January 10, 2024

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

Re:	**Notice of Exempt Modification – Antenna and RRU Swap/Add**
Property Address:	**125 South Main West Hartford, CT**
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 107' on an existing 104-foot monopole, owned by Everest Infrastructure Partners, and Southern New England Telephone c/o Frontier Communications as the Property Owner.

AT&T desires to modify its existing telecommunications facility by swapping six (6) antennas, six (6) remote radio units, adding three (3) antennas, three (3) remote radio units and associated lines. The centerline height of said antennas and remote radio units is and will remain at 107' on the existing antenna mount.

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. § 16-5l0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to the following individuals: The Honorable Heather Maguire, Chairman of the Town of Avon, Brandon Robertson, Town Manager of the Town of Avon, SRR Towers, LLC, as tower and property owner.

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

- **EM-AT&T -155-18027** – AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 125 South Main West Hartford, 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 107-foot level of the 104-foot Monopole.
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,

Carolyn Seeley
Real Estate Specialist
Smartlink on behalf of AT&T
(978) 760-5577
Carolyn.seeley@smartlinkgroup.com

CC w/enclosures:

The Honorable Shari Cantor, Mayor, Town of West Hartford
Rick Ledwith, Town Manager, Town of West Hartford
Todd Dumais, Town Planner, Town of West Hartford
Everest Infrastructure Partners, Tower Owner
SNET c/o Frontier Communications, Property Owner

125 SOUTH MAIN STREET

Location	125 SOUTH MAIN STREET	**Mblu**	F10/ 5095/ 125/ /
Parcel ID	5095 1 125 0001	**Owner**	SOUTHERN NEW ENGLAND TELEPHONE CO
Assessment	$1,857,800	**Appraisal**	$2,654,000
Vision Id #	17685	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$1,220,800	$1,433,200	$2,654,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$854,560	$1,003,240	$1,857,800

Owner of Record

Owner	SOUTHERN NEW ENGLAND TELEPHONE CO	**Sale Price**	$0
Co-Owner	FRONTIER COMMUNICATIONS	**Book & Page**	0318/0019
Address	C/O DUFF + PHELPS LLC PO BOX 2629 ADDISON, TX 75001	**Sale Date**	09/01/2021
		Instrument	U

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
SOUTHERN NEW ENGLAND TELEPHONE CO	$0	0318/0019	U	09/01/2021

Building Information

Building 1 : Section 1

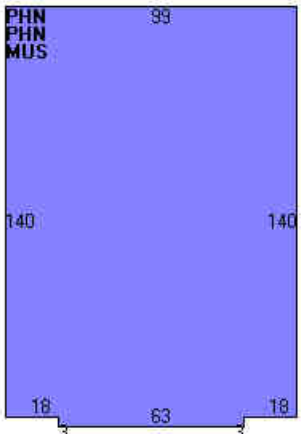
Year Built:	1962
Living Area:	28,098
Replacement Cost:	$3,777,536
Building Percent Good:	30
Replacement Cost Less Depreciation:	$1,133,300

Building Attributes	
Field	**Description**
Style:	Telephone Exchange
Model	Ind/Comm
Grade	D 0.85
Stories:	2
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Reinf Concrete
Floor Cover	Asphalt
Heating Fuel	Typical
Heating Type	Forced Hot Air
AC Type	Central - Zone
As Built Use	PHON
Bldg Use	Utility Building
Num of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	100
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Rigid Steel
Plumbing	LIGHT
Ceiling	Acoustic Panel
Group1	IND
Wall Height	12.00
Adjustment	

Building Photo

(https://images.vgsi.com/photos/WestHartfordCTPhotos//\00\01\66\43.JPG

Building Layout



(https://images.vgsi.com/photos/WestHartfordCTPhotos//Sketches/17685_

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PHN	TELEPHONE EXCHANGE	28,098	28,098
MUS	MULTI USE STORAGE	14,049	0
		42,147	28,098

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	401
Description	Utility Building
Zone	RM-1
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	3.03
Frontage	
Depth	
Assessed Value	$1,003,240
Appraised Value	$1,433,200

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CLP4	Paving, Asphalt			19000.00 SF	$25,100	1
CPL6	Light Pole - Steel			20.00 SF	$600	1
CFC5	Shed - Concrete Block			286.00 SF	$3,900	1
C220	Elevator pass 2k lbs			1.00 UNIT	$57,900	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$1,220,800	$1,433,200	$2,654,000
2021	$1,220,800	$1,433,200	$2,654,000
2020	$2,531,600	$0	$2,531,600

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$854,560	$1,003,240	$1,857,800
2021	$854,560	$1,003,240	$1,857,800
2020	$1,772,120	$0	$1,772,120

January 24, 2024

Andrew Dykstra
Everest Infrastructure Partners
Two Allegheny Center, Nova Tower 2, Suite 1002
Pittsburg, PA 15212
(412) 489-0348

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
Structures@tepgroup.net

Subject: **Structural Analysis Report – Revision 1**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL01076
	Carrier Site Name:	West Hartford - South Main
	FA Location:	10035052
Client Designation:	**Site Number:**	701774
	Site Name:	West Hartford #2 CO
Engineering Firm Designation:	**TEP Project Number:**	153243.920297
Site Data:	**125 South Main Street, West Hartford, Hartford County, CT 06107** **Latitude *41° 45' 12.39"*, Longitude *-72° 44' 39.99"*** **105 Foot - Monopole**	

Dear Andrew Dykstra,

Tower Engineering Professionals is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Proposed + Reserved Loading **Sufficient Capacity**
Note: See Table 1 for the existing, proposed, and reserved loading

Structure Capacity	Foundation Capacity
81.5%	66.7%

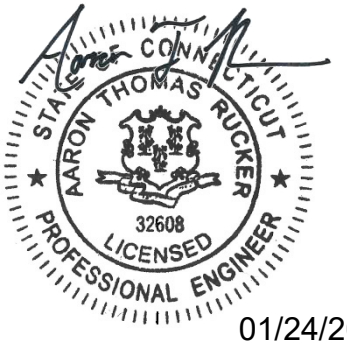
The analysis has been performed in accordance with the ANSI/TIA-222-H Structural Standard for Antenna Supporting Structures, Antennas, and Small Wind Turbine Support Structures and the 2022 Connecticut State Building Code.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* appreciate the opportunity of providing our continuing professional services to you and *Everest Infrastructure Partners.* If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Aaron T. Rucker, P.E.



01/24/2024

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1) INTRODUCTION

The tower is a 105 Foot Monopole designed by EEI. The original design standard and wind speed are unavailable. The tower has been modified per reinforcement drawings prepared by B+T Group in February of 2013. The shaft reinforcement modifications designed by B+T Group in February of 2013 were determined to be ineffective and not considered structurally in this analysis. Proposed modifications designed by TEP in January of 2023 have been considered as installed for this analysis. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	ANSI/TIA-222-H
Type of Analysis:	Rigorous
Risk Category:	II
Wind Speed:	117 mph (Ultimate)
Exposure Category:	C
Topographic Category:	1 (Kzt = 1.0)
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Design Category:	A
Seismic Ss:	0.188
Seismic S1:	0.055
Service Wind Speed:	60 mph

Table 1 - Existing, Proposed, and Reserved Antenna and Cable Information

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Proposed	***105.0***	***105.0***	***3***	***CCI TPA-65R-BU6DA-K***	***Site Pro 1 RMQLP-4120-H10***	***2 1***	***3/4 DC 3/8***	***Inside***	***AT&T***
			3	***CCI OPA65R-BU6DA***					
			3	***Ericsson AIR6449 B77D***					
			3	***Ericsson AIR6419 B77G***					
			3	***Ericsson RRUS-4478 B14***					
			3	***Ericsson RRUS-4490 B5/B12***					
			3	***Ericsson RRUS-4890 B2/B66A***					
			1	***Raycap DC9-48-60-18-8F***					
Existing	105.0	105.0	3	Ericsson RRUS-32 B30		6 4 2	7/8 3/4 DC 3/8	Inside	AT&T
			2	Raycap DC6-48-60-18-8F					
To Be Removed	*105.0*	*105.0*	*6*	*Powerwave 7770*	*Platform Mount*	*6*	*7/8*	*Inside*	*AT&T*
			3	*KMW AM-X-CD-16-65-00T-RET*					
			3	*Quintel QS66512-2*					
			3	*Ericsson RRUS-11*					
			3	*Ericsson RRUS-32 B2*					
			6	*Powerwave LGP 21401*					
			3	*Kaelus DBC0061F1V51-2*					

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
To Be Removed	*74.0*	*79.0*	*3*	*Commscope LLPX310R-V1*	*Side Arm Mounts*	*6*	*5/16*	*Inside*	*T-Mobile*
		79.0	*2*	*Samsung RRH-2WB*		*2*	*1/2*		
			4	*Commscope VHLP2-23*					
Existing	75.0	75.0	1	GPS Antenna	Side-Arm Mount	1	1/2	Outside	AT&T
Existing	65.0	65.0	1	GPS Antenna	Side-Arm Mount	1	1/2	Outside	AT&T

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Source
Geotechnical Report	Tower Engineering Professionals, Inc., dated January 9, 2023 TEP No. 153243.794844	EIP
Foundation Design	Gigard & Co. Engineers, dated May 6, 1998	EIP
Previous Modification Design	B+T Group, dated August 17, 2012 Project No. 84416.000.0005	EIP
Previous Modification Design	Tower Engineering Professionals, Inc., dated January 30, 2023 TEP No. 153243.781564	TEP
Tower Inspection Report	Tower Engineering Professionals, Inc., dated November 30, 2020 TEP No. 153243.455355	TEP
Construction Drawings	Hudson Design Group, LLC, dated March 18, 2022 Drawing No. CTL01076 Rev. 2	EIP
Mount Analysis Report	Hudson Design Group, LLC, dated March 9, 2022	EIP
Previous Structural Analysis	Tower Engineering Professionals, Inc., dated May 24, 2022 TEP No. 153243.701680	TEP
Correspondence	Correspondence in reference to the existing, proposed, and reserved loading.	EIP

3.1) Analysis Method

tnxTower (version 8.2.2.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

For analysis of monopole shaft reinforcements, the plates are modeled as linear appurtenances along the exterior of the pole. The loads calculated from tnxTower are then exported to a proprietary calculation sheet created by Tower Engineering Professionals, Inc. that analyzes each reinforcing element along each critical axis and presents percent capacities for each element and the pole shaft along each critical axis. The actual percent capacity of the tower structure including the reinforcing elements is reported in Table 3 - Section Capacity (Summary).

3.2) Analysis Assumptions

1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
2) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
3) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
4) All tower components are in sufficient condition to carry their full design capacity.
5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts.
7) The tower geometry was assumed per the previous analysis by B+T Group dated August 17, 2012.

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

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
L1	105.00-93.92	Pole	TP15.94×14.57×0.1875	1	Note 1	Note 1	31.5	Pass
L2	95.87-51.33	Pole	TP21.35×15.32×0.2500	2	Note 1	Note 1	81.5	Pass
L3	53.94-0.00	Pole	TP27.87×20.50×0.3125	3	Note 1	Note 1	79.0	Pass
M1	5.00-0.00	Mod (Ex)	(TS) 1.25x5.75 (65 ksi)	1	Note 1	Note 1	64.4	Pass
M2	35.50-0.50	Mod (Ex)	TEP-SFP-050125	2	Note 1	Note 1	66.9	Pass
							Summary	
						Pole (L2)	81.5	Pass
						Mod (M2)	66.9	Pass
						RATING =	**81.5**	**Pass**

Table 4 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Base Foundation – Micropiles	-	66.7	Pass

Structure Rating (max from all components) =	**81.5%**

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) A structure rating of 105% or less is within engineering tolerances and considered acceptable.

Table 5 - Dish Twist/Sway Results for 60 mph Service Wind Speed

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
-	-	-	-	-

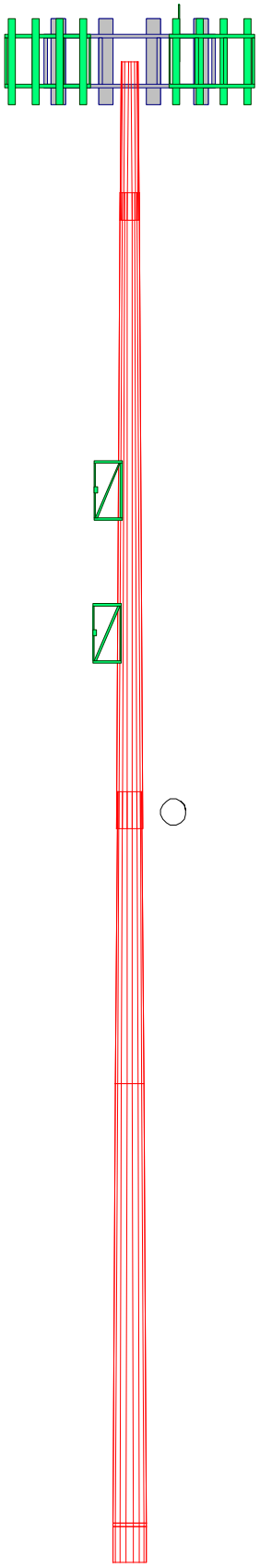
4.1) Recommendations

1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNX TOWER OUTPUT

Section	1	2	3	4	5	6
Length (ft)	11.08	44.54	20.44	30.75	2.50	25
Number of Sides	18	18	18	18	18	18
Thickness (in)	0.1875	0.2500	0.3125	0.3970	0.6070	0.6696
Socket Length (ft)	1.95	2.61				
Top Dia (in)	14.5700	15.3239	20.4969	23.2908	27.2283	27.9941
Bot Dia (in)	15.9400	21.3500	23.2908	27.4941	27.9941	28.3283
Grade	MPRF-Fy=65ksi, Density=100%				MPRF-Fy=65ksi, Density=50%	
Weight (lb)	338.1	2175.2	1488.8	2602.3	22.9	4231.2
Total Weight (lb)	6858.4					



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
1/2" x 4' LRod	105	RRUS 4490 B5/B12	105
TPA65R-BU6DA-K w/ Mount Pipe	105	RRUS 4490 B5/B12	105
TPA65R-BU6DA-K w/ Mount Pipe	105	RRUS 4490 B5/B12	105
TPA65R-BU6DA-K w/ Mount Pipe	105	RRUS 4890 B25/B66	105
OPA65R-BU6DA w/ Mount Pipe	105	RRUS 4890 B25/B66	105
OPA65R-BU6DA w/ Mount Pipe	105	RRUS 4890 B25/B66	105
OPA65R-BU6DA w/ Mount Pipe	105	DC6-48-60-18-8F	105
AIR 6449 B77D w/ Mount Pipe	105	DC6-48-60-18-8F	105
AIR 6449 B77D w/ Mount Pipe	105	DC9-48-60-18-8F	105
AIR 6449 B77D w/ Mount Pipe	105	2.4" x 10' pipe	105
AIR 6419 B77G w/ Mount Pipe	105	2.4" x 10' pipe	105
AIR 6419 B77G w/ Mount Pipe	105	2.4" x 10' pipe	105
AIR 6419 B77G w/ Mount Pipe	105	Side Arm Mount [SO 901-3]	105
RRUS 32 B30	105	SitePro 1 RMQLP-4120-H10	105
RRUS 32 B30	105	GPS_A	75
RRUS 32 B30	105	Side Arm Mount [SO 301-1]	75
RRUS 4478 B14	105	GPS_A	65
RRUS 4478 B14	105	Side Arm Mount [SO 301-1]	65
RRUS 4478 B14	105		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
MPRF-Fy=65ks Density=100%	65 ksi	80 ksi	MPRF-Fy=65ks Density=50%	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350
TEP

Job: ***West Hartford #2 CO (701774)***			
Project: ***TEP No. 153243.920297***			
Client: EIP Communications, LLC	Drawn by: npdanyluk	App'd:	
Code: TIA-222-H	Date: 01/24/24	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 116.28 ft.
Basic wind speed of 117 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	105.00-93.92	11.08	1.9500	18	14.5700	15.9400	0.1875	0.7500	MPRF-Fy=65ksi, Density=100% (65 ksi)
L2	93.92-51.33	44.54	2.6100	18	15.3239	21.3500	0.2500	1.0000	MPRF-Fy=65ksi, Density=100% (65 ksi)
L3	51.33-33.50	20.44	0.0000	18	20.4969	23.2908	0.3125	1.2500	MPRF-Fy=65ksi, Density=100% (65 ksi)
L4	33.50-2.75	30.75	0.0000	18	23.2908	27.4941	0.3970	1.5878	MPRF-Fy=65ksi, Density=100% (65 ksi)
L5	2.75-2.50	0.25	0.0000	18	27.4941	27.5283	0.7696	3.0782	MPRF-Fy=65ksi, Density=50% (65 ksi)
L6	2.50-0.00	2.50		18	27.5283	27.8700	0.6707	2.6828	MPRF-Fy=65ksi, Density=50% (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.7658	8.5594	223.6911	5.1058	7.4016	30.2222	447.6766	4.2805	2.2343	11.916
	16.1570	9.3747	293.8963	5.5921	8.0975	36.2946	588.1793	4.6882	2.4754	13.202
L2	15.7896	11.9611	343.3685	5.3512	7.7845	44.1090	687.1887	5.9817	2.2570	9.028
	21.6408	16.7429	941.7416	7.4905	10.8458	86.8301	1884.7223	8.3730	3.3176	13.27
L3	21.1271	20.0204	1030.4819	7.1655	10.4124	98.9667	2062.3198	10.0121	3.0575	9.784
	23.6019	22.7916	1520.3746	8.1573	11.8317	128.4996	3042.7497	11.3980	3.5492	11.357
L4	23.5889	28.8448	1910.0504	8.1273	11.8317	161.4343	3822.6142	14.4252	3.4005	8.567
	27.8570	34.1407	3167.0627	9.6195	13.9670	226.7532	6338.2928	17.0736	4.1403	10.43
L5	27.7995	65.2767	5890.0146	9.4872	13.9670	421.7093	11787.7794	32.6446	3.4845	4.528
	27.8342	65.3602	5912.6382	9.4993	13.9844	422.8036	11833.0565	32.6863	3.4906	4.536
L6	27.8495	57.1751	5210.4754	9.5344	13.9844	372.5930	10427.8069	28.5930	3.6645	5.464
	28.1965	57.9025	5411.9066	9.6557	14.1580	382.2519	10830.9343	28.9568	3.7247	5.553

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 105.00-93.92				1	1	1			
L2 93.92-51.33				1	1	1			
L3 51.33-33.50				1	1	1			
L4 33.50-2.75				1	1	0.789696			
L5 2.75-2.50				1	1	0.826027			
L6 2.50-0.00				1	1	0.944124			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	Surface Ar (CaAa)	105.00 - 10.00	1	1	0.333 0.333	0.3750		0.22
Step Pegs (5/8" SR) 7-in. w/30" step	A	No	Surface Ar (CaAa)	105.00 - 10.00	1	1	0.333 0.333	0.3500		0.49
1/2" dia. coax	A	No	Surface Ar (CaAa)	65.00 - 0.00	2	2	-0.333 -0.333	0.5000		0.15
1/2" dia. coax	A	No	Surface Ar (CaAa)	75.00 - 65.00	1	1	-0.333 -0.333	0.5000		0.15
***										
***										
***										
Ineffective Mods										
***										
(Aero) MP303	A	No	Surface Af (CaAa)	10.75 - 0.00	1	1	0.167 0.167	4.0583	11.2541	21.66
(Aero) MP303	C	No	Surface Af (CaAa)	10.75 - 0.00	1	1	0.500 0.500	4.0583	11.2541	21.66
(Aero) MP303	C	No	Surface Af (CaAa)	10.75 - 0.00	1	1	-0.333 -0.333	4.0583	11.2541	21.66
(Aero) MP303	B	No	Surface Af (CaAa)	10.75 - 0.00	1	1	0.000 0.000	4.0583	11.2541	21.66
***										
(Aero) MP304	A	No	Surface Af (CaAa)	50.67 - 10.25	1	1	0.333 0.333	4.7800	12.7800	26.19
(Aero) MP304	C	No	Surface Af (CaAa)	50.67 - 10.25	1	1	0.333 0.333	4.7800	12.7800	26.19
***										
(Aero) MP303	A	No	Surface Af (CaAa)	54.50 - 49.50	1	1	0.000 0.000	4.0583	11.2541	21.66
(Aero) MP303	C	No	Surface Af (CaAa)	54.50 - 49.50	1	1	0.000 0.000	4.0583	11.2541	21.66
(Aero) MP303	B	No	Surface Af (CaAa)	54.50 - 49.50	1	1	0.000 0.000	4.0583	11.2541	21.66
***										
(Aero) MP303	A	No	Surface Af (CaAa)	62.50 - 52.50	1	1	0.333 0.333	4.0583	11.2541	21.66
(Aero) MP303	C	No	Surface Af (CaAa)	62.50 - 52.50	1	1	0.333 0.333	4.0583	11.2541	21.66
(Aero) MP303	B	No	Surface Af (CaAa)	62.50 - 52.50	1	1	0.333 0.333	4.0583	11.2541	21.66
Proposed Mods										
TEP-65FP-050125 (H)	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.000 0.000	5.0000	12.5000	21.27
TEP-65FP-050125 (H)	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	-0.333 -0.333	5.0000	12.5000	21.27
TEP-65FP-050125 (H)	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.500 0.500	5.0000	12.5000	21.27
TEP-65FP-050125 (H)	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.167 0.167	5.0000	12.5000	21.27
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***									
LDF5-50A(7/8")	C	No	No	Inside Pole	105.00 - 0.00	6	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
3/4" DC	C	No	No	Inside Pole	105.00 - 0.00	6	No Ice	0.00	1.24
							1/2" Ice	0.00	1.24
							1" Ice	0.00	1.24
							2" Ice	0.00	1.24
3/8" Fiber Cable	C	No	No	Inside Pole	105.00 - 0.00	3	No Ice	0.00	0.18
							1/2" Ice	0.00	0.18
							1" Ice	0.00	0.18
							2" Ice	0.00	0.18
***									
Ineffective Mods									
***									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	105.00-93.92	A	0.000	0.000	0.803	0.000	7.83
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	110.36
L2	93.92-51.33	A	0.000	0.000	13.462	0.000	321.02
		B	0.000	0.000	8.507	0.000	285.31
		C	0.000	0.000	8.507	0.000	709.51
L3	51.33-33.50	A	0.000	0.000	21.094	0.000	592.30
		B	0.000	0.000	4.340	0.000	124.71
		C	0.000	0.000	14.685	0.000	666.86
L4	33.50-2.75	A	0.000	0.000	79.962	0.000	2115.94
		B	0.000	0.000	56.661	0.000	1481.25
		C	0.000	0.000	29.345	0.000	1261.74
L5	2.75-2.50	A	0.000	0.000	0.611	0.000	16.12
		B	0.000	0.000	0.586	0.000	16.05
		C	0.000	0.000	0.338	0.000	13.32
L6	2.50-0.00	A	0.000	0.000	6.108	0.000	161.25
		B	0.000	0.000	5.858	0.000	160.50
		C	0.000	0.000	3.382	0.000	133.22

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	105.00-93.92	A	1.424	0.000	0.000	7.113	0.000	76.67
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	110.36
L2	93.92-51.33	A	1.378	0.000	0.000	48.106	0.000	794.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	10.845	0.000	406.66
		C		0.000	0.000	10.845	0.000	830.86
L3	51.33-33.50	A	1.307	0.000	0.000	43.627	0.000	982.87
		B		0.000	0.000	5.722	0.000	178.85
		C		0.000	0.000	19.697	0.000	848.63
L4	33.50-2.75	A	1.201	0.000	0.000	123.054	0.000	3052.21
		B		0.000	0.000	72.880	0.000	2029.85
		C		0.000	0.000	37.826	0.000	1567.92
L5	2.75-2.50	A	0.990	0.000	0.000	0.818	0.000	21.25
		B		0.000	0.000	0.725	0.000	20.62
		C		0.000	0.000	0.418	0.000	16.21
L6	2.50-0.00	A	0.919	0.000	0.000	8.044	0.000	207.88
		B		0.000	0.000	7.157	0.000	202.21
		C		0.000	0.000	4.142	0.000	159.54

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	105.00-93.92	-0.1915	-0.5250	-0.6947	-1.9044
L2	93.92-51.33	-0.3648	-0.3040	-1.1249	-1.3437
L3	51.33-33.50	-2.6952	-1.5801	-2.7796	-1.8592
L4	33.50-2.75	-1.6285	1.3327	-1.8568	0.7832
L5	2.75-2.50	-0.3382	0.9483	-0.6032	0.8822
L6	2.50-0.00	-0.3400	0.9533	-0.5878	0.8745

