June 28, 2022

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

Re:	**Notice of Exempt Modification – Antenna and RRU Add**
Property Address:	**1233 Wolcott Road, Wolcott, CT 06716**
Applicant:	**AT&T Mobility, LLC**

Dear Ms. Bachman:

On behalf of AT&T, please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16- 50j-72(b) (2).

AT&T currently maintains a wireless telecommunications facility consisting of nine (9) wireless telecommunication antennas at an antenna center line height of 185-feet on an existing 350-foot Self Support Tower, owned by SBA Communications Corporation at 8051 Congress Ave, Boca Raton, FL, 33487. AT&T now intendeds to remove one (1) 6' KMW AM-X-CD-16-65-00T-RET Panel Antenna, currently installed in position [1] per Alpha sector only, remove two (2) Kathrein 800-10121, each currently installed in position [1] per Beta & Gamma sectors, remove three (3) 8' KMW EPBQ-65RL8H8-L2 Panel Antennas, currently installed in position [3] on all sectors, remove three (3) 6' CCI PRODUCTS HPA-65R-BUU-H6, currently installed in position [4], on all sectors. AT&T then will add three (3) 8' Quintel QD8616-7 Panel Antennas, each to be installed in position [2] all sectors, add three (3) 2.5' Ericsson AIR6419 B77G (top) and three (3) 2.5' Ericsson AIR6449 B77D (bottom) Stacked Panel Antennas on position [3] for a total of six (6) all sectors, and add three (3) 8' CCI DMP65R-BU8DA Panel Antennas on position [4] all sectors. In addition, AT&T intends to remove three (3) RRUS-11 B12, currently installed on position [4] all sectors, remove three (3) RRUs-4478 B5, currently installed on position [3] all sectors, remove RRUs-32 B2 on position [3], remove three (3) RRUs-4426 B66, currently installed on position [3] all sectors for a total of twelve (12) RRUs. AT&T intends to add three (3) RRUs-4449 B5/B12 in position [4] all sectors, install three (3) RRUs-8843 B2/B66A on position [2] all sectors, install RRUs-4478 B14 on position [2] all sectors, for a total of nine (9) RRUS. AT&T is also removing six (6) 1-5/8" Coax Cables and three (3) #8 AWG DC Power Trunks. AT&T intends to move three (3) existing AT&T Surge Suppressor DC6-48-60-18-8C-EV to position [2] all sectors, install three (3) #6 AWG DC Trunks on all sectors, and add six (6) "Y" Cables. All of the changes will take place on a new antenna mount. This modification/proposal includes B2, B5, and B12 hardware that is both 4G(LTE) and 5GNR capable through remote software configuration and either or both services may be turned on or off at various times

Attached is a summary of the planned modifications including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-5I0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to the Honorable, Mayor Thomas G. Dunn, Mayor, Town of Wolcott and David Kalinowski, Zoning Inspector, Town of Wolcott, CT both at 10 Kenea Ave, Wolcott, CT 06716. A copy of this letter is being sent to the property owner Edward F. Cleary at 50 Beach Road, Wolcott, CT 06716, and the tower owner, SBA Communications Corporation at 8051 Congress Ave, Boca Raton, FL, 33487.

The following is a list of subsequent decisions by the Connecticut Siting Council:

- **EM-AT&T-166-020626** - AT&T Wireless notice of intent to modify an existing telecommunications facility located at 1233 Wolcott Road, **Wolcott**, Connecticut.

- **EM-CING-132-134-152-165-166-070726** – New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 151 Sand Hill Road, South Windsor; 30 Old Country Road, Stafford; 53 Dayton Road, Waterford; 20 Spring Street, Windsor Locks; and 1233 Wolcott Road, **Wolcott**, Connecticut.
- **EM-CING-078-078-080-083-166-070815 -** New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 82 North Eagleville Road, Mansfield; 1725 Stafford Road, Mansfield; 21 West Peak Drive, Meriden; 1969 Saybrook Road, Middletown; and 1233 Wolcott Road, **Wolcott**, Connecticut.
- **EM-AT&T-166-120601 –** AT&T Mobility notice of intent to modify an existing telecommunications facility located at 1233 Wolcott Road, **Wolcott**, Connecticut.
- **EM-CING-166-140826 -** New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1233 Wolcott Road, **Wolcott**, Connecticut.
- **EM-AT&T-166-170712** - AT&T notice of intent to modify an existing telecommunications facility located at 1233 Wolcott Road, **Wolcott**, Connecticut.
- **EM-AT&T-166-181203** - AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 1233 Wolcott Road, **Wolcott**, Connecticut.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b) (2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 185-feet on an existing 350-foot Self Support Tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

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

Sincerely

Kristina Cottone

CC w/enclosures:
Mayor Thomas G. Dunn - Mayor, Town of Wolcott
David Kalinowski, Zoning Inspector - Town of Wolcott, CT
Edward F. Cleary - Property Owner
SBA Communications Corporation – Tower Owner

APPLICATION FOR PLAN EXAMINATION AND BUILDING PERMIT

NO. 1233 STREET WOLCOTT ROAD

IMPORTANT – Applicant to complete all items in sections: I, II, III, IV, and IX.

I. LOCATION OF BUILDING

AT (LOCATION) 1235 (NO.) Wolcott Road 1233 (STREET) ZONING DISTRICT Ind.

BETWEEN Boundline (CROSS STREET) AND Idlewood (CROSS STREET)

SUBDIVISION _____ LOT 119 BLOCK 7-A LOT SIZE 3.970 acres

II. TYPE AND COST OF BUILDING – *All applicants complete Parts A – D*

A. TYPE OF IMPROVEMENT

1 [X] New building
2 [ ] Addition *(If residential, enter number of new housing units added, if any, in Part D, 13)*
3 [ ] Alteration *(See 2 above)*
4 [ ] Repair, replacement
5 [ ] Wrecking *(If multifamily residential, enter number of units in building in Part D, 13)*
6 [ ] Moving (relocation)
7 [ ] Foundation only

B. OWNERSHIP

8 [X] Private (individual, corporation, nonprofit institution, etc.)
9 [ ] Public (Federal, State, or local government)

D. PROPOSED USE – *For "Wrecking" most recent use*

Residential

12 [ ] One family
13 [ ] Two or more family – *Enter number of units* ----→ _____
14 [ ] Transient hotel, motel, or dormitory – *Enter number of units* ----→ _____
15 [ ] Garage
16 [ ] Carport
17 [ ] Other – *Specify* _____

Nonresidential

18 [ ] Amusement, recreational
19 [ ] Church, other religious
20 [ ] Industrial
21 [ ] Parking garage
22 [ ] Service station, repair garage
23 [ ] Hospital, institutional
24 [ ] Office, bank, professional
25 [ ] Public utility
26 [ ] School, library, other educational
27 [ ] Stores, mercantile
28 [XX] Tanks, towers
29 [ ] Other – *Specify* _____

C. COST

	(Omit cents)
10. Cost of improvement	$ 93,000
To be installed but not included in the above cost	
a. Electrical	5,000
b. Plumbing	N/A
c. Heating, air conditioning	N/A
d. Other (elevator, etc.)	N/A
11. TOTAL COST OF IMPROVEMENT	$ 98,000

Nonresidential – Describe in detail proposed use of buildings, e.g., food processing plant, machine shop, laundry building at hospital, elementary school, secondary school, college, parochial school, parking garage for department store, rental office building, office building at industrial plant. If use of existing building is being changed, enter proposed use.

Radio Communications Equipment Storage Buildings and Antenna Support Structure

470.00
5.00
475.00

III. SELECTED CHARACTERISTICS OF BUILDING – *For new buildings and additions, complete Parts E – L; for wrecking, complete only Part J, for all others skip to IV.*

E. PRINCIPAL TYPE OF FRAME

30 [ ] Masonry (wall bearing)
31 [ ] Wood frame
32 [XX] Structural steel
33 [ ] Reinforced concrete
34 [ ] Other – *Specify* _____

F. PRINCIPAL TYPE OF HEATING FUEL

35 [ ] Gas
36 [ ] Oil
37 [X] Electricity
38 [ ] Coal
39 [ ] Other – *Specify* _____

G. TYPE OF SEWAGE DISPOSAL N/A

40 [ ] Public or private company
41 [ ] Private (septic tank, etc.)

H. TYPE OF WATER SUPPLY N/A

42 [ ] Public or private company
43 [ ] Private (well, cistern)

I. TYPE OF MECHANICAL

Will there be central air conditioning?
44 [ ] Yes 45 [XX] No

Will there be an elevator?
46 [ ] Yes 47 [XX] No

J. DIMENSIONS

48. Number of stories	35
49. Total square feet of floor area, all floors, based on exterior dimensions	1225
50. Total land area, sq. ft.	172,938

K. NUMBER OF OFF-STREET PARKING SPACES

51. Enclosed	
52. Outdoors	4

L. RESIDENTIAL BUILDINGS ONLY

53. Number of bedrooms	
54. Number of bathrooms – Full	
54. Number of bathrooms – Partial	

0709

IV. IDENTIFICATION – *To be completed by all applicants*

	Name	Mailing address – *Number, street, city, and State*	ZIP code	Tel. No.
1. Owner or Lessee	AAT Communications Corporation	1854 Hylan Boulevard Staten Island, NY	10305	(718) 979-6600
2. Contractor	Francisco Tower Incorporated	431 East Ellis Street, P.O. Box 249 East Syracuse, NY	Builder's License No. 13057	(315) 437-3059
3. Architect or Engineer	Charles L. Burns	431 East Ellist Street, P.O. Box 249 East Syracuse, NY	13057	(315) 446-3114

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and we agree to conform to all applicable laws of this jurisdiction.

Signature of applicant	Address	Application date
[signature]	1854 Hylan Blvd S.I. NY 10305	11/6/91

DO NOT WRITE BELOW THIS LINE

V. PLAN REVIEW RECORD – *For office use*

Plans Review Required	Check	Plan Review Fee	Date Plans Started	By	Date Plans Approved	By	Notes
BUILDING		$					
PLUMBING		$					
MECHANICAL		$					
ELECTRICAL		$					
OTHER _____		$					

VI. ADDITIONAL PERMITS REQUIRED OR OTHER JURISDICTION APPROVALS

Permit or Approval	Check	Date Obtained	Number	By	Permit or Approval	Check	Date Obtained	Number	By
BOILER					PLUMBING				
CURB OR SIDEWALK CUT					ROOFING				
ELEVATOR					SEWER				
ELECTRICAL					SIGN OR BILLBOARD				
FURNACE					STREET GRADES				
GRADING					USE OF PUBLIC AREAS				
OIL BURNER					WRECKING				
OTHER _____					OTHER _____				

VII. VALIDATION

David.BarBagallo@SmartLink LLC.com

Building Permit number _____

Building Permit issued _____ 19____

Building Permit Fee $ _____

Certificate of Occupancy $ _____

Drain Tile $ _____

Plan Review Fee $ _____

FOR DEPARTMENT USE ONLY

Use Group _____

Fire Grading _____

Live Loading _____

Occupancy Load _____

Approved by: Kenneth Smoil

_____
TITLE

DATE November 22, 1991

ZONING PERMIT FEE.....$25.00

WOLCOTT PLANNING AND ZONING COMMISSION

DATE November 22, 1991 PERMIT NO. 3024

A zoning permit is hereby granted to AAT CommunicationsCorp. Lessee (Edward Cleary owner)
1233 ~~1235~~ Wolcott Rd. To install a radio communications equipement storage building and antenna support structure.
authorizing building construction and site development activities in accordance with Application for Zoning Permit# 3024 approved by the Zoning Enforcement Officer on November 22,1991

Signed: L. P. Lyon

NOTE: 1. Site plan and Special Permits approved by the Planning and Zoning Commission and Variances granted by the Zoniing Board of Appeals may have been approved or granted subject to conditions, which conditions are also conditions of approval of the Zoning Permit.

2. After completion of any construction and improvements and Prior to the use or occupancy of the premises, a Certificate of Zoning Compliance must be obtained. Such a Certificate of Zoning Compliance must also be obtained prior to a change of use of an existing premises.

OWNER EDWARD CLEARY DATE September 4, 1991

ADDRESS 50 Beach Road, Wolcott, CT TELEPHONE 879-4987

APPLICANT AAT Communications Corporation

ADDRESS 1854 Hylan Blvd., Staten Island, NY 10305 TELEPHONE 1-718-979-6600

The undersigned hereby makes application for a Zoning Permit under the Zoning Regulations of the Town of Wolcott for one or more of the following:

X Use of Land ____ Sign ____ Parking Area

____ Change of use of existing building or structure

____ Outside storage area

X Proposed building or structure and use thereof

____ Change of existing building or storage & use thereof

Zoning District Industrial Address 1235 Wolcott Road, Wolcott

Location: On North side of Wolcott (Street) between Boundline

and Idlewood Town Road: Accepted ____ Unaccepted ____

Description of Proposal Erection and use of antenna support structure (tower) and communication equipment storage building

____ Plan Drawing Attached

*** I attest to the accuracy of information submitted on this application and agree t comply with all regulations of the Town c Wolcott

Date ____ Sign ____

Date September 4, 1991 Authorized Agent William F. Tynan

Sanitation Approval

Chesprocott Health District

by ____

Application Approved ____ Date ____

Sewer & Water Department Approval ____ Date ____

Comments ____

By ____ Date 9/5/91

____ Decision of Zoning Enforcement Officer ____ Site Plan Approval ✓

____ Special Permit Approval ____ Variance or other Approval ____

Zoning Permit # ____ Issued on ____

Application disapproved on ____ because of the following ____

Assessor's Map # 119 Parcel # 7-A

Subdivision, if any: Title _____ Lot #

Inland Wetland Area: Yes: _____ No: _____ Flood Hazard Area: Yes _____

Proposed Use Buildings and Structures

Proposed Use: (Cite from Article 3) Relay towers and facilities - Section 3.1; Part B; B.3

The proposed use is permitted

_____ As matter of right

_____ With Site Plan approval

_____ By Special Permit

_____ Other (describe)

Proposed buildings and structures (for proposals with several buildings, attach appropriat tabulation.

Total floor area for each dwelling unit _____

Total ground coverage of buildings as % of lot _____

Total floor area of all buildings _____

Number of stories _____

Maximum height _____

*****SETBACKS***** Front Yard _____ Rear Yard _____ Side Yard _____ ***** Side Yard _____

If applicable, do plan drawings show off-street parking and loading, outside yard _____

Site development and landscaping, signs, driveway locations?

Parking _____ Yes _____ No

Outside Storage _____ Yes _____ No

Landscaping, etc. _____ Yes _____ No

Signs _____ Yes _____ No

Driveway Location _____ Yes _____ No

As per Article 7, Section 3, Paragraph 3.6.1., Staking is required prior to issuing Zoning Permit.

STATEMENT OF USE

Antenna Support Structure (350 feet in height) and accessory radio communication equipment storage building (15 x 40) for the location of one way and two way radio equipment and related antenna.

TOWN OF WOLCOTT BUILDING PERMIT
OFFICE OF THE BUILDING INSPECTOR

BUILDING PERMIT

DEPT. FILE COPY

AMOUNT PAID

VALIDATION

DATE November 22, 19 91 PERMIT NO. 6969

APPLICANT AAT Communications Inc. ADDRESS 1854 Hylan Boulevard, Staten Island, NY
(NO.) (STREET) (CONTR'S LICENSE)

PERMIT TO install radio tower etc/) STORY NUMBER OF DWELLING UNITS
(TYPE OF IMPROVEMENT) NO. (PROPOSED USE)

AT (LOCATION) 1235 Wolcott Road #1233 ZONING DISTRICT
(NO.) (STREET)

BETWEEN (CROSS STREET) AND (CROSS STREET)

SUBDIVISION LOT BLOCK LOT SIZE

BUILDING IS TO BE FT. WIDE BY FT. LONG BY FT. IN HEIGHT AND SHALL CONFORM IN CONSTRUCTION

TO TYPE 1-8 USE GROUP 22 BASEMENT WALLS OR FOUNDATION
(TYPE)

REMARKS: radio communications equipement storage buildings and antenna support structure

AREA OR VOLUME (CUBIC/SQUARE FEET) ESTIMATED COST $ 98,000.00 PERMIT FEE $ 475.00

OWNER AAT Communications Inc. Lessee (Edward Cleary) (Owner)

ADDRESS 1235 Wolcott Road Wolcott, CT 06716
see address abive.

BUILDING DEPT. BY Kenneth Smith

(Affidavit on reverse side of application to be completed by authorized agent of owner)

FORM NO. BOCA-BP 1969

1233 WOLCOTT RD

Location	1233 WOLCOTT RD	**Mblu**	119/ 3/ 7/ /
Acct#	C0109000	**Owner**	CLEARY EDWARD F
Assessment	$421,000	**Appraisal**	$601,400
PID	1226	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$258,370	$343,030	$601,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$180,870	$240,130	$421,000

Owner of Record

Owner	CLEARY EDWARD F	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	50 BEACH RD WOLCOTT, CT 06716	**Book & Page**	0192/0018
		Sale Date	02/28/1990
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CLEARY EDWARD F	$0		0192/0018	25	02/28/1990

Building Information

Building 1 : Section 1

Year Built:	1999
Living Area:	4,000
Replacement Cost:	$161,820
Building Percent Good:	87
Replacement Cost Less Depreciation:	$140,780

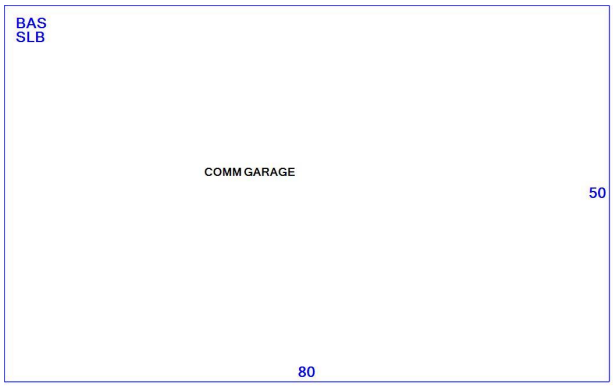
Building Attributes

Field	Description
Style:	Comm Garage
Model	Comm/Ind
Grade	D
Stories:	1
Occupancy	3.00
Exterior Wall 1	Pre-finish Metl
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Metal
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Hot Air
AC %	0
Foundation	Poured Conc
Bldg Use	Commercial
Total Rooms	0
Total Bedrms	0
Total Fixtures	0
Perimeter	260
SF Fin Bsmt	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	STEEL
Baths/Plumbing	LIGHT
Ceiling/Wall	NONE
Rooms/Prtns	LIGHT
Wall Height	14.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos/WolcottCTPhotos//\00\01\12\49.jpg)

Building Layout



(ParcelSketch.ashx?pid=1226&bid=1226)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	4,000	4,000
SLB	Slab	4,000	0
		8,000	4,000

Building 2 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes : Bldg 2 of 2	
Field	Description

Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
SF Rec Rm	
Fin Bsmt Qual	
Bsmt Access	
Fndtn Cndtn	
Basement	

Building Photo

(https://images.vgsi.com/photos/WolcottCTPhotos//\00\01\12\50.jpg)

Building Layout

Building Layout (ParcelSketch.ashx?pid=1226&bid=20020)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	201
Description	Commercial
Zone	GC
Neighborhood	C150
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	7.04
Frontage	
Depth	
Assessed Value	$240,130
Appraised Value	$343,030

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CELL	Cell	SH	Cell Shed	450.00 S.F.	$60,750	2
CELL	Cell	SH	Cell Shed	200.00 S.F.	$27,000	2
PAV1	Paving	AS	Asphalt	31500.00 S.F.	$27,560	1
FN4	FENCE-8' CHAIN			240.00 L.F.	$2,280	2

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$255,360	$332,280	$587,640
2019	$255,360	$332,280	$587,640
2018	$255,360	$332,280	$587,640

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$178,760	$232,600	$411,360
2019	$178,760	$232,600	$411,360
2018	$178,760	$232,600	$411,360

Radio Frequency Safety Survey Report Predictive (RFSSRP) Prepared For AT&T

Site Name:	WOLCOTT-NORTH
FA#	10041812
USID:	26036
Site ID:	CTL01111
Address:	1233 WOLCOTT ROAD WOLCOTT, CT 06716
County:	NEW HAVEN
Latitude:	41.6215731
Longitude:	-72.9736319
Structure Type:	SELF SUPPORT
Property Owner:	NA
Pace Job:	MRCTB053996
RFDS Technology	5G NR 1SR CBAND

Report Information

Report Writer: Parul

Report Generated Date: 06-06-2022

Compliance Statement

AT&T Mobility Compliance Statement: Based on the information collected, AT&T Mobility will be Compliant when the remediation recommended in section 5 or appropriate remediation determined by AT&T is implemented

Table of Contents

1. Executive Summary

1.1 Site Summary

Max Predictive Spatial Average MPE% & Location on Site (General Public)	17208.20% on Antennas Centerline Level & at AT&T Sec-B antenna no. #B3-2
Max Predictive Spatial Average MPE% on Ground (General Public)	0.57%
AT&T Mobility Site Compliance	AT&T Mobility will be Compliant by implementing remediation recommended as per section 5 in this report.

TABLE 1: Site Summary

1.2 Signage Summary (Proposed)

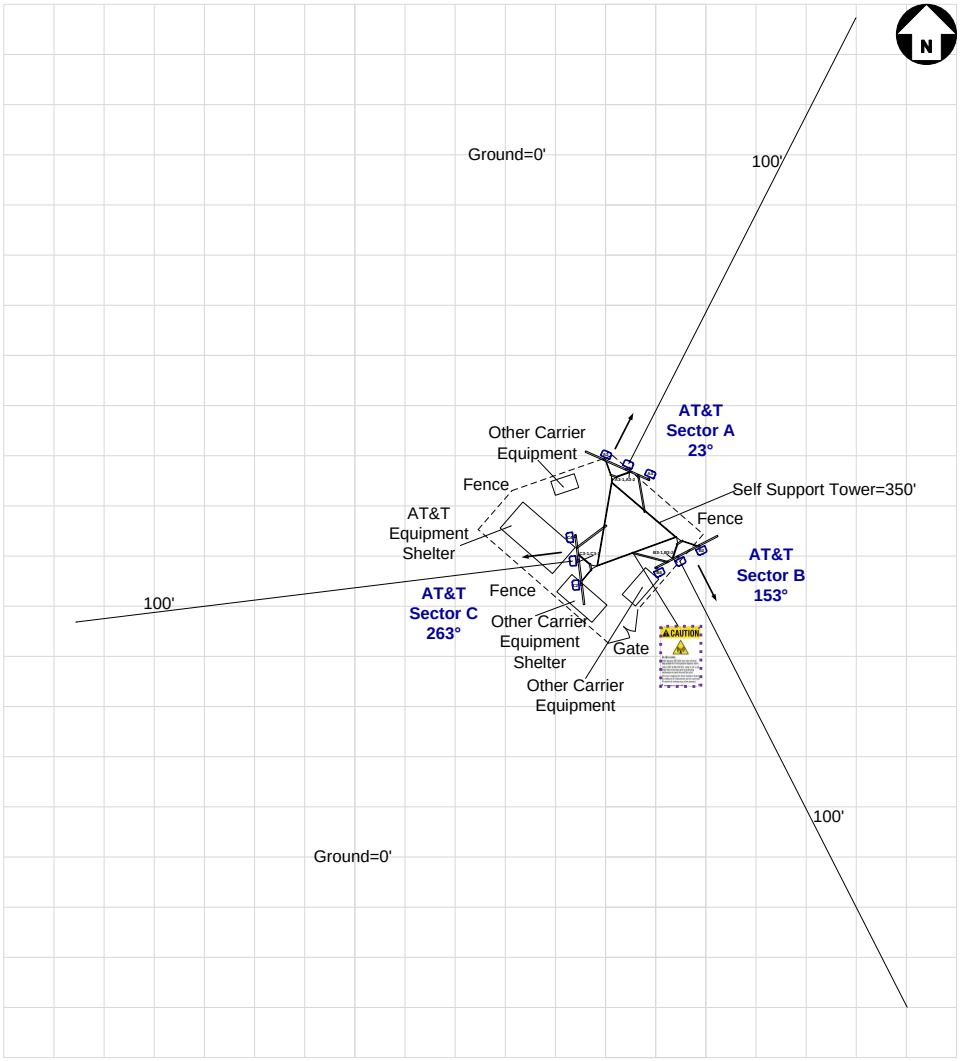
AT&T Signage Locations	Sign Type									
	Safety Instructions	Notice Sign 2	Caution Sign 2	Caution Sign 2B	Caution Sign 2C	Caution 7"x7"	Warning Sign 1B	RF Exposure Map	Lock	Barriers
Access Point(s)				1						
Alpha										
Beta										
Gamma										

TABLE 2: Signage Summary (Proposed)

1.3 List of Documents used to prepare this Report

- 10041812_AE201_220324_CTL01111_Rev1_5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, BBU RECONFIG.5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS
- NEW-ENGLAND_CONNECTICUT_CTV1111_2021-5G-NR-Radio_5G-NR-1SR-CBAND_pn5165_PTN_10041812_26036_11-01-2021_Final-Approved_v4.00

2. Site Scale Map



AT&T Antenna	Proposed	Proposed Signage									
Panel	Barrier	Safety Instructions	Notice 2	Caution 2	Caution 2B	Caution 2C	Caution 7"x7"	Warning 1B	RF Exposure Map	Lock	***Map Scale = 10 ft***
OMNI	Posts										

3. Antenna Inventory

Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (0)	HBW (0)	Antenna Gain (dBd)	Antenna Aperture (ft)	Transmitter Power (Watts)	Total Loss (dB)	Total ERP (Watts)	Total EIRP (Watts)
A2	AT&T	Quintel	QD8616-7	Panel	700	LTE(B29)	23	72	12.75	8	60.00	0.5	1007.28	1652.54
A2	AT&T	Quintel	QD8616-7	Panel	700	LTE(FN)	23	72	12.75	8	120.00	0.5	2014.56	3305.07
A2	AT&T	Quintel	QD8616-7	Panel	1900	LTE/5G	23	62	15.05	8	120.00	0.5	3421.22	5612.82
A2	AT&T	Quintel	QD8616-7	Panel	2100	LTE/5G	23	62	15.35	8	120.00	0.5	3665.91	6014.25
A3-1	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	23	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
A3-2	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	23	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
A4	AT&T	CCI	DMP65R-BU8D	Panel	700	LTE(B12)	23	75	12.95	8	120.00	0.5	2109.51	3460.84
A4	AT&T	CCI	DMP65R-BU8D	Panel	850	5G	23	64	13.85	8	120.00	0.5	2595.26	4257.76
A4	AT&T	CCI	DMP65R-BU8D	Panel	2300	LTE	23	64	15.95	8	75.00	0.5	2630.64	4315.80
B2	AT&T	Quintel	QD8616-7	Panel	700	LTE(B29)	153	72	12.75	8	60.00	0.5	1007.28	1652.54
B2	AT&T	Quintel	QD8616-7	Panel	700	LTE(FN)	153	72	12.75	8	120.00	0.5	2014.56	3305.07
B2	AT&T	Quintel	QD8616-7	Panel	1900	LTE/5G	153	62	15.05	8	120.00	0.5	3421.22	5612.82
B2	AT&T	Quintel	QD8616-7	Panel	2100	LTE/5G	153	62	15.35	8	120.00	0.5	3665.91	6014.25
B3-1	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	153	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
B3-2	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	153	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
B4	AT&T	CCI	DMP65R-BU8D	Panel	700	LTE(B12)	153	75	12.95	8	120.00	0.5	2109.51	3460.84
B4	AT&T	CCI	DMP65R-BU8D	Panel	850	5G	153	64	13.85	8	120.00	0.5	2595.26	4257.76
B4	AT&T	CCI	DMP65R-BU8D	Panel	2300	LTE	153	64	15.95	8	75.00	0.5	2630.64	4315.80

Table 3.1: Antenna Inventory Table

Note: **^ Mechanical Tilt value of "0°" MUST be retained for C-BAND and/or DoD AAS antenna(s) at all times to ensure that "EME (Predictive) Study" shall remain valid.**
* 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor[1] are used to calculate Transmitter Power & ERP/EiRP

Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (0)	HBW (0)	Antenna Gain (dBd)	Antenna Aperture (ft)	Transmitter Power (Watts)	Total Loss (dB)	Total ERP (Watts)	Total EIRP (Watts)
C2	AT&T	Quintel	QD8616-7	Panel	700	LTE(B29)	263	72	12.75	8	60.00	0.5	1007.28	1652.54
C2	AT&T	Quintel	QD8616-7	Panel	700	LTE(FN)	263	72	12.75	8	120.00	0.5	2014.56	3305.07
C2	AT&T	Quintel	QD8616-7	Panel	1900	LTE/5G	263	62	15.05	8	120.00	0.5	3421.22	5612.82
C2	AT&T	Quintel	QD8616-7	Panel	2100	LTE/5G	263	62	15.35	8	120.00	0.5	3665.91	6014.25
C3-1	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	263	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
C3-2	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	263	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
C4	AT&T	CCI	DMP65R-BU8D	Panel	700	LTE(B12)	263	75	12.95	8	120.00	0.5	2109.51	3460.84
C4	AT&T	CCI	DMP65R-BU8D	Panel	850	5G	263	64	13.85	8	120.00	0.5	2595.26	4257.76
C4	AT&T	CCI	DMP65R-BU8D	Panel	2300	LTE	263	64	15.95	8	75.00	0.5	2630.64	4315.80

Table 3.2: Antenna Inventory Table

Note: **^ Mechanical Tilt value of "0°" MUST be retained for C-BAND and/or DoD AAS antenna(s) at all times to ensure that "EME (Predictive) Study" shall remain valid.**

* 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor[1] are used to calculate Transmitter Power & ERP/EiRP

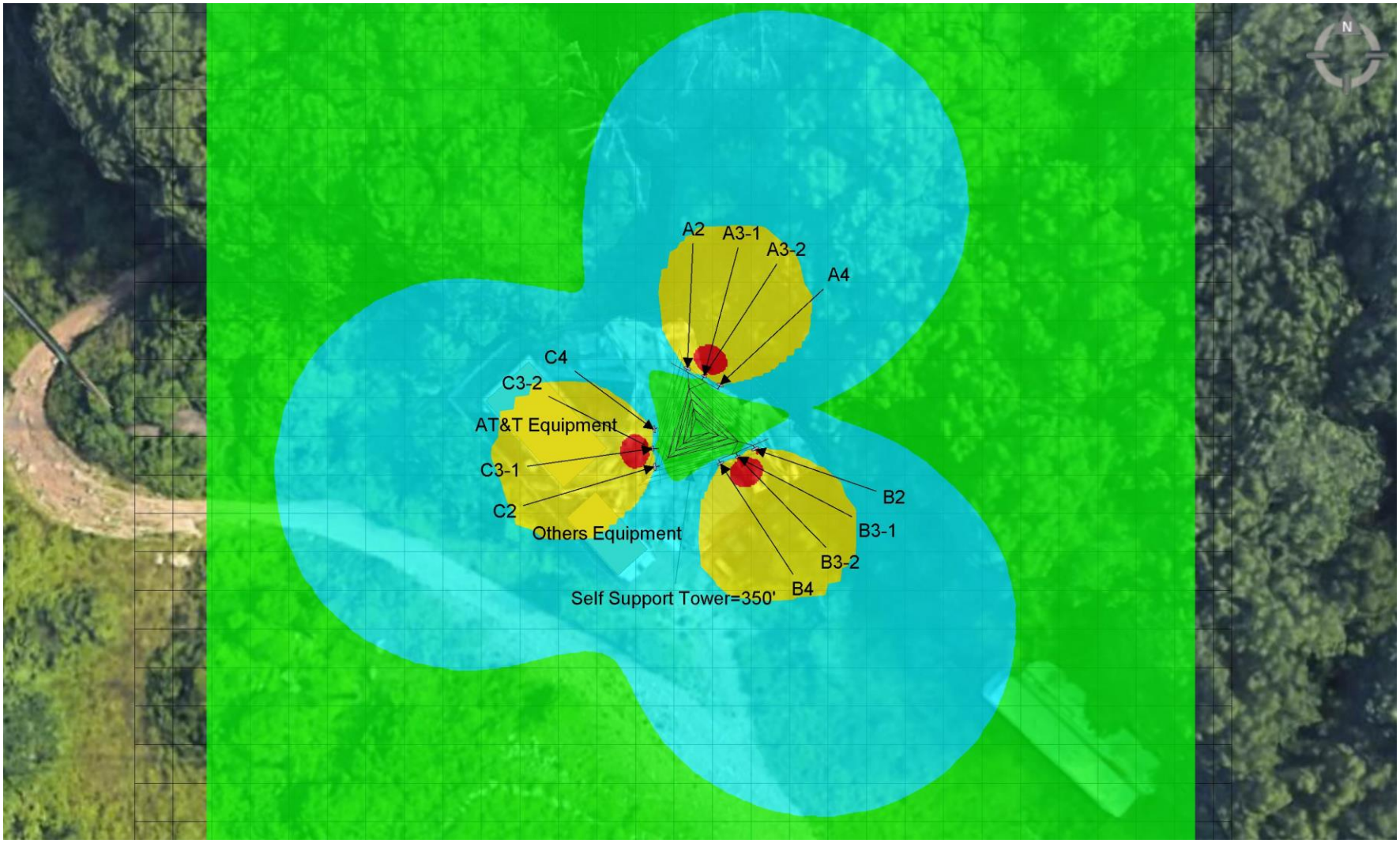
Antenna Heights (Z)

Ant ID	Operator	Antenna Radiation Centerline	Z-Height from Ground
A2	AT&T	184.66	180.66
A3-1	AT&T	186.44	185.16
A3-2	AT&T	182.89	181.61
A4	AT&T	184.66	180.66
B2	AT&T	184.66	180.66
B3-1	AT&T	186.44	185.16
B3-2	AT&T	182.89	181.61
B4	AT&T	184.66	180.66
C2	AT&T	184.66	180.66
C3-1	AT&T	186.44	185.16
C3-2	AT&T	182.89	181.61
C4	AT&T	184.66	180.66

Table 3.3: Antenna Height(s) Summary Table

4. Predicted Emission

4.1 Predictive Cumulative MPE Contribution from All Sources at Antennas Centerline Level (184.66 ft.)



Max. Predictive Spatial Average MPE% = **17208.20%**

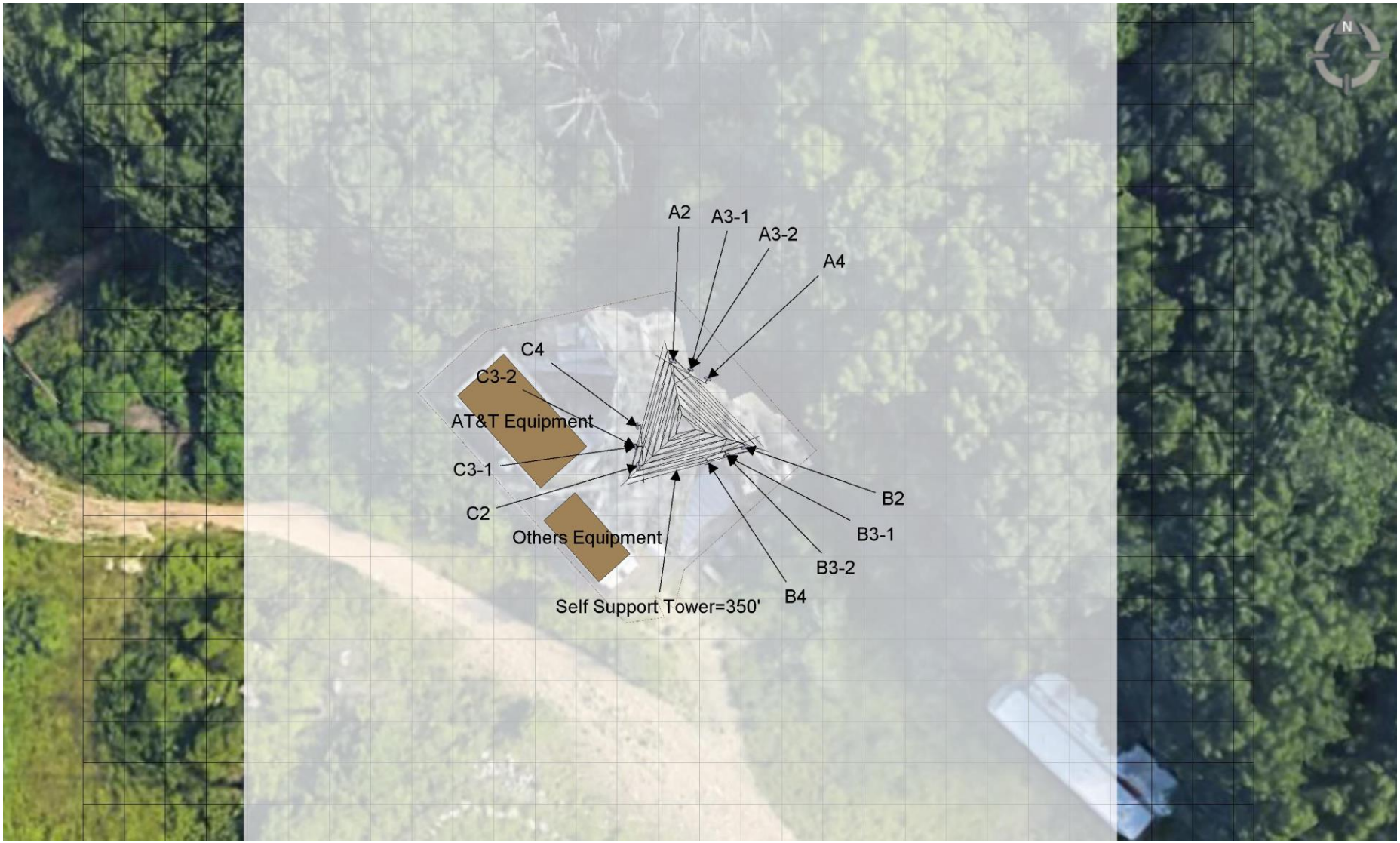
Proposed Barrier
Proposed Posts

% of FCC General Public Exposure Limit (Predictive Spatial Average)

Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Map Scale = 10 ft

4.2 Predictive Cumulative MPE Contribution from All Sources at Ground Level (0 ft.)



Max. Predictive Spatial Average MPE% = **0.57%**

Proposed Barrier
Proposed Posts

% of FCC General Public Exposure Limit (Predictive Spatial Average)

Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Map Scale = 10 ft

5. Statement of Compliance

5.1 Statement of AT&T Mobility Compliance

At the time of our Analysis, AT&T Mobility is required to take action to fulfill their Obligations to comply with the FCC's mandate as defined in OET-65

Recommendations

AT&T Alpha Sector:

- No actions required.

AT&T Beta Sector:

- No actions required.

AT&T Gamma Sector:

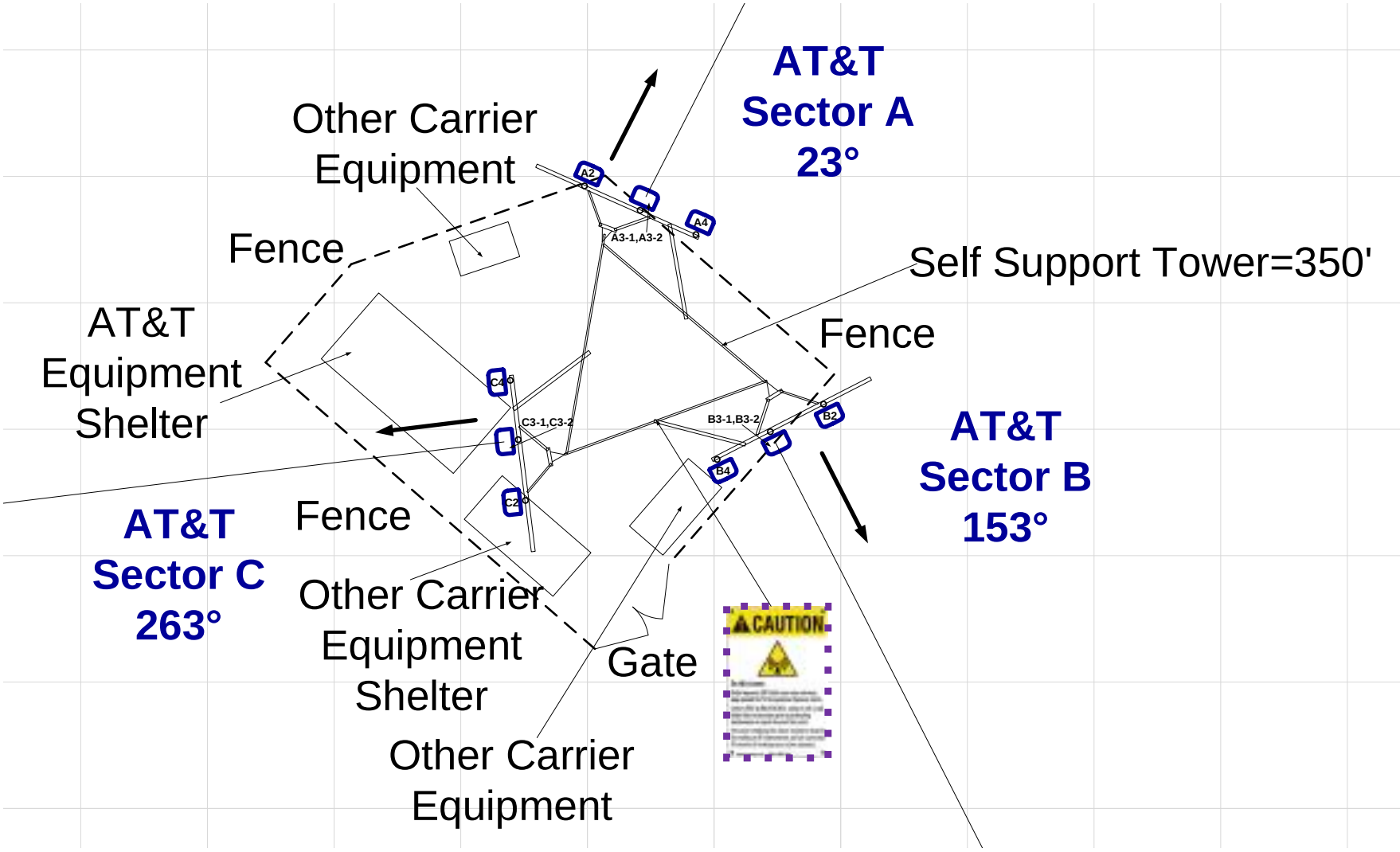
- No actions required.

Tower:

- One Caution 2B Sign to be posted at the climbing access, facing outwards so approaching people can see as shown in "Recommendations Map – Detailed View" on page 11. (1 Total Sign)

Recommendations Map – Detailed View

AT&T Alpha, Beta & Gamma Sectors



AT&T Antenna	Proposed	Proposed Signage									
Panel	Barrier	Safety Instructions	Notice 2	Caution 2	Caution 2B	Caution 2C	Caution 7"x7"	Warning 1B	RF Exposure Map	Lock	***Map Scale = 10 ft***
OMNI	Posts										

Appendix A – Statement of Limiting Conditions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at full power at all times. AT&T has further recommended to assume a 75% duty cycle of maximum radiated power for all LTE & 5G carriers (& consider 100% duty cycle for all UMTS carriers).

In this site compliance report, it is assumed that Mechanical Tilt value of "0°" MUST be retained for C-BAND and/or DoD AAS^ antenna(s) at all times to ensure that "EME (Predictive) Study" shall remain valid.

AT&T recommended to consider - For C-BAND and/or DoD AAS^ antenna(s) 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor[1] are used to calculate Transmitter Power & ERP/EiRP.

AT&T recommended to use worst-case tilts for the simulations.

***Power Reduction Factor**: IEC Standard 62232: 2017 allows for a statistically conservative power density model to more realistically define the RF exposure area. AT&T recommends a "0.32" factor to calculate the "Actual Maximum" (time averaged) power value, which accounts for "Beam Scanning," "Scheduling," and "RBS Utilization" This recommended value is a conservative figure modelled and supported by other vendors and through measurements published in scientific articles and white papers by IEEE and others. Those publication are listed below:*

1. IEEE Access, Time-Averaged Realistic Maximum Power Levels for the Assessment of RF Exposure for 5G Radio Base Stations Using Massive MIMO (Published Sept. 18, 2017 / BJÖRN THORS, ANDERS FURUSKÄR, DAVIDE COLOMBI, AND CHRISTER TÖRNEVIK)
2. IEEE Explore, A Statistical Approach for RF Exposure Compliance Boundary Assessment in Massive MIMO Systems (Published Jan. 25, 2018 / Paolo Baracca, Andreas Weber, Thorsten Wild, Christophe Grangeat)
3. IEEE Access, In-situ Measurement Methodology for the Assessment of 5G NR Massive MIMO Base Station Exposure at Sub-6 GHz Frequencies (Published Dec. 20, 2019 / SAM AERTS, LEEN VERLOOCK, MATTHIAS VAN DEN BOSSCHE, DAVIDE COLOMBI, LUC MARTENS, CHRISTER TÖRNEVIK AND WOUT JOSEPH)
4. Applied Sciences, Analysis of the Actual Power and EMF Exposure from Base Stations in a Commercial 5G Network (Published July 30, 2020 / Davide Colombi, Paramananda Joshi, Bo Xu, Fatemeh Ghasemifard, Vignesh Narasaraju and Christer Törnevik)
5. Ofcom Technical Report, Electromagnetic Field (EMF) measurements near 5G mobile phone base stations (Published Feb. 21, 2020 / Davide Colombi, Paramananda Joshi, Bo Xu, Fatemeh Ghasemifard, Vignesh Narasaraju and Christer Törnevik)

MobileComm believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor). Thus, at any time, if power density measurements were made, we believe the real time measurements would indicate levels below those depicted in the RF emission diagram(s) in this report. By modelling in this way, MobileComm has conservatively shown exclusion areas – areas that should not be entered without the use of a personal monitor, carriers reducing power, or performing real-time measurements to indicate real-time exposure levels.

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Other Carrier" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, MobileComm will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, MobileComm uses the closest frequency in the antenna's range that corresponds to the highest Maximum Exposure Limit (MPE), resulting in a conservative analysis.

Appendix B – FCC Guidelines and Emissions Threshold Limits

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (µW/cm2). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 µW/cm2 and 567 µW/cm2 respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 µW/cm2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, have been properly trained in RF safety and can exercise control over their exposure. Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

Appendix C – Rules & Regulations

Explanation of Applicable Rules and Regulations

FCC has set forth guidelines in OET Bulletin 65 for human exposure to radio frequency electromagnetic fields. Currently, there are two different levels of MPE - General Public MPE and Occupational MPE. An individual classified as Occupational can be defined as an individual who has received appropriate RF training and meets the conditions outlined below. General Public is defined as anyone who does not meet the conditions of being Occupational. FCC Rules and Regulations define compliance in terms of total exposure to total RF energy, regardless of location of or proximity to the sources of energy.

It is the responsibility of all licensees to ensure these guidelines are maintained at all times. It is the ongoing responsibility of all licensees composing the site to maintain ongoing compliance with FCC rules and regulations.

A building owner or site manager can use this report as part of an overall RF Health and Safety Policy. It is important for building owners/site managers to identify areas in excess of the General Population MPE and ensure that only persons qualified as Occupational are granted access to those areas.

