STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

September 7, 2022

Jack Andrews
Zoning Manager
Centerline Communications, LLC
10130 Donleigh Drive
Columbia, MD 21046
jmandrews@clinellc.com

RE: **EM-AT&T-014-220728** – AT&T notice of intent to modify an existing telecommunications facility located at 171 Short Beach Road, Branford, Connecticut.

Dear Mr. Andrews:

The Connecticut Siting Council (Council) is in receipt of your correspondence of August 25, 2022 submitted in response to the Council's August 24, 2022 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/RDM/emr

From: John Andrews <jmandrews@clinellc.com>
Sent: Thursday, August 25, 2022 3:10 PM
To: Robidoux, Evan <Evan.Robidoux@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: Council Incomplete Letter for EM-AT&T-014-220728 (171 Short Beach Road, Branford) 13958523

Attached are 1) a copy of the requested RF Report ("EME") and 2) a copy of all the documents that I filed, with the EME tacked onto the very end. I'll send a hard copy tomorrow. I'm really sorry for this mistake. Thanks

John Andrews Jr. | Project Manager
10130 Donleigh Drive, Columbia, MD 21046
Centerline Communications
750 W Center St, Suite 301 | West Bridgewater, MA 02379
Mobile: 443.677.0144
jmandrews@clinellc.com | www.centerlinecommunications.com

Radio Frequency Safety Survey Report Prediction (RFSSRP)

AT&T Mobility Monopole Facility

Site ID: CTL01283 **Site Name:** Branford Short Beach Road **Address:** 171 Short Beach Road, Branford, CT 06405 **Latitude:** 41.262792 **Longitude:** -72.834420 **USID:** 106390 **FA**: 10133913	**Prepared for:** American Tower on behalf of AT&T **Centerline PN: 950035-003** **Pace ID: MRCTB053902; MRCTB056193; MRCTB054761; MRCTB056237; MRCTB056010; MRCTB053884** **Report Writer:** Michelle Stone **Date:** June 10, 2022 **Report Reviewer**: Yasir Alqadhili

Statement of Compliance

AT&T is compliant with FCC Regulations.

TABLE OF CONTENTS

1.0 GENERAL SUMMARY 3
1.1 SITE SUMMARY 3
2.0 SITE SCALE MAP 5
2.1 C-BAND ANALYSIS 6
3.0 ANTENNA INVENTORY 7
4.0 PREDICTED EMISSION LEVELS AND DISCUSSION 9
5.0 EMISSIONS DIAGRAMS 10
6.0 STATEMENT OF COMPLIANCE 12
6.1 STATEMENT OF AT&T MOBILITY COMPLIANCE 12
6.2 RECOMMENDATIONS 12
7.0 FALL ARREST AND PARAPET INFORMATION 13
APPENDIX A: RF SIGNAGE 14
APPENDIX B: FCC GUIDELINES AND EMISSIONS THRESHOLD LIMITS 15
APPENDIX C: CALCULATION METHODOLOGY 17
APPENDIX D: CERTIFICATIONS 20
APPENDIX E: PROPRIETARY STATEMENT 21

1.0 GENERAL SUMMARY

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following AT&T Mobility wireless monopole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations, for all equipment for AT&T Mobility.

1.1 SITE SUMMARY

Analysis Site Data	
Site USID:	106390
Site FA#:	10133913
Site Name:	Branford Short Beach Road
Site Address:	171 Short Beach Road, Branford CT 06405
Site Latitude:	41.262792
Site Longitude:	-72.834420
Facility Type:	Monopole
Compliance Summary	
Compliance Status:	Compliant
Maximum Modeled AT&T MPE% at Ground Level (General Public Limit):	0.22%
Site Survey Data	
Is Access Locked or Controlled? :	Unknown
Lock or Control Measures if Present:	Unknown
Parapet Height:	0
Site Data Information	
CD:	AT&T, 10133913,ATC 2843422 (13958523) AE(CD) REV0
RFDS:	NEW-ENGLAND_CONNECTICUT_CTL01283_10133913_106390_10-01-2021_Final-Approved_v2.00 (1)

Signage and barriers are the primary means of mitigating access to accessible areas of exposure. Below is a summary of existing and recommended signage at this AT&T facility.

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	0	0	0	0	0

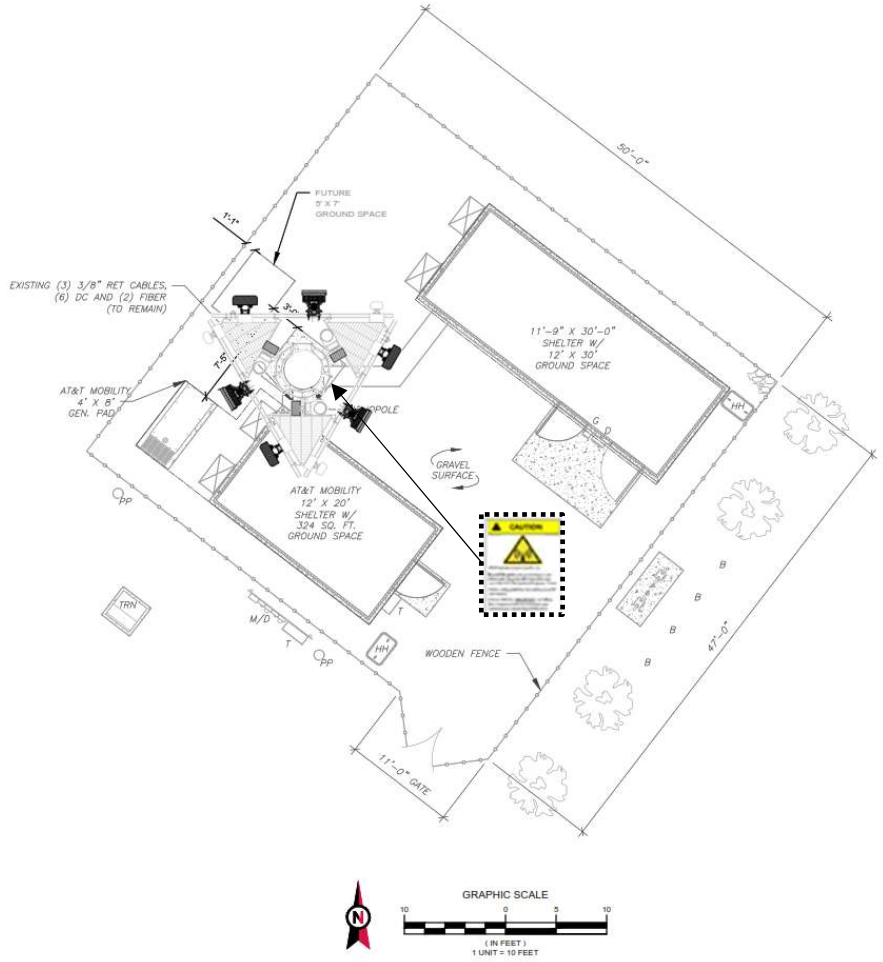
Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Monopole Base	0	0	1	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	1	0	0	0	0

Monopole Base:

- Install (1) Caution 2B sign at the base of the monopole per AT&T Policy.

2.0 SITE SCALE MAP



Operator Antenna Identifiers

- AT&T Mobility
- Verizon
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown


INFO 1 Sign

Caution 1 Sign

INFO 2 Sign

Tower Caution Sign

Notice 1 Sign


Caution 2 Sign


Notice 2 Sign

Warning 2 Sign

Items to be Removed | Existing Sign | Proposed Sign | Existing Barrier | Proposed Barrier

Signage/ Mitigation Plan

Branford Short Beach Road / 10133913

2.1 C-BAND ANALYSIS

- All adjacent buildings are >60’ away laterally from the AIR6449/6419 antennas and/or >20’ below the bottom tips of the AIR6449/6419 antennas.

3.0 ANTENNA INVENTORY

ANT ID	Operator	Antenna Make	Antenna Model	Type	Freq (MHz)	TPO (Watts)	# of TX	Azimuth (°)	BW (°)	Gain (dBd)	Total ERP (Watts)	Length (ft.)	Antenna Z Value (ft.) AGL*
1	AT&T	CCI	TPA65R-BU8D	Panel	700	30.00	4	0	62	13.05	2422.04	8.0	116.0
1	AT&T	CCI	TPA65R-BU8D	Panel	1900	30.00	4	0	62	15.15	3928.09	8.0	116.0
1	AT&T	CCI	TPA65R-BU8D	Panel	2100	30.00	4	0	64	15.65	4407.39	8.0	116.0
2	AT&T	ERICSSON	AIR6449	Panel	3700	108.40	1	0	11	23.55	24548.74	2.8	118.6
3	AT&T	ERICSSON	AIR6419 NR	Panel	3450	54.20	1	0	13	22.85	10447.19	2.4	118.8
3	AT&T	ERICSSON	AIR6419 LTE	Panel	3450	54.00	1	0	13	22.85	10408.63	2.4	118.8
4	AT&T	KATHREIN	80010966	Panel	700	30.00	2	0	66.7	13.15	1239.23	8.0	116.0
4	AT&T	KATHREIN	80010966	Panel	850	30.00	2	0	65.2	13.95	1489.88	8.0	116.0
4	AT&T	KATHREIN	80010966	Panel	2300	18.00	4	0	58.7	16.05	2899.56	8.0	116.0
5	AT&T	CCI	TPA65R-BU8D	Panel	700	30.00	4	120	62	13.05	2422.04	8.0	116.0
5	AT&T	CCI	TPA65R-BU8D	Panel	1900	30.00	4	120	62	15.15	3928.09	8.0	116.0
5	AT&T	CCI	TPA65R-BU8D	Panel	2100	30.00	4	120	64	15.65	4407.39	8.0	116.0
6	AT&T	ERICSSON	AIR6449	Panel	3700	108.40	1	120	11	23.55	24548.74	2.8	118.6
7	AT&T	ERICSSON	AIR6419 NR	Panel	3450	54.20	1	120	13	22.85	10447.19	2.4	118.8
7	AT&T	ERICSSON	AIR6419 LTE	Panel	3450	54.00	1	120	13	22.85	10408.63	2.4	118.8
8	AT&T	KATHREIN	80010966	Panel	700	30.00	2	120	66.7	13.15	1239.23	8.0	116.0
8	AT&T	KATHREIN	80010966	Panel	850	30.00	2	120	65.2	13.95	1489.88	8.0	116.0
8	AT&T	KATHREIN	80010966	Panel	2300	18.00	4	120	58.7	16.05	2899.56	8.0	116.0
9	AT&T	CCI	TPA65R-BU8D	Panel	700	30.00	4	240	62	13.05	2422.04	8.0	116.0
9	AT&T	CCI	TPA65R-BU8D	Panel	1900	30.00	4	240	62	15.15	3928.09	8.0	116.0
9	AT&T	CCI	TPA65R-BU8D	Panel	2100	30.00	4	240	64	15.65	4407.39	8.0	116.0
10	AT&T	ERICSSON	AIR6449	Panel	3700	108.40	1	240	11	23.55	24548.74	2.8	118.6
11	AT&T	ERICSSON	AIR6419 NR	Panel	3450	54.20	1	240	13	22.85	10447.19	2.4	118.8
11	AT&T	ERICSSON	AIR6419 LTE	Panel	3450	54.00	1	240	13	22.85	10408.63	2.4	118.8
12	AT&T	KATHREIN	80010966	Panel	700	30.00	2	240	66.7	13.15	1239.23	8.0	116.0

ANT ID	Operator	Antenna Make	Antenna Model	Type	Freq (MHz)	TPO (Watts)	# of TX	Azimuth (°)	BW (°)	Gain (dBd)	Total ERP (Watts)	Length (ft.)	Antenna Z Value (ft.) AGL*
12	AT&T	KATHREIN	80010966	Panel	850	30.00	2	240	65.2	13.95	1489.88	8.0	116.0
12	AT&T	KATHREIN	80010966	Panel	2300	18.00	4	240	58.7	16.05	2899.56	8.0	116.0
13	Unknown	GENERIC	PANEL 6FT	Panel	850	40.00	4	0	66	12.62	2924.96	6.0	97.0
14	Unknown	GENERIC	PANEL 6FT	Panel	1900	40.00	4	0	66	15.84	6139.32	6.0	97.0
15	Unknown	GENERIC	PANEL 6FT	Panel	2100	40.00	4	0	63	16.39	6968.19	6.0	97.0
16	Unknown	GENERIC	PANEL 6FT	Panel	700	40.00	4	0	68	12.33	2736.02	6.0	97.0
17	Unknown	GENERIC	PANEL 6FT	Panel	850	40.00	4	120	66	12.62	2924.96	6.0	97.0
18	Unknown	GENERIC	PANEL 6FT	Panel	1900	40.00	4	120	66	15.84	6139.32	6.0	97.0
19	Unknown	GENERIC	PANEL 6FT	Panel	2100	40.00	4	120	63	16.39	6968.19	6.0	97.0
20	Unknown	GENERIC	PANEL 6FT	Panel	700	40.00	4	120	68	12.33	2736.02	6.0	97.0
21	Unknown	GENERIC	PANEL 6FT	Panel	850	40.00	4	240	66	12.62	2924.96	6.0	97.0
22	Unknown	GENERIC	PANEL 6FT	Panel	1900	40.00	4	240	66	15.84	6139.32	6.0	97.0
23	Unknown	GENERIC	PANEL 6FT	Panel	2100	40.00	4	240	63	16.39	6968.19	6.0	97.0
24	Unknown	GENERIC	PANEL 6FT	Panel	700	40.00	4	240	68	12.33	2736.02	6.0	97.0

*Table 1: Total Site Data Table (*AGL = Above Ground Level)*

Note: Z Value represents the bottom tip height of the antenna

75% TDD Cycle is assumed for all AT&T antennas

C-Band antennas were calculated using AT&T's preferred conservative power reduction factor of 0.32

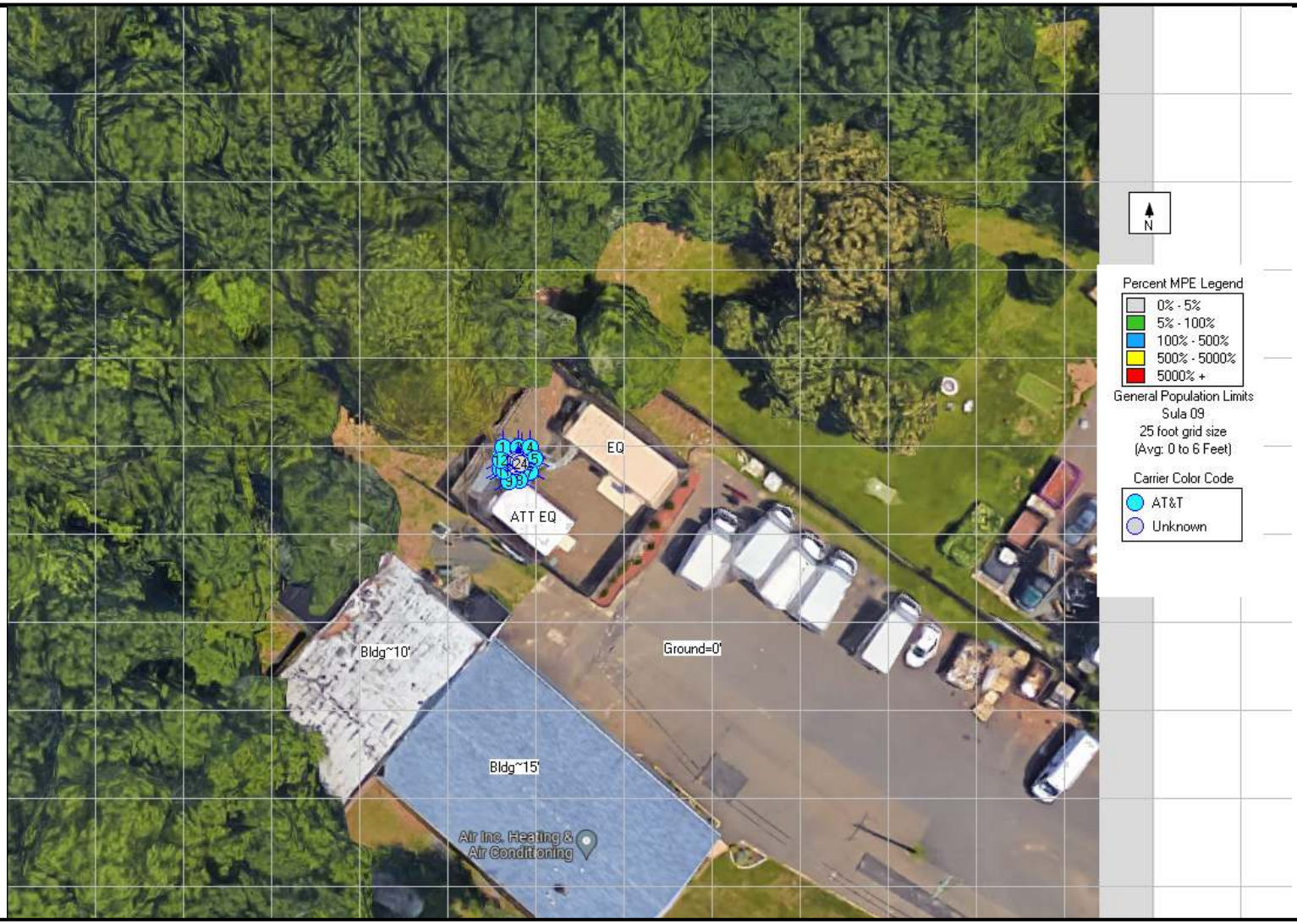
4.0 PREDICTED EMISSION LEVELS AND DISCUSSION

All calculations performed based upon the data listed for this facility have produced results that are within allowable limits for General Population limits for exposure to RF emissions as specified by federal standards.

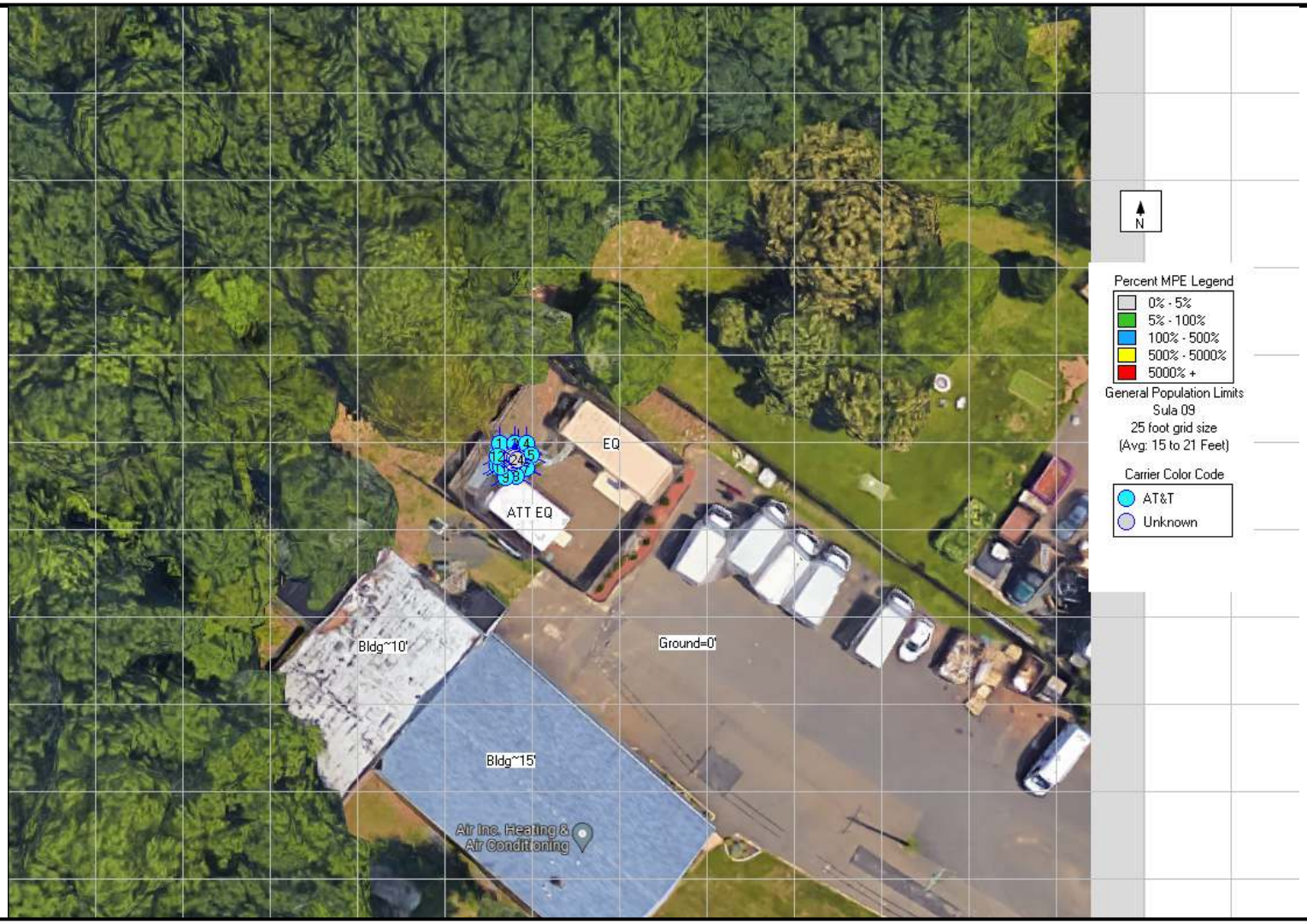
Maximum Predicted Ground Level MPE – AT&T Only:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.22%**
Ground Level **Occupational** MPE Limits:	**0.04%**

Maximum Predicted Ground Level MPE – All Carriers:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.33%**
Ground Level **Occupational** MPE Limits:	**0.07%**

5.0 EMISSIONS DIAGRAMS



Emissions Thresholds for All Carriers (Ground 0.00ft.) Branford Short Beach Road / 10133913



Emissions Thresholds for All Carriers (Adjacent Building 15.00ft.) Branford Short Beach Road / 10133913

6.0 STATEMENT OF COMPLIANCE

Centerline conducted worst case modeling to determine whether the monopole facility located at 171 Short Beach Road in Branford, Connecticut is in compliance with FCC Regulations.

6.1 STATEMENT OF AT&T MOBILITY COMPLIANCE

Based on the information analyzed, AT&T is in compliance with FCC Regulations. No additional action is required by AT&T.

