 1/2" Ice	0.00 0.00	0.66 0.66

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	0.66
1 1/4	C	No	Inside Pole	148.00 - 8.00	1	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
5/16	C	No	Inside Pole	148.00 - 8.00	6	No Ice	0.00	0.09
						1/2" Ice	0.00	0.09
						1" Ice	0.00	0.09
1/2	C	No	Inside Pole	148.00 - 8.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
**********								
EW90	C	No	Inside Pole	144.00 - 8.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
**********								
1 5/8	B	No	Inside Pole	120.00 - 8.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
5/8	B	No	Inside Pole	120.00 - 8.00	2	No Ice	0.00	0.40
						1/2" Ice	0.00	0.40
						1" Ice	0.00	0.40
3/8	B	No	Inside Pole	120.00 - 8.00	2	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
3/4	B	No	Inside Pole	120.00 - 8.00	2	No Ice	0.00	0.47
						1/2" Ice	0.00	0.47
						1" Ice	0.00	0.47
**********								
7/8	A	No	Inside Pole	96.00 - 8.00	8	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
1/2	A	No	Inside Pole	96.00 - 8.00	5	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
**********								
7/8	A	No	Inside Pole	82.00 - 8.00	18	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
1 1/4	A	No	Inside Pole	82.00 - 8.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
**********								
1 5/8	C	No	Inside Pole	72.00 - 8.00	6	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
**********								
1/2	B	No	Inside Pole	53.00 - 8.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
**********								
1/2	A	No	Inside Pole	50.00 - 8.00	1	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
**********								

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 lb
L1	148.00-143.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	19.82
L2	143.00-138.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	21.10
L3	138.00-133.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	21.10
L4	133.00-128.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	21.10
L5	128.00-123.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.188	21.10
L6	123.00-118.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	28.76
		C	0.000	0.000	0.000	0.188	21.10
L7	118.00-113.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	71.90
		C	0.000	0.000	0.000	0.188	21.10
L8	113.00-108.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	71.90
		C	0.000	0.000	0.000	0.188	21.10
L9	108.00-100.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	107.85
		C	0.000	0.000	0.000	0.281	31.65
L10	100.50-99.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	14.38
		C	0.000	0.000	0.000	0.037	4.22
L11	99.50-94.50	A	0.000	0.000	0.000	0.000	8.36
		B	0.000	0.000	0.000	0.000	71.90
		C	0.000	0.000	0.000	0.188	21.10
L12	94.50-89.50	A	0.000	0.000	0.000	0.000	27.85
		B	0.000	0.000	0.000	0.000	71.90
		C	0.000	0.000	0.000	0.188	21.10
L13	89.50-84.50	A	0.000	0.000	0.000	0.000	27.85
		B	0.000	0.000	0.000	0.000	71.90
		C	0.000	0.000	0.000	0.188	21.10
L14	84.50-79.50	A	0.000	0.000	0.000	0.000	62.05
		B	0.000	0.000	0.000	0.000	71.90
		C	0.000	0.000	0.000	0.188	21.10
L15	79.50-74.50	A	0.000	0.000	0.000	0.000	96.25
		B	0.000	0.000	0.000	0.000	71.90
		C	0.000	0.000	0.000	0.188	21.10
L16	74.50-70.67	A	0.000	0.000	1.125	0.000	73.79
		B	0.000	0.000	1.125	0.000	55.12
		C	0.000	0.000	1.125	0.144	24.49
L17	70.67-70.42	A	0.000	0.000	0.188	0.000	4.81
		B	0.000	0.000	0.188	0.000	3.60
		C	0.000	0.000	0.188	0.009	2.62
L18	70.42-65.42	A	0.000	0.000	3.750	0.000	96.25
		B	0.000	0.000	3.750	0.000	71.90
		C	0.000	0.000	3.750	0.188	52.30
L19	65.42-63.67	A	0.000	0.000	1.313	0.000	33.69
		B	0.000	0.000	1.313	0.000	25.16
		C	0.000	0.000	1.313	0.066	18.31
L20	63.67-63.42	A	0.000	0.000	0.188	0.000	4.81
		B	0.000	0.000	0.188	0.000	3.60
		C	0.000	0.000	0.188	0.009	2.62
L21	63.42-58.25	A	0.000	0.000	0.938	0.000	99.46

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 lb
		B	0.000	0.000	0.938	0.000	74.30
		C	0.000	0.000	0.938	0.194	54.05
L22	58.25-57.25	A	0.000	0.000	0.000	0.000	19.25
		B	0.000	0.000	0.000	0.000	14.38
		C	0.000	0.000	0.000	0.037	10.46
L23	57.25-53.23	A	0.000	0.000	2.000	0.000	77.40
		B	0.000	0.000	2.000	0.000	57.82
		C	0.000	0.000	2.000	0.151	42.06
L24	53.23-52.98	A	0.000	0.000	0.250	0.000	4.81
		B	0.000	0.000	0.250	0.000	3.61
		C	0.000	0.000	0.250	0.009	2.62
L25	52.98-47.98	A	0.000	0.000	5.000	0.000	96.76
		B	0.000	0.000	5.000	0.000	74.40
		C	0.000	0.000	5.000	0.188	52.30
L26	47.98-42.98	A	0.000	0.000	5.000	0.000	97.50
		B	0.000	0.000	5.000	0.000	74.40
		C	0.000	0.000	5.000	0.188	52.30
L27	42.98-37.98	A	0.000	0.000	5.000	0.000	97.50
		B	0.000	0.000	5.000	0.000	74.40
		C	0.000	0.000	5.000	0.188	52.30
L28	37.98-35.13	A	0.000	0.000	2.854	0.000	55.65
		B	0.000	0.000	2.854	0.000	42.47
		C	0.000	0.000	2.854	0.107	29.85
L29	35.13-34.88	A	0.000	0.000	0.271	0.000	4.88
		B	0.000	0.000	0.271	0.000	3.72
		C	0.000	0.000	0.256	0.009	2.62
L30	34.88-28.75	A	0.000	0.000	6.635	0.000	119.44
		B	0.000	0.000	6.635	0.000	91.14
		C	0.000	0.000	6.277	0.230	64.07
L31	28.75-27.75	A	0.000	0.000	1.083	0.000	19.50
		B	0.000	0.000	1.083	0.000	14.88
		C	0.000	0.000	2.650	0.037	10.46
L32	27.75-25.88	A	0.000	0.000	2.031	0.000	36.56
		B	0.000	0.000	2.031	0.000	27.90
		C	0.000	0.000	5.984	0.070	19.61
L33	25.88-25.75	A	0.000	0.000	0.135	0.000	2.44
		B	0.000	0.000	0.135	0.000	1.86
		C	0.000	0.000	0.399	0.005	1.31
L34	25.75-25.63	A	0.000	0.000	0.135	0.000	2.44
		B	0.000	0.000	0.135	0.000	1.86
		C	0.000	0.000	0.399	0.005	1.31
L35	25.63-25.50	A	0.000	0.000	0.135	0.000	2.44
		B	0.000	0.000	0.135	0.000	1.86
		C	0.000	0.000	0.399	0.005	1.31
L36	25.50-20.50	A	0.000	0.000	5.417	0.000	97.50
		B	0.000	0.000	5.417	0.000	74.40
		C	0.000	0.000	13.267	0.188	52.30
L37	20.50-15.50	A	0.000	0.000	5.417	0.000	97.50
		B	0.000	0.000	5.417	0.000	74.40
		C	0.000	0.000	10.833	0.188	52.30
L38	15.50-10.50	A	0.000	0.000	5.417	0.000	97.50
		B	0.000	0.000	5.417	0.000	74.40
		C	0.000	0.000	10.833	0.188	52.30
L39	10.50-5.50	A	0.000	0.000	5.417	0.000	48.75
		B	0.000	0.000	5.417	0.000	37.20
		C	0.000	0.000	10.833	0.019	25.71
L40	5.50-0.50	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.00
		C	0.000	0.000	10.833	0.000	0.00
L41	0.50-0.00	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.542	0.000	0.00

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 lb
		C	0.000	0.000	1.083	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	148.00-143.00	A	1.740	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.927	29.04
L2	143.00-138.00	A	1.734	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.921	30.29
L3	138.00-133.00	A	1.728	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.915	30.26
L4	133.00-128.00	A	1.721	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.909	30.22
L5	128.00-123.00	A	1.714	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.902	30.19
L6	123.00-118.00	A	1.707	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	28.76
		C		0.000	0.000	0.000	1.895	30.15
L7	118.00-113.00	A	1.700	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	71.90
		C		0.000	0.000	0.000	1.888	30.11
L8	113.00-108.00	A	1.693	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	71.90
		C		0.000	0.000	0.000	1.880	30.07
L9	108.00-100.50	A	1.683	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	107.85
		C		0.000	0.000	0.000	2.805	45.03
L10	100.50-99.50	A	1.676	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	14.38
		C		0.000	0.000	0.000	0.374	6.00
L11	99.50-94.50	A	1.671	0.000	0.000	0.000	0.000	8.36
		B		0.000	0.000	0.000	0.000	71.90
		C		0.000	0.000	0.000	1.858	29.95
L12	94.50-89.50	A	1.662	0.000	0.000	0.000	0.000	27.85
		B		0.000	0.000	0.000	0.000	71.90
		C		0.000	0.000	0.000	1.849	29.91
L13	89.50-84.50	A	1.653	0.000	0.000	0.000	0.000	27.85
		B		0.000	0.000	0.000	0.000	71.90
		C		0.000	0.000	0.000	1.840	29.86
L14	84.50-79.50	A	1.643	0.000	0.000	0.000	0.000	62.05
		B		0.000	0.000	0.000	0.000	71.90
		C		0.000	0.000	0.000	1.830	29.81
L15	79.50-74.50	A	1.633	0.000	0.000	0.000	0.000	96.25
		B		0.000	0.000	0.000	0.000	71.90
		C		0.000	0.000	0.000	1.820	29.75
L16	74.50-70.67	A	1.623	0.000	0.000	1.397	0.000	90.02
		B		0.000	0.000	1.397	0.000	71.35
		C		0.000	0.000	1.397	1.388	47.32
L17	70.67-70.42	A	1.618	0.000	0.000	0.233	0.000	7.51
		B		0.000	0.000	0.233	0.000	6.29
		C		0.000	0.000	0.233	0.090	5.74

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 lb
L18	70.42-65.42	A	1.612	0.000	0.000	4.652	0.000	149.87
		B		0.000	0.000	4.652	0.000	125.52
		C		0.000	0.000	4.652	1.800	114.46
L19	65.42-63.67	A	1.604	0.000	0.000	1.627	0.000	52.32
		B		0.000	0.000	1.627	0.000	43.80
		C		0.000	0.000	1.627	0.627	39.92
L20	63.67-63.42	A	1.602	0.000	0.000	0.232	0.000	7.47
		B		0.000	0.000	0.232	0.000	6.25
		C		0.000	0.000	0.232	0.089	5.70
L21	63.42-58.25	A	1.595	0.000	0.000	1.161	0.000	112.67
		B		0.000	0.000	1.161	0.000	87.51
		C		0.000	0.000	1.161	1.842	75.99
L22	58.25-57.25	A	1.586	0.000	0.000	0.000	0.000	19.25
		B		0.000	0.000	0.000	0.000	14.38
		C		0.000	0.000	0.000	0.356	12.15
L23	57.25-53.23	A	1.579	0.000	0.000	2.632	0.000	101.94
		B		0.000	0.000	2.632	0.000	82.36
		C		0.000	0.000	2.632	1.421	73.33
L24	53.23-52.98	A	1.573	0.000	0.000	0.329	0.000	7.86
		B		0.000	0.000	0.329	0.000	6.66
		C		0.000	0.000	0.329	0.088	6.08
L25	52.98-47.98	A	1.565	0.000	0.000	6.565	0.000	157.39
		B		0.000	0.000	6.565	0.000	135.04
		C		0.000	0.000	6.565	1.753	121.23
L26	47.98-42.98	A	1.549	0.000	0.000	6.549	0.000	157.32
		B		0.000	0.000	6.549	0.000	134.22
		C		0.000	0.000	6.549	1.736	120.33
L27	42.98-37.98	A	1.531	0.000	0.000	6.531	0.000	156.43
		B		0.000	0.000	6.531	0.000	133.33
		C		0.000	0.000	6.531	1.718	119.34
L28	37.98-35.13	A	1.515	0.000	0.000	3.719	0.000	88.85
		B		0.000	0.000	3.719	0.000	75.66
		C		0.000	0.000	3.719	0.972	67.63
L29	35.13-34.88	A	1.509	0.000	0.000	0.346	0.000	7.99
		B		0.000	0.000	0.346	0.000	6.83
		C		0.000	0.000	0.296	0.085	6.13
L30	34.88-28.75	A	1.494	0.000	0.000	8.466	0.000	194.75
		B		0.000	0.000	8.466	0.000	166.45
		C		0.000	0.000	7.247	2.060	149.08
L31	28.75-27.75	A	1.477	0.000	0.000	1.382	0.000	31.80
		B		0.000	0.000	1.382	0.000	27.18
		C		0.000	0.000	3.258	0.336	42.78
L32	27.75-25.88	A	1.469	0.000	0.000	2.582	0.000	59.12
		B		0.000	0.000	2.582	0.000	50.46
		C		0.000	0.000	7.378	0.621	90.22
L33	25.88-25.75	A	1.464	0.000	0.000	0.172	0.000	3.93
		B		0.000	0.000	0.172	0.000	3.36
		C		0.000	0.000	0.492	0.041	5.99
L34	25.75-25.63	A	1.463	0.000	0.000	0.172	0.000	3.93
		B		0.000	0.000	0.172	0.000	3.36
		C		0.000	0.000	0.491	0.041	5.99
L35	25.63-25.50	A	1.462	0.000	0.000	0.172	0.000	3.93
		B		0.000	0.000	0.172	0.000	3.36
		C		0.000	0.000	0.491	0.041	5.99
L36	25.50-20.50	A	1.447	0.000	0.000	6.863	0.000	156.51
		B		0.000	0.000	6.863	0.000	133.41
		C		0.000	0.000	16.525	1.634	206.02
L37	20.50-15.50	A	1.412	0.000	0.000	6.828	0.000	154.72
		B		0.000	0.000	6.828	0.000	131.62
		C		0.000	0.000	13.657	1.599	174.21
L38	15.50-10.50	A	1.366	0.000	0.000	6.783	0.000	152.43

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 lb
		B		0.000	0.000	6.783	0.000	129.33
		C		0.000	0.000	13.566	1.554	169.40
L39	10.50-5.50	A	1.302	0.000	0.000	6.718	0.000	100.45
		B		0.000	0.000	6.718	0.000	88.90
		C		0.000	0.000	13.437	0.149	129.80
L40	5.50-0.50	A	1.180	0.000	0.000	6.597	0.000	45.81
		B		0.000	0.000	6.597	0.000	45.81
		C		0.000	0.000	13.193	0.000	91.61
L41	0.50-0.00	A	0.920	0.000	0.000	0.634	0.000	3.40
		B		0.000	0.000	0.634	0.000	3.40
		C		0.000	0.000	1.267	0.000	6.80

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	148.00-143.00	-0.1853	0.1070	-1.2298	0.7100
L2	143.00-138.00	-0.1855	0.1071	-1.2396	0.7157
L3	138.00-133.00	-0.1856	0.1071	-1.2483	0.7207
L4	133.00-128.00	-0.1857	0.1072	-1.2560	0.7252
L5	128.00-123.00	-0.1858	0.1073	-1.2629	0.7291
L6	123.00-118.00	-0.1859	0.1073	-1.2689	0.7326
L7	118.00-113.00	-0.1859	0.1074	-1.2741	0.7356
L8	113.00-108.00	-0.1860	0.1074	-1.2785	0.7381
L9	108.00-100.50	-0.1861	0.1075	-1.2829	0.7407
L10	100.50-99.50	-0.1864	0.1076	-1.2870	0.7431
L11	99.50-94.50	-0.1864	0.1076	-1.2847	0.7417
L12	94.50-89.50	-0.1865	0.1077	-1.2866	0.7428
L13	89.50-84.50	-0.1865	0.1077	-1.2877	0.7435
L14	84.50-79.50	-0.1866	0.1077	-1.2882	0.7437
L15	79.50-74.50	-0.1866	0.1077	-1.2879	0.7436
L16	74.50-70.67	-0.1464	0.0845	-1.0347	0.5974
L17	70.67-70.42	-0.1101	0.0636	-0.7955	0.4593
L18	70.42-65.42	-0.1108	0.0640	-0.7986	0.4610
L19	65.42-63.67	-0.1116	0.0644	-0.8023	0.4632
L20	63.67-63.42	-0.1118	0.0646	-0.8033	0.4638
L21	63.42-58.25	-0.1610	0.0930	-1.1215	0.6475
L22	58.25-57.25	-0.1869	0.1079	-1.2816	0.7400
L23	57.25-53.23	-0.1303	0.0752	-0.9019	0.5207
L24	53.23-52.98	-0.1003	0.0579	-0.6982	0.4031
L25	52.98-47.98	-0.1009	0.0583	-0.7005	0.4045
L26	47.98-42.98	-0.1021	0.0589	-0.7043	0.4066
L27	42.98-37.98	-0.1032	0.0596	-0.7071	0.4083
L28	37.98-35.13	-0.1041	0.0601	-0.7085	0.4091
L29	35.13-34.88	-0.1016	-0.1299	-0.7056	-0.0876
L30	34.88-28.75	-0.1023	-0.1307	-0.7058	-0.0882
L31	28.75-27.75	-0.0830	2.5553	-0.5743	2.5498
L32	27.75-25.88	-0.0784	3.2491	-0.5365	3.2295
L33	25.88-25.75	-0.0786	3.2552	-0.5362	3.2355
L34	25.75-25.63	-0.0786	3.2588	-0.5366	3.2389
L35	25.63-25.50	-0.0787	3.2598	-0.5366	3.2398
L36	25.50-20.50	-0.0841	2.0436	-0.5655	2.1608
L37	20.50-15.50	-0.0901	0.8087	-0.5917	1.0763
L38	15.50-10.50	-0.0911	0.8165	-0.5849	1.0788
L39	10.50-5.50	-0.0092	0.7794	-0.0580	0.7990
L40	5.50-0.50	0.0000	0.7814	0.0000	0.7696

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L41	0.50-0.00	0.0000	0.7852	0.0000	0.7616