Occupational Environment Explained

The FCC definition of Occupational exposure limits apply to persons who:

- *are exposed to RF energy as a consequence of their employment;*
- *have been made aware of the possibility of exposure; and*
- *can exercise control over their exposure.*

FCC guidelines go further to state that persons must complete RF Safety Awareness training and must be trained in the use of appropriate personal protective equipment.

In order to consider this site an Occupational Environment, the site must be controlled to prevent access by any individuals classified as the General Public. Compliance is also maintained when any non-occupational individuals (the General Public) are prevented from accessing areas indicated as Red or Yellow in the attached RF Emissions diagram. In addition, a person must be aware of the RF environment into which they are entering. This can be accomplished by an RF Safety Awareness class, and by appropriate written documentation such as this Site Compliance Report.

Appendix D – General Safety Recommendations

The following are general recommendations appropriate for any site with accessible areas in excess of 100% General Public MPE. These recommendations are not specific to this site. These are safety recommendations appropriate for typical site management, building management, and other tenant operations.

1. All individuals needing access to the main site should be instructed to read and obey all posted placards and signs.

2. The site should be routinely inspected and this or similar report updated with the addition of any antennas or upon any changes to the RF environment including:

- *adding new antennas that may have been located on the site*
- *removing of any existing antennas*
- *changes in the radiating power or number of RF emitters*

3. Post the appropriate SAFETY INSTRUCTIONS, NOTICE, CAUTION & WARNING sign at the main site access point(s) and other locations as required. Note: Please refer to RF Exposure Diagrams in the report section above, to inform everyone who has access to this site that beyond posted signs there may be levels in excess of the limits prescribed by the FCC. The signs below are examples of signs meeting FCC guidelines.

4. Ensure that the site door remains locked (or appropriately controlled) to deny access to the general public if deemed as policy by the building/site owner.

5. For a General Public environment the five color levels identified in measured RF emission diagram can be interpreted in the following manner:

- *White represents areas predicted to be greater than or equal to 0% and less than 1% of the MPE general public limits*
- *Green represents areas predicted to be greater than or equal to 1% and less than 100% of the MPE general public limits*
- *Blue represents areas predicted to be greater than or equal to 100% and lesser than 500% of the MPE general public limits.*
- *Yellow represents areas predicted to be greater than or equal to 500% and lesser than 5000% of the MPE general public limits.*
- *Red areas indicates predicted levels greater than or equal to 5000% of the MPE general public limits.*

Appendix E – References

1 - FCC Definition

FCC defines an Occupational or Controlled environment as one where persons are exposed to RF fields as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Typical criteria for an Occupational or Controlled environment is restricted access (i.e. locked doors, gates, etc.) to areas where antennas are located coupled with proper RF warning signage.

FCC defines a site as a General Public or Uncontrolled environment when human exposure to RF fields occurs to the general public or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over the exposure. Typical criteria for a General Public or Uncontrolled environment are unrestricted access (i.e. unlocked or no restrictions) to areas where antennas are located without proper RF warning signage being posted.

2 - Physical Testing measurement procedure and Tools

The Narda Broadband Field Meter NBM-550 can make rapid conformance measurements with evaluation in the time domain when used in conjunction EA5091 probe. This probe is a so-called Shaped Probe, i.e. it is frequency weighted so that it automatically takes account of the FCC Occupational limit values. To collect data, the probe is pointed towards the potential source(s) of EME radiation and moved slowly from ground level up to slightly above head height (approx. 6 ft).

Spatial Average Measurement A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy an average sized human body will absorb while present in an electromagnetic field of energy.

3 - Site Safety Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: *Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.*

Training and Qualification Verification: *All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).*

Physical Access Control: *Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:*

- *Locked door or gate*
- *Alarmed door*
- *Locked ladder access*
- *Restrictive Barrier at antenna locations (e.g. Chain link with posted RF Sign)*

RF Signage: *Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.*

Assume all antennas are active: *Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.*

Maintain a 3 foot clearance from all antennas: *There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.*

Rooftop RF Emissions Diagram: *Section 4 of this report contains an RF Emissions Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas on the rooftop. This analysis is all theoretical and assumes a duty cycle of 75% for each transmitting antenna at full power. This analysis is a worst case scenario. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.*

4 - Definitions

Compliance- *The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.*

Decibel (dB) – *A unit for measuring power or strength of a signal.*

Duty Cycle – *The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 75% corresponds to continuous operation.*

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – *The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna, this product is divided by the cable losses*

Effective Radiated Power (ERP) – *In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.*

Gain (of an antenna in dbd) – *The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from a reference dipole. Gain is a measure of the relative efficiency of a directional antennas as compared to a reference dipole.*

General Population/Uncontrolled Environment – *Defined by the FCC, as an area where RFR exposure may occur to persons who are unaware of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.*

Generic Antenna – *For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, MobileComm will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.*

Isotropic Antenna – *An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.*

Maximum Measurement – *This measurement represents the single largest measurement recorded when performing a spatial average measurement.*

Maximum Exposure Limit (MPE) – *The RMS and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.*

Occupational/Controlled Environment – *Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are aware of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.*

Radio Frequency Radiation – *Electromagnetic waves that are propagated from antennas through space.*

Spatial Average Measurement – *A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy an average sized human body will absorb while present in an electromagnetic field of energy.*

Transmitter Power Output (TPO) – *The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.*

Appendix F – Proprietary Statement

This report was prepared for the use of AT&T Mobility, LLC to meet requirements specified in AT&T's corporate RF safety guidelines. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by MobileComm are based solely on the information provided by AT&T Mobility and all observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to MobileComm so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

ALLPRO
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Tower Structural Analysis Report for
SBA Network Services, Inc.

Existing 350' Self Support Tower

SBA Site Name: Cleary Tower (Edward)
SBA Site ID: CT20021-A-08
Carrier Name: AT&T
Carrier Site ID/Name: CTL01111 /WALCOTT
App # 193674, v1

Site Location: 1233 Wolcott Road (Rt-69)
Wolcott, CT 06716
New Haven County

Latitude: 41.621581°
Longitude: -72.973633°

ACGI Job # 22-1552
(Refer to Previous ACGI Job # 21-6467, dated 12/09/2021)

ANALYSIS RESULTS		
Tower Components	**73.8 %**	**Pass**
Foundation	**39.4 %**	**Pass**
Net change in tower stress	**+0.2 %**	**From previous SA by Allpro Consulting Group, Inc. ACGI # 21-1552 dated 12/09/2021.**

Prepared By:
Maqdoom Shariq
Staff Engineer

04/20/2022
Approved By:
Joji M. George, P.E.
CT PE # 24444

TABLE OF CONTENTS

1. ANALYSIS SUMMARY

The existing 350' Self-Supported Tower located in Wolcott, Connecticut was analyzed by Allpro Consulting Group, Inc. (ACGI) for the existing loads and the proposed AT&T antennas, dishes and coaxes per application # 193674, v1 as authorized by SBA Communication Corp. Based on the results of the analysis, the existing tower with below mentioned proposed and existing loading is found **in code compliance** with *TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and International Building Code 2018*.

2. SCOPE & SOURCE OF INFORMATION

The purpose of this structural analysis is to determine whether the existing structure is capable of supporting additional proposed loads.

SOURCE OF INFORMATION		
Tower Data:	Paul J. Ford & Co.	Structural analysis by Paul J. Ford & Co., Job No. A03-T143 dated 12/22/2003.
	FDH Engineering	Previous structural analysis by FDH Engineering, project #1462GQ1400, dated 04/09/2014.
	Allpro Consulting Group, Inc.	Previous structural analysis by Allpro Consulting Group, Inc., ACGI Job #16-4376, dated 12/14/2016.
		Previous modification design by Allpro Consulting Group, Inc., ACGI#17-0832 Rev.2 dated 07/14/2017.
		Previous structural analysis by Allpro Consulting Group, Inc., ACGI Job #18-5441, dated 08/22/2018
		Previous structural analysis by Allpro Consulting Group, Inc., ACGI Job # 19-0197, dated 01/15/2019.
		Previous structural analysis by Allpro Consulting Group, Inc., ACGI Job # 19-0642, dated 02/04/2019.
		Previous structural analysis by Allpro Consulting Group, Inc., ACGI Job # 21-6467, dated 12/03/2021.
Foundation Data:	Paul J. Ford & Co.	Structural analysis by Paul J. Ford & Co., Job No. A03-T143 dated 12/22/2003.
Geotechnical Report:	Osman Pekin	Soil report by Osman Pekin, Ph.D., P.E. dated 12/12/1991.

Loading Data:	Allpro Consulting Group, Inc. SBA Communication Corp.	Existing Loading as per previous by Allpro Consulting Group, Inc., ACGI Job # 21-6467, dated 12/03/2021. Proposed final loading for AT&T as per sbasite.com, App#193674, v1 downloaded from the SBA portal. Site summary dated 05/24/2021.
Authorization:	SBA Communication Corp.	

3. ANALYSIS METHODS & DATA

The analysis was performed in accordance with Telecommunication Industry Association specification TIA-222-G-Addendum 2. The tower was modeled using TNX Tower, a 3-D finite element program. TNX Tower is a general-purpose modeling, analysis, and design program created specifically for communication towers using the EIA-222-C, EIA-222-D, TIA/EIA-222-F or TIA-222-H standards. The 3-D model included the tower, with existing appurtenances and all proposed loads.

SITE DATA	
SBA Site Name:	Cleary Tower (Edward)
SBA Site Number:	CT20021-A-08
Carrier Site Name:	AT&T: CTL01111 /WALCOTT
City, State:	Wolcott, CT
County:	New Haven
Code Wind Load Requirement:	TIA-222-H (117 mph basic wind speed) & IBC 2018
Wind Load Used:	TIA-222-H Code: • Basic wind speed of 117 mph (3 second gust wind speed) • Structure Class II*. • Exposure Category B. • Ground Elevation 963.64 ft. • Topographic Category 1. • Crest Height 0.00 ft. • A wind speed of 50 mph is used in combination with ice. • Nominal ice thickness of 1.0 in.
Seismic Check:	S_s=0.19, Seismic check calculations are included as per TIA-222-H

*This structural analysis is based upon the tower being classified as a class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

TOWER DATA	
Tower Type:	Self-Supported Tower
Height:	350'
Cross Section:	Triangular
Steel Strength:	Legs – 50 ksi, Braces – 36ksi
Type of Foundation:	Pad and Pier Foundation

TOWER HISTORY	
Tower Manufacturer / Model:	FWT, Inc.
Date of Original Design:	1992
Previous Modifications:	Previous modification design by Allpro Consulting Group, Inc., ACGI#17-0832 Rev.2 dated 07/14/2017.
Original Design Code Reqts:	EIA/TIA 222-E, 85mph basic wind speed without ice and 74 mph basic wind speed with 0.5" thick ice

4. APPURTENANCE LISTING

EXISTING LOAD DESCRIPTION					
ELEV (ft.)	***Qty.***	***Antenna Description***	***Mount Type & Qty.***	***TX. LINE (in)***	***TENANT***
350±	1	Celwave PD200 Omni	(1) Star Mount w/ (9) Standoffs	(1) 7/8"	LoJack
350±	1	101 Omni		(1) 1 1/4"	Marcus
341±	3	JMA Wireless MX08FRO665-20 Panel Antennas	(3) Commscope SF-SU7-2-96 Sector Frame	(1) 1.75" Hybrid	Dish Network
	3	Fujitsu TA08025-B605 RRUs			
	3	Fujitsu TA08025-B604 RRUs			
	1	Raycap RDIDC-9181-PF-48 DC Surge Suppressors			
320±	2	101 Omni	(2) 6' Standoffs	(2) 1 1/4"	Marcus
185±	3	Powerwave 7770 Antenna	(3) Sitepro 1 VFA14-H10-2120 Reinforced Sector Frame	(12) 1-5/8" (2) 1/2" Fiber (6) 3/4" DC Power	AT&T
	1	KMW AM-X-CD-16-65-00T-RET Antenna			
	2	Kathrein 800 10121 Antenna			
	3	CCI HPA-65R-BUU-H6 Antenna			
	3	KMW EPBQ-654L8H8-L2 Antenna			
	6	CCI DTMABP7819VG12A TMA			
	6	Powerwave LGP 13519 Diplexer			
	4	Kathrein 860 10025 RET			
	3	Ericsson RRUS 11 Remote Radio			
	3	Ericsson RRUS 32 Remote Radio			
	3	Ericsson RRUS 4478 B5 RRU			
	3	Ericsson RRUS 4426 B66 RRU			
	3	Ericsson RRUS 32 B66 RRU			
	1	Raycap DC6-48-60-18-8F Surge			
	2	Raycap DC6-48-60-18-8F Surge			
165±	3	SPD3-2.4 Radiowaves Dish	Pipe Mount	(6) 1/2"	Marcus
	3	SPD2-5.8 Radiowaves Dish	Pipe Mount		
158±	1	Decibel DB408 Omni	(1) 17" Standoff	(1) 7/8"	Wolcott
134±	3	APXVTM14-C-I20	(3) 15' T-Frames	(4) 1-1/4"	Sprint
	3	RFS APXVSPP18			
	3	RRH 1900 MHz			
	3	RRH 800 MHz			
	3	RRH TD-8x20-25			

	3	RRH 800 MHz Filter			
	4	RFS ACU-A20-N			

FINAL AT&T LOAD DESCRIPTION					
ELEV (ft.)	***Qty.***	***Antenna Description***	***Mount Type & Qty.***	***TX. LINE (in)***	***TENANT***
185±	**3**	**Quintel QD8616-7 Panel Antennas**	(3) Sitepro 1 VFA14-H10-2120 Reinforced Sector Frame	**(6) 1-5/8" Coax (3) 1/2" Fiber** (6) 3/4" DC Power	AT&T
	3	**Cci DMP65R-BU86DA Panel Antennas**			
	3	**Ericsson AIR6449 B77D Panel Antennas**			
	3	**Ericsson AIR6419 B77G Panel Antennas**			
	3	Ericsson RRUS 32 Remote Radio			
	3	**Ericsson RRUS 4478 B14 RRU**			
	3	**Ericsson RRUS 8843 B2 B66A RRU**			
	3	**Ericsson RRUS 4449 B5/B12 RRU**			
	1	Raycap DC6-48-60-18-8F Surge			
	2	Raycap DC6-48-60-18-8F Surge			

Notes:

1. ACGI should be notified of any discrepancies found in the data listed in this report.
2. Notify ACGI if any potential physical and other interference with existing antennas for a redesign.

5. CONCLUSIONS

RESULT SUMMARY		
MEMBER	*% Capacity*	*Pass/Fail*
Leg	**46.5 %**	**Pass**
Diagonal	**45.7 %**	**Pass**
Horizontal	**37.9 %**	**Pass**
Top Girt	**3.2 %**	**Pass**
Redundant Horizontal Bracing	**73.8 %**	**Pass**
Redundant Diagonal Bracing	**51.5 %**	**Pass**
Inner Bracing	**0.7 %**	**Pass**
Bolts	**45.7 %**	**Pass**
Anchor Bolts	**42.8%**	**Pass**
OVERALL TOWER RATING = 73.8 % (Pass)		

Foundation Type	*Reaction Direction*	*Current Analysis Reaction (TIA-222-H)*	*Original Design Reaction (EIA/TIA-222-E)*	*Original Design Reaction equivalent to TIA-222-G (multiply by 1.35)*	*% Capacity*
Individual Foundation	**Uplift**	**286 k**	**631 k**	**851.8 k**	**33.5 %**
	Compression	**399 k**	**751 k**	**1013.8 k**	**39.4 %**

**Note: Soil data available as per Soil report by Osman Pekin, Ph.D., P.E. dated 12/12/1991 is not sufficient for the detail analysis of the foundation. Therefore, reactions are compared based upon the original tower design. Foundation is estimated to be acceptable based on the tower member loads and stresses. However, it is recommended to provide detailed geotechnical investigation report for rigorous analysis of the tower foundation.*

MAXIMUM DISH ROTATION AT SERVICE WIND SPEED Twist and Sway (deg), 10 dB degradation limit*				
Elev. (ft)	*MW Dish*	*Tilt (deg)*	*Twist (deg)*	*Allowable (deg)*
165±	**SPD3-2.4**	**0.0695**	**0.0038**	**Carrier to verify**

As per the results of the analysis, the existing tower **is in code compliance** for the proposed and existing antenna loads.

Maximum tower member stress **is less than 100%, making** it **is in code complaince** under the TIA-222-H code and **2018 International Building Code (IBC 2018)** requirements.

Overall tower stress ratio increased by 0.2% compared to previous SA by Allpro Consulting Group, Inc. ACGI # 21-6467 dated 12/09/2021 due to change in AT&T loading.

6. ASSUMPTIONS

This analysis was completed based on the following assumptions:

- Tower has been properly maintained
- Tower erection was in accordance to manufacturer drawings
- Leg flanges have been properly designed by manufacturer to not be a limiting reaction
- Welds have been properly designed and installed by manufacturer to not be a limiting reaction
- Foundation was constructed in accordance to manufacturer drawings
- Foundation does not have structural damage
- Bolts have been properly tightened according to manufacturer specifications
- Appurtenance, mount and transmission line sizes and weights are best estimates using the tnxTower database and manufacturer information

7. DISCLAIMER

Installation procedures and related loading are not within the scope of this analysis. A contractor experienced in similar work should perform all installation work. The engineering services provided by Allpro Consulting Group, Inc. (ACGI) are limited to the computer analysis and calculations of the structure with the proposed and existing loads. This analysis is considered void if the loading mentioned in this report is changed or is different as installed. It is assumed that the existing structure is properly maintained and is in good condition free of any defects. Scope of this analysis does not include existing connections, except as noted in this report.

ACGI does not make any warranties, expressed or implied in connection with this engineering analysis report and disclaims any liability arising from deficiencies or any existing conditions of the original structure. ACGI will not be responsible for consequential or incidental damages sustained by any parties as a result of any data or conclusions included in this Report. The maximum liability of ACGI pursuant to this report shall be limited to the consulting fee received for the preparation of the report.

Climbers should not latch or tie their support lanyard or gear on to antennas, radios, epoxied or glued mounts etc without proper evaluation. They should only tie to their support lanyards or gear to or attach to Tower structural members that have visible bolting and connection to the larger structure.

8. SUMMARY OF WORKING PERCENTAGE OF STRUCTURAL COMPONENTS

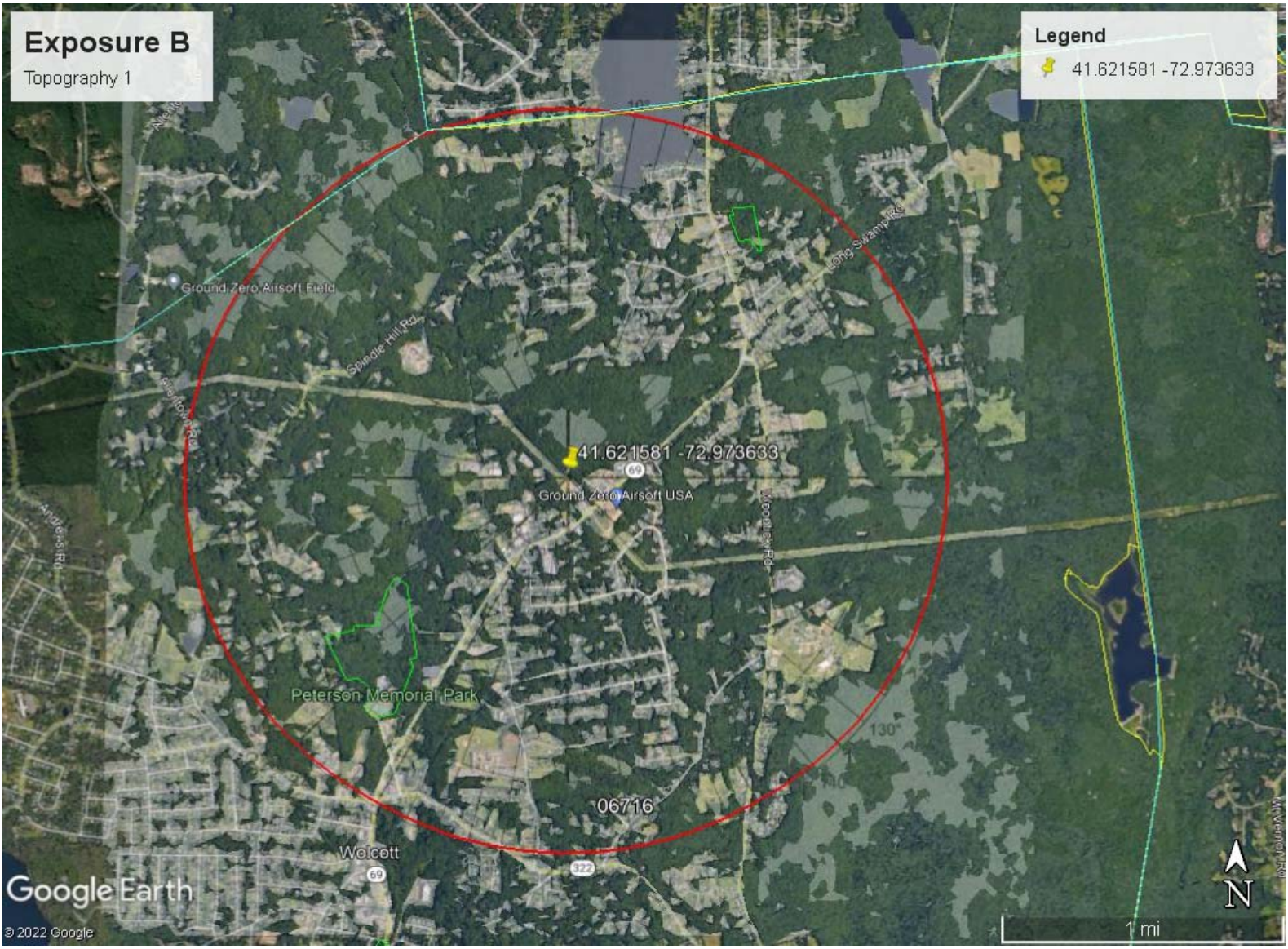
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	350 - 340	Leg	2	3	-5.43	49.29	11.0	Pass
		Diagonal	L2x1 1/2x3/16	9	-2.03	13.47	15.1	Pass
							29.7 (b)	
		Top Girt	L3x3x1/4	4	-0.33	36.68	0.9	Pass
							3.2 (b)	
T2	340 - 320	Leg	2	21	-33.54	72.06	46.5	Pass
		Diagonal	L2x1 1/2x3/16	24	-3.33	14.98	22.2	Pass
							45.7 (b)	
T3	320 - 300	Leg	2 1/2	54	-52.13	112.35	46.4	Pass
		Diagonal	L2x2x3/16	75	-2.65	17.06	15.5	Pass
							35.0 (b)	
T4	300 - 280	Leg	3 1/4	81	-65.96	183.31	36.0	Pass
		Diagonal	L2-1/2x2-1/2x3/16	84	-2.14	17.45	12.3	Pass
							26.1 (b)	
T5	280 - 260	Leg	3 1/4	102	-80.19	183.31	43.7	Pass
		Diagonal	L2-1/2x2-1/2x3/16	107	-2.29	13.10	17.5	Pass
							28.6 (b)	
T6	260 - 240	Leg	3 1/2	123	-95.02	234.48	40.5	Pass
		Diagonal	L3x3x3/16	128	-2.69	17.56	15.3	Pass
							34.0 (b)	
T7	240 - 220	Leg	3 1/2	144	-109.44	306.64	35.7	Pass
		Diagonal	2L2 1/2x2 1/2x3/16x3/8	152	-3.49	32.33	10.8	Pass
							21.8 (b)	
		Horizontal	L2 1/2x2 1/2x3/16	148	-2.08	10.45	19.9	Pass
							26.6 (b)	
		Inner Bracing	L2 1/2x2 1/2x3/16	154	-0.01	9.64	0.4	Pass
T8	220 - 200	Leg	3 3/4	183	-125.79	368.01	34.2	Pass
		Diagonal	2L2 1/2x2 1/2x3/16x3/8	191	-3.96	26.85	14.8	Pass
							21.4 (b)	
		Horizontal	L2 1/2x2 1/2x3/16	187	-2.28	7.86	29.0	Pass
							29.1 (b)	
		Inner Bracing	L2 1/2x2 1/2x3/16	193	-0.01	7.31	0.5	Pass
T9	200 - 180	Leg	4	222	-146.02	434.24	33.6	Pass
		Diagonal	2L3x3x3/16x3/8	230	-6.19	39.43	15.7	Pass
							31.3 (b)	
		Horizontal	L3x3x3/16	226	-2.54	10.75	23.6	Pass
							32.4 (b)	
		Inner Bracing	L3x3x3/16	232	-0.01	10.06	0.5	Pass
T10	180 - 160	Leg	4 1/4	261	-170.77	505.22	33.8	Pass
		Diagonal	2L3x3x3/16x3/8	269	-7.06	33.29	21.2	Pass
							35.9 (b)	
		Horizontal	L3x3x3/16	265	-2.96	8.62	34.4	Pass
							37.8 (b)	
		Inner Bracing	L3x3x3/16	273	-0.01	8.10	0.6	Pass
T11	160 - 140	Leg	4 1/4	300	-196.87	505.22	39.0	Pass
		Diagonal	2L3x3x3/16x3/8	308	-7.76	28.30	27.4	Pass
							41.0 (b)	
		Horizontal	L3 1/2x3 1/2x1/4	304	-3.41	14.81	23.1	Pass
							32.7 (b)	
		Inner Bracing	L3 1/2x3 1/2x1/4	310	-0.02	14.00	0.5	Pass
T12	140 - 120	Leg	4 1/2	339	-217.01	580.90	37.4	Pass
		Diagonal	2L3x3x1/4x3/8	358	-11.32	38.40	29.5	Pass
							40.4 (b)	
		Horizontal	2L2 1/2x2 1/2x3/16x3/8	347	-3.76	17.33	21.7	Pass
		Redund Horz 1 Bracing	L2x2x3/16	352	-3.76	7.12	52.9	Pass
		Redund Diag 1 Bracing	L2-1/2x2-1/2x3/16	378	-2.56	7.69	33.2	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	362	-0.02	12.23	0.5	Pass
T13	120 - 100	Leg	4 3/4	384	-246.40	661.23	37.3	Pass
		Diagonal	2L3x3x1/4x3/8	400	-11.26	35.46	31.8	Pass
							43.8 (b)	
		Horizontal	2L2 1/2x2 1/2x3/16x3/8	392	-4.27	14.63	29.2	Pass
		Redund Horz 1	L2x2x3/16	401	-4.27	6.02	71.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	øP$_{allow}$ K	% Capacity	Pass Fail
		Bracing						
		Redund Diag 1 Bracing	L2-1/2x2-1/2x3/16	423	-2.80	6.96	40.3	Pass
		Inner Bracing	L4x4x1/4	406	-0.02	15.60	0.6	Pass
T14	100 - 80	Leg	4 3/4	429	-273.29	661.23	41.3	Pass
		Diagonal	2L3x3x1/4x3/8	448	-12.14	32.71	37.1 44.1 (b)	Pass
		Horizontal	2L2 1/2x2 1/2x3/16x3/8	437	-4.74	12.49	37.9	Pass
		Redund Horz 1 Bracing	L2x2x3/8	442	-4.74	9.53	49.7	Pass
		Redund Diag 1 Bracing	L2-1/2x2-1/2x3/16	465	-3.02	6.29	48.0	Pass
		Inner Bracing	L4x4x1/4	453	-0.03	13.37	0.6	Pass
T15	80 - 60	Leg	5	474	-302.17	746.17	40.5	Pass
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	490	-12.26	45.63	26.9 39.9 (b)	Pass
		Horizontal	2L3x3x3/16x3/8	482	-5.24	19.06	27.5 27.7 (b)	Pass
		Redund Horz 1 Bracing	L2-1/2x2-1/2x3/16	487	-5.24	8.86	59.2	Pass
		Redund Diag 1 Bracing	L3x3x3/16	510	-3.26	10.04	32.5	Pass
		Inner Bracing	2L3x3x3/16x3/8	498	-0.03	18.17	0.6	Pass
T16	60 - 40	Leg	5 1/4	519	-329.59	835.68	39.4	Pass
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	538	-13.23	42.29	31.3 40.8 (b)	Pass
		Horizontal	2L3x3x3/16x3/8	527	-5.72	16.65	34.3	Pass
		Redund Horz 1 Bracing	L2-1/2x2-1/2x3/16	532	-5.72	7.74	73.8	Pass
		Redund Diag 1 Bracing	L3x3x3/16	558	-3.48	9.16	38.0	Pass
		Inner Bracing	2L3x3x3/16x3/8	541	-0.03	15.90	0.7	Pass
T17	40 - 20	Leg	5 1/4	564	-358.54	835.68	42.9	Pass
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	580	-13.29	39.18	33.9 42.7 (b)	Pass
		Horizontal	2L3 1/2x3 1/2x1/4x3/8	572	-6.22	30.62	20.3 24.6 (b)	Pass
		Redund Horz 1 Bracing	L2.5x2.5x3/16 + L2.5x2.5x1/4 (C-Shape) - Cleary Tower	599	-6.22	14.96	41.6	Pass
		Redund Diag 1 Bracing	L3x3x3/16	600	-3.72	8.35	44.5	Pass
		Inner Bracing	2L3 1/2x3 1/2x1/4x3/8	588	-0.04	29.32	0.6	Pass
T18	20 - 0	Leg	5 1/2	609	-386.45	929.74	41.6	Pass
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	628	-13.91	36.38	38.2 43.7 (b)	Pass
		Horizontal	2L3 1/2x3 1/2x1/4x3/8	617	-6.70	27.18	24.7 26.6 (b)	Pass
		Redund Horz 1 Bracing	L3x3x3/16	622	-6.70	10.61	63.2	Pass
		Redund Diag 1 Bracing	L3x3x3/16	648	-3.94	7.66	51.5	Pass
		Inner Bracing	2L3 1/2x3 1/2x1/4x3/8	632	-0.03	26.06	0.6	Pass
							Summary	
						Leg (T2)	46.5	Pass
						Diagonal (T2)	45.7	Pass
						Horizontal (T14)	37.9	Pass
						Top Girt (T1)	3.2	Pass
						Redund Horz 1 Bracing (T16)	73.8	Pass
						Redund Diag 1 Bracing	51.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$øP_{allow}$ K	% Capacity	Pass Fail
						(T18) Inner Bracing (T16)	0.7	Pass
						Bolt Checks	45.7	Pass
						RATING =	**73.8**	**Pass**

APPENDIX

TOWER DATA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Topography 1
Legend
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Ground Zero Airsoft Field
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Long Swamp Rd
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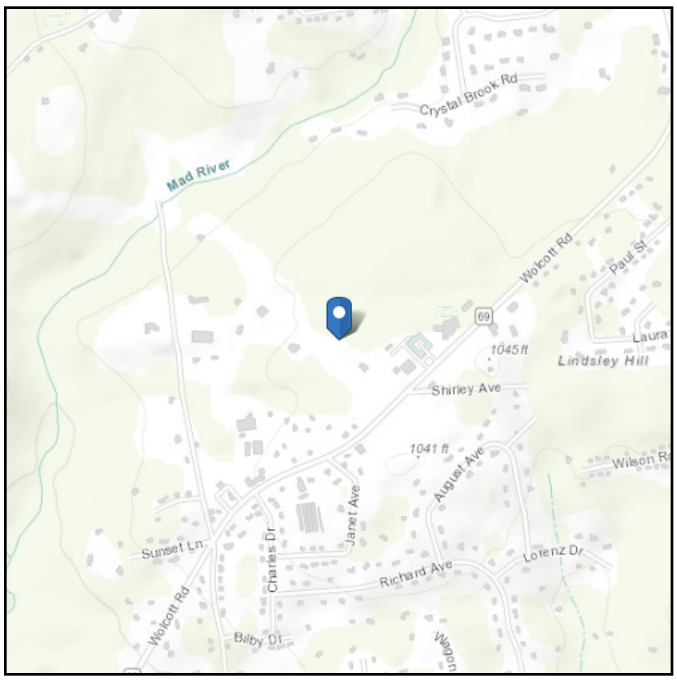
Ground Zero Airsoft USA
Woodtick Rd
Peterson Memorial Park
130°
06716
Wolcott
69
322
Google Earth
© 2022 Google
N
1 mi

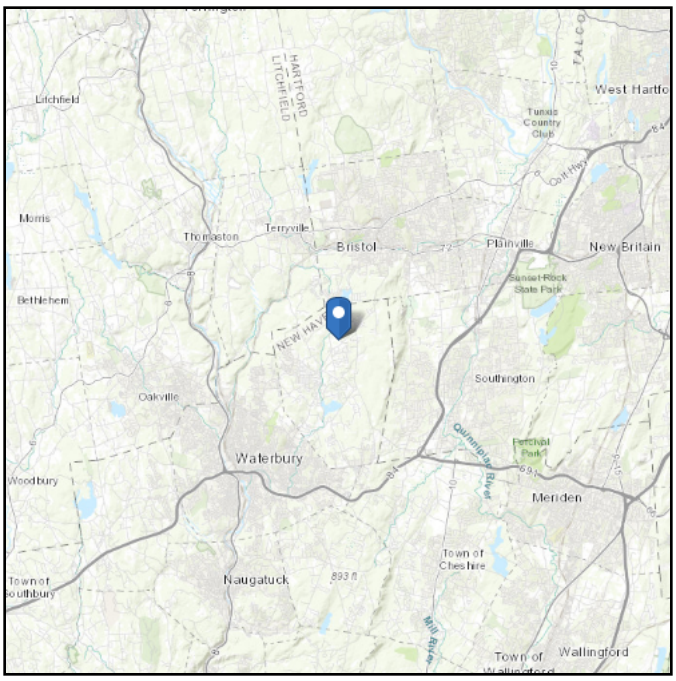
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 963.64 ft (NAVD 88)
Latitude: 41.621581
Longitude: -72.973633





Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Apr 15 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

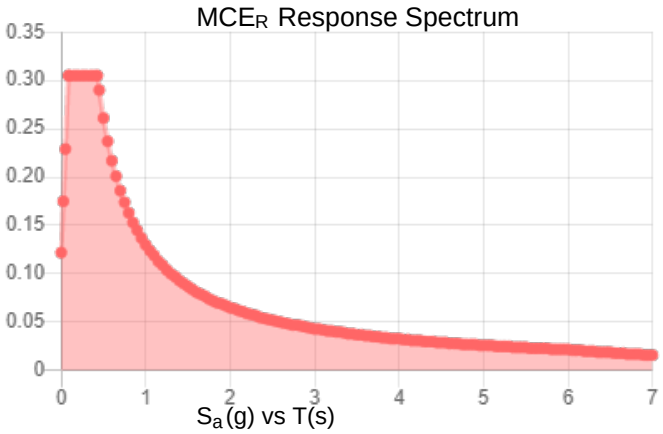
Seismic

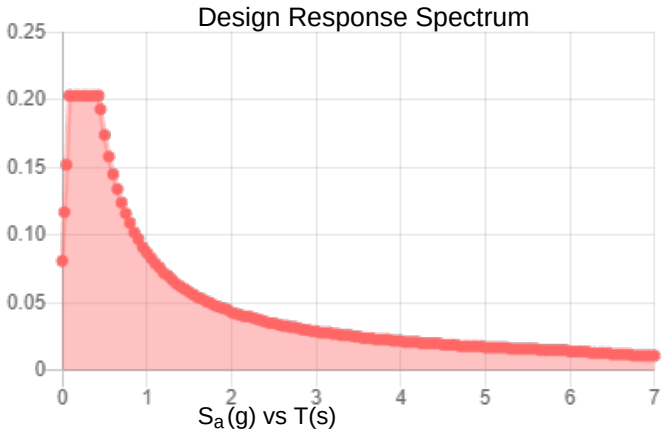
Site Soil Class: D - Stiff Soil

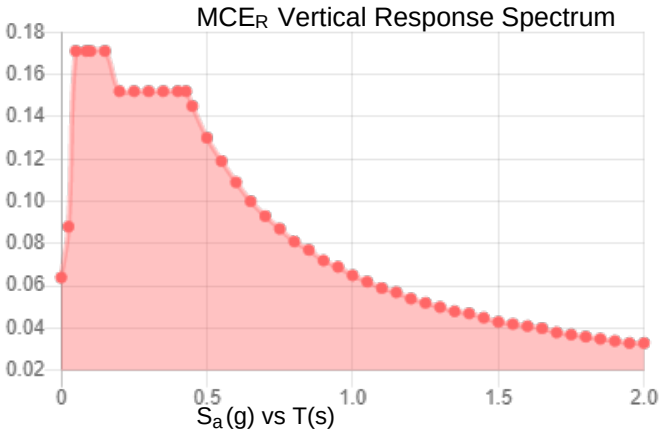
Results:

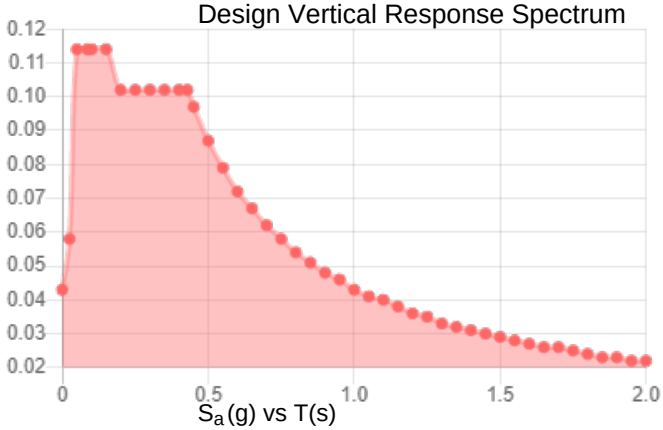
S_S :	0.19	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.104
F_v :	2.4	PGA_M :	0.166
S_{MS} :	0.305	F_{PGA} :	1.592
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.203	C_v :	0.7

Seismic Design Category B









Data Accessed: **Fri Apr 15 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

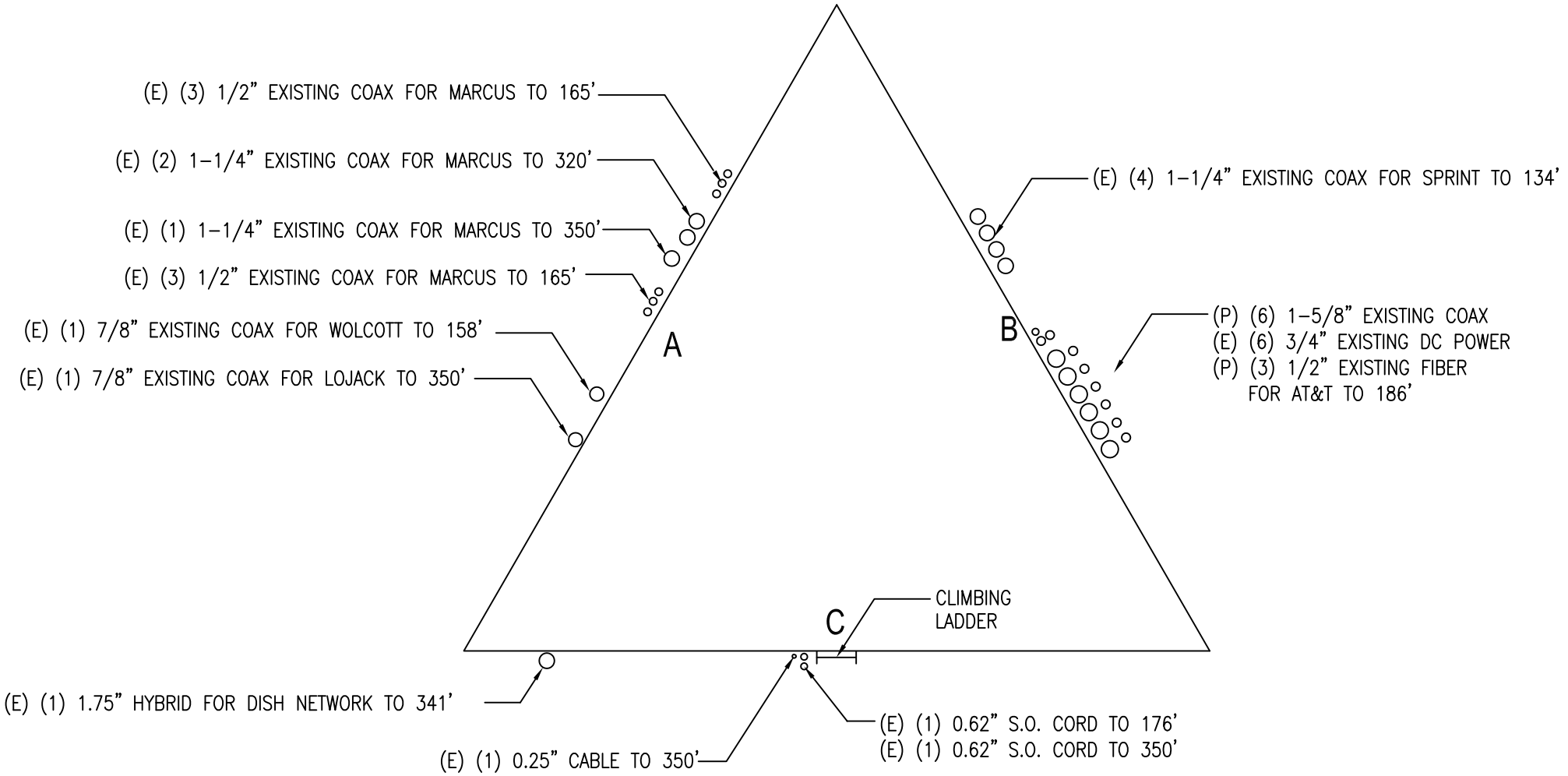
Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Apr 15 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

COAX LAYOUT

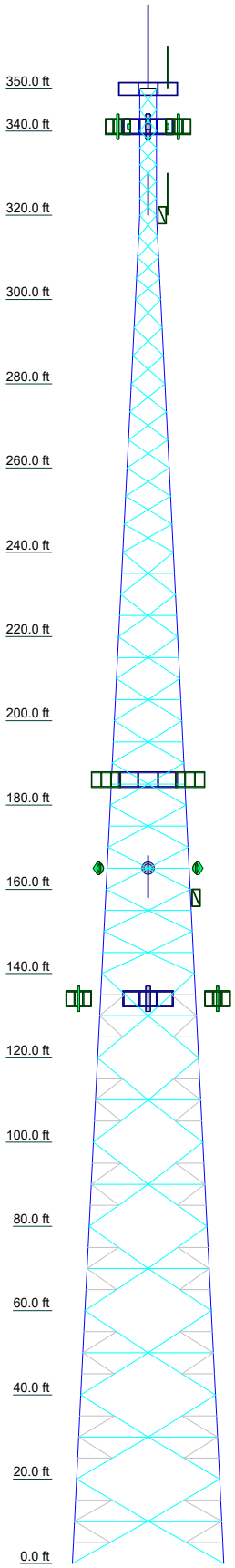


COAX LAYOUT

N.T.S

TOWER ELEVATION DRAWING

Section	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 5 1/2	SR 5 1/4		SR 5	SR 4 3/4		SR 4 1/2		SR 4 1/4	SR 4	SR 3 3/4	SR 3 1/2		SR 3 1/4		SR 2 1/2	SR 2	
Leg Grade									A572-50									
Diagonals	2L3 1/2x3 1/2x1/4x3/8			2L3x3x3/16x3/8		2L3x3x1/4x3/8		B	2L3x3x3/16x3/8		2L2 1/2x2 1/2x3/16x3/8		L3x3x3/16	L2-1/2x2-1/2x3/16		L2x2x3/16	L2x1 1/2x3/16	
Diagonal Grade									A36									
Top Girts									N.A.									A
Horizontals	2L3 1/2x3 1/2x1/4x3/8		2L3x3x3/16x3/8		2L2 1/2x2 1/2x3/16x3/8				L3x3x3/16		L2 1/2x2 1/2x3/16					N.A.		
Red. Horizontals	L3x3x3/16	C	L2-1/2x2-1/2x3/16		L2x2x3/8	L2x2x3/16						N.A.						
Red. Diagonals	L3x3x3/16				L2-1/2x2-1/2x3/16							N.A.						
Inner Bracing	2L3 1/2x3 1/2x1/4x3/8		2L3x3x3/16x3/8		L4x4x1/4		L3 1/2x3 1/2x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16							
Face Width (ft)	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	
# Panels @ (ft)				14 @ 10			20 @ 5					9 @ 6.66667				4 @ 5	5 @ 4	2 @ 5
Weight (K)	95.3	10.8	10.1	9.1	8.5	7.4	7.0	6.4	6.4	5.7	5.1	4.2	3.7	3.0	2.4	2.3	1.5	1.1	0.6



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3x3x1/4	C	L2.5x2.5x3/16 + L2.5x2.5x1/4 (C-Shape) - Cleary Tower
B	L3 1/2x3 1/2x1/4		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 73.9%

△ *ALL REACTIONS ARE FACTORED*

MAX. CORNER REACTIONS AT BASE:
DOWN: 399 K
SHEAR: 43 K

UPLIFT: -286 K
SHEAR: 33 K

AXIAL 144 K
SHEAR 2 K *MOMENT 494 kip-ft*
TORQUE 0 kip-ft
SEISMIC

AXIAL 238 K
SHEAR 20 K *MOMENT 3374 kip-ft*
TORQUE 7 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 139 K
SHEAR 68 K *MOMENT 11007 kip-ft*
TORQUE 28 kip-ft
REACTIONS - 117 mph WIND

Allpro Consulting Group Inc.
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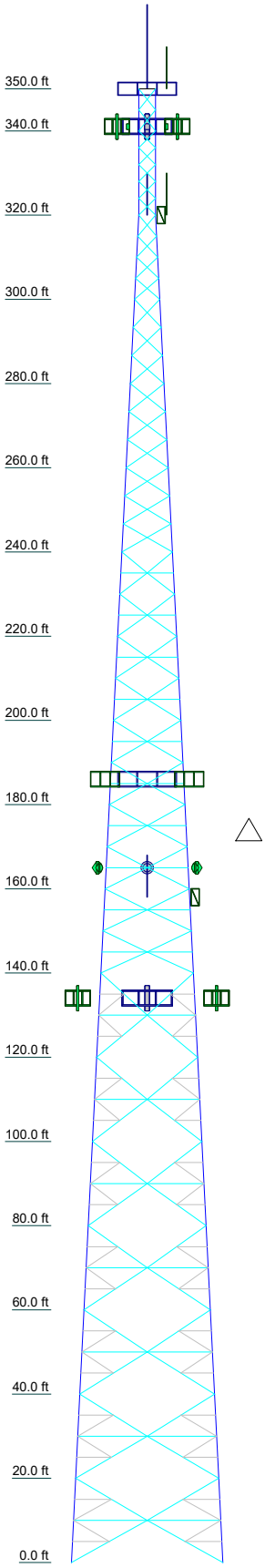
Dallas, Tx
Consulting Engineers
Phone: 972-231-8893
FAX:

Job: 22-1552		
Project: CT20021-A-08 Cleary Tower (Edward)		
Client: SBA	Drawn by: mshariq	App'd:
Code: TIA-222-H	Date: 04/18/22	Scale: NTS
Path:		Dwg No. E-1

Section	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 5 1/2	SR 5 1/4		SR 5	SR 4 3/4		SR 4 1/2	B	SR 4 1/4	SR 4	SR 3 3/4	SR 3 1/2		SR 3 1/4		SR 2 1/2	SR 2	
Leg Grade	A572-50																	
Diagonals	2L3 1/2x3 1/2x1/4x3/8			2L3x3x3/16x3/8	2L3x3x1/4x3/8		2L2 1/2x2 1/2x3/16x3/8		2L3x3x3/16x3/8		2L2 1/2x2 1/2x3/16		L3x3x3/16	L2-1/2x2-1/2x3/16		L2x2x3/16	L2x1 1/2x3/16	
Diagonal Grade	A36																	
Top Girts	N.A.																	A
Horizontals	2L3 1/2x3 1/2x1/4x3/8		2L3x3x3/16x3/8		2L2 1/2x2 1/2x3/16x3/8			B	L3x3x3/16		L2 1/2x2 1/2x3/16		N.A.					
Red. Horizontals	L3x3x3/16	C	L2-1/2x2-1/2x3/16		L2x2x3/8	L2x2x3/16			N.A.									
Red. Diagonals	L3x3x3/16				L2-1/2x2-1/2x3/16				N.A.									
Inner Bracing	2L3 1/2x3 1/2x1/4x3/8		2L3x3x3/16x3/8		L4x4x1/4		L3 1/2x3 1/2x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16							
Face Width (ft)	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	
# Panels @ (ft)				14 @ 10				20 @ 5				9 @ 6.66667				4 @ 5	5 @ 4	2 @ 5
Weight (K)	95.3	10.8	10.1	9.1	8.5	7.4	7.0	6.4	6.4	5.7	5.1	4.2	3.7	3.0	2.4	2.3	1.5	1.1	0.6



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Celwave PD200 Omni (LoJack)	350	RRUS-4449 B5/B12 (ATI)	186
101 Omni (Marcus)	350	DC6-48-60-18-8F (ATI)	186
Star Mount w/ (9) Standoffs (Marcus/LoJack)	350	QD8616-7 (ATI)	185
		QD8616-7 (ATI)	185
T1	350	DMP65R-BU86DA (ATI)	185
MX08FRO665-20 (Dish Network)	341	DMP65R-BU86DA (ATI)	185
MX08FRO665-20 (Dish Network)	341	QD8616-7 (ATI)	185
MX08FRO665-20 (Dish Network)	341	DMP65R-BU86DA (ATI)	185
RDIDC-9181-PF-48 (Dish Network)	341	AIR6449 B77D (ATI)	185
TA08025-B605 (Dish Network)	341	AIR6449 B77D (ATI)	185
TA08025-B605 (Dish Network)	341	AIR6449 B77D (ATI)	185
TA08025-B605 (Dish Network)	341	AIR6419 B77G (ATI)	185
TA08025-B604 (Dish Network)	341	AIR6419 B77G (ATI)	185
TA08025-B604 (Dish Network)	341	AIR6419 B77G (ATI)	185
TA08025-B604 (Dish Network)	341	T10	180
Commscope SF-SU7-2-96 Sector Frame (Dish Network)	341	(2) Pipe Mounts (5.25' x 4.5") (Marcus)	165
		(2) Pipe Mounts (5.25' x 4.5") (Marcus)	165
Commscope SF-SU7-2-96 Sector Frame (Dish Network)	341	(2) Pipe Mounts (5.25' x 4.5") (Marcus)	165
		Radiowaves SPD3-2.4 Dish (Marcus)	165
Commscope SF-SU7-2-96 Sector Frame (Dish Network)	341	Radiowaves SPD3-2.4 Dish (Marcus)	165
		Radiowaves SPD3-2.4 Dish (Marcus)	165
Antenna Mount Pipes (2x2.375x96) (Dish Network)	341	Radiowaves SPD2-5.8 Dish (Marcus)	165
		Radiowaves SPD2-5.8 Dish (Marcus)	165
Antenna Mount Pipes (2x2.375x96) (Dish Network)	341	Radiowaves SPD2-5.8 Dish (Marcus)	165
		Radiowaves SPD2-5.8 Dish (Marcus)	165
Antenna Mount Pipes (2x2.375x96) (Dish Network)	341	T11	160
		17" Standoff Mount (Wolcott)	158
T2	340	Decibel DB408 Omni (Wolcott Ambulance)	158
101 Omni (Marcus)	320		
101 Omni (Marcus)	320	T12	140
6' Standoff (Marcus)	320	15' T-Frames (Sprint)	134
6' Standoff (Marcus)	320	15' T-Frames (Sprint)	134
T3	320	Antenna mount Pipes (3x2.375x72) (Sprint)	134
T4	300		
T5	280	Antenna mount Pipes (3x2.375x72) (Sprint)	134
T6	260		
T7	240	Antenna mount Pipes (3x2.375x72) (Sprint)	134
T8	220		
Empty T-frames	200	ACU-A20-N (Sprint)	134
Empty T-frames	200	800 MHz RRH (Sprint)	134
Antenna Mount Pipes	200	800 MHz RRH (Sprint)	134
Antenna Mount Pipes	200	800 MHz RRH (Sprint)	134
T9	200	TD-RRH8x20-25 (Sprint)	134
RRUS 32 (ATI)	186	TD-RRH8x20-25 (Sprint)	134
RRUS 32 (ATI)	186	TD-RRH8x20-25 (Sprint)	134
RRUS 32 (ATI)	186	800 MHz Filter (Sprint)	134
RRUS 32 (ATI)	186	800 MHz Filter (Sprint)	134
RRUS 32 (ATI)	186	800 MHz Filter (Sprint)	134
RRUS 32 (ATI)	186	APXVTM14-C-I20 (Sprint)	134
RRUS 4478 B14 (ATI)	186	APXVTM14-C-I20 (Sprint)	134
VFA14-H10-2120 (ATI)	186	APXVTM14-C-I20 (Sprint)	134
VFA14-H10-2120 (ATI)	186	RFS APXVSPP18 (Sprint)	134
VFA14-H10-2120 (ATI)	186	RFS APXVSPP18 (Sprint)	134
(5) Mount Pipes (ATI)	186	RFS APXVSPP18 (Sprint)	134
(5) Mount Pipes (ATI)	186	1900 MHz RRH (Sprint)	134
RRUS-4449 B5/B12 (ATI)	186	1900 MHz RRH (Sprint)	134
RRUS-4449 B5/B12 (ATI)	186	ACU-A20-N (Sprint)	134
DC6-48-60-18-8F (ATI)	186	1900 MHz RRH (Sprint)	134
DC6-48-60-18-8F (ATI)	186	(2) ACU-A20-N (Sprint)	134
(5) Mount Pipes (ATI)	186	15' T-Frames (Sprint)	134
RRUS 4478 B14 (ATI)	186	T13	120
RRUS 4478 B14 (ATI)	186	T14	100
RRUS 8843 B2 B66A (ATI)	186	T15	80
RRUS 8843 B2 B66A (ATI)	186	T16	60
RRUS 8843 B2 B66A (ATI)	186	T17	40
		T18	20

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3x3x1/4	C	L2.5x2.5x3/16 + L2.5x2.5x1/4 (C-Shape) - Cleary Tower
B	L3 1/2x3 1/2x1/4		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.

