July 28, 2022

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

Re: Notice of Exempt Modification – AT&T Mobility Site 13755758
AT&T Wireless Telecommunications Facility @ 880 Andrew Mountain Road, Naugatuck, CT

Dear Ms. Bachman,

AT&T is proposing modifications to a wireless telecommunications facility on an existing tower at 880 Andrew Mountain Road, Naugatuck. Enclosed please find Check Number 03 4933 in the amount of Six Hundred and Twenty Five Dollars ($625.00); an original and two (2) copies of the following documents: the CSC Exempt Mod letter; a Letter of Authorization from the tower owner; the Property Card and GIS data of the property; a set of Construction and Mount Modification Drawings; a Structural Analysis Report; an Antenna Mount Analysis Report; an EME Study Report; and Four (4) Notice Confirmations.

I will email a .pdf copy of these documents to the Council.

If you have any questions, please feel free to contact me; I can be reached at 443-677-0144 or via email at jmandrews@clinellc.com. Thank you for your kind cooperation in this matter.

Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

July 9, 2022

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

Re: Notice of Exempt Modification – AT&T Mobility Site 113755758
AT&T Wireless Telecommunications Facility @ 880 Andrew Mountain Road, Naugatuck, CT

Dear Ms. Bachman,

AT&T Mobility ("AT&T") is proposing to modify a wireless telecommunications facility on an existing eighty nine (89) foot tall monopole tower at 880 Andrew Mountain Road, in Naugatuck, CT 06770 (Latitude: 41.484453 Longitude: -73.089844). The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by Russell B. Andrew Sr.

AT&T proposes to remove twelve (12) antennas, three (3) RRH units, three (3) RET control cables and two (2) fiber cables; and install mount modifications in accordance with the enclosed reinforcement drawings, and nine (9) antennas, six (6) RRHs, two (2) squids, two (2) AWG cables, three (3) Y cables and two (2) fiber cables.

Please accept this application as notification in accordance with 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). In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the following individuals: American Tower Corporation as Tower Operator/Owner; Russell B. Andrew Sr., as Property Owner; the Honorable N. Warren "Pete" Hess III, the Mayor of the Borough of Naugatuck, and Lori Rotella, the Town Planner.

The applicant's proposal falls 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 structure. AT&T's antennas and associated lines will be installed at the existing mount height of 103' on the tower.
2. The proposed modifications will NOT require an extension of the site boundary.
3. The proposed modifications will NOT increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will NOT increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.
5. The proposed modifications will NOT cause an ineligible change or alteration in the physical or environmental characteristics of the site.

Jack Andrews. 10130 Donleigh Dr., Columbia, MD 21046 443-677-0144 jmandrews@clinellc.com
Centerline Communications • 750 W Center Street, Suite 301, W Bridgewater, MA 02379

6. The existing structure and its foundation can support the proposed loading. Please see the structural analysis enclosed herewith.

For the foregoing reasons, AT&T respectfully requests that the Council approve this request for the exempt modifications under R.C.S.A. § 16-50j-72(b)(2), for this tower located at 880 Andrew Mountain Road, Naugatuck, CT 06770.

If you have any questions, please feel free to contact me.

Sincerely,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

Enclosures:
Exhibit 1 – Property Card and GIS
Exhibit 2 – Construction and Mount Modification Drawings
Exhibit 3 – Structural Analysis Report
Exhibit 4 – Antenna Mount Analysis Report
Exhibit 5 – EME Study Report
Exhibit 6 – (4) Notice Confirmations

cc: American Tower Corporation - Tower Operator/Owner
Russell B. Andrew Sr. - Property Owner
The Honorable N. Warren "Pete" Hess III - Mayor of the Borough of Naugatuck
Lori Rotella - Town Planner/WEO

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

CENTERLINE COMMUNICATIONS LLC/ AT&T MOBILITY

I, Margaret Robinson, Vice President, US Tower Legal Division on behalf of American Tower*, owner/operator of the tower facility located at the address identified below (the "Tower Facilities"), do hereby authorize AT&T MOBILITY, CENTERLINE COMMUNICATIONS LLC, its successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment on the Tower Facility located at the above address. This installation shall not affect adjoining lands and will occur only within the area leased by American Tower.

American Tower understands that the application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by American Tower of conditions related to American Tower's installation. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit AT&T MOBILITY, CENTERLINE COMMUNICATIONS LLC to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installation of telecommunications equipment without the prior written approval of American Tower.

*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

ATC Asset #	Site Name	Project Number	Site Address
283420	STONEYBROOK RD CT	13682835	23 Stonybrook Road, Stratford, Connecticut
243036	WEST HAVEN & RT 162 CT	13682841	668 Jones Hill Road, West Haven, Connecticut
302479	Rkhl - Rocky Hill	13683394	699 West Street, Rocky Hill, Connecticut
302537	Middletown CT 3	13747862	47 Inwood Road, Rocky Hill, Connecticut
302535	Milford CT 2	13748383	185 Research Drive, Milford, Connecticut
302473	E H F R - Prestige Park	13748397	310 Prestige Park Road, East Hartford, Connecticut
302505	Wshn - West Haven	13748405	204 Burwell Street, West Haven, Connecticut
302489	Enfd - Enfield	13753208	77 Town Farm Road, Enfield, Connecticut
302524	Beacon Falls	13753210	664 Rimmon Hill Road, Seymour, Connecticut
310968	WSPT-WESTPORT REBUILD CT	13753216	180A Bayberry Lane, Westport, Connecticut
302526	Naugatuck (telephone Pole)	13753218	585 South Main St. (soc. Club), Naugatuck, Connecticut
310972	WATERFORD REBUILD CT	13753547	15 Miner Lane, Waterford, Connecticut
302538	Parsonage Hill Aka Wallin	13753549	922 Northrop Road, Wallingford, Connecticut
370624	Mankes Silo	13754283	1338 Highland Ave, Cheshire, Connecticut

AMERICAN TOWER®
CORPORATION

88017	SHELTON-TRUMBULL	13755484	14 OXFORD DRIVE/BOOTH HILL RD, Shelton, Connecticut
414240	Byram Park CT	13755490	48 RITCH AVENUE WEST, Greenwich, Connecticut
283423	NAUGATUCK CT	13755758	880 Andrew Mountain Road, Naugatuck, Connecticut
302480	Woodbridge CT 1	13756843	77 Pease Road, Woodbridge, Connecticut
411183	WATERFORD CT	13756866	53 Dayton Rd. Waterford, Connecticut
302540	Madison CT 6	13757740	8 Old 79, Madison, Connecticut
411259	CT Collinsville CAC 802816 CT	13757764	650 Albany Turnpike, Collinsville, Connecticut
411256	CANTON CT	13757774	14 CANTON SPRINGS ROAD, Canton, Connecticut
302493	Nrwc - Norwich	13757776	225 Rogers Road, Norwich, Connecticut
302476	Wtbr - Waterbury	13757794	352 Garden Circle, Waterbury, Connecticut
302475	Sttn - Southington	13757796	80 Shuttle Meadow Road, Southington, Connecticut
302494	Hddm - Haddam	13757798	139 Morris Hubbard Rd, Higganum, Connecticut
283419	PINE ORCHARD BRANFORD CT	13757800	123 Pine Orchard Road, Brrandford, Connecticut
302482	North Havent CT 1	13757802	15 Dewight Street, North Haven, Connecticut
302485	Mdfd - Middlefield	13757806	134 Kikapoo Road, Middlefield, Connecticut
302500	Brst - Bristol	13757810	790 Willis Street, Bristol, Connecticut
302467	Bilkays Express	13757812	90 North Plains Industrial Rd. Wallingford, Connecticut
302536	Cherry Hill-branford	13759895	4 Beaver Road, Brandford, Connecticut
302482	North Havent CT 1	14050356	15 Dewight Street, North Haven, Connecticut
311305	GLFD-GUILFORD REBUILD CT	14050358	10 Tanner Marsh Road, Guilford, Connecticut
411261	CROMWELLSW CT	14089799	99 Christian Hill Road, Cromwell, Connecticut
302481	Hrfr - South	14090117	289 Mountain Street, Hartford, Connecticut

Signature: _____

Margaret Robinson, Vice President
US Tower Legal Division

See attached Notary Block

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION
CENTERLINE COMMUNICATIONS LLC/ AT&T MOBILITY

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Vice President, UST Legal of American Tower (Tower Facility owner), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

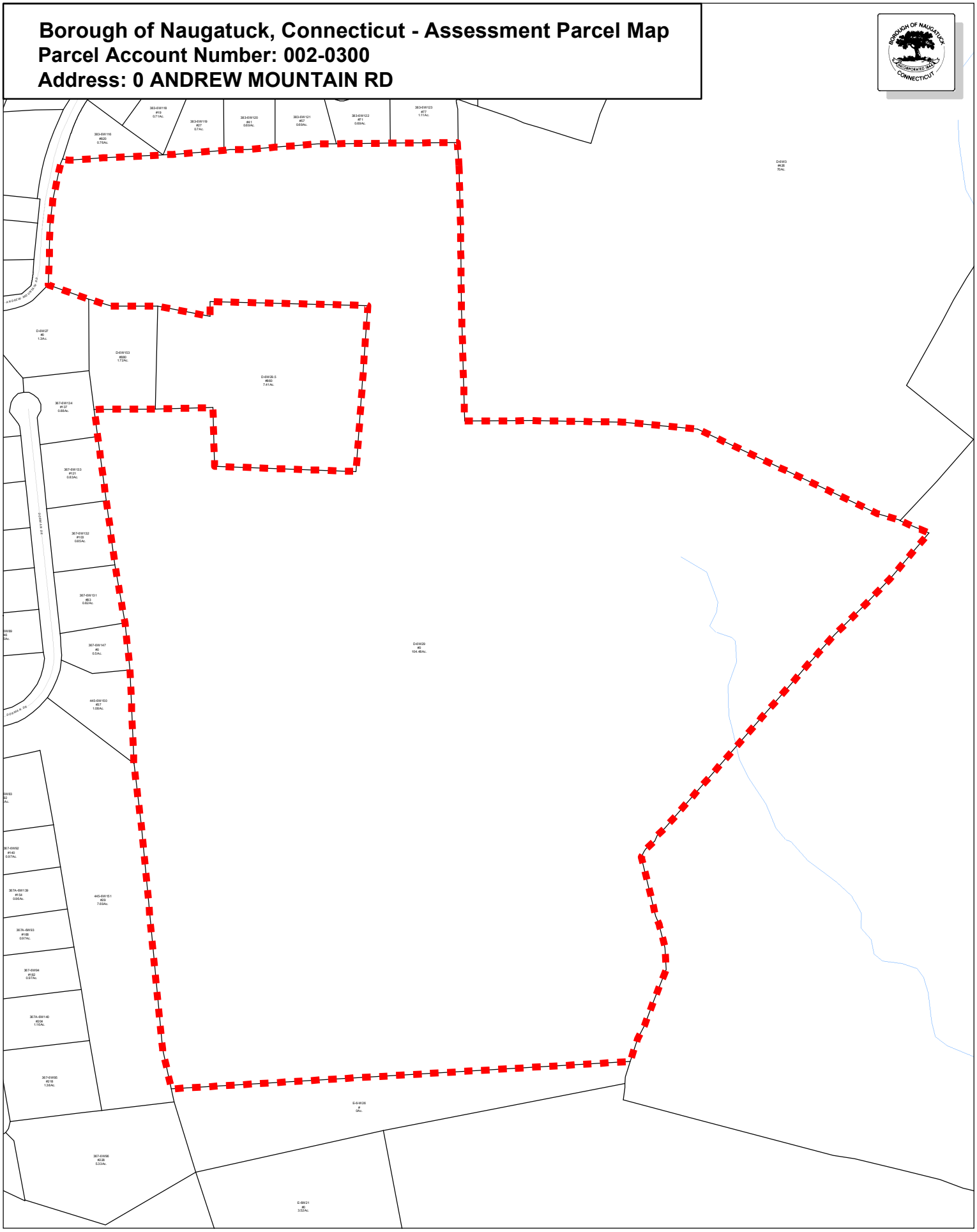
WITNESS my hand and official seal, this 30th day of June, 2022.

NOTARY SEAL

MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public
My Commission Expires: March 14, 2025

Borough of Naugatuck, Connecticut - Assessment Parcel Map
Parcel Account Number: 002-0300
Address: 0 ANDREW MOUNTAIN RD



0 100 200 300 400 Feet

Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The Borough of Naugatuck and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced March 2019

Borough of Naugatuck, CT

Property Listing Report

Map Block Lot	Building #	Unique Identifier
AO07 6W29 B		002-0300

Property Information

Property Location	0 ANDREW MOUNTAIN RD
Mailing Address	861 ANDREW MTN RD NAUGATUCK CT 06770
Land Use	Residential Vacant Land
Zoning Code	DD
Neighborhood	07

Owner	ANDREW RUSSELL B SR
Co-Owner	
Book / Page	0954/0260
Land Class	Use Assessment
Census Tract	345300
Acreage	104.48

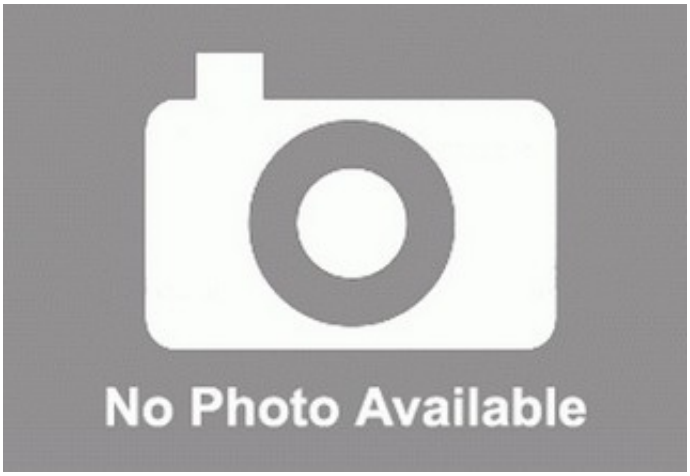
Valuation Summary

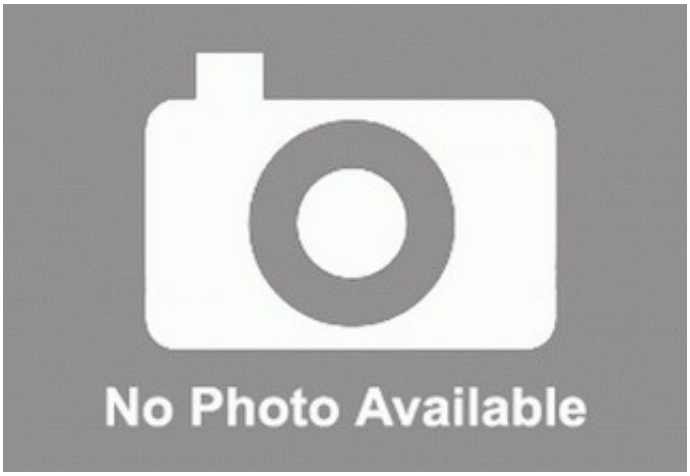
(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Outbuildings	3360	2350
Land	1137260	17940
Total	1140620	20290

Utility Information

Electric	No
Gas	No
Sewer	No
Public Water	No
Well	No





Primary Construction Details

Year Built	
Building Desc.	
Building Style	
Stories	
Exterior Walls	
Exterior Walls 2	
Interior Walls	
Interior Walls 2	
Interior Floors 1	
Interior Floors 2	

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	
Full Bathrooms	
Half Bathrooms	
Extra Fixtures	
Total Rooms	
Bath Style	
Kitchen Style	
Occupancy	

Building Use	
Building Condition	
Frame Type	
Fireplaces	
Bsmt Gar	
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	
Roof Style	
Roof Cover	

Report Created On 7/9/2022

Borough of Naugatuck, CT

Property Listing Report | Map Block Lot **AO07 6W29 B** | Building # | Unique Identifier **002-0300**

Detached Outbuildings

Type	Description	Area (sq ft)	Condition	Year Built
Canopy	Detached Canopy	800	Average	1990

Attached Extra Features

Type	Description	Area (sq ft)	Condition	Year Built

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
ANDREW FRANKLIN B JR + PIERCE MARJORIE	0954_0258	12/17/2014	0
ANDREW RUSSELL B SR	0954_0260	12/17/2014	0
ANDREW FRANKLIN B JR	0954_0256	12/17/2014	0
ANDREW FRANKLIN BROOKS EST	0932_0275	8/8/2013	0
ANDREW FRANKLIN B	0684_0440	10/28/2004	0
ANDREW FRANKLIN B	0467_0103	6/29/1998	0
ANDREW FRANKLIN B	0339_0202	12/27/1989	0
ANDREW FRANKLIN B	0134_0531	6/24/1965	0

Radio Frequency Exposure Analysis Report

June 20, 2022

American Tower on behalf of AT&T
Centerline Communications Project Number: 950035-004

AT&T Site Name: NAUGATUCK CT
Site Number: CTL02409
FA#: 10133908
USID: 104833

Site Address: 880 ANDREW MOUNTAIN ROAD, NAUGATUCK, CT 06770

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	21.45505 µW/cm^2
Cumulative General Population % MPE (Ground Level):	2.14595%

June 20, 2022

Centerline
Attn: Jennifer Iliades, Project Manager
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **NAUGATUCK CT**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed AT&T facility at **880 ANDREW MOUNTAIN ROAD, NAUGATUCK, CT 06770** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter ($\mu W/cm^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in mW/cm^2) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{MHz}/1500$). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of 1 mW/cm^2 (1000 $\mu W/cm^2$). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Wireless carriers use different frequency bands with varying MPE limits; therefore, it is useful to report results in terms of % MPE as opposed to power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the MPE limits for General Population/Uncontrolled environments as defined below.

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

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/ controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Additional details can be found in FCC OET 65.

Calculation Methodology

Centerline Communications, LLC has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.

Data & Results

The following table details the antennas and operating parameters for the AT&T antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at the Ground Level.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average). The results from highest cumulative sample point at ground level surrounding the site are displayed in the table below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table. The cumulative power density and cumulative % MPE are displayed at the bottom of the table.

Maximum Calculated Cumulative Power Density (Location: approximately 258' southeast of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (μW/cm²)	General Population MPE Limit (μW/cm²)	General Population % MPE
AT&T A 1	QUINTEL QD8616-7 V1	700	13.06	116.00	4.00	30.00	2425.05	0.00000	466.67	0.000000
AT&T A 1	QUINTEL QD8616-7 V1	700	13.06	116.00	2.00	30.00	1212.53	0.00000	466.67	0.000000
AT&T A 1	QUINTEL QD8616-7 V1	1900	15.15	116.00	4.00	30.00	3926.01	0.00000	1000.00	0.000000
AT&T A 1	QUINTEL QD8616-7 V1	2100	15.72	116.00	4.00	30.00	4479.00	0.00000	1000.00	0.000000
AT&T A 2	Ericsson SON_AIR6419	3450	23.45	117.75	1.00	108.40	23989.95	0.00002	1000.00	0.000002
AT&T A 3	Ericsson SON_AIR6449	3700	23.45	114.25	1.00	108.40	23989.95	0.00002	1000.00	0.000002
AT&T A 4	CCI DMP65R-BU8D	700	12.25	116.00	4.00	30.00	2014.56	0.00000	466.67	0.000000
AT&T A 4	CCI DMP65R-BU8D	850	12.55	116.00	4.00	30.00	2158.65	0.00000	566.67	0.000000
AT&T A 4	CCI DMP65R-BU8D	2300	14.25	116.00	4.00	18.00	1915.72	0.00000	1000.00	0.000000
AT&T B 5	QUINTEL QD8616-7 V1	700	13.06	116.00	4.00	30.00	2425.05	0.00042	466.67	0.000090
AT&T B 5	QUINTEL QD8616-7 V1	700	13.06	116.00	2.00	30.00	1212.53	0.00021	466.67	0.000045
AT&T B 5	QUINTEL QD8616-7 V1	1900	15.15	116.00	4.00	30.00	3926.01	0.00069	1000.00	0.000069
AT&T B 5	QUINTEL QD8616-7 V1	2100	15.72	116.00	4.00	30.00	4479.00	0.00054	1000.00	0.000054
AT&T B 6	Ericsson SON_AIR6419	3450	23.45	117.75	1.00	108.40	23989.95	0.00211	1000.00	0.000210
AT&T B 7	Ericsson SON_AIR6449	3700	23.45	114.25	1.00	108.40	23989.95	0.00280	1000.00	0.000280
AT&T B 8	CCI DMP65R-BU8D	700	12.25	116.00	4.00	30.00	2014.56	0.00044	466.67	0.000094
AT&T B 8	CCI DMP65R-BU8D	850	12.55	116.00	4.00	30.00	2158.65	0.00037	566.67	0.000065
AT&T B 8	CCI DMP65R-BU8D	2300	14.95	116.00	4.00	18.00	2250.78	0.00030	1000.00	0.000030
AT&T B 9	QUINTEL QD8616-7 V1	700	13.06	116.00	4.00	30.00	2425.05	0.00042	466.67	0.000090
AT&T B 9	QUINTEL QD8616-7 V1	700	13.06	116.00	2.00	30.00	1212.53	0.00021	466.67	0.000045
AT&T B 9	QUINTEL QD8616-7 V1	1900	15.15	116.00	4.00	30.00	3926.01	0.00069	1000.00	0.000069
AT&T B 9	QUINTEL QD8616-7 V1	2100	15.72	116.00	4.00	30.00	4479.00	0.00054	1000.00	0.000054
AT&T C 10	Ericsson SON_AIR6419	3450	23.45	117.75	1.00	108.40	23989.95	0.00002	1000.00	0.000002
AT&T C 11	Ericsson SON_AIR6449	3700	23.45	114.25	1.00	108.40	23989.95	0.00002	1000.00	0.000002
AT&T C 12	CCI DMP65R-BU8D	700	12.25	116.00	4.00	30.00	2014.56	0.00000	466.67	0.000000
AT&T C 12	CCI DMP65R-BU8D	850	12.55	116.00	4.00	30.00	2158.65	0.00000	566.67	0.000000
AT&T C 12	CCI DMP65R-BU8D	2300	14.25	116.00	4.00	18.00	1915.72	0.00000	1000.00	0.000000
Unknown A 13	GENERIC PANEL 6FT	700	12.33	106.00	4.00	40.00	2736.02	0.00000	466.67	0.000000
Unknown A 13	GENERIC PANEL 6FT	850	12.62	106.00	4.00	40.00	2924.96	0.00000	566.67	0.000000
Unknown A 13	GENERIC PANEL 6FT	1900	15.84	106.00	4.00	40.00	6139.32	0.00000	1000.00	0.000000
Unknown B 14	GENERIC PANEL 6FT	700	12.33	106.00	4.00	40.00	2736.02	0.00051	466.67	0.000110
Unknown B 14	GENERIC PANEL 6FT	850	12.62	106.00	4.00	40.00	2924.96	0.00053	566.67	0.000093
Unknown B 14	GENERIC PANEL 6FT	1900	15.84	106.00	4.00	40.00	6139.32	0.00053	1000.00	0.000053
Unknown C 15	GENERIC PANEL 6FT	700	12.33	106.00	4.00	40.00	2736.02	0.00000	466.67	0.000000
Unknown C 15	GENERIC PANEL 6FT	850	12.62	106.00	4.00	40.00	2924.96	0.00000	566.67	0.000000

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (µW/cm²)	General Population MPE Limit (µW/cm²)	General Population % MPE
Unknown C 15	GENERIC PANEL 6FT	1900	15.84	106.00	4.00	40.00	6139.32	0.00000	1000.00	0.000000
Unknown D 16	GENERIC PANEL 6FT	700	12.33	96.00	4.00	40.00	2736.02	0.00000	466.67	0.000000
Unknown D 16	GENERIC PANEL 6FT	850	12.62	96.00	4.00	40.00	2924.96	0.00000	566.67	0.000000
Unknown D 17	GENERIC PANEL 6FT	1900	15.84	96.00	4.00	40.00	6139.32	0.00000	1000.00	0.000000
Unknown D 18	GENERIC PANEL 6FT	2100	16.39	96.00	4.00	40.00	6968.19	0.00000	1000.00	0.000000
Unknown E 19	GENERIC PANEL 6FT	700	12.33	96.00	4.00	40.00	2736.02	0.00063	466.67	0.000136
Unknown E 19	GENERIC PANEL 6FT	850	12.62	96.00	4.00	40.00	2924.96	0.00065	566.67	0.000115
Unknown E 20	GENERIC PANEL 6FT	1900	15.84	96.00	4.00	40.00	6139.32	0.00065	1000.00	0.000065
Unknown E 21	GENERIC PANEL 6FT	2100	16.39	96.00	4.00	40.00	6968.19	0.00068	1000.00	0.000068
Unknown F 22	GENERIC PANEL 6FT	700	12.33	96.00	4.00	40.00	2736.02	0.00000	466.67	0.000001
Unknown F 22	GENERIC PANEL 6FT	850	12.62	96.00	4.00	40.00	2924.96	0.00000	566.67	0.000000
Unknown F 23	GENERIC PANEL 6FT	1900	15.84	96.00	4.00	40.00	6139.32	0.00000	1000.00	0.000000
Unknown F 24	GENERIC PANEL 6FT	2100	16.39	96.00	4.00	40.00	6968.19	0.00000	1000.00	0.000000
							Cumulative Power Density:	**21.45505 µW/cm²**	**Cumulative % MPE:**	**2.14595%**

Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at Ground Level that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **Compliant** with FCC rules and regulations.

Matt Schulzinger
RF EME Technical Writer
Centerline Communications, LLC

Matt Schulzinger

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**119 ft Monopole**
ATC Site Name	:	**NAUGATUCK CT,CT**
ATC Site Number	:	**283423**
Engineering Number	:	**13755758_C3_03**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**MRCTB055032**
Carrier Site Number	:	**CTL02409**
Site Location	:	**880 Andrew Mountain Road** **Naugatuck, CT 06770-3656** **41.4845, -73.0898**
County	:	**New Haven**
Date	:	**March 14, 2022**
Max Usage	:	**56%**
Result	:	**Pass**

Prepared By:

Lucas Tait
Structural Engineer I

Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 119 ft Monopole to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	TransAmerican DaVinci Job #11235-1298, dated June 14, 2011
Foundation Drawing	TransAmerican DaVinci Job #11235-1298, dated June 14, 2011
Geotechnical Report	Terracon Project #J2115128, dated May 10, 2011

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	117 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Crest Height (H):	220 ft
Crest Length (L):	1920 ft
Spectral Response:	Ss = 0.20, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
119.0	3	Ericsson RRUS 4478 B14 (15")	Triangular Platform with Handrails	(1) 0.39" (10mm) Fiber Trunk (8) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	3	Raycap DC6-48-60-18-8F			
	3	Ericsson RRUS 32 B66A			
	3	Ericsson RRUS 32 B2			
106.0	3	Samsung B5/B13 RRH-BR04C	Triangular Low Profile Platform	(4) 1 1/4" Hybriflex Cable	VERIZON WIRELESS
	3	Commscope CBC78T-DS-43-2X			
	3	Samsung B2/B66A RRH-BR049			
	2	Commscope JAHH-45B-R3B			
	4	Commscope JAHH-65B-R3B			
	2	Raycap RCMDC-6627-PF-48			
96.0	3	Fujitsu TA08025-B604	Triangular Platform with Handrails	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B605			
	1	Commscope RDIDC-9181-PF-48			
	3	JMA Wireless MX08FRO665-21			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
119.0	1	Raycap DC6-48-60-18-8F	-	(3) 0.39" (10mm) Fiber Trunk (2) 0.40" (10.3mm) Fiber (3) 3/8" (0.38"-9.5mm) RET Control Cable	AT&T MOBILITY
	3	Ericsson RRUS 32 (50.8 lbs)			
	3	Kathrein Scala 80010966			
	9	CCI HPA-65R-BUU-H8			
	9	Ericsson RRUS-11			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
121.0	3	Ericsson AIR 6419 B77G	Triangular Platform with Handrails	(2) 0.41" (10.3mm) Fiber (2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
119.0	2	Raycap DC6-48-60-0-8F			
	3	Ericsson RRUs 2012 B29 w/Fan			
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 32 B30			
	3	CCI DMP65R-BU8D			
	3	Quintel QD8616-7			
117.0	3	Ericsson Air 6449 B77D			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	46%	Pass
Shaft	53%	Pass
Baseplate	15%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	3850.0	2000.9	52%
Shear (Kips)	42.0	23.7	56%

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
121.0	Ericsson AIR 6419 B77G	AT&T MOBILITY	0.154	0.130
119.0	Ericsson RRUs 2012 B29 w/Fan		0.668	0.560
	Raycap DC6-48-60-0-8F			
	Ericsson RRUS 4449 B5, B12			
	Ericsson RRUS 32 B30			
	CCI DMP65R-BU8D			
	Quintel QD8616-7			
117.0	Ericsson Air 6449 B77D		0.649	0.560

***Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H**

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

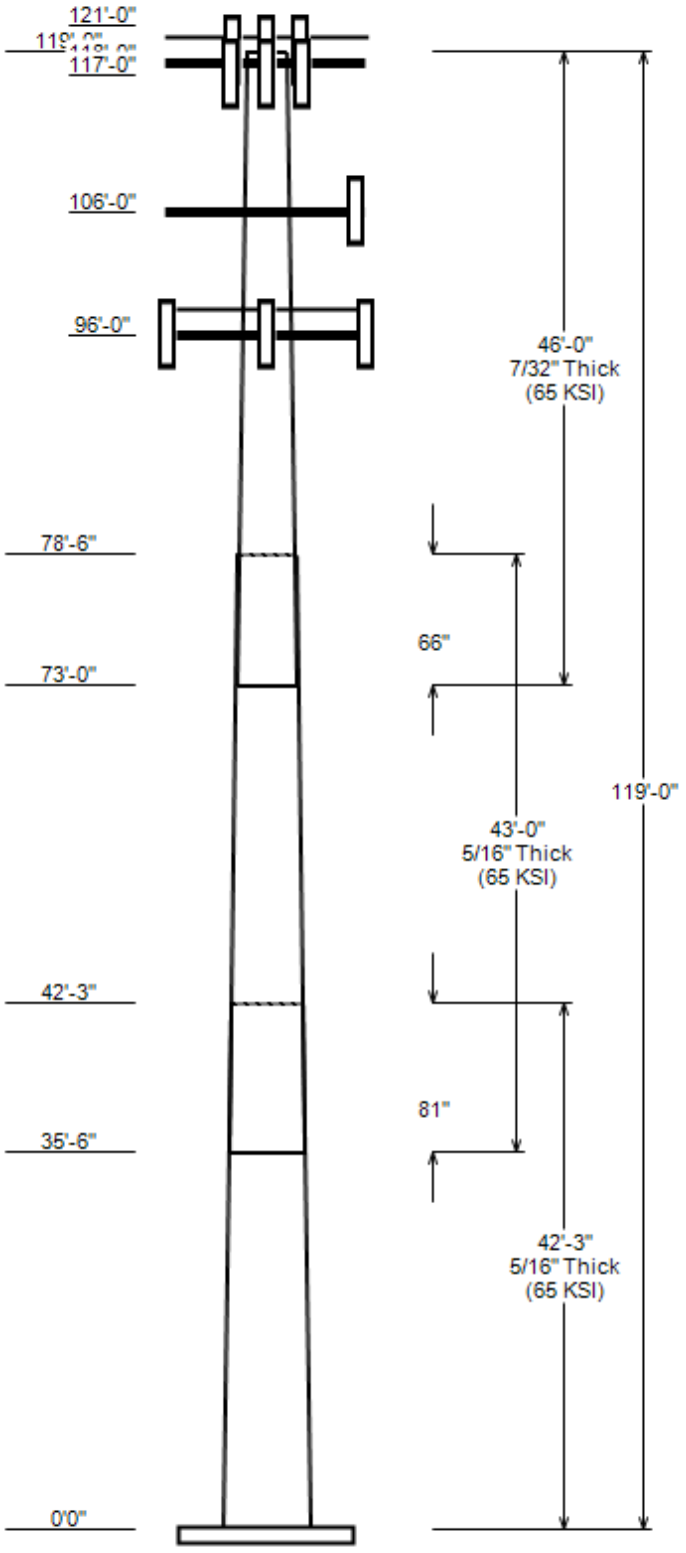
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

JOB INFORMATION

Asset :	283423, NAUGATUCK CT	Height :	119 ft
Client :	AT&T MOBILITY	Base Width :	57
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Nominal Wind: 117 mph wind with no ice **Topo Category:** 0

Ice Wind: 50 mph wind with 1" radial **Topo Method:** Method 2

Base Elev (ft): 0.00 **Taper :** 0.25700(In/ft) **Topo Feature:** Hill

Structure Class: II **Exposure :** B **S_s :** 0.196 **S_1** : 0.054

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	42.250	46.13	57.00	0.312		0.000	18 Sides	65
2	43.000	37.44	48.50	0.312	Slip Joint	81.000	18 Sides	65
3	46.000	27.46	39.29	0.219	Slip Joint	66.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
121.0	121.0	3	Ericsson AIR 6419 B77G
119.0	118.0	3	Raycap DC6-48-60-18-8F
119.0	119.0	2	Raycap DC6-48-60-0-8F
119.0	118.0	3	Ericsson RRUS 4478 B14 (15")
119.0	119.0	3	Ericsson RRUs 2012 B29 w/Fan
119.0	119.0	3	Ericsson RRUS 4449 B5, B12
119.0	119.0	3	Ericsson RRUS 32 B66A
119.0	119.0	3	Ericsson RRUS 32 B2
119.0	119.0	3	Ericsson RRUS 32 B30
119.0	119.0	3	CCI DMP65R-BU8D
119.0	119.0	3	Quintel QD8616-7
118.0	118.0	1	Generic Round Platform with Ha
117.0	117.0	3	Ericsson Air 6449 B77D
106.0	106.0	3	Commscope CBC78T-DS-43-2X
106.0	106.0	3	Samsung B5/B13 RRH-BR04C
106.0	106.0	3	Samsung B2/B66A RRH-BR049
106.0	106.0	2	Raycap RCMDC-6627-PF-48
106.0	106.0	4	Commscope JAHH-65B-R3B
106.0	106.0	2	Commscope JAHH-45B-R3B
106.0	106.0	1	Generic Round Low Profile Plat
96.0	96.0	1	Commscope RDIDC-9181-PF-48
96.0	96.0	3	Fujitsu TA08025-B604
96.0	96.0	3	Fujitsu TA08025-B605
96.0	96.0	3	JMA Wireless MX08FRO665-21
96.0	96.0	1	Generic Flat Platform with Han

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	119.0	0.78" (19.7mm) 8 AWG 6	No
0.0	119.0	0.78" (19.7mm) 8 AWG 6	No
0.0	119.0	0.41" (10.3mm) Fiber	No
0.0	119.0	0.39" (10mm) Fiber Trunk	No
0.0	106.0	1 1/4" Hybriflex Cable	No
0.0	106.0	1 1/4" Hybriflex Cable	No
0.0	96.0	1.60" (40.6mm) Hybrid	No

LOAD CASES

1.2D + 1.0W Normal	117 mph wind with no ice
0.9D + 1.0W Normal	117 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Nor	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Nor	Seismic
0.9D - 1.0Ev + 1.0Eh Nor	Seismic (Reduced DL)
1.0D + 1.0W Service Norm	60 mph Wind with No Ice

JOB INFORMATION			
Asset :	283423, NAUGATUCK CT	Height :	119 ft
Client :	AT&T MOBILITY	Base Width :	57
Code :	ANSI/TIA-222-H	Shape :	18 Sides

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	2000.91	23.72	35.15
0.9D + 1.0W Normal	1988.50	23.71	26.36
1.2D + 1.0Di + 1.0Wi Normal	544.30	6.65	49.00
1.2D + 1.0Ev + 1.0Eh Normal	103.69	1.05	35.15
0.9D - 1.0Ev + 1.0Eh Normal	102.86	1.05	24.29
1.0D + 1.0W Service Normal	468.95	5.58	29.32

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)

ANALYSIS PARAMETERS

Location:	New Haven County,CT	**Height:**	119 ft
Type and Shape:	Taper, 18 Sides	**Base Diameter:**	57.00 in
Manufacturer:	TransAmerican	**Top Diameter:**	27.46 in
K_d (non-service):	0.95	**Taper:**	0.2570 in/ft
K_e:	0.97	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed w/o Ice:**	117 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	50 mph
Topo Factor Procedure:	Method 2	**Operational Wind Speed:**	60 mph
		Design Ice Thickness:	1.00 in
		HMSL:	855.00 ft
Crest Height(H):	220 ft	**Distance from Apex (x):**	0 ft
Crest Length(L):	1920 ft	**Upwind/Downwind:**	Upwind
Feature:	Hill		

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	1.61
T_L (sec):	6	**P:**	1	**C_s:**	0.036
S_s:	0.196	**S_1:**	0.054	**C_s Max:**	0.036
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.209	**S_{d1}:**	0.086		

LOAD CASES

1.2D + 1.0W Normal	117 mph wind with no ice
0.9D + 1.0W Normal	117 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

