



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

August 19, 2019

Denise Sabo
Northeast Site Solutions
4 Angela's Way
Burlington, CT 06103

RE: **EM-T-MOBILE-051-190723** – T-Mobile notice of intent to modify an existing telecommunications facility located at 3965 Congress Street, Fairfield, Connecticut.

Dear Ms. Sabo:

The Connecticut Siting Council (Council) is in receipt of your correspondence of August 9, 2019, submitted in response to the Council's August 1, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The Designed Appurtenance Loading Table (DALT) in the revised Structural Analysis Report dated August 8, 2019 includes most of the approved New Cingular Wireless PCS, LLC (AT&T) loading from EM-CING-051-190416, but does not appear to include the six approved 7770.00 antennas at the 127-foot level of the tower. Only three 7770.00 antennas appear to be included in the DALT.

The DALT also does not appear to include the approved Cellco Partnership d/b/a Verizon Wireless (Cellco) loading from EM-VER-051-180620. Specifically, Cellco's approved six Commscope NHH-65B-R2B antennas and six remote radio heads (3ea. RRH2x60-700U and 3ea. RRH2x90-AWS) at the 80-foot level of the tower are not identified on the DALT.

Thus, this submission remains incomplete at this time. The Council recommends that T-Mobile provide an updated Structural Analysis Report for the facility that includes the approved equipment by AT&T and Cellco on or before September 9, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to September 9, 2019. **Please provide an electronic version and one hard copy of the revised structural analysis for the incomplete request to be rendered complete and processed. Please include the Council's exempt modification identification number referenced above with the submittal.**

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/MP/lm



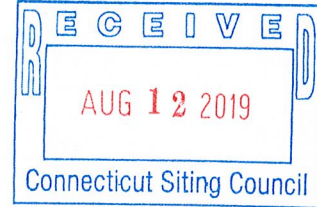
CONNECTICUT SITING COUNCIL

Affirmative Action / Equal Opportunity Employer



NORTHEAST
SITE SOLUTIONS

Turnkey Wireless Development



Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
860-209-4690
denise@northeastsitesolutions.com

August 9, 2019

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

RE: **EM-T-MOBILE-051-190723**
3965 Congress Street, Fairfield CT 06824
Latitude: 41. 1883470
Longitude: -73.2990760
T-Mobile Site#: CT11077C-L600

Dear Ms. Bachman:

As requested, please find the enclosed revised structural for T-Mobile site CT11077C located at 3965 Congress Street, Fairfield CT. The new structural is dated August 8, 2019 and has been revised to include Verizon's updated loading from their June filing. Also included is our construction drawings revised to show the new structural date.

A copy will be sent to the Town of Fairfield as both property and tower owner.

Sincerely,





Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

Attachments

cc:

First Selectman Michael C. Tetreau
Sullivan Independence Hall
725 Old Post Road
Fairfield CT 06824

Sullivan Independence Hall
725 Old Post Road
Fairfield CT 06824
Attn: Jim Wendt
Planning Director

 UNITED STATES POSTAL SERVICE®			
		<small>usps.com</small> 9405 5036 9930 0080 8684 07 0073 5000 0020 6824 \$7.35 US POSTAGE <small>Flat Rate Env</small>	
<small>08/09/2019</small>		<small>Mailed from 06002 062S00000000309</small>	
PRIORITY MAIL 2-DAY™		<small>Expected Delivery Date: 08/12/19</small> <small>Ref#: 077C ZAP</small> 0004	
DEBORAH CHASE T-MOBILE USA- NSS 35 GRIFFIN RD S BLOOMFIELD CT 06002-1351		Carrier -- Leave if No Response	
SHIP JIM WENDT TO: PLANNING DIRECTOR-TOWN OF FAIRFIELD 725 OLD POST RD SULLIVAN INDEPENDENCE HALL FAIRFIELD CT 06824-6684		C005	
USPS TRACKING #			
			
9405 5036 9930 0080 8684 07			
Electronic Rate Approved #038555749			

Cut on dotted line.

Instructions






- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
- To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
- Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0080 8684 07	
Trans. #: 470029140 Print Date: 08/09/2019 Ship Date: 08/09/2019 Expected Delivery Date: 08/12/2019	Priority Mail® Postage: \$7.35 Total: \$7.35
From: DEBORAH CHASE T-MOBILE USA- NSS 35 GRIFFIN RD S BLOOMFIELD CT 06002-1351	Ref#: 077C ZAP
To: JIM WENDT PLANNING DIRECTOR-TOWN OF FAIRFIELD 725 OLD POST RD SULLIVAN INDEPENDENCE HALL FAIRFIELD CT 06824-6684	
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

 UNITED STATES POSTAL SERVICE®			<small>usps.com</small> US POSTAGE <small>Flat Rate Env</small>	<small>9405 5036 9930 0080 8684 38 0073 5000 0010 6051</small>
		<small>08/09/2019</small>		<small>Mailed from 06002 062S0000001307</small>
PRIORITY MAIL 1-DAY™		<small>Expected Delivery Date: 08/10/19</small>		
DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC/ T- MOBILE 35 GRIFFIN RD S BLOOMFIELD CT 06002-1351		0024		
SHIP TO: LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655		Carrier -- Leave if No Response		
USPS TRACKING #		C006		
		9405 5036 9930 0080 8684 38		
Electronic Rate Approved #038555749				



Cut on dotted line.

Instructions


1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0080 8684 38	
Trans. #: 470029140 Print Date: 08/09/2019 Ship Date: 08/09/2019 Expected Delivery Date: 08/10/2019	Priority Mail® Postage: \$7.35 Total: \$7.35
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC/ T-MOBILE 35 GRIFFIN RD S BLOOMFIELD CT 06002-1351	
To: LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655	
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com




**UNITED STATES
POSTAL SERVICE®**

Click-N-Ship®

usps.com 9405 5036 9930 0080 8683 91 0073 5000 0020 6824
US POSTAGE
\$7.35
 Flat Rate Env

P

08/09/2019




Mailed from 06002 062S00000000312

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 08/12/19
 Ref#: 077C-ZAP
0004

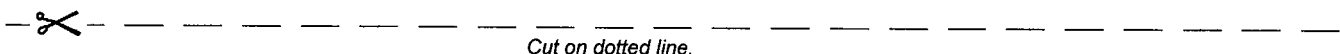
SHIP TO: MICHAEL C TETREAU
 FIRST SELECTMAN-TOWN OF FAIRFIELD
 725 OLD POST RD
 FAIRFIELD CT 06824-6684

USPS TRACKING #



9405 5036 9930 0080 8683 91

Electronic Rate Approved #038555749



Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. **DO NOT PHOTO COPY OR ALTER LABEL.**
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, **DO NOT TAPE OVER BARCODE.** Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0080 8683 91

Trans. #: 470029140	Priority Mail® Postage: \$7.35
Print Date: 08/09/2019	Total: \$7.35
Ship Date: 08/09/2019	
Expected Delivery Date: 08/12/2019	

From: DEBORAH CHASE Ref#: 077C-ZAP
 NORTHEAST SITE SOLUTIONS, LLC/ T-MOBILE
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

To: MICHAEL C TETREAU
 FIRST SELECTMAN- TOWN OF FAIRFIELD
 725 OLD POST RD
 FAIRFIELD CT 06824-6684

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!
 Check the status of your shipment on the USPS Tracking® page at usps.com

STRUCTURAL ANALYSIS REPORT

TECTONIC WORK ORDER #: 9927.CT11077C

PROJECT SCOPE OF WORK: T-MOBILE "L600 SCOPE"
SITE TYPE: ANTENNA MOUNT ON 150' MONOPOLE

DATE: August 08, 2019
REVISION #: 3

SITE ID #: CT11077C
SITE NAME: FAIRFIELD FIRE RESCUE #5
SITE ADDRESS: 3965 CONGRESS STREET,
FAIRFIELD, CT 06824

PREPARED FOR: NORTHEAST SITE SOLUTIONS

PASS

PASS WITH MODS
83% UTILIZATION

FAIL

APPROVED BY: 
EDWARD N. IAMICELI, P.E.



Tectonic Engineering & Surveying Consultants P.C.

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
Equal Opportunity Employer

dba, Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road, PO Box 37 | Mountainville, NY 10953

Project Information			
W.O. Number:	9927.CT11077C	Report Date:	8/8/19
Client:	T-Mobile / Northeast Site Solutions	Revision:	3
Site Name:	Fairfield Fire Rescue #5		
Owner:	Town of Fairfield		
Address:	3965 Congress Street	FCC Registration Number:	-
City, State, Zip:	Fairfield, CT 06824	County:	Fairfield

Structure Information			
Structure Type:	Monopole	Manufacturer:	Valmont
Structure Height:	150 ft	Year Built:	1994
Original Drawings:	Structure: No	Foundation:	No
Previous Analysis:	Yes		
Documents provided:			
	<u>Item</u>	<u>By</u>	<u>No.</u>
	Original Tower and Foundation Design Report	Paul J. Ford & Company	31298-044 R2
	Previous Structural Analysis Report	Dewberry Engineers, Inc.	50093832
	Antenna/Coax Verification & Mount Mapping Report	Hightower Solutions	CT11077C
	RFDS	T-Mobile	CT11077C
	Construction Drawings Rev 1	Tectonic Engineering	9927.CT11077C
			7/22/19

Inspection			
Type:	Limited visual inspection from ground.	Date:	5/15/19
	Tower Climb		6/4/19
General Condition:			
	Tower: Good		
	Foundation: Good		
Observations:	None		
Finish:	Galvanized	Condition:	Intact

Existing T-Mobile Installation						
Antennas:						
Height (ft.)	Carrier	Qty	Manuf.	Model	Mount	Comment
116	T-Mobile	3	Ericsson	APX16DWV-16DWV-S-E-A20	Low-Profile Platform	To Be Removed
		6	-	Twin Style TMA		To Remain
Cables:						
Height (ft.)	Qty	Nom. Size	Location/Support			
116	12	1-1/4" Coax	Existing to remain along the exterior of the pole			

Proposed T-Mobile Installation						
T-Mobile is proposing to replace all three (3) of the existing panel antennas with six (6) newer model antennas and associated appurtenances. The final T-Mobile configuration upon this installation will be as follows:						
Antennas:						
Height (ft.)	Carrier	Qty	Manuf.	Model	Mount	Location
116	T-Mobile	3	Ericsson	AIR32 KRD901146-1_B66A_B2A	Existing Low-Profile Platform w/ Handrail Kit (SitePro1 HRK12 or approved equal)	Face A, B, and C
		6	-	Twin Style TMA		
		3	RFS	APXVAARR24_43-U-NA20		
		3	Ericsson	RRU 4449 B71+B12		
Cables:						
Height (ft.)	Qty	Nom. Size	Location/Support			
116	12	1-1/4" Coax	Existing to remain along the exterior of the pole			
116	2	6x12 Hybriflex	Proposed to be routed along the exterior of the pole			

W.O. Number:	9927.CT11077C	Report Date:	8/8/2019
Client:	T-Mobile / Northeast Site Solutions	Revision:	3
Site Name:	Fairfield Fire Rescue #5		

Analysis Criteria

Design Standard: ANSI/TIA/222-G-2005
 Building Code: 2018 Connecticut State Building Code

	Capacity (no ice)	Capacity w/ ice	Service
Wind Speed:	97 mph*	50 mph	60 mph
Basic Ice Thickness:	0 inch	0.75 inch	0 inch

*This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

Structure Class: 2 Seismic: No
 Exposure Category: B
 Topo Category: 1 Crest Height: 0 ft

- Assumptions:
- The monopole and foundation were designed, manufactured, and constructed in accordance with the approved design drawings and applicable codes and standards in affect at the time.
 - The slip jointed splices were assembled in accordance with the manufacturer's specs.
 - The tower and foundation have been properly maintained in accordance with industry standards.
 - The tower is considered to be used for non-emergency services and therefore, structure class II has been used for the analysis.
 - The weight and wind area of certain appurtenances have been estimated.
 - The existing tower modifications have been installed in accordance with the original design drawings. The connections have been adequately designed to develop the full capacity of the reinforcing members.
 - The foundation geometry and geotechnical values are based solely on the previous analysis report by Paul J. Ford & Company, referenced above.
 - The reserved AT&T loading at the 127' level is based on the previous analysis report by Dewberry, referenced above.

Analysis Results

Tower Members:

Element	% Usage
Pole Shaft	71
Pole Reinforcement	83
Anchor Bolts	78
Base Plate	52
Base Foundation	46
Base Foundation Soil Interaction	76
Low-Profile Platform	83
Platform Connections	40

Service Load Deformations (Max):

Type	Actual	Allowable	% of Allowable
Tower Horizontal (in)	19.92	54.00	37%
Twist & Sway (deg):	1.08	4.00	27%

Foundation Reactions (Envelope)

Axial	61 kips
Shear	42 kips
Moment	3876 k-ft

For detailed information, see the attached lnTower output.

Conclusions

Based on our analysis, the existing tower and its foundation have adequate capacity to support the proposed T-Mobile installation and the reserved AT&T loading as described herein in accordance with current code requirements.

The existing low-profile platform and its connections will have adequate capacity to support the proposed T-Mobile installation as described herein in accordance with current code requirements. In order for the results of this analysis to be valid, a handrail kit (SitePro1 #HRK12, or approved equal) and new HSS2.875x0.203 corner mounting pipes must be installed prior to the installation of the proposed equipment. See Construction Drawings by Tectonic for more details.

This analysis is based on a limited visual inspection from the ground, an antenna/coax verification & mount mapping report, and the information provided by the client. Any further changes to the antenna configuration or other appurtenances should be reviewed with respect to their effect on structural loads prior to implementation. If the existing conditions are not as represented in this report, the design engineer should be immediately notified prior to construction.

Prepared by: Ian Marinaccio, EIT
 Project Engineer

Submitted By: Edward N. Iamiceli
 Edward N. Iamiceli, P.E.
 Sr. Project Manager

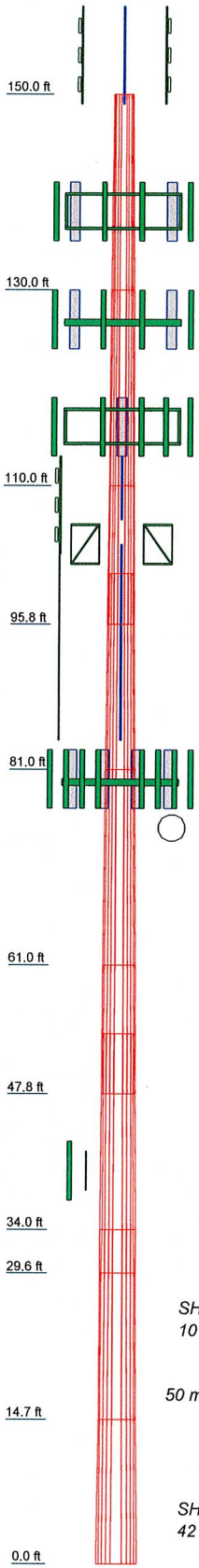
Date: 8/8/19

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS

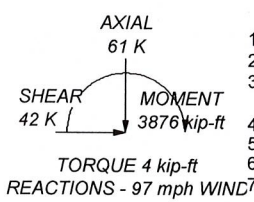
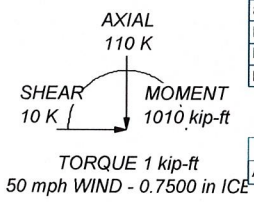
Municipality	Ground Snow Load (psf)	MCE Spectral Accelerations (%g)		Ultimate Design Wind Speeds, V_{ult} (mph)			Nominal Design Wind Speeds, V_{asd} (mph)			Wind-Borne Debris Regions ¹		Hurricane-Prone Regions
		S_s	S_1	Risk Cat. I	Risk Cat. II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
East Hampton	30	0.177	0.062	120	130	140	93	101	108			Yes
East Hartford	30	0.180	0.064	115	125	135	89	97	105			Yes
East Haven	30	0.182	0.062	120	130	140	93	101	108		Type B	Yes
East Lyme	30	0.164	0.059	125	135	145	97	105	112	Type B	Type A	Yes
Easton	30	0.215	0.066	110	120	130	85	93	101			Yes
East Windsor	35	0.177	0.064	115	125	135	89	97	105			Yes
Ellington	35	0.176	0.064	115	125	135	89	97	105			Yes
Enfield	35	0.176	0.065	110	125	130	85	97	101			Yes
Essex	30	0.168	0.059	120	135	145	93	105	112		Type A	Yes
Fairfield	30	0.215	0.065	115	125	135	89	97	105		Type B	Yes
Farmington	35	0.183	0.064	115	125	135	89	97	105			Yes
Franklin	30	0.171	0.061	120	130	140	93	101	108		Type A	Yes
Glastonbury	30	0.180	0.063	115	125	135	89	97	105			Yes
Goshen	40	0.181	0.065	105	115	125	81	89	97			
Granby	35	0.176	0.065	110	120	130	85	93	101			Yes
Greenwich	30	0.259	0.070	110	120	130	85	93	101			Yes
Griswold	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Groton	30	0.160	0.058	125	135	145	97	105	112	Type B	Type A	Yes
Guilford	30	0.176	0.061	120	130	140	93	101	108		Type B	Yes
Haddam	30	0.175	0.061	120	130	140	93	101	108			Yes
Hamden	30	0.185	0.063	115	125	135	89	97	105			Yes
Hampton	35	0.172	0.062	120	130	140	93	101	108			Yes
Hartford	30	0.181	0.064	115	125	135	89	97	105			Yes
Hartland	40	0.175	0.065	110	120	125	85	93	97			Yes
Harwinton	35	0.183	0.065	110	120	130	85	93	101			Yes
Hebron	30	0.177	0.063	120	130	140	93	101	108			Yes
Kent	40	0.188	0.065	105	115	120	81	89	93			
Killingly	40	0.171	0.062	120	130	140	93	101	108			Yes
Killingworth	30	0.173	0.061	120	130	140	93	101	108			Yes
Lebanon	30	0.173	0.062	120	130	140	93	101	108			Yes
Ledyard	30	0.163	0.059	125	135	145	97	105	112		Type A	Yes
Lisbon	30	0.169	0.061	125	135	145	97	105	112		Type A	Yes
Litchfield	40	0.184	0.065	110	120	125	85	93	97			Yes
Lyme	30	0.164	0.059	125	135	145	97	105	112		Type A	Yes
Madison	30	0.173	0.060	120	130	140	93	101	108		Type B	Yes
Manchester	30	0.178	0.064	115	125	135	89	97	105			Yes
Mansfield	35	0.173	0.062	120	130	140	93	101	108			Yes
Marlborough	30	0.177	0.062	120	130	140	93	101	108			Yes
Meriden	30	0.183	0.063	115	125	135	89	97	105			Yes
Middlebury	35	0.191	0.064	110	120	130	85	93	101			Yes
Middlefield	30	0.181	0.063	115	125	135	89	97	105			Yes
Middletown	30	0.180	0.063	115	130	135	89	101	105			Yes
Milford	30	0.194	0.063	115	125	135	89	97	105		Type B	Yes
Monroe	30	0.205	0.065	110	120	130	85	93	101			Yes

TOWER ANALYSIS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	20.00	12	0.2813		23.6100	27.2500		1.6
2	20.00	12	0.2813		27.2500	30.8900		1.8
3	14.17	12	0.2813	5.17	30.8900	33.4690		1.4
4	20.00	12	0.3750		31.9655	35.6055		2.7
5	20.00	12	0.3750		35.6055	39.2455	A572-65	3.0
6	13.17	12	0.3750	6.17	39.2455	41.6425		2.2
7	20.00	12	0.4375		39.7885	43.4095		3.9
8	4.42	12	0.4375		43.4095	44.2134		0.9
9	14.91	12	0.5800		44.2134	46.9276		4.3
10	14.67	12	0.7000		46.9276	49.5976		5.4