6.2 RECOMMENDATIONS

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	0	0	0	0	0

Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Monopole Base	0	0	1	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	1	0	0	0	0

Monopole Base:

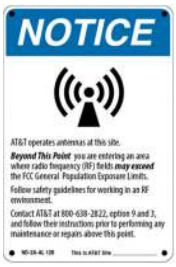
- Install (1) Caution 2B sign at the base of the monopole per AT&T policy.

7.0 FALL ARREST AND PARAPET INFORMATION

As per AT&T barrier policy, rooftop edges that are protected with a 39-inch parapet wall or guardrail are safe for work activity within six (6) feet of the edge. OSHA has stated that an existing 39-inch guardrail or parapet provides sufficient protection for employees. The height of the top rail or equivalent component of guardrail systems in new construction shall be at least 42 inches above the walking or working surface. It should also be noted that the height of the parapet or guardrail may be reduced to no less than 30 inches at any point provided the sum of the depth (horizontal distance) of the top edge, and the height of the top edge (vertical distance from the work surface to the top edge of the top member, is at least 48 inches. If there is no reason for working atop the roof, then edge protection is not required. In addition, workers may use personnel lifts or temporary fall protection measures to perform work within 6 feet of the roof edge in place of permanent edge protection. Reference: 29 CFR 1910.28, 29 CFR 1910.23 (NPRM-1990); OSHA Letters of Interpretation 2/9/83 and 3/8/9

APPENDIX A: RF SIGNAGE

AT&T RF Signage

Sign	Description	Sign	Description
	**Information 1 Sign** Gives guidelines on how to proceed and who to contact regarding areas that may exceed either the FCC's General Population or Occupational emissions limits.		**Caution 2C Sign** Gives specific information on how to proceed and who to contact regarding antennas that are façade mounted, concealed or on stand-alone structures.
	**Blue Notice 1 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Blue Notice 2 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limits. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Blue Notice 1 signs.
	**Yellow Caution 1 Sign- Rooftop** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Yellow Caution 2 Sign- Rooftop** Used to alert individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Yellow Caution 1 signs.
	**Yellow Caution 2B Sign- Tower** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limits. Must be placed at the base of the tower to warn tower climbers of potential for exposure.		**Warning 2 Sign** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit by a factor of 10 or greater. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.

APPENDIX B: FCC GUIDELINES AND EMISSIONS THRESHOLD LIMITS

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

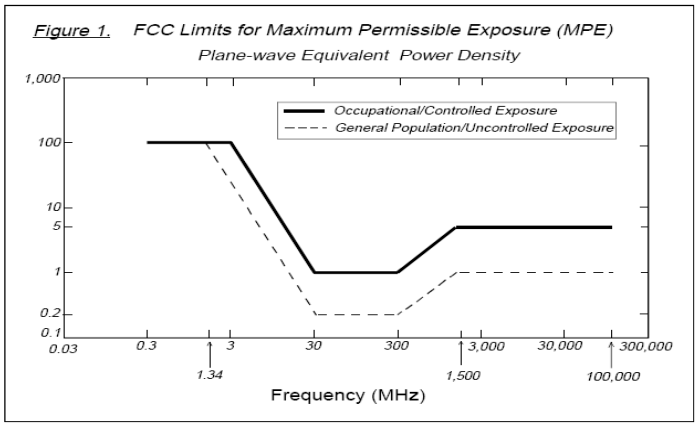
The FCC Mandates that if a site is found to be out of compliance with regard to emissions that any system operator contributing 5% or more to areas exceeding the FCC's allowable limits will be responsible for bringing the site into compliance.

Additional details can be found in FCC OET 65.

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

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX C: CALCULATION METHODOLOGY

Centerline Communications, LLC has performed theoretical modeling using Waterford Consultants' RoofMaster™ 2020 Version 35.05.18.22 which 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. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

The diagrams listed with "Farfield Overlay" have Sula09 spatial average calculations active for all non-C-Band antennas while simultaneously having only far-field spatial average calculations active for AT&T C-Band antennas.

The modeling is based on worst-case assumptions for the number of antennas and transmitter power. No losses were included in the power calculations unless they were specifically provided for the project.

FAR FIELD MODEL

In OET-65, a far field model is presented to calculate the spatial peak power density. The RoofMasterTM implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. Power density is calculated as follows:

$$S = \frac{13.05 P_{in} G}{R^2} \frac{\mu W}{cm^2}$$

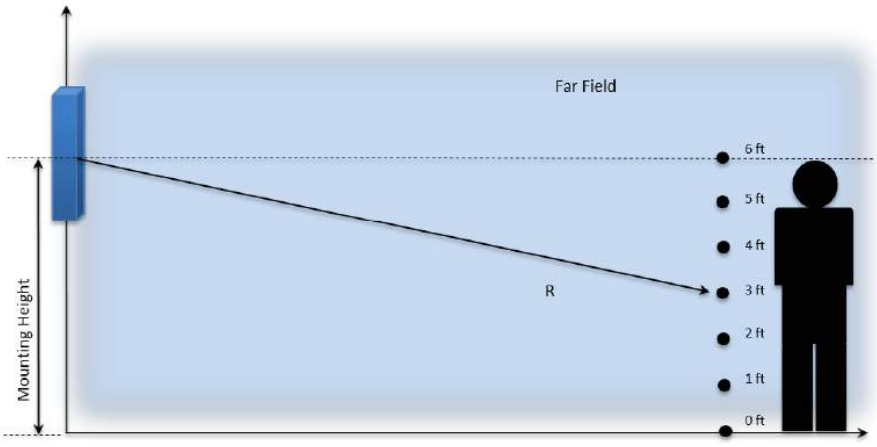
- Does not include 100% reflection factor
- Pin is Watts
- R is meters to study point
- G is gain to study point as specified in manufacturer horizontal and vertical patterns

A worst-case prediction is described in OET-65 where field strength may double due to 100% reflection of the incoming radiation. Considering an EPA recommendation that a multiplier of 1.6 is a more realistically representation of this effect is rewritten as follow:

$$S_{FF} = \frac{33.4 \cdot P_{in} \cdot G_{dBd}}{R^2} \quad (\mu W/cm^2)$$

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 to 6 feet) must be conducted.

RoofMasterTM calculates seven power density values between 0 and 6 feet above the specified study plane and performs a linear spatial average.



Predicted power densities are displayed as a percentage of the applicable FCC standards.

Power Reduction Formula for Reducing Maximum Safety Distance Length

($\mathbf{R}_{reduced}/\mathbf{R}_{max}$) = 0.99 * ($\mathbf{P}_{reduced}/\mathbf{P}_{max}$)

$\mathbf{P}_{max}$ = 200W (Nominal Peak power of AEQK)

$\mathbf{R}_{max}$ = Lateral Compliance Distance of AEQK

$\mathbf{P}_{reduced}$ = ?

$\mathbf{R}_{reduced}$ = Actual Lateral Distance between AEQK and Bldg. X

APPENDIX D: CERTIFICATIONS

I, Michelle Stone, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Michelle Stone

6/10/2022

I, Yasir Alqadhili, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Yasir Alqadhili

6/10/2022

APPENDIX E: PROPRIETARY STATEMENT

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

July 7, 2022

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

Re: Exempt Modification Application – AT&T Site 13958523
AT&T Mobility Telecommunications Facility @ 171 Short Beach Road, Branford, CT 06405

Dear Ms. Bachman,

New Cingular Wireless, PCS, LLC (dba AT&T) currently maintains antennas on a wireless telecommunications facility on an existing American Tower Corporation (ATC) telecommunications tower at the above referenced address. AT&T desires to modify its existing equipment as described in the attached Construction and Antenna Mount Modification Drawings:

- Remove nine (9) antennas and three (3) RRHs;
- Install mount modifications, nine (9) antennas, three (3) RRHs, one (1) cable and six (6) Y cables.
- Ground work includes installing a 6648 plus XCEDE and four (4) rectifiers.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2), and as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of AT&T's intent to modify a telecommunications facility pursuant to R.C.S.A. 16-50j-88. 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; 171 Short Beach Road Realty LLC., as Property Owner; the Honorable James Cosgrove, as First Selectman of the Town of Branford, and Branford Town Planner Harry Smith.

The applicant's proposal falls squarely within those activities explicitly provided for in R.C.S.A. §16-50j-89. Specifically:

1. The proposed modifications will NOT result in an increase in the height of the existing structure.
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.
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 Exempt Modification request for this tower located at 171 Short Beach Road, Branford, CT 06405. If you have any questions, please feel free to contact me.

Sincerely,

Jack Andrews
Zoning Manager, Centerline Communications
443-677-0144

Enclosures:
Exhibit 1 – Letter of Authorization from tower owner
Exhibit 2 – Property Card and GIS
Exhibit 3 – Construction and Mount Modification Drawings
Exhibit 4 – Structural Analysis Report
Exhibit 5 – Antenna Mount Analysis Report (failing)
Exhibit 6 – EME Study Report
Exhibit 7 – Four (4) Notice Confirmations

cc: American Tower Corporation - Tower Operator/Owner
171 Short Beach Road Realty LLC. - Property Owner
James Cosgrove - First Selectman of the Town of Branford
Harry Smith – Branford own Planner

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

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

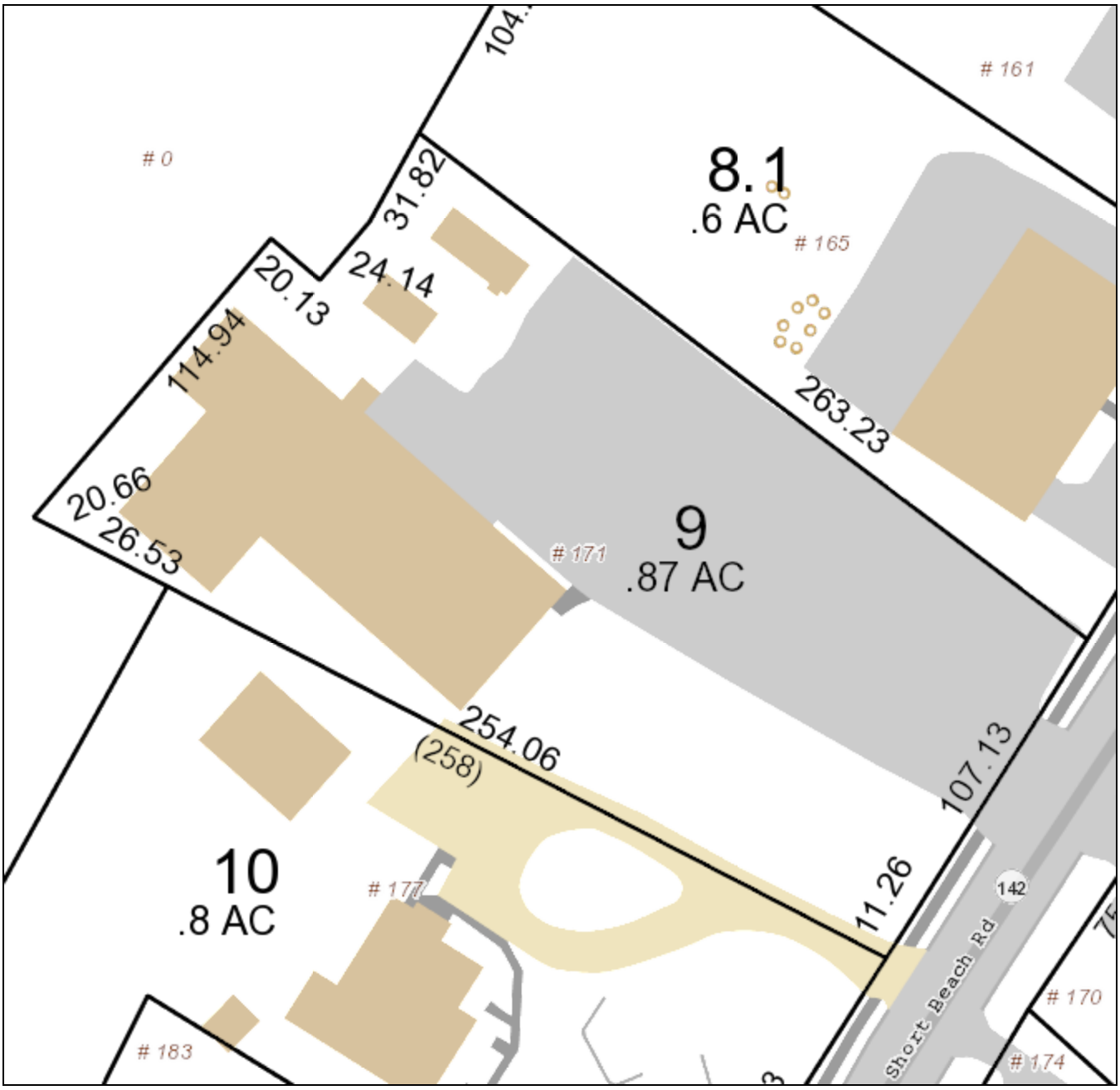
MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public
My Commission Expires: March 14, 2025

Town of Branford

Geographic Information System (GIS)

Date Printed: 7/7/2022



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Branford and its mapping contractors assume no legal responsibility for the information contained herein.

0 50 Feet

N W E S

TOWN OF BRANFORD CONNECTICUT

GIS & Real Property Information

1019 Main Street
Branford, CT 06405
ph (203) 488-2039

Property Search

Name: ex. Smith

House No:
171

Street:
SHORT BEACH RD

MBL:(ex.) E07-000-015-00001

GO

Information Updates

Parcels updated
Oct 1, annually

Property Info Data Updated
Nightly

Current Parcel Count
13,501+/- (including condos)

Detailed Parcel Information

GIS ID
C10-000-002-00009

Parcel ID
C10/000/002/00009

Unique ID
688

Owner
171 SHORT BEACH ROAD
REALTY LLC

Location
171 SHORT BEACH RD

MAILING ADDRESS
171 SHORT BEACH RD
BRANFORD CT 06405

Quick Links: Quick Map Property Card Assessor Tax Map

Scroll Down For Complete Property Detail

PARCEL VALUATIONS

	Appraised Value	Assessed Value
Buildings	224500	157200
Land	307500	215300

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**119 ft Monopole**
ATC Site Name	:	**SHORT BEACH BRANFORD CT,CT**
ATC Site Number	:	**283422**
Engineering Number	:	**13958523_C3_03**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**MRCTB056193**
Carrier Site Number	:	**CT1283**
Site Location	:	**171 Short Beach Road** **Branford, CT 06405-4930** **41.2628, -72.8344**
County	:	**New Haven**
Date	:	**February 28, 2022**
Max Usage	:	**70%**
Result	:	**Pass**

Prepared By:

Sammie Brown
Structural Engineer I

Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction....3
Supporting Documents....3
Analysis....3
Conclusion....3
Existing and Reserved Equipment....4
Equipment to be Removed....4
Proposed Equipment....4
Structure Usages....5
Foundations....5
Deflection and Sway*....5
Standard Conditions....6
Calculations ....Attached

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	Sabre Job #73523, dated January 26, 2013
Foundation Drawing	Sabre Job #73523, dated January 26, 2013
Geotechnical Report	Terracon Project #J2135101, dated January 17, 2013
Modifications	Mount Analysis Maser Consulting Project #21777425A, dated May 4, 2021

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:	121 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:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 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
120.0	2	Raycap DC6-48-60-18-8F	Triangular Platform with Handrails	(3) 3/8" (0.38"-9.5mm) RET Control Cable	AT&T MOBILITY
	1	Commscope WCS-IMFQ-AMT			
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 32 B30 (60 lbs)			
	3	Kathrein Scala 80010966			
110.0	3	Fujitsu TA08025-B604	Triangular Platform with Handrails	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	1	Commscope RDIDC-9181-PF-48			
	3	Fujitsu TA08025-B605			
	3	JMA Wireless MX08FRO665-21			
100.0	3	Commscope CBC78T-DS-43-2X	Triangular Platform with Handrails	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung MT6407-77A			
	2	RFS DB-T1-6Z-8AB-0Z			
	3	Antel BXA-70063-6CF-EDIN-X			
	6	Commscope JAHH-65B-R3B			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
120.0	1	Raycap DC6-48-60-18-8F	-	(3) 0.39" (10mm) Fiber Trunk (3) 3" conduit	AT&T MOBILITY
	3	Ericsson RRUS 11 (Band 12)			
	3	CCI HPA-65R-BUU-H8			
	3	CCI HPA65R-BU8A			
	3	Andrew SBNH-1D6565C			
	3	Ericsson RRUW			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
120.0	1	Raycap DC6-48-60-0-8F	Triangular Platform with Handrails	(2) 0.40" (10.3mm) Fiber (3) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 4478 B14			
	3	Ericsson AIR 6419 B77G			
	3	Ericsson AIR 6449 B77D/ C-Band			
	3	CCI TPA65R-BU8A			

[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	58%	Pass
Shaft	70%	Pass
Base Plate	31%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	2678.3	1840.6	69%
Shear (Kips)	30.2	20.5	68%

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 and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
120.0	Raycap DC6-48-60-0-8F	AT&T MOBILITY	1.363	1.250
	Ericsson RRUS 4478 B14			
	CCI TPA65R-BU8A			
	Ericsson AIR 6449 B77D/ C-Band			
	Ericsson AIR 6419 B77G			

***Deflection 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.

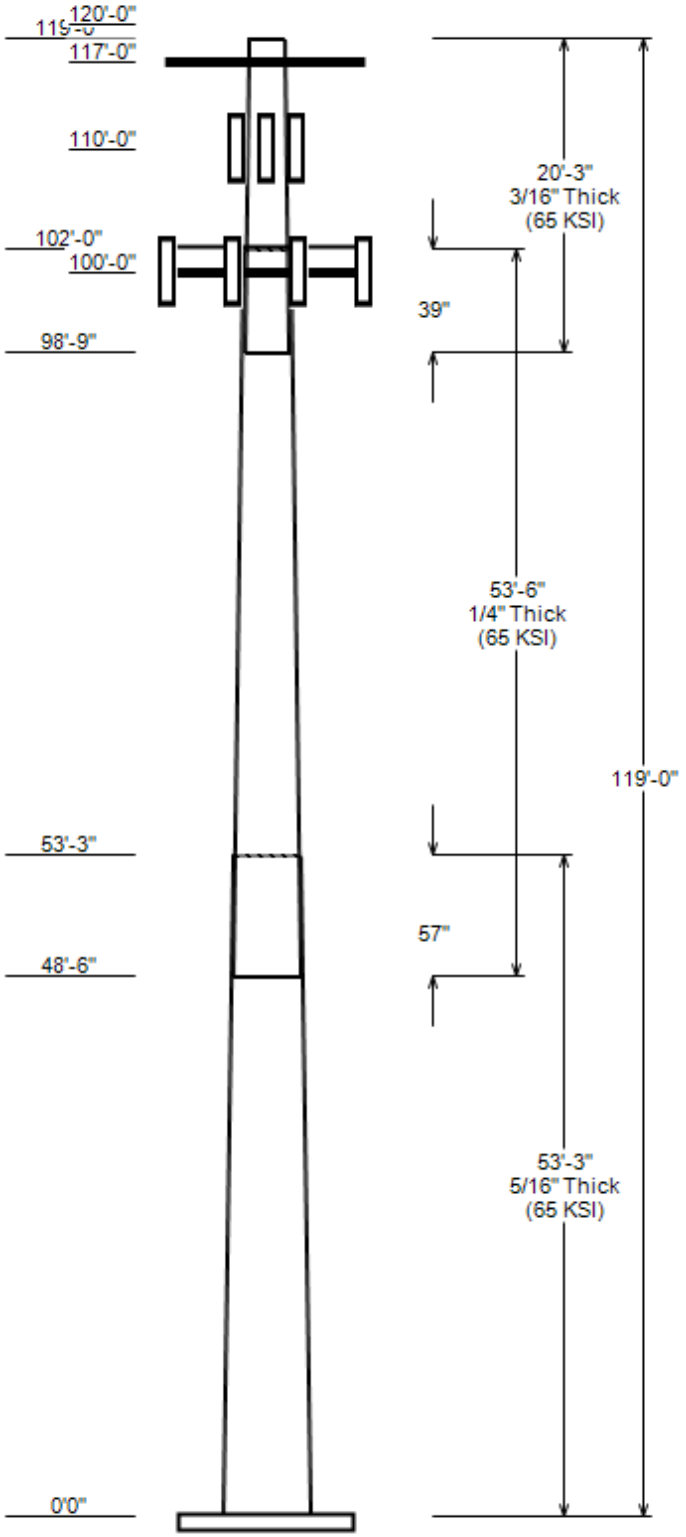
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with 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 :	283422, SHORT BEACH BRANFORD CT	Height :	119 ft
Client :	AT&T MOBILITY	Base Width :	45.7
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Nominal Wind: 121 mph wind with no ice **Topo Category:** 1

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

Base Elev (ft): 0.00 **Taper :** 0.24200(In/ft) **Topo Feature:**

Structure Class: II **Exposure :** C **S_s :** 0.2 **S_1** : 0.053

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	53.250	32.80	45.70	0.312		0.000	18 Sides	65
2	53.500	21.50	34.45	0.250	Slip Joint	57.000	18 Sides	65
3	20.250	17.75	22.66	0.188	Slip Joint	39.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
120.0	120.0	1	Commscope WCS-IMFQ-AMT
120.0	117.0	2	Raycap DC6-48-60-18-8F
120.0	120.0	1	Raycap DC6-48-60-0-8F
120.0	120.0	3	Ericsson RRUS 8843 B2, B66A
120.0	120.0	3	Ericsson RRUS 4478 B14
120.0	120.0	3	Ericsson RRUS 4449 B5, B12
120.0	120.0	3	Ericsson RRUS 32 B30 (60 lbs)
120.0	120.0	3	Ericsson AIR 6419 B77G
120.0	120.0	3	Ericsson AIR 6449 B77D/ C-Band
120.0	120.0	3	Kathrein Scala 80010966
120.0	120.0	3	CCI TPA65R-BU8A
117.0	117.0	1	Round Plafform w/ Handrails w/
110.0	110.0	1	Commscope RDIDC-9181-PF-48
110.0	110.0	3	Fujitsu TA08025-B605
110.0	110.0	3	Fujitsu TA08025-B604
110.0	110.0	3	JMA Wireless MX08FRO665-21
100.0	100.0	3	Commscope CBC78T-DS-43-2X
100.0	100.0	3	Samsung B2/B66A RRH-BR049
100.0	100.0	3	Samsung B5/B13 RRH-BR04C
100.0	100.0	3	Samsung MT6407-77A
100.0	100.0	2	RFS DB-T1-6Z-8AB-0Z
100.0	100.0	3	Antel BXA-70063-6CF-EDIN-X
100.0	100.0	6	Commscope JAHH-65B-R3B
100.0	100.0	1	Round Platform w/ Handrails