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	93.92 - 105.00	1.0000	1.0000
L1	2	Step Pegs (5/8" SR) 7-in. w/30" step	93.92 - 105.00	1.0000	1.0000
L2	1	Safety Line 3/8	51.33 - 93.92	1.0000	1.0000
L2	2	Step Pegs (5/8" SR) 7-in. w/30" step	51.33 - 93.92	1.0000	1.0000
L2	8	1/2" dia. coax	51.33 - 65.00	1.0000	1.0000
L2	9	1/2" dia. coax	65.00 - 75.00	1.0000	1.0000
L2	30	(Aero) MP303	51.33 - 54.50	1.0000	1.0000
L2	31	(Aero) MP303	51.33 - 54.50	1.0000	1.0000
L2	32	(Aero) MP303	51.33 - 54.50	1.0000	1.0000
L2	34	(Aero) MP303	52.50 - 62.50	1.0000	1.0000
L2	35	(Aero) MP303	52.50 - 62.50	1.0000	1.0000
L2	36	(Aero) MP303	52.50 - 62.50	1.0000	1.0000
L3	1	Safety Line 3/8	33.50 - 51.33	1.0000	1.0000
L3	2	Step Pegs (5/8" SR) 7-in.	33.50 - 51.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		w/30" step			
L3	8	1/2" dia. coax	33.50 - 51.33	1.0000	1.0000
L3	26	(Aero) MP304	33.50 - 50.67	1.0000	1.0000
L3	27	(Aero) MP304	33.50 - 50.67	1.0000	1.0000
L3	30	(Aero) MP303	49.50 - 51.33	1.0000	1.0000
L3	31	(Aero) MP303	49.50 - 51.33	1.0000	1.0000
L3	32	(Aero) MP303	49.50 - 51.33	1.0000	1.0000
L3	38	TEP-65FP-050125 (H)	33.50 - 35.50	1.0000	1.0000
L3	39	TEP-65FP-050125 (H)	33.50 - 35.50	1.0000	1.0000
L3	40	TEP-65FP-050125 (H)	33.50 - 35.50	1.0000	1.0000
L3	41	TEP-65FP-050125 (H)	33.50 - 35.50	1.0000	1.0000
L4	1	Safety Line 3/8	10.00 - 33.50	1.0000	1.0000
L4	2	Step Pegs (5/8" SR) 7-in.	10.00 - 33.50	1.0000	1.0000
		w/30" step			
L4	8	1/2" dia. coax	2.75 - 33.50	1.0000	1.0000
L4	21	(Aero) MP303	2.75 - 10.75	1.0000	1.0000
L4	22	(Aero) MP303	2.75 - 10.75	1.0000	1.0000
L4	23	(Aero) MP303	2.75 - 10.75	1.0000	1.0000
L4	24	(Aero) MP303	2.75 - 10.75	1.0000	1.0000
L4	26	(Aero) MP304	10.25 - 33.50	1.0000	1.0000
L4	27	(Aero) MP304	10.25 - 33.50	1.0000	1.0000
L4	38	TEP-65FP-050125 (H)	2.75 - 33.50	1.0000	1.0000
L4	39	TEP-65FP-050125 (H)	2.75 - 33.50	1.0000	1.0000
L4	40	TEP-65FP-050125 (H)	2.75 - 33.50	1.0000	1.0000
L4	41	TEP-65FP-050125 (H)	2.75 - 33.50	1.0000	1.0000
L5	8	1/2" dia. coax	2.50 - 2.75	1.0000	1.0000
L5	21	(Aero) MP303	2.50 - 2.75	1.0000	1.0000
L5	22	(Aero) MP303	2.50 - 2.75	1.0000	1.0000
L5	23	(Aero) MP303	2.50 - 2.75	1.0000	1.0000
L5	24	(Aero) MP303	2.50 - 2.75	1.0000	1.0000
L5	38	TEP-65FP-050125 (H)	2.50 - 2.75	1.0000	1.0000
L5	39	TEP-65FP-050125 (H)	2.50 - 2.75	1.0000	1.0000
L5	40	TEP-65FP-050125 (H)	2.50 - 2.75	1.0000	1.0000
L5	41	TEP-65FP-050125 (H)	2.50 - 2.75	1.0000	1.0000
L6	8	1/2" dia. coax	0.00 - 2.50	1.0000	1.0000
L6	21	(Aero) MP303	0.00 - 2.50	1.0000	1.0000
L6	22	(Aero) MP303	0.00 - 2.50	1.0000	1.0000
L6	23	(Aero) MP303	0.00 - 2.50	1.0000	1.0000
L6	24	(Aero) MP303	0.00 - 2.50	1.0000	1.0000
L6	38	TEP-65FP-050125 (H)	0.00 - 2.50	1.0000	1.0000
L6	39	TEP-65FP-050125 (H)	0.00 - 2.50	1.0000	1.0000
L6	40	TEP-65FP-050125 (H)	0.00 - 2.50	1.0000	1.0000
L6	41	TEP-65FP-050125 (H)	0.00 - 2.50	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L2	30	(Aero) MP303	51.33 - 54.50	Auto	0.1918
L2	31	(Aero) MP303	51.33 - 54.50	Auto	0.1918
L2	32	(Aero) MP303	51.33 - 54.50	Auto	0.1918
L2	34	(Aero) MP303	52.50 - 62.50	Auto	0.2187
L2	35	(Aero) MP303	52.50 - 62.50	Auto	0.2187

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L2	36	(Aero) MP303	52.50 - 62.50	Auto	0.2187
L3	26	(Aero) MP304	33.50 - 50.67	Auto	0.3007
L3	27	(Aero) MP304	33.50 - 50.67	Auto	0.3007
L3	30	(Aero) MP303	49.50 - 51.33	Auto	0.2257
L3	31	(Aero) MP303	49.50 - 51.33	Auto	0.2257
L3	32	(Aero) MP303	49.50 - 51.33	Auto	0.2257
L3	38	TEP-65FP-050125 (H)	33.50 - 35.50	Auto	0.2950
L3	39	TEP-65FP-050125 (H)	33.50 - 35.50	Auto	0.2950
L3	40	TEP-65FP-050125 (H)	33.50 - 35.50	Auto	0.2950
L3	41	TEP-65FP-050125 (H)	33.50 - 35.50	Auto	0.2950
L4	21	(Aero) MP303	2.75 - 10.75	Auto	0.0078
L4	22	(Aero) MP303	2.75 - 10.75	Auto	0.0078
L4	23	(Aero) MP303	2.75 - 10.75	Auto	0.0078
L4	24	(Aero) MP303	2.75 - 10.75	Auto	0.0078
L4	26	(Aero) MP304	10.25 - 33.50	Auto	0.2301
L4	27	(Aero) MP304	10.25 - 33.50	Auto	0.2301
L4	38	TEP-65FP-050125 (H)	2.75 - 33.50	Auto	0.2459
L4	39	TEP-65FP-050125 (H)	2.75 - 33.50	Auto	0.2459
L4	40	TEP-65FP-050125 (H)	2.75 - 33.50	Auto	0.2459
L4	41	TEP-65FP-050125 (H)	2.75 - 33.50	Auto	0.2459
L5	21	(Aero) MP303	2.50 - 2.75	Auto	0.1406
L5	22	(Aero) MP303	2.50 - 2.75	Auto	0.1406
L5	23	(Aero) MP303	2.50 - 2.75	Auto	0.1406
L5	24	(Aero) MP303	2.50 - 2.75	Auto	0.1406
L5	38	TEP-65FP-050125 (H)	2.50 - 2.75	Auto	0.3025
L5	39	TEP-65FP-050125 (H)	2.50 - 2.75	Auto	0.3025
L5	40	TEP-65FP-050125 (H)	2.50 - 2.75	Auto	0.3025
L5	41	TEP-65FP-050125 (H)	2.50 - 2.75	Auto	0.3025
L6	21	(Aero) MP303	0.00 - 2.50	Auto	0.0896
L6	22	(Aero) MP303	0.00 - 2.50	Auto	0.0896
L6	23	(Aero) MP303	0.00 - 2.50	Auto	0.0896
L6	24	(Aero) MP303	0.00 - 2.50	Auto	0.0896
L6	38	TEP-65FP-050125 (H)	0.00 - 2.50	Auto	0.2611
L6	39	TEP-65FP-050125 (H)	0.00 - 2.50	Auto	0.2611
L6	40	TEP-65FP-050125 (H)	0.00 - 2.50	Auto	0.2611
L6	41	TEP-65FP-050125 (H)	0.00 - 2.50	Auto	0.2611

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
1/2" x 4' LRod	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.20 0.61 0.95 1.46	0.20 0.61 0.95 1.46	2.67 5.17 10.32 29.17
***									
TPA65R-BU6DA-K w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	12.95 13.55 14.11	7.26 8.43 9.31	93.61 185.88 286.67

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						2" Ice	15.26	11.13	517.41
TPA65R-BU6DA-K w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.95 13.55 14.11 15.26	7.26 8.43 9.31 11.13	93.61 185.88 286.67 517.41
TPA65R-BU6DA-K w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.95 13.55 14.11 15.26	7.26 8.43 9.31 11.13	93.61 185.88 286.67 517.41
OPA65R-BU6DA w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.16 13.74 14.30 15.46	7.67 8.68 9.56 11.38	100.00 196.97 303.05 541.63
OPA65R-BU6DA w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.16 13.74 14.30 15.46	7.67 8.68 9.56 11.38	100.00 196.97 303.05 541.63
OPA65R-BU6DA w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.16 13.74 14.30 15.46	7.67 8.68 9.56 11.38	100.00 196.97 303.05 541.63
AIR 6449 B77D w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.23 4.55 4.88 5.58	2.87 3.30 3.74 4.68	94.49 133.47 177.35 282.16
AIR 6449 B77D w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.23 4.55 4.88 5.58	2.87 3.30 3.74 4.68	94.49 133.47 177.35 282.16
AIR 6449 B77D w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.23 4.55 4.88 5.58	2.87 3.30 3.74 4.68	94.49 133.47 177.35 282.16
AIR 6419 B77G w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.87 4.18 4.50 5.16	2.32 2.72 3.13 4.01	78.35 112.67 151.59 245.53
AIR 6419 B77G w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.87 4.18 4.50 5.16	2.32 2.72 3.13 4.01	78.35 112.67 151.59 245.53
AIR 6419 B77G w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.87 4.18 4.50 5.16	2.32 2.72 3.13 4.01	78.35 112.67 151.59 245.53
RRUS 32 B30	A	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	52.90 73.96 98.21 157.06
RRUS 32 B30	B	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	52.90 73.96 98.21 157.06
RRUS 32 B30	C	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	52.90 73.96 98.21 157.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRUS 4478 B14	A	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	59.90 75.78 94.29 139.98
RRUS 4478 B14	B	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	59.90 75.78 94.29 139.98
RRUS 4478 B14	C	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	59.90 75.78 94.29 139.98
RRUS 4490 B5/B12	A	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.58 2.99	0.99 1.13 1.28 1.59	70.00 85.06 104.86 153.50
RRUS 4490 B5/B12	B	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.58 2.99	0.99 1.13 1.28 1.59	70.00 85.06 104.86 153.50
RRUS 4490 B5/B12	C	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.58 2.99	0.99 1.13 1.28 1.59	70.00 85.06 104.86 153.50
RRUS 4890 B25/B66	A	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.58 2.99	1.01 1.15 1.29 1.61	70.00 85.17 105.09 153.97
RRUS 4890 B25/B66	B	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.58 2.99	1.01 1.15 1.29 1.61	70.00 85.17 105.09 153.97
RRUS 4890 B25/B66	C	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.58 2.99	1.01 1.15 1.29 1.61	70.00 85.17 105.09 153.97
DC6-48-60-18-8F	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.36 1.53 1.91	0.85 1.36 1.53 1.91	18.90 35.59 54.69 100.71
DC6-48-60-18-8F	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.36 1.53 1.91	0.85 1.36 1.53 1.91	18.90 35.59 54.69 100.71
DC9-48-60-18-8F	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.89 1.01 1.13 1.41	2.12 2.32 2.53 2.97	30.00 54.59 80.41 142.53
2.4" x 10' pipe	A	From Leg	0.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.38 3.40 4.45 5.91	2.38 3.40 4.45 5.91	36.60 54.45 78.81 147.64
2.4" x 10' pipe	B	From Leg	0.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.38 3.40 4.45 5.91	2.38 3.40 4.45 5.91	36.60 54.45 78.81 147.64
2.4" x 10' pipe	C	From Leg	0.50	0.0000	105.00	No Ice	2.38	2.38	36.60

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	3.40	3.40	54.45
			0.00			1" Ice	4.45	4.45	78.81
						2" Ice	5.91	5.91	147.64
Side Arm Mount [SO 901-3]	C	None		0.0000	105.00	No Ice	1.14	1.14	315.99
						1/2" Ice	1.49	1.49	338.76
						1" Ice	1.91	1.91	369.48
						2" Ice	2.93	2.93	458.37
SitePro 1 RMQLP-4120-H10	C	None		0.0000	105.00	No Ice	28.15	26.41	3265.00
						1/2" Ice	34.10	32.35	3657.00
						1" Ice	40.10	38.54	4180.00
						2" Ice	51.95	50.17	4833.00
***									
GPS_A	C	From Leg	2.00	0.0000	75.00	No Ice	0.12	0.12	0.87
			0.00			1/2" Ice	0.21	0.21	3.85
			0.00			1" Ice	0.28	0.28	7.85
						2" Ice	0.44	0.44	19.56
Side Arm Mount [SO 301-1]	C	From Leg	1.00	0.0000	75.00	No Ice	0.46	0.91	23.00
			0.00			1/2" Ice	0.65	1.30	32.54
			0.00			1" Ice	0.87	1.71	46.82
						2" Ice	1.41	2.62	91.42
***									
***									
GPS_A	C	From Leg	2.00	0.0000	65.00	No Ice	0.12	0.12	0.87
			0.00			1/2" Ice	0.21	0.21	3.85
			0.00			1" Ice	0.28	0.28	7.85
						2" Ice	0.44	0.44	19.56
Side Arm Mount [SO 301-1]	C	From Leg	1.00	0.0000	65.00	No Ice	0.46	0.91	23.00
			0.00			1/2" Ice	0.65	1.30	32.54
			0.00			1" Ice	0.87	1.71	46.82
						2" Ice	1.41	2.62	91.42

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

Comb. No.	Description
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
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	105 - 93.92	26.992	50	2.3715	0.0246
L2	95.87 - 51.33	22.511	50	2.2937	0.0182
L3	53.94 - 33.5	6.476	50	1.2252	0.0051
L4	33.5 - 2.75	2.313	50	0.6900	0.0024
L5	2.75 - 2.5	0.010	50	0.0337	0.0001
L6	2.5 - 0	0.008	50	0.0310	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.00	1/2" x 4' LRod	50	26.992	2.3715	0.0246	5967
75.00	GPS_A	50	13.407	1.8477	0.0092	2354
65.00	GPS_A	50	9.794	1.5530	0.0069	2076

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	105 - 93.92	110.061	24	9.7234	0.0978
L2	95.87 - 51.33	91.828	24	9.4040	0.0720
L3	53.94 - 33.5	26.450	24	5.0151	0.0200
L4	33.5 - 2.75	9.446	24	2.8204	0.0093
L5	2.75 - 2.5	0.040	24	0.1376	0.0004
L6	2.5 - 0	0.033	24	0.1264	0.0003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.00	1/2" x 4' LRod	24	110.061	9.7234	0.0978	1532
75.00	GPS_A	24	54.736	7.5714	0.0359	593
65.00	GPS_A	24	39.998	6.3613	0.0270	519

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	105 - 93.92 (1)	TP15.94x14.57x0.1875	11.08	0.00	0.0	9.2312	-6081.15	540026.00	0.011
L2	93.92 - 51.33 (2)	TP21.35x15.3239x0.25	44.54	0.00	0.0	16.4626	-10480.40	963065.00	0.011
L3	51.33 - 33.5 (3)	TP23.2908x20.4969x0.3125	20.44	0.00	0.0	22.7916	-14502.20	1333310.00	0.011
L4	33.5 - 2.75 (4)	TP27.4941x23.2908x0.397	30.75	0.00	0.0	34.1407	-23899.60	1997230.00	0.012
L5	2.75 - 2.5 (5)	TP27.5283x27.4941x0.7696	0.25	0.00	0.0	65.3602	-23994.90	3823570.00	0.006
L6	2.5 - 0 (6)	TP27.87x27.5283x0.6707	2.50	0.00	0.0	57.9025	-24836.90	3387300.00	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	105 - 93.92 (1)	TP15.94x14.57x0.1875	64602.67	217843.33	0.297	0.00	217843.33	0.000
L2	93.92 - 51.33 (2)	TP21.35x15.3239x0.25	410647.50	519640.00	0.790	0.00	519640.00	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L3	51.33 - 33.5 (3)	TP23.2908x20.4969x0.3125	606737.50	795573.33	0.763	0.00	795573.33	0.000
L4	33.5 - 2.75 (4)	TP27.4941x23.2908x0.397	927691.67	1403883.33	0.661	0.00	1403883.33	0.000
L5	2.75 - 2.5 (5)	TP27.5283x27.4941x0.7696	930383.33	2617683.33	0.355	0.00	2617683.33	0.000
L6	2.5 - 0 (6)	TP27.87x27.5283x0.6707	957408.33	2366616.67	0.405	0.00	2366616.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	105 - 93.92 (1)	TP15.94x14.57x0.1875	7280.37	162008.00	0.045	1670.35	220073.33	0.008
L2	93.92 - 51.33 (2)	TP21.35x15.3239x0.25	9174.62	288919.00	0.032	1488.32	524940.00	0.003
L3	51.33 - 33.5 (3)	TP23.2908x20.4969x0.3125	9956.90	399993.00	0.025	1479.83	804917.50	0.002
L4	33.5 - 2.75 (4)	TP27.4941x23.2908x0.397	10797.20	599169.00	0.018	1475.52	1421850.00	0.001
L5	2.75 - 2.5 (5)	TP27.5283x27.4941x0.7696	10782.20	1147070.00	0.009	1475.50	2688041.67	0.001
L6	2.5 - 0 (6)	TP27.87x27.5283x0.6707	10881.40	1016190.00	0.011	1475.50	2420541.67	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	105 - 93.92 (1)	0.011	0.297	0.000	0.045	0.008	0.311	1.000	
L2	93.92 - 51.33 (2)	0.011	0.790	0.000	0.032	0.003	0.802	1.000	
L3	51.33 - 33.5 (3)	0.011	0.763	0.000	0.025	0.002	0.774	1.000	
L4	33.5 - 2.75 (4)	0.012	0.661	0.000	0.018	0.001	0.673	1.000	
L5	2.75 - 2.5 (5)	0.006	0.355	0.000	0.009	0.001	0.362	1.000	
L6	2.5 - 0 (6)	0.007	0.405	0.000	0.011	0.001	0.412	1.000	

APPENDIX B

ADDITIONAL CALCULATIONS

Pole (L2)	81.5%	Pass
Mod (M2)	66.9%	Pass

West Hartford (701774)

TEP #: 153243.920297

Analysis: AKK 1/24/2024

Check: NPD 1/24/2024

Monopole Reinforcement_v1.9.6 - TIA-222-H

Mod #	Modification Type	Termination Length (ft)	Bot. Elevation (ft)	Top Elevation (ft)	Termination Length (ft)	Modification Location (° or Flat/Point #)	Location (F/P)	Lateral Offset (in)
1	(TS) 1.25x5.75 (65 ksi)	0.00	0.00	5.00		1 7 13	Flats	0.00
2	TEP-SFP-050125		0.50	35.50		3 5 12 14	Flats	0.00

MODIFICATION PROPERTIES

#	Modification	Default Termination (ft)	Stitch (in)	k	Drill Hole (in)	Bolt/Weld Capacity (k)	A_G (in^2)	F_Y (ksi)	F_U (ksi)
1	(TS) 1.25x5.75 (65 ksi)	2.25	1.25	0.80	Weld	Weld	6.25	65.0	80.0
2	TEP-SFP-050125	2.00	23.00	0.80	1.1875	36.0	6.25	65.0	80.0

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Pole (L2)	81.5%	Pass
Mod (M2)	66.9%	Pass

West Hartford (701774)

TEP #: 153243.920297

Analysis: AKK 1/24/2024

Check: NPD 1/24/2024

Monopole Reinforcement_v1.9.6 - TIA-222-H - Capacities

Section No.	*Elevation (ft)*	*Type*	*Size*	*Critical Element*	*Pu (lb)*	*φPn (lb)*	*% Capacity*	*Pass/Fail*
L1	105.00-93.92	Pole	TP15.94×14.57×0.1875	1	Note 1	Note 1	31.5	Pass
L2	95.87-51.33	Pole	TP21.35×15.32×0.2500	2	Note 1	Note 1	81.5	Pass
L3	53.94-0.00	Pole	TP27.87×20.50×0.3125	3	Note 1	Note 1	79.0	Pass
M1	5.00-0.00	Mod (Ex)	(TS) 1.25x5.75 (65 ksi)	1	Note 1	Note 1	64.4	Pass
M2	35.50-0.50	Mod (Ex)	TEP-SFP-050125	2	Note 1	Note 1	66.9	Pass

	Summary	
Pole (L2)	81.5	Pass
Mod (M2)	66.9	Pass
RATING =	**81.5**	**Pass**

Note 1: See additional documentation in following sheets for details

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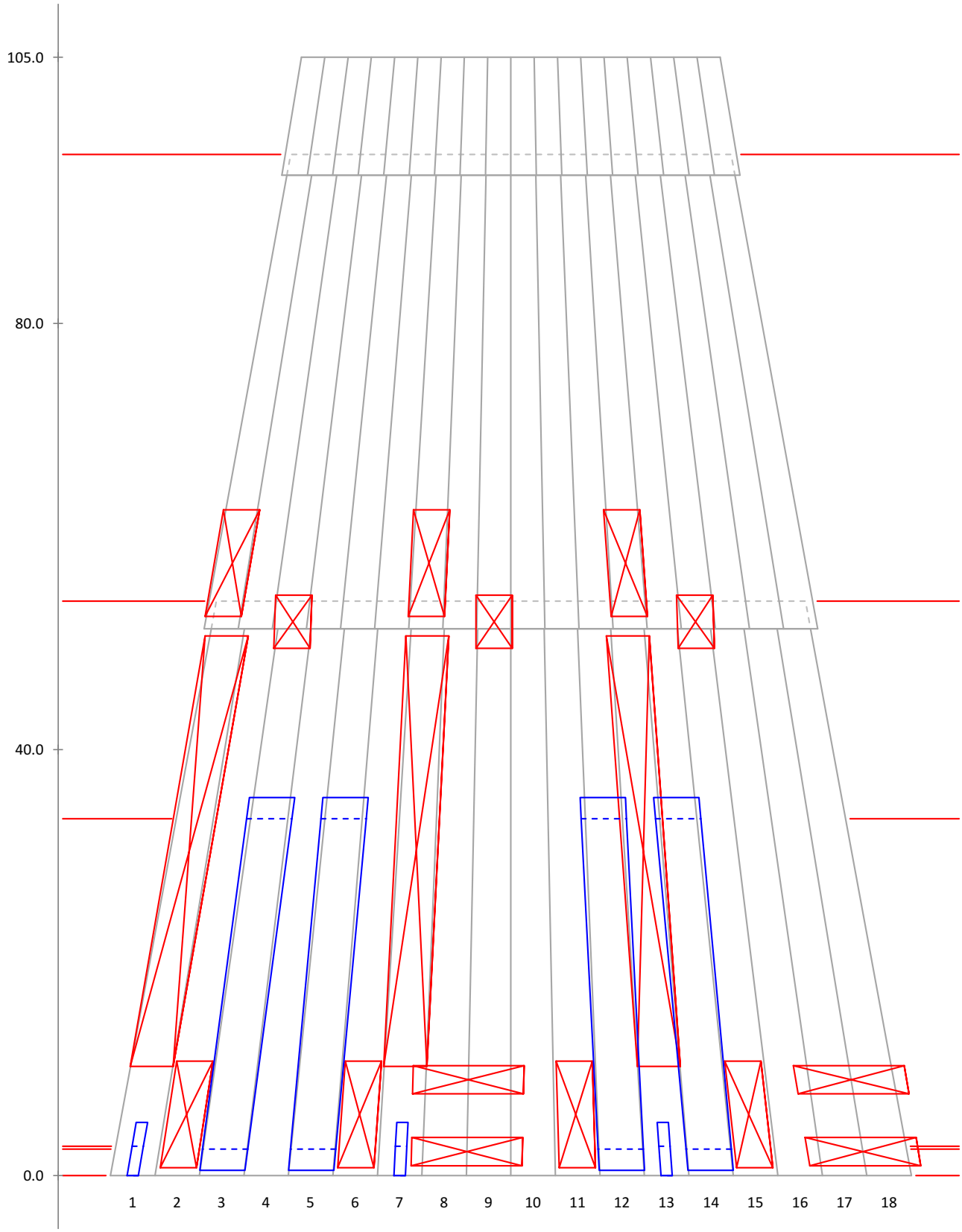
Reinforcement Layout