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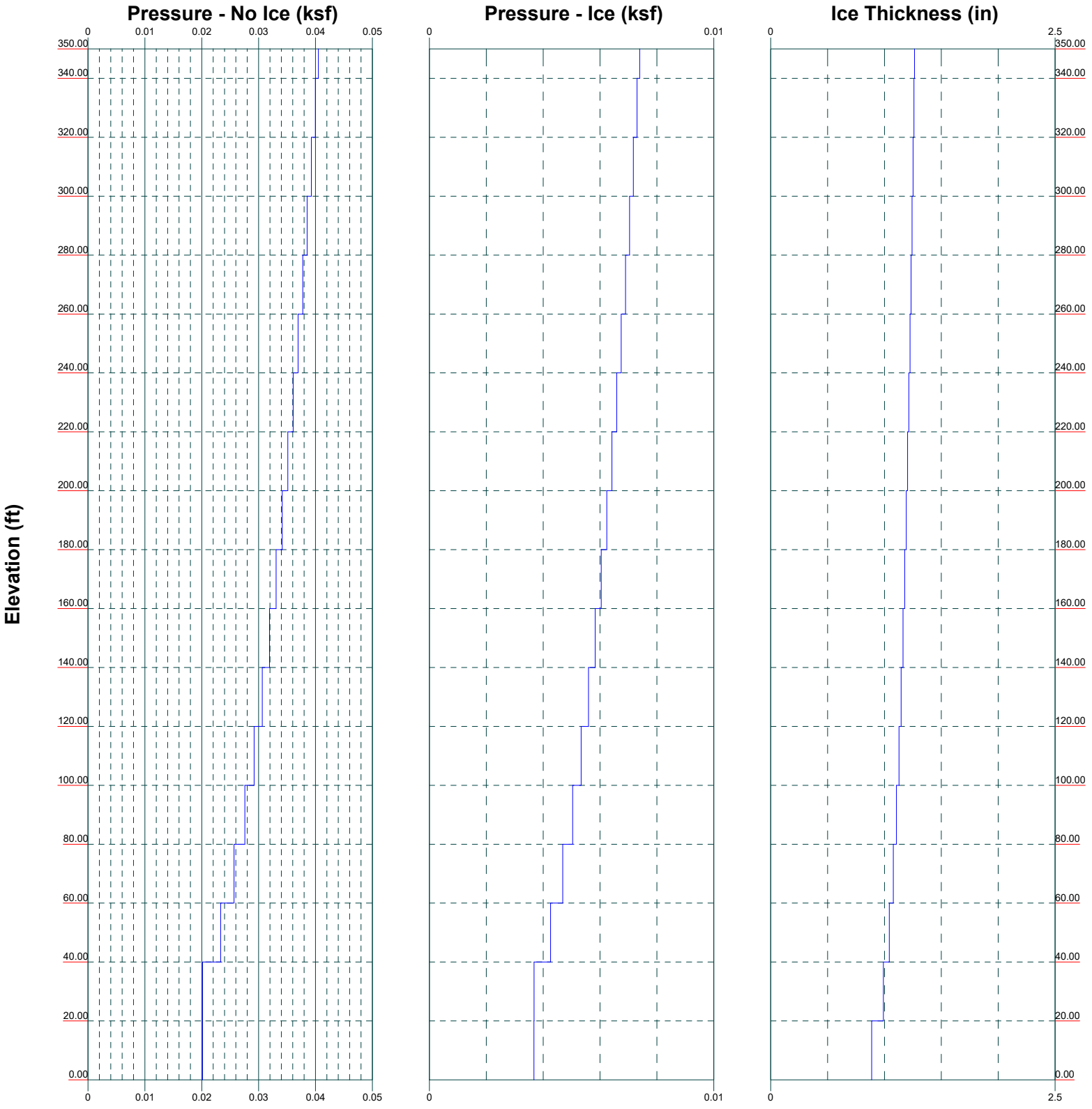
Job: *22-1552*
Project: *CT20021-A-08 Cleary Tower (Edward)*
Client: SBA | Drawn by: mshariq | App'd:
Code: TIA-222-H | Date: 04/18/22 | Scale: NTS
Path: | Dwg No. E-1

MISCELLANEOUS PLOTS

Wind Pressures and Ice Thickness

TIA-222-H - 117 mph/50 mph 1.0000 in Ice Exposure B



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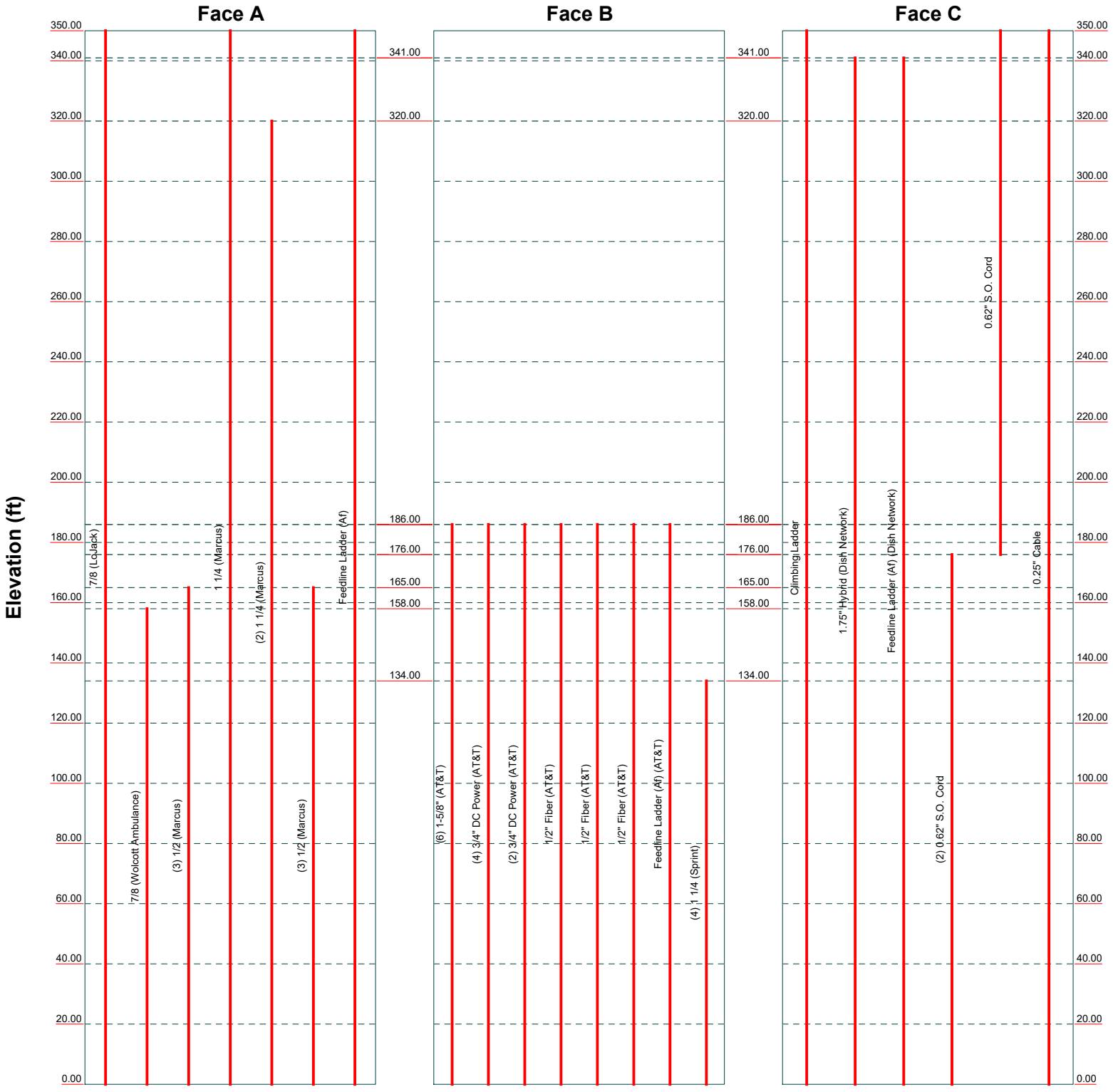
Project: ***CT20021-A-08 Cleary Tower (Edward)***			
Client: SBA	Drawn by: mshariq	App'd:	
Code: TIA-222-H	Date: 04/18/22	Scale: NTS	
Path:		Dwg No. E-9	

Feed Line Distribution Chart
0' - 350'

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



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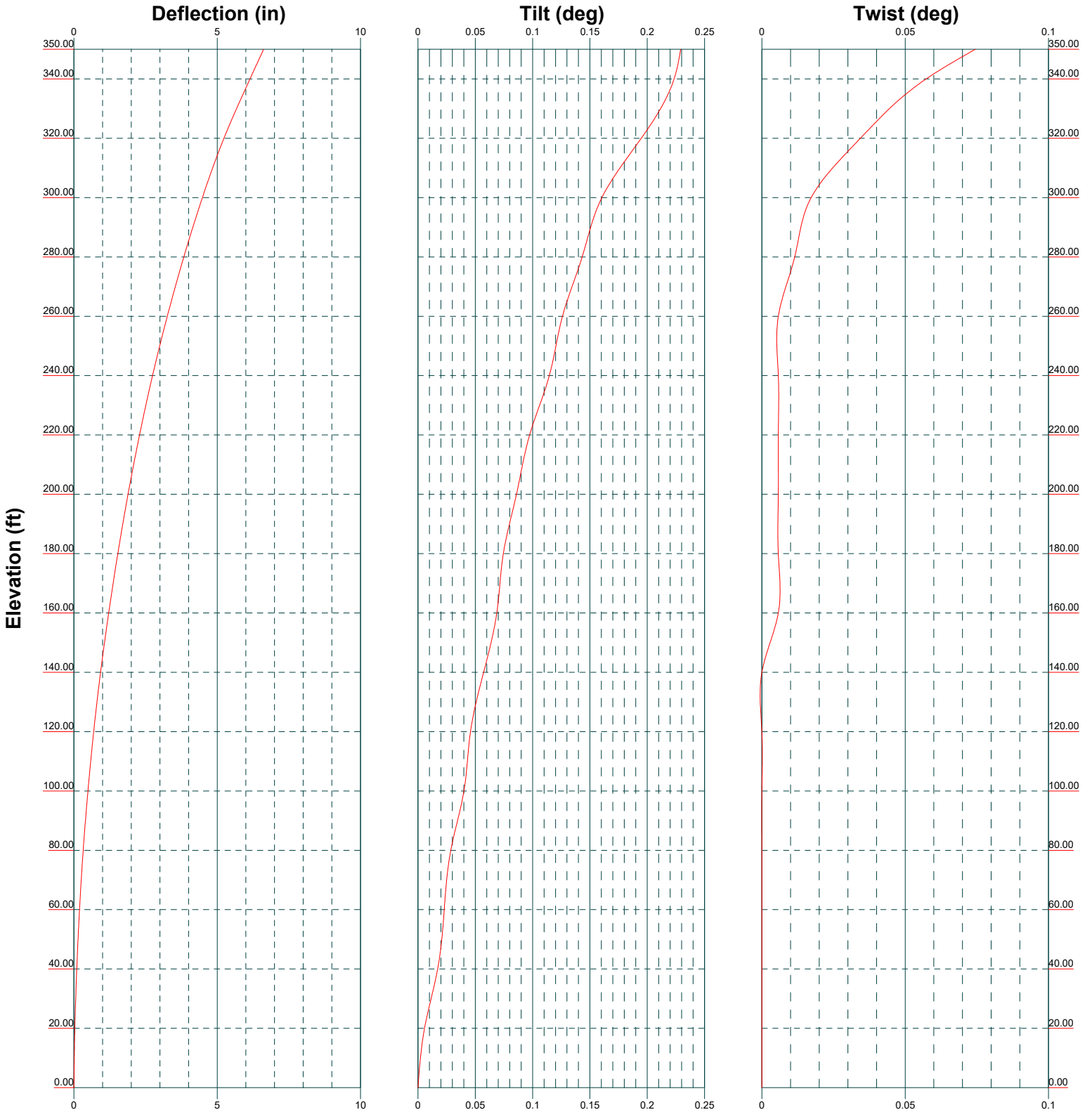
Job: ***22-1552***		
Project: ***CT20021-A-08 Cleary Tower (Edward)***		
Client: SBA	Drawn by: msharig	App'd:
Code: TIA-222-H	Date: 04/18/22	Scale: NTS
Path:		Dwg No. E-7

TIA-222-H - Service - 60 mph

Maximum Values



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Phone: 972-231-8893
FAX:

Job: ***22-1552***			
Project: ***CT20021-A-08 Cleary Tower (Edward)***			
Client: SBA	Drawn by: mshariq	App'd:	
Code: TIA-222-H	Date: 04/18/22	Scale: NTS	
Path:		Dwg No. E-5	

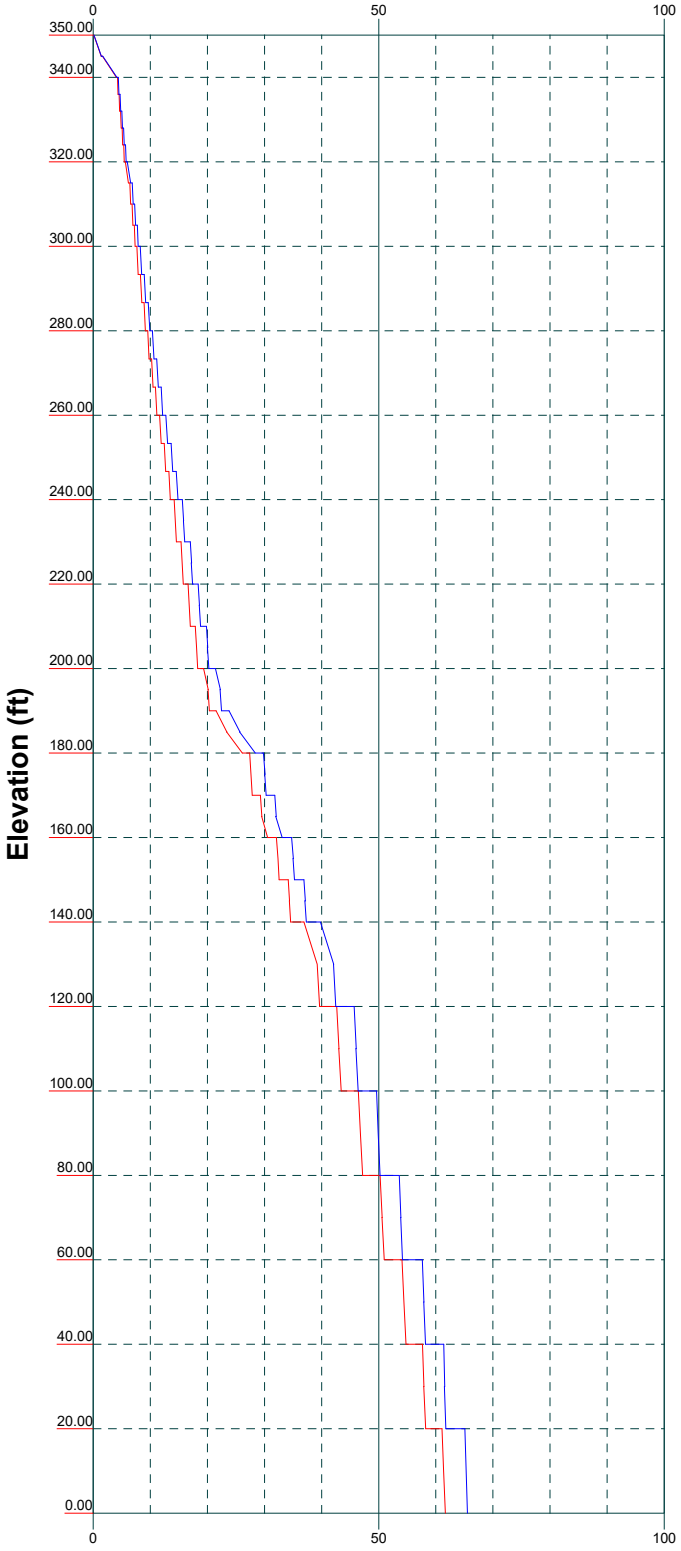
TIA-222-H - 117 mph/50 mph 1.0000 in Ice Exposure B

Vx Vz

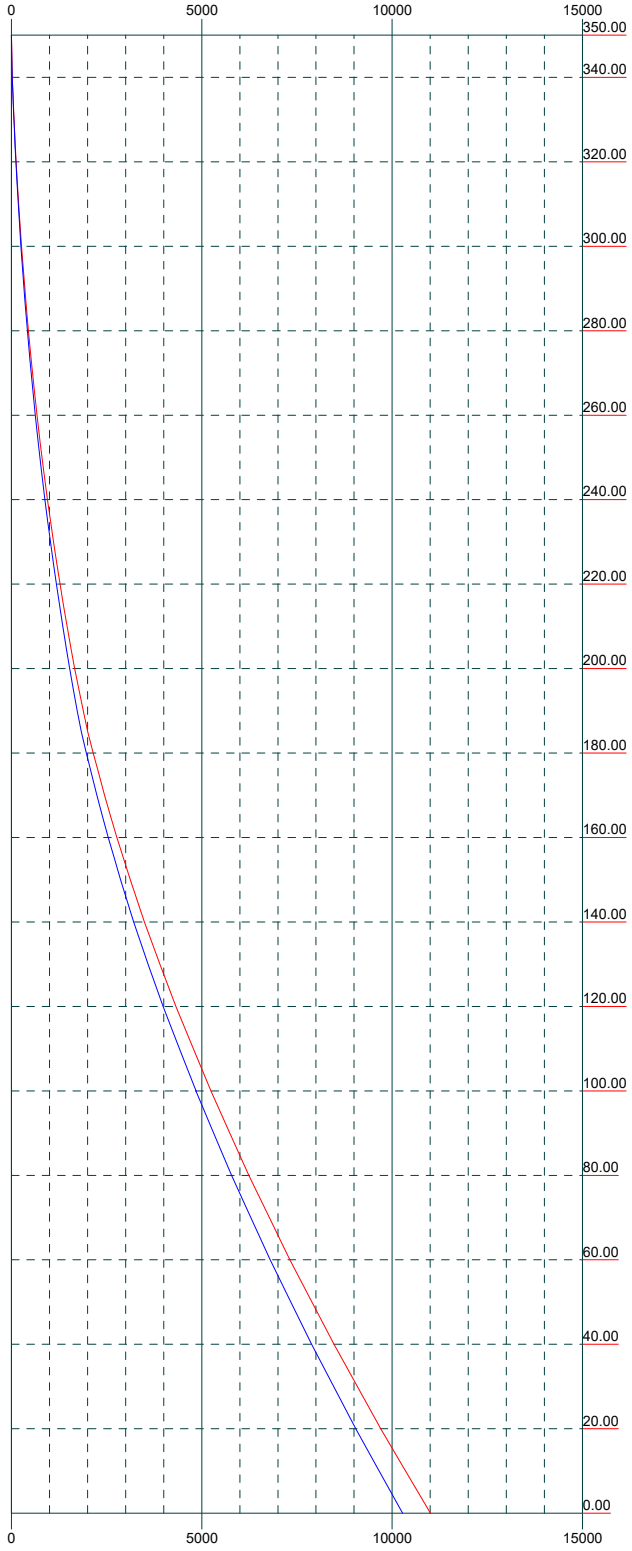
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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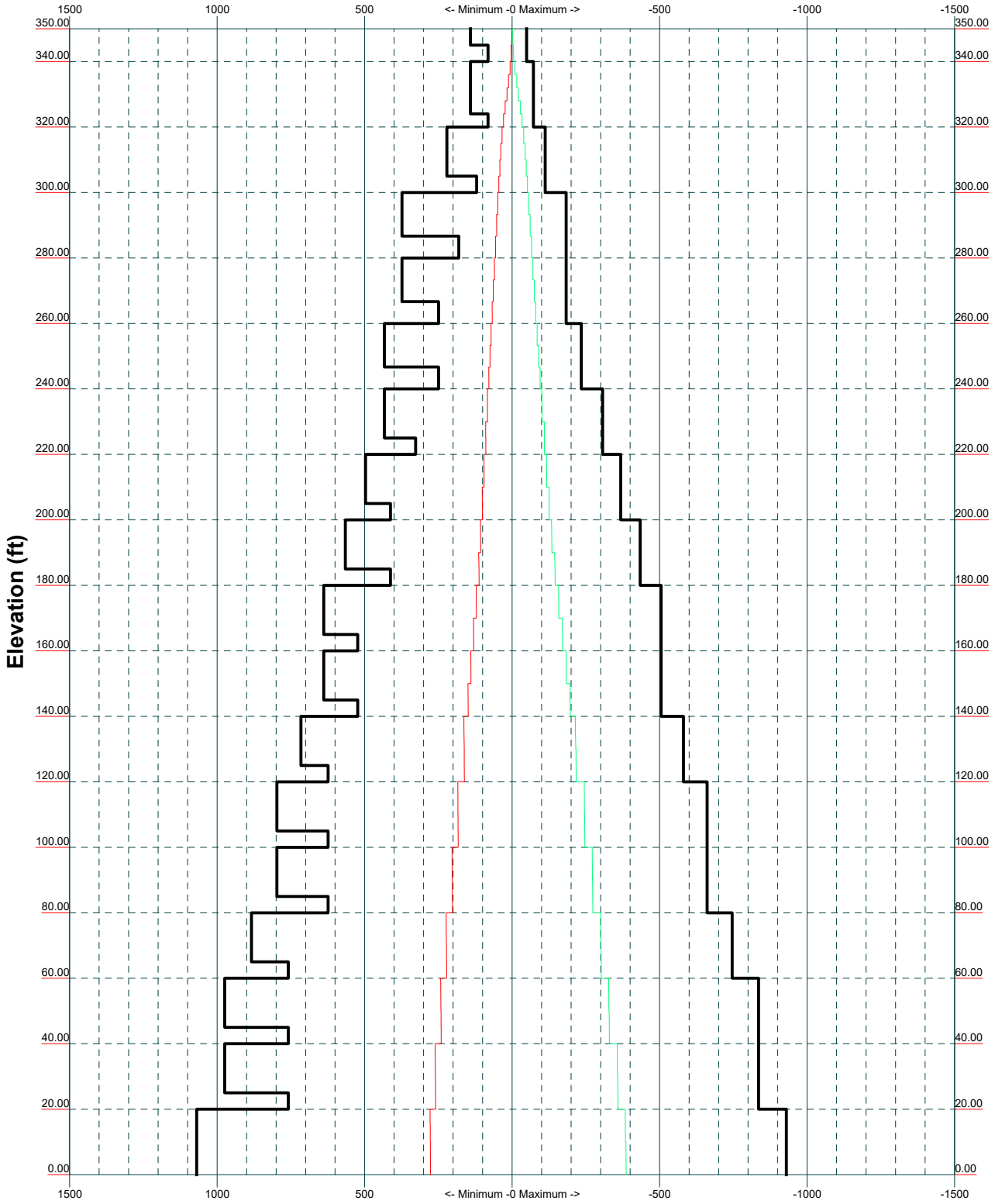
Phone: 972-231-8893
FAX:

Job: ***22-1552***			
Project: ***CT20021-A-08 Cleary Tower (Edward)***			
Client: SBA	Drawn by: mshariq	App'd:	
Code: TIA-222-H	Date: 04/18/22	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - 117 mph/50 mph 1.0000 in Ice Exposure B

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



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Phone: 972-231-8893
FAX:

Job: ***22-1552***			
Project: ***CT20021-A-08 Cleary Tower (Edward)***			
Client: SBA	Drawn by: mshariq	App'd:	
Code: TIA-222-H	Date: 04/18/22	Scale: NTS	
Path:		Dwg No. E-3	

CALCULATION PRINTOUT

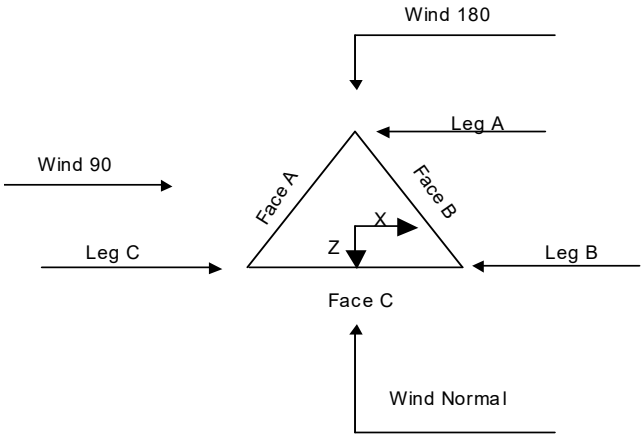
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 350.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.00 ft at the top and 36.00 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 963.64 ft.
Basic wind speed of 117 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 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 tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	350.00-340.00			4.00	1	10.00
T2	340.00-320.00			4.00	1	20.00
T3	320.00-300.00			4.00	1	20.00
T4	300.00-280.00			6.00	1	20.00
T5	280.00-260.00			8.00	1	20.00
T6	260.00-240.00			10.00	1	20.00
T7	240.00-220.00			12.00	1	20.00
T8	220.00-200.00			14.00	1	20.00
T9	200.00-180.00			16.00	1	20.00
T10	180.00-160.00			18.00	1	20.00
T11	160.00-140.00			20.00	1	20.00
T12	140.00-120.00			22.00	1	20.00
T13	120.00-100.00			24.00	1	20.00
T14	100.00-80.00			26.00	1	20.00
T15	80.00-60.00			28.00	1	20.00
T16	60.00-40.00			30.00	1	20.00
T17	40.00-20.00			32.00	1	20.00
T18	20.00-0.00			34.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	350.00-340.00	5.00	X Brace	No	No	0.0000	0.0000
T2	340.00-320.00	4.00	X Brace	No	No	0.0000	0.0000
T3	320.00-300.00	5.00	X Brace	No	No	0.0000	0.0000
T4	300.00-280.00	6.67	X Brace	No	No	0.0000	0.0000
T5	280.00-260.00	6.67	X Brace	No	No	0.0000	0.0000
T6	260.00-240.00	6.67	X Brace	No	No	0.0000	0.0000
T7	240.00-220.00	5.00	Double K	No	Yes	0.0000	0.0000
T8	220.00-200.00	5.00	Double K	No	Yes	0.0000	0.0000
T9	200.00-180.00	5.00	Double K	No	Yes	0.0000	0.0000
T10	180.00-160.00	5.00	Double K	No	Yes	0.0000	0.0000
T11	160.00-140.00	5.00	Double K	No	Yes	0.0000	0.0000
T12	140.00-120.00	10.00	Double K1	No	Yes	0.0000	0.0000
T13	120.00-100.00	10.00	Double K1	No	Yes	0.0000	0.0000
T14	100.00-80.00	10.00	Double K1	No	Yes	0.0000	0.0000
T15	80.00-60.00	10.00	Double K1	No	Yes	0.0000	0.0000
T16	60.00-40.00	10.00	Double K1	No	Yes	0.0000	0.0000
T17	40.00-20.00	10.00	Double K1	No	Yes	0.0000	0.0000
T18	20.00-0.00	10.00	Double K1	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 350.00-340.00	Solid Round	2	A572-50 (50 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T2 340.00-320.00	Solid Round	2	A572-50 (50 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T3 320.00-300.00	Solid Round	2 1/2	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 300.00-280.00	Solid Round	3 1/4	A572-50 (50 ksi)	Equal Angle	L2-1/2x2-1/2x3/16	A36 (36 ksi)
T5 280.00-260.00	Solid Round	3 1/4	A572-50 (50 ksi)	Equal Angle	L2-1/2x2-1/2x3/16	A36 (36 ksi)
T6 260.00-240.00	Solid Round	3 1/2	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 240.00-220.00	Solid Round	3 1/2	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x3/8	A36 (36 ksi)
T8 220.00-200.00	Solid Round	3 3/4	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x3/8	A36 (36 ksi)
T9 200.00-180.00	Solid Round	4	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T10 180.00-160.00	Solid Round	4 1/4	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T11 160.00-140.00	Solid Round	4 1/4	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T12 140.00-120.00	Solid Round	4 1/2	A572-50 (50 ksi)	Double Equal Angle	2L3x3x1/4x3/8	A36 (36 ksi)
T13 120.00-100.00	Solid Round	4 3/4	A572-50 (50 ksi)	Double Equal Angle	2L3x3x1/4x3/8	A36 (36 ksi)
T14 100.00-80.00	Solid Round	4 3/4	A572-50 (50 ksi)	Double Equal Angle	2L3x3x1/4x3/8	A36 (36 ksi)
T15 80.00-60.00	Solid Round	5	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	A36 (36 ksi)
T16 60.00-40.00	Solid Round	5 1/4	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	A36 (36 ksi)
T17 40.00-20.00	Solid Round	5 1/4	A572-50	Double Equal	2L3 1/2x3 1/2x1/4x3/8	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T18 20.00-0.00	Solid Round	5 1/2	(50 ksi) A572-50 (50 ksi)	Angle Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T7 240.00-220.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 220.00-200.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T9 200.00-180.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T10 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T11 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T12 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x3/8	A36 (36 ksi)
T13 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x3/8	A36 (36 ksi)
T14 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x3/8	A36 (36 ksi)
T15 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T16 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T17 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	A36 (36 ksi)
T18 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T7 240.00-220.00	Equal Angle		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 220.00-200.00	Equal Angle		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T9 200.00-180.00	Equal Angle		A36 (36 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T10 180.00-160.00	Equal Angle		A36 (36 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T11 160.00-140.00	Equal Angle		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T12 140.00-120.00	Equal Angle		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T13 120.00-100.00	Equal Angle		A36 (36 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T14 100.00-80.00	Equal Angle		A36 (36 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T15 80.00-60.00	Equal Angle		A36 (36 ksi)	Double Equal Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T16 60.00-40.00	Equal Angle		A36 (36 ksi)	Double Equal Angle	2L3x3x3/16x3/8	A36 (36 ksi)
T17 40.00-20.00	Equal Angle		A36 (36 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	A36 (36 ksi)
T18 20.00-0.00	Equal Angle		A36 (36 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T12 140.00-120.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	L2x2x3/16 L2-1/2x2-1/2x3/16	1 1
T13 120.00-100.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	L2x2x3/16 L2-1/2x2-1/2x3/16	1 1
T14 100.00-80.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	L2x2x3/8 L2-1/2x2-1/2x3/16	1 1
T15 80.00-60.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	L2-1/2x2-1/2x3/16 L3x3x3/16	1 1
T16 60.00-40.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	L2-1/2x2-1/2x3/16 L3x3x3/16	1 1
T17 40.00-20.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Arbitrary Shape Equal Angle	L2.5x2.5x3/16 + L2.5x2.5x1/4 (C-Shape) - Cleary Tower L3x3x3/16	1 1
T18 20.00-0.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	L3x3x3/16 L3x3x3/16	1 1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 350.00-340.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 340.00-320.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 320.00-300.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000

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
300.00-280.00			(36 ksi)						
T5	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
280.00-260.00			(36 ksi)						
T6	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
260.00-240.00			(36 ksi)						
T7	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
240.00-220.00			(36 ksi)						
T8	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
220.00-200.00			(36 ksi)						
T9	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
200.00-180.00			(36 ksi)						
T10	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
180.00-160.00			(36 ksi)						
T11	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
160.00-140.00			(36 ksi)						
T12	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
140.00-120.00			(36 ksi)						
T13	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
120.00-100.00			(36 ksi)						
T14	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
100.00-80.00			(36 ksi)						
T15	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
80.00-60.00			(36 ksi)						
T16	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
60.00-40.00			(36 ksi)						
T17	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
40.00-20.00			(36 ksi)						
T18 20.00-0.00	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
350.00-340.00				1	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
340.00-320.00				1	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
320.00-300.00				1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
300.00-280.00				1	1	1	1	1	1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
280.00-260.00				1	1	1	1	1	1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
200.00-180.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T15	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T16	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T17	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T18	Yes	Yes	1	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
350.00-340.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
340.00-320.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
320.00-300.00														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
300.00-280.00														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
280.00-260.00														
T6	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
260.00-240.00														
T7	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
240.00-220.00														
T8	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
220.00-200.00														
T9	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
200.00-180.00														
T10	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
180.00-160.00														
T11	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
160.00-140.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T12 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 350.00-340.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 340.00-320.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 320.00-300.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 300.00-280.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 280.00-260.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 260.00-240.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 240.00-220.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 220.00-200.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 200.00-180.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 140.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T18 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1	Flange	0.6250	4	0.6250	1	0.6250	1	0.0000	0	0.6250	0	0.6250	0	0.6250	0
350.00-340.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	0.6250	4	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
340.00-320.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	0.7500	4	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
320.00-300.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Flange	0.7500	6	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
300.00-280.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	0.8750	6	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
280.00-260.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	Flange	0.8750	6	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
260.00-240.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	1.0000	6	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	1	0.6250	0
240.00-220.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8	Flange	1.1250	6	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.6250	1	0.6250	1
220.00-200.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9	Flange	1.1250	6	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.6250	1	0.6250	1
200.00-180.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	1.2500	6	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.6250	1	0.6250	1
180.00-160.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	1.2500	6	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.6250	1	0.6250	1
160.00-140.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	1.3750	6	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.7500	1	0.6250	1
140.00-120.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	1.3750	6	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.7500	1	0.6250	1
120.00-100.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	1.3750	6	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.7500	1	0.6250	1
100.00-80.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Flange	1.5000	6	0.8750	1	0.6250	0	0.0000	0	0.6250	0	0.7500	1	0.6250	1
80.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Flange	1.5000	6	0.8750	1	0.6250	0	0.0000	0	0.6250	0	0.7500	1	0.6250	1
60.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17	Flange	1.5000	6	0.8750	1	0.6250	0	0.0000	0	0.6250	0	0.7500	1	0.6250	1
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18 20.00-0.00	Flange	2.5000	6	0.8750	1	0.6250	0	0.0000	0	0.6250	0	0.7500	1	0.6250	1
		A307		A325N		A325N		A325N		A325N		A325N		A325N	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8 (LoJack)	A	No	No	Ar (CaAa)	350.00 - 0.00	0.0000	-0.15	1	1	0.5000	1.1100		0.54
7/8 (Wolcott Ambulance)	A	No	No	Ar (CaAa)	158.00 - 0.00	0.0000	-0.1	1	1	0.5000	1.1100		0.54
1/2 (Marcus)	A	No	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.05	3	3	0.5000	0.5800		0.25
1 1/4 (Marcus)	A	No	No	Ar (CaAa)	350.00 - 0.00	0.0000	0.1	1	1	0.5000	1.5500		0.66
1 1/4 (Marcus)	A	No	No	Ar (CaAa)	320.00 - 0.00	0.0000	0.12	2	2	0.5000	1.5500		0.66
1/2 (Marcus)	A	No	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.15	3	3	0.5000	0.5800		0.25
Feedline Ladder (Af) ****	A	No	No	Af (CaAa)	350.00 - 0.00	0.0000	0	1	1	1.5000	1.5000		4.20
1-5/8" (AT&T)	B	No	No	Ar (CaAa)	186.00 - 0.00	0.0000	0.15	6	6	0.5000	1.9800		0.82
3/4" DC Power (AT&T)	B	No	No	Ar (CaAa)	186.00 - 0.00	4.5000	0.15	4	4	0.5000	0.8650		0.15
3/4" DC Power (AT&T)	B	No	No	Ar (CaAa)	186.00 - 0.00	0.0000	0.05	2	1	0.5000	0.8650		0.15
1/2" Fiber (AT&T)	B	No	No	Ar (CaAa)	186.00 - 0.00	0.0000	0.05	1	1	0.5000	0.6400		0.11
1/2" Fiber (AT&T)	B	No	No	Ar (CaAa)	186.00 - 0.00	4.5000	0.17	1	1	0.5000	0.6400		0.11
1/2" Fiber (AT&T)	B	No	No	Ar (CaAa)	186.00 - 0.00	4.5000	0.17	1	1	0.5000	0.6400		0.11
Feedline Ladder (Af) (AT&T) ****	B	No	No	Af (CaAa)	186.00 - 0.00	0.0000	0	1	1	1.5000	1.5000		4.20
1 1/4 (Sprint) ****	B	No	No	Ar (CaAa)	134.00 - 0.00	0.0000	-0.15	4	4	0.5000	1.5500		0.66
Climbing Ladder ****	C	No	No	Af (CaAa)	350.00 - 0.00	0.0000	0	1	1	0.5000	1.5000		7.90
1.75" Hybrid (Dish Network)	C	No	No	Ar (CaAa)	341.00 - 0.00	0.0000	0.4	1	1	0.5000	1.7500		2.72
Feedline Ladder (Af) (Dish Network) ****	C	No	No	Af (CaAa)	341.00 - 0.00	0.0000	0.4	1	1	1.5000	1.5000		4.20
0.62" S.O. Cord	C	No	No	Ar (CaAa)	176.00 - 0.00	0.0000	0	2	2	0.0000	0.6200		0.31
0.62" S.O. Cord	C	No	No	Ar (CaAa)	350.00 - 176.00	0.0000	0	1	1	0.0000	0.6200		0.31
0.25" Cable	C	No	No	Ar (CaAa)	350.00 - 0.00	0.0000	0	1	1	0.2500	0.2500		0.13

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	350.00-340.00	A	0.000	0.000	5.160	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.795	0.000	0.09
T2	340.00-320.00	A	0.000	0.000	10.320	0.000	0.11
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.240	0.000	0.31
T3	320.00-300.00	A	0.000	0.000	16.520	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.240	0.000	0.31
T4	300.00-280.00	A	0.000	0.000	16.520	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.240	0.000	0.31
T5	280.00-260.00	A	0.000	0.000	16.520	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.240	0.000	0.31
T6	260.00-240.00	A	0.000	0.000	16.520	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.240	0.000	0.31
T7	240.00-220.00	A	0.000	0.000	16.520	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.240	0.000	0.31
T8	220.00-200.00	A	0.000	0.000	16.520	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.240	0.000	0.31
T9	200.00-180.00	A	0.000	0.000	16.520	0.000	0.13
		B	0.000	0.000	12.894	0.000	0.06
		C	0.000	0.000	15.240	0.000	0.31
T10	180.00-160.00	A	0.000	0.000	18.260	0.000	0.14
		B	0.000	0.000	42.980	0.000	0.21
		C	0.000	0.000	16.232	0.000	0.31
T11	160.00-140.00	A	0.000	0.000	25.478	0.000	0.17
		B	0.000	0.000	42.980	0.000	0.21
		C	0.000	0.000	16.480	0.000	0.31
T12	140.00-120.00	A	0.000	0.000	25.700	0.000	0.18
		B	0.000	0.000	51.660	0.000	0.24
		C	0.000	0.000	16.480	0.000	0.31
T13	120.00-100.00	A	0.000	0.000	25.700	0.000	0.18
		B	0.000	0.000	55.380	0.000	0.26
		C	0.000	0.000	16.480	0.000	0.31
T14	100.00-80.00	A	0.000	0.000	25.700	0.000	0.18
		B	0.000	0.000	55.380	0.000	0.26
		C	0.000	0.000	16.480	0.000	0.31
T15	80.00-60.00	A	0.000	0.000	25.700	0.000	0.18
		B	0.000	0.000	55.380	0.000	0.26
		C	0.000	0.000	16.480	0.000	0.31
T16	60.00-40.00	A	0.000	0.000	25.700	0.000	0.18
		B	0.000	0.000	55.380	0.000	0.26
		C	0.000	0.000	16.480	0.000	0.31
T17	40.00-20.00	A	0.000	0.000	25.700	0.000	0.18
		B	0.000	0.000	55.380	0.000	0.26
		C	0.000	0.000	16.480	0.000	0.31
T18	20.00-0.00	A	0.000	0.000	25.700	0.000	0.18
		B	0.000	0.000	55.380	0.000	0.26
		C	0.000	0.000	16.480	0.000	0.31