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	120.0	3/8" (0.38"- 9.5mm) RET Control Cable	No
0.0	120.0	2" conduit	No
0.0	120.0	0.40" (10.3mm) Fiber	No
0.0	110.0	1.60" (40.6mm) Hybrid	No
0.0	100.0	1 5/8" Hybriflex	No
0.0	100.0	1 5/8" Coax	No

LOAD CASES

1.2D + 1.0W Normal	121 mph wind with no ice
0.9D + 1.0W Normal	121 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 :	283422, SHORT BEACH BRANFORD CT	Height :	119 ft
Client :	AT&T MOBILITY	Base Width :	45.7
Code :	ANSI/TIA-222-H	Shape :	18 Sides

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	1840.65	20.54	27.73
0.9D + 1.0W Normal	1819.34	20.53	20.79
1.2D + 1.0Di + 1.0Wi Normal	453.60	5.22	37.99
1.2D + 1.0Ev + 1.0Eh Normal	72.69	0.70	27.65
0.9D - 1.0Ev + 1.0Eh Normal	71.61	0.69	19.08
1.0D + 1.0W Service Normal	402.32	4.52	23.14

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:**	45.70 in
Manufacturer:	Sabre	**Top Diameter:**	17.75 in
K_d (non-service):	0.95	**Taper:**	0.2420 in/ft
K_e:	1.00	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	C	**Design Wind Speed w/o Ice:**	121 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	50 mph
Topo Factor Procedure:	Method 1	**Operational Wind Speed:**	60 mph
Topographic Category:	1	**Design Ice Thickness:**	1.00 in
Crest Height:	0 ft	**HMSL:**	59.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	2.19
T_L (sec):	6	**P:**	1	**C_s:**	0.030
S_s:	0.200	**S_1:**	0.053	**C_s Max:**	0.030
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.213	**S_{d1}:**	0.085		

LOAD CASES

1.2D + 1.0W Normal	121 mph wind with no ice
0.9D + 1.0W Normal	121 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

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	53.25	0.3125	65		0.00	6,998	45.70	0.000	45.02	11,716.6	24.02	146.24	32.80	53.25	32.23	4,297.9	16.75	104.97	0.2422
2-18	53.50	0.2500	65	Slip	57.00	4,005	34.45	48.500	27.14	4,011.3	22.54	137.81	21.50	102.00	16.86	961.4	13.40	85.98	0.2422
3-18	20.25	0.1875	65	Slip	39.00	821	22.66	98.750	13.37	853.0	19.54	120.84	17.75	119.00	10.45	407.5	14.93	94.68	0.2422
				Shaft Weight		11,824													

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
120.00	Raycap DC6-48-60-18-8F	2	0.75	-3.000	20.00	1.260	1.00	54.34	1.689	1.00
120.00	Commscope WCS-IMFQ-AMT	1	0.75	0.000	29.50	0.989	1.00	51.47	1.420	1.00
120.00	Ericsson RRUS 4478 B14	3	0.75	0.000	59.90	1.842	0.50	95.96	2.427	0.50
120.00	Ericsson RRUS 32 B30 (60 lbs)	3	0.75	0.000	60.00	2.692	0.50	106.34	3.445	0.50
120.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	113.03	2.577	0.50
120.00	CCI TPA65R-BU8A	3	0.75	0.000	108.00	21.356	0.61	365.77	23.782	0.61
120.00	Ericsson RRUS 8843 B2, B66A	3	0.75	0.000	72.00	1.639	0.50	111.98	2.190	0.50
120.00	Raycap DC6-48-60-0-8F	1	0.75	0.000	32.80	1.360	1.00	70.71	1.793	1.00
120.00	Kathrein Scala 80010966	3	0.75	0.000	114.60	17.363	0.63	324.02	19.769	0.63
120.00	Ericsson AIR 6449 B77D/ C-Band	3	0.75	0.000	81.60	4.028	0.70	157.57	4.923	0.70
120.00	Ericsson AIR 6419 B77G	3	0.75	0.000	66.10	3.797	0.65	129.38	4.656	0.65
117.00	Round Plafform w/ Handrails w/	1	1.00	0.000	2500.00	32.700	1.00	3656.63	43.231	1.00
110.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	115.48	2.556	0.50
110.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	101.58	2.556	0.50
110.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	58.67	2.449	1.00
110.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	230.58	14.305	0.64
100.00	Commscope JAHH-65B-R3B	6	0.75	0.000	60.60	9.113	0.69	190.30	10.892	0.69
100.00	Antel BXA-70063-6CF-EDIN-X	3	0.75	0.000	17.00	7.569	0.66	111.88	9.337	0.66
100.00	RFS DB-T1-6Z-8AB-0Z	2	0.75	0.000	44.00	4.800	0.72	124.69	5.711	0.72
100.00	Samsung MT6407-77A	3	0.75	0.000	81.60	4.709	0.61	146.94	5.683	0.61
100.00	Samsung B5/B13 RRH-BR04C	3	0.75	0.000	70.30	1.875	0.50	106.97	2.454	0.50
100.00	Samsung B2/B66A RRH-BR049	3	0.75	0.000	84.40	1.875	0.50	125.30	2.454	0.50
100.00	Commscope CBC78T-DS-43-2X	3	0.75	0.000	20.70	0.552	0.50	34.86	0.878	0.50
100.00	Round Platform w/ Handrails	1	1.00	0.000	2000.00	27.200	1.00	2830.71	42.871	1.00
Totals	Num Loadings: 24	63			8,407.60			15,300.97		

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	120.00	3	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	120.00	3	3/8" (0.38"- 9.5mm) R	0.38	0.23	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	120.00	2	0.40" (10.3mm) Fiber	0.4	0.09	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	110.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS
0.00	100.00	12	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	100.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL

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	45.700	45.017	11,716.60	24.02	146.24	73.1	505.0	0.0	0.0
5.00		0.3125	44.489	43.816	10,803.60	23.34	142.36	73.9	478.3	0.0	755.7
10.00		0.3125	43.278	42.615	9,939.30	22.66	138.49	74.8	452.3	0.0	735.3
15.00		0.3125	42.067	41.414	9,122.30	21.97	134.61	75.6	427.1	0.0	714.8
20.00		0.3125	40.856	40.213	8,351.40	21.29	130.74	76.4	402.6	0.0	694.4
25.00		0.3125	39.645	39.012	7,625.20	20.61	126.86	77.2	378.8	0.0	674.0
30.00		0.3125	38.434	37.810	6,942.30	19.92	122.99	78	355.8	0.0	653.5
35.00		0.3125	37.223	36.609	6,301.50	19.24	119.11	78.8	333.4	0.0	633.1
40.00		0.3125	36.012	35.408	5,701.40	18.56	115.24	79.6	311.8	0.0	612.6
45.00		0.3125	34.801	34.207	5,140.60	17.87	111.36	80.4	290.9	0.0	592.2
48.50	Bot - Section 2	0.3125	33.953	33.366	4,770.80	17.39	108.65	80.9	276.8	0.0	402.4
50.00		0.3125	33.590	33.006	4,617.90	17.19	107.49	81.2	270.8	0.0	307.2
53.25	Top - Section 1	0.2500	33.303	26.226	3,620.00	21.73	133.21	75.8	214.1	0.0	654.2
55.00		0.2500	32.879	25.890	3,482.50	21.43	131.52	76.2	208.6	0.0	155.2
60.00		0.2500	31.668	24.929	3,109.00	20.57	126.67	77.2	193.4	0.0	432.3
65.00		0.2500	30.457	23.968	2,763.20	19.72	121.83	78.2	178.7	0.0	416.0
70.00		0.2500	29.246	23.007	2,444.00	18.86	116.98	79.2	164.6	0.0	399.6
75.00		0.2500	28.035	22.047	2,150.40	18.01	112.14	80.2	151.1	0.0	383.3
80.00		0.2500	26.824	21.086	1,881.30	17.16	107.30	81.2	138.1	0.0	366.9
85.00		0.2500	25.613	20.125	1,635.60	16.30	102.45	82.2	125.8	0.0	350.6
90.00		0.2500	24.402	19.164	1,412.40	15.45	97.61	82.6	114.0	0.0	334.2
95.00		0.2500	23.191	18.203	1,210.40	14.59	92.76	82.6	102.8	0.0	317.9
98.75	Bot - Section 3	0.2500	22.283	17.482	1,072.20	13.95	89.13	82.6	94.8	0.0	227.7
100.00		0.2500	21.980	17.242	1,028.60	13.74	87.92	82.6	92.2	0.0	130.3
102.00	Top - Section 2	0.1875	21.871	12.904	766.50	18.80	116.64	79.3	69.0	0.0	204.8
105.00		0.1875	21.144	12.471	692.00	18.12	112.77	80.1	64.5	0.0	129.5
110.00		0.1875	19.933	11.751	578.80	16.98	106.31	81.4	57.2	0.0	206.1
115.00		0.1875	18.722	11.030	478.70	15.84	99.85	82.6	50.4	0.0	193.8
117.00		0.1875	18.238	10.742	442.20	15.39	97.27	82.6	47.8	0.0	74.1
119.00		0.1875	17.753	10.453	407.50	14.93	94.68	82.6	45.2	0.0	72.1
								Totals:			11,823.8

Load Case: 1.2D + 1.0W Normal 121 mph wind with no ice 23 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	-27.73	-20.54	0.00	-1,840.6	0.00	1,840.65	2,963.53	790.05	3,238.73	2,770.25	0	0	0.674
5.00	-26.58	-20.19	0.00	-1,737.9	0.00	1,737.94	2,916.15	768.97	3,068.22	2,652.73	0.12	-0.22	0.665
10.00	-25.47	-19.84	0.00	-1,637.0	0.00	1,637.01	2,867.03	747.89	2,902.33	2,536.05	0.46	-0.44	0.655
15.00	-24.38	-19.49	0.00	-1,537.8	0.00	1,537.82	2,816.18	726.81	2,741.05	2,420.35	1.05	-0.67	0.645
20.00	-23.31	-19.12	0.00	-1,440.4	0.00	1,440.39	2,763.58	705.73	2,584.37	2,305.75	1.87	-0.9	0.634
25.00	-22.27	-18.75	0.00	-1,344.8	0.00	1,344.77	2,709.26	684.65	2,432.31	2,192.39	2.94	-1.14	0.622
30.00	-21.26	-18.36	0.00	-1,251.0	0.00	1,251.03	2,653.19	663.57	2,284.86	2,080.40	4.26	-1.38	0.610
35.00	-20.28	-17.97	0.00	-1,159.2	0.00	1,159.21	2,595.39	642.49	2,142.02	1,969.90	5.83	-1.63	0.597
40.00	-19.32	-17.58	0.00	-1,069.4	0.00	1,069.35	2,535.84	621.41	2,003.78	1,861.03	7.67	-1.88	0.583
45.00	-18.40	-17.24	0.00	-981.5	0.00	981.46	2,474.56	600.33	1,870.16	1,753.92	9.77	-2.13	0.568
48.50	-17.77	-17.03	0.00	-921.1	0.00	921.14	2,430.64	585.58	1,779.37	1,680.06	11.41	-2.32	0.556
50.00	-17.33	-16.84	0.00	-895.6	0.00	895.60	2,411.55	579.25	1,741.15	1,648.70	12.15	-2.4	0.551
53.25	-16.41	-16.61	0.00	-840.9	0.00	840.87	1,790.30	460.27	1,374.10	1,217.91	13.84	-2.57	0.701
55.00	-16.12	-16.37	0.00	-811.8	0.00	811.80	1,775.53	454.37	1,339.09	1,192.26	14.8	-2.67	0.691
60.00	-15.38	-15.98	0.00	-730.0	0.00	729.97	1,732.17	437.51	1,241.55	1,119.65	17.76	-2.98	0.662
65.00	-14.66	-15.60	0.00	-650.1	0.00	650.06	1,687.08	420.65	1,147.69	1,048.13	21.06	-3.3	0.630
70.00	-13.96	-15.23	0.00	-572.0	0.00	572.04	1,640.24	403.78	1,057.53	977.85	24.68	-3.61	0.595
75.00	-13.29	-14.86	0.00	-495.9	0.00	495.90	1,591.67	386.92	971.05	908.92	28.63	-3.92	0.555
80.00	-12.64	-14.49	0.00	-421.6	0.00	421.62	1,541.36	370.05	888.26	841.49	32.9	-4.23	0.511
85.00	-12.03	-14.13	0.00	-349.2	0.00	349.17	1,489.32	353.19	809.16	775.68	37.48	-4.52	0.460
90.00	-11.43	-13.77	0.00	-278.5	0.00	278.53	1,423.78	336.33	733.74	705.79	42.36	-4.79	0.404
95.00	-10.87	-13.46	0.00	-209.7	0.00	209.67	1,352.39	319.46	662.02	636.45	47.51	-5.04	0.339
98.75	-10.47	-13.27	0.00	-159.2	0.00	159.21	1,298.85	306.82	610.64	586.79	51.53	-5.2	0.281
100.00	-6.74	-8.69	0.00	-142.6	0.00	142.62	1,281.00	302.60	593.98	570.68	52.89	-5.25	0.256
102.00	-6.47	-8.51	0.00	-125.2	0.00	125.24	920.75	226.46	443.53	410.46	55.11	-5.32	0.314
105.00	-6.27	-8.25	0.00	-99.7	0.00	99.72	898.91	218.87	414.30	387.19	58.48	-5.42	0.266
110.00	-5.31	-6.65	0.00	-58.5	0.00	58.49	861.13	206.22	367.81	349.29	64.25	-5.59	0.175
115.00	-5.02	-6.42	0.00	-25.2	0.00	25.24	819.47	193.58	324.08	311.81	70.15	-5.69	0.088
117.00	-2.10	-4.33	0.00	-12.4	0.00	12.41	798.05	188.52	307.37	295.65	72.54	-5.71	0.045
119.00	0.00	-4.10	0.00	-3.8	0.00	3.75	776.64	183.46	291.09	279.91	74.93	-5.72	0.014

Load Case: 0.9D + 1.0W Normal — 121 mph wind with no ice — 23 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	-20.79	-20.53	0.00	-1,819.3	0.00	1,819.34	2,963.53	790.05	3,238.73	2,770.25	0	0	0.664
5.00	-19.91	-20.15	0.00	-1,716.7	0.00	1,716.70	2,916.15	768.97	3,068.22	2,652.73	0.12	-0.21	0.655
10.00	-19.06	-19.77	0.00	-1,616.0	0.00	1,615.97	2,867.03	747.89	2,902.33	2,536.05	0.46	-0.43	0.645
15.00	-18.22	-19.40	0.00	-1,517.1	0.00	1,517.11	2,816.18	726.81	2,741.05	2,420.35	1.03	-0.66	0.634
20.00	-17.40	-19.02	0.00	-1,420.1	0.00	1,420.11	2,763.58	705.73	2,584.37	2,305.75	1.85	-0.89	0.623
25.00	-16.61	-18.62	0.00	-1,325.0	0.00	1,325.04	2,709.26	684.65	2,432.31	2,192.39	2.9	-1.12	0.611
30.00	-15.84	-18.22	0.00	-1,231.9	0.00	1,231.94	2,653.19	663.57	2,284.86	2,080.40	4.2	-1.36	0.599
35.00	-15.08	-17.81	0.00	-1,140.9	0.00	1,140.87	2,595.39	642.49	2,142.02	1,969.90	5.76	-1.6	0.586
40.00	-14.35	-17.40	0.00	-1,051.8	0.00	1,051.83	2,535.84	621.41	2,003.78	1,861.03	7.57	-1.85	0.572
45.00	-13.65	-17.04	0.00	-964.8	0.00	964.85	2,474.56	600.33	1,870.16	1,753.92	9.64	-2.1	0.556
48.50	-13.17	-16.83	0.00	-905.2	0.00	905.20	2,430.64	585.58	1,779.37	1,680.06	11.25	-2.28	0.545
50.00	-12.83	-16.63	0.00	-880.0	0.00	879.96	2,411.55	579.25	1,741.15	1,648.70	11.98	-2.36	0.540
53.25	-12.14	-16.41	0.00	-825.9	0.00	825.90	1,790.30	460.27	1,374.10	1,217.91	13.65	-2.53	0.686
55.00	-11.91	-16.15	0.00	-797.2	0.00	797.18	1,775.53	454.37	1,339.09	1,192.26	14.59	-2.63	0.677
60.00	-11.34	-15.75	0.00	-716.4	0.00	716.44	1,732.17	437.51	1,241.55	1,119.65	17.51	-2.94	0.648
65.00	-10.79	-15.36	0.00	-637.7	0.00	637.69	1,687.08	420.65	1,147.69	1,048.13	20.75	-3.25	0.616
70.00	-10.25	-14.97	0.00	-560.9	0.00	560.89	1,640.24	403.78	1,057.53	977.85	24.32	-3.55	0.581
75.00	-9.74	-14.59	0.00	-486.0	0.00	486.04	1,591.67	386.92	971.05	908.92	28.2	-3.86	0.542
80.00	-9.24	-14.22	0.00	-413.1	0.00	413.09	1,541.36	370.05	888.26	841.49	32.41	-4.16	0.498
85.00	-8.77	-13.85	0.00	-342.0	0.00	342.00	1,489.32	353.19	809.16	775.68	36.91	-4.44	0.448
90.00	-8.32	-13.49	0.00	-272.8	0.00	272.76	1,423.78	336.33	733.74	705.79	41.71	-4.71	0.394
95.00	-7.90	-13.18	0.00	-205.3	0.00	205.31	1,352.39	319.46	662.02	636.45	46.77	-4.95	0.330
98.75	-7.60	-12.99	0.00	-155.9	0.00	155.90	1,298.85	306.82	610.64	586.79	50.72	-5.11	0.273
100.00	-4.89	-8.51	0.00	-139.7	0.00	139.66	1,281.00	302.60	593.98	570.68	52.06	-5.16	0.249
102.00	-4.68	-8.33	0.00	-122.6	0.00	122.64	920.75	226.46	443.53	410.46	54.24	-5.23	0.305
105.00	-4.53	-8.07	0.00	-97.6	0.00	97.65	898.91	218.87	414.30	387.19	57.55	-5.33	0.259
110.00	-3.84	-6.50	0.00	-57.3	0.00	57.30	861.13	206.22	367.81	349.29	63.22	-5.49	0.170
115.00	-3.63	-6.27	0.00	-24.8	0.00	24.82	819.47	193.58	324.08	311.81	69.02	-5.59	0.085
117.00	-1.48	-4.26	0.00	-12.3	0.00	12.28	798.05	188.52	307.37	295.65	71.36	-5.61	0.044
119.00	0.00	-4.10	0.00	-3.8	0.00	3.75	776.64	183.46	291.09	279.91	73.71	-5.62	0.014

Load Case: 1.2D + 1.0Di + 1.0Wi Normal		50 mph wind with 1" radial ice			22 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	-37.99	-5.22	0.00	-453.6	0.00	453.60	2,963.53	790.05	3,238.73	2,770.25	0	0	0.177
5.00	-36.70	-5.12	0.00	-427.5	0.00	427.50	2,916.15	768.97	3,068.22	2,652.73	0.03	-0.05	0.174
10.00	-35.41	-5.02	0.00	-401.9	0.00	401.89	2,867.03	747.89	2,902.33	2,536.05	0.11	-0.11	0.171
15.00	-34.14	-4.93	0.00	-376.8	0.00	376.77	2,816.18	726.81	2,741.05	2,420.35	0.26	-0.16	0.168
20.00	-32.90	-4.82	0.00	-352.1	0.00	352.14	2,763.58	705.73	2,584.37	2,305.75	0.46	-0.22	0.165
25.00	-31.68	-4.72	0.00	-328.0	0.00	328.01	2,709.26	684.65	2,432.31	2,192.39	0.72	-0.28	0.161
30.00	-30.49	-4.61	0.00	-304.4	0.00	304.42	2,653.19	663.57	2,284.86	2,080.40	1.05	-0.34	0.158
35.00	-29.33	-4.50	0.00	-281.4	0.00	281.37	2,595.39	642.49	2,142.02	1,969.90	1.43	-0.4	0.154
40.00	-28.20	-4.39	0.00	-258.9	0.00	258.88	2,535.84	621.41	2,003.78	1,861.03	1.88	-0.46	0.150
45.00	-27.10	-4.29	0.00	-236.9	0.00	236.94	2,474.56	600.33	1,870.16	1,753.92	2.39	-0.52	0.146
48.50	-26.34	-4.23	0.00	-221.9	0.00	221.94	2,430.64	585.58	1,779.37	1,680.06	2.79	-0.56	0.143
50.00	-25.85	-4.17	0.00	-215.6	0.00	215.59	2,411.55	579.25	1,741.15	1,648.70	2.97	-0.58	0.142
53.25	-24.82	-4.11	0.00	-202.0	0.00	202.02	1,790.30	460.27	1,374.10	1,217.91	3.39	-0.63	0.180
55.00	-24.49	-4.04	0.00	-194.8	0.00	194.83	1,775.53	454.37	1,339.09	1,192.26	3.62	-0.65	0.177
60.00	-23.60	-3.93	0.00	-174.6	0.00	174.63	1,732.17	437.51	1,241.55	1,119.65	4.34	-0.72	0.170
65.00	-22.72	-3.82	0.00	-155.0	0.00	154.98	1,687.08	420.65	1,147.69	1,048.13	5.14	-0.8	0.161
70.00	-21.88	-3.71	0.00	-135.9	0.00	135.87	1,640.24	403.78	1,057.53	977.85	6.02	-0.87	0.152
75.00	-21.06	-3.60	0.00	-117.3	0.00	117.31	1,591.67	386.92	971.05	908.92	6.97	-0.95	0.142
80.00	-20.27	-3.50	0.00	-99.3	0.00	99.28	1,541.36	370.05	888.26	841.49	8.01	-1.02	0.131
85.00	-19.50	-3.39	0.00	-81.8	0.00	81.80	1,489.32	353.19	809.16	775.68	9.11	-1.09	0.119
90.00	-18.76	-3.28	0.00	-64.8	0.00	64.84	1,423.78	336.33	733.74	705.79	10.29	-1.15	0.105
95.00	-18.05	-3.19	0.00	-48.4	0.00	48.42	1,352.39	319.46	662.02	636.45	11.53	-1.21	0.090
98.75	-17.54	-3.13	0.00	-36.4	0.00	36.45	1,298.85	306.82	610.64	586.79	12.49	-1.25	0.076
100.00	-11.43	-2.03	0.00	-32.5	0.00	32.54	1,281.00	302.60	593.98	570.68	12.82	-1.26	0.066
102.00	-11.09	-1.98	0.00	-28.5	0.00	28.48	920.75	226.46	443.53	410.46	13.35	-1.28	0.081
105.00	-10.79	-1.89	0.00	-22.6	0.00	22.55	898.91	218.87	414.30	387.19	14.16	-1.3	0.070
110.00	-8.96	-1.52	0.00	-13.1	0.00	13.08	861.13	206.22	367.81	349.29	15.54	-1.33	0.048
115.00	-8.52	-1.44	0.00	-5.5	0.00	5.49	819.47	193.58	324.08	311.81	16.95	-1.36	0.028
117.00	-4.45	-0.93	0.00	-2.6	0.00	2.61	798.05	188.52	307.37	295.65	17.52	-1.36	0.014
119.00	0.00	-0.83	0.00	-0.7	0.00	0.74	776.64	183.46	291.09	279.91	18.09	-1.36	0.003