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Elevation: 0.00-ft

Loads	
Axial:	24.8 k
Moment:	974.5 k·ft
Shear:	10.9 k
Torsion:	1.5 k·ft

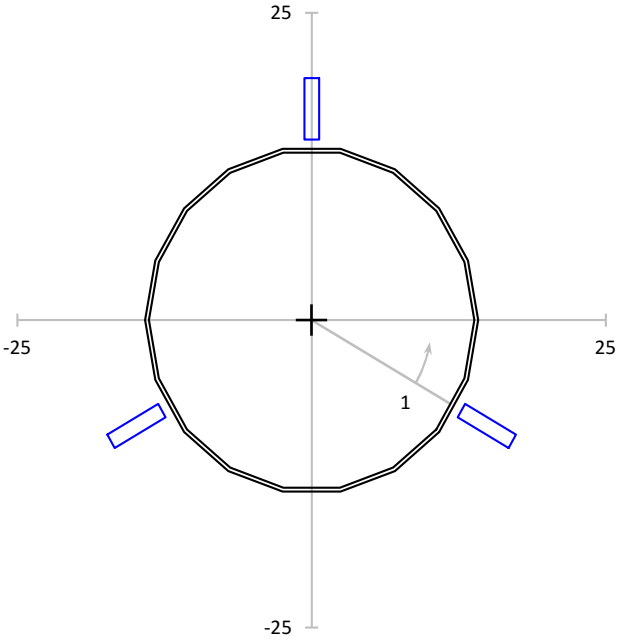
Pole Info	
OD:	27.87 in
t:	0.3125 in
Pole A_G:	27.33 in^2
Pole I_G:	2,622.5 in^4

Equivalent Loads to Pole	
Axial:	14.7 k
Moment:	472.2 k·ft
Shear:	6.5 k
Torsion:	1.5 k·ft

Controlling	
Angle:	120.00°
I_{CONT}:	5,411.9 in^4
A_G:	46.08 in^2

Shear Flow	
Controlling Mod:	1
q:	0.216 k/in
Bolt/Weld Cap:	1000.0 k/bolt
Max Spacing:	4627.75 in
Stitch:	1.25 in
Capacity:	0.0%

Minimum	
Angle:	111.90°
I_{MIN}:	5,411.9 in^4
t_{EFF}:	0.6707 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
290.00	14.16	5411.9	0.539	30.591	0.236	0.047	58.500	74.295	17.550	37.050	**42.1%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**360.00**	17.19	5411.9	0.539	37.131	0.236	58.457	58.457	29.250	**64.4%**
1	2	**120.00**	17.19	5411.9	0.539	37.131	0.236	58.457	58.457	29.250	**64.4%**
1	3	**240.00**	17.19	5411.9	0.539	37.131	0.236	58.457	58.457	29.250	**64.4%**

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Loads	
Axial:	24.1 k
Moment:	947.3 k·ft
Shear:	10.9 k
Torsion:	1.5 k·ft

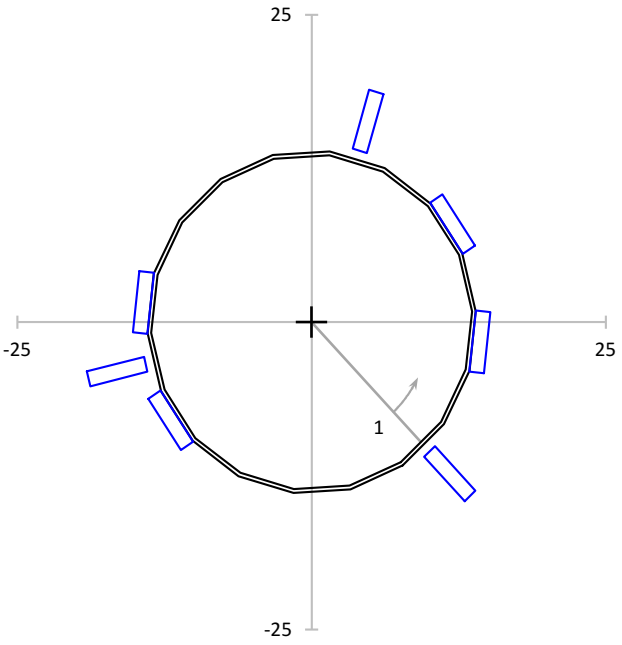
Pole Info	
OD:	27.53 in
t:	0.3125 in
Pole A_G:	26.99 in^2
Pole I_G:	2,526.1 in^4

Equivalent Loads to Pole	
Axial:	9.2 k
Moment:	404.7 k·ft
Shear:	4.2 k
Torsion:	1.5 k·ft

Controlling	
Angle:	**136.35°**
I_G:	6,131.4 in^4
A_G:	70.74 in^2

Shear Flow	
Controlling Mod:	2
q:	0.113 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	319.68 in
Stitch:	23.00 in
Capacity:	**7.2%**

Minimum	
Angle:	**150.00°**
I_{MIN}:	5,912.6 in^4
t_{EFF}:	0.7696 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
150.00	13.98	5912.6	0.341	26.887	0.154	0.049	58.500	74.295	17.550	37.050	**36.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1	1	**343.65**	16.33	6131.4	0.341	30.270	0.154	58.457	58.457	29.250	**52.4%**
1	2	**136.35**	16.33	6131.4	0.341	30.270	0.154	58.457	58.457	29.250	**52.4%**
1	3	**240.00**	17.01	9840.4	0.341	19.656	0.154	58.457	58.457	29.250	**34.2%**
2	1	**13.20**	12.84	7753.2	0.341	18.832	0.154	45.690	45.000	29.250	**42.0%**
2	2	**106.80**	12.84	7753.2	0.341	18.832	0.154	45.690	45.000	29.250	**42.0%**
2	3	**193.20**	12.84	7753.2	0.341	18.832	0.154	45.690	45.000	29.250	**42.0%**
2	4	**286.80**	12.84	7753.2	0.341	18.832	0.154	45.690	45.000	29.250	**42.0%**

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Elevation: 2.75-ft

Loads	
Axial:	24.0 k
Moment:	944.6 k·ft
Shear:	10.9 k
Torsion:	1.5 k·ft

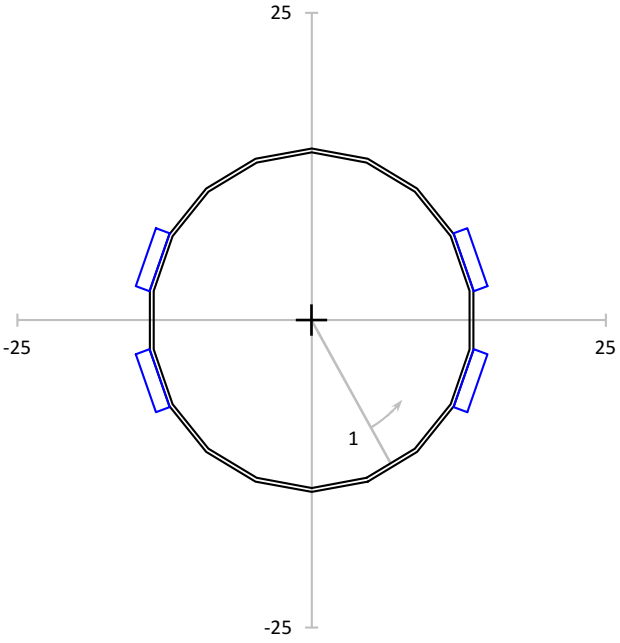
Pole Info	
OD:	27.49 in
t:	0.3125 in
Pole A_G:	26.96 in^2
Pole I_G:	2,516.6 in^4

Equivalent Loads to Pole	
Axial:	12.5 k
Moment:	750.6 k·ft
Shear:	5.6 k
Torsion:	1.5 k·ft

Controlling	
Angle:	**150.00°**
I_G:	3,167.1 in^4
A_G:	51.96 in^2

Shear Flow	
Controlling Mod:	2
q:	0.180 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	199.45 in
Stitch:	23.00 in
Capacity:	**11.5%**

Minimum	
Angle:	**150.00°**
I_{MIN}:	3,167.1 in^4
t_{EFF}:	0.3970 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
150.00	13.97	3167.1	0.462	49.991	0.209	0.049	58.500	74.295	17.550	37.050	**68.1%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
2	1	**0.60**	11.11	4182.4	0.462	30.100	0.209	45.690	45.000	29.250	**66.9%**
2	2	**119.40**	11.11	4182.4	0.462	30.100	0.209	45.690	45.000	29.250	**66.9%**
2	3	**180.60**	11.11	4182.4	0.462	30.100	0.209	45.690	45.000	29.250	**66.9%**
2	4	**299.40**	11.11	4182.4	0.462	30.100	0.209	45.690	45.000	29.250	**66.9%**

Elevation: 33.50-ft

Loads	
Axial:	15.5 k
Moment:	618.4 k·ft
Shear:	10.3 k
Torsion:	1.5 k·ft

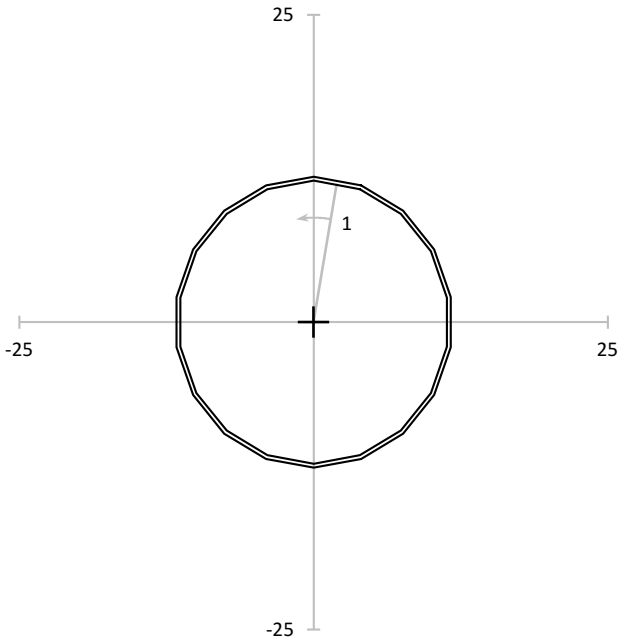
Equivalent Loads to Pole	
Axial:	15.5 k
Moment:	618.4 k·ft
Shear:	10.3 k
Torsion:	1.5 k·ft

Shear Flow N/A

Pole Info	
OD:	23.29 in
t:	0.3125 in
Pole A_G:	22.79 in^2
Pole I_G:	1,520.4 in^4

Controlling	
Angle:	**10.00°**
I_G:	1,520.4 in^4
A_G:	22.79 in^2

Minimum	
Angle:	**0.00°**
I_{MIN}:	1,520.4 in^4
t_{EFF}:	0.3125 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	11.83	1520.4	0.679	57.749	0.451	0.069	58.500	74.295	17.550	37.050	**79.0%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity

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Loads	
Axial:	10.3 k
Moment:	417.4 k·ft
Shear:	9.3 k
Torsion:	1.5 k·ft

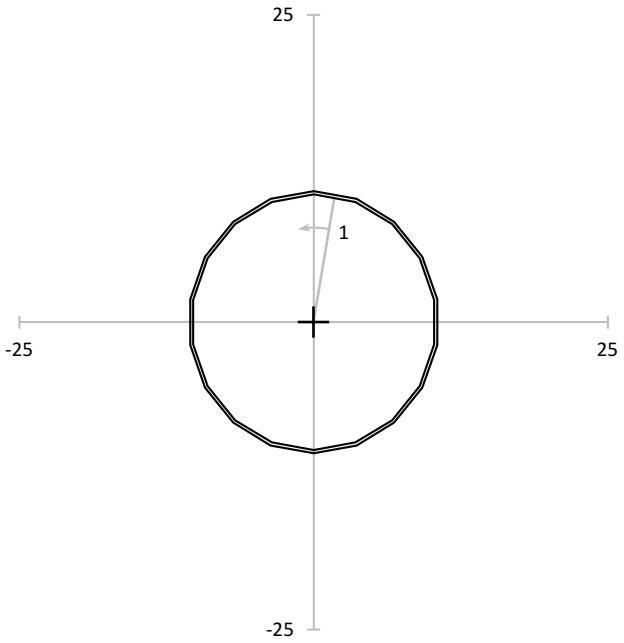
Pole Info	
OD:	21.00 in
t:	0.2500 in
Pole A_G:	16.46 in^2
Pole I_G:	895.2 in^4

Equivalent Loads to Pole	
Axial:	10.3 k
Moment:	417.4 k·ft
Shear:	9.3 k
Torsion:	1.5 k·ft

Controlling	
Angle:	**10.00°**
I_G:	895.2 in^4
A_G:	16.46 in^2

Shear Flow N/A

Minimum	
Angle:	**0.00°**
I_{MIN}:	895.2 in^4
t_{EFF}:	0.2500 in



Pole Segment: L2, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	10.67	895.2	0.627	59.682	0.568	0.106	58.500	74.295	17.550	37.050	**81.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity

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Elevation: 95.87-ft

Loads	
Axial:	6.0 k
Moment:	65.5 k·ft
Shear:	7.4 k
Torsion:	1.7 k·ft

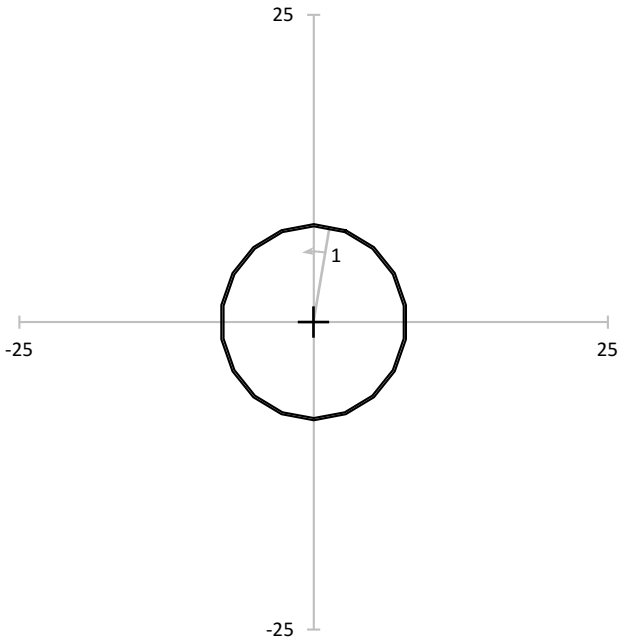
Equivalent Loads to Pole	
Axial:	6.0 k
Moment:	65.5 k·ft
Shear:	7.4 k
Torsion:	1.7 k·ft

Shear Flow N/A

Pole Info	
OD:	15.70 in
t:	0.1875 in
Pole A_G:	9.23 in²
Pole I_G:	280.6 in⁴

Controlling	
Angle:	**10.00°**
I_G:	280.6 in⁴
A_G:	9.23 in²

Minimum	
Angle:	**0.00°**
I_{MIN}:	280.6 in⁴
t_{EFF}:	0.1875 in



Pole Segment: L1, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	7.98	280.6	0.645	22.354	0.800	0.284	58.500	74.295	17.550	37.050	**31.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity

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TOWER ENGINEERING PROFESSIONALS

Capacity: 66.7% | PASS

West Hartford (701774)

TEP #: 153243.920297

Analysis: AKK 1/24/2024

Check: NPD 1/24/2024

Foundation Anchor Analysis

Code Revision

H

Bar Selection

Anchor Type:	DYWIDAG Threadbar	
Bar Size:	Gr. 75 #18	
Drill Bit Type:	N/A	
Nominal Diameter:	2.25	in
Effective Area:	4	in^2
Yield Stress, Fy:	80	ksi
Ultimate Stress, Fu:	100	ksi
Axial Rigidity:	116000	k
Design Strength:	256.00	k
Drill Bit Diameter:	152.4	mm
Drill Bit Diameter:	6.0	in

Steel to Grout Bond Length

Ult Bond Strength:	290.0	psi
Bar Circumference:	7.069	in
Required Length:	124.88	in
Actual Length:	124.88	in
Effective Stiffness:	474	k/in

Grout to Soil Bond Length

a_{bond}:	44.38	psi
ϕ Factor:	0.75	
Shaft Circum.:	18.85	in
Required Length:	34.00	ft

Tower and Base Plate Information

Pole Dia. At Base:	27.87	in
t Pole:	0.3125	in
Fy Pole:	65	ksi
Fu Pole:	80	ksi
No. of Pole Sides:	18	
t Base Plate:	2.50	in
Fy Base Plate:	60	ksi
Fu Base Plate:	75	ksi

Reactions from TNX

Axial:	25	k
Moment:	974	k-ft

Micropile Specifications

Quantity:	3	Symmetrical
Bolt Circle:	8.0	ft

Micro-Pile Design Results

Max Axial Load:	171	kips
All. Axial Load:	256.0	kips
Pile Stress Capacity:	66.7%	PASS

Req. Bond Length

Steel to Grout:	10.41	ft
Grout to Soil:	34.00	ft
Micro-Pile Bond Length:	35.00	ft
Ignored Soil Depth:	10.00	ft

Buckling check

Unbraced Length, L:	0.77	in
r:	0.5608	in
KL/r:	1.37	
Fe:	N/A	ksi
Fcr:	N/A	ksi
ΦPn:	N/A	kips
Buckling Stress Ratio:	0.0%	N/A

Provided Bond Length

Rock Anchor Bond Length:	35.00	ft
Bond Strength:	263.51	kips

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January 27, 2022
March 9, 2022 (Rev.1)
January 15, 2023 (Rev.2)

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

RE:	AT&T Site Number:	CT1076 (C-BAND)
	FA Number:	10035052
	PACE Number:	MRCTB052267
	PT Number:	2051A101RV
	TEP Project Number:	25683.920927
	AT&T Site Name:	WEST HARTFORD SBC CO
	Site Address:	125 South Main Street West Hartford, CT 06107

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by Smartlink, LLC to perform a mount analysis on the proposed AT&T antenna/RRH mount to determine its capability of supporting the following additional loading (Based on RFDS V5.00 dated 07/10/2023):

- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each) (Separate Mount)
- (2) DC6-48-60-18-8F Surge Arrestors (31.4"x10.2"Ø – Wt. = 29 lbs. /each) (Standoff)
- **(3) TPA65R-BU6DV2 Antennas (71.2"x20.7"x7.7" – Wt. = 69 lbs. /each)**
- **(3) AIR6419 Antennas (31.2"x16.1"x9.1" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. 84 lbs. /each)**
- **(3) OPA65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 64 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each) (Separate Mount)**
- **(3) 4890 B25/B66 RRH's (17.5"x15.2"x6.9" – Wt. = 68 lbs. /each) (Separate Mount)**
- **(3) 4490 B5/B12 RRH's (17.5"x15.1"x6.8" – Wt. = 68 lbs. /each) (Separate Mount)**
- **(1) DC6-48-60-18-8C-EV Surge Arrestor (31.4"x10.2"Ø – Wt. = 29 lbs. /each) (Standoff)**

**Proposed equipment shown in bold.*

Mount fabrication drawings prepared by Sitepro1, RMQLP-4120-H10, dated October 18, 2019, 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 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- TEP NE 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 P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.69 in was used for this analysis.
- TEP NE considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE 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 0.055.
- The mount has 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 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount will be secured to the existing monopole with ring mounts and threaded rods. TEP NE considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the Proposed SitePro1 RMQLP-4120-H10 mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	44	LC2	60%	**PASS**

Reference Documents:

- Mount fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10, dated October 18, 2019.

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE 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 mount 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. TEP NE performed a localized analysis on the mount itself and not on the supporting tower structure.

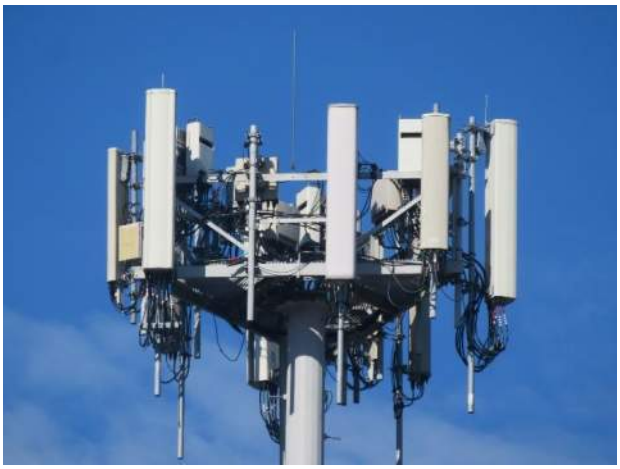
Please feel free to contact our office should you have any questions.

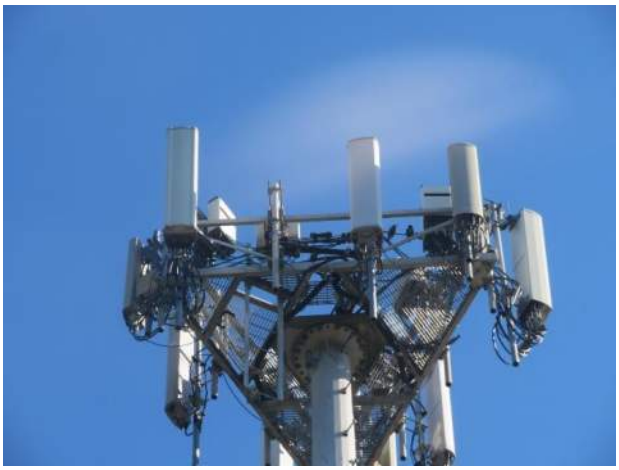
Respectfully Submitted,
TEP Northeast

Michael Cabral
Director

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:
**Existing mount to be removed and replaced.*







Wind & Ice
Calculations

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM **Checked By:** MSC

2.6.5.2 Velocity Pressure Coeff:

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

z=	107	(ft)
z_g=	1200	(ft)
α=	7.0	

K_z= 1.008

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=	107	
z_s=	106	(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=	1.00	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.50 in
Importance Factor =	I=	1.00 (from Table 2-3)
	K_{iz} =	1.12 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.69 in

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM Checked By: MSC

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=	105	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=	1.008	(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=	**35.15**	K_e=	1.00	(from 2.6.8)
$q_{z\ (ice)}$=	**6.10**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.20**	V_{max}=	120	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

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM Checked By: MSC

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 = 1.69 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)
TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.44	1.24	447	94	28
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.94	1.20	147	34	9
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	143	33	9
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	447	94	28
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	71	18	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	44	13	3
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	1.15	1.20	78	20	5
4890 B25/B66 RRH (Side)	17.5	6.9	15.2	0.84	2.54	1.20	35	11	2
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	1.16	1.20	77	20	5
4490 B5/B12 RRH (Side)	17.5	6.8	15.1	0.83	2.57	1.20	35	11	2
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	96	24	6
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	59	17	4
DC6 Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	55	14	3
PL 6x3/8	0.4	12.0	-	0.03	0.03	2.00	2		
L 2-1/2x2-1/2 Angle	2.5	12.0	-	0.21	0.21	2.00	15		
L 2x2 Angle	2.0	12.0	-	0.17	0.17	2.00	12		
HSS 4x4	4.0	12.0	-	0.33	0.33	1.25	15		
3" Pipe	3.5	12.0	-	0.29	0.29	1.20	12		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	10		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	8		

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle = 30 (deg)

Ice Thickness = 1.69 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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	384
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	147	86	132
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	143	96	131
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	384
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	71	44	64
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	36	71	45
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	78	35	67
4890 B25/B66 RRH (Side)	17.5	7.6	15.2	0.92	1.85	2.30	1.15	1.20	1.20	39	78	49
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	77	35	67
4490 B5/B12 RRH (Side)	17.5	7.6	15.1	0.92	1.84	2.32	1.16	1.20	1.20	39	77	48
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	96	59	87
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	52	96	63

WIND LOADS WITH ICE:

TPA65R-BU6DV2 Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	82
AIR6419 Antenna	34.6	19.5	12.5	4.68	3.00	1.78	2.77	1.20	1.21	34	22	31
AIR6449 Antenna	34.0	19.3	14.0	4.55	3.30	1.76	2.43	1.20	1.20	33	24	31
OPA65R-BU6DA Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	82
B14 4478 RRH	21.5	16.8	11.7	2.50	1.74	1.28	1.84	1.20	1.20	18	13	17
B14 4478 RRH (Side)	21.5	8.4	16.8	1.25	2.50	2.56	1.28	1.20	1.20	9	18	11
4890 B25/B66 RRH	20.9	18.6	10.3	2.69	1.49	1.12	2.03	1.20	1.20	20	11	18
4890 B25/B66 RRH (Side)	20.9	9.3	18.6	1.35	2.69	2.25	1.12	1.20	1.20	10	20	12
4490 B5/B12 RRH	20.9	18.5	10.2	2.68	1.47	1.13	2.05	1.20	1.20	20	11	17
4490 B5/B12 RRH (Side)	20.9	9.2	18.5	1.34	2.68	2.26	1.13	1.20	1.20	10	20	12
RRUS-32 B30 RRH	30.6	15.5	10.4	3.29	2.20	1.98	2.95	1.20	1.22	24	16	22
RRUS-32 B30 RRH (Side)	30.6	7.7	15.5	1.64	3.29	3.95	1.98	1.26	1.20	13	24	16