ALL REACTIONS ARE FACTORED



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10' x 1.5" Dia Dipole	149	RRUS 4449 B5/B12	127
10' x 1.5" Dia Dipole	149	RRUS 4449 B5/B12	127
12' x 3" Dia Omni	149	RRUS 4449 B5/B12	127
13' T-Arms	149	DC6-48-60-18-8F	127
(4) 2" STD Pipe (2.375 OD)x6'-0"	149	(2) RADIO 4449 B12/B71	116
(4) 2" STD Pipe (2.375 OD)x6'-0"	149	RADIO 4449 B12/B71	116
(4) 2" STD Pipe (2.375 OD)x6'-0"	149	(4) Twin Style TMA	116
RRUS A2 B13	138	(2) Twin Style TMA	116
RRUS A2 B13	138	(2) APXVARR24_43-C-NA20 w/ Mount Pipe	116
RRUS A2 B13	138	APXVARR24_43-C-NA20 w/ Mount Pipe	116
RRUS 32 B30	138	AIR 32 B66Aa B2a w/ Mount Pipe	116
RRUS 32 B30	138	AIR 32 B66Aa B2a w/ Mount Pipe	116
RRUS 32 B30	138	AIR 32 B66Aa B2a w/ Mount Pipe	116
RRUS 32 B30	138	SitePro1 HRK12 Handrail kit	116
DT465B-2XR-V2 w/ Mount Pipe	138	13' Low-Profile Platform	116
DT465B-2XR-V2 w/ Mount Pipe	138	(2) Collar Mount	106 - 105
DT465B-2XR-V2 w/ Mount Pipe	138	(2) Collar Mount	106
APXVSP18-C-A20_TIA w/ Mount Pipe	138	8' x 2" Dia Dipole	104
APXVSP18-C-A20_TIA w/ Mount Pipe	138	15'x1.25" Dia Whips	104
APXVSP18-C-A20_TIA w/ Mount Pipe	138	20' x 2" Dia Whips	104
FD-RRH-2x50-800	138	20' x 2" Dia Whips	104
FD-RRH-2x50-800	138	6' Standoff	104
FD-RRH-2x50-800	138	6' Standoff	104
RRH4X45-19	138	6' Standoff	104
RRH4X45-19	138	RRFDC-3315-PF-48	80
RRH4X45-19	138	13' Low Profile Platform	80
13' Low-Profile Platform	138	BXA-171063-12CF-EDIN-X w/ Mount Pipe	80
2" STD Pipe (2.375 OD)x6'-0"	138	BXA-171063-12CF-EDIN-X w/ Mount Pipe	80
2" STD Pipe (2.375 OD)x6'-0"	138	BXA-171063-12CF-EDIN-X w/ Mount Pipe	80
2" STD Pipe (2.375 OD)x6'-0"	138	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
DC6-48-60-18-8F	129	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
RRUS 11	129	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
RRUS 11	129	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
RRUS 11	129	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
RRUS 12	129	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
RRUS 12	129	RRH2x40-AWS	80
RRUS 12	129	RRH2x40-AWS	80
RRU A2	129	RRH2x40-AWS	80
RRU A2	129	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
RRU A2	129	BXA-171063-12CF-EDIN-X w/ Mount Pipe	80
Collar Mount	129	BXA-171063-8BF-EDIN-X w/ Mount Pipe	80
HPA-65R-BUU-H6_TIA w/ Mount Pipe	127	BXA-171063-8BF-EDIN-X w/ Mount Pipe	80
HPA-65R-BUU-H6_TIA w/ Mount Pipe	127	BXA-171063-8BF-EDIN-X w/ Mount Pipe	80
HPA-65R-BUU-H6_TIA w/ Mount Pipe	127	BXA-171063-8BF-EDIN-X w/ Mount Pipe	80
7770.00 w/ Mount Pipe	127	BXA-171063-8BF-EDIN-X w/ Mount Pipe	80
7770.00 w/ Mount Pipe	127	BXA-171063-8BF-EDIN-X w/ Mount Pipe	80
7770.00 w/ Mount Pipe	127	BXA-171063-8BF-EDIN-X w/ Mount Pipe	80
LGP214nn	127	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
LGP214nn	127	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
LGP214nn	127	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
13' Low-Profile Platform	127	BXA-171063-6CF-EDIN-X w/ Mount Pipe	80
80010965_TIA w/ Mount Pipe	127	3' Stand Off	40
80010965_TIA w/ Mount Pipe	127	GPS_A	40
80010965_TIA w/ Mount Pipe	127		
RADIO 4415 B30	127		
RADIO 4415 B30	127		
RADIO 4415 B30	127		


MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 71.3%

Equivalent Thickness of Reinforced Sections




Tectonic
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job: **9927.CT11077C, Revision 3**

Project: **150' Monopole**

Client: T-Mobile	Drawn by: Ian Marinaccio	App'd:
Code: TIA-222-G	Date: 08/08/19	Scale: NTS
Path:		Dwg No. E-1

 <p>1279 Route 300 Newburgh, NY 12550 Phone: (845) 567-6656 FAX: (845) 567-8703</p>	Job 9927.CT11077C, Revision 3	Page 1 of 23
	Project 150' Monopole	Date 08/08/19
	Client T-Mobile	Designed by Ian Marinaccio

Tower Input Data

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

- Basic wind speed of 97 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.

Options

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|--|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	150.00-130.00	20.00	0.00	12	23.6100	27.2500	0.2813	1.1252	A572-65 (65 ksi)

Job	9927.CT11077C, Revision 3	Page	2 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

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
L2	130.00-110.00	20.00	0.00	12	27.2500	30.8900	0.2813	1.1252	A572-65 (65 ksi)
L3	110.00-95.83	14.17	5.17	12	30.8900	33.4690	0.2813	1.1252	A572-65 (65 ksi)
L4	95.83-81.00	20.00	0.00	12	31.9655	35.6055	0.3750	1.5000	A572-65 (65 ksi)
L5	81.00-61.00	20.00	0.00	12	35.6055	39.2455	0.3750	1.5000	A572-65 (65 ksi)
L6	61.00-47.83	13.17	6.17	12	39.2455	41.6425	0.3750	1.5000	A572-65 (65 ksi)
L7	47.83-34.00	20.00	0.00	12	39.7695	43.4095	0.4375	1.7500	A572-65 (65 ksi)
L8	34.00-29.58	4.42	0.00	12	43.4095	44.2134	0.4375	1.7500	A572-65 (65 ksi)
L9	29.58-14.67	14.91	0.00	12	44.2134	46.9276	0.5800	2.3200	A572-65 (65 ksi)
L10	14.67-0.00	14.67		12	46.9276	49.5976	0.7000	2.8000	A572-65 (65 ksi)

Equivalent thickness of reinforced section

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	24.3436	21.1308	1467.8550	8.3517	12.2300	120.0211	2974.2723	10.3999	5.5736	19.814
	28.1121	24.4279	2267.7368	9.6548	14.1155	160.6557	4595.0496	12.0227	6.5491	23.282
L2	28.1121	24.4279	2267.7368	9.6548	14.1155	160.6557	4595.0496	12.0227	6.5491	23.282
	31.8805	27.7250	3315.4927	10.9579	16.0010	207.2048	6718.0872	13.6454	7.5246	26.75
L3	31.8805	27.7250	3315.4927	10.9579	16.0010	207.2048	6718.0872	13.6454	7.5246	26.75
	34.5504	30.0610	4226.1315	11.8812	17.3369	243.7645	8563.2881	14.7951	8.2158	29.207
L4	33.9349	38.1455	4858.9305	11.3094	16.5581	293.4473	9845.5105	18.7740	7.5617	20.165
	36.7292	42.5408	6739.5146	12.6125	18.4436	365.4114	13656.0838	20.9373	8.5373	22.766
L5	36.7292	42.5408	6739.5146	12.6125	18.4436	365.4114	13656.0838	20.9373	8.5373	22.766
	40.4976	46.9361	9051.7677	13.9156	20.3292	445.2601	18341.3354	23.1005	9.5128	25.367
L6	40.4976	46.9361	9051.7677	13.9156	20.3292	445.2601	18341.3354	23.1005	9.5128	25.367
	42.9792	49.8304	10831.6861	14.7737	21.5708	502.1460	21947.9327	24.5250	10.1552	27.08
L7	42.1806	55.4090	10941.0287	14.0809	20.6006	531.1023	22169.4904	27.2706	9.4857	21.682
	44.7865	60.5368	14268.4704	15.3840	22.4861	634.5453	28911.7893	29.7944	10.4613	23.911
L8	44.7865	60.5368	14268.4704	15.3840	22.4861	634.5453	28911.7893	29.7944	10.4613	23.911
	45.6187	61.6693	15084.2698	15.6718	22.9025	658.6291	30564.8202	30.3517	10.6767	24.404
L9	45.5684	81.4897	19802.7790	15.6207	22.9025	864.6548	40125.7991	40.1067	10.2948	17.75
	48.3784	86.5588	23732.9550	16.5924	24.3085	976.3232	48089.4011	42.6016	11.0222	19.004
L10	48.3361	104.1970	28421.3139	16.5495	24.3085	1169.1924	57589.2875	51.2826	10.7006	15.287
	51.1002	110.2151	33635.7844	17.5053	25.6915	1309.2164	68155.2183	54.2445	11.4161	16.309

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 Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-130.00				1	1	1			
L2 130.00-110.00				1	1	1			
L3 110.00-95.83				1	1	1			
L4 95.83-81.00				1	1	1			



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	3 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L5 81.00-61.00				1	1	1			
L6 61.00-47.83				1	1	1			
L7 47.83-34.00				1	1	1			
L8 34.00-29.58				1	1	1			
L9 29.58-14.67				1	1	1			
L10 14.67-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Black Cable .4"	C	No	Surface Ar (CaAa)	127.00 - 0.00	1	1	0.000	0.5200		0.14
PWRT-608-S(13/16")	C	No	Surface Ar (CaAa)	127.00 - 0.00	2	2	0.000	0.8200		0.62
RG-6(1/2")	C	No	Surface Ar (CaAa)	127.00 - 0.00	1	1	0.000	0.5840		0.15
RG-6(1/2")	C	No	Surface Ar (CaAa)	127.00 - 0.00	1	1	0.000	0.5840		0.15
*										
RF 1 5/8 inch-50(1-5/8")	C	No	Surface Ar (CaAa)	80.00 - 0.00	12	6	-0.500	1.9700		0.97
FLC 114-50J(1-1/4")	C	No	Surface Ar (CaAa)	80.00 - 0.00	1	1	-0.300	1.5800		0.70

LCF114-50J(1-1/4")	A	No	Surface Ar (CaAa)	127.00 - 116.00	12	12	-0.250	1.5800		0.70
LCF114-50J(1-1/4")	A	No	Surface Ar (CaAa)	116.00 - 0.00	24	12	-0.250	1.5800		0.70
HCS 6X12 4AWG(1-5/8)	A	No	Surface Ar (CaAa)	116.00 - 0.00	2	2	0.000	1.6600		2.40
Black Cable .32"	A	No	Surface Ar (CaAa)	116.00 - 0.00	1	1	0.000	0.3150		0.07
**										
Step Bolts	C	No	Surface Ar (CaAa)	140.00 - 12.25	1	1	0.000	0.3750		2.00
Safety Line 3/8	C	No	Surface Ar (CaAa)	150.00 - 12.25	1	1	0.000	0.3750		0.22
**										
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.000	8.0000		25.00
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.500	8.0000		25.00
WT6x25 Reinforcement	B	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.250	8.0000		25.00
WT6x25 Reinforcement	C	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.000	8.0000		25.00
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	-0.250	8.0000		25.00
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	0.250	8.0000		25.00
WT6x25 Reinforcement	B	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	0.000	8.0000		25.00



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	4 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
WT6x25 Reinforcement	C	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	0.250 0.250	8.0000		25.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		CAAA ft ² /ft	Weight plf
*									
AVA5-50(7/8")	C	No	No	Inside Pole	104.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.30 0.30 0.30
AVA5-50(7/8")	C	No	No	Inside Pole	149.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.30 0.30 0.30
LCF114-50J(1-1/4")	C	No	No	Inside Pole	149.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.70 0.70 0.70
*									
FLC 12-50J(1/2")	C	No	No	Inside Pole	138.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.17 0.17 0.17
1" Rigid Conduit	C	No	No	Inside Pole	138.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.50 0.50 0.50
FLC 114-50J(1-1/4")	C	No	No	Inside Pole	138.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.70 0.70 0.70

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	CAAA In Face ft ²	CAAA Out Face ft ²	Weight K
L1	150.00-130.00	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	1.125	0.000	0.07
L2	130.00-110.00	A	0.000	0.000	34.413	0.000	0.22
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	7.158	0.000	0.15
L3	110.00-95.83	A	0.000	0.000	32.017	0.000	0.31
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.779	0.000	0.12
L4	95.83-81.00	A	0.000	0.000	33.508	0.000	0.32
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	6.048	0.000	0.13
L5	81.00-61.00	A	0.000	0.000	45.190	0.000	0.43
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	33.616	0.000	0.41
L6	61.00-47.83	A	0.000	0.000	29.758	0.000	0.29



1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	5 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L7	47.83-34.00	B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	23.019	0.000	0.28
		A	0.000	0.000	31.249	0.000	0.30
L8	34.00-29.58	B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	24.172	0.000	0.29
		A	0.000	0.000	12.246	0.000	0.17
L9	29.58-14.67	B	0.000	0.000	1.133	0.000	0.04
		C	0.000	0.000	8.853	0.000	0.13
		A	0.000	0.000	59.590	0.000	1.13
L10	14.67-0.00	B	0.000	0.000	12.947	0.000	0.40
		C	0.000	0.000	39.012	0.000	0.72
		A	0.000	0.000	80.091	0.000	1.78
		B	0.000	0.000	23.472	0.000	0.73
		C	0.000	0.000	48.193	0.000	1.02

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} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	150.00-130.00	A	1.733	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	11.523	0.000	0.21
L2	130.00-110.00	A	1.706	0.000	0.000	54.829	0.000	0.88
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	46.163	0.000	0.68
L3	110.00-95.83	A	1.681	0.000	0.000	56.579	0.000	1.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	36.126	0.000	0.52
L4	95.83-81.00	A	1.655	0.000	0.000	59.214	0.000	1.06
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	37.809	0.000	0.55
L5	81.00-61.00	A	1.619	0.000	0.000	78.997	0.000	1.39
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	94.370	0.000	1.55
L6	61.00-47.83	A	1.577	0.000	0.000	51.629	0.000	0.89
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	62.752	0.000	1.02
L7	47.83-34.00	A	1.532	0.000	0.000	54.217	0.000	0.94
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	65.897	0.000	1.08
L8	34.00-29.58	A	1.494	0.000	0.000	20.173	0.000	0.41
		B		0.000	0.000	1.557	0.000	0.06
		C		0.000	0.000	21.983	0.000	0.39
L9	29.58-14.67	A	1.441	0.000	0.000	92.263	0.000	2.30
		B		0.000	0.000	17.610	0.000	0.67
		C		0.000	0.000	85.220	0.000	1.74
L10	14.67-0.00	A	1.289	0.000	0.000	116.635	0.000	3.19
		B		0.000	0.000	31.038	0.000	1.16
		C		0.000	0.000	86.534	0.000	2.02

Feed Line Center of Pressure



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	6 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Section	Elevation	CP _X	CP _Z	CP _X Ice	CP _Z Ice
	ft	in	in	in	in
L1	150.00-130.00	0.0000	0.3275	0.0000	2.1212
L2	130.00-110.00	-5.1274	-1.7913	-3.9104	1.3412
L3	110.00-95.83	-6.3146	-2.4148	-5.0222	0.5888
L4	95.83-81.00	-6.4781	-2.4725	-5.2297	0.6257
L5	81.00-61.00	-2.8298	0.4432	-2.3103	2.6485
L6	61.00-47.83	-2.7756	0.5858	-2.3087	2.8408
L7	47.83-34.00	-2.8329	0.5966	-2.3769	2.9232
L8	34.00-29.58	-3.1426	0.1440	-2.8634	2.3990
L9	29.58-14.67	-3.8886	-0.5550	-3.5540	1.4635
L10	14.67-0.00	-3.0774	-1.2327	-3.0228	0.0718

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	22	Step Bolts	130.00 - 140.00	1.0000	1.0000
L1	23	Safety Line 3/8	130.00 - 150.00	1.0000	1.0000
L2	1	Black Cable .4"	110.00 - 127.00	1.0000	1.0000
L2	2	PWRT-608-S(13/16")	110.00 - 127.00	1.0000	1.0000
L2	3	RG-6(1/2")	110.00 - 127.00	1.0000	1.0000
L2	4	RG-6(1/2")	110.00 - 127.00	1.0000	1.0000
L2	17	LCF114-50J(1-1/4")	116.00 - 127.00	1.0000	1.0000
L2	18	LCF114-50J(1-1/4")	110.00 - 116.00	1.0000	1.0000
L2	19	HCS 6X12 4AWG(1-5/8)	110.00 - 116.00	1.0000	1.0000
L2	20	Black Cable .32"	110.00 - 116.00	1.0000	1.0000
L2	22	Step Bolts	110.00 - 130.00	1.0000	1.0000
L2	23	Safety Line 3/8	110.00 - 130.00	1.0000	1.0000
L3	1	Black Cable .4"	95.83 - 110.00	1.0000	1.0000
L3	2	PWRT-608-S(13/16")	95.83 - 110.00	1.0000	1.0000
L3	3	RG-6(1/2")	95.83 - 110.00	1.0000	1.0000
L3	4	RG-6(1/2")	95.83 - 110.00	1.0000	1.0000
L3	18	LCF114-50J(1-1/4")	95.83 - 110.00	1.0000	1.0000
L3	19	HCS 6X12 4AWG(1-5/8)	95.83 - 110.00	1.0000	1.0000
L3	20	Black Cable .32"	95.83 - 110.00	1.0000	1.0000
L3	22	Step Bolts	95.83 - 110.00	1.0000	1.0000
L3	23	Safety Line 3/8	95.83 - 110.00	1.0000	1.0000
L5	1	Black Cable .4"	61.00 - 81.00	1.0000	1.0000
L5	2	PWRT-608-S(13/16")	61.00 - 81.00	1.0000	1.0000
L5	3	RG-6(1/2")	61.00 - 81.00	1.0000	1.0000
L5	4	RG-6(1/2")	61.00 - 81.00	1.0000	1.0000



1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	7 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L5	10	RF 1 5/8 inch-50(1-5/8")	61.00 - 80.00	1.0000	1.0000
L5	11	FLC 114-50J(1-1/4")	61.00 - 80.00	1.0000	1.0000
L5	18	LCF114-50J(1-1/4")	61.00 - 81.00	1.0000	1.0000
L5	19	HCS 6X12 4AWG(1-5/8)	61.00 - 81.00	1.0000	1.0000
L5	20	Black Cable .32"	61.00 - 81.00	1.0000	1.0000
L5	22	Step Bolts	61.00 - 81.00	1.0000	1.0000
L5	23	Safety Line 3/8	61.00 - 81.00	1.0000	1.0000
L6	1	Black Cable .4"	47.83 - 61.00	1.0000	1.0000
L6	2	PWRT-608-S(13/16")	47.83 - 61.00	1.0000	1.0000
L6	3	RG-6(1/2")	47.83 - 61.00	1.0000	1.0000
L6	4	RG-6(1/2")	47.83 - 61.00	1.0000	1.0000
L6	10	RF 1 5/8 inch-50(1-5/8")	47.83 - 61.00	1.0000	1.0000
L6	11	FLC 114-50J(1-1/4")	47.83 - 61.00	1.0000	1.0000
L6	18	LCF114-50J(1-1/4")	47.83 - 61.00	1.0000	1.0000
L6	19	HCS 6X12 4AWG(1-5/8)	47.83 - 61.00	1.0000	1.0000
L6	20	Black Cable .32"	47.83 - 61.00	1.0000	1.0000
L6	22	Step Bolts	47.83 - 61.00	1.0000	1.0000
L6	23	Safety Line 3/8	47.83 - 61.00	1.0000	1.0000
L8	1	Black Cable .4"	29.58 - 34.00	1.0000	1.0000
L8	2	PWRT-608-S(13/16")	29.58 - 34.00	1.0000	1.0000
L8	3	RG-6(1/2")	29.58 - 34.00	1.0000	1.0000
L8	4	RG-6(1/2")	29.58 - 34.00	1.0000	1.0000
L8	10	RF 1 5/8 inch-50(1-5/8")	29.58 - 34.00	1.0000	1.0000
L8	11	FLC 114-50J(1-1/4")	29.58 - 34.00	1.0000	1.0000
L8	18	LCF114-50J(1-1/4")	29.58 - 34.00	1.0000	1.0000
L8	19	HCS 6X12 4AWG(1-5/8)	29.58 - 34.00	1.0000	1.0000
L8	20	Black Cable .32"	29.58 - 34.00	1.0000	1.0000
L8	22	Step Bolts	29.58 - 34.00	1.0000	1.0000
L8	23	Safety Line 3/8	29.58 - 34.00	1.0000	1.0000
L8	29	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L8	30	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L8	31	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L8	32	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L9	1	Black Cable .4"	14.67 - 29.58	1.0000	1.0000
L9	2	PWRT-608-S(13/16")	14.67 - 29.58	1.0000	1.0000
L9	3	RG-6(1/2")	14.67 - 29.58	1.0000	1.0000
L9	4	RG-6(1/2")	14.67 - 29.58	1.0000	1.0000
L9	10	RF 1 5/8 inch-50(1-5/8")	14.67 - 29.58	1.0000	1.0000
L9	11	FLC 114-50J(1-1/4")	14.67 - 29.58	1.0000	1.0000
L9	18	LCF114-50J(1-1/4")	14.67 - 29.58	1.0000	1.0000
L9	19	HCS 6X12 4AWG(1-5/8)	14.67 - 29.58	1.0000	1.0000
L9	20	Black Cable .32"	14.67 - 29.58	1.0000	1.0000
L9	22	Step Bolts	14.67 - 29.58	1.0000	1.0000
L9	23	Safety Line 3/8	14.67 - 29.58	1.0000	1.0000
L9	25	WT6x25 Reinforcement	14.67 - 15.94	1.0000	1.0000
L9	26	WT6x25 Reinforcement	14.67 - 15.94	1.0000	1.0000
L9	27	WT6x25 Reinforcement	14.67 - 15.94	1.0000	1.0000
L9	28	WT6x25 Reinforcement	14.67 - 15.94	1.0000	1.0000
L9	29	WT6x25 Reinforcement	14.67 - 29.58	1.0000	1.0000
L9	30	WT6x25 Reinforcement	14.67 - 29.58	1.0000	1.0000
L9	31	WT6x25 Reinforcement	14.67 - 29.58	1.0000	1.0000
L9	32	WT6x25 Reinforcement	14.67 - 29.58	1.0000	1.0000
L10	1	Black Cable .4"	0.00 - 14.67	1.0000	1.0000
L10	2	PWRT-608-S(13/16")	0.00 - 14.67	1.0000	1.0000
L10	3	RG-6(1/2")	0.00 - 14.67	1.0000	1.0000
L10	4	RG-6(1/2")	0.00 - 14.67	1.0000	1.0000
L10	10	RF 1 5/8 inch-50(1-5/8")	0.00 - 14.67	1.0000	1.0000
L10	11	FLC 114-50J(1-1/4")	0.00 - 14.67	1.0000	1.0000
L10	18	LCF114-50J(1-1/4")	0.00 - 14.67	1.0000	1.0000
L10	19	HCS 6X12 4AWG(1-5/8)	0.00 - 14.67	1.0000	1.0000
L10	20	Black Cable .32"	0.00 - 14.67	1.0000	1.0000
L10	22	Step Bolts	12.25 - 14.67	1.0000	1.0000