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	36	CCI-SFP-045100	70.67 - 72.17	1.0000	1.0000
L16	37	CCI-SFP-045100	70.67 - 72.17	1.0000	1.0000
L16	38	CCI-SFP-045100	70.67 - 72.17	1.0000	1.0000
L17	36	CCI-SFP-045100	70.42 - 70.67	1.0000	1.0000
L17	37	CCI-SFP-045100	70.42 - 70.67	1.0000	1.0000
L17	38	CCI-SFP-045100	70.42 - 70.67	1.0000	1.0000
L18	36	CCI-SFP-045100	65.42 - 70.42	1.0000	1.0000
L18	37	CCI-SFP-045100	65.42 - 70.42	1.0000	1.0000
L18	38	CCI-SFP-045100	65.42 - 70.42	1.0000	1.0000
L19	36	CCI-SFP-045100	63.67 - 65.42	1.0000	1.0000
L19	37	CCI-SFP-045100	63.67 - 65.42	1.0000	1.0000
L19	38	CCI-SFP-045100	63.67 - 65.42	1.0000	1.0000
L20	36	CCI-SFP-045100	63.42 - 63.67	1.0000	1.0000
L20	37	CCI-SFP-045100	63.42 - 63.67	1.0000	1.0000
L20	38	CCI-SFP-045100	63.42 - 63.67	1.0000	1.0000
L21	36	CCI-SFP-045100	62.17 - 63.42	1.0000	1.0000
L21	37	CCI-SFP-045100	62.17 - 63.42	1.0000	1.0000
L21	38	CCI-SFP-045100	62.17 - 63.42	1.0000	1.0000
L23	33	CCI-SFP-060100	53.23 - 55.23	1.0000	1.0000
L23	34	CCI-SFP-060100	53.23 - 55.23	1.0000	1.0000
L23	35	CCI-SFP-060100	53.23 - 55.23	1.0000	1.0000
L24	33	CCI-SFP-060100	52.98 - 53.23	1.0000	1.0000
L24	34	CCI-SFP-060100	52.98 - 53.23	1.0000	1.0000
L24	35	CCI-SFP-060100	52.98 - 53.23	1.0000	1.0000
L25	33	CCI-SFP-060100	47.98 - 52.98	1.0000	1.0000
L25	34	CCI-SFP-060100	47.98 - 52.98	1.0000	1.0000
L25	35	CCI-SFP-060100	47.98 - 52.98	1.0000	1.0000
L26	33	CCI-SFP-060100	42.98 - 47.98	1.0000	1.0000
L26	34	CCI-SFP-060100	42.98 - 47.98	1.0000	1.0000
L26	35	CCI-SFP-060100	42.98 - 47.98	1.0000	1.0000
L27	33	CCI-SFP-060100	37.98 - 42.98	1.0000	1.0000
L27	34	CCI-SFP-060100	37.98 - 42.98	1.0000	1.0000
L27	35	CCI-SFP-060100	37.98 - 42.98	1.0000	1.0000
L28	33	CCI-SFP-060100	35.13 - 37.98	1.0000	1.0000
L28	34	CCI-SFP-060100	35.13 - 37.98	1.0000	1.0000
L28	35	CCI-SFP-060100	35.13 - 37.98	1.0000	1.0000
L29	28	CCI-WAFP-065125	34.88 - 35.13	1.0000	1.0000
L29	29	CCI-WAFP-065125	34.88 - 35.13	1.0000	1.0000
L29	32	CCI-SFP-065125	34.88 - 35.13	1.0000	1.0000
L30	28	CCI-WAFP-065125	28.75 - 34.88	1.0000	1.0000
L30	29	CCI-WAFP-065125	28.75 - 34.88	1.0000	1.0000
L30	32	CCI-SFP-065125	28.75 - 34.88	1.0000	1.0000
L30	30	CCI-WAFP-065125	28.75 - 28.50	1.0000	1.0000
L30	31	CCI-WAFP-065125	28.75 - 28.50	1.0000	1.0000
L32	28	CCI-WAFP-065125	25.88 - 27.75	1.0000	1.0000
L32	29	CCI-WAFP-065125	25.88 - 27.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L32	30	CCI-WAFP-065125	25.88 - 27.75	1.0000	1.0000
L32	31	CCI-WAFP-065125	25.88 - 27.75	1.0000	1.0000
L32	32	CCI-SFP-065125	25.88 - 27.75	1.0000	1.0000
L33	28	CCI-WAFP-065125	25.75 - 25.88	1.0000	1.0000
L33	29	CCI-WAFP-065125	25.75 - 25.88	1.0000	1.0000
L33	30	CCI-WAFP-065125	25.75 - 25.88	1.0000	1.0000
L33	31	CCI-WAFP-065125	25.75 - 25.88	1.0000	1.0000
L33	32	CCI-SFP-065125	25.75 - 25.88	1.0000	1.0000
L34	28	CCI-WAFP-065125	25.63 - 25.75	1.0000	1.0000
L34	29	CCI-WAFP-065125	25.63 - 25.75	1.0000	1.0000
L34	30	CCI-WAFP-065125	25.63 - 25.75	1.0000	1.0000
L34	31	CCI-WAFP-065125	25.63 - 25.75	1.0000	1.0000
L34	32	CCI-SFP-065125	25.63 - 25.75	1.0000	1.0000
L35	28	CCI-WAFP-065125	25.50 - 25.63	1.0000	1.0000
L35	29	CCI-WAFP-065125	25.50 - 25.63	1.0000	1.0000
L35	30	CCI-WAFP-065125	25.50 - 25.63	1.0000	1.0000
L35	31	CCI-WAFP-065125	25.50 - 25.63	1.0000	1.0000
L35	32	CCI-SFP-065125	25.50 - 25.63	1.0000	1.0000
L36	28	CCI-WAFP-065125	20.50 - 25.50	1.0000	1.0000
L36	29	CCI-WAFP-065125	20.50 - 25.50	1.0000	1.0000
L36	30	CCI-WAFP-065125	20.50 - 25.50	1.0000	1.0000
L36	31	CCI-WAFP-065125	20.50 - 25.50	1.0000	1.0000
L36	32	CCI-SFP-065125	23.13 - 25.50	1.0000	1.0000
L37	28	CCI-WAFP-065125	15.50 - 20.50	1.0000	1.0000
L37	29	CCI-WAFP-065125	15.50 - 20.50	1.0000	1.0000
L37	30	CCI-WAFP-065125	15.50 - 20.50	1.0000	1.0000
L37	31	CCI-WAFP-065125	15.50 - 20.50	1.0000	1.0000
L38	28	CCI-WAFP-065125	10.50 - 15.50	1.0000	1.0000
L38	29	CCI-WAFP-065125	10.50 - 15.50	1.0000	1.0000
L38	30	CCI-WAFP-065125	10.50 - 15.50	1.0000	1.0000
L38	31	CCI-WAFP-065125	10.50 - 15.50	1.0000	1.0000
L39	28	CCI-WAFP-065125	5.50 - 10.50	1.0000	1.0000
L39	29	CCI-WAFP-065125	5.50 - 10.50	1.0000	1.0000
L39	30	CCI-WAFP-065125	5.50 - 10.50	1.0000	1.0000
L39	31	CCI-WAFP-065125	5.50 - 10.50	1.0000	1.0000
L40	28	CCI-WAFP-065125	0.50 - 5.50	1.0000	1.0000
L40	29	CCI-WAFP-065125	0.50 - 5.50	1.0000	1.0000
L40	30	CCI-WAFP-065125	0.50 - 5.50	1.0000	1.0000
L40	31	CCI-WAFP-065125	0.50 - 5.50	1.0000	1.0000
L41	28	CCI-WAFP-065125	0.00 - 0.50	1.0000	1.0000
L41	29	CCI-WAFP-065125	0.00 - 0.50	1.0000	1.0000
L41	30	CCI-WAFP-065125	0.00 - 0.50	1.0000	1.0000
L41	31	CCI-WAFP-065125	0.00 - 0.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
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DB420-B	A	From Face	0.00	0.0000	148.00	No Ice	3.33	3.33	34.00

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 lb
			0.00			1/2" Ice	5.99	5.99	44.20
			10.00			1" Ice	8.66	8.66	54.40
6' x 2" Pipe Mount	A	From Face	0.00	0.0000	148.00	No Ice	1.43	1.43	21.90
			0.00			1/2" Ice	1.92	1.92	32.73
			1.00			1" Ice	2.29	2.29	47.61
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NNVV-65B-R4	A	From Face	4.00	0.0000	148.00	No Ice	12.27	5.75	77.40
			-7.00			1/2" Ice	12.77	6.21	149.54
			0.00			1" Ice	13.27	6.67	228.32
NNVV-65B-R4	B	From Face	4.00	0.0000	148.00	No Ice	12.27	5.75	77.40
			-7.00			1/2" Ice	12.77	6.21	149.54
			0.00			1" Ice	13.27	6.67	228.32
NNVV-65B-R4	C	From Face	4.00	0.0000	148.00	No Ice	12.27	5.75	77.40
			7.00			1/2" Ice	12.77	6.21	149.54
			0.00			1" Ice	13.27	6.67	228.32
AAHC	A	From Face	4.00	0.0000	148.00	No Ice	4.20	2.07	103.70
			0.00			1/2" Ice	4.46	2.26	136.01
			0.00			1" Ice	4.72	2.46	172.07
AAHC	B	From Face	4.00	0.0000	148.00	No Ice	4.20	2.07	103.70
			0.00			1/2" Ice	4.46	2.26	136.01
			0.00			1" Ice	4.72	2.46	172.07
AAHC	C	From Face	4.00	0.0000	148.00	No Ice	4.20	2.07	103.70
			0.00			1/2" Ice	4.46	2.26	136.01
			0.00			1" Ice	4.72	2.46	172.07
800MHz 2x50W RRH	A	From Face	4.00	0.0000	148.00	No Ice	2.06	1.93	64.00
			-2.00			1/2" Ice	2.24	2.11	86.12
			0.50			1" Ice	2.43	2.29	111.30
800MHz 2x50W RRH	B	From Face	4.00	0.0000	148.00	No Ice	2.06	1.93	64.00
			-7.00			1/2" Ice	2.24	2.11	86.12
			0.50			1" Ice	2.43	2.29	111.30
800MHz 2x50W RRH	C	From Face	4.00	0.0000	148.00	No Ice	2.06	1.93	64.00
			7.00			1/2" Ice	2.24	2.11	86.12
			0.50			1" Ice	2.43	2.29	111.30
800MHz 2x50W RRH	A	From Face	4.00	0.0000	148.00	No Ice	2.06	1.93	64.00
			0.00			1/2" Ice	2.24	2.11	86.12
			2.50			1" Ice	2.43	2.29	111.30
800MHz 2x50W RRH	B	From Face	4.00	0.0000	148.00	No Ice	2.06	1.93	64.00
			-7.00			1/2" Ice	2.24	2.11	86.12
			0.50			1" Ice	2.43	2.29	111.30
800MHz 2x50W RRH	C	From Face	4.00	0.0000	148.00	No Ice	2.06	1.93	64.00
			7.00			1/2" Ice	2.24	2.11	86.12
			2.50			1" Ice	2.43	2.29	111.30
1900MHz 4x45W RRH	A	From Leg	0.50	0.0000	148.00	No Ice	2.32	2.24	59.50
			0.00			1/2" Ice	2.53	2.44	82.62
			1.00			1" Ice	2.74	2.65	108.98
1900MHz 4x45W RRH	B	From Leg	0.50	0.0000	148.00	No Ice	2.32	2.24	59.50
			0.00			1/2" Ice	2.53	2.44	82.62
			1.00			1" Ice	2.74	2.65	108.98
1900MHz 4x45W RRH	C	From Leg	0.50	0.0000	148.00	No Ice	2.32	2.24	59.50
			0.00			1/2" Ice	2.53	2.44	82.62
			1.00			1" Ice	2.74	2.65	108.98
(4) 6' x 2" Pipe Mount	A	From Face	4.00	0.0000	148.00	No Ice	1.43	1.43	21.90
			0.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61
(5) 6' x 2" Pipe Mount	B	From Face	4.00	0.0000	148.00	No Ice	1.43	1.43	21.90
			0.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(4) 6' x 2" Pipe Mount	C	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	21.90 32.73 47.61
6' x 2" Pipe Mount	A	From Leg	0.50 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	21.90 32.73 47.61
6' x 2" Pipe Mount	B	From Leg	0.50 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	21.90 32.73 47.61
6' x 2" Pipe Mount	C	From Leg	0.50 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	21.90 32.73 47.61
(2) 6' x 3" Pipe Mount	B	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.93 2.29 2.67	1.93 2.29 2.67	45.50 60.68 80.03
6' x 3" Pipe Mount	C	From Face	4.00 -2.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.93 2.29 2.67	1.93 2.29 2.67	45.50 60.68 80.03
Side Arm Mount [SO 102-3]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	81.00 111.00 141.00
Miscellaneous [NA 510-1]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice	6.00 8.50 11.00	6.00 8.50 11.00	255.70 339.50 423.30
Platform Mount [LP 1201-1]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice	23.10 26.80 30.50	23.10 26.80 30.50	2100.00 2500.00 2900.00
Miscellaneous [NA 509-3]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice	11.84 16.96 22.08	11.84 16.96 22.08	275.00 296.20 317.40
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Pipe Mount [PM 601-1]	C	From Face	0.50 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice 1" Ice	3.00 3.74 4.48	0.90 1.12 1.34	65.00 79.14 93.27
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7770.00	A	From Leg	3.00 -5.50 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	5.57 5.93 6.30	2.92 3.27 3.62	12.10 44.85 82.42
7770.00	B	From Leg	3.00 -5.50 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	5.57 5.93 6.30	2.92 3.27 3.62	12.10 44.85 82.42
7770.00	C	From Leg	3.00 -5.50 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	5.57 5.93 6.30	2.92 3.27 3.62	12.10 44.85 82.42
P65-16-XLH-RR	A	From Leg	3.00 5.50 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	4.70 5.15 5.60	64.00 111.28 164.59
P65-16-XLH-RR	B	From Leg	3.00 5.50 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	4.70 5.15 5.60	64.00 111.28 164.59
P65-16-XLH-RR	C	From Leg	3.00 5.50 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	4.70 5.15 5.60	64.00 111.28 164.59
QS66512-3	A	From Leg	3.00 -2.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	6.80 7.27 7.72	112.00 169.20 232.66
QS66512-3	B	From Leg	3.00	0.0000	120.00	No Ice	8.13	6.80	112.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			-2.00			1/2" Ice	8.59	7.27	169.20
			0.00			1" Ice	9.05	7.72	232.66
QS66512-3	C	From Leg	3.00	0.0000	120.00	No Ice	8.13	6.80	112.00
			-2.00			1/2" Ice	8.59	7.27	169.20
			0.00			1" Ice	9.05	7.72	232.66
RRUS-11	A	From Leg	3.00	0.0000	120.00	No Ice	2.78	1.19	50.71
			5.50			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-11	B	From Leg	3.00	0.0000	120.00	No Ice	2.78	1.19	50.71
			5.50			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-11	C	From Leg	3.00	0.0000	120.00	No Ice	2.78	1.19	50.71
			5.50			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-32	A	From Leg	3.00	0.0000	120.00	No Ice	2.69	1.59	50.80
			-2.00			1/2" Ice	2.91	1.78	71.33
			0.00			1" Ice	3.14	1.97	95.01
RRUS-32	B	From Leg	3.00	0.0000	120.00	No Ice	2.69	1.59	50.80
			-2.00			1/2" Ice	2.91	1.78	71.33
			0.00			1" Ice	3.14	1.97	95.01
RRUS-32	C	From Leg	3.00	0.0000	120.00	No Ice	2.69	1.59	50.80
			-2.00			1/2" Ice	2.91	1.78	71.33
			0.00			1" Ice	3.14	1.97	95.01
RRUS-32 B2	A	From Leg	3.00	0.0000	120.00	No Ice	2.73	1.67	52.90
			-2.00			1/2" Ice	2.95	1.86	73.96
			0.00			1" Ice	3.18	2.05	98.21
RRUS-32 B2	B	From Leg	3.00	0.0000	120.00	No Ice	2.73	1.67	52.90
			-2.00			1/2" Ice	2.95	1.86	73.96
			0.00			1" Ice	3.18	2.05	98.21
RRUS-32 B2	C	From Leg	3.00	0.0000	120.00	No Ice	2.73	1.67	52.90
			-2.00			1/2" Ice	2.95	1.86	73.96
			0.00			1" Ice	3.18	2.05	98.21
(2) LGP214nn	A	From Leg	3.00	0.0000	120.00	No Ice	1.11	0.21	14.10
			0.00			1/2" Ice	1.25	0.28	21.30
			0.00			1" Ice	1.39	0.35	30.39
(2) LGP214nn	B	From Leg	3.00	0.0000	120.00	No Ice	1.11	0.21	14.10
			0.00			1/2" Ice	1.25	0.28	21.30
			0.00			1" Ice	1.39	0.35	30.39
(2) LGP214nn	C	From Leg	3.00	0.0000	120.00	No Ice	1.11	0.21	14.10
			0.00			1/2" Ice	1.25	0.28	21.30
			0.00			1" Ice	1.39	0.35	30.39
(2) 7020.00	A	From Leg	3.00	0.0000	120.00	No Ice	0.34	0.18	2.20
			0.00			1/2" Ice	0.42	0.24	5.14
			0.00			1" Ice	0.51	0.31	9.29
(2) 7020.00	B	From Leg	3.00	0.0000	120.00	No Ice	0.34	0.18	2.20
			0.00			1/2" Ice	0.42	0.24	5.14
			0.00			1" Ice	0.51	0.31	9.29
(2) 7020.00	C	From Leg	3.00	0.0000	120.00	No Ice	0.34	0.18	2.20
			0.00			1/2" Ice	0.42	0.24	5.14
			0.00			1" Ice	0.51	0.31	9.29
DC6-48-60-18-8F	B	From Face	1.00	0.0000	120.00	No Ice	0.92	0.92	32.80
			0.00			1/2" Ice	1.46	1.46	50.52
			1.00			1" Ice	1.64	1.64	70.72
DC6-48-60-18-8F	C	From Face	1.00	0.0000	120.00	No Ice	0.92	0.92	32.80
			0.00			1/2" Ice	1.46	1.46	50.52
			1.00			1" Ice	1.64	1.64	70.72
4'x2" Pipe Mount	B	From Face	1.00	0.0000	120.00	No Ice	0.87	0.87	14.64

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 lb
			0.00			1/2" Ice	1.11	1.11	21.95
			0.00			1" Ice	1.36	1.36	32.11
4'x2" Pipe Mount	C	From Face	1.00	0.0000	120.00	No Ice	0.87	0.87	14.64
			0.00			1/2" Ice	1.11	1.11	21.95
			0.00			1" Ice	1.36	1.36	32.11
Platform Mount [LP 301-1]	C	From Leg	0.00	0.0000	120.00	No Ice	30.10	30.10	1588.50
			0.00			1/2" Ice	40.80	40.80	2029.18
			-2.50			1" Ice	51.50	51.50	2469.86
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PD1110	A	From Face	4.00	0.0000	96.00	No Ice	3.06	3.06	25.00
			2.00			1/2" Ice	5.10	5.10	60.00
			6.00			1" Ice	7.14	7.14	95.00
PD1110	C	From Face	4.00	0.0000	96.00	No Ice	3.06	3.06	25.00
			-7.00			1/2" Ice	5.10	5.10	60.00
			6.00			1" Ice	7.14	7.14	95.00
PD201-1	B	From Face	4.00	0.0000	96.00	No Ice	1.18	1.18	4.00
			7.00			1/2" Ice	2.09	2.09	14.05
			-4.50			1" Ice	3.02	3.02	29.87
PD201-1	B	From Face	4.00	0.0000	96.00	No Ice	1.18	1.18	4.00
			-7.00			1/2" Ice	2.09	2.09	14.05
			-4.50			1" Ice	3.02	3.02	29.87
PD83-1	C	From Face	4.00	0.0000	96.00	No Ice	3.70	3.70	17.00
			-2.00			1/2" Ice	5.58	5.58	45.48
			10.00			1" Ice	7.47	7.47	85.62
PD83-1	B	From Face	4.00	0.0000	96.00	No Ice	3.70	3.70	17.00
			-2.00			1/2" Ice	5.58	5.58	45.48
			10.00			1" Ice	7.47	7.47	85.62
PD83-1	A	From Face	4.00	0.0000	96.00	No Ice	3.70	3.70	17.00
			0.00			1/2" Ice	5.58	5.58	45.48
			10.00			1" Ice	7.47	7.47	85.62
PD220	B	From Face	4.00	0.0000	96.00	No Ice	3.56	3.56	23.00
			2.00			1/2" Ice	7.13	7.13	46.00
			10.00			1" Ice	10.70	10.70	69.00
DB205-A	B	From Face	4.00	0.0000	96.00	No Ice	1.20	1.20	38.00
			-7.00			1/2" Ice	2.16	2.16	49.40
			7.00			1" Ice	3.12	3.12	60.80
DB224	C	From Face	4.00	0.0000	96.00	No Ice	3.15	3.15	32.00
			0.00			1/2" Ice	5.67	5.67	41.60
			11.00			1" Ice	8.19	8.19	51.20
DB806E-XT	B	From Leg	4.00	0.0000	96.00	No Ice	2.40	2.40	16.00
			7.00			1/2" Ice	3.19	3.19	33.51
			5.50			1" Ice	3.67	3.67	56.37
DB420-B	C	From Face	4.00	0.0000	96.00	No Ice	3.33	3.33	34.00
			7.00			1/2" Ice	5.99	5.99	44.20
			10.00			1" Ice	8.66	8.66	54.40
6' Yagi	C	From Face	4.00	0.0000	96.00	No Ice	3.13	3.13	30.00
			0.00			1/2" Ice	8.14	8.14	64.43
			1.50			1" Ice	13.17	13.17	129.62
(2) 6' x 2" Pipe Mount	A	From Face	4.00	0.0000	96.00	No Ice	1.43	1.43	21.90
			0.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61
(4) 6' x 2" Pipe Mount	B	From Face	4.00	0.0000	96.00	No Ice	1.43	1.43	21.90
			0.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61
(3) 6' x 2" Pipe Mount	C	From Face	4.00	0.0000	96.00	No Ice	1.43	1.43	21.90
			0.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Platform Mount [LP 1201-1]	C	From Leg	0.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice 1" Ice	23.10 26.80 30.50	23.10 26.80 30.50	2100.00 2500.00 2900.00
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APXV18-206516S-C w/Mount Pipe	A	From Face	4.00 2.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.88 4.30 4.70	3.31 4.04 4.71	38.78 73.44 113.96
APXV18-206516S-C w/Mount Pipe	B	From Face	4.00 2.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.88 4.30 4.70	3.31 4.04 4.71	38.78 73.44 113.96
APXV18-206516S-C w/Mount Pipe	C	From Face	4.00 2.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.88 4.30 4.70	3.31 4.04 4.71	38.78 73.44 113.96
APXV18-206516S-C w/Mount Pipe	A	From Face	4.00 -7.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.88 4.30 4.70	3.31 4.04 4.71	38.78 73.44 113.96
APXV18-206516S-C w/Mount Pipe	B	From Face	4.00 -7.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.88 4.30 4.70	3.31 4.04 4.71	38.78 73.44 113.96
APXV18-206516S-C w/Mount Pipe	C	From Face	4.00 -7.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.88 4.30 4.70	3.31 4.04 4.71	38.78 73.44 113.96
LNX-6515DS-A1M w/Mount Pipe	A	From Face	4.00 -2.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.14	9.85 11.38 12.92	76.55 166.25 265.92
LNX-6515DS-A1M w/Mount Pipe	B	From Face	4.00 -2.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.14	9.85 11.38 12.92	76.55 166.25 265.92
LNX-6515DS-A1M w/Mount Pipe	C	From Face	4.00 -2.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.14	9.85 11.38 12.92	76.55 166.25 265.92
ETW190VS12UB	A	From Face	4.00 2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.57 0.67 0.77	0.32 0.40 0.49	14.60 19.55 26.03
ETW190VS12UB	B	From Face	4.00 2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.57 0.67 0.77	0.32 0.40 0.49	14.60 19.55 26.03
ETW190VS12UB	C	From Face	4.00 2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.57 0.67 0.77	0.32 0.40 0.49	14.60 19.55 26.03
ATMAA1412D-1A20	A	From Face	4.00 -2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.26	0.41 0.50 0.59	13.00 20.62 30.11
ATMAA1412D-1A20	B	From Face	4.00 -2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.26	0.41 0.50 0.59	13.00 20.62 30.11
ATMAA1412D-1A20	C	From Face	4.00 -2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.26	0.41 0.50 0.59	13.00 20.62 30.11
ATSBT-BOTTOM-FM-4G	A	From Face	4.00 -2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.17 0.23 0.29	0.09 0.14 0.19	1.80 3.48 6.09
ATSBT-BOTTOM-FM-4G	B	From Face	4.00 -2.00 0.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.17 0.23 0.29	0.09 0.14 0.19	1.80 3.48 6.09
ATSBT-BOTTOM-FM-4G	C	From Face	4.00 -2.00	0.0000	82.00	No Ice 1/2" Ice	0.17 0.23	0.09 0.14	1.80 3.48