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 22 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	-23.14	-4.52	0.00	-402.3	0.00	402.32	2,963.53	790.05	3,238.73	2,770.25	0	0	0.153
5.00	-22.25	-4.44	0.00	-379.7	0.00	379.74	2,916.15	768.97	3,068.22	2,652.73	0.03	-0.05	0.151
10.00	-21.37	-4.35	0.00	-357.6	0.00	357.56	2,867.03	747.89	2,902.33	2,536.05	0.1	-0.1	0.148
15.00	-20.52	-4.27	0.00	-335.8	0.00	335.79	2,816.18	726.81	2,741.05	2,420.35	0.23	-0.15	0.146
20.00	-19.69	-4.19	0.00	-314.4	0.00	314.42	2,763.58	705.73	2,584.37	2,305.75	0.41	-0.2	0.144
25.00	-18.88	-4.11	0.00	-293.5	0.00	293.46	2,709.26	684.65	2,432.31	2,192.39	0.64	-0.25	0.141
30.00	-18.09	-4.02	0.00	-272.9	0.00	272.93	2,653.19	663.57	2,284.86	2,080.40	0.93	-0.3	0.138
35.00	-17.32	-3.93	0.00	-252.8	0.00	252.83	2,595.39	642.49	2,142.02	1,969.90	1.27	-0.35	0.135
40.00	-16.57	-3.84	0.00	-233.2	0.00	233.18	2,535.84	621.41	2,003.78	1,861.03	1.68	-0.41	0.132
45.00	-15.85	-3.77	0.00	-214.0	0.00	213.97	2,474.56	600.33	1,870.16	1,753.92	2.13	-0.47	0.128
48.50	-15.35	-3.72	0.00	-200.8	0.00	200.79	2,430.64	585.58	1,779.37	1,680.06	2.49	-0.51	0.126
50.00	-15.00	-3.68	0.00	-195.2	0.00	195.21	2,411.55	579.25	1,741.15	1,648.70	2.65	-0.52	0.125
53.25	-14.26	-3.63	0.00	-183.2	0.00	183.25	1,790.30	460.27	1,374.10	1,217.91	3.02	-0.56	0.158
55.00	-14.05	-3.57	0.00	-176.9	0.00	176.90	1,775.53	454.37	1,339.09	1,192.26	3.23	-0.58	0.156
60.00	-13.49	-3.49	0.00	-159.0	0.00	159.04	1,732.17	437.51	1,241.55	1,119.65	3.88	-0.65	0.150
65.00	-12.93	-3.40	0.00	-141.6	0.00	141.61	1,687.08	420.65	1,147.69	1,048.13	4.6	-0.72	0.143
70.00	-12.40	-3.32	0.00	-124.6	0.00	124.60	1,640.24	403.78	1,057.53	977.85	5.39	-0.79	0.135
75.00	-11.88	-3.24	0.00	-108.0	0.00	108.00	1,591.67	386.92	971.05	908.92	6.25	-0.86	0.126
80.00	-11.38	-3.16	0.00	-91.8	0.00	91.82	1,541.36	370.05	888.26	841.49	7.18	-0.92	0.117
85.00	-10.89	-3.08	0.00	-76.0	0.00	76.04	1,489.32	353.19	809.16	775.68	8.18	-0.99	0.105
90.00	-10.42	-3.00	0.00	-60.7	0.00	60.66	1,423.78	336.33	733.74	705.79	9.25	-1.04	0.093
95.00	-9.97	-2.93	0.00	-45.7	0.00	45.67	1,352.39	319.46	662.02	636.45	10.37	-1.1	0.079
98.75	-9.64	-2.89	0.00	-34.7	0.00	34.68	1,298.85	306.82	610.64	586.79	11.25	-1.13	0.067
100.00	-6.23	-1.89	0.00	-31.1	0.00	31.07	1,281.00	302.60	593.98	570.68	11.55	-1.14	0.059
102.00	-5.99	-1.85	0.00	-27.3	0.00	27.28	920.75	226.46	443.53	410.46	12.03	-1.16	0.073
105.00	-5.82	-1.80	0.00	-21.7	0.00	21.72	898.91	218.87	414.30	387.19	12.77	-1.18	0.063
110.00	-4.92	-1.45	0.00	-12.8	0.00	12.75	861.13	206.22	367.81	349.29	14.02	-1.22	0.042
115.00	-4.67	-1.40	0.00	-5.5	0.00	5.51	819.47	193.58	324.08	311.81	15.31	-1.24	0.023
117.00	-2.08	-0.95	0.00	-2.7	0.00	2.72	798.05	188.52	307.37	295.65	15.83	-1.25	0.012
119.00	0.00	-0.90	0.00	-0.8	0.00	0.83	776.64	183.46	291.09	279.91	16.36	-1.25	0.003

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.200
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.053
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}):	0.213
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.085
Seismic Response Coefficient (C_s):	0.030
Upper Limit C_S:	0.030
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	2.190
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.840
Total Unfactored Dead Load:	23.140 k
Seismic Base Shear (E):	0.690 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)
29	118	96	635	0.008	6	119
28	116	98	628	0.008	6	121
27	112.5	253	1,536	0.020	14	314
26	107.5	277	1,546	0.021	14	344
25	103.5	172	896	0.012	8	214
24	101	233	1,161	0.016	11	290
23	99.375	164	790	0.010	7	203
22	96.875	327	1,509	0.020	14	407
21	92.5	451	1,909	0.026	18	560
20	87.5	467	1,785	0.024	17	581
19	82.5	484	1,658	0.022	15	601
18	77.5	500	1,527	0.020	14	621
17	72.5	516	1,394	0.019	13	642
16	67.5	533	1,261	0.017	12	662
15	62.5	549	1,128	0.015	10	682
14	57.5	565	996	0.013	9	703
13	54.125	202	318	0.004	3	251
12	51.625	741	1,069	0.014	10	920
11	49.25	347	459	0.006	4	431
10	46.75	495	596	0.008	6	616
9	42.5	725	731	0.010	7	901
8	37.5	746	597	0.008	6	927
7	32.5	766	471	0.006	4	952
6	27.5	787	355	0.005	3	977
5	22.5	807	252	0.003	2	1,003
4	17.5	827	162	0.002	2	1,028
3	12.5	848	89	0.001	1	1,054
2	7.5	868	36	0.000	0	1,079
1	2.5	889	5	0.000	0	1,104
Commscope WCS-IMFQ-AMT	119	30	199	0.003	2	37
Raycap DC6-48-60-18-8F	119	40	269	0.004	2	50
Raycap DC6-48-60-0-8F	119	33	221	0.003	2	41
Ericsson RRUS 8843 B2, B66A	119	216	1,455	0.019	13	268
Ericsson RRUS 4478 B14	119	180	1,211	0.016	11	223

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Ericsson RRUS 4449 B5, B12	119	213	1,435	0.019	13	265
Ericsson RRUS 32 B30 (60 lbs)	119	180	1,213	0.016	11	224
Ericsson AIR 6419 B77G	119	198	1,336	0.018	12	246
Ericsson AIR 6449 B77D/ C-Band	119	245	1,649	0.022	15	304
Kathrein Scala 80010966	119	344	2,316	0.031	21	427
CCI TPA65R-BU8A	119	324	2,183	0.029	20	403
Round Plafform w/ Handrails w/ Proposed HRK	117	2,500	16,325	0.218	151	3,107
Commscope RDIDC-9181-PF-48	110	22	128	0.002	1	27
Fujitsu TA08025-B604	110	192	1,117	0.015	10	238
Fujitsu TA08025-B605	110	225	1,311	0.018	12	280
JMA Wireless MX08FRO665-21	110	194	1,128	0.015	10	240
Commscope CBC78T-DS-43-2X	100	62	304	0.004	3	77
Samsung B2/B66A RRH-BR049	100	253	1,238	0.016	11	315
Samsung B5/B13 RRH-BR04C	100	211	1,031	0.014	10	262
Samsung MT6407-77A	100	245	1,197	0.016	11	304
RFS DB-T1-6Z-8AB-0Z	100	88	430	0.006	4	109
Antel BXA-70063-6CF-EDIN-X	100	51	249	0.003	2	63
Commscope JAHH-65B-R3B	100	364	1,777	0.024	16	452
Round Platform w/ Handrails	100	2,000	9,776	0.130	90	2,485
		23,139	75,000	1.000	694	28,754

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)
29	118	96	635	0.008	6	82
28	116	98	628	0.008	6	84
27	112.5	253	1,536	0.020	14	217
26	107.5	277	1,546	0.021	14	237
25	103.5	172	896	0.012	8	147
24	101	233	1,161	0.016	11	200
23	99.375	164	790	0.010	7	140
22	96.875	327	1,509	0.020	14	281
21	92.5	451	1,909	0.026	18	387
20	87.5	467	1,785	0.024	17	401
19	82.5	484	1,658	0.022	15	415
18	77.5	500	1,527	0.020	14	429
17	72.5	516	1,394	0.019	13	443
16	67.5	533	1,261	0.017	12	457
15	62.5	549	1,128	0.015	10	471
14	57.5	565	996	0.013	9	485
13	54.125	202	318	0.004	3	173
12	51.625	741	1,069	0.014	10	635
11	49.25	347	459	0.006	4	298
10	46.75	495	596	0.008	6	425
9	42.5	725	731	0.010	7	622
8	37.5	746	597	0.008	6	639
7	32.5	766	471	0.006	4	657
6	27.5	787	355	0.005	3	674
5	22.5	807	252	0.003	2	692
4	17.5	827	162	0.002	2	709
3	12.5	848	89	0.001	1	727
2	7.5	868	36	0.000	0	744
1	2.5	889	5	0.000	0	762
Commscope WCS-IMFQ-AMT	119	30	199	0.003	2	25
Raycap DC6-48-60-18-8F	119	40	269	0.004	2	34
Raycap DC6-48-60-0-8F	119	33	221	0.003	2	28
Ericsson RRUS 8843 B2, B66A	119	216	1,455	0.019	13	185
Ericsson RRUS 4478 B14	119	180	1,211	0.016	11	154
Ericsson RRUS 4449 B5, B12	119	213	1,435	0.019	13	183
Ericsson RRUS 32 B30 (60 lbs)	119	180	1,213	0.016	11	154
Ericsson AIR 6419 B77G	119	198	1,336	0.018	12	170
Ericsson AIR 6449 B77D/ C-Band	119	245	1,649	0.022	15	210

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Kathrein Scala 80010966	119	344	2,316	0.031	21	295
CCI TPA65R-BU8A	119	324	2,183	0.029	20	278
Round Plafform w/ Handrails w/ Proposed HRK	117	2,500	16,325	0.218	151	2,143
Commscope RDIDC-9181-PF-48	110	22	128	0.002	1	19
Fujitsu TA08025-B604	110	192	1,117	0.015	10	164
Fujitsu TA08025-B605	110	225	1,311	0.018	12	193
JMA Wireless MX08FRO665-21	110	194	1,128	0.015	10	166
Commscope CBC78T-DS-43-2X	100	62	304	0.004	3	53
Samsung B2/B66A RRH-BR049	100	253	1,238	0.016	11	217
Samsung B5/B13 RRH-BR04C	100	211	1,031	0.014	10	181
Samsung MT6407-77A	100	245	1,197	0.016	11	210
RFS DB-T1-6Z-8AB-0Z	100	88	430	0.006	4	75
Antel BXA-70063-6CF-EDIN-X	100	51	249	0.003	2	44
Commscope JAHH-65B-R3B	100	364	1,777	0.024	16	312
Round Platform w/ Handrails	100	2,000	9,776	0.130	90	1,715
		23,139	75,000	1.000	694	19,838

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	-27.65	-0.70	0.00	-72.69	0.00	72.69	2,963.53	790.05	3,239	2,770.25	0.00	0.00	0.04
5.00	-26.57	-0.70	0.00	-69.21	0.00	69.21	2,916.15	768.97	3,068	2,652.73	0.00	-0.01	0.04
10.00	-25.52	-0.70	0.00	-65.72	0.00	65.72	2,867.03	747.89	2,902	2,536.05	0.02	-0.02	0.04
15.00	-24.49	-0.70	0.00	-62.21	0.00	62.21	2,816.18	726.81	2,741	2,420.35	0.04	-0.03	0.03
20.00	-23.49	-0.70	0.00	-58.69	0.00	58.69	2,763.58	705.73	2,584	2,305.75	0.07	-0.04	0.03
25.00	-22.51	-0.70	0.00	-55.16	0.00	55.16	2,709.26	684.65	2,432	2,192.39	0.12	-0.05	0.03
30.00	-21.56	-0.70	0.00	-51.64	0.00	51.64	2,653.19	663.57	2,285	2,080.40	0.17	-0.06	0.03
35.00	-20.63	-0.70	0.00	-48.12	0.00	48.12	2,595.39	642.49	2,142	1,969.90	0.23	-0.07	0.03
40.00	-19.73	-0.70	0.00	-44.62	0.00	44.62	2,535.84	621.41	2,004	1,861.03	0.31	-0.08	0.03
45.00	-19.11	-0.69	0.00	-41.14	0.00	41.14	2,474.56	600.33	1,870	1,753.92	0.40	-0.09	0.03
48.50	-18.68	-0.69	0.00	-38.71	0.00	38.71	2,430.64	585.58	1,779	1,680.06	0.46	-0.09	0.03
50.00	-17.76	-0.68	0.00	-37.68	0.00	37.68	2,411.55	579.25	1,741	1,648.70	0.49	-0.10	0.03
53.25	-17.51	-0.68	0.00	-35.47	0.00	35.47	1,790.30	460.27	1,374	1,217.91	0.56	-0.11	0.04
55.00	-16.81	-0.67	0.00	-34.28	0.00	34.28	1,775.53	454.37	1,339	1,192.26	0.60	-0.11	0.04
60.00	-16.13	-0.66	0.00	-30.93	0.00	30.93	1,732.17	437.51	1,242	1,119.65	0.72	-0.12	0.04
65.00	-15.46	-0.65	0.00	-27.61	0.00	27.61	1,687.08	420.65	1,148	1,048.13	0.86	-0.14	0.04
70.00	-14.82	-0.64	0.00	-24.35	0.00	24.35	1,640.24	403.78	1,058	977.85	1.01	-0.15	0.03
75.00	-14.20	-0.63	0.00	-21.14	0.00	21.14	1,591.67	386.92	971	908.92	1.17	-0.16	0.03
80.00	-13.60	-0.62	0.00	-17.99	0.00	17.99	1,541.36	370.05	888	841.49	1.35	-0.18	0.03
85.00	-13.02	-0.60	0.00	-14.92	0.00	14.92	1,489.32	353.19	809	775.68	1.54	-0.19	0.03
90.00	-12.46	-0.58	0.00	-11.92	0.00	11.92	1,423.78	336.33	734	705.79	1.75	-0.20	0.03
95.00	-12.05	-0.57	0.00	-9.00	0.00	9.00	1,352.39	319.46	662	636.45	1.96	-0.21	0.02
98.75	-11.85	-0.56	0.00	-6.87	0.00	6.87	1,298.85	306.82	611	586.79	2.13	-0.22	0.02
100.00	-7.49	-0.39	0.00	-6.17	0.00	6.17	1,281.00	302.60	594	570.68	2.19	-0.22	0.02
102.00	-7.28	-0.38	0.00	-5.39	0.00	5.39	920.75	226.46	444	410.46	2.28	-0.22	0.02
105.00	-6.93	-0.36	0.00	-4.26	0.00	4.26	898.91	218.87	414	387.19	2.42	-0.23	0.02
110.00	-5.83	-0.31	0.00	-2.44	0.00	2.44	861.13	206.22	368	349.29	2.66	-0.23	0.01
115.00	-5.71	-0.31	0.00	-0.88	0.00	0.88	819.47	193.58	324	311.81	2.91	-0.24	0.01
117.00	-2.49	-0.14	0.00	-0.27	0.00	0.27	798.05	188.52	307	295.65	3.01	-0.24	0.00
119.00	0.00	-0.12	0.00	0.00	0.00	0.00	776.64	183.46	291	279.91	3.11	-0.24	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	-19.08	-0.69	0.00	-71.61	0.00	71.61	2,963.53	790.05	3,239	2,770.25	0.00	0.00	0.03
5.00	-18.33	-0.70	0.00	-68.14	0.00	68.14	2,916.15	768.97	3,068	2,652.73	0.00	-0.01	0.03

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
10.00	-17.60	-0.70	0.00	-64.65	0.00	64.65	2,867.03	747.89	2,902	2,536.05	0.02	-0.02	0.03
15.00	-16.90	-0.70	0.00	-61.16	0.00	61.16	2,816.18	726.81	2,741	2,420.35	0.04	-0.03	0.03
20.00	-16.20	-0.70	0.00	-57.66	0.00	57.66	2,763.58	705.73	2,584	2,305.75	0.07	-0.04	0.03
25.00	-15.53	-0.70	0.00	-54.16	0.00	54.16	2,709.26	684.65	2,432	2,192.39	0.12	-0.05	0.03
30.00	-14.87	-0.70	0.00	-50.67	0.00	50.67	2,653.19	663.57	2,285	2,080.40	0.17	-0.05	0.03
35.00	-14.23	-0.69	0.00	-47.19	0.00	47.19	2,595.39	642.49	2,142	1,969.90	0.23	-0.06	0.03
40.00	-13.61	-0.69	0.00	-43.73	0.00	43.73	2,535.84	621.41	2,004	1,861.03	0.30	-0.08	0.03
45.00	-13.19	-0.68	0.00	-40.29	0.00	40.29	2,474.56	600.33	1,870	1,753.92	0.39	-0.09	0.03
48.50	-12.89	-0.68	0.00	-37.90	0.00	37.90	2,430.64	585.58	1,779	1,680.06	0.45	-0.09	0.03
50.00	-12.25	-0.67	0.00	-36.88	0.00	36.88	2,411.55	579.25	1,741	1,648.70	0.48	-0.10	0.03
53.25	-12.08	-0.67	0.00	-34.70	0.00	34.70	1,790.30	460.27	1,374	1,217.91	0.55	-0.10	0.04
55.00	-11.60	-0.66	0.00	-33.53	0.00	33.53	1,775.53	454.37	1,339	1,192.26	0.59	-0.11	0.04
60.00	-11.12	-0.65	0.00	-30.23	0.00	30.23	1,732.17	437.51	1,242	1,119.65	0.71	-0.12	0.03
65.00	-10.67	-0.64	0.00	-26.98	0.00	26.98	1,687.08	420.65	1,148	1,048.13	0.84	-0.13	0.03
70.00	-10.23	-0.63	0.00	-23.78	0.00	23.78	1,640.24	403.78	1,058	977.85	0.99	-0.15	0.03
75.00	-9.80	-0.62	0.00	-20.63	0.00	20.63	1,591.67	386.92	971	908.92	1.15	-0.16	0.03
80.00	-9.38	-0.60	0.00	-17.55	0.00	17.55	1,541.36	370.05	888	841.49	1.33	-0.17	0.03
85.00	-8.98	-0.59	0.00	-14.55	0.00	14.55	1,489.32	353.19	809	775.68	1.51	-0.18	0.03
90.00	-8.59	-0.57	0.00	-11.62	0.00	11.62	1,423.78	336.33	734	705.79	1.71	-0.20	0.02
95.00	-8.31	-0.55	0.00	-8.78	0.00	8.78	1,352.39	319.46	662	636.45	1.92	-0.21	0.02
98.75	-8.17	-0.55	0.00	-6.70	0.00	6.70	1,298.85	306.82	611	586.79	2.09	-0.21	0.02
100.00	-5.17	-0.38	0.00	-6.01	0.00	6.01	1,281.00	302.60	594	570.68	2.14	-0.22	0.02
102.00	-5.02	-0.37	0.00	-5.26	0.00	5.26	920.75	226.46	444	410.46	2.24	-0.22	0.02
105.00	-4.78	-0.35	0.00	-4.15	0.00	4.15	898.91	218.87	414	387.19	2.37	-0.22	0.02
110.00	-4.02	-0.30	0.00	-2.38	0.00	2.38	861.13	206.22	368	349.29	2.61	-0.23	0.01
115.00	-3.94	-0.30	0.00	-0.86	0.00	0.86	819.47	193.58	324	311.81	2.85	-0.23	0.01
117.00	-1.72	-0.13	0.00	-0.26	0.00	0.26	798.05	188.52	307	295.65	2.95	-0.23	0.00
119.00	0.00	-0.12	0.00	0.00	0.00	0.00	776.64	183.46	291	279.91	3.05	-0.23	0.00

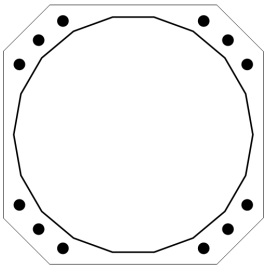
ANALYSIS SUMMARY

	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	20.54	0.00	27.73	0.00	0.00	1840.65	53.25	0.7
0.9D + 1.0W Normal	20.53	0.00	20.79	0.00	0.00	1819.34	53.25	0.69
1.2D + 1.0Di + 1.0Wi Normal	5.22	0.00	37.99	0.00	0.00	453.60	53.25	0.18
1.2D + 1.0Ev + 1.0Eh Normal	0.70	0.00	27.65	0.00	0.00	72.69	53.25	0.04
0.9D - 1.0Ev + 1.0Eh Normal	0.70	0.00	19.08	0.00	0.00	71.61	53.25	0.04
1.0D + 1.0W Service Normal	4.52	0.00	23.14	0.00	0.00	402.32	53.25	0.16