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	8 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L10	23	Safety Line 3/8	12.25 - 14.67	1.0000	1.0000
L10	25	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000
L10	26	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000
L10	27	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000
L10	28	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000
L10	29	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000
L10	30	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000
L10	31	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000
L10	32	WT6x25 Reinforcement	0.00 - 14.67	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
GPS_A	C	From Leg	4.00	0.0000	40.00	No Ice	0.26	0.26	0.00
			0.00	1/2" Ice		0.32	0.32	0.00	
			0.00	1" Ice		0.39	0.39	0.01	
3' Stand Off	C	From Leg	2.00	0.0000	40.00	No Ice	0.85	1.67	0.07
			0.00	1/2" Ice		1.14	2.34	0.08	
			0.00	1" Ice		1.43	3.01	0.09	

BXA-171063-8BF-EDIN-X w/ Mount Pipe	A	From Leg	4.00	0.0000	80.00	No Ice	3.18	3.35	0.03
			0.00	1/2" Ice		3.56	3.97	0.06	
			0.00	1" Ice		3.93	4.60	0.10	
BXA-171063-8BF-EDIN-X w/ Mount Pipe	B	From Leg	4.00	0.0000	80.00	No Ice	3.18	3.35	0.03
			0.00	1/2" Ice		3.56	3.97	0.06	
			0.00	1" Ice		3.93	4.60	0.10	
BXA-171063-8BF-EDIN-X w/ Mount Pipe	C	From Leg	4.00	0.0000	80.00	No Ice	3.18	3.35	0.03
			0.00	1/2" Ice		3.56	3.97	0.06	
			0.00	1" Ice		3.93	4.60	0.10	
BXA-70063-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.00	0.0000	80.00	No Ice	7.81	5.80	0.04
			0.00	1/2" Ice		8.36	6.95	0.10	
			0.00	1" Ice		8.87	7.82	0.17	
BXA-70063-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.00	0.0000	80.00	No Ice	7.81	5.80	0.04
			0.00	1/2" Ice		8.36	6.95	0.10	
			0.00	1" Ice		8.87	7.82	0.17	
BXA-70063-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.00	0.0000	80.00	No Ice	7.81	5.80	0.04
			0.00	1/2" Ice		8.36	6.95	0.10	
			0.00	1" Ice		8.87	7.82	0.17	
BXA-171063-12CF-EDIN-X w/ Mount Pipe	A	From Leg	4.00	0.0000	80.00	No Ice	5.03	5.29	0.04
			0.00	1/2" Ice		5.58	6.46	0.09	
			0.00	1" Ice		6.10	7.35	0.14	
BXA-171063-12CF-EDIN-X w/ Mount Pipe	B	From Leg	4.00	0.0000	80.00	No Ice	5.03	5.29	0.04
			0.00	1/2" Ice		5.58	6.46	0.09	
			0.00	1" Ice		6.10	7.35	0.14	
BXA-171063-12CF-EDIN-X w/ Mount Pipe	C	From Leg	4.00	0.0000	80.00	No Ice	5.03	5.29	0.04
			0.00	1/2" Ice		5.58	6.46	0.09	
			0.00	1" Ice		6.10	7.35	0.14	
BXA-70063-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.00	0.0000	80.00	No Ice	7.81	5.80	0.04
			0.00	1/2" Ice		8.36	6.95	0.10	

Job	9927.CT11077C, Revision 3	Page	9 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00					
BXA-70063-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.00	0.0000	80.00	1" Ice 8.87 No Ice 7.81	7.82 5.80	0.17 0.04
			0.00			1/2" Ice 8.36	6.95	0.10
			0.00			1" Ice 8.87	7.82	0.17
BXA-70063-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.00	0.0000	80.00	No Ice 7.81	5.80	0.04
			0.00			1/2" Ice 8.36	6.95	0.10
			0.00			1" Ice 8.87	7.82	0.17
RRH2x40-AWS	A	From Leg	4.00	0.0000	80.00	No Ice 2.16	1.42	0.04
			0.00			1/2" Ice 2.36	1.59	0.06
			0.00			1" Ice 2.57	1.77	0.08
RRH2x40-AWS	B	From Leg	4.00	0.0000	80.00	No Ice 2.16	1.42	0.04
			0.00			1/2" Ice 2.36	1.59	0.06
			0.00			1" Ice 2.57	1.77	0.08
RRH2x40-AWS	C	From Leg	4.00	0.0000	80.00	No Ice 2.16	1.42	0.04
			0.00			1/2" Ice 2.36	1.59	0.06
			0.00			1" Ice 2.57	1.77	0.08
RRFDC-3315-PF-48	C	From Leg	0.50	0.0000	80.00	No Ice 3.71	2.19	0.02
			1.00			1/2" Ice 3.95	2.39	0.05
			0.00			1" Ice 4.20	2.61	0.09
13' Low Profile Platform	C	None		0.0000	80.00	No Ice 24.33	24.33	1.65
						1/2" Ice 30.22	30.22	2.03
						1" Ice 36.11	36.11	2.41

8' x 2" Dia Dipole	C	From Leg	6.00	0.0000	104.00	No Ice 1.60	1.60	0.02
			0.00			1/2" Ice 2.42	2.42	0.03
			4.00			1" Ice 3.24	3.24	0.05
15'x1.25" Dia Whips	A	From Leg	6.00	0.0000	104.00	No Ice 1.88	1.88	0.02
			0.00			1/2" Ice 3.39	3.39	0.04
			7.50			1" Ice 4.93	4.93	0.06
20' x 2" Dia Whips	C	From Leg	6.00	0.0000	104.00	No Ice 4.00	4.00	0.02
			0.00			1/2" Ice 6.03	6.03	0.05
			-10.00			1" Ice 8.07	8.07	0.09
20' x 2" Dia Whips	A	From Leg	6.00	0.0000	104.00	No Ice 4.00	4.00	0.02
			0.00			1/2" Ice 6.03	6.03	0.05
			-10.00			1" Ice 8.07	8.07	0.09
6' Standoff	A	From Leg	3.00	0.0000	104.00	No Ice 0.85	1.67	0.07
			0.00			1/2" Ice 1.14	2.34	0.08
			0.00			1" Ice 1.43	3.01	0.09
6' Standoff	B	From Leg	3.00	0.0000	104.00	No Ice 0.85	1.67	0.07
			0.00			1/2" Ice 1.14	2.34	0.08
			0.00			1" Ice 1.43	3.01	0.09
6' Standoff	C	From Leg	3.00	0.0000	104.00	No Ice 0.85	1.67	0.07
			0.00			1/2" Ice 1.14	2.34	0.08
			0.00			1" Ice 1.43	3.01	0.09
6' Standoff	C	From Face	3.00	0.0000	104.00	No Ice 0.85	1.67	0.07
			0.00			1/2" Ice 1.14	2.34	0.08
			0.00			1" Ice 1.43	3.01	0.09
(2) Collar Mount	C	None		0.0000	106.00 - 105.00	No Ice 1.14	1.14	0.32
						1/2" Ice 1.49	1.49	0.34
						1" Ice 1.91	1.91	0.37
(2) Collar Mount	C	None		0.0000	106.00	No Ice 1.14	1.14	0.32
						1/2" Ice 1.49	1.49	0.34
						1" Ice 1.91	1.91	0.37

(2) RADIO 4449 B12/B71	B	From Leg	4.00	0.0000	116.00	No Ice 1.65	1.16	0.07
			0.00			1/2" Ice 1.81	1.30	0.09
			0.00			1" Ice 1.98	1.45	0.11



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	10 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	K
RADIO 4449 B12/B71	C	From Leg	4.00	0.0000	116.00	No Ice	1.65	1.16	0.07
			0.00			1/2" Ice	1.81	1.30	0.09
			0.00			1" Ice	1.98	1.45	0.11
(4) Twin Style TMA	B	From Leg	4.00	0.0000	116.00	No Ice	6.68	3.48	0.07
			0.00			1/2" Ice	7.07	4.12	0.12
			0.00			1" Ice	7.48	4.78	0.18
(2) Twin Style TMA	C	From Leg	4.00	0.0000	116.00	No Ice	6.68	3.48	0.07
			0.00			1/2" Ice	7.07	4.12	0.12
			0.00			1" Ice	7.48	4.78	0.18
(2)	B	From Leg	4.00	0.0000	116.00	No Ice	17.38	10.88	0.12
			0.00			1/2" Ice	18.11	12.41	0.24
			0.00			1" Ice	18.85	13.96	0.37
APXVARR24_43-C-NA20 w/ Mount Pipe	C	From Leg	4.00	0.0000	116.00	No Ice	17.38	10.88	0.12
			0.00			1/2" Ice	18.11	12.41	0.24
			0.00			1" Ice	18.85	13.96	0.37
AIR 32 B66Aa B2a w/ Mount Pipe	A	From Leg	4.00	0.0000	116.00	No Ice	6.81	6.14	0.15
			0.00			1/2" Ice	7.30	6.99	0.22
			0.00			1" Ice	7.76	7.73	0.28
AIR 32 B66Aa B2a w/ Mount Pipe	B	From Leg	4.00	0.0000	116.00	No Ice	6.81	6.14	0.15
			0.00			1/2" Ice	7.30	6.99	0.22
			0.00			1" Ice	7.76	7.73	0.28
AIR 32 B66Aa B2a w/ Mount Pipe	C	From Leg	4.00	0.0000	116.00	No Ice	6.81	6.14	0.15
			0.00			1/2" Ice	7.30	6.99	0.22
			0.00			1" Ice	7.76	7.73	0.28
SitePro1 HRK12 Handrail kit	C	None		0.0000	116.00	No Ice	4.80	4.80	0.25
						1/2" Ice	6.70	6.70	0.29
						1" Ice	8.60	8.60	0.34
13' Low-Profile Platform	C	None		0.0000	116.00	No Ice	32.03	32.03	1.34
						1/2" Ice	38.71	38.71	1.80
						1" Ice	45.39	45.39	2.26

HPA-65R-BUU-H6_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	127.00	No Ice	9.72	7.15	0.07
			0.00			1/2" Ice	10.30	8.34	0.15
			0.00			1" Ice	10.84	9.24	0.23
HPA-65R-BUU-H6_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	127.00	No Ice	9.72	7.15	0.07
			0.00			1/2" Ice	10.30	8.34	0.15
			0.00			1" Ice	10.84	9.24	0.23
HPA-65R-BUU-H6_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	127.00	No Ice	9.72	7.15	0.07
			0.00			1/2" Ice	10.30	8.34	0.15
			0.00			1" Ice	10.84	9.24	0.23
7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	127.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			0.00			1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	127.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			0.00			1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	127.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			0.00			1" Ice	6.61	5.71	0.16
LGP214nn	A	From Leg	4.00	0.0000	127.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			0.00			1" Ice	1.38	0.54	0.03
LGP214nn	B	From Leg	4.00	0.0000	127.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			0.00			1" Ice	1.38	0.54	0.03
LGP214nn	C	From Leg	4.00	0.0000	127.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02

Job	9927.CT11077C, Revision 3	Page	11 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						ft
			Vert	ft	°	ft	ft ²	ft ²	K	
			0.00							
13' Low-Profile Platform	C	None			0.0000	127.00	1" Ice	1.38	0.54	0.03
							No Ice	24.53	24.53	1.34
							1/2" Ice	29.94	29.94	1.65
80010965_TIA w/ Mount Pipe	A	From Leg	4.00		0.0000	127.00	1" Ice	35.35	35.35	1.96
			0.00				No Ice	14.05	7.63	0.14
			0.00				1/2" Ice	14.69	8.90	0.23
80010965_TIA w/ Mount Pipe	B	From Leg	4.00		0.0000	127.00	1" Ice	15.30	9.96	0.34
			0.00				No Ice	14.05	7.63	0.14
			0.00				1/2" Ice	14.69	8.90	0.23
80010965_TIA w/ Mount Pipe	C	From Leg	4.00		0.0000	127.00	1" Ice	15.30	9.96	0.34
			0.00				No Ice	14.05	7.63	0.14
			0.00				1/2" Ice	14.69	8.90	0.23
RADIO 4415 B30	A	From Leg	4.00		0.0000	127.00	1" Ice	15.30	9.96	0.34
			0.00				No Ice	1.64	0.64	0.04
			0.00				1/2" Ice	1.80	0.75	0.05
RADIO 4415 B30	B	From Leg	4.00		0.0000	127.00	1" Ice	1.97	0.87	0.07
			0.00				No Ice	1.64	0.64	0.04
			0.00				1/2" Ice	1.80	0.75	0.05
RADIO 4415 B30	C	From Leg	4.00		0.0000	127.00	1" Ice	1.97	0.87	0.07
			0.00				No Ice	1.64	0.64	0.04
			0.00				1/2" Ice	1.80	0.75	0.05
RRUS 4449 B5/B12	A	From Leg	4.00		0.0000	127.00	1" Ice	1.97	0.87	0.07
			0.00				No Ice	1.97	1.41	0.07
			0.00				1/2" Ice	2.14	1.56	0.09
RRUS 4449 B5/B12	B	From Leg	4.00		0.0000	127.00	1" Ice	2.33	1.73	0.11
			0.00				No Ice	1.97	1.41	0.07
			0.00				1/2" Ice	2.14	1.56	0.09
RRUS 4449 B5/B12	C	From Leg	4.00		0.0000	127.00	1" Ice	2.33	1.73	0.11
			0.00				No Ice	1.97	1.41	0.07
			0.00				1/2" Ice	2.14	1.56	0.09
DC6-48-60-18-8F	A	From Leg	4.00		0.0000	127.00	1" Ice	2.33	1.73	0.11
			0.00				No Ice	0.92	0.92	0.02
			0.00				1/2" Ice	1.46	1.46	0.04
* DC6-48-60-18-8F	C	From Leg	4.00		0.0000	129.00	1" Ice	1.64	1.64	0.06
			0.00				No Ice	0.92	0.92	0.02
			0.00				1/2" Ice	1.46	1.46	0.04
RRUS 11	A	From Leg	4.00		0.0000	129.00	1" Ice	1.64	1.64	0.06
			0.00				No Ice	2.78	1.19	0.05
			0.00				1/2" Ice	2.99	1.33	0.07
RRUS 11	B	From Leg	4.00		0.0000	129.00	1" Ice	3.21	1.49	0.10
			0.00				No Ice	2.78	1.19	0.05
			0.00				1/2" Ice	2.99	1.33	0.07
RRUS 11	C	From Leg	4.00		0.0000	129.00	1" Ice	3.21	1.49	0.10
			0.00				No Ice	2.78	1.19	0.05
			0.00				1/2" Ice	2.99	1.33	0.07
RRUS 12	A	From Leg	4.00		0.0000	129.00	1" Ice	3.21	1.49	0.10
			0.00				No Ice	3.15	1.29	0.06
			0.00				1/2" Ice	3.36	1.44	0.08
RRUS 12	B	From Leg	4.00		0.0000	129.00	1" Ice	3.59	1.60	0.11
			0.00				No Ice	3.15	1.29	0.06
			0.00				1/2" Ice	3.36	1.44	0.08
RRUS 12	C	From Leg	4.00		0.0000	129.00	1" Ice	3.59	1.60	0.11
			0.00				No Ice	3.15	1.29	0.06
			0.00				1/2" Ice	3.36	1.44	0.08
RRU A2	A	From Leg	4.00		0.0000	129.00	1" Ice	3.59	1.60	0.11
			0.00				No Ice	2.07	0.50	0.02
			0.00				1" Ice	3.59	1.60	0.11



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	12 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	K
			0.00			1/2" Ice	2.25	0.61	0.03
			0.00			1" Ice	2.43	0.73	0.05
RRU A2	B	From Leg	4.00		0.0000	No Ice	2.07	0.50	0.02
			0.00			1/2" Ice	2.25	0.61	0.03
			0.00			1" Ice	2.43	0.73	0.05
RRU A2	C	From Leg	4.00		0.0000	No Ice	2.07	0.50	0.02
			0.00			1/2" Ice	2.25	0.61	0.03
			0.00			1" Ice	2.43	0.73	0.05
Collar Mount	C	None			0.0000	No Ice	1.14	1.14	0.32
						1/2" Ice	1.49	1.49	0.34
						1" Ice	1.91	1.91	0.37

RRUS A2 B13	A	From Leg	4.00		0.0000	No Ice	2.79	1.72	0.08
			0.00			1/2" Ice	3.00	1.90	0.10
			0.00			1" Ice	3.21	2.07	0.13
RRUS A2 B13	B	From Leg	4.00		0.0000	No Ice	2.79	1.72	0.08
			0.00			1/2" Ice	3.00	1.90	0.10
			0.00			1" Ice	3.21	2.07	0.13
RRUS A2 B13	C	From Leg	4.00		0.0000	No Ice	2.79	1.72	0.08
			0.00			1/2" Ice	3.00	1.90	0.10
			0.00			1" Ice	3.21	2.07	0.13
RRUS 32 B30	A	From Leg	4.00		0.0000	No Ice	2.69	1.57	0.06
			0.00			1/2" Ice	2.91	1.76	0.08
			0.00			1" Ice	3.14	1.95	0.10
RRUS 32 B30	B	From Leg	4.00		0.0000	No Ice	2.69	1.57	0.06
			0.00			1/2" Ice	2.91	1.76	0.08
			0.00			1" Ice	3.14	1.95	0.10
RRUS 32 B30	C	From Leg	4.00		0.0000	No Ice	2.69	1.57	0.06
			0.00			1/2" Ice	2.91	1.76	0.08
			0.00			1" Ice	3.14	1.95	0.10
DT465B-2XR-V2 w/ Mount Pipe	A	From Leg	4.00		0.0000	No Ice	5.50	4.38	0.09
			0.00			1/2" Ice	5.97	4.84	0.16
			0.00			1" Ice	6.45	5.30	0.25
DT465B-2XR-V2 w/ Mount Pipe	B	From Leg	4.00		0.0000	No Ice	5.50	4.38	0.09
			0.00			1/2" Ice	5.97	4.84	0.16
			0.00			1" Ice	6.45	5.30	0.25
DT465B-2XR-V2 w/ Mount Pipe	C	From Leg	4.00		0.0000	No Ice	5.50	4.38	0.09
			0.00			1/2" Ice	5.97	4.84	0.16
			0.00			1" Ice	6.45	5.30	0.25
APXVSPP18-C-A20_TIA w/ Mount Pipe	A	From Leg	4.00		0.0000	No Ice	8.26	7.47	0.10
			0.00			1/2" Ice	8.82	8.66	0.17
			0.00			1" Ice	9.35	9.56	0.24
APXVSPP18-C-A20_TIA w/ Mount Pipe	B	From Leg	4.00		0.0000	No Ice	8.26	7.47	0.10
			0.00			1/2" Ice	8.82	8.66	0.17
			0.00			1" Ice	9.35	9.56	0.24
APXVSPP18-C-A20_TIA w/ Mount Pipe	C	From Leg	4.00		0.0000	No Ice	8.26	7.47	0.10
			0.00			1/2" Ice	8.82	8.66	0.17
			0.00			1" Ice	9.35	9.56	0.24
FD-RRH-2x50-800	A	From Leg	4.00		0.0000	No Ice	1.36	3.01	0.05
			0.00			1/2" Ice	1.52	3.22	0.08
			0.00			1" Ice	1.68	3.45	0.10
FD-RRH-2x50-800	B	From Leg	4.00		0.0000	No Ice	1.36	3.01	0.05
			0.00			1/2" Ice	1.52	3.22	0.08
			0.00			1" Ice	1.68	3.45	0.10
FD-RRH-2x50-800	C	From Leg	4.00		0.0000	No Ice	1.36	3.01	0.05
			0.00			1/2" Ice	1.52	3.22	0.08
			0.00			1" Ice	1.68	3.45	0.10