							Bottom						Top					
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	42.25	0.3125	65		0.00	7,309	57.00	0.000	56.22	22,827.4	30.40	182.40	46.13	42.25	45.45	12,056.0	24.27	147.63	0.2572
2-18	43.00	0.3125	65	Slip	81.00	6,190	48.50	35.500	47.79	14,017.3	25.60	155.18	37.44	78.50	36.82	6,411.4	19.36	119.80	0.2572
3-18	46.00	0.2188	65	Slip	66.00	3,604	39.29	73.000	27.13	5,232.5	29.90	179.56	27.46	119.00	18.92	1,773.3	20.36	125.49	0.2572
				Shaft Weight		17,103													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
121.00	Ericsson AIR 6419 B77G	3	0.75	0.000	66.10	3.797	0.65	135.24	4.736	0.65
119.00	CCI DMP65R-BU8D	3	0.75	0.000	95.70	17.871	0.63	337.91	20.497	0.63
119.00	Ericsson RRUS 32 B30	3	0.75	0.000	60.00	2.743	0.67	112.43	3.576	0.67
119.00	Ericsson RRUS 32 B2	3	0.75	0.000	53.00	2.743	0.67	105.41	3.576	0.67
119.00	Ericsson RRUS 32 B66A	3	0.75	0.000	50.70	2.720	0.67	102.93	3.549	0.67
119.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	116.93	2.634	0.50
119.00	Quintel QD8616-7	3	0.75	0.000	150.00	18.815	0.65	421.36	21.449	0.65
119.00	Ericsson RRUs 2012 B29 w/Fan	3	0.75	0.000	46.50	1.856	0.50	83.60	2.497	0.50
119.00	Ericsson RRUS 4478 B14 (15")	3	0.75	-1.000	59.40	1.650	0.50	94.82	2.254	0.50
119.00	Raycap DC6-48-60-18-8F	3	0.75	-1.000	20.00	1.260	0.50	57.52	1.729	0.50
119.00	Raycap DC6-48-60-0-8F	2	0.75	0.000	32.80	1.360	1.00	74.23	1.833	1.00
118.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3653.69	44.611	1.00
117.00	Ericsson Air 6449 B77D	3	0.75	0.000	81.60	4.028	0.65	154.79	5.007	0.65
106.00	Generic Round Low Profile Plat	1	1.00	0.000	1875.00	21.700	1.00	2448.09	35.286	1.00
106.00	Commscope JAHH-45B-R3B	2	0.80	0.000	83.80	11.400	0.73	245.50	13.373	0.73
106.00	Commscope JAHH-65B-R3B	4	0.80	0.000	60.60	9.113	0.69	203.76	11.076	0.69
106.00	Raycap RCMDC-6627-PF-48	2	0.80	0.000	32.00	4.056	0.79	121.94	5.022	0.79
106.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	129.54	2.514	0.50
106.00	Commscope CBC78T-DS-43-2X	3	0.80	0.000	20.70	0.552	0.50	36.33	0.911	0.50
106.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	110.78	2.514	0.50
96.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	61.92	2.500	1.00
96.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	119.05	2.609	0.50
96.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	104.91	2.609	0.50
96.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	245.24	14.465	0.64
96.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3749.25	57.148	1.00
Totals	Num Loadings: 25	65			10,834.90			19,017.70		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	119.00	8	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	2	0.41" (10.3mm) Fiber	0.41	0.09	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	119.00	1	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	106.00	2	1 1/4" Hybriflex Cabl	1.54	1	N	0	0	0	0	0	N	VERIZON WIREL
0.00	106.00	2	1 1/4" Hybriflex Cabl	1.54	1	N	0	0	0	0	0	N	VERIZON WIREL
0.00	96.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3125	57.000	56.225	22,827.40	30.40	182.40	65.6	788.8	0.0	0.0
5.00		0.3125	55.714	54.949	21,308.90	29.67	178.29	66.5	753.3	0.0	945.8
10.00		0.3125	54.428	53.674	19,859.30	28.95	174.17	67.4	718.7	0.0	924.1
15.00		0.3125	53.142	52.399	18,477.00	28.22	170.06	68.2	684.8	0.0	902.4
20.00		0.3125	51.856	51.123	17,160.30	27.50	165.94	69.1	651.8	0.0	880.7
25.00		0.3125	50.570	49.848	15,907.80	26.77	161.83	69.9	619.6	0.0	859.0
30.00		0.3125	49.285	48.572	14,717.70	26.05	157.71	70.8	588.2	0.0	837.3
35.00		0.3125	47.999	47.297	13,588.50	25.32	153.60	71.6	557.6	0.0	815.6
35.50	Bot - Section 2	0.3125	47.870	47.169	13,478.90	25.25	153.18	71.7	554.6	0.0	80.4
40.00		0.3125	46.713	46.022	12,518.60	24.59	149.48	72.5	527.8	0.0	1,436.5
42.25	Top - Section 1	0.3125	46.759	46.068	12,556.10	24.62	149.63	72.4	528.9	0.0	705.1
45.00		0.3125	46.052	45.366	11,991.20	24.22	147.37	72.9	512.9	0.0	427.8
50.00		0.3125	44.766	44.091	11,008.00	23.50	143.25	73.8	484.3	0.0	761.0
55.00		0.3125	43.480	42.815	10,080.10	22.77	139.14	74.6	456.6	0.0	739.3
60.00		0.3125	42.194	41.540	9,205.90	22.04	135.02	75.5	429.7	0.0	717.6
65.00		0.3125	40.908	40.264	8,383.70	21.32	130.91	76.3	403.7	0.0	695.9
70.00		0.3125	39.622	38.989	7,612.00	20.59	126.79	77.2	378.4	0.0	674.2
73.00	Bot - Section 3	0.3125	38.851	38.224	7,172.50	20.16	124.32	77.7	363.6	0.0	394.1
75.00		0.3125	38.336	37.714	6,889.10	19.87	122.68	78	353.9	0.0	441.8
78.50	Top - Section 2	0.2188	37.874	26.149	4,684.50	28.76	173.10	67.6	243.6	0.0	759.0
80.00		0.2188	37.488	25.882	4,542.00	28.45	171.33	67.9	238.6	0.0	132.8
85.00		0.2188	36.202	24.989	4,087.90	27.41	165.46	69.2	222.4	0.0	432.7
90.00		0.2188	34.916	24.096	3,665.10	26.38	159.58	70.4	206.7	0.0	417.6
95.00		0.2188	33.630	23.203	3,272.50	25.34	153.70	71.6	191.7	0.0	402.4
96.00		0.2188	33.373	23.024	3,197.50	25.13	152.53	71.8	188.7	0.0	78.6
100.00		0.2188	32.344	22.310	2,909.00	24.30	147.83	72.8	177.1	0.0	308.5
105.00		0.2188	31.059	21.417	2,573.50	23.27	141.95	74	163.2	0.0	372.0
106.00		0.2188	30.801	21.238	2,509.60	23.06	140.77	74.3	160.5	0.0	72.6
110.00		0.2188	29.773	20.524	2,264.80	22.23	136.07	75.3	149.8	0.0	284.2
115.00		0.2188	28.487	19.631	1,981.90	21.19	130.20	76.5	137.0	0.0	341.6
117.00		0.2188	27.972	19.273	1,875.60	20.78	127.84	77	132.1	0.0	132.4
118.00		0.2188	27.715	19.095	1,824.00	20.57	126.67	77.2	129.6	0.0	65.3
119.00		0.2188	27.458	18.916	1,773.30	20.36	125.49	77.4	127.2	0.0	64.7
								Totals:			17,103.0

Load Case: 1.2D + 1.0W Normal 117 mph wind with no ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-35.15	-23.72	0.00	-2,000.9	0.00	2,000.91	3,321.87	986.75	5,051.94	3,883.62	0	0	0.526
5.00	-33.90	-23.16	0.00	-1,882.3	0.00	1,882.30	3,288.72	964.36	4,825.36	3,757.16	0.07	-0.12	0.512
10.00	-32.67	-22.61	0.00	-1,766.5	0.00	1,766.50	3,253.61	941.98	4,603.98	3,630.29	0.26	-0.24	0.497
15.00	-31.46	-22.08	0.00	-1,653.4	0.00	1,653.42	3,216.54	919.60	4,387.80	3,503.16	0.58	-0.37	0.482
20.00	-30.29	-21.56	0.00	-1,543.0	0.00	1,543.02	3,177.52	897.21	4,176.81	3,375.93	1.03	-0.49	0.467
25.00	-29.15	-21.06	0.00	-1,435.2	0.00	1,435.20	3,136.53	874.83	3,971.03	3,248.74	1.61	-0.61	0.452
30.00	-28.03	-20.56	0.00	-1,329.9	0.00	1,329.92	3,093.58	852.45	3,770.44	3,121.77	2.32	-0.74	0.436
35.00	-26.95	-20.28	0.00	-1,227.1	0.00	1,227.12	3,048.68	830.06	3,575.05	2,995.16	3.15	-0.86	0.419
35.50	-26.83	-20.03	0.00	-1,217.0	0.00	1,216.98	3,044.08	827.82	3,555.80	2,982.53	3.24	-0.87	0.417
40.00	-25.02	-19.66	0.00	-1,126.8	0.00	1,126.85	3,001.81	807.68	3,384.86	2,869.08	4.12	-0.98	0.402
42.25	-24.12	-19.39	0.00	-1,082.6	0.00	1,082.61	3,003.54	808.49	3,391.62	2,873.61	4.6	-1.04	0.385
45.00	-23.55	-18.99	0.00	-1,029.3	0.00	1,029.28	2,976.96	796.17	3,289.13	2,804.53	5.22	-1.11	0.375
50.00	-22.53	-18.47	0.00	-934.3	0.00	934.32	2,927.13	773.79	3,106.81	2,679.53	6.44	-1.22	0.357
55.00	-21.55	-17.94	0.00	-842.0	0.00	841.99	2,875.34	751.41	2,929.68	2,555.45	7.79	-1.34	0.338
60.00	-20.59	-17.41	0.00	-752.3	0.00	752.30	2,821.60	729.02	2,757.76	2,432.44	9.25	-1.45	0.317
65.00	-19.66	-16.89	0.00	-665.2	0.00	665.23	2,765.89	706.64	2,591.03	2,310.67	10.83	-1.56	0.296
70.00	-18.77	-16.47	0.00	-580.8	0.00	580.77	2,708.22	684.26	2,429.50	2,190.28	12.52	-1.67	0.273
73.00	-18.24	-16.21	0.00	-531.4	0.00	531.35	2,672.68	670.83	2,335.08	2,118.77	13.59	-1.73	0.258
75.00	-17.68	-15.93	0.00	-498.9	0.00	498.92	2,648.59	661.87	2,273.17	2,071.43	14.33	-1.77	0.248
78.50	-16.71	-15.65	0.00	-443.2	0.00	443.18	1,590.36	458.92	1,560.74	1,234.68	15.65	-1.84	0.371
80.00	-16.52	-15.34	0.00	-419.7	0.00	419.70	1,582.58	454.22	1,528.93	1,215.98	16.23	-1.87	0.357
85.00	-15.91	-14.85	0.00	-343.0	0.00	343.00	1,555.39	438.55	1,425.25	1,153.62	18.25	-1.99	0.309
90.00	-15.33	-14.37	0.00	-268.7	0.00	268.74	1,526.24	422.88	1,325.22	1,091.30	20.39	-2.09	0.257
95.00	-14.77	-14.08	0.00	-196.9	0.00	196.88	1,495.13	407.20	1,228.82	1,029.18	22.64	-2.18	0.202
96.00	-11.02	-10.68	0.00	-182.8	0.00	182.81	1,488.67	404.07	1,209.98	1,016.80	23.1	-2.2	0.188
100.00	-10.61	-10.27	0.00	-140.1	0.00	140.08	1,462.05	391.53	1,136.06	967.43	24.97	-2.26	0.153
105.00	-10.11	-9.98	0.00	-88.8	0.00	88.75	1,427.03	375.86	1,046.94	906.20	27.36	-2.31	0.106
106.00	-6.69	-6.58	0.00	-78.8	0.00	78.77	1,419.78	372.73	1,029.56	894.03	27.85	-2.32	0.093
110.00	-6.33	-6.18	0.00	-52.4	0.00	52.45	1,390.04	360.19	961.47	845.65	29.81	-2.35	0.067
115.00	-5.90	-5.87	0.00	-21.5	0.00	21.53	1,351.09	344.52	879.63	785.93	32.28	-2.38	0.032
117.00	-5.45	-5.45	0.00	-9.8	0.00	9.78	1,334.96	338.25	847.91	762.31	33.28	-2.38	0.017
118.00	-2.42	-3.96	0.00	-4.3	0.00	4.33	1,326.78	335.11	832.27	750.56	33.78	-2.38	0.008
119.00	0.00	-3.85	0.00	-0.4	0.00	0.37	1,318.52	331.98	816.78	738.86	34.28	-2.38	0.001

Load Case: 0.9D + 1.0W Normal — 117 mph wind with no ice — 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.36	-23.71	0.00	-1,988.5	0.00	1,988.50	3,321.87	986.75	5,051.94	3,883.62	0	0	0.521
5.00	-25.40	-23.13	0.00	-1,869.9	0.00	1,869.94	3,288.72	964.36	4,825.36	3,757.16	0.07	-0.12	0.506
10.00	-24.47	-22.57	0.00	-1,754.3	0.00	1,754.27	3,253.61	941.98	4,603.98	3,630.29	0.26	-0.24	0.491
15.00	-23.56	-22.02	0.00	-1,641.4	0.00	1,641.42	3,216.54	919.60	4,387.80	3,503.16	0.58	-0.36	0.476
20.00	-22.67	-21.49	0.00	-1,531.3	0.00	1,531.32	3,177.52	897.21	4,176.81	3,375.93	1.02	-0.48	0.461
25.00	-21.80	-20.97	0.00	-1,423.9	0.00	1,423.88	3,136.53	874.83	3,971.03	3,248.74	1.6	-0.61	0.446
30.00	-20.95	-20.46	0.00	-1,319.0	0.00	1,319.03	3,093.58	852.45	3,770.44	3,121.77	2.3	-0.73	0.430
35.00	-20.14	-20.17	0.00	-1,216.7	0.00	1,216.74	3,048.68	830.06	3,575.05	2,995.16	3.13	-0.85	0.413
35.50	-20.05	-19.92	0.00	-1,206.6	0.00	1,206.65	3,044.08	827.82	3,555.80	2,982.53	3.22	-0.87	0.412
40.00	-18.68	-19.55	0.00	-1,117.0	0.00	1,117.03	3,001.81	807.68	3,384.86	2,869.08	4.09	-0.98	0.396
42.25	-18.01	-19.28	0.00	-1,073.0	0.00	1,073.05	3,003.54	808.49	3,391.62	2,873.61	4.56	-1.03	0.380
45.00	-17.57	-18.87	0.00	-1,020.0	0.00	1,020.04	2,976.96	796.17	3,289.13	2,804.53	5.18	-1.1	0.370
50.00	-16.80	-18.33	0.00	-925.7	0.00	925.70	2,927.13	773.79	3,106.81	2,679.53	6.39	-1.21	0.352
55.00	-16.06	-17.80	0.00	-834.0	0.00	834.03	2,875.34	751.41	2,929.68	2,555.45	7.73	-1.33	0.333
60.00	-15.34	-17.27	0.00	-745.0	0.00	745.02	2,821.60	729.02	2,757.76	2,432.44	9.18	-1.44	0.312
65.00	-14.64	-16.75	0.00	-658.7	0.00	658.66	2,765.89	706.64	2,591.03	2,310.67	10.75	-1.55	0.291
70.00	-13.96	-16.33	0.00	-574.9	0.00	574.93	2,708.22	684.26	2,429.50	2,190.28	12.43	-1.65	0.268
73.00	-13.57	-16.07	0.00	-526.0	0.00	525.95	2,672.68	670.83	2,335.08	2,118.77	13.49	-1.71	0.254
75.00	-13.14	-15.78	0.00	-493.8	0.00	493.81	2,648.59	661.87	2,273.17	2,071.43	14.21	-1.76	0.244
78.50	-12.41	-15.51	0.00	-438.6	0.00	438.58	1,590.36	458.92	1,560.74	1,234.68	15.53	-1.82	0.364
80.00	-12.27	-15.19	0.00	-415.3	0.00	415.32	1,582.58	454.22	1,528.93	1,215.98	16.1	-1.85	0.350
85.00	-11.81	-14.70	0.00	-339.4	0.00	339.36	1,555.39	438.55	1,425.25	1,153.62	18.11	-1.97	0.303
90.00	-11.37	-14.22	0.00	-265.8	0.00	265.85	1,526.24	422.88	1,325.22	1,091.30	20.23	-2.07	0.252
95.00	-10.95	-13.93	0.00	-194.8	0.00	194.75	1,495.13	407.20	1,228.82	1,029.18	22.45	-2.16	0.198
96.00	-8.17	-10.57	0.00	-180.8	0.00	180.82	1,488.67	404.07	1,209.98	1,016.80	22.91	-2.18	0.184
100.00	-7.86	-10.15	0.00	-138.6	0.00	138.55	1,462.05	391.53	1,136.06	967.43	24.76	-2.24	0.149
105.00	-7.49	-9.87	0.00	-87.8	0.00	87.79	1,427.03	375.86	1,046.94	906.20	27.14	-2.29	0.103
106.00	-4.96	-6.51	0.00	-77.9	0.00	77.91	1,419.78	372.73	1,029.56	894.03	27.62	-2.3	0.091
110.00	-4.69	-6.11	0.00	-51.9	0.00	51.88	1,390.04	360.19	961.47	845.65	29.56	-2.33	0.065
115.00	-4.37	-5.81	0.00	-21.3	0.00	21.31	1,351.09	344.52	879.63	785.93	32.02	-2.35	0.031
117.00	-4.03	-5.39	0.00	-9.7	0.00	9.69	1,334.96	338.25	847.91	762.31	33	-2.36	0.016
118.00	-1.78	-3.93	0.00	-4.3	0.00	4.30	1,326.78	335.11	832.27	750.56	33.5	-2.36	0.007
119.00	0.00	-3.85	0.00	-0.4	0.00	0.37	1,318.52	331.98	816.78	738.86	33.99	-2.36	0.001

Load Case: 1.2D + 1.0Di + 1.0Wi Normal		50 mph wind with 1" radial ice			19 Iterations
Gust Response Factor:	1.10	Ice Dead Load Factor	1.00		
Dead load Factor:	1.20			Ice Importance Factor	1.00
Wind Load Factor:	1.00				

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.00	-6.65	0.00	-544.3	0.00	544.30	3,321.87	986.75	5,051.94	3,883.62	0	0	0.155
5.00	-47.47	-6.48	0.00	-511.1	0.00	511.06	3,288.72	964.36	4,825.36	3,757.16	0.02	-0.03	0.151
10.00	-45.94	-6.31	0.00	-478.7	0.00	478.67	3,253.61	941.98	4,603.98	3,630.29	0.07	-0.07	0.146
15.00	-44.43	-6.15	0.00	-447.1	0.00	447.10	3,216.54	919.60	4,387.80	3,503.16	0.16	-0.1	0.141
20.00	-42.94	-5.99	0.00	-416.4	0.00	416.35	3,177.52	897.21	4,176.81	3,375.93	0.28	-0.13	0.137
25.00	-41.48	-5.84	0.00	-386.4	0.00	386.38	3,136.53	874.83	3,971.03	3,248.74	0.44	-0.17	0.132
30.00	-40.04	-5.69	0.00	-357.2	0.00	357.18	3,093.58	852.45	3,770.44	3,121.77	0.63	-0.2	0.127
35.00	-38.64	-5.60	0.00	-328.8	0.00	328.75	3,048.68	830.06	3,575.05	2,995.16	0.85	-0.23	0.122
35.50	-38.50	-5.52	0.00	-326.0	0.00	325.95	3,044.08	827.82	3,555.80	2,982.53	0.88	-0.24	0.122
40.00	-36.39	-5.41	0.00	-301.1	0.00	301.10	3,001.81	807.68	3,384.86	2,869.08	1.11	-0.27	0.117
42.25	-35.36	-5.33	0.00	-288.9	0.00	288.92	3,003.54	808.49	3,391.62	2,873.61	1.24	-0.28	0.112
45.00	-34.61	-5.20	0.00	-274.3	0.00	274.27	2,976.96	796.17	3,289.13	2,804.53	1.41	-0.3	0.109
50.00	-33.29	-5.04	0.00	-248.2	0.00	248.25	2,927.13	773.79	3,106.81	2,679.53	1.74	-0.33	0.104
55.00	-32.00	-4.88	0.00	-223.0	0.00	223.05	2,875.34	751.41	2,929.68	2,555.45	2.1	-0.36	0.098
60.00	-30.74	-4.71	0.00	-198.7	0.00	198.67	2,821.60	729.02	2,757.76	2,432.44	2.5	-0.39	0.093
65.00	-29.51	-4.55	0.00	-175.1	0.00	175.11	2,765.89	706.64	2,591.03	2,310.67	2.92	-0.42	0.086
70.00	-28.32	-4.42	0.00	-152.4	0.00	152.37	2,708.22	684.26	2,429.50	2,190.28	3.37	-0.45	0.080
73.00	-27.62	-4.33	0.00	-139.1	0.00	139.12	2,672.68	670.83	2,335.08	2,118.77	3.66	-0.46	0.076
75.00	-26.94	-4.24	0.00	-130.5	0.00	130.46	2,648.59	661.87	2,273.17	2,071.43	3.86	-0.47	0.073
78.50	-25.77	-4.16	0.00	-115.6	0.00	115.60	1,590.36	458.92	1,560.74	1,234.68	4.21	-0.49	0.110
80.00	-25.50	-4.06	0.00	-109.4	0.00	109.37	1,582.58	454.22	1,528.93	1,215.98	4.36	-0.5	0.106
85.00	-24.62	-3.90	0.00	-89.1	0.00	89.08	1,555.39	438.55	1,425.25	1,153.62	4.9	-0.53	0.093
90.00	-23.77	-3.75	0.00	-69.6	0.00	69.56	1,526.24	422.88	1,325.22	1,091.30	5.47	-0.56	0.079
95.00	-22.95	-3.65	0.00	-50.8	0.00	50.81	1,495.13	407.20	1,228.82	1,029.18	6.07	-0.58	0.065
96.00	-17.37	-2.81	0.00	-47.2	0.00	47.16	1,488.67	404.07	1,209.98	1,016.80	6.19	-0.59	0.058
100.00	-16.75	-2.68	0.00	-35.9	0.00	35.92	1,462.05	391.53	1,136.06	967.43	6.69	-0.6	0.049
105.00	-15.99	-2.58	0.00	-22.5	0.00	22.54	1,427.03	375.86	1,046.94	906.20	7.33	-0.61	0.036
106.00	-10.85	-1.70	0.00	-20.0	0.00	19.96	1,419.78	372.73	1,029.56	894.03	7.46	-0.62	0.030
110.00	-10.29	-1.57	0.00	-13.2	0.00	13.15	1,390.04	360.19	961.47	845.65	7.98	-0.62	0.023
115.00	-9.61	-1.47	0.00	-5.3	0.00	5.28	1,351.09	344.52	879.63	785.93	8.63	-0.63	0.014
117.00	-8.88	-1.36	0.00	-2.3	0.00	2.34	1,334.96	338.25	847.91	762.31	8.9	-0.63	0.010
118.00	-4.83	-0.90	0.00	-1.0	0.00	0.98	1,326.78	335.11	832.27	750.56	9.03	-0.63	0.005
119.00	0.00	-0.85	0.00	-0.1	0.00	0.08	1,318.52	331.98	816.78	738.86	9.16	-0.63	0.000

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 19 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-29.32	-5.58	0.00	-469.0	0.00	468.95	3,321.87	986.75	5,051.94	3,883.62	0	0	0.130
5.00	-28.30	-5.45	0.00	-441.0	0.00	441.05	3,288.72	964.36	4,825.36	3,757.16	0.02	-0.03	0.126
10.00	-27.32	-5.31	0.00	-413.8	0.00	413.83	3,253.61	941.98	4,603.98	3,630.29	0.06	-0.06	0.122
15.00	-26.35	-5.19	0.00	-387.3	0.00	387.26	3,216.54	919.60	4,387.80	3,503.16	0.14	-0.09	0.119
20.00	-25.40	-5.06	0.00	-361.3	0.00	361.33	3,177.52	897.21	4,176.81	3,375.93	0.24	-0.11	0.115
25.00	-24.48	-4.94	0.00	-336.0	0.00	336.02	3,136.53	874.83	3,971.03	3,248.74	0.38	-0.14	0.111
30.00	-23.58	-4.82	0.00	-311.3	0.00	311.31	3,093.58	852.45	3,770.44	3,121.77	0.54	-0.17	0.107
35.00	-22.70	-4.76	0.00	-287.2	0.00	287.20	3,048.68	830.06	3,575.05	2,995.16	0.74	-0.2	0.103
35.50	-22.61	-4.70	0.00	-284.8	0.00	284.83	3,044.08	827.82	3,555.80	2,982.53	0.76	-0.2	0.103
40.00	-21.12	-4.61	0.00	-263.7	0.00	263.70	3,001.81	807.68	3,384.86	2,869.08	0.97	-0.23	0.099
42.25	-20.38	-4.55	0.00	-253.3	0.00	253.33	3,003.54	808.49	3,391.62	2,873.61	1.08	-0.24	0.095
45.00	-19.92	-4.45	0.00	-240.8	0.00	240.83	2,976.96	796.17	3,289.13	2,804.53	1.22	-0.26	0.093
50.00	-19.10	-4.32	0.00	-218.6	0.00	218.58	2,927.13	773.79	3,106.81	2,679.53	1.51	-0.29	0.088
55.00	-18.29	-4.20	0.00	-197.0	0.00	196.95	2,875.34	751.41	2,929.68	2,555.45	1.82	-0.31	0.083
60.00	-17.51	-4.08	0.00	-176.0	0.00	175.95	2,821.60	729.02	2,757.76	2,432.44	2.17	-0.34	0.079
65.00	-16.75	-3.95	0.00	-155.6	0.00	155.57	2,765.89	706.64	2,591.03	2,310.67	2.54	-0.37	0.073
70.00	-16.01	-3.85	0.00	-135.8	0.00	135.81	2,708.22	684.26	2,429.50	2,190.28	2.93	-0.39	0.068
73.00	-15.58	-3.79	0.00	-124.2	0.00	124.24	2,672.68	670.83	2,335.08	2,118.77	3.18	-0.4	0.065
75.00	-15.12	-3.73	0.00	-116.7	0.00	116.66	2,648.59	661.87	2,273.17	2,071.43	3.35	-0.41	0.062
78.50	-14.31	-3.66	0.00	-103.6	0.00	103.62	1,590.36	458.92	1,560.74	1,234.68	3.66	-0.43	0.093
80.00	-14.16	-3.59	0.00	-98.1	0.00	98.12	1,582.58	454.22	1,528.93	1,215.98	3.8	-0.44	0.090
85.00	-13.66	-3.47	0.00	-80.2	0.00	80.18	1,555.39	438.55	1,425.25	1,153.62	4.27	-0.46	0.078
90.00	-13.18	-3.36	0.00	-62.8	0.00	62.82	1,526.24	422.88	1,325.22	1,091.30	4.77	-0.49	0.066
95.00	-12.72	-3.29	0.00	-46.0	0.00	46.02	1,495.13	407.20	1,228.82	1,029.18	5.3	-0.51	0.053
96.00	-9.50	-2.50	0.00	-42.7	0.00	42.73	1,488.67	404.07	1,209.98	1,016.80	5.41	-0.51	0.048
100.00	-9.15	-2.40	0.00	-32.7	0.00	32.74	1,462.05	391.53	1,136.06	967.43	5.85	-0.53	0.040
105.00	-8.73	-2.33	0.00	-20.8	0.00	20.75	1,427.03	375.86	1,046.94	906.20	6.41	-0.54	0.029
106.00	-5.78	-1.54	0.00	-18.4	0.00	18.41	1,419.78	372.73	1,029.56	894.03	6.52	-0.54	0.025
110.00	-5.47	-1.45	0.00	-12.3	0.00	12.26	1,390.04	360.19	961.47	845.65	6.98	-0.55	0.018
115.00	-5.10	-1.37	0.00	-5.0	0.00	5.04	1,351.09	344.52	879.63	785.93	7.56	-0.56	0.010
117.00	-4.71	-1.27	0.00	-2.3	0.00	2.29	1,334.96	338.25	847.91	762.31	7.79	-0.56	0.007
118.00	-2.14	-0.93	0.00	-1.0	0.00	1.02	1,326.78	335.11	832.27	750.56	7.91	-0.56	0.003
119.00	0.00	-0.91	0.00	-0.1	0.00	0.09	1,318.52	331.98	816.78	738.86	8.02	-0.56	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.196
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.209
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.036
Upper Limit C_S:	0.036
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.610
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.560
Total Unfactored Dead Load:	29.320 k
Seismic Base Shear (E):	1.050 k

1.2D + 1.0Ev + 1.0Eh Normal **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
32	118.5	71	120	0.005	5	88
31	117.5	71	119	0.005	5	89
30	116	145	237	0.009	10	180
29	112.5	372	582	0.023	24	462
28	108	309	453	0.018	19	383
27	105.5	83	117	0.005	5	103
26	102.5	423	572	0.022	23	525
25	98	349	440	0.017	18	433
24	95.5	91	110	0.004	5	113
23	92.5	465	536	0.021	22	577
22	87.5	480	507	0.020	21	596
21	82.5	495	478	0.019	20	615
20	79.25	152	137	0.005	6	188
19	76.75	803	692	0.027	28	997
18	74	467	380	0.015	16	580
17	71.5	432	333	0.013	14	536
16	67.5	737	520	0.020	21	915
15	62.5	758	475	0.019	19	942
14	57.5	780	429	0.017	18	969
13	52.5	802	383	0.015	16	996
12	47.5	823	336	0.013	14	1,023
11	43.625	462	165	0.006	7	574
10	41.125	733	239	0.009	10	910
9	37.75	1,493	426	0.017	17	1,854
8	35.25	87	22	0.001	1	108
7	32.5	878	199	0.008	8	1,090
6	27.5	900	157	0.006	6	1,117
5	22.5	921	118	0.005	5	1,144
4	17.5	943	81	0.003	3	1,171
3	12.5	965	49	0.002	2	1,198
2	7.5	986	23	0.001	1	1,225
1	2.5	1,008	4	0.000	0	1,252
Ericsson AIR 6419 B77G	119	198	338	0.013	14	246
Raycap DC6-48-60-18-8F	119	60	102	0.004	4	75

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Raycap DC6-48-60-0-8F	119	66	112	0.004	5	81
Ericsson RRUS 4478 B14 (15")	119	178	304	0.012	12	221
Ericsson RRUs 2012 B29 w/Fan	119	140	238	0.009	10	173
Ericsson RRUS 4449 B5, B12	119	213	363	0.014	15	265
Ericsson RRUS 32 B66A	119	152	260	0.010	11	189
Ericsson RRUS 32 B2	119	159	271	0.011	11	197
Ericsson RRUS 32 B30	119	180	307	0.012	13	224
CCI DMP65R-BU8D	119	287	490	0.019	20	357
Quintel QD8616-7	119	450	768	0.030	31	559
Generic Round Platform with Handrails	118	2,500	4,210	0.165	172	3,105
Ericsson Air 6449 B77D	117	245	407	0.016	17	304
Commscope CBC78T-DS-43-2X	106	62	88	0.004	4	77
Samsung B5/B13 RRH-BR04C	106	211	301	0.012	12	262
Samsung B2/B66A RRH-BR049	106	253	361	0.014	15	314
Raycap RCMDC-6627-PF-48	106	64	91	0.004	4	79
Commscope JAHH-65B-R3B	106	242	345	0.014	14	301
Commscope JAHH-45B-R3B	106	168	239	0.009	10	208
Generic Round Low Profile Platform	106	1,875	2,672	0.105	109	2,328
Commscope RDIDC-9181-PF-48	96	22	27	0.001	1	27
Fujitsu TA08025-B605	96	225	275	0.011	11	279
Fujitsu TA08025-B604	96	192	234	0.009	10	238
JMA Wireless MX08FRO665-21	96	194	236	0.009	10	240
Generic Flat Platform with Handrails	96	2,500	3,053	0.120	125	3,105
		29,317	25,531	1.000	1,046	36,406

0.9D - 1.0Ev + 1.0Eh Normal **Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
32	118.5	71	120	0.005	5	61
31	117.5	71	119	0.005	5	61
30	116	145	237	0.009	10	124
29	112.5	372	582	0.023	24	319
28	108	309	453	0.018	19	265
27	105.5	83	117	0.005	5	71
26	102.5	423	572	0.022	23	363
25	98	349	440	0.017	18	300
24	95.5	91	110	0.004	5	78
23	92.5	465	536	0.021	22	399
22	87.5	480	507	0.020	21	412
21	82.5	495	478	0.019	20	425
20	79.25	152	137	0.005	6	130
19	76.75	803	692	0.027	28	689
18	74	467	380	0.015	16	401
17	71.5	432	333	0.013	14	370
16	67.5	737	520	0.020	21	632
15	62.5	758	475	0.019	19	651
14	57.5	780	429	0.017	18	669
13	52.5	802	383	0.015	16	688
12	47.5	823	336	0.013	14	707
11	43.625	462	165	0.006	7	397
10	41.125	733	239	0.009	10	629
9	37.75	1,493	426	0.017	17	1,281
8	35.25	87	22	0.001	1	74
7	32.5	878	199	0.008	8	753
6	27.5	900	157	0.006	6	772
5	22.5	921	118	0.005	5	791
4	17.5	943	81	0.003	3	809
3	12.5	965	49	0.002	2	828
2	7.5	986	23	0.001	1	847
1	2.5	1,008	4	0.000	0	865
Ericsson AIR 6419 B77G	119	198	338	0.013	14	170
Raycap DC6-48-60-18-8F	119	60	102	0.004	4	51

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Raycap DC6-48-60-0-8F	119	66	112	0.004	5	56
Ericsson RRUS 4478 B14 (15")	119	178	304	0.012	12	153
Ericsson RRUs 2012 B29 w/Fan	119	140	238	0.009	10	120
Ericsson RRUS 4449 B5, B12	119	213	363	0.014	15	183
Ericsson RRUS 32 B66A	119	152	260	0.010	11	131
Ericsson RRUS 32 B2	119	159	271	0.011	11	136
Ericsson RRUS 32 B30	119	180	307	0.012	13	154
CCI DMP65R-BU8D	119	287	490	0.019	20	246
Quintel QD8616-7	119	450	768	0.030	31	386
Generic Round Platform with Handrails	118	2,500	4,210	0.165	172	2,145
Ericsson Air 6449 B77D	117	245	407	0.016	17	210
Commscope CBC78T-DS-43-2X	106	62	88	0.004	4	53
Samsung B5/B13 RRH-BR04C	106	211	301	0.012	12	181
Samsung B2/B66A RRH-BR049	106	253	361	0.014	15	217
Raycap RCMDC-6627-PF-48	106	64	91	0.004	4	55
Commscope JAHH-65B-R3B	106	242	345	0.014	14	208
Commscope JAHH-45B-R3B	106	168	239	0.009	10	144
Generic Round Low Profile Platform	106	1,875	2,672	0.105	109	1,609
Commscope RDIDC-9181-PF-48	96	22	27	0.001	1	19
Fujitsu TA08025-B605	96	225	275	0.011	11	193
Fujitsu TA08025-B604	96	192	234	0.009	10	165
JMA Wireless MX08FRO665-21	96	194	236	0.009	10	166
Generic Flat Platform with Handrails	96	2,500	3,053	0.120	125	2,145
		29,317	25,531	1.000	1,046	25,159

1.2D + 1.0Ev + 1.0Eh Normal **Seismic**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-35.15	-1.05	0.00	-103.69	0.00	103.69	3,321.87	986.75	5,052	3,883.62	0.00	0.00	0.04
5.00	-33.93	-1.05	0.00	-98.45	0.00	98.45	3,288.72	964.36	4,825	3,757.16	0.00	-0.01	0.04
10.00	-32.73	-1.05	0.00	-93.20	0.00	93.20	3,253.61	941.98	4,604	3,630.29	0.01	-0.01	0.04
15.00	-31.56	-1.05	0.00	-87.94	0.00	87.94	3,216.54	919.60	4,388	3,503.16	0.03	-0.02	0.04
20.00	-30.42	-1.05	0.00	-82.68	0.00	82.68	3,177.52	897.21	4,177	3,375.93	0.05	-0.03	0.03
25.00	-29.30	-1.05	0.00	-77.44	0.00	77.44	3,136.53	874.83	3,971	3,248.74	0.08	-0.03	0.03
30.00	-28.21	-1.04	0.00	-72.21	0.00	72.21	3,093.58	852.45	3,770	3,121.77	0.12	-0.04	0.03
35.00	-28.10	-1.04	0.00	-67.00	0.00	67.00	3,048.68	830.06	3,575	2,995.16	0.17	-0.05	0.03
35.50	-26.25	-1.02	0.00	-66.48	0.00	66.48	3,044.08	827.82	3,556	2,982.53	0.17	-0.05	0.03
40.00	-25.34	-1.02	0.00	-61.87	0.00	61.87	3,001.81	807.68	3,385	2,869.08	0.22	-0.05	0.03
42.25	-24.76	-1.01	0.00	-59.59	0.00	59.59	3,003.54	808.49	3,392	2,873.61	0.24	-0.06	0.03
45.00	-23.74	-1.00	0.00	-56.81	0.00	56.81	2,976.96	796.17	3,289	2,804.53	0.28	-0.06	0.03
50.00	-22.74	-0.98	0.00	-51.83	0.00	51.83	2,927.13	773.79	3,107	2,679.53	0.34	-0.07	0.03
55.00	-21.77	-0.97	0.00	-46.91	0.00	46.91	2,875.34	751.41	2,930	2,555.45	0.42	-0.07	0.03
60.00	-20.83	-0.95	0.00	-42.08	0.00	42.08	2,821.60	729.02	2,758	2,432.44	0.49	-0.08	0.03
65.00	-19.92	-0.93	0.00	-37.34	0.00	37.34	2,765.89	706.64	2,591	2,310.67	0.58	-0.08	0.02
70.00	-19.38	-0.91	0.00	-32.70	0.00	32.70	2,708.22	684.26	2,430	2,190.28	0.67	-0.09	0.02
73.00	-18.80	-0.90	0.00	-29.96	0.00	29.96	2,672.68	670.83	2,335	2,118.77	0.73	-0.09	0.02
75.00	-17.81	-0.87	0.00	-28.16	0.00	28.16	2,648.59	661.87	2,273	2,071.43	0.77	-0.10	0.02
78.50	-17.62	-0.87	0.00	-25.12	0.00	25.12	1,590.36	458.92	1,561	1,234.68	0.84	-0.10	0.03
80.00	-17.00	-0.85	0.00	-23.82	0.00	23.82	1,582.58	454.22	1,529	1,215.98	0.87	-0.10	0.03
85.00	-16.41	-0.83	0.00	-19.59	0.00	19.59	1,555.39	438.55	1,425	1,153.62	0.98	-0.11	0.03
90.00	-15.83	-0.80	0.00	-15.46	0.00	15.46	1,526.24	422.88	1,325	1,091.30	1.10	-0.11	0.03
95.00	-15.72	-0.80	0.00	-11.44	0.00	11.44	1,495.13	407.20	1,229	1,029.18	1.23	-0.12	0.02
96.00	-11.39	-0.62	0.00	-10.64	0.00	10.64	1,488.67	404.07	1,210	1,016.80	1.25	-0.12	0.02
100.00	-10.87	-0.59	0.00	-8.17	0.00	8.17	1,462.05	391.53	1,136	967.43	1.35	-0.12	0.02
105.00	-10.77	-0.59	0.00	-5.21	0.00	5.21	1,427.03	375.86	1,047	906.20	1.49	-0.13	0.01
106.00	-6.81	-0.39	0.00	-4.62	0.00	4.62	1,419.78	372.73	1,030	894.03	1.51	-0.13	0.01
110.00	-6.35	-0.37	0.00	-3.05	0.00	3.05	1,390.04	360.19	961	845.65	1.62	-0.13	0.01
115.00	-6.17	-0.36	0.00	-1.20	0.00	1.20	1,351.09	344.52	880	785.93	1.76	-0.13	0.01
117.00	-5.78	-0.34	0.00	-0.49	0.00	0.49	1,334.96	338.25	848	762.31	1.81	-0.13	0.01
118.00	-2.59	-0.15	0.00	-0.15	0.00	0.15	1,326.78	335.11	832	750.56	1.84	-0.13	0.00
119.00	0.00	-0.15	0.00	0.00	0.00	0.00	1,318.52	331.98	817	738.86	1.87	-0.13	0.00