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	350.00-340.00	A	1.265	0.000	0.000	12.747	0.000	0.17
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	11.888	0.000	0.19
T2	340.00-320.00	A	1.259	0.000	0.000	25.427	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	40.419	0.000	0.66
T3	320.00-300.00	A	1.251	0.000	0.000	43.646	0.000	0.51
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	40.262	0.000	0.66
T4	300.00-280.00	A	1.243	0.000	0.000	43.488	0.000	0.50
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	40.095	0.000	0.66
T5	280.00-260.00	A	1.234	0.000	0.000	43.321	0.000	0.50
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	39.918	0.000	0.65
T6	260.00-240.00	A	1.224	0.000	0.000	43.142	0.000	0.50
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	39.729	0.000	0.65
T7	240.00-220.00	A	1.214	0.000	0.000	42.949	0.000	0.49
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	39.526	0.000	0.64
T8	220.00-200.00	A	1.203	0.000	0.000	42.741	0.000	0.49
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	39.306	0.000	0.64
T9	200.00-180.00	A	1.191	0.000	0.000	42.514	0.000	0.48
		B		0.000	0.000	31.614	0.000	0.33
		C		0.000	0.000	39.066	0.000	0.63
T10	180.00-160.00	A	1.178	0.000	0.000	49.617	0.000	0.53
		B		0.000	0.000	104.909	0.000	1.09
		C		0.000	0.000	43.377	0.000	0.64
T11	160.00-140.00	A	1.163	0.000	0.000	77.382	0.000	0.76
		B		0.000	0.000	104.386	0.000	1.08
		C		0.000	0.000	44.183	0.000	0.64
T12	140.00-120.00	A	1.147	0.000	0.000	77.465	0.000	0.75
		B		0.000	0.000	122.536	0.000	1.25
		C		0.000	0.000	43.802	0.000	0.63
T13	120.00-100.00	A	1.128	0.000	0.000	76.770	0.000	0.74
		B		0.000	0.000	129.767	0.000	1.31
		C		0.000	0.000	43.364	0.000	0.62
T14	100.00-80.00	A	1.106	0.000	0.000	75.952	0.000	0.73
		B		0.000	0.000	128.824	0.000	1.29
		C		0.000	0.000	42.848	0.000	0.62
T15	80.00-60.00	A	1.078	0.000	0.000	74.949	0.000	0.71
		B		0.000	0.000	127.671	0.000	1.26
		C		0.000	0.000	42.216	0.000	0.60
T16	60.00-40.00	A	1.042	0.000	0.000	73.647	0.000	0.68
		B		0.000	0.000	126.173	0.000	1.22
		C		0.000	0.000	41.394	0.000	0.59
T17	40.00-20.00	A	0.991	0.000	0.000	71.754	0.000	0.65
		B		0.000	0.000	123.996	0.000	1.17
		C		0.000	0.000	40.198	0.000	0.57
T18	20.00-0.00	A	0.887	0.000	0.000	68.001	0.000	0.59
		B		0.000	0.000	119.683	0.000	1.06
		C		0.000	0.000	37.825	0.000	0.53

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	350.00-340.00	-1.3469	-0.2959	-2.2971	0.8845
T2	340.00-320.00	-2.9477	0.5381	-4.2490	2.2305
T3	320.00-300.00	-3.9227	-0.6642	-5.5442	1.1216
T4	300.00-280.00	-4.4673	-0.7552	-6.8631	1.3949
T5	280.00-260.00	-5.1584	-0.8758	-8.0642	1.6403
T6	260.00-240.00	-5.1427	-0.8782	-8.5962	1.7553
T7	240.00-220.00	-5.9576	-1.0175	-9.6735	1.9619
T8	220.00-200.00	-6.2867	-1.0747	-10.3348	2.0874
T9	200.00-180.00	-3.3229	-1.4612	-6.4548	1.1166
T10	180.00-160.00	1.5275	-2.6865	0.2078	-1.2095
T11	160.00-140.00	0.1191	-3.9512	-2.4443	-3.6766
T12	140.00-120.00	1.1291	-7.2171	-1.6889	-6.6819
T13	120.00-100.00	1.6066	-8.5766	-1.2531	-8.0683
T14	100.00-80.00	1.6579	-8.9278	-1.2774	-8.4770
T15	80.00-60.00	1.5392	-8.4461	-1.2094	-8.4404
T16	60.00-40.00	1.5693	-8.6684	-1.1832	-8.7635
T17	40.00-20.00	1.5710	-8.7482	-1.0966	-9.0170
T18	20.00-0.00	1.5709	-8.8111	-0.8941	-9.3188

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	7/8	340.00 - 350.00	0.6000	0.5756
T1	4	1 1/4	340.00 - 350.00	0.6000	0.5756
T1	7	Feedline Ladder (Af)	340.00 - 350.00	0.6000	0.5756
T1	20	Climbing Ladder	340.00 - 350.00	0.6000	0.5756
T1	22	1.75" Hybrid	340.00 - 341.00	0.6000	0.5756
T1	23	Feedline Ladder (Af)	340.00 - 341.00	0.6000	0.5756
T1	26	0.62" S.O. Cord	340.00 - 350.00	0.6000	0.5756
T1	27	0.25" Cable	340.00 - 350.00	0.6000	0.5756
T2	1	7/8	320.00 - 340.00	0.6000	0.5948
T2	4	1 1/4	320.00 - 340.00	0.6000	0.5948
T2	7	Feedline Ladder (Af)	320.00 - 340.00	0.6000	0.5948
T2	20	Climbing Ladder	320.00 - 340.00	0.6000	0.5948
T2	22	1.75" Hybrid	320.00 - 340.00	0.6000	0.5948
T2	23	Feedline Ladder (Af)	320.00 - 340.00	0.6000	0.5948
T2	26	0.62" S.O. Cord	320.00 - 340.00	0.6000	0.5948
T2	27	0.25" Cable	320.00 - 340.00	0.6000	0.5948

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	1	7/8	300.00 - 320.00	0.6000	0.6000
T3	4	1 1/4	300.00 - 320.00	0.6000	0.6000
T3	5	1 1/4	300.00 - 320.00	0.6000	0.6000
T3	7	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.6000
T3	20	Climbing Ladder	300.00 - 320.00	0.6000	0.6000
T3	22	1.75" Hybrid	300.00 - 320.00	0.6000	0.6000
T3	23	Feedline Ladder (Af)	300.00 - 320.00	0.6000	0.6000
T3	26	0.62" S.O. Cord	300.00 - 320.00	0.6000	0.6000
T3	27	0.25" Cable	300.00 - 320.00	0.6000	0.6000
T4	1	7/8	280.00 - 300.00	0.6000	0.6000
T4	4	1 1/4	280.00 - 300.00	0.6000	0.6000
T4	5	1 1/4	280.00 - 300.00	0.6000	0.6000
T4	7	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.6000
T4	20	Climbing Ladder	280.00 - 300.00	0.6000	0.6000
T4	22	1.75" Hybrid	280.00 - 300.00	0.6000	0.6000
T4	23	Feedline Ladder (Af)	280.00 - 300.00	0.6000	0.6000
T4	26	0.62" S.O. Cord	280.00 - 300.00	0.6000	0.6000
T4	27	0.25" Cable	280.00 - 300.00	0.6000	0.6000
T5	1	7/8	260.00 - 280.00	0.6000	0.6000
T5	4	1 1/4	260.00 - 280.00	0.6000	0.6000
T5	5	1 1/4	260.00 - 280.00	0.6000	0.6000
T5	7	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.6000
T5	20	Climbing Ladder	260.00 - 280.00	0.6000	0.6000
T5	22	1.75" Hybrid	260.00 - 280.00	0.6000	0.6000
T5	23	Feedline Ladder (Af)	260.00 - 280.00	0.6000	0.6000
T5	26	0.62" S.O. Cord	260.00 - 280.00	0.6000	0.6000
T5	27	0.25" Cable	260.00 - 280.00	0.6000	0.6000
T6	1	7/8	240.00 - 260.00	0.6000	0.6000
T6	4	1 1/4	240.00 - 260.00	0.6000	0.6000
T6	5	1 1/4	240.00 - 260.00	0.6000	0.6000
T6	7	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	20	Climbing Ladder	240.00 - 260.00	0.6000	0.6000
T6	22	1.75" Hybrid	240.00 - 260.00	0.6000	0.6000
T6	23	Feedline Ladder (Af)	240.00 - 260.00	0.6000	0.6000
T6	26	0.62" S.O. Cord	240.00 - 260.00	0.6000	0.6000
T6	27	0.25" Cable	240.00 - 260.00	0.6000	0.6000
T7	1	7/8	220.00 - 240.00	0.6000	0.6000
T7	4	1 1/4	220.00 - 240.00	0.6000	0.6000
T7	5	1 1/4	220.00 - 240.00	0.6000	0.6000
T7	7	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T7	20	Climbing Ladder	220.00 - 240.00	0.6000	0.6000
T7	22	1.75" Hybrid	220.00 - 240.00	0.6000	0.6000
T7	23	Feedline Ladder (Af)	220.00 - 240.00	0.6000	0.6000
T7	26	0.62" S.O. Cord	220.00 - 240.00	0.6000	0.6000
T7	27	0.25" Cable	220.00 - 240.00	0.6000	0.6000
T8	1	7/8	200.00 - 220.00	0.6000	0.6000
T8	4	1 1/4	200.00 - 220.00	0.6000	0.6000
T8	5	1 1/4	200.00 - 220.00	0.6000	0.6000
T8	7	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T8	20	Climbing Ladder	200.00 - 220.00	0.6000	0.6000
T8	22	1.75" Hybrid	200.00 - 220.00	0.6000	0.6000
T8	23	Feedline Ladder (Af)	200.00 - 220.00	0.6000	0.6000
T8	26	0.62" S.O. Cord	200.00 - 220.00	0.6000	0.6000
T8	27	0.25" Cable	200.00 - 220.00	0.6000	0.6000
T9	1	7/8	180.00 - 200.00	0.6000	0.6000
T9	4	1 1/4	180.00 - 200.00	0.6000	0.6000
T9	5	1 1/4	180.00 - 200.00	0.6000	0.6000
T9	7	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T9	9	1-5/8"	180.00 - 186.00	0.6000	0.6000
T9	10	3/4" DC Power	180.00 - 186.00	0.6000	0.6000
T9	11	3/4" DC Power	180.00 - 186.00	0.6000	0.6000
T9	12	1/2" Fiber	180.00 - 186.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	13	1/2" Fiber	180.00 - 186.00	0.0001	0.0001
T9	14	1/2" Fiber	180.00 - 186.00	0.0001	0.0001
T9	16	Feedline Ladder (Af)	180.00 - 186.00	0.6000	0.6000
T9	20	Climbing Ladder	180.00 - 200.00	0.6000	0.6000
T9	22	1.75" Hybrid	180.00 - 200.00	0.6000	0.6000
T9	23	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.6000
T9	26	0.62" S.O. Cord	180.00 - 200.00	0.6000	0.6000
T9	27	0.25" Cable	180.00 - 200.00	0.6000	0.6000
T10	1	7/8	160.00 - 180.00	0.6000	0.6000
T10	3	1/2	160.00 - 165.00	0.6000	0.6000
T10	4	1 1/4	160.00 - 180.00	0.6000	0.6000
T10	5	1 1/4	160.00 - 180.00	0.6000	0.6000
T10	6	1/2	160.00 - 165.00	0.6000	0.6000
T10	7	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T10	9	1-5/8"	160.00 - 180.00	0.6000	0.6000
T10	10	3/4" DC Power	160.00 - 180.00	0.6000	0.6000
T10	11	3/4" DC Power	160.00 - 180.00	0.6000	0.6000
T10	12	1/2" Fiber	160.00 - 180.00	0.6000	0.6000
T10	13	1/2" Fiber	160.00 - 180.00	0.0001	0.0001
T10	14	1/2" Fiber	160.00 - 180.00	0.0001	0.0001
T10	16	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T10	20	Climbing Ladder	160.00 - 180.00	0.6000	0.6000
T10	22	1.75" Hybrid	160.00 - 180.00	0.6000	0.6000
T10	23	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T10	25	0.62" S.O. Cord	160.00 - 176.00	0.6000	0.6000
T10	26	0.62" S.O. Cord	176.00 - 180.00	0.6000	0.6000
T10	27	0.25" Cable	160.00 - 180.00	0.6000	0.6000
T11	1	7/8	140.00 - 160.00	0.6000	0.6000
T11	2	7/8	140.00 - 158.00	0.6000	0.6000
T11	3	1/2	140.00 - 160.00	0.6000	0.6000
T11	4	1 1/4	140.00 - 160.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	5	1 1/4	140.00 - 160.00	0.6000	0.6000
T11	6	1/2	140.00 - 160.00	0.6000	0.6000
T11	7	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T11	9	1-5/8"	140.00 - 160.00	0.6000	0.6000
T11	10	3/4" DC Power	140.00 - 160.00	0.6000	0.6000
T11	11	3/4" DC Power	140.00 - 160.00	0.6000	0.6000
T11	12	1/2" Fiber	140.00 - 160.00	0.6000	0.6000
T11	13	1/2" Fiber	140.00 - 160.00	0.0001	0.0001
T11	14	1/2" Fiber	140.00 - 160.00	0.0001	0.0001
T11	16	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T11	20	Climbing Ladder	140.00 - 160.00	0.6000	0.6000
T11	22	1.75" Hybrid	140.00 - 160.00	0.6000	0.6000
T11	23	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T11	25	0.62" S.O. Cord	140.00 - 160.00	0.6000	0.6000
T11	27	0.25" Cable	140.00 - 160.00	0.6000	0.6000
T12	1	7/8	120.00 - 140.00	0.6000	0.6000
T12	2	7/8	120.00 - 140.00	0.6000	0.6000
T12	3	1/2	120.00 - 140.00	0.6000	0.6000
T12	4	1 1/4	120.00 - 140.00	0.6000	0.6000
T12	5	1 1/4	120.00 - 140.00	0.6000	0.6000
T12	6	1/2	120.00 - 140.00	0.6000	0.6000
T12	7	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T12	9	1-5/8"	120.00 - 140.00	0.6000	0.6000
T12	10	3/4" DC Power	120.00 - 140.00	0.6000	0.6000
T12	11	3/4" DC Power	120.00 - 140.00	0.6000	0.6000
T12	12	1/2" Fiber	120.00 - 140.00	0.6000	0.6000
T12	13	1/2" Fiber	120.00 - 140.00	0.0001	0.0001
T12	14	1/2" Fiber	120.00 - 140.00	0.0001	0.0001
T12	16	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T12	18	1 1/4	120.00 - 134.00	0.6000	0.6000
T12	20	Climbing Ladder	120.00 - 140.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	22	1.75" Hybrid	120.00 - 140.00	0.6000	0.6000
T12	23	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T12	25	0.62" S.O. Cord	120.00 - 140.00	0.6000	0.6000
T12	27	0.25" Cable	120.00 - 140.00	0.6000	0.6000
T13	1	7/8	100.00 - 120.00	0.6000	0.6000
T13	2	7/8	100.00 - 120.00	0.6000	0.6000
T13	3	1/2	100.00 - 120.00	0.6000	0.6000
T13	4	1 1/4	100.00 - 120.00	0.6000	0.6000
T13	5	1 1/4	100.00 - 120.00	0.6000	0.6000
T13	6	1/2	100.00 - 120.00	0.6000	0.6000
T13	7	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T13	9	1-5/8"	100.00 - 120.00	0.6000	0.6000
T13	10	3/4" DC Power	100.00 - 120.00	0.6000	0.6000
T13	11	3/4" DC Power	100.00 - 120.00	0.6000	0.6000
T13	12	1/2" Fiber	100.00 - 120.00	0.6000	0.6000
T13	13	1/2" Fiber	100.00 - 120.00	0.0001	0.0001
T13	14	1/2" Fiber	100.00 - 120.00	0.0001	0.0001
T13	16	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T13	18	1 1/4	100.00 - 120.00	0.6000	0.6000
T13	20	Climbing Ladder	100.00 - 120.00	0.6000	0.6000
T13	22	1.75" Hybrid	100.00 - 120.00	0.6000	0.6000
T13	23	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T13	25	0.62" S.O. Cord	100.00 - 120.00	0.6000	0.6000
T13	27	0.25" Cable	100.00 - 120.00	0.6000	0.6000
T14	1	7/8	80.00 - 100.00	0.6000	0.6000
T14	2	7/8	80.00 - 100.00	0.6000	0.6000
T14	3	1/2	80.00 - 100.00	0.6000	0.6000
T14	4	1 1/4	80.00 - 100.00	0.6000	0.6000
T14	5	1 1/4	80.00 - 100.00	0.6000	0.6000
T14	6	1/2	80.00 - 100.00	0.6000	0.6000
T14	7	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T14	9	1-5/8"	80.00 - 100.00	0.6000	0.6000
T14	10	3/4" DC Power	80.00 - 100.00	0.6000	0.6000
T14	11	3/4" DC Power	80.00 - 100.00	0.6000	0.6000
T14	12	1/2" Fiber	80.00 - 100.00	0.6000	0.6000
T14	13	1/2" Fiber	80.00 - 100.00	0.0001	0.0001
T14	14	1/2" Fiber	80.00 - 100.00	0.0001	0.0001
T14	16	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	18	1 1/4	80.00 - 100.00	0.6000	0.6000
T14	20	Climbing Ladder	80.00 - 100.00	0.6000	0.6000
T14	22	1.75" Hybrid	80.00 - 100.00	0.6000	0.6000
T14	23	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T14	25	0.62" S.O. Cord	80.00 - 100.00	0.6000	0.6000
T14	27	0.25" Cable	80.00 - 100.00	0.6000	0.6000
T15	1	7/8	60.00 - 80.00	0.6000	0.6000
T15	2	7/8	60.00 - 80.00	0.6000	0.6000
T15	3	1/2	60.00 - 80.00	0.6000	0.6000
T15	4	1 1/4	60.00 - 80.00	0.6000	0.6000
T15	5	1 1/4	60.00 - 80.00	0.6000	0.6000
T15	6	1/2	60.00 - 80.00	0.6000	0.6000
T15	7	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T15	9	1-5/8"	60.00 - 80.00	0.6000	0.6000
T15	10	3/4" DC Power	60.00 - 80.00	0.6000	0.6000
T15	11	3/4" DC Power	60.00 - 80.00	0.6000	0.6000
T15	12	1/2" Fiber	60.00 - 80.00	0.6000	0.6000
T15	13	1/2" Fiber	60.00 - 80.00	0.0001	0.0001
T15	14	1/2" Fiber	60.00 - 80.00	0.0001	0.0001
T15	16	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T15	18	1 1/4	60.00 - 80.00	0.6000	0.6000
T15	20	Climbing Ladder	60.00 - 80.00	0.6000	0.6000
T15	22	1.75" Hybrid	60.00 - 80.00	0.6000	0.6000
T15	23	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T15	25	0.62" S.O. Cord	60.00 - 80.00	0.6000	0.6000
T15	27	0.25" Cable	60.00 - 80.00	0.6000	0.6000
T16	1	7/8	40.00 - 60.00	0.6000	0.6000
T16	2	7/8	40.00 - 60.00	0.6000	0.6000
T16	3	1/2	40.00 - 60.00	0.6000	0.6000
T16	4	1 1/4	40.00 - 60.00	0.6000	0.6000
T16	5	1 1/4	40.00 - 60.00	0.6000	0.6000
T16	6	1/2	40.00 - 60.00	0.6000	0.6000
T16	7	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T16	9	1-5/8"	40.00 - 60.00	0.6000	0.6000
T16	10	3/4" DC Power	40.00 - 60.00	0.6000	0.6000
T16	11	3/4" DC Power	40.00 - 60.00	0.6000	0.6000
T16	12	1/2" Fiber	40.00 - 60.00	0.6000	0.6000
T16	13	1/2" Fiber	40.00 - 60.00	0.0001	0.0001
T16	14	1/2" Fiber	40.00 - 60.00	0.0001	0.0001
T16	16	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T16	18	1 1/4	40.00 - 60.00	0.6000	0.6000
T16	20	Climbing Ladder	40.00 - 60.00	0.6000	0.6000
T16	22	1.75" Hybrid	40.00 - 60.00	0.6000	0.6000
T16	23	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T16	25	0.62" S.O. Cord	40.00 - 60.00	0.6000	0.6000
T16	27	0.25" Cable	40.00 - 60.00	0.6000	0.6000
T17	1	7/8	20.00 - 40.00	0.6000	0.6000
T17	2	7/8	20.00 - 40.00	0.6000	0.6000
T17	3	1/2	20.00 - 40.00	0.6000	0.6000
T17	4	1 1/4	20.00 - 40.00	0.6000	0.6000
T17	5	1 1/4	20.00 - 40.00	0.6000	0.6000
T17	6	1/2	20.00 - 40.00	0.6000	0.6000
T17	7	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T17	9	1-5/8"	20.00 - 40.00	0.6000	0.6000
T17	10	3/4" DC Power	20.00 - 40.00	0.6000	0.6000
T17	11	3/4" DC Power	20.00 - 40.00	0.6000	0.6000
T17	12	1/2" Fiber	20.00 - 40.00	0.6000	0.6000
T17	13	1/2" Fiber	20.00 - 40.00	0.0001	0.0001
T17	14	1/2" Fiber	20.00 - 40.00	0.0001	0.0001
T17	16	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T17	18	1 1/4	20.00 - 40.00	0.6000	0.6000
T17	20	Climbing Ladder	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	22	1.75" Hybrid	20.00 - 40.00	0.6000	0.6000
T17	23	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T17	25	0.62" S.O. Cord	20.00 - 40.00	0.6000	0.6000
T17	27	0.25" Cable	20.00 - 40.00	0.6000	0.6000
T18	1	7/8	0.00 - 20.00	0.6000	0.6000
T18	2	7/8	0.00 - 20.00	0.6000	0.6000
T18	3	1/2	0.00 - 20.00	0.6000	0.6000
T18	4	1 1/4	0.00 - 20.00	0.6000	0.6000
T18	5	1 1/4	0.00 - 20.00	0.6000	0.6000
T18	6	1/2	0.00 - 20.00	0.6000	0.6000
T18	7	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T18	9	1-5/8"	0.00 - 20.00	0.6000	0.6000
T18	10	3/4" DC Power	0.00 - 20.00	0.6000	0.6000
T18	11	3/4" DC Power	0.00 - 20.00	0.6000	0.6000
T18	12	1/2" Fiber	0.00 - 20.00	0.6000	0.6000
T18	13	1/2" Fiber	0.00 - 20.00	0.0001	0.0001
T18	14	1/2" Fiber	0.00 - 20.00	0.0001	0.0001
T18	16	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T18	18	1 1/4	0.00 - 20.00	0.6000	0.6000
T18	20	Climbing Ladder	0.00 - 20.00	0.6000	0.6000
T18	22	1.75" Hybrid	0.00 - 20.00	0.6000	0.6000
T18	23	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T18	25	0.62" S.O. Cord	0.00 - 20.00	0.6000	0.6000
T18	27	0.25" Cable	0.00 - 20.00	0.6000	0.6000

User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
T1	350.00	0.00	0.0000	0.13	0.00	0.00	0.16
T2	340.00	0.00	0.0000	0.06	0.00	0.00	0.07
T3	320.00	0.00	0.0000	0.08	0.00	0.00	0.10
T4	300.00	0.00	0.0000	0.11	0.00	0.00	0.12
T5	280.00	0.00	0.0000	0.12	0.00	0.00	0.12
T6	260.00	0.00	0.0000	0.14	0.00	0.00	0.13
T7	240.00	0.00	0.0000	0.17	0.00	0.00	0.15
T8	220.00	0.00	0.0000	0.19	0.00	0.00	0.15
T9	200.00	0.00	0.0000	0.43	0.00	0.00	0.31
T10	180.00	0.00	0.0000	0.28	0.00	0.00	0.18
T11	160.00	0.00	0.0000	0.29	0.00	0.00	0.17
T12	140.00	0.00	0.0000	0.38	0.00	0.00	0.19
T13	120.00	0.00	0.0000	0.32	0.00	0.00	0.14
T14	100.00	0.00	0.0000	0.33	0.00	0.00	0.12
T15	80.00	0.00	0.0000	0.38	0.00	0.00	0.11
T16	60.00	0.00	0.0000	0.40	0.00	0.00	0.09
T17	40.00	0.00	0.0000	0.44	0.00	0.00	0.06
T18	20.00	0.00	0.0000	0.47	0.00	0.00	0.03

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
QD8616-7	A	From Leg	3.00	0.0000	185.00	No Ice	20.53	9.60	0.07
(AT&T)			0.00			1/2" Ice	21.52	10.31	0.18
			0.00			1" Ice	22.52	11.01	0.29
QD8616-7	B	From Leg	3.00	0.0000	185.00	No Ice	20.53	9.60	0.07
(AT&T)			0.00			1/2" Ice	21.52	10.31	0.18
			0.00			1" Ice	22.52	11.01	0.29
QD8616-7	C	From Leg	3.00	0.0000	185.00	No Ice	20.53	9.60	0.07
(AT&T)			0.00			1/2" Ice	21.52	10.31	0.18
			0.00			1" Ice	22.52	11.01	0.29
DMP65R-BU86DA	A	From Leg	3.00	0.0000	185.00	No Ice	19.32	8.12	0.10
(AT&T)			0.00			1/2" Ice	20.30	8.77	0.19
			0.00			1" Ice	21.28	9.42	0.29
DMP65R-BU86DA	B	From Leg	3.00	0.0000	185.00	No Ice	19.32	8.12	0.10
(AT&T)			0.00			1/2" Ice	20.30	8.77	0.19
			0.00			1" Ice	21.28	9.42	0.29
DMP65R-BU86DA	C	From Leg	3.00	0.0000	185.00	No Ice	19.32	8.12	0.10
(AT&T)			0.00			1/2" Ice	20.30	8.77	0.19
			0.00			1" Ice	21.28	9.42	0.29
AIR6449 B77D	A	From Leg	3.00	0.0000	185.00	No Ice	4.82	3.23	0.09
(AT&T)			0.00			1/2" Ice	5.22	3.59	0.12
			0.00			1" Ice	5.62	3.94	0.16
AIR6449 B77D	B	From Leg	3.00	0.0000	185.00	No Ice	4.82	3.23	0.09
(AT&T)			0.00			1/2" Ice	5.22	3.59	0.12
			0.00			1" Ice	5.62	3.94	0.16
AIR6449 B77D	C	From Leg	3.00	0.0000	185.00	No Ice	4.82	3.23	0.09
(AT&T)			0.00			1/2" Ice	5.22	3.59	0.12
			0.00			1" Ice	5.62	3.94	0.16
AIR6419 B77G	A	From Leg	3.00	0.0000	185.00	No Ice	4.30	2.17	0.07
(AT&T)			0.00			1/2" Ice	4.81	2.48	0.09
			0.00			1" Ice	5.32	2.79	0.12
AIR6419 B77G	B	From Leg	3.00	0.0000	185.00	No Ice	4.30	2.17	0.07
(AT&T)			0.00			1/2" Ice	4.81	2.48	0.09
			0.00			1" Ice	5.32	2.79	0.12
AIR6419 B77G	C	From Leg	3.00	0.0000	185.00	No Ice	4.30	2.17	0.07
(AT&T)			0.00			1/2" Ice	4.81	2.48	0.09
			0.00			1" Ice	5.32	2.79	0.12
VFA14-H10-2120	A	From Leg	1.50	0.0000	185.00	No Ice	8.14	5.84	0.50
(AT&T)			0.00			1/2" Ice	11.15	7.84	0.70
			0.00			1" Ice	14.16	9.84	0.90
VFA14-H10-2120	B	From Leg	1.50	0.0000	185.00	No Ice	8.14	5.84	0.50
(AT&T)			0.00			1/2" Ice	11.15	7.84	0.70
			0.00			1" Ice	14.16	9.84	0.90
VFA14-H10-2120	C	From Leg	1.50	0.0000	185.00	No Ice	8.14	5.84	0.50
(AT&T)			0.00			1/2" Ice	11.15	7.84	0.70
			0.00			1" Ice	14.16	9.84	0.90
(5) Mount Pipes	A	From Leg	3.00	0.0000	185.00	No Ice	4.05	9.03	0.15
(AT&T)			0.00			1/2" Ice	5.76	12.82	0.20
			0.00			1" Ice	7.47	16.63	0.25
(5) Mount Pipes	B	From Leg	3.00	0.0000	185.00	No Ice	4.05	9.03	0.15
(AT&T)			0.00			1/2" Ice	5.76	12.82	0.20
			0.00			1" Ice	7.47	16.63	0.25
(5) Mount Pipes	C	From Leg	3.00	0.0000	185.00	No Ice	4.05	9.03	0.15
(AT&T)			0.00			1/2" Ice	5.76	12.82	0.20
			0.00			1" Ice	7.47	16.63	0.25
RRUS 32	A	From Leg	3.00	0.0000	185.00	No Ice	2.32	1.65	0.08
(AT&T)			0.00			1/2" Ice	2.51	1.83	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	2.71	2.01	0.12
RRUS 32	B	From Leg	3.00	0.0000	185.00	No Ice	2.32	1.65	0.08
(AT&T)			0.00			1/2" Ice	2.51	1.83	0.10
			0.00			1" Ice	2.71	2.01	0.12
RRUS 32	C	From Leg	3.00	0.0000	185.00	No Ice	2.32	1.65	0.08
(AT&T)			0.00			1/2" Ice	2.51	1.83	0.10
			0.00			1" Ice	2.71	2.01	0.12
RRUS 4478 B14	A	From Leg	3.00	0.0000	185.00	No Ice	2.02	1.25	0.06
(AT&T)			0.00			1/2" Ice	2.20	1.40	0.08
			0.00			1" Ice	2.39	1.55	0.10
RRUS 4478 B14	B	From Leg	3.00	0.0000	185.00	No Ice	2.02	1.25	0.06
(AT&T)			0.00			1/2" Ice	2.20	1.40	0.08
			0.00			1" Ice	2.39	1.55	0.10
RRUS 4478 B14	C	From Leg	3.00	0.0000	185.00	No Ice	2.02	1.25	0.06
(AT&T)			0.00			1/2" Ice	2.20	1.40	0.08
			0.00			1" Ice	2.39	1.55	0.10
RRUS 8843 B2 B66A	A	From Leg	3.00	0.0000	185.00	No Ice	1.91	1.58	0.07
(AT&T)			0.00			1/2" Ice	2.15	1.80	0.09
			0.00			1" Ice	2.40	2.02	0.11
RRUS 8843 B2 B66A	B	From Leg	3.00	0.0000	185.00	No Ice	1.91	1.58	0.07
(AT&T)			0.00			1/2" Ice	2.15	1.80	0.09
			0.00			1" Ice	2.40	2.02	0.11
RRUS 8843 B2 B66A	C	From Leg	3.00	0.0000	185.00	No Ice	1.91	1.58	0.07
(AT&T)			0.00			1/2" Ice	2.15	1.80	0.09
			0.00			1" Ice	2.40	2.02	0.11
RRUS-4449 B5/B12	A	From Leg	3.00	0.0000	185.00	No Ice	1.97	1.63	0.07
(AT&T)			0.00			1/2" Ice	2.15	1.79	0.09
			0.00			1" Ice	2.33	1.96	0.12
RRUS-4449 B5/B12	B	From Leg	3.00	0.0000	185.00	No Ice	1.97	1.63	0.07
(AT&T)			0.00			1/2" Ice	2.15	1.79	0.09
			0.00			1" Ice	2.33	1.96	0.12
RRUS-4449 B5/B12	C	From Leg	3.00	0.0000	185.00	No Ice	1.97	1.63	0.07
(AT&T)			0.00			1/2" Ice	2.15	1.79	0.09
			0.00			1" Ice	2.33	1.96	0.12
DC6-48-60-18-8F	A	From Leg	3.00	0.0000	186.00	No Ice	1.56	4.78	0.03
(AT&T)			0.00			1/2" Ice	1.72	5.06	0.06
			0.00			1" Ice	1.89	5.35	0.10
DC6-48-60-18-8F	B	From Leg	3.00	0.0000	186.00	No Ice	1.56	4.78	0.03
(AT&T)			0.00			1/2" Ice	1.72	5.06	0.06
			0.00			1" Ice	1.89	5.35	0.10
DC6-48-60-18-8F	C	From Leg	3.00	0.0000	186.00	No Ice	1.56	4.78	0.03
(AT&T)			0.00			1/2" Ice	1.72	5.06	0.06
			0.00			1" Ice	1.89	5.35	0.10
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Celwave PD200 Omni	A	From Leg	3.00	0.0000	350.00	No Ice	2.73	2.73	0.02
(LoJack)			0.00			1/2" Ice	3.91	3.91	0.04
			10.00			1" Ice	5.09	5.10	0.07
101 Omni	B	From Leg	3.00	0.0000	350.00	No Ice	2.14	2.14	0.02
(Marcus)			0.00			1/2" Ice	3.06	3.06	0.04
			5.00			1" Ice	5.10	3.99	0.07
Star Mount w/ (9) Standoffs	A	From Leg	1.50	0.0000	350.00	No Ice	28.57	28.57	0.57
(Marcus/LoJack)			0.00			1/2" Ice	35.34	35.34	0.86
			0.00			1" Ice	42.11	42.11	1.16
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101 Omni	A	From Leg	3.00	0.0000	320.00	No Ice	2.14	2.14	0.02
(Marcus)			0.00			1/2" Ice	3.06	3.06	0.04
			5.00			1" Ice	5.10	3.99	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
101 Omni	B	From Leg	3.00	0.0000	320.00	No Ice	2.14	2.14	0.02
(Marcus)			0.00			1/2" Ice	3.06	3.06	0.04
			5.00			1" Ice	5.10	3.99	0.07
6' Standoff	A	From Leg	1.50	0.0000	320.00	No Ice	4.97	3.20	0.07
(Marcus)			0.00			1/2" Ice	6.12	5.12	0.13
			0.00			1" Ice	7.27	7.04	0.19
6' Standoff	B	From Leg	1.50	0.0000	320.00	No Ice	4.97	3.20	0.07
(Marcus)			0.00			1/2" Ice	6.12	5.12	0.13
			0.00			1" Ice	7.27	7.04	0.19
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Decibel DB408 Omni	A	From Leg	3.00	0.0000	158.00	No Ice	1.60	1.60	0.02
(Wolcott Ambulance)			0.00			1/2" Ice	2.42	2.42	0.03
			5.00			1" Ice	3.24	3.24	0.05
17" Standoff Mount	B	From Leg	1.50	0.0000	158.00	No Ice	0.73	0.73	0.03
(Wolcott)			0.00			1/2" Ice	0.91	0.91	0.04
			0.00			1" Ice	1.09	1.09	0.05
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(2) Pipe Mounts (5.25' x 4.5")	A	From Leg	0.50	0.0000	165.00	No Ice	1.69	1.69	0.06
(Marcus)			0.00			1/2" Ice	2.21	2.21	0.07
			0.00			1" Ice	2.54	2.54	0.09
(2) Pipe Mounts (5.25' x 4.5")	B	From Leg	0.50	0.0000	165.00	No Ice	1.69	1.69	0.06
(Marcus)			0.00			1/2" Ice	2.21	2.21	0.07
			0.00			1" Ice	2.54	2.54	0.09
(2) Pipe Mounts (5.25' x 4.5")	C	From Leg	0.50	0.0000	165.00	No Ice	1.69	1.69	0.06
(Marcus)			0.00			1/2" Ice	2.21	2.21	0.07
			0.00			1" Ice	2.54	2.54	0.09
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MX08FRO665-20	C	From Leg	3.00	0.0000	341.00	No Ice	12.49	5.87	0.07
(Dish Network)			0.00			1/2" Ice	12.99	6.32	0.14
			0.00			1" Ice	13.49	6.79	0.22
MX08FRO665-20	B	From Leg	3.00	0.0000	341.00	No Ice	12.49	5.87	0.07
(Dish Network)			0.00			1/2" Ice	12.99	6.32	0.14
			0.00			1" Ice	13.49	6.79	0.22
MX08FRO665-20	A	From Leg	3.00	0.0000	341.00	No Ice	12.49	5.87	0.07
(Dish Network)			0.00			1/2" Ice	12.99	6.32	0.14
			0.00			1" Ice	13.49	6.79	0.22
RDIDC-9181-PF-48	A	From Leg	3.00	0.0000	341.00	No Ice	2.24	1.17	0.02
(Dish Network)			0.00			1/2" Ice	2.42	1.31	0.04
			0.00			1" Ice	2.62	1.46	0.06
TA08025-B605	A	From Leg	3.00	0.0000	341.00	No Ice	1.96	1.19	0.07
(Dish Network)			0.00			1/2" Ice	2.14	1.33	0.09
			0.00			1" Ice	2.32	1.48	0.11
TA08025-B605	B	From Leg	3.00	0.0000	341.00	No Ice	1.96	1.19	0.07
(Dish Network)			0.00			1/2" Ice	2.14	1.33	0.09
			0.00			1" Ice	2.32	1.48	0.11
TA08025-B605	C	From Leg	3.00	0.0000	341.00	No Ice	1.96	1.19	0.07
(Dish Network)			0.00			1/2" Ice	2.14	1.33	0.09
			0.00			1" Ice	2.32	1.48	0.11
TA08025-B604	A	From Leg	3.00	0.0000	341.00	No Ice	1.96	1.03	0.06
(Dish Network)			0.00			1/2" Ice	2.14	1.17	0.08
			0.00			1" Ice	2.32	1.31	0.10
TA08025-B604	B	From Leg	3.00	0.0000	341.00	No Ice	1.96	1.03	0.06
(Dish Network)			0.00			1/2" Ice	2.14	1.17	0.08
			0.00			1" Ice	2.32	1.31	0.10
TA08025-B604	C	From Leg	3.00	0.0000	341.00	No Ice	1.96	1.03	0.06
(Dish Network)			0.00			1/2" Ice	2.14	1.17	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	2.32	1.31	0.10
Commscope SF-SU7-2-96	A	From Leg	1.50	0.0000	341.00	No Ice	15.15	10.77	0.33
Sector Frame			0.00			1/2" Ice	20.05	14.02	0.47
(Dish Network)			0.00			1" Ice	24.95	17.27	0.60
Commscope SF-SU7-2-96	B	From Leg	1.50	0.0000	341.00	No Ice	15.15	10.77	0.33
Sector Frame			0.00			1/2" Ice	20.05	14.02	0.47
(Dish Network)			0.00			1" Ice	24.95	17.27	0.60
Commscope SF-SU7-2-96	C	From Leg	1.50	0.0000	341.00	No Ice	15.15	10.77	0.33
Sector Frame			0.00			1/2" Ice	20.05	14.02	0.47
(Dish Network)			0.00			1" Ice	24.95	17.27	0.60
Antenna Mount Pipes	A	From Leg	3.00	0.0000	341.00	No Ice	2.38	3.80	0.06
(2x2.375x96)			0.00			1/2" Ice	3.38	5.40	0.08
(Dish Network)			0.00			1" Ice	4.38	7.00	0.11
Antenna Mount Pipes	B	From Leg	3.00	0.0000	341.00	No Ice	2.38	3.80	0.06
(2x2.375x96)			0.00			1/2" Ice	3.38	5.40	0.08
(Dish Network)			0.00			1" Ice	4.38	7.00	0.11
Antenna Mount Pipes	C	From Leg	3.00	0.0000	341.00	No Ice	2.38	3.80	0.06
(2x2.375x96)			0.00			1/2" Ice	3.38	5.40	0.08
(Dish Network)			0.00			1" Ice	4.38	7.00	0.11
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APXVTM14-C-I20	A	From Leg	3.00	0.0000	134.00	No Ice	6.34	3.61	0.06
(Sprint)			0.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
APXVTM14-C-I20	B	From Leg	3.00	0.0000	134.00	No Ice	6.34	3.61	0.06
(Sprint)			0.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
APXVTM14-C-I20	C	From Leg	3.00	0.0000	134.00	No Ice	6.34	3.61	0.06
(Sprint)			0.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
RFS APXVSPP18	A	From Leg	3.00	0.0000	134.00	No Ice	8.02	5.28	0.06
(Sprint)			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
RFS APXVSPP18	B	From Leg	3.00	0.0000	134.00	No Ice	8.02	5.28	0.06
(Sprint)			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
RFS APXVSPP18	C	From Leg	3.00	0.0000	134.00	No Ice	8.02	5.28	0.06
(Sprint)			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
1900 MHz RRH	A	From Leg	3.00	0.0000	134.00	No Ice	1.16	2.38	0.06
(Sprint)			0.00			1/2" Ice	1.26	2.58	0.08
			0.00			1" Ice	1.36	2.79	0.11
1900 MHz RRH	B	From Leg	3.00	0.0000	134.00	No Ice	1.16	2.38	0.06
(Sprint)			0.00			1/2" Ice	1.26	2.58	0.08
			0.00			1" Ice	1.36	2.79	0.11
1900 MHz RRH	C	From Leg	3.00	0.0000	134.00	No Ice	1.16	2.38	0.06
(Sprint)			0.00			1/2" Ice	1.26	2.58	0.08
			0.00			1" Ice	1.36	2.79	0.11
800 MHz RRH	A	From Leg	3.00	0.0000	134.00	No Ice	1.07	1.77	0.05
(Sprint)			0.00			1/2" Ice	1.16	1.95	0.07
			0.00			1" Ice	1.25	2.13	0.10
800 MHz RRH	B	From Leg	3.00	0.0000	134.00	No Ice	1.07	1.77	0.05
(Sprint)			0.00			1/2" Ice	1.16	1.95	0.07
			0.00			1" Ice	1.25	2.13	0.10
800 MHz RRH	C	From Leg	3.00	0.0000	134.00	No Ice	1.07	1.77	0.05
(Sprint)			0.00			1/2" Ice	1.16	1.95	0.07
			0.00			1" Ice	1.25	2.13	0.10
TD-RRH8x20-25	A	From Leg	3.00	0.0000	134.00	No Ice	1.85	1.29	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(Sprint)			0.00				1/2" Ice	1.97	1.46	0.09
			0.00				1" Ice	2.09	1.64	0.12
TD-RRH8x20-25	B	From Leg	3.00		0.0000	134.00	No Ice	1.85	1.29	0.07
(Sprint)			0.00				1/2" Ice	1.97	1.46	0.09
			0.00				1" Ice	2.09	1.64	0.12
TD-RRH8x20-25	C	From Leg	3.00		0.0000	134.00	No Ice	1.85	1.29	0.07
(Sprint)			0.00				1/2" Ice	1.97	1.46	0.09
			0.00				1" Ice	2.09	1.64	0.12
800 MHz Filter	A	From Leg	3.00		0.0000	134.00	No Ice	0.30	0.15	0.01
(Sprint)			0.00				1/2" Ice	0.37	0.20	0.01
			0.00				1" Ice	0.45	0.26	0.02
800 MHz Filter	B	From Leg	3.00		0.0000	134.00	No Ice	0.30	0.15	0.01
(Sprint)			0.00				1/2" Ice	0.37	0.20	0.01
			0.00				1" Ice	0.45	0.26	0.02
800 MHz Filter	C	From Leg	3.00		0.0000	134.00	No Ice	0.30	0.15	0.01
(Sprint)			0.00				1/2" Ice	0.37	0.20	0.01
			0.00				1" Ice	0.45	0.26	0.02
(2) ACU-A20-N	A	From Leg	3.00		0.0000	134.00	No Ice	0.07	0.12	0.00
(Sprint)			0.00				1/2" Ice	0.10	0.16	0.00
			0.00				1" Ice	0.15	0.21	0.00
ACU-A20-N	B	From Leg	3.00		0.0000	134.00	No Ice	0.07	0.12	0.00
(Sprint)			0.00				1/2" Ice	0.10	0.16	0.00
			0.00				1" Ice	0.15	0.21	0.00
ACU-A20-N	C	From Leg	3.00		0.0000	134.00	No Ice	0.07	0.12	0.00
(Sprint)			0.00				1/2" Ice	0.10	0.16	0.00
			0.00				1" Ice	0.15	0.21	0.00
15' T-Frames	A	From Leg	1.50		0.0000	134.00	No Ice	12.67	8.47	0.38
(Sprint)			0.00				1/2" Ice	18.10	12.52	0.53
			0.00				1" Ice	23.53	16.57	0.69
15' T-Frames	B	From Leg	1.50		0.0000	134.00	No Ice	12.67	8.47	0.38
(Sprint)			0.00				1/2" Ice	18.10	12.52	0.53
			0.00				1" Ice	23.53	16.57	0.69
15' T-Frames	C	From Leg	1.50		0.0000	134.00	No Ice	12.67	8.47	0.38
(Sprint)			0.00				1/2" Ice	18.10	12.52	0.53
			0.00				1" Ice	23.53	16.57	0.69
Antenna mount Pipes	A	From Leg	3.00		0.0000	134.00	No Ice	1.85	4.28	0.07
(3x2.375x72)			0.00				1/2" Ice	2.63	6.08	0.09
(Sprint)			0.00				1" Ice	3.42	7.88	0.12
Antenna mount Pipes	B	From Leg	3.00		0.0000	134.00	No Ice	1.85	4.28	0.07
(3x2.375x72)			0.00				1/2" Ice	2.63	6.08	0.09
(Sprint)			0.00				1" Ice	3.42	7.88	0.12
Antenna mount Pipes	C	From Leg	3.00		0.0000	134.00	No Ice	1.85	4.28	0.07
(3x2.375x72)			0.00				1/2" Ice	2.63	6.08	0.09
(Sprint)			0.00				1" Ice	3.42	7.88	0.12
***										
Empty T-frames	A	From Leg	1.50		0.0000	200.00	No Ice	7.27	7.55	0.41
			0.00				1/2" Ice	11.34	10.68	0.57
			0.00				1" Ice	15.42	13.80	0.73
Empty T-frames	B	From Leg	1.50		0.0000	200.00	No Ice	7.27	7.55	0.41
			0.00				1/2" Ice	11.34	10.68	0.57
			0.00				1" Ice	15.42	13.80	0.73
Antenna Mount Pipes	A	From Leg	3.00		0.0000	200.00	No Ice	2.85	2.85	0.04
			0.00				1/2" Ice	4.05	4.05	0.06
			0.00				1" Ice	5.25	5.25	0.08
Antenna Mount Pipes	B	From Leg	3.00		0.0000	200.00	No Ice	2.85	2.85	0.04
			0.00				1/2" Ice	4.05	4.05	0.06
			0.00				1" Ice	5.25	5.25	0.08

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
Radiowaves SPD3-2.4 Dish (Marcus)	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		165.00	3.00	No Ice 1/2" Ice 1" Ice	7.10 7.46 7.83	0.04 0.07 0.11
Radiowaves SPD3-2.4 Dish (Marcus)	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		165.00	3.00	No Ice 1/2" Ice 1" Ice	7.10 7.46 7.83	0.04 0.07 0.11
Radiowaves SPD3-2.4 Dish (Marcus)	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		165.00	3.00	No Ice 1/2" Ice 1" Ice	7.10 7.46 7.83	0.04 0.07 0.11
Radiowaves SPD2-5.8 Dish (Marcus)	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		165.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	0.02 0.04 0.06
Radiowaves SPD2-5.8 Dish (Marcus)	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		165.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	0.02 0.04 0.06
Radiowaves SPD2-5.8 Dish (Marcus)	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		165.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	0.02 0.04 0.06

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice

Comb. No.	Description
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	350 - 340	6.617	39	0.2281	0.0735
T2	340 - 320	6.140	39	0.2246	0.0594
T3	320 - 300	5.233	39	0.1937	0.0343