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 lb
			0.50			1" Ice	0.29	0.19	6.09
6' x 2" Pipe Mount	A	From Face	4.00	0.0000	82.00	No Ice	1.43	1.43	21.90
			7.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61
6' x 2" Pipe Mount	B	From Face	4.00	0.0000	82.00	No Ice	1.43	1.43	21.90
			7.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61
6' x 2" Pipe Mount	C	From Face	4.00	0.0000	82.00	No Ice	1.43	1.43	21.90
			7.00			1/2" Ice	1.92	1.92	32.73
			0.00			1" Ice	2.29	2.29	47.61
Platform Mount [LP 1201-1]	C	From Leg	0.00	0.0000	82.00	No Ice	23.10	23.10	2100.00
			0.00			1/2" Ice	26.80	26.80	2500.00
			-1.00			1" Ice	30.50	30.50	2900.00
**********									
800 10504 w/Mount Pipe	A	From Face	1.00	0.0000	72.00	No Ice	3.47	3.05	38.05
			0.00			1/2" Ice	3.84	3.68	69.36
			0.00			1" Ice	4.23	4.33	106.43
800 10504 w/Mount Pipe	B	From Face	1.00	0.0000	72.00	No Ice	3.47	3.05	38.05
			0.00			1/2" Ice	3.84	3.68	69.36
			0.00			1" Ice	4.23	4.33	106.43
800 10504 w/Mount Pipe	C	From Face	1.00	0.0000	72.00	No Ice	3.47	3.05	38.05
			0.00			1/2" Ice	3.84	3.68	69.36
			0.00			1" Ice	4.23	4.33	106.43
Side Arm Mount [SO 102-3]	C	None		0.0000	72.00	No Ice	3.00	3.00	81.00
						1/2" Ice	3.48	3.48	111.00
						1" Ice	3.96	3.96	141.00
**********									
BSA150B	A	From Leg	6.00	0.0000	53.00	No Ice	2.33	2.33	100.00
			0.00			1/2" Ice	3.13	3.13	150.00
			4.00			1" Ice	3.93	3.93	200.00
BSA150B	A	From Leg	6.00	0.0000	53.00	No Ice	2.33	2.33	100.00
			0.00			1/2" Ice	3.13	3.13	150.00
			-4.00			1" Ice	3.93	3.93	200.00
8'x2" Antenna Mount Pipe	A	From Leg	6.00	0.0000	53.00	No Ice	1.90	1.90	30.00
			0.00			1/2" Ice	2.73	2.73	44.34
			0.00			1" Ice	3.40	3.40	63.96
Side Arm Mount [SO 702-1]	A	From Leg	3.00	0.0000	53.00	No Ice	1.00	1.43	27.00
			0.00			1/2" Ice	1.25	2.05	38.00
			0.00			1" Ice	1.50	2.67	49.00
**********									
BULLET III	A	From Leg	0.00	0.0000	50.00	No Ice	0.04	0.04	0.38
			0.00			1/2" Ice	0.07	0.07	1.27
			0.00			1" Ice	0.11	0.11	2.75
**********									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
**********											
VHLP800-11	B	Paraboloid w/Shroud (HP)	From Face	3.00 2.00 3.50	0.0000		148.00	2.92	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.46	48.00 76.00 104.00
VHLP800-11	C	Paraboloid w/Shroud (HP)	From Face	3.00 -2.00 3.50	0.0000		148.00	2.92	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.46	48.00 76.00 104.00
**********											
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Face	0.50 0.00 0.00	0.0000		144.00	2.92	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.46	48.00 76.00 104.00
**********											

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	29569.27					
Bracing Weight	0.00					
Total Member Self-Weight	29569.27			1896.24	7975.53	
Total Weight	46829.62			1896.24	7975.53	
Wind 0 deg - No Ice		68.27	-18839.09	-1791278.98	-2364.45	-4101.94
Wind 30 deg - No Ice		9325.87	-16354.61	-1556869.51	-874717.70	-3005.67
Wind 60 deg - No Ice		16070.21	-9551.11	-914222.65	-1508420.16	-909.06
Wind 90 deg - No Ice		18607.91	-18.76	-1082.94	-1750575.70	1566.28
Wind 120 deg - No Ice		16086.46	9387.77	893570.42	-1510795.88	3373.62
Wind 150 deg - No Ice		9248.48	16243.11	1544094.62	-863070.60	4277.59
Wind 180 deg - No Ice		-109.22	18764.73	1784118.84	24520.37	4209.77
Wind 210 deg - No Ice		-9338.64	16298.46	1552478.41	892677.91	2963.87
Wind 240 deg - No Ice		-16130.88	9492.24	909393.23	1533472.89	728.32
Wind 270 deg - No Ice		-18650.77	106.57	17900.70	1773019.68	-1746.41
Wind 300 deg - No Ice		-16091.32	-9437.18	-896965.87	1527571.28	-3300.71
Wind 330 deg - No Ice		-9235.90	-16348.63	-1555965.82	877042.46	-4055.66
Member Ice	10920.36					
Total Weight Ice	78093.63			3061.56	15276.31	
Wind 0 deg - Ice		23.76	-8679.49	-849959.48	11677.80	-1529.33
Wind 30 deg - Ice		4305.07	-7530.39	-737704.57	-405830.56	-679.64
Wind 60 deg - Ice		7427.84	-4385.52	-430243.86	-709761.36	420.00
Wind 90 deg - Ice		8594.89	-6.53	2023.91	-824557.45	1454.11
Wind 120 deg - Ice		7433.49	4328.68	427861.51	-710587.57	2012.21
Wind 150 deg - Ice		4278.14	7491.60	738063.83	-401777.55	2031.34
Wind 180 deg - Ice		-38.01	8653.62	852272.75	21034.19	1566.86
Wind 210 deg - Ice		-4309.52	7510.87	740981.56	437082.82	665.11
Wind 240 deg - Ice		-7448.95	4365.04	433368.16	743480.96	-482.88
Wind 270 deg - Ice		-8609.80	37.08	8630.58	857369.68	-1516.80
Wind 300 deg - Ice		-7435.18	-4345.87	-424238.17	741427.58	-1986.86
Wind 330 deg - Ice		-4273.76	-7528.31	-737390.02	431640.95	-1954.12
Total Weight	46829.62			1896.24	7975.53	
Wind 0 deg - Service		25.42	-7016.03	-665938.75	4086.05	-1527.64
Wind 30 deg - Service		3473.13	-6090.77	-578640.20	-320794.94	-1119.37
Wind 60 deg - Service		5984.85	-3557.02	-339306.24	-556797.83	-338.55
Wind 90 deg - Service		6929.94	-6.99	764.41	-646981.17	583.31
Wind 120 deg - Service		5990.91	3496.18	333950.39	-557682.59	1256.40
Wind 150 deg - Service		3444.31	6049.24	576218.02	-316457.34	1593.05

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 180 deg - Service		-40.68	6988.34	665607.62	14098.47	1567.80
Wind 210 deg - Service		-3477.89	6069.86	579340.30	337416.91	1103.80
Wind 240 deg - Service		-6007.45	3535.09	339843.11	576061.19	271.24
Wind 270 deg - Service		-6945.90	39.69	7834.28	665272.98	-650.40
Wind 300 deg - Service		-5992.71	-3514.59	-332879.49	573863.31	-1229.25
Wind 330 deg - Service		-3439.63	-6088.54	-578303.64	331593.96	-1510.40

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
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service

Comb. No.	Description
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 lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	148 - 143	Pole	Max Tension	1	0.00	-0.03	0.01
			Max. Compression	26	-11668.08	6520.68	1033.76
			Max. Mx	20	-5440.63	35136.53	-732.26
			Max. My	2	-5411.60	748.81	34395.00
			Max. Vy	20	-6245.50	35136.53	-732.26
			Max. Vx	2	-6564.92	748.81	34395.00
			Max. Torque	14			-5111.67
L2	143 - 138	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12359.26	6620.12	1013.21
			Max. Mx	20	-5823.96	67450.42	-1631.20
			Max. My	2	-5794.75	231.10	68305.38
			Max. Vy	20	-6683.31	67450.42	-1631.20
			Max. Vx	2	-7003.16	231.10	68305.38
			Max. Torque	14			-5117.81
L3	138 - 133	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13077.01	6717.64	990.41
			Max. Mx	20	-6227.07	101978.94	-2531.85
			Max. My	2	-6198.01	-289.31	104432.01
			Max. Vy	20	-7131.91	101978.94	-2531.85
			Max. Vx	2	-7452.04	-289.31	104432.01
			Max. Torque	14			-5123.97
L4	133 - 128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13821.20	6813.40	965.34
			Max. Mx	20	-6650.07	138774.65	-3433.88
			Max. My	2	-6621.46	-812.01	142826.79
			Max. Vy	20	-7590.72	138774.65	-3433.88
			Max. Vx	2	-7911.01	-812.01	142826.79
			Max. Torque	14			-5130.14
L5	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14591.73	6907.54	938.01
			Max. Mx	20	-7093.05	177887.15	-4336.97
			Max. My	2	-7065.15	-1336.60	183538.66
			Max. Vy	20	-8059.13	177887.15	-4336.97
			Max. Vx	2	-8379.45	-1336.60	183538.66
			Max. Torque	14			-5136.36
L6	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23228.37	10108.15	-1241.84
			Max. Mx	20	-10720.02	226211.92	-6360.50
			Max. My	2	-10689.70	-133.27	230507.37
			Max. Vy	20	-12466.38	226211.92	-6360.50
			Max. Vx	2	-12789.30	-133.27	230507.37
			Max. Torque	14			-6281.99
L7	118 - 113	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24137.41	10235.94	-1284.00
			Max. Mx	20	-11301.32	289728.22	-7284.71
			Max. My	2	-11272.14	-654.03	295635.84
			Max. Vy	20	-12947.43	289728.22	-7284.71
			Max. Vx	2	-13270.28	-654.03	295635.84

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Torque	14			-6288.13
L8	113 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25072.35	10355.94	-1326.16
			Max. Mx	20	-11906.06	355657.56	-8206.84
			Max. My	2	-11878.31	-1178.91	363176.49
			Max. Vy	20	-13432.69	355657.56	-8206.84
			Max. Vx	2	-13755.32	-1178.91	363176.49
			Max. Torque	14			-6294.25
L9	108 - 100.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25744.64	10435.55	-1355.74
			Max. Mx	20	-12342.51	403252.20	-8850.84
			Max. My	2	-12315.88	-1548.42	411898.08
			Max. Vy	20	-13773.29	403252.20	-8850.84
			Max. Vx	2	-14095.68	-1548.42	411898.08
			Max. Torque	14			-6298.54
L10	100.5 - 99.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27643.52	10548.24	-1399.09
			Max. Mx	20	-13608.95	473485.67	-9772.82
			Max. My	2	-13583.09	-2075.01	483742.04
			Max. Vy	20	-14320.89	473485.67	-9772.82
			Max. Vx	2	-14643.63	-2075.01	483742.04
			Max. Torque	14			-6305.51
L11	99.5 - 94.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35130.02	12855.88	-5889.49
			Max. Mx	20	-17475.22	563004.12	-12590.31
			Max. My	2	-17449.02	-12.41	570307.86
			Max. Vy	20	-17626.64	563004.12	-12590.31
			Max. Vx	2	-17950.94	-12.41	570307.86
			Max. Torque	12			-6553.90
L12	94.5 - 89.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36444.23	12983.43	-5939.99
			Max. Mx	20	-18445.76	652374.59	-13522.08
			Max. My	2	-18420.83	-540.12	661297.07
			Max. Vy	20	-18132.79	652374.59	-13522.08
			Max. Vx	2	-18457.00	-540.12	661297.07
			Max. Torque	12			-6561.67
L13	89.5 - 84.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37791.81	13104.77	-5987.34
			Max. Mx	20	-19446.58	744274.06	-14449.95
			Max. My	2	-19423.08	-1070.03	754814.38
			Max. Vy	20	-18639.27	744274.06	-14449.95
			Max. Vx	2	-18963.25	-1070.03	754814.38
			Max. Torque	12			-6569.50
L14	84.5 - 79.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46007.28	18055.05	-8821.13
			Max. Mx	20	-23670.66	847749.63	-17187.44
			Max. My	14	-23655.01	22967.29	-855735.97
			Max. Vy	20	-21791.46	847749.63	-17187.44
			Max. Vx	2	-22116.73	1529.69	854910.78
			Max. Torque	12			-7654.79
L15	79.5 - 74.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47502.97	18176.97	-8865.83
			Max. Mx	20	-24822.89	957906.32	-18115.63
			Max. My	14	-24808.39	23948.34	-966907.92
			Max. Vy	20	-22287.44	957906.32	-18115.63
			Max. Vx	2	-22612.58	995.96	966690.87
			Max. Torque	12			-7662.72
L16	74.5 - 70.667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49442.77	18263.15	-8896.15
			Max. Mx	20	-25953.60	1044603.24	-18822.83
			Max. My	2	-25932.65	584.70	1054631.69

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	20	-23100.92	1044603.24	-18822.83
			Max. Vx	2	-23426.01	584.70	1054631.69
			Max. Torque	12			-7668.88
L17	70.667 - 70.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49529.61	18269.50	-8898.28
			Max. Mx	20	-26023.16	1050379.08	-18869.86
			Max. My	2	-26002.47	558.23	1060488.51
			Max. Vy	20	-23118.99	1050379.08	-18869.86
			Max. Vx	2	-23442.72	558.23	1060488.51
			Max. Torque	12			-7669.19
L18	70.417 - 65.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51282.56	18371.84	-8932.41
			Max. Mx	20	-27264.13	1167165.40	-19785.17
			Max. My	2	-27244.96	18.42	1178896.34
			Max. Vy	20	-23610.11	1167165.40	-19785.17
			Max. Vx	2	-23934.77	18.42	1178896.34
			Max. Torque	12			-7677.42
L19	65.417 - 63.667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51903.28	18405.31	-8943.04
			Max. Mx	20	-27701.27	1208614.95	-20104.39
			Max. My	2	-27682.56	-170.59	1220912.89
			Max. Vy	20	-23786.30	1208614.95	-20104.39
			Max. Vx	2	-24110.92	-170.59	1220912.89
			Max. Torque	12			-7680.33
L20	63.667 - 63.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51992.26	18410.93	-8944.77
			Max. Mx	20	-27777.20	1214560.74	-20150.34
			Max. My	2	-27758.87	-197.80	1226939.49
			Max. Vy	20	-23798.67	1214560.74	-20150.34
			Max. Vx	2	-24121.81	-197.80	1226939.49
			Max. Torque	12			-7680.65
L21	63.417 - 58.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52047.80	18414.58	-8945.90
			Max. Mx	20	-27820.47	1218535.82	-20181.30
			Max. My	2	-27802.22	-215.46	1230968.57
			Max. Vy	20	-23817.00	1218535.82	-20181.30
			Max. Vx	2	-24138.44	-215.46	1230968.57
			Max. Torque	12			-7680.91
L22	58.25 - 57.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55578.95	18523.86	-8978.95
			Max. Mx	20	-30440.78	1363404.43	-21273.39
			Max. My	2	-30423.46	-864.10	1377781.76
			Max. Vy	20	-24474.64	1363404.43	-21273.39
			Max. Vx	2	-24799.34	-864.10	1377781.76
			Max. Torque	12			-7691.68
L23	57.25 - 53.229	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57104.76	18592.75	-8998.17
			Max. Mx	20	-31611.33	1462532.77	-22001.40
			Max. My	2	-31595.39	-1301.60	1478212.31
			Max. Vy	20	-24850.88	1462532.77	-22001.40
			Max. Vx	2	-25175.12	-1301.60	1478212.31
			Max. Torque	12			-7698.36
L24	53.229 - 52.979	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57928.31	18597.69	-3653.82
			Max. Mx	20	-31993.07	1468763.24	-19823.87
			Max. My	2	-31977.63	-1328.45	1486791.00
			Max. Vy	20	-25120.27	1468763.24	-19823.87
			Max. Vx	2	-25430.06	-1328.45	1486791.00
			Max. Torque	12			-7698.24
L25	52.979 - 47.979	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59958.84	18674.48	-3664.55

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	20	-33479.01	1595481.61	-20723.67
			Max. My	2	-33465.29	-1874.29	1615060.90
			Max. Vy	20	-25583.66	1595481.61	-20723.67
			Max. Vx	2	-25894.00	-1874.29	1615060.90
			Max. Torque	12			-6822.44
L26	47.979 - 42.979	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62016.48	18742.82	-3683.71
			Max. Mx	20	-35004.62	1724454.79	-21618.76
			Max. My	2	-34992.82	-2421.51	1745580.00
			Max. Vy	20	-26028.20	1724454.79	-21618.76
			Max. Vx	2	-26337.57	-2421.51	1745580.00
			Max. Torque	12			-6830.96
L27	42.979 - 37.979	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64105.25	18801.89	-3701.14
			Max. Mx	20	-36563.00	1855612.02	-22507.43
			Max. My	2	-36553.18	-2969.98	1878277.81
			Max. Vy	20	-26458.23	1855612.02	-22507.43
			Max. Vx	2	-26766.49	-2969.98	1878277.81
			Max. Torque	12			-6839.52
L28	37.979 - 35.125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65311.03	18831.40	-3710.30
			Max. Mx	20	-37463.32	1931429.26	-23011.77
			Max. My	2	-37454.55	-3283.25	1954971.81
			Max. Vy	20	-26701.43	1931429.26	-23011.77
			Max. Vx	2	-27009.12	-3283.25	1954971.81
			Max. Torque	12			-6844.41
L29	35.125 - 34.875	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65442.67	18834.78	-3711.34
			Max. Mx	20	-37577.67	1938103.33	-23055.88
			Max. My	2	-37569.23	-3311.11	1961722.47
			Max. Vy	20	-26710.52	1938103.33	-23055.88
			Max. Vx	2	-27016.97	-3311.11	1961722.47
			Max. Torque	12			-6844.82
L30	34.875 - 28.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65640.22	18838.08	-3712.40
			Max. Mx	20	-37731.95	1948124.49	-23121.91
			Max. My	2	-37723.59	-3352.26	1971858.73
			Max. Vy	20	-26743.56	1948124.49	-23121.91
			Max. Vx	2	-27050.55	-3352.26	1971858.73
			Max. Torque	12			-6845.47
L31	28.75 - 27.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71953.77	18857.30	-3745.47
			Max. Mx	20	-42738.73	2130944.97	-24313.02
			Max. My	2	-42731.29	-4089.68	2156750.12
			Max. Vy	20	-27423.35	2130944.97	-24313.02
			Max. Vx	2	-27730.72	-4089.68	2156750.12
			Max. Torque	12			-6857.45
L32	27.75 - 25.875	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73057.04	18862.58	-3802.13
			Max. Mx	20	-43583.14	2182497.08	-24643.07
			Max. My	2	-43576.09	-4295.02	2208876.91
			Max. Vy	20	-27592.49	2182497.08	-24643.07
			Max. Vx	2	-27899.69	-4295.02	2208876.91
			Max. Torque	12			-6860.67
L33	25.875 - 25.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73118.33	18864.25	-3806.28
			Max. Mx	20	-43638.66	2185944.96	-24665.06
			Max. My	2	-43631.90	-4309.18	2212362.83
			Max. Vy	20	-27593.18	2185944.96	-24665.06
			Max. Vx	2	-27896.02	-4309.18	2212362.83
			Max. Torque	12			-6860.88