0.9D - 1.0Ev + 1.0Eh Normal **Seismic (Reduced DL)**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-24.29	-1.05	0.00	-102.86	0.00	102.86	3,321.87	986.75	5,052	3,883.62	0.00	0.00	0.03
5.00	-23.45	-1.05	0.00	-97.63	0.00	97.63	3,288.72	964.36	4,825	3,757.16	0.00	-0.01	0.03
10.00	-22.62	-1.05	0.00	-92.39	0.00	92.39	3,253.61	941.98	4,604	3,630.29	0.01	-0.01	0.03
15.00	-21.81	-1.05	0.00	-87.14	0.00	87.14	3,216.54	919.60	4,388	3,503.16	0.03	-0.02	0.03
20.00	-21.02	-1.04	0.00	-81.91	0.00	81.91	3,177.52	897.21	4,177	3,375.93	0.05	-0.03	0.03
25.00	-20.25	-1.04	0.00	-76.68	0.00	76.68	3,136.53	874.83	3,971	3,248.74	0.08	-0.03	0.03
30.00	-19.49	-1.03	0.00	-71.48	0.00	71.48	3,093.58	852.45	3,770	3,121.77	0.12	-0.04	0.03
35.00	-19.42	-1.03	0.00	-66.31	0.00	66.31	3,048.68	830.06	3,575	2,995.16	0.17	-0.05	0.03
35.50	-18.14	-1.02	0.00	-65.79	0.00	65.79	3,044.08	827.82	3,556	2,982.53	0.17	-0.05	0.03
40.00	-17.51	-1.01	0.00	-61.22	0.00	61.22	3,001.81	807.68	3,385	2,869.08	0.22	-0.05	0.03
42.25	-17.11	-1.00	0.00	-58.95	0.00	58.95	3,003.54	808.49	3,392	2,873.61	0.24	-0.06	0.03
45.00	-16.41	-0.99	0.00	-56.20	0.00	56.20	2,976.96	796.17	3,289	2,804.53	0.27	-0.06	0.03
50.00	-15.72	-0.97	0.00	-51.25	0.00	51.25	2,927.13	773.79	3,107	2,679.53	0.34	-0.07	0.02
55.00	-15.05	-0.96	0.00	-46.38	0.00	46.38	2,875.34	751.41	2,930	2,555.45	0.41	-0.07	0.02
60.00	-14.40	-0.94	0.00	-41.59	0.00	41.59	2,821.60	729.02	2,758	2,432.44	0.49	-0.08	0.02
65.00	-13.76	-0.92	0.00	-36.90	0.00	36.90	2,765.89	706.64	2,591	2,310.67	0.57	-0.08	0.02
70.00	-13.39	-0.90	0.00	-32.31	0.00	32.31	2,708.22	684.26	2,430	2,190.28	0.67	-0.09	0.02
73.00	-12.99	-0.89	0.00	-29.60	0.00	29.60	2,672.68	670.83	2,335	2,118.77	0.72	-0.09	0.02
75.00	-12.30	-0.86	0.00	-27.82	0.00	27.82	2,648.59	661.87	2,273	2,071.43	0.76	-0.10	0.02
78.50	-12.17	-0.86	0.00	-24.81	0.00	24.81	1,590.36	458.92	1,561	1,234.68	0.83	-0.10	0.03
80.00	-11.75	-0.84	0.00	-23.52	0.00	23.52	1,582.58	454.22	1,529	1,215.98	0.87	-0.10	0.03
85.00	-11.34	-0.82	0.00	-19.34	0.00	19.34	1,555.39	438.55	1,425	1,153.62	0.98	-0.11	0.02
90.00	-10.94	-0.79	0.00	-15.27	0.00	15.27	1,526.24	422.88	1,325	1,091.30	1.09	-0.11	0.02
95.00	-10.86	-0.79	0.00	-11.30	0.00	11.30	1,495.13	407.20	1,229	1,029.18	1.21	-0.12	0.02
96.00	-7.87	-0.61	0.00	-10.51	0.00	10.51	1,488.67	404.07	1,210	1,016.80	1.24	-0.12	0.02
100.00	-7.51	-0.59	0.00	-8.07	0.00	8.07	1,462.05	391.53	1,136	967.43	1.34	-0.12	0.01
105.00	-7.44	-0.58	0.00	-5.14	0.00	5.14	1,427.03	375.86	1,047	906.20	1.47	-0.13	0.01
106.00	-4.71	-0.39	0.00	-4.56	0.00	4.56	1,419.78	372.73	1,030	894.03	1.50	-0.13	0.01
110.00	-4.39	-0.36	0.00	-3.01	0.00	3.01	1,390.04	360.19	961	845.65	1.60	-0.13	0.01
115.00	-4.26	-0.35	0.00	-1.19	0.00	1.19	1,351.09	344.52	880	785.93	1.74	-0.13	0.01
117.00	-3.99	-0.33	0.00	-0.48	0.00	0.48	1,334.96	338.25	848	762.31	1.79	-0.13	0.00
118.00	-1.79	-0.15	0.00	-0.15	0.00	0.15	1,326.78	335.11	832	750.56	1.82	-0.13	0.00
119.00	0.00	-0.15	0.00	0.00	0.00	0.00	1,318.52	331.98	817	738.86	1.85	-0.13	0.00

ANALYSIS SUMMARY

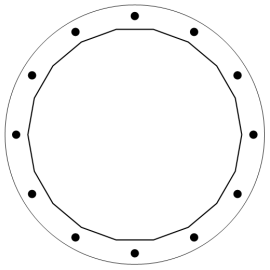
	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W Normal	23.72	0.00	35.15	0.00	0.00	2000.91	0.00	0.53
0.9D + 1.0W Normal	23.71	0.00	26.36	0.00	0.00	1988.50	0.00	0.52
1.2D + 1.0Di + 1.0Wi Normal	6.65	0.00	49.00	0.00	0.00	544.30	0.00	0.15
1.2D + 1.0Ev + 1.0Eh Normal	1.05	0.00	35.15	0.00	0.00	103.69	0.00	0.04
0.9D - 1.0Ev + 1.0Eh Normal	1.05	0.00	24.29	0.00	0.00	102.86	0.00	0.03
1.0D + 1.0W Service Normal	5.58	0.00	29.32	0.00	0.00	468.95	0.00	0.13

ASSET:	283423, NAUGATUCK CT	CODE:	ANSI/TIA-222-H
CUSTOMER:	AT&T MOBILITY	ENG NO:	13755758

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 446)

Diameter:	70	in
Shape:	Round	
Thickness:	2	in
Grade:	A572-60	
Yield Strength:	60	ksi
Tensile Strength:	75	ksi
Rod Detail Type:	d	
Clear Distance	3	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	346	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 2238]	Radial	12	2.25	64	A615-75	75	100	-	-

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (12) 2.25"ø [ID 2238]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.524	27.71	16.00	21.317	1476.683	107.13	2.21
2	1.047	16.00	27.71	29.499	2826.896	107.13	0.85
3	1.571	0.00	32.00	29.776	2880.265	107.13	0.74
4	2.094	-16.00	27.71	22.075	1583.420	107.13	2.13
5	2.618	-27.71	16.00	8.459	233.206	107.13	2.95
6	3.142	-32.00	0.00	-7.424	179.838	-95.41	2.98
7	3.665	-27.71	-16.00	-21.317	1476.681	-95.41	2.21
8	4.189	-16.00	-27.71	-29.499	2826.895	-95.41	0.85
9	4.712	0.00	-32.00	-29.776	2880.264	-95.41	0.74
10	5.236	16.00	-27.71	-22.075	1583.419	-95.41	2.13
11	5.760	27.71	-16.00	-8.459	233.205	-95.41	2.95
12	6.283	32.00	0.00	7.424	179.837	107.13	2.98

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	57"ø x 0.3125" (18 Sides)	2000.9	35.15	23.72	1.000
Bolt Group	Original (12) 2.25"ø	2000.9	-	23.72	1.000
	TOTALS	**2000.91**	**35.15**	**23.72**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	57"ø x 0.3125" (18 Sides)	55.3707	-	-	22243.34	-
Bolt Group	Original (12) 2.25"ø	3.9761	3.2477	0.8393	18360.61	4.5

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	57.12	in
Point-to-Point Diameter:	58.01	in
Flat Width:	10.073	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	346	°
Bend Line Lower Limit:	0.647	rad
Bend Line Upper Limit:	1.971	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	35.751	0.00	35.751	277.0	1930.6	0.144
Corner	34.303	0.00	34.303	163.5	1852.4	0.088
Circumferential	52.898	0.00	52.898	433.9	2856.5	0.152

PLASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio
Original	12	2.25	107.2	3.0	243.6	0.464

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

telamon
Tower Engineering PLLC

Antenna Mount Analysis Report

ATC Site Name	:	**Naugatuck CT**
ATC Asset Number	:	**283423**
Engineering Number	:	**13755758_C8_01**
Mount Elevation	:	**117.25 ft**
Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**MRCTB055032**
Carrier Site Number	:	**CTL02409**
Site Location	:	**880 Andrew Mountain Road** **Naugatuck, CT 06770-3656** **41.484453, -73.089844**
County	:	**New Haven**
Date	:	**March 16, 2022**
Max Usage	:	**>200%**
Result	:	**Fail**

Prepared By:
Rohit Yadav
Telamon Tower Engineering, PLLC

Reviewed By:
William Holt, P.E.
Telamon Tower Engineering, PLLC

Digitally signed by William Holt
Date: 2022.03.16 17:05:24 -04'00'

STATE OF CONNECTICUT
WILLIAM HOLT
PEN.35568
LICENSED
PROFESSIONAL ENGINEER

William Holt, PE
Director of Engineering
License No. 35568 Expires: 01/31/2023

Table of Contents

Introduction

The proposed equipment is to be mounted to the existing Platform w/ Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

Supporting Documents

Structural Data	Site Photos, dated November 18, 2019 Spec Sheet by Site Pro 1, Dwg #RMQP-NP
Previous Analyses	Tower SA by Tower Engineering Professionals, Eng. #13698427_C3_03, dated July 20, 2021
Construction Drawings	CD by Hudson Design Group LLC for AT&T, Site ID #CT2409, Rev. 2, dated May 10, 2018
Loading Data	ATC Application, Project #13755758, dated March 11, 2022 AT&T RFDS, RFDS ID #4788730, Version 2, dated January 14, 2022

Analysis

Codes	TIA-222-H
Basic Wind Speed	117 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	B
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	220 ft
Crest Length (L):	1920 ft
Risk Category	II
Maintenance Live Load	L_M: 500 lb
Spectral Response	S_s: 0.20; S_1: 0.05; Site Class: D

Conclusion

Based on the analysis, the antenna mount does not meet the requirements per the applicable codes listed above. The mount can support equipment as described in this report after the modifications listed below are completed:

- **Reinforce base corner plates**
- **Reinforce stand-off offset plates**

The rough cost estimate, pre-MOD design, is estimated to be <$20k. Please note, a more refined cost estimate will be provided as part of the Modification document package.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

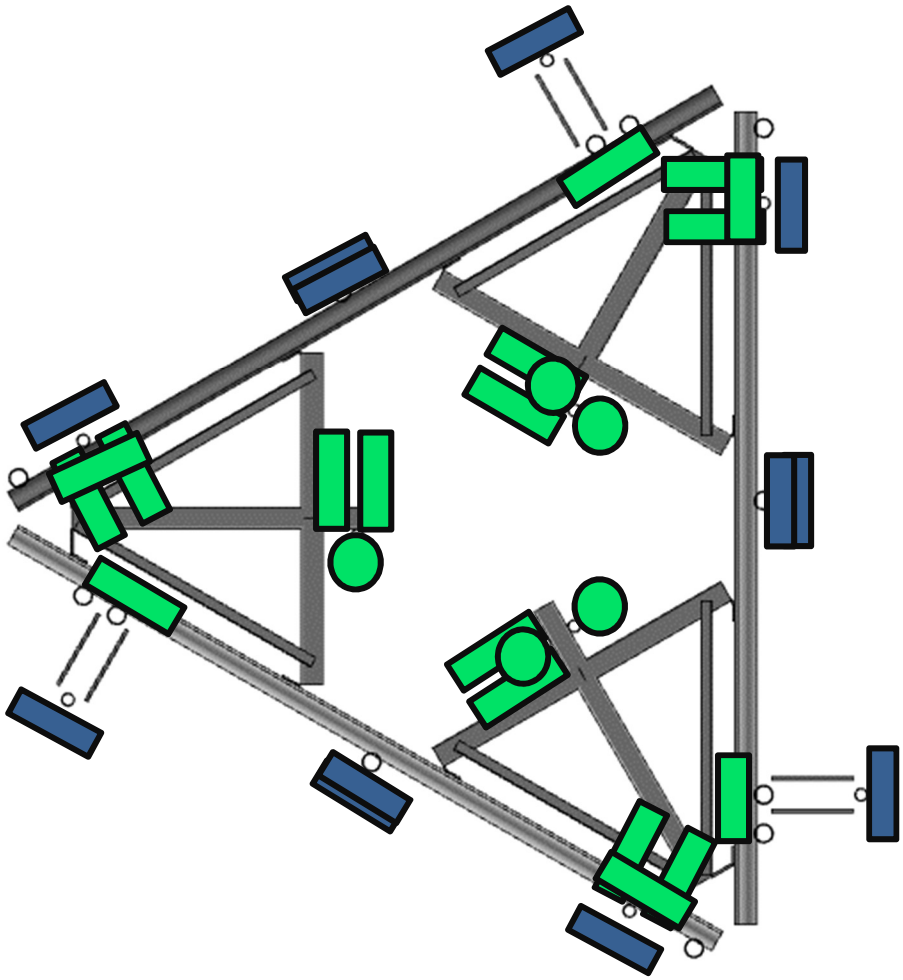
Antenna Loading

Elevation (ft)		Antennas	
Mount	**Rad.**	**#**	**Name**
117.3	121.0	3	Ericsson AIR 6419 B77G
	119.0	3	Quintel QD8616-7
		3	CCI DMP65R-BU8D
		3	Ericsson RRUS 32 B66A
		3	Ericsson RRUS 32 B2
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 2012 B29
		3	Ericsson RRUS 4478 B14
		2	Raycap DC6-48-60-0-8F
		3	Raycap DC6-48-60-18-8F
	117.0	3	Ericsson AIR 6449 B77D

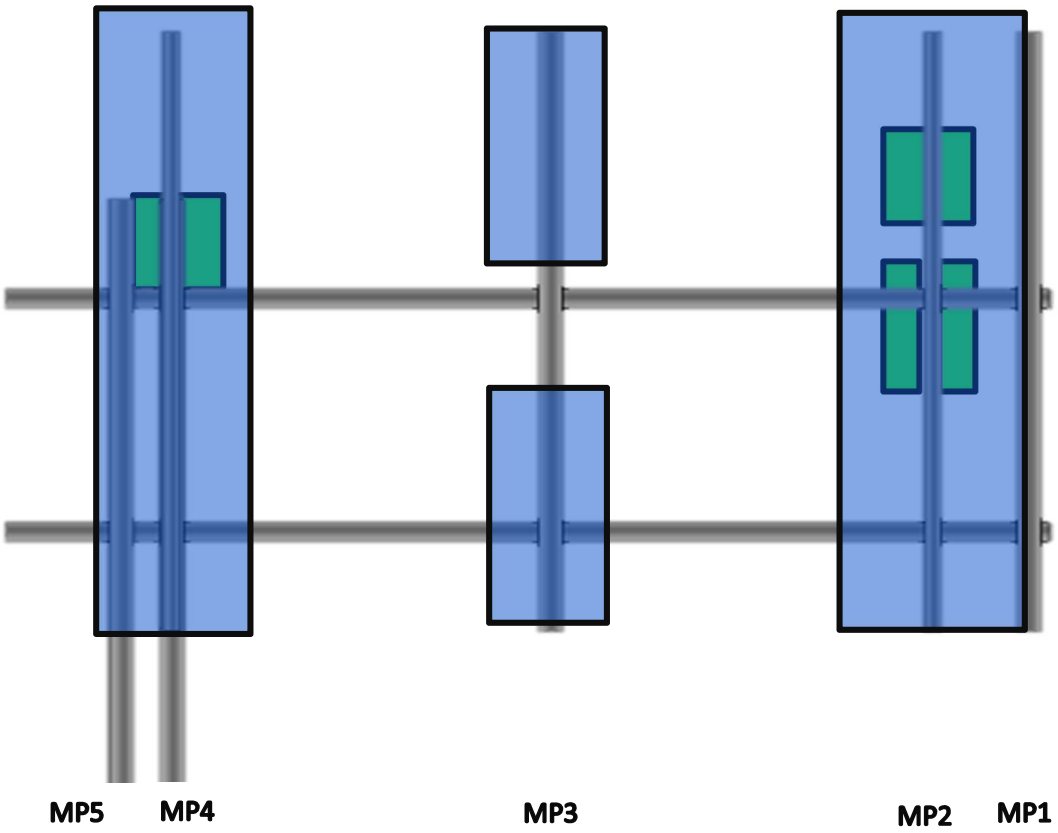
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Corner Plates	**>200%**	**Fail**
Stand-Off Offset Plates	**>200%**	**Fail**
Stand-Off Horizontals	85%	Pass
Tower To Mount Connection Plates	78%	Pass
Threaded Rods	76%	Pass
Mount Pipes	75%	Pass
Platform Base	41%	Pass

Equipment Layout Plan View



Equipment Layout Front Elevation View



Total #	Equipment	Mount Pipe Position
3	Ericsson AIR 6419 B77G	P3
3	Ericsson AIR 6449 B77D	P3
3	Quintel Technology QD8616-7	P2
3	Cci Antennas DMP65R-BU8D	P4
2	Raycap DC6-48-60-0-8F	Stand-off
3	Raycap DC6-48-60-18-8F	Stand-off
3	Ericsson RRUS 4449 B5, B12	Stand-off
3	Ericsson RRUS 4478 B14	Stand-off
3	Ericsson RRUS 2012 B29	P2
3	Ericsson RRUS 32 B2	P2
3	Ericsson RRUS 32 B66A	P2
3	Ericsson RRUS 32 B30	P4

Standard Conditions

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, Telamon Tower Engineering, PLLC should be notified immediately to revise results.

This analysis assumes the following:

1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.
7. Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from Telamon Tower Engineering, PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. Telamon Tower Engineering, PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by Telamon Tower Engineering, PLLC verifies the adequacy of the primary members of the structure. Telamon Tower Engineering, PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	117 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	119 ft	K_d	0.95
Elevation AMSL (ft)	855 ft	K_e	0.97
TIA Standard	H	K_z	1.03
Basic Wind Speed, V_{ult} (bare)	117 mph	K_{zt}	1.29
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.24 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	43.0 psf
Seismic Response Coeff., C_s	0.10	q_z (ice)	7.9 psf

Live Loading

At Mount Pipes, L_M	500 lb
Joint Labels Considered	M1
	M2
	M3
	M4
	M5

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Offset End Plate	0.5 x 6 Plate	38.70	6.01	8.15
Offset Side Plate	0.38 X 6 Plate	38.70	6.00	8.03
Offset Tube	HSS4X4X4	25.80	2.11	9.60
Platform Horzontal Pipe	PIPE_3.0	13.55	4.23	7.18
Grating Angle	L2x2x3	12.90	1.93	5.61
Support Rail	PIPE_3.0	13.55	4.23	7.18
Mount Pipe	PIPE_2.0	9.19	3.43	5.48
Mount Pipe 1	PIPE_3.0	13.55	4.23	7.18
MOD Threaded Rods	5/8 SR	2.42	2.20	2.83
MOD Pipe	PIPE_2.0	9.19	3.43	5.48

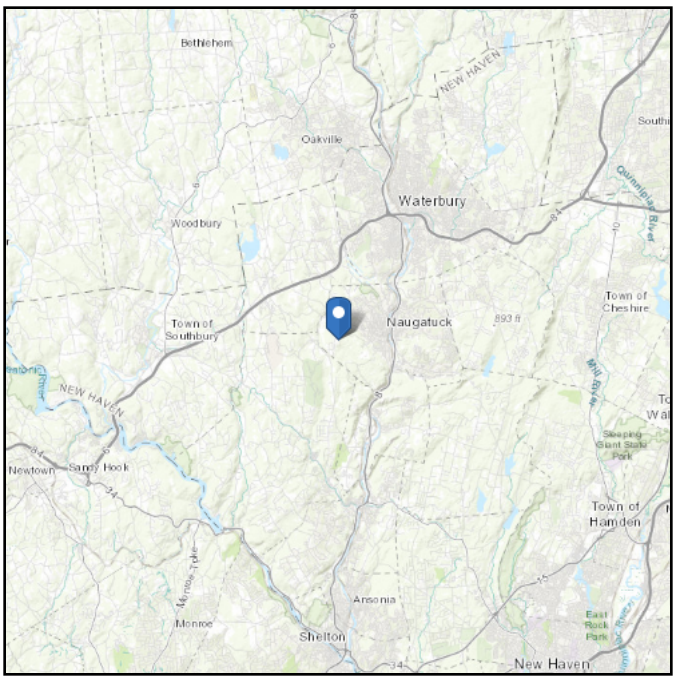
Appurtenances

Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		120° Joints		240° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft²)		EPA_A (Ice) (ft²)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°	120°	240°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
AIR 6419 B77G			121	☐			1	1	1	3	A3	A4	B3	B4	G3	G4	28.3	16.1	7.9	66.1	Flat	69.24	3.80	1.94	4.77	2.71	147.73	75.39	33.88	19.26
AIR 6449 B77D			117	☐			1	1	1	3	A5	A6	B5	B6	G3	G4	30.4	15.9	10.6	81.6	Flat	82.96	4.03	2.72	5.04	3.59	155.83	105.30	35.58	25.34
QD8616-7				☐			1	1	1	3	A1	A2	B1	B2	G1	G2	96	22	9.6	150	Flat	287.08	18.81	9.60	21.23	11.89	729.97	372.46	150.40	84.22
DMP65R-BU8D				☐			1	1	1	3	A7	A8	B7	B8	G7	G8	96	20.7	7.7	105.6	Generic	242.28	15.86	5.95	18.19	8.01	615.33	230.85	128.91	56.76
DC6-48-60-0-8F				☐			1	1		2	RY3		RY1				24	11	11	18.9	Round	43.98	1.28	1.28	1.74	1.74	49.79	49.79	12.30	12.30
DC6-48-60-18-8F				☐			1	1	1	3	RY4		RY2		RY5		24	11	11	18.9	Round	43.98	1.28	1.28	1.74	1.74	49.79	49.79	12.30	12.30
RRUS 4449 B5, B12				☑		0.5	1	1	1	3	S1		S2		S3		17.9	13.19	9.44	71	Flat	51.21	1.41	0.98	2.03	1.33	54.63	38.17	14.35	9.43
RRUS 4478 B14				☑		0.5	1	1	1	3	S1		S2		S3		15	13.2	7.3	59.4	Flat	40.08	0.91	0.83	1.43	1.14	35.40	32.01	10.10	8.09
RRUS 2012 B29				☐	0		1	1	1	3	R1		R21		R31		16.5	13.5	6.4	46.5	Flat	41.14	0.00	0.88	0.00	1.41	0.00	34.24	0.00	9.96
RRUS 32 B2				☑		0.5	1	1	1	3	R2		R22		R32		27.2	12.05	7	52.9	Flat	52.28	1.67	1.37	2.40	1.80	64.72	52.98	17.01	12.74
RRUS 32 B66A				☑		0.5	1	1	1	3	R2		R22		R32		27.6	12.45	7.41	55.12	Flat	55.43	1.78	1.43	2.53	1.87	69.12	55.55	17.92	13.26
RRUS 32 B30				☐	0		1	1	1	3	R3		R23		R33		26.7	12.1	6.7	60	Flat	50.65	0.00	1.57	0.00	2.29	0.00	61.02	0.00	16.22

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	854.54 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.484453
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.089844



Wind

Results:

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

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

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

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

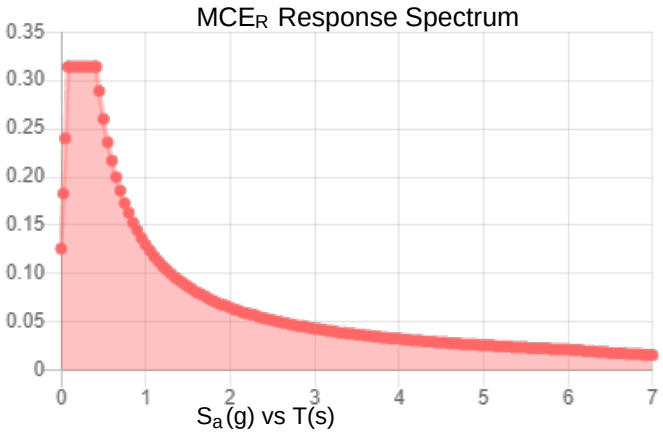
Seismic

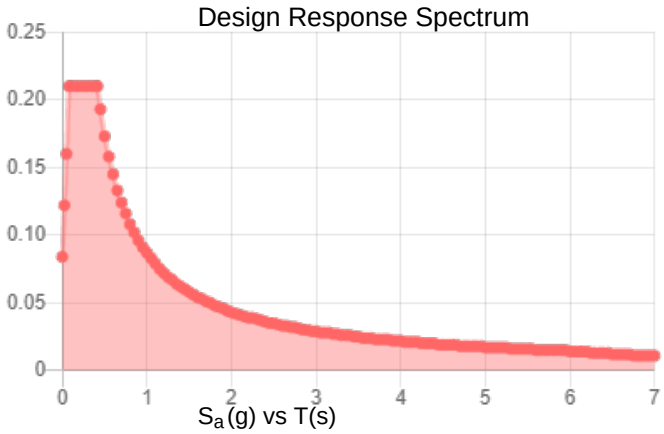
Site Soil Class: D - Default (see Section 11.4.3)

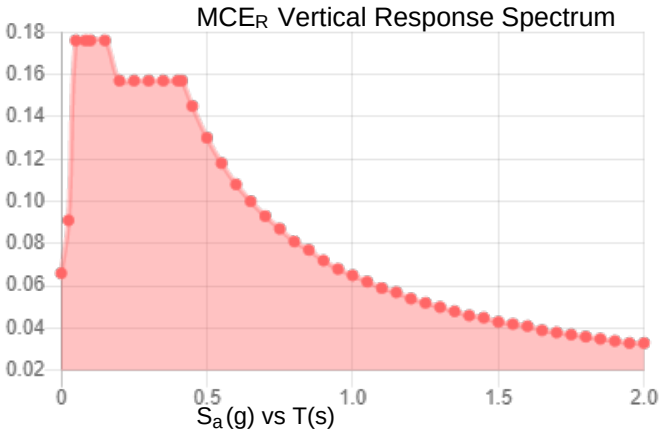
Results:

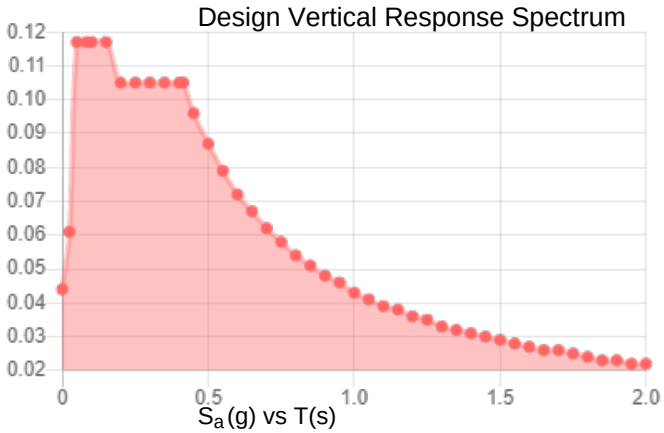
S_S :	0.196	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.109
F_v :	2.4	PGA_M :	0.172
S_{MS} :	0.314	F_{PGA} :	1.582
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.21	C_v :	0.7

Seismic Design Category B









Data Accessed: **Tue Mar 15 2022**

Date Source:

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

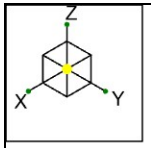
Ice

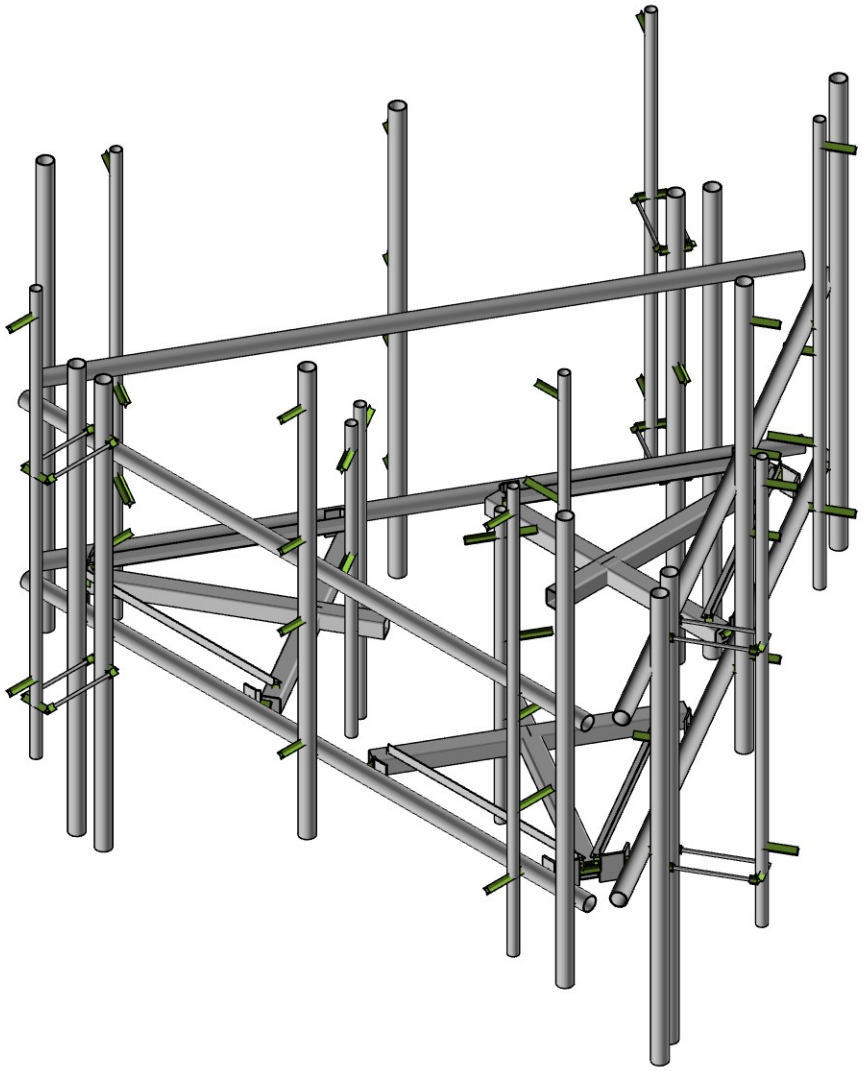
Results:

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

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

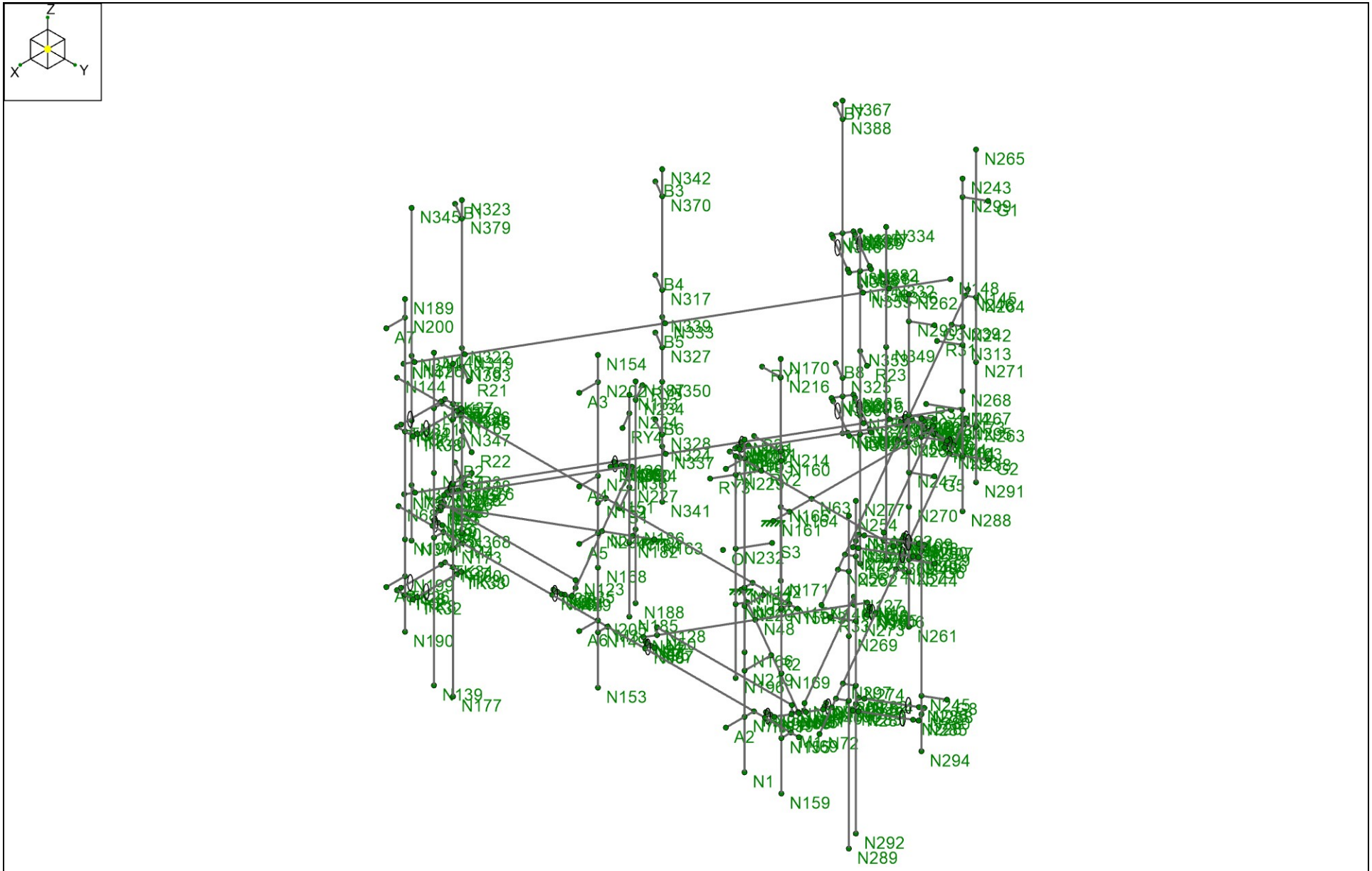
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from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



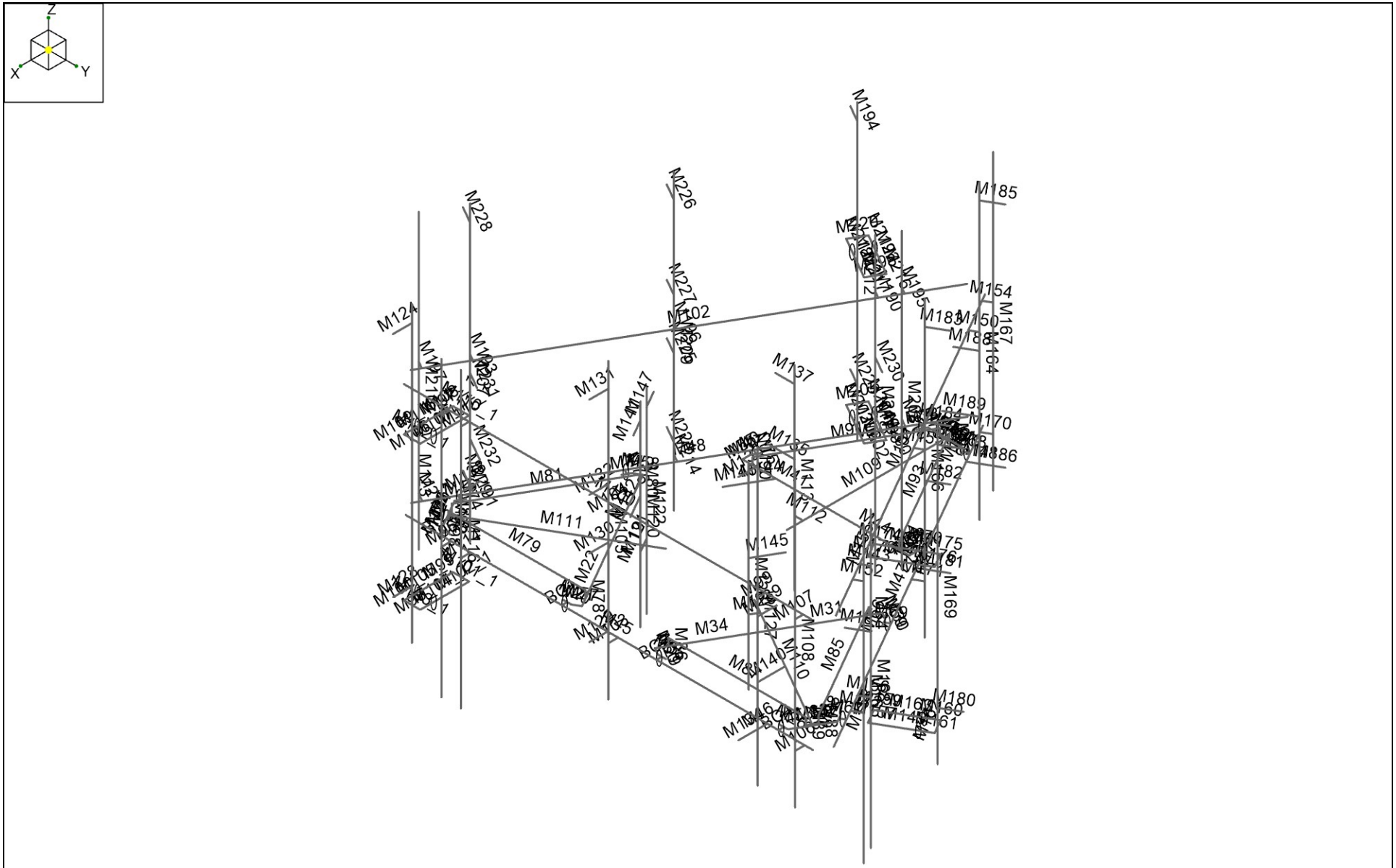


Envelope Only Solution

Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-1
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Rendered	41124-13755758_C8_01-01-MA.r3d