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	13 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
RRH4X45-19	A	From Leg	4.00	0.00	0.0000	138.00	No Ice	2.31	2.38	0.09
			0.00	0.00			1/2" Ice	2.52	2.58	0.11
			0.00	0.00			1" Ice	2.73	2.79	0.14
RRH4X45-19	B	From Leg	4.00	0.00	0.0000	138.00	No Ice	2.31	2.38	0.09
			0.00	0.00			1/2" Ice	2.52	2.58	0.11
			0.00	0.00			1" Ice	2.73	2.79	0.14
RRH4X45-19	C	From Leg	4.00	0.00	0.0000	138.00	No Ice	2.31	2.38	0.09
			0.00	0.00			1/2" Ice	2.52	2.58	0.11
			0.00	0.00			1" Ice	2.73	2.79	0.14
13' Low-Profile Platform	C	None			0.0000	138.00	No Ice	44.21	44.21	1.77
							1/2" Ice	53.97	53.97	2.32
							1" Ice	63.73	63.73	2.87
2" STD Pipe (2.375 OD)x6'-0"	A	From Leg	4.00	0.00	0.0000	138.00	No Ice	1.43	1.43	0.02
			0.00	0.00			1/2" Ice	1.92	1.92	0.03
			0.00	0.00			1" Ice	2.29	2.29	0.05
2" STD Pipe (2.375 OD)x6'-0"	B	From Leg	4.00	0.00	0.0000	138.00	No Ice	1.43	1.43	0.02
			0.00	0.00			1/2" Ice	1.92	1.92	0.03
			0.00	0.00			1" Ice	2.29	2.29	0.05
2" STD Pipe (2.375 OD)x6'-0"	C	From Leg	4.00	0.00	0.0000	138.00	No Ice	1.43	1.43	0.02
			0.00	0.00			1/2" Ice	1.92	1.92	0.03
			0.00	0.00			1" Ice	2.29	2.29	0.05

10' x 1.5" Dia Dipole	B	From Leg	4.00	0.00	0.0000	149.00	No Ice	2.00	2.00	0.02
			0.00	5.00			1/2" Ice	3.02	3.02	0.04
			0.00	5.00			1" Ice	4.07	4.07	0.06
10' x 1.5" Dia Dipole	C	From Leg	4.00	0.00	0.0000	149.00	No Ice	2.00	2.00	0.02
			0.00	5.00			1/2" Ice	3.02	3.02	0.04
			0.00	5.00			1" Ice	4.07	4.07	0.06
12' x 3" Dia Omni	A	From Leg	4.00	0.00	0.0000	149.00	No Ice	3.60	3.60	0.04
			0.00	5.00			1/2" Ice	4.83	4.83	0.07
			0.00	5.00			1" Ice	6.08	6.08	0.10
13' T-Arms	C	None			0.0000	149.00	No Ice	11.59	11.59	0.77
							1/2" Ice	15.44	15.44	0.99
							1" Ice	19.29	19.29	1.21
(4) 2" STD Pipe (2.375 OD)x6'-0"	A	From Leg	4.00	0.00	0.0000	149.00	No Ice	1.43	1.43	0.02
			0.00	0.00			1/2" Ice	1.92	1.92	0.03
			0.00	0.00			1" Ice	2.29	2.29	0.05
(4) 2" STD Pipe (2.375 OD)x6'-0"	B	From Leg	4.00	0.00	0.0000	149.00	No Ice	1.43	1.43	0.02
			0.00	0.00			1/2" Ice	1.92	1.92	0.03
			0.00	0.00			1" Ice	2.29	2.29	0.05
(4) 2" STD Pipe (2.375 OD)x6'-0"	C	From Leg	4.00	0.00	0.0000	149.00	No Ice	1.43	1.43	0.02
			0.00	0.00			1/2" Ice	1.92	1.92	0.03
			0.00	0.00			1" Ice	2.29	2.29	0.05

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



1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	14 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 130	Pole	Max Tension	48	0.00	-0.00	0.00
			Max. Compression	26	-15.21	0.01	0.03
			Max. Mx	20	-6.46	89.37	0.05
			Max. My	2	-6.48	0.02	89.32
			Max. Vy	20	-8.33	89.37	0.05
			Max. Vx	14	8.31	-0.05	-89.17

Job	9927.CT11077C, Revision 3	Page	15 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	130 - 110	Pole	Max. Torque	8			0.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.23	-4.50	-10.73
			Max. Mx	8	-15.69	-395.67	-4.02
			Max. My	14	-15.77	-2.52	-392.71
			Max. Vy	20	-20.77	392.91	-1.39
			Max. Vx	14	20.08	-2.52	-392.71
L3	110 - 95.83	Pole	Max. Torque	18			5.54
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.00	-1.88	-10.19
			Max. Mx	8	-18.98	-587.64	-5.98
			Max. My	14	-19.06	-3.82	-579.01
			Max. Vy	20	-22.62	586.09	0.27
			Max. Vx	14	21.90	-3.82	-579.01
L4	95.83 - 81	Pole	Max. Torque	18			5.54
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.07	0.23	-10.44
			Max. Mx	8	-23.76	-1062.83	-9.89
			Max. My	14	-23.84	-7.18	-1040.15
			Max. Vy	20	-24.92	1062.69	4.45
			Max. Vx	14	24.19	-7.18	-1040.15
L5	81 - 61	Pole	Max. Torque	18			4.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.05	2.84	-12.16
			Max. Mx	20	-31.29	1645.05	7.82
			Max. My	14	-31.35	-10.04	-1606.92
			Max. Vy	20	-30.29	1645.05	7.82
			Max. Vx	14	29.54	-10.04	-1606.92
L6	61 - 47.83	Pole	Max. Torque	18			4.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.08	3.68	-12.77
			Max. Mx	20	-33.17	1859.61	8.98
			Max. My	14	-33.23	-11.02	-1816.05
			Max. Vy	20	-30.96	1859.61	8.98
			Max. Vx	14	30.21	-11.02	-1816.05
L7	47.83 - 34	Pole	Max. Torque	18			4.31
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.46	6.62	-14.76
			Max. Mx	20	-40.65	2500.56	12.21
			Max. My	14	-40.69	-13.57	-2441.52
			Max. Vy	20	-32.94	2500.56	12.21
			Max. Vx	14	32.21	-13.57	-2441.52
L8	34 - 29.5833	Pole	Max. Torque	20			4.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.86	7.28	-15.05
			Max. Mx	20	-42.27	2647.07	13.03
			Max. My	14	-42.29	-14.13	-2584.69
			Max. Vy	20	-33.32	2647.07	13.03
			Max. Vx	14	32.66	-14.13	-2584.69
L9	29.5833 - 14.67	Pole	Max. Torque	20			4.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.40	10.52	-15.28
			Max. Mx	20	-50.40	3162.22	16.16
			Max. My	14	-50.41	-15.30	-3089.65
			Max. Vy	20	-35.58	3162.22	16.16
			Max. Vx	14	35.15	-15.30	-3089.65
L10	14.67 - 0	Pole	Max. Torque	20			4.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-110.07	14.89	-14.52
			Max. Mx	20	-61.36	3708.51	19.77

Job	9927.CT11077C, Revision 3	Page	16 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-61.36	-15.52	-3626.60
			Max. Vy	20	-38.59	3708.51	19.77
			Max. Vx	14	38.21	-15.52	-3626.60
			Max. Torque	20			4.28

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	110.07	0.00	-0.00
	Max. H _x	20	61.37	38.57	0.18
	Max. H _z	2	61.37	0.18	38.20
	Max. M _x	2	3621.86	0.18	38.20
	Max. M _z	8	3695.36	-38.57	-0.18
	Max. Torsion	20	4.07	38.57	0.18
	Min. Vert	13	46.03	-19.35	-32.73
	Min. H _x	8	61.37	-38.57	-0.18
	Min. H _z	14	61.37	-0.18	-38.20
	Min. M _x	14	-3626.60	-0.18	-38.20
	Min. M _z	20	-3708.51	38.57	0.18
	Min. Torsion	8	-4.07	-38.57	-0.18

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	51.14	0.00	0.00	1.87	5.41	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	61.37	-0.18	-38.20	-3621.86	28.71	0.34
0.9 Dead+1.6 Wind 0 deg - No Ice	46.03	-0.18	-38.20	-3584.35	26.80	0.31
1.2 Dead+1.6 Wind 30 deg - No Ice	61.37	21.34	-36.54	-3337.07	-1951.10	1.43
0.9 Dead+1.6 Wind 30 deg - No Ice	46.03	21.34	-36.54	-3303.47	-1932.68	1.37
1.2 Dead+1.6 Wind 60 deg - No Ice	61.37	35.80	-20.21	-1865.81	-3324.78	3.44
0.9 Dead+1.6 Wind 60 deg - No Ice	46.03	35.80	-20.21	-1847.14	-3291.99	3.37
1.2 Dead+1.6 Wind 90 deg - No Ice	61.37	38.57	0.18	24.47	-3695.36	4.07
0.9 Dead+1.6 Wind 90 deg - No Ice	46.03	38.57	0.18	23.59	-3657.97	4.01
1.2 Dead+1.6 Wind 120 deg - No Ice	61.37	33.15	18.89	1828.10	-3207.10	3.27
0.9 Dead+1.6 Wind 120 deg - No Ice	46.03	33.15	18.89	1808.19	-3174.83	3.23
1.2 Dead+1.6 Wind 150 deg - No Ice	61.37	19.35	32.73	3146.74	-1864.04	1.62
0.9 Dead+1.6 Wind 150 deg - No Ice	46.03	19.35	32.73	3112.95	-1845.96	1.61

Job	9927.CT11077C, Revision 3	Page	17 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 180 deg - No Ice	61.37	0.18	38.20	3626.60	-15.52	-0.34
0.9 Dead+1.6 Wind 180 deg - No Ice	46.03	0.18	38.20	3587.81	-16.95	-0.31
1.2 Dead+1.6 Wind 210 deg - No Ice	61.37	-21.34	36.54	3341.78	1964.29	-1.43
0.9 Dead+1.6 Wind 210 deg - No Ice	46.03	-21.34	36.54	3306.92	1942.53	-1.37
1.2 Dead+1.6 Wind 240 deg - No Ice	61.37	-35.80	20.21	1870.50	3337.95	-3.44
0.9 Dead+1.6 Wind 240 deg - No Ice	46.03	-35.80	20.21	1850.57	3301.82	-3.37
1.2 Dead+1.6 Wind 270 deg - No Ice	61.37	-38.57	-0.18	-19.77	3708.51	-4.07
0.9 Dead+1.6 Wind 270 deg - No Ice	46.03	-38.57	-0.18	-20.16	3667.79	-4.01
1.2 Dead+1.6 Wind 300 deg - No Ice	61.37	-33.15	-18.89	-1823.38	3220.24	-3.27
0.9 Dead+1.6 Wind 300 deg - No Ice	46.03	-33.15	-18.89	-1804.74	3184.64	-3.23
1.2 Dead+1.6 Wind 330 deg - No Ice	61.37	-19.35	-32.73	-3141.99	1877.20	-1.62
0.9 Dead+1.6 Wind 330 deg - No Ice	46.03	-19.35	-32.73	-3109.48	1855.79	-1.61
1.2 Dead+1.0 Ice+1.0 Temp	110.07	-0.00	0.00	14.52	14.89	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	110.07	-0.02	-9.02	-934.57	17.71	-0.02
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	110.07	4.92	-8.46	-840.71	-482.94	0.45
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	110.07	8.27	-4.72	-470.82	-838.38	0.98
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	110.07	9.17	0.02	17.36	-946.38	1.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	110.07	7.77	4.45	490.58	-816.51	0.91
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	110.07	4.53	7.75	837.35	-467.29	0.53
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	110.07	0.02	9.02	963.80	12.22	0.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	110.07	-4.92	8.46	869.94	512.87	-0.45
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	110.07	-8.27	4.72	500.05	868.32	-0.99
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	110.07	-9.17	-0.02	11.87	976.31	-1.10
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	110.07	-7.77	-4.45	-461.35	846.44	-0.92
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	110.07	-4.53	-7.75	-808.11	497.22	-0.53
Dead+Wind 0 deg - Service	51.14	-0.04	-8.17	-768.83	10.18	0.07
Dead+Wind 30 deg - Service	51.14	4.57	-7.82	-708.42	-410.97	0.30
Dead+Wind 60 deg - Service	51.14	7.66	-4.32	-395.43	-703.14	0.73
Dead+Wind 90 deg - Service	51.14	8.25	0.04	6.65	-781.87	0.87
Dead+Wind 120 deg - Service	51.14	7.09	4.04	390.25	-678.02	0.70
Dead+Wind 150 deg - Service	51.14	4.14	7.00	670.69	-392.37	0.35
Dead+Wind 180 deg - Service	51.14	0.04	8.17	772.74	0.77	-0.07
Dead+Wind 210 deg - Service	51.14	-4.57	7.82	712.32	421.91	-0.30
Dead+Wind 240 deg - Service	51.14	-7.66	4.32	399.33	714.09	-0.73
Dead+Wind 270 deg - Service	51.14	-8.25	-0.04	-2.75	792.81	-0.87
Dead+Wind 300 deg - Service	51.14	-7.09	-4.04	-386.35	688.96	-0.70
Dead+Wind 330 deg - Service	51.14	-4.14	-7.00	-666.79	403.31	-0.35



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
 Newburgh, NY 12550
 Phone: (845) 567-6656
 FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	18 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-51.14	0.00	0.00	51.14	-0.00	0.000%
2	-0.18	-61.37	-38.20	0.18	61.37	38.20	0.000%
3	-0.18	-46.03	-38.20	0.18	46.03	38.20	0.000%
4	21.34	-61.37	-36.54	-21.34	61.37	36.54	0.000%
5	21.34	-46.03	-36.54	-21.34	46.03	36.54	0.000%
6	35.80	-61.37	-20.21	-35.80	61.37	20.21	0.000%
7	35.80	-46.03	-20.21	-35.80	46.03	20.21	0.000%
8	38.57	-61.37	0.18	-38.57	61.37	-0.18	0.000%
9	38.57	-46.03	0.18	-38.57	46.03	-0.18	0.000%
10	33.15	-61.37	18.89	-33.15	61.37	-18.89	0.000%
11	33.15	-46.03	18.89	-33.15	46.03	-18.89	0.000%
12	19.35	-61.37	32.73	-19.35	61.37	-32.73	0.000%
13	19.35	-46.03	32.73	-19.35	46.03	-32.73	0.000%
14	0.18	-61.37	38.20	-0.18	61.37	-38.20	0.000%
15	0.18	-46.03	38.20	-0.18	46.03	-38.20	0.000%
16	-21.34	-61.37	36.54	21.34	61.37	-36.54	0.000%
17	-21.34	-46.03	36.54	21.34	46.03	-36.54	0.000%
18	-35.80	-61.37	20.21	35.80	61.37	-20.21	0.000%
19	-35.80	-46.03	20.21	35.80	46.03	-20.21	0.000%
20	-38.57	-61.37	-0.18	38.57	61.37	0.18	0.000%
21	-38.57	-46.03	-0.18	38.57	46.03	0.18	0.000%
22	-33.15	-61.37	-18.89	33.15	61.37	18.89	0.000%
23	-33.15	-46.03	-18.89	33.15	46.03	18.89	0.000%
24	-19.35	-61.37	-32.73	19.35	61.37	32.73	0.000%
25	-19.35	-46.03	-32.73	19.35	46.03	32.73	0.000%
26	0.00	-110.07	0.00	0.00	110.07	-0.00	0.000%
27	-0.02	-110.07	-9.02	0.02	110.07	9.02	0.000%
28	4.92	-110.07	-8.46	-4.92	110.07	8.46	0.000%
29	8.27	-110.07	-4.72	-8.27	110.07	4.72	0.000%
30	9.17	-110.07	0.02	-9.17	110.07	-0.02	0.000%
31	7.77	-110.07	4.45	-7.77	110.07	-4.45	0.000%
32	4.53	-110.07	7.75	-4.53	110.07	-7.75	0.000%
33	0.02	-110.07	9.02	-0.02	110.07	-9.02	0.000%
34	-4.92	-110.07	8.46	4.92	110.07	-8.46	0.000%
35	-8.27	-110.07	4.72	8.27	110.07	-4.72	0.000%
36	-9.17	-110.07	-0.02	9.17	110.07	0.02	0.000%
37	-7.77	-110.07	-4.45	7.77	110.07	4.45	0.000%
38	-4.53	-110.07	-7.75	4.53	110.07	7.75	0.000%
39	-0.04	-51.14	-8.17	0.04	51.14	8.17	0.000%
40	4.57	-51.14	-7.82	-4.57	51.14	7.82	0.000%
41	7.66	-51.14	-4.32	-7.66	51.14	4.32	0.000%
42	8.25	-51.14	0.04	-8.25	51.14	-0.04	0.000%
43	7.09	-51.14	4.04	-7.09	51.14	-4.04	0.000%
44	4.14	-51.14	7.00	-4.14	51.14	-7.00	0.000%
45	0.04	-51.14	8.17	-0.04	51.14	-8.17	0.000%
46	-4.57	-51.14	7.82	4.57	51.14	-7.82	0.000%
47	-7.66	-51.14	4.32	7.66	51.14	-4.32	0.000%
48	-8.25	-51.14	-0.04	8.25	51.14	0.04	0.000%
49	-7.09	-51.14	-4.04	7.09	51.14	4.04	0.000%
50	-4.14	-51.14	-7.00	4.14	51.14	7.00	0.000%



1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	19 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00012250
3	Yes	5	0.00000001	0.00005745
4	Yes	6	0.00000001	0.00020478
5	Yes	6	0.00000001	0.00006670
6	Yes	6	0.00000001	0.00017756
7	Yes	6	0.00000001	0.00005741
8	Yes	5	0.00000001	0.00053138
9	Yes	5	0.00000001	0.00024708
10	Yes	6	0.00000001	0.00020220
11	Yes	6	0.00000001	0.00006637
12	Yes	6	0.00000001	0.00018945
13	Yes	6	0.00000001	0.00006193
14	Yes	5	0.00000001	0.00023111
15	Yes	5	0.00000001	0.00010855
16	Yes	6	0.00000001	0.00018665
17	Yes	6	0.00000001	0.00006001
18	Yes	6	0.00000001	0.00020778
19	Yes	6	0.00000001	0.00006797
20	Yes	5	0.00000001	0.00041564
21	Yes	5	0.00000001	0.00019342
22	Yes	6	0.00000001	0.00018257
23	Yes	6	0.00000001	0.00005947
24	Yes	6	0.00000001	0.00019261
25	Yes	6	0.00000001	0.00006320
26	Yes	4	0.00000001	0.00031657
27	Yes	6	0.00000001	0.00015361
28	Yes	6	0.00000001	0.00020347
29	Yes	6	0.00000001	0.00019785
30	Yes	6	0.00000001	0.00016119
31	Yes	6	0.00000001	0.00021373
32	Yes	6	0.00000001	0.00020868
33	Yes	6	0.00000001	0.00016239
34	Yes	6	0.00000001	0.00021403
35	Yes	6	0.00000001	0.00022017
36	Yes	6	0.00000001	0.00016301
37	Yes	6	0.00000001	0.00019867
38	Yes	6	0.00000001	0.00020107
39	Yes	4	0.00000001	0.00022064
40	Yes	5	0.00000001	0.00005392
41	Yes	4	0.00000001	0.00081412
42	Yes	4	0.00000001	0.00049652
43	Yes	5	0.00000001	0.00005241
44	Yes	4	0.00000001	0.00090159
45	Yes	4	0.00000001	0.00024029
46	Yes	4	0.00000001	0.00089177
47	Yes	5	0.00000001	0.00005883
48	Yes	4	0.00000001	0.00047613
49	Yes	4	0.00000001	0.00082198
50	Yes	4	0.00000001	0.00094400