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T4	300 - 280	4.480	39	0.1614	0.0181
T5	280 - 260	3.833	39	0.1437	0.0117
T6	260 - 240	3.256	39	0.1270	0.0081
T7	240 - 220	2.742	39	0.1131	0.0060
T8	220 - 200	2.288	39	0.0993	0.0051
T9	200 - 180	1.887	39	0.0874	0.0043
T10	180 - 160	1.531	39	0.0769	0.0037
T11	160 - 140	1.212	39	0.0674	0.0031
T12	140 - 120	0.930	39	0.0574	0.0026
T13	120 - 100	0.690	39	0.0482	0.0022
T14	100 - 80	0.489	47	0.0396	0.0018
T15	80 - 60	0.323	47	0.0307	0.0014
T16	60 - 40	0.195	47	0.0224	0.0011
T17	40 - 20	0.100	47	0.0148	0.0007
T18	20 - 0	0.032	47	0.0071	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
350.00	Celwave PD200 Omni	39	6.617	0.2281	0.0735	350675
341.00	MX08FRO665-20	39	6.187	0.2253	0.0608	176391
340.00	T2	39	6.140	0.2246	0.0594	148134
320.00	101 Omni	39	5.233	0.1937	0.0343	25160
300.00	T4	39	4.480	0.1614	0.0181	51145
280.00	T5	39	3.833	0.1437	0.0117	70437
260.00	T6	39	3.256	0.1270	0.0081	77483
240.00	T7	39	2.742	0.1131	0.0060	77004
220.00	T8	39	2.288	0.0993	0.0051	93364
200.00	Empty T-frames	39	1.887	0.0874	0.0043	103466
186.00	DC6-48-60-18-8F	39	1.634	0.0799	0.0039	126896
185.00	QD8616-7	39	1.617	0.0794	0.0038	129068
180.00	T10	39	1.531	0.0769	0.0037	138647
165.00	Radiowaves SPD3-2.4 Dish	39	1.288	0.0697	0.0033	135160
160.00	T11	39	1.212	0.0674	0.0031	132319
158.00	Decibel DB408 Omni	39	1.182	0.0664	0.0031	130091
140.00	T12	39	0.930	0.0574	0.0026	109641
134.00	APXVTM14-C-I20	39	0.853	0.0545	0.0025	111026
120.00	T13	39	0.690	0.0482	0.0022	118453
100.00	T14	47	0.489	0.0396	0.0018	154357
80.00	T15	47	0.323	0.0307	0.0014	119358
60.00	T16	47	0.195	0.0224	0.0011	139424
40.00	T17	47	0.100	0.0148	0.0007	219290
20.00	T18	47	0.032	0.0071	0.0004	103901

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	350 - 340	25.123	2	0.8510	0.2799

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T2	340 - 320	23.338	2	0.8423	0.2263
T3	320 - 300	19.920	2	0.7331	0.1307
T4	300 - 280	17.064	2	0.6136	0.0687
T5	280 - 260	14.600	2	0.5473	0.0446
T6	260 - 240	12.402	2	0.4841	0.0308
T7	240 - 220	10.442	2	0.4311	0.0228
T8	220 - 200	8.714	2	0.3784	0.0193
T9	200 - 180	7.185	2	0.3330	0.0165
T10	180 - 160	5.829	2	0.2930	0.0140
T11	160 - 140	4.613	2	0.2567	0.0119
T12	140 - 120	3.537	2	0.2188	0.0098
T13	120 - 100	2.623	2	0.1834	0.0084
T14	100 - 80	1.861	2	0.1507	0.0069
T15	80 - 60	1.227	2	0.1168	0.0054
T16	60 - 40	0.739	18	0.0854	0.0040
T17	40 - 20	0.378	18	0.0565	0.0027
T18	20 - 0	0.121	19	0.0269	0.0013

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
350.00	Celwave PD200 Omni	2	25.123	0.8510	0.2799	159063
341.00	MX08FRO665-20	2	23.516	0.8445	0.2316	75284
340.00	T2	2	23.338	0.8423	0.2263	59176
320.00	101 Omni	2	19.920	0.7331	0.1307	6875
300.00	T4	2	17.064	0.6136	0.0687	13626
280.00	T5	2	14.600	0.5473	0.0446	18657
260.00	T6	2	12.402	0.4841	0.0308	20385
240.00	T7	2	10.442	0.4311	0.0228	20217
220.00	T8	2	8.714	0.3784	0.0193	24441
200.00	Empty T-frames	2	7.185	0.3330	0.0165	27148
186.00	DC6-48-60-18-8F	2	6.220	0.3045	0.0147	33291
185.00	QD8616-7	2	6.154	0.3025	0.0146	33860
180.00	T10	2	5.829	0.2930	0.0140	36367
165.00	Radiowaves SPD3-2.4 Dish	2	4.904	0.2658	0.0124	35419
160.00	T11	2	4.613	0.2567	0.0119	34669
158.00	Decibel DB408 Omni	2	4.498	0.2529	0.0116	34090
140.00	T12	2	3.537	0.2188	0.0098	28780
134.00	APXVTM14-C-I20	2	3.246	0.2078	0.0094	29129
120.00	T13	2	2.623	0.1834	0.0084	31030
100.00	T14	2	1.861	0.1507	0.0069	40491
80.00	T15	2	1.227	0.1168	0.0054	31262
60.00	T16	18	0.739	0.0854	0.0040	36772
40.00	T17	18	0.378	0.0565	0.0027	56816
20.00	T18	19	0.121	0.0269	0.0013	27418

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	350	Leg	A325N	0.6250	4	0.82	20.34	0.040 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	2.03	6.83	0.297 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	1	0.34	10.44	0.032 ✔	1	Member Bearing
T2	340	Leg	A325N	0.6250	4	7.22	20.34	0.355 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	3.12	6.83	0.457 ✔	1	Member Block Shear
T3	320	Leg	A325N	0.7500	4	11.22	30.10	0.373 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	2.39	6.83	0.350 ✔	1	Member Block Shear
T4	300	Leg	A325N	0.7500	6	9.37	30.10	0.311 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	2.04	7.83	0.261 ✔	1	Member Bearing
T5	280	Leg	A325N	0.8750	6	11.26	41.56	0.271 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	2.24	7.83	0.286 ✔	1	Member Bearing
T6	260	Leg	A325N	0.8750	6	13.15	41.56	0.317 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	2.66	7.83	0.340 ✔	1	Member Bearing
T7	240	Leg	A325N	1.0000	6	14.89	54.52	0.273 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	3.42	15.66	0.218 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	1	2.08	7.83	0.266 ✔	1	Member Bearing
T8	220	Leg	A325N	1.1250	6	16.84	68.69	0.245 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	3.83	17.94	0.214 ✔	1	Member Block Shear
		Horizontal	A325N	0.6250	1	2.28	7.83	0.291 ✔	1	Member Bearing
T9	200	Leg	A325N	1.1250	6	18.68	68.69	0.272 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	5.92	18.92	0.313 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	1	2.54	7.83	0.324 ✔	1	Member Bearing
T10	180	Leg	A325N	1.2500	6	21.70	87.22	0.249 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	6.79	18.92	0.359 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	1	2.96	7.83	0.378 ✔	1	Member Bearing
T11	160	Leg	A325N	1.2500	6	24.85	87.22	0.285 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	7.76	18.92	0.410 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	1	3.41	10.44	0.327 ✔	1	Member Bearing
T12	140	Leg	A325N	1.3750	6	27.00	103.94	0.260 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	10.18	25.23	0.404 ✔	1	Member Bearing
		Horizontal	A325N	0.7500	1	3.76	17.94	0.210 ✔	1	Member Block Shear
T13	120	Leg	A325N	1.3750	6	30.49	103.94	0.293 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	11.06	25.23	0.438 ✔	1	Member Bearing
		Horizontal	A325N	0.7500	1	4.27	17.94	0.238 ✔	1	Member Block Shear
T14	100	Leg	A325N	1.3750	6	33.73	103.94	0.325 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	11.12	25.23	0.441 ✔	1	Member Bearing
		Horizontal	A325N	0.7500	1	4.74	17.94	0.264 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T15	80	Leg	A325N	1.5000	6	37.01	126.47	0.293 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	11.80	29.58	0.399 ✔	1	Member Bearing
		Horizontal	A325N	0.7500	1	5.24	18.92	0.277 ✔	1	Member Bearing
T16	60	Leg	A325N	1.5000	6	40.08	126.47	0.317 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	12.05	29.58	0.408 ✔	1	Member Bearing
		Horizontal	A325N	0.7500	1	5.72	18.92	0.302 ✔	1	Member Bearing
T17	40	Leg	A325N	1.5000	6	43.21	126.47	0.342 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	12.64	29.58	0.427 ✔	1	Member Bearing
		Horizontal	A325N	0.7500	1	6.22	25.23	0.246 ✔	1	Member Bearing
T18	20	Leg	A307	2.5000	6	46.10	179.95	0.256 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	12.92	29.58	0.437 ✔	1	Member Bearing
		Horizontal	A325N	0.7500	1	6.70	25.23	0.266 ✔	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	350 - 340	2	10.00	5.00	120.0 K=1.00	3.1416	-5.43	49.29	0.110 [1] ✔
T2	340 - 320	2	20.00	4.00	96.0 K=1.00	3.1416	-33.54	72.06	0.465 [1] ✔
T3	320 - 300	2 1/2	20.03	5.01	96.2 K=1.00	4.9087	-52.13	112.35	0.464 [1] ✔
T4	300 - 280	3 1/4	20.03	6.68	98.6 K=1.00	8.2958	-65.96	183.31	0.360 [1] ✔
T5	280 - 260	3 1/4	20.03	6.68	98.6 K=1.00	8.2958	-80.19	183.31	0.437 [1] ✔
T6	260 - 240	3 1/2	20.03	6.68	91.6 K=1.00	9.6211	-95.02	234.48	0.405 [1] ✔
T7	240 - 220	3 1/2	20.03	5.01	68.7 K=1.00	9.6211	-109.44	306.64	0.357 [1] ✔
T8	220 - 200	3 3/4	20.03	5.01	64.1 K=1.00	11.0447	-125.79	368.01	0.342 [1] ✔
T9	200 - 180	4	20.03	5.01	60.1 K=1.00	12.5664	-146.02	434.24	0.336 [1] ✔
T10	180 - 160	4 1/4	20.03	5.01	56.6 K=1.00	14.1863	-170.77	505.22	0.338 [1] ✔
T11	160 - 140	4 1/4	20.03	5.01	56.6 K=1.00	14.1863	-196.87	505.22	0.390 [1] ✔
T12	140 - 120	4 1/2	20.03	5.01	53.4	15.9043	-217.01	580.90	0.374 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T13	120 - 100	4 3/4	20.03	5.01	50.6 K=1.00	17.7205	-246.40	661.23	0.373 [1]
T14	100 - 80	4 3/4	20.03	5.01	50.6 K=1.00	17.7205	-273.29	661.23	0.413 [1]
T15	80 - 60	5	20.03	5.01	48.1 K=1.00	19.6350	-302.17	746.17	0.405 [1]
T16	60 - 40	5 1/4	20.03	5.01	45.8 K=1.00	21.6475	-329.59	835.68	0.394 [1]
T17	40 - 20	5 1/4	20.03	5.01	45.8 K=1.00	21.6475	-358.54	835.68	0.429 [1]
T18	20 - 0	5 1/2	20.03	5.01	43.7 K=1.00	23.7583	-386.45	929.74	0.416 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	350 - 340	L2x1 1/2x3/16	6.40	2.95	112.4 K=1.02	0.6211	-2.03	13.47	0.151 [1]
T2	340 - 320	L2x1 1/2x3/16	5.66	2.59	102.4 K=1.06	0.6211	-3.33	14.98	0.222 [1]
T3	320 - 300	L2x2x3/16	6.56	3.22	103.5 K=1.06	0.7148	-2.65	17.06	0.155 [1]
T4	300 - 280	L2-1/2x2-1/2x3/16	10.16	5.00	121.3 K=1.00	0.9023	-2.14	17.45	0.123 [1]
T5	280 - 260	L2-1/2x2-1/2x3/16	11.74	5.79	140.4 K=1.00	0.9023	-2.29	13.10	0.175 [1]
T6	260 - 240	L3x3x3/16	13.44	6.62	133.3 K=1.00	1.0898	-2.69	17.56	0.153 [1]
T7	240 - 220	2L2 1/2x2 1/2x3/16x3/8	8.60	8.18	126.2 K=1.00	1.8000	-3.49	32.33	0.108 [1]
T8	220 - 200	2L2 1/2x2 1/2x3/16x3/8	9.44	8.98	138.5 K=1.00	1.8000	-3.96	26.85	0.148 [1]
T9	200 - 180	2L3x3x3/16x3/8	10.30	9.84	125.7 K=1.00	2.1800	-6.19	39.43	0.157 [1]
T10	180 - 160	2L3x3x3/16x3/8	11.18	10.71	136.9 K=1.00	2.1800	-7.06	33.29	0.212 [1]
T11	160 - 140	2L3x3x3/16x3/8	12.08	11.62	148.5 K=1.00	2.1800	-7.76	28.30	0.274 [1]
T12	140 - 120	2L3x3x1/4x3/8	15.62	15.11	143.9 K=1.00	2.8800	-11.32	38.40	0.295 [1]
T13	120 - 100	2L3x3x1/4x3/8	16.40	15.88	150.0 K=1.00	2.8800	-11.26	35.46	0.318 [1]
T14	100 - 80	2L3x3x1/4x3/8	17.21	16.69	156.4 K=1.00	2.8800	-12.14	32.71	0.371 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T15	80 - 60	2L3 1/2x3 1/2x1/4x3/8	18.03	17.48	141.7 K=1.00	3.3800	-12.26	45.63	0.269 [1] ✔
T16	60 - 40	2L3 1/2x3 1/2x1/4x3/8	18.87	18.31	147.6 K=1.00	3.3800	-13.23	42.29	0.313 [1] ✔
T17	40 - 20	2L3 1/2x3 1/2x1/4x3/8	19.73	19.17	153.7 K=1.00	3.3800	-13.29	39.18	0.339 [1] ✔
T18	20 - 0	2L3 1/2x3 1/2x1/4x3/8	20.59	20.03	159.8 K=1.00	3.3800	-13.91	36.38	0.382 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	240 - 220	L2 1/2x2 1/2x3/16	13.50	6.48	157.2 K=1.00	0.9023	-2.08	10.45	0.199 [1] ✔
T8	220 - 200	L2 1/2x2 1/2x3/16	15.50	7.47	181.2 K=1.00	0.9023	-2.28	7.86	0.290 [1] ✔
T9	200 - 180	L3x3x3/16	17.50	8.46	170.3 K=1.00	1.0898	-2.54	10.75	0.236 [1] ✔
T10	180 - 160	L3x3x3/16	19.50	9.45	190.2 K=1.00	1.0898	-2.96	8.62	0.344 [1] ✔
T11	160 - 140	L3 1/2x3 1/2x1/4	21.50	10.45	180.7 K=1.00	1.6900	-3.41	14.81	0.231 [1] ✔
T12	140 - 120	2L2 1/2x2 1/2x3/16x3/8	23.00	11.18	172.4 K=1.00	1.8000	-3.76	17.33	0.217 [1] ✔
T13	120 - 100	2L2 1/2x2 1/2x3/16x3/8	25.00	12.17	187.7 K=1.00	1.8000	-4.27	14.63	0.292 [1] ✔
T14	100 - 80	2L2 1/2x2 1/2x3/16x3/8	27.00	13.17	203.1 K=1.00	1.8000	-4.74	12.49	0.379 [1] ✔
T15	80 - 60	2L3x3x3/16x3/8	29.00	14.16	180.9 K=1.00	2.1800	-5.24	19.06	0.275 [1] ✔
T16	60 - 40	2L3x3x3/16x3/8	31.00	15.15	193.6 K=1.00	2.1800	-5.72	16.65	0.343 [1] ✔
T17	40 - 20	2L3 1/2x3 1/2x1/4x3/8	33.00	16.15	177.8 K=1.00	3.3800	-6.22	30.62	0.203 [1] ✔
T18	20 - 0	2L3 1/2x3 1/2x1/4x3/8	35.00	17.14	188.6 K=1.00	3.3800	-6.70	27.18	0.247 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	350 - 340	L3x3x1/4	4.00	3.59	96.4 K=1.32	1.4400	-0.33	36.68	0.009 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	140 - 120	L2x2x3/16	5.75	5.56	169.5 K=1.00	0.7148	-3.76	7.12	0.529 [1] ✔
T13	120 - 100	L2x2x3/16	6.25	6.05	184.4 K=1.00	0.7148	-4.27	6.02	0.710 [1] ✔
T14	100 - 80	L2x2x3/8	6.75	6.55	202.1 K=1.00	1.3600	-4.74	9.53	0.497 [1] ✔
T15	80 - 60	L2-1/2x2-1/2x3/16	7.25	7.04	170.7 K=1.00	0.9023	-5.24	8.86	0.592 [1] ✔
T16	60 - 40	L2-1/2x2-1/2x3/16	7.75	7.53	182.6 K=1.00	0.9023	-5.72	7.74	0.738 [1] ✔
T17	40 - 20	L2.5x2.5x3/16 + L2.5x2.5x1/4 (C-Shape) - Cleary Tower	8.25	8.03	125.4 K=1.00	1.0565	-6.22	14.96	0.416 [1] ✔
T18	20 - 0	L3x3x3/16	8.75	8.52	171.5 K=1.00	1.0898	-6.70	10.61	0.632 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	140 - 120	L2-1/2x2-1/2x3/16	7.81	7.56	183.3 K=1.00	0.9023	-2.56	7.69	0.332 [1] ✔
T13	120 - 100	L2-1/2x2-1/2x3/16	8.20	7.94	192.6 K=1.00	0.9023	-2.80	6.96	0.403 [1] ✔
T14	100 - 80	L2-1/2x2-1/2x3/16	8.60	8.35	202.6 K=1.00	0.9023	-3.02	6.29	0.480 [1] ✔
T15	80 - 60	L3x3x3/16	9.02	8.76	176.3 K=1.00	1.0898	-3.26	10.04	0.325 [1] ✔
T16	60 - 40	L3x3x3/16	9.44	9.17	184.6 K=1.00	1.0898	-3.48	9.16	0.380 [1] ✔
T17	40 - 20	L3x3x3/16	9.86	9.60	193.3 K=1.00	1.0898	-3.72	8.35	0.445 [1] ✔
T18	20 - 0	L3x3x3/16	10.30	10.03	201.9 K=1.00	1.0898	-3.94	7.66	0.515 [1] ✔

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

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	240 - 220	L2 1/2x2 1/2x3/16	6.75	6.75	163.7 K=1.00	0.9023	-0.01	9.64	0.001 [1] ✔
T8	220 - 200	L2 1/2x2 1/2x3/16	7.75	7.75	187.9 K=1.00	0.9023	-0.01	7.31	0.001 [1] ✔
T9	200 - 180	L3x3x3/16	8.75	8.75	176.1 K=1.00	1.0898	-0.01	10.06	0.001 [1] ✔
T10	180 - 160	L3x3x3/16	9.75	9.75	196.2 K=1.00	1.0898	-0.01	8.10	0.002 [1] ✔
T11	160 - 140	L3 1/2x3 1/2x1/4	10.75	10.75	185.9 K=1.00	1.6900	-0.02	14.00	0.001 [1] ✔
T12	140 - 120	L3 1/2x3 1/2x1/4	11.50	11.50	198.8 K=1.00	1.6900	-0.02	12.23	0.002 [1] ✔
T13	120 - 100	L4x4x1/4	12.50	12.50	188.7 K=1.00	1.9400	-0.02	15.60	0.002 [1] ✔
T14	100 - 80	L4x4x1/4	13.50	13.50	203.8 K=1.00	1.9400	-0.03	13.37	0.002 [1] ✔
T15	80 - 60	2L3x3x3/16x3/8	14.50	14.50	185.3 K=1.00	2.1800	-0.03	18.17	0.002 [1] ✔
T16	60 - 40	2L3x3x3/16x3/8	15.50	15.50	198.1 K=1.00	2.1800	-0.03	15.90	0.002 [1] ✔
T17	40 - 20	2L3 1/2x3 1/2x1/4x3/8	16.50	16.50	181.7 K=1.00	3.3800	-0.04	29.32	0.001 [1] ✔
T18	20 - 0	2L3 1/2x3 1/2x1/4x3/8	17.50	17.50	192.7 K=1.00	3.3800	-0.03	26.06	0.001 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	350 - 340	2	10.00	5.00	120.0	3.1416	3.28	141.37	0.023 [1] ✔
T2	340 - 320	2	20.00	4.00	96.0	3.1416	28.90	141.37	0.204 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	320 - 300	2 1/2	20.03	5.01	96.2	4.9087	44.86	220.89	0.203 [1]
T4	300 - 280	3 1/4	20.03	6.68	98.6	8.2958	56.24	373.31	0.151 [1]
T5	280 - 260	3 1/4	20.03	6.68	98.6	8.2958	67.56	373.31	0.181 [1]
T6	260 - 240	3 1/2	20.03	6.68	91.6	9.6211	78.92	432.95	0.182 [1]
T7	240 - 220	3 1/2	20.03	5.01	68.7	9.6211	89.50	432.95	0.207 [1]
T8	220 - 200	3 3/4	20.03	5.01	64.1	11.0447	101.21	497.01	0.204 [1]
T9	200 - 180	4	20.03	5.01	60.1	12.5664	113.44	565.49	0.201 [1]
T10	180 - 160	4 1/4	20.03	5.01	56.6	14.1863	130.60	638.38	0.205 [1]
T11	160 - 140	4 1/4	20.03	5.01	56.6	14.1863	149.41	638.38	0.234 [1]
T12	140 - 120	4 1/2	20.03	5.01	53.4	15.9043	163.47	715.69	0.228 [1]
T13	120 - 100	4 3/4	20.03	5.01	50.6	17.7205	184.03	797.42	0.231 [1]
T14	100 - 80	4 3/4	20.03	5.01	50.6	17.7205	203.54	797.42	0.255 [1]
T15	80 - 60	5	20.03	5.01	48.1	19.6350	223.36	883.57	0.253 [1]
T16	60 - 40	5 1/4	20.03	5.01	45.8	21.6475	241.90	974.14	0.248 [1]
T17	40 - 20	5 1/4	20.03	5.01	45.8	21.6475	260.76	974.14	0.268 [1]
T18	20 - 0	5 1/2	20.03	5.01	43.7	23.7583	278.01	1069.12	0.260 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	350 - 340	L2x1 1/2x3/16	6.40	2.95	83.8	0.3604	2.03	15.68	0.130 [1]
T2	340 - 320	L2x1 1/2x3/16	5.66	2.59	74.0	0.3604	3.12	15.68	0.199 [1]
T3	320 - 300	L2x2x3/16	6.56	3.22	64.9	0.4307	2.39	18.73	0.128 [1]
T4	300 - 280	L2-1/2x2-1/2x3/16	9.67	4.77	75.3	0.5713	2.04	24.85	0.082 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	280 - 260	L2-1/2x2-1/2x3/16	11.74	5.79	91.1	0.5713	2.24	24.85	0.090 [1] ✔
T6	260 - 240	L3x3x3/16	13.44	6.62	86.1	0.7119	2.66	30.97	0.086 [1] ✔
T7	240 - 220	2L2 1/2x2 1/2x3/16x3/8	8.20	7.78	123.7	1.1391	3.42	49.55	0.069 [1] ✔
T8	220 - 200	2L2 1/2x2 1/2x3/16x3/8	9.02	8.56	136.2	1.1039	3.83	48.02	0.080 [1] ✔
T9	200 - 180	2L3x3x3/16x3/8	10.30	9.84	129.1	1.3889	5.92	60.42	0.098 [1] ✔
T10	180 - 160	2L3x3x3/16x3/8	11.18	10.71	140.4	1.3889	6.79	60.42	0.112 [1] ✔
T11	160 - 140	2L3x3x3/16x3/8	11.63	11.17	146.1	1.3889	7.76	60.42	0.128 [1] ✔
T12	140 - 120	2L3x3x1/4x3/8	15.62	15.11	132.8	1.8319	10.18	79.69	0.128 [1] ✔
T13	120 - 100	2L3x3x1/4x3/8	15.62	15.10	132.7	1.8319	11.06	79.69	0.139 [1] ✔
T14	100 - 80	2L3x3x1/4x3/8	16.40	15.89	139.5	1.8319	11.12	79.69	0.140 [1] ✔
T15	80 - 60	2L3 1/2x3 1/2x1/4x3/8	17.21	16.65	128.0	2.1600	11.80	93.96	0.126 [1] ✔
T16	60 - 40	2L3 1/2x3 1/2x1/4x3/8	18.03	17.47	134.1	2.1600	12.05	93.96	0.128 [1] ✔
T17	40 - 20	2L3 1/2x3 1/2x1/4x3/8	18.87	18.31	140.5	2.1600	12.64	93.96	0.134 [1] ✔
T18	20 - 0	2L3 1/2x3 1/2x1/4x3/8	19.73	19.16	146.9	2.1600	12.92	93.96	0.137 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	240 - 220	L2 1/2x2 1/2x3/16	12.50	5.98	94.1	0.5713	2.08	24.85	0.084 [1] ✔
T8	220 - 200	L2 1/2x2 1/2x3/16	14.50	6.97	109.4	0.5713	2.28	24.85	0.092 [1] ✔
T9	200 - 180	L3x3x3/16	16.50	7.96	103.3	0.7119	2.54	30.97	0.082 [1] ✔
T10	180 - 160	L3x3x3/16	19.50	9.45	122.3	0.7119	2.96	30.97	0.096 [1] ✔
T11	160 - 140	L3 1/2x3 1/2x1/4	20.50	9.95	110.9	1.1269	3.41	49.02	0.070 [1] ✔
T12	140 - 120	2L2 1/2x2 1/2x3/16x3/8	23.00	11.18	174.5	1.1039	3.76	48.02	0.078 [1] ✔
T13	120 - 100	2L2 1/2x2 1/2x3/16x3/8	25.00	12.17	189.7	1.1039	4.27	48.02	0.089 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	100 - 80	2L2 1/2x2 1/2x3/16x3/8	27.00	13.17	205.2	1.1039	4.74	48.02	0.099 [1]
T15	80 - 60	2L3x3x3/16x3/8	29.00	14.16	182.6	1.3889	5.24	60.42	0.087 [1]
T16	60 - 40	2L3x3x3/16x3/8	31.00	15.15	195.3	1.3889	5.72	60.42	0.095 [1]
T17	40 - 20	2L3 1/2x3 1/2x1/4x3/8	33.00	16.15	179.2	2.2069	6.22	96.00	0.065 [1]
T18	20 - 0	2L3 1/2x3 1/2x1/4x3/8	35.00	17.14	190.1	2.2069	6.70	96.00	0.070 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	350 - 340	L3x3x1/4	4.00	3.59	49.5	0.9394	0.34	40.86	0.008 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	140 - 120	L2x2x3/16	5.75	5.56	108.1	0.7148	3.76	23.16	0.162 [1]
T13	120 - 100	L2x2x3/16	6.25	6.05	117.6	0.7148	4.27	23.16	0.184 [1]
T14	100 - 80	L2x2x3/8	6.75	6.55	132.4	1.3600	4.74	44.06	0.108 [1]
T15	80 - 60	L2-1/2x2-1/2x3/16	7.25	7.04	108.6	0.9023	5.24	29.24	0.179 [1]
T16	60 - 40	L2-1/2x2-1/2x3/16	7.75	7.53	116.1	0.9023	5.72	29.24	0.196 [1]
T17	40 - 20	L2.5x2.5x3/16 + L2.5x2.5x1/4 (C-Shape) - Cleary Tower	8.25	8.03	125.4	1.0565	6.22	34.23	0.182 [1]
T18	20 - 0	L3x3x3/16	8.75	8.52	108.9	1.0898	6.70	35.31	0.190 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	140 - 120	L2-1/2x2-1/2x3/16	7.81	7.56	116.5	0.9023	2.56	29.24	0.087 [1] ✔
T13	120 - 100	L2-1/2x2-1/2x3/16	8.20	7.94	122.5	0.9023	2.80	29.24	0.096 [1] ✔
T14	100 - 80	L2-1/2x2-1/2x3/16	8.60	8.35	128.8	0.9023	3.02	29.24	0.103 [1] ✔
T15	80 - 60	L3x3x3/16	9.02	8.76	111.9	1.0898	3.26	35.31	0.092 [1] ✔
T16	60 - 40	L3x3x3/16	9.44	9.17	117.2	1.0898	3.48	35.31	0.099 [1] ✔
T17	40 - 20	L3x3x3/16	9.86	9.60	122.7	1.0898	3.72	35.31	0.105 [1] ✔
T18	20 - 0	L3x3x3/16	10.30	10.03	128.1	1.0898	3.94	35.31	0.112 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	350 - 340	Leg	2	3	-5.43	49.29	11.0	Pass
		Diagonal	L2x1 1/2x3/16	9	-2.03	13.47	15.1	Pass
							29.7 (b)	
		Top Girt	L3x3x1/4	4	-0.33	36.68	0.9	Pass
							3.2 (b)	
T2	340 - 320	Leg	2	21	-33.54	72.06	46.5	Pass
		Diagonal	L2x1 1/2x3/16	24	-3.33	14.98	22.2	Pass
							45.7 (b)	
T3	320 - 300	Leg	2 1/2	54	-52.13	112.35	46.4	Pass
		Diagonal	L2x2x3/16	75	-2.65	17.06	15.5	Pass
							35.0 (b)	
T4	300 - 280	Leg	3 1/4	81	-65.96	183.31	36.0	Pass
		Diagonal	L2-1/2x2-1/2x3/16	84	-2.14	17.45	12.3	Pass
							26.1 (b)	
T5	280 - 260	Leg	3 1/4	102	-80.19	183.31	43.7	Pass
		Diagonal	L2-1/2x2-1/2x3/16	107	-2.29	13.10	17.5	Pass
							28.6 (b)	
T6	260 - 240	Leg	3 1/2	123	-95.02	234.48	40.5	Pass
		Diagonal	L3x3x3/16	128	-2.69	17.56	15.3	Pass
							34.0 (b)	
T7	240 - 220	Leg	3 1/2	144	-109.44	306.64	35.7	Pass
		Diagonal	2L2 1/2x2 1/2x3/16x3/8	152	-3.49	32.33	10.8	Pass
							21.8 (b)	
		Horizontal	L2 1/2x2 1/2x3/16	148	-2.08	10.45	19.9	Pass
							26.6 (b)	
		Inner Bracing	L2 1/2x2 1/2x3/16	154	-0.01	9.64	0.4	Pass
T8	220 - 200	Leg	3 3/4	183	-125.79	368.01	34.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2 1/2x3/16x3/8	191	-3.96	26.85	14.8	Pass
							21.4 (b)	
		Horizontal	L2 1/2x2 1/2x3/16	187	-2.28	7.86	29.0	Pass
							29.1 (b)	
		Inner Bracing	L2 1/2x2 1/2x3/16	193	-0.01	7.31	0.5	Pass
T9	200 - 180	Leg	4	222	-146.02	434.24	33.6	Pass
		Diagonal	2L3x3x3/16x3/8	230	-6.19	39.43	15.7	Pass
							31.3 (b)	
		Horizontal	L3x3x3/16	226	-2.54	10.75	23.6	Pass
							32.4 (b)	
		Inner Bracing	L3x3x3/16	232	-0.01	10.06	0.5	Pass
T10	180 - 160	Leg	4 1/4	261	-170.77	505.22	33.8	Pass
		Diagonal	2L3x3x3/16x3/8	269	-7.06	33.29	21.2	Pass
							35.9 (b)	
		Horizontal	L3x3x3/16	265	-2.96	8.62	34.4	Pass
							37.8 (b)	
		Inner Bracing	L3x3x3/16	273	-0.01	8.10	0.6	Pass
T11	160 - 140	Leg	4 1/4	300	-196.87	505.22	39.0	Pass
		Diagonal	2L3x3x3/16x3/8	308	-7.76	28.30	27.4	Pass
							41.0 (b)	
		Horizontal	L3 1/2x3 1/2x1/4	304	-3.41	14.81	23.1	Pass
							32.7 (b)	
		Inner Bracing	L3 1/2x3 1/2x1/4	310	-0.02	14.00	0.5	Pass
T12	140 - 120	Leg	4 1/2	339	-217.01	580.90	37.4	Pass
		Diagonal	2L3x3x1/4x3/8	358	-11.32	38.40	29.5	Pass
							40.4 (b)	
		Horizontal	2L2 1/2x2 1/2x3/16x3/8	347	-3.76	17.33	21.7	Pass
		Redund Horz 1 Bracing	L2x2x3/16	352	-3.76	7.12	52.9	Pass
		Redund Diag 1 Bracing	L2-1/2x2-1/2x3/16	378	-2.56	7.69	33.2	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	362	-0.02	12.23	0.5	Pass
T13	120 - 100	Leg	4 3/4	384	-246.40	661.23	37.3	Pass
		Diagonal	2L3x3x1/4x3/8	400	-11.26	35.46	31.8	Pass
							43.8 (b)	
		Horizontal	2L2 1/2x2 1/2x3/16x3/8	392	-4.27	14.63	29.2	Pass
		Redund Horz 1 Bracing	L2x2x3/16	401	-4.27	6.02	71.0	Pass
		Redund Diag 1 Bracing	L2-1/2x2-1/2x3/16	423	-2.80	6.96	40.3	Pass
		Inner Bracing	L4x4x1/4	406	-0.02	15.60	0.6	Pass
T14	100 - 80	Leg	4 3/4	429	-273.29	661.23	41.3	Pass
		Diagonal	2L3x3x1/4x3/8	448	-12.14	32.71	37.1	Pass
							44.1 (b)	
		Horizontal	2L2 1/2x2 1/2x3/16x3/8	437	-4.74	12.49	37.9	Pass
		Redund Horz 1 Bracing	L2x2x3/8	442	-4.74	9.53	49.7	Pass
		Redund Diag 1 Bracing	L2-1/2x2-1/2x3/16	465	-3.02	6.29	48.0	Pass
		Inner Bracing	L4x4x1/4	453	-0.03	13.37	0.6	Pass
T15	80 - 60	Leg	5	474	-302.17	746.17	40.5	Pass
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	490	-12.26	45.63	26.9	Pass
							39.9 (b)	
		Horizontal	2L3x3x3/16x3/8	482	-5.24	19.06	27.5	Pass
							27.7 (b)	
		Redund Horz 1 Bracing	L2-1/2x2-1/2x3/16	487	-5.24	8.86	59.2	Pass
		Redund Diag 1 Bracing	L3x3x3/16	510	-3.26	10.04	32.5	Pass
		Inner Bracing	2L3x3x3/16x3/8	498	-0.03	18.17	0.6	Pass
T16	60 - 40	Leg	5 1/4	519	-329.59	835.68	39.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	538	-13.23	42.29	31.3 40.8 (b)	Pass
		Horizontal	2L3x3x3/16x3/8	527	-5.72	16.65	34.3	Pass
		Redund Horz 1 Bracing	L2-1/2x2-1/2x3/16	532	-5.72	7.74	73.8	Pass
		Redund Diag 1 Bracing	L3x3x3/16	558	-3.48	9.16	38.0	Pass
		Inner Bracing	2L3x3x3/16x3/8	541	-0.03	15.90	0.7	Pass
T17	40 - 20	Leg	5 1/4	564	-358.54	835.68	42.9	Pass
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	580	-13.29	39.18	33.9 42.7 (b)	Pass
		Horizontal	2L3 1/2x3 1/2x1/4x3/8	572	-6.22	30.62	20.3 24.6 (b)	Pass
		Redund Horz 1 Bracing	L2.5x2.5x3/16 + L2.5x2.5x1/4 (C-Shape) - Cleary Tower	599	-6.22	14.96	41.6	Pass
		Redund Diag 1 Bracing	L3x3x3/16	600	-3.72	8.35	44.5	Pass
		Inner Bracing	2L3 1/2x3 1/2x1/4x3/8	588	-0.04	29.32	0.6	Pass
T18	20 - 0	Leg	5 1/2	609	-386.45	929.74	41.6	Pass
		Diagonal	2L3 1/2x3 1/2x1/4x3/8	628	-13.91	36.38	38.2 43.7 (b)	Pass
		Horizontal	2L3 1/2x3 1/2x1/4x3/8	617	-6.70	27.18	24.7 26.6 (b)	Pass
		Redund Horz 1 Bracing	L3x3x3/16	622	-6.70	10.61	63.2	Pass
		Redund Diag 1 Bracing	L3x3x3/16	648	-3.94	7.66	51.5	Pass
		Inner Bracing	2L3 1/2x3 1/2x1/4x3/8	632	-0.03	26.06	0.6	Pass
							Summary	
							Leg (T2) 46.5	Pass
							Diagonal (T2) 45.7	Pass
							Horizontal (T14) 37.9	Pass
							Top Girt (T1) 3.2	Pass
							Redund Horz 1 Bracing (T16) 73.8	Pass
							Redund Diag 1 Bracing (T18) 51.5	Pass
							Inner Bracing (T16) 0.7	Pass
							Bolt Checks 45.7	Pass
							RATING = 73.8	**Pass**

Seismic Load Analysis Output

Project Data

ACGI#	22-1552
Site Name/ID	CT20021-A-08/ Cleary Tower
TIA Code	TIA-222-H
Type of Tower	SST
Risk Category	II

Output Result

Total Weight W	116.020	k
Fundamental Period (T)	1.406	s
Total Seimic Shear	2.392	k

Seismic Design Data

SDS	0.203
SD1	0.087
S1	0.054
TL(sec)	6

T1	350.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.126	0.159
T2	340.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.061	0.075
T3	320.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.084	0.097
T4	300.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.113	0.122
T5	280.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.117	0.117
T6	260.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.138	0.130
T7	240.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.168	0.146
T8	220.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.188	0.149
T9	200.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.432	0.311
T10	180.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.281	0.182
T11	160.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.287	0.166
T12	140.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.383	0.193
T13	120.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.316	0.136
T14	100.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.331	0.119
T15	80.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.375	0.108
T16	60.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.402	0.087
T17	40.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.439	0.063
T18	20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.469	0.034

MATHCAD CALCULATION PRINTOUT

EXISTING 350' SELF SUPPORT TOWER ANCHOR BOLT CHECK

REACTIONS ON THE FOUNDATION

As per Tnx output (see attached)

Down load; $P_{uc} := 399 \cdot kips$ Shear; $V_{uc} := 43 \cdot kips$

Uplift load; $P_{ut} := 286 \cdot kips$ $V_{ut} := 33 \cdot kips$

Anchor Rod Data is as per Structural Analysis by Paul J. Ford & Co., Job No. A03-T143 dated 12/22/2003.

Number of Anchor Rods: $N_{anchors} := 6$

Diameter of Anchors: $D_{anchors} := 2.5in$ $n := 4in^{-1}$

Area of anchor bolts $A_g := \frac{\pi \cdot \left(D_{anchors}^{2}\right)}{4} = 4.909 \cdot in^2$

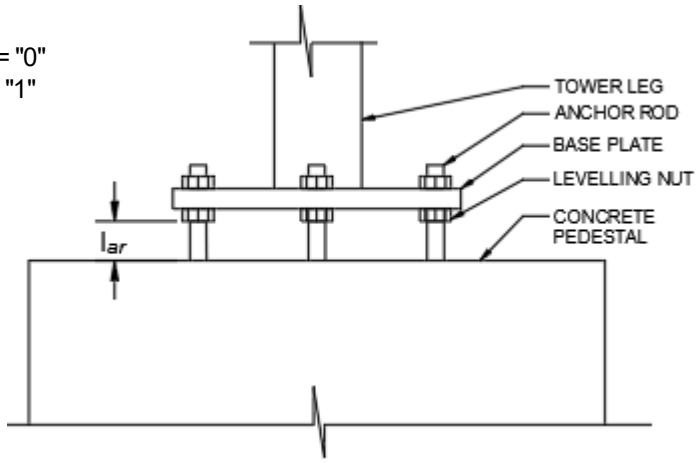
Net Tensile Area of Anchors: $A_n := \frac{\pi}{4} \cdot \left(D_{anchors} - \frac{0.9743}{n}\right)^2 = 3.999 \cdot in^2$

Minimum Yield Stress $F_{Yanchors} := 36ksi$

Ultimate Tensile Stress: $F_{Uanchors} := 58ksi$

The existing tower is originally designed based on TIA-222-G/F Code $code := 0$ YES = "0" NO = "1"

Is there a cementious grout existing in good condition (or) being proposed in between tower base plate and top of foundation $Grout := 1$ YES = "0" NO = "1"



Clear Distance: $l_{ar} := 2.5in$ (estimated)

Note: When the anchor rod projection, l_{ar}, for an installation exceeds 1(d) but is not more than 3 in. [75 mm], it shall be permitted to consider l_{ar} less than or equal to 1(d) when 5,000 psi [35 MPa] minimum 7-day strength non-shrink, non-metallic grout is properly installed between the supporting surface and a base plate with properly installed leveling nuts. Drainage is required for all grouted base plates for base plates supporting tubular sections.

Saftey Factor for Anchor: $\phi_t := 0.75$ $\phi_v := 0.75$ $\phi_c := 0.9$ $\phi_f := 0.9$ (Section 4.9.9, TIA-222-H Addendum 1)

Design Shear Strength of anchor rod

$\phi R_{nv} := \phi_v \cdot 0.5 \cdot F_{Uanchors} \cdot A_g = 106.765 \cdot kips$

$\phi R_{nvc} := \phi_c \cdot 0.6 \cdot F_{Yanchors} \cdot \left(0.75 A_g\right) = 71.569 \cdot kips$

Design Tensile Strength of anchor rod

$\phi R_{nt} := \phi_t \cdot F_{Uanchors} \cdot A_n = 173.949 \cdot kips$

Design Compression Strength of anchor rod

$\phi R_{nc} := \phi_c \cdot F_{Yanchors} \cdot A_g = 159.043 \cdot kips$

Interaction Equation for Anchor Rods as per Section 4.9.9, TIA-222-H Addendum 1

Design Flexural Strength of anchor rod

$Z := \frac{\left(D_{anchors}\right)^3}{6} = 1.507 \times 10^{-3} \cdot ft^3$

$M_n := F_{Yanchors} \cdot Z = 7.813 \cdot kips \cdot ft$

$M_{uc} := 0.65 \cdot I_{ar} \cdot V_{uc} = 5.823 \cdot kips \cdot ft$ $M_{ut} := 0.65 \cdot I_{ar} \cdot V_{ut} = 4.469 \cdot kips \cdot ft$

Design Buckling Strength of anchor rod

Unbraced length $L := 1.2 I_{ar}$ $k := 1$ $E := 29000 \cdot ksi$

Mom.of Inertia $I := \frac{\pi \cdot \left(D_{anchors}^4\right)}{64}$ $I = 1.917 \cdot in^4$

Radius of gyration $R := \sqrt{\frac{I}{A_g}}$ $R = 0.625 \cdot in$

$\lambda c := \frac{\frac{k \cdot L}{R}}{\pi} \cdot \sqrt{\frac{F_{Yanchors}}{E}}$ $\lambda c = 0.054$

$F_{cr} := \text{if}\left[\lambda c > 1.5, \left[\frac{0.877}{(\lambda c)^2}\right] \cdot F_{Yanchors}, \left[0.658^{(\lambda c)^2}\right] \cdot F_{Yanchors}\right] = 35.956 \cdot ksi$

$\phi R_{nb} := \phi_c \cdot F_{cr} \cdot A_g = 158.85 \cdot kips$

Anchor Rod Capacity in Tension:

$$T_t := \begin{cases} \left(\frac{\frac{V_{ut}}{N_{anchors}}}{\phi R_{nv}}\right)^2 + \left(\frac{\frac{P_{ut}}{N_{anchors}}}{\phi R_{nt}}\right)^2 & \text{if } I_{ar} \le D_{anchors} \\ \left(\frac{\frac{V_{ut}}{N_{anchors}}}{\phi R_{nv}}\right)^2 + \left(\frac{\frac{P_{ut}}{N_{anchors}}}{\phi R_{nt}} + \frac{\frac{M_{ut}}{N_{anchors}}}{\phi_f \cdot M_n}\right)^2 & \text{if } D_{anchors} < I_{ar} \le 4 \cdot D_{anchors} \\ \left(\frac{\frac{V_{ut}}{N_{anchors}}}{\phi R_{nv}}\right)^2 + \left(\frac{\frac{P_{ut}}{N_{anchors}}}{\phi R_{nt}} + \frac{\frac{M_{ut}}{N_{anchors}}}{\phi_f \cdot M_n}\right)^2 & \text{if } I_{ar} > 4 \cdot D_{anchors} \end{cases} = 7.774 \cdot \%$$

Anchor Rod Capacity in Compression:

$$P_{uc1} := \text{if}\left(\text{code} = 0, \text{if}\left(\text{Grout} < 1, 0, P_{uc}\right), P_{uc}\right) = 399 \cdot \text{kips}$$
$$V_{uc1} := \text{if}\left(\text{code} = 0, \text{if}\left(\text{Grout} < 1, 0, V_{uc}\right), V_{uc}\right) = 43 \cdot \text{kips}$$
$$M_{uc1} := \text{if}\left(\text{code} = 0, \text{if}\left(\text{Grout} < 1, 0, M_{uc}\right), M_{uc}\right) = 1.775 \cdot \text{kips}$$

$$T_c := \begin{cases} \left(\frac{\frac{V_{uc1}}{N_{anchors}}}{\phi R_{nvc}}\right)^2 + \left(\frac{\frac{P_{uc1}}{N_{anchors}}}{\phi R_{nc}}\right) & \text{if } I_{ar} \le D_{anchors} \\ \left(\frac{\frac{V_{uc1}}{N_{anchors}}}{\phi R_{nvc}}\right)^2 + \left(\frac{\frac{P_{uc1}}{N_{anchors}}}{\phi R_{nc}} + \frac{\frac{M_{uc1}}{N_{anchors}}}{\phi_f \cdot M_n}\right) & \text{if } D_{anchors} < I_{ar} \le 4 \cdot D_{anchors} \\ \left(\frac{\frac{V_{uc1}}{N_{anchors}}}{\phi R_{nvc}}\right)^2 + \left(\frac{\frac{P_{uc1}}{N_{anchors}}}{\phi R_{nb}} + \frac{\frac{M_{uc1}}{N_{anchors}}}{\phi_f \cdot M_n}\right) & \text{if } I_{ar} > 4 \cdot D_{anchors} \end{cases} = 42.815 \cdot \%$$

Summary

-Foundation Reactions from Tower Base-

Shear	$V_{uc} = 43 \cdot \text{kips}$	$V_{ut} = 33 \cdot \text{kips}$
Down load	$P_{uc} = 399 \cdot \text{kips}$	
Uplift load	$P_{ut} = 286 \cdot \text{kips}$	

Anchor Rod Check $T := \max\left(T_t, T_c\right)$ $T = 42.815 \cdot \%$

$\text{Anchor\_Rod\_Check} := \text{if}\left(T < 1, \text{"OK"}, \text{"Not OK"}\right)$

Anchor_Rod_Check = "OK"

March 24, 2022

smartlink at&t

Smartlink, LLC
1997 Annapolis Exchange Pkwy, Suite 200
Annapolis, MD 21401

RE:		
	Site Number:	CT1111
	FA Number:	10041812
	PACE Number:	MRCTB054196
	PT Number:	2051A11PJF
	Site Name:	WOLCOTT-NORTH
	Site Address:	1233 Wolcott Road Wolcott, CT 06716

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Smartlink to perform a mount analysis on the proposed AT&T antenna/RRH mounts to determine its capability of supporting the following additional loading (based on RFDS dated 3/16/2022 v.4.0):

- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) DC6-48-60-18-8F Surge Arrestors (31.4"x10.2" Ø – Wt. = 33 lbs.) (Tower Mounted)
- **(3) QD8616-7 Antennas (96.0"x22.0"x9.6" – Wt. = 150 lbs. /each)**
- **(3) AIR6419 Antennas (31.0"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 119 lbs. /each)**
- **(3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(1) DC6-48-60-18-8F Surge Arrestor (31.4"x10.2" Ø – Wt. = 33 lbs.) (Tower Mounted)**

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 14, 2017, were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.19 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.187 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.064.
- The mounts have been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mounts have been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mounts are to be secured to the existing self-supporting tower with threaded rods and clamps tightened around the tower leg. HDG considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the Proposed SitePro1 VFA14-H10-2120 mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	9	LC83	66%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 14, 2017.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mounts will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mount must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

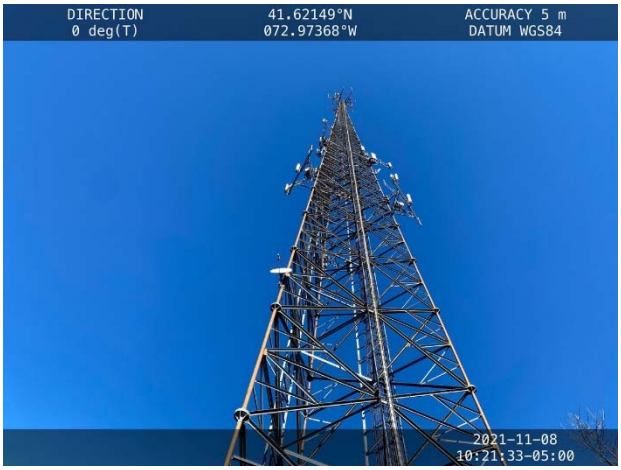
Please feel free to contact our office should you have any questions.