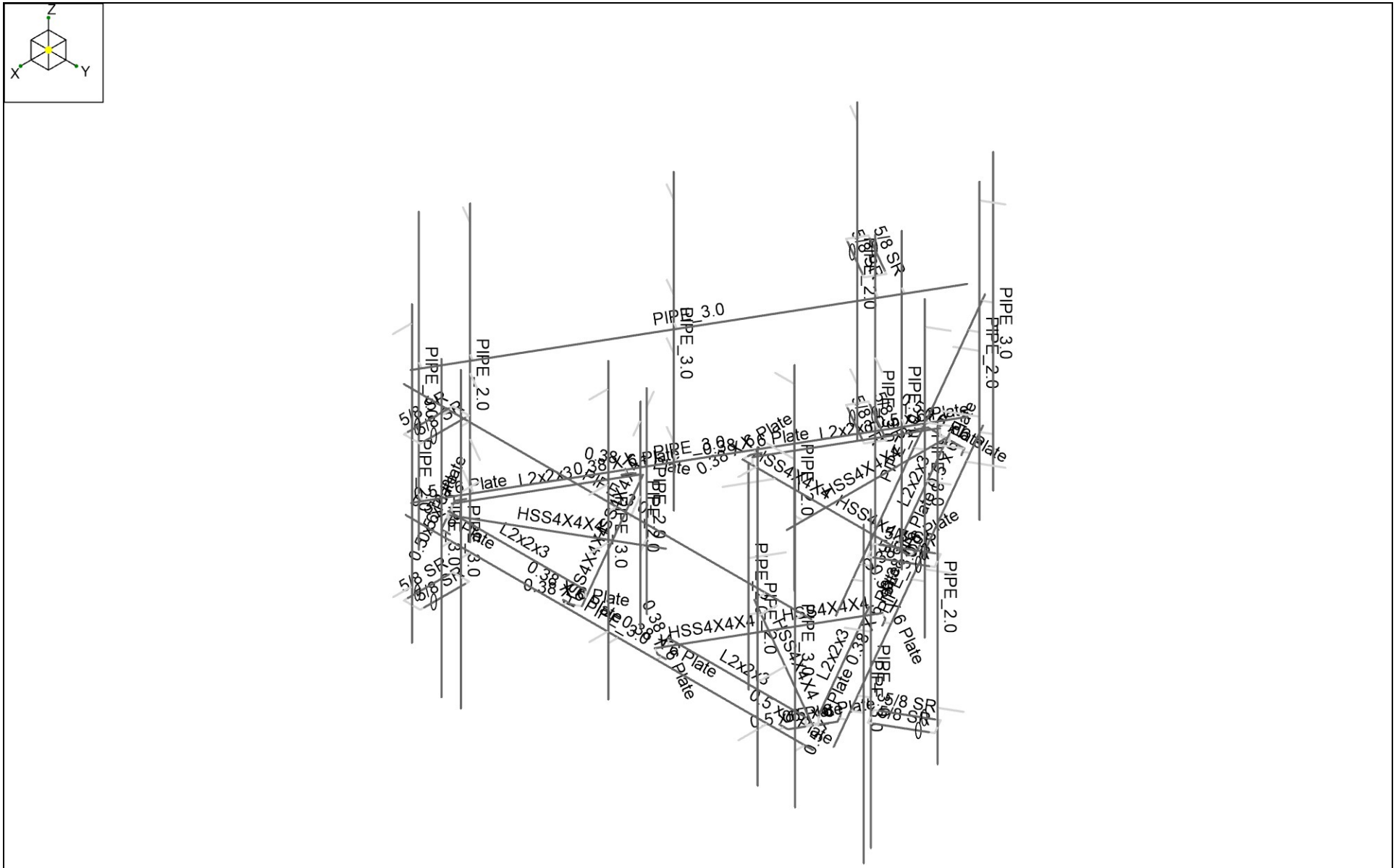


Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-2
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Joint Labels	41124-13755758_C8_01-01-MA.r3d



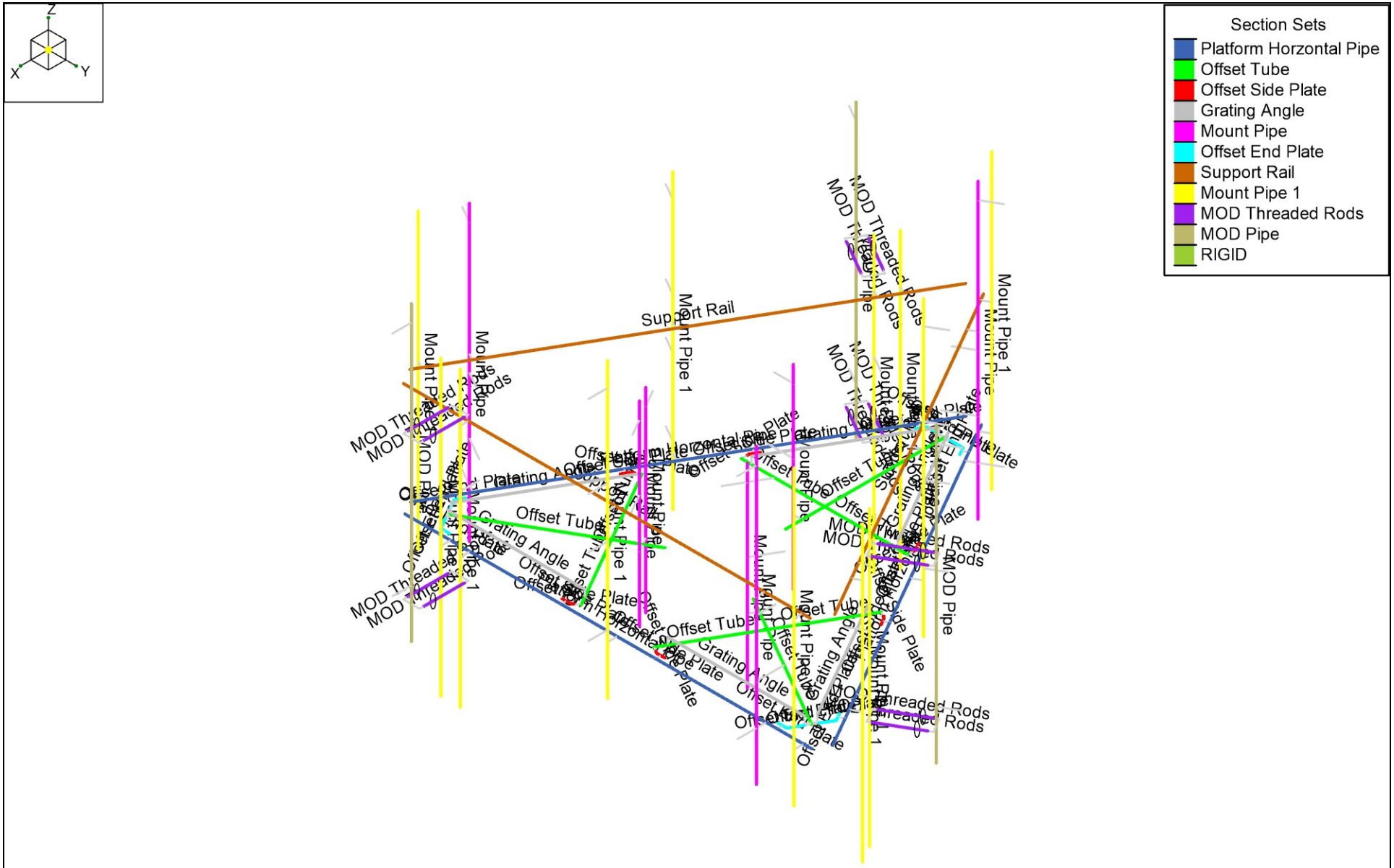
Envelope Only Solution

Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-3
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Member Labels	41124-13755758_C8_01-01-MA.r3d

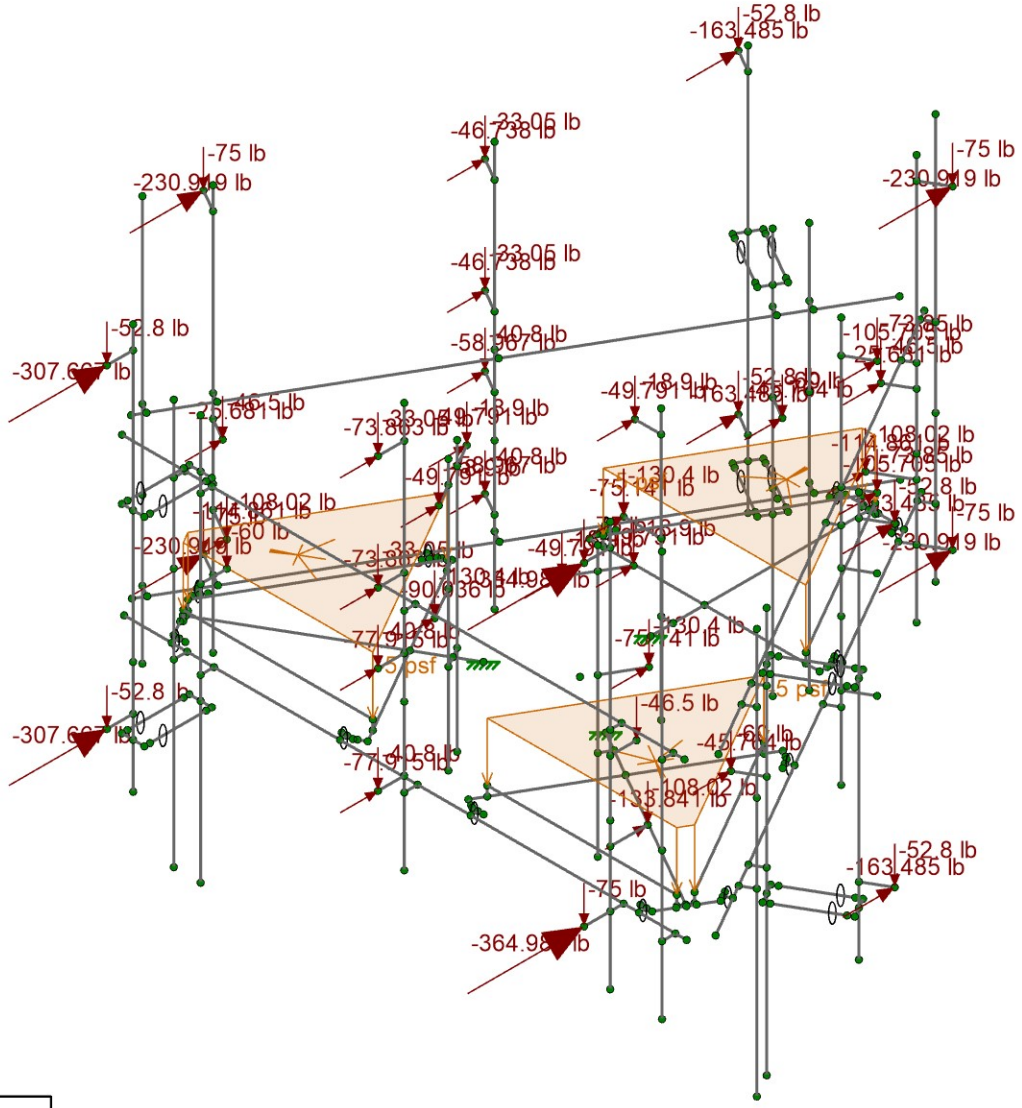


Envelope Only Solution

Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-3.1
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Member Shapes	41124-13755758_C8_01-01-MA.r3d



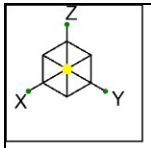
Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-4
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Section Sets	41124-13755758_C8_01-01-MA.r3d

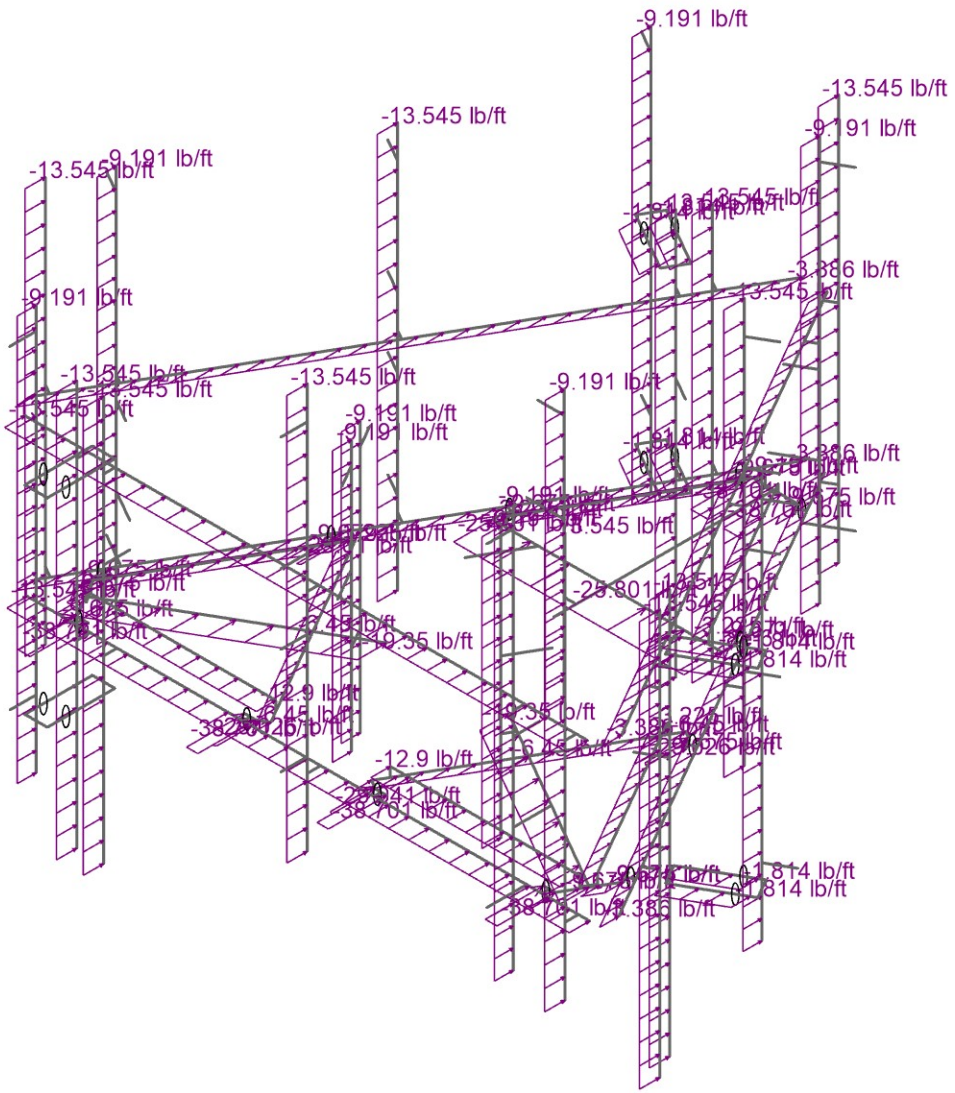


Loads: LC 1, DISPLAY (1.0D + 1.0W_0)

Envelope Only Solution

Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-5
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Joint Loads – Dead and Normal Wind	41124-13755758_C8_01-01-MA.r3d

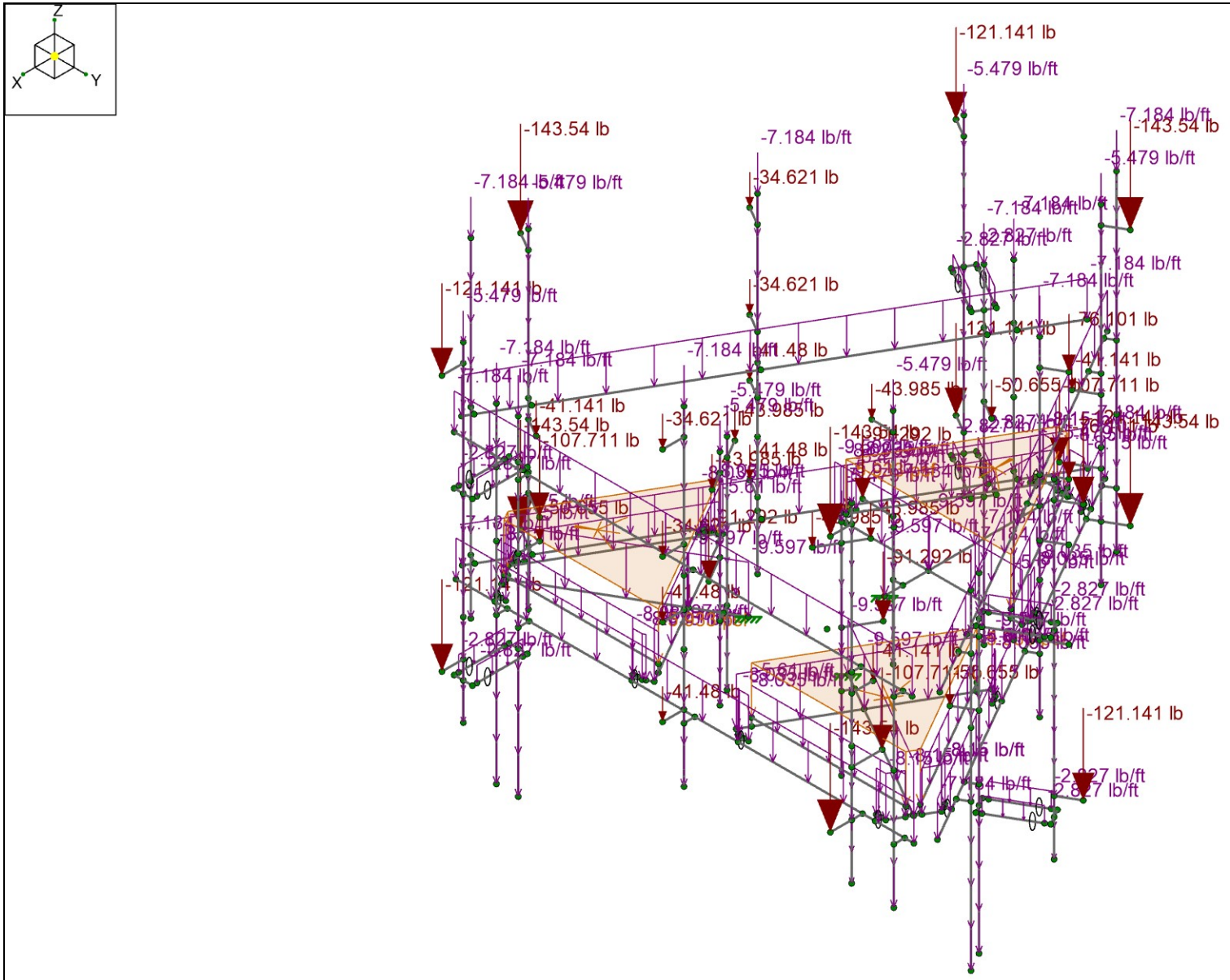




Loads: BLC 5, Structure Wind 0

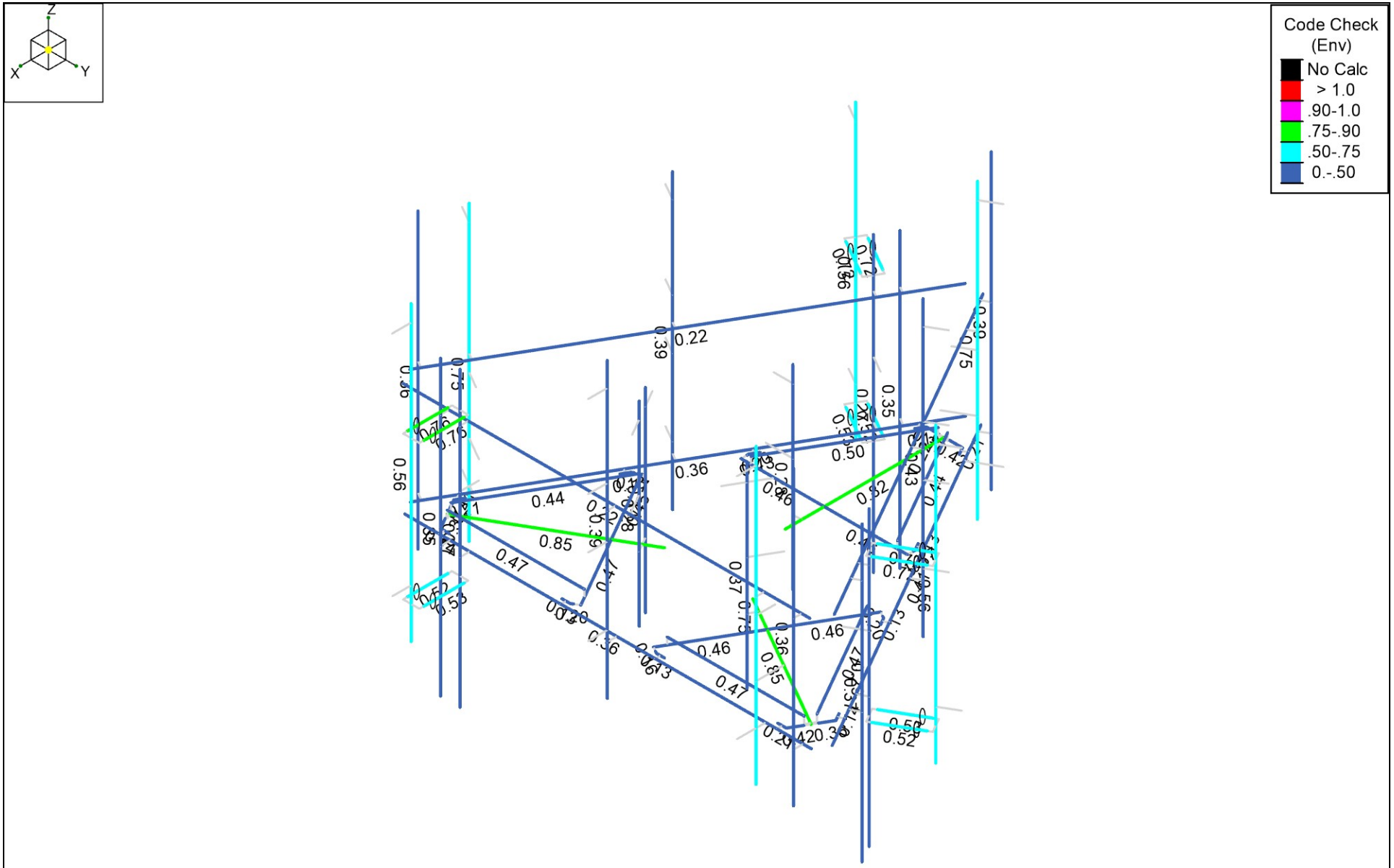
Envelope Only Solution

Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-6
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Distributed Load – Normal Wind	41124-13755758_C8_01-01-MA.r3d



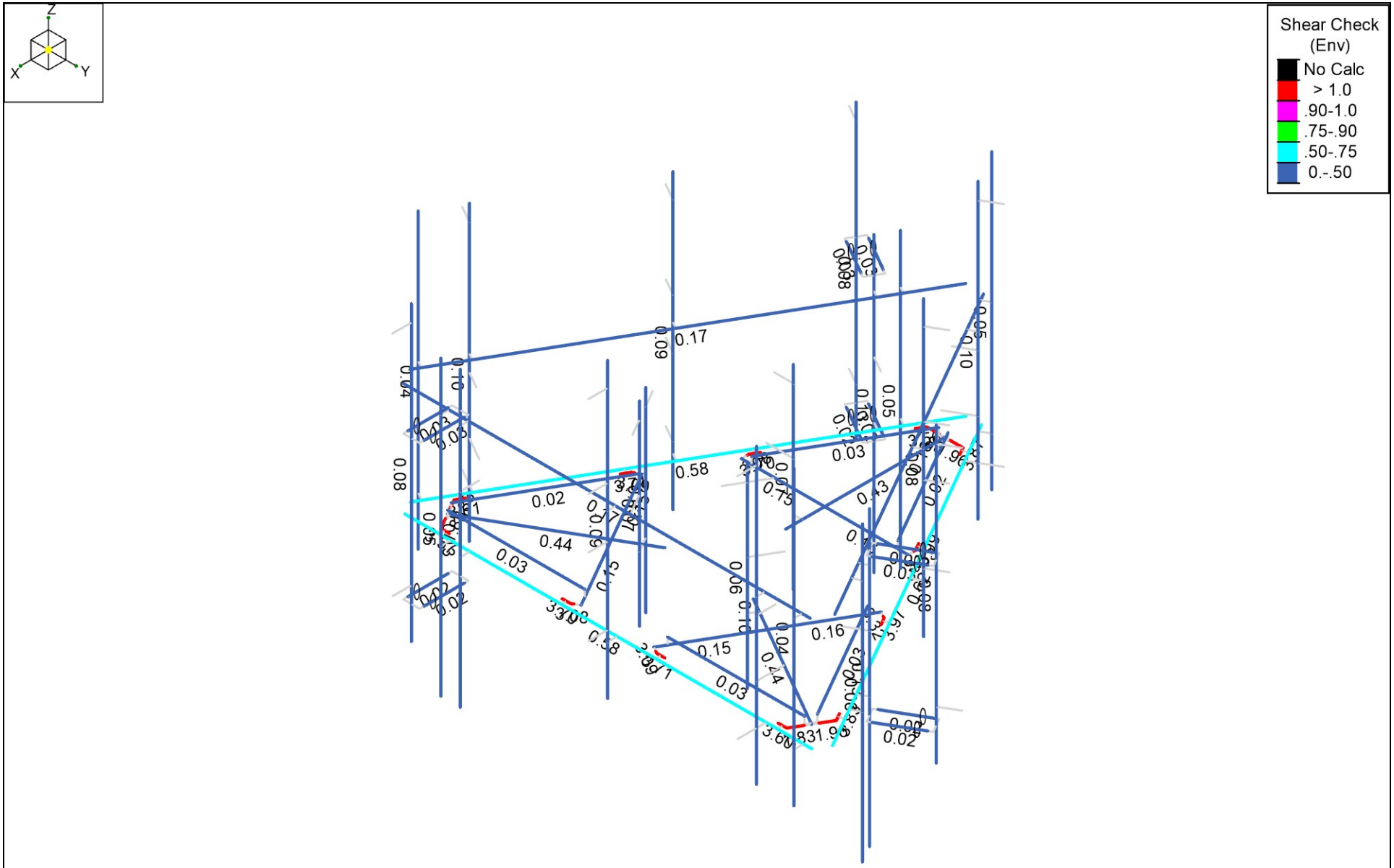
Loads: BLC 2, Ice Dead
Envelope Only Solution

Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-7
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Ice Dead Loads	41124-13755758_C8_01-01-MA.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-8
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Envelope Member Unity Check Results – Bending	41124-13755758_C8_01-01-MA.r3d



Telamon CLS	41124-13755758_C8_01- Naugatuck CT	SK-9
RY		Mar 16, 2022
41124-13755758_C8_01-01-MA	Envelope Member Check Results – Shear	41124-13755758_C8_01-01-MA.r3d

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	47		3
2	Ice Dead	RL		47	79	3
3	BLC 1 Transient Area Loads	None			30	
4	BLC 2 Transient Area Loads	None			30	
5	Structure Wind 0°	None			73	
6	Structure Wind 30°	None			134	
7	Structure Wind 45°	None			158	
8	Structure Wind 60°	None			146	
9	Structure Wind 90°	None			68	
10	Structure Wind 120°	None			146	
11	Structure Wind 135°	None			158	
12	Structure Wind 150°	None			134	
13	Structure Wind 180°	None			73	
14	Structure Wind 210°	None			134	
15	Structure Wind 225°	None			158	
16	Structure Wind 240°	None			146	
17	Structure Wind 270°	None			68	
18	Structure Wind 300°	None			146	
19	Structure Wind 315°	None			158	
20	Structure Wind 330°	None			134	
21	Structure Wind w/ Ice 0°	None			73	
22	Structure Wind w/ Ice 30°	None			138	
23	Structure Wind w/ Ice 45°	None			158	
24	Structure Wind w/ Ice 60°	None			146	
25	Structure Wind w/ Ice 90°	None			69	
26	Structure Wind w/ Ice 120°	None			146	
27	Structure Wind w/ Ice 135°	None			158	
28	Structure Wind w/ Ice 150°	None			138	
29	Structure Wind w/ Ice 180°	None			73	
30	Structure Wind w/ Ice 210°	None			138	
31	Structure Wind w/ Ice 225°	None			158	
32	Structure Wind w/ Ice 240°	None			146	
33	Structure Wind w/ Ice 270°	None			69	
34	Structure Wind w/ Ice 300°	None			146	
35	Structure Wind w/ Ice 315°	None			158	
36	Structure Wind w/ Ice 330°	None			138	
37	Antenna Wind 0°	None		45		
38	Antenna Wind 30°	None		94		
39	Antenna Wind 45°	None		94		
40	Antenna Wind 60°	None		90		
41	Antenna Wind 90°	None		47		
42	Antenna Wind 120°	None		90		
43	Antenna Wind 135°	None		94		
44	Antenna Wind 150°	None		94		
45	Antenna Wind 180°	None		45		
46	Antenna Wind 210°	None		94		
47	Antenna Wind 225°	None		94		
48	Antenna Wind 240°	None		90		
49	Antenna Wind 270°	None		47		
50	Antenna Wind 300°	None		90		
51	Antenna Wind 315°	None		94		
52	Antenna Wind 330°	None		94		
53	Antenna Wind w/ Ice 0°	None		45		
54	Antenna Wind w/ Ice 30°	None		94		
55	Antenna Wind w/ Ice 45°	None		94		
56	Antenna Wind w/ Ice 60°	None		90		
57	Antenna Wind w/ Ice 90°	None		47		
58	Antenna Wind w/ Ice 120°	None		90		

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
59	Antenna Wind w/ Ice 135°	None		94		
60	Antenna Wind w/ Ice 150°	None		94		
61	Antenna Wind w/ Ice 180°	None		45		
62	Antenna Wind w/ Ice 210°	None		94		
63	Antenna Wind w/ Ice 225°	None		94		
64	Antenna Wind w/ Ice 240°	None		90		
65	Antenna Wind w/ Ice 270°	None		47		
66	Antenna Wind w/ Ice 300°	None		90		
67	Antenna Wind w/ Ice 315°	None		94		
68	Antenna Wind w/ Ice 330°	None		94		
69	Seismic X	ELX		47	79	
70	Seismic Y	ELY		47	79	
71	Seismic Z	ELZ		47	79	
72	Maintenance Live 500 (1)	OL1		1		
73	Maintenance Live 500 (2)	OL2		1		
74	Maintenance Live 500 (3)	OL3		1		
75	Maintenance Live 500 (4)	OL4		1		
76	Maintenance Live 500 (5)	OL5		1		

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DISPLAY (1.0D + 1.0W_0°)	Yes	Y	DL	1	37	1				
2	1.4D	Yes	Y	DL	1.4						
3	1.2D + 1.0W_0°	Yes	Y	DL	1.2	5	1	37	1		
4	1.2D + 1.0W_30°	Yes	Y	DL	1.2	6	1	38	1		
5	1.2D + 1.0W_45°	Yes	Y	DL	1.2	7	1	39	1		
6	1.2D + 1.0W_60°	Yes	Y	DL	1.2	8	1	40	1		
7	1.2D + 1.0W_90°	Yes	Y	DL	1.2	9	1	41	1		
8	1.2D + 1.0W_120°	Yes	Y	DL	1.2	10	1	42	1		
9	1.2D + 1.0W_135°	Yes	Y	DL	1.2	11	1	43	1		
10	1.2D + 1.0W_150°	Yes	Y	DL	1.2	12	1	44	1		
11	1.2D + 1.0W_180°	Yes	Y	DL	1.2	13	-1	45	-1		
12	1.2D + 1.0W_210°	Yes	Y	DL	1.2	14	-1	46	-1		
13	1.2D + 1.0W_225°	Yes	Y	DL	1.2	15	-1	47	-1		
14	1.2D + 1.0W_240°	Yes	Y	DL	1.2	16	-1	48	-1		
15	1.2D + 1.0W_270°	Yes	Y	DL	1.2	17	-1	49	-1		
16	1.2D + 1.0W_300°	Yes	Y	DL	1.2	18	-1	50	-1		
17	1.2D + 1.0W_315°	Yes	Y	DL	1.2	19	-1	51	-1		
18	1.2D + 1.0W_330°	Yes	Y	DL	1.2	20	-1	52	-1		
19	1.2D + 1.0Di + 1.0Wi_0°	Yes	Y	DL	1.2	21	1	53	1	RL	1
20	1.2D + 1.0Di + 1.0Wi_30°	Yes	Y	DL	1.2	22	1	54	1	RL	1
21	1.2D + 1.0Di + 1.0Wi_45°	Yes	Y	DL	1.2	23	1	55	1	RL	1
22	1.2D + 1.0Di + 1.0Wi_60°	Yes	Y	DL	1.2	24	1	56	1	RL	1
23	1.2D + 1.0Di + 1.0Wi_90°	Yes	Y	DL	1.2	25	1	57	1	RL	1
24	1.2D + 1.0Di + 1.0Wi_120°	Yes	Y	DL	1.2	26	1	58	1	RL	1
25	1.2D + 1.0Di + 1.0Wi_135°	Yes	Y	DL	1.2	27	1	59	1	RL	1
26	1.2D + 1.0Di + 1.0Wi_150°	Yes	Y	DL	1.2	28	1	60	1	RL	1
27	1.2D + 1.0Di + 1.0Wi_180°	Yes	Y	DL	1.2	29	-1	61	-1	RL	1
28	1.2D + 1.0Di + 1.0Wi_210°	Yes	Y	DL	1.2	30	-1	62	-1	RL	1
29	1.2D + 1.0Di + 1.0Wi_225°	Yes	Y	DL	1.2	31	-1	63	-1	RL	1
30	1.2D + 1.0Di + 1.0Wi_240°	Yes	Y	DL	1.2	32	-1	64	-1	RL	1
31	1.2D + 1.0Di + 1.0Wi_270°	Yes	Y	DL	1.2	33	-1	65	-1	RL	1
32	1.2D + 1.0Di + 1.0Wi_300°	Yes	Y	DL	1.2	34	-1	66	-1	RL	1
33	1.2D + 1.0Di + 1.0Wi_315°	Yes	Y	DL	1.2	35	-1	67	-1	RL	1
34	1.2D + 1.0Di + 1.0Wi_330°	Yes	Y	DL	1.2	36	-1	68	-1	RL	1
35	1.2D + 1.0Ev + 1.0Eh_0°	Yes	Y	DL	1.242	ELX	-1	ELY			
36	1.2D + 1.0Ev + 1.0Eh_30°	Yes	Y	DL	1.242	ELX	-0.866	ELY	0.5		
37	1.2D + 1.0Ev + 1.0Eh_45°	Yes	Y	DL	1.242	ELX	-0.707	ELY	0.707		