Maximum Tower Deflections - Service Wind

Job	9927.CT11077C, Revision 3	Page	20 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 130	19.917	46	1.0796	0.0044
L2	130 - 110	15.417	46	1.0619	0.0047
L3	110 - 95.83	11.131	46	0.9679	0.0040
L4	101 - 81	9.374	46	0.8940	0.0030
L5	81 - 61	5.906	46	0.7418	0.0020
L6	61 - 47.83	3.219	46	0.5359	0.0012
L7	54 - 34	2.491	46	0.4576	0.0009
L8	34 - 29.5833	0.907	46	0.2756	0.0005
L9	29.5833 - 14.67	0.674	46	0.2275	0.0004
L10	14.67 - 0	0.158	46	0.1028	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	10' x 1.5" Dia Dipole	46	19.691	1.0794	0.0045	114693
138.00	RRUS A2 B13	46	17.207	1.0742	0.0046	47788
129.00	DC6-48-60-18-8F	46	15.195	1.0595	0.0047	24463
127.00	HPA-65R-BUU-H6_TIA w/ Mount Pipe	46	14.752	1.0542	0.0047	20317
116.00	(2) RADIO 4449 B12/B71	46	12.371	1.0075	0.0045	9451
106.00	(2) Collar Mount	46	10.336	0.9358	0.0036	7950
105.50	(2) Collar Mount	46	10.238	0.9316	0.0035	8035
105.00	(2) Collar Mount	46	10.141	0.9274	0.0035	8123
104.00	8' x 2" Dia Dipole	46	9.947	0.9190	0.0034	8292
80.00	BXA-171063-8BF-EDIN-X w/ Mount Pipe	46	5.751	0.7331	0.0020	5904
40.00	GPS A	46	1.295	0.3330	0.0006	5482

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 130	93.197	16	5.0588	0.0212
L2	130 - 110	72.154	16	4.9745	0.0223
L3	110 - 95.83	52.122	16	4.5342	0.0190
L4	101 - 81	43.901	16	4.1897	0.0142
L5	81 - 61	27.667	16	3.4773	0.0093
L6	61 - 47.83	15.082	16	2.5121	0.0055
L7	54 - 34	11.668	16	2.1449	0.0043
L8	34 - 29.5833	4.247	16	1.2912	0.0023
L9	29.5833 - 14.67	3.157	16	1.0657	0.0018
L10	14.67 - 0	0.740	16	0.4814	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Job	9927.CT11077C, Revision 3	Page	21 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
149.00	10' x 1.5" Dia Dipole	16	92.138	5.0578	0.0213	25140
138.00	RRUS A2 B13	16	80.522	5.0329	0.0220	10474
129.00	DC6-48-60-18-8F	16	71.116	4.9634	0.0223	5313
127.00	HPA-65R-BUU-H6_TIA w/ Mount Pipe	16	69.046	4.9382	0.0223	4383
116.00	(2) RADIO 4449 B12/B71	16	57.918	4.7192	0.0211	2063
106.00	(2) Collar Mount	16	48.400	4.3845	0.0169	1733
105.50	(2) Collar Mount	16	47.943	4.3650	0.0166	1751
105.00	(2) Collar Mount	16	47.487	4.3454	0.0164	1769
104.00	8' x 2" Dia Dipole	16	46.581	4.3061	0.0158	1804
80.00	BXA-171063-8BF-EDIN-X w/ Mount Pipe	16	26.942	3.4368	0.0092	1266
40.00	GPS_A	16	6.067	1.5605	0.0029	1171

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	KI/r	A	P _u	φP _n	Ratio P _u /φP _n
	ft		ft	ft		in ²	K	K	
L1	150 - 130 (1)	TP27.25x23.61x0.2813	20.00	0.00	0.0	24.4279	-6.46	1743.92	0.004
L2	130 - 110 (2)	TP30.89x27.25x0.2813	20.00	0.00	0.0	27.7250	-15.69	1884.92	0.008
L3	110 - 95.83 (3)	TP33.469x30.89x0.2813	14.17	0.00	0.0	29.2087	-18.98	1941.05	0.010
L4	95.83 - 81 (4)	TP35.6055x31.9655x0.375	20.00	0.00	0.0	42.5408	-23.77	3058.53	0.008
L5	81 - 61 (5)	TP39.2455x35.6055x0.375	20.00	0.00	0.0	46.9361	-31.29	3254.69	0.010
L6	61 - 47.83 (6)	TP41.6425x39.2455x0.375	13.17	0.00	0.0	48.4745	-33.08	3318.04	0.010
L7	47.83 - 34 (7)	TP43.4095x39.7695x0.4375	20.00	0.00	0.0	60.5368	-40.56	4284.32	0.009
L8	34 - 29.5833 (8)	TP44.2134x43.4095x0.4375	4.42	0.00	0.0	61.6693	-42.19	4334.66	0.010
L9	29.5833 - 14.67 (9)	TP46.9276x44.2134x0.58	14.91	0.00	0.0	86.5588	-50.36	6380.25	0.008
L10	14.67 - 0 (10)	TP49.5976x46.9276x0.7	14.67	0.00	0.0	110.215	-61.35	8123.96	0.008

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{ux}	Ratio M _{ux} /φM _{ux}	M _{uy}	φM _{uy}	Ratio M _{uy} /φM _{uy}
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	150 - 130 (1)	TP27.25x23.61x0.2813	89.46	955.77	0.094	0.00	955.77	0.000
L2	130 - 110 (2)	TP30.89x27.25x0.2813	396.95	1173.93	0.338	0.00	1173.93	0.000
L3	110 - 95.83 (3)	TP33.469x30.89x0.2813	589.01	1274.16	0.462	0.00	1274.16	0.000
L4	95.83 - 81 (4)	TP35.6055x31.9655x0.375	1064.03	2189.32	0.486	0.00	2189.32	0.000
L5	81 - 61 (5)	TP39.2455x35.6055x0.375	1645.08	2572.97	0.639	0.00	2572.97	0.000
L6	61 - 47.83 (6)	TP41.6425x39.2455x0.375	1866.03	2709.85	0.689	0.00	2709.85	0.000
L7	47.83 - 34 (7)	TP43.4095x39.7695x0.4375	2553.48	3742.35	0.682	0.00	3742.35	0.000
L8	34 - 29.5833 (8)	TP44.2134x43.4095x0.4375	2713.55	3857.86	0.703	0.00	3857.86	0.000
L9	29.5833 -	TP46.9276x44.2134x0.58	3278.35	5997.07	0.547	0.00	5997.07	0.000

Job	9927.CT11077C, Revision 3	Page	22 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M_{uy} kip-ft	ϕM_{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L10	14.67 (9) 14.67 - 0 (10)	TP49.5976x46.9276x0.7	3876.32	8041.86	0.482	0.00	8041.86	0.000

Reactions used to check reinforcing members

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_n kip-ft	ϕT_n kip-ft	Ratio $\frac{T_n}{\phi T_n}$
L1	150 - 130 (1)	TP27.25x23.61x0.2813	8.33	871.96	0.010	0.19	1944.85	0.000
L2	130 - 110 (2)	TP30.89x27.25x0.2813	20.77	942.46	0.022	2.68	2387.76	0.001
L3	110 - 95.83 (3)	TP33.469x30.89x0.2813	22.61	970.52	0.023	2.84	2591.24	0.001
L4	95.83 - 81 (4)	TP35.6055x31.9655x0.375	24.91	1529.27	0.016	2.84	4455.24	0.001
L5	81 - 61 (5)	TP39.2455x35.6055x0.375	30.29	1627.35	0.019	4.23	5234.23	0.001
L6	61 - 47.83 (6)	TP41.6425x39.2455x0.375	32.64	1659.02	0.020	3.05	5512.11	0.001
L7	47.83 - 34 (7)	TP43.4095x39.7695x0.4375	35.91	2142.16	0.017	2.65	7614.46	0.000
L8	34 - 29.5833 (8)	TP44.2134x43.4095x0.4375	36.55	2167.33	0.017	2.57	7848.99	0.000
L9	29.5833 - 14.67 (9)	TP46.9276x44.2134x0.58	39.16	3190.12	0.012	2.09	12211.58	0.000
L10	14.67 - 0 (10)	TP49.5976x46.9276x0.7	42.33	4061.98	0.010	1.47	16385.17	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 130 (1)	0.004	0.094	0.000	0.010	0.000	0.097	1.000	4.8.2 ✓
L2	130 - 110 (2)	0.008	0.338	0.000	0.022	0.001	0.347	1.000	4.8.2 ✓
L3	110 - 95.83 (3)	0.010	0.462	0.000	0.023	0.001	0.473	1.000	4.8.2 ✓
L4	95.83 - 81 (4)	0.008	0.486	0.000	0.016	0.001	0.494	1.000	4.8.2 ✓
L5	81 - 61 (5)	0.010	0.639	0.000	0.019	0.001	0.649	1.000	4.8.2 ✓
L6	61 - 47.83 (6)	0.010	0.689	0.000	0.020	0.001	0.699	1.000	4.8.2 ✓
L7	47.83 - 34 (7)	0.009	0.682	0.000	0.017	0.000	0.692	1.000	4.8.2 ✓
L8	34 - 29.5833 (8)	0.010	0.703	0.000	0.017	0.000	0.713	1.000	4.8.2 ✓
L9	29.5833 - 14.67 (9)	0.008	0.547	0.000	0.012	0.000	0.555	1.000	4.8.2 ✓
L10	14.67 - 0 (10)	0.008	0.482	0.000	0.010	0.000	0.490	1.000	4.8.2 ✓



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job	9927.CT11077C, Revision 3	Page	23 of 23
Project	150' Monopole	Date	08/08/19
Client	T-Mobile	Designed by	Ian Marinaccio

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	150 - 130	Pole	TP27.25x23.61x0.2813	1	-6.46	1743.92	9.7	Pass	
L2	130 - 110	Pole	TP30.89x27.25x0.2813	2	-15.69	1884.92	34.7	Pass	
L3	110 - 95.83	Pole	TP33.469x30.89x0.2813	3	-18.98	1941.05	47.3	Pass	
L4	95.83 - 81	Pole	TP35.6055x31.9655x0.375	4	-23.77	3058.53	49.4	Pass	
L5	81 - 61	Pole	TP39.2455x35.6055x0.375	5	-31.29	3254.69	64.9	Pass	
L6	61 - 47.83	Pole	TP41.6425x39.2455x0.375	6	-33.08	3318.04	69.9	Pass	
L7	47.83 - 34	Pole	TP43.4095x39.7695x0.4375	7	-40.56	4284.32	69.2	Pass	
L8	34 - 29.5833	Pole	TP44.2134x43.4095x0.4375	8	-42.19	4334.66	71.3	Pass	
L9	29.5833 - 14.67	Pole	TP46.9276x44.2134x0.58	9	-50.36	6380.25	82.6	Pass	
L10	14.67 - 0	Pole	TP49.5976x46.9276x0.7	10	-61.35	8123.96	72.1	Pass	
							Summary		
							Pole (L8)	71.3	Pass
							RATING =	82.6	Pass

Reinforcing member capacity governs over pole shaft. See attached calculations.

W.O.	9927.CT11077C	Report Date:	8/8/2019
Client:	T-Mobile / Northeast Site Solutions	Revision:	3
Site Name:	Fairfield Fire Rescue #5	Prepared By:	IM

CHECK FOR REINFORCING MEMBER

SECTION	0'-14.67'		
Fy	65 ksi	Reinf. Member	(8) WT6x25
Moment @ Base	3876.32 kip-ft	Area	7.30 in ²
Y _{POLE} @ Bottom	24.81 in	Capacity	327.6 kips
Y _{REINF} @ Bottom	30.13 in		

POLE ELEVATION	Moment of Inertia (in ⁴)		
	w/o Reinforcement	w/Reinforcement	Reinforcement
Base	21396	43283	21887

Moment distribution within the pole and the reinforcing plates

AT BASE	Ratios of the moments	Approx Moment Distribution (kip-ft)	Axial Force in Plate (kips)
Pole Section	0.49	1916	236
Reinforcing Plate	0.51	1960	

Max Percentage Stress of the reinforcing member = 72.1% Pass



W.O.	9927.CT11077C	Report Date:	8/8/2019
Client:	T-Mobile / Northeast Site Solutions	Revision:	3
Site Name:	Fairfield Fire Rescue #5	Prepared By:	IM

CHECK FOR REINFORCING MEMBER

SECTION	14.67'-31'		
Fy	65 ksi	Reinf. Member	(4) WT6x25
Moment @ Base	3278.35 kip-ft	Area	7.30 in ²
Y _{POLE} @ Bottom	23.4375 in	Capacity	327.6 kips
Y _{REINF} @ Bottom	28.50 in		

POLE ELEVATION	Moment of Inertia (in ⁴)		
	w/o Reinforcement	w/Reinforcement	Reinforcement
@ 14.67	18084	30239	12155

Moment distribution within the pole and the reinforcing plates

AT BASE	Ratios of the moments	Approx Moment Distribution (kip-ft)	Axial Force in Plate (kips)
Pole Section	0.60	1961	
Reinforcing Plate	0.40	1318	271

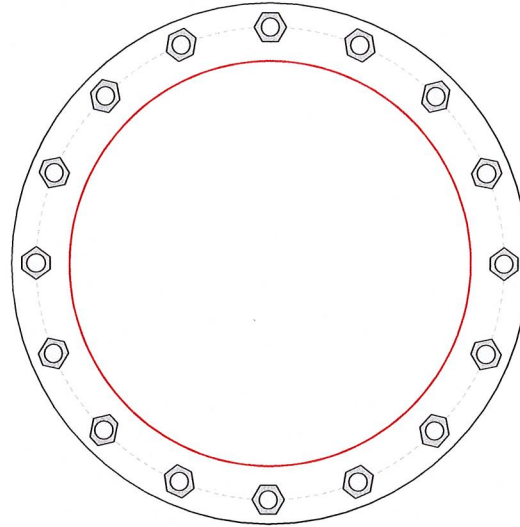
Max Percentage Stress of the reinforcing member = 82.6% Pass

Monopole Base Plate Connection

Site Info	
Site #	CT11077C
Site Name	Fairfield Fire Rescue #9
WO #	9927.CT11077C, Rev 3

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	Yes
l_{ar} (in)	0
Eta Factor, η	0.55

Applied Loads	
Moment (kip-ft)	3876.00
Axial Force (kips)	61.00
Shear Force (kips)	42.00



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 57.85" BC		$Pu_t = 197.07$	$\phi Pn_t = 260$ Stress Rating
Base Plate Data		$Vu = 2.63$	$\phi Vn = n/a$ 77.6%
63.85" OD x 2.75" Plate (A633 Gr. E; $F_y=60$ ksi, $F_u=75$ ksi)		$Mu = n/a$	$\phi Mn = n/a$ Pass
Stiffener Data		Base Plate Summary	
N/A		Max Stress (ksi):	27.95 (Flexural)
Pole Data		Allowable Stress (ksi):	54
49.597566" x 0.4375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)		Stress Rating:	51.8% Pass

Drilled Pier Foundation

Site #: CT11077C
 Site Name: Fairfield Fire Rescue #5
 WO#: 9927.CT11077C, Rev 3

TIA-222 Revision: G
 Tower Type: Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	3876	
Axial Force (kips)	61	
Shear Force (kips)	42	

Material Properties	
Concrete Strength, f _c	3 ksi
Rebar Strength, F _y	60 ksi

Pier Design Data	
Depth	26.5 ft
Ext. Above Grade	1 ft
Pier Section 1	
<i>From 1' above grade to 26.5' below grade</i>	
Pier Diameter	7 ft
Rebar Quantity	40
Rebar Size	11
Clear Cover to Ties	4 in
Tie Size	4

Analysis Results		
Soil Lateral Capacity		
D ₉₀ (ft from TOC)	6.66	-
Soil Safety Factor	1.74	-
Max Moment (kip-ft)	4187.54	-
Rating	76.3%	-
Soil Vertical Capacity		
Skin Friction (kips)	262.46	-
End Bearing (kips)	0.00	-
Weight of Concrete (kips)	129.98	-
Total Capacity (kips)	262.46	-
Axial (kips)	190.98	-
Rating	72.8%	-
Reinforced Concrete Capacity		
Critical Depth (ft from TOC)	6.86	-
Critical Moment (kip-ft)	4187.05	-
Critical Moment Capacity	9149.36	-
Rating	45.8%	-
Soil Interaction Rating		76.3%
Structural Foundation Rating		45.8%

Soil Profile		
Groundwater Depth	5.5 ft	# of Layers 3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{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	4	4	120	150	0	0	0.000	0.000	0.00	0.00		0	Cohesionless	
2	4	5.5	1.5	120	150	0	35	0.687	0.687				20	Cohesionless	
3	5.5	26.5	21	42.6	87.6	0	30	0.709	0.709				0	10	Cohesionless

MOUNT ANALYSIS



Job No. 9927.CT11077C, Revision 3
 Sheet No. 1 of 3
 Calculated By IM Date : 08/08/19
 Checked By EI Date : 08/08/19

WIND AND ICE LOADS PER TIA-222-G

W.O.	9927.CT11077C, Revision 3
Project Name	Fairfield Fire Rescue #5
Location	3965 Congress Street, Fairfield, CT 06824
County	Fairfield

Tower Type	MP	Monopole
Structure Class	2	Substantial hazard
Exposure Category	B	Suburban/wooded/obstructed
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft

Basic Wind Speed (3-sec gust):		
Without ice	97	mph*
With ice	50	mph
Maintenance	40	mph
Ice thickness	0.75	in

*Nominal converted from 125 mph ultimate risk cat. 2

Importance Factor	
Wind only	1.00
Wind with ice	1.00
Ice thickness	1.00
Supporting Data:	
K_e	0.90
K_t	N/A
f	N/A
z_g	1200
α	7
$K_{z,min}$	0.7
K_d	0.95
G_h	1.00

Height	z (ft)	116
	K_h	N/A
	K_{zt}	1.00
	K_z	1.03
	K_{iz}	1.13
Wind Pressure, q_z (psf)	No Ice	23.59
	With Ice	6.27
	Service	4.01
(tiz)	Ice Thk	1.70
Appurtenances ($q_z G_h$)	No Ice	23.59
	With Ice	6.27
	Service	4.01

Appurtenance Information

Effective Projected Area for Appurtenance (EPA) $=\text{Max}((EPA)_N, (EPA)_T)$

$(EPA)_T = \sum(C_a A_a)_T$

$(EPA)_N = \sum(C_a A_a)_N$

Reduction Factor = 0.9

Wind Only Load Combinations

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna (Ca) _T	Antenna (Ca) _N	Side Face (Aa) _T (ft ²)	Windward Side Face (CaAa) _T (ft ²)	Face Normal (Aa) _N (ft ²)	Windward Face Normal (CaAa) _N (ft ²)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
RRU 4449 B71+B12	P	1	116	1.25	13.20	10.40	Flat	1.20	1.20	1.08	1.17	1.38	1.49	35	28	75.0	75.0
TMA	E	2	116	1.32	14.00	3.10	Flat	1.32	1.20	0.34	0.81	1.54	3.32	39	10	33.0	66.0
AIR-32 B2A/B66A	P	1	116	4.72	12.90	8.70	Flat	1.38	1.28	3.42	4.24	5.07	5.86	138	100	132.2	132.2
APXVAARR24_43-U-NA20	P	1	116	7.99	24.00	8.70	Flat	1.53	1.27	5.79	8.00	15.98	18.22	430	189	153.3	153.3
										$\sum(CaAa)_T$	14.22	$\sum(CaAa)_N$	28.88				

Wind with Ice Load Combinations

Ice Thk= 1.70 in

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna (Ca) _T	Antenna (Ca) _N	Side Face (Aa) _T (ft ²)	Windward Side Face (CaAa) _T (ft ²)	Face Normal (Aa) _N (ft ²)	Windward Face Normal (CaAa) _N (ft ²)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft ²)	Ice Weight Alone (lbs)
RRU 4449 B71+B12	P	1	116	1.53	16.60	13.80	Cylindrical	0.7	0.7	1.76	1.11	2.12	1.34	8	7	4.9	39.0
TMA	E	2	116	1.60	17.40	6.50	Cylindrical	0.7	0.7	0.87	1.09	2.32	2.92	9	3	3.8	29.8
AIR-32 B2A/B66A	P	1	116	5.00	16.30	12.10	Cylindrical	0.73	0.73	5.04	3.30	6.79	4.44	28	21	17.0	134.8
APXVAARR24_43-U-NA20	P	1	116	8.28	27.40	12.10	Cylindrical	0.72	0.72	8.35	5.45	18.90	12.33	77	34	43.6	345.7
										$\sum(CaAa)_T$	10.94	$\sum(CaAa)_N$	21.03				

Maintenance Load Combinations

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna (Ca) _T	Antenna (Ca) _N	Side Face (Aa) _T (ft ²)	Windward Side Face (CaAa) _T (ft ²)	Face Normal (Aa) _N (ft ²)	Windward Face Normal (CaAa) _N (ft ²)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)
RRU 4449 B71+B12	P	1	116	1.25	13.20	10.40	Flat	1.20	1.20	1.08	1.17	1.38	1.49	6	5
TMA	E	2	116	1.32	14.00	3.10	Flat	1.32	1.20	0.34	0.81	1.54	3.32	7	2
AIR-32 B2A/B66A	P	1	116	4.72	12.90	8.70	Flat	1.38	1.28	3.42	4.24	5.07	5.86	24	17
APXVAARR24_43-U-NA20	P	1	116	7.99	24.00	8.70	Flat	1.53	1.27	5.79	8.00	15.98	18.22	73	32



Job No. 9927.CT11077C, Revision 3
 Sheet No. 3 of 3
 Calculated By IM Date : 08/08/19
 Checked By IM Date : 08/08/19

Existing Low-Profile Platform

Mount Center Line= 116 ft

Member lengths and widths based on mapping report by Hightower Solutions, dated 6/6/19.