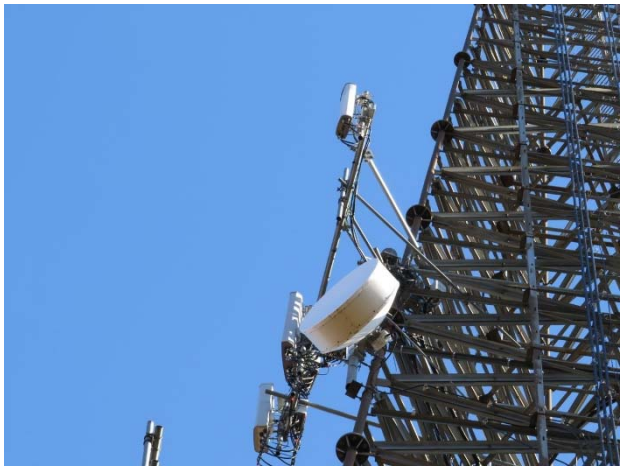
Respectfully Submitted,
Hudson Design Group LLC

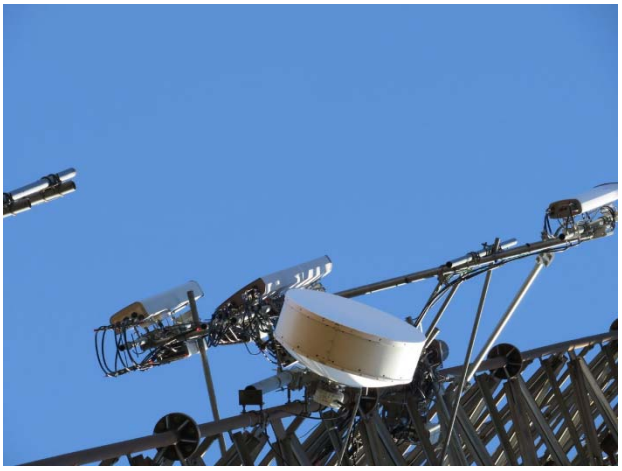
Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:
*Note: Existing mounts to be removed.







FIELD PHOTOS (CONT.):
*Note: Existing mounts to be removed.

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Wind & Ice
Calculations

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Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	187.67	(ft)
z_g=	1200	(ft)
α=	7	
K_z=	**1.183**	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= 1

(If Category 1 then K_{zt}=1.0)

Category= **1**

K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	187.67	
z_s=	977	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.97	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i =	1.00	in
Importance Factor = I=	1.00	(from Table 2-3)
K_{iz} =	1.19	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.19 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	350	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.183	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**38.83**	K_e=	0.97	(from 2.6.8)
$q_{z\ (ice)}$=	**6.21**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**2.24**	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

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Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{-1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.19 in **Angle =** 0 (deg) **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	4.36	1.28	731	133	42
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.93	1.20	161	32	9
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	157	31	9
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	694	127	40
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	49	11	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	4.36	1.28	26	7	1
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	53	12	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	27	7	2
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	54	12	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	29	8	2
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	65	15	4
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	7.77	1.43	37	11	2
DC6-48-60-18-8F Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	60	13	3
Plate 11-1/4x5/8	0.6	12.0		0.05	0.05	2.00	4		
Plate 3-1/2x5/8	0.6	12.0		0.05	0.05	2.00	4		
3/4" RoundBar	0.8	12.0		0.06	0.06	1.20	3		
5/8" RoundBar	0.6	12.0		0.05	0.05	1.20	2		
2" Pipe	2.4	12.0		0.20	0.20	1.20	9		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	11		

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Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.19	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	731	373	641
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	161	78	141
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	157	106	145
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	694	315	599
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	78	56
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	26	78	39
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	53	64	55
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	27	64	36
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	54	76	60
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	29	76	41
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	106	75
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	37	106	54

WIND LOADS WITH ICE:

QD8616-7 Antenna	98.4	24.4	12.0	16.66	8.18	4.04	8.21	1.27	1.44	131	73	117
AIR6419 Antenna	33.4	18.5	9.7	4.28	2.24	1.81	3.45	1.20	1.24	32	17	28
AIR6449 Antenna	33.0	18.3	13.0	4.19	2.97	1.80	2.54	1.20	1.20	31	22	29
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.77	6.89	4.26	9.76	1.28	1.49	125	64	110
4478 B14 RRH (Side)	20.5	10.7	15.8	1.52	2.24	1.92	1.30	1.20	1.20	11	17	13
4478 B14 RRH (Shielded)	20.5	6.5	15.8	0.93	2.24	3.14	1.30	1.23	1.20	7	17	9
8843 B2/B66A RRH (Side)	17.3	13.3	15.6	1.59	1.87	1.30	1.11	1.20	1.20	12	14	12
8843 B2/B66A RRH (Shielded)	17.3	7.8	15.6	0.94	1.87	2.21	1.11	1.20	1.20	7	14	9
4449 B5/B12 RRH (Side)	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	12	16	13
4449 B5/B12 RRH (Shielded)	20.3	7.1	15.6	1.00	2.19	2.86	1.30	1.22	1.20	8	16	10
RRUS-32 B30 RRH (Side)	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	15	22	17
RRUS-32 B30 RRH (Shielded)	29.6	5.9	14.5	1.21	2.97	5.03	2.04	1.31	1.20	10	22	13

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	21	37
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	4	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	35
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	2
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3

Date: 3/1/2022
Project Name: WOLCOTT-NORTH
Project No.: CT1111
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg) | Ice Thickness = 1.19 in. | Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	731	373	462
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	161	78	99
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	157	106	119
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	694	315	410
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	78	71
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	26	78	65
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	53	64	61
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	27	64	54
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	54	76	71
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	29	76	64
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	106	96
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	37	106	89

WIND LOADS WITH ICE:

QD8616-7 Antenna	98.4	24.4	12.0	16.66	8.18	4.04	8.21	1.27	1.44	131	73	88
AIR6419 Antenna	33.4	18.5	9.7	4.28	2.24	1.81	3.45	1.20	1.24	32	17	21
AIR6449 Antenna	33.0	18.3	13.0	4.19	2.97	1.80	2.54	1.20	1.20	31	22	24
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.77	6.89	4.26	9.76	1.28	1.49	125	64	79
4478 B14 RRH (Side)	20.5	10.7	15.8	1.52	2.24	1.92	1.30	1.20	1.20	11	17	15
4478 B14 RRH (Shielded)	20.5	6.5	15.8	0.93	2.24	3.14	1.30	1.23	1.20	7	17	14
8843 B2/B66A RRH (Side)	17.3	13.3	15.6	1.59	1.87	1.30	1.11	1.20	1.20	12	14	13
8843 B2/B66A RRH (Shielded)	17.3	7.8	15.6	0.94	1.87	2.21	1.11	1.20	1.20	7	14	12
4449 B5/B12 RRH (Side)	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	12	16	15
4449 B5/B12 RRH (Shielded)	20.3	7.1	15.6	1.00	2.19	2.86	1.30	1.22	1.20	8	16	14
RRUS-32 B30 RRH (Side)	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	15	22	20
RRUS-32 B30 RRH (Shielded)	29.6	5.9	14.5	1.21	2.97	5.03	2.04	1.31	1.20	10	22	19

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	21	27
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	4	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	24
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	4
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	5

Date: 3/1/2022
Project Name: WOLCOTT-NORTH
Project No.: CT1111
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.19	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	731	373	373
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	161	78	78
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	157	106	106
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	694	315	315
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	78	78
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	26	78	78
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	53	64	64
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	27	64	64
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	54	76	76
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	29	76	76
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	106	106
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	37	106	106

WIND LOADS WITH ICE:

QD8616-7 Antenna	98.4	24.4	12.0	16.66	8.18	4.04	8.21	1.27	1.44	131	73	73
AIR6419 Antenna	33.4	18.5	9.7	4.28	2.24	1.81	3.45	1.20	1.24	32	17	17
AIR6449 Antenna	33.0	18.3	13.0	4.19	2.97	1.80	2.54	1.20	1.20	31	22	22
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.77	6.89	4.26	9.76	1.28	1.49	125	64	64
4478 B14 RRH (Side)	20.5	10.7	15.8	1.52	2.24	1.92	1.30	1.20	1.20	11	17	17
4478 B14 RRH (Shielded)	20.5	6.5	15.8	0.93	2.24	3.14	1.30	1.23	1.20	7	17	17
8843 B2/B66A RRH (Side)	17.3	13.3	15.6	1.59	1.87	1.30	1.11	1.20	1.20	12	14	14
8843 B2/B66A RRH (Shielded)	17.3	7.8	15.6	0.94	1.87	2.21	1.11	1.20	1.20	7	14	14
4449 B5/B12 RRH (Side)	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	12	16	16
4449 B5/B12 RRH (Shielded)	20.3	7.1	15.6	1.00	2.19	2.86	1.30	1.22	1.20	8	16	16
RRUS-32 B30 RRH (Side)	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	15	22	22
RRUS-32 B30 RRH (Shielded)	29.6	5.9	14.5	1.21	2.97	5.03	2.04	1.31	1.20	10	22	22

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	21	21
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	4	4
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	6
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	18
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	5
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	4
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	4
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	6

Date: 3/1/2022
Project Name: WOLCOTT-NORTH
Project No.: CT1111
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.19 in. | Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	731	373	462
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	161	78	99
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	157	106	119
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	694	315	410
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	78	71
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	26	78	65
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	53	64	61
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	27	64	54
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	54	76	71
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	29	76	64
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	106	96
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	37	106	89

WIND LOADS WITH ICE:

QD8616-7 Antenna	98.4	24.4	12.0	16.66	8.18	4.04	8.21	1.27	1.44	131	73	88
AIR6419 Antenna	33.4	18.5	9.7	4.28	2.24	1.81	3.45	1.20	1.24	32	17	21
AIR6449 Antenna	33.0	18.3	13.0	4.19	2.97	1.80	2.54	1.20	1.20	31	22	24
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.77	6.89	4.26	9.76	1.28	1.49	125	64	79
4478 B14 RRH (Side)	20.5	10.7	15.8	1.52	2.24	1.92	1.30	1.20	1.20	11	17	15
4478 B14 RRH (Shielded)	20.5	6.5	15.8	0.93	2.24	3.14	1.30	1.23	1.20	7	17	14
8843 B2/B66A RRH (Side)	17.3	13.3	15.6	1.59	1.87	1.30	1.11	1.20	1.20	12	14	13
8843 B2/B66A RRH (Shielded)	17.3	7.8	15.6	0.94	1.87	2.21	1.11	1.20	1.20	7	14	12
4449 B5/B12 RRH (Side)	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	12	16	15
4449 B5/B12 RRH (Shielded)	20.3	7.1	15.6	1.00	2.19	2.86	1.30	1.22	1.20	8	16	14
RRUS-32 B30 RRH (Side)	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	15	22	20
RRUS-32 B30 RRH (Shielded)	29.6	5.9	14.5	1.21	2.97	5.03	2.04	1.31	1.20	10	22	19

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	21	27
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	4	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	24
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	4
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	5

Date: 3/1/2022
Project Name: WOLCOTT-NORTH
Project No.: CT1111
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.19	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	731	373	641
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	161	78	141
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	157	106	145
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	694	315	599
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	78	56
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	26	78	39
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	53	64	55
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	27	64	36
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	54	76	60
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	29	76	41
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	106	75
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	37	106	54

WIND LOADS WITH ICE:

QD8616-7 Antenna	98.4	24.4	12.0	16.66	8.18	4.04	8.21	1.27	1.44	131	73	117
AIR6419 Antenna	33.4	18.5	9.7	4.28	2.24	1.81	3.45	1.20	1.24	32	17	28
AIR6449 Antenna	33.0	18.3	13.0	4.19	2.97	1.80	2.54	1.20	1.20	31	22	29
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.77	6.89	4.26	9.76	1.28	1.49	125	64	110
4478 B14 RRH (Side)	20.5	10.7	15.8	1.52	2.24	1.92	1.30	1.20	1.20	11	17	13
4478 B14 RRH (Shielded)	20.5	6.5	15.8	0.93	2.24	3.14	1.30	1.23	1.20	7	17	9
8843 B2/B66A RRH (Side)	17.3	13.3	15.6	1.59	1.87	1.30	1.11	1.20	1.20	12	14	12
8843 B2/B66A RRH (Shielded)	17.3	7.8	15.6	0.94	1.87	2.21	1.11	1.20	1.20	7	14	9
4449 B5/B12 RRH (Side)	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	12	16	13
4449 B5/B12 RRH (Shielded)	20.3	7.1	15.6	1.00	2.19	2.86	1.30	1.22	1.20	8	16	10
RRUS-32 B30 RRH (Side)	29.6	9.4	14.5	1.93	2.97	3.15	2.04	1.23	1.20	15	22	17
RRUS-32 B30 RRH (Shielded)	29.6	5.9	14.5	1.21	2.97	5.03	2.04	1.31	1.20	10	22	13

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	21	37
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	4	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	35
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	5	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	2
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3

Date: 3/1/2022
Project Name: WOLCOTT-NORTH
Project No.: CT1111
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.19 in.
Density of ice: 56 pcf

QD8616-7 Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 22.0
Depth (in): 9.6
Total weight of ice on object: 293 lbs
Weight of object: 150.0 lbs
Combined weight of ice and object: 443 lbs

AIR6419 Antenna
Weight of ice based on total radial SF area:
Height (in): 31.0
Width (in): 16.1
Depth (in): 7.3
Total weight of ice on object: 71 lbs
Weight of object: 66.0 lbs
Combined weight of ice and object: 137 lbs

AIR6449 Antenna
Weight of ice based on total radial SF area:
Height (in): 30.6
Width (in): 15.9
Depth (in): 10.6
Total weight of ice on object: 75 lbs
Weight of object: 82.0 lbs
Combined weight of ice and object: 157 lbs

DMP65R-BU8DA Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 271 lbs
Weight of object: 96.0 lbs
Combined weight of ice and object: 367 lbs

4478 B14 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 37 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 97 lbs

8843 B2/B66A RRH
Weight of ice based on total radial SF area:
Height (in): 14.9
Width (in): 13.2
Depth (in): 10.9
Total weight of ice on object: 33 lbs
Weight of object: 72.0 lbs
Combined weight of ice and object: 105 lbs

4449 B5/B12 RRH
Weight of ice based on total radial SF area:
Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4
Total weight of ice on object: 38 lbs
Weight of object: 73.0 lbs
Combined weight of ice and object: 111 lbs

RRUS-32 B30 RRH
Weight of ice based on total radial SF area:
Height (in): 27.2
Width (in): 12.1
Depth (in): 7.0
Total weight of ice on object: 50 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 110 lbs

DC6-48-60-18 Surge Arrestor
Weight of ice based on total radial SF area:
Depth (in): 31.4
Diameter(in): 10.2
Total weight of ice on object: 43 lbs
Weight of object: 33 lbs
Combined weight of ice and object: 76 lbs

2-1/2" pipe
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 6 plf

PL 11-1/4x5/8
Weight of ice based on total radial SF area:
Height (in): 11.25
Width (in): 0.63
Per foot weight of ice on object: 18 plf

PL 3-1/2x5/8
Weight of ice based on total radial SF area:
Height (in): 3.5
Width (in): 0.63
Per foot weight of ice on object: 7 plf

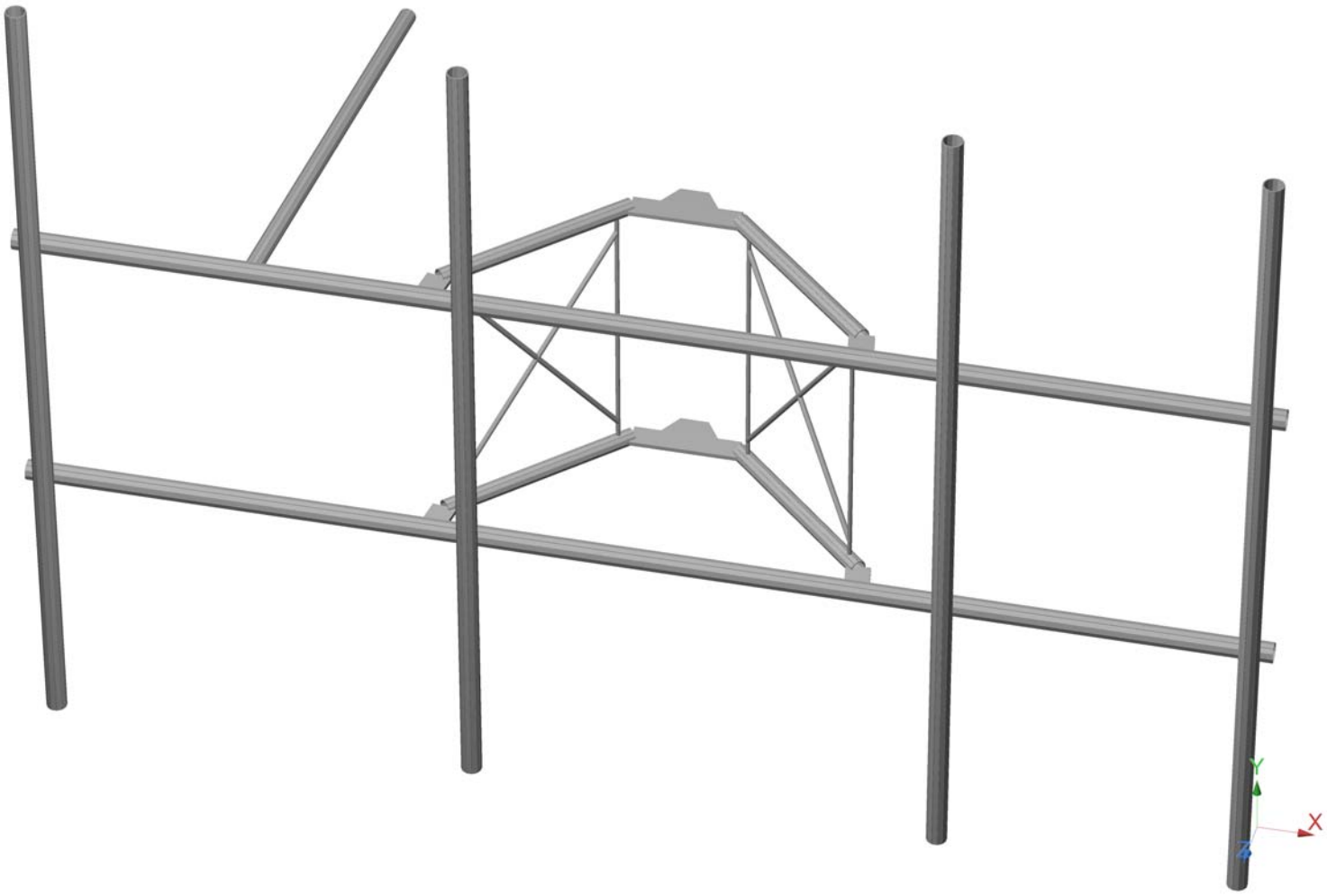
3/4" Round Bar
Per foot weight of ice:
diameter (in): 0.75
Per foot weight of ice on object: 3 plf

5/8" Round Bar
Per foot weight of ice:
diameter (in): 0.63
Per foot weight of ice on object: 3 plf

2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 5 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)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Current Date: 3/1/2022 8:59 PM
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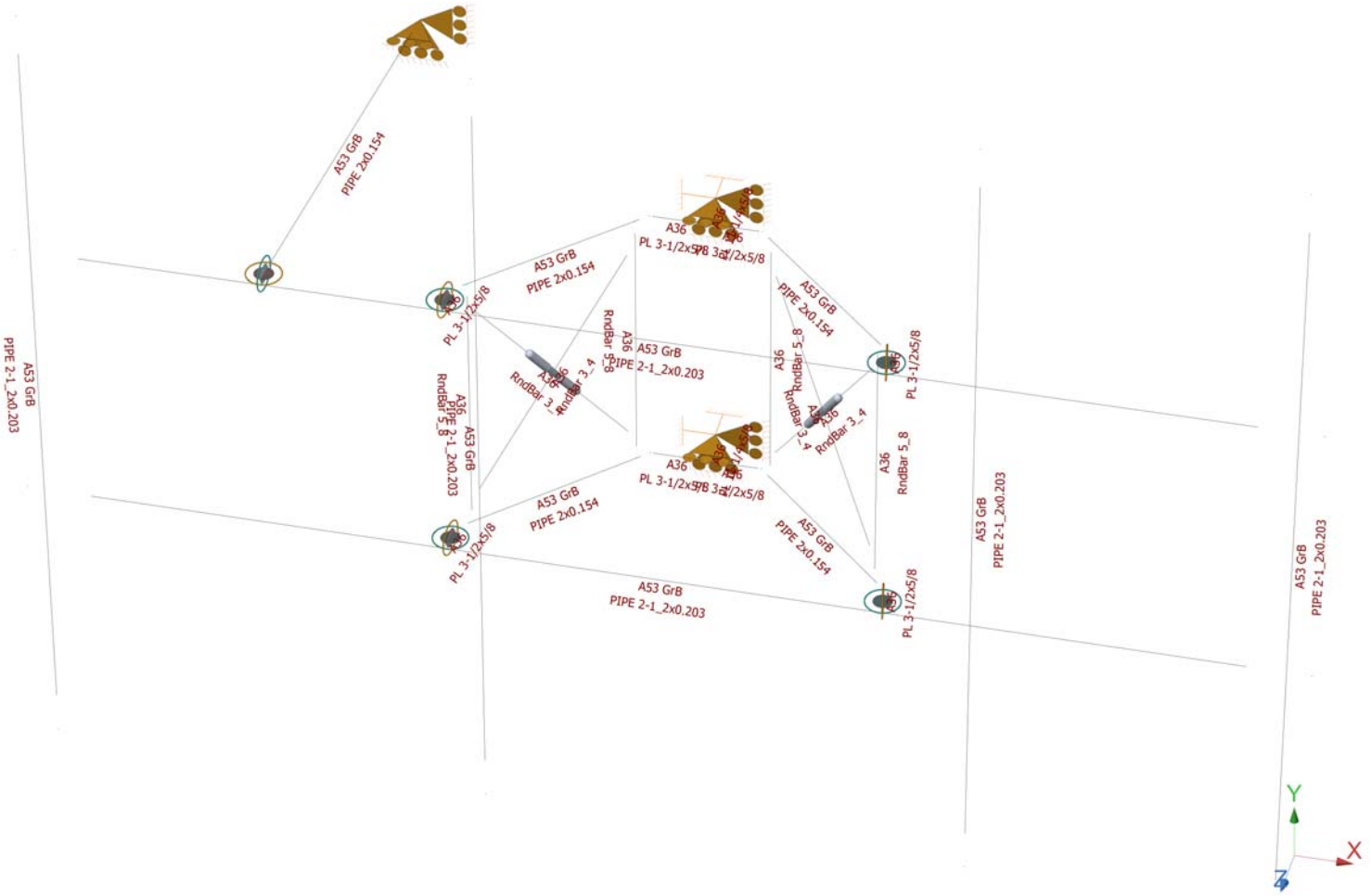

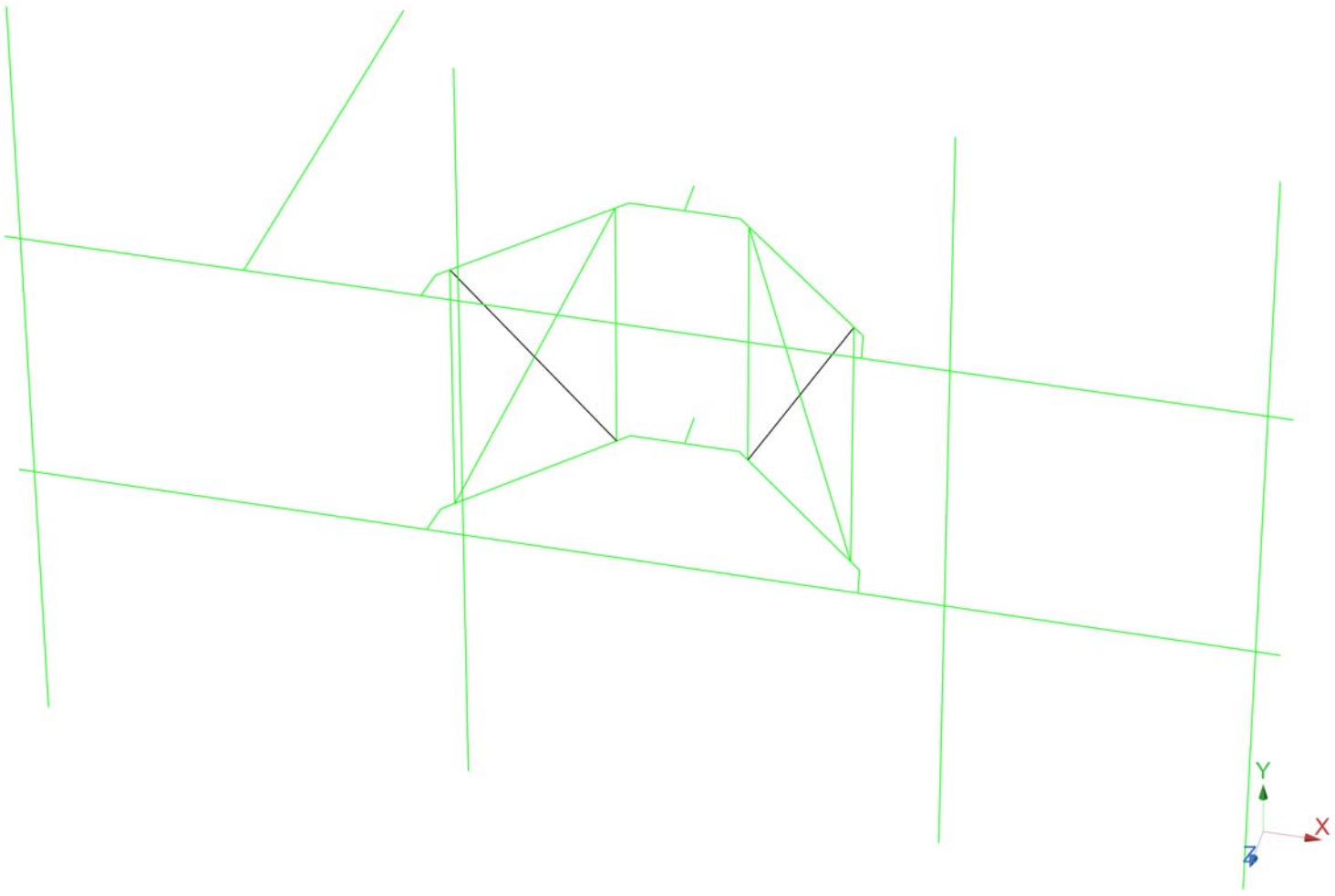
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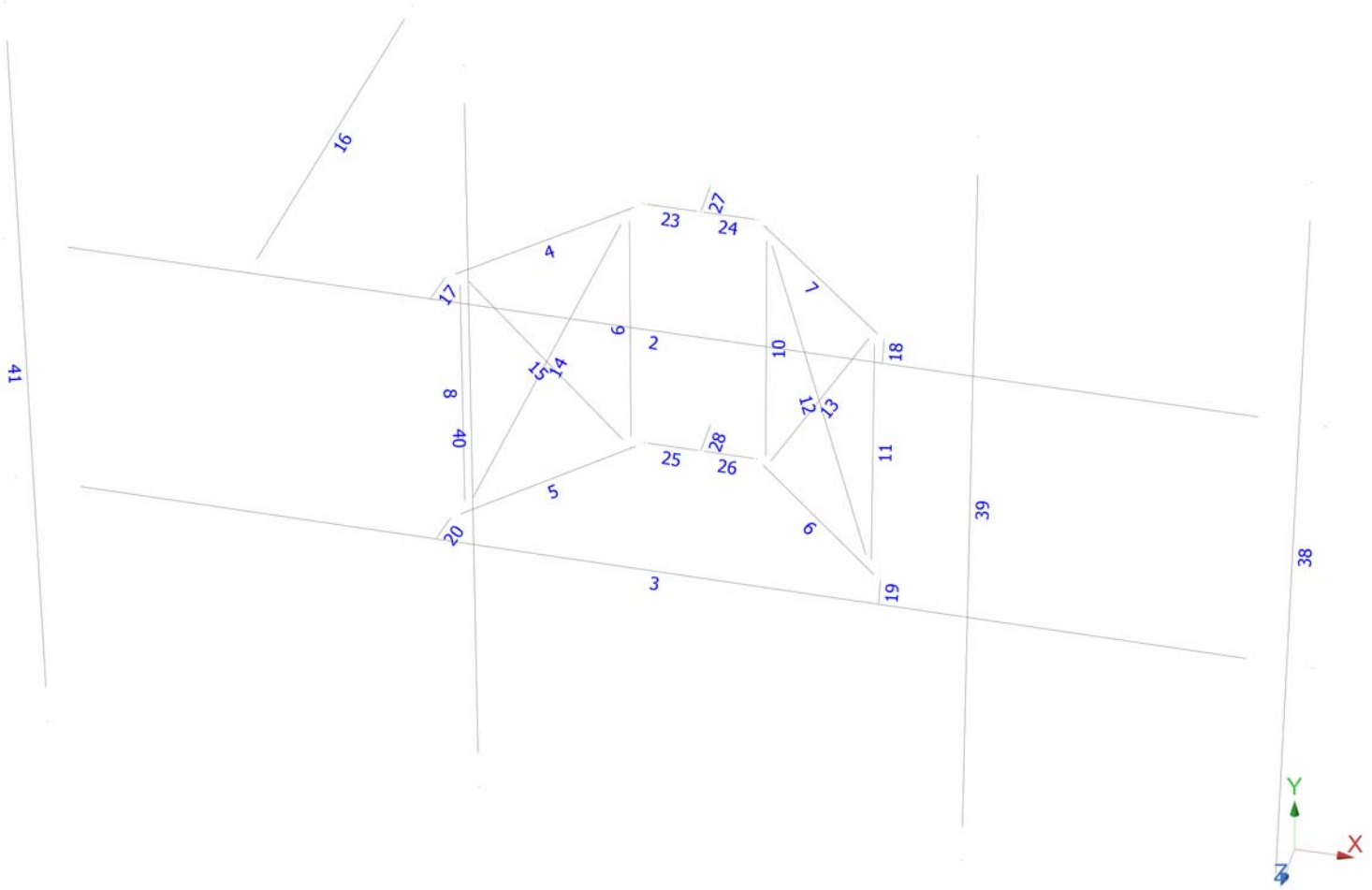
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RAM® Elements
CONNECT Edition

Current Date: 3/1/2022 9:00 PM
Units system: English

Load data

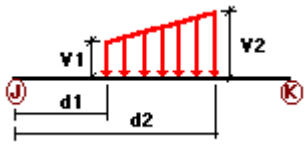
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



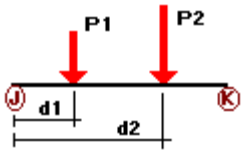
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	2	z	-0.011	0.00	0.00	No	0.00	No
	3	z	-0.011	0.00	0.00	No	0.00	No
	4	z	-0.009	0.00	0.00	No	0.00	No
	5	z	-0.009	0.00	0.00	No	0.00	No
	6	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.009	0.00	0.00	No	0.00	No
	8	z	-0.002	0.00	0.00	No	0.00	No
	9	z	-0.002	0.00	0.00	No	0.00	No
	10	z	-0.002	0.00	0.00	No	0.00	No
	11	z	-0.002	0.00	0.00	No	0.00	No
	12	z	-0.003	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	16	z	-0.009	0.00	0.00	No	0.00	No
	17	z	-0.004	0.00	0.00	No	0.00	No
	18	z	-0.004	0.00	0.00	No	0.00	No
	19	z	-0.004	0.00	0.00	No	0.00	No
	20	z	-0.004	0.00	0.00	No	0.00	No
	23	z	-0.004	0.00	0.00	No	0.00	No
	24	z	-0.004	0.00	0.00	No	0.00	No
	25	z	-0.004	0.00	0.00	No	0.00	No
	26	z	-0.004	0.00	0.00	No	0.00	No
	27	z	-0.004	0.00	0.00	No	0.00	No
	28	z	-0.004	0.00	0.00	No	0.00	No
	38	z	-0.011	0.00	0.00	No	0.00	No
W30	2	z	-0.011	0.00	0.00	No	0.00	No
	3	z	-0.011	0.00	0.00	No	0.00	No
	4	z	-0.009	0.00	0.00	No	0.00	No
	5	z	-0.009	0.00	0.00	No	0.00	No
	6	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.009	0.00	0.00	No	0.00	No
	8	z	-0.002	0.00	0.00	No	0.00	No
	9	z	-0.002	0.00	0.00	No	0.00	No
	10	z	-0.002	0.00	0.00	No	0.00	No
	11	z	-0.002	0.00	0.00	No	0.00	No
	12	z	-0.003	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	16	z	-0.009	0.00	0.00	No	0.00	No
	17	z	-0.004	0.00	0.00	No	0.00	No
	18	z	-0.004	0.00	0.00	No	0.00	No
	19	z	-0.004	0.00	0.00	No	0.00	No
	20	z	-0.004	0.00	0.00	No	0.00	No
	23	z	-0.004	0.00	0.00	No	0.00	No
	24	z	-0.004	0.00	0.00	No	0.00	No
	25	z	-0.004	0.00	0.00	No	0.00	No
	26	z	-0.004	0.00	0.00	No	0.00	No
	27	z	-0.004	0.00	0.00	No	0.00	No
	28	z	-0.004	0.00	0.00	No	0.00	No
	38	z	-0.011	0.00	0.00	No	0.00	No
W60	2	x	-0.011	0.00	0.00	No	0.00	No
	3	x	-0.011	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.009	0.00	0.00	No	0.00	No
	8	x	-0.002	0.00	0.00	No	0.00	No
	9	x	-0.002	0.00	0.00	No	0.00	No

	10	x	-0.002	0.00	0.00	No	0.00	No
	11	x	-0.002	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.009	0.00	0.00	No	0.00	No
	17	x	-0.004	0.00	0.00	No	0.00	No
	18	x	-0.004	0.00	0.00	No	0.00	No
	19	x	-0.004	0.00	0.00	No	0.00	No
	20	x	-0.004	0.00	0.00	No	0.00	No
	23	x	-0.004	0.00	0.00	No	0.00	No
	24	x	-0.004	0.00	0.00	No	0.00	No
	25	x	-0.004	0.00	0.00	No	0.00	No
	26	x	-0.004	0.00	0.00	No	0.00	No
	27	x	-0.004	0.00	0.00	No	0.00	No
	28	x	-0.004	0.00	0.00	No	0.00	No
	38	x	-0.011	0.00	0.00	No	0.00	No
	39	x	-0.011	0.00	0.00	No	0.00	No
	40	x	-0.011	0.00	0.00	No	0.00	No
	41	x	-0.011	0.00	0.00	No	0.00	No
W90	4	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.009	0.00	0.00	No	0.00	No
	8	x	-0.002	0.00	0.00	No	0.00	No
	9	x	-0.002	0.00	0.00	No	0.00	No
	10	x	-0.002	0.00	0.00	No	0.00	No
	11	x	-0.002	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.009	0.00	0.00	No	0.00	No
	17	x	-0.004	0.00	0.00	No	0.00	No
	18	x	-0.004	0.00	0.00	No	0.00	No
	19	x	-0.004	0.00	0.00	No	0.00	No
	20	x	-0.004	0.00	0.00	No	0.00	No
	23	x	-0.004	0.00	0.00	No	0.00	No
	24	x	-0.004	0.00	0.00	No	0.00	No
	25	x	-0.004	0.00	0.00	No	0.00	No
	26	x	-0.004	0.00	0.00	No	0.00	No
	27	x	-0.004	0.00	0.00	No	0.00	No
	28	x	-0.004	0.00	0.00	No	0.00	No
	38	x	-0.011	0.00	0.00	No	0.00	No
	39	x	-0.011	0.00	0.00	No	0.00	No
	40	x	-0.011	0.00	0.00	No	0.00	No
	41	x	-0.011	0.00	0.00	No	0.00	No
W120	2	x	-0.011	0.00	0.00	No	0.00	No
	3	x	-0.011	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.009	0.00	0.00	No	0.00	No
	8	x	-0.002	0.00	0.00	No	0.00	No
	9	x	-0.002	0.00	0.00	No	0.00	No
	10	x	-0.002	0.00	0.00	No	0.00	No
	11	x	-0.002	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No

	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.009	0.00	0.00	No	0.00	No
	17	x	-0.004	0.00	0.00	No	0.00	No
	18	x	-0.004	0.00	0.00	No	0.00	No
	19	x	-0.004	0.00	0.00	No	0.00	No
	20	x	-0.004	0.00	0.00	No	0.00	No
	23	x	-0.004	0.00	0.00	No	0.00	No
	24	x	-0.004	0.00	0.00	No	0.00	No
	25	x	-0.004	0.00	0.00	No	0.00	No
	26	x	-0.004	0.00	0.00	No	0.00	No
	27	x	-0.004	0.00	0.00	No	0.00	No
	28	x	-0.004	0.00	0.00	No	0.00	No
	38	x	-0.011	0.00	0.00	No	0.00	No
	39	x	-0.011	0.00	0.00	No	0.00	No
	40	x	-0.011	0.00	0.00	No	0.00	No
	41	x	-0.011	0.00	0.00	No	0.00	No
W150	2	z	0.011	0.00	0.00	No	0.00	No
	3	z	0.011	0.00	0.00	No	0.00	No
	4	z	0.009	0.00	0.00	No	0.00	No
	5	z	0.009	0.00	0.00	No	0.00	No
	6	z	0.009	0.00	0.00	No	0.00	No
	7	z	0.009	0.00	0.00	No	0.00	No
	8	z	0.002	0.00	0.00	No	0.00	No
	9	z	0.002	0.00	0.00	No	0.00	No
	10	z	0.002	0.00	0.00	No	0.00	No
	11	z	0.002	0.00	0.00	No	0.00	No
	12	z	0.003	0.00	0.00	No	0.00	No
	13	z	0.003	0.00	0.00	No	0.00	No
	14	z	0.003	0.00	0.00	No	0.00	No
	15	z	0.003	0.00	0.00	No	0.00	No
	16	z	0.009	0.00	0.00	No	0.00	No
	17	z	0.004	0.00	0.00	No	0.00	No
	18	z	0.004	0.00	0.00	No	0.00	No
	19	z	0.004	0.00	0.00	No	0.00	No
	20	z	0.004	0.00	0.00	No	0.00	No
	23	z	0.004	0.00	0.00	No	0.00	No
	24	z	0.004	0.00	0.00	No	0.00	No
	25	z	0.004	0.00	0.00	No	0.00	No
	26	z	0.004	0.00	0.00	No	0.00	No
	27	z	0.004	0.00	0.00	No	0.00	No
	28	z	0.004	0.00	0.00	No	0.00	No
	38	z	0.011	0.00	0.00	No	0.00	No
	39	z	0.011	0.00	0.00	No	0.00	No
	40	z	0.011	0.00	0.00	No	0.00	No
	41	z	0.011	0.00	0.00	No	0.00	No
Di	2	y	-0.006	0.00	0.00	No	0.00	No
	3	y	-0.006	0.00	0.00	No	0.00	No
	4	y	-0.005	0.00	0.00	No	0.00	No
	5	y	-0.005	0.00	0.00	No	0.00	No
	6	y	-0.005	0.00	0.00	No	0.00	No
	7	y	-0.005	0.00	0.00	No	0.00	No
	8	y	-0.003	0.00	0.00	No	0.00	No
	9	y	-0.003	0.00	0.00	No	0.00	No
	10	y	-0.003	0.00	0.00	No	0.00	No
	11	y	-0.003	0.00	0.00	No	0.00	No
	12	y	-0.003	0.00	0.00	No	0.00	No
	13	y	-0.003	0.00	0.00	No	0.00	No
	14	y	-0.003	0.00	0.00	No	0.00	No
	15	y	-0.003	0.00	0.00	No	0.00	No

16	y	-0.005	0.00	0.00	No	0.00	No
17	y	-0.007	0.00	0.00	No	0.00	No
18	y	-0.007	0.00	0.00	No	0.00	No
19	y	-0.007	0.00	0.00	No	0.00	No
20	y	-0.007	0.00	0.00	No	0.00	No
23	y	-0.007	0.00	0.00	No	0.00	No
24	y	-0.007	0.00	0.00	No	0.00	No
25	y	-0.007	0.00	0.00	No	0.00	No
26	y	-0.007	0.00	0.00	No	0.00	No
27	y	-0.018	0.00	0.00	No	0.00	No
28	y	-0.018	0.00	0.00	No	0.00	No
38	y	-0.006	0.00	0.00	No	0.00	No
39	y	-0.006	0.00	0.00	No	0.00	No
40	y	-0.006	0.00	0.00	No	0.00	No
41	y	-0.006	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	39	y	-0.075	1.50	No
		y	-0.075	8.50	No
		y	-0.06	5.00	No
		y	-0.072	5.00	No
	40	y	-0.033	2.25	No
		y	-0.033	4.00	No
		y	-0.041	6.00	No
		y	-0.041	7.75	No
	41	y	-0.048	1.50	No
		y	-0.048	8.50	No
		y	-0.073	5.00	No
		y	-0.06	5.00	No
Wo	39	z	-0.366	1.50	No
		z	-0.366	8.50	No
		z	-0.026	5.00	No
		z	-0.027	5.00	No
	40	z	-0.081	2.25	No
		z	-0.081	4.00	No
		z	-0.079	6.00	No
		z	-0.079	7.75	No
	41	z	-0.347	1.50	No
		z	-0.347	8.50	No
		z	-0.029	5.00	No
		z	-0.037	5.00	No
W30	39	3	-0.321	1.50	No
		3	-0.321	8.50	No
		3	-0.039	5.00	No
	40	3	-0.071	2.25	No
		3	-0.071	4.00	No
		3	-0.073	6.00	No

		3	-0.073	7.75	No
	41	3	-0.30	1.50	No
		3	-0.30	8.50	No
		3	-0.054	5.00	No
W60	39	3	-0.232	1.50	No
		3	-0.232	8.50	No
		3	-0.065	5.00	No
	40	3	-0.05	2.25	No
		3	-0.05	4.00	No
		3	-0.06	6.00	No
		3	-0.06	7.75	No
	41	3	-0.206	1.50	No
		3	-0.206	8.50	No
		3	-0.089	5.00	No
W90	39	x	-0.187	1.50	No
		x	-0.187	8.50	No
		x	-0.078	5.00	No
	40	x	-0.039	2.25	No
		x	-0.039	4.00	No
		x	-0.054	6.00	No
		x	-0.054	7.75	No
	41	x	-0.158	1.50	No
		x	-0.158	8.50	No
		x	-0.106	5.00	No
W120	39	2	-0.232	1.50	No
		2	-0.232	8.50	No
		2	-0.065	5.00	No
	40	2	-0.05	2.25	No
		2	-0.05	4.00	No
		2	-0.06	6.00	No
		2	-0.06	7.75	No
	41	2	-0.206	1.50	No
		2	-0.206	8.50	No
		2	-0.089	5.00	No
W150	39	2	-0.321	1.50	No
		2	-0.321	8.50	No
		2	-0.039	5.00	No
	40	2	-0.071	2.25	No
		2	-0.071	4.00	No
		2	-0.073	6.00	No
		2	-0.073	7.75	No
	41	2	-0.30	1.50	No
		2	-0.30	8.50	No
		2	-0.054	5.00	No
Di	39	y	-0.147	1.50	No
		y	-0.147	8.50	No
		y	-0.037	5.00	No
		y	-0.033	5.00	No
	40	y	-0.036	2.25	No
		y	-0.036	4.00	No
		y	-0.038	6.00	No
		y	-0.038	7.75	No
	41	y	-0.136	1.50	No
		y	-0.136	8.50	No
		y	-0.038	5.00	No
		y	-0.05	5.00	No
WI0	39	z	-0.067	1.50	No
		z	-0.067	8.50	No
		z	-0.007	5.00	No
		z	-0.007	5.00	No