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
38	1.2D + 1.0Ev + 1.0Eh_60°	Yes	Y	DL	1.242	ELX	-0.5	ELY	0.866		
39	1.2D + 1.0Ev + 1.0Eh_90°	Yes	Y	DL	1.242	ELX		ELY	1		
40	1.2D + 1.0Ev + 1.0Eh_120°	Yes	Y	DL	1.242	ELX	0.5	ELY	0.866		
41	1.2D + 1.0Ev + 1.0Eh_135°	Yes	Y	DL	1.242	ELX	0.707	ELY	0.707		
42	1.2D + 1.0Ev + 1.0Eh_150°	Yes	Y	DL	1.242	ELX	0.866	ELY	0.5		
43	1.2D + 1.0Ev + 1.0Eh_180°	Yes	Y	DL	1.242	ELX	1	ELY			
44	1.2D + 1.0Ev + 1.0Eh_210°	Yes	Y	DL	1.242	ELX	0.866	ELY	-0.5		
45	1.2D + 1.0Ev + 1.0Eh_225°	Yes	Y	DL	1.242	ELX	0.707	ELY	-0.707		
46	1.2D + 1.0Ev + 1.0Eh_240°	Yes	Y	DL	1.242	ELX	0.5	ELY	-0.866		
47	1.2D + 1.0Ev + 1.0Eh_270°	Yes	Y	DL	1.242	ELX		ELY	-1		
48	1.2D + 1.0Ev + 1.0Eh_300°	Yes	Y	DL	1.242	ELX	-0.5	ELY	-0.866		
49	1.2D + 1.0Ev + 1.0Eh_315°	Yes	Y	DL	1.242	ELX	-0.707	ELY	-0.707		
50	1.2D + 1.0Ev + 1.0Eh_330°	Yes	Y	DL	1.242	ELX	-0.866	ELY	-0.5		
51	0.9D - 1.0Ev + 1.0Eh_0°	Yes	Y	DL	0.858	ELX	-1	ELY			
52	0.9D - 1.0Ev + 1.0Eh_30°	Yes	Y	DL	0.858	ELX	-0.866	ELY	0.5		
53	0.9D - 1.0Ev + 1.0Eh_45°	Yes	Y	DL	0.858	ELX	-0.707	ELY	0.707		
54	0.9D - 1.0Ev + 1.0Eh_60°	Yes	Y	DL	0.858	ELX	-0.5	ELY	0.866		
55	0.9D - 1.0Ev + 1.0Eh_90°	Yes	Y	DL	0.858	ELX		ELY	1		
56	0.9D - 1.0Ev + 1.0Eh_120°	Yes	Y	DL	0.858	ELX	0.5	ELY	0.866		
57	0.9D - 1.0Ev + 1.0Eh_135°	Yes	Y	DL	0.858	ELX	0.707	ELY	0.707		
58	0.9D - 1.0Ev + 1.0Eh_150°	Yes	Y	DL	0.858	ELX	0.866	ELY	0.5		
59	0.9D - 1.0Ev + 1.0Eh_180°	Yes	Y	DL	0.858	ELX	1	ELY			
60	0.9D - 1.0Ev + 1.0Eh_210°	Yes	Y	DL	0.858	ELX	0.866	ELY	-0.5		
61	0.9D - 1.0Ev + 1.0Eh_225°	Yes	Y	DL	0.858	ELX	0.707	ELY	-0.707		
62	0.9D - 1.0Ev + 1.0Eh_240°	Yes	Y	DL	0.858	ELX	0.5	ELY	-0.866		
63	0.9D - 1.0Ev + 1.0Eh_270°	Yes	Y	DL	0.858	ELX		ELY	-1		
64	0.9D - 1.0Ev + 1.0Eh_300°	Yes	Y	DL	0.858	ELX	-0.5	ELY	-0.866		
65	0.9D - 1.0Ev + 1.0Eh_315°	Yes	Y	DL	0.858	ELX	-0.707	ELY	-0.707		
66	0.9D - 1.0Ev + 1.0Eh_330°	Yes	Y	DL	0.858	ELX	-0.866	ELY	-0.5		
67	1.2D + 1.5Lm_1 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.069	37	0.069	OL1	1.5
68	1.2D + 1.5Lm_1 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.069	38	0.069	OL1	1.5
69	1.2D + 1.5Lm_1 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.069	39	0.069	OL1	1.5
70	1.2D + 1.5Lm_1 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.069	40	0.069	OL1	1.5
71	1.2D + 1.5Lm_1 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.069	41	0.069	OL1	1.5
72	1.2D + 1.5Lm_1 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.069	42	0.069	OL1	1.5
73	1.2D + 1.5Lm_1 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.069	43	0.069	OL1	1.5
74	1.2D + 1.5Lm_1 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.069	44	0.069	OL1	1.5
75	1.2D + 1.5Lm_1 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.069	45	-0.069	OL1	1.5
76	1.2D + 1.5Lm_1 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.069	46	-0.069	OL1	1.5
77	1.2D + 1.5Lm_1 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.069	47	-0.069	OL1	1.5
78	1.2D + 1.5Lm_1 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.069	48	-0.069	OL1	1.5
79	1.2D + 1.5Lm_1 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.069	49	-0.069	OL1	1.5
80	1.2D + 1.5Lm_1 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.069	50	-0.069	OL1	1.5
81	1.2D + 1.5Lm_1 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.069	51	-0.069	OL1	1.5
82	1.2D + 1.5Lm_1 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.069	52	-0.069	OL1	1.5
83	1.2D + 1.5Lm_2 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.069	37	0.069	OL2	1.5
84	1.2D + 1.5Lm_2 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.069	38	0.069	OL2	1.5
85	1.2D + 1.5Lm_2 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.069	39	0.069	OL2	1.5
86	1.2D + 1.5Lm_2 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.069	40	0.069	OL2	1.5
87	1.2D + 1.5Lm_2 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.069	41	0.069	OL2	1.5
88	1.2D + 1.5Lm_2 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.069	42	0.069	OL2	1.5
89	1.2D + 1.5Lm_2 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.069	43	0.069	OL2	1.5
90	1.2D + 1.5Lm_2 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.069	44	0.069	OL2	1.5
91	1.2D + 1.5Lm_2 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.069	45	-0.069	OL2	1.5
92	1.2D + 1.5Lm_2 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.069	46	-0.069	OL2	1.5
93	1.2D + 1.5Lm_2 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.069	47	-0.069	OL2	1.5
94	1.2D + 1.5Lm_2 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.069	48	-0.069	OL2	1.5
95	1.2D + 1.5Lm_2 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.069	49	-0.069	OL2	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
96	1.2D + 1.5Lm_2 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.069	50	-0.069	OL2	1.5
97	1.2D + 1.5Lm_2 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.069	51	-0.069	OL2	1.5
98	1.2D + 1.5Lm_2 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.069	52	-0.069	OL2	1.5
99	1.2D + 1.5Lm_3 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.069	37	0.069	OL3	1.5
100	1.2D + 1.5Lm_3 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.069	38	0.069	OL3	1.5
101	1.2D + 1.5Lm_3 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.069	39	0.069	OL3	1.5
102	1.2D + 1.5Lm_3 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.069	40	0.069	OL3	1.5
103	1.2D + 1.5Lm_3 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.069	41	0.069	OL3	1.5
104	1.2D + 1.5Lm_3 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.069	42	0.069	OL3	1.5
105	1.2D + 1.5Lm_3 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.069	43	0.069	OL3	1.5
106	1.2D + 1.5Lm_3 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.069	44	0.069	OL3	1.5
107	1.2D + 1.5Lm_3 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.069	45	-0.069	OL3	1.5
108	1.2D + 1.5Lm_3 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.069	46	-0.069	OL3	1.5
109	1.2D + 1.5Lm_3 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.069	47	-0.069	OL3	1.5
110	1.2D + 1.5Lm_3 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.069	48	-0.069	OL3	1.5
111	1.2D + 1.5Lm_3 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.069	49	-0.069	OL3	1.5
112	1.2D + 1.5Lm_3 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.069	50	-0.069	OL3	1.5
113	1.2D + 1.5Lm_3 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.069	51	-0.069	OL3	1.5
114	1.2D + 1.5Lm_3 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.069	52	-0.069	OL3	1.5
115	1.2D + 1.5Lm_4 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.069	37	0.069	OL4	1.5
116	1.2D + 1.5Lm_4 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.069	38	0.069	OL4	1.5
117	1.2D + 1.5Lm_4 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.069	39	0.069	OL4	1.5
118	1.2D + 1.5Lm_4 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.069	40	0.069	OL4	1.5
119	1.2D + 1.5Lm_4 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.069	41	0.069	OL4	1.5
120	1.2D + 1.5Lm_4 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.069	42	0.069	OL4	1.5
121	1.2D + 1.5Lm_4 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.069	43	0.069	OL4	1.5
122	1.2D + 1.5Lm_4 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.069	44	0.069	OL4	1.5
123	1.2D + 1.5Lm_4 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.069	45	-0.069	OL4	1.5
124	1.2D + 1.5Lm_4 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.069	46	-0.069	OL4	1.5
125	1.2D + 1.5Lm_4 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.069	47	-0.069	OL4	1.5
126	1.2D + 1.5Lm_4 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.069	48	-0.069	OL4	1.5
127	1.2D + 1.5Lm_4 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.069	49	-0.069	OL4	1.5
128	1.2D + 1.5Lm_4 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.069	50	-0.069	OL4	1.5
129	1.2D + 1.5Lm_4 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.069	51	-0.069	OL4	1.5
130	1.2D + 1.5Lm_4 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.069	52	-0.069	OL4	1.5
131	1.2D + 1.5Lm_5 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.069	37	0.069	OL5	1.5
132	1.2D + 1.5Lm_5 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.069	38	0.069	OL5	1.5
133	1.2D + 1.5Lm_5 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.069	39	0.069	OL5	1.5
134	1.2D + 1.5Lm_5 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.069	40	0.069	OL5	1.5
135	1.2D + 1.5Lm_5 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.069	41	0.069	OL5	1.5
136	1.2D + 1.5Lm_5 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.069	42	0.069	OL5	1.5
137	1.2D + 1.5Lm_5 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.069	43	0.069	OL5	1.5
138	1.2D + 1.5Lm_5 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.069	44	0.069	OL5	1.5
139	1.2D + 1.5Lm_5 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.069	45	-0.069	OL5	1.5
140	1.2D + 1.5Lm_5 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.069	46	-0.069	OL5	1.5
141	1.2D + 1.5Lm_5 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.069	47	-0.069	OL5	1.5
142	1.2D + 1.5Lm_5 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.069	48	-0.069	OL5	1.5
143	1.2D + 1.5Lm_5 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.069	49	-0.069	OL5	1.5
144	1.2D + 1.5Lm_5 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.069	50	-0.069	OL5	1.5
145	1.2D + 1.5Lm_5 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.069	51	-0.069	OL5	1.5
146	1.2D + 1.5Lm_5 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.069	52	-0.069	OL5	1.5

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3

Hot Rolled Steel Properties (Continued)

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	SAE J429 Grade 2	29000	11154	0.3	0.65	0.49	57	1.5	74	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	Platform Horzontal Pipe	PIPE_3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offset Tube	HSS4X4X4	None	None	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
3	Offset Side Plate	0.38 X 6 Plate	None	None	A36 Gr.36	Typical	2.28	0.027	6.84	0.105
4	Grating Angle	L2x2x3	None	None	A36 Gr.36	Typical	0.722	0.271	0.271	0.009
5	Mount Pipe	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
6	Offset End Plate	0.5 x 6 Plate	None	None	A36 Gr.36	Typical	3	0.063	9	0.237
7	Support Rail	PIPE_3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
8	Mount Pipe 1	PIPE_3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
9	MOD Threaded Rods	5/8 SR	None	None	SAE J429 Grade 2	Typical	0.307	0.007	0.007	0.015
10	MOD Pipe	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	K y-y	K z-z	Function
1	M16	Offset End Plate	3.122					Lateral
2	M17	Offset End Plate	4.688					Lateral
3	M18	Offset End Plate	3.122					Lateral
4	M19	Offset Side Plate	0.875					Lateral
5	M20	Offset Side Plate	3					Lateral
6	M21	Offset Side Plate	0.875					Lateral
7	M22	Offset Tube	30.688					Lateral
8	M25	Offset Tube	30.687					Lateral
9	M26	Offset End Plate	3.122					Lateral
10	M27	Offset End Plate	4.688					Lateral
11	M28	Offset End Plate	3.122					Lateral
12	M29	Offset Side Plate	0.875					Lateral
13	M30	Offset Side Plate	0.875					Lateral
14	M31	Offset Tube	30.688					Lateral
15	M34	Offset Tube	30.687					Lateral
16	M36	Offset End Plate	3.122					Lateral
17	M37	Offset End Plate	4.688					Lateral
18	M38	Offset End Plate	3.122					Lateral
19	M39	Offset Side Plate	0.875					Lateral
20	M40	Offset Side Plate	0.875					Lateral
21	M41	Offset Tube	30.688					Lateral
22	M44	Offset Tube	30.687					Lateral
23	M45	Platform Horzontal Pipe	150	54.95	44.89			Lateral
24	M47	Platform Horzontal Pipe	150	54.95	44.89			Lateral
25	M48	Platform Horzontal Pipe	150	54.95	44.89			Lateral
26	M49	Offset End Plate	4.688					Lateral
27	M51	Offset End Plate	4.688					Lateral
28	M53	Offset End Plate	4.688					Lateral
29	M65	Offset Side Plate	3					Lateral
30	M66	Offset Side Plate	3					Lateral
31	M71	Offset Side Plate	3					Lateral
32	M72	Offset Side Plate	3					Lateral
33	M77	Offset Side Plate	3					Lateral
34	M79	Grating Angle	50.542			0.65	0.65	Lateral
35	M81	Grating Angle	50.542			0.65	0.65	Lateral
36	M85	Grating Angle	50.542			0.65	0.65	Lateral
37	M87	Grating Angle	50.542			0.65	0.65	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	K y-y	K z-z	Function
38	M91	Grating Angle	50.542			0.65	0.65	Lateral
39	M93	Grating Angle	50.542			0.65	0.65	Lateral
40	M100	Support Rail	150		54.95			Lateral
41	M101	Support Rail	150		54.95			Lateral
42	M102	Support Rail	150		54.95			Lateral
43	M127	Mount Pipe	108					Lateral
44	M98	Mount Pipe 1	108					Lateral
45	M105	Mount Pipe 1	108					Lateral
46	M108	Mount Pipe 1	108					Lateral
47	M109	Offset Tube	58.7					Lateral
48	M110	Offset Tube	58.7					Lateral
49	M111	Offset Tube	58.7					Lateral
50	M113	Mount Pipe	72					Lateral
51	M116	Mount Pipe 1	108					Lateral
52	M120	Mount Pipe	72					Lateral
53	M122	Mount Pipe	72					Lateral
54	M126	Mount Pipe	72					Lateral
55	M104_1	MOD Threaded Rods	15					Lateral
56	M105_1	MOD Threaded Rods	15					Lateral
57	M107_1	MOD Threaded Rods	15					Lateral
58	M113_1	MOD Threaded Rods	15					Lateral
59	M123	MOD Pipe	108					Lateral
60	M149	MOD Threaded Rods	15					Lateral
61	M163	MOD Threaded Rods	15					Lateral
62	M164	Mount Pipe	108					Lateral
63	M165	Mount Pipe 1	108					Lateral
64	M166	Mount Pipe 1	108					Lateral
65	M167	Mount Pipe 1	108					Lateral
66	M168	Mount Pipe 1	108					Lateral
67	M169	MOD Pipe	108					Lateral
68	M178	MOD Threaded Rods	15					Lateral
69	M179	MOD Threaded Rods	15					Lateral
70	M192	MOD Threaded Rods	15					Lateral
71	M206	MOD Threaded Rods	15					Lateral
72	M207	Mount Pipe	108					Lateral
73	M208	Mount Pipe 1	108					Lateral
74	M209	Mount Pipe 1	108					Lateral
75	M210	Mount Pipe 1	108					Lateral
76	M211	Mount Pipe 1	108					Lateral
77	M212	MOD Pipe	108					Lateral
78	M221	MOD Threaded Rods	15					Lateral
79	M222	MOD Threaded Rods	15					Lateral

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M16			Yes	** NA **	None
2	M17			Yes	** NA **	None
3	M18			Yes	** NA **	None
4	M19			Yes	** NA **	None
5	M20			Yes	** NA **	None
6	M21			Yes	** NA **	None
7	M22			Yes	** NA **	None
8	M24			Yes	** NA **	None
9	M25			Yes	** NA **	None
10	M26			Yes	** NA **	None
11	M27			Yes	** NA **	None
12	M28			Yes	** NA **	None
13	M29			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
14	M30			Yes	** NA **	None
15	M31			Yes	** NA **	None
16	M33			Yes	** NA **	None
17	M34			Yes	** NA **	None
18	M36			Yes	** NA **	None
19	M37			Yes	** NA **	None
20	M38			Yes	** NA **	None
21	M39			Yes	** NA **	None
22	M40			Yes	** NA **	None
23	M41			Yes	** NA **	None
24	M43			Yes	** NA **	None
25	M44			Yes	** NA **	None
26	M45			Yes	** NA **	None
27	M46			Yes	** NA **	None
28	M47			Yes	** NA **	None
29	M48			Yes	** NA **	None
30	M49			Yes	** NA **	None
31	M50			Yes	** NA **	None
32	M51			Yes	** NA **	None
33	M52			Yes	** NA **	None
34	M53			Yes	** NA **	None
35	M54			Yes	** NA **	None
36	M55			Yes	** NA **	None
37	M56			Yes	** NA **	None
38	M57			Yes	** NA **	None
39	M58			Yes	** NA **	None
40	M59			Yes	** NA **	None
41	M60			Yes	** NA **	None
42	BC3		OOOXOO	Yes	** NA **	None
43	BC4		OOOXOO	Yes	** NA **	None
44	BC1		OOOXOO	Yes	** NA **	None
45	BC2		OOOXOO	Yes	** NA **	None
46	M65			Yes	** NA **	None
47	M66			Yes	** NA **	None
48	M67		OOOXOO	Yes	** NA **	None
49	M68		OOOXOO	Yes	** NA **	None
50	M69		OOOXOO	Yes	** NA **	None
51	M70		OOOXOO	Yes	** NA **	None
52	M71			Yes	** NA **	None
53	M72			Yes	** NA **	None
54	M73		OOOXOO	Yes	** NA **	None
55	M74		OOOXOO	Yes	** NA **	None
56	M75		OOOXOO	Yes	** NA **	None
57	M76		OOOXOO	Yes	** NA **	None
58	M77			Yes	** NA **	None
59	M78			Yes	** NA **	None
60	M79			Yes	** NA **	None
61	M80			Yes	** NA **	None
62	M81			Yes	** NA **	None
63	M82			Yes	** NA **	None
64	M83			Yes	** NA **	None
65	M84			Yes	** NA **	None
66	M85			Yes	** NA **	None
67	M86			Yes	** NA **	None
68	M87			Yes	** NA **	None
69	M88			Yes	** NA **	None
70	M89			Yes	** NA **	None
71	M90			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
72	M91			Yes	** NA **	None
73	M92			Yes	** NA **	None
74	M93			Yes	** NA **	None
75	M94			Yes	** NA **	None
76	M95			Yes	** NA **	None
77	M99			Yes	** NA **	None
78	M100			Yes	** NA **	None
79	M101			Yes	** NA **	None
80	M102			Yes	** NA **	None
81	M127			Yes	** NA **	None
82	M96			Yes	** NA **	None
83	M97			Yes	** NA **	None
84	M98			Yes	** NA **	None
85	M103			Yes	** NA **	None
86	M104			Yes	** NA **	None
87	M105			Yes	** NA **	None
88	M106			Yes	** NA **	None
89	M107			Yes	** NA **	None
90	M108			Yes	** NA **	None
91	M109			Yes	** NA **	None
92	M110			Yes	** NA **	None
93	M111			Yes	** NA **	None
94	M112			Yes	** NA **	None
95	M113			Yes	** NA **	None
96	M114			Yes	** NA **	None
97	M115			Yes	** NA **	None
98	M116			Yes	** NA **	None
99	M119			Yes	** NA **	None
100	M120			Yes	** NA **	None
101	M121			Yes	** NA **	None
102	M122			Yes	** NA **	None
103	M125			Yes	** NA **	None
104	M126			Yes	** NA **	None
105	M98_1			Yes	** NA **	None
106	M99_1			Yes	** NA **	None
107	M100_1			Yes	** NA **	None
108	M101_1			Yes	** NA **	None
109	M102_1			Yes	** NA **	None
110	M103_1			Yes	** NA **	None
111	M104_1	OOOXOO		Yes	** NA **	None
112	M105_1	OOOXOO		Yes	** NA **	None
113	M106_1			Yes	** NA **	None
114	M107_1	OOOXOO		Yes	** NA **	None
115	M108_1			Yes	** NA **	None
116	M109_1			Yes	** NA **	None
117	M110_1			Yes	** NA **	None
118	M111_1			Yes	** NA **	None
119	M112_1			Yes	** NA **	None
120	M113_1	OOOXOO		Yes	** NA **	None
121	M123			Yes	** NA **	None
122	M124			Yes	** NA **	None
123	M128			Yes	** NA **	None
124	M129			Yes	** NA **	None
125	M130			Yes	** NA **	None
126	M131			Yes	** NA **	None
127	M132			Yes	** NA **	None
128	M133			Yes	** NA **	None
129	M134			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
130	M135			Yes	** NA **	None
131	M137			Yes	** NA **	None
132	M138			Yes	** NA **	None
133	M139			Yes	** NA **	None
134	M140			Yes	** NA **	None
135	M141			Yes	** NA **	None
136	M142			Yes	** NA **	None
137	M144			Yes	** NA **	None
138	M145			Yes	** NA **	None
139	M146			Yes	** NA **	None
140	M147			Yes	** NA **	None
141	M143			Yes	** NA **	None
142	M148			Yes	** NA **	None
143	M149	OOOXOO		Yes	** NA **	None
144	M150			Yes	** NA **	None
145	M151			Yes	** NA **	None
146	M152			Yes	** NA **	None
147	M153			Yes	** NA **	None
148	M154			Yes	** NA **	None
149	M155			Yes	** NA **	None
150	M156			Yes	** NA **	None
151	M157			Yes	** NA **	None
152	M158			Yes	** NA **	None
153	M159			Yes	** NA **	None
154	M160			Yes	** NA **	None
155	M161			Yes	** NA **	None
156	M162			Yes	** NA **	None
157	M163	OOOXOO		Yes	** NA **	None
158	M164			Yes	** NA **	None
159	M165			Yes	** NA **	None
160	M166			Yes	** NA **	None
161	M167			Yes	** NA **	None
162	M168			Yes	** NA **	None
163	M169			Yes	** NA **	None
164	M170			Yes	** NA **	None
165	M171			Yes	** NA **	None
166	M172			Yes	** NA **	None
167	M173			Yes	** NA **	None
168	M174			Yes	** NA **	None
169	M175			Yes	** NA **	None
170	M176			Yes	** NA **	None
171	M177			Yes	** NA **	None
172	M178	OOOXOO		Yes	** NA **	None
173	M179	OOOXOO		Yes	** NA **	None
174	M180			Yes	** NA **	None
175	M181			Yes	** NA **	None
176	M182			Yes	** NA **	None
177	M183			Yes	** NA **	None
178	M184			Yes	** NA **	None
179	M185			Yes	** NA **	None
180	M186			Yes	** NA **	None
181	M187			Yes	** NA **	None
182	M188			Yes	** NA **	None
183	M189			Yes	** NA **	None
184	M190			Yes	** NA **	None
185	M191			Yes	** NA **	None
186	M192	OOOXOO		Yes	** NA **	None
187	M193			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
188	M194			Yes	** NA **	None
189	M195			Yes	** NA **	None
190	M196			Yes	** NA **	None
191	M197			Yes	** NA **	None
192	M198			Yes	** NA **	None
193	M199			Yes	** NA **	None
194	M200			Yes	** NA **	None
195	M201			Yes	** NA **	None
196	M202			Yes	** NA **	None
197	M203			Yes	** NA **	None
198	M204			Yes	** NA **	None
199	M205			Yes	** NA **	None
200	M206	OOOXOO		Yes	** NA **	None
201	M207			Yes	** NA **	None
202	M208			Yes	** NA **	None
203	M209			Yes	** NA **	None
204	M210			Yes	** NA **	None
205	M211			Yes	** NA **	None
206	M212			Yes	** NA **	None
207	M213			Yes	** NA **	None
208	M214			Yes	** NA **	None
209	M215			Yes	** NA **	None
210	M216			Yes	** NA **	None
211	M217			Yes	** NA **	None
212	M218			Yes	** NA **	None
213	M219			Yes	** NA **	None
214	M220			Yes	** NA **	None
215	M221	OOOXOO		Yes	** NA **	None
216	M222	OOOXOO		Yes	** NA **	None
217	M223			Yes	** NA **	None
218	M224			Yes	** NA **	None
219	M225			Yes	** NA **	None
220	M226			Yes	** NA **	None
221	M227			Yes	** NA **	None
222	M228			Yes	** NA **	None
223	M229			Yes	** NA **	None
224	M230			Yes	** NA **	None
225	M231			Yes	** NA **	None
226	M232			Yes	** NA **	None

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N161	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N162	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N163	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N161	max	3317.3854	3	1960.4404	15	4182.4471	19	3619.4052	7	9235.55	3	2206.5217	7
2		min	-4375.1296	11	-1954.1326	7	-472.7595	11	-3943.3697	15	-2773.8352	11	-2213.8583	15
3	N162	max	2235.5827	3	3918.191	16	4251.1726	24	8655.3275	7	3141.4165	3	2225.4004	12
4		min	-1700.9946	11	-2997.29	8	-441.0356	16	-3053.8989	15	-6159.0406	11	-2232.267	4
5	N163	max	2459.7978	3	2968.2532	14	4316.3126	30	3017.7412	7	2882.3569	3	2262.3357	18
6		min	-1936.7904	11	-3878.5405	6	-401.0114	6	-8472.9734	15	-6257.61	11	-2269.8298	10
7	Totals:	max	8012.7658	3	8014.7088	15	10961.8461	19						
8		min	-8012.9146	11	-8014.7536	7	3867.4886	59						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M71	0.38 X 6 Plate	0.1267	1.4999	15	3.9854	2.9998	y	6	71020.2581	73872	584.82	9234	3	H1-1b
2	M66	0.38 X 6 Plate	0.1313	3	7	3.9732	3	y	6	71019.8853	73872	584.82	9234	3	H1-1b
3	M36	0.5 x 6 Plate	0.2082	1.4955	4	3.8678	1.4955	y	6	94834.571	97200	1012.5	12150	3	H1-1b
4	M28	0.5 x 6 Plate	0.1373	0	10	3.8278	1.4955	y	6	94834.571	97200	1012.5	12150	3	H1-1b
5	M77	0.38 X 6 Plate	0.1347	1.4999	10	3.7118	2.9998	y	16	71020.2581	73872	584.82	9234	3	H1-1b
6	M65	0.38 X 6 Plate	0.1339	1.4999	4	3.7083	2.9998	y	11	71020.2581	73872	584.82	9234	3	H1-1b
7	M20	0.38 X 6 Plate	0.1284	3	12	3.699	3	y	11	71019.8853	73872	584.82	9234	3	H1-1b
8	M72	0.38 X 6 Plate	0.1276	3	18	3.6982	3	y	16	71019.8853	73872	584.82	9234	3	H1-1b
9	M16	0.5 x 6 Plate	0.2136	1.4955	15	3.6126	1.4955	y	16	94834.571	97200	1012.5	12150	3	H1-1b
10	M26	0.5 x 6 Plate	0.2135	1.4955	10	3.5988	1.4955	y	11	94834.571	97200	1012.5	12150	3	H1-1b
11	M18	0.5 x 6 Plate	0.1381	0	15	3.5665	1.4955	y	11	94834.571	97200	1012.5	12150	3	H1-1b
12	M38	0.5 x 6 Plate	0.1409	0	4	3.5553	1.4955	y	16	94834.571	97200	1012.5	12150	3	H1-1b
13	M39	0.38 X 6 Plate	0.1732	0	5	3.327	0.875	y	6	73624.9781	73872	584.82	9234	1.034	H1-1b
14	M30	0.38 X 6 Plate	0.204	0	7	3.3157	0.875	y	6	73624.9782	73872	584.82	9234	1.0447	H1-1b
15	M19	0.38 X 6 Plate	0.1656	0	15	3.0901	0.875	y	16	73624.9781	73872	584.82	9234	1.0475	H1-1b
16	M29	0.38 X 6 Plate	0.1643	0	10	3.0885	0.875	y	11	73624.9781	73872	584.82	9234	1.0476	H1-1b
17	M40	0.38 X 6 Plate	0.1994	0	17	3.0768	0.875	y	16	73624.9782	73872	584.82	9234	1.0362	H1-1b
18	M21	0.38 X 6 Plate	0.196	0	12	3.0764	0.875	y	11	73624.9782	73872	584.82	9234	1.0477	H1-1b
19	M27	0.5 x 6 Plate	0.3641	4.6876	8	1.9623	0	y	6	91950.0929	97200	1012.5	12146.4691	1.012	H1-1b
20	M49	0.5 x 6 Plate	0.4152	0	4	1.9609	4.6876	y	6	91950.0929	97200	1012.5	12098.7099	1.0081	H1-1b
21	M51	0.5 x 6 Plate	0.4139	0	14	1.8338	4.6876	y	16	91950.0929	97200	1012.5	12150	1.0281	H1-1b
22	M17	0.5 x 6 Plate	0.366	4.6876	14	1.833	0	y	11	91950.0929	97200	1012.5	12096.3089	1.0079	H1-1b
23	M37	0.5 x 6 Plate	0.3684	4.6876	3	1.8272	0	y	16	91950.0929	97200	1012.5	12059.2884	1.0048	H1-1b
24	M53	0.5 x 6 Plate	0.421	0	9	1.8263	4.6876	y	11	91950.0929	97200	1012.5	12150	1.0156	H1-1b
25	M47	PIPE_3.0	0.4063	16.5789	6	0.6237	13.4211		6	58281.696	65205	5748.75	5748.75	3	H3-6
26	M45	PIPE_3.0	0.3643	16.5789	11	0.5838	13.4211		11	58281.696	65205	5748.75	5748.75	3	H3-6
27	M48	PIPE_3.0	0.3624	16.5789	16	0.5821	13.4211		16	58281.696	65205	5748.75	5748.75	3	H3-6
28	M111	HSS4X4X4	0.8476	0	11	0.4407	0	z	10	100957.4817	109188	12663	12663	2.8612	H3-6
29	M110	HSS4X4X4	0.8508	0	6	0.4382	0	z	4	100957.4817	109188	12663	12663	2.8247	H3-6
30	M109	HSS4X4X4	0.8236	0	16	0.4337	0	z	15	100957.4817	109188	12663	12663	2.8213	H3-6
31	M101	PIPE_3.0	0.2244	78.9474	24	0.1814	133.4211		6	28250.554	65205	5748.75	5748.75	2.2952	H1-1b
32	M102	PIPE_3.0	0.2191	78.9474	19	0.1662	133.4211		16	28250.554	65205	5748.75	5748.75	2.2383	H1-1b
33	M100	PIPE_3.0	0.2181	78.9474	29	0.1657	133.4211		11	28250.554	65205	5748.75	5748.75	2.1994	H1-1b
34	M31	HSS4X4X4	0.4637	30.6875	7	0.1599	3.5533	z	6	106874.1062	109188	12663	12663	1.4334	H1-1b
35	M44	HSS4X4X4	0.4561	0	4	0.156	27.1339	y	4	106874.1659	109188	12663	12663	1.4311	H1-1b
36	M41	HSS4X4X4	0.4579	30.6875	18	0.154	3.5533	z	17	106874.1062	109188	12663	12663	1.4471	H1-1b
37	M22	HSS4X4X4	0.4663	30.6875	13	0.153	3.5533	z	11	106874.1062	109188	12663	12663	1.5103	H1-1b
38	M25	HSS4X4X4	0.453	0	14	0.1521	27.1339	y	15	106874.1659	109188	12663	12663	1.5693	H1-1b
39	M34	HSS4X4X4	0.4588	0	9	0.1515	27.1339	y	10	106874.1659	109188	12663	12663	1.5058	H1-1b
40	M116	PIPE_3.0	0.2657	59.6842	11	0.1349	17.6211		9	42263.9478	65205	5748.75	5748.75	1.8746	H1-1b
41	M168	PIPE_3.0	0.2874	59.6842	5	0.1277	17.6211		3	42263.9478	65205	5748.75	5748.75	1.824	H1-1b
42	M211	PIPE_3.0	0.2656	59.6842	16	0.1271	17.6211		14	42263.9478	65205	5748.75	5748.75	1.8733	H1-1b
43	M127	PIPE_2.0	0.7546	47.7474	11	0.1015	47.7474		5	12143.9474	32130	1871.625	1871.625	1.8148	H1-1b
44	M164	PIPE_2.0	0.7548	47.7474	6	0.0984	47.7474		16	12143.9474	32130	1871.625	1871.625	1.8225	H1-1b
45	M207	PIPE_2.0	0.7545	47.7474	16	0.0984	47.7474		11	12143.9474	32130	1871.625	1871.625	1.814	H1-1b
46	M105	PIPE_3.0	0.3909	89.8105	3	0.0885	89.8105		4	42263.9478	65205	5748.75	5748.75	1.3164	H1-1b
47	M209	PIPE_3.0	0.3912	89.8105	8	0.0879	89.8105		10	42263.9478	65205	5748.75	5748.75	1.3198	H1-1b
48	M166	PIPE_3.0	0.4297	89.8105	14	0.0823	89.8105		15	42263.9478	65205	5748.75	5748.75	1.3886	H1-1b
49	M123	PIPE_2.0	0.557	42.6316	11	0.0819	95.4947		5	12143.9474	32130	1871.625	1871.625	1.3767	H1-1b
50	M169	PIPE_2.0	0.5569	42.6316	6	0.0788	95.4947		15	12143.9474	32130	1871.625	1871.625	1.3488	H1-1b
51	M212	PIPE_2.0	0.5568	42.6316	16	0.0767	42.6316		10	12143.9474	32130	1871.625	1871.625	1.36	H1-1b
52	M120	PIPE_2.0	0.2807	47.7474	10	0.073	47.7474		13	20866.7334	32130	1871.625	1871.625	2.1897	H1-1b
53	M113	PIPE_2.0	0.2807	47.7474	15	0.072	47.7474		3	20866.7334	32130	1871.625	1871.625	2.1897	H1-1b
54	M165	PIPE_3.0	0.3698	59.6842	6	0.0604	59.6842		6	42263.9478	65205	5748.75	5748.75	1.9292	H1-1b
55	M126	PIPE_2.0	0.3685	47.7474	5	0.06	47.7474		7	20866.7334	32130	1871.625	1871.625	2.1709	H1-1b
56	M208	PIPE_3.0	0.3465	59.6842	16	0.0534	59.6842		17	42263.9478	65205	5748.75	5748.75	1.9263	H1-1b
57	M98	PIPE_3.0	0.3471	59.6842	11	0.0532	59.6842		11	42263.9478	65205	5748.75	5748.75	1.9274	H1-1b
58	M167	PIPE_3.0	0.3861	89.8105	6	0.049	89.8105		6	42263.9478	65205	5748.75	5748.75	2.0342	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
59	M210	PIPE_3.0	0.3623	89.8105	16	0.0434	89.8105		17	42263.9478	65205	5748.75	5748.75	2.0173	H1-1b
60	M108	PIPE_3.0	0.3616	89.8105	11	0.0428	89.8105		28	42263.9478	65205	5748.75	5748.75	2.018	H1-1b
61	M91	L2x2x3	0.4977	50.5418	6	0.0276	50.5418	y	6	16069.9763	23392.8	557.7166	1137.5872	1.5	H2-1
62	M87	L2x2x3	0.4709	50.5416	6	0.0265	50.5416	z	6	16070.0241	23392.8	557.7166	1137.5881	1.5	H2-1
63	M122	PIPE_2.0	0.1396	47.7474	18	0.0264	47.7474		14	20866.7334	32130	1871.625	1871.625	2.0094	H1-1b
64	M85	L2x2x3	0.4727	50.5418	11	0.0262	50.5418	y	11	16069.9763	23392.8	557.7166	1137.5872	1.5	H2-1
65	M107_1	5/8 SR	0.7596	0	5	0.0261	15		5	7300.3106	15738.6348	163.9411	163.9411	2.2433	H1-1b
66	M113_1	5/8 SR	0.7617	0	17	0.0261	15		17	7300.3106	15738.6348	163.9411	163.9411	2.2447	H1-1b
67	M79	L2x2x3	0.4693	50.5418	16	0.0261	50.5418	y	16	16069.9763	23392.8	557.7166	1137.5872	1.5	H2-1
68	M179	5/8 SR	0.7199	15	11	0.0251	15		11	7300.3106	15738.6348	163.9411	163.9411	2.2553	H1-1b
69	M178	5/8 SR	0.7178	0	16	0.0251	15		16	7300.3106	15738.6348	163.9411	163.9411	2.2529	H1-1b
70	M222	5/8 SR	0.7191	0	6	0.0251	15		6	7300.3106	15738.6348	163.9411	163.9411	2.2542	H1-1b
71	M221	5/8 SR	0.7172	0	11	0.0251	15		11	7300.3106	15738.6348	163.9411	163.9411	2.2522	H1-1b
72	M81	L2x2x3	0.4414	50.5416	11	0.025	50.5416	z	11	16070.0241	23392.8	557.7166	1137.5881	1.5	H2-1
73	M93	L2x2x3	0.4434	50.5416	16	0.0249	50.5416	z	16	16070.0241	23392.8	557.7166	1137.5881	1.5	H2-1
74	M163	5/8 SR	0.5334	15	21	0.0194	15		22	7300.3106	15738.6348	163.9411	163.9411	2.2753	H1-1b
75	M206	5/8 SR	0.5294	15	32	0.0193	15		32	7300.3106	15738.6348	163.9411	163.9411	2.2759	H1-1b
76	M104_1	5/8 SR	0.5291	15	27	0.0193	15		27	7300.3106	15738.6348	163.9411	163.9411	2.2759	H1-1b
77	M149	5/8 SR	0.5233	15	22	0.0189	15		22	7300.3106	15738.6348	163.9411	163.9411	2.2754	H1-1b
78	M192	5/8 SR	0.521	15	33	0.0189	15		32	7300.3106	15738.6348	163.9411	163.9411	2.2761	H1-1b
79	M105_1	5/8 SR	0.52	15	27	0.0188	15		27	7300.3106	15738.6348	163.9411	163.9411	2.276	H1-1b

TOWER-MOUNT CONNECTION ANALYSIS

v.1.0.0

telamon CLS
319 Chapanoke Road, Suite 118
Raleigh, NC 27603
Office: (405) 348-5460
Fax: (405) 341-6334

SITE INFORMATION	
Site ID	283423
Site Name	Naugatuck CT
Project ID	41124-13755758_C8_01-01-MA

ANALYSIS PARAMETERS	
TIA Revision	H

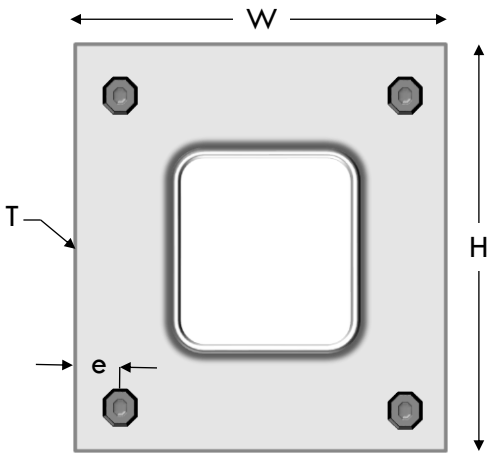
APPLIED FORCES FROM R3D		
Member Label		LC8 M110
Member End Label		I
Force-X	Fx, lbs	-3379.1
Force-Y	Fy, lbs	4075.4
Force-Z	Fz, lbs	141.8
Moment X-X	Mx, lbs-ft	79.3
Moment Y-Y	My, lbs-ft	-84.0
Moment Z-Z	Mz, lbs-ft	9413.9

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect. HSS
Standoff Member Shape	HSS4X4X1/4
Standoff Member Grade	A36
Member to Plate Weld Size, in	3/16

BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.00
Nominal Bolt Diameter (ØDb), in	0.625
Bolt Grade	A325
Plate Height (H), in	8.00
Plate Width (W), in	8.00
Plate Thickness (T), in	0.75
Plate Grade	A36

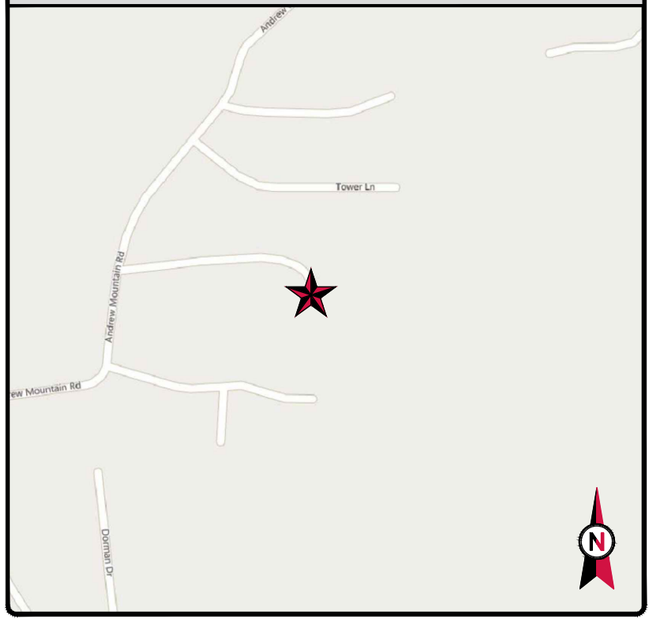
BOLT ANALYSIS		
Shear Demand (Vu), k	1.03	
Shear Capacity (ΦRnv), k	13.81	
Tension Demand (Tu), k	14.16	
Tension Capacity (ΦRnt), k	20.34	
Shear Utilization	7.5%	
Tension Utilization	69.6%	PASS
Interaction Utilization	49.0%	

PLATE ANALYSIS		
Moment Demand (Mu), k-in	20.02	
Flexural Capacity (ΦMn), k-in	25.77	
Plate Utilization	77.7%	PASS



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	36
Standoff Member - Ultimate Strength (Fu), ksi	58
Bolt - Yield Strength (Fy), ksi	92
Bolt - Tensile Strength (Fu), ksi	120
Plate - Yield Strength (Fy), ksi	36
Plate - Ultimate Strength (Fu), ksi	58

VICINITY MAP



AMERICAN TOWER®

SITE NAME:	NAUGATUCK CT
SITE NUMBER:	283423
ATC PROJECT NUMBER:	13755758_C9_04
SITE ADDRESS:	880 ANDREW MOUNTAIN ROAD
	NAUGATUCK, CT 06770-3656

LOCATION MAP

MOUNT REINFORCEMENT DRAWINGS PREPARED FOR AT&T MOBILITY

PROJECT TEAM

TOWER OWNER:
AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 1801

ENGINEERED BY:
TELAMON TOWER ENGINEERING PLLC.
319 CHAPANOKE ROAD, SUITE 118
RALEIGH, NC 27603

CARRIER INFORMATION:
CARRIER: AT&T MOBILITY
CARRIER SITE NAME: MRCTB055032
CARRIER SITE NUMBER: CTL02409
CARRIER FA LOCATION: 10133908

811 LOGO

CALL CONNECTICUT ONE-CALL
3 DAYS BEFORE YOU DIG
811 OR 1-800-922-4455

PROJECT LOCATION (GEO COORDINATES)

1. LATITUDE: 41.484453°
2. LONGITUDE: −73.089844°

PROJECT DESCRIPTION

THE MODIFICATIONS PRESENTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER THE PROJECT NUMBER 13755758_C8_01 DATED MARCH 16, 2022. SATISFACTORY COMPLETION OF THE WORK INDICATED ON THESE DRAWINGS WILL RESULT IN THE STRUCTURE MEETING THE REQUIREMENTS OF THE SPECIFICATIONS UNDER WHICH THE STRUCTURAL WAS COMPLETED.