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L34	25.75 - 25.625	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73196.23	18865.22	-3810.23
			Max. Mx	20	-43699.95	2189393.67	-24687.19
			Max. My	2	-43693.23	-4322.74	2215849.84
			Max. Vy	20	-27603.43	2189393.67	-24687.19
			Max. Vx	2	-27906.35	-4322.74	2215849.84
			Max. Torque	12			-6861.10
L35	25.625 - 25.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73274.15	18865.57	-3814.01
			Max. Mx	20	-43760.93	2192843.75	-24709.15
			Max. My	2	-43754.23	-4336.45	2219338.20
			Max. Vy	20	-27614.33	2192843.75	-24709.15
			Max. Vx	2	-27917.24	-4336.45	2219338.20
			Max. Torque	12			-6861.32
L36	25.5 - 20.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76365.86	18878.21	-3903.97
			Max. Mx	20	-46205.39	2331967.28	-25585.35
			Max. My	2	-46199.85	-4885.01	2359991.11
			Max. Vy	20	-28053.01	2331967.28	-25585.35
			Max. Vx	2	-28359.15	-4885.01	2359991.11
			Max. Torque	12			-6870.17
L37	20.5 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79454.13	18892.65	-3940.15
			Max. Mx	20	-48690.74	2473281.53	-26457.31
			Max. My	2	-48686.50	-5433.61	2502829.94
			Max. Vy	20	-28491.99	2473281.53	-26457.31
			Max. Vx	2	-28797.19	-5433.61	2502829.94
			Max. Torque	12			-6879.28
L38	15.5 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82561.32	18907.00	-3975.72
			Max. Mx	20	-51211.17	2616793.26	-27324.33
			Max. My	2	-51208.24	-5982.15	2647861.10
			Max. Vy	20	-28932.96	2616793.26	-27324.33
			Max. Vx	2	-29237.11	-5982.15	2647861.10
			Max. Torque	12			-6888.66
L39	10.5 - 5.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85535.53	18908.15	-4002.58
			Max. Mx	20	-53632.41	2762494.97	-28184.81
			Max. My	2	-53630.81	-6532.53	2795079.76
			Max. Vy	20	-29369.79	2762494.97	-28184.81
			Max. Vx	2	-29672.76	-6532.53	2795079.76
			Max. Torque	12			-6889.51
L40	5.5 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88353.76	18907.88	-4026.08
			Max. Mx	20	-55954.67	2910382.83	-29039.41
			Max. My	2	-55954.40	-7082.76	2944478.70
			Max. Vy	20	-29808.47	2910382.83	-29039.41
			Max. Vx	2	-30110.17	-7082.76	2944478.70
			Max. Torque	12			-6889.49
L41	0.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88625.28	18907.85	-4027.84
			Max. Mx	20	-56192.49	2925292.32	-29124.46
			Max. My	2	-56192.42	-7137.95	2959538.94
			Max. Vy	20	-29846.76	2925292.32	-29124.46
			Max. Vx	2	-30148.25	-7137.95	2959538.94
			Max. Torque	12			-6889.46

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	26	88625.28	-0.02	0.00
	Max. H_x	21	42146.65	29841.09	-170.52
	Max. H_z	2	56195.54	-109.22	30142.44
	Max. M_x	2	2959538.94	-109.22	30142.44
	Max. M_z	8	2894228.64	-29772.45	30.02
	Max. Torsion	2	6621.34	-109.22	30142.44
	Min. Vert	9	42146.65	-29772.33	30.02
	Min. H_x	8	56195.54	-29772.45	30.02
	Min. H_z	15	42146.66	174.75	-30023.50
	Min. M_x	14	-2946203.91	174.75	-30023.47
	Min. M_z	20	-2925292.32	29841.02	-170.51
	Min. Torsion	12	-6889.47	-14797.54	-25988.94

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	46829.62	1.37	-0.44	1953.56	8151.50	0.50
1.2 Dead+1.6 Wind 0 deg - No Ice	56195.54	109.22	-30142.44	-2959538.94	-7138.14	-6621.34
0.9 Dead+1.6 Wind 0 deg - No Ice	42146.65	109.22	-30142.39	-2935736.78	-9593.11	-6590.07
1.2 Dead+1.6 Wind 30 deg - No Ice	56195.54	14921.38	-26167.34	-2572432.39	-1447731.52	-4937.32
0.9 Dead+1.6 Wind 30 deg - No Ice	42146.66	14921.38	-26167.36	-2551810.60	-1438397.05	-4899.17
1.2 Dead+1.6 Wind 60 deg - No Ice	56195.54	25712.30	-15281.76	-1511142.85	-2494183.94	-1628.04
0.9 Dead+1.6 Wind 60 deg - No Ice	42146.66	25712.31	-15281.77	-1499221.37	-2476305.91	-1592.97
1.2 Dead+1.6 Wind 90 deg - No Ice	56195.54	29772.45	-30.02	-2541.65	-2894228.64	2395.88
0.9 Dead+1.6 Wind 90 deg - No Ice	42146.65	29772.33	-30.02	-3129.95	-2873026.26	2417.01
1.2 Dead+1.6 Wind 120 deg - No Ice	56195.54	25738.31	15020.41	1475272.85	-2498174.91	5361.72
0.9 Dead+1.6 Wind 120 deg - No Ice	42146.66	25738.32	15020.42	1462497.44	-2480252.75	5363.84
1.2 Dead+1.6 Wind 150 deg - No Ice	56195.54	14797.54	25988.94	2549749.27	-1428339.33	6889.47
0.9 Dead+1.6 Wind 150 deg - No Ice	42146.66	14797.55	25988.95	2528127.88	-1419211.51	6872.17
1.2 Dead+1.6 Wind 180 deg - No Ice	56195.54	-174.75	30023.47	2946203.91	37709.39	6867.03
0.9 Dead+1.6 Wind 180 deg - No Ice	42146.66	-174.75	30023.50	2921311.81	34770.11	6834.49
1.2 Dead+1.6 Wind 210 deg - No Ice	56195.54	-14941.81	26077.51	2563709.41	1471327.28	4868.54
0.9 Dead+1.6 Wind 210 deg - No Ice	42146.66	-14941.81	26077.52	2541935.62	1456669.77	4830.15
1.2 Dead+1.6 Wind 240 deg - No Ice	56195.54	-25809.37	15187.56	1501657.90	2529603.61	1265.25
0.9 Dead+1.6 Wind 240 deg - No Ice	42146.66	-25809.38	15187.57	1488595.64	2506273.01	1230.69
1.2 Dead+1.6 Wind 270 deg - No Ice	56195.54	-29841.02	170.51	29124.39	2925292.32	-2729.02
0.9 Dead+1.6 Wind 270 deg - No Ice	42146.65	-29841.09	170.52	28194.74	2898706.18	-2750.79
1.2 Dead+1.6 Wind 300 deg - No Ice	56195.54	-25746.07	-15099.47	-1482376.46	2519782.37	-5240.07
0.9 Dead+1.6 Wind 300 deg - No Ice	42146.66	-25746.08	-15099.48	-1470762.45	2496557.12	-5242.83
1.2 Dead+1.6 Wind 330 deg - No Ice	56195.54	-14777.43	-26157.78	-2570956.07	1445240.64	-6481.41
0.9 Dead+1.6 Wind 330 deg - No Ice	42146.66	-14777.43	-26157.79	-2550346.82	1430866.29	-6464.96
1.2 Dead+1.0 Ice+1.0 Temp	88625.28	0.02	-0.00	4027.84	18907.85	4.07
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	88625.28	23.76	-8679.47	-903843.06	15136.95	-1682.97
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	88625.28	4305.07	-7530.38	-784405.46	-429048.31	-843.86
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	88625.28	7427.82	-4385.51	-457260.28	-752365.56	288.92
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	88625.28	8594.87	-6.53	2922.46	-874555.45	1399.13
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	88625.28	7433.48	4328.68	456143.94	-753263.61	2045.95
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	88625.28	4278.14	7491.59	786268.63	-424655.65	2145.13
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	88625.28	-38.01	8653.61	907827.03	25289.44	1733.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	88625.28	-4309.51	7510.85	789434.12	467895.79	836.21
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	88625.28	-7448.93	4365.03	462118.69	793887.41	-350.05
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	88625.28	-8609.79	37.08	10090.48	915092.20	-1455.59

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	88625.28	-7435.17	-4345.86	-450744.74	791659.24	-2012.37
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	88625.28	-4273.76	-7528.30	-784065.40	461986.72	-2057.19
Dead+Wind 0 deg - Service	46829.62	25.43	-7015.56	-683962.66	4390.18	-1549.56
Dead+Wind 30 deg - Service	46829.62	3472.91	-6090.36	-594305.89	-329257.68	-1147.88
Dead+Wind 60 deg - Service	46829.62	5984.46	-3556.77	-348501.89	-571613.68	-366.47
Dead+Wind 90 deg - Service	46829.62	6929.49	-6.99	869.87	-664256.43	567.20
Dead+Wind 120 deg - Service	46829.62	5990.73	3496.08	343132.91	-572556.78	1255.20
Dead+Wind 150 deg - Service	46829.62	3444.21	6049.06	591988.79	-324780.84	1607.05
Dead+Wind 180 deg - Service	46829.62	-40.66	6987.86	683782.78	14761.83	1594.45
Dead+Wind 210 deg - Service	46829.62	-3477.78	6069.67	595223.33	346809.33	1133.03
Dead+Wind 240 deg - Service	46829.62	-6007.03	3534.84	349220.57	591883.28	296.04
Dead+Wind 270 deg - Service	46829.62	-6945.42	39.68	8193.28	683520.50	-635.57
Dead+Wind 300 deg - Service	46829.62	-5992.30	-3514.35	-341845.10	589607.59	-1226.98
Dead+Wind 330 deg - Service	46829.62	-3439.52	-6088.36	-593986.44	340776.21	-1520.88

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-46829.62	0.00	-1.37	46829.62	0.44	0.003%
2	109.22	-56195.55	-30142.54	-109.22	56195.54	30142.44	0.000%
3	109.22	-42146.66	-30142.54	-109.22	42146.65	30142.39	0.000%
4	14921.40	-56195.55	-26167.38	-14921.38	56195.54	26167.34	0.000%
5	14921.40	-42146.66	-26167.38	-14921.38	42146.66	26167.36	0.000%
6	25712.33	-56195.55	-15281.78	-25712.30	56195.54	15281.76	0.000%
7	25712.33	-42146.66	-15281.78	-25712.31	42146.66	15281.77	0.000%
8	29772.66	-56195.55	-30.02	-29772.45	56195.54	30.02	0.000%
9	29772.66	-42146.66	-30.02	-29772.33	42146.65	30.02	0.001%
10	25738.34	-56195.55	15020.43	-25738.31	56195.54	-15020.41	0.000%
11	25738.34	-42146.66	15020.43	-25738.32	42146.66	-15020.42	0.000%
12	14797.56	-56195.55	25988.98	-14797.54	56195.54	-25988.94	0.000%
13	14797.56	-42146.66	25988.98	-14797.55	42146.66	-25988.95	0.000%
14	-174.75	-56195.55	30023.56	174.75	56195.54	-30023.47	0.000%
15	-174.75	-42146.66	30023.56	174.75	42146.66	-30023.50	0.000%
16	-14941.83	-56195.55	26077.54	14941.81	56195.54	-26077.51	0.000%
17	-14941.83	-42146.66	26077.54	14941.81	42146.66	-26077.52	0.000%
18	-25809.40	-56195.55	15187.58	25809.37	56195.54	-15187.56	0.000%
19	-25809.40	-42146.66	15187.58	25809.38	42146.66	-15187.57	0.000%
20	-29841.23	-56195.55	170.52	29841.02	56195.54	-170.51	0.000%
21	-29841.23	-42146.66	170.52	29841.09	42146.65	-170.52	0.000%
22	-25746.11	-56195.55	-15099.49	25746.07	56195.54	15099.47	0.000%
23	-25746.11	-42146.66	-15099.49	25746.08	42146.66	15099.48	0.000%
24	-14777.45	-56195.55	-26157.81	14777.43	56195.54	26157.78	0.000%
25	-14777.45	-42146.66	-26157.81	14777.43	42146.66	26157.79	0.000%
26	0.00	-88625.28	0.00	-0.02	88625.28	0.00	0.000%
27	23.76	-88625.28	-8679.49	-23.76	88625.28	8679.47	0.000%
28	4305.07	-88625.28	-7530.39	-4305.07	88625.28	7530.38	0.000%
29	7427.84	-88625.28	-4385.52	-7427.82	88625.28	4385.51	0.000%
30	8594.89	-88625.28	-6.53	-8594.87	88625.28	6.53	0.000%
31	7433.49	-88625.28	4328.68	-7433.48	88625.28	-4328.68	0.000%
32	4278.14	-88625.28	7491.60	-4278.14	88625.28	-7491.59	0.000%
33	-38.01	-88625.28	8653.62	38.01	88625.28	-8653.61	0.000%
34	-4309.52	-88625.28	7510.87	4309.51	88625.28	-7510.85	0.000%
35	-7448.95	-88625.28	4365.04	7448.93	88625.28	-4365.03	0.000%
36	-8609.80	-88625.28	37.08	8609.79	88625.28	-37.08	0.000%
37	-7435.18	-88625.28	-4345.87	7435.17	88625.28	4345.86	0.000%
38	-4273.76	-88625.28	-7528.31	4273.76	88625.28	7528.30	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
39	25.42	-46829.62	-7016.03	-25.43	46829.62	7015.56	0.001%
40	3473.13	-46829.62	-6090.77	-3472.91	46829.62	6090.36	0.001%
41	5984.85	-46829.62	-3557.02	-5984.46	46829.62	3556.77	0.001%
42	6929.94	-46829.62	-6.99	-6929.49	46829.62	6.99	0.001%
43	5990.91	-46829.62	3496.18	-5990.73	46829.62	-3496.08	0.000%
44	3444.31	-46829.62	6049.24	-3444.21	46829.62	-6049.06	0.000%
45	-40.68	-46829.62	6988.34	40.66	46829.62	-6987.86	0.001%
46	-3477.89	-46829.62	6069.86	3477.78	46829.62	-6069.67	0.000%
47	-6007.45	-46829.62	3535.09	6007.03	46829.62	-3534.84	0.001%
48	-6945.90	-46829.62	39.69	6945.42	46829.62	-39.68	0.001%
49	-5992.71	-46829.62	-3514.59	5992.30	46829.62	3514.35	0.001%
50	-3439.63	-46829.62	-6088.54	3439.52	46829.62	6088.36	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	8	0.00000001	0.00002530
2	Yes	19	0.00000001	0.00008530
3	Yes	18	0.00000001	0.00014908
4	Yes	20	0.00000001	0.00009307
5	Yes	20	0.00000001	0.00007051
6	Yes	20	0.00000001	0.00010638
7	Yes	20	0.00000001	0.00008095
8	Yes	18	0.00000001	0.00008476
9	Yes	17	0.00000001	0.00014327
10	Yes	20	0.00000001	0.00011779
11	Yes	20	0.00000001	0.00009028
12	Yes	20	0.00000001	0.00008754
13	Yes	20	0.00000001	0.00006633
14	Yes	19	0.00000001	0.00009682
15	Yes	19	0.00000001	0.00007552
16	Yes	20	0.00000001	0.00012095
17	Yes	20	0.00000001	0.00009178
18	Yes	20	0.00000001	0.00010404
19	Yes	20	0.00000001	0.00007845
20	Yes	18	0.00000001	0.00010701
21	Yes	18	0.00000001	0.00008335
22	Yes	20	0.00000001	0.00009363
23	Yes	20	0.00000001	0.00007061
24	Yes	20	0.00000001	0.00012652
25	Yes	20	0.00000001	0.00009660
26	Yes	16	0.00000001	0.00010330
27	Yes	20	0.00000001	0.00012101
28	Yes	20	0.00000001	0.00012100
29	Yes	20	0.00000001	0.00011833
30	Yes	20	0.00000001	0.00011434
31	Yes	20	0.00000001	0.00011969
32	Yes	20	0.00000001	0.00012245
33	Yes	20	0.00000001	0.00012352
34	Yes	20	0.00000001	0.00012978
35	Yes	20	0.00000001	0.00013020
36	Yes	20	0.00000001	0.00012581
37	Yes	20	0.00000001	0.00012767
38	Yes	20	0.00000001	0.00012708
39	Yes	15	0.00000001	0.00014390

40	Yes	15	0.00000001	0.00013728
41	Yes	15	0.00000001	0.00013985
42	Yes	15	0.00000001	0.00009713
43	Yes	16	0.00000001	0.00008570
44	Yes	16	0.00000001	0.00007368
45	Yes	15	0.00000001	0.00014983
46	Yes	16	0.00000001	0.00008801
47	Yes	15	0.00000001	0.00014212
48	Yes	15	0.00000001	0.00010614
49	Yes	15	0.00000001	0.00014771
50	Yes	16	0.00000001	0.00009682

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	148 - 143	15.807	46	0.9823	0.0165
L2	143 - 138	14.782	46	0.9756	0.0146
L3	138 - 133	13.767	46	0.9621	0.0130
L4	133 - 128	12.769	46	0.9427	0.0116
L5	128 - 123	11.795	46	0.9183	0.0103
L6	123 - 118	10.848	46	0.8897	0.0092
L7	118 - 113	9.933	46	0.8572	0.0082
L8	113 - 108	9.054	46	0.8194	0.0072
L9	108 - 100.5	8.218	46	0.7770	0.0063
L10	104.5 - 99.5	7.660	46	0.7450	0.0057
L11	99.5 - 94.5	6.891	46	0.7221	0.0053
L12	94.5 - 89.5	6.153	46	0.6857	0.0048
L13	89.5 - 84.5	5.456	46	0.6463	0.0043
L14	84.5 - 79.5	4.800	46	0.6052	0.0038
L15	79.5 - 74.5	4.189	46	0.5624	0.0033
L16	74.5 - 70.667	3.623	46	0.5177	0.0029
L17	70.667 - 70.417	3.222	46	0.4826	0.0025
L18	70.417 - 65.417	3.196	46	0.4802	0.0025
L19	65.417 - 63.667	2.718	46	0.4333	0.0021
L20	63.667 - 63.417	2.562	46	0.4169	0.0020
L21	63.417 - 58.25	2.540	46	0.4146	0.0020
L22	63.25 - 57.25	2.526	46	0.4130	0.0020
L23	57.25 - 53.229	2.024	46	0.3812	0.0017
L24	53.229 - 52.979	1.718	46	0.3455	0.0015
L25	52.979 - 47.979	1.700	46	0.3433	0.0015
L26	47.979 - 42.979	1.364	46	0.2988	0.0012
L27	42.979 - 37.979	1.075	46	0.2541	0.0010
L28	37.979 - 35.125	0.832	46	0.2094	0.0008
L29	35.125 - 34.875	0.714	46	0.1839	0.0007
L30	34.875 - 28.75	0.705	46	0.1823	0.0007
L31	34.5 - 27.75	0.691	46	0.1800	0.0006
L32	27.75 - 25.875	0.451	46	0.1564	0.0005
L33	25.875 - 25.75	0.392	46	0.1451	0.0005
L34	25.75 - 25.625	0.388	46	0.1441	0.0005
L35	25.625 - 25.5	0.384	46	0.1434	0.0005
L36	25.5 - 20.5	0.380	46	0.1427	0.0005
L37	20.5 - 15.5	0.246	46	0.1147	0.0004
L38	15.5 - 10.5	0.140	46	0.0866	0.0003
L39	10.5 - 5.5	0.064	46	0.0587	0.0002
L40	5.5 - 0.5	0.018	46	0.0306	0.0001
L41	0.5 - 0	0.000	46	0.0000	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
151.50	VHLP800-11	46	15.807	0.9823	0.0165	26449
148.00	DB420-B	46	15.807	0.9823	0.0165	26449
144.00	VHLP2.5-11	46	14.987	0.9774	0.0150	26449
120.00	7770.00	46	10.295	0.8709	0.0086	8594
96.00	PD1110	46	6.371	0.6979	0.0049	7953
82.00	APXV18-206516S-C w/Mount Pipe	46	4.489	0.5840	0.0036	6680
72.00	800 10504 w/Mount Pipe	46	3.358	0.4948	0.0026	6228
53.00	BSA150B	46	1.702	0.3434	0.0015	6482
50.00	BULLET III	46	1.495	0.3168	0.0013	6424

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 143	67.373	16	4.1779	0.0703
L2	143 - 138	63.014	16	4.1542	0.0624
L3	138 - 133	58.697	16	4.0984	0.0554
L4	133 - 128	54.452	16	4.0159	0.0492
L5	128 - 123	50.306	16	3.9115	0.0438
L6	123 - 118	46.278	16	3.7889	0.0391
L7	118 - 113	42.386	16	3.6507	0.0350
L8	113 - 108	38.649	16	3.4907	0.0306
L9	108 - 100.5	35.090	16	3.3107	0.0267
L10	104.5 - 99.5	32.714	16	3.1748	0.0241
L11	99.5 - 94.5	29.438	16	3.0770	0.0225
L12	94.5 - 89.5	26.298	16	2.9220	0.0203
L13	89.5 - 84.5	23.327	16	2.7555	0.0181
L14	84.5 - 79.5	20.534	16	2.5811	0.0161
L15	79.5 - 74.5	17.926	16	2.3999	0.0142
L16	74.5 - 70.667	15.515	2	2.2112	0.0122
L17	70.667 - 70.417	13.802	2	2.0625	0.0108
L18	70.417 - 65.417	13.694	2	2.0527	0.0107
L19	65.417 - 63.667	11.650	2	1.8538	0.0090
L20	63.667 - 63.417	10.984	2	1.7841	0.0085
L21	63.417 - 58.25	10.891	2	1.7740	0.0084
L22	63.25 - 57.25	10.829	2	1.7672	0.0084
L23	57.25 - 53.229	8.684	2	1.6321	0.0074
L24	53.229 - 52.979	7.373	2	1.4806	0.0063
L25	52.979 - 47.979	7.296	2	1.4712	0.0063
L26	47.979 - 42.979	5.855	2	1.2811	0.0052
L27	42.979 - 37.979	4.613	2	1.0900	0.0042
L28	37.979 - 35.125	3.572	2	0.8985	0.0033
L29	35.125 - 34.875	3.068	2	0.7892	0.0028
L30	34.875 - 28.75	3.026	2	0.7826	0.0028
L31	34.5 - 27.75	2.965	2	0.7726	0.0028
L32	27.75 - 25.875	1.936	2	0.6714	0.0023
L33	25.875 - 25.75	1.682	2	0.6230	0.0021
L34	25.75 - 25.625	1.666	2	0.6186	0.0021
L35	25.625 - 25.5	1.650	2	0.6156	0.0021
L36	25.5 - 20.5	1.634	2	0.6126	0.0021