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 6300)

Width:	50.25	in
Shape:	Square	
Thickness:	2.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Clip Length:	9	in
Rod Detail Type:	d	
Clear Distance	3	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	224	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 2237]	Cluster	12	2.25	51.75	A615-75	75	100	6	-

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (12) 2.25"ø [ID 2237]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.554	22.01	13.60	5.227	89.561	135.98	2.93
2	0.785	18.30	18.30	-0.429	1.436	-126.73	3.00
3	1.017	13.60	22.01	-6.061	120.149	-126.73	2.91
4	2.124	-13.60	22.01	-24.000	1871.502	-126.73	0.64
5	2.356	-18.30	18.30	-24.559	1959.627	-126.73	0.05
6	2.588	-22.01	13.60	-23.803	1840.914	-126.73	0.74
7	3.695	-22.01	-13.60	-5.227	89.560	-126.73	2.93
8	3.927	-18.30	-18.30	0.429	1.436	135.98	3.00
9	4.159	-13.60	-22.01	6.061	120.149	135.98	2.91
10	5.266	13.60	-22.01	24.000	1871.502	135.98	0.64
11	5.498	18.30	-18.30	24.559	1959.627	135.98	0.05
12	5.730	22.01	-13.60	23.803	1840.914	135.98	0.74

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	45.7"ø x 0.3125" (18 Sides)	1840.6	27.73	20.54	1.000
Bolt Group	Original (12) 2.25"ø	1840.6	-	20.54	1.000
	TOTALS	**1840.65**	**27.73**	**20.54**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	45.7"ø x 0.3125" (18 Sides)	44.3332	-	-	11417.38	-
Bolt Group	Original (12) 2.25"ø	3.9761	3.2477	0.8393	11766.38	4.5

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	45.82	in
Point-to-Point Diameter:	46.53	in
Flat Width:	8.080	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	224	°
Bend Line Lower Limit:		rad
Bend Line Upper Limit:	-0.133	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	25.239	0.00	39.436	543.2	1774.6	0.306
Corner	24.532	0.00	38.332	384.8	1724.9	0.223

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	135.9	3.0	243.6	0.583

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

telamon
Tower Engineering PLLC

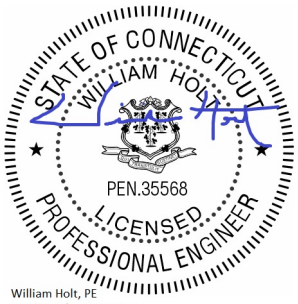
Antenna Mount Analysis Report

ATC Site Name	:	**Short Beach Branford CT**
ATC Asset Number	:	**283422**
Engineering Number	:	**13958523_C8_01**
Mount Elevation	:	**121 ft**
Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**MRCTB056193**
Carrier Site Number	:	**CT1283**
Site Location	:	**171 Short Beach Road** **Branford, CT 06405-4930** **41.26278888, -72.8344277**
County	:	**New Haven**
Date	:	**March 1, 2022**
Max Usage	:	**191%**
Result	:	**Fail**

Digitally signed by William Holt
Date: 2022.03.01 21:21:33 -05'00'

Prepared By:
Kowsalya V
Telamon Tower Engineering, PLLC

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



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

Table of Contents

Introduction 2

Supporting Documents 2

Analysis 2

Conclusion 2

Antenna Loading 3

Structure Usages 3

Equipment Layout Plan View 4

Equipment Layout Front Elevation View 5

Standard Conditions 6

Calculations ..... Attached

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 January 27, 2020 Mount Mapping by B+T GRP, Project #G0153577.002.01, dated December 27, 2021
Previous Analyses	Tower SA by CLS Engineering for ATC, Engineering #13668667_C3_01, dated August 13, 2021 Mount Analysis by Hudson Design Group LLC, Site #CT1283 (LTE 4C/5C), dated January 16, 2019
Loading Data	ATC Application, Project #13958523, dated February 25, 2022 AT&T RFDS ID:4775853, Ver. 2.00, dated January 14, 2022

Analysis

Codes	TIA-222-H
Basic Wind Speed	121 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	C
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 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 tower mount plate connection**

The rough cost estimate, pre-MOD design, is estimated to be <$10k. 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.

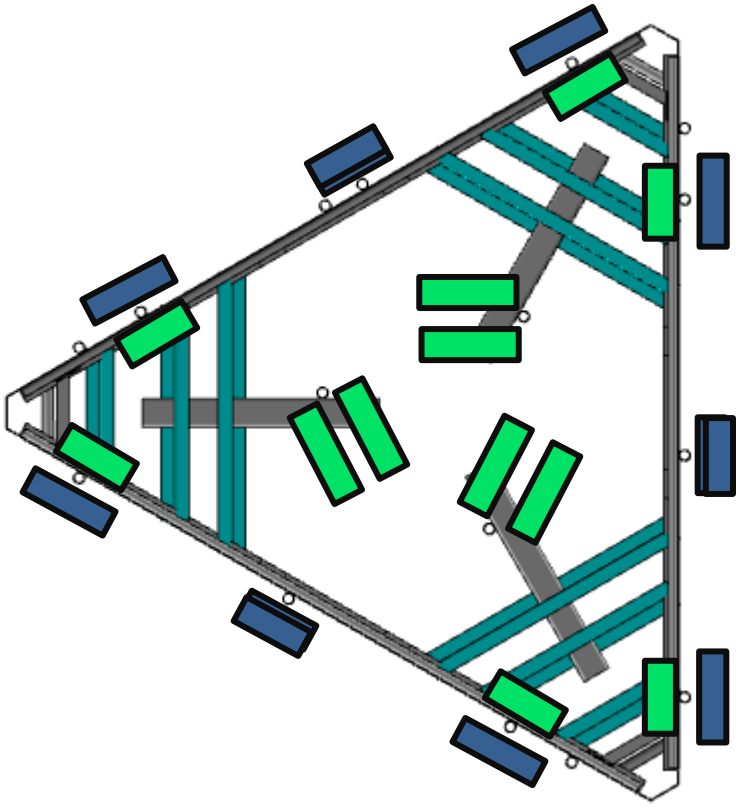
Antenna Loading

Elevation (ft)		Antennas	
Mount	Rad.	#	Name
121.0	120.0	3	CCI TPA65R-BU8A
		3	Kathrein 80010966
		3	Ericsson AIR 6449 B77D/ C-Band
		3	Ericsson AIR 6419 B77G
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		3	Ericsson RRUS 8843 B2, B66A
		1	Commscope WCS-IMFQ-AMT
		1	Raycap DC6-48-60-0-8F
		2	Raycap DC6-48-60-18-8F

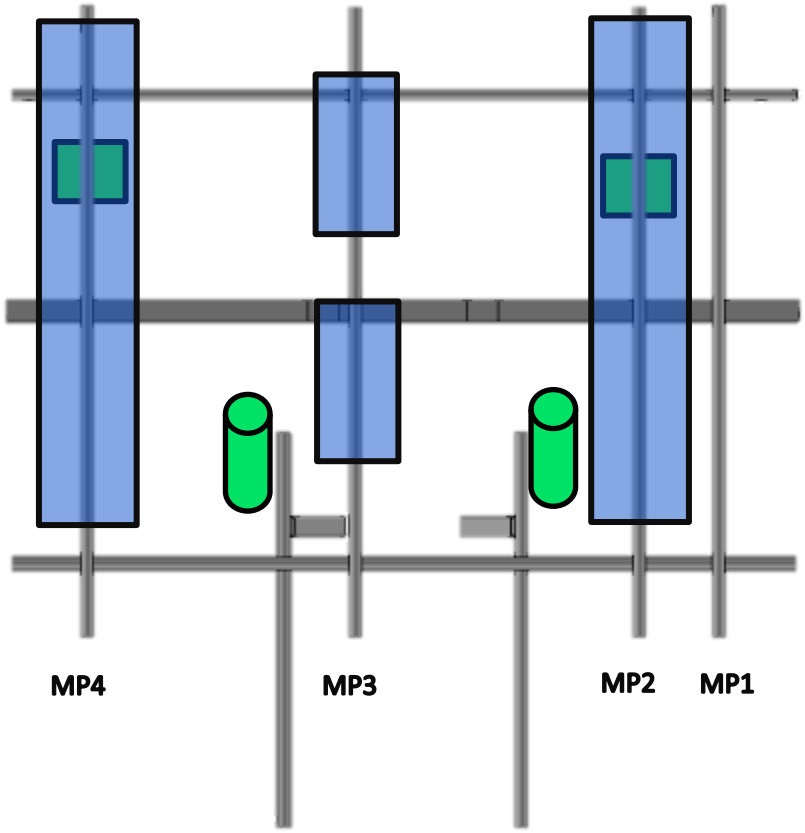
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Tower Mount Plate Connection	**191%**	**Fail**
Bracing Members	55%	Pass
Support Rail	46%	Pass
Corner Plates	43%	Pass
Mount Pipes	43%	Pass
Stand-Off Horizontals	38%	Pass
Platform Base	23%	Pass

Equipment Layout Plan View



Equipment Layout Front Elevation View



Total #	Equipment	Mount Pipe Position
3	CCI TPA65R-BU8A	P2
3	Ericsson AIR 6419 B77G	P3
3	Ericsson AIR 6449 B77D	P3
3	Kathrein 80010966	P4
1	Raycap DC6-48-60-0-8F	Stand-off Mount
2	Raycap DC6-48-60-18-8F	Stand-off Mount
3	Ericsson RRUS 8843 B2/B66A	P2
3	Ericsson RRUS 32 B30	P4
3	Ericsson RRUS 4478 B14	Stand-off
3	Ericsson RRUS 4449 B5/B12	Stand-off
1	Commscope WCS-IMFQ-AMT	P4 (Gamma)

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}	121 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	120 ft	K_d	0.95
Elevation AMSL (ft)	59 ft	K_e	1.00
TIA Standard	H	K_z	1.32
Basic Wind Speed, V_{ult} (bare)	121 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.14 in
Exposure Category	C	G_h	1.00
Risk Category	II	q_z (bare)	46.8 psf
Seismic Response Coeff., C_s	0.11	q_z (ice)	8.0 psf

Live Loading

At Mount Pipes, L_M	500 lb
Joint Labels Considered	1_M1
	1_M2
	1_M3
	1_M4

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Offset Arm	HSS6X3X6	42.13	2.18	9.56
Face Mid Channel	CH3x4x3/16	28.09	2.00	10.06
Face Channel	CH3x4x3/16	28.09	2.00	10.06
Corner Plate	PL3.5x.3/16	24.58	4.16	4.85
Grating Horizontal	Custom Z 4x3x3/16	28.52	2.00	8.61
Support Rail 2	PIPE_2.0	10.01	3.35	4.89
Support Rail Brace	PIPE_2.0	10.01	3.35	4.89
Support Rail 1	PIPE_1.5	8.00	3.01	4.23
SR Conn Plate	PL6x0.375	42.13	5.96	7.23
SR Conn Angle	L2.5x2.5x4	17.55	1.86	5.90
Mount Pipe	PIPE_2.0	10.01	3.35	4.89
Stand-Off	HSS4X4X4	28.09	2.00	8.67
MOD RRH Pipe	PIPE_2.0	10.01	3.35	4.89

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
TPA65R-BU8A				☐			1	1	1	3	1_A2T	1_A2B	2_A2T	2_A2B	3_A2T	3_A2B	96	25.5	7.6	114.6	Generic	258.21	21.31	6.38	23.72	8.45	896.20	268.31	170.35	60.69
AIR 6419 B77G				☐			1	1	1	3	1_A3T	1_A3B	2_A3T	2_A3B	3_A3T	3_A3B	28.3	16.1	7.9	66.1	Flat	63.40	3.80	1.94	4.68	2.64	159.68	81.49	33.62	18.97
AIR 6449 B77D				☐			1	1	1	3	1_A3TB	1_A3BB	2_A3TB	2_A3BB	3_A3TB	3_A3BB	30.4	15.9	10.6	81.6	Flat	76.11	4.03	2.72	4.95	3.51	169.40	114.47	35.54	25.21
80010966				☐			1	1	1	3	1_A4T	1_A4B	2_A4T	2_A4B	3_A4T	3_A4B	96	20	6.9	125.7	Generic	209.77	14.59	5.04	16.57	6.79	613.59	211.96	118.99	48.78
DC6-48-60-0-8F				☐			1			1	1_M						24	11	11	18.9	Round	40.31	1.28	1.28	1.70	1.70	53.97	53.97	12.18	12.18
DC6-48-60-18-8F				☐			1	1		2	2_M		3_M				24	11	11	18.9	Round	40.31	1.28	1.28	1.70	1.70	53.97	53.97	12.18	12.18
RRUS 8843 B2/B66A				☐	0		1	1	1	3	1_R2BN		2_R2BN		3_R2BN		14.9	13.2	10.9	72	Flat	40.04	0.00	1.35	0.00	1.89	0.00	56.92	0.00	13.54
RRUS 32 B30				☐	0		1	1	1	3	1_R4BN		2_R4BN		3_R4BN		26.7	12.1	6.7	60	Flat	46.43	0.00	1.57	0.00	2.23	0.00	66.14	0.00	15.98
RRUS 4478 B14				☑		0.5	1	1	1	3	1_R7BT		2_R7BT		3_R7BT		16.5	13.4	7.7	59.9	Flat	36.13	1.06	0.92	1.56	1.23	44.53	38.74	11.21	8.81
RRUS 4449 B5/B12				☑		0.5	1	1	1	3	1_R7BT		2_R7BT		3_R7BT		17.9	13.19	9.44	71	Flat	42.12	1.41	0.98	1.97	1.30	59.22	41.37	14.14	9.34
WCS-IMFQ-AMT				☐	0				1	1					4_M		11.2	10.6	6.9	29.5	Flat	22.04	0.00	0.64	0.00	1.03	0.00	27.08	0.00	7.40

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 59.15 ft (NAVD 88)
Latitude: 41.262789
Longitude: -72.834428

Wind

Results:

Wind Speed	121 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	92 Vmph
100-year MRI	99 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 01 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.

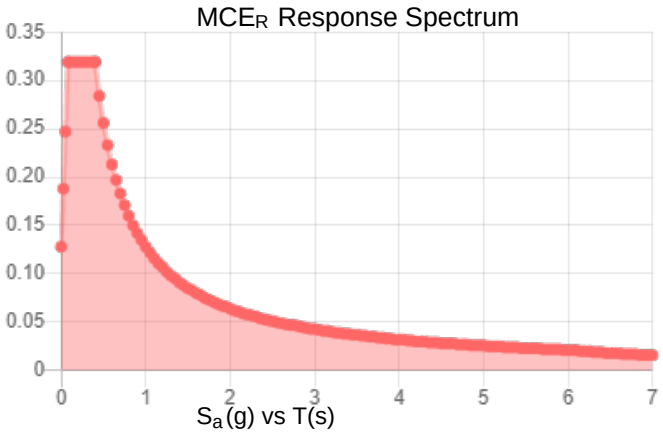
Seismic

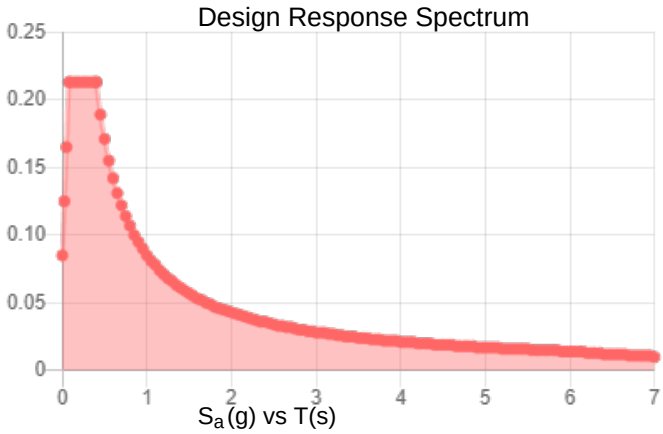
Site Soil Class: D - Default (see Section 11.4.3)

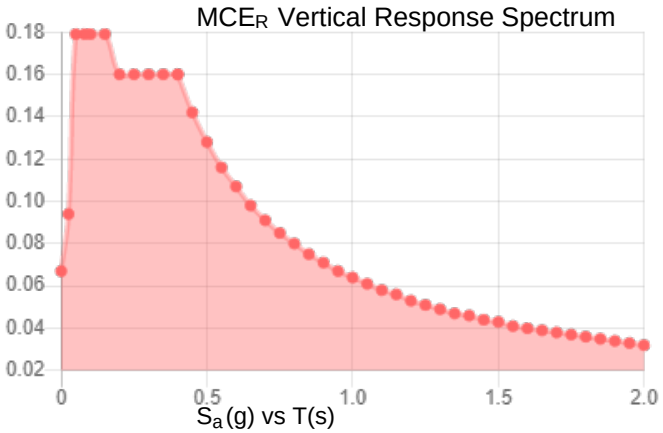
Results:

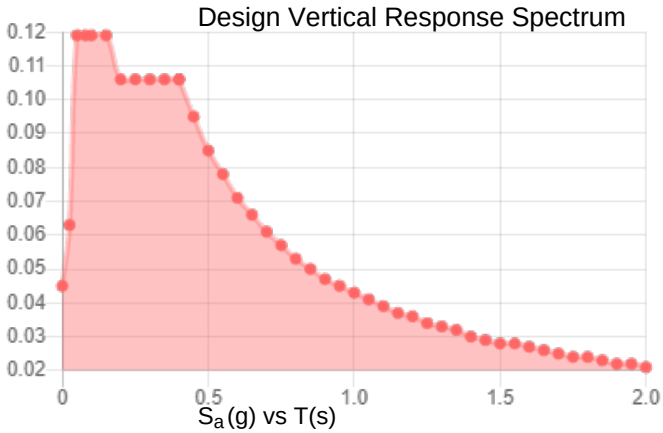
S_S :	0.2	S_{D1} :	0.085
S_1 :	0.053	T_L :	6
F_a :	1.6	PGA :	0.111
F_v :	2.4	PGA_M :	0.176
S_{MS} :	0.319	F_{PGA} :	1.577
S_{M1} :	0.128	I_e :	1
S_{DS} :	0.213	C_v :	0.7

Seismic Design Category B









Data Accessed: **Tue Mar 01 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.

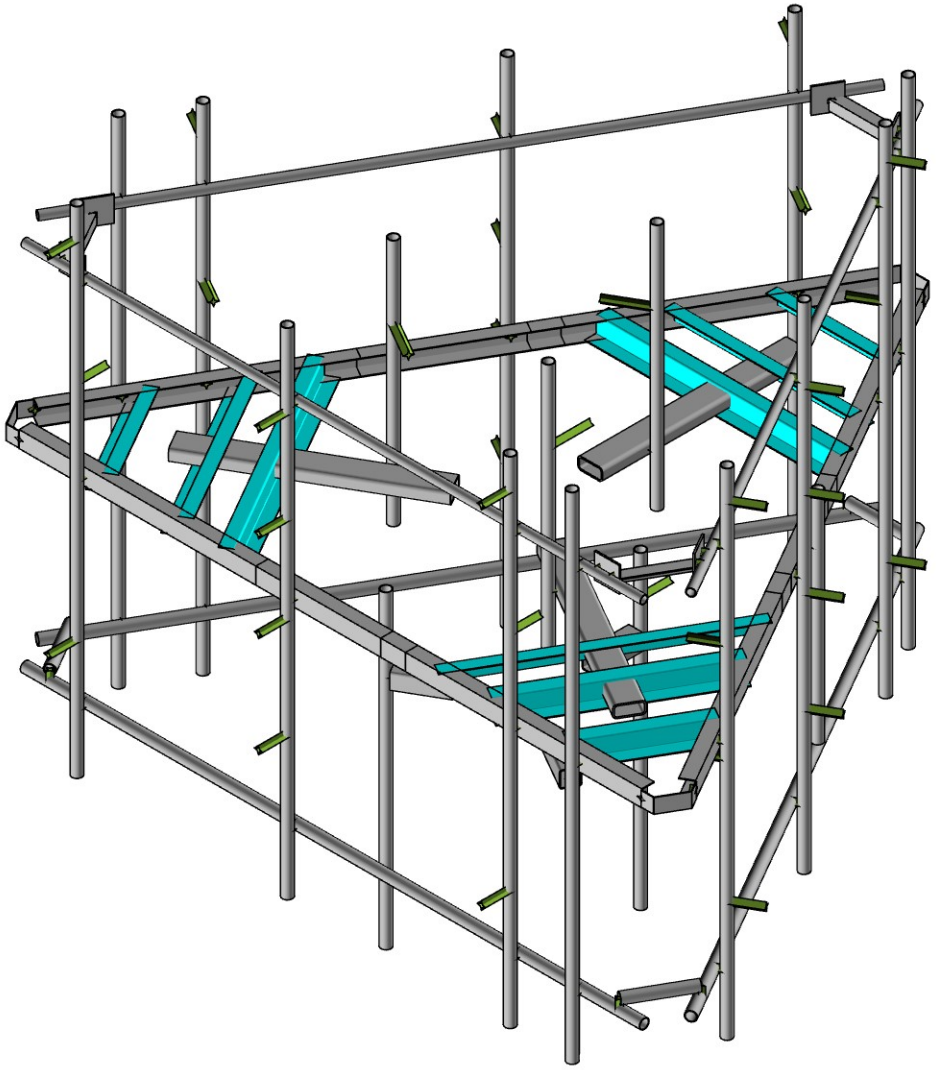
Ice

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 01 2022

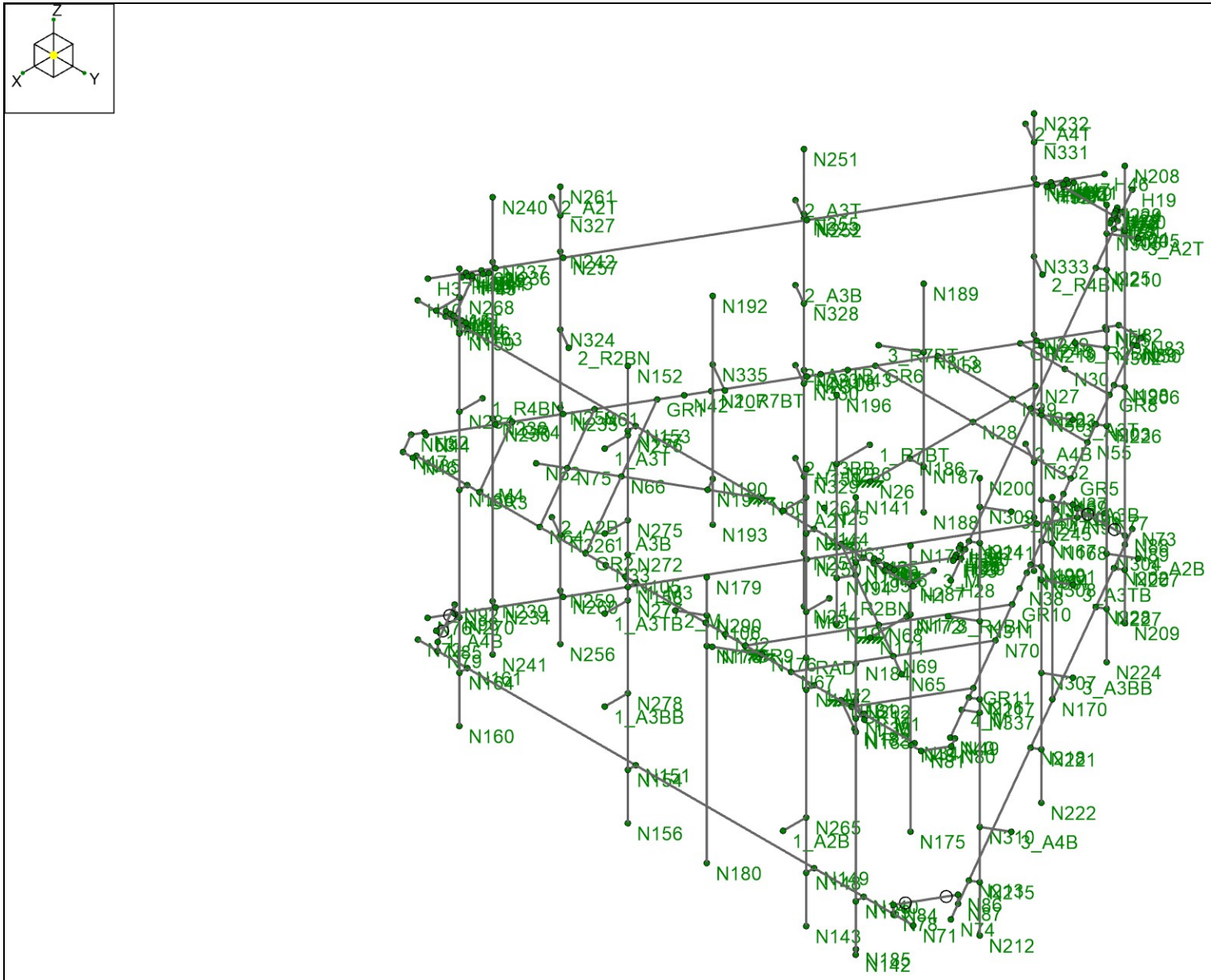
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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.