PROJECT NOTE

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.6100 (B)(7).

COMPLIANCE CODE

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

1. TIA: STRUCTURAL STANDARDS (222−H EDITION)

DRAWING INDEX

SHEET	SHEET TITLE	REV
G−002	IBC GENERAL NOTES & MODIFICATION INSPECTION	0
S−101	MODIFICATION PROFILE	0
S−102	MODIFICATION REINFORCEMENT LIST	0
S−103	SAFETY CLIMB LAYOUT	0
S−501	MODIFICATION DETAILS	0
R−901	SUPPLEMENTAL	0
R−902	SUPPLEMENTAL	0
R−903	SUPPLEMENTAL	0
R−904	SUPPLEMENTAL	0
R−905	SUPPLEMENTAL	0

telamon Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT
CONNECTICUT

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656

STATE OF CONNECTICUT · DAVID CHICKERING · No. 35683 · LICENSED PROFESSIONAL ENGINEER

David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE
COVER PAGE

SHEET NUMBER	REVISION
G-001	0

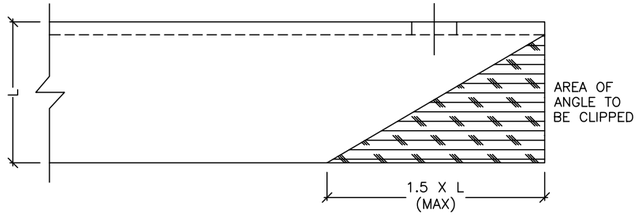
GENERAL

1. ALL WORK TO BE COMPLETED PER APPLICABLE LOCAL, STATE, FEDERAL CODES AND ORDINANCES AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS FOR WIRELESS TOWER SITES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL REQUIRED PERMITS.
2. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
4. ANY SUBSTITUTIONS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
5. ANY MANUFACTURED DESIGN ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGNS ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
6. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER ANSI/TIA-322 AND ANSI/ASSE A10.48, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
8. CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

STRUCTURAL STEEL

1. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.
2. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
3. ALL U-BOLTS SHALL BE ASTM A36 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.
5. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
6. ALL STRUCTURAL STEEL EMBEDDED IN THE CONCRETE SHALL BE APPLIED WITH (2) BRUSHED COATS OF POLYGUARD CA-9 MASTIC OR EQUIVALENT. REFER TO THE MANUFACTURER SPECIFICATIONS FOR SURFACE PREPARATION AND APPLICATION. APPLICATION OF POLYGUARD 400 WRAP IS NOT ESSENTIAL.
7. CONTRACTOR SHALL PERFORM WORK ON ONLY ONE (1) TOWER FACE AND REPLACE/REINFORCE ONE (1) BOLT/MEMBER AT A TIME.
8. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.

MAXIMUM ALLOWABLE ANGLE CLIP



PAINT

1. AS REQUIRED, CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 70/7460-1L

WELDING

1. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
2. ALL WELDS SHALL BE INSPECTED VISUALLY. IF DIRECTED BY ENGINEER OF RECORD, 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE (100% IF REJECTABLE DEFECTS ARE FOUND) TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NEC.
3. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
4. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER AND/OR BASE METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
5. IN CASES WHERE BASE METAL GRADE IS UNKNOWN, ALL WELDING ON LATTICE TOWERS SHALL BE DONE WITH E70XX ELECTRODES; ALL WELDING ON POLE STRUCTURES SHALL BE DONE WITH E80XX, UNLESS OTHERWISE NOTED.
6. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

BOLT TIGHTENING PROCEDURE

1. STRUCTURAL CONNECTIONS TO BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC SPECIFICATIONS.
2. FLANGE BOLTS SHALL BE INSTALLED AND TIGHTENED USING DIRECT TENSION INDICATING (DTI) SQUIRTER WASHERS. DTI SQUIRTER WASHERS ARE TO BE INSTALLED AND ORIENTED / TIGHTENED PER MANUFACTURER SPECIFICATIONS TO ACHIEVE DESIRED LEVEL OF BOLT PRE-TENSION.
3. IN LIEU OF USING DTI SQUIRTER WASHERS, FLANGE BOLTS MAY BE TIGHTENED USING AISC/RCSC "TURN-OF-THE-NUT" METHOD, PENDING APPROVAL BY THE ENGINEER OF RECORD (EOR). TIGHTEN FLANGE BOLTS USING THE CHART BELOW:

BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS		
1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS UP TO AND INCLUDING 4.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS UP TO AND INCLUDING 5.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS UP TO AND INCLUDING 5.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS UP TO AND INCLUDING 6.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS		
1/2"	BOLTS 2.25 TO AND INCLUDING 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO AND INCLUDING 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO AND INCLUDING 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO AND INCLUDING 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO AND INCLUDING 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO AND INCLUDING 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO AND INCLUDING 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO AND INCLUDING 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO AND INCLUDING 12.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

BOLT TIGHTENING PROCEDURE (CONTINUED)

4. SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS", LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

   FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

   8.2.1 TURN-OF-NUT PRE-TENSIONING
   BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

5. ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

   ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND NUTS THREADED TO COMPLETE THE ASSEMBLY. COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.

MODIFICATION INSPECTION

MODIFICATION INSPECTION NOTES:

1. THE MOUNT MODIFICATION INSPECTION (MMI) PROCEDURE IS INTENDED TO CONFIRM THAT CONSTRUCTION AND INSTALLATION MEETS ENGINEERING DESIGN, ATC PROCEDURES AND ATC STANDARD SPECIFICATIONS FOR WIRELESS TOWER SITES.
2. TO ENSURE THAT THE REQUIREMENTS OF THE MMI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR SUBMIT ALL REQUIRED PHOTOGRAPHS AND DRAWINGS TO AMERICAN TOWER CORPORATIONS (ATC).

GENERAL CONTRACTOR:

1. THE GENERAL CONTRACTOR IS REQUIRED TO:
   - REVIEW THE REQUIREMENTS OF THE MMI CHECKLIST.
   - UNDERSTAND ALL INSPECTION REQUIREMENTS.
2. THE GENERAL CONTRACTOR SHALL PERFORM AND RECORD THE INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMI CHECKLIST.

MOUNT MODIFICATION INSPECTION CHECKLIST

INSPECTION DOCUMENT	DESCRIPTION	INSPECTION TESTING REQUIREMENT	RESPONSIBILITY
ON-SITE COLD GALVANIZING VERIFICATION	PHOTOGRAPHIC EVIDENCE OF COLD GALVANIZATION TYPE AND APPLICATION IN ALL APPLICABLE LOCATIONS TO BE INCLUDED WITH THE MMI REPORT.	✔	GC
GC AS-BUILT DRAWINGS WITH CONSTRUCTION REDLINES	"AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS TO MMI FOR APPROVAL/REVIEW AND INCLUSION IN MMI REPORT.	✔	GC
PHOTOGRAPHS	PHOTOGRAPHIC EVIDENCE OF MOUNT MODIFICATION INSPECTION, ON SITE REMEDIATION, AND ITEMS FAILING INSPECTION & REQUIRING FOLLOW UP TO BE INCLUDED WITHIN THE MMI REPORT. COMPLETE PHOTO LOG TO BE SUBMITTED WITHIN MMI REPORT.	✔	GC

TABLE KEY:
MMI - MOUNT MODIFICATION INSPECTION GC - GENERAL CONTRACTOR ATC - AMERICAN TOWER CORPORATION

telamon Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

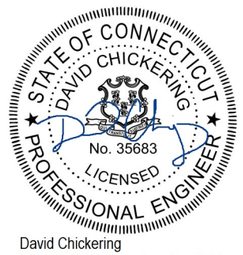
ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656



David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

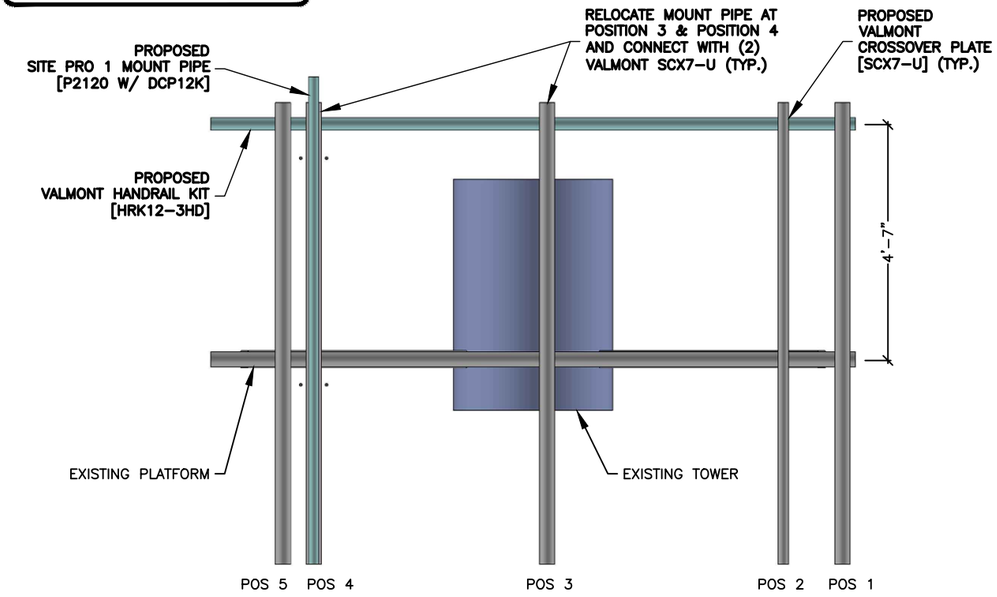
SHEET TITLE

IBC GENERAL NOTES & MODIFICATION INSPECTION

SHEET NUMBER	REVISION
G-002	0

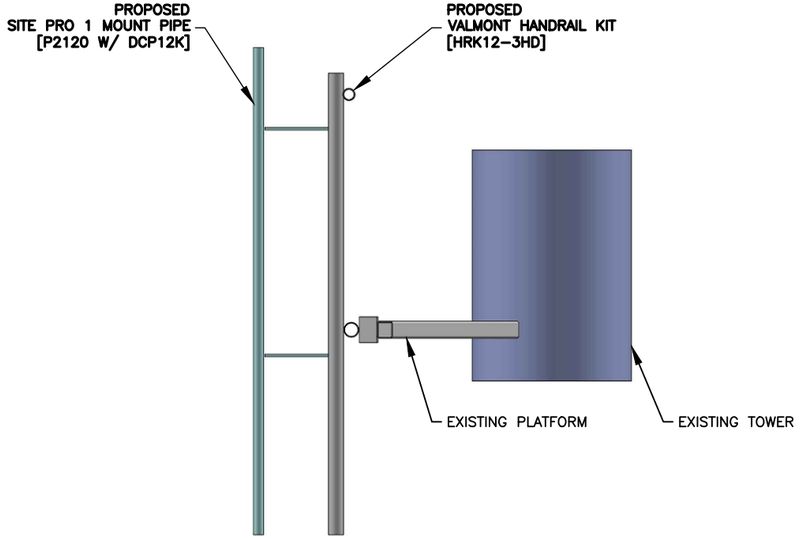
REFERENCE NOTE

SEE SHEET S-501 FOR PART DETAILS AND REFERENCE PHOTOGRAPH.



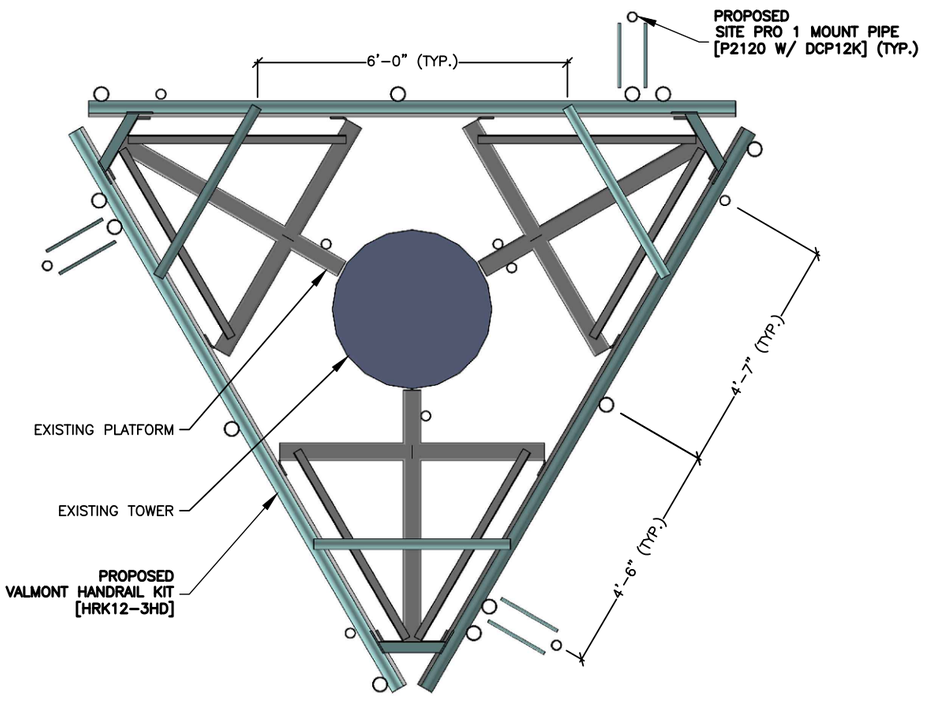
1 TYPICAL MOUNT MODIFICATION - FRONT VIEW

SCALE: N.T.S.



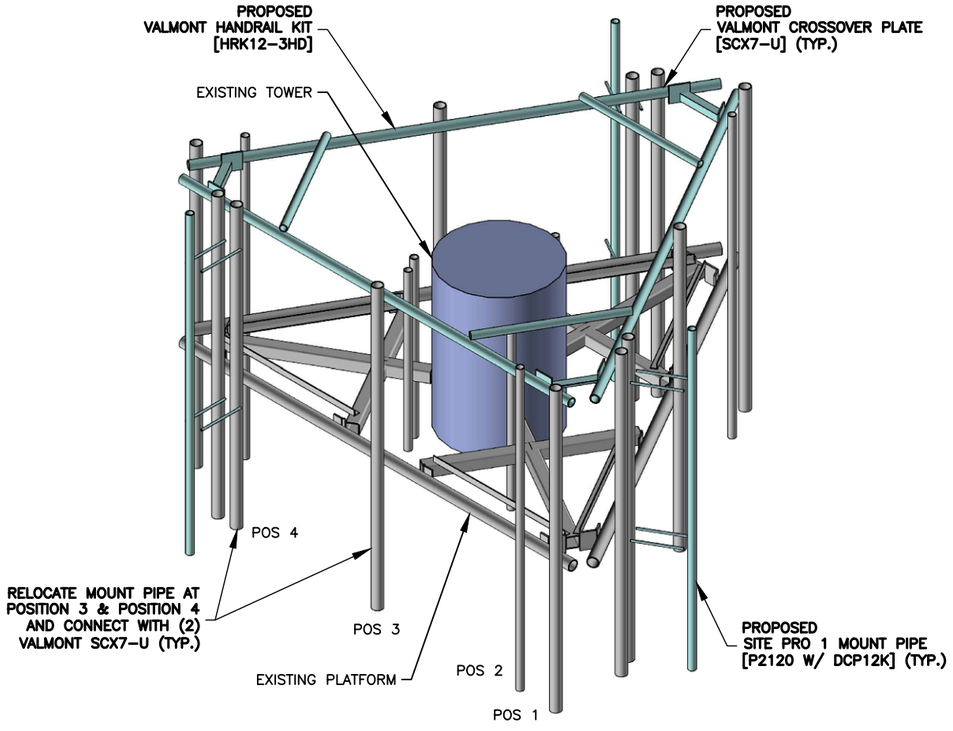
2 TYPICAL MOUNT MODIFICATION - SIDE VIEW

SCALE: N.T.S.



3 TYPICAL MOUNT MODIFICATION - TOP VIEW

SCALE: N.T.S.



4 TYPICAL MOUNT MODIFICATION - ISOMETRIC VIEW

SCALE: N.T.S.

telamon Tower Engineering PLLC

319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

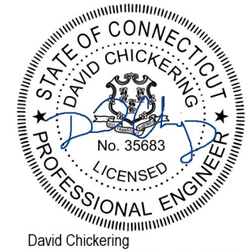
ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656



David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE

MODIFICATION PROFILE

SHEET NUMBER	REVISION
S-101	0

REINFORCEMENT MATERIALS LIST (ALL SECTORS)

QTY REQ'D.	MANUFACTURER	PART #	DESCRIPTION	LENGTH	PART WEIGHT (LB)	WEIGHT (LB)	NOTES
1	VALMONT	HRK12-3HD	HEAY DUTY HANDRAIL KIT FOR 12' PLATFORMS WITH 2-7/8" HANDRAIL PIPES	----	502.3	502	ANT.51649 GALVANIZED. USE VALMONT SCX7-U IN LIEU OF SCX2 CROSSOVER PLATES.
3	SITE PRO 1	DCP12K	PIPE TO PIPE CLAMP SET 1-1/2" TO 5" PIPE 1/2" THICK CLAMP	----	27.01	81	GALVANIZED. USE G58R-24 THREADED RODS IN LIEU OF DCP12K THREADED RODS G58R-12.
3	SITE PRO 1	P2120	PIPE 2-3/8" OD X 120", ASTM A53 GRADE B, SCHEDULE 40	10'-0"	37	111	GALVANIZED
21	VALMONT	SCX7-U	CROSSOVER PLATE	----	12.0	252	ANT.16985
12	SITE PRO 1	G58R-24	THREADED RODS	2'-0"	1.70	20	GALVANIZED
					TOTAL WEIGHT:	966	

MATERIALS LIST NOTE

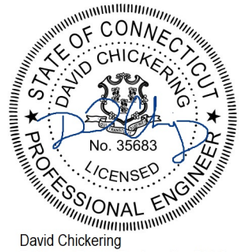
1. IN THE EVENT A PROPOSED MODIFICATION PART LISTED IN THE DRAWINGS IS NOT AVAILABLE, AN APPROVED EQUIVALENT CAN BE SUBSTITUTED. FOR APPROVAL OF EQUIVALENT PARTS OR QUESTIONS PLEASE CONTACT AMERICAN TOWER PMI INBOX AT PMI@AMERICANTOWER.COM.
2. AT&T CONMAT DOES NOT HAVE PARTS WHICH CONNECT PIPE–PIPE THREADED ROD CLAMP KITS AND MOUNT PIPE. HENCE PROPOSING MODIFICATION PARTS WHICH ARE NOT LISTED IN CONMAT LIST.

telamon Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:
283423
ATC SITE NAME:
NAUGATUCK CT
CONNECTICUT
SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656



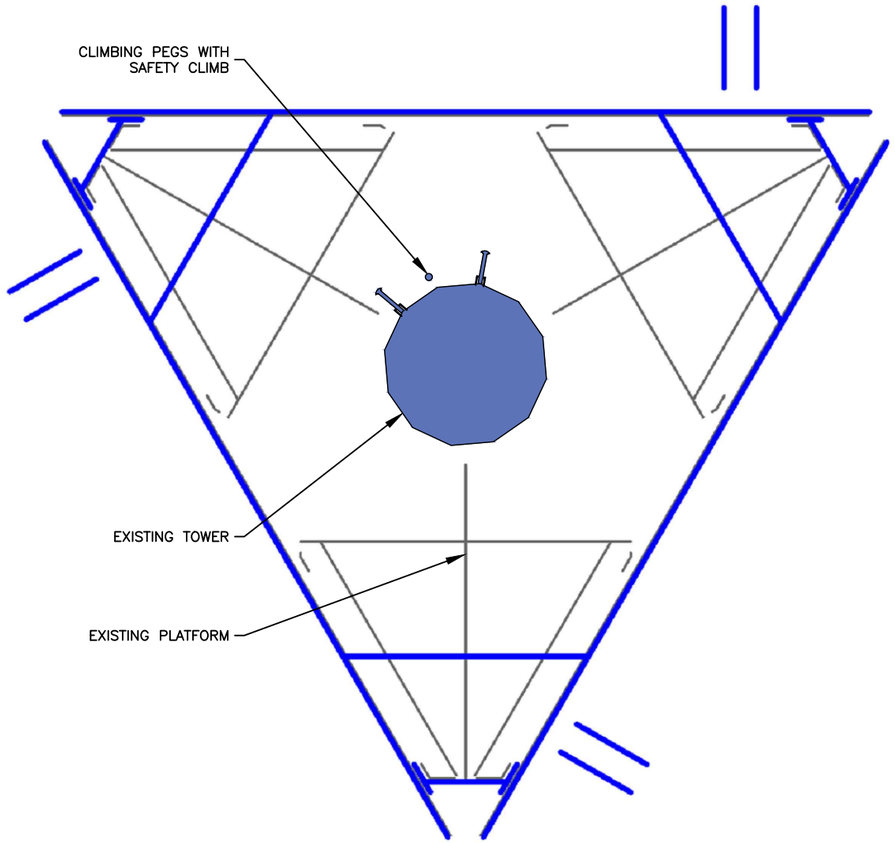
David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE
MODIFICATION REINFORCEMENT MATERIALS LIST

SHEET NUMBER	REVISION
S-102	0



1 SAFETY CLIMB LOCATION
SCALE: N.T.S.

CONSTRUCTION NOTE

CONTRACTOR TO INSTALL MOUNT MODIFICATIONS PER THE MANUFACTURERS SPECIFICATION. MODIFICATIONS SHALL NOT OBSTRUCT, INTERFERE, OR BLOCK EXISTING SAFETY CLIMB SYSTEM. IF ANY OF THESE OCCURS DURING INSTALLATION CONTACT THE AMERICAN TOWER PMI INBOX PMI@AMERICANTOWER.COM.

telamon
Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

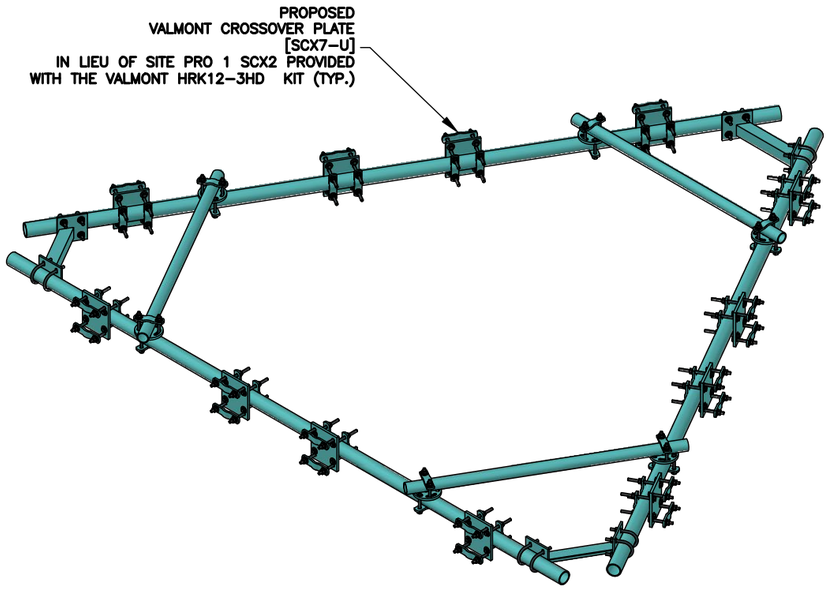
05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

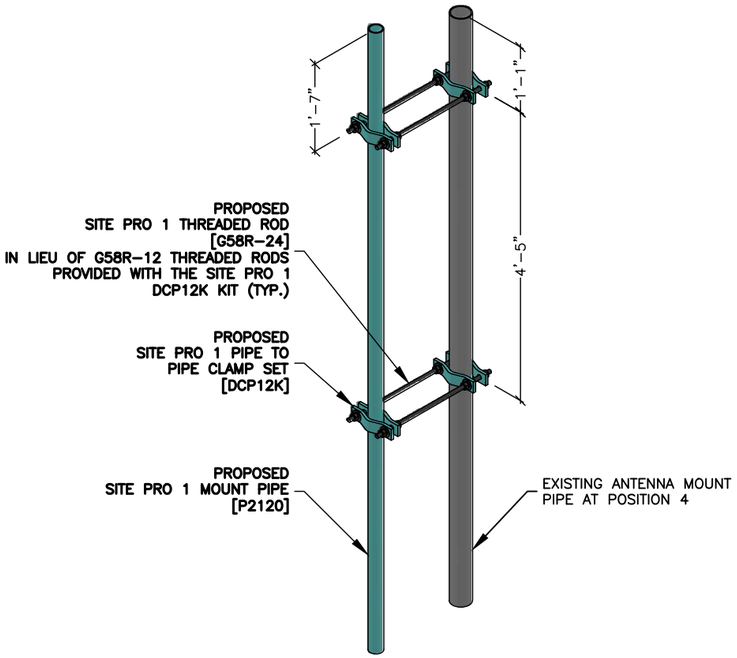
SHEET TITLE

SAFETY CLIMB LAYOUT

SHEET NUMBER	REVISION
S-103	0



1 VALMONT HANDRAIL KIT [HRK12-3HD]
SCALE: N.T.S.



2 SITE PRO 1 MOUNT PIPE [P2120 W/ DCP12K]
SCALE: N.T.S.

3 REFERENCE PHOTOGRAPH
SCALE: N.T.S.

telamon
Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE

MODIFICATION DETAILS

SHEET NUMBER	REVISION
S-501	0

MOD SUMMARY

Project & Site Information		
CLS Project ID		41124-13755758_C9_04-02-MOD
Client Information	Carrier Name	AT&T Mobility
	Client Name	American Tower
	Site #	283423
	Site Name	Naugatuck CT
	Application #	13755758_C9_04
Site Location	Address	880 Andrew Mountain Road, Naugatuck, CT 06770-3656
	County	New Haven
	GPS	41.484453, -73.089844
	Elevation AMSL (ft)	854.54

Mount & Supporting Structure		
Mount Configuration	Mount Type	Platform w/ Support Rails
Nominal AGL Elevations (ft)	Mount Elevation	117.25
	Default Antenna Rad	119
Supporting Structure	Structure Type	Monopole
	Height (TOS) (ft)	119

Wind & Ice Loading	
TIA Standard	TIA-222-H
Building Code	-
Basic Wind Speed, V (bare)	117 mph
Basic Wind Speed, V (ice)	50 mph
Design Ice Thickness, t_i	1 in

MOD Summary			Cost Estimation
Install (1) proposed Support Rail Kit at each sector (1 total).			$ 1,875
Install (1) proposed Mount Pipe at each sector (3 total).			$ 1,875
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
Post MOD Usage	75%	Cost + Mobilization	$ 6,750.00

Replacement Summary	Cost Estimate
(1) Site Pro 1 RMQLP-4120-H10 (ANT.44987) (or equivalent)	$29,500

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER

R-901

REVISION

0

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by
telamon Tower Engineering PLLC

Antenna Mount Analysis Report

ATC Site Name	:	Naugatuck CT
ATC Asset Number	:	283423
Engineering Number	:	13755758_C9_04
Mount Elevation	:	117.25 ft
Carrier	:	AT&T Mobility
Carrier Site Name	:	MRCTB055032
Carrier Site Number	:	CTL02409
Site Location	:	880 Andrew Mountain Road Naugatuck, CT 06770-3656 41.484453, -73.089844
County	:	New Haven
Date	:	May 25, 2022
Max Usage	:	75%
Result	:	Pass (Pending MODs)

Prepared By:
Rohit Yadav
Telamon Tower Engineering, PLLC

Reviewed By:

Table of Contents

Introduction

The proposed equipment is to be mounted to the existing Platform w/ Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

Supporting Documents

Structural Data	Site Photos, dated Jul 11, 2019 Spec Sheet by Site Pro 1, Dwg #RMQP-NP
Previous Analyses	Mount Analysis Report by Telamon Tower Engineering, PLLC, Eng. #13755758_C8_01, dated March 16, 2022 Tower SA by Tower Engineering Professionals, Eng. #13698427_C3_03, dated July 20, 2021
Construction Drawings	CD by Hudson Design Group LLC for AT&T, Site ID #CT2409, Rev. 2, dated May 10, 2018
Loading Data	ATC Application, Project #13755758, dated March 11, 2022 AT&T RFDS, RFDS ID #4788730, Version 2, dated January 14, 2022

Analysis

Codes	TIA-222-H
Basic Wind Speed	117 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	B
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	220 ft
Crest Length (L):	1920 ft
Risk Category	II
Maintenance Live Load	L_M: 500 lb
Spectral Response	S_s: 0.20; S_1: 0.05; Site Class: D

Conclusion

Based on the analysis, the antenna mount meets the requirements per the applicable codes listed above. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the referenced modifications are installed.

This analysis incorporates modifications per Telamon Tower Engineering, PLLC, dated May 25, 2022.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

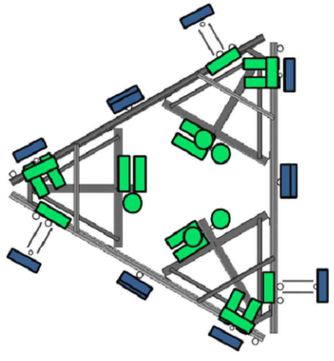
Antenna Loading

Elevation (ft)		Antennas	
Mount	Rad.	#	Name
117.3	121.0	3	Ericsson AIR 6419 B77G
	119.0	3	Quintel QD8616-7
		3	CCI DMP65R-BU8D
		3	Ericsson RRUS 32 B66A
		3	Ericsson RRUS 32 B2
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 2012 B29
		3	Ericsson RRUS 4478 B14
		2	Raycap DC6-48-60-0-8F
		3	Raycap DC6-48-60-18-8F
	117.0	3	Ericsson AIR 6449 B77D

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Mount Pipes	75%	Pass
Tower To Mount Plate Connections	62%	Pass
Stand-Off Horizontals	57%	Pass
Threaded Rods	56%	Pass
Corner Plates	26%	Pass

Equipment Layout Plan View



telamon Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

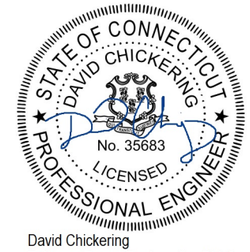
ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656



David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

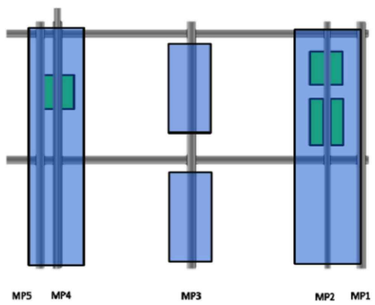
DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-902	0

Equipment Layout Front Elevation View



Total #	Equipment	Mount Pipe Position
3	Ericsson AIR 6419 B77G	P3
3	Ericsson AIR 6449 B77D	P3
3	Quintel Technology QD8616-7	P2
3	Cci Antennas DMP65R-BU8D	P4
2	Raycap DC6-48-60-0-8F	Stand-off
3	Raycap DC6-48-60-18-8F	Stand-off
3	Ericsson RRUS 4449 B5, B12	Stand-off
3	Ericsson RRUS 4478 B14	Stand-off
3	Ericsson RRUS 2012 B29	P2
3	Ericsson RRUS 32 B2	P2
3	Ericsson RRUS 32 B66A	P2
3	Ericsson RRUS 32 B30	P4

Standard Conditions

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, Telamon Tower Engineering, PLLC should be notified immediately to revise results.

This analysis assumes the following:

1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.
7. Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from Telamon Tower Engineering, PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. Telamon Tower Engineering, PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by Telamon Tower Engineering, PLLC verifies the adequacy of the primary members of the structure. Telamon Tower Engineering, PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.