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L37	20.5 - 15.5	1.055	2	0.4927	0.0016
L38	15.5 - 10.5	0.603	2	0.3718	0.0012
L39	10.5 - 5.5	0.276	2	0.2519	0.0008
L40	5.5 - 0.5	0.075	2	0.1313	0.0004
L41	0.5 - 0	0.001	2	0.0118	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
151.50	VHLP800-11	16	67.373	4.1779	0.0703	7087
148.00	DB420-B	16	67.373	4.1779	0.0703	7087
144.00	VHLP2.5-11	16	63.884	4.1610	0.0639	7087
120.00	7770.00	16	43.925	3.7084	0.0367	2042
96.00	PD1110	16	27.224	2.9738	0.0210	1885
82.00	APXV18-206516S-C w/Mount Pipe	16	19.206	2.4913	0.0151	1586
72.00	800 10504 w/Mount Pipe	2	14.384	2.1145	0.0113	1476
53.00	BSA150B	2	7.302	1.4720	0.0063	1521
50.00	BULLET III	2	6.413	1.3585	0.0056	1505

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	148 - 143 (1)	TP23.0151x22x0.25	5.00	0.00	0.0	18.3259	-5428.70	1243390.00	0.004
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	5.00	0.00	0.0	19.1430	-5794.75	1280700.00	0.005
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	5.00	0.00	0.0	19.9601	-6198.01	1316460.00	0.005
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	5.00	0.00	0.0	20.7772	-6621.46	1350670.00	0.005
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	5.00	0.00	0.0	21.5943	-7065.15	1383330.00	0.005
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	5.00	0.00	0.0	22.4115	-10693.60	1414450.00	0.008
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	5.00	0.00	0.0	23.2286	-11275.80	1444010.00	0.008
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	5.00	0.00	0.0	24.0457	-11881.70	1472030.00	0.008
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	7.50	0.00	0.0	24.6177	-12315.90	1490720.00	0.008
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	5.00	0.00	0.0	37.3975	-13583.10	2544520.00	0.005
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	5.00	0.00	0.0	38.6231	-17451.20	2627920.00	0.007
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	5.00	0.00	0.0	39.8488	-18423.00	2711310.00	0.007
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	5.00	0.00	0.0	41.0744	-19425.20	2790220.00	0.007
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	5.00	0.00	0.0	42.3001	-23649.30	2846760.00	0.008
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	5.00	0.00	0.0	43.5257	-24803.20	2901760.00	0.009
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	3.83	0.00	0.0	44.4653	-25934.90	2942880.00	0.009
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.375	0.25	0.00	0.0	44.5266	-26004.80	2945530.00	0.009
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.375	5.00	0.00	0.0	45.7522	-27247.40	2997710.00	0.009
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.375	1.75	0.00	0.0	46.1812	-27685.10	3015610.00	0.009
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	0.25	0.00	0.0	46.2425	-27761.40	3018160.00	0.009
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	5.17	0.00	0.0	46.2834	-27804.80	3019850.00	0.009
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	6.00	0.00	0.0	54.5687	-30426.00	3712860.00	0.008

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	lb	lb	
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	4.02	0.00	0.0	55.7187	-31598.00	3788980.00	0.008
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.4375	0.25	0.00	0.0	55.7842	-31794.30	3792050.00	0.008
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.4375	5.00	0.00	0.0	57.2202	-33467.60	3858570.00	0.009
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.4375	5.00	0.00	0.0	58.6502	-34994.80	3923250.00	0.009
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.4375	5.00	0.00	0.0	60.0802	-36553.20	3986380.00	0.009
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.4375	2.85	0.00	0.0	60.8964	-37454.60	4021720.00	0.009
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	0.25	0.00	0.0	88.4284	-37569.20	6016670.00	0.006
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	6.13	0.00	0.0	88.5847	-37723.60	6027300.00	0.006
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.7	6.75	0.00	0.0	98.2448	-42731.30	6684580.00	0.006
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.6875	1.88	0.00	0.0	97.3607	-43576.10	6624420.00	0.007
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.5	0.13	0.00	0.0	71.1505	-43631.90	4841080.00	0.009
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	0.13	0.00	0.0	106.1830	-43693.20	7224710.00	0.006
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	0.13	0.00	0.0	106.2450	-43754.20	7228880.00	0.006
L36	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	5.00	0.00	0.0	108.6960	-46199.90	7395660.00	0.006
L37	20.5 - 15.5 (37)	TP46.7736x45.7586x0.7375	5.00	0.00	0.0	109.3240	-48686.50	7438420.00	0.007
L38	15.5 - 10.5 (38)	TP47.7885x46.7736x0.7375	5.00	0.00	0.0	111.7340	-51208.20	7602410.00	0.007
L39	10.5 - 5.5 (39)	TP48.8035x47.7885x0.725	5.00	0.00	0.0	112.2390	-53630.80	7636760.00	0.007
L40	5.5 - 0.5 (40)	TP49.8185x48.8035x0.725	5.00	0.00	0.0	114.6090	-55954.40	7797980.00	0.007
L41	0.5 - 0 (41)	TP49.92x49.8185x0.725	0.50	0.00	0.0	114.8460	-56192.40	7814100.00	0.007

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		lb-ft	lb-ft		lb-ft	lb-ft	
L1	148 - 143 (1)	TP23.0151x22x0.25	35170.08	574920.83	0.061	0.00	574920.83	0.000
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	68305.75	618861.67	0.110	0.00	618861.67	0.000
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	104432.50	663577.50	0.157	0.00	663577.50	0.000
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	142829.17	708971.67	0.201	0.00	708971.67	0.000
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	183543.33	754946.67	0.243	0.00	754946.67	0.000
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	231510.00	801406.67	0.289	0.00	801406.67	0.000
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	296194.17	848258.33	0.349	0.00	848258.33	0.000
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	363291.67	895391.67	0.406	0.00	895391.67	0.000
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	411900.83	928508.33	0.444	0.00	928508.33	0.000
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	483746.67	1598858.33	0.303	0.00	1598858.33	0.000
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	574247.50	1706025.00	0.337	0.00	1706025.00	0.000
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	664796.67	1816666.67	0.366	0.00	1816666.67	0.000
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	757873.33	1927683.33	0.393	0.00	1927683.33	0.000
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	862525.00	2026075.00	0.426	0.00	2026075.00	0.000
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	973858.33	2125691.67	0.458	0.00	2125691.67	0.000
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	1061458.33	2202833.33	0.482	0.00	2202833.33	0.000
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.375	1067300.00	2207883.33	0.483	0.00	2207883.33	0.000
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.375	1185258.33	2309475.00	0.513	0.00	2309475.00	0.000
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.375	1227116.67	2345258.33	0.523	0.00	2345258.33	0.000
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	1233116.67	2350383.33	0.525	0.00	2350383.33	0.000
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	1237133.33	2353808.33	0.526	0.00	2353808.33	0.000
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	1383408.33	2920216.67	0.474	0.00	2920216.67	0.000
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	1483475.00	3043600.00	0.487	0.00	3043600.00	0.000
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.4375	1489216.67	3049683.33	0.488	0.00	3049683.33	0.000
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.4375	1615625.00	3183933.33	0.507	0.00	3183933.33	0.000
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.4375	1745708.33	3319066.67	0.526	0.00	3319066.67	0.000
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.4375	1878283.33	3455558.33	0.544	0.00	3455558.33	0.000
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.4375	1954975.00	3534041.67	0.553	0.00	3534041.67	0.000
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	1961725.00	5244533.33	0.374	0.00	5244533.33	0.000
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	1971858.33	5263225.00	0.375	0.00	5263225.00	0.000
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.7	2156750.00	5888241.33	0.366	0.00	5888241.33	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.6875	2208883.33	5890358.00	0.375	0.00	5890358.00	0.000
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.5	2212366.67	4343933.33	0.509	0.00	4343933.33	0.000
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	2215850.00	6413408.00	0.346	0.00	6413408.00	0.000
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	2219341.67	6420874.67	0.346	0.00	6420874.67	0.000
L36	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	2360000.00	6723108.00	0.351	0.00	6723108.00	0.000
L37	20.5 - 15.5 (37)	TP46.7736x45.7586x0.7375	2502833.33	6920724.67	0.362	0.00	6920724.67	0.000
L38	15.5 - 10.5 (38)	TP47.7885x46.7736x0.7375	2647866.67	7231716.67	0.366	0.00	7231716.67	0.000
L39	10.5 - 5.5 (39)	TP48.8035x47.7885x0.725	2795083.33	7427374.67	0.376	0.00	7427374.67	0.000
L40	5.5 - 0.5 (40)	TP49.8185x48.8035x0.725	2944483.33	7746658.00	0.380	0.00	7746658.00	0.000
L41	0.5 - 0 (41)	TP49.92x49.8185x0.725	2959550.00	7778958.00	0.380	0.00	7778958.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	148 - 143 (1)	TP23.0151x22x0.25	6362.67	621696.00	0.010	2122.65	1170091.67	0.002
L2	143 - 138 (2)	TP24.0301x23.0151x0.25	7003.91	636680.00	0.011	4881.92	1259325.00	0.004
L3	138 - 133 (3)	TP25.0452x24.0301x0.25	7452.75	654715.00	0.011	4888.06	1350116.67	0.004
L4	133 - 128 (4)	TP26.0602x25.0452x0.25	7911.68	671975.00	0.012	4894.22	1442291.67	0.003
L5	128 - 123 (5)	TP27.0753x26.0602x0.25	8380.08	688461.00	0.012	4900.39	1535625.00	0.003
L6	123 - 118 (6)	TP28.0903x27.0753x0.25	12701.70	707223.00	0.018	4949.03	1629941.67	0.003
L7	118 - 113 (7)	TP29.1054x28.0903x0.25	13182.60	722006.00	0.018	4952.32	1725041.67	0.003
L8	113 - 108 (8)	TP30.1204x29.1054x0.25	13667.60	736016.00	0.019	4955.57	1820725.00	0.003
L9	108 - 100.5 (9)	TP31.643x30.1204x0.25	14096.10	742289.00	0.019	6060.11	1887950.00	0.003
L10	100.5 - 99.5 (10)	TP31.346x30.331x0.375	14644.00	1263920.00	0.012	6067.05	3255250.00	0.002
L11	99.5 - 94.5 (11)	TP32.361x31.346x0.375	17864.20	1313960.00	0.014	3376.18	3472991.67	0.001
L12	94.5 - 89.5 (12)	TP33.3761x32.361x0.375	18369.90	1355660.00	0.014	3379.92	3697783.33	0.001
L13	89.5 - 84.5 (13)	TP34.3911x33.3761x0.375	18875.90	1395110.00	0.014	3383.68	3923316.67	0.001
L14	84.5 - 79.5 (14)	TP35.4061x34.3911x0.375	22029.10	1423380.00	0.015	3925.53	4123133.33	0.001
L15	79.5 - 74.5 (15)	TP36.4211x35.4061x0.375	22524.20	1450880.00	0.016	3929.32	4325425.00	0.001
L16	74.5 - 70.667 (16)	TP37.1993x36.4211x0.375	23336.80	1471440.00	0.016	3932.28	4482050.00	0.001
L17	70.667 - 70.417 (17)	TP37.25x37.1993x0.375	23364.90	1472760.00	0.016	3932.38	4492308.33	0.001
L18	70.417 - 65.417 (18)	TP38.2651x37.25x0.375	23845.20	1498860.00	0.016	3936.33	4698583.33	0.001
L19	65.417 - 63.667 (19)	TP38.6203x38.2651x0.375	24020.80	1507810.00	0.016	3937.76	4771241.67	0.001
L20	63.667 - 63.417 (20)	TP38.6711x38.6203x0.375	24039.70	1509080.00	0.016	3937.84	4781641.67	0.001
L21	63.417 - 58.25 (21)	TP39.72x38.6711x0.375	24066.40	1509930.00	0.016	3937.97	4788591.67	0.001
L22	58.25 - 57.25 (22)	TP39.1731x37.955x0.4375	24709.10	1856430.00	0.013	3943.23	5943908.00	0.001
L23	57.25 - 53.229 (23)	TP39.9894x39.1731x0.4375	25084.50	1894490.00	0.013	3946.41	6194558.00	0.001
L24	53.229 - 52.979 (24)	TP40.0401x39.9894x0.4375	25348.10	1896170.00	0.013	4830.97	6206916.67	0.001
L25	52.979 - 47.979 (25)	TP41.0552x40.0401x0.4375	25806.30	1929280.00	0.013	4835.91	6479541.33	0.001
L26	47.979 - 42.979 (26)	TP42.0703x41.0552x0.4375	26249.70	1961620.00	0.013	4839.94	6753966.67	0.001
L27	42.979 - 37.979 (27)	TP43.0854x42.0703x0.4375	26766.70	1993190.00	0.013	6578.35	7031124.67	0.001
L28	37.979 - 35.125 (28)	TP43.6648x43.0854x0.4375	27009.30	2010860.00	0.013	6582.56	7190483.33	0.001
L29	35.125 - 34.875 (29)	TP43.7155x43.6648x0.6375	27017.20	3008340.00	0.009	6582.87	10687416.67	0.001
L30	34.875 - 28.75 (30)	TP44.959x43.7155x0.6375	27050.80	3013650.00	0.009	6583.43	10725416.67	0.001
L31	28.75 - 27.75 (31)	TP44.2869x42.9167x0.7	27730.90	3342290.00	0.008	6593.77	12004166.67	0.001
L32	27.75 - 25.875 (32)	TP44.6675x44.2869x0.6875	27899.90	3312210.00	0.008	6596.57	12006749.33	0.001
L33	25.875 - 25.75 (33)	TP44.6929x44.6675x0.5	27896.20	2420540.00	0.012	6596.70	8841833.33	0.001
L34	25.75 - 25.625 (34)	TP44.7182x44.6929x0.75	27906.50	3612360.00	0.008	6596.88	13079166.67	0.001
L35	25.625 - 25.5 (35)	TP44.7436x44.7182x0.75	27917.40	3614440.00	0.008	6597.07	13094333.33	0.001
L36	25.5 - 20.5 (36)	TP45.7586x44.7436x0.75	28359.40	3697830.00	0.008	6604.72	13708916.00	0.000
L37	20.5 - 15.5 (37)	TP46.7736x45.7586x0.7375	28797.40	3719210.00	0.008	6612.57	14108833.33	0.000
L38	15.5 - 10.5 (38)	TP47.7885x46.7736x0.7375	29237.30	3801210.00	0.008	6620.68	14741166.67	0.000
L39	10.5 - 5.5 (39)	TP48.8035x47.7885x0.725	29673.00	3818380.00	0.008	6621.39	15137000.00	0.000
L40	5.5 - 0.5 (40)	TP49.8185x48.8035x0.725	30110.40	3898990.00	0.008	6621.34	15786082.67	0.000

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L41	0.5 - 0 (41)	TP49.92x49.8185x0.725	30148.40	3907050.00	0.008	6621.34	15851749.33	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	148 - 143 (1)	0.004	0.061	0.000	0.010	0.002	0.066 ✔	1.000	4.8.2 ✔
L2	143 - 138 (2)	0.005	0.110	0.000	0.011	0.004	0.115 ✔	1.000	4.8.2 ✔
L3	138 - 133 (3)	0.005	0.157	0.000	0.011	0.004	0.162 ✔	1.000	4.8.2 ✔
L4	133 - 128 (4)	0.005	0.201	0.000	0.012	0.003	0.207 ✔	1.000	4.8.2 ✔
L5	128 - 123 (5)	0.005	0.243	0.000	0.012	0.003	0.248 ✔	1.000	4.8.2 ✔
L6	123 - 118 (6)	0.008	0.289	0.000	0.018	0.003	0.297 ✔	1.000	4.8.2 ✔
L7	118 - 113 (7)	0.008	0.349	0.000	0.018	0.003	0.357 ✔	1.000	4.8.2 ✔
L8	113 - 108 (8)	0.008	0.406	0.000	0.019	0.003	0.414 ✔	1.000	4.8.2 ✔
L9	108 - 100.5 (9)	0.008	0.444	0.000	0.019	0.003	0.452 ✔	1.000	4.8.2 ✔
L10	100.5 - 99.5 (10)	0.005	0.303	0.000	0.012	0.002	0.308 ✔	1.000	4.8.2 ✔
L11	99.5 - 94.5 (11)	0.007	0.337	0.000	0.014	0.001	0.343 ✔	1.000	4.8.2 ✔
L12	94.5 - 89.5 (12)	0.007	0.366	0.000	0.014	0.001	0.373 ✔	1.000	4.8.2 ✔
L13	89.5 - 84.5 (13)	0.007	0.393	0.000	0.014	0.001	0.400 ✔	1.000	4.8.2 ✔
L14	84.5 - 79.5 (14)	0.008	0.426	0.000	0.015	0.001	0.434 ✔	1.000	4.8.2 ✔
L15	79.5 - 74.5 (15)	0.009	0.458	0.000	0.016	0.001	0.467 ✔	1.000	4.8.2 ✔
L16	74.5 - 70.667 (16)	0.009	0.482	0.000	0.016	0.001	0.491 ✔	1.000	4.8.2 ✔
L17	70.667 - 70.417 (17)	0.009	0.483	0.000	0.016	0.001	0.493 ✔	1.000	4.8.2 ✔
L18	70.417 - 65.417 (18)	0.009	0.513	0.000	0.016	0.001	0.523 ✔	1.000	4.8.2 ✔
L19	65.417 - 63.667 (19)	0.009	0.523	0.000	0.016	0.001	0.533 ✔	1.000	4.8.2 ✔
L20	63.667 - 63.417 (20)	0.009	0.525	0.000	0.016	0.001	0.534 ✔	1.000	4.8.2 ✔
L21	63.417 - 58.25 (21)	0.009	0.526	0.000	0.016	0.001	0.535 ✔	1.000	4.8.2 ✔
L22	58.25 - 57.25 (22)	0.008	0.474	0.000	0.013	0.001	0.482 ✔	1.000	4.8.2 ✔
L23	57.25 - 53.229 (23)	0.008	0.487	0.000	0.013	0.001	0.496 ✔	1.000	4.8.2 ✔
L24	53.229 - 52.979 (24)	0.008	0.488	0.000	0.013	0.001	0.497 ✔	1.000	4.8.2 ✔
L25	52.979 - 47.979 (25)	0.009	0.507	0.000	0.013	0.001	0.516 ✔	1.000	4.8.2 ✔
L26	47.979 - 42.979 (26)	0.009	0.526	0.000	0.013	0.001	0.535 ✔	1.000	4.8.2 ✔
L27	42.979 - 37.979 (27)	0.009	0.544	0.000	0.013	0.001	0.553 ✔	1.000	4.8.2 ✔
L28	37.979 - 35.125 (28)	0.009	0.553	0.000	0.013	0.001	0.563 ✔	1.000	4.8.2 ✔
L29	35.125 - 34.875 (29)	0.006	0.374	0.000	0.009	0.001	0.380 ✔	1.000	4.8.2 ✔
L30	34.875 - 28.75 (30)	0.006	0.375	0.000	0.009	0.001	0.381 ✔	1.000	4.8.2 ✔
L31	28.75 - 27.75 (31)	0.006	0.366	0.000	0.008	0.001	0.373 ✔	1.000	4.8.2 ✔
L32	27.75 - 25.875 (32)	0.007	0.375	0.000	0.008	0.001	0.382 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L33	25.875 - 25.75 (33)	0.009	0.509	0.000	0.012	0.001	0.518 ✓	1.000	4.8.2 ✓
L34	25.75 - 25.625 (34)	0.006	0.346	0.000	0.008	0.001	0.352 ✓	1.000	4.8.2 ✓
L35	25.625 - 25.5 (35)	0.006	0.346	0.000	0.008	0.001	0.352 ✓	1.000	4.8.2 ✓
L36	25.5 - 20.5 (36)	0.006	0.351	0.000	0.008	0.000	0.357 ✓	1.000	4.8.2 ✓
L37	20.5 - 15.5 (37)	0.007	0.362	0.000	0.008	0.000	0.368 ✓	1.000	4.8.2 ✓
L38	15.5 - 10.5 (38)	0.007	0.366	0.000	0.008	0.000	0.373 ✓	1.000	4.8.2 ✓
L39	10.5 - 5.5 (39)	0.007	0.376	0.000	0.008	0.000	0.383 ✓	1.000	4.8.2 ✓
L40	5.5 - 0.5 (40)	0.007	0.380	0.000	0.008	0.000	0.387 ✓	1.000	4.8.2 ✓
L41	0.5 - 0 (41)	0.007	0.380	0.000	0.008	0.000	0.388 ✓	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	148 - 143	Pole	TP23.0151x22x0.25	1	-5428.70	1243390.00	6.6	Pass
L2	143 - 138	Pole	TP24.0301x23.0151x0.25	2	-5794.75	1280700.00	11.5	Pass
L3	138 - 133	Pole	TP25.0452x24.0301x0.25	3	-6198.01	1316460.00	16.2	Pass
L4	133 - 128	Pole	TP26.0602x25.0452x0.25	4	-6621.46	1350670.00	20.7	Pass
L5	128 - 123	Pole	TP27.0753x26.0602x0.25	5	-7065.15	1383330.00	24.8	Pass
L6	123 - 118	Pole	TP28.0903x27.0753x0.25	6	-10693.60	1414450.00	29.7	Pass
L7	118 - 113	Pole	TP29.1054x28.0903x0.25	7	-11275.80	1444010.00	35.7	Pass
L8	113 - 108	Pole	TP30.1204x29.1054x0.25	8	-11881.70	1472030.00	41.4	Pass
L9	108 - 100.5	Pole	TP31.643x30.1204x0.25	9	-12315.90	1490720.00	45.2	Pass
L10	100.5 - 99.5	Pole	TP31.346x30.331x0.375	10	-13583.10	2544520.00	30.8	Pass
L11	99.5 - 94.5	Pole	TP32.361x31.346x0.375	11	-17451.20	2627920.00	34.3	Pass
L12	94.5 - 89.5	Pole	TP33.3761x32.361x0.375	12	-18423.00	2711310.00	37.3	Pass
L13	89.5 - 84.5	Pole	TP34.3911x33.3761x0.375	13	-19425.20	2790220.00	40.0	Pass
L14	84.5 - 79.5	Pole	TP35.4061x34.3911x0.375	14	-23649.30	2846760.00	43.4	Pass
L15	79.5 - 74.5	Pole	TP36.4211x35.4061x0.375	15	-24803.20	2901760.00	46.7	Pass
L16	74.5 - 70.667	Pole	TP37.1993x36.4211x0.375	16	-25934.90	2942880.00	49.1	Pass
L17	70.667 - 70.417	Pole	TP37.25x37.1993x0.375	17	-26004.80	2945530.00	49.3	Pass
L18	70.417 - 65.417	Pole	TP38.2651x37.25x0.375	18	-27247.40	2997710.00	52.3	Pass
L19	65.417 - 63.667	Pole	TP38.6203x38.2651x0.375	19	-27685.10	3015610.00	53.3	Pass
L20	63.667 - 63.417	Pole	TP38.6711x38.6203x0.375	20	-27761.40	3018160.00	53.4	Pass
L21	63.417 - 58.25	Pole	TP39.72x38.6711x0.375	21	-27804.80	3019850.00	53.5	Pass
L22	58.25 - 57.25	Pole	TP39.1731x37.955x0.4375	22	-30426.00	3712860.00	48.2	Pass
L23	57.25 - 53.229	Pole	TP39.9894x39.1731x0.4375	23	-31598.00	3788980.00	49.6	Pass
L24	53.229 - 52.979	Pole	TP40.0401x39.9894x0.4375	24	-31794.30	3792050.00	49.7	Pass
L25	52.979 - 47.979	Pole	TP41.0552x40.0401x0.4375	25	-33467.60	3858570.00	51.6	Pass
L26	47.979 - 42.979	Pole	TP42.0703x41.0552x0.4375	26	-34994.80	3923250.00	53.5	Pass
L27	42.979 - 37.979	Pole	TP43.0854x42.0703x0.4375	27	-36553.20	3986380.00	55.3	Pass
L28	37.979 - 35.125	Pole	TP43.6648x43.0854x0.4375	28	-37454.60	4021720.00	56.3	Pass
L29	35.125 - 34.875	Pole	TP43.7155x43.6648x0.6375	29	-37569.20	6016670.00	38.0	Pass
L30	34.875 - 28.75	Pole	TP44.959x43.7155x0.6375	30	-37723.60	6027300.00	38.1	Pass
L31	28.75 - 27.75	Pole	TP44.2869x42.9167x0.7	31	-42731.30	6684580.00	37.3	Pass
L32	27.75 - 25.875	Pole	TP44.6675x44.2869x0.6875	32	-43576.10	6624420.00	38.2	Pass
L33	25.875 - 25.75	Pole	TP44.6929x44.6675x0.5	33	-43631.90	4841080.00	51.8	Pass
L34	25.75 - 25.625	Pole	TP44.7182x44.6929x0.75	34	-43693.20	7224710.00	35.2	Pass
L35	25.625 - 25.5	Pole	TP44.7436x44.7182x0.75	35	-43754.20	7228880.00	35.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L36	25.5 - 20.5	Pole	TP45.7586x44.7436x0.75	36	-46199.90	7395660.00	35.7	Pass
L37	20.5 - 15.5	Pole	TP46.7736x45.7586x0.7375	37	-48686.50	7438420.00	36.8	Pass
L38	15.5 - 10.5	Pole	TP47.7885x46.7736x0.7375	38	-51208.20	7602410.00	37.3	Pass
L39	10.5 - 5.5	Pole	TP48.8035x47.7885x0.725	39	-53630.80	7636760.00	38.3	Pass
L40	5.5 - 0.5	Pole	TP49.8185x48.8035x0.725	40	-55954.40	7797980.00	38.7	Pass
L41	0.5 - 0	Pole	TP49.92x49.8185x0.725	41	-56192.40	7814100.00	38.8	Pass
							Summary	
						Pole (L28)	56.3	Pass
						RATING =	**56.3**	**Pass**