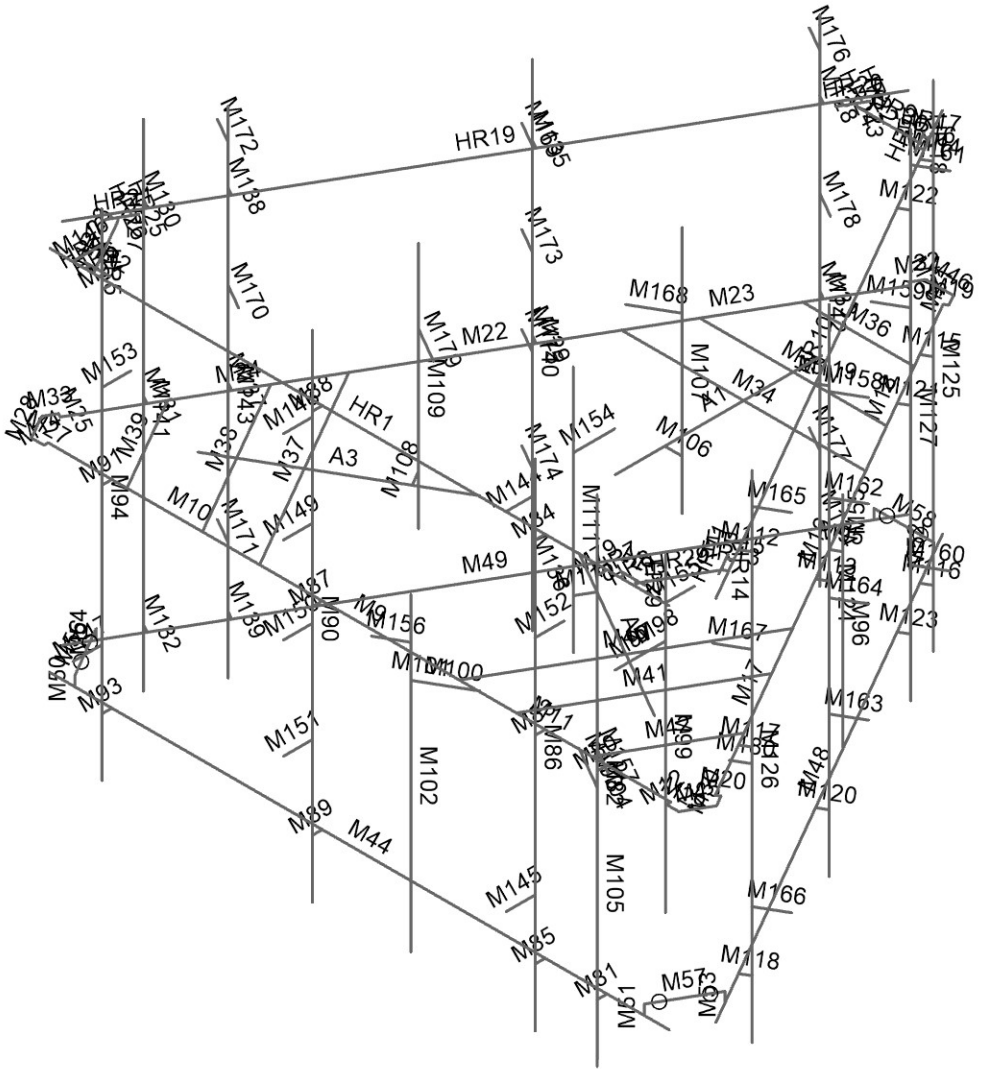
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-1
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Rendered	41124-13958523_C8_01-01-MA.r3d



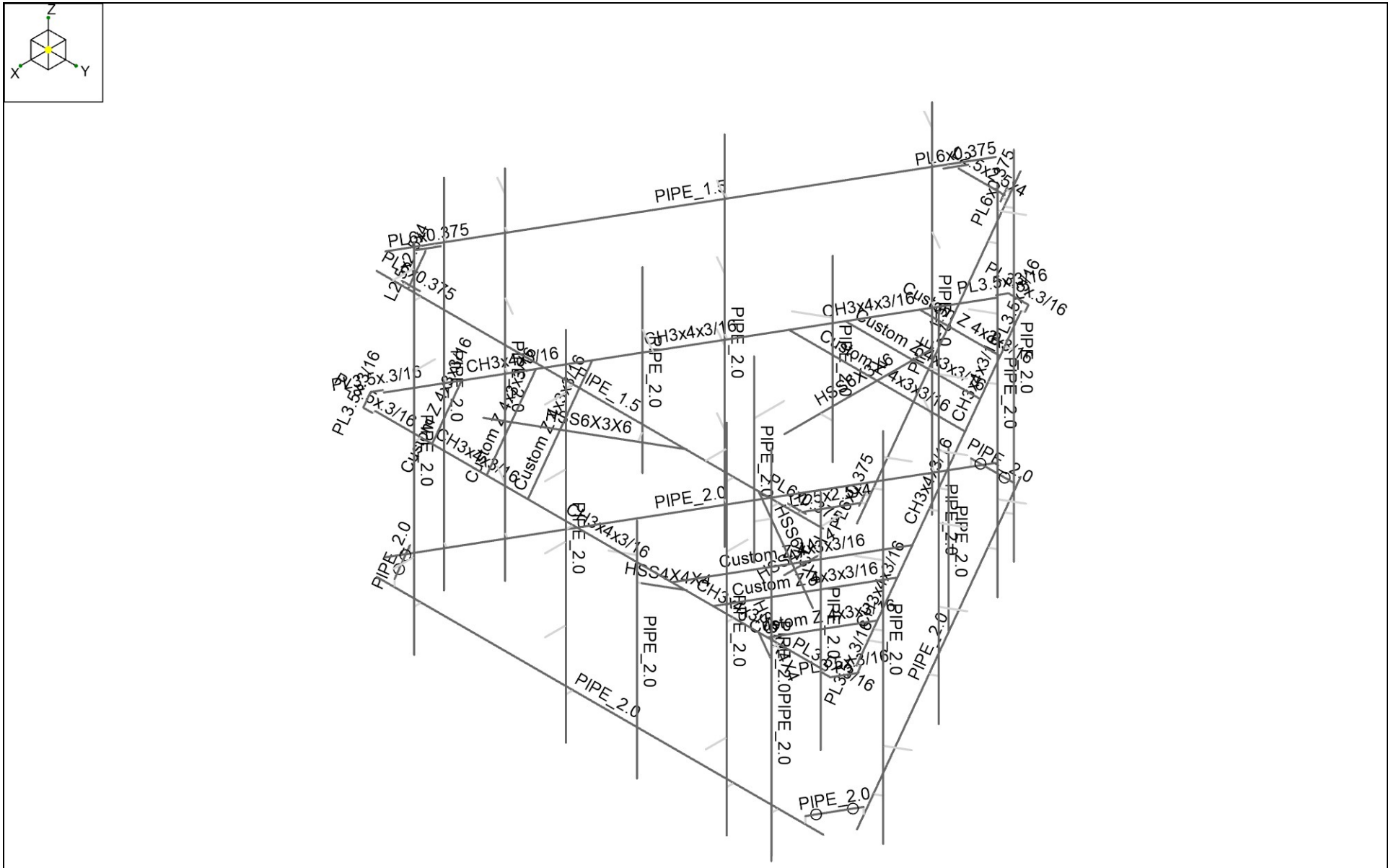
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-2
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Joint Labels	41124-13958523_C8_01-01-MA.r3d



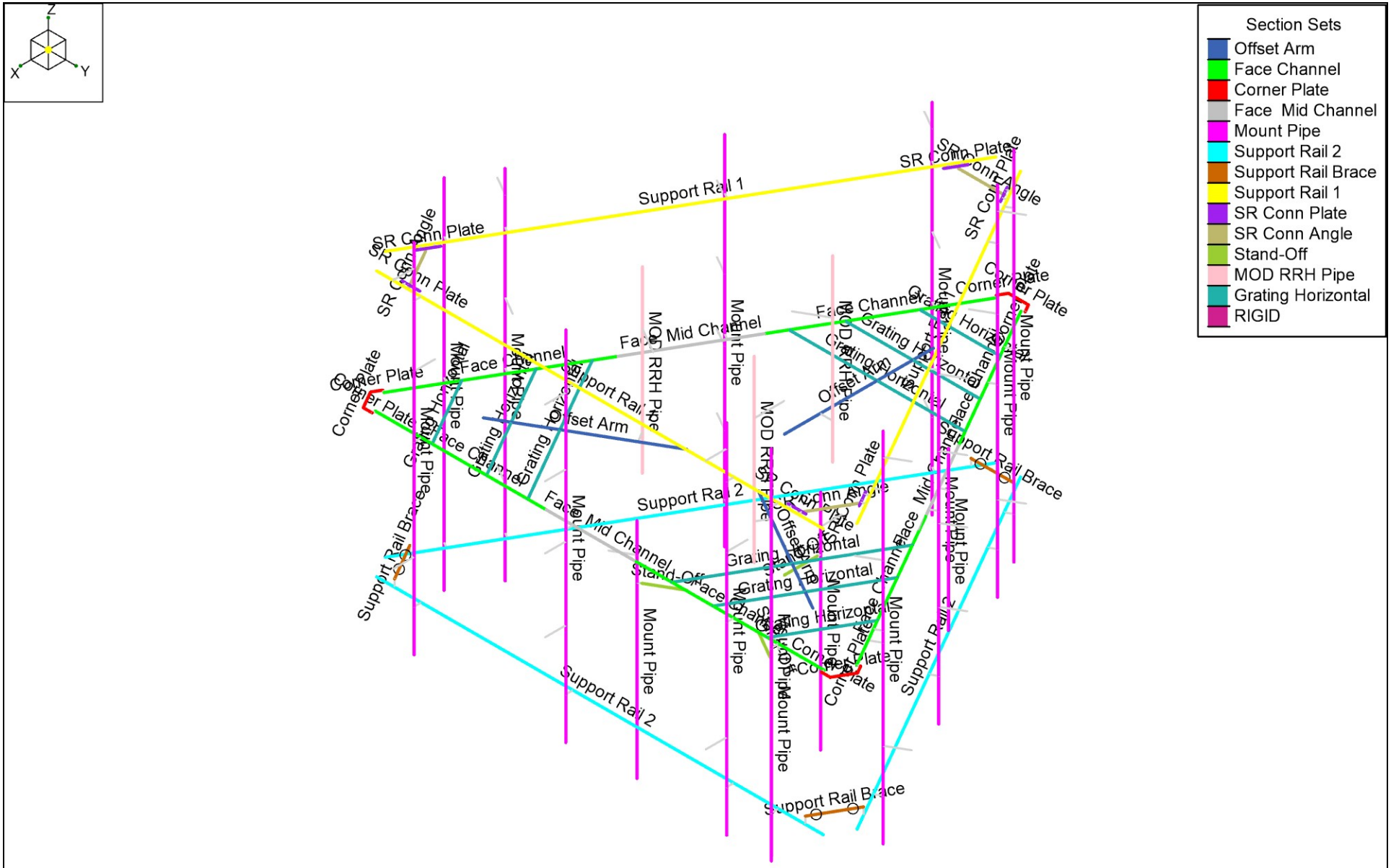
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-3
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Member Labels	41124-13958523_C8_01-01-MA.r3d



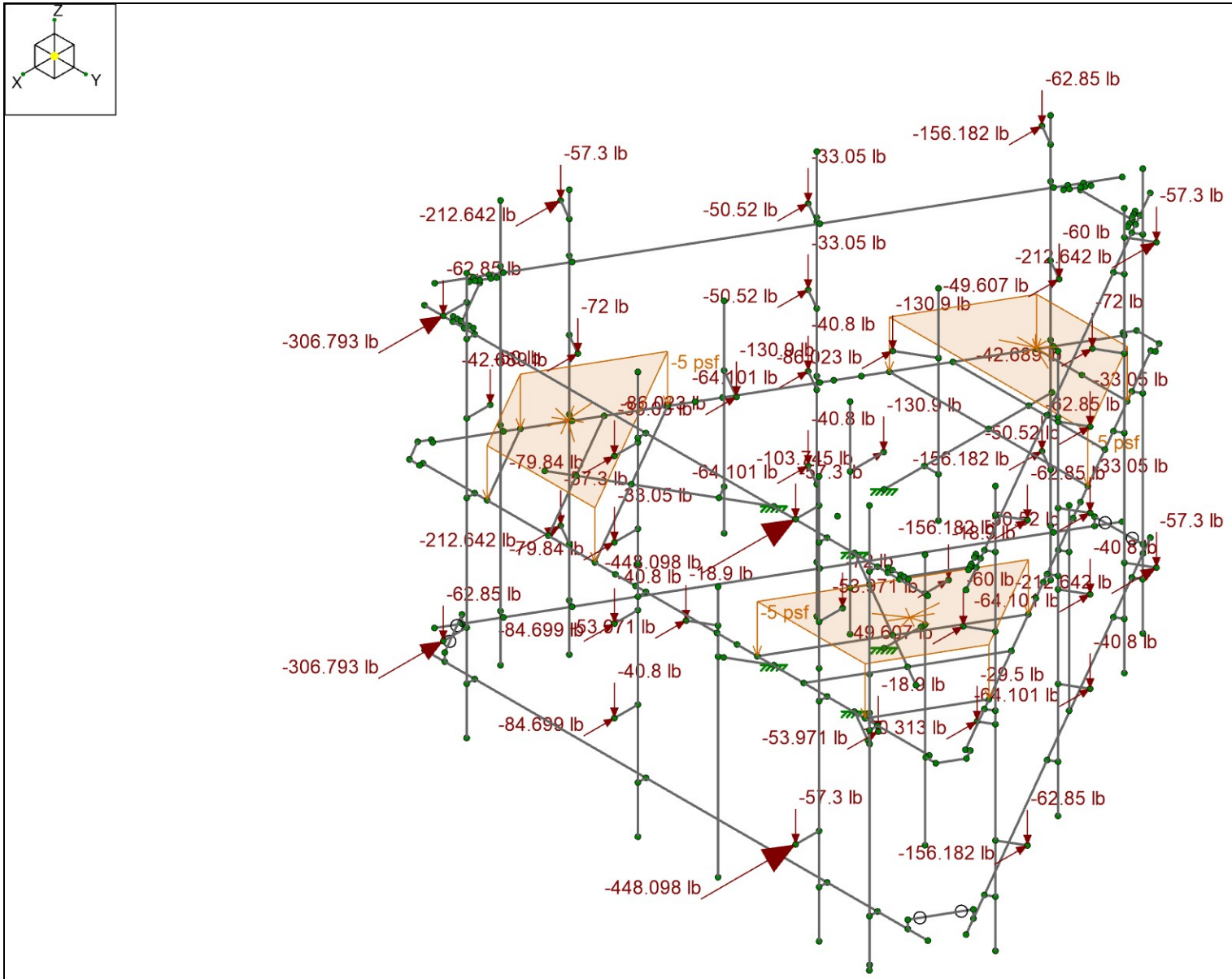
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-3.1
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Member Shapes	41124-13958523_C8_01-01-MA.r3d



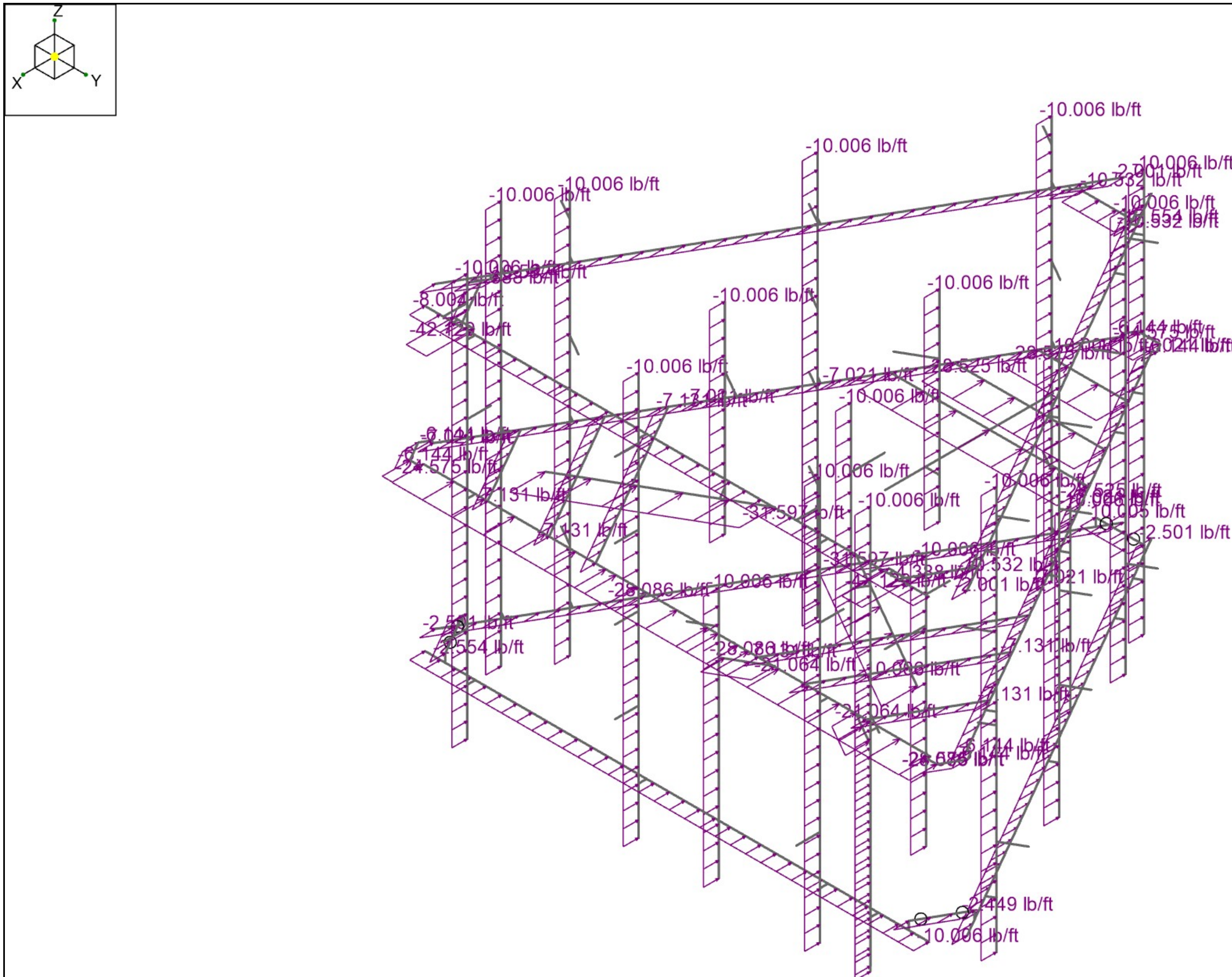
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-4
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Section Sets	41124-13958523_C8_01-01-MA.r3d