Wind & Ice Loading			
Nominal Mount Elevation (AGL), z_{mount}	117 ft	K_{iz}	0.90
Nominal Rad Elevation (AGL), z_{rad}	119 ft	K_d	0.95
Elevation AMSL (ft)	865 ft	K_e	0.97
TIA Standard	H	K_z	1.03
Basic Wind Speed, V_{ult} (bare)	117 mph	K_{zt}	1.29
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.24 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	43.0 psf
Seismic Response Coeff., C_s	0.10	q_z (ice)	7.9 psf

Live Loading	
At Mount Pipes, L_M	500 lb
Joint Labels Considered	M1
	M2
	M3
	M4
	M5

Member Distributed Loading				
Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Offset End Plate	0.5X6PLATE	38.70	6.01	8.15
Offset Side Plate	0.38X6PLATE	38.70	6.00	8.03
Offset Tube	HSS4X4X4	25.80	2.11	9.60
Platform Horzontal Pipe	PIPE_3.0	13.55	4.23	7.18
Grating Angle	L2X2X3	12.90	1.93	5.61
Mount Pipe	PIPE_2.0	9.19	3.43	5.48
Mount Pipe 1	PIPE_3.0	13.55	4.23	7.18
MOD Threaded Rods	5/8SR	2.42	2.20	2.83
MOD Pipe	PIPE_2.0	9.19	3.43	5.48
MOD Support Rail	PIPE_2.5	11.13	3.79	6.24
MOD SR Conn Plate	PL6X0.375	38.70	6.00	8.03
MOD SR Conn Angle	L2.5X2.5X4	16.13	1.97	6.57
MOD SR Bracing	PIPE_2.0	9.19	3.43	5.48

Appurtenances

Appurtenance Model	Status	Azimuth Offset ($^\circ$, Σ_i)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		120° Joints		240° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_N (Bare) (ft^2)		EPA_A (Ice) (ft^2)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°	120°	240°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
AIR 6419 B77G			121	☐			1	1	1	3	A3	A4	B3	B4	G3	G4	31.1	16.1	7.3	55.4	Flat	72.55	4.17	2.02	5.20	2.83	162.34	78.41	36.96	20.13
AIR 6449 B77D			117	☐			1	1	1	3	A5	A6	B5	B6	G5	G6	30.4	15.9	10.6	81.6	Flat	82.96	4.03	2.72	5.04	3.59	155.83	105.30	35.58	25.34
QD8616-7				☐			1	1	1	3	A1	A2	B1	B2	G1	G2	96	22	9.6	150	Flat	287.08	18.81	9.60	21.23	11.89	729.97	372.46	150.40	84.22
DMP65R-BU8D				☐			1	1	1	3	A7	A8	B7	B8	G7	G8	96	20.7	7.7	105.6	Generic	242.28	15.86	5.95	18.19	8.01	615.33	230.85	128.91	56.76
D06-48-60-0-8F				☐			1	1		2	RY3		RY1				24	11	11	18.9	Round	43.98	1.28	1.28	1.74	1.74	49.79	49.79	12.30	12.30
D06-48-60-18-8F				☐			1	1	1	3	RY4		RY2		RY5		24	11	11	18.9	Round	43.98	1.28	1.28	1.74	1.74	49.79	49.79	12.30	12.30
RRUS 4449 B5, B12				☑		0.5	1	1	1	3	S1		S2		S3		17.9	13.19	9.44	71	Flat	51.21	1.41	0.98	2.03	1.33	54.63	38.17	14.35	9.43
RRUS 4478 B14				☑		0.5	1	1	1	3	S1		S2		S3		15	13.2	7.3	59.4	Flat	40.08	0.91	0.83	1.43	1.14	35.40	32.01	10.10	8.09
RRUS 2012 B29				☐	0		1	1	1	3	R1		R21		R31		16.5	13.5	6.4	46.5	Flat	41.14	0.00	0.88	0.00	1.41	0.00	34.24	0.00	9.96
RRUS 32 B2				☑		0.5	1	1	1	3	R2		R22		R32		27.2	12.05	7	52.9	Flat	52.28	1.67	1.37	2.40	1.80	64.72	52.98	17.01	12.74
RRUS 32 B66A				☑		0.5	1	1	1	3	R2		R22		R32		27.6	12.45	7.41	55.12	Flat	55.43	1.78	1.43	2.53	1.87	69.12	55.55	17.92	13.26
RRUS 32 B30				☐	0		1	1	1	3	R3		R23		R33		26.7	12.1	6.7	60	Flat	50.65	0.00	1.57	0.00	2.29	0.00	61.02	0.00	16.22

telamon Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE

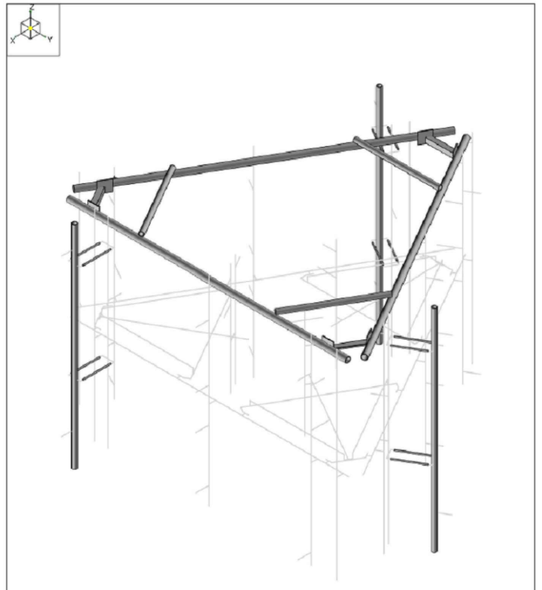
SUPPLEMENTAL

SHEET NUMBER
R-903

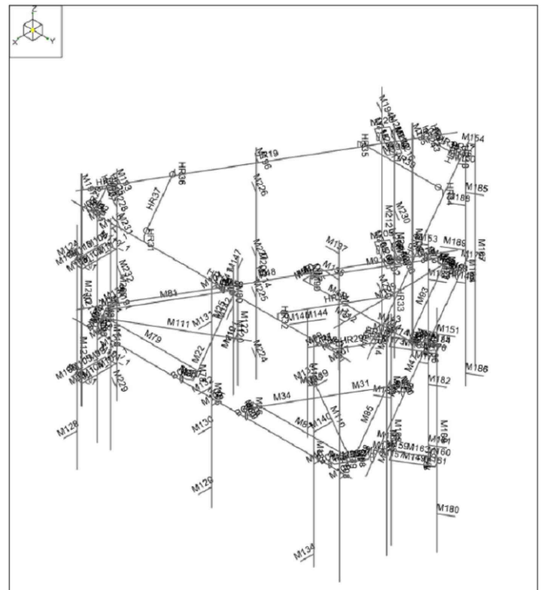
REVISION
0

C:\USERS\ADARSH.DHENGALE\DROPBOX (TELAMON)_TTI LLP\ SHARE FOLDER_PROJECTS\41124\283423-13755758\02 - MOD\CAD\41124-ATC MA-283423-13755758.DWG - CLS PROJECT ID: 41124-ATC MA-283423-13755758

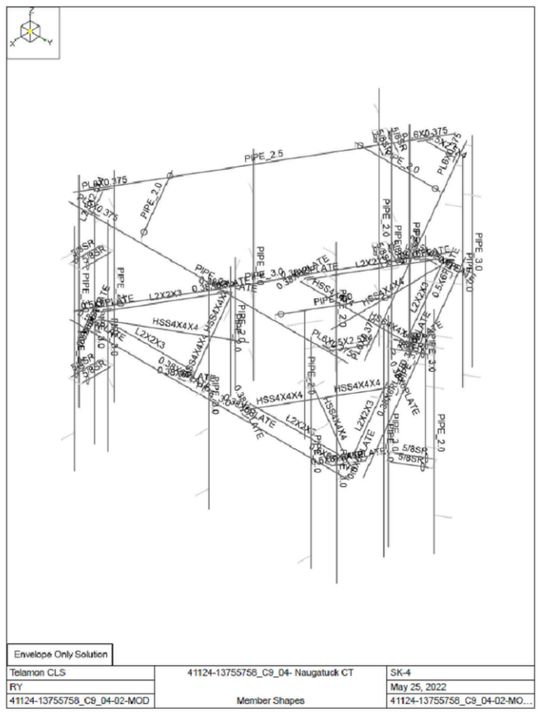
Envelope Only Solution		
Telamon CLS	41124-13755758_C9_04- Naugatuck CT	SK-1
RY		May 25, 2022
41124-13755758_C9_04-02-MOD	Rendered	41124-13755758_C9_04-02-MO...



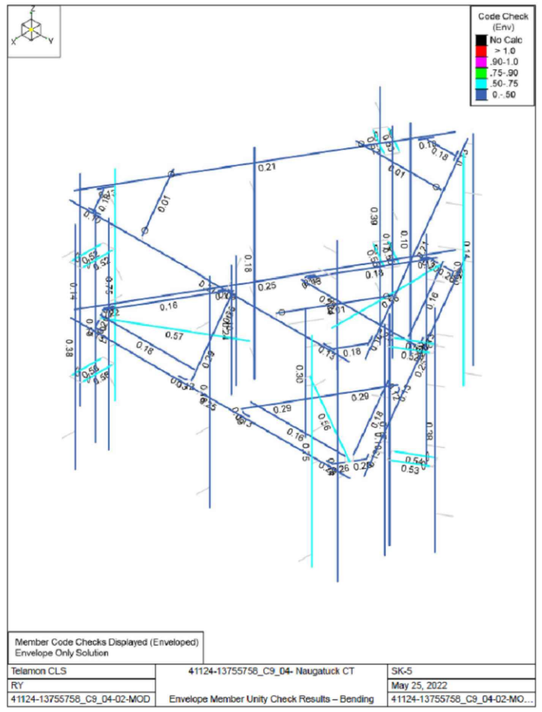
Envelope Only Solution		
Telamon CLS	41124-13755758_C9_04- Naugatuck CT	SK-2
RY		May 25, 2022
41124-13755758_C9_04-02-MOD	Proposed Modification - Rendered	41124-13755758_C9_04-02-MO...



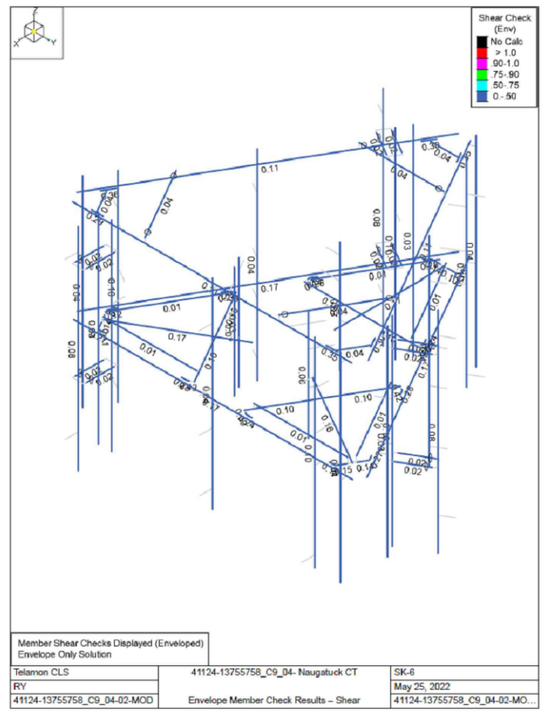
Envelope Only Solution		
Telamon CLS	41124-13755758_C9_04- Naugatuck CT	SK-3
RY		May 25, 2022
41124-13755758_C9_04-02-MOD	Member Labels	41124-13755758_C9_04-02-MO...



Envelope Only Solution		
Telamon CLS	41124-13755758_C9_04- Naugatuck CT	SK-4
RY		May 25, 2022
41124-13755758_C9_04-02-MOD	Member Shapes	41124-13755758_C9_04-02-MO...



Member Code Checks Displayed (Enveloped) Envelope Only Solution		
Telamon CLS	41124-13755758_C9_04- Naugatuck CT	SK-5
RY		May 25, 2022
41124-13755758_C9_04-02-MOD	Envelope Member Unity Check Results – Bending	41124-13755758_C9_04-02-MO...



Member Shear Checks Displayed (Enveloped) Envelope Only Solution		
Telamon CLS	41124-13755758_C9_04- Naugatuck CT	SK-6
RY		May 25, 2022
41124-13755758_C9_04-02-MOD	Envelope Member Check Results – Shear	41124-13755758_C9_04-02-MO...

telamon Tower Engineering PLLC

319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

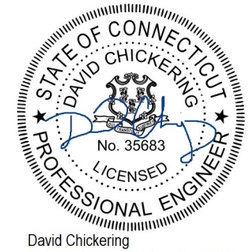
ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656



David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-904	0

Company :Telamon CLS
Designer :RY
Job Number :41124-13755758_C9_04-02-MOD
Model Name:41124-13755758_C9_04- Naugatuck CT

5/24/2022
11:54:14 AM
Checked By : JLS

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	47		3
2	Ice Dead	RL		47	91	3
5	Structure Wind 0°	None			85	
6	Structure Wind 30°	None			150	
7	Structure Wind 45°	None			182	
8	Structure Wind 60°	None			170	
9	Structure Wind 90°	None			76	
10	Structure Wind 120°	None			170	
11	Structure Wind 135°	None			182	
12	Structure Wind 150°	None			150	
13	Structure Wind 180°	None			85	
14	Structure Wind 210°	None			150	
15	Structure Wind 225°	None			182	
16	Structure Wind 240°	None			170	
17	Structure Wind 270°	None			76	
18	Structure Wind 300°	None			170	
19	Structure Wind 315°	None			182	
20	Structure Wind 330°	None			150	
21	Structure Wind w/ Ice 0°	None			85	
22	Structure Wind w/ Ice 30°	None			154	
23	Structure Wind w/ Ice 45°	None			182	
24	Structure Wind w/ Ice 60°	None			170	
25	Structure Wind w/ Ice 90°	None			77	
26	Structure Wind w/ Ice 120°	None			170	
27	Structure Wind w/ Ice 135°	None			182	
28	Structure Wind w/ Ice 150°	None			154	
29	Structure Wind w/ Ice 180°	None			85	
30	Structure Wind w/ Ice 210°	None			154	
31	Structure Wind w/ Ice 225°	None			182	
32	Structure Wind w/ Ice 240°	None			170	
33	Structure Wind w/ Ice 270°	None			77	
34	Structure Wind w/ Ice 300°	None			170	
35	Structure Wind w/ Ice 315°	None			182	
36	Structure Wind w/ Ice 330°	None			154	
37	Antenna Wind 0°	None		45		
38	Antenna Wind 30°	None		94		
39	Antenna Wind 45°	None		94		
40	Antenna Wind 60°	None		90		
41	Antenna Wind 90°	None		47		
42	Antenna Wind 120°	None		90		
43	Antenna Wind 135°	None		94		
44	Antenna Wind 150°	None		94		
45	Antenna Wind 180°	None		45		
46	Antenna Wind 210°	None		94		
47	Antenna Wind 225°	None		94		
48	Antenna Wind 240°	None		90		
49	Antenna Wind 270°	None		47		
50	Antenna Wind 300°	None		90		
51	Antenna Wind 315°	None		94		
52	Antenna Wind 330°	None		94		
53	Antenna Wind w/ Ice 0°	None		45		
54	Antenna Wind w/ Ice 30°	None		94		
55	Antenna Wind w/ Ice 45°	None		94		
56	Antenna Wind w/ Ice 60°	None		90		
57	Antenna Wind w/ Ice 90°	None		47		

Company :Telamon CLS
Designer :RY
Job Number :41124-13755758_C9_04-02-MOD
Model Name:41124-13755758_C9_04- Naugatuck CT

5/24/2022
11:54:14 AM
Checked By : JLS

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
58	Antenna Wind w/ Ice 120°	None		90		
59	Antenna Wind w/ Ice 135°	None		94		
60	Antenna Wind w/ Ice 150°	None		94		
61	Antenna Wind w/ Ice 180°	None		45		
62	Antenna Wind w/ Ice 210°	None		94		
63	Antenna Wind w/ Ice 225°	None		94		
64	Antenna Wind w/ Ice 240°	None		90		
65	Antenna Wind w/ Ice 270°	None		47		
66	Antenna Wind w/ Ice 300°	None		90		
67	Antenna Wind w/ Ice 315°	None		94		
68	Antenna Wind w/ Ice 330°	None		94		
69	Seismic X	ELX		47	91	
70	Seismic Y	ELY		47	91	
71	Seismic Z	ELZ		47	91	
72	Maintenance Live 500 (1)	QL1		1		
73	Maintenance Live 500 (2)	QL2		1		
74	Maintenance Live 500 (3)	QL3		1		
75	Maintenance Live 500 (4)	QL4		1		
76	Maintenance Live 500 (5)	QL5		1		

TOWER-MOUNT CONNECTION ANALYSIS

v.1.0.0

telamon CLS

319 Chapanoke Road, Suite 118
Raleigh, NC 27603
Office: (405) 348-5460
Fax: (405) 341-4306

SITE INFORMATION	
Site ID	283423
Site Name	Naugatuck CT
Project ID	41124-13755758_C9_01-01-MA

ANALYSIS PARAMETERS	
TIA Revision	H

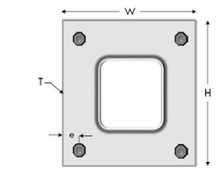
APPLIED FORCES FROM RISA		
Member Label		M111
Member End Label		I
Force-X	Fx, lbs	-3513.9
Force-Y	Fy, lbs	3960.6
Force-Z	Fz, lbs	2034.8
Moment X-X	Mx, lbs-ft	920.8
Moment Y-Y	My, lbs-ft	-2165.8
Moment Z-Z	Mz, lbs-ft	7099.1

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect HSS
Standoff Member Shape	HSS4X4X1/4
Standoff Member Grade	A36
Member to Plate Weld Size, in	3/16

BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.00
Nominal Bolt Diameter (STDb), in	0.625
Bolt Grade	A325
Plate Height (H), in	8.00
Plate Width (W), in	8.00
Plate Thickness (T), in	0.75
Plate Grade	A36

BOLT ANALYSIS		
Shear Demand (Vs), k	1.28	
Shear Capacity (ΦRn), k	13.81	
Tension Demand (Ts), k	11.38	
Tension Capacity (ΦRn), k	20.34	
Shear Utilization	9.2%	
Tension Utilization	55.9%	PASS
Interaction Utilization	32.1%	

PLATE ANALYSIS		
Moment Demand (Mu), k-in	16.09	
Flexural Capacity (ΦMn), k-in	25.77	
Plate Utilization	62.4%	PASS



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	36
Standoff Member - Ultimate Strength (Fu), ksi	58
Bolt - Yield Strength (Fy), ksi	92
Bolt - Tensile Strength (Fu), ksi	120
Plate - Yield Strength (Fy), ksi	36
Plate - Ultimate Strength (Fu), ksi	58

telamon Tower Engineering PLLC
319 CHAPANOKE RD, SUITE 118
RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

TELAMON TOWER ENGINEERING, PLLC PROJECT ID:
41124-ATC MA-283423-13755758

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	AND	05/24/2022
0	FOR CONSTRUCTION	AND	05/25/2022

ATC SITE NUMBER:

283423

ATC SITE NAME:

NAUGATUCK CT

CONNECTICUT

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK, CT 06770-3656

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

David Chickering
Telamon Tower Engineering PLLC
PE # 35683 Exp. 01/31/2023

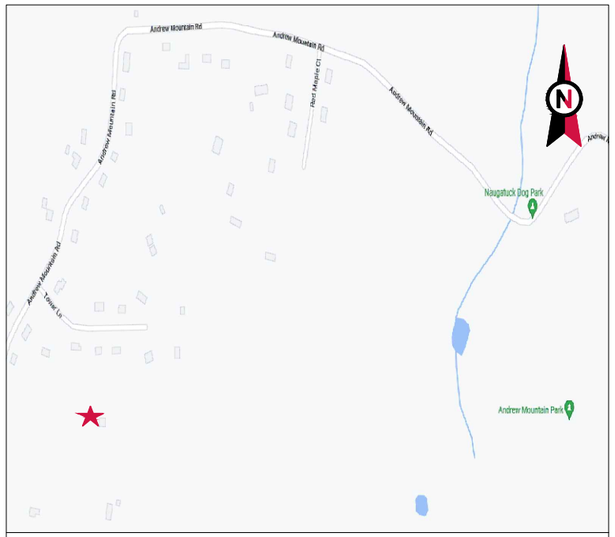
05/25/2022

DRAWN BY:	AND
APPROVED BY:	DC
DATE DRAWN:	05/25/2022
ATC JOB NO:	13755758_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-905	0

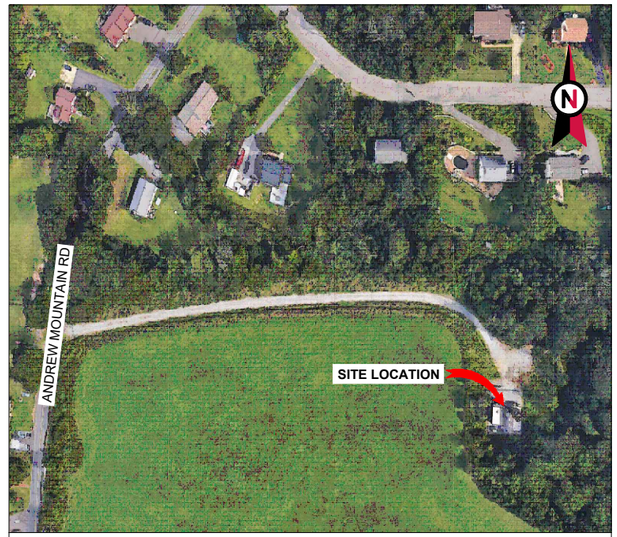


VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: NAUGATUCK CT
ATC SITE NUMBER: 283423
AT&T PACE NUMBERS: MRCTB053875/ MRCTB053879/ MRCTB054770/ MRCTB055245/ MRCTB055455/ MRCTB055628/ MRCTB055032/ MRCTB055036
AT&T SITE ID: CTL02409
AT&T FA CODE:10133908
AT&T SITE NAME: NAUGATUCK ANDREW MTN RD
SITE ADDRESS: 880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

AT&T AMENDMENT PLAN



LOCATION MAP

COMPLIANCE CODE

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

1. INTERNATIONAL BUILDING CODE (IBC)
2. NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: UTILITY COMPANY DIRECT
PHONE: UNKNOWN

TELEPHONE COMPANY: UNKNOWN
PHONE: UNKNOWN

811 Know what's below. Call before you dig.

PROJECT SUMMARY

SITE ADDRESS:

880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656
COUNTY: NEW HAVEN

GEOGRAPHIC COORDINATES:

LATITUDE: 41.484453
LONGITUDE: -73.089844
GROUND ELEVATION: 855' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

AT&T MOBILITY

ENGINEER:

HUDSON DESIGN GROUP, LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845

PROPERTY OWNER:

FRANKLIN B ANDREW JR
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:

REMOVE (12) ANTENNA(S), (3) RRH(S), (3) 3/8" RET CONTROL CABLE(S) AND (2) 0.40" FIBER CABLE(S)

INSTALL MOUNT MODIFICATIONS,(9) ANTENNA(S), (6) RRH(S), (2) SQUID(S), (2) 0.78" 8 AWG 6 CABLE(S), (3) Y-CABLE(S) AND (2) 0.41" FIBER CABLE(S)

EXISTING (12) RRH(S), (3) SQUID(S) AND (8) 0.78" 8 AWG 6 CABLE(S) TO REMAIN

GROUND WORK:

REMOVE NONE
INSTALL 6630+IDLE AND 6648+XCEDE
EXISTING (1) 5216 AND (1) XMU TO REMAIN

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

PROJECT LOCATION DIRECTIONS

FROM DOWNTOWN NEW HAVEN CT START OUT GOING NORTHEAST ON CHURCH ST TOWARD WALL ST. TURN LEFT ONTO GROVE ST. GROVE ST BECOMES TOWER PKWY. TOWER PKWY BECOMES WHALLEY AVE. TURN SLIGHT LEFT ONTO AMITY RD/CT-63. CONTINUE TO FOLLOW CT-63. TURN LEFT TO STAY ON CT-63. TURN LEFT ONTO SCOTT ST. TAKE THE 3RD LEFT ONTO ANDREW AVE. TURN RIGHT ONTO ANDREW MOUNTAIN RD. 946 ANDREW MOUNTAIN RD, NAUGATUCK, CT 06770-3643, 946 ANDREW MOUNTAIN RD IS ON THE LEFT.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	B	04/04/22	TR
G-002	GENERAL NOTES	B	04/04/22	TR
C-101	DETAILED SITE PLAN	B	04/04/22	TR
C-201	TOWER ELEVATION	B	04/04/22	TR
E-501	GROUNDING DETAILS	B	04/04/22	TR
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
	MOUNT MODFICIATION SHEETS			

AMERICAN TOWER®

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

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	03/22/22
B	PRELIM REVISED	TR	04/04/22

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT

AT&T SITE NAME:
NAUGATUCK ANDREW MTN RD

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

SEAL:

PRELIMINARY: NOT FOR CONSTRUCTION

AT&T

DATE DRAWN:	03/22/22
ATC JOB NO:	13755758_D1
CUSTOMER ID:	CTL02409
CUSTOMER #:	10133908

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	B

GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, AT&T "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
   - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   - B. AC/TELCO INTERFACE BOX (PPC)
   - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   - D. TOWERS, MONOPOLES
   - E. TOWER LIGHTING
   - F. GENERATORS & LIQUID PROPANE TANK
   - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   - H. ANTENNAS (INSTALLED BY OTHERS)
   - I. TRANSMISSION LINE
   - J. TRANSMISSION LINE JUMPERS
   - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   - L. TRANSMISSION LINE GROUND KITS
   - M. HANGERS
   - N. HOISTING GRIPS
   - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF AT&T TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE AT&T REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE AT&T REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE AT&T REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE AT&T CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE AT&T REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH AT&T AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH AT&T REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH AT&T REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY AT&T MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH AT&T SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO AT&T FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO AT&T SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY AT&T REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE AT&T REP. ANY WORK FOUND BY THE AT&T REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. AT&T FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE AT&T WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. AT&T OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO AT&T OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
   - A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY AT&T UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.
   - B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND AT&T SPECIFICATIONS.
   - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
   - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.
   - E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
   - F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
   - G. ANTENNA AND COAXIAL CABLE GROUNDING:
2. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
3. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS)

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

AMERICAN TOWER®

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

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	03/22/22
B	PRELIM REVISED	TR	04/04/22

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT

AT&T SITE NAME:
NAUGATUCK ANDREW MTN RD

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

SEAL:

PRELIMINARY: NOT FOR CONSTRUCTION

AT&T

DATE DRAWN:	03/22/22
ATC JOB NO:	13755758_D1
CUSTOMER ID:	CTL02409
CUSTOMER #:	10133908

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	B

SITE PLAN NOTES:

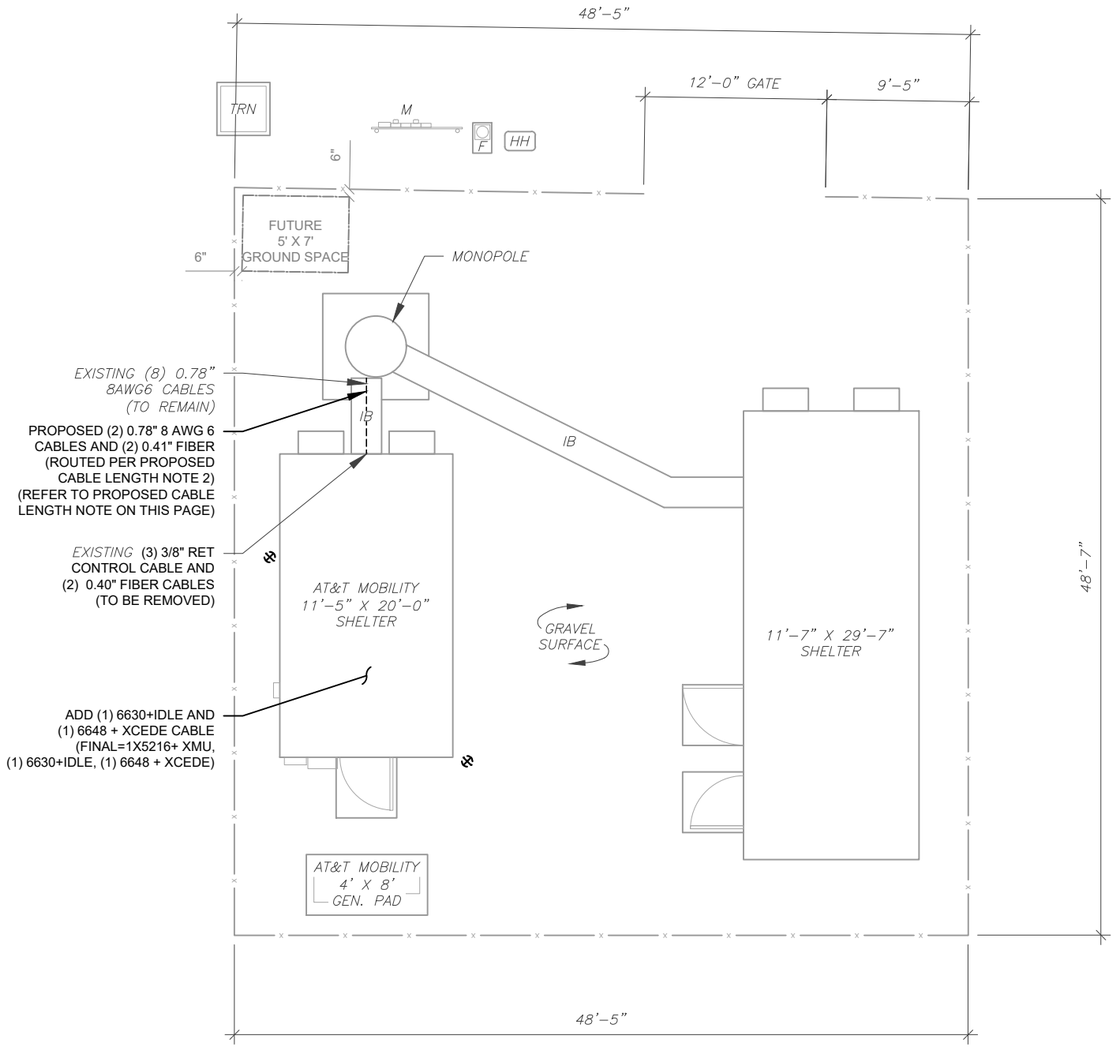
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.

3. THIS PROJECT INCLUDES NO INSTALL OR MODIFICATION AT GRADE.

LEGEND

⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
——x——	CHAINLINK FENCE



1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

N

PROPOSED CABLE LENGTH:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **150'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.

AMERICAN TOWER®

HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5586

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	03/22/22
B	PRELIM REVISED	TR	04/04/22

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT

AT&T SITE NAME:
NAUGATUCK ANDREW MTN RD

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

SEAL:

PRELIMINARY: NOT FOR CONSTRUCTION

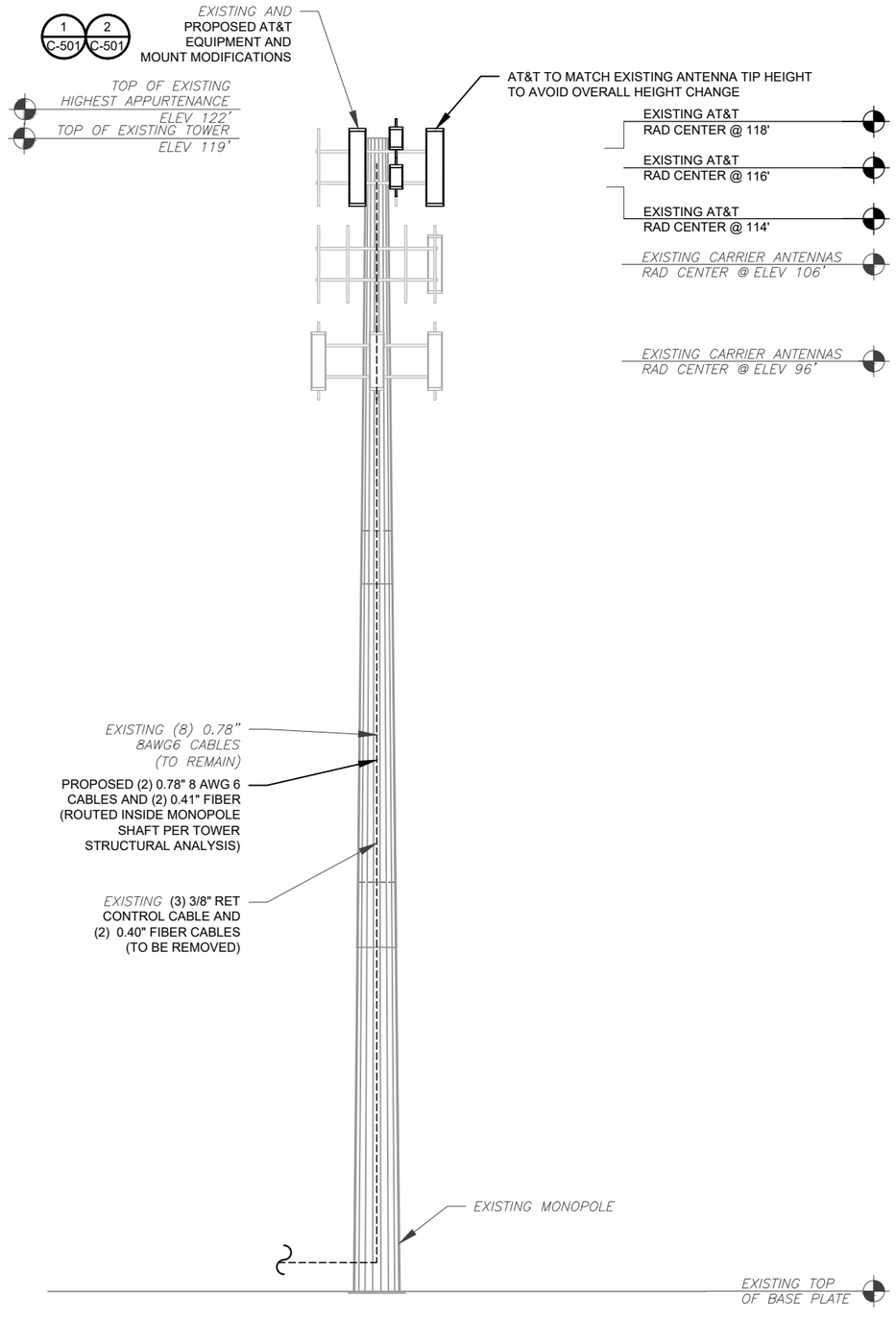
AT&T

DATE DRAWN:	03/22/22
ATC JOB NO:	13755758_D1
CUSTOMER ID:	CTL02409
CUSTOMER #:	10133908

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	B

PER MOUNT ANALYSIS COMPLETED BY TELAMON TOWER ENGINEERING PLLC, DATED 03/16/22, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. A MOUNT MODIFICATION DESIGN SHALL BE COMPLETED AND MODIFICATION MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



1 TOWER ELEVATION
SCALE: N.T.S.

TOWER NOTE:
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
4. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)
5. TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.

AMERICAN TOWER®

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

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	03/22/30
B	PRELIM REVISED	TR	04/04/22

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT

AT&T SITE NAME:
NAUGATUCK ANDREW MTN RD

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

SEAL:

PRELIMINARY: NOT FOR CONSTRUCTION

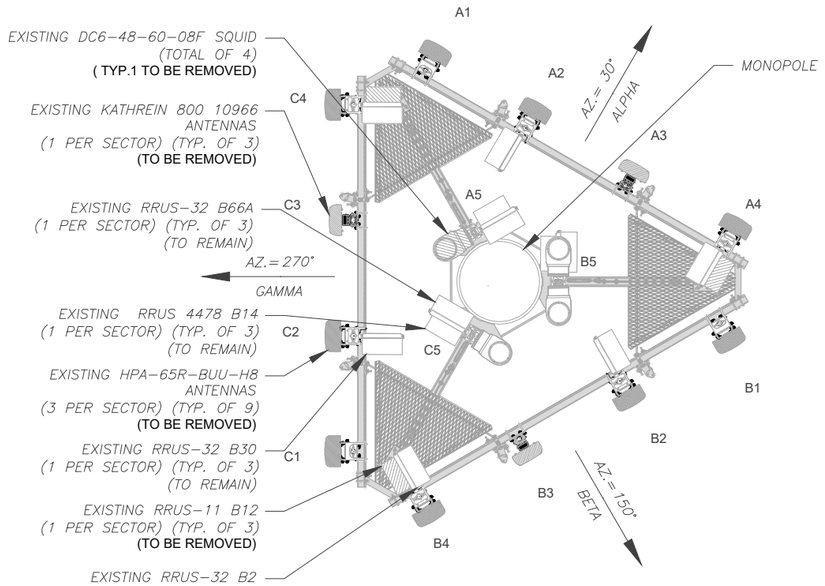
AT&T

DATE DRAWN:	03/22/22
ATC JOB NO:	13755758_D1
CUSTOMER ID:	CTL02409
CUSTOMER #:	10133908

TOWER ELEVATION

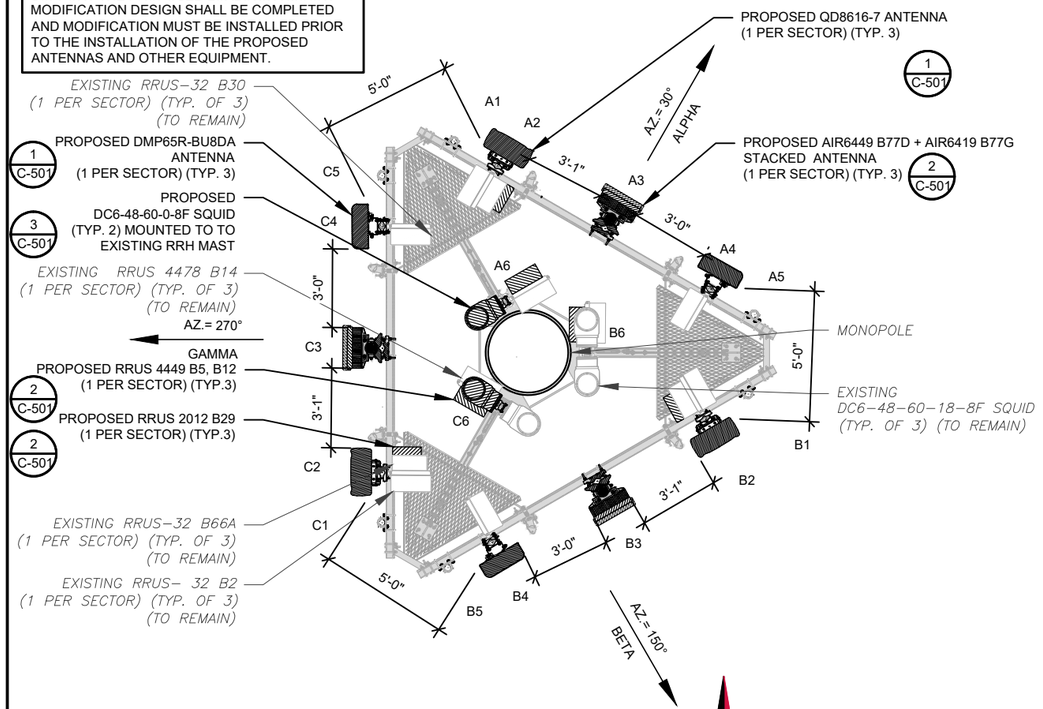
SHEET NUMBER:	REVISION:
C-201	B

EXISTING CONFIGURATIONS ARE BASED ON RFDS.
CONTRACTOR TO VERIFY EXISTING CONDITIONS.