See the CCIpole output for accurate calculations.

CCIpole

per TIA-222- G

Site: CT03XC355

Project #: 39392

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	148	47.5	4	12	22	31.643	0.25	1	A607-60
2	104.5	46.25	5	12	30.33	39.72	0.375	1.5	A607-60
3	63.25	34.5	5.75	12	37.95	44.959	0.4375	1.75	A607-60
4	34.5	34.5	0	12	42.92	49.92	0.5	2	A607-60

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	35.125	plate	CCI-WSFP-065125	2			0								0	
2	0	25.75	plate	CCI-WSFP-065125	2						0		0				
3	25.875	35.125	plate	CCI-SFP-065125	1							0					
4	35.125	53.229	plate	CCI-SFP-060100	3			0				0				0	
5	63.667	70.667	plate	CCI-SFP-045100	3	0				0				0			
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
2	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
3	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
4	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
5	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	148 - 143	5		12	22.000	23.015	0.25	A607-60	1.000
2	143 - 138	5		12	23.015	24.030	0.25	A607-60	1.000
3	138 - 133	5		12	24.030	25.045	0.25	A607-60	1.000
4	133 - 128	5		12	25.045	26.060	0.25	A607-60	1.000
5	128 - 123	5		12	26.060	27.075	0.25	A607-60	1.000
6	123 - 118	5		12	27.075	28.090	0.25	A607-60	1.000
7	118 - 113	5		12	28.090	29.105	0.25	A607-60	1.000
8	113 - 108	5		12	29.105	30.120	0.25	A607-60	1.000
9	108 - 104.5	7.5	4	12	30.120	31.643	0.25	A607-60	1.000
10	104.5 - 99.5	5		12	30.331	31.346	0.375	A607-60	1.000
11	99.5 - 94.5	5		12	31.346	32.361	0.375	A607-60	1.000
12	94.5 - 89.5	5		12	32.361	33.376	0.375	A607-60	1.000
13	89.5 - 84.5	5		12	33.376	34.391	0.375	A607-60	1.000
14	84.5 - 79.5	5		12	34.391	35.406	0.375	A607-60	1.000
15	79.5 - 74.5	5		12	35.406	36.421	0.375	A607-60	1.000
16	74.5 - 70.667	3.833		12	36.421	37.199	0.375	A607-60	1.000
17	70.667 - 70.417	0.25		12	37.199	37.250	0.375	A607-60	1.000
18	70.417 - 65.417	5		12	37.250	38.265	0.375	A607-60	1.000
19	65.417 - 63.667	1.75		12	38.265	38.620	0.375	A607-60	1.000
20	63.667 - 63.417	0.25		12	38.620	38.671	0.375	A607-60	1.000
21	63.417 - 63.25	5.167	5	12	38.671	39.720	0.375	A607-60	1.000
22	63.25 - 57.25	6		12	37.955	39.173	0.4375	A607-60	1.000
23	57.25 - 53.229	4.021		12	39.173	39.989	0.4375	A607-60	1.000
24	53.229 - 52.979	0.25		12	39.989	40.040	0.4375	A607-60	1.000
25	52.979 - 47.979	5		12	40.040	41.055	0.4375	A607-60	1.000
26	47.979 - 42.979	5		12	41.055	42.070	0.4375	A607-60	1.000
27	42.979 - 37.979	5		12	42.070	43.085	0.4375	A607-60	1.000
28	37.979 - 35.125	2.854		12	43.085	43.665	0.4375	A607-60	1.000
29	35.125 - 34.875	0.25		12	43.665	43.716	0.6375	A607-60	0.966
30	34.875 - 34.5	6.125	5.75	12	43.716	44.959	0.6375	A607-60	0.965
31	34.5 - 27.75	6.75		12	42.917	44.287	0.7	A607-60	0.966
32	27.75 - 25.875	1.875		12	44.287	44.667	0.6875	A607-60	0.981
33	25.875 - 25.75	0.125		12	44.667	44.693	0.5	A607-60	1.000
34	25.75 - 25.625	0.125		12	44.693	44.718	0.75	A607-60	0.977
35	25.625 - 25.5	0.125		12	44.718	44.744	0.75	A607-60	0.977
36	25.5 - 20.5	5		12	44.744	45.759	0.75	A607-60	0.970
37	20.5 - 15.5	5		12	45.759	46.774	0.7375	A607-60	0.979
38	15.5 - 10.5	5		12	46.774	47.789	0.7375	A607-60	0.973
39	10.5 - 5.5	5		12	47.789	48.804	0.725	A607-60	0.983
40	5.5 - 0.5	5		12	48.804	49.819	0.725	A607-60	0.977
41	0.5 - 0	0.5		12	49.819	49.920	0.725	A607-60	0.976

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	148 - 143	5.43	35.17	6.36
2	143 - 138	5.79	68.31	7.00
3	138 - 133	6.20	104.43	7.45
4	133 - 128	6.62	142.83	7.91
5	128 - 123	7.07	183.54	8.38
6	123 - 118	10.69	231.51	12.70
7	118 - 113	11.28	296.19	13.18
8	113 - 108	11.88	363.29	13.67
9	108 - 104.5	12.32	411.90	14.10
10	104.5 - 99.5	13.58	483.75	14.64
11	99.5 - 94.5	17.45	574.25	17.86
12	94.5 - 89.5	18.42	664.80	18.37
13	89.5 - 84.5	19.43	757.87	18.88
14	84.5 - 79.5	23.65	862.52	22.03
15	79.5 - 74.5	24.80	973.86	22.52
16	74.5 - 70.667	25.93	1061.46	23.34
17	70.667 - 70.417	26.00	1067.30	23.36
18	70.417 - 65.417	27.25	1185.26	23.85
19	65.417 - 63.667	27.69	1227.11	24.02
20	63.667 - 63.417	27.76	1233.12	24.04
21	63.417 - 63.25	27.80	1237.13	24.07
22	63.25 - 57.25	30.43	1383.41	24.71
23	57.25 - 53.229	31.60	1483.47	25.08
24	53.229 - 52.979	31.98	1487.80	25.35
25	52.979 - 47.979	33.47	1615.63	25.81
26	47.979 - 42.979	34.99	1745.71	26.25
27	42.979 - 37.979	36.55	1878.28	26.77
28	37.979 - 35.125	37.45	1954.97	27.01
29	35.125 - 34.875	37.57	1961.73	27.02
30	34.875 - 34.5	37.72	1971.86	27.05
31	34.5 - 27.75	42.73	2156.75	27.73
32	27.75 - 25.875	43.58	2208.88	27.90
33	25.875 - 25.75	43.63	2212.37	27.90
34	25.75 - 25.625	43.69	2215.85	27.91
35	25.625 - 25.5	43.75	2219.34	27.92
36	25.5 - 20.5	46.20	2360.00	28.36
37	20.5 - 15.5	48.69	2502.84	28.80
38	15.5 - 10.5	51.21	2647.87	29.24
39	10.5 - 5.5	53.63	2795.09	29.67
40	5.5 - 0.5	55.95	2944.49	30.11
41	0.5 - 0	56.19	2959.55	30.15

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP23.015x22x0.25	Pole	6.5%	Pass
143 - 138	Pole	TP24.03x23.015x0.25	Pole	11.5%	Pass
138 - 133	Pole	TP25.045x24.03x0.25	Pole	16.2%	Pass
133 - 128	Pole	TP26.06x25.045x0.25	Pole	20.6%	Pass
128 - 123	Pole	TP27.075x26.06x0.25	Pole	24.8%	Pass
123 - 118	Pole	TP28.09x27.075x0.25	Pole	29.6%	Pass
118 - 113	Pole	TP29.105x28.09x0.25	Pole	35.6%	Pass
113 - 108	Pole	TP30.12x29.105x0.25	Pole	41.3%	Pass
108 - 104.5	Pole	TP31.643x30.12x0.25	Pole	45.1%	Pass
104.5 - 99.5	Pole	TP31.346x30.331x0.375	Pole	30.7%	Pass
99.5 - 94.5	Pole	TP32.361x31.346x0.375	Pole	34.2%	Pass
94.5 - 89.5	Pole	TP33.376x32.361x0.375	Pole	37.2%	Pass
89.5 - 84.5	Pole	TP34.391x33.376x0.375	Pole	39.9%	Pass
84.5 - 79.5	Pole	TP35.406x34.391x0.375	Pole	43.3%	Pass
79.5 - 74.5	Pole	TP36.421x35.406x0.375	Pole	46.6%	Pass
74.5 - 70.67	Pole	TP37.199x36.421x0.375	Pole	49.0%	Pass
70.67 - 70.42	Pole	TP37.25x37.199x0.375	Pole	49.1%	Pass
70.42 - 65.42	Pole	TP38.265x37.25x0.375	Pole	52.1%	Pass
65.42 - 63.67	Pole	TP38.62x38.265x0.375	Pole	53.1%	Pass
63.67 - 63.42	Pole	TP38.671x38.62x0.375	Pole	53.3%	Pass
63.42 - 63.25	Pole	TP39.72x38.671x0.375	Pole	53.4%	Pass
63.25 - 57.25	Pole	TP39.173x37.955x0.4375	Pole	48.1%	Pass
57.25 - 53.23	Pole	TP39.989x39.173x0.4375	Pole	49.5%	Pass
53.23 - 52.98	Pole	TP40.04x39.989x0.4375	Pole	49.5%	Pass
52.98 - 47.98	Pole	TP41.055x40.04x0.4375	Pole	51.5%	Pass
47.98 - 42.98	Pole	TP42.07x41.055x0.4375	Pole	53.4%	Pass
42.98 - 37.98	Pole	TP43.085x42.07x0.4375	Pole	55.1%	Pass
37.98 - 35.13	Pole	TP43.665x43.085x0.4375	Pole	56.1%	Pass
35.13 - 34.88	Pole + Reinf.	TP43.716x43.665x0.6375	Reinf. 1 Tension Rupture	53.2%	Pass
34.88 - 34.5	Pole + Reinf.	TP44.959x43.716x0.6375	Reinf. 1 Tension Rupture	53.3%	Pass
34.5 - 27.75	Pole + Reinf.	TP44.287x42.917x0.7	Reinf. 1 Tension Rupture	52.2%	Pass
27.75 - 25.88	Pole + Reinf.	TP44.667x44.287x0.6875	Reinf. 1 Tension Rupture	52.6%	Pass
25.88 - 25.75	Pole	TP44.693x44.667x0.5	Pole	51.7%	Pass
25.75 - 25.63	Pole + Reinf.	TP44.718x44.693x0.75	Reinf. 1 Tension Rupture	49.9%	Pass
25.63 - 25.5	Pole + Reinf.	TP44.744x44.718x0.75	Reinf. 1 Tension Rupture	49.9%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.759x44.744x0.75	Reinf. 1 Tension Rupture	51.1%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.774x45.759x0.7375	Reinf. 1 Tension Rupture	52.2%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.789x46.774x0.7375	Reinf. 1 Tension Rupture	53.2%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.804x47.789x0.725	Reinf. 1 Tension Rupture	54.1%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.819x48.804x0.725	Reinf. 1 Tension Rupture	55.0%	Pass
0.5 - 0	Pole + Reinf.	TP49.92x49.819x0.725	Reinf. 1 Tension Rupture	55.1%	Pass
				Summary	
			Pole	56.1%	Pass
			Reinforcement	55.1%	Pass
			Overall	56.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
148 - 143	1214	n/a	1214	18.30	n/a	18.30	6.5%					
143 - 138	1384	n/a	1384	19.12	n/a	19.12	11.5%					
138 - 133	1568	n/a	1568	19.93	n/a	19.93	16.2%					
133 - 128	1769	n/a	1769	20.75	n/a	20.75	20.6%					
128 - 123	1986	n/a	1986	21.56	n/a	21.56	24.8%					
123 - 118	2220	n/a	2220	22.38	n/a	22.38	29.6%					
118 - 113	2472	n/a	2472	23.20	n/a	23.20	35.6%					
113 - 108	2742	n/a	2742	24.01	n/a	24.01	41.3%					
108 - 104.5	2943	n/a	2943	24.58	n/a	24.58	45.1%					
104.5 - 99.5	4585	n/a	4585	37.34	n/a	37.34	30.7%					
99.5 - 94.5	5051	n/a	5051	38.57	n/a	38.57	34.2%					
94.5 - 89.5	5547	n/a	5547	39.79	n/a	39.79	37.2%					
89.5 - 84.5	6075	n/a	6075	41.02	n/a	41.02	39.9%					
84.5 - 79.5	6635	n/a	6635	42.24	n/a	42.24	43.3%					
79.5 - 74.5	7228	n/a	7228	43.46	n/a	43.46	46.6%					
74.5 - 70.67	7707	n/a	7707	44.40	n/a	44.40	49.0%					
70.67 - 70.42	7739	n/a	7739	44.46	n/a	44.46	49.1%					
70.42 - 65.42	8395	n/a	8395	45.69	n/a	45.69	52.1%					
65.42 - 63.67	8634	n/a	8634	46.12	n/a	46.12	53.1%					
63.67 - 63.42	8668	n/a	8668	46.18	n/a	46.18	53.3%					
63.42 - 63.25	8691	n/a	8691	46.22	n/a	46.22	53.4%					
63.25 - 57.25	10465	n/a	10465	54.49	n/a	54.49	48.1%					
57.25 - 53.23	11141	n/a	11141	55.64	n/a	55.64	49.5%					
53.23 - 52.98	11184	n/a	11184	55.71	n/a	55.71	49.5%					
52.98 - 47.98	12066	n/a	12066	57.14	n/a	57.14	51.5%					
47.98 - 42.98	12993	n/a	12993	58.57	n/a	58.57	53.4%					
42.98 - 37.98	13967	n/a	13967	59.99	n/a	59.99	55.1%					
37.98 - 35.13	14544	n/a	14544	60.81	n/a	60.81	56.1%					
35.13 - 34.88	14595	6205	20800	60.88	24.38	85.26	38.2%	53.2%		53.2%		
34.88 - 34.5	14672	6226	20898	60.99	24.38	85.36	38.3%	53.3%		53.3%		
34.5 - 27.75	17276	6363	23638	70.40	24.38	94.77	36.4%	52.2%		52.2%		
27.75 - 25.88	17730	6469	24199	71.01	24.38	95.38	36.7%	52.6%		52.6%		
25.88 - 25.75	17761	n/a	17761	71.05	n/a	71.05	51.7%					
25.75 - 25.63	17832	8544	26376	71.09	32.50	103.59	35.6%	49.9%	46.3%			
25.63 - 25.5	17863	8553	26416	71.13	32.50	103.63	35.6%	49.9%	46.3%			
25.5 - 20.5	19119	8933	28052	72.76	32.50	105.26	36.5%	51.1%	47.4%			
20.5 - 15.5	20433	9322	29755	74.39	32.50	106.89	37.5%	52.2%	48.5%			
15.5 - 10.5	21806	9719	31525	76.03	32.50	108.53	38.6%	53.2%	49.5%			
10.5 - 5.5	23239	10125	33363	77.66	32.50	110.16	39.5%	54.1%	50.4%			
5.5 - 0.5	24733	10538	35271	79.29	32.50	111.79	40.5%	55.0%	51.3%			
0.5 - 0	24886	10580	35466	79.45	32.50	111.95	40.6%	55.1%	51.4%			

Note: Section capacity checked in 5 degree increments.