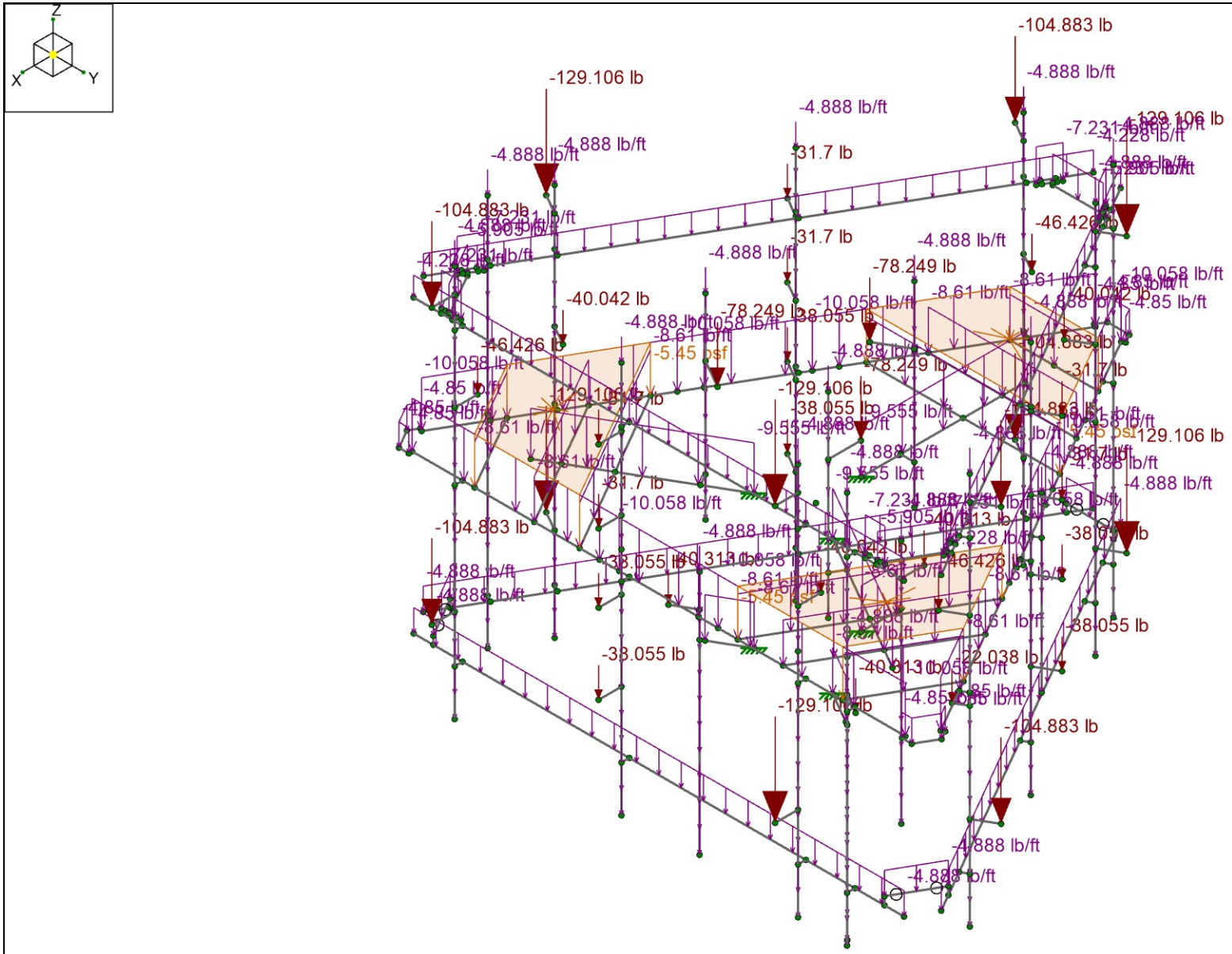
Loads: LC 1, DISPLAY (1.0D + 1.0W_0)
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-5
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Joint Loads – Dead and Normal Wind	41124-13958523_C8_01-01-MA.r3d



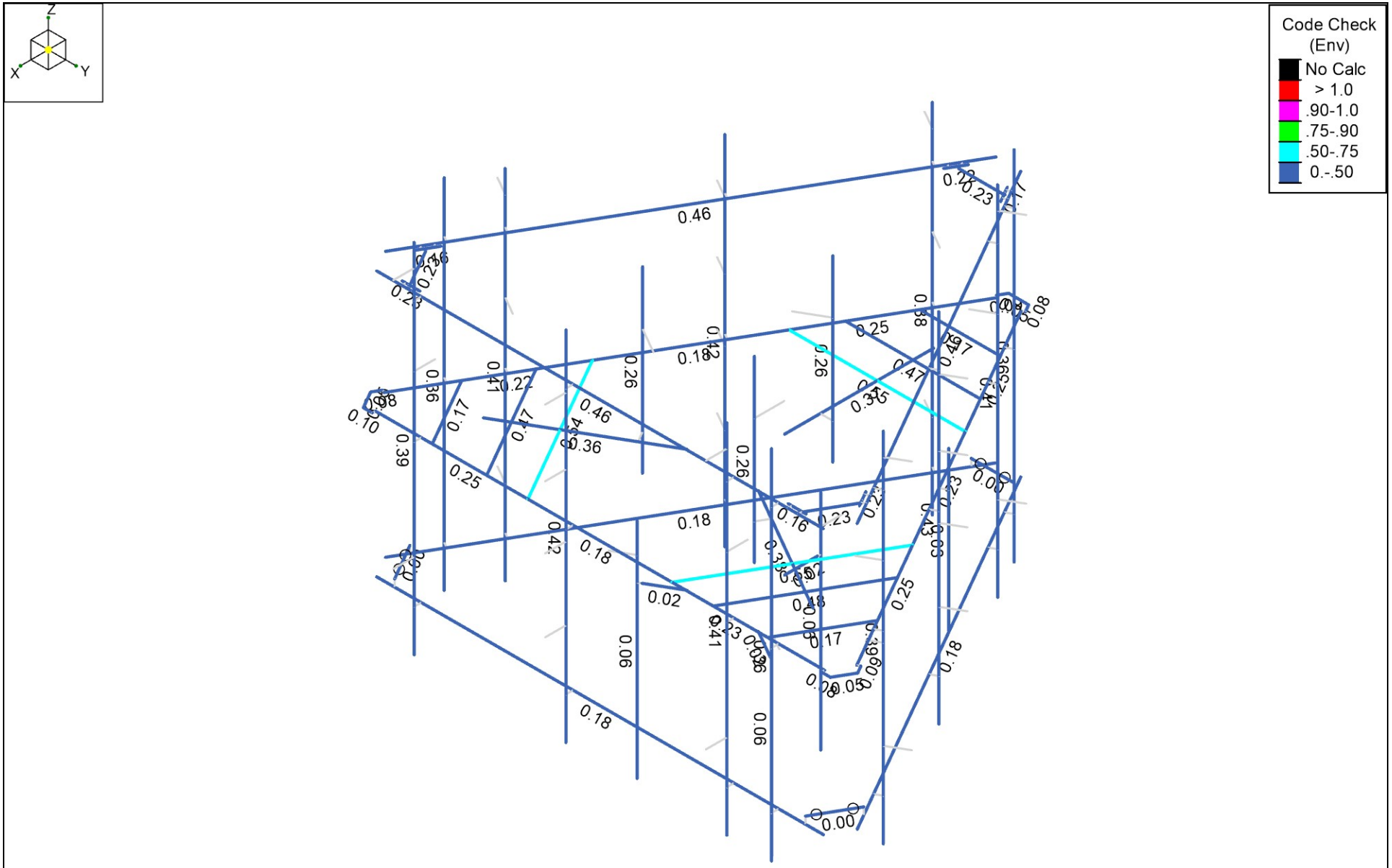
Loads: BLC 5, Structure Wind 0
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-6
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Distributed Load – Normal Wind	41124-13958523_C8_01-01-MA.r3d



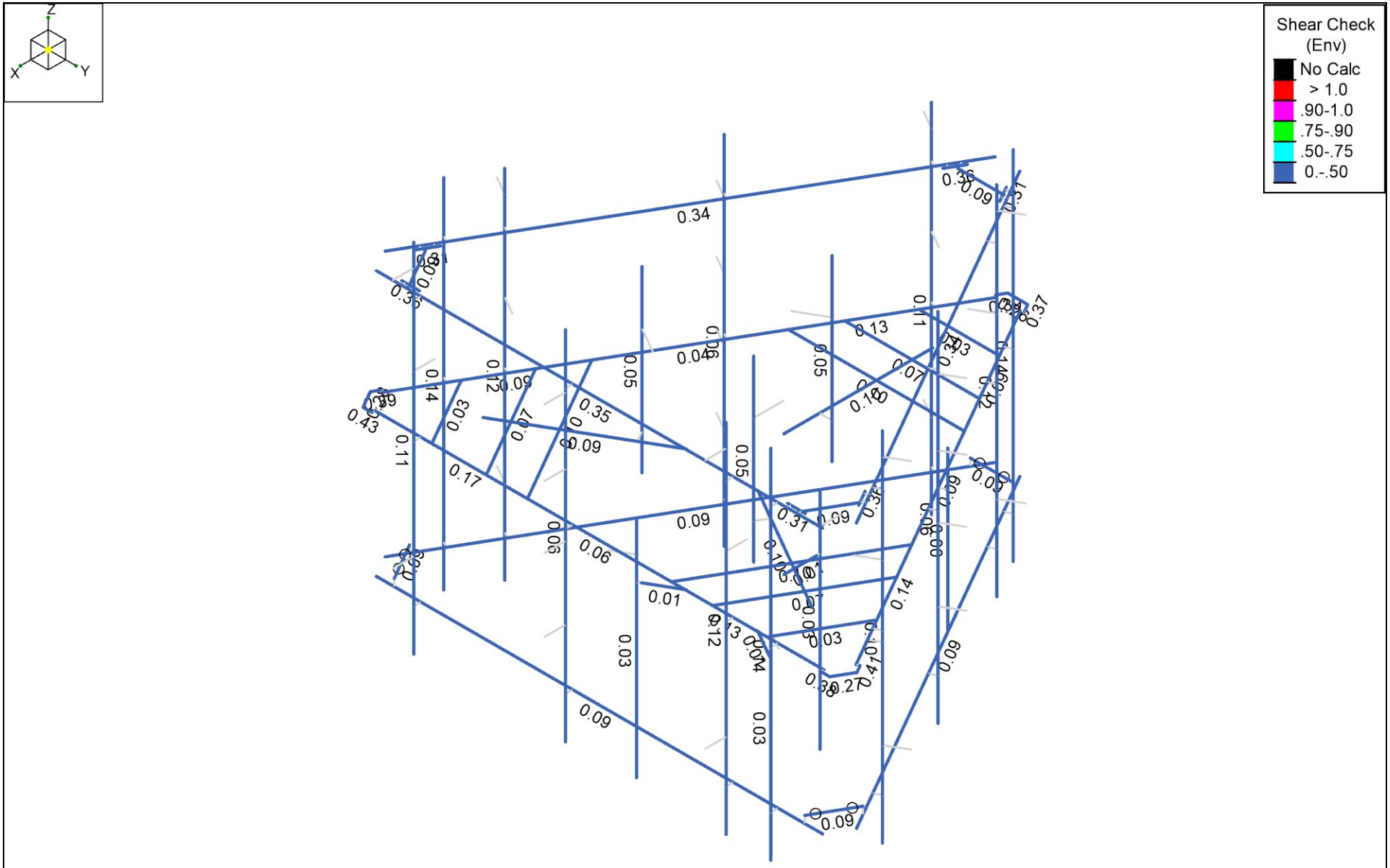
Loads: BLC 2, Ice Dead
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-7
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Ice Dead Loads	41124-13958523_C8_01-01-MA.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-8
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Envelope Member Unity Check Results – Bending	41124-13958523_C8_01-01-MA.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Telamon CLS	41124-13958523_C8_01-Short Beach Branford CT	SK-9
KV		Mar 01, 2022
41124-13958523_C8_01-01-MA	Envelope Member Check Results – Shear	41124-13958523_C8_01-01-MA.r3d

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	40		3
2	Ice Dead	RL		40	70	3
3	BLC 1 Transient Area Loads	None			39	
4	BLC 2 Transient Area Loads	None			39	
5	Structure Wind 0°	None			68	
6	Structure Wind 30°	None			112	
7	Structure Wind 45°	None			140	
8	Structure Wind 60°	None			136	
9	Structure Wind 90°	None			56	
10	Structure Wind 120°	None			136	
11	Structure Wind 135°	None			140	
12	Structure Wind 150°	None			112	
13	Structure Wind 180°	None			68	
14	Structure Wind 210°	None			112	
15	Structure Wind 225°	None			140	
16	Structure Wind 240°	None			136	
17	Structure Wind 270°	None			56	
18	Structure Wind 300°	None			136	
19	Structure Wind 315°	None			140	
20	Structure Wind 330°	None			112	
21	Structure Wind w/ Ice 0°	None			68	
22	Structure Wind w/ Ice 30°	None			112	
23	Structure Wind w/ Ice 45°	None			140	
24	Structure Wind w/ Ice 60°	None			136	
25	Structure Wind w/ Ice 90°	None			56	
26	Structure Wind w/ Ice 120°	None			136	
27	Structure Wind w/ Ice 135°	None			140	
28	Structure Wind w/ Ice 150°	None			112	
29	Structure Wind w/ Ice 180°	None			68	
30	Structure Wind w/ Ice 210°	None			112	
31	Structure Wind w/ Ice 225°	None			140	
32	Structure Wind w/ Ice 240°	None			136	
33	Structure Wind w/ Ice 270°	None			56	
34	Structure Wind w/ Ice 300°	None			136	
35	Structure Wind w/ Ice 315°	None			140	
36	Structure Wind w/ Ice 330°	None			112	
37	Antenna Wind 0°	None		38		
38	Antenna Wind 30°	None		80		
39	Antenna Wind 45°	None		80		
40	Antenna Wind 60°	None		74		
41	Antenna Wind 90°	None		40		
42	Antenna Wind 120°	None		76		
43	Antenna Wind 135°	None		80		
44	Antenna Wind 150°	None		80		
45	Antenna Wind 180°	None		38		
46	Antenna Wind 210°	None		80		
47	Antenna Wind 225°	None		80		
48	Antenna Wind 240°	None		74		
49	Antenna Wind 270°	None		40		
50	Antenna Wind 300°	None		76		
51	Antenna Wind 315°	None		80		
52	Antenna Wind 330°	None		80		
53	Antenna Wind w/ Ice 0°	None		38		
54	Antenna Wind w/ Ice 30°	None		80		
55	Antenna Wind w/ Ice 45°	None		80		

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
56	Antenna Wind w/ Ice 60°	None		74		
57	Antenna Wind w/ Ice 90°	None		40		
58	Antenna Wind w/ Ice 120°	None		76		
59	Antenna Wind w/ Ice 135°	None		80		
60	Antenna Wind w/ Ice 150°	None		80		
61	Antenna Wind w/ Ice 180°	None		38		
62	Antenna Wind w/ Ice 210°	None		80		
63	Antenna Wind w/ Ice 225°	None		80		
64	Antenna Wind w/ Ice 240°	None		74		
65	Antenna Wind w/ Ice 270°	None		40		
66	Antenna Wind w/ Ice 300°	None		76		
67	Antenna Wind w/ Ice 315°	None		80		
68	Antenna Wind w/ Ice 330°	None		80		
69	Seismic X	ELX		40	70	
70	Seismic Y	ELY		40	70	
71	Seismic Z	ELZ		40	70	
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		

Load Combinations

	Description	Solve	P-Delta	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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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	1.243	ELX	-1	ELY			
36	1.2D + 1.0Ev + 1.0Eh_30°	Yes	Y	DL	1.243	ELX	-0.866	ELY	0.5		
37	1.2D + 1.0Ev + 1.0Eh_45°	Yes	Y	DL	1.243	ELX	-0.707	ELY	0.707		
38	1.2D + 1.0Ev + 1.0Eh_60°	Yes	Y	DL	1.243	ELX	-0.5	ELY	0.866		
39	1.2D + 1.0Ev + 1.0Eh_90°	Yes	Y	DL	1.243	ELX		ELY	1		
40	1.2D + 1.0Ev + 1.0Eh_120°	Yes	Y	DL	1.243	ELX	0.5	ELY	0.866		
41	1.2D + 1.0Ev + 1.0Eh_135°	Yes	Y	DL	1.243	ELX	0.707	ELY	0.707		
42	1.2D + 1.0Ev + 1.0Eh_150°	Yes	Y	DL	1.243	ELX	0.866	ELY	0.5		
43	1.2D + 1.0Ev + 1.0Eh_180°	Yes	Y	DL	1.243	ELX	1	ELY			
44	1.2D + 1.0Ev + 1.0Eh_210°	Yes	Y	DL	1.243	ELX	0.866	ELY	-0.5		
45	1.2D + 1.0Ev + 1.0Eh_225°	Yes	Y	DL	1.243	ELX	0.707	ELY	-0.707		
46	1.2D + 1.0Ev + 1.0Eh_240°	Yes	Y	DL	1.243	ELX	0.5	ELY	-0.866		
47	1.2D + 1.0Ev + 1.0Eh_270°	Yes	Y	DL	1.243	ELX		ELY	-1		
48	1.2D + 1.0Ev + 1.0Eh_300°	Yes	Y	DL	1.243	ELX	-0.5	ELY	-0.866		
49	1.2D + 1.0Ev + 1.0Eh_315°	Yes	Y	DL	1.243	ELX	-0.707	ELY	-0.707		
50	1.2D + 1.0Ev + 1.0Eh_330°	Yes	Y	DL	1.243	ELX	-0.866	ELY	-0.5		
51	0.9D - 1.0Ev + 1.0Eh_0°	Yes	Y	DL	0.857	ELX	-1	ELY			
52	0.9D - 1.0Ev + 1.0Eh_30°	Yes	Y	DL	0.857	ELX	-0.866	ELY	0.5		
53	0.9D - 1.0Ev + 1.0Eh_45°	Yes	Y	DL	0.857	ELX	-0.707	ELY	0.707		
54	0.9D - 1.0Ev + 1.0Eh_60°	Yes	Y	DL	0.857	ELX	-0.5	ELY	0.866		
55	0.9D - 1.0Ev + 1.0Eh_90°	Yes	Y	DL	0.857	ELX		ELY	1		
56	0.9D - 1.0Ev + 1.0Eh_120°	Yes	Y	DL	0.857	ELX	0.5	ELY	0.866		
57	0.9D - 1.0Ev + 1.0Eh_135°	Yes	Y	DL	0.857	ELX	0.707	ELY	0.707		
58	0.9D - 1.0Ev + 1.0Eh_150°	Yes	Y	DL	0.857	ELX	0.866	ELY	0.5		
59	0.9D - 1.0Ev + 1.0Eh_180°	Yes	Y	DL	0.857	ELX	1	ELY			
60	0.9D - 1.0Ev + 1.0Eh_210°	Yes	Y	DL	0.857	ELX	0.866	ELY	-0.5		
61	0.9D - 1.0Ev + 1.0Eh_225°	Yes	Y	DL	0.857	ELX	0.707	ELY	-0.707		
62	0.9D - 1.0Ev + 1.0Eh_240°	Yes	Y	DL	0.857	ELX	0.5	ELY	-0.866		
63	0.9D - 1.0Ev + 1.0Eh_270°	Yes	Y	DL	0.857	ELX		ELY	-1		
64	0.9D - 1.0Ev + 1.0Eh_300°	Yes	Y	DL	0.857	ELX	-0.5	ELY	-0.866		
65	0.9D - 1.0Ev + 1.0Eh_315°	Yes	Y	DL	0.857	ELX	-0.707	ELY	-0.707		
66	0.9D - 1.0Ev + 1.0Eh_330°	Yes	Y	DL	0.857	ELX	-0.866	ELY	-0.5		
67	1.2D + 1.5Lm_1 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.065	37	0.065	OL1	1.5
68	1.2D + 1.5Lm_1 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.065	38	0.065	OL1	1.5
69	1.2D + 1.5Lm_1 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.065	39	0.065	OL1	1.5
70	1.2D + 1.5Lm_1 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.065	40	0.065	OL1	1.5
71	1.2D + 1.5Lm_1 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.065	41	0.065	OL1	1.5
72	1.2D + 1.5Lm_1 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.065	42	0.065	OL1	1.5
73	1.2D + 1.5Lm_1 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.065	43	0.065	OL1	1.5
74	1.2D + 1.5Lm_1 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.065	44	0.065	OL1	1.5
75	1.2D + 1.5Lm_1 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.065	45	-0.065	OL1	1.5
76	1.2D + 1.5Lm_1 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.065	46	-0.065	OL1	1.5
77	1.2D + 1.5Lm_1 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.065	47	-0.065	OL1	1.5
78	1.2D + 1.5Lm_1 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.065	48	-0.065	OL1	1.5
79	1.2D + 1.5Lm_1 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.065	49	-0.065	OL1	1.5
80	1.2D + 1.5Lm_1 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.065	50	-0.065	OL1	1.5
81	1.2D + 1.5Lm_1 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.065	51	-0.065	OL1	1.5
82	1.2D + 1.5Lm_1 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.065	52	-0.065	OL1	1.5
83	1.2D + 1.5Lm_2 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.065	37	0.065	OL2	1.5
84	1.2D + 1.5Lm_2 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.065	38	0.065	OL2	1.5
85	1.2D + 1.5Lm_2 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.065	39	0.065	OL2	1.5
86	1.2D + 1.5Lm_2 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.065	40	0.065	OL2	1.5
87	1.2D + 1.5Lm_2 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.065	41	0.065	OL2	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
88	1.2D + 1.5Lm_2 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.065	42	0.065	OL2	1.5
89	1.2D + 1.5Lm_2 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.065	43	0.065	OL2	1.5
90	1.2D + 1.5Lm_2 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.065	44	0.065	OL2	1.5
91	1.2D + 1.5Lm_2 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.065	45	-0.065	OL2	1.5
92	1.2D + 1.5Lm_2 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.065	46	-0.065	OL2	1.5
93	1.2D + 1.5Lm_2 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.065	47	-0.065	OL2	1.5
94	1.2D + 1.5Lm_2 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.065	48	-0.065	OL2	1.5
95	1.2D + 1.5Lm_2 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.065	49	-0.065	OL2	1.5
96	1.2D + 1.5Lm_2 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.065	50	-0.065	OL2	1.5
97	1.2D + 1.5Lm_2 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.065	51	-0.065	OL2	1.5
98	1.2D + 1.5Lm_2 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.065	52	-0.065	OL2	1.5
99	1.2D + 1.5Lm_3 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.065	37	0.065	OL3	1.5
100	1.2D + 1.5Lm_3 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.065	38	0.065	OL3	1.5
101	1.2D + 1.5Lm_3 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.065	39	0.065	OL3	1.5
102	1.2D + 1.5Lm_3 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.065	40	0.065	OL3	1.5
103	1.2D + 1.5Lm_3 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.065	41	0.065	OL3	1.5
104	1.2D + 1.5Lm_3 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.065	42	0.065	OL3	1.5
105	1.2D + 1.5Lm_3 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.065	43	0.065	OL3	1.5
106	1.2D + 1.5Lm_3 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.065	44	0.065	OL3	1.5
107	1.2D + 1.5Lm_3 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.065	45	-0.065	OL3	1.5
108	1.2D + 1.5Lm_3 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.065	46	-0.065	OL3	1.5
109	1.2D + 1.5Lm_3 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.065	47	-0.065	OL3	1.5
110	1.2D + 1.5Lm_3 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.065	48	-0.065	OL3	1.5
111	1.2D + 1.5Lm_3 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.065	49	-0.065	OL3	1.5
112	1.2D + 1.5Lm_3 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.065	50	-0.065	OL3	1.5
113	1.2D + 1.5Lm_3 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.065	51	-0.065	OL3	1.5
114	1.2D + 1.5Lm_3 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.065	52	-0.065	OL3	1.5
115	1.2D + 1.5Lm_4 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.065	37	0.065	OL4	1.5
116	1.2D + 1.5Lm_4 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.065	38	0.065	OL4	1.5
117	1.2D + 1.5Lm_4 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.065	39	0.065	OL4	1.5
118	1.2D + 1.5Lm_4 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.065	40	0.065	OL4	1.5
119	1.2D + 1.5Lm_4 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.065	41	0.065	OL4	1.5
120	1.2D + 1.5Lm_4 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.065	42	0.065	OL4	1.5
121	1.2D + 1.5Lm_4 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.065	43	0.065	OL4	1.5
122	1.2D + 1.5Lm_4 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.065	44	0.065	OL4	1.5
123	1.2D + 1.5Lm_4 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.065	45	-0.065	OL4	1.5
124	1.2D + 1.5Lm_4 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.065	46	-0.065	OL4	1.5
125	1.2D + 1.5Lm_4 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.065	47	-0.065	OL4	1.5
126	1.2D + 1.5Lm_4 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.065	48	-0.065	OL4	1.5
127	1.2D + 1.5Lm_4 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.065	49	-0.065	OL4	1.5
128	1.2D + 1.5Lm_4 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.065	50	-0.065	OL4	1.5
129	1.2D + 1.5Lm_4 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.065	51	-0.065	OL4	1.5
130	1.2D + 1.5Lm_4 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.065	52	-0.065	OL4	1.5