1 CURRENT ANTENNA PLAN
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY TELAMON TOWER ENGINEERING PLLC, DATED 03/16/22, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. A MOUNT MODIFICATION DESIGN SHALL BE COMPLETED AND MODIFICATION MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



2 FINAL ANTENNA PLAN
SCALE: N.T.S.

PROPOSED RRUs MUST BE INSTALLED A MINIMUM OF 8" AWAY FROM ALL ANTENNAS

EXISTING ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	116'	30°	A1	HPA-65R-BUU-H8	–	RMV	–	–
			A2	HPA-65R-BUU-H8	WCS	RMV	RRUS-32 B30	RMN
			A3	800 10966 K	700, AWS	RMV	RRUS 4478 B14 RRUS-32 B66A	RMN
			A4	HPA-65R-BUU-H8	700, 1900	RMV	RRUS-11 B12 RRUS-32 B2	RMV RMN
BETA	116'	150°	B1	HPA-65R-BUU-H8	–	RMV	–	–
			B2	HPA-65R-BUU-H8	WCS	RMV	RRUS-32 B30	RMN
			B3	800 10966 K	700, AWS	RMV	RRUS 4478 B14 RRUS-32 B66A	RMN
			B4	HPA-65R-BUU-H8	700, 1900	RMV	RRUS-11 B12 RRUS-32 B2	RMV RMN
GAMMA	116'	270°	B1	HPA-65R-BUU-H8	–	RMV	–	–
			B2	HPA-65R-BUU-H8	WCS	RMV	RRUS-32 B30	RMN
			B3	800 10966 K	700, AWS	RMV	RRUS 4478 B14 RRUS-32 B66A	RMN
			B4	HPA-65R-BUU-H8	700, 1900	RMV	RRUS-11 B12 RRUS-32 B2	RMV RMN

NOTES

1. CONFIRM WITH AT&T REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
3. THE ANTENNA ORIENTATION PLAN IS A SCHEMATIC. ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA AZIMUTHS, MOUNT CONFIGURATIONS AND TOWER ORIENTATION. SCALES SHOWN ARE FOR REFERENCE ONLY AND EXISTING DIMENSIONS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO INSTALLATION AND NOTIFY ATC OF ANY DISCREPANCIES.
4. CONTRACTOR TO ENSURE PROPER SEPARATION IN ACCORDANCE WITH AT&T'S FIRSTNET REQUIREMENTS (SEE SHEET R-602)

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
RRU TO ANTENNA: 10'

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
ADD: TO BE ADDED

FINAL ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	116'	30°	A1	-	-	EMPTY	RRUS 4478 B14 RRUS 4449 B5, B12	RMN ADD
	116'		A2	QD8616-7	LTE 700 DE/ B14/ PCS/ AWS	ADD	RRUS 32 B2 RRUS 32 B66A RRUS 2012 B29	RMN RMN ADD
	119'		A3UP	AIR 6419 B77G	DOD	ADD	-	
	114'		A3DN	AIR 6449 B77D	C-BAND	ADD	-	-
	116'		A4	DMP65R-BU8D	LTE 700 BC/ 850/ WCS	ADD	RRUS-32 B30	RMN
	116'		A5	-	-	EMPTY		
BETA	116'	150°	B1	-	-	-	RRUS 4478 B14 RRUS 4449 B5, B12	RMN ADD
	116'		B2	QD8616-7	LTE 700 DE/ B14/ PCS/ AWS	ADD	RRUS 32 B2 RRUS 32 B66A RRUS 2012 B29	RMN RMN ADD
	119'		B3UP	AIR 6419 B77G	DOD	ADD	-	
	114'		B3DN	AIR 6449 B77D	C-BAND	ADD	-	-
	116'		B4	DMP65R-BU8D	LTE 700 BC/ 850/ WCS	ADD	RRUS-32 B30	RMN
	116'			-	-	EMPTY		
GAMMA	116'	270°	C1	-	-	-	RRUS 4478 B14 RRUS 4449 B5, B12	RMN ADD
	116'		C2	QD8616-7	LTE 700 DE/ B14/ PCS/ AWS	ADD	RRUS 32 B2 RRUS 32B66A RRUS 2012 B29	RMN ADD
	119'		C3UP	AIR 6419 B77G	DOD	ADD	-	
	114'		C3DN	AIR 6449 B77D	C-BAND	ADD	-	-
	116'		C4	DMP65R-BU8D	LTE 700 BC/ 850/ WCS	ADD	RRUS-32 B30	RMN
	116'		C5	-	-	EMPTY		

FINAL FIBER DISTRIBUTION/SQUID		FINAL CABLING SUMMARY			
MODEL NUMBER	STATUS	COAX	DC	FIBER	STATUS
(3) DC6-48-60-18-8F	RMN	–	(8) 0.78" 8 AWG 6	(1) 0.39"	RMN
(2) DC6-48-60-0-8F	ADD	-	(2) 0.78" 8 AWG 6	(2) 0.41"	ADD

EXISTING FIBER DISTRIBUTION/SQUID		EXISTING CABLING SUMMARY			
MODEL NUMBER	STATUS	COAX	DC	FIBER	STATUS
(3) DC6-48-60-18-8F	RMN	–	(8) 0.78" 8 AWG 6	(1) 0.39"	RMN
(1) DC6-48-60-18-8F	RMV	–	(3) 3/8" RET CONTROL CABLE	(3) 0.39" (2) 0.40"	RMV

3 EQUIPMENT SCHEDULES

AMERICAN TOWER®

HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5586

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	03/22/22
B	PRELIM REVISED	TR	04/04/22

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT

AT&T SITE NAME:
NAUGATUCK ANDREW MTN RD

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

SEAL:

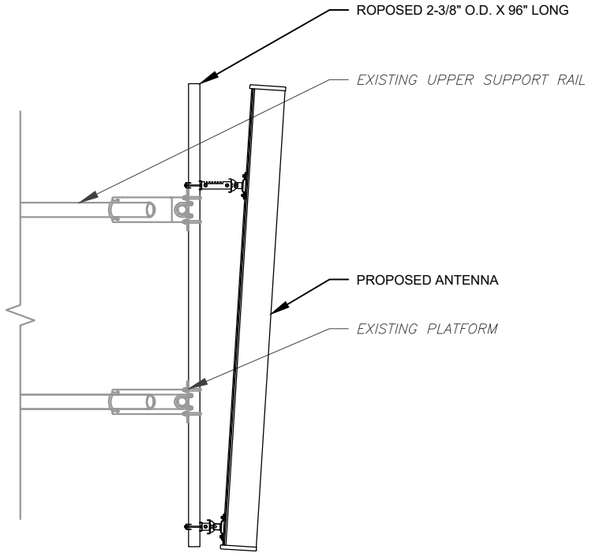
PRELIMINARY: NOT FOR CONSTRUCTION

AT&T

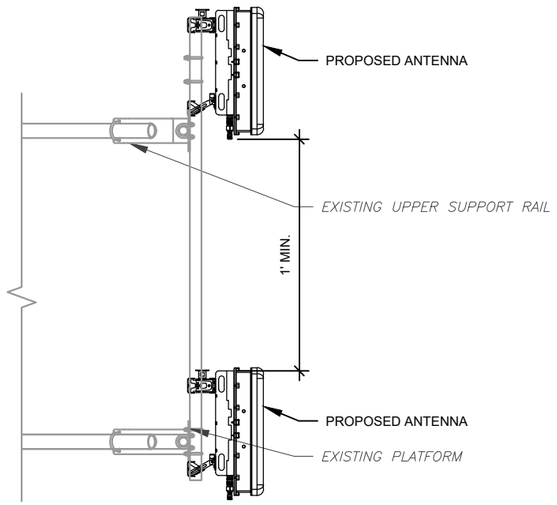
DATE DRAWN:	03/22/22
ATC JOB NO:	13755758_D1
CUSTOMER ID:	CTL02409
CUSTOMER #:	10133908

RF SCHEDULE AND ANTENNA INSTALLATION

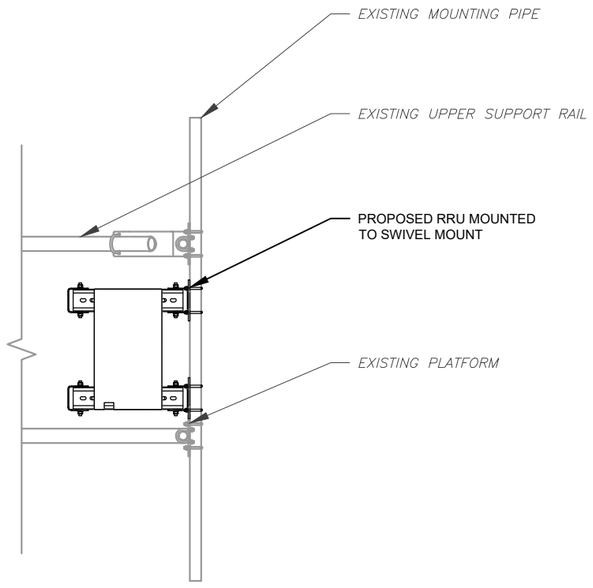
SHEET NUMBER:	REVISION:
C-401	B



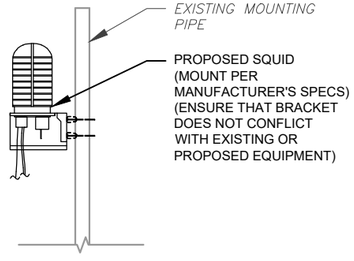
1 ANTENNA DETAIL
SCALE: N.T.S.



2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.



3 PROPOSED RRU MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.



4 PROPOSED SQUID MOUNTING
SCALE: N.T.S.

AMERICAN TOWER®

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

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	03/22/22
B	PRELIM REVISED	TR	04/04/22

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT

AT&T SITE NAME:
NAUGATUCK ANDREW MTN RD

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

SEAL:

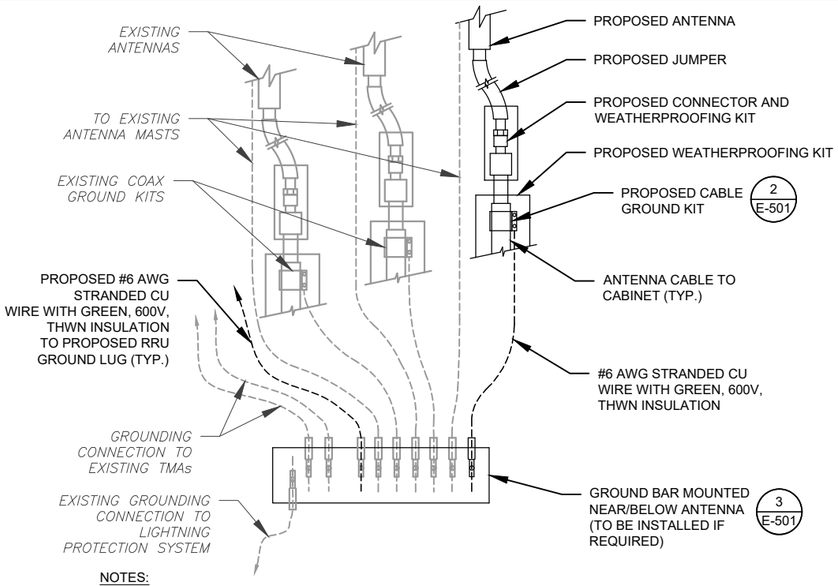
PRELIMINARY: NOT FOR CONSTRUCTION

AT&T

DATE DRAWN:	03/22/22
ATC JOB NO:	13755758_D1
CUSTOMER ID:	CTL02409
CUSTOMER #:	10133908

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	B

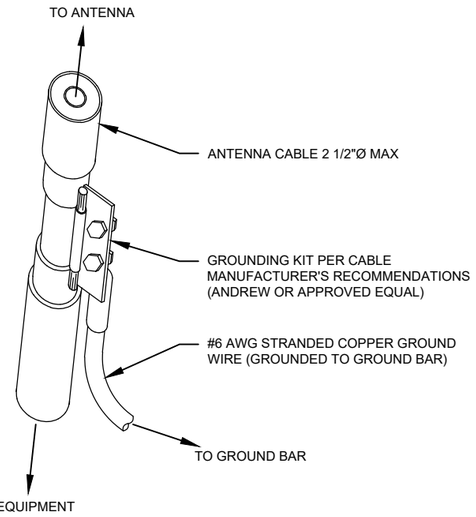


NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH AT&T GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH AT&T GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: N.T.S.

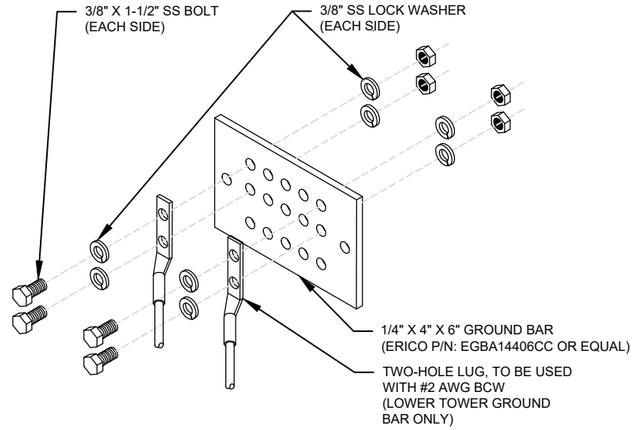


GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: N.T.S.

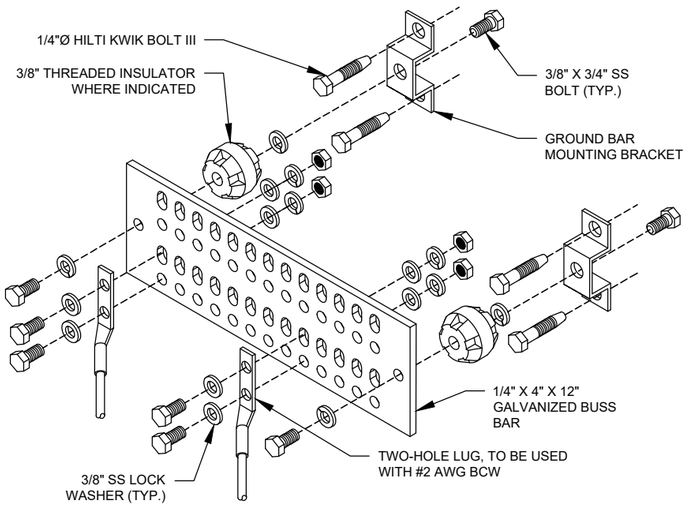


GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

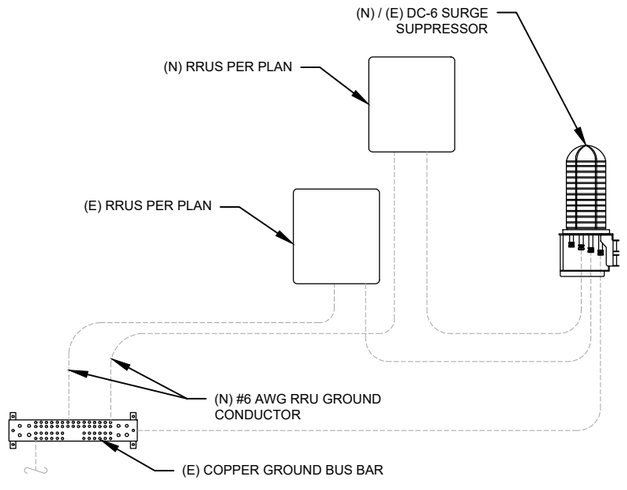


GROUND BAR NOTES

1. GROUND KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR SHALL BE BOLTED TO STRUCTURAL MEMBER OR ANCHORED TO CONCRETE SLAB W/ HILTI KWIK BOLT III.

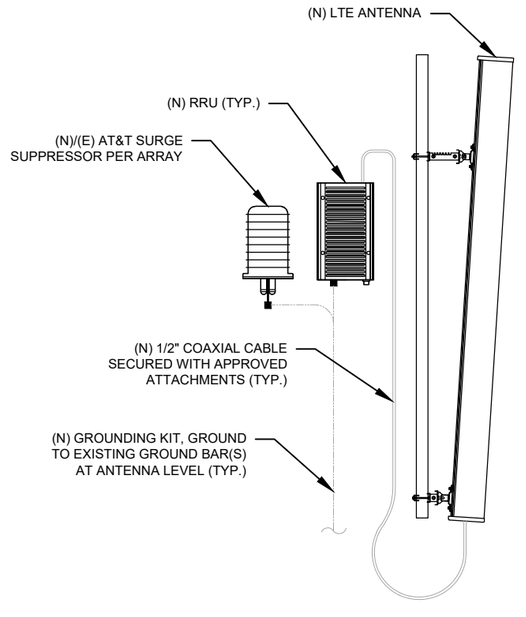
4 MAIN GROUND BAR DETAIL

SCALE: N.T.S.



5 RRU GROUNDING

SCALE: N.T.S.



6 ANTENNA/RRU GROUNDING

SCALE: N.T.S.

AMERICAN TOWER®

HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	03/22/22
B	PRELIM REVISED	TR	04/04/22

ATC SITE NUMBER:
283423

ATC SITE NAME:
NAUGATUCK CT

AT&T SITE NAME:
NAUGATUCK ANDREW MTN RD

SITE ADDRESS:
880 ANDREW MOUNTAIN ROAD
NAUGATUCK,CT 06770-3656

SEAL:

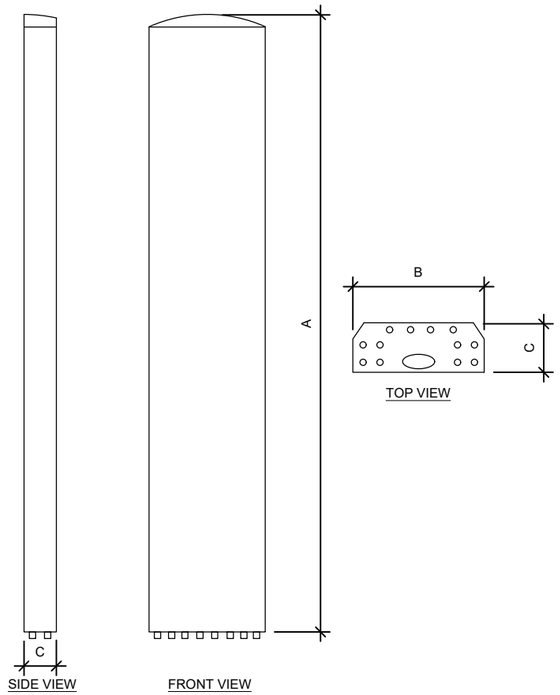
PRELIMINARY: NOT FOR CONSTRUCTION

AT&T

DATE DRAWN:	03/22/22
ATC JOB NO:	13755758_D1
CUSTOMER ID:	CTL02409
CUSTOMER #:	10133908

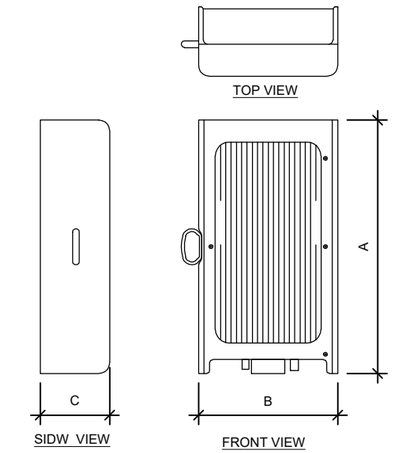
GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	B



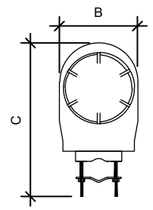
SIDE VIEW FRONT VIEW TOP VIEW

ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
AIR 6419 B77G	15.7"	30.0"	6.7"	102.5
AIR 6449 B77D	15.9"	30.4"	8.1"	103.6
QD8616-7	96.0"	22.0"	9.6"	98.0
CCI DMP65R-BU8D	96.0"	20.7"	7.7"	95.7

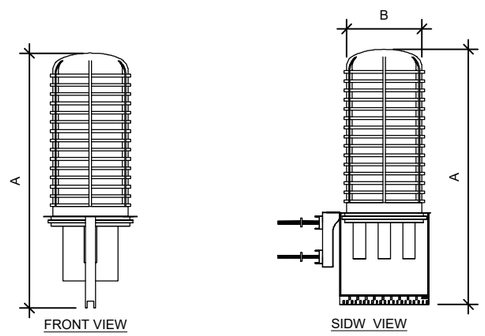


SIDW VIEW FRONT VIEW

RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
4449 B5, B12	17.9"	13.2"	9.4"	71.0
RRUS 2012 B29	16.5"	13.5"	6.4"	53.0



PLAN VIEW



FRONT VIEW SIDW VIEW

RAYCAP SPECIFICATIONS				
RAYCAP MODEL	A	B	C	WEIGHT (LBS)
DC6-48-60-0-F	22.3"	11"	11"	32.8

1 EQUIPMENT SPECIFICATIONS

SCALE: N.T.S.

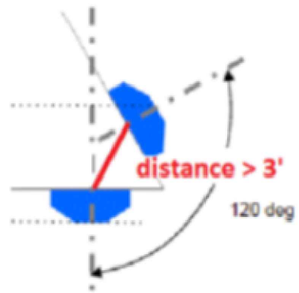
SUPPLEMENTAL

SHEET NUMBER: R-601

REVISION: B

RF REQUIREMENTS FOR 700 B14 FIRSTNET, 700 B12, 700D B29 ANTENNA SEPARATION

- ❑ Horizontal separation (side to side of antenna): >= 3’
- ❑ Vertical separation (between the tips of the antennas): > 3’
- ❑ Inter-sector separation: > 4' between the center of the antenna backplanes.



- ❑ Please note additional horizontal separation may be required if B14 antennas azimuth are different from others or antennas are severely angled with respect to the mount.
- ❑ Typical 3' horizontal separation can tolerate skew angle up to 6°.

SUPPLEMENTAL

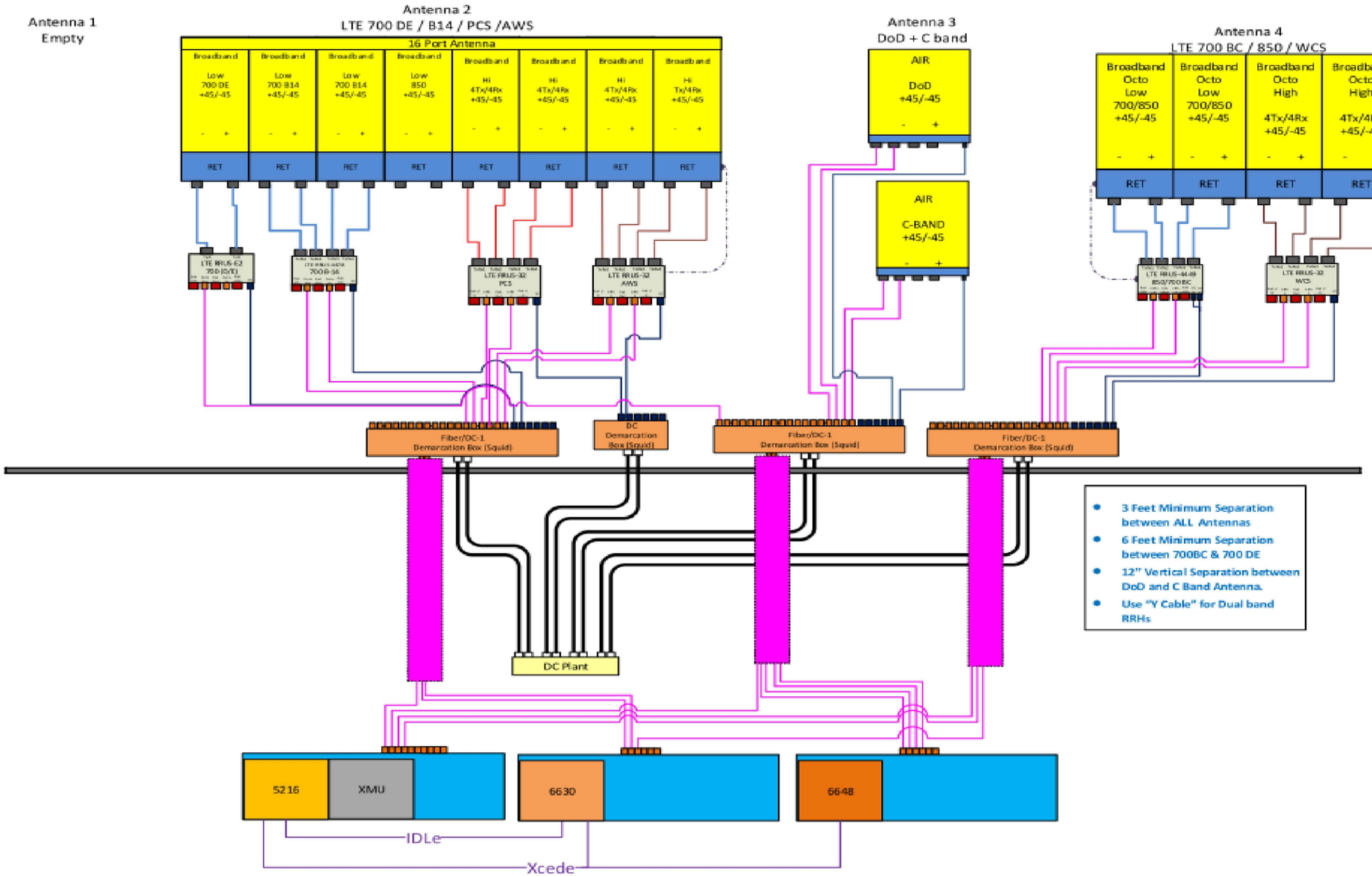
SHEET NUMBER: R-602

REVISION: B

Diagram - Sector	A	Diagram File Name - CT2409_ABC C-BAND DOD_1.vsd					
Atoll Site Name -	CTL02409	Location Name -	NAUGATUCK ANDREW MTN RD	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)							

Antenna 1
Empty

Antenna 2
LTE 700 DE / B14 / PCS /AWS



Antenna 3
DoD + C band

Antenna 4
LTE 700 BC / 850 / WCS

- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs

1 RFDS PLUMBING DIAGRAM

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. GENERAL CONTRACTOR IS TO CHECK WITH THE AT&T CM TO ENSURE THIS IS THE MOST RECENT VERSION OF THE RFDS.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-603	B

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by
telamon
Tower Engineering PLLC

Antenna Mount Analysis Report

ATC Site Name	:	Naugatuck CT
ATC Asset Number	:	283423
Engineering Number	:	13755758_C8_01
Mount Elevation	:	117.25 ft
Carrier	:	AT&T Mobility
Carrier Site Name	:	MRCTB055032
Carrier Site Number	:	CTL02409
Site Location	:	880 Andrew Mountain Road Naugatuck, CT 06770-3656 41.484453, -73.089844
County	:	New Haven
Date	:	March 16, 2022
Max Usage	:	>200%
Result	:	Fail

Prepared By:
Rohit Yadav
Telamon Tower Engineering, PLLC

Reviewed By:
William Holt, P.E.
Telamon Tower Engineering, PLLC
Digitally signed by William Holt
Date: 2022.03.16 17:05:24 -04'00'

STATE OF CONNECTICUT
WILLIAM HOLT
PEN.35568
LICENSED
PROFESSIONAL ENGINEER

Introduction

The proposed equipment is to be mounted to the existing Platform w/ Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

Supporting Documents

Structural Data	Site Photos, dated November 18, 2019 Spec Sheet by Site Pro 1, Dwg #RMQP-NP
Previous Analyses	Tower SA by Tower Engineering Professionals, Eng. #13698427_C3_03, dated July 20, 2021
Construction Drawings	CD by Hudson Design Group LLC for AT&T, Site ID #CT2409, Rev. 2, dated May 10, 2018
Loading Data	ATC Application, Project #13755758, dated March 11, 2022 AT&T RFDS, RFDS ID #4788730, Version 2, dated January 14, 2022

Analysis

Codes	TIA-222-H
Basic Wind Speed	117 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	B
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	220 ft
Crest Length (L):	1920 ft
Risk Category	II
Maintenance Live Load	L_M: 500 lb
Spectral Response	S_s: 0.20; S_1: 0.05; Site Class: D

Conclusion

Based on the analysis, the antenna mount does not meet the requirements per the applicable codes listed above. The mount can support equipment as described in this report after the modifications listed below are completed:

- **Reinforce base corner plates**
- **Reinforce stand-off offset plates**

The rough cost estimate, pre-MOD design, is estimated to be <$20k. Please note, a more refined cost estimate will be provided as part of the Modification document package.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

1 MOUNT ANALYSIS

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERYIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONTRUCTION.

SUPPLEMENTAL

SHEET NUMBER: R-604

REVISION: B

July 9, 2022

The Honorable N. Warren "Pete" Hess III
229 Church Street, 4th Floor
Naugatuck, CT 06770

Re: Notice of Exempt Modification – AT&T Mobility Site 113755758
AT&T Wireless Telecommunications Facility @ 880 Andrew Mountain Road, Naugatuck, CT

Dear Mayor Hess:

AT&T Mobility ("AT&T") is proposing to modify a wireless telecommunications facility on an existing eighty nine (89) foot tall monopole tower at 880 Andrew Mountain Road, in Naugatuck, CT 06770 (Latitude: 41.484453 Longitude: -73.089844). The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by Russell B. Andrew Sr.

AT&T proposes to remove twelve (12) antennas, three (3) RRH units, three (3) RET control cables and two (2) fiber cables; and install mount modifications in accordance with the enclosed reinforcement drawings, and nine (9) antennas, six (6) RRHs, two (2) squids, two (2) AWG cables, three (3) Y cables and two (2) fiber cables.

This letter is intended to serve as the required notice to the chief elected official/municipal officer. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe AT&T's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

July 9, 2022

Russell B. Andrew Sr.
861 Andrew Mountain Road
Naugatuck, CT, 06770

Re: Notice of Exempt Modification – AT&T Mobility Site 113755758
AT&T Wireless Telecommunications Facility @ 880 Andrew Mountain Road, Naugatuck, CT

Dear Property Owner:

AT&T Mobility ("AT&T") is proposing to modify a wireless telecommunications facility on an existing eighty nine (89) foot tall monopole tower at 880 Andrew Mountain Road, in Naugatuck, CT, 06770 (Latitude: 41.484453 Longitude: -73.089844). The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by Russell B. Andrew Sr.

AT&T proposes to remove twelve (12) antennas, three (3) RRH units, three (3) RET control cables and two (2) fiber cables; and install mount modifications in accordance with the enclosed reinforcement drawings, and nine (9) antennas, six (6) RRHs, two (2) squids, two (2) AWG cables, three (3) Y cables and two (2) fiber cables.

This letter is intended to serve as the required notice to the property owner. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe AT&T's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

July 9, 2022

Lori Rotella, Town Planner
Land Use Office, Naugatuck Town Hall
229 Church St., 2nd Floor
Naugatuck, CT 06770

Re: Notice of Exempt Modification – AT&T Mobility Site 113755758
AT&T Wireless Telecommunications Facility @ 880 Andrew Mountain Road, Naugatuck, CT

Dear Ms. Rotella:

AT&T Mobility ("AT&T") is proposing to modify a wireless telecommunications facility on an existing eighty nine (89) foot tall monopole tower at 880 Andrew Mountain Road, in Naugatuck, CT 06770 (Latitude: 41.484453 Longitude: -73.089844). The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by Russell B. Andrew Sr.

AT&T proposes to remove twelve (12) antennas, three (3) RRH units, three (3) RET control cables and two (2) fiber cables; and install mount modifications in accordance with the enclosed reinforcement drawings, and nine (9) antennas, six (6) RRHs, two (2) squids, two (2) AWG cables, three (3) Y cables and two (2) fiber cables.

This letter is intended to serve as the required notice to the municipal planning agency. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe AT&T's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

July 8, 2022

Jacqueline Hall
Project Manager, Site Development
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

Re: Notice of Exempt Modification – AT&T Mobility Site 113755758
AT&T Wireless Telecommunications Facility @ 880 Andrew Mountain Road, Naugatuck, CT

Dear Ms. Hall:

AT&T Mobility ("AT&T") is proposing to modify a wireless telecommunications facility on an existing eighty nine (89) foot tall monopole tower at 880 Andrew Mountain Road, in Naugatuck, CT 06770 (Latitude: 41.484453 Longitude: -73.089844). The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by Russell B. Andrew Sr.

AT&T proposes to remove twelve (12) antennas, three (3) RRH units, three (3) RET control cables and two (2) fiber cables; and install mount modifications in accordance with the enclosed reinforcement drawings, and nine (9) antennas, six (6) RRHs, two (2) squids, two (2) AWG cables, three (3) Y cables and two (2) fiber cables.

This letter is intended to serve as the required notice to the tower owner. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe AT&T's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

Jack Andrews. 10130 Donleigh Dr., Columbia, MD 21046 443-677-0144 jmandrews@clinellc.com
Centerline Communications • 750 W Center Street, Suite 301, W Bridgewater, MA 02379

About 22,000,000 results (0.52 seconds)

Track your package
Data provided by USPS

Tracking number 9505510391972200716950

Delivered
July 21, 11:25AM
Naugatuck, CT

Russell B. Andrew Sr. - Property Owner

View details on USPS

Call 1-800-275-8777

Track another package

https://tools.usps.com

USPS.com® - USPS Tracking®

The shipping confirmation email you received from an online retailer · The bottom peel-off portion of your **USPS Tracking**® label ...

Where is my package?

Responses to common requests such as package not received ...

Look Up a ZIP Code

Can't find what you're looking for? Go to our FAQs section to find ...

More results from usps.com »

https://www.usps.com

USPS: Welcome

Welcome to **USPS**.com. Find information on our most ... Use our quick tools to find locations, calculate prices, look up a ZIP Code, and get **Track** & Confirm info.

https://www.usps.com › manage

Receive Mail & Packages - USPS

Track USPS package deliveries, get **tracking** text and email notifications, forward mail, change your address, and learn about setting up PO boxes or home ...

https://faq.usps.com › topic › usps-tracking-

USPS Tracking ®

USPS Tracking® provides end-to-end item tracking. With the tracking number, you can check delivery progress online, by phone, and by text.

https://faq.usps.com › article › USPS-Tracking-The-Basics

USPS Tracking® - The Basics

USPS Tracking® service provides end-to-end item tracking. This article provides in-depth information on how to use the service, what information the service ...

Google usps tracking

All Books Shopping News Videos More Tools

About 22,000,000 results (0.52 seconds)

Track your package
Data provided by USPS

Tracking number 9505510391972200716967

Delivered
July 21, 09:36AM
Naugatuck, CT

The Honorable N. Warren "Pete" Hess III - Mayor of the Borough of Naugatuck

View details on USPS

Call 1-800-275-8777

Track another package

https://tools.usps.com

USPS.com® - USPS Tracking®

The shipping confirmation email you received from an online retailer · The bottom peel-off portion of your **USPS Tracking**® label ...

Where is my package?

Responses to common requests such as package not received ...

Look Up a ZIP Code

Can't find what you're looking for? Go to our FAQs section to find ...

More results from usps.com »

https://www.usps.com

USPS: Welcome

Welcome to **USPS**.com. Find information on our most ... Use our quick tools to find locations, calculate prices, look up a ZIP Code, and get **Track** & Confirm info.

https://www.usps.com › manage

Receive Mail & Packages - USPS

Track USPS package deliveries, get **tracking** text and email notifications, forward mail, change your address, and learn about setting up PO boxes or home ...

https://faq.usps.com › topic › usps-tracking-

USPS Tracking ®

USPS Tracking® provides end-to-end item tracking. With the tracking number, you can check delivery progress online, by phone, and by text.

https://faq.usps.com › article › USPS-Tracking-The-Basics

USPS Tracking® - The Basics

USPS Tracking® service provides end-to-end item tracking. This article provides in-depth information on how to use the service, what information the service ...

Google usps tracking

Sign in

All Books Shopping News Videos More Tools

About 22,000,000 results (0.50 seconds)

Track your package
Data provided by USPS

Tracking number 9505510391972200716974

Delivered
July 21, 09:36AM
Naugatuck, CT

Lori Rotella - Town Planner/WEO

View details on USPS

Call 1-800-275-8777

Track another package

https://tools.usps.com

USPS.com® - USPS Tracking®

The shipping confirmation email you received from an online retailer · The bottom peel-off portion of your **USPS Tracking**® label ...

Where is my package?

Responses to common requests such as package not received ...

More results from usps.com »

https://www.usps.com

USPS: Welcome

Welcome to **USPS**.com. Find information on our most ... Use our quick tools to find locations, calculate prices, look up a ZIP Code, and get **Track** & Confirm info.

https://www.usps.com › manage

Receive Mail & Packages - USPS

Track USPS package deliveries, get **tracking** text and email notifications, forward mail, change your address, and learn about setting up PO boxes or home ...

https://faq.usps.com › topic › usps-tracking-

USPS Tracking ®

USPS Tracking® provides end-to-end item tracking. With the tracking number, you can check delivery progress online, by phone, and by text.

https://faq.usps.com › article › USPS-Tracking-The-Basics

USPS Tracking® - The Basics

USPS Tracking® service provides end-to-end item tracking. This article provides in-depth information on how to use the service, what information the service ...

How does USPS Tracking® work?: Add tracki… Receive automatic notifications: How can I …
What is USPS Tracking®?: My mailpiece has…

https://usps-track.us

USPS Tracking - Track Package

USPS General Inquiery about your Package Status. Call Above Tollfree number for your Present Status Quo of Your **USPS** Post or Shipment Details. E- ...

https://www.trackingmore.com › usps-tracking

USPS Tracking - TrackingMore.com

USPS Tracking · 1. Dial 1-800-222-1811, 1-800-275-8777 or 1-800-ASK-USPS. · 2. When you hear an automated voice asking you to say the required option, say "Agent" ...

★★★★★ Rating: 4.8 · 122 reviews

https://www.aftership.com › couriers › usps

USPS Tracking - AfterShip

Enter **tracking** number to **track USPS** shipments and get delivery status online. Contact **USPS** and get REST API docs.

https://parcelsapp.com › carriers › usps

USPS Tracking Package and Mail

Whenever you post a package, the post office workers assign a number to that order, that number is called **USPS Tracking** Number. It is also known as label or ...

USPS Marketing Mail®: 3-10 business days (… First-Class Mail®: 1-3 business days (not g…
Priority Mail Express®: 1-2 calendar days ... MAIL CLASS: DELIVERY STANDARD

USPS Tracking

USPS Delivery Tracking

Related searches

- **ups** tracking
- usps tracking **international**
- **live** usps tracking
- usps tracking **sign in**
- **fedex** tracking
- usps tracking **by name**
- usps **customer service**
- usps tracking **phone number**

About 22,000,000 results (0.52 seconds)

Track your package
Data provided by USPS

Tracking number 9505510391972200716943

Delivered
July 22, 11:43AM
Woburn, MA

View details on USPS

Call 1-800-275-8777

Track another package

https://tools.usps.com

USPS.com® - USPS Tracking®

The shipping confirmation email you received from an online retailer · The bottom peel-off portion of your **USPS Tracking**® label ...

Where is my package?

Responses to common requests such as package not received ...

Look Up a ZIP Code

Can't find what you're looking for? Go to our FAQs section to find ...

More results from usps.com »

https://www.usps.com

USPS: Welcome

Welcome to **USPS**.com. Find information on our most ... Use our quick tools to find locations, calculate prices, look up a ZIP Code, and get **Track** & Confirm info.

https://www.usps.com › manage

Receive Mail & Packages - USPS

Track USPS package deliveries, get **tracking** text and email notifications, forward mail, change your address, and learn about setting up PO boxes or home ...

https://faq.usps.com › topic › usps-tracking-

USPS Tracking ®

USPS Tracking® provides end-to-end item tracking. With the tracking number, you can check delivery progress online, by phone, and by text.

https://faq.usps.com › article › USPS-Tracking-The-Basics

USPS Tracking® - The Basics

USPS Tracking® service provides end-to-end item tracking. This article provides in-depth information on how to use the service, what information the service ...

How does USPS Tracking® work?: Add trackin… Receive automatic notifications: How can I u…

https://usps-track.us

USPS Tracking - Track Package

USPS General Inquiery about your Package Status. Call Above Tollfree number for your Present Status Quo of Your **USPS** Post or Shipment Details. E- ...

https://www.trackingmore.com › usps-tracking

USPS Tracking - TrackingMore.com

USPS Tracking · 1. Dial 1-800-222-1811, 1-800-275-8777 or 1-800-ASK-USPS. · 2. When you hear an automated voice asking you to say the required option, say "Agent" ...

★★★★★ Rating: 4.8 · 122 reviews

https://www.aftership.com › couriers › usps

USPS Tracking - AfterShip

Enter **tracking** number to **track USPS** shipments and get delivery status online. Contact **USPS** and get REST API docs.

https://parcelsapp.com › carriers › usps

USPS Tracking Package and Mail

Whenever you post a package, the post office workers assign a number to that order, that number is called **USPS Tracking** Number. It is also known as label or ...

USPS Marketing Mail®: 3-10 business days (n… First-Class Mail®: 1-3 business days (not gu…
Priority Mail Express®: 1-2 calendar days ... MAIL CLASS: DELIVERY STANDARD

USPS Tracking

USPS Delivery Tracking

Related searches

- **ups** tracking
- usps tracking **international**
- **live** usps tracking
- usps tracking **sign in**
- **fedex** tracking
- usps tracking **by name**
- usps **customer service**
- usps tracking **phone number**