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

Project #: *CT03XC355*
Site Name: *39392*

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	2959.6	ft-kips
Factored Axial, Pu:	56.2	kips
Factored Shear, Vu:	30.1	kips

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	58	in
Anchor Spacing:	6	in

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	128.3	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	49.3%	**Pass**

Plate Data		
W=Side:	60	in
Thick:	2.75	in
Grade:	50	ksi
Clip Distance:	8	in

Base Plate Results Shear Check Only

Base Plate Stress:	3.8	ksi
PL Design Bending Strength, Φ*Fy:	27.0	ksi
Base Plate Stress Ratio:	14.1%	**Pass**

PL Ref. Data	
Yield Line (in):	N/A, Roark
Max PL Length:	34.93

Stiffener Data (Welding at both sides)		
Configuration:	Stiffened	
Weld Type:	Both	**
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	6	in
Height:	18	in
Thick:	1	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

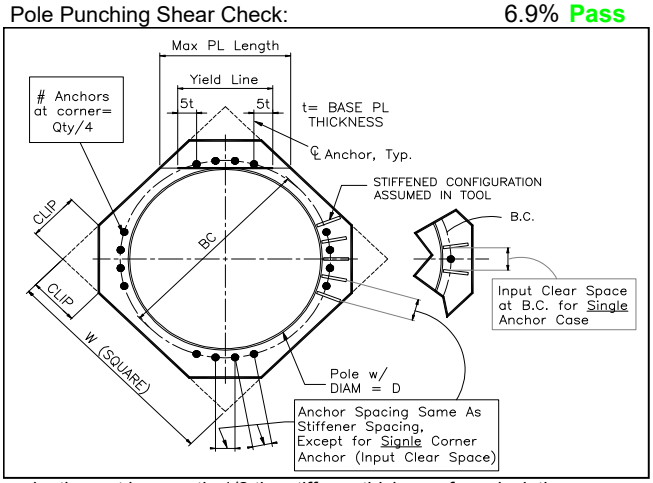
Stiffener Results

Horizontal Weld :	31.7%	**Pass**
Vertical Weld:	28.1%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	7.3%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	32.2%	**Pass**
Plate Comp. (AISC Bracket):	33.5%	**Pass**

Pole Results

Pole Punching Shear Check:	6.9%	**Pass**

Pole Data		
Diam:	49.92	in
Thick:	0.5	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round



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

Drilled Pier Foundation

Project #:	39392
Site Name:	CT03XC355

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2959.6	
Axial Force (kips)	56.2	
Shear Force (kips)	30.1	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	22.5	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 22.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	40	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	9.35	-
Soil Safety Factor	2.95	-
Max Moment (kip-ft)	3333.69	-
Rating	*45.1%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	380.81	-
End Bearing (kips)	2857.47	-
Weight of Concrete (kips)	159.33	-
Total Capacity (kips)	3238.28	-
Axial (kips)	215.53	-
Rating	*6.7%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	9.27	-
Critical Moment (kip-ft)	3333.58	-
Critical Moment Capacity	9174.30	-
Rating	*36.3%*	-

Soil Interaction Rating	**45.1%**
Structural Foundation Rating	**36.3%**

Soil Profile				
Groundwater Depth	n/a	ft	# of Layers	6

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	100	150			0.000	0.000					Cohesionless
2	3.5	8	4.5	100	150			0.000	0.000					Cohesionless
3	8	13	5	135	150		45	0.000	0.000	1.013	1.013			Cohesionless
4	13	18	5	135	150		45	0.000	0.000	1.613	1.613			Cohesionless
5	18	22.5	4.5	135	150		45	0.000	0.000	2.213	2.213	99		Cohesionless
6														

PROJECT INFORMATION:

TOWER INFORMATION

CASCADE: CT03XC355

ADDRESS: 515 POST ROAD EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

LAT: 41.140000°

LONG: --73.347778°

SITE TYPE: 148' MONOPOLE

LANDLORD

CROWN CASTLE USA
2000 CORPORATE DRIVE
CANONSBURG, PA

APPLICANT

SPRINT
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
CONTACT: TBD
PHONE: TBD
EMAIL: TBD

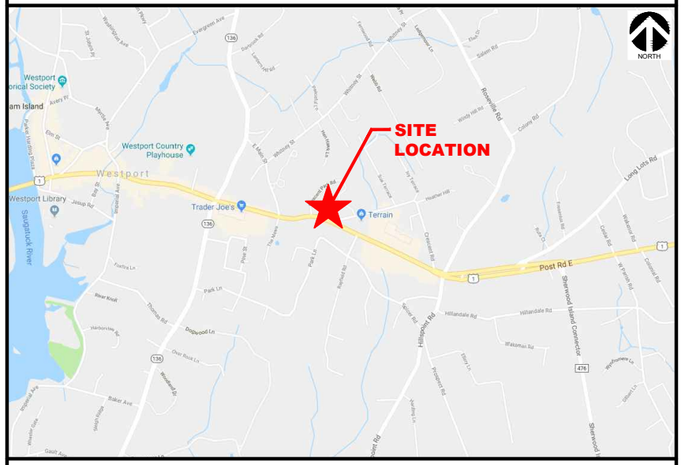
A&E FIRM

RAMAKER & ASSOCIATES, INC.
CONTACT: KEITH BOHNSACK
PROJECT MANAGER
PHONE: (608) 643-4100
EMAIL: kbohnsack@ramaker.com

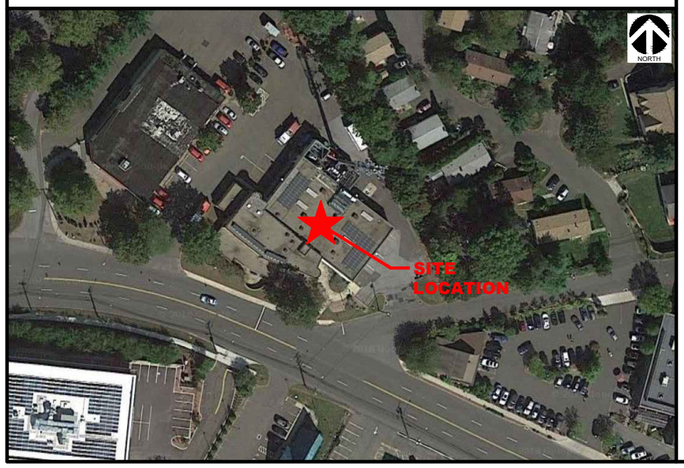
SCOPE OF WORK:

- REPLACE (3) EXISTING ANTENNAS WITH (3) NEW 800/1900 PANEL ANTENNAS ON MODIFIED MOUNTS
- REPLACE (3) EXISTING CW ANTENNAS WITH (3) NEW 2500 MIMO ANTENNAS ON MODIFIED MOUNTS
- REMOVE (3) EXISTING CW RRHS
- ADD (3) NEW 800 RRHS
- ADD (1) NEW TOP HAT CABINET EXTENSION
- ADD (1) NEW DC/FIBER DISTRIBUTION BOX
- ADD (3) HYBRIFLEX CABLES

VICINITY MAP:



AERIAL MAP:



SHEET INDEX:

SHEET #	SHEET DESCRIPTION	REVISION
T-1	COVER SHEET & SITE PLAN	1
A-1	ANTENNA LAYOUTS & EQUIPMENT LAYOUT	-
A-2	TOWER ELEVATION	-
A-3	ANTENNA DETAILS	-
A-4	ANTENNA SCHEDULE & DETAILS	-
A-5	PLUMBING DIAGRAM	-
S-1	STRUCTURAL DETAILS	-
S-2	STRUCTURAL DETAILS	-

CODE COMPLIANCE:

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

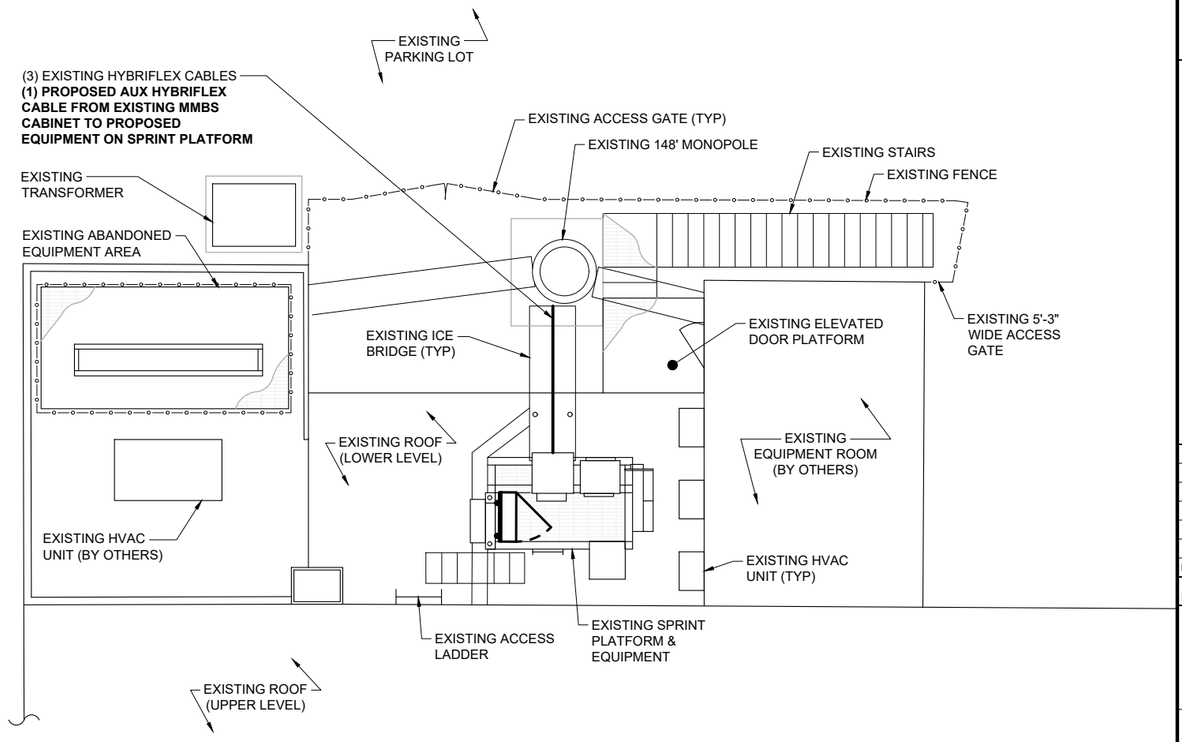
1. 2015 INTERNATIONAL BUILDING CODE
2. 2018 CT STATE BUILDING CODE
3. ANSI/TIA-222 STRUCTURAL STANDARD FOR ANTENNA STRUCTURES
4. NFPA 780 - LIGHTNING PROTECTION CODE
5. NATIONAL ELECTRIC CODE

811 Know what's below. Call before you dig. www.call811.com

MIMO UPGRADE

SITE CASCADE:
CT03XC355

NORTH



OVERALL SITE PLAN (1)

SCALE: 1" = 10'

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495

RAMAKER & ASSOCIATES, INC.
100% EMPLOYEE-OWNED
123 Broadway, Woodcliff Lake, NJ 07677
608-643-4100 www.Ramaker.com
Sauk City, WI • Willmar, MN
Woodcliff Lake, NJ • Bayamon, PR

Transcend Wireless
10 INDUSTRIAL AVE., SUITE 3
MAHWAH, NJ 07430

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: James R. Skowronski Date: 4/04/2019

MARK	DATE	DESCRIPTION
1	04/04/19	REVISED CODE COMPLIANCE

ISSUE PHASE: FINAL
DATE ISSUED: 07/16/2018

PROJECT TITLE:
CT03XC355

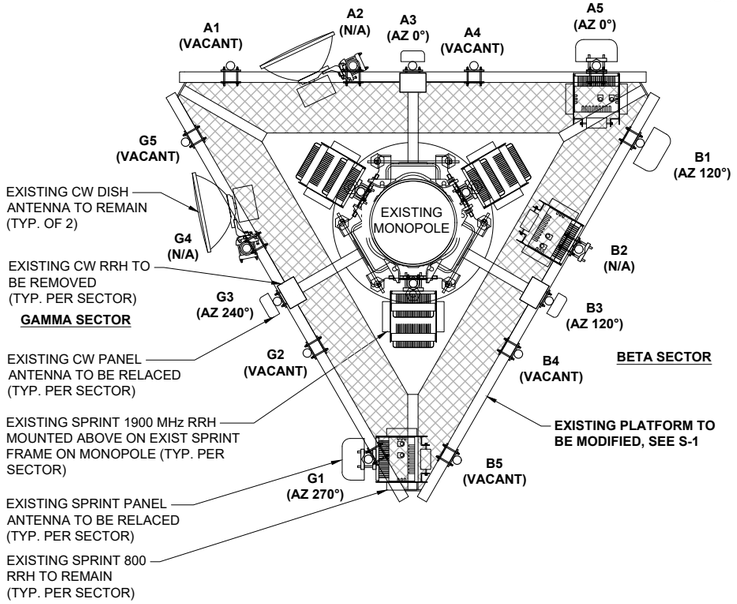
PROJECT INFORMATION:
515 POST ROAD EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

SHEET TITLE:
COVER SHEET & SITE PLAN

0 5' 10' 20'

11" x 17" - 1" = 10'
22" x 34" - 1" = 5'

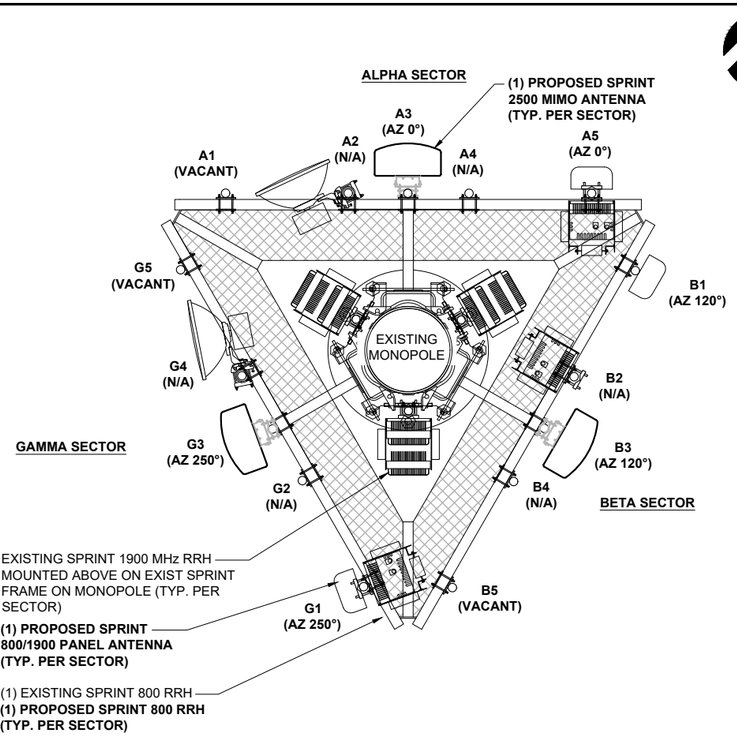
PROJECT NUMBER: 39392
SHEET NUMBER: T-1



EXISTING ANTENNA PLAN

SCALE: NTS

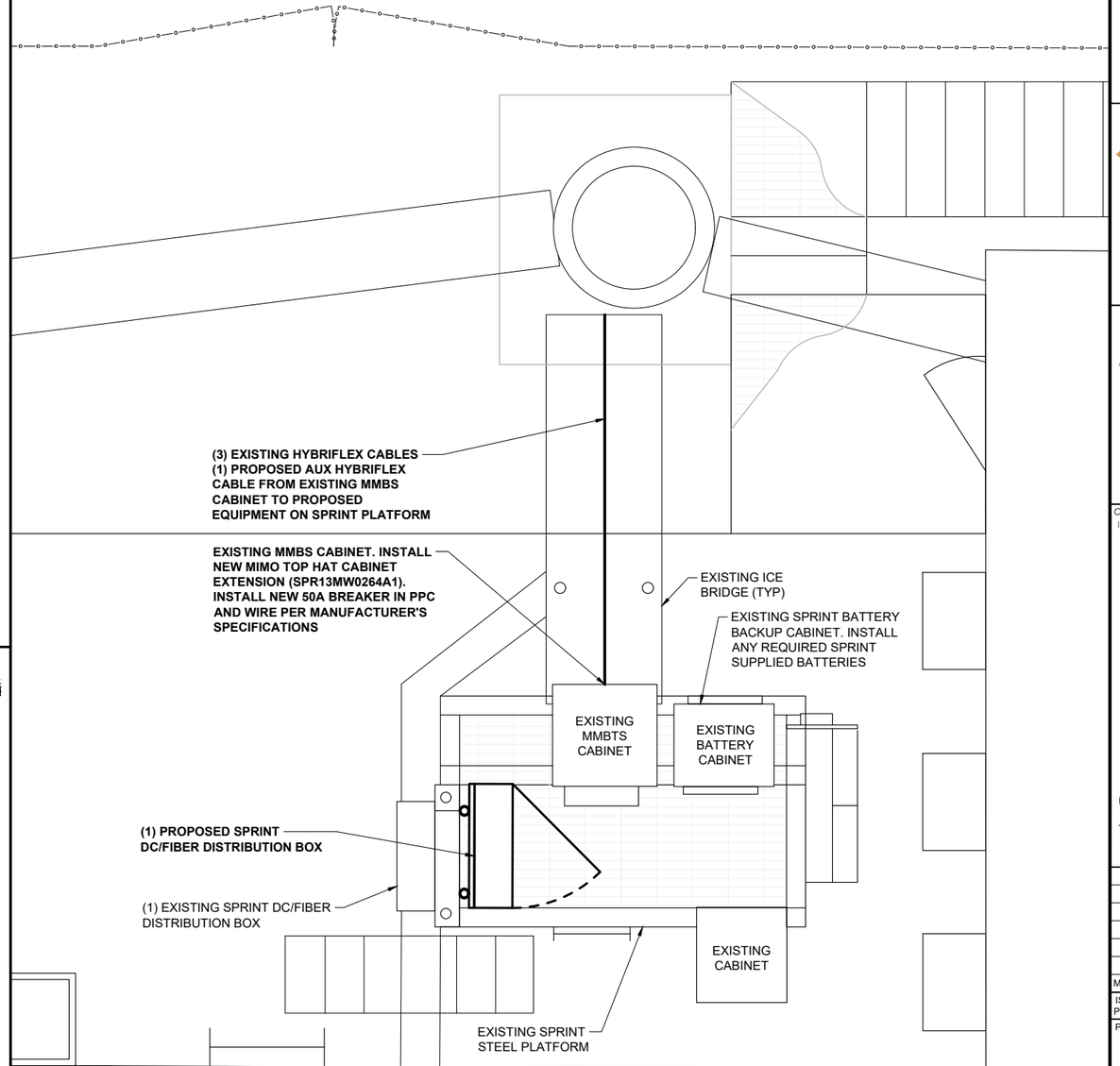
1



PROPOSED ANTENNA PLAN

SCALE: NTS

2



EQUIPMENT PLAN

SCALE: 1" = 3.75'

3

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MAHWAH, NJ 07495

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MAHWAH, NJ 07430

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JAMES R. SKOWRONSKI
26266
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MARK	DATE	DESCRIPTION
1	04/04/19	REVISED CODE COMPLIANCE

ISSUE PHASE: FINAL
DATE ISSUED: 07/16/2018

PROJECT TITLE:

CT03XC355

PROJECT INFORMATION:
515 POST ROAD EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

SHEET TITLE:

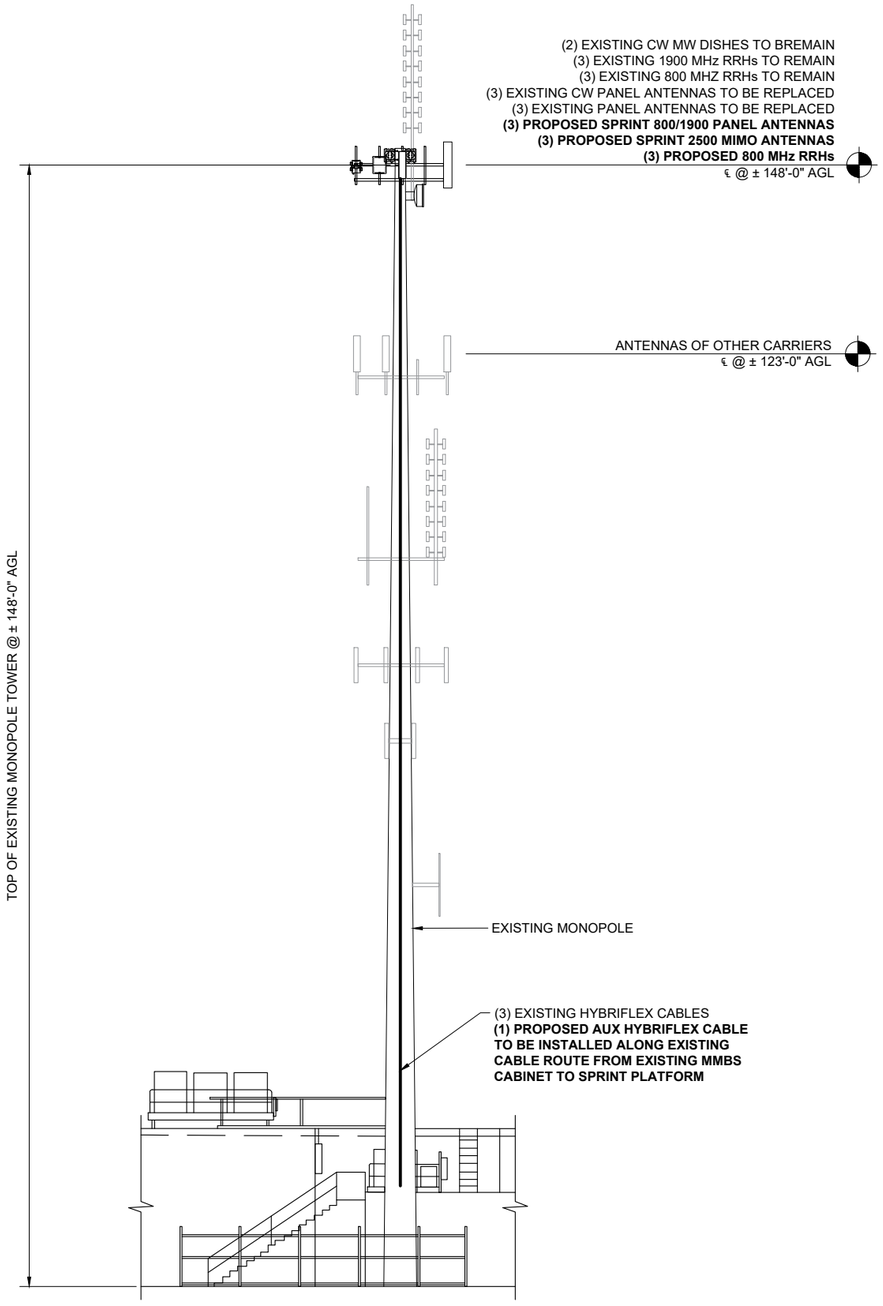
ANTENNA LAYOUTS & EQUIPMENT LAYOUT

0 1.875' 3.75' 7.5'