WIND LOADS AT 30 MPH:

TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	24
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	9	5	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	24
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	3	4
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	2	4	3
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	5	2	4
4890 B25/B66 RRH (Side)	17.5	7.6	15.2	0.92	1.85	2.30	1.15	1.20	1.20	2	5	3
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	5	2	4
4490 B5/B12 RRH (Side)	17.5	7.6	15.1	0.92	1.84	2.32	1.16	1.20	1.20	2	5	3
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	5
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	3	6	4

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM Checked By: MSC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.69	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	260
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	147	86	101
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	143	96	108
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	260
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	71	44	51
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	53	71	67
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	78	35	46
4890 B25/B66 RRH (Side)	17.5	11.4	15.2	1.39	1.85	1.54	1.15	1.20	1.20	58	78	73
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	77	35	46
4490 B5/B12 RRH (Side)	17.5	11.3	15.1	1.38	1.84	1.55	1.16	1.20	1.20	58	77	73
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	96	59	68
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	74	96	91

WIND LOADS WITH ICE:

TPA65R-BU6DV2 Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	60
AIR6419 Antenna	34.6	19.5	12.5	4.68	3.00	1.78	2.77	1.20	1.21	34	22	25
AIR6449 Antenna	34.0	19.3	14.0	4.55	3.30	1.76	2.43	1.20	1.20	33	24	26
OPA65R-BU6DA Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	60
B14 4478 RRH	21.5	16.8	11.7	2.50	1.74	1.28	1.84	1.20	1.20	18	13	14
B14 4478 RRH (Side)	21.5	12.6	16.8	1.88	2.50	1.71	1.28	1.20	1.20	14	18	17
4890 B25/B66 RRH	20.9	18.6	10.3	2.69	1.49	1.12	2.03	1.20	1.20	20	11	13
4890 B25/B66 RRH (Side)	20.9	13.9	18.6	2.02	2.69	1.50	1.12	1.20	1.20	15	20	18
4490 B5/B12 RRH	20.9	18.5	10.2	2.68	1.47	1.13	2.05	1.20	1.20	20	11	13
4490 B5/B12 RRH (Side)	20.9	13.9	18.5	2.01	2.68	1.51	1.13	1.20	1.20	15	20	18
RRUS-32 B30 RRH	30.6	15.5	10.4	3.29	2.20	1.98	2.95	1.20	1.22	24	16	18
RRUS-32 B30 RRH (Side)	30.6	11.6	15.5	2.46	3.29	2.63	1.98	1.21	1.20	18	24	23

WIND LOADS AT 30 MPH:

TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	16
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	9	5	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	16
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	3	3
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	3	4	4
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	5	2	3
4890 B25/B66 RRH (Side)	17.5	11.4	15.2	1.39	1.85	1.54	1.15	1.20	1.20	4	5	5
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	5	2	3
4490 B5/B12 RRH (Side)	17.5	11.3	15.1	1.38	1.84	1.55	1.16	1.20	1.20	4	5	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	5	6	6

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.69	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	197
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	147	86	86
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	143	96	96
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	197
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	71	44	44
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	44	71	71
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	78	35	35
4890 B25/B66 RRH (Side)	17.5	6.9	15.2	0.84	1.85	2.54	1.15	1.20	1.20	35	78	78
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	77	35	35
4490 B5/B12 RRH (Side)	17.5	6.8	15.1	0.83	1.84	2.57	1.16	1.20	1.20	35	77	77
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	96	59	59
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	59	96	96

WIND LOADS WITH ICE:

TPA65R-BU6DV2 Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	49
AIR6419 Antenna	34.6	19.5	12.5	4.68	3.00	1.78	2.77	1.20	1.21	34	22	22
AIR6449 Antenna	34.0	19.3	14.0	4.55	3.30	1.76	2.43	1.20	1.20	33	24	24
OPA65R-BU6DA Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	49
B14 4478 RRH	21.5	16.8	11.7	2.50	1.74	1.28	1.84	1.20	1.20	18	13	13
B14 4478 RRH (Side)	21.5	11.7	16.8	1.74	2.50	1.84	1.28	1.20	1.20	13	18	18
4890 B25/B66 RRH	20.9	18.6	10.3	2.69	1.49	1.12	2.03	1.20	1.20	20	11	11
4890 B25/B66 RRH (Side)	20.9	10.3	18.6	1.49	2.69	2.03	1.12	1.20	1.20	11	20	20
4490 B5/B12 RRH	20.9	18.5	10.2	2.68	1.47	1.13	2.05	1.20	1.20	20	11	11
4490 B5/B12 RRH (Side)	20.9	10.2	18.5	1.47	2.68	2.05	1.13	1.20	1.20	11	20	20
RRUS-32 B30 RRH	30.6	15.5	10.4	3.29	2.20	1.98	2.95	1.20	1.22	24	16	16
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.20	3.29	2.95	1.98	1.22	1.20	16	24	24

WIND LOADS AT 30 MPH:

TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	12
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	9	5	5
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	6
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	12
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	3	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	4
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	5	2	2
4890 B25/B66 RRH (Side)	17.5	6.9	15.2	0.84	1.85	2.54	1.15	1.20	1.20	2	5	5
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	5	2	2
4490 B5/B12 RRH (Side)	17.5	6.8	15.1	0.83	1.84	2.57	1.16	1.20	1.20	2	5	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	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

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.69	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	260
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	147	86	101
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	143	96	108
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	260
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	71	44	51
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	53	71	67
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	78	35	46
4890 B25/B66 RRH (Side)	17.5	11.4	15.2	1.39	1.85	1.54	1.15	1.20	1.20	58	78	73
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	77	35	46
4490 B5/B12 RRH (Side)	17.5	11.3	15.1	1.38	1.84	1.55	1.16	1.20	1.20	58	77	73
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	96	59	68
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	74	96	91

WIND LOADS WITH ICE:

TPA65R-BU6DV2 Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	60
AIR6419 Antenna	34.6	19.5	12.5	4.68	3.00	1.78	2.77	1.20	1.21	34	22	25
AIR6449 Antenna	34.0	19.3	14.0	4.55	3.30	1.76	2.43	1.20	1.20	33	24	26
OPA65R-BU6DA Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	60
B14 4478 RRH	21.5	16.8	11.7	2.50	1.74	1.28	1.84	1.20	1.20	18	13	14
B14 4478 RRH (Side)	21.5	12.6	16.8	1.88	2.50	1.71	1.28	1.20	1.20	14	18	17
4890 B25/B66 RRH	20.9	18.6	10.3	2.69	1.49	1.12	2.03	1.20	1.20	20	11	13
4890 B25/B66 RRH (Side)	20.9	13.9	18.6	2.02	2.69	1.50	1.12	1.20	1.20	15	20	18
4490 B5/B12 RRH	20.9	18.5	10.2	2.68	1.47	1.13	2.05	1.20	1.20	20	11	13
4490 B5/B12 RRH (Side)	20.9	13.9	18.5	2.01	2.68	1.51	1.13	1.20	1.20	15	20	18
RRUS-32 B30 RRH	30.6	15.5	10.4	3.29	2.20	1.98	2.95	1.20	1.22	24	16	18
RRUS-32 B30 RRH (Side)	30.6	11.6	15.5	2.46	3.29	2.63	1.98	1.21	1.20	18	24	23

WIND LOADS AT 30 MPH:

TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	16
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	9	5	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	16
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	3	3
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	3	4	4
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	5	2	3
4890 B25/B66 RRH (Side)	17.5	11.4	15.2	1.39	1.85	1.54	1.15	1.20	1.20	4	5	5
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	5	2	3
4490 B5/B12 RRH (Side)	17.5	11.3	15.1	1.38	1.84	1.55	1.16	1.20	1.20	4	5	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	5	6	6

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM Checked By: MSC

WIND LOADS

Angle = 150 (deg)

Ice Thickness = 1.69 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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	384
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	147	86	132
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	143	96	131
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	447	197	384
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	71	44	64
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	36	71	45
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	78	35	67
4890 B25/B66 RRH (Side)	17.5	7.6	15.2	0.92	1.85	2.30	1.15	1.20	1.20	39	78	49
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	77	35	67
4490 B5/B12 RRH (Side)	17.5	7.6	15.1	0.92	1.84	2.32	1.16	1.20	1.20	39	77	48
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	96	59	87
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	52	96	63

WIND LOADS WITH ICE:

TPA65R-BU6DV2 Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	82
AIR6419 Antenna	34.6	19.5	12.5	4.68	3.00	1.78	2.77	1.20	1.21	34	22	31
AIR6449 Antenna	34.0	19.3	14.0	4.55	3.30	1.76	2.43	1.20	1.20	33	24	31
OPA65R-BU6DA Antenna	74.6	24.1	11.1	12.47	5.74	3.10	6.73	1.23	1.39	93	49	82
B14 4478 RRH	21.5	16.8	11.7	2.50	1.74	1.28	1.84	1.20	1.20	18	13	17
B14 4478 RRH (Side)	21.5	8.4	16.8	1.25	2.50	2.56	1.28	1.20	1.20	9	18	11
4890 B25/B66 RRH	20.9	18.6	10.3	2.69	1.49	1.12	2.03	1.20	1.20	20	11	18
4890 B25/B66 RRH (Side)	20.9	9.3	18.6	1.35	2.69	2.25	1.12	1.20	1.20	10	20	12
4490 B5/B12 RRH	20.9	18.5	10.2	2.68	1.47	1.13	2.05	1.20	1.20	20	11	17
4490 B5/B12 RRH (Side)	20.9	9.2	18.5	1.34	2.68	2.26	1.13	1.20	1.20	10	20	12
RRUS-32 B30 RRH	30.6	15.5	10.4	3.29	2.20	1.98	2.95	1.20	1.22	24	16	22
RRUS-32 B30 RRH (Side)	30.6	7.7	15.5	1.64	3.29	3.95	1.98	1.26	1.20	13	24	16

WIND LOADS AT 30 MPH:

TPA65R-BU6DV2 Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	24
AIR6419 Antenna	31.2	16.1	9.1	3.49	1.97	1.94	3.43	1.20	1.24	9	5	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
OPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	28	12	24
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	3	4
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	2	4	3
4890 B25/B66 RRH	17.5	15.2	6.9	1.85	0.84	1.15	2.54	1.20	1.20	5	2	4
4890 B25/B66 RRH (Side)	17.5	7.6	15.2	0.92	1.85	2.30	1.15	1.20	1.20	2	5	3
4490 B5/B12 RRH	17.5	15.1	6.8	1.84	0.83	1.16	2.57	1.20	1.20	5	2	4
4490 B5/B12 RRH (Side)	17.5	7.6	15.1	0.92	1.84	2.32	1.16	1.20	1.20	2	5	3
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	5
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	3	6	4

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.69 in.
Density of ice: 56 pcf

TPA65R-BU6DV2 Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		291 lbs
Weight of object:	69.0	lbs
Combined weight of ice and object:		360 lbs

AIR6419 Antenna

Weight of ice based on total radial SF area:

Height (in):	31.2	
Width (in):	16.1	
Depth (in):	9.1	
Total weight of ice on object:		108 lbs
Weight of object:	66.0	lbs
Combined weight of ice and object:		174 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:		110 lbs
Weight of object:	84.0	lbs
Combined weight of ice and object:		194 lbs

OPA65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		291 lbs
Weight of object:	64.0	lbs
Combined weight of ice and object:		355 lbs

B14 4478 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:		54 lbs
Weight of object:	60.0	lbs
Combined weight of ice and object:		114 lbs

4890 B25/B66 RRH

Weight of ice based on total radial SF area:

Height (in):	17.5	
Width (in):	15.2	
Depth (in):	6.9	
Total weight of ice on object:		55 lbs
Weight of object:	68.0	lbs
Combined weight of ice and object:		123 lbs

4490 B5/B12 RRH

Weight of ice based on total radial SF area:

Height (in):	17.5	
Width (in):	15.1	
Depth (in):	6.8	
Total weight of ice on object:		55 lbs
Weight of object:	68.0	lbs
Combined weight of ice and object:		123 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:		73 lbs
Weight of object:	60.0	lbs
Combined weight of ice and object:		133 lbs

DC6 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:		64 lbs
Weight of object:	29	lbs
Combined weight of ice and object:		93 lbs

PL 6x3/8

Weight of ice based on total radial SF area:

Height (in):	6	
Width (in):	0.375	
Per foot weight of ice on object:		16 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		15 plf

L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:		11 plf

L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:		9 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		11 plf

2-1/2" Pipe

Per foot weight of ice:

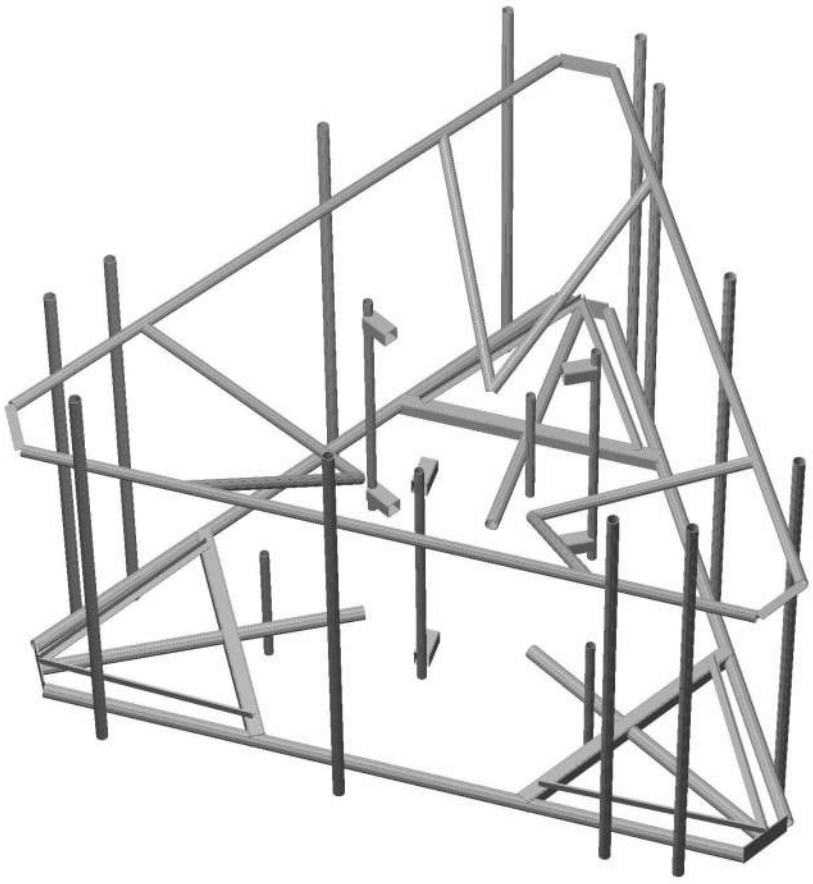
diameter (in):	2.88	
Per foot weight of ice on object:		9 plf

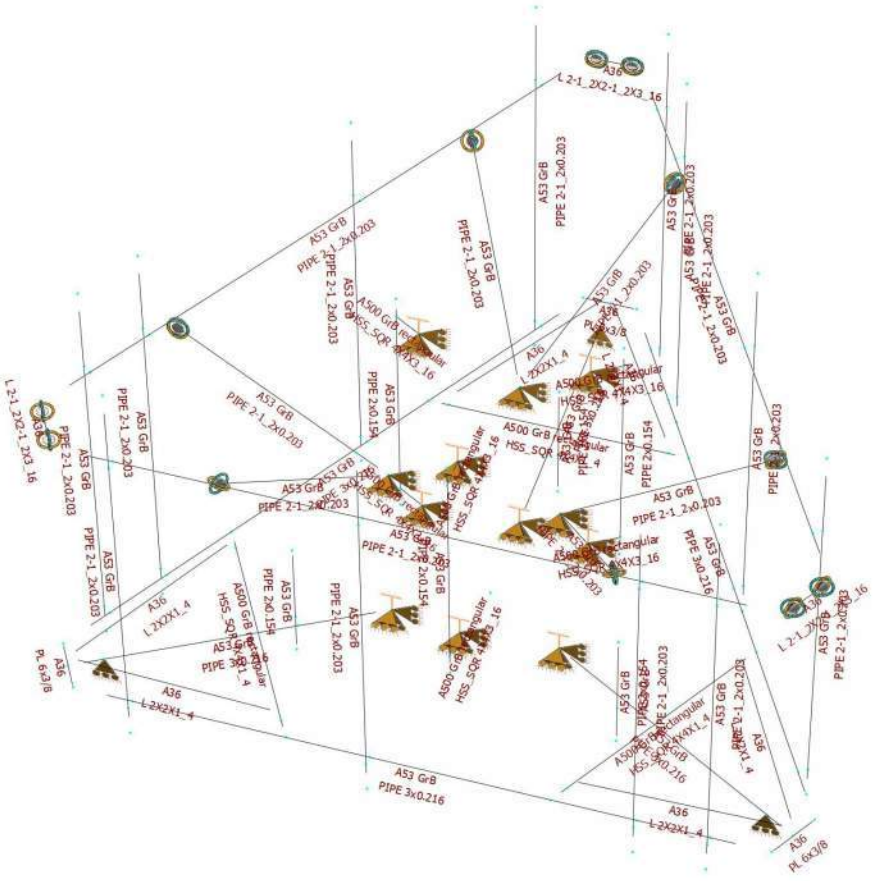
2" Pipe

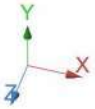
Per foot weight of ice:

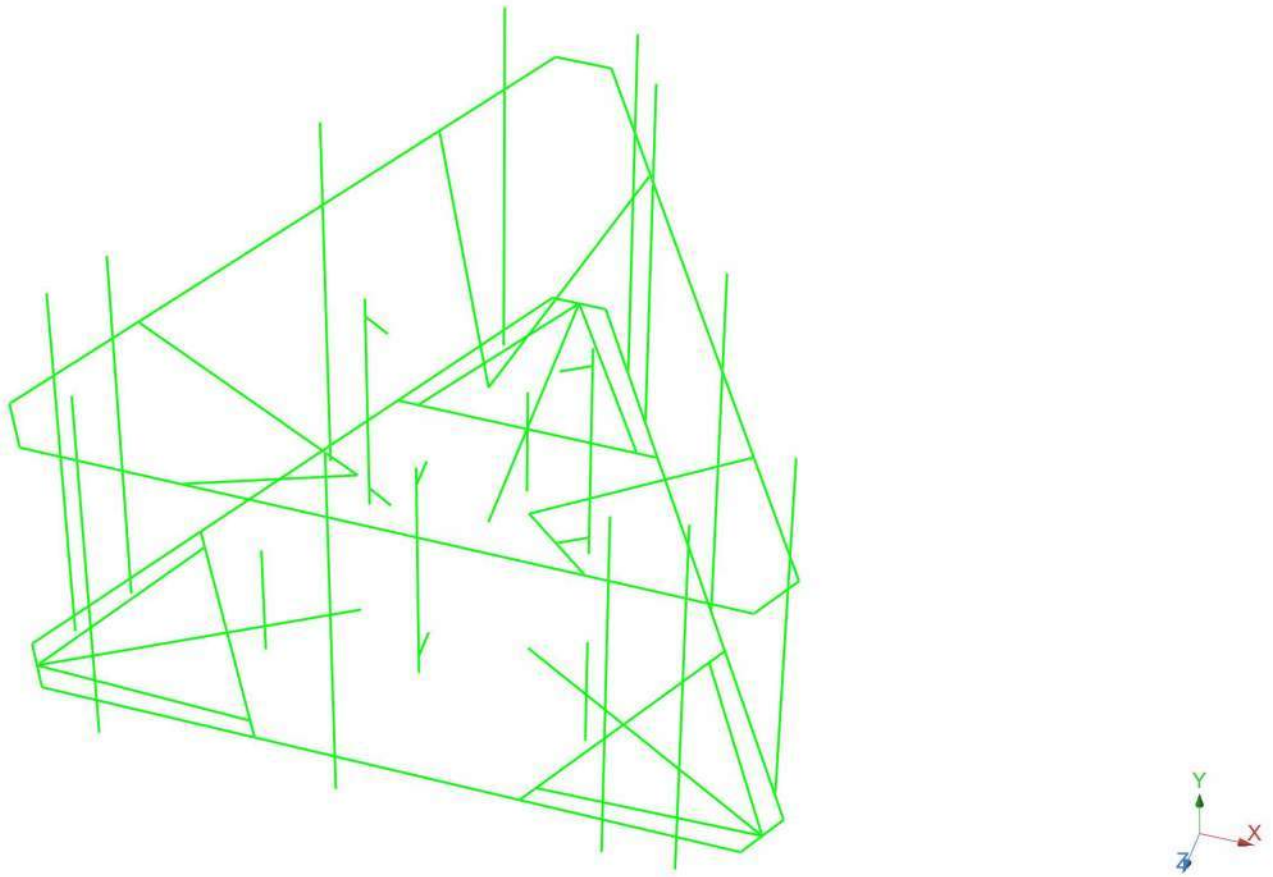
diameter (in):	2.38	
Per foot weight of ice on object:		8 plf

Mount Calculations
(Proposed Conditions)


Y
X
Z

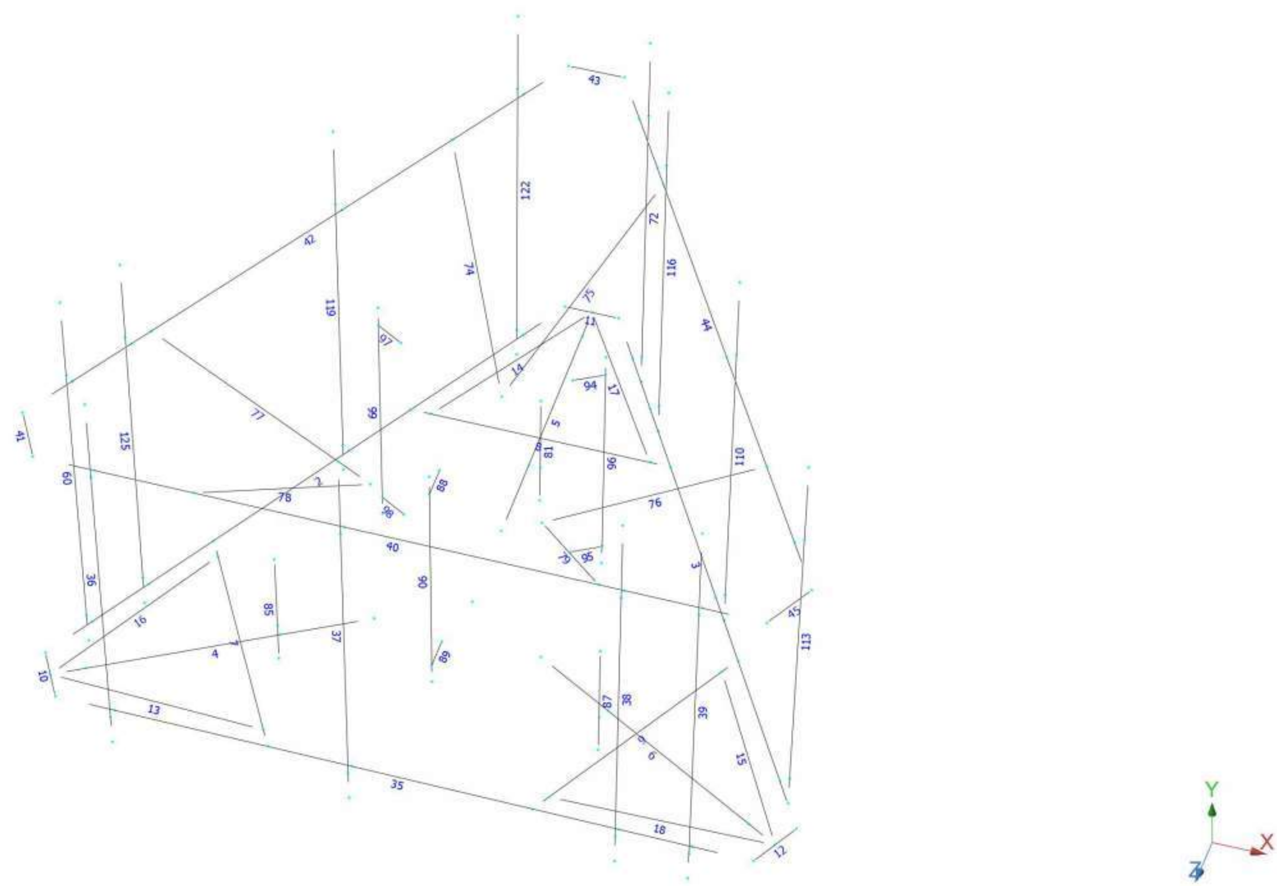

A36
L 2-1_2X2-1_2X3_16
A53 GrB
PIPE 2-1_2x0.203
A500 GrB
HSS_SQR
PIPE 2x0.154
L 2X2X1_4
PIPE 3x0.216
PL 6x3/8
L 2X2X1_4


Y
X
Z


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 1/15/2024 3:00 PM
Units system: English