	40	z	-0.016	2.25	No
		z	-0.016	4.00	No
		z	-0.016	6.00	No
		z	-0.016	7.75	No
	41	z	-0.064	1.50	No
		z	-0.064	8.50	No
		z	-0.008	5.00	No
		z	-0.011	5.00	No
WI30	39	3	-0.059	1.50	No
		3	-0.059	8.50	No
		3	-0.009	5.00	No
	40	3	-0.015	2.25	No
		3	-0.015	4.00	No
		3	-0.015	6.00	No
		3	-0.015	7.75	No
	41	3	-0.055	1.50	No
		3	-0.055	8.50	No
		3	-0.013	5.00	No
WI60	39	3	-0.044	1.50	No
		3	-0.044	8.50	No
		3	-0.014	5.00	No
	40	3	-0.011	2.25	No
		3	-0.011	4.00	No
		3	-0.013	6.00	No
		3	-0.013	7.75	No
	41	3	-0.04	1.50	No
		3	-0.04	8.50	No
		3	-0.019	5.00	No
WI90	39	x	-0.037	1.50	No
		x	-0.037	8.50	No
		x	-0.017	5.00	No
	40	x	-0.009	2.25	No
		x	-0.009	4.00	No
		x	-0.012	6.00	No
		x	-0.012	7.75	No
	41	x	-0.032	1.50	No
		x	-0.032	8.50	No
		x	-0.022	5.00	No
WI120	39	2	-0.044	1.50	No
		2	-0.044	8.50	No
		2	-0.014	5.00	No
	40	2	-0.011	2.25	No
		2	-0.011	4.00	No
		2	-0.013	6.00	No
		2	-0.013	7.75	No
	41	2	-0.04	1.50	No
		2	-0.04	8.50	No
		2	-0.019	5.00	No
WI150	39	2	-0.059	1.50	No
		2	-0.059	8.50	No
		2	-0.009	5.00	No
	40	2	-0.015	2.25	No
		2	-0.015	4.00	No
		2	-0.015	6.00	No
		2	-0.015	7.75	No
	41	2	-0.055	1.50	No
		2	-0.055	8.50	No
		2	-0.013	5.00	No
WL0	39	z	-0.022	1.50	No
		z	-0.022	8.50	No

		z	-0.001	5.00	No
		z	-0.002	5.00	No
	40	z	-0.005	2.25	No
		z	-0.005	4.00	No
		z	-0.005	6.00	No
		z	-0.005	7.75	No
	41	z	-0.02	1.50	No
		z	-0.02	8.50	No
		z	-0.002	5.00	No
		z	-0.002	5.00	No
WL30	39	3	-0.019	1.50	No
		3	-0.019	8.50	No
		3	-0.002	5.00	No
	40	3	-0.005	2.25	No
		3	-0.005	4.00	No
		3	-0.005	6.00	No
		3	-0.005	7.75	No
	41	3	-0.018	1.50	No
		3	-0.018	8.50	No
		3	-0.003	5.00	No
WL60	39	3	-0.014	1.50	No
		3	-0.014	8.50	No
		3	-0.004	5.00	No
	40	3	-0.003	2.25	No
		3	-0.003	4.00	No
		3	-0.004	6.00	No
		3	-0.004	7.75	No
	41	3	-0.012	1.50	No
		3	-0.012	8.50	No
		3	-0.005	5.00	No
WL90	39	x	-0.011	1.50	No
		x	-0.011	8.50	No
		x	-0.005	5.00	No
	40	x	-0.003	2.25	No
		x	-0.003	4.00	No
		x	-0.004	6.00	No
		x	-0.004	7.75	No
	41	x	-0.01	1.50	No
		x	-0.01	8.50	No
		x	-0.006	5.00	No
WL120	39	2	-0.014	1.50	No
		2	-0.014	8.50	No
		2	-0.004	5.00	No
	40	2	-0.003	2.25	No
		2	-0.003	4.00	No
		2	-0.004	6.00	No
		2	-0.004	7.75	No
	41	2	-0.012	1.50	No
		2	-0.012	8.50	No
		2	-0.005	5.00	No
WL150	39	2	-0.019	1.50	No
		2	-0.019	8.50	No
		2	-0.002	5.00	No
	40	2	-0.005	2.25	No
		2	-0.005	4.00	No
		2	-0.005	6.00	No
		2	-0.005	7.75	No
	41	2	-0.018	1.50	No
		2	-0.018	8.50	No
		2	-0.003	5.00	No

LL1	2	y	-0.25	50.00	Yes
LL2	2	y	-0.25	100.00	Yes
LL3	2	y	-0.25	0.00	Yes
LLa1	38	y	-0.50	50.00	Yes
LLa2	39	y	-0.50	50.00	Yes
LLa3	40	y	-0.50	50.00	Yes
LLa4	41	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00

Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

Current Date: 3/1/2022 9:01 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2

LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**2**	LC6 at 32.81%	**0.66**	**OK**	
		3	LC12 at 32.14%	0.61	OK	
		38	LC47 at 33.33%	0.31	OK	
		39	LC47 at 33.33%	0.30	OK	
		40	LC3 at 33.33%	0.19	OK	
		41	LC77 at 33.33%	0.46	OK	
	PIPE 2x0.154	**4**	LC81 at 93.75%	**0.41**	**OK**	
		5	LC87 at 93.75%	0.30	OK	
		6	LC40 at 93.75%	0.25	OK	
		7	LC45 at 93.75%	0.34	OK	
		16	LC3 at 0.00%	0.06	OK	
	PL 11-1/4x5/8	**27**	LC30 at 100.00%	**0.50**	**OK**	
		28	LC31 at 100.00%	0.31	OK	
	PL 3-1/2x5/8	**17**	LC77 at 100.00%	0.42	OK	
		18	LC41 at 100.00%	0.37	OK	
		19	LC45 at 100.00%	0.43	OK	
		20	LC83 at 100.00%	0.51	OK	
		23	LC81 at 100.00%	0.61	OK	
		24	LC41 at 0.00%	0.53	OK	
		25	LC87 at 100.00%	**0.63**	**OK**	
		26	LC41 at 0.00%	0.54	OK	
	RndBar 3_4	**12**	LC49 at 100.00%	0.28	OK	
		13	LC41 at 0.00%	0.30	With warnings	
		14	LC87 at 0.00%	0.37	OK	
		15	LC87 at 100.00%	**0.37**	**With warnings**	

RndBar 5_8	**8**	LC87 at 87.50%	0.64	OK
	9	LC83 at 87.50%	**0.66**	**OK**
	10	LC41 at 87.50%	0.54	OK
	11	LC40 at 87.50%	0.55	OK

RAM® Elements
CONNECT Edition

Current Date: 3/1/2022 9:01 PM
Units system: English

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
142	0.00	0.00	0.1833	0
143	-0.6362	0.00	0.6617	0
144	0.00	-3.3333	0.1833	0
145	-0.6362	-3.3333	0.6617	0
146	0.6362	-3.3333	0.6617	0
147	0.6362	0.00	0.6617	0
158	-7.25	0.00	2.8133	0
159	7.25	0.00	2.8133	0
160	-7.25	-3.3333	2.8133	0
161	7.25	-3.3333	2.8133	0
162	-2.4126	0.00	2.4208	0
163	-2.4126	-3.3333	2.4208	0
164	2.4126	-3.3333	2.4208	0
165	2.4126	0.00	2.4208	0
166	-2.2835	0.00	2.2929	0
167	-2.2835	-3.3333	2.2929	0
168	-0.7653	0.00	0.7895	0
169	-0.7653	-3.3333	0.7895	0
170	0.7653	0.00	0.7895	0
171	0.7653	-3.3333	0.7895	0
172	2.2835	0.00	2.2929	0
173	2.2835	-3.3333	2.2929	0
174	-4.50	0.00	2.8133	0

175	-4.00	0.00	-2.3167	0
184	-2.4792	0.00	2.8133	0
185	2.4792	0.00	2.8133	0
186	2.4792	-3.3333	2.8133	0
187	-2.4792	-3.3333	2.8133	0
208	0.00	0.00	0.6617	0
209	0.00	-3.3333	0.6617	0
231	7.00	3.3333	3.0133	0
232	7.00	-6.6667	3.0133	0
233	3.50	3.3333	3.0133	0
234	3.50	-6.6667	3.0133	0
235	-2.00	3.3333	3.0133	0
236	-2.00	-6.6667	3.0133	0
237	-7.00	3.3333	3.0133	0
238	-7.00	-6.6667	3.0133	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
175	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	158	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
3	160	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
4	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	164	146		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	165	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	166	167		RndBar 5_8	A36	0.00	0.00	0.00
9	168	169		RndBar 5_8	A36	0.00	0.00	0.00
10	170	171		RndBar 5_8	A36	0.00	0.00	0.00
11	172	173		RndBar 5_8	A36	0.00	0.00	0.00
12	170	173		RndBar 3_4	A36	0.00	0.00	0.00
13	171	172		RndBar 3_4	A36	0.00	0.00	0.00
14	167	168		RndBar 3_4	A36	0.00	0.00	0.00
15	166	169		RndBar 3_4	A36	0.00	0.00	0.00
16	174	175		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
17	162	184		PL 3-1/2x5/8	A36	0.00	0.00	0.00
18	165	185		PL 3-1/2x5/8	A36	0.00	0.00	0.00
19	164	186		PL 3-1/2x5/8	A36	0.00	0.00	0.00
20	163	187		PL 3-1/2x5/8	A36	0.00	0.00	0.00
23	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
24	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
25	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
26	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00
27	208	142		PL 11-1/4x5/8	A36	11.25	4.00	0.00

28	209	144		PL 11-1/4x5/8	A36	11.25	4.00	0.00
38	231	232		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
39	233	234		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
40	235	236		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
41	237	238		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

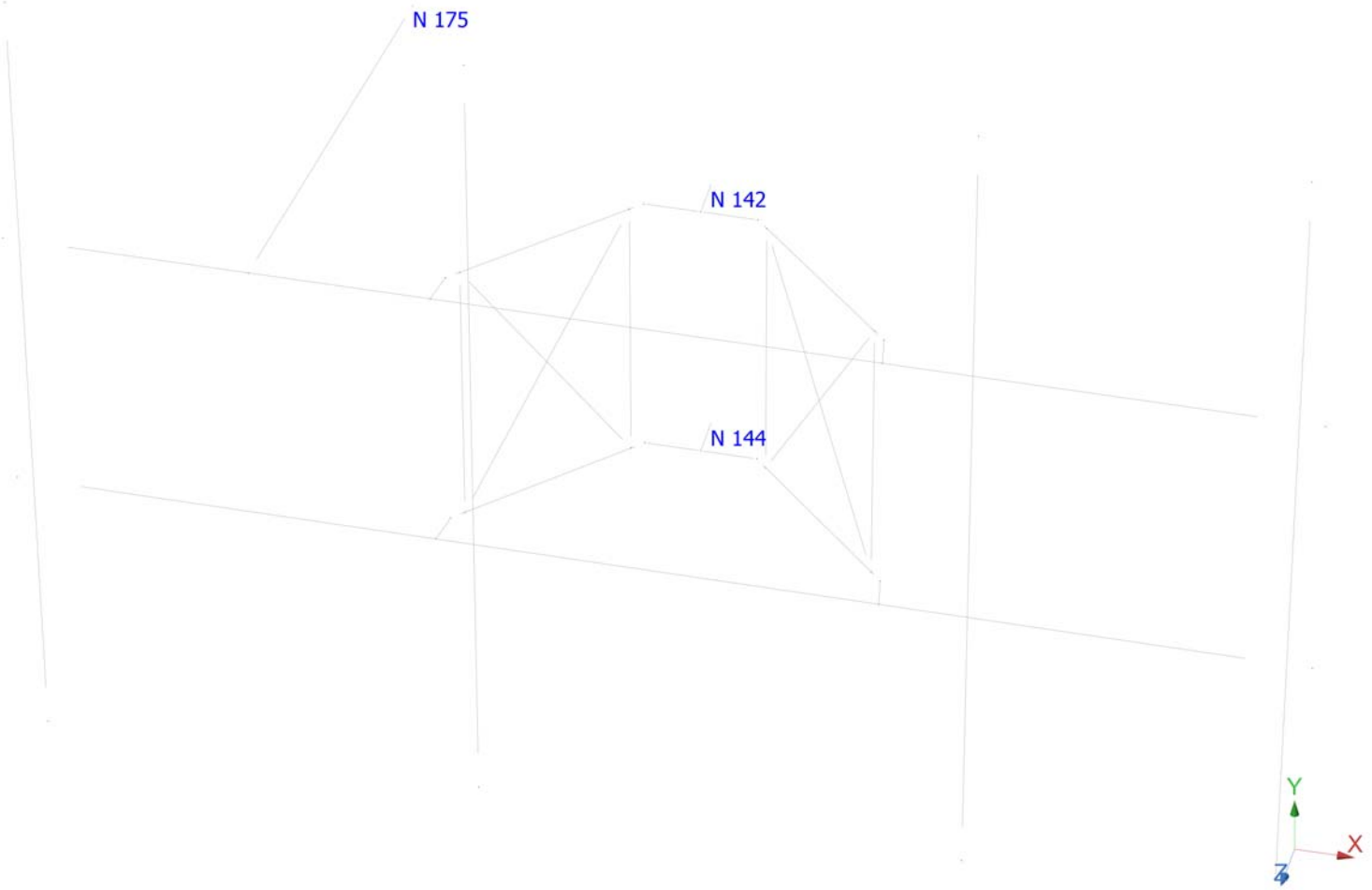
Member	Rotation [Deg]	Axes23	NX	NY	NZ
8	0.00	2	0.00	0.00	1.00
9	0.00	2	0.00	0.00	1.00
10	0.00	2	0.00	0.00	1.00
11	0.00	2	0.00	0.00	1.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
20	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	90.00	0	0.00	0.00	0.00
28	90.00	0	0.00	0.00	0.00
38	315.00	0	0.00	0.00	0.00
39	315.00	0	0.00	0.00	0.00
40	315.00	0	0.00	0.00	0.00
41	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
12	0.00	-3.50	0.00	0.00	3.50	0.00
13	0.00	3.50	0.00	0.00	-3.50	0.00
14	0.00	3.50	0.00	0.00	-3.50	0.00
15	0.00	-3.50	0.00	0.00	3.50	0.00
27	0.00	-0.625	0.00	0.00	-0.625	0.00
28	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
13	0	0	0	0	0	0	0	0	0	0	Tension only
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	1	1	0	0	0	0	0	0	0	0	Full
17	1	1	0	0	0	0	0	0	0	0	Full
18	1	1	0	0	0	0	0	0	0	0	Full
19	1	1	0	0	0	0	0	0	0	0	Full
20	1	1	0	0	0	0	0	0	0	0	Full

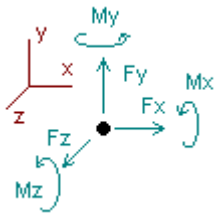

N 175
N 142
N 144
Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 3/1/2022 9:03 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.2D+Wo**						
142	0.35960	0.78476	-0.31207	-0.24061	0.00000	-0.00143
144	-0.30485	0.61253	2.17369	-0.25267	0.00000	-0.01902
175	-0.05475	0.00926	0.57644	0.00000	0.00000	0.00000
SUM	0.00000	1.40655	2.43806	-0.49327	0.00000	-0.02045
Condition **LC2=1.2D+W30**						
142	1.00649	0.77814	-1.15446	-0.22487	0.00000	0.04604
144	0.24318	0.61984	1.82496	-0.24511	0.00000	0.01934
175	-0.10204	0.00858	1.05020	0.00000	0.00000	0.00000
SUM	1.14763	1.40655	1.72069	-0.46998	0.00000	0.06538
Condition **LC3=1.2D+W60**						
142	1.21964	0.76569	-1.83154	-0.20305	0.00000	0.06747
144	0.39266	0.63262	1.42117	-0.24433	0.00000	0.03857
175	-0.10453	0.00824	1.29425	0.00000	0.00000	0.00000
SUM	1.50776	1.40655	0.88388	-0.44738	0.00000	0.10603
Condition **LC4=1.2D+W90**						
142	1.26865	0.76896	-2.03766	-0.19993	0.00000	0.05125
144	0.49791	0.62903	0.97518	-0.23094	0.00000	0.02619
175	-0.08268	0.00856	1.06247	0.00000	0.00000	0.00000
SUM	1.68388	1.40655	0.00000	-0.43087	0.00000	0.07743
Condition **LC5=1.2D+W120**						
142	1.12160	0.77628	-2.00603	-0.20236	0.00000	0.01193
144	0.42254	0.62097	0.52792	-0.21556	0.00000	-0.00577
175	-0.03638	0.00929	0.59423	0.00000	0.00000	0.00000
SUM	1.50776	1.40655	-0.88388	-0.41793	0.00000	0.00616

Condition **LC6=1.2D+W150**

142	0.91179	0.77454	-2.34400	-0.19126	0.00000	-0.00760
144	0.26981	0.62223	-0.04160	-0.20436	0.00000	-0.02395
175	-0.03396	0.00978	0.33491	0.00000	0.00000	0.00000
SUM	1.14763	1.40655	-2.05069	-0.39562	0.00000	-0.03155

Condition **LC7=1.2D-Wo**

142	0.20214	0.78667	-1.61812	-0.20662	0.00000	-0.08825
144	-0.26043	0.60800	-0.23380	-0.19396	0.00000	-0.08861
175	0.05830	0.01188	-0.58614	0.00000	0.00000	0.00000
SUM	0.00000	1.40655	-2.43806	-0.40058	0.00000	-0.17686

Condition **LC8=1.2D-W30**

142	-0.44174	0.79257	-0.78169	-0.22168	0.00000	-0.13526
144	-0.80887	0.60065	0.11561	-0.20161	0.00000	-0.12668
175	0.10298	0.01333	-1.05462	0.00000	0.00000	0.00000
SUM	-1.14763	1.40655	-1.72069	-0.42329	0.00000	-0.26194

Condition **LC9=1.2D-W60**

142	-0.65182	0.80428	-0.11070	-0.24270	0.00000	-0.15636
144	-0.95782	0.58820	0.52013	-0.20256	0.00000	-0.14581
175	0.10187	0.01408	-1.29332	0.00000	0.00000	0.00000
SUM	-1.50776	1.40655	-0.88388	-0.44527	0.00000	-0.30218

Condition **LC10=1.2D-W90**

142	-0.69904	0.80136	0.09430	-0.24588	0.00000	-0.14042
144	-1.06322	0.59183	0.96643	-0.21594	0.00000	-0.13379
175	0.07838	0.01336	-1.06073	0.00000	0.00000	0.00000
SUM	-1.68388	1.40655	0.00000	-0.46182	0.00000	-0.27421

Condition **LC11=1.2D-W120**

142	-0.55321	0.79476	0.06428	-0.24402	0.00000	-0.10130
144	-0.98794	0.59981	1.41331	-0.23128	0.00000	-0.10196
175	0.03339	0.01198	-0.59371	0.00000	0.00000	0.00000
SUM	-1.50776	1.40655	0.88388	-0.47530	0.00000	-0.20326

Condition **LC12=1.2D-W150**

142	-0.34518	0.79672	0.41081	-0.25537	0.00000	-0.08251
144	-0.83504	0.59850	1.98269	-0.24228	0.00000	-0.08429
175	0.03258	0.01133	-0.34280	0.00000	0.00000	0.00000
SUM	-1.14763	1.40655	2.05069	-0.49765	0.00000	-0.16680

Condition **LC13=0.9D+Wo**

142	0.28933	0.58776	-0.06875	-0.18458	0.00000	0.01002
144	-0.23461	0.46018	1.93047	-0.19675	0.00000	-0.00536
175	-0.05472	0.00697	0.57633	0.00000	0.00000	0.00000
SUM	0.00000	1.05491	2.43806	-0.38133	0.00000	0.00466

Condition **LC14=0.9D+W30**

142	0.93558	0.58086	-0.91116	-0.16881	0.00000	0.05712
144	0.31402	0.46750	1.58203	-0.18920	0.00000	0.03267
175	-0.10196	0.00656	1.04982	0.00000	0.00000	0.00000
SUM	1.14763	1.05491	1.72069	-0.35801	0.00000	0.08979

Condition **LC15=0.9D+W60**

142	1.14810	0.56832	-1.58835	-0.14700	0.00000	0.07836
144	0.46410	0.48024	1.17850	-0.18844	0.00000	0.05178
175	-0.10443	0.00635	1.29373	0.00000	0.00000	0.00000
SUM	1.50776	1.05491	0.88388	-0.33544	0.00000	0.13014

Condition **LC16=0.9D+W90**

142	1.19703	0.57170	-1.79486	-0.14392	0.00000	0.06201
144	0.56945	0.47666	0.73280	-0.17508	0.00000	0.03930
175	-0.08260	0.00655	1.06207	0.00000	0.00000	0.00000
SUM	1.68388	1.05491	0.00000	-0.31900	0.00000	0.10131

Condition **LC17=0.9D+W120**

142	1.05010	0.57927	-1.76374	-0.14641	0.00000	0.02267
144	0.49401	0.46863	0.28578	-0.15974	0.00000	0.00733
175	-0.03634	0.00701	0.59407	0.00000	0.00000	0.00000
SUM	1.50776	1.05491	-0.88388	-0.30615	0.00000	0.03000

Condition **LC18=0.9D+W150**

142	0.84014	0.57771	-2.10213	-0.13537	0.00000	0.00308
144	0.34144	0.46984	-0.28343	-0.14858	0.00000	-0.01092
175	-0.03395	0.00736	0.33486	0.00000	0.00000	0.00000
SUM	1.14763	1.05491	-2.05069	-0.28394	0.00000	-0.00783

Condition **LC19=0.9D-Wo**

142	0.13107	0.59035	-1.37679	-0.15081	0.00000	-0.07731
144	-0.18931	0.45563	-0.47558	-0.13822	0.00000	-0.07534
175	0.05823	0.00893	-0.58569	0.00000	0.00000	0.00000
SUM	0.00000	1.05491	-2.43806	-0.28903	0.00000	-0.15265

Condition **LC20=0.9D-W30**

142	-0.51216	0.59656	-0.54034	-0.16595	0.00000	-0.12390
144	-0.73835	0.44824	-0.12647	-0.14586	0.00000	-0.11307
175	0.10287	0.01012	-1.05388	0.00000	0.00000	0.00000
SUM	-1.14763	1.05491	-1.72069	-0.31181	0.00000	-0.23697

Condition **LC21=0.9D-W60**

142	-0.72160	0.60837	0.13076	-0.18697	0.00000	-0.14481
144	-0.88791	0.43581	0.27780	-0.14680	0.00000	-0.13208
175	0.10174	0.01073	-1.29244	0.00000	0.00000	0.00000
SUM	-1.50776	1.05491	-0.88388	-0.33378	0.00000	-0.27689

Condition **LC22=0.9D-W90**

142	-0.76876	0.60529	0.33613	-0.19006	0.00000	-0.12879
144	-0.99340	0.43948	0.72383	-0.16014	0.00000	-0.11997
175	0.07827	0.01014	-1.05996	0.00000	0.00000	0.00000
SUM	-1.68388	1.05491	0.00000	-0.35020	0.00000	-0.24876

Condition **LC23=0.9D-W120**

142	-0.62304	0.59844	0.30662	-0.18813	0.00000	-0.08965
144	-0.91804	0.44744	1.17046	-0.17544	0.00000	-0.08814
175	0.03332	0.00903	-0.59320	0.00000	0.00000	0.00000
SUM	-1.50776	1.05491	0.88388	-0.36357	0.00000	-0.17779

Condition **LC24=0.9D-W150**

142	-0.41485	0.60022	0.65357	-0.19942	0.00000	-0.07080
144	-0.76532	0.44617	1.73952	-0.18641	0.00000	-0.07040
175	0.03253	0.00852	-0.34240	0.00000	0.00000	0.00000
SUM	-1.14763	1.05491	2.05069	-0.38583	0.00000	-0.14119

Condition **LC25=1.2D+Di+WI0**

142	0.73836	1.45159	-1.75629	-0.41146	0.00000	-0.10241
144	-0.72382	1.12590	1.96614	-0.41593	0.00000	-0.12758
175	-0.01454	0.02266	0.14915	0.00000	0.00000	0.00000
SUM	0.00000	2.60014	0.35900	-0.82739	0.00000	-0.23000

Condition **LC26=1.2D+Di+WI30**

142	0.86172	1.45070	-1.91251	-0.40862	0.00000	-0.09361
144	-0.61956	1.12716	1.89712	-0.41442	0.00000	-0.12045
175	-0.02296	0.02228	0.23460	0.00000	0.00000	0.00000
SUM	0.21920	2.60014	0.21920	-0.82304	0.00000	-0.21406

Condition **LC27=1.2D+Di+WI60**

142	0.83193	1.45102	-1.88935	-0.40905	0.00000	-0.09724
144	-0.63744	1.12663	1.87718	-0.41367	0.00000	-0.12327
175	-0.01842	0.02249	0.18825	0.00000	0.00000	0.00000
SUM	0.17607	2.60014	0.17607	-0.82272	0.00000	-0.22052

Condition **LC28=1.2D+Di+WI90**

142	0.84593	1.45155	-1.93289	-0.40834	0.00000	-0.10006
144	-0.61273	1.12591	1.78812	-0.41101	0.00000	-0.12538
175	-0.01419	0.02269	0.14477	0.00000	0.00000	0.00000
SUM	0.21900	2.60014	0.00000	-0.81935	0.00000	-0.22544

Condition **LC29=1.2D+Di+WI120**

142	0.81154	1.45288	-1.91867	-0.40888	0.00000	-0.10852
144	-0.63117	1.12412	1.69886	-0.40788	0.00000	-0.13225
175	-0.00429	0.02314	0.04374	0.00000	0.00000	0.00000
SUM	0.17607	2.60014	-0.17607	-0.81675	0.00000	-0.24077

Condition **LC30=1.2D+Di+WI150**

142	0.83663	1.45271	-1.95349	-0.40830	0.00000	-0.10719
144	-0.61201	1.12435	1.67914	-0.40730	0.00000	-0.13128
175	-0.00542	0.02309	0.05514	0.00000	0.00000	0.00000
SUM	0.21920	2.60014	-0.21920	-0.81560	0.00000	-0.23847

Condition **LC31=1.2D+Di-WI0**

142	0.69611	1.45505	-1.81491	-0.41113	0.00000	-0.12528
144	-0.71113	1.12104	1.60904	-0.40421	0.00000	-0.14581
175	0.01502	0.02406	-0.15312	0.00000	0.00000	0.00000
SUM	0.00000	2.60014	-0.35900	-0.81534	0.00000	-0.27109

Condition **LC32=1.2D+Di-WI30**

142	0.57290	1.45590	-1.65880	-0.41394	0.00000	-0.13409
144	-0.81540	1.11978	1.67810	-0.40572	0.00000	-0.15294
175	0.02330	0.02447	-0.23850	0.00000	0.00000	0.00000
SUM	-0.21920	2.60014	-0.21920	-0.81966	0.00000	-0.28703

Condition **LC33=1.2D+Di-WI60**

142	0.60268	1.45559	-1.68196	-0.41352	0.00000	-0.13046
144	-0.79752	1.12031	1.69803	-0.40647	0.00000	-0.15012
175	0.01877	0.02425	-0.19214	0.00000	0.00000	0.00000
SUM	-0.17607	2.60014	-0.17607	-0.81999	0.00000	-0.28058

Condition **LC34=1.2D+Di-WI90**

142	0.58873	1.45507	-1.63845	-0.41423	0.00000	-0.12765
144	-0.82222	1.12104	1.78709	-0.40914	0.00000	-0.14802
175	0.01449	0.02404	-0.14864	0.00000	0.00000	0.00000
SUM	-0.21900	2.60014	0.00000	-0.82337	0.00000	-0.27567

Condition **LC35=1.2D+Di-WI120**

142	0.62307	1.45376	-1.65264	-0.41371	0.00000	-0.11919
144	-0.80378	1.12282	1.87634	-0.41227	0.00000	-0.14115
175	0.00464	0.02356	-0.04764	0.00000	0.00000	0.00000
SUM	-0.17607	2.60014	0.17607	-0.82598	0.00000	-0.26035

Condition **LC36=1.2D+Di-WI150**

142	0.59799	1.45394	-1.61782	-0.41428	0.00000	-0.12052
144	-0.82294	1.12259	1.89607	-0.41284	0.00000	-0.14213
175	0.00575	0.02362	-0.05905	0.00000	0.00000	0.00000
SUM	-0.21920	2.60014	0.21920	-0.82712	0.00000	-0.26265

Condition **LC37=1.2D+1.6LL1**

142	0.28209	1.01822	-1.24187	-0.30138	0.00000	-0.04557
144	-0.28212	0.77787	1.24223	-0.29046	0.00000	-0.05538
175	0.00004	0.01046	-0.00036	0.00000	0.00000	0.00000
SUM	0.00000	1.80655	0.00000	-0.59184	0.00000	-0.10095

Condition **LC38=1.2D+1.6LL2**

142	-0.50122	1.01489	-1.25030	-0.28587	0.00000	0.08774
144	0.50134	0.78120	1.24905	-0.28279	0.00000	0.10137
175	-0.00012	0.01046	0.00125	0.00000	0.00000	0.00000
SUM	0.00000	1.80655	0.00000	-0.56866	0.00000	0.18910

Condition **LC39=1.2D+1.6LL3**

142	1.06527	1.01585	-1.24870	-0.28149	0.00000	-0.18006
144	-1.06551	0.78024	1.25119	-0.27884	0.00000	-0.21142
175	0.00024	0.01047	-0.00248	0.00000	0.00000	0.00000
SUM	0.00000	1.80655	0.00000	-0.56033	0.00000	-0.39148

Condition **LC40=1.2D+WL0+1.6LLa1**

142	-1.22770	1.24323	-1.56663	-0.34751	0.00000	0.20911
144	1.23226	0.95292	1.63077	-0.34545	0.00000	0.24410
175	-0.00456	0.01040	0.04686	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	0.11100	-0.69296	0.00000	0.45321

Condition **LC41=1.2D+WL30+1.6LLa1**

142	-1.18772	1.24278	-1.62002	-0.34644	0.00000	0.21227
144	1.26544	0.95341	1.61082	-0.34503	0.00000	0.24664
175	-0.00771	0.01035	0.07921	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	0.07000	-0.69147	0.00000	0.45891

Condition **LC42=1.2D+WL60+1.6LLa1**

142	-1.19986	1.24300	-1.60889	-0.34669	0.00000	0.21070
144	1.25862	0.95318	1.60310	-0.34473	0.00000	0.24543
175	-0.00573	0.01038	0.05881	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	0.05303	-0.69142	0.00000	0.45613

Condition **LC43=1.2D+WL90+1.6LLa1**

142	-1.19460	1.24313	-1.62431	-0.34642	0.00000	0.20996
144	1.26629	0.95303	1.57610	-0.34394	0.00000	0.24486
175	-0.00470	0.01039	0.04821	0.00000	0.00000	0.00000
SUM	0.06700	2.20655	0.00000	-0.69035	0.00000	0.45482

Condition **LC44=1.2D+WL120+1.6LLa1**

142	-1.20548	1.24358	-1.62090	-0.34660	0.00000	0.20745
144	1.26036	0.95254	1.54896	-0.34300	0.00000	0.24282
175	-0.00184	0.01043	0.01891	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	-0.05303	-0.68960	0.00000	0.45027

Condition **LC45=1.2D+WL150+1.6LLa1**

142	-1.19579	1.24352	-1.63264	-0.34639	0.00000	0.20778
144	1.26786	0.95260	1.54142	-0.34277	0.00000	0.24305
175	-0.00207	0.01043	0.02122	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	-0.07000	-0.68916	0.00000	0.45083

Condition **LC46=1.2D-WL0+1.6LLa1**

142	-1.23977	1.24432	-1.59163	-0.34732	0.00000	0.20239
144	1.23586	0.95172	1.52077	-0.34189	0.00000	0.23871
175	0.00391	0.01051	-0.04013	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	-0.11100	-0.68922	0.00000	0.44110

Condition **LC47=1.2D-WL30+1.6LLa1**

142	-1.27974	1.24477	-1.53826	-0.34839	0.00000	0.19924
144	1.20268	0.95123	1.54073	-0.34232	0.00000	0.23616
175	0.00705	0.01056	-0.07248	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	-0.07000	-0.69071	0.00000	0.43540

Condition **LC48=1.2D-WL60+1.6LLa1**

142	-1.26760	1.24456	-1.54939	-0.34814	0.00000	0.20080
144	1.20950	0.95146	1.54844	-0.34262	0.00000	0.23737
175	0.00507	0.01053	-0.05208	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	-0.05303	-0.69076	0.00000	0.43818

Condition **LC49=1.2D-WL90+1.6LLa1**

142	-1.27286	1.24442	-1.53397	-0.34841	0.00000	0.20155
144	1.20182	0.95161	1.57544	-0.34341	0.00000	0.23794
175	0.00403	0.01051	-0.04148	0.00000	0.00000	0.00000
SUM	-0.06700	2.20655	0.00000	-0.69182	0.00000	0.43949

Condition **LC50=1.2D-WL120+1.6LLa1**

142	-1.26198	1.24397	-1.53737	-0.34823	0.00000	0.20405
144	1.20776	0.95210	1.60258	-0.34435	0.00000	0.23998
175	0.00118	0.01047	-0.01218	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	0.05303	-0.69258	0.00000	0.44403

Condition **LC51=1.2D-WL150+1.6LLa1**

142	-1.27167	1.24403	-1.52564	-0.34844	0.00000	0.20372
144	1.20026	0.95204	1.61013	-0.34458	0.00000	0.23976
175	0.00141	0.01048	-0.01449	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	0.07000	-0.69302	0.00000	0.44348

Condition **LC52=1.2D+WL0+1.6LLa2**

142	-0.46023	1.23971	-1.55809	-0.35509	0.00000	0.10231
144	0.46448	0.95646	1.62549	-0.35554	0.00000	0.11025
175	-0.00425	0.01037	0.04361	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	0.11100	-0.71063	0.00000	0.21256

Condition **LC53=1.2D+WL30+1.6LLa2**

142	-0.42021	1.23928	-1.61140	-0.35405	0.00000	0.10546
144	0.49763	0.95695	1.60544	-0.35512	0.00000	0.11278
175	-0.00741	0.01031	0.07596	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	0.07000	-0.70917	0.00000	0.21824

Condition **LC54=1.2D+WL60+1.6LLa2**

142	-0.43236	1.23949	-1.60030	-0.35429	0.00000	0.10390
144	0.49082	0.95671	1.59773	-0.35482	0.00000	0.11158
175	-0.00543	0.01035	0.05559	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	0.05303	-0.70911	0.00000	0.21547

Condition **LC55=1.2D+WL90+1.6LLa2**

142	-0.42708	1.23962	-1.61574	-0.35402	0.00000	0.10316
144	0.49848	0.95656	1.57069	-0.35403	0.00000	0.11102
175	-0.00440	0.01037	0.04504	0.00000	0.00000	0.00000
SUM	0.06700	2.20655	0.00000	-0.70805	0.00000	0.21418

Condition **LC56=1.2D+WL120+1.6LLa2**

142	-0.43796	1.24006	-1.61238	-0.35419	0.00000	0.10067
144	0.49254	0.95606	1.54354	-0.35309	0.00000	0.10899
175	-0.00154	0.01043	0.01581	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	-0.05303	-0.70728	0.00000	0.20966

Condition **LC57=1.2D+WL150+1.6LLa2**

142	-0.42827	1.24001	-1.62411	-0.35399	0.00000	0.10100
144	0.50004	0.95612	1.53597	-0.35286	0.00000	0.10922
175	-0.00177	0.01042	0.01813	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	-0.07000	-0.70685	0.00000	0.21022

Condition **LC58=1.2D-WL0+1.6LLa2**

142	-0.47227	1.24078	-1.58323	-0.35488	0.00000	0.09564
144	0.46805	0.95523	1.51537	-0.35198	0.00000	0.10490
175	0.00421	0.01054	-0.04314	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	-0.11100	-0.70687	0.00000	0.20054

Condition **LC59=1.2D-WL30+1.6LLa2**

142	-0.51227	1.24120	-1.52994	-0.35592	0.00000	0.09250
144	0.43490	0.95474	1.53542	-0.35240	0.00000	0.10237
175	0.00736	0.01061	-0.07549	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	-0.07000	-0.70832	0.00000	0.19486

Condition **LC60=1.2D-WL60+1.6LLa2**

142	-0.50013	1.24100	-1.54103	-0.35568	0.00000	0.09406
144	0.44172	0.95498	1.54312	-0.35270	0.00000	0.10357
175	0.00538	0.01057	-0.05512	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	-0.05303	-0.70838	0.00000	0.19763

Condition **LC61=1.2D-WL90+1.6LLa2**

142	-0.50539	1.24087	-1.52560	-0.35595	0.00000	0.09479
144	0.43405	0.95513	1.57016	-0.35349	0.00000	0.10413
175	0.00434	0.01055	-0.04457	0.00000	0.00000	0.00000
SUM	-0.06700	2.20655	0.00000	-0.70945	0.00000	0.19892

Condition **LC62=1.2D-WL120+1.6LLa2**

142	-0.49452	1.24043	-1.52895	-0.35578	0.00000	0.09728
144	0.43999	0.95563	1.59732	-0.35444	0.00000	0.10616
175	0.00149	0.01049	-0.01534	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	0.05303	-0.71022	0.00000	0.20344

Condition **LC63=1.2D-WL150+1.6LLa2**

142	-0.50421	1.24049	-1.51722	-0.35598	0.00000	0.09695
144	0.43249	0.95557	1.60488	-0.35467	0.00000	0.10593
175	0.00172	0.01049	-0.01766	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	0.07000	-0.71065	0.00000	0.20288

Condition **LC64=1.2D+WL0+1.6LLa3**

142	0.71421	1.23770	-1.55181	-0.36309	0.00000	-0.12859
144	-0.71005	0.95852	1.62014	-0.36593	0.00000	-0.14706
175	-0.00416	0.01033	0.04268	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	0.11100	-0.72902	0.00000	-0.27566

Condition **LC65=1.2D+WL30+1.6LLa3**

142	0.75433	1.23731	-1.60489	-0.36211	0.00000	-0.12543
144	-0.67700	0.95901	1.59986	-0.36551	0.00000	-0.14451
175	-0.00733	0.01024	0.07503	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	0.07000	-0.72762	0.00000	-0.26994

Condition **LC66=1.2D+WL60+1.6LLa3**

142	0.74217	1.23750	-1.59382	-0.36233	0.00000	-0.12699
144	-0.68380	0.95876	1.59218	-0.36521	0.00000	-0.14571
175	-0.00534	0.01030	0.05467	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	0.05303	-0.72754	0.00000	-0.27270

Condition **LC67=1.2D+WL90+1.6LLa3**

142	0.74748	1.23763	-1.60916	-0.36207	0.00000	-0.12770
144	-0.67617	0.95859	1.56504	-0.36442	0.00000	-0.14626
175	-0.00431	0.01033	0.04412	0.00000	0.00000	0.00000
SUM	0.06700	2.20655	0.00000	-0.72649	0.00000	-0.27396

Condition **LC68=1.2D+WL120+1.6LLa3**

142	0.73660	1.23806	-1.60579	-0.36223	0.00000	-0.13018
144	-0.68211	0.95808	1.53786	-0.36347	0.00000	-0.14826
175	-0.00146	0.01041	0.01490	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	-0.05303	-0.72570	0.00000	-0.27844

Condition **LC69=1.2D+WL150+1.6LLa3**

142	0.74632	1.23801	-1.61746	-0.36204	0.00000	-0.12984
144	-0.67463	0.95814	1.53023	-0.36324	0.00000	-0.14803
175	-0.00168	0.01041	0.01723	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	-0.07000	-0.72528	0.00000	-0.27787

Condition **LC70=1.2D-WL0+1.6LLa3**

142	0.70225	1.23874	-1.57671	-0.36287	0.00000	-0.13519
144	-0.70655	0.95722	1.50974	-0.36236	0.00000	-0.15233
175	0.00430	0.01059	-0.04403	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	-0.11100	-0.72523	0.00000	-0.28753

Condition **LC71=1.2D-WL30+1.6LLa3**

142	0.66214	1.23913	-1.52365	-0.36385	0.00000	-0.13836
144	-0.73960	0.95674	1.53002	-0.36277	0.00000	-0.15488
175	0.00746	0.01069	-0.07637	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	-0.07000	-0.72662	0.00000	-0.29324

Condition **LC72=1.2D-WL60+1.6LLa3**

142	0.67430	1.23894	-1.53472	-0.36363	0.00000	-0.13680
144	-0.73280	0.95698	1.53770	-0.36308	0.00000	-0.15368
175	0.00547	0.01063	-0.05601	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	-0.05303	-0.72670	0.00000	-0.29048

Condition **LC73=1.2D-WL90+1.6LLa3**

142	0.66899	1.23881	-1.51938	-0.36389	0.00000	-0.13609
144	-0.74043	0.95715	1.56484	-0.36387	0.00000	-0.15314
175	0.00444	0.01060	-0.04546	0.00000	0.00000	0.00000
SUM	-0.06700	2.20655	0.00000	-0.72776	0.00000	-0.28922

Condition **LC74=1.2D-WL120+1.6LLa3**

142	0.67987	1.23838	-1.52275	-0.36373	0.00000	-0.13361
144	-0.73448	0.95766	1.59202	-0.36481	0.00000	-0.15113
175	0.00158	0.01051	-0.01625	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	0.05303	-0.72855	0.00000	-0.28474

Condition **LC75=1.2D-WL150+1.6LLa3**

142	0.67015	1.23843	-1.51107	-0.36392	0.00000	-0.13395
144	-0.74197	0.95761	1.59965	-0.36504	0.00000	-0.15136
175	0.00181	0.01051	-0.01857	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	0.07000	-0.72897	0.00000	-0.28531

Condition **LC76=1.2D+WL0+1.6LLa4**

142	1.80267	1.24474	-1.56290	-0.33889	0.00000	-0.29736
144	-1.79889	0.95162	1.63523	-0.33887	0.00000	-0.35108
175	-0.00379	0.01019	0.03867	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	0.11100	-0.67776	0.00000	-0.64845

Condition **LC77=1.2D+WL30+1.6LLa4**

142	1.84273	1.24442	-1.61603	-0.33798	0.00000	-0.29410
144	-1.76575	0.95216	1.61486	-0.33849	0.00000	-0.34845
175	-0.00697	0.00997	0.07117	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	0.07000	-0.67647	0.00000	-0.64255

Condition **LC78=1.2D+WL60+1.6LLa4**

142	1.83055	1.24456	-1.60488	-0.33818	0.00000	-0.29567
144	-1.77254	0.95188	1.60716	-0.33817	0.00000	-0.34965
175	-0.00497	0.01011	0.05076	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	0.05303	-0.67635	0.00000	-0.64532

Condition **LC79=1.2D+WL90+1.6LLa4**

142	1.83580	1.24467	-1.62015	-0.33792	0.00000	-0.29633
144	-1.76485	0.95170	1.57992	-0.33738	0.00000	-0.35015
175	-0.00394	0.01018	0.04023	0.00000	0.00000	0.00000
SUM	0.06700	2.20655	0.00000	-0.67530	0.00000	-0.64648

Condition **LC80=1.2D+WL120+1.6LLa4**

142	1.82487	1.24503	-1.61663	-0.33804	0.00000	-0.29878
144	-1.77076	0.95113	1.55265	-0.33642	0.00000	-0.35213
175	-0.00107	0.01038	0.01094	0.00000	0.00000	0.00000
SUM	0.05303	2.20655	-0.05303	-0.67446	0.00000	-0.65092

Condition **LC81=1.2D+WL150+1.6LLa4**

142	1.83454	1.24499	-1.62829	-0.33786	0.00000	-0.29842
144	-1.76323	0.95119	1.54500	-0.33620	0.00000	-0.35188
175	-0.00130	0.01037	0.01329	0.00000	0.00000	0.00000
SUM	0.07000	2.20655	-0.07000	-0.67406	0.00000	-0.65029

Condition **LC82=1.2D-WL0+1.6LLa4**

142	1.79046	1.24559	-1.58731	-0.33861	0.00000	-0.30381
144	-1.79519	0.95018	1.52445	-0.33527	0.00000	-0.35621
175	0.00472	0.01079	-0.04814	0.00000	0.00000	0.00000
SUM	0.00000	2.20655	-0.11100	-0.67388	0.00000	-0.66002

Condition **LC83=1.2D-WL30+1.6LLa4**

142	1.75042	1.24590	-1.53419	-0.33952	0.00000	-0.30707
144	-1.82832	0.94963	1.54482	-0.33565	0.00000	-0.35885
175	0.00790	0.01102	-0.08064	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	-0.07000	-0.67517	0.00000	-0.66592

Condition **LC84=1.2D-WL60+1.6LLa4**

142	1.76260	1.24577	-1.54534	-0.33933	0.00000	-0.30551
144	-1.82153	0.94991	1.55253	-0.33597	0.00000	-0.35764
175	0.00590	0.01087	-0.06022	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	-0.05303	-0.67530	0.00000	-0.66315

Condition **LC85=1.2D-WL90+1.6LLa4**

142	1.75736	1.24566	-1.53007	-0.33959	0.00000	-0.30484
144	-1.82922	0.95009	1.57976	-0.33676	0.00000	-0.35715
175	0.00486	0.01080	-0.04969	0.00000	0.00000	0.00000
SUM	-0.06700	2.20655	0.00000	-0.67635	0.00000	-0.66199

Condition **LC86=1.2D-WL120+1.6LLa4**

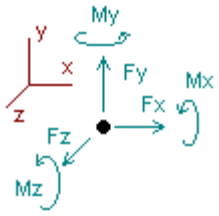
142	1.76828	1.24529	-1.53359	-0.33946	0.00000	-0.30239
144	-1.82331	0.95066	1.60703	-0.33772	0.00000	-0.35516
175	0.00200	0.01060	-0.02041	0.00000	0.00000	0.00000
SUM	-0.05303	2.20655	0.05303	-0.67718	0.00000	-0.65755

Condition **LC87=1.2D-WL150+1.6LLa4**

142	1.75861	1.24534	-1.52193	-0.33964	0.00000	-0.30276
144	-1.83084	0.95060	1.61468	-0.33794	0.00000	-0.35542
175	0.00223	0.01061	-0.02275	0.00000	0.00000	0.00000
SUM	-0.07000	2.20655	0.07000	-0.67758	0.00000	-0.65818

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120

LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Node		Forces						Moments					
		Fx [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
142	Max	1.843	LC77	1.456	LC32	0.654	LC24	-0.13537	LC18	0.00000	LC1	0.21227	LC41
	Min	-1.280	LC47	0.568	LC15	-2.344	LC6	-0.41428	LC36	0.00000	LC1	-0.30707	LC83
144	Max	1.268	LC45	1.127	LC26	2.174	LC1	-0.13822	LC19	0.00000	LC1	0.24664	LC41
	Min	-1.831	LC87	0.436	LC21	-0.476	LC19	-0.41593	LC25	0.00000	LC1	-0.35885	LC83
175	Max	0.103	LC8	0.024	LC32	1.294	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.105	LC3	0.006	LC15	-1.293	LC9	0.00000	LC1	0.00000	LC1	0.00000	LC1

HUDSON
Design Group LLC

Connection Check

Date: 3/1/2022
Project Name: WOLCOTT-NORTH
Project No.: CT1111
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A325 5/8" (Threaded Rod)

Allowable Tensile Load =

F_{Tall} = 13806 lbs.

Allowable Shear Load =

F_{Vall} = 8283 lbs.

TENSILE FORCES

Reaction **F =** 2344 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1843 lbs. (See Bentley Output)
Reactions in Y direction: 1456 lbs. (See Bentley Output)

Resultant: 2349 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t = 586.00 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 587.19 lbs. < 8283 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.042	+	0.071	=	0.113	<	1.0	**Therefore, OK !**

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Thursday, June 30, 2022 10:16 AM
To: Kristina Cottone
Subject: FedEx Shipment 777247743955: Your package has been delivered

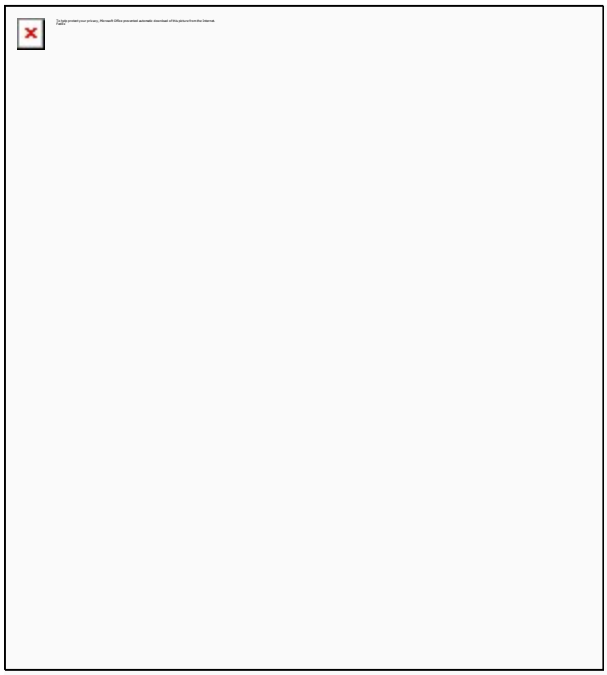
Hi. Your package was delivered Thu, 06/30/2022 at 10:13am.