11" x 17" - 1" = 3.75'
22" x 34" - 1" = 1.875'

PROJECT NUMBER: 39392

SHEET NUMBER: A-1



TOWER ELEVATION (NORTH) 1

SCALE: 1" = 20'

Sprint

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: 4/04/2019 Date:

MARK	DATE	DESCRIPTION
1	04/04/19	REVISED CODE COMPLIANCE

ISSUE PHASE: FINAL
DATE ISSUED: 07/16/2018

PROJECT TITLE:

CT03XC355

PROJECT INFORMATION:
515 POST ROAD EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

SHEET TITLE:

TOWER ELEVATION

0 10' 20' 40'

11" x 17" - 1" = 20'
22" x 34" - 1" = 10'

PROJECT NUMBER: 39392

SHEET NUMBER: A-2

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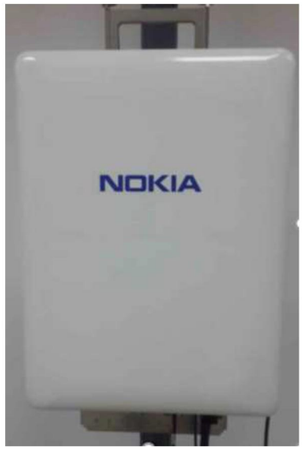
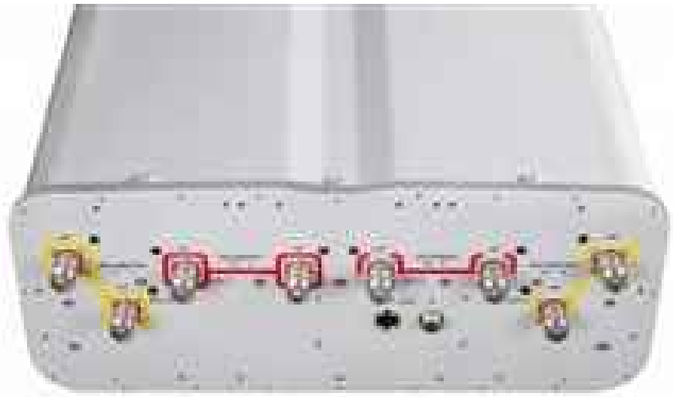


MECHANICAL	
DIMENSION (HxWxD)	25.6" x 19.7" x 9.64"
WEIGHT	103.7 lbs

ANTENNA MODEL: NOKIA #AAHC - ANTENNA SPECS



MECHANICAL	
DIMENSION (HxWxD)	72.0" x 19.6" x 7.8"
WEIGHT	77.4 lbs

ANTENNA MODEL: COMMSCOPE #NNVV-65B-R4 - ANTENNA SPECS

800MHz 2X50W Remote Radio Head (RRH)

Simultaneous CDMA & LTE Multi technology RRH 862-869 MHz

- Any combination of CDMA and LTE carriers supported by 100W RF Power

2 CPRI-like Optical Connections for daisy chaining

Software Switchable External Filter for use before Public Safety is cleared

Dimensions:	w/o Filter	w/ Filter
Height:	480 mm (19")	480 mm (19")
Width:	330 mm (13")	330 mm (13")
Depth:	218 mm (8.6")	310 (12.2")
Weight:	24 kg (53 lbs)	29 kg (64 lbs)
	49 liters, <29kg	

Power Supply: -48 VDC

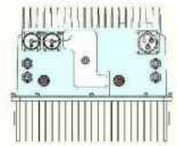
Power Consumption: <400W Typical

Operating Temp range -40°C to +55°C

Option to mount on Ground at tower base

Front/Top View

Bottom View



Alcatel-Lucent's 800 RRH satisfies Sprint's requirements.

MECHANICAL	
DIMENSION (HxWxD)	19" x 13" x 12.2"
WEIGHT	64 lbs

RRH MODEL: ALU #800 MHz 2x50W - RADIO SPECS

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495

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Certification & Seal:
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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: 4/04/2019 Date:

MARK	DATE	DESCRIPTION
1	04/04/19	REVISED CODE COMPLIANCE

ISSUE PHASE: FINAL
DATE ISSUED: 07/16/2018

PROJECT TITLE:
CT03XC355

PROJECT INFORMATION:
515 POST ROAD EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

SHEET TITLE:
ANTENNA DETAILS

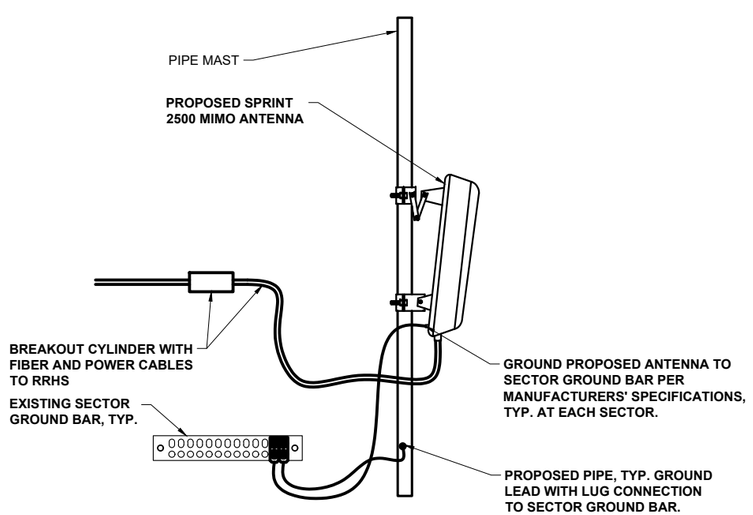
SCALE: NONE

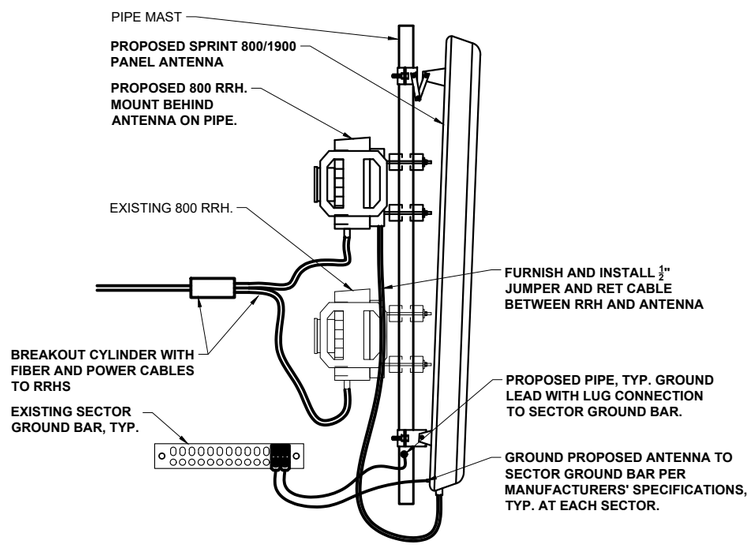
PROJECT NUMBER: 39392
SHEET NUMBER: A-3

800/1900/2.5 EQUIPMENT SCHEDULE

SECTOR	POSITION	ANTENNA MAKE/MODEL	AZIMUTH	CENTERLINE	RRH	CABLE TYPE	CABLE LENGTH	JUMPER TYPE
ALPHA	1	-	-	-	-	-	-	-
	2	EXISTING CW DISH	N/A	148'-0"	-	EXISTING	160'	EXISTING
	3	PROPOSED 800/1900 PANEL ANTENNA (COMMSCOPE NNVV-65B-R4)	0°	148'-0"	(1) PROPOSED RRH (RRH-2x50-800)	EXISTING	160'	8' HYBRID
					(1) EXISTING 800 RRH			EXISTING
					(1) EXISTING 1900 RRH			EXISTING
	4	-	-	-	-	-	-	-
	5	PROPOSED 2500 MIMO ANTENNA (NOKIA AAHC)	0°	148'-0"	INTEGRATED WITHIN PROPOSED ANTENNA	(1) PROPOSED HYBRIFLEX	160'	8' HYBRID
BETA	1	PROPOSED 800/1900 PANEL ANTENNA (COMMSCOPE NNVV-65B-R4)	120°	148'-0"	(1) PROPOSED RRH (RRH-2x50-800)	EXISTING	160'	8' HYBRID
					(1) EXISTING 800 RRH			EXISTING
					(1) EXISTING 1900 RRH			EXISTING
	2	-	-	-	-	-	-	-
	3	PROPOSED 2500 MIMO ANTENNA (NOKIA AAHC)	120°	148'-0"	INTEGRATED WITHIN PROPOSED ANTENNA	(1) PROPOSED HYBRIFLEX	160'	8' HYBRID
	4	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
GAMMA	1	PROPOSED 800/1900 PANEL ANTENNA (COMMSCOPE NNVV-65B-R4)	250°	148'-0"	(1) PROPOSED RRH (RRH-2x50-800)	EXISTING	160'	8' HYBRID
					(1) EXISTING 800 RRH			EXISTING
					(1) EXISTING 1900 RRH			EXISTING
	2	-	-	-	-	-	-	-
	3	PROPOSED 2500 MIMO ANTENNA (NOKIA AAHC)	250°	148'-0"	INTEGRATED WITHIN PROPOSED ANTENNA	(1) PROPOSED HYBRIFLEX	160'	8' HYBRID
	4	EXISTING CW DISH	N/A	148'-0"	-	EXISTING	160'	EXISTING
	5	-	-	-	-	-	-	-

EQUIPMENT & CABLE SCHEDULE (1)
SCALE: NTS





ANTENNA & RRH MOUNTING DETAIL (2)
SCALE: NTS

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495

RAMAKER & ASSOCIATES, INC.
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123 Broadway, Woodcliff Lake, NJ 07677
608-643-4100 www.Ramaker.com
Sauk City, WI • Willmar, MN
Woodcliff Lake, NJ • Bayamon, PR

Transcend Wireless
10 INDUSTRIAL AVE., SUITE 3
MAHWAH, NJ 07430

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

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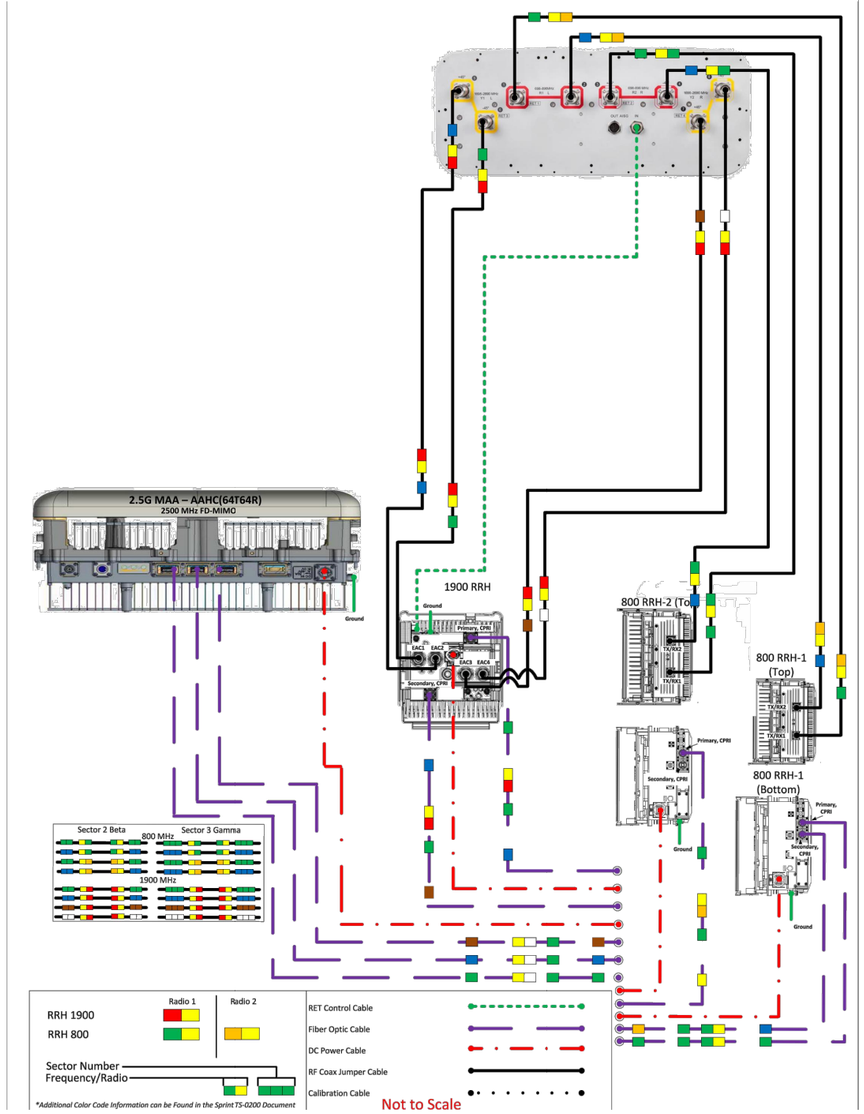
FAIRFIELD COUNTY

SHEET TITLE:
ANTENNA SCHEDULE & DETAIL

SCALE: NONE

PROJECT NUMBER: 39392
SHEET NUMBER: A-4

ALU 21-MIMO NNVV-65B-R4 wo Filters



ANTENNA COLOR CODING CHART

SCALE: NTS

1

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FAIRFIELD COUNTY

SHEET TITLE:

PLUMBING DIAGRAM

SCALE: NONE

PROJECT NUMBER: 39392

SHEET NUMBER: A-5

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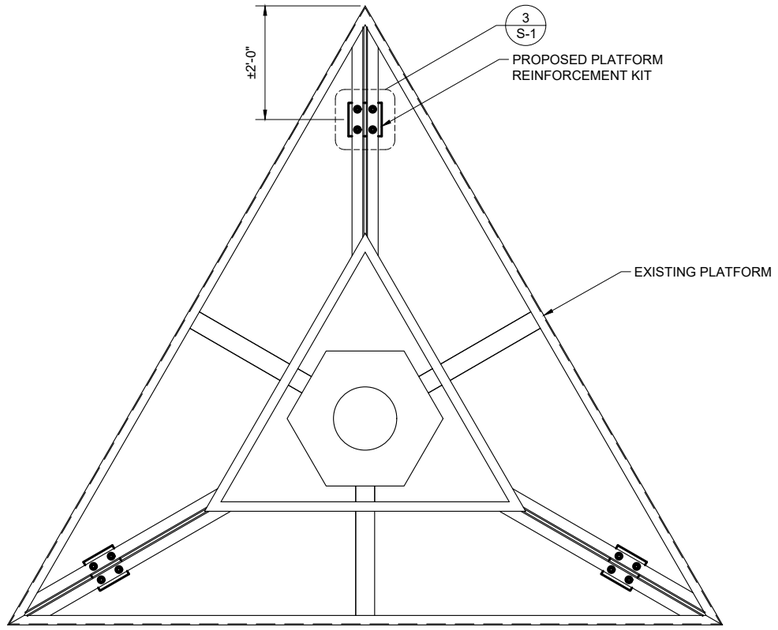
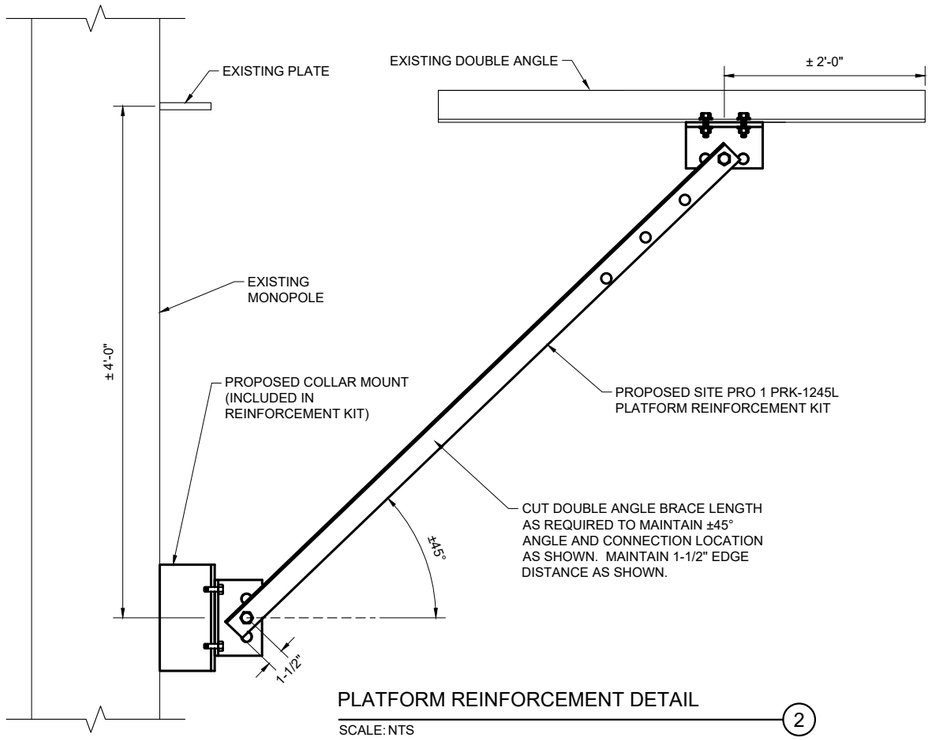
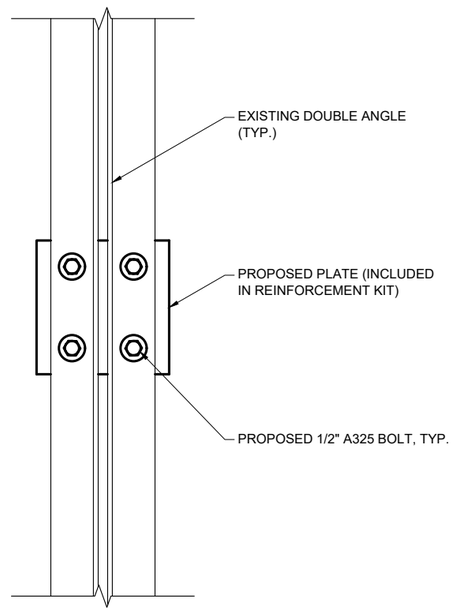


PLATFORM MODIFICATION PLAN VIEW 1
SCALE: NTS



PLATFORM REINFORCEMENT DETAIL 2
SCALE: NTS



CONNECTION DETAIL 3
SCALE: NTS

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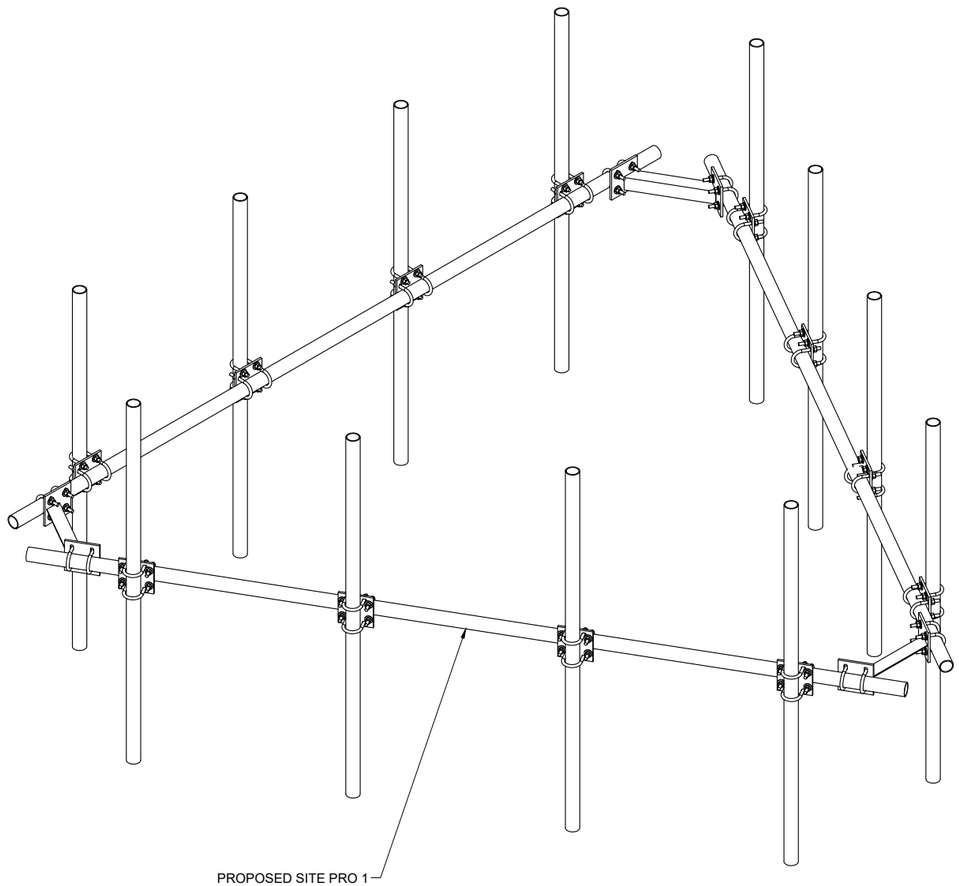
SHEET TITLE:
STRUCTURAL DETAILS

SCALE: NONE

PROJECT NUMBER: 39392
SHEET NUMBER: S-1



PROPOSED HANDRAIL DETAIL (1)
SCALE: NTS

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SHEET TITLE:
STRUCTURAL DETAILS

SCALE: NONE

PROJECT NUMBER: 39392
SHEET NUMBER: S-2