RAM® Elements
CONNECT Edition

Current Date: 1/15/2024 3:00 PM
Units system: English

Load data

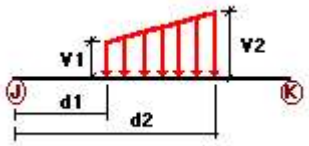
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load on Antenna 1	No	LL
LLa2	500 lb Live Load on Antenna 2	No	LL
LLa3	500 lb Live Load on Antenna 3	No	LL
LLa4	500 lb Live Load on Antenna 4	No	LL

Distributed force on members



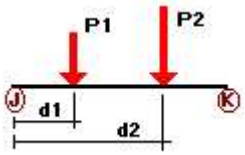
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	4	y	-0.01	-0.01	0.00	No	3.90	No
	5	y	-0.01	-0.01	0.00	No	3.90	No
	6	y	-0.01	-0.01	0.00	No	3.90	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	9	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.01	0.00	0.00	No	0.00	No
	14	y	-0.01	0.00	0.00	No	0.00	No
	15	y	-0.01	0.00	0.00	No	0.00	No
	16	y	-0.01	0.00	0.00	No	0.00	No
	17	y	-0.01	0.00	0.00	No	0.00	No
	18	y	-0.01	0.00	0.00	No	0.00	No
W0	2	z	-0.012	-0.012	0.00	No	100.00	Yes
	3	z	-0.012	-0.012	0.00	No	100.00	Yes
	4	z	-0.012	-0.012	0.00	No	100.00	Yes
	6	z	-0.012	-0.012	0.00	No	100.00	Yes

	7	z	-0.015	-0.015	0.00	No	100.00	Yes
	8	z	-0.015	-0.015	0.00	No	100.00	Yes
	9	z	-0.015	-0.015	0.00	No	100.00	Yes
	10	z	-0.002	-0.002	0.00	No	100.00	Yes
	11	z	-0.002	-0.002	0.00	No	100.00	Yes
	12	z	-0.002	-0.002	0.00	No	100.00	Yes
	35	z	-0.012	-0.012	0.00	No	100.00	Yes
	39	z	-0.01	-0.01	0.00	No	100.00	Yes
	40	z	-0.01	-0.01	0.00	No	100.00	Yes
	41	z	-0.015	-0.015	0.00	No	100.00	Yes
	42	z	-0.01	-0.01	0.00	No	100.00	Yes
	43	z	-0.015	-0.015	0.00	No	100.00	Yes
	44	z	-0.01	-0.01	0.00	No	100.00	Yes
	45	z	-0.015	-0.015	0.00	No	100.00	Yes
	60	z	-0.01	-0.01	0.00	No	100.00	Yes
	72	z	-0.01	-0.01	0.00	No	100.00	Yes
	74	z	-0.01	-0.01	0.00	No	100.00	Yes
	75	z	-0.01	-0.01	0.00	No	100.00	Yes
	76	z	-0.01	-0.01	0.00	No	100.00	Yes
	77	z	-0.01	-0.01	0.00	No	100.00	Yes
	78	z	-0.01	-0.01	0.00	No	100.00	Yes
	79	z	-0.01	-0.01	0.00	No	100.00	Yes
	81	z	-0.008	-0.008	0.00	No	100.00	Yes
	85	z	-0.008	-0.008	0.00	No	100.00	Yes
	87	z	-0.008	-0.008	0.00	No	100.00	Yes
	90	z	-0.008	-0.008	0.00	No	100.00	Yes
	94	z	-0.015	-0.015	0.00	No	100.00	Yes
	95	z	-0.015	-0.015	0.00	No	100.00	Yes
	96	z	-0.008	-0.008	0.00	No	100.00	Yes
	97	z	-0.015	-0.015	0.00	No	100.00	Yes
	98	z	-0.015	-0.015	0.00	No	100.00	Yes
	99	z	-0.008	-0.008	0.00	No	100.00	Yes
	110	z	-0.01	-0.01	0.00	No	100.00	Yes
	113	z	-0.01	-0.01	0.00	No	100.00	Yes
	116	z	-0.01	-0.01	0.00	No	100.00	Yes
	119	z	-0.01	-0.01	0.00	No	100.00	Yes
	122	z	-0.01	-0.01	0.00	No	100.00	Yes
	125	z	-0.01	-0.01	0.00	No	100.00	Yes
W30	2	x	-0.012	-0.012	0.00	No	100.00	Yes
	3	x	-0.012	-0.012	0.00	No	100.00	Yes
	4	x	-0.012	-0.012	0.00	No	100.00	Yes
	5	x	-0.012	-0.012	0.00	No	100.00	Yes
	6	x	-0.012	-0.012	0.00	No	100.00	Yes
	7	x	-0.015	-0.015	0.00	No	100.00	Yes
	9	x	-0.015	-0.015	0.00	No	100.00	Yes
	10	x	-0.002	-0.002	0.00	No	100.00	Yes
	12	x	-0.002	-0.002	0.00	No	100.00	Yes
	36	x	-0.01	-0.01	0.00	No	100.00	Yes
	37	x	-0.01	-0.01	0.00	No	100.00	Yes
	38	x	-0.01	-0.01	0.00	No	100.00	Yes
	39	x	-0.01	-0.01	0.00	No	100.00	Yes
	40	x	-0.01	-0.01	0.00	No	100.00	Yes
	41	x	-0.015	-0.015	0.00	No	100.00	Yes
	42	x	-0.01	-0.01	0.00	No	100.00	Yes
	44	x	-0.01	-0.01	0.00	No	100.00	Yes
	45	x	-0.015	-0.015	0.00	No	100.00	Yes
	60	x	-0.01	-0.01	0.00	No	100.00	Yes
	72	x	-0.01	-0.01	0.00	No	100.00	Yes
	74	x	-0.01	-0.01	0.00	No	100.00	Yes
	75	x	-0.01	-0.01	0.00	No	100.00	Yes

	76	x	-0.01	-0.01	0.00	No	100.00	Yes
	77	x	-0.01	-0.01	0.00	No	100.00	Yes
	78	x	-0.01	-0.01	0.00	No	100.00	Yes
	79	x	-0.01	-0.01	0.00	No	100.00	Yes
	81	x	-0.008	-0.008	0.00	No	100.00	Yes
	85	x	-0.008	-0.008	0.00	No	100.00	Yes
	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.015	-0.015	0.00	No	100.00	Yes
	89	x	-0.015	-0.015	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.015	-0.015	0.00	No	100.00	Yes
	95	x	-0.015	-0.015	0.00	No	100.00	Yes
	96	x	-0.008	-0.008	0.00	No	100.00	Yes
	97	x	-0.015	-0.015	0.00	No	100.00	Yes
	98	x	-0.015	-0.015	0.00	No	100.00	Yes
	99	x	-0.008	-0.008	0.00	No	100.00	Yes
	119	x	-0.01	-0.01	0.00	No	100.00	Yes
	122	x	-0.01	-0.01	0.00	No	100.00	Yes
	125	x	-0.01	-0.01	0.00	No	100.00	Yes
Di	2	y	-0.011	-0.011	0.00	No	100.00	Yes
	3	y	-0.011	-0.011	0.00	No	100.00	Yes
	4	y	-0.011	-0.011	0.00	No	100.00	Yes
	5	y	-0.011	-0.011	0.00	No	100.00	Yes
	6	y	-0.011	-0.011	0.00	No	100.00	Yes
	7	y	-0.015	-0.015	0.00	No	100.00	Yes
	8	y	-0.015	-0.015	0.00	No	100.00	Yes
	9	y	-0.015	-0.015	0.00	No	100.00	Yes
	10	y	-0.016	-0.016	0.00	No	100.00	Yes
	11	y	-0.016	-0.016	0.00	No	100.00	Yes
	12	y	-0.016	-0.016	0.00	No	100.00	Yes
	13	y	-0.009	-0.009	0.00	No	100.00	Yes
	14	y	-0.009	-0.009	0.00	No	100.00	Yes
	15	y	-0.009	-0.009	0.00	No	100.00	Yes
	16	y	-0.009	-0.009	0.00	No	100.00	Yes
	17	y	-0.009	-0.009	0.00	No	100.00	Yes
	18	y	-0.009	-0.009	0.00	No	100.00	Yes
	35	y	-0.011	-0.011	0.00	No	100.00	Yes
	36	y	-0.009	-0.009	0.00	No	100.00	Yes
	37	y	-0.009	-0.009	0.00	No	100.00	Yes
	38	y	-0.009	-0.009	0.00	No	100.00	Yes
	39	y	-0.009	-0.009	0.00	No	100.00	Yes
	40	y	-0.009	-0.009	0.00	No	100.00	Yes
	41	y	-0.011	-0.011	0.00	No	100.00	Yes
	42	y	-0.009	-0.009	0.00	No	100.00	Yes
	43	y	-0.011	-0.011	0.00	No	100.00	Yes
	44	y	-0.009	-0.009	0.00	No	100.00	Yes
	45	y	-0.011	-0.011	0.00	No	100.00	Yes
	60	y	-0.009	-0.009	0.00	No	100.00	Yes
	72	y	-0.009	-0.009	0.00	No	100.00	Yes
	74	y	-0.009	-0.009	0.00	No	100.00	Yes
	75	y	-0.009	-0.009	0.00	No	100.00	Yes
	76	y	-0.009	-0.009	0.00	No	100.00	Yes
	77	y	-0.009	-0.009	0.00	No	100.00	Yes
	78	y	-0.009	-0.009	0.00	No	100.00	Yes
	79	y	-0.009	-0.009	0.00	No	100.00	Yes
	81	y	-0.008	-0.008	0.00	No	100.00	Yes
	85	y	-0.008	-0.008	0.00	No	100.00	Yes
	87	y	-0.008	-0.008	0.00	No	100.00	Yes
	88	y	-0.015	-0.015	0.00	No	100.00	Yes
	89	y	-0.015	-0.015	0.00	No	100.00	Yes

90	y	-0.008	-0.008	0.00	No	100.00	Yes
94	y	-0.015	-0.015	0.00	No	100.00	Yes
95	y	-0.015	-0.015	0.00	No	100.00	Yes
96	y	-0.008	-0.008	0.00	No	100.00	Yes
97	y	-0.015	-0.015	0.00	No	100.00	Yes
98	y	-0.015	-0.015	0.00	No	100.00	Yes
99	y	-0.008	-0.008	0.00	No	100.00	Yes
110	y	-0.009	-0.009	0.00	No	100.00	Yes
113	y	-0.009	-0.009	0.00	No	100.00	Yes
116	y	-0.009	-0.009	0.00	No	100.00	Yes
119	y	-0.009	-0.009	0.00	No	100.00	Yes
122	y	-0.009	-0.009	0.00	No	100.00	Yes
125	y	-0.009	-0.009	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	36	y	-0.032	0.50	No
		y	-0.032	5.50	No
	37	y	-0.033	0.50	No
		y	-0.033	2.50	No
		y	-0.042	4.50	No
		y	-0.042	6.50	No
	38	y	-0.035	0.50	No
		y	-0.035	5.50	No
	81	y	-0.029	2.00	No
	85	y	-0.029	2.00	No
	87	y	-0.029	2.00	No
	90	y	-0.06	2.00	No
		y	-0.068	2.00	No
		y	-0.068	4.50	No
		y	-0.06	4.50	No
	96	y	-0.06	2.00	No
		y	-0.068	2.00	No
		y	-0.068	4.50	No
		y	-0.06	4.50	No
	99	y	-0.06	2.00	No
		y	-0.068	2.00	No
		y	-0.068	4.50	No
		y	-0.06	4.50	No
	110	y	-0.033	0.50	No
		y	-0.033	2.50	No
		y	-0.042	4.50	No
		y	-0.042	6.50	No
	113	y	-0.032	0.50	No
		y	-0.032	5.50	No
	116	y	-0.035	0.50	No
		y	-0.035	5.50	No
	119	y	-0.033	0.50	No

		y	-0.033	2.50	No
		y	-0.042	4.50	No
		y	-0.042	6.50	No
	122	y	-0.032	0.50	No
		y	-0.032	5.50	No
	125	y	-0.035	0.50	No
		y	-0.035	5.50	No
W0	36	z	-0.224	0.50	No
		z	-0.224	5.50	No
	37	z	-0.074	0.50	No
		z	-0.074	2.50	No
		z	-0.072	4.50	No
		z	-0.072	6.50	No
	38	z	-0.224	0.50	No
		z	-0.224	5.50	No
	81	z	-0.055	2.00	No
	85	z	-0.055	2.00	No
	87	z	-0.055	2.00	No
	90	z	-0.044	2.00	No
		z	-0.035	2.00	No
		z	-0.035	4.50	No
		z	-0.059	4.50	No
	96	z	-0.073	2.00	No
		z	-0.091	4.50	No
	99	z	-0.073	2.00	No
		z	-0.091	4.50	No
	110	z	-0.051	0.50	No
		z	-0.051	2.50	No
		z	-0.054	4.50	No
		z	-0.054	6.50	No
	113	z	-0.13	0.50	No
		z	-0.13	5.50	No
	116	z	-0.13	0.50	No
		z	-0.13	5.50	No
	119	z	-0.051	0.50	No
		z	-0.051	2.50	No
		z	-0.054	4.50	No
		z	-0.054	6.50	No
	122	z	-0.13	0.50	No
		z	-0.13	5.50	No
	125	z	-0.13	0.50	No
		z	-0.13	5.50	No
W30	36	x	-0.099	0.50	No
		x	-0.099	5.50	No
	37	x	-0.043	0.50	No
		x	-0.043	2.50	No
		x	-0.048	4.50	No
		x	-0.048	6.50	No
	38	x	-0.099	0.50	No
		x	-0.099	5.50	No
	81	x	-0.055	2.00	No
	85	x	-0.055	2.00	No
	87	x	-0.055	2.00	No
	90	x	-0.078	2.00	No
		x	-0.096	4.50	No
	96	x	-0.049	2.00	No
		x	-0.063	4.50	No
	99	x	-0.049	2.00	No
		x	-0.063	4.50	No
	110	x	-0.066	0.50	No

		x	-0.066	2.50	No
		x	-0.066	4.50	No
		x	-0.066	6.50	No
	113	x	-0.192	0.50	No
		x	-0.192	5.50	No
	116	x	-0.192	0.50	No
		x	-0.192	5.50	No
	119	x	-0.066	0.50	No
		x	-0.066	2.50	No
		x	-0.066	4.50	No
		x	-0.066	6.50	No
	122	x	-0.192	0.50	No
		x	-0.192	5.50	No
	125	x	-0.192	0.50	No
		x	-0.192	5.50	No
Di	36	y	-0.146	0.50	No
		y	-0.146	5.50	No
	37	y	-0.054	0.50	No
		y	-0.054	2.50	No
		y	-0.055	4.50	No
		y	-0.055	6.50	No
	38	y	-0.146	0.50	No
		y	-0.146	5.50	No
	81	y	-0.064	2.00	No
	85	y	-0.064	2.00	No
	87	y	-0.064	2.00	No
	90	y	-0.054	2.00	No
		y	-0.055	2.00	No
		y	-0.055	4.50	No
		y	-0.073	4.50	No
	96	y	-0.054	2.00	No
		y	-0.055	2.00	No
		y	-0.055	4.50	No
		y	-0.073	4.50	No
	99	y	-0.054	2.00	No
		y	-0.055	2.00	No
		y	-0.055	4.50	No
		y	-0.073	4.50	No
	110	y	-0.054	0.50	No
		y	-0.054	2.50	No
		y	-0.055	4.50	No
		y	-0.055	6.50	No
	113	y	-0.146	0.50	No
		y	-0.146	5.50	No
	116	y	-0.146	0.50	No
		y	-0.146	5.50	No
	119	y	-0.054	0.50	No
		y	-0.054	2.50	No
		y	-0.055	4.50	No
		y	-0.055	6.50	No
	122	y	-0.146	0.50	No
		y	-0.146	5.50	No
	125	y	-0.146	0.50	No
		y	-0.146	5.50	No
Wi0	36	z	-0.047	0.50	No
		z	-0.047	5.50	No
	37	z	-0.017	0.50	No
		z	-0.017	2.50	No
		z	-0.017	4.50	No
		z	-0.017	6.50	No

	38	z	-0.047	0.50	No
		z	-0.047	5.50	No
	81	z	-0.014	2.00	No
	85	z	-0.014	2.00	No
	87	z	-0.014	2.00	No
	90	z	-0.013	2.00	No
		z	-0.011	2.00	No
		z	-0.011	4.50	No
		z	-0.017	4.50	No
	96	z	-0.018	2.00	No
		z	-0.023	4.50	No
	99	z	-0.018	2.00	No
		z	-0.023	4.50	No
	110	z	-0.013	0.50	No
		z	-0.013	2.50	No
		z	-0.013	4.50	No
		z	-0.013	6.50	No
	113	z	-0.03	0.50	No
		z	-0.03	5.50	No
	116	z	-0.03	0.50	No
		z	-0.03	5.50	No
	119	z	-0.013	0.50	No
		z	-0.013	2.50	No
		z	-0.013	4.50	No
		z	-0.013	6.50	No
	122	z	-0.03	0.50	No
		z	-0.03	5.50	No
	125	z	-0.03	0.50	No
		z	-0.03	5.50	No
Wi30	36	x	-0.025	0.50	No
		x	-0.025	5.50	No
	37	x	-0.011	0.50	No
		x	-0.011	2.50	No
		x	-0.012	4.50	No
		x	-0.012	6.50	No
	38	x	-0.025	0.50	No
		x	-0.025	5.50	No
	81	x	-0.014	2.00	No
	85	x	-0.014	2.00	No
	87	x	-0.014	2.00	No
	90	x	-0.02	2.00	No
		x	-0.024	4.50	No
	96	x	-0.012	2.00	No
		x	-0.016	4.50	No
	99	x	-0.012	2.00	No
		x	-0.016	4.50	No
	110	x	-0.016	0.50	No
		x	-0.016	2.50	No
		x	-0.016	4.50	No
		x	-0.016	6.50	No
	113	x	-0.041	0.50	No
		x	-0.041	5.50	No
	116	x	-0.041	0.50	No
		x	-0.041	5.50	No
	119	x	-0.016	0.50	No
		x	-0.016	2.50	No
		x	-0.016	4.50	No
		x	-0.016	6.50	No
	122	x	-0.041	0.50	No
		x	-0.041	5.50	No

	125	x	-0.041	0.50	No
		x	-0.041	5.50	No
WL0	36	z	-0.014	0.50	No
		z	-0.014	5.50	No
	37	z	-0.005	0.50	No
		z	-0.005	2.50	No
		z	-0.005	4.50	No
		z	-0.005	6.50	No
	38	z	-0.014	0.50	No
		z	-0.014	5.50	No
	81	z	-0.003	2.00	No
	85	z	-0.003	2.00	No
	87	z	-0.003	2.00	No
	90	z	-0.003	2.00	No
		z	-0.002	2.00	No
		z	-0.002	4.50	No
		z	-0.004	4.50	No
	96	z	-0.005	2.00	No
		z	-0.006	4.50	No
	99	z	-0.005	2.00	No
		z	-0.006	4.50	No
	110	z	-0.003	0.50	No
		z	-0.003	2.50	No
		z	-0.004	4.50	No
		z	-0.004	6.50	No
	113	z	-0.008	0.50	No
		z	-0.008	5.50	No
	116	z	-0.008	0.50	No
		z	-0.008	5.50	No
	119	z	-0.003	0.50	No
		z	-0.003	2.50	No
		z	-0.004	4.50	No
		z	-0.004	6.50	No
	122	z	-0.008	0.50	No
		z	-0.008	5.50	No
	125	z	-0.008	0.50	No
		z	-0.008	5.50	No
WL30	36	x	-0.006	0.50	No
		x	-0.006	5.50	No
	37	x	-0.003	0.50	No
		x	-0.003	2.50	No
		x	-0.003	4.50	No
		x	-0.003	6.50	No
	38	x	-0.006	0.50	No
		x	-0.006	5.50	No
	81	x	-0.003	2.00	No
	85	x	-0.003	2.00	No
	87	x	-0.003	2.00	No
	90	x	-0.005	2.00	No
		x	-0.006	4.50	No
	96	x	-0.003	2.00	No
		x	-0.004	4.50	No
	99	x	-0.003	2.00	No
		x	-0.004	4.50	No
	110	x	-0.004	0.50	No
		x	-0.004	2.50	No
		x	-0.004	4.50	No
		x	-0.004	6.50	No
	113	x	-0.012	0.50	No
		x	-0.012	5.50	No

	116	x	-0.012	0.50	No
		x	-0.012	5.50	No
	119	x	-0.004	0.50	No
		x	-0.004	2.50	No
		x	-0.004	4.50	No
		x	-0.004	6.50	No
	122	x	-0.012	0.50	No
		x	-0.012	5.50	No
	125	x	-0.012	0.50	No
		x	-0.012	5.50	No
LL1	35	y	-0.25	50.00	Yes
LL2	35	y	-0.25	0.00	Yes
LLa1	39	y	-0.50	50.00	Yes
LLa2	38	y	-0.50	50.00	Yes
LLa3	37	y	-0.50	50.00	Yes
LLa4	36	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	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 End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load on Antenna 4	No	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

Current Date: 1/15/2024 3:00 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**7**	LC2 at 48.44%	0.15	OK	
		8	LC1 at 50.00%	**0.16**	**OK**	
		9	LC4 at 50.00%	0.15	OK	
	HSS_SQR 4X4X3_16	**88**	LC3 at 100.00%	0.02	OK	
		89	LC1 at 100.00%	**0.02**	**OK**	
		94	LC4 at 100.00%	0.02	OK	
		95	LC2 at 100.00%	0.02	OK	
		97	LC2 at 100.00%	0.02	OK	
		98	LC4 at 100.00%	0.02	OK	
	L 2-1_2X2-1_2X3_16	**41**	LC4 at 62.50%	0.01	OK	
		43	LC5 at 50.00%	**0.02**	**OK**	
		45	LC2 at 50.00%	0.01	OK	
	L 2X2X1_4	**13**	LC2 at 100.00%	0.18	OK	
		14	LC1 at 100.00%	0.20	OK	
		15	LC4 at 100.00%	0.20	OK	

	16	LC2 at 0.00%	0.20	OK
	17	LC1 at 0.00%	**0.21**	**OK**
	18	LC3 at 0.00%	0.19	OK
PIPE 2-1_2x0.203	**36**	LC3 at 20.83%	0.26	OK
	37	LC2 at 91.67%	0.14	OK
	38	LC3 at 20.83%	0.23	OK
	39	LC3 at 91.67%	0.15	OK
	40	LC1 at 77.68%	0.59	OK
	42	LC3 at 77.68%	0.53	OK
	44	LC2 at 77.68%	**0.60**	**OK**
	60	LC2 at 91.67%	0.29	OK
	72	LC1 at 91.67%	0.22	OK
	74	LC3 at 0.00%	0.26	OK
	75	LC3 at 0.00%	0.27	OK
	76	LC2 at 0.00%	0.20	OK
	77	LC4 at 0.00%	0.20	OK
	78	LC4 at 0.00%	0.23	OK
	79	LC2 at 0.00%	0.25	OK
	110	LC4 at 91.67%	0.25	OK
	113	LC4 at 91.67%	0.27	OK
	116	LC1 at 91.67%	0.18	OK
	119	LC1 at 91.67%	0.23	OK
	122	LC1 at 91.67%	0.27	OK
	125	LC2 at 20.83%	0.24	OK
PIPE 2x0.154	**81**	LC2 at 34.38%	0.06	OK
	85	LC3 at 34.38%	0.08	OK
	87	LC3 at 34.38%	0.08	OK
	90	LC3 at 8.33%	**0.15**	**OK**
	96	LC3 at 33.33%	0.13	OK
	99	LC3 at 33.33%	0.13	OK
PIPE 3x0.216	**2**	LC2 at 56.25%	0.21	OK
	3	LC4 at 57.14%	0.23	OK
	4	LC2 at 59.38%	0.31	OK
	5	LC1 at 59.38%	0.32	OK
	6	LC3 at 59.38%	**0.33**	**OK**
	35	LC3 at 57.14%	0.22	OK
PL 6x3/8	**10**	LC2 at 46.88%	0.21	OK
	11	LC1 at 50.00%	**0.23**	**OK**
	12	LC4 at 46.88%	0.20	OK

RAM® Elements
CONNECT Edition

Current Date: 1/15/2024 3:00 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
1	0.00	-4.00	0.00	0
3	0.596	-4.00	-8.7157	0
4	7.846	-4.00	3.8417	0
9	-7.846	-4.00	3.8417	0
10	-0.596	-4.00	-8.7157	0
12	7.25	-4.00	4.874	0
13	-7.25	-4.00	4.874	0
14	7.548	-4.00	4.3578	0
15	1.7716	-4.00	1.0228	0
18	-7.548	-4.00	4.3578	0
19	-1.7716	-4.00	1.0228	0
20	0.00	-4.00	-8.7157	0
21	0.00	-4.00	-2.0457	0
22	2.846	-4.00	-4.8186	0
23	5.596	-4.00	-0.0554	0
26	-2.846	-4.00	-4.8186	0
27	-5.596	-4.00	-0.0554	0
28	-2.75	-4.00	4.874	0
29	2.75	-4.00	4.874	0
30	5.3725	-4.00	0.3317	0
31	2.9735	-4.00	4.4869	0
34	-2.9735	-4.00	4.4869	0
35	-5.3725	-4.00	0.3317	0