Delivered to 8051 CONGRESS AVE, BOCA RATON, FL 33487
Received by L.OURDES

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	777247743955
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	SBA Communications Corp. George O'Neil

	8051 Congress Avenue BOCA RATON, FL, US, 33487
REFERENCE	CTL01111 - Wolcott
SHIPPER REFERENCE	CTL01111 - Wolcott
SHIP DATE	Tue 6/28/2022 06:24 PM
DELIVERED TO	Mailroom
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	BOCA RATON, FL, US, 33487
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx 2Day



FOLLOW FEDEX

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Thursday, June 30, 2022 12:32 PM
To: Kristina Cottone
Subject: FedEx Shipment 777247605230: Your package has been delivered

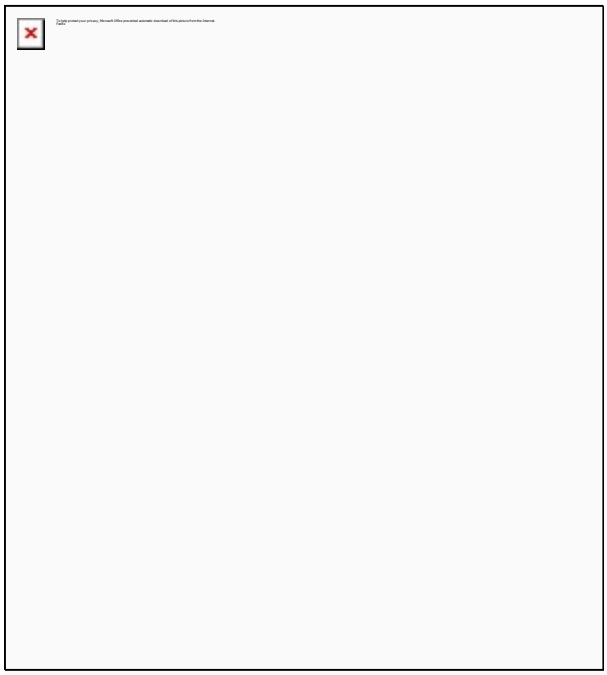
Hi. Your package was delivered Thu, 06/30/2022 at 12:28pm.

Delivered to 10 KENEA AVE, WOLCOTT, CT 06716
Received by K.MOWAD

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	777247605230
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	Town of Wolcott ATTN: Zoning Inspector David K.

	10 Kenea Ave WOLCOTT, CT, US, 06716
REFERENCE	CTL01111 - Wolcott
SHIPPER REFERENCE	CTL01111 - Wolcott
SHIP DATE	Tue 6/28/2022 06:24 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	WOLCOTT, CT, US, 06716
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx 2Day



FOLLOW FEDEX

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Thursday, June 30, 2022 12:32 PM
To: Kristina Cottone
Subject: FedEx Shipment 777247693350: Your package has been delivered

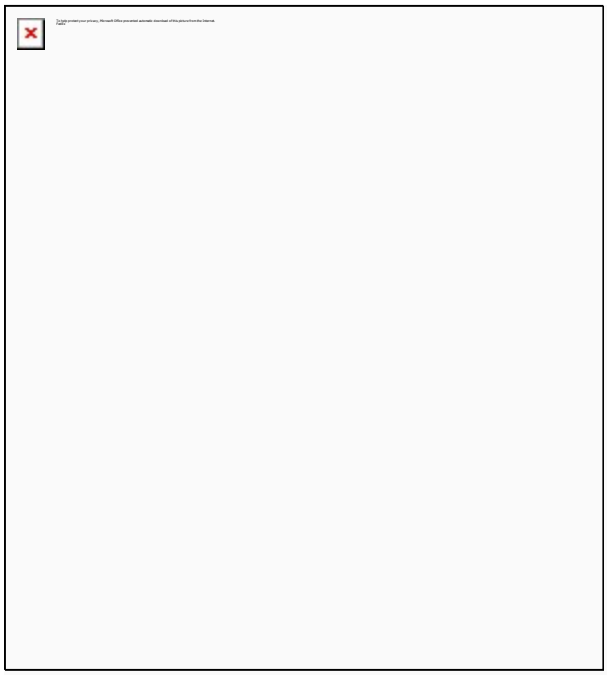
Hi. Your package was delivered Thu, 06/30/2022 at 12:28pm.

Delivered to 10 KENEA AVE, WOLCOTT, CT 06716
Received by K.MOWAD

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	777247693350
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	Town of Wolcott ATTN: Mayor Thomas G. Dunn

	10 Kenea Ave WOLCOTT, CT, US, 06716
REFERENCE	CTL01111 - Wolcott
SHIPPER REFERENCE	CTL01111 - Wolcott
SHIP DATE	Tue 6/28/2022 06:24 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	WOLCOTT, CT, US, 06716
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx 2Day



FOLLOW FEDEX

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Thursday, June 30, 2022 3:14 PM
To: Kristina Cottone
Subject: FedEx Shipment 777247720726: Your package has been delivered

Hi. Your package was delivered Thu, 06/30/2022 at 3:12pm.

Delivered to 50 BEACH RD, WOLCOTT, CT 06716
Received by D.DARTY

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	777247720726
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	Edward F. Cleary ATTN: Edward F. Cleary

	Beach Road WOLCOTT, CT, US, 06716
REFERENCE	CTL01111 - Wolcott
SHIPPER REFERENCE	CTL01111 - Wolcott
SHIP DATE	Tue 6/28/2022 06:24 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	WOLCOTT, CT, US, 06716
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx 2Day

FOLLOW FEDEX

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT TOWER:
- INSTALL AT&T SECTOR FRAME SITEPRO #VFA14-H10-2120 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3)(TOP).
- INSTALL AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3) (BOTTOM).
- INSTALL AT&T ANTENNAS: QD8616-7 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T ANTENNAS: DMP65R-BU8DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL RRUS-4449 B5/B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL RRUS-8843 B2/B66A (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL RRUS-4478 B14 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T SURGE SUPPRESSOR DC6-48-60-18-8C-EV (TYP. OF 3)
- ADD (6) "Y" CABLE.
- INSTALL (3) #6 AWG DC TRUNKS (1 PER SECTOR)

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD 6648+XCEDE CABLE FINAL CONFIG. 1X6648+1XXCEDE CABLE1X6601 1X5216+1XXMU03+1X6630 MIXED-MODE
- ADD (6) UP CONVERTERS.
- INSTALL RRUS-2012 B29 (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO BE REMOVED:
- EXISTING RRUS-11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING RRUS-4478 B5 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING RRUS-32 B2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING RRUS-4426 B66 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING TMAS DTMABP7819VG12A (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T LGP 21901 DIPLEXERS (TYP. 2 PER SECTOR, TOTAL OF 6)
- EXISTING AT&T ANTENNA (AM-X-CD-16-65-00T-RET) (TYP. OF 1 PER ALPHA SECTOR, TOTAL OF 1).
- EXISTING AT&T ANTENNA (800-10121) (TYP. OF 1 PER BETA & GAMMA SECTORS, TOTAL OF 2).
- EXISTING AT&T ANTENNA (EPBQ-654L8H8-L2)(TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA (HPA-65R-BUU-H6) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T (6) 1-5/8" COAX CABLES.
- EXISTING AT&T (3) #8 AWG DC POWER TRUNKS

ITEMS TO REMAIN:
- (6) RRHs, (3) DC6 SURGE ARRESTORS, (6) 1-5/8" COAX CABLES, (3) #8 AWG DC POWER TRUNKS & (3) FIBER.

RFDS:	FINAL APPROVED V4 RFDS 03/16/2022
SITE ADDRESS:	1233 WOLCOTT ROAD WOLCOTT, CT 06716
LATITUDE:	41.6215731° N 41° 37' 17.66" N
LONGITUDE:	-72.9736319° W 72° 58' 25.07" W
TYPE OF SITE:	SELF SUPPORT TOWER / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	350'-0"±
RAD CENTER:	184'-8"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SITE NUMBER: CTL01111
SITE NAME: WOLCOTT-NORTH
FA CODE: 10041812
PACE ID: MRCTB054196, MRCTB055215, MRCTB055039, MRCTB053996, MRCTB053991, MRCTB055424, MRCTB056405, MRCTB062670
PROJECT: 5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, BBU RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

VICINITY MAP

DIRECTIONS TO SITE: (FROM AT&T ADDRESS)
HEAD SOUTHEAST TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE WITH I-91 S, MERGE WITH I-91 S TAKE EXIT 22N TO MERGE WITH CT-9 N TOWARD NEW BRITAIN, TAKE EXIT 28 ON THE LEFT FOR CT-72 TOWARD BRISTOL, CONTINUE ONTO CT-72 W, MERGE WITH CT-72 W/I-84, TAKE EXIT 33 FOR CT-72 W TOWARD BRISTOL, CONTINUE ONTO CT-72 W, CONTINUE ONTO PINE ST, CONTINUE STRAIGHT ONTO MOUNTAIN RD, CONTINUE STRAIGHT ONTO SOUTH ST, TURN LEFT ONTO WILLIS ST WILLIS ST TURNS SLIGHTLY RIGHT AND BECOMES BEECHER RD, TURN RIGHT ONTO LONG SWAMP RD, TURN LEFT ONTO CT-69 S, WOLCOTT, CT 06716

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
SMARTLINK
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL01111
SITE NAME: WOLCOTT-NORTH

1233 WOLCOTT ROAD
WOLCOTT, CT 06716
NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK'D
1	03/24/22	ISSUED FOR CONSTRUCTION	MB	NKT DPH
0	03/04/22	ISSUED FOR REVIEW	VS	NKT DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, BBU RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL01111	T-1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SMARTLINK
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

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

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

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

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

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

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

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

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
SMARTLINK
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL01111
SITE NAME: WOLCOTT-NORTH

1233 WOLCOTT ROAD
WOLCOTT, CT 06716
NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
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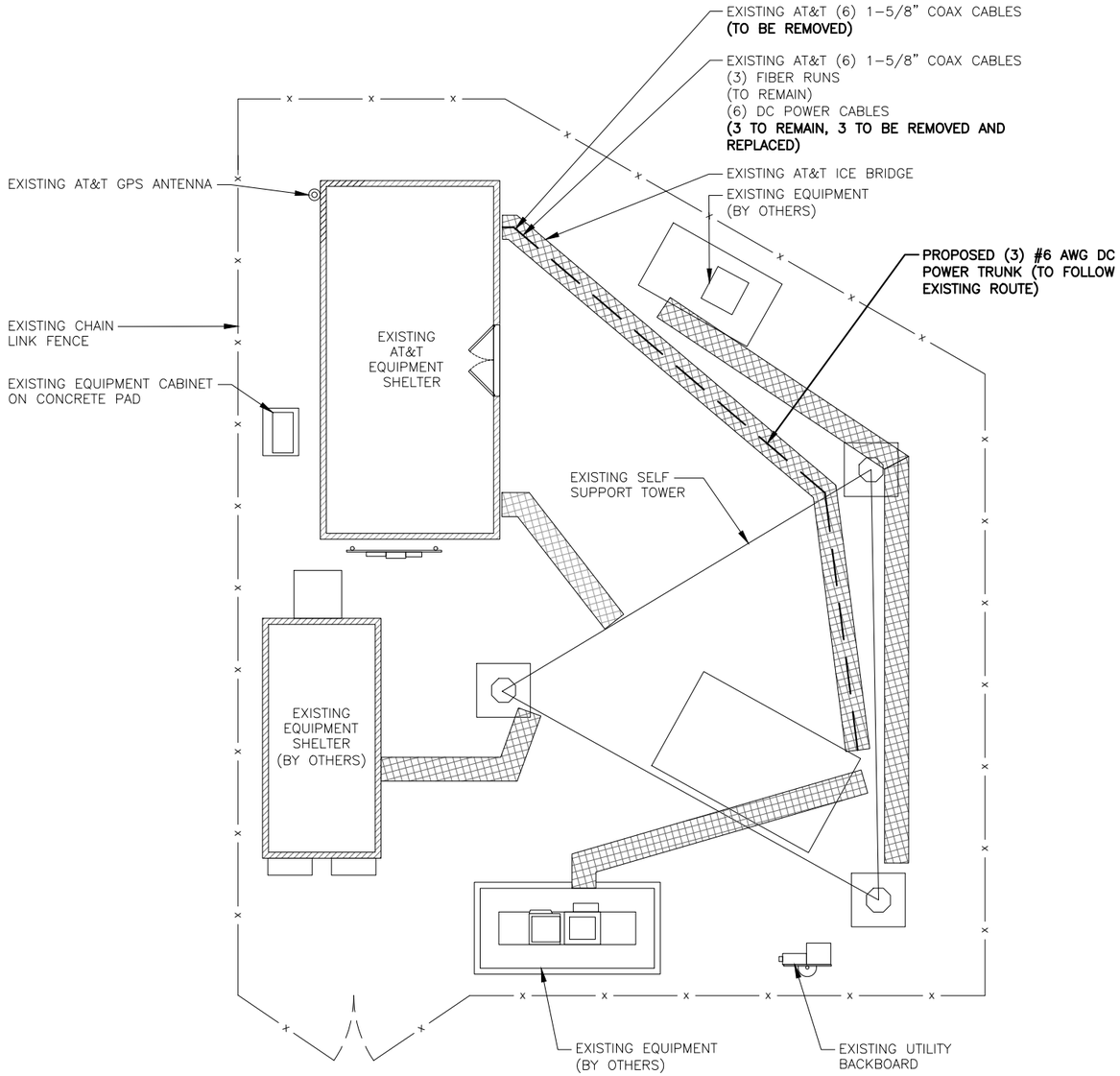
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VS

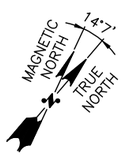
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, B66 RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL01111	GN-1	1





COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"

NOTE:

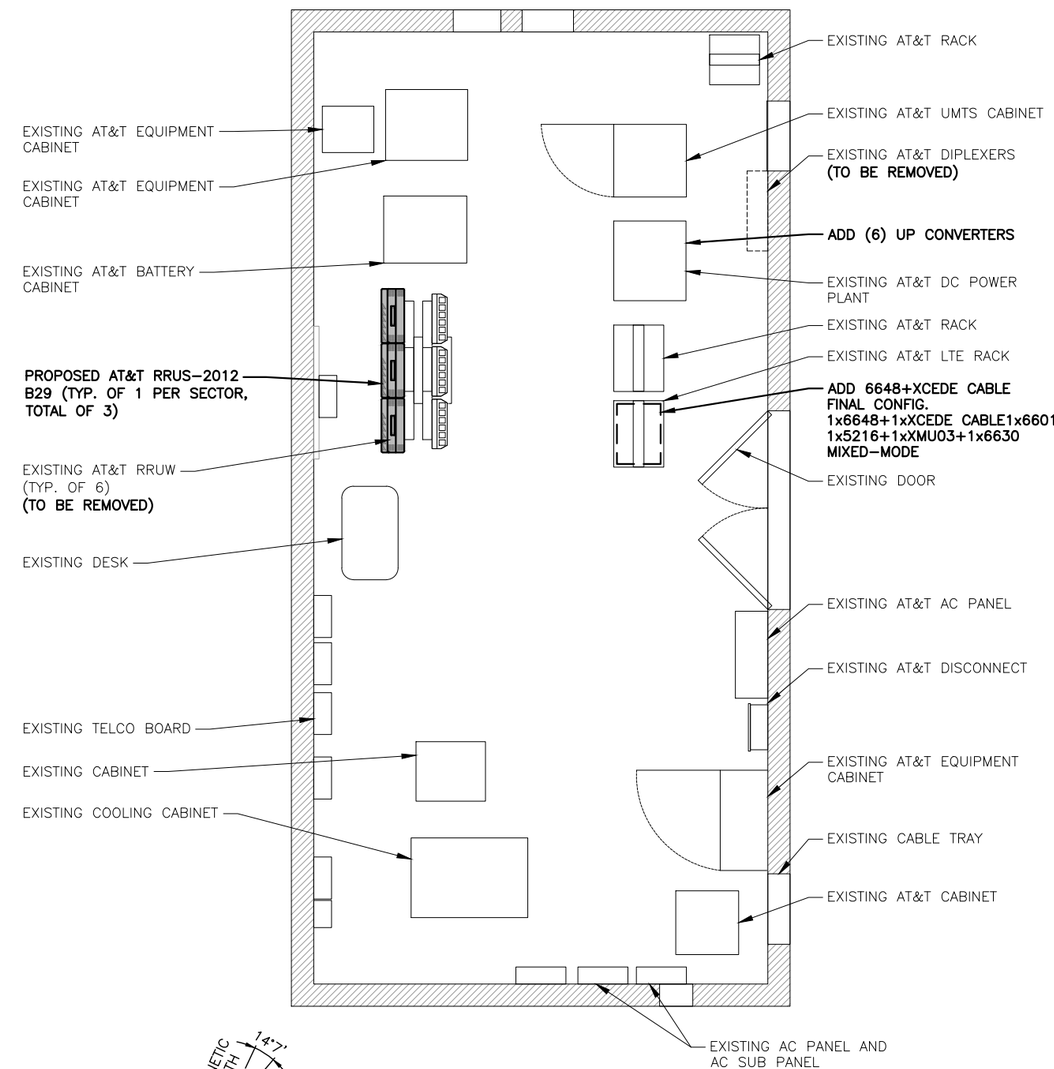
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

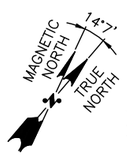
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: MARCH 02, 2022

NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/16/2022





EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
SMARTLINK
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ANNAPOLIS, MD 21401

SITE NUMBER: CTL01111
SITE NAME: WOLCOTT-NORTH

1233 WOLCOTT ROAD
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500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T
COMPOUND & EQUIPMENT PLANS
5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, B2 RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL01111	A-1	1

NOTE:

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NOTE:

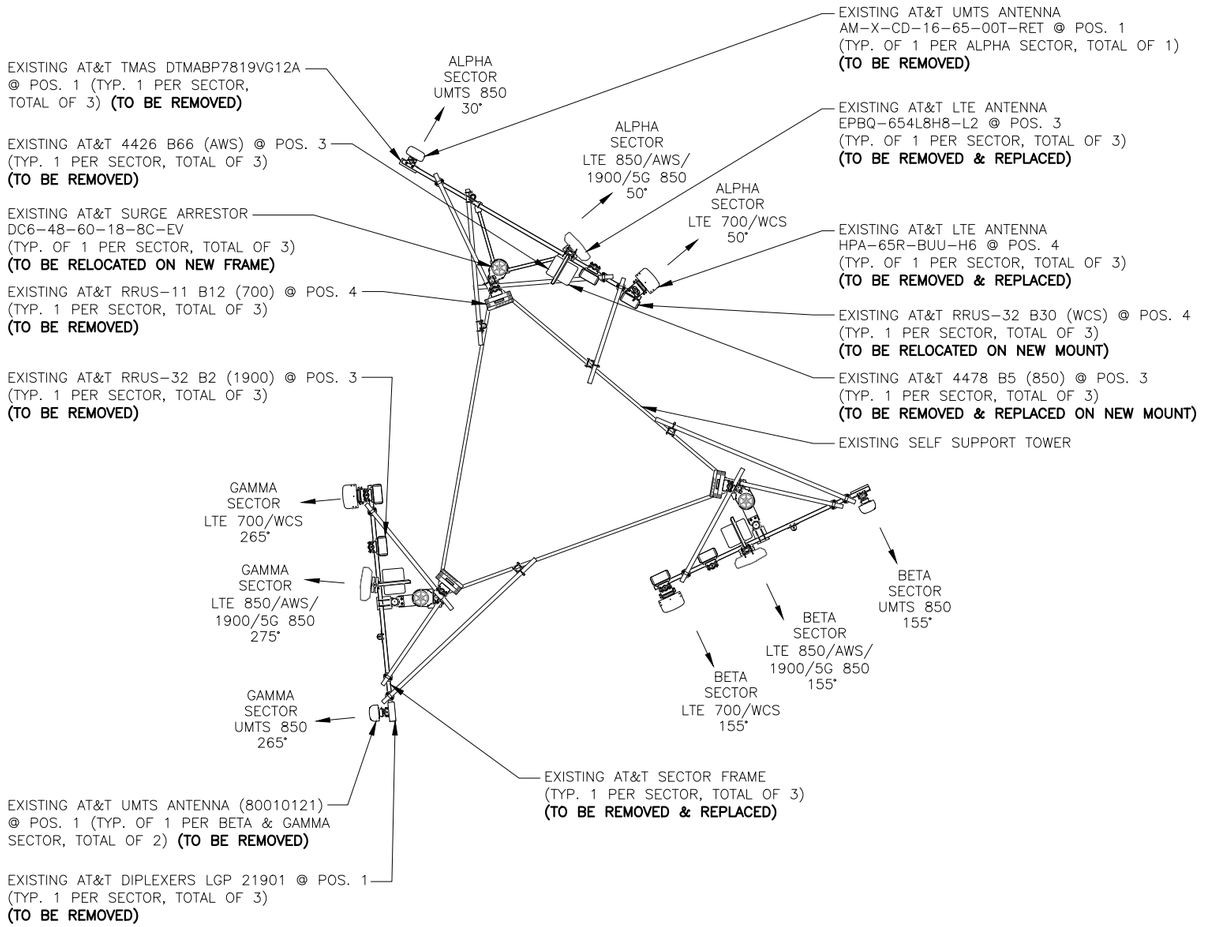
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: MARCH 02, 2022

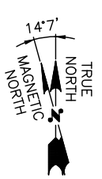
NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/16/2022

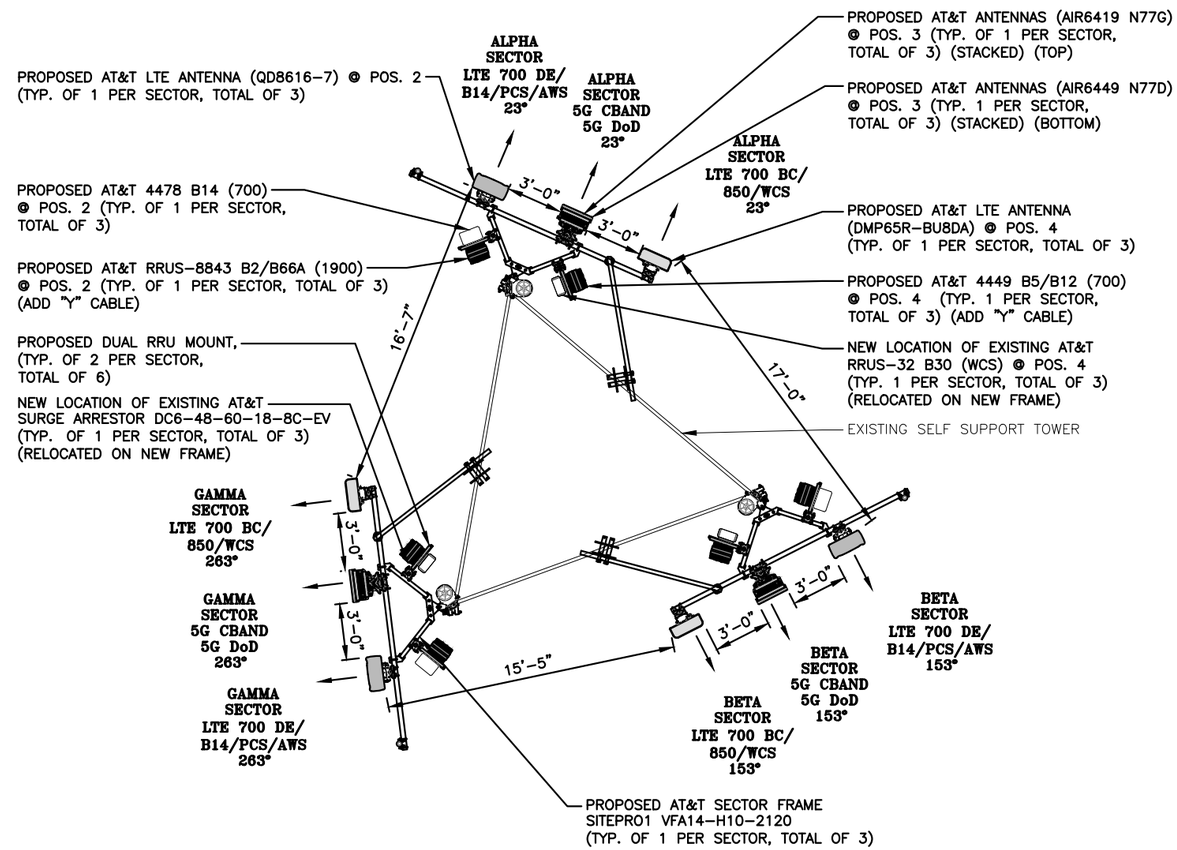
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.





EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

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ANNAPOLIS, MD 21401

SITE NUMBER: CTL01111
SITE NAME: WOLCOTT-NORTH

1233 WOLCOTT ROAD
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NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK'D
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

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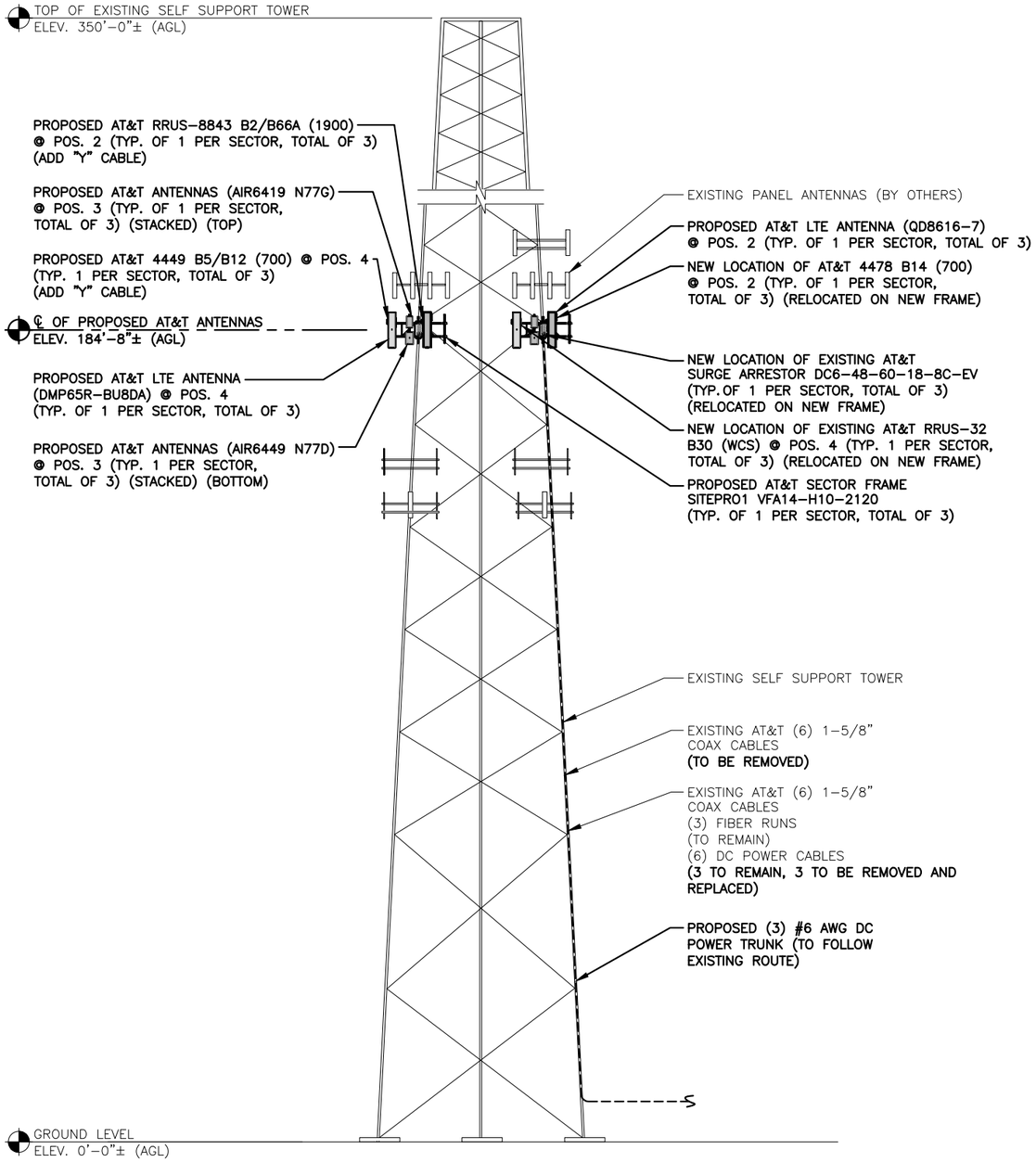
ANTENNA LAYOUTS
5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, B2/12 RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL01111	A-2	1



ELEVATION 1 / A-3
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/16/2022

NOTE:

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ELEVATION

5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, BBU RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL01111	A-3	1

ANTENNA SCHEDULE

FINAL APPROVED V4 RFDS 03/16/2022

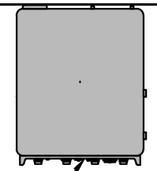
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8C-EV
A2	PROPOSED	LTE 700 DE/ B14/PCS/AWS	QD8616-7	96"X22"X9.6"	184'-8"±	23°	–	(E)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (1900) (P)(1) 2012 B29	– 14.9"x13.2"x10.9" 20.4"x18.5"x7.5"	(1) (P) Y-CABLE (E)(2) 1-5/8" COAX (E)(1) DC POWER (P)(1) #6 AWG DC TRUNK (E)(1) FIBER	
A3	PROPOSED	DOD C-BAND	AIR 6419 N77G AIR 6449 N77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	184'-8"±	23°	–	–	–	–	
A4	PROPOSED	LTE 700 BC/ 850/WCS	DMP65R-BU8DA	96"x20.7"x7.7"	184'-8"±	23°	–	(P)(1) 4449 B5/B12 (850/700) (E) RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(1) (P) Y-CABLE –	
B1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8C-EV
B2	PROPOSED	LTE 700 DE/ B14/PCS/AWS	QD8616-7	96"X22"X9.6"	184'-8"±	153°	–	(E)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (1900) (P)(1) 2012 B29	– 14.9"x13.2"x10.9" 20.4"x18.5"x7.5"	(1) (P) Y-CABLE (E)(2) 1-5/8" COAX (E)(1) DC POWER (P)(1) #6 AWG DC TRUNK (E)(1) FIBER	
B3	PROPOSED	DOD C-BAND	AIR 6419 N77G AIR 6449 N77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	184'-8"±	153°	–	–	–	–	
B4	PROPOSED	LTE 700 BC/ 850/WCS	DMP65R-BU8DA	96"x20.7"x7.7"	184'-8"±	153°	–	(P)(1) 4449 B5/B12 (850/700) (E) RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(1) (P) Y-CABLE –	
C1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8C-EV
C2	PROPOSED	LTE 700 DE/ B14/PCS/AWS	QD8616-7	96"X22"X9.6"	184'-8"±	263°	–	(E)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (1900) (P)(1) 2012 B29	– 14.9"x13.2"x10.9" 20.4"x18.5"x7.5"	(1) (P) Y-CABLE (E)(2) 1-5/8" COAX (E)(1) DC POWER (P)(1) #6 AWG DC TRUNK (E)(1) FIBER	
C3	PROPOSED	DOD C-BAND	AIR 6419 N77G AIR 6449 N77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	184'-8"±	263°	–	–	–	–	
C4	PROPOSED	LTE 700 BC/ 850/WCS	DMP65R-BU8DA	96"x20.7"x7.7"	184'-8"±	263°	–	(P)(1) 4449 B5/B12 (850/700) (E) RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(1) (P) Y-CABLE –	

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(E)	4478 B14 (700)	18.1"X13.4"X8.3"
3(P)	2012 B29	20.4"X18.5X7.5"
3(P)	8843 B2/B66A (1900)	14.9"x13.2"x10.9"
3(P)	4449 B5/B12 (700)	17.9"x13.2"x10.4"
3(E)	RRUS-32 B30 (WCS)	27.2"X12.1X7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-4)
SCALE: N.T.S

NOTE:
REFER TO FINAL APPROVED V4 RFDS 03/16/2022

NOTE:
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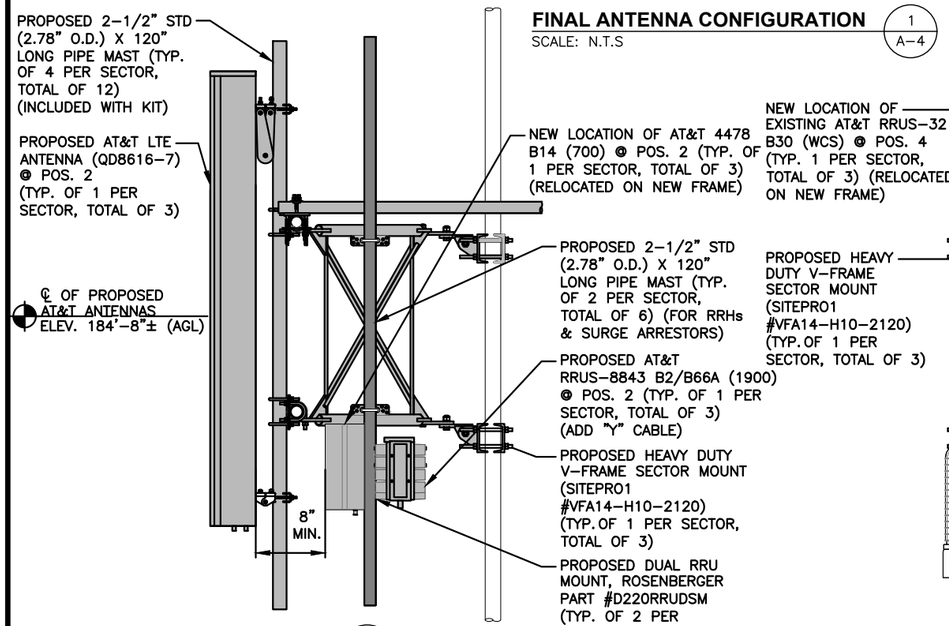
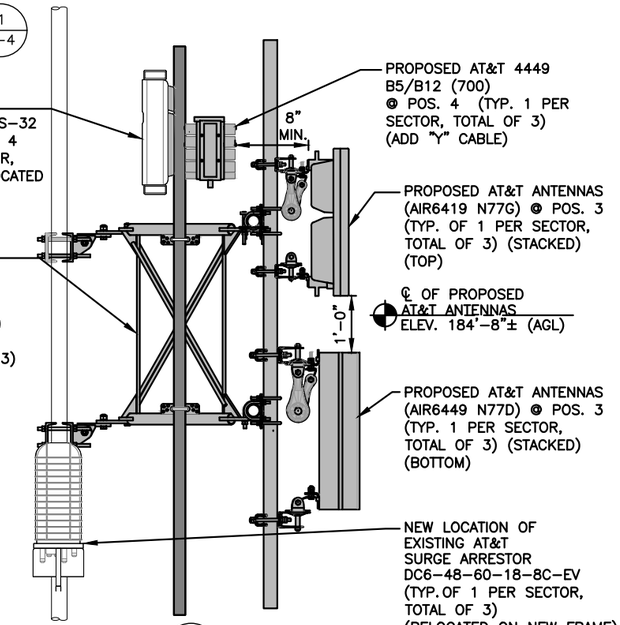
DATED: MARCH 02, 2022

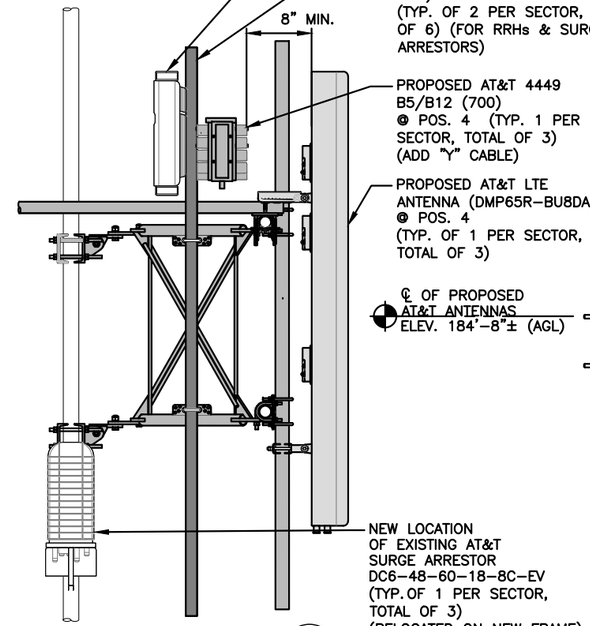
FINAL ANTENNA CONFIGURATION (1 / A-4)
SCALE: N.T.S



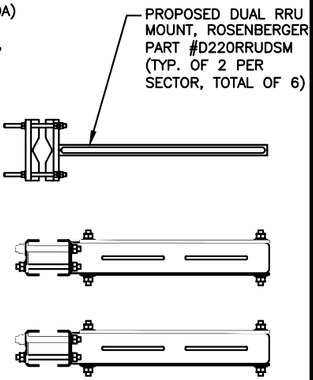
PROPOSED ANTENNA @ POS. 2 (3 / A-4)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED ANTENNA @ POS. 3 (4 / A-4)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED ANTENNA @ POS. 4 (5 / A-4)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"



BACK TO BACK RRU MOUNT DETAIL (6 / A-4)
SCALE: N.T.S

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DETAILS
5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, BBU RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL01111	A-4	1

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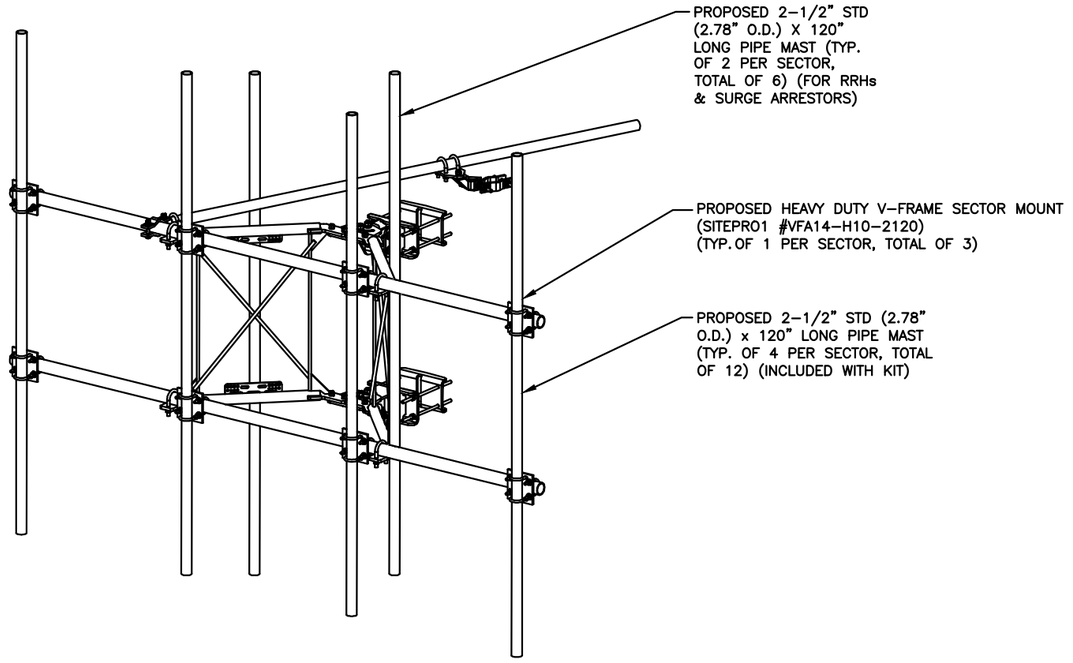

PROPOSED MOUNT (SITEPRO1 #VFA14-H10-2120) DETAIL (1 / A-5)

SCALE: N.T.S

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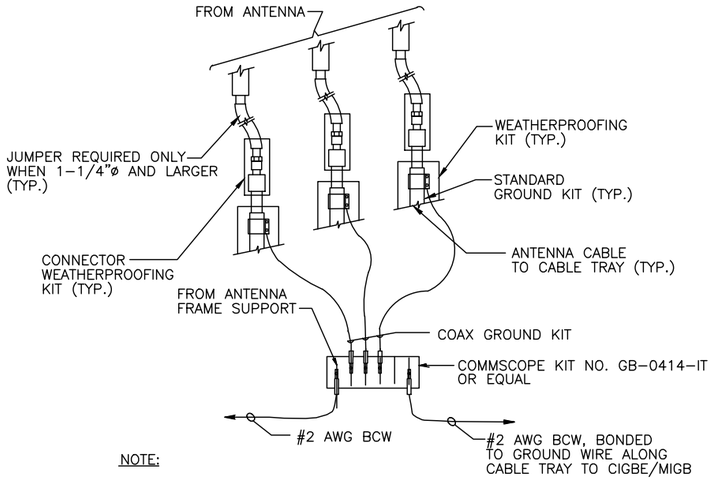
DETAILS

5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, BBU RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL01111	A-5	1



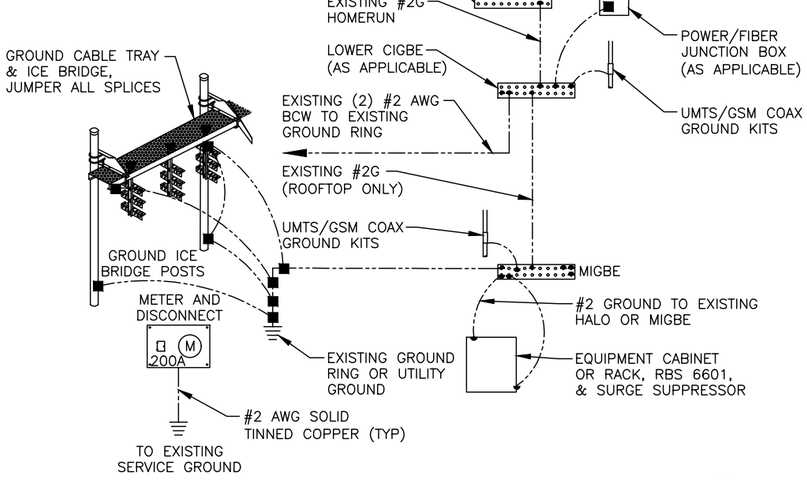
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

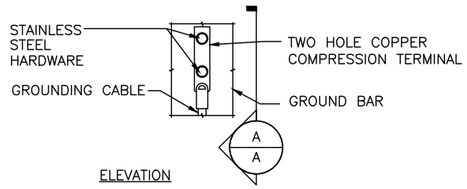
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

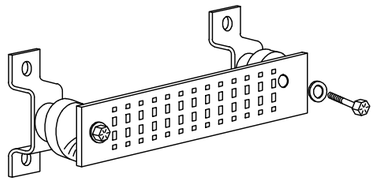
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

4 / G-1

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AT&T

5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, B12 RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
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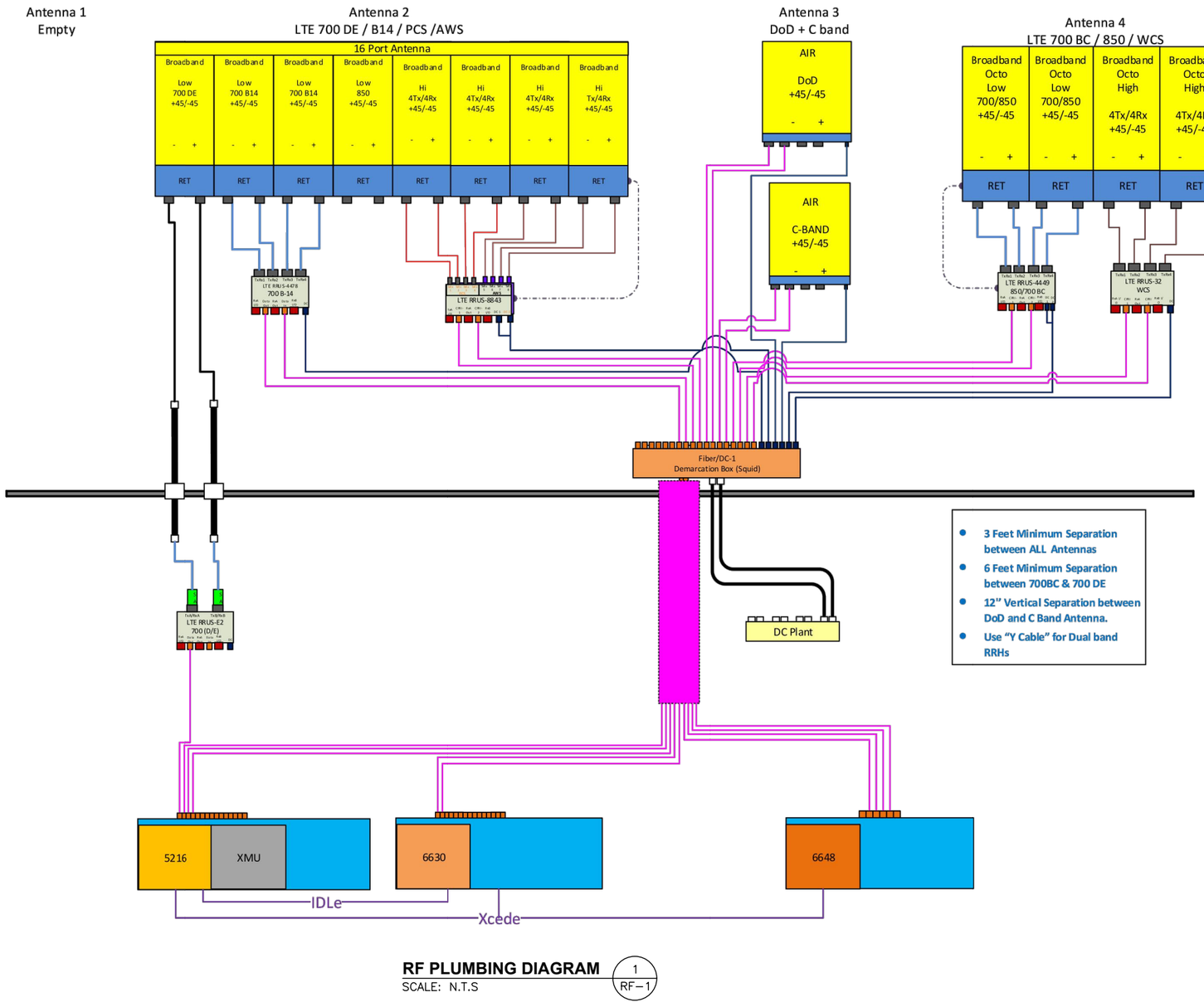
FINAL APPROVED V4 RFDS 03/16/2022



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/16/2022

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RF PLUMBING DIAGRAM
5G NR ACTIVATION, LTE 6C, 4TXRX, 5G NR SOFTWARE, BBU RECONFIG. 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODS

SITE NUMBER	DRAWING NUMBER	REV
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