Reduction Factor = 0.9

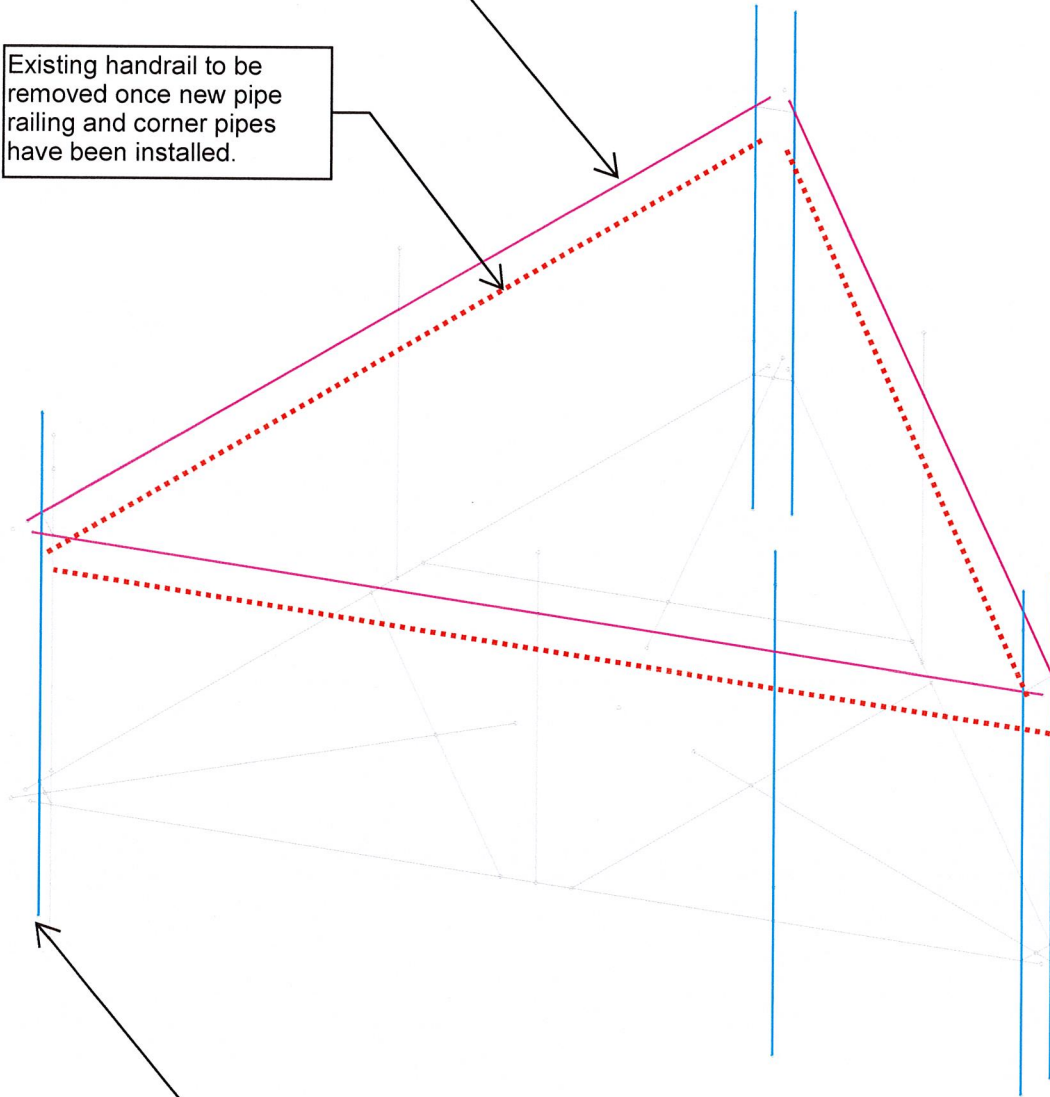
Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical ?	Drag Factor	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	Maintenance Wind Force (lbs/ft)
C5x9 - Face Horizontal	3	13.25	5.00	1.89	Flat	2	33.13	17.7	45.65	9.1	55.66	7.9	3.0
L2.5x2.5 - Exist Handrail	3	13.25	2.50	2.50	Flat	2	16.56	8.8	33.13	6.6	39.10	5.5	1.5
2.38" OD Pipe - Mount Pipe	6	4.00	2.38	2.38	Cylindrical	1.2	5.71	5.1	14.95	4.9	13.88	3.3	0.9
2.38" OD Pipe - New Handrail	3	12.00	2.38	2.38	Cylindrical	1.2	8.57	5.1	22.42	4.9	20.81	3.3	0.9
2.38" OD Pipe - New Mount Pipe	3	8.00	2.38	2.38	Cylindrical	1.2	5.71	5.1	14.95	4.9	13.88	3.3	0.9
L4x4 - Grating Support	3	5.58	4.00	4.00	Flat	2	11.16	14.2	22.32	10.6	20.65	7.0	2.4
HSS 4x4 -Standoff	3	5.83	4.00	4.00	Cylindrical	1.2	7.00	8.5	18.31	8.3	12.95	4.2	1.4



Section Sets	
■	L2.5x2.5
■	4x4
■	4" Tube
■	2.375" Pipe
■	New HSS 2.875 x .203
■	Flt

(P) SitePro1 Handrail Kit for 12'-6" face (Part #HRK12) or approved equal to replace existing handrail. Install within 6" of the exiting rail.

Existing handrail to be removed once new railing and corner pipes have been installed.

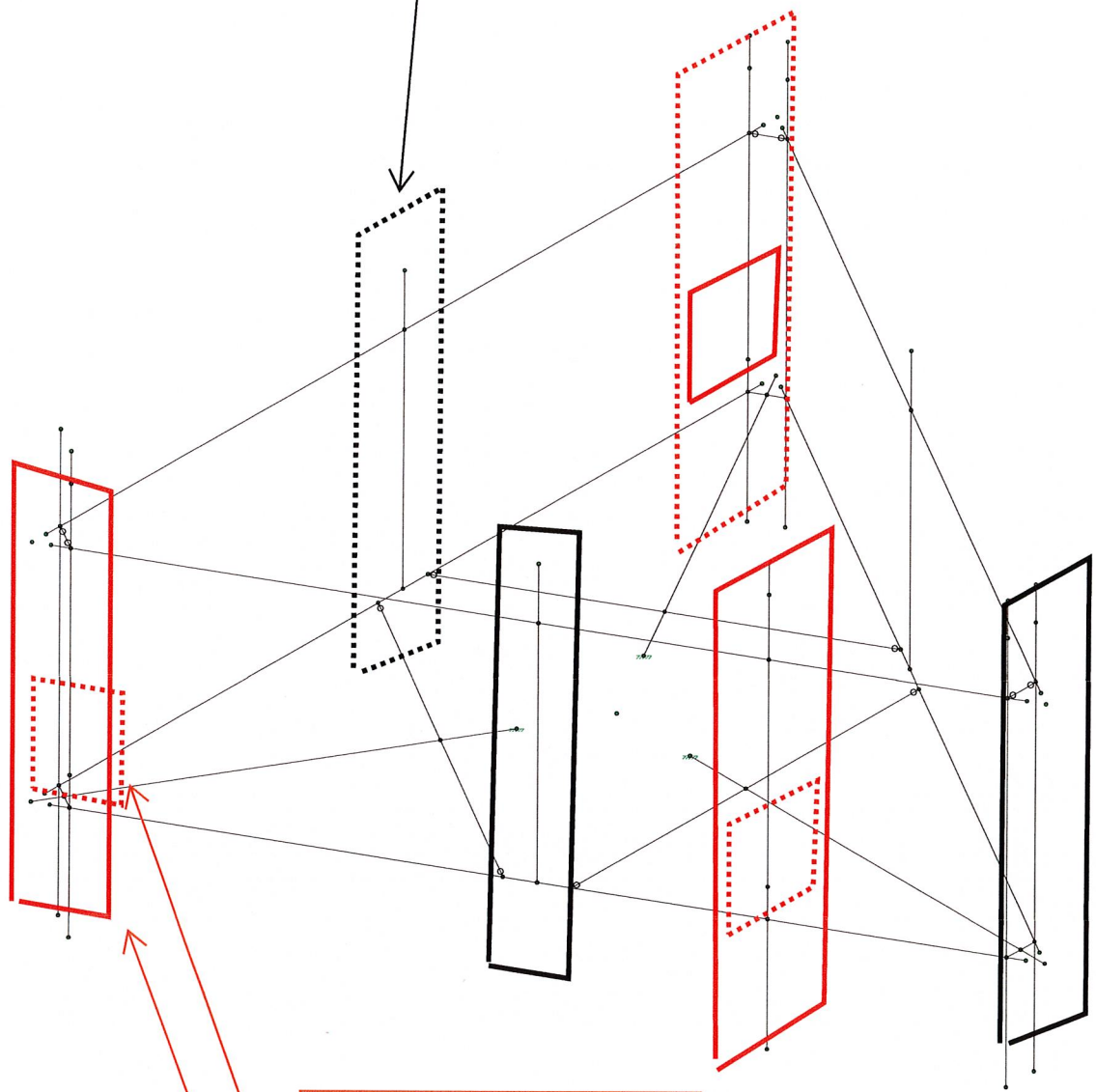


Corner pipes to be replaced with larger HSS 2.875 x 0.203 pipe (typ of 6)

Tectonic	Low-Profile Platform	
Ian Marinaccio		
9927.CT11077C, Rev 3		9927.CT11077C_Mod.r3.r3d



AIR32 B66A B2A
TYP OF 3



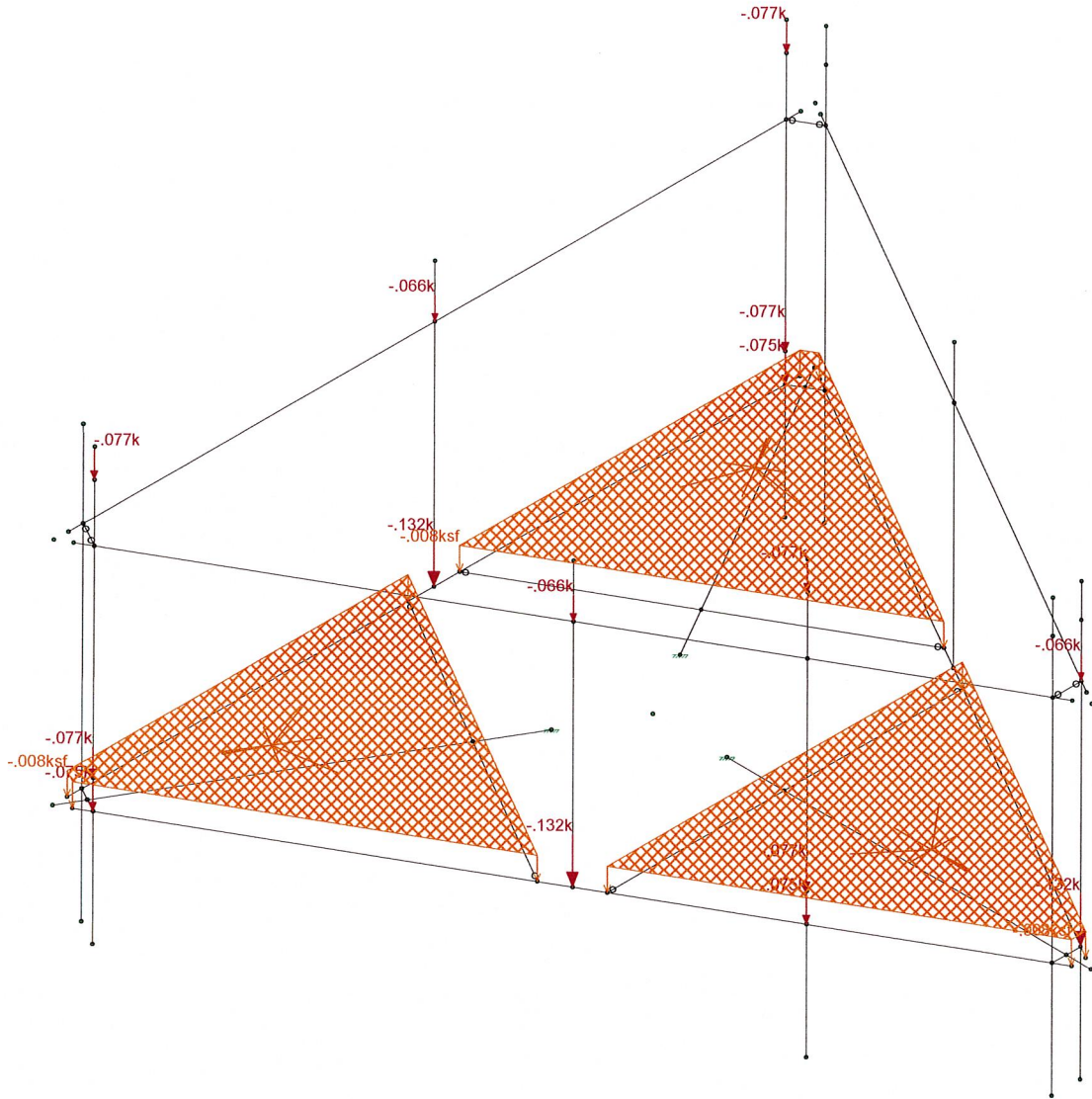
RADIO 4449 B71/B12
BEHIND NEW ANTENNA
TYP OF 3

APXVAARR24 ON NEW
HSS 2.3875x0.2035 PIPE
TYP OF 3

Tectonic
Ian Marinaccio
9927.CT11077C, Rev 3

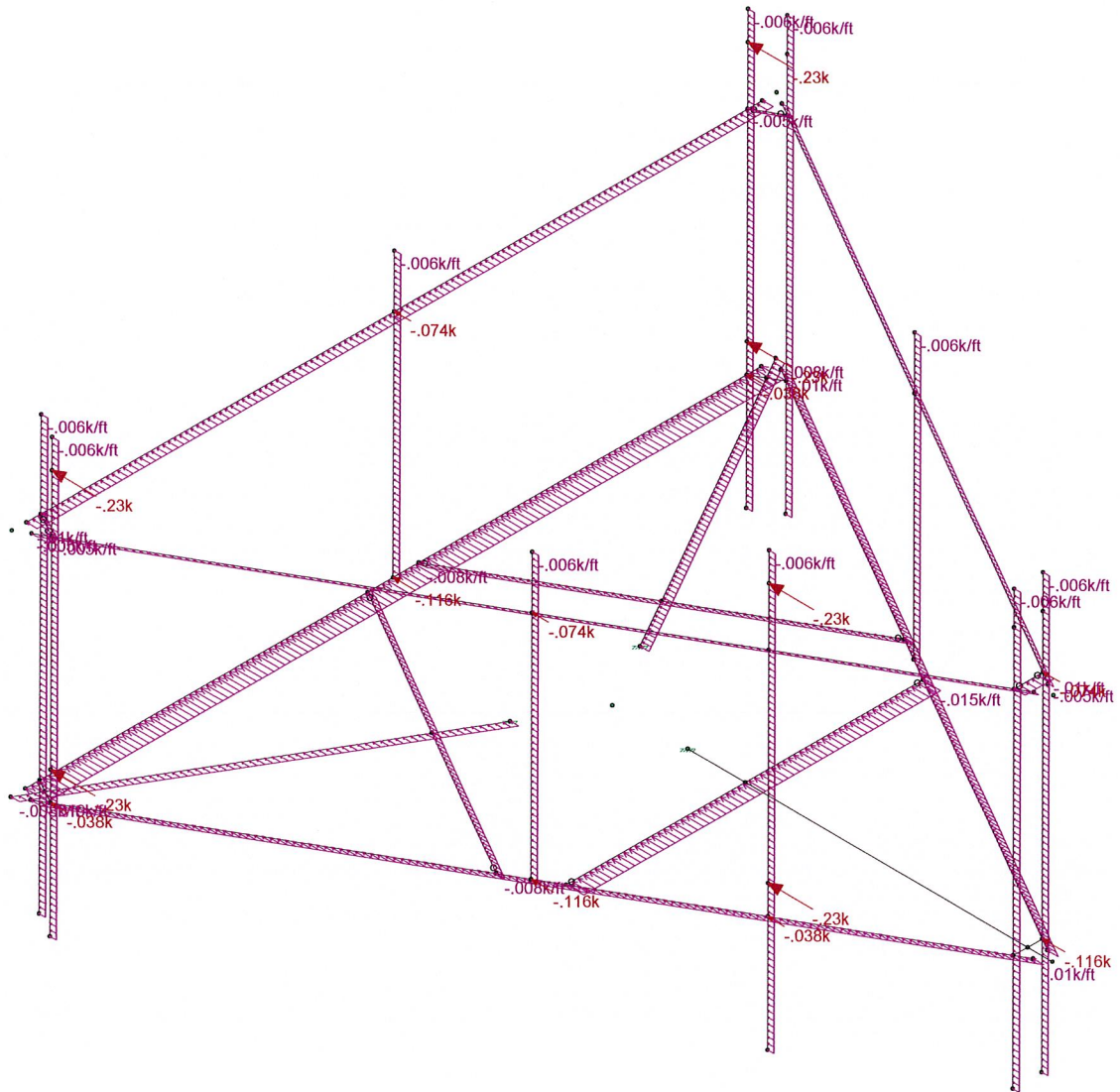
Low-Profile Platform

9927.CT11077C_Mod.r3.r3d



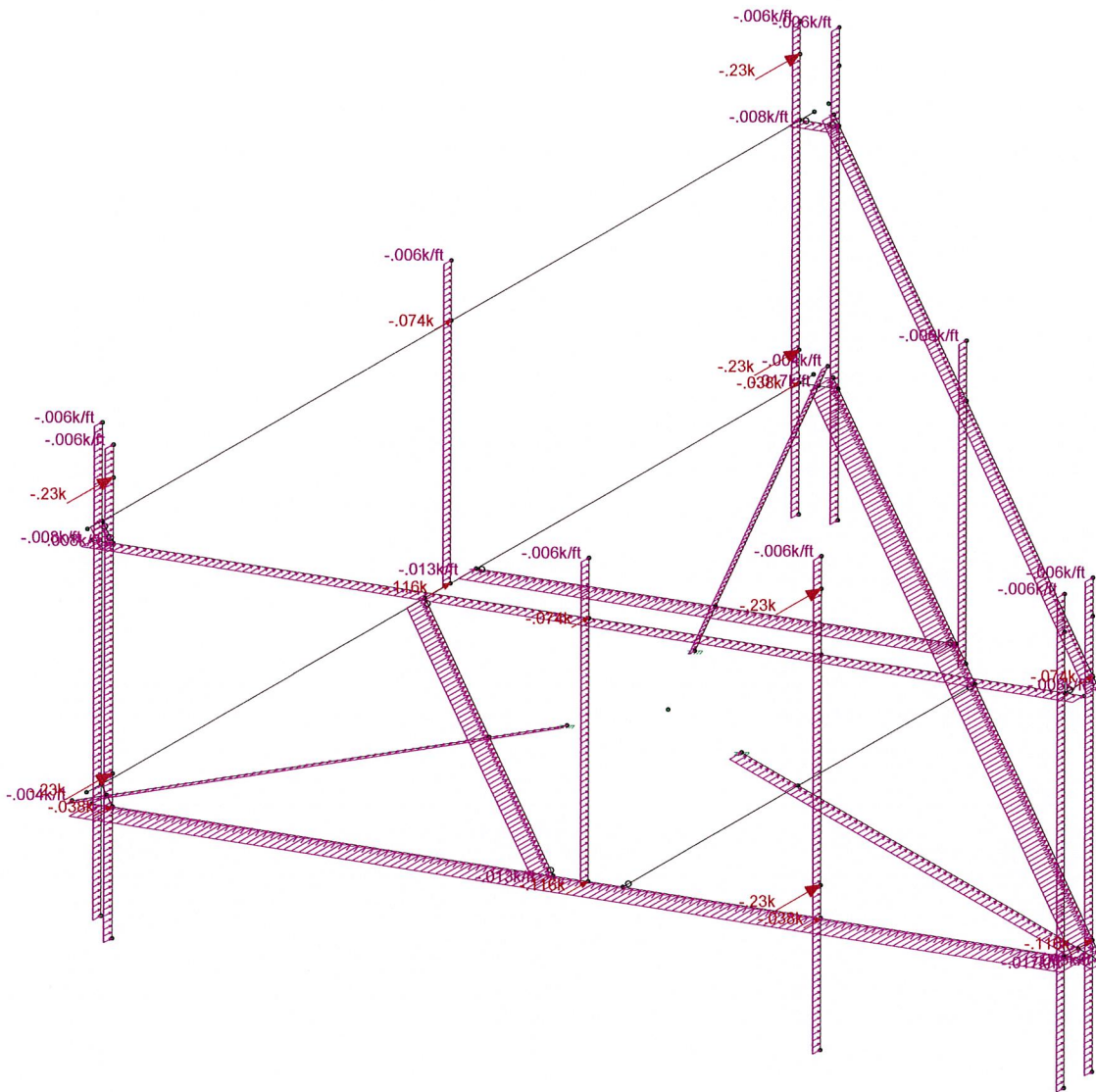
Loads: BLC 1, DL

Tectonic	Low-Profile Platform	Aug 8, 2019 at 11:48 AM
Ian Marinaccio		9927.CT11077C_Mod.r3.r3d
9927.CT11077C, Rev 3		