36	-2.399	-4.00	-4.8186	0
37	2.399	-4.00	-4.8186	0
86	6.00	-4.00	4.874	0
87	6.00	-4.00	5.074	0
90	4.50	-4.00	4.874	0
91	4.50	-4.00	5.074	0
94	-1.00	-4.00	4.874	0
95	-1.00	-4.00	5.074	0
98	-6.00	-4.00	4.874	0
99	-6.00	-4.00	5.074	0
100	6.00	5.25	5.074	0
101	4.50	5.00	5.074	0
102	-1.00	5.00	5.074	0
103	-6.00	5.00	5.074	0
104	6.00	-4.75	5.074	0
105	4.50	-4.75	5.074	0
106	-1.00	-4.75	5.074	0
107	-6.00	-4.75	5.074	0
108	-7.25	3.00	4.874	0
109	-7.846	3.00	3.8417	0
110	-0.596	3.00	-8.7157	0
111	0.596	3.00	-8.7157	0
112	7.25	3.00	4.874	0
113	7.846	3.00	3.8417	0
114	-1.7716	0.00	1.0228	0
115	0.00	0.00	-2.0457	0
116	1.7716	0.00	1.0228	0
117	-6.00	3.00	4.874	0
118	-6.00	3.00	5.074	0
119	-1.00	3.00	4.874	0
120	-1.00	3.00	5.074	0
121	4.50	3.00	4.874	0
122	4.50	3.00	5.074	0
123	6.00	3.00	4.874	0
124	6.00	3.00	5.074	0
143	-7.221	-4.00	2.7592	0
144	-7.3942	-4.00	2.6592	0
145	-7.3942	5.00	2.6592	0
146	-7.3942	-4.75	2.6592	0
147	-7.221	3.00	2.7592	0
148	-7.3942	3.00	2.6592	0
167	1.221	-4.00	-7.6332	0
168	1.3942	-4.00	-7.7332	0
169	1.3942	5.00	-7.7332	0
170	1.3942	-4.75	-7.7332	0
171	1.221	3.00	-7.6332	0
172	1.3942	3.00	-7.7332	0
173	6.221	3.00	1.0271	0
174	-4.00	3.00	4.874	0
175	-2.221	3.00	-5.9011	0
176	4.00	3.00	4.874	0
177	-6.221	3.00	1.0271	0
178	2.221	3.00	-5.9011	0
179	0.00	-4.00	-7.9746	0
180	6.9062	-4.00	3.9873	0
181	-6.9062	-4.00	3.9873	0
182	0.00	-4.00	-4.00	0
183	0.25	-4.00	-4.00	0
184	0.25	-5.00	-4.00	0
185	0.25	-2.00	-4.00	0

190	-3.4641	-4.00	2.00	0
191	-3.5891	-4.00	1.7835	0
192	-3.5891	-5.00	1.7835	0
193	-3.5891	-2.00	1.7835	0
194	3.4641	-4.00	2.00	0
195	3.3391	-4.00	2.2165	0
196	3.3391	-5.00	2.2165	0
197	3.3391	-2.00	2.2165	0
198	0.00	2.00	2.0457	0
199	0.00	-3.00	2.0457	0
200	0.00	2.00	2.7123	0
201	0.00	-3.00	2.7123	0
203	0.00	-3.50	2.7123	0
204	0.00	2.50	2.7123	0
211	1.7716	2.00	-1.0228	0
212	1.7716	-3.00	-1.0228	0
213	2.349	2.00	-1.3562	0
214	2.349	-3.00	-1.3562	0
215	2.349	-3.50	-1.3562	0
216	2.349	2.50	-1.3562	0
217	-1.7716	2.00	-1.0228	0
218	-1.7716	-3.00	-1.0228	0
219	-2.349	2.00	-1.3562	0
220	-2.349	-3.00	-1.3562	0
221	-2.349	-3.50	-1.3562	0
222	-2.349	2.50	-1.3562	0
241	4.721	-4.00	-1.571	0
242	4.8942	-4.00	-1.671	0
243	4.8942	5.00	-1.671	0
244	4.8942	-4.75	-1.671	0
245	4.721	3.00	-1.571	0
246	4.8942	3.00	-1.671	0
247	7.221	-4.00	2.7592	0
248	7.3942	-4.00	2.6592	0
249	7.3942	5.00	2.6592	0
250	7.3942	-4.75	2.6592	0
251	7.221	3.00	2.7592	0
252	7.3942	3.00	2.6592	0
253	1.971	-4.00	-6.3341	0
254	2.1442	-4.00	-6.4341	0
255	2.1442	5.00	-6.4341	0
256	2.1442	-4.75	-6.4341	0
257	1.971	3.00	-6.3341	0
258	2.1442	3.00	-6.4341	0
259	-3.721	-4.00	-3.303	0
260	-3.8942	-4.00	-3.403	0
261	-3.8942	5.00	-3.403	0
262	-3.8942	-4.75	-3.403	0
263	-3.721	3.00	-3.303	0
264	-3.8942	3.00	-3.403	0
265	-1.221	-4.00	-7.6332	0
266	-1.3942	-4.00	-7.7332	0
267	-1.3942	5.00	-7.7332	0
268	-1.3942	-4.75	-7.7332	0
269	-1.221	3.00	-7.6332	0
270	-1.3942	3.00	-7.7332	0
271	-6.471	-4.00	1.4601	0
272	-6.6442	-4.00	1.3601	0
273	-6.6442	5.00	1.3601	0
274	-6.6442	-4.75	1.3601	0

275	-6.471	3.00	1.4601	0
276	-6.6442	3.00	1.3601	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
15	1	1	1	0	1	0
19	1	1	1	0	1	0
21	1	1	1	0	1	0
114	1	1	1	0	0	0
115	1	1	1	0	0	0
116	1	1	1	0	0	0
179	0	1	0	0	0	0
180	0	1	0	0	0	0
181	0	1	0	0	0	0
198	1	1	1	0	1	0
199	1	1	1	0	1	0
211	1	1	1	0	1	0
212	1	1	1	0	1	0
217	1	1	1	0	1	0
218	1	1	1	0	1	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	9	10		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
3	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
4	18	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
5	20	21		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
6	14	15		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
7	28	27		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	26	22		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	23	29		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	13	9		PL 6x3/8	A36	0.00	0.00	0.00
11	10	3		PL 6x3/8	A36	0.00	0.00	0.00
12	12	4		PL 6x3/8	A36	0.00	0.00	0.00
13	34	18		L 2X2X1_4	A36	0.00	0.00	0.00
14	36	20		L 2X2X1_4	A36	0.00	0.00	0.00
15	30	14		L 2X2X1_4	A36	0.00	0.00	0.00
16	18	35		L 2X2X1_4	A36	0.00	0.00	0.00
17	20	37		L 2X2X1_4	A36	0.00	0.00	0.00
18	14	31		L 2X2X1_4	A36	0.00	0.00	0.00
35	12	13		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
36	103	107		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
37	102	106		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
38	101	105		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
39	100	104		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
40	112	108		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
41	108	109		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
42	109	110		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

43	110	111	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
44	111	113	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	112	113	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
60	145	146	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
72	169	170	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
74	115	175	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
75	115	178	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
76	116	173	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
77	114	177	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
78	114	174	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
79	116	176	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
81	184	185	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
85	192	193	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
87	196	197	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	198	200	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
89	199	201	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
90	204	203	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	211	213	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
95	212	214	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
96	216	215	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
97	217	219	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
98	218	220	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
99	222	221	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
110	243	244	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
113	249	250	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
116	255	256	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
119	261	262	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
122	267	268	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
125	273	274	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
41	180.00	0	0.00	0.00	0.00
43	180.00	0	0.00	0.00	0.00
45	90.00	0	0.00	0.00	0.00
85	0.00	2	0.50	0.00	0.866
87	0.00	2	0.50	0.00	-0.866
96	0.00	2	-0.50	0.00	-0.866
99	0.00	2	-0.50	0.00	0.866
110	0.00	2	-0.50	0.00	-0.866
113	0.00	2	-0.50	0.00	-0.866
116	0.00	2	-0.50	0.00	-0.866
119	0.00	2	-0.50	0.00	0.866
122	0.00	2	-0.50	0.00	0.866
125	0.00	2	-0.50	0.00	0.866

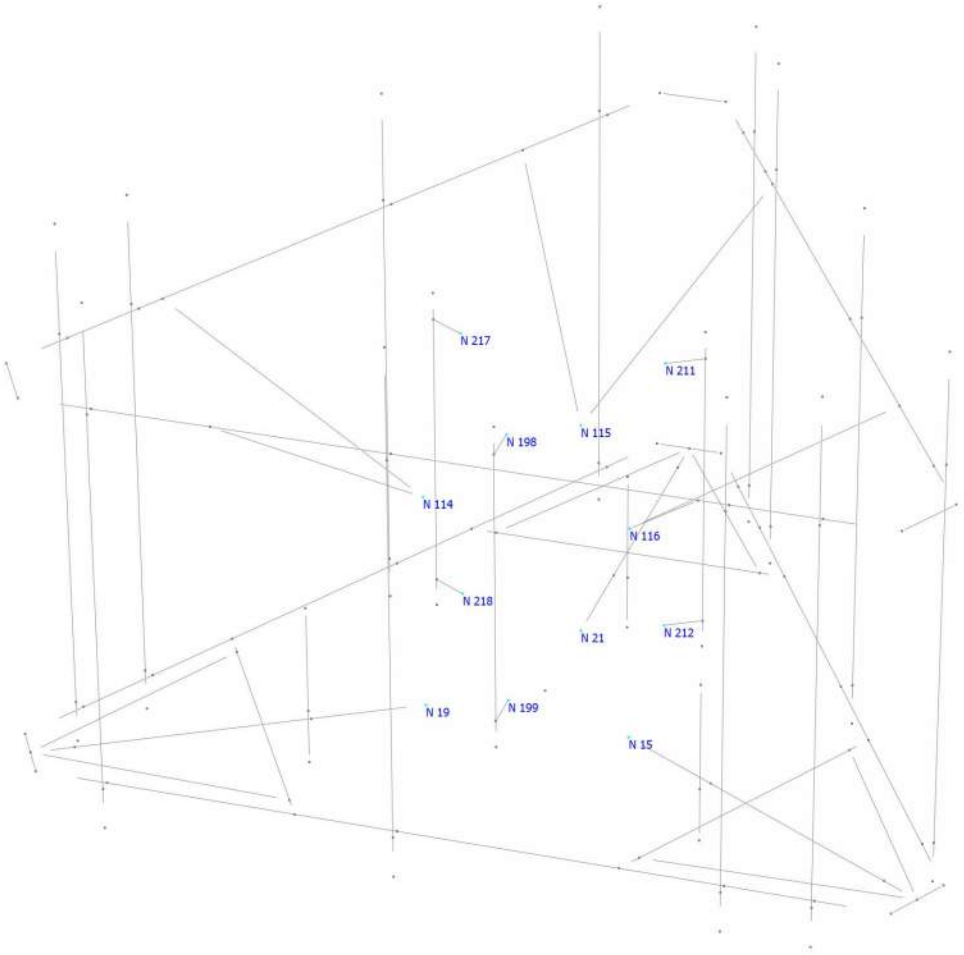
Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
13	0.00	3.00	0.00	0.00	3.00	0.00
14	0.00	3.00	0.00	0.00	3.00	0.00
15	0.00	3.00	0.00	0.00	3.00	0.00
16	0.00	3.00	0.00	0.00	3.00	0.00
17	0.00	3.00	0.00	0.00	3.00	0.00
18	0.00	3.00	0.00	0.00	3.00	0.00

Hinges

Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
41	1	1	0	0	1	1	0	0	0	0	Full
43	1	1	0	0	1	1	0	0	0	0	Full
45	1	1	0	0	1	1	0	0	0	0	Full
74	0	0	0	0	1	1	0	0	0	0	Full
75	0	0	0	0	1	1	0	0	0	0	Full
76	0	0	0	0	1	1	0	0	0	0	Full
77	0	0	0	0	1	1	0	0	0	0	Full
78	0	0	0	0	1	1	0	0	0	0	Full
79	0	0	0	0	1	1	0	0	0	0	Full

Connection Check


N 217
N 211
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N 115
N 114
N 116
N 218
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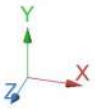
N 199
N 15


Y
X
Z

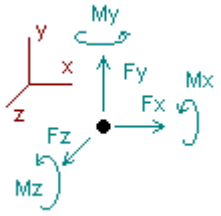
Current Date: 1/16/2024 2:29 PM
Units system: English

Analysis result

Nodes

Envelope for nodal reactions

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



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

Node		Forces						Moments					
		Fx [Kip]	lc	Fy [Kip]	lc	Fz [Kip]	lc	Mx [Kip*ft]	lc	My [Kip*ft]	lc	Mz [Kip*ft]	lc
15	Max	1.216	LC6	0.613	LC12	0.889	LC6	0.00000	LC1	0.57943	LC3	0.00000	LC1
	Min	-1.264	LC4	-0.094	LC6	-0.931	LC4	0.00000	LC1	-0.58010	LC5	0.00000	LC1
19	Max	1.260	LC2	0.614	LC10	0.824	LC5	0.00000	LC1	0.62074	LC1	0.00000	LC1
	Min	-1.205	LC8	-0.105	LC8	-0.854	LC3	0.00000	LC1	-0.60925	LC7	0.00000	LC1
21	Max	0.896	LC6	0.637	LC1	1.821	LC1	0.00000	LC1	1.47749	LC4	0.00000	LC1
	Min	-0.902	LC4	-0.132	LC7	-1.755	LC7	0.00000	LC1	-1.47020	LC6	0.00000	LC1
114	Max	1.808	LC6	1.532	LC4	1.317	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.950	LC4	-1.313	LC6	-1.249	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
115	Max	0.875	LC2	1.664	LC3	1.990	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.865	LC8	-1.449	LC5	-2.140	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
116	Max	1.831	LC2	1.438	LC2	1.261	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.700	LC8	-1.218	LC8	-1.177	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
198	Max	0.172	LC6	0.395	LC3	0.123	LC5	0.00000	LC1	0.10980	LC6	0.00000	LC1
	Min	-0.172	LC8	-0.093	LC5	-0.202	LC3	0.00000	LC1	-0.10980	LC8	0.00000	LC1
199	Max	0.215	LC2	0.395	LC1	0.242	LC1	0.00000	LC1	0.13767	LC2	0.00000	LC1
	Min	-0.215	LC4	-0.092	LC7	-0.163	LC7	0.00000	LC1	-0.13767	LC4	0.00000	LC1
211	Max	0.092	LC6	0.317	LC12	0.186	LC1	0.00000	LC1	0.09031	LC7	0.00000	LC1
	Min	-0.161	LC4	-0.006	LC6	-0.146	LC7	0.00000	LC1	-0.09030	LC5	0.00000	LC1
212	Max	0.190	LC2	0.318	LC10	0.187	LC5	0.00000	LC1	0.11354	LC3	0.00000	LC1
	Min	-0.121	LC8	-0.006	LC8	-0.226	LC3	0.00000	LC1	-0.11353	LC1	0.00000	LC1
217	Max	0.161	LC2	0.317	LC10	0.186	LC1	0.00000	LC1	0.09030	LC5	0.00000	LC1
	Min	-0.092	LC8	-0.006	LC8	-0.146	LC7	0.00000	LC1	-0.09031	LC7	0.00000	LC1
218	Max	0.121	LC6	0.318	LC12	0.187	LC5	0.00000	LC1	0.11353	LC1	0.00000	LC1
	Min	-0.190	LC4	-0.006	LC6	-0.226	LC3	0.00000	LC1	-0.11354	LC3	0.00000	LC1

Date: 1/15/2024
Project Name: WEST HARTFORD SBC CO
Project No.: CT1076
Designed By: KM **Checked By:** MSC

CHECK THRU BOLT CONNECTION CAPACITY → (WORST CASE)

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

Bolt Type = A325 5/8" Thru Bolt

Allowable Tensile Load = F_{Tall} = 13806 lbs.

Allowable Shear Load = F_{vall} = 8283 lbs.

CONNECTION PLATE CONFIGURATION (4-BOLTS)

$N_{BOLT\ ROWS}$	=	2	rows	d_Y	=	8	in (Min.)
N_{BOLTS}	=	2	bolts/row	d_X	=	8	in (Min.)

TENSILE FORCES

Moment in X axis:	0	lb-ft.	(See Bentley Output)
Couple Reaction from M_X:	0	lbs.	
Moment in Y axis:	1477	lb-ft.	(See Bentley Output)
Couple Reaction from M_Y:	4431	lbs.	
Reaction in Z direction:	1821	lbs.	(See Bentley Output)
Resultant per bolt:	2671	lbs.	

SHEAR FORCES

Moment in Z axis:	0	lb-ft.	(See Bentley Output)
Couple Reaction from M_Z:	0	lbs.	
Reaction in X direction:	902	lbs.	(See Bentley Output)
Reaction in Y direction:	637	lbs.	(See Bentley Output)
Resultant per bolt:	276	lbs.	

Tension Design Load /Bolts =

f_t= 2670.75 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v= 276.06 lbs. < 8283.5 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.193	+	0.033	=	0.227	<	1.0	**Therefore, OK !**

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING TOWER ON MONOPOLE: • NEW PROPOSED AT&T LOW PROFILE PLATFORM, SITEPRO-1 PART # RMQLP-4120-H10 • NEW AT&T ANTENNAS: TPA-65R-BU6DA-K (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T ANTENNAS: AIR6449 N77D (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T ANTENNAS: AIR6419 N77G (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRU: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRU: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRU: 8843 B2/B66A (PCS/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T SQUID: DC6-48-60-18-8C-EV (TOTAL OF 1) WITH (2) 6AWG DC POWER & (1) 18 FIBER LINES. • NEW AT&T (6) Y-CABLES. ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • ADD (1) 6648 + XCEDE CABLE ADD (1) 6630 AND IDLE. FINAL CONFIG. 5216 + XMU /6630+IDLE / 6648+XCEDE. • ADD (3) RECTIFIERS. ITEMS TO BE REMOVED: • EXISTING AT&T UMTS ANTENNA: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T LTE ANTENNA: AM-X-CD-16-65-00T-RET (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T LTE ANTENNA: QS66512-2(TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T RRUS: RRUS-11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T RRUS: RRUS-32 B2 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T TMA: LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6). • EXISTING AT&T COAX: 7/8" (TYP. OF 2 PER SECTOR, TOTAL OF 6). ITEMS TO REMAIN: • (3) RRU'S, (2) SURGE ARRESTOR, (6) COAX CABLES, (4) DC POWER & (2) FIBER
RFDS:	FINAL APPROVED V4 RFDS 2/22/2022
SITE ADDRESS:	125 SOUTH MAIN STREET WEST HARTFORD, CT 06107
LATITUDE:	41.7534439° N, 41° 45' 12.39" N
LONGITUDE:	-72.7444439° W, 72° 44' 39.99" W
TYPE OF SITE:	MONOPOLE / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	104'-0"±
RAD CENTER:	107'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

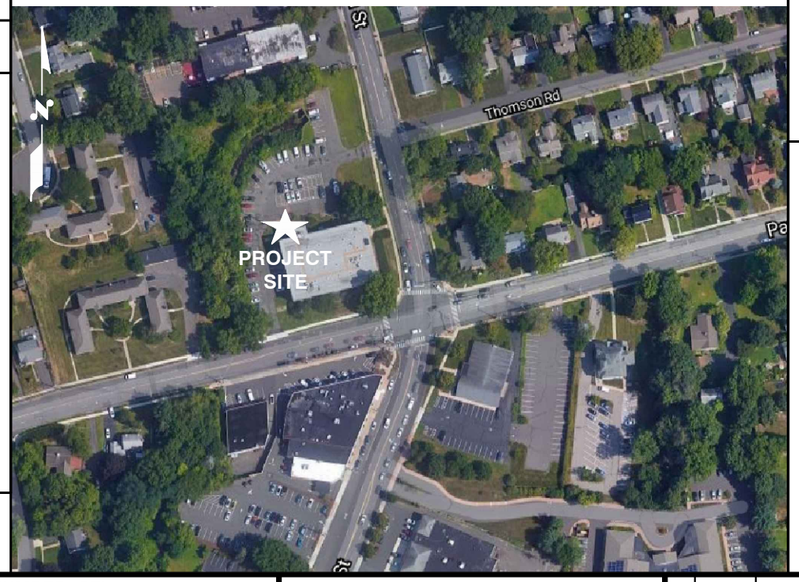
SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
A-1	COMPOUND & EQUIPMENT PLAN	2
A-2	ANTENNA PLANS & ELEVATION	2
A-3	DETAILS	2
A-4	DETAILS	2
G-1	GROUNDING DETAILS	2
RF-1	RF PLUMBING DIAGRAM	2

SITE NUMBER: CTL01076
SITE NAME: WEST HARTFORD SBC CO
FA CODE: 10035052
PACE ID: MRCTB052267, MRCTB050860, MRCTB050827, MRCTB051294, MRCTB050887, MRCTB050947, MRCTB051030, MRCTB051432
PROJECT: 5G NR 1SR CBAND, BBU ADD, 4TX4RX, 5G NR 1SR, LTE 4C, LTE 5C SOFTWARE, 5G NR RADIO

VICINITY MAP

DIRECTIONS TO SITE: (FROM AT&T ADDRESS)

HEAD NORTHWEST, TURN LEFT TOWARD MYRICK ST, TURN RIGHT ONTO MYRICK ST, MAKE A U-TURN TURN LEFT AT THE 1ST CROSS STREET ONTO ME-3 E/BAR HARBOR RD/HIGH ST, CONTINUE TO FOLLOW ME-3 E/BAR HARBOR RD, KEEP RIGHT TO CONTINUE ON ME-102 S/ME-198 S, TURN LEFT ONTO ME-198 S/ME-3 W, TURN LEFT ONTO CEMETERY RD, TURN RIGHT, WEST HARTFORD, CT 06107



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: CTL01076
SITE NAME: WEST HARTFORD SBC CO

125 SOUTH MAIN STREET
WEST HARTFORD, CT 06107
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	03/18/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
1	03/10/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
0	01/24/22	ISSUED FOR REVIEW	VA	AT	DPH

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

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

AT&T
TITLE SHEET
5G NR 1SR CBAND, BBU ADD, 4TX4RX, 5G NR 1SR, LTE 4C, LTE 5C SOFTWARE, 5G NR RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL01076	T-1	2

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 CL	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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

SITE NUMBER: CTL01076
SITE NAME: WEST HARTFORD SBC CO

125 SOUTH MAIN STREET
WEST HARTFORD, CT 06107
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	03/18/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
1	03/10/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
0	01/24/22	ISSUED FOR REVIEW	VA	AT	DPH

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

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

AT&T
GENERAL NOTES
5G NR 1SR CBAND, BBU ADD, 4TX4RX, 5G NR 1SR, LTE 4C, LTE 5C SOFTWARE, 5G NR RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL01076	GN-1	2

NOTE:

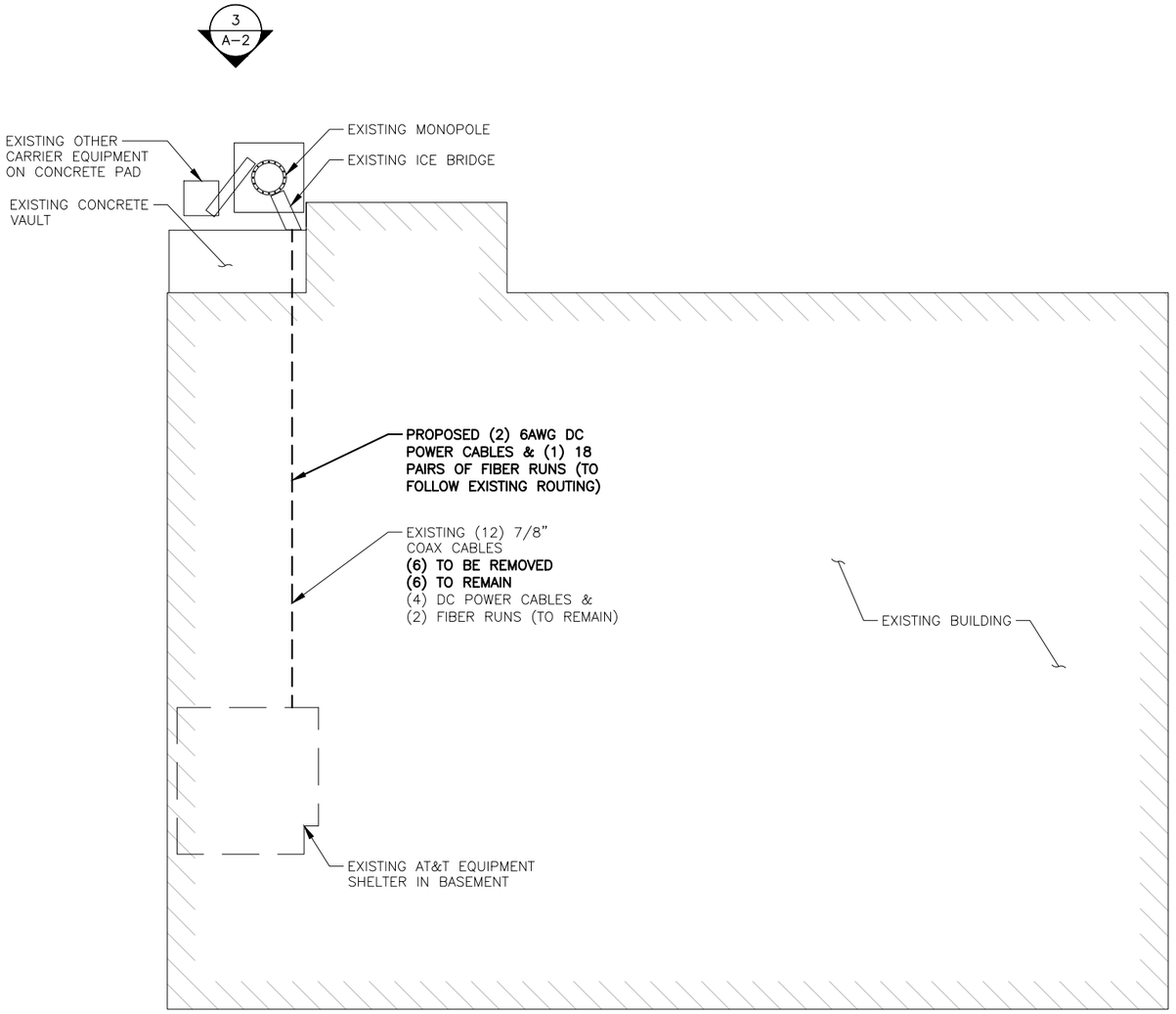
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: MARCH 09, 2022 (REV. 1)

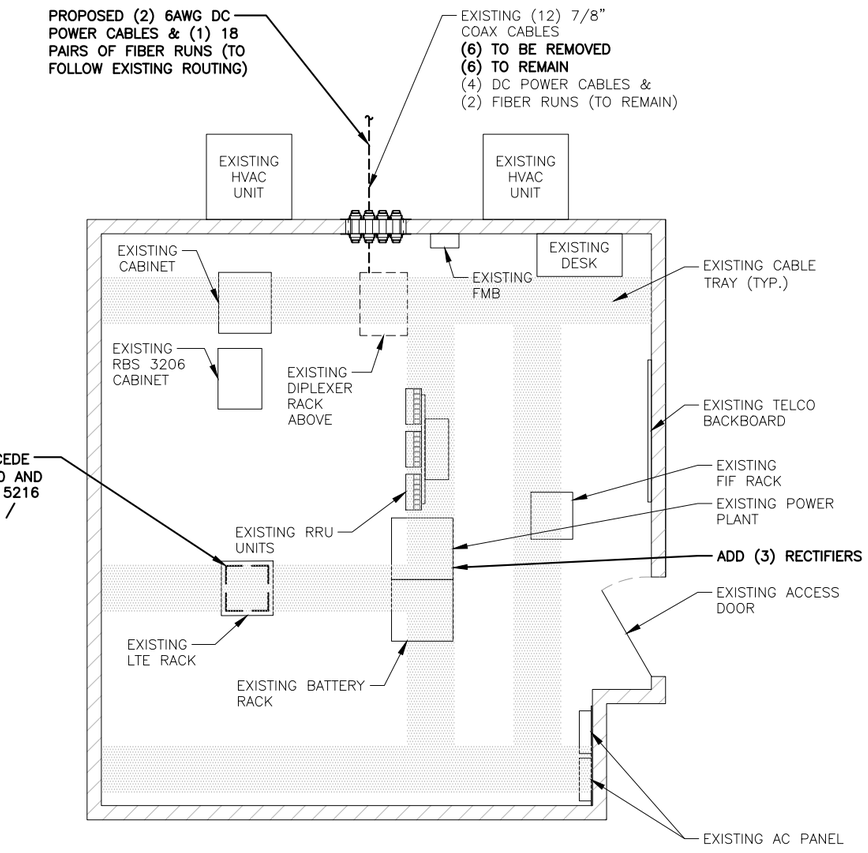
NOTE:

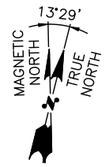
REFER TO FINAL APPROVED V4 RFDS 2/22/2022

NOTE:

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

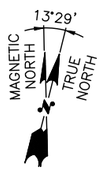






COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

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

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SMARTLINK
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL01076
SITE NAME: WEST HARTFORD SBC CO

125 SOUTH MAIN STREET
WEST HARTFORD, CT 06107
HARTFORD COUNTY

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

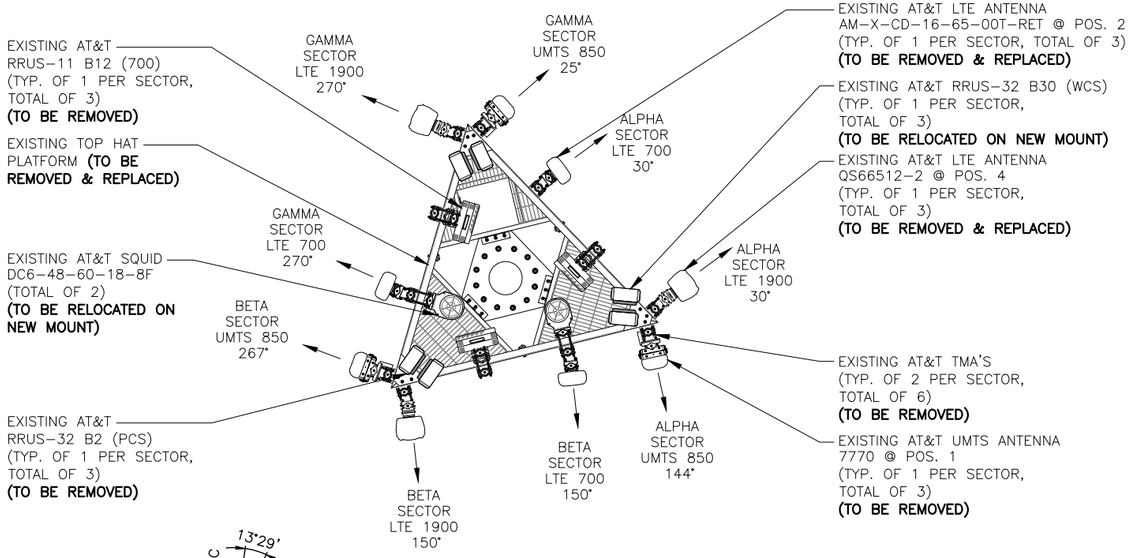
NO.	DATE	REVISIONS	BY	CHK	APP'D
2	03/18/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
1	03/10/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
0	01/24/22	ISSUED FOR REVIEW	VA	AT	DPH

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

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

AT&T
COMPOUND & EQUIPMENT PLANS
5G NR 1SR CBAND, BBU ADD, 4TX4RX, 5G NR 4CR, LTE 4C, LTE 5C SOFTWARE, 5G NR RADIO

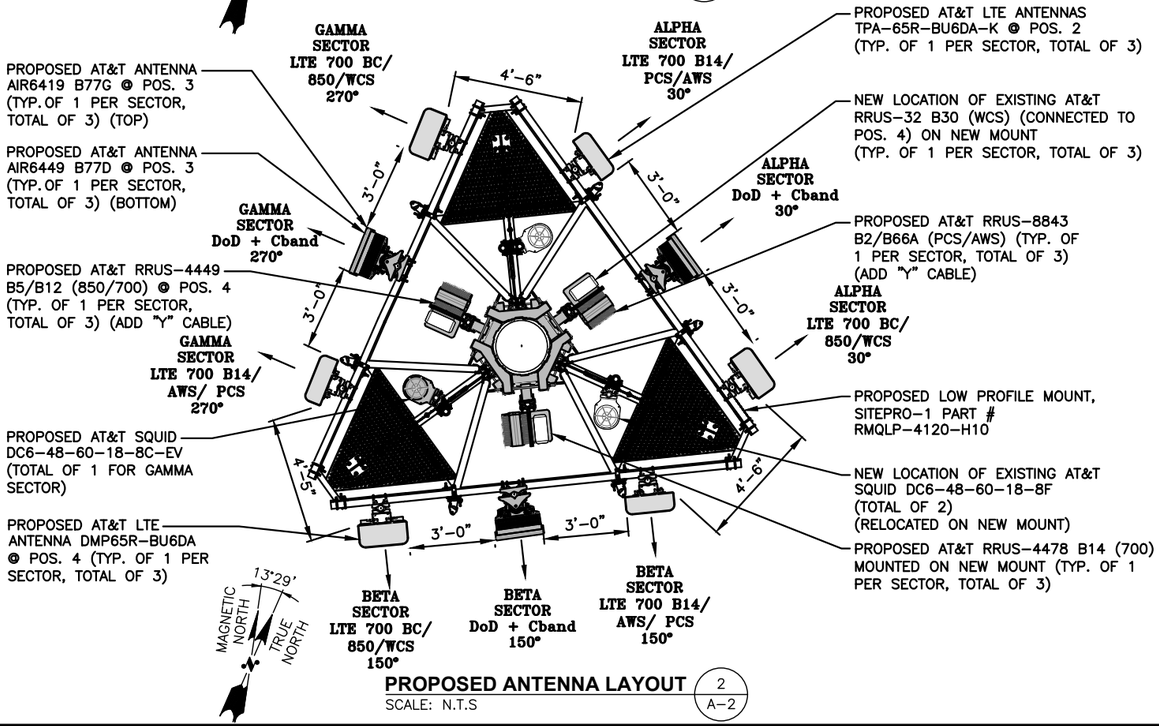
SITE NUMBER	DRAWING NUMBER	REV
CTL01076	A-1	2



EXISTING ANTENNA LAYOUT

SCALE: N.T.S

(1 / A-2)



PROPOSED ANTENNA LAYOUT

SCALE: N.T.S

(2 / A-2)

NOTE:

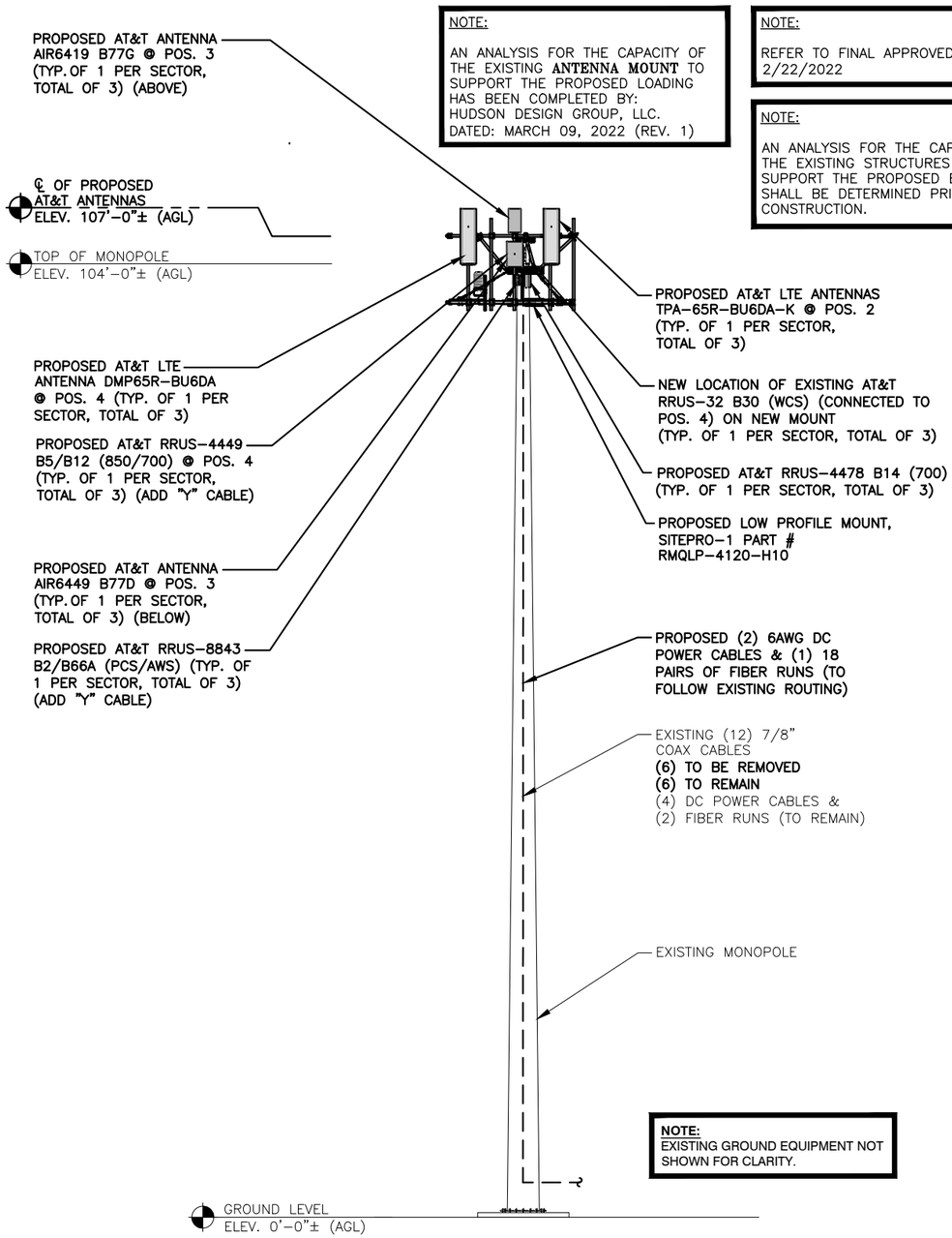
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: MARCH 09, 2022 (REV. 1)

NOTE:

REFER TO FINAL APPROVED V4 RFDS 2/22/2022

NOTE:

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



NOTE:
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

ELEVATION

22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

(3 / A-2)

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

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STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24128
LICENSED PROFESSIONAL ENGINEER

AT&T
ANTENNA LAYOUTS & ELEVATION
5G NR 1SR CBAND, BBU ADD, 4TX4RX, 5G NR 1SR, LTE 4C, LTE 5C SOFTWARE, 5G NR RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL01076	A-2	2

ANTENNA SCHEDULE

FINAL APPROVED V4 RFDS 2/22/2022

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	–	–	–	–	–	–	–	–	–	(2)7/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	PROPOSED	LTE 700 B14/ PCS/AWS	TPA-65R-BU6DA-K	71.2X20.7X7.7	107'-0"±	30°	–	(P)(1)RRUS-8843 B2/B66A (PCS/AWS) (P)(1)RRUS-4478 B14 (700)	14.9"x13.2"x10.9" 18.1"X13.4"X8.3"	(P)(1) Y CABLE (E)(2) DC POWER & (1) FIBER	
A3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1X16.1X7.3 30.4X15.9X8.1	107'-0"±	30°	–	–	–	–	
A4	PROPOSED	LTE 700 BC/ 850/WCS	DMP65R-BU6DA	71.2X20.7X7.7	107'-0"±	30°	–	(P)(1)RRUS-4449 B5/B12 (850/700) (E)(1)RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(P)(1) Y CABLE	
B1	–	–	–	–	–	–	–	–	–	(2)7/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
B2	PROPOSED	LTE 700 B14/ PCS/AWS	TPA-65R-BU6DA-K	71.2X20.7X7.7	107'-0"±	150°	–	(P)(1)RRUS-8843 B2/B66A (PCS/AWS) (P)(1)RRUS-4478 B14 (700)	14.9"x13.2"x10.9" 18.1"X13.4"X8.3"	(P)(1) Y CABLE (E)(2) DC POWER & (1) FIBER	
B3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1X16.1X7.3 30.4X15.9X8.1	107'-0"±	150°	–	–	–	–	
B4	PROPOSED	LTE 700 BC/ 850/WCS	DMP65R-BU6DA	71.2X20.7X7.7	107'-0"±	150°	–	(P)(1)RRUS-4449 B5/B12 (850/700) (E)(1)RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(P)(1) Y CABLE	
C1	–	–	–	–	–	–	–	–	–	(2)7/8 COAX	(P) (1) RAYCAP DC6-48-60-18-8C-EV
C2	PROPOSED	LTE 700 B14/ PCS/AWS	TPA-65R-BU6DA-K	71.2X20.7X7.7	107'-0"±	270°	–	(P)(1)RRUS-8843 B2/B66A (PCS/AWS) (P)(1)RRUS-4478 B14 (700)	14.9"x13.2"x10.9" 18.1"X13.4"X8.3"	(P)(2) 6AWG DC TRUNKS & (1) 18 PAIR FIBER (APPROX. LENGTH=210'±) (P)(1) Y CABLE	
C3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1X16.1X7.3 30.4X15.9X8.1	107'-0"±	270°	–	–	–	–	
C4	PROPOSED	LTE 700 BC/ 850/WCS	DMP65R-BU6DA	71.2X20.7X7.7	107'-0"±	270°	–	(P)(1)RRUS-4449 B5/B12 (850/700) (E)(1)RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(P)(1) Y CABLE	

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(P)	RRUS-4449 B5/B12 (850/700)	17.9"x13.2"x10.4"
3(P)	RRUS-32 B30 (WCS)	18.1"X13.4"X8.3"
3(P)	RRUS-8843 B2/B66A (PCS/AWS)	14.9"x13.2"x10.9"
3(E)	RRUS-32 B30 (WCS)	27.2"X12.1X7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

REFER TO FINAL APPROVED V4 RFDS 2/22/2022

NOTE:

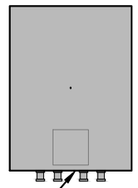
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

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 09, 2022 (REV. 1)

NOTE:

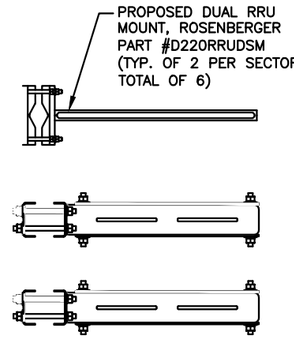
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



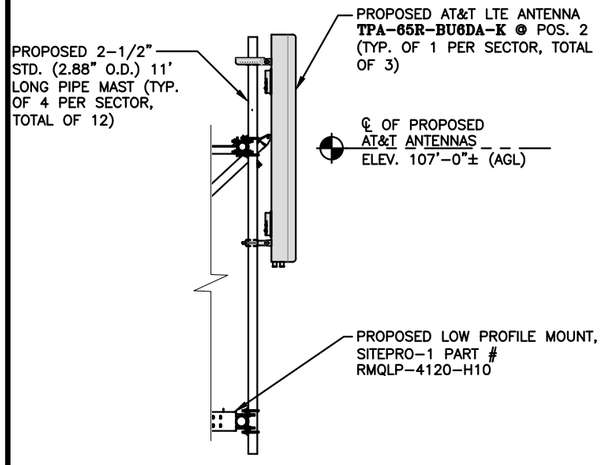
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

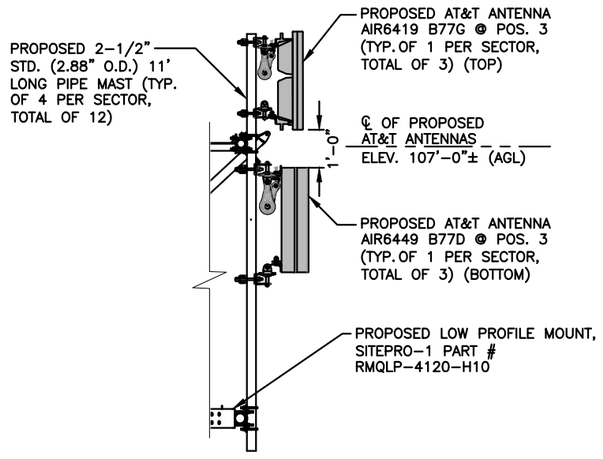
PROPOSED RRUS DETAIL (2 / A-3)
SCALE: N.T.S



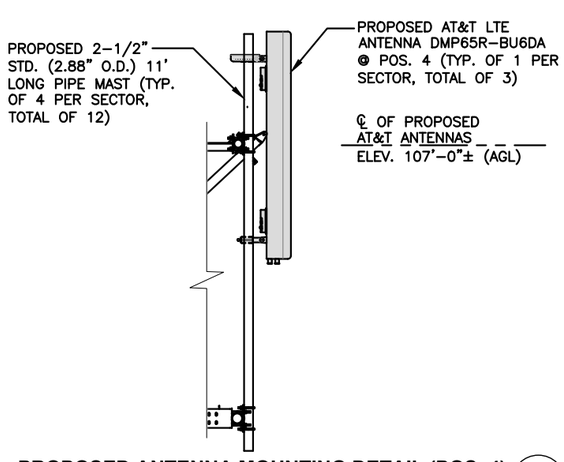
FINAL ANTENNA CONFIGURATION (1 / A-3)
SCALE: N.T.S



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

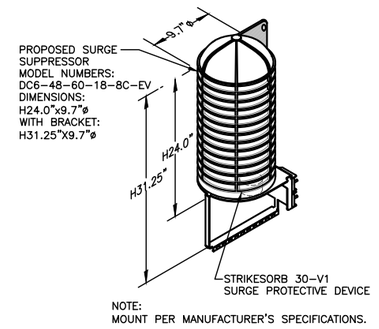


PROPOSED ANTENNAS MOUNTING DETAIL (POS. 3) (5 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED ANTENNA MOUNTING DETAIL (POS. 4) (6 / A-3)
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 (3 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (7 / A-3)
SCALE: N.T.S

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

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1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL01076
SITE NAME: WEST HARTFORD SBC CO

125 SOUTH MAIN STREET
WEST HARTFORD, CT 06107
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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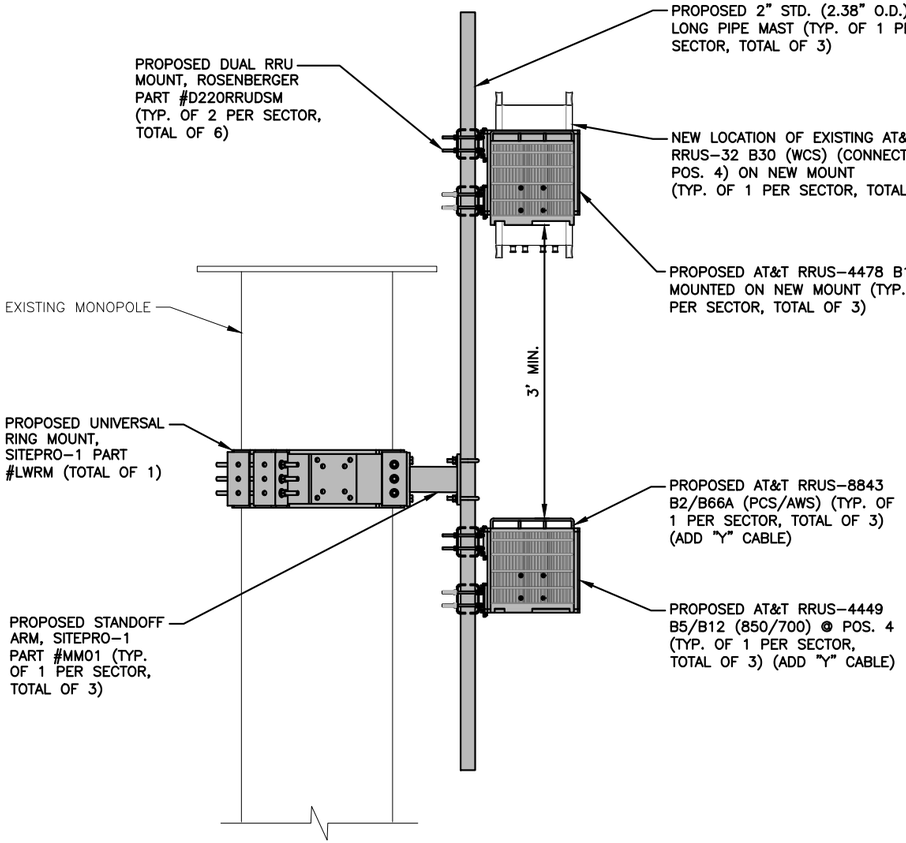
0	01/24/22	ISSUED FOR REVIEW	MB	AT	DPH