Loads: BLC 2, WLX

Tectonic	Low-Profile Platform	
Ian Marinaccio		Aug 8, 2019 at 11:49 AM
9927.CT11077C, Rev 3		9927.CT11077C_Mod.r3.r3d



Loads: BLC 3, WLZ

Tectonic

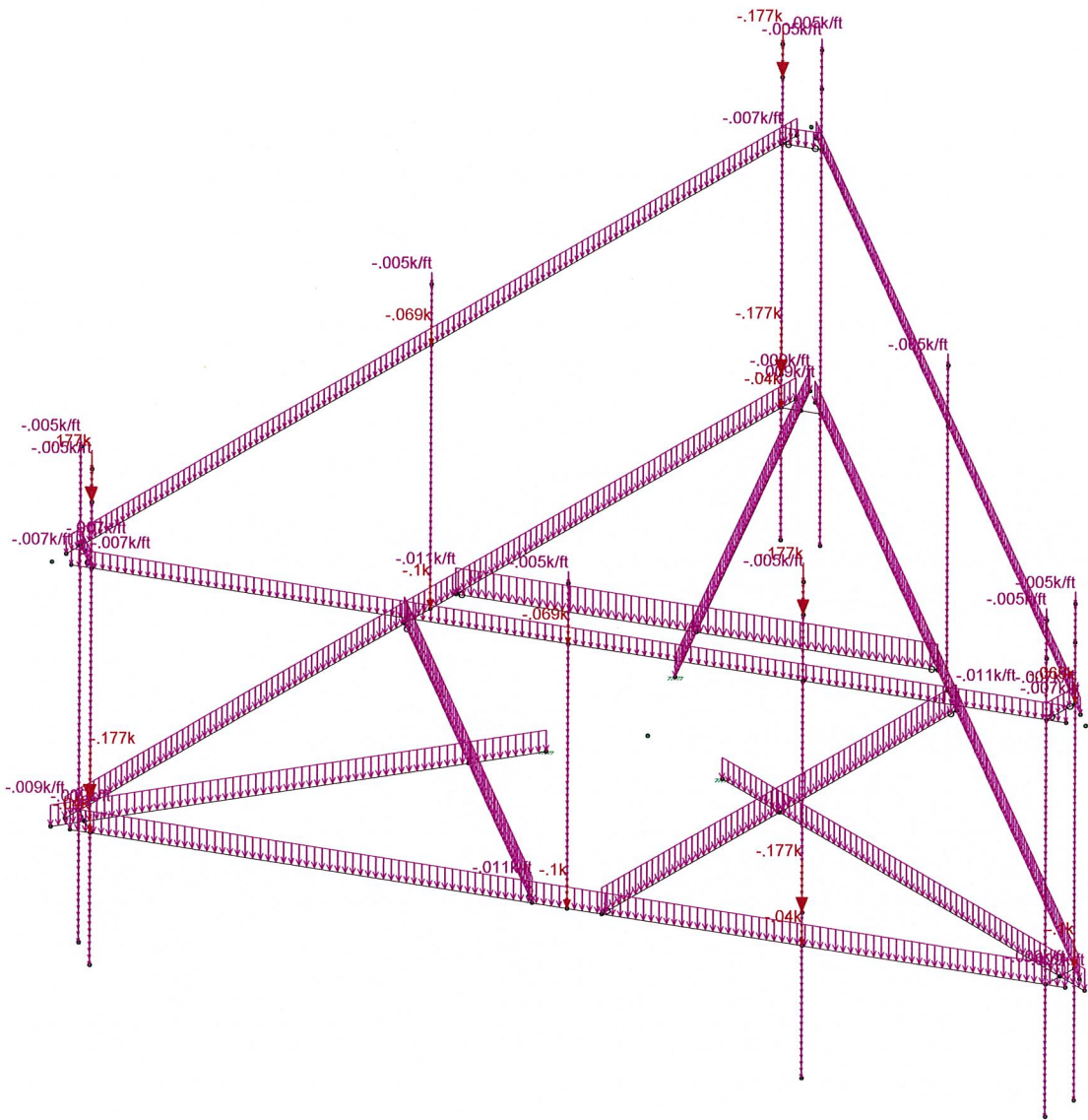
Ian Marinaccio

9927.CT11077C, Rev 3

Low-Profile Platform

Aug 8, 2019 at 11:49 AM

9927.CT11077C_Mod.r3.r3d



Loads: BLC 4, DL (ICE)

Tectonic

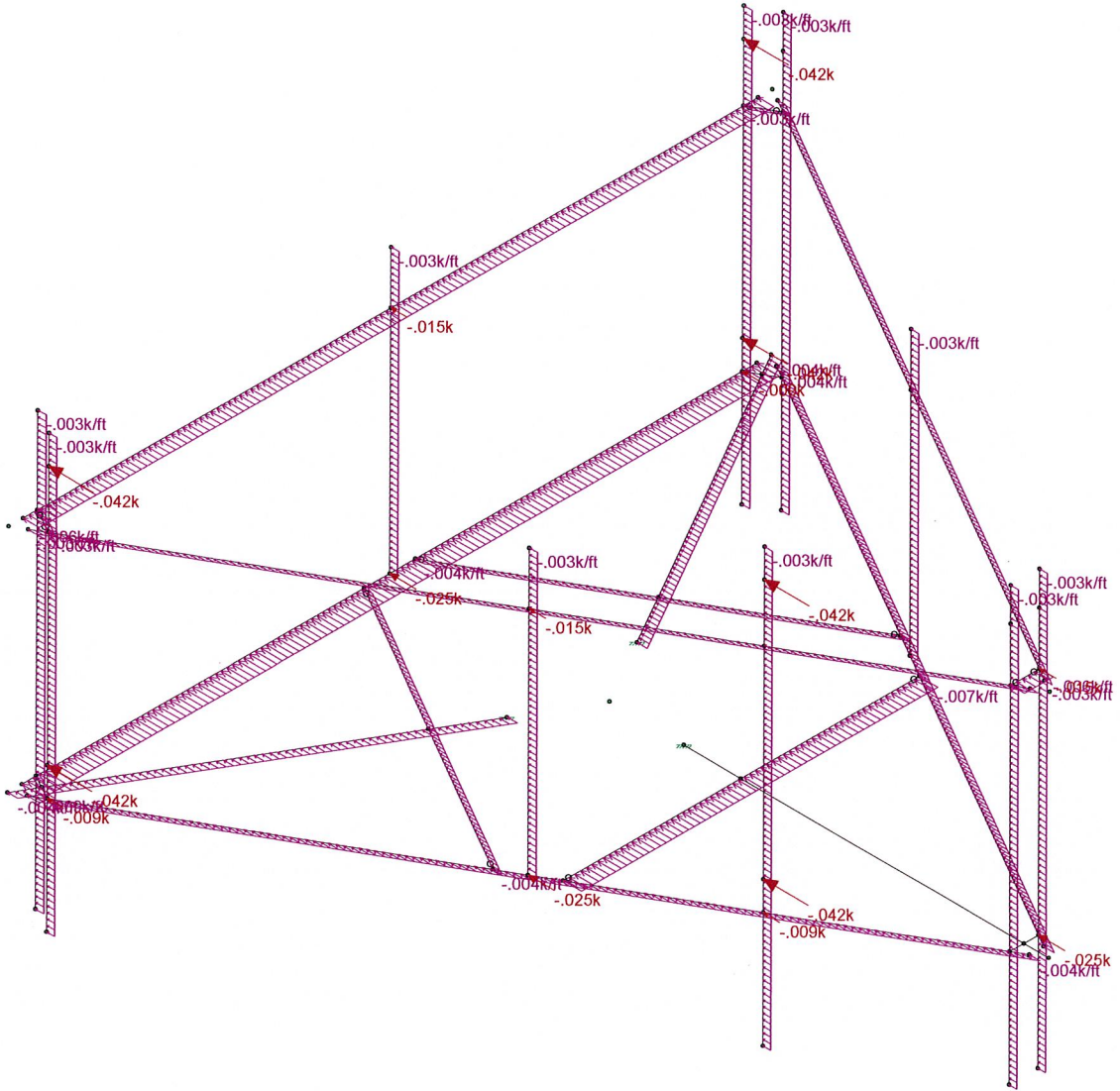
Ian Marinaccio

9927.CT11077C, Rev 3

Low-Profile Platform

Aug 8, 2019 at 11:49 AM

9927.CT11077C_Mod.r3.r3d

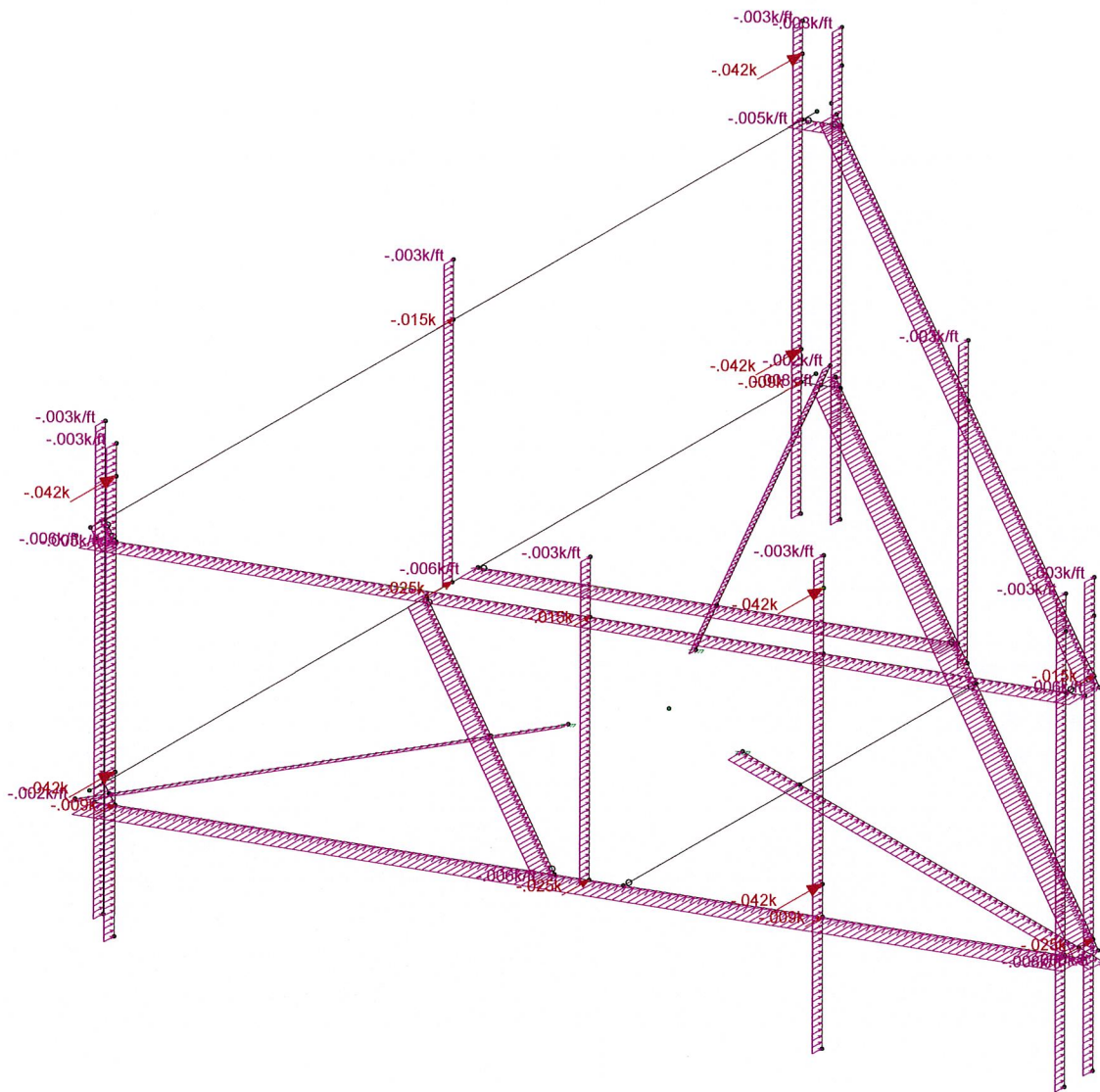


Loads: BLC 5, WLX (ICE)

Tectonic
 Ian Marinaccio
 9927.CT11077C, Rev 3

Low-Profile Platform

Aug 8, 2019 at 11:49 AM
 9927.CT11077C_Mod.r3.r3d



Loads: BLC 6, WLZ (ICE)

Tectonic

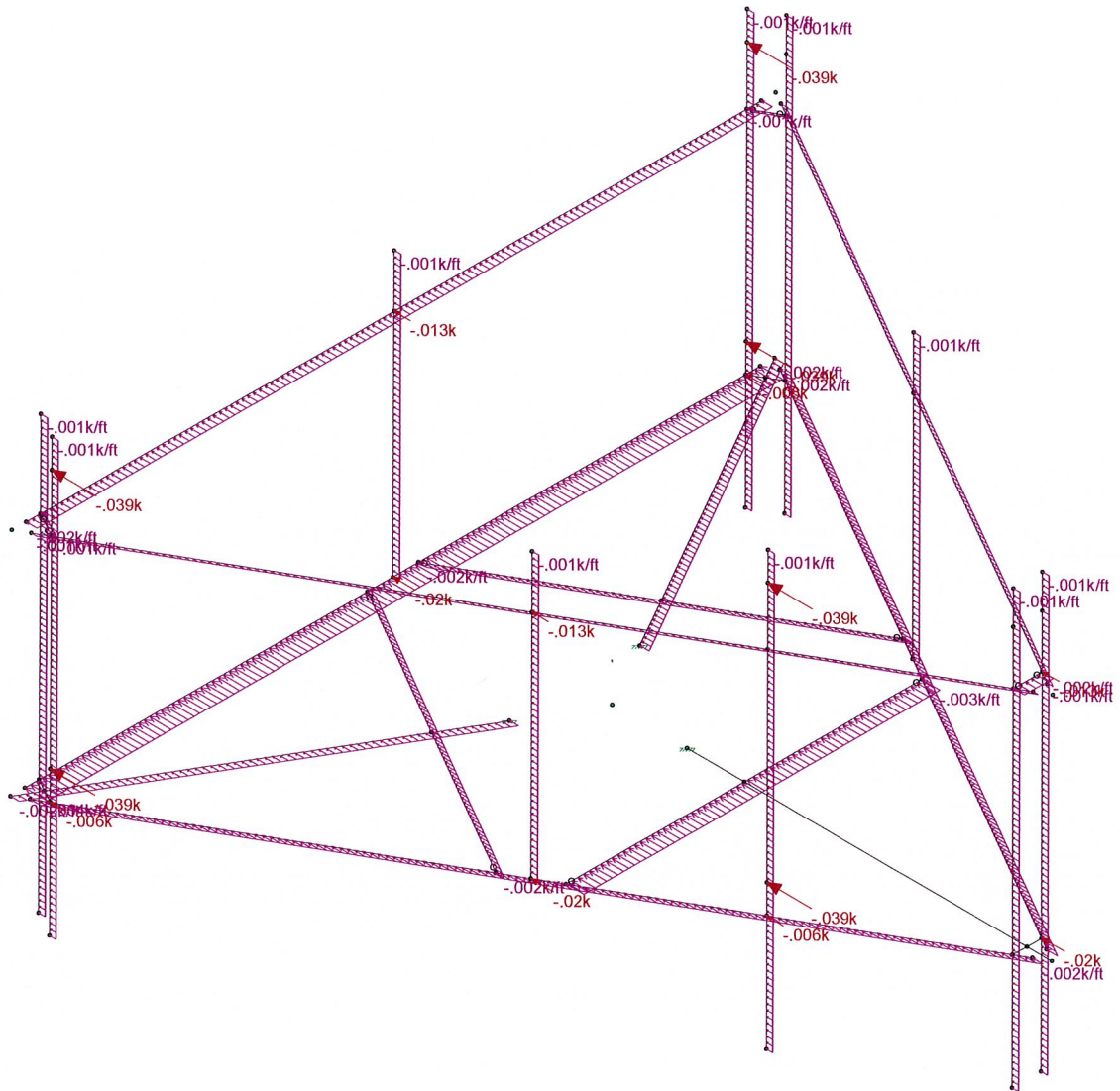
Ian Marinaccio

9927.CT11077C, Rev 3

Low-Profile Platform

Aug 8, 2019 at 11:49 AM

9927.CT11077C_Mod.r3.r3d



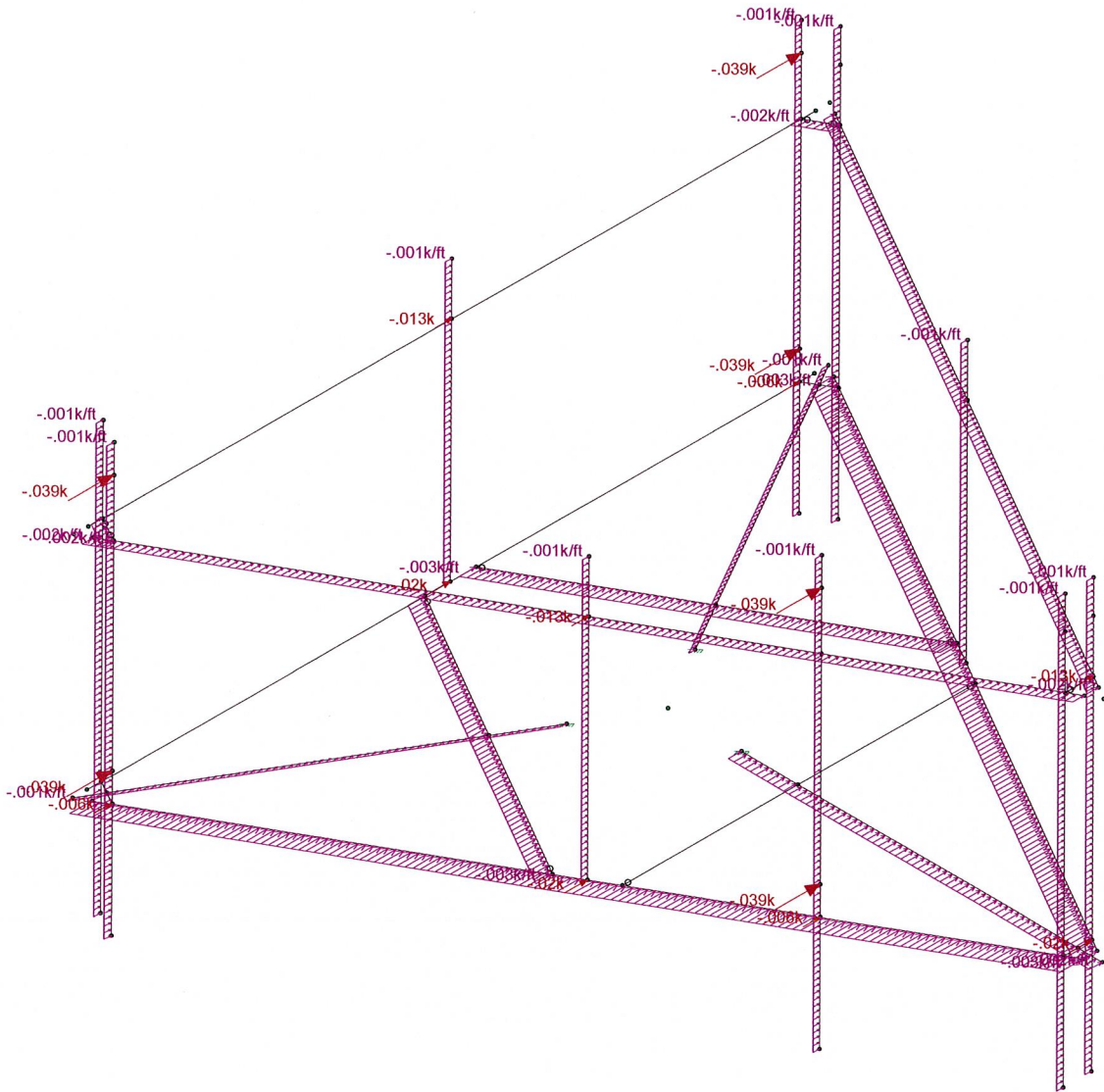
Loads: BLC 7, WLX (MAINT)