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

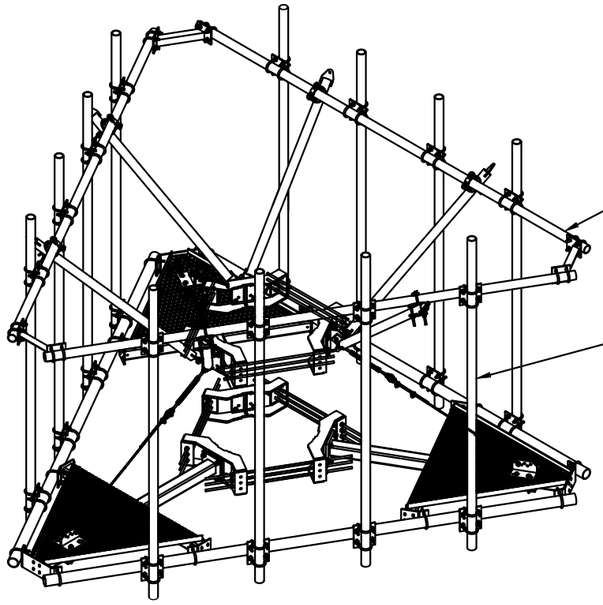
STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T
DETAILS
5G NR 1SR CBAND, BBU ADD, 4TX4RX, 5G NR MSR, LTE 4C, LTE 5C SOFTWARE, 5G NR RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL01076	A-3	2



PROPOSED RRH MOUNTING DETAIL (1 / A-4)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"



14'-6" LOW PROFILE PLATFORM (RMQLP-4120-H10) (2 / A-4)
SCALE: N.T.S

NOTE:

REFER TO FINAL APPROVED V4 RFDS 2/22/2022

NOTE:

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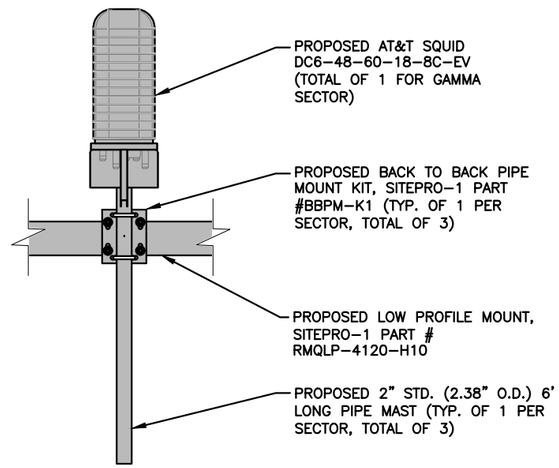
HUDSON DESIGN GROUP, LLC.
DATED: MARCH 09, 2022 (REV. 1)



PROPOSED SURGE ARRESTOR MOUNTING DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"

HUDSON Design Group LLC
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AT&T
DETAILS
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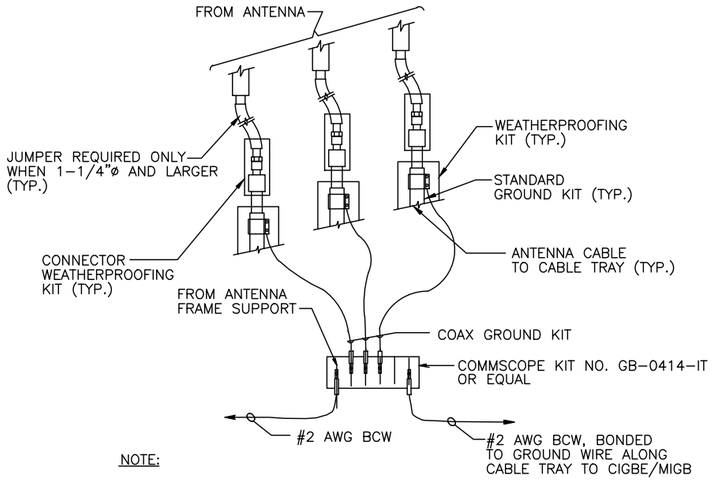
SITE NUMBER	DRAWING NUMBER	REV
CTL01076	A-4	2

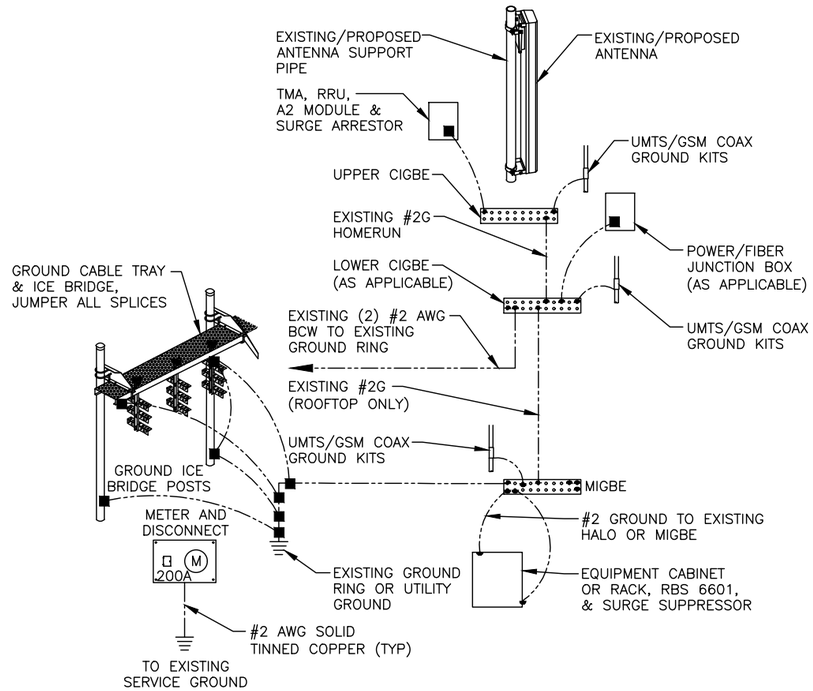


NOTE:

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

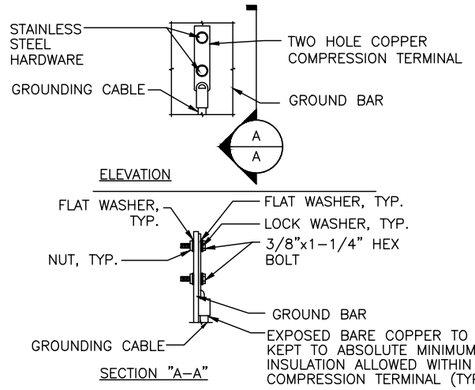
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



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 (3 / G-1)

SCALE: N.T.S

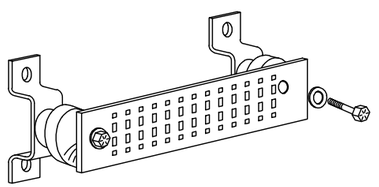
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

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DANIEL P. HAMM
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LICENSED PROFESSIONAL ENGINEER

AT&T
GROUNDING DETAILS
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SITE NUMBER	DRAWING NUMBER	REV
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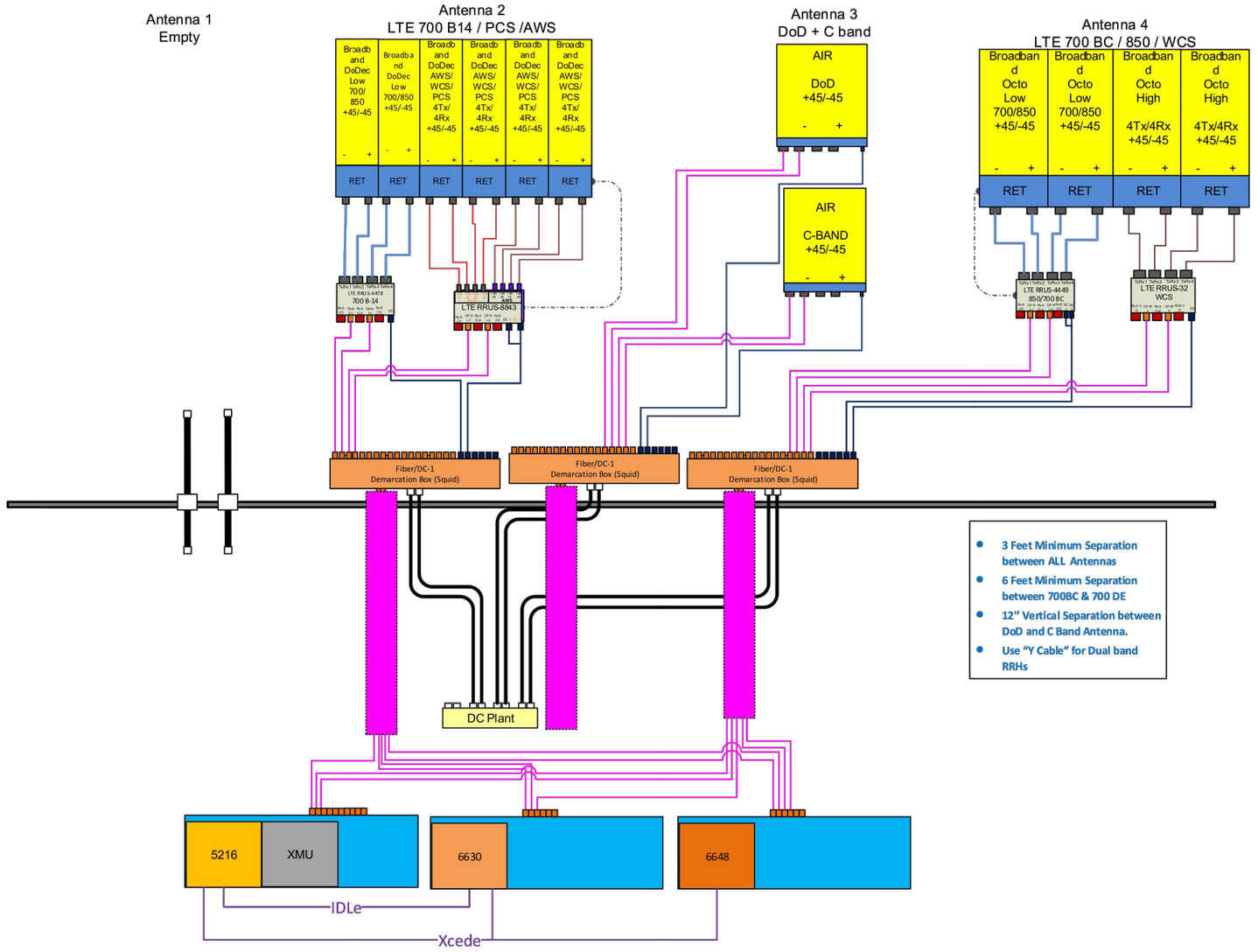
FINAL APPROVED V4 RFDS 2/22/2022



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 2/22/2022

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0	01/24/22	ISSUED FOR REVIEW	VA	AT	DPH

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

AT&T
RF PLUMBING DIAGRAM
5G NR 1SR CBAND, BBU ADD, 4TX4RX, 5G NR 1SR, LTE 4C, LTE 5C SOFTWARE, 5G NR RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL01076	RF–1	2

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Monday

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Signed for by: P.RICHARDSON

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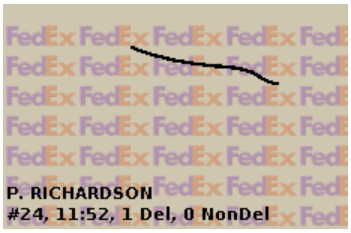
DELIVERY STATUS

Delivered



TRACKING ID

774940004093

FROM
Smartlink LLC
Carolyn Seeley
6 Jasmine Rd
Oxford, MA US 01540
9787605577

Label Created
1/25/24 10:34 AM

WE HAVE YOUR PACKAGE
WEST BOYLSTON, MA
1/26/24 3:09 PM

ON THE WAY
SOUTH WINDSOR, CT
1/29/24 4:50 AM

OUT FOR DELIVERY
SOUTH WINDSOR, CT
1/29/24 6:54 AM

50 S Main Street
WEST HARTFORD, CT US 06107
8605617500

Delivered
1/29/24 at 11:49 AM

View travel history

Want updates on this shipment? Enter your email and we will do the rest!

YOUR EMAIL SUBMIT

MORE OPTIONS

Manage Delivery

Shipment facts

Shipment overview

TRACKING NUMBER 774940004093

DELIVERED TO Shipping/Receiving

SHIPPER REFERENCE CTL01076

SHIP DATE 1/26/24

STANDARD TRANSIT 1/30/24 before 5:00 PM

ACTUAL DELIVERY 1/29/24 at 11:49 AM

Services

SERVICE FedEx 2Day

TERMS Shipper

SPECIAL HANDLING SECTION Deliver Weekday

Package details

WEIGHT 0.5 lbs / 0.23 kgs

TOTAL PIECES 1

FedEx

PACKAGING FedEx Envelope

Back to to

Travel history

Ascending

Local Scan Time

Thursday, 1/25/24

- 10:34 AM
  Shipment information sent to FedEx

Friday, 1/26/24

- 3:09 PM
  Picked up
  WEST BOYLSTON, MA
- 8:08 PM
  Left FedEx origin facility
  WEST BOYLSTON, MA
- 8:09 PM
  Shipment arriving early
  WEST BOYLSTON, MA

Saturday, 1/27/24

- 12:34 AM
  Arrived at FedEx hub
  WILLINGTON, CT

Monday, 1/29/24

- 4:48 AM
  At local FedEx facility
  SOUTH WINDSOR, CT
- 4:50 AM
  Shipment arriving early
  SOUTH WINDSOR, CT
- 6:54 AM
  On FedEx vehicle for delivery
  SOUTH WINDSOR, CT
- 11:49 AM
  Delivered
  WEST HARTFORD, CT

All (30)

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LANGUAGE

United States

FOLLOW FEDEX

FedEx®

FedEx® Tracking

DELIVERED

Monday

1/29/24 at 9:33 AM

Signed for by: M.NARDONE

Obtain proof of delivery

DELIVERY STATUS

Delivered

TRACKING ID

774754625180

FROM
Smartlink LLC
Carolyn Seeley
6 Jasmine Rd
Oxford, MA US 01540
9787605577

Label Created
1/10/24 1:23 PM

WE HAVE YOUR PACKAGE
WEST BOYLSTON, MA
1/26/24 3:09 PM

ON THE WAY
PITTSBURGH, PA
1/29/24 6:53 AM

OUT FOR DELIVERY
PITTSBURGH, PA
1/29/24 6:50 AM

DELIVERED
Everest Infastructure Partners
Town of West Hartford
2 ALLEGHENY CTR
PITTSBURGH, PA US 15212

FedEx

View travel history

Want updates on this shipment? Enter your email and we will do the rest!

YOUR EMAIL SUBMIT

MORE OPTIONS

Manage Delivery

Shipment facts

Shipment overview

TRACKING NUMBER 774754625180

DELIVERED TO Receptionist/Front Desk

SHIPPER REFERENCE CTL01076

SHIP DATE 1/26/24

STANDARD TRANSIT 1/30/24 before 10:30 AM

ACTUAL DELIVERY 1/29/24 at 9:33 AM

Services

SERVICE FedEx 2Day AM

TERMS Shipper

SPECIAL HANDLING SECTION Deliver Weekday

Package details

WEIGHT 0.5 lbs / 0.23 kgs

TOTAL PIECES 1

TOTAL SHIPMENT WEIGHT 0.5 lbs / 0.23 kgs

PACKAGING FedEx Envelope

FedEx

Travel History

Ascending

Local Scan Time

Wednesday, 1/10/24

- 1:23 PM
  Shipment information sent to FedEx

Friday, 1/26/24

- 3:09 PM
  Picked up
  WEST BOYLSTON, MA
- 3:10 PM
  Shipment arriving On-Time
  WEST BOYLSTON, MA
- 7:22 PM
  Left FedEx origin facility
  WEST BOYLSTON, MA

Saturday, 1/27/24

- 11:29 AM
  Arrived at FedEx hub
  MEMPHIS, TN

Sunday, 1/28/24

- 5:22 PM
  Departed FedEx hub
  MEMPHIS, TN
- 8:00 PM
  At destination sort facility
  MOON TOWNSHIP, PA

- 5:42 AM
  At local FedEx facility
  PITTSBURGH, PA
- 6:50 AM
  On FedEx vehicle for delivery
  PITTSBURGH, PA
- 6:53 AM
  Shipment arriving early
  PITTSBURGH, PA

9:33 AM
Delivered
PITTSBURGH, PA

↑ Back to to

All (30)

FedEx

FedEx® Tracking

DELIVERED

Tuesday

1/30/24 at 10:06 AM

Your package was released as requested and safely delivered.

Signed for by: Signature release on file

Obtain proof of delivery

DELIVERY STATUS

Delivered

TRACKING ID

774754566177

FROM
Smartlink LLC
Carolyn Seeley
6 Jasmine Rd
Oxford, MA US 01540
9787605577

Label Created
1/10/24 1:20 PM

WE HAVE YOUR PACKAGE
WEST BOYLSTON, MA
1/26/24 3:09 PM

ON THE WAY
WINDSOR LOCKS, CT
1/30/24 7:57 AM

OUT FOR DELIVERY
WINDSOR LOCKS, CT
1/30/24 9:01 AM

DELIVERED
Rick Ledwith
Town of West Hartford
50 S MAIN ST
WEST HARTFORD, CT US 06107
8605617500

Delivered
1/30/24 at 10:06 AM

YOUR EMAIL SUBMIT

MORE OPTIONS

Manage Delivery

Shipment facts

Shipment overview

TRACKING NUMBER 774754566177

SHIPPER REFERENCE CTL01076

SHIP DATE 1/26/24

STANDARD TRANSIT 1/30/24 before 10:30 AM

ACTUAL DELIVERY 1/30/24 at 10:06 AM

Services

SERVICE FedEx 2Day AM

TERMS Shipper

SPECIAL HANDLING SECTION Deliver Weekday

Package details

WEIGHT 2 lbs / 0.91 kgs

TOTAL PIECES 1

TOTAL SHIPMENT WEIGHT 2 lbs / 0.91 kgs

PACKAGING FedEx Envelope

Back to to

Travel history

Local Scan Time

Wednesday, 1/10/24

- 1:20 PM
  Shipment information sent to FedEx

Friday, 1/26/24

- 3:09 PM
  Picked up
  WEST BOYLSTON, MA
- 7:22 PM
  Left FedEx origin facility
  WEST BOYLSTON, MA

Saturday, 1/27/24

- 11:29 AM
  Arrived at FedEx hub
  MEMPHIS, TN

Sunday, 1/28/24

- 3:47 PM
  Departed FedEx hub
  MEMPHIS, TN
- 3:48 PM
  Shipment arriving On-Time
  MEMPHIS, TN
- 7:14 PM
  At destination sort facility
  EAST GRANBY, CT

Monday, 1/29/24

- 7:36 AM
  At local FedEx facility
  WINDSOR LOCKS, CT
- 8:55 AM
  At local FedEx facility
  Your package is expected to arrive on the scheduled delivery date
  WINDSOR LOCKS, CT
- 10:04 PM
  At local FedEx facility
  WINDSOR LOCKS, CT

- 7:37 AM
  At local FedEx facility
  WINDSOR LOCKS, CT

- 9:01 AM
  On FedEx vehicle for delivery
  WINDSOR LOCKS, CT

- 10:06 AM
  Delivered
  WEST HARTFORD, CT

↑ Back to to

All (30)

FedEx®

FedEx® Tracking

DELIVERED

Tuesday

1/30/24 at 10:06 AM

Your package was released as requested and safely delivered.

Signed for by: Signature release on file

Obtain proof of delivery

DELIVERY STATUS

Delivered

TRACKING ID

774754556246

FROM
Smartlink LLC
Carolyn Seeley
6 Jasmine Rd
Oxford, MA US 01540
9787605577

Label Created
1/10/24 1:20 PM

WE HAVE YOUR PACKAGE
WEST BOYLSTON, MA
1/26/24 3:09 PM

ON THE WAY
WINDSOR LOCKS, CT
1/30/24 7:24 AM

OUT FOR DELIVERY
WINDSOR LOCKS, CT
1/30/24 9:00 AM

DELIVERED
Shari Cantor
Town of West Hartford
50 S MAIN ST
WEST HARTFORD, CT US 06107
8605617500

Delivered
1/30/24 at 10:06 AM

YOUR EMAIL SUBMIT

MORE OPTIONS

Manage Delivery

Shipment facts

Shipment overview

TRACKING NUMBER 774754556246

SHIPPER REFERENCE CTL01076

SHIP DATE 1/26/24

STANDARD TRANSIT 1/30/24 before 10:30 AM

ACTUAL DELIVERY 1/30/24 at 10:06 AM

Services

SERVICE FedEx 2Day AM

TERMS Shipper

SPECIAL HANDLING SECTION Deliver Weekday

Package details

WEIGHT 2 lbs / 0.91 kgs

TOTAL PIECES 1

TOTAL SHIPMENT WEIGHT 2 lbs / 0.91 kgs

PACKAGING FedEx Envelope

Back to to

Travel history

Local Scan Time

Wednesday, 1/10/24

- 1:20 PM
  Shipment information sent to FedEx

Friday, 1/26/24

- 3:09 PM
  Picked up
  WEST BOYLSTON, MA
- 7:22 PM
  Left FedEx origin facility
  WEST BOYLSTON, MA

Saturday, 1/27/24

- 11:29 AM
  Arrived at FedEx hub
  MEMPHIS, TN

Sunday, 1/28/24

- 3:47 PM
  Departed FedEx hub
  MEMPHIS, TN
- 3:48 PM
  Shipment arriving On-Time
  MEMPHIS, TN
- 7:14 PM
  At destination sort facility
  EAST GRANBY, CT

Monday, 1/29/24

- 8:03 AM
  At local FedEx facility
  WINDSOR LOCKS, CT
- 8:04 AM
  Shipment arriving early
  WINDSOR LOCKS, CT

- 7:23 AM
  At local FedEx facility
  WINDSOR LOCKS, CT
- 7:24 AM
  Shipment arriving On-Time
  WINDSOR LOCKS, CT
- 9:00 AM
  On FedEx vehicle for delivery
  WINDSOR LOCKS, CT
- 10:06 AM
  Delivered
  WEST HARTFORD, CT

Back to to

All (30)

FedEx

FedEx® Tracking

DELIVERED

Monday

1/29/24 at 2:07 PM

Signed for by: H.JONES

Obtain proof of delivery

DELIVERY STATUS

Delivered

TRACKING ID

774754689571

FROM
Smartlink LLC
Carolyn Seeley
6 Jasmine Rd
Oxford, MA US 01540
9787605577

Label Created
1/10/24 1:26 PM

WE HAVE YOUR PACKAGE
WEST BOYLSTON, MA
1/26/24 3:09 PM

ON THE WAY
ADDISON, TX
1/29/24 1:46 PM

OUT FOR DELIVERY
ADDISON, TX
1/29/24 1:45 PM

DELIVERED
c/o Frontier Communications
Southern New England Telephone Co
4020 MARSH RIDGE RD
ADDISON, TX US 75001

FedEx

View travel history

Want updates on this shipment? Enter your email and we will do the rest!

YOUR EMAIL SUBMIT

MORE OPTIONS

Manage Delivery

Shipment facts

Shipment overview

TRACKING NUMBER 774754689571

DELIVERED TO Receptionist/Front Desk

SHIPPER REFERENCE CTL01076

SHIP DATE 1/26/24

STANDARD TRANSIT 1/30/24 before 10:30 AM

ACTUAL DELIVERY 1/29/24 at 2:07 PM

Services

SERVICE FedEx 2Day AM

TERMS Shipper

SPECIAL HANDLING SECTION Deliver Weekday

Package details

WEIGHT 2 lbs / 0.91 kgs

TOTAL PIECES 1

TOTAL SHIPMENT WEIGHT 2 lbs / 0.91 kgs

PACKAGING FedEx Envelope

FedEx

Travel History

Ascending

Local Scan Time

Wednesday, 1/10/24

- 1:26 PM
  Shipment information sent to FedEx

Friday, 1/26/24

- 3:09 PM
  Picked up
  WEST BOYLSTON, MA
- 7:22 PM
  Left FedEx origin facility
  WEST BOYLSTON, MA

Saturday, 1/27/24

- 11:29 AM
  Arrived at FedEx hub
  MEMPHIS, TN
- 11:30 AM
  Shipment arriving early
  MEMPHIS, TN

Sunday, 1/28/24

- 4:17 PM
  Departed FedEx hub
  MEMPHIS, TN

- 1:13 AM
  Arrived at FedEx hub
  FORT WORTH, TX
- 4:13 AM
  Departed FedEx hub
  FORT WORTH, TX
- 7:30 AM
  At local FedEx facility
  ADDISON, TX
- 9:57 AM
  Operational Delay
  Incorrect Address
  ADDISON, TX
- 9:58 AM
  Shipment arriving On-Time
  ADDISON, TX
- 12:10 PM
  At local FedEx facility
  ADDISON, TX
- 1:45 PM
  On FedEx vehicle for delivery
  ADDISON, TX
- 1:46 PM
  Shipment arriving early
  ADDISON, TX
- 2:07 PM
  Delivered
  ADDISON, TX

Back to to

All (30)

FedEx

FOLLOW FEDEX