Tectonic
Ian Marinaccio
9927.CT11077C, Rev 3

Low-Profile Platform

Aug 8, 2019 at 11:49 AM

9927.CT11077C_Mod.r3.r3d

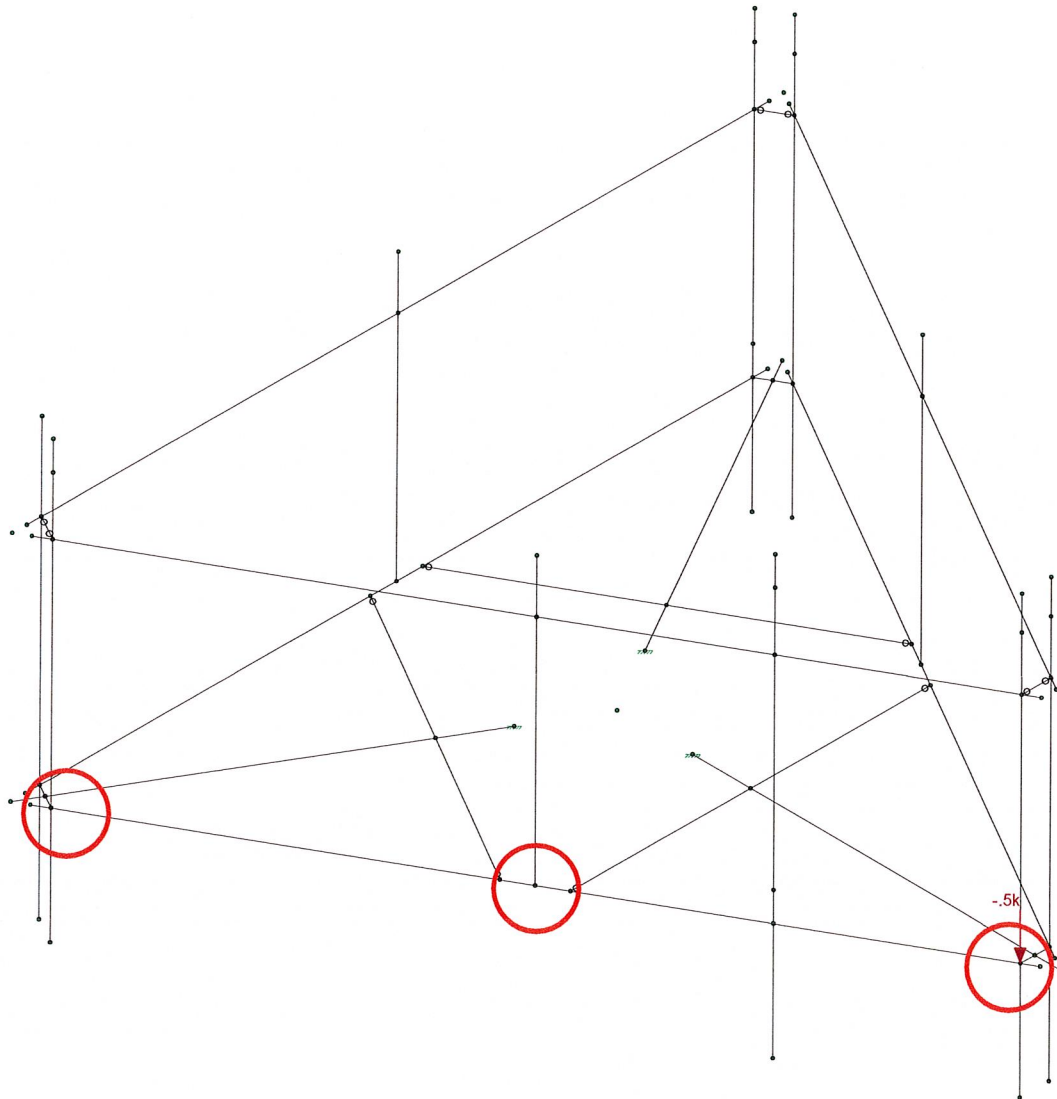


Loads: BLC 8, WLZ (MAINT)

Tectonic
Ian Marinaccio
9927.CT11077C, Rev 3

Low-Profile Platform

Aug 8, 2019 at 11:49 AM
9927.CT11077C_Mod.r3.r3d



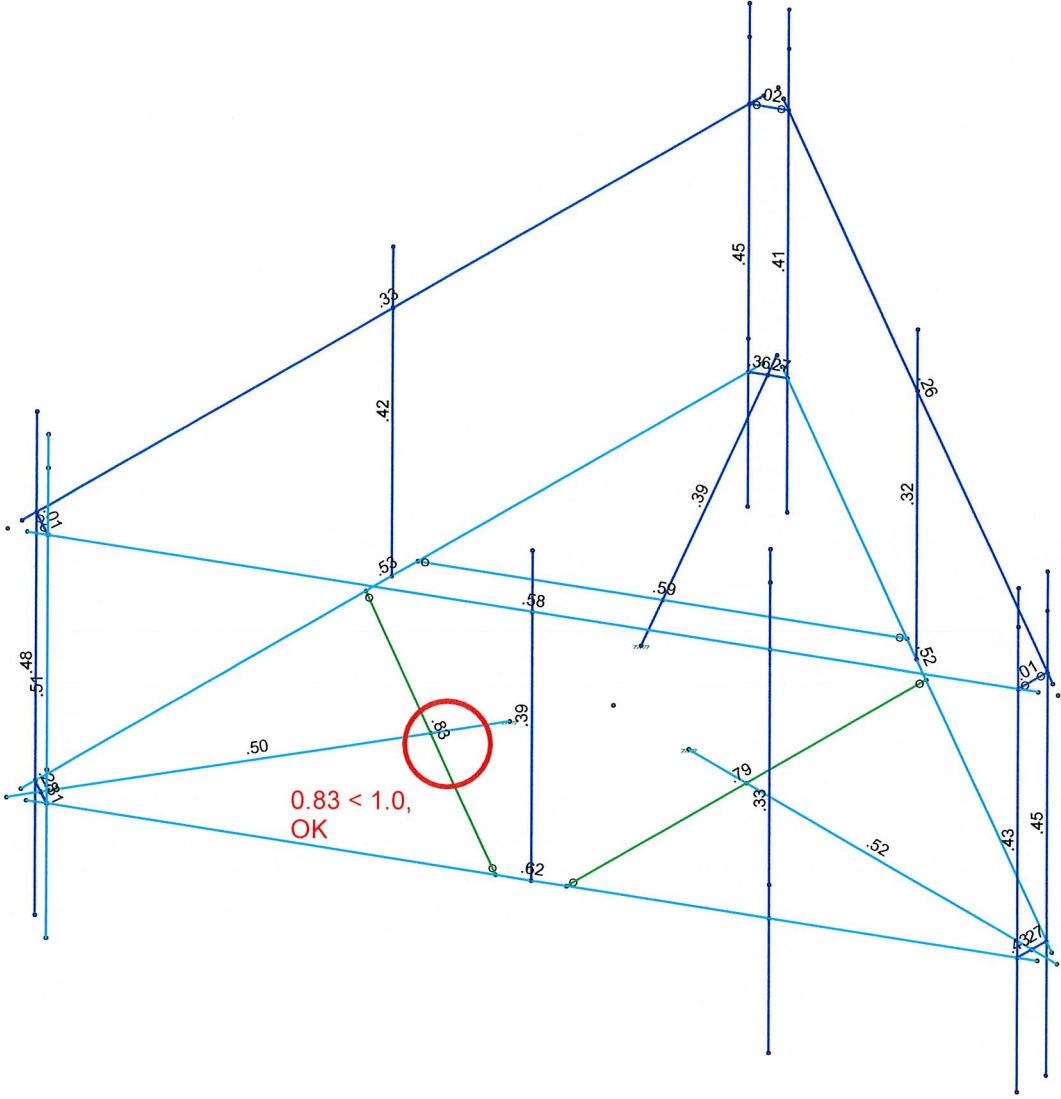
500 lb Man Load
Typ of 3 locations

Loads: BLC 9, Lm1

Tectonic	Low-Profile Platform	
Ian Marinaccio		Aug 8, 2019 at 11:52 AM
9927.CT11077C, Rev 3		9927.CT11077C_Mod.r3.r3d



Code Check (Env)	
No Calc	
> 1.0	
.99-1.0	
.75-.99	
.50-.75	
0-.50	



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic
Ian Marinaccio
9927.CT11077C, Rev 3

Low-Profile Platform

Aug 8, 2019 at 11:49 AM
9927.CT11077C_Mod.r3.r3d



Company : Tectonic
 Designer : Ian Marinaccio
 Job Number : 9927.CT11077C, Rev 3
 Model Name : Low-Profile Platform

Checked By: _____

Load Combinations (Continued)

	Description	Sol..P...	SRSS	BLCFa...	B...	Factor	BLC	Factor	B...	Fact...	B...	Fa...	B...	Fa...	B...	Fa...
29	1.2D+1.0Di+1.0(WLXi+WLZi) - 300 Deg	Yes	Y			1	1.2	4	1	5	.5	6	-.87			
30	1.2D+1.0Di+1.0(WLXi+WLZi) - 330 Deg	Yes	Y			1	1.2	4	1	5	.87	6	-.5			
31	**Maintenance Load (With Service Load)**..		Y													
32	1.2D+1.5Lm1+1.0WLX (service)	Yes	Y			1	1.2	9	1.5	7	1	8				
33	1.2D+1.5Lm1+1.0WLZ (service)	Yes	Y			1	1.2	9	1.5	7		8	1			
34	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 0..	Yes	Y			1	1.2	9	1.5	7	1	8				
35	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	9	1.5	7	.87	8	.5			
36	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 6..	Yes	Y			1	1.2	9	1.5	7	.5	8	.87			
37	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 9..	Yes	Y			1	1.2	9	1.5	7		8	1			
38	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	9	1.5	7	-.5	8	.87			
39	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	9	1.5	7	-.87	8	.5			
40	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	9	1.5	7	-1	8				
41	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	9	1.5	7	-.87	8	-.5			
42	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	9	1.5	7	-.5	8	-.87			
43	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	9	1.5	7		8	-1			
44	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	9	1.5	7	.5	8	-.87			
45	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	9	1.5	7	.87	8	-.5			
46	**Maintenance Load (With Service Load)**..		Y													
47	1.2D+1.5Lm2+1.0WLX (service)	Yes	Y			1	1.2	10	1.5	7	1	8				
48	1.2D+1.5Lm2+1.0WLZ (service)	Yes	Y			1	1.2	10	1.5	7		8	1			
49	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 0..	Yes	Y			1	1.2	10	1.5	7	1	8				
50	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	10	1.5	7	.87	8	.5			
51	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 6..	Yes	Y			1	1.2	10	1.5	7	.5	8	.87			
52	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 9..	Yes	Y			1	1.2	10	1.5	7		8	1			
53	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	10	1.5	7	-.5	8	.87			
54	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	10	1.5	7	-.87	8	.5			
55	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	10	1.5	7	-1	8				
56	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	10	1.5	7	-.87	8	-.5			
57	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	10	1.5	7	-.5	8	-.87			
58	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	10	1.5	7		8	-1			
59	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	10	1.5	7	.5	8	-.87			
60	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	10	1.5	7	.87	8	-.5			
61	**Maintenance Load (With Service Load)**..		Y													
62	1.2D+1.5Lm3+1.0WLX (service)	Yes	Y			1	1.2	11	1.5	7	1	8				
63	1.2D+1.5Lm3+1.0WLZ (service)	Yes	Y			1	1.2	11	1.5	7		8	1			
64	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 0..	Yes	Y			1	1.2	11	1.5	7	1	8				
65	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	11	1.5	7	.87	8	.5			
66	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 6..	Yes	Y			1	1.2	11	1.5	7	.5	8	.87			
67	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 9..	Yes	Y			1	1.2	11	1.5	7		8	1			
68	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	11	1.5	7	-.5	8	.87			
69	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	11	1.5	7	-.87	8	.5			
70	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 1..	Yes	Y			1	1.2	11	1.5	7	-1	8				
71	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	11	1.5	7	-.87	8	-.5			
72	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	11	1.5	7	-.5	8	-.87			
73	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 2..	Yes	Y			1	1.2	11	1.5	7		8	-1			
74	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	11	1.5	7	.5	8	-.87			
75	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 3..	Yes	Y			1	1.2	11	1.5	7	.87	8	-.5			

Hot Rolled Steel Section Sets

Label	Shape	Type	Design List	Material	Desig...	A [in2]	Iyy [i...	Izz [i...	J [in4]
1	L2.5x2.5	L2.5x2.5x3	None	None	A36 Gr.36	Typical	.901	.535	.535 .011
2	C5x9	C5X9	None	None	A36 Gr.36	Typical	2.64	.624	8.89 .109
3	L4x4	L4X4X4	None	None	A36 Gr.36	Typical	1.93	3	3 .044
4	4"Tube	HSS4X4X3	None	None	A500 Gr.B R..	Typical	2.58	6.21	6.21 10
5	2.375" Pipe	HSS2.375X0.154	None	None	A53 Gr.B	Typical	1	.627	.627 1.25



Company : Tectonic
 Designer : Ian Marinaccio
 Job Number : 9927.CT11077C, Rev 3
 Model Name : Low-Profile Platform

Checked By: _____

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Desig...	A [in ²]	I _y [i...]	I _z [i...]	J [in ⁴]
6	New HSs 2.875 x.2...	HSS2.875X0.203	None	None	A53 Gr.B	Typical	1.59	1.45	1.45	2.89
7	Flat	10	None	None	A36 Gr.36	Typical	5	.104	41.667	.404

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N34A	max	1.606	15	2.621	29	2.129	8	1.205	7	1.319	5	1.418	10
2		min	-2.086	9	.165	8	-1.34	14	-5.247	13	-1.459	11	-3.254	2
3	N33A	max	3.4	4	2.466	25	1.54	7	2.037	7	1.488	13	5.674	10
4		min	-2.488	10	.182	2	-1.53	13	-2.619	13	-1.313	3	-1.03	2
5	N32A	max	.944	6	1.984	21	2.116	6	3.763	7	.481	8	1.674	10
6		min	-1.384	12	-.089	12	-2.924	12	-1.179	13	-.533	14	-3.39	2
7	Totals:	max	5.555	4	6.47	30	5.379	7						
8		min	-5.555	10	3.448	2	-5.379	13						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Co...	Loc[ft]	LC	Shear...	Loc[ft]	Dir	LC	phi*...	phi*...	phi*Mn y-y [k-ft]	phi*...	Eqn
1	M1	C5X9	.535	5.844	4	.090	5.977	z	10	6.022	85.5...	1.909	11.0...	H1-...
2	M2	C5X9	.521	6.906	9	.066	6.375	y	13	6.022	85.5...	1.909	10.6...	H1-...
3	M3	C5X9	.621	3.453	12	.128	3.32	y	6	6.022	85.5...	1.909	11.8...	H1-...
4	M4	HSS2.375X0.1...	.332	12.484	13	.135	6.375		14	6.051	31.5	1.872	1.872	H1-...
5	M5	HSS2.375X0.1...	.259	12.484	11	.171	6.375		6	6.051	31.5	1.872	1.872	H1-...
6	M6	HSS2.375X0.1...	.577	9.43	6	.218	12.484		12	6.051	31.5	1.872	1.872	H1-...
7	M12	HSS2.375X0.1...	.320	4.917	5	.154	4.917		5	23.7...	31.5	1.872	1.872	H1-...
8	M16A	HSS4X4X3	.387	6.35	6	.244	6.35	y	4	90.8...	106...	12.662	12.6...	H1-...
9	M17A	HSS4X4X3	.517	6.35	9	.299	6.35	z	13	90.8...	106...	12.662	12.6...	H1-...
10	M18A	HSS4X4X3	.503	6.35	12	.302	6.35	y	12	90.8...	106...	12.662	12.6...	H3-6
11	M19	L4X4X4	.794	3.089	26	.096	3.089	y	12	39.0...	62.5...	3.138	6.028	H2-1
12	M20	L4X4X4	.591	3.089	21	.076	3.024	y	5	39.0...	62.5...	3.138	6.003	H2-1
13	M21	L4X4X4	.829	3.089	29	.095	3.089	y	12	39.0...	62.5...	3.138	6.008	H2-1
14	M26	L2.5x2.5x3	.014	.25	11	.361	0	y	6	28.0...	29.1...	.873	1.972	H2-1
15	M26A	10	.268	0	13	.759	0	y	4	158...	162	1.688	33.75	H1-...
16	M27A	10	.267	.25	9	.814	.25	y	12	158...	162	1.688	33.75	H1-...
17	M28	10	.427	0	5	.914	0	y	7	158...	162	1.688	33.2...	H1-...
18	M30	10	.278	0	4	.927	0	y	12	158...	162	1.688	33.75	H1-...
19	M31	HSS2.375X0.1...	.416	4.917	13	.135	4.917		7	23.7...	31.5	1.872	1.872	H1-...
20	M29A	HSS2.875X0.2...	.447	5.469	10	.108	5.469		11	31.7...	50.0...	3.596	3.596	H1-...
21	M29B	L2.5x2.5x3	.015	.26	5	.351	.5	z	10	28.0...	29.1...	.873	1.972	H2-1
22	M30A	10	.358	.25	11	.751	.25	y	10	158...	162	1.688	33.6...	H1-...
23	M31A	HSS2.875X0.2...	.331	5.469	15	.222	5.469		6	31.7...	50.0...	3.596	3.596	H1-...
24	M31B	HSS2.375X0.1...	.390	4.917	9	.091	4.917		9	23.7...	31.5	1.872	1.872	H1-...
25	M29	L2.5x2.5x3	.014	.271	13	.429	.5	y	6	28.0...	29.1...	.873	1.972	H2-1
26	M30B	10	.314	.25	7	.946	.25	y	5	158...	162	1.688	33.6...	H1-...
27	M31C	HSS2.875X0.2...	.484	5.469	6	.105	5.469		10	31.7...	50.0...	3.596	3.596	H1-...
28	M28A	HSS2.875X0.2...	.453	5.469	6	.096	5.469		5	31.7...	50.0...	3.596	3.596	H1-...
29	M29C	HSS2.875X0.2...	.409	5.469	10	.102	5.469		11	31.7...	50.0...	3.596	3.596	H1-...
30	M30C	HSS2.875X0.2...	.512	5.469	6	.144	5.469		6	31.7...	50.0...	3.596	3.596	H1-...
31	M31D	HSS2.875X0.2...	.431	5.469	6	.220	5.469		6	31.7...	50.0...	3.596	3.596	H1-...

Maximum member stress is at 83% of its capacity; therefore, the existing mount members are adequate to support the proposed installation. In order for the results of this analysis to be valid, a handrail kit (SitePro1 #HRK12, or approved equal) must be installed prior to the installation of the proposed equipment.

Design connection per AISC Steel Manual [LRFD]

Connection Details

Bolts	
Quantity =	4
Diameter =	0.625
Vertical Spacing =	6 in (assumed)
Horizontal Spacing =	6 in (assumed)
Grade =	A325
F_{nt} =	90 ksi
F_{nv} =	54 ksi

Loading Details

Node N33A	
Shear, Z =	1.54 k
Shear, Y =	2.466 k
Tension, X =	2.488 k
Mz =	5.674 k-ft
My =	1.488 k-ft
Mx =	2.619 k-ft
	[Table J3.2]
	[Table J3.2]

1 - Tensile Capacity

$\phi R_{nt} = F_{nt} A_b$	[Eqn. J3-1]
ϕ =	0.75
F_{nt} =	90 ksi
A_b =	0.307 in ²
ϕR_{nt} =	20.72 k
T_{max} =	7.78 k
Rnt > Tmax	OK
	38%

2 - Shear Capacity

$\phi R_{nv} = F_{nv} A_b$	[Eqn. J3-1]
ϕ =	0.75
F_{nv} =	54 ksi
A_b =	0.307 in ²
ϕR_{nv} =	12.43 k
V_{max} =	4.43 k
Rnv > Vmax	OK
	36%

3 - Combined Tension and Shear Capacity

$\phi R'_{nt} = F'_{nt} A_b$	[Eqn. J3-2]
$F'_{nt} = 1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \leq F_{nt}$	[Eqn. J3-3a]
ϕ =	0.75
F'_{nt} =	85 ksi
A_b =	0.307 in ²
$\phi R'_{nt}$ =	19.55 k
T_{max} =	7.78 k
R'nt > Tmax	OK
	40%