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	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
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	A500 Gr. C	29000	11154	0.3	0.65	0.527	46	1.5	62	1.2

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Fu [ksi]
1	A653 SS Gr33	29500	11346	0.3	0.65	0.49	33	45
2	A653 SS Gr50/1	29500	11346	0.3	0.65	0.49	50	65
3	A36	29500	11154	0.3	0.65	0.49	36	58

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Offset Arm	HSS6X3X6	Beam	None	A500 Gr. C	Typical	5.48	7.48	22.7	19.3
2	Face Channel	CH3x4x3/16	Beam	None	A36 Gr.36	Typical	1.809	1.688	4.847	0.021
3	Corner Plate	PL3.5x.3/16	Beam	None	A36 Gr.36	Typical	0.656	0.002	0.67	0.007
4	Face Mid Channel	CH3x4x3/16	Beam	None	A36 Gr.36	Typical	1.809	1.688	4.847	0.021
5	Mount Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
6	Support Rail 2	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	Support Rail Brace	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
8	Support Rail 1	PIPE_1.5	Beam	None	A53 Gr.B	Typical	0.749	0.293	0.293	0.586
9	SR Conn Plate	PL6x0.375	Beam	None	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
10	SR Conn Angle	L2.5x2.5x4	Beam	None	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
11	Stand-Off	HSS4X4X4	Beam	None	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
12	MOD RRH Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Grating Horizontal	Custom Z 4x3x3/16	Beam	None	A36	Typical	1.757	3.069	4.646	0.021

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Function
1	A1	Offset Arm	50			Lateral
2	M9	Face Mid Channel	36.25	48.373	54	Lateral
3	M10	Face Channel	63.35	48.373	54	Lateral
4	M11	Face Channel	63.25	48.373	54	Lateral
5	M16	Face Mid Channel	36.25	48.373	51	Lateral
6	M17	Face Channel	63.35	48.373	51	Lateral
7	M18	Face Channel	63.25	48.373	51	Lateral
8	M27	Corner Plate	3			Lateral
9	M28	Corner Plate	6.695			Lateral
10	M22	Face Mid Channel	36.25	48.373	54	Lateral
11	M29	Corner Plate	3			Lateral
12	M23	Face Channel	63.35	48.373	54	Lateral
13	M30	Corner Plate	3			Lateral
14	M24	Face Channel	63.25	48.373	54	Lateral
15	M31	Corner Plate	3			Lateral
16	M32	Corner Plate	3			Lateral
17	M33	Corner Plate	3			Lateral
18	M45	Corner Plate	6.695			Lateral
19	M46	Corner Plate	6.695			Lateral
20	A3	Offset Arm	50			Lateral
21	A2	Offset Arm	50			Lateral
22	M44	Support Rail 2	150	138	54	Lateral
23	M48	Support Rail 2	150	138	54	Lateral
24	M49	Support Rail 2	150	138	54	Lateral
25	M56	Support Rail Brace	14.326			Lateral
26	M57	Support Rail Brace	14.326			Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Function
27	M58	Support Rail Brace	14.326			Lateral
28	HR1	Support Rail 1	150	126.211	54	Lateral
29	HR2	SR Conn Plate	6			Lateral
30	HR3	SR Conn Plate	6			Lateral
31	HR10	Support Rail 1	150	126.211	54	Lateral
32	HR11	SR Conn Plate	6			Lateral
33	HR12	SR Conn Plate	6			Lateral
34	HR19	Support Rail 1	150	126.211	54	Lateral
35	HR20	SR Conn Plate	6			Lateral
36	HR21	SR Conn Plate	6			Lateral
37	HR28	SR Conn Angle	15.408			Lateral
38	HR29	SR Conn Angle	15.408			Lateral
39	HR30	SR Conn Angle	15.408			Lateral
40	M82	Mount Pipe	120			Lateral
41	M86	Mount Pipe	120			Lateral
42	M90	Mount Pipe	120			Lateral
43	M94	Mount Pipe	120			Lateral
44	M96	Mount Pipe	53			Lateral
45	M97	Stand-Off	11			Lateral
46	M99	Mount Pipe	75			Lateral
47	M100	Stand-Off	11			Lateral
48	M102	Mount Pipe	75			Lateral
49	M103	Stand-Off	11			Lateral
50	M105	Mount Pipe	75			Lateral
51	M107	MOD RRH Pipe	60			Lateral
52	M109	MOD RRH Pipe	60			Lateral
53	M111	MOD RRH Pipe	60			Lateral
54	M124	Mount Pipe	120			Lateral
55	M125	Mount Pipe	120			Lateral
56	M126	Mount Pipe	120			Lateral
57	M127	Mount Pipe	120			Lateral
58	M140	Mount Pipe	120			Lateral
59	M141	Mount Pipe	120			Lateral
60	M142	Mount Pipe	120			Lateral
61	M143	Mount Pipe	120			Lateral

Cold Formed Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	K y-y	K z-z	Function
1	M34	Grating Horizontal	59.139	Lbyy	0.65	0.65	Lateral
2	M35	Grating Horizontal	45.283	Lbyy	0.65	0.65	Lateral
3	M36	Grating Horizontal	27.004	Lbyy	0.65	0.65	Lateral
4	M37	Grating Horizontal	59.139	Lbyy	0.65	0.65	Lateral
5	M38	Grating Horizontal	45.283	Lbyy	0.65	0.65	Lateral
6	M39	Grating Horizontal	27.004	Lbyy	0.65	0.65	Lateral
7	M40	Grating Horizontal	59.139	Lbyy	0.65	0.65	Lateral
8	M41	Grating Horizontal	45.283	Lbyy	0.65	0.65	Lateral
9	M42	Grating Horizontal	27.004	Lbyy	0.65	0.65	Lateral

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	A1			Yes	Default	None
2	M9			Yes	Default	None
3	M10			Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
4	M11			Yes	Default	None
5	M12			Yes	** NA **	None
6	M14			Yes	** NA **	None
7	M19			Yes	** NA **	None
8	M16			Yes	Default	None
9	M20			Yes	** NA **	None
10	M17			Yes	Default	None
11	M25			Yes	** NA **	None
12	M18			Yes	Default	None
13	M26			Yes	** NA **	None
14	M27			Yes	Default	None
15	M28			Yes	Default	None
16	M22			Yes	Default	None
17	M29			Yes	Default	None
18	M23			Yes	Default	None
19	M30			Yes	Default	None
20	M24			Yes	Default	None
21	M31			Yes	Default	None
22	M32			Yes	Default	None
23	M33			Yes	Default	None
24	M34			Yes	N/A	None
25	M35			Yes	N/A	None
26	M36			Yes	N/A	None
27	M37			Yes	N/A	None
28	M38			Yes	N/A	None
29	M39			Yes	N/A	None
30	M40			Yes	N/A	None
31	M41			Yes	N/A	None
32	M42			Yes	N/A	None
33	M45			Yes	Default	None
34	M46			Yes	Default	None
35	A3			Yes	Default	None
36	A2			Yes	Default	None
37	M44			Yes	Default	None
38	M48			Yes	Default	None
39	M49			Yes	Default	None
40	M50			Yes	** NA **	None
41	M51			Yes	** NA **	None
42	M52			Yes	** NA **	None
43	M53			Yes	** NA **	None
44	M54			Yes	** NA **	None
45	M55			Yes	** NA **	None
46	M56	BenPIN	BenPIN	Yes	Default	None
47	M57	BenPIN	BenPIN	Yes	Default	None
48	M58	BenPIN	BenPIN	Yes	Default	None
49	HR1			Yes	Default	None
50	HR2			Yes	Default	None
51	HR3			Yes	Default	None
52	HR4			Yes	** NA **	None
53	HR5			Yes	** NA **	None
54	HR6			Yes	** NA **	None
55	HR7			Yes	** NA **	None
56	HR8			Yes	** NA **	None
57	HR9			Yes	** NA **	None
58	HR10			Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
59	HR11			Yes	Default	None
60	HR12			Yes	Default	None
61	HR13			Yes	** NA **	None
62	HR14			Yes	** NA **	None
63	HR15			Yes	** NA **	None
64	HR16			Yes	** NA **	None
65	HR17			Yes	** NA **	None
66	HR18			Yes	** NA **	None
67	HR19			Yes	Default	None
68	HR20			Yes	Default	None
69	HR21			Yes	Default	None
70	HR22			Yes	** NA **	None
71	HR23			Yes	** NA **	None
72	HR24			Yes	** NA **	None
73	HR25			Yes	** NA **	None
74	HR26			Yes	** NA **	None
75	HR27			Yes	** NA **	None
76	HR28			Yes	Default	None
77	HR29			Yes	Default	None
78	HR30			Yes	Default	None
79	M79			Yes	** NA **	None
80	M80			Yes	** NA **	None
81	M81			Yes	** NA **	None
82	M82			Yes	Default	None
83	M83			Yes	** NA **	None
84	M84			Yes	** NA **	None
85	M85			Yes	** NA **	None
86	M86			Yes	Default	None
87	M87			Yes	** NA **	None
88	M88			Yes	** NA **	None
89	M89			Yes	** NA **	None
90	M90			Yes	Default	None
91	M91			Yes	** NA **	None
92	M92			Yes	** NA **	None
93	M93			Yes	** NA **	None
94	M94			Yes	Default	None
95	M95			Yes	** NA **	None
96	M96			Yes	Default	None
97	M97			Yes	Default	None
98	M98			Yes	** NA **	None
99	M99			Yes	Default	None
100	M100			Yes	Default	None
101	M101			Yes	** NA **	None
102	M102			Yes	Default	None
103	M103			Yes	Default	None
104	M104			Yes	** NA **	None
105	M105			Yes	Default	None
106	M106			Yes	** NA **	None
107	M107			Yes	Default	None
108	M108			Yes	** NA **	None
109	M109			Yes	Default	None
110	M110			Yes	** NA **	None
111	M111			Yes	Default	None
112	M112			Yes	** NA **	None
113	M113			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
114	M114			Yes	** NA **	None
115	M115			Yes	** NA **	None
116	M116			Yes	** NA **	None
117	M117			Yes	** NA **	None
118	M118			Yes	** NA **	None
119	M119			Yes	** NA **	None
120	M120			Yes	** NA **	None
121	M121			Yes	** NA **	None
122	M122			Yes	** NA **	None
123	M123			Yes	** NA **	None
124	M124			Yes	Default	None
125	M125			Yes	Default	None
126	M126			Yes	Default	None
127	M127			Yes	Default	None
128	M128			Yes	** NA **	None
129	M129			Yes	** NA **	None
130	M130			Yes	** NA **	None
131	M131			Yes	** NA **	None
132	M132			Yes	** NA **	None
133	M133			Yes	** NA **	None
134	M134			Yes	** NA **	None
135	M135			Yes	** NA **	None
136	M136			Yes	** NA **	None
137	M137			Yes	** NA **	None
138	M138			Yes	** NA **	None
139	M139			Yes	** NA **	None
140	M140			Yes	Default	None
141	M141			Yes	Default	None
142	M142			Yes	Default	None
143	M143			Yes	Default	None
144	M144			Yes	** NA **	None
145	M145			Yes	** NA **	None
146	M146			Yes	** NA **	None
147	M147			Yes	** NA **	None
148	M148			Yes	** NA **	None
149	M149			Yes	** NA **	None
150	M150			Yes	** NA **	None
151	M151			Yes	** NA **	None
152	M152			Yes	** NA **	None
153	M153			Yes	** NA **	None
154	M154			Yes	** NA **	None
155	M155			Yes	** NA **	None
156	M156			Yes	** NA **	None
157	M157			Yes	** NA **	None
158	M158			Yes	** NA **	None
159	M159			Yes	** NA **	None
160	M160			Yes	** NA **	None
161	M161			Yes	** NA **	None
162	M162			Yes	** NA **	None
163	M163			Yes	** NA **	None
164	M164			Yes	** NA **	None
165	M165			Yes	** NA **	None
166	M166			Yes	** NA **	None
167	M167			Yes	** NA **	None
168	M168			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
169	M169			Yes	** NA **	None
170	M170			Yes	** NA **	None
171	M171			Yes	** NA **	None
172	M172			Yes	** NA **	None
173	M173			Yes	** NA **	None
174	M174			Yes	** NA **	None
175	M175			Yes	** NA **	None
176	M176			Yes	** NA **	None
177	M177			Yes	** NA **	None
178	M178			Yes	** NA **	None
179	M179			Yes	** NA **	None
180	M180			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	N26	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N60	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N63	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N171	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N176	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N181	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	N26	max	3111.8313	3	2234.4335	15	2924.5052	19	944.1902	7	7356.081	19	4204.3662	7
2		min	-3111.944	11	-2237.1747	7	1000.5927	59	-941.5022	15	2359.8305	59	-4208.8669	15
3	N60	max	2087.6011	3	2675.1715	14	2887.8443	30	-1877.7512	7	-549.7579	1	4095.015	18
4		min	-2084.8989	11	-2674.1786	6	987.3619	54	-6309.0276	31	-3749.0987	27	-4100.0754	10
5	N63	max	2244.1928	3	2698.661	16	2995.1028	24	6621.8239	23	-537.0946	1	4219.1514	12
6		min	-2246.7781	11	-2697.1141	8	1031.7943	64	2115.5011	15	-3847.8153	27	-4223.4109	4
7	N171	max	116.5057	3	142.2509	15	140.1381	19	65.572	15	193.5719	27	161.7303	7
8		min	-116.5056	11	-142.2509	7	43.8135	59	-65.572	7	2.9553	3	-161.7303	15
9	N176	max	135.8146	3	122.9419	15	140.1381	30	6.2247	15	31.3065	11	161.7302	18
10		min	-135.8146	11	-122.942	7	43.8135	54	-171.0976	23	-109.6974	19	-161.7302	10
11	N181	max	135.8146	3	122.9419	15	140.1381	24	171.0976	31	31.3065	11	161.7302	12
12		min	-135.8146	11	-122.9419	7	43.8135	64	-6.2247	7	-109.6974	19	-161.7302	4
13	Totals:	max	7831.76	3	7818.2163	15	9095.0208	24						
14		min	-7831.7558	11	-7818.2132	7	3194.3839	66						

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	HR1	PIPE_1.5	0.4641	15	10	0.3472	15		10	4155.4021	23593.5	1105.125	1105.125	3	H3-6
2	HR19	PIPE_1.5	0.4578	15	15	0.3431	15		15	4155.4021	23593.5	1105.125	1105.125	3	H3-6
3	HR10	PIPE_1.5	0.456	15	4	0.3404	15		4	4155.4021	23593.5	1105.125	1105.125	2.9931	H3-6
4	M124	PIPE_2.0	0.4317	57.4737	14	0.0605	57.4737		15	9836.5974	32130	1871.625	1871.625	2.4487	H1-1b
5	M90	PIPE_2.0	0.4227	57.4737	3	0.0599	57.4737		4	9836.5974	32130	1871.625	1871.625	2.6659	H1-1b
6	M140	PIPE_2.0	0.4222	57.4737	8	0.06	57.4737		10	9836.5974	32130	1871.625	1871.625	2.4224	H1-1b
7	M86	PIPE_2.0	0.4147	57.4737	3	0.1179	57.4737		11	9836.5974	32130	1871.625	1871.625	1.8213	H1-1b
8	M127	PIPE_2.0	0.414	57.4737	14	0.1208	57.4737		5	9836.5974	32130	1871.625	1871.625	1.7562	H1-1b
9	M143	PIPE_2.0	0.4131	57.4737	8	0.1178	57.4737		16	9836.5974	32130	1871.625	1871.625	1.8029	H1-1b
10	M94	PIPE_2.0	0.3863	57.4737	9	0.1057	57.4737		11	9836.5974	32130	1871.625	1871.625	3	H1-1b
11	M126	PIPE_2.0	0.3857	57.4737	4	0.1039	57.4737		6	9836.5974	32130	1871.625	1871.625	3	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
12	M142	PIPE_2.0	0.3822	57.4737	15	0.1056	57.4737		16	9836.5974	32130	1871.625	1871.625	3	H1-1b
13	A2	HSS6X3X6	0.3816	0	20	0.0997	0	z	20	200573.6331	226872	20803.5	34155	2.7245	H1-1b
14	A1	HSS6X3X6	0.3706	0	31	0.0973	0	z	23	200573.6331	226872	20803.5	34155	2.7219	H1-1b
15	A3	HSS6X3X6	0.3648	0	33	0.0946	0	z	26	200573.6331	226872	20803.5	34155	2.5758	H1-1b
16	M82	PIPE_2.0	0.3625	58.1053	4	0.1414	57.4737		11	9836.5974	32130	1871.625	1871.625	1.8099	H1-1b
17	M125	PIPE_2.0	0.3613	58.1053	15	0.1403	57.4737		6	9836.5974	32130	1871.625	1871.625	1.8301	H1-1b
18	M141	PIPE_2.0	0.3594	58.1053	10	0.1423	57.4737		16	9836.5974	32130	1871.625	1871.625	1.8427	H1-1b
19	M109	PIPE_2.0	0.2555	48	8	0.0527	48		12	23808.5402	32130	1871.625	1871.625	1.6522	H1-1b
20	M107	PIPE_2.0	0.2555	48	14	0.0527	48		18	23808.5402	32130	1871.625	1871.625	1.6522	H1-1b
21	M111	PIPE_2.0	0.2555	48	3	0.0527	48		7	23808.5402	32130	1871.625	1871.625	1.6522	H1-1b
22	M17	CH3x4x3/16	0.2537	12.0032	12	0.1354	44.345	y	6	37406.9516	58621.7088	2998.557	7471.539	1.5518	H1-1b
23	M18	CH3x4x3/16	0.2493	51.2658	15	0.0912	37.6171	y	32	37435.3912	58621.7088	2998.557	7471.539	1.7141	H1-1b
24	M23	CH3x4x3/16	0.2486	12.3366	16	0.1278	44.345	y	16	37272.9583	58621.7088	3592.5127	7471.539	1.5634	H1-1b
25	M10	CH3x4x3/16	0.2472	12.3366	11	0.1653	44.345	y	123	37272.9583	58621.7088	3592.5127	7471.539	1.5627	H1-1b
26	M16	CH3x4x3/16	0.2307	27.0921	7	0.0875	18.125	z	14	46895.0268	58621.7088	2998.557	7471.539	1.0882	H1-1b
27	HR28	L2.5x2.5x4	0.2304	15.4084	11	0.0871	0	z	18	36536.5295	38556	1113.5545	2537.3882	1.5	H2-1
28	HR29	L2.5x2.5x4	0.2302	15.4084	5	0.0865	0	z	12	36536.5295	38556	1113.5545	2537.3882	1.5	H2-1
29	M11	CH3x4x3/16	0.2294	51.2658	4	0.1345	18.975	y	77	37301.2701	58621.7088	2998.557	7471.539	1.7017	H1-1b
30	HR30	L2.5x2.5x4	0.2278	15.4084	16	0.0866	0	z	7	36536.5295	38556	1113.5545	2537.3882	1.5	H2-1
31	HR2	PL6x0.375	0.2263	2.3053	16	0.3625	2.2737	y	10	62014.2245	72900	569.5326	9112.5	1.5267	H1-1b
32	HR11	PL6x0.375	0.2253	2.3053	11	0.3557	2.2737	y	4	62014.2245	72900	569.5326	9112.5	1.5268	H1-1b
33	M24	CH3x4x3/16	0.223	51.2658	10	0.0898	37.6171	y	27	37301.2701	58621.7088	2998.557	7471.539	1.6652	H1-1b
34	HR20	PL6x0.375	0.2226	2.3053	6	0.3582	2.2737	y	15	62014.2245	72900	569.5326	9112.5	1.5269	H1-1b
35	M9	CH3x4x3/16	0.1829	27.0921	12	0.057	27.2829	y	112	46706.9045	58621.7088	2998.557	7471.539	1.1319	H1-1b
36	M44	PIPE_2.0	0.1826	15.7895	6	0.0915	30		5	7437.8808	32130	1871.625	1871.625	3	H1-1b
37	M48	PIPE_2.0	0.1817	15.7895	16	0.0895	30		16	7437.8808	32130	1871.625	1871.625	3	H1-1b
38	M22	CH3x4x3/16	0.1813	27.0921	18	0.0432	27.2829	y	21	46706.9045	58621.7088	2998.557	7471.539	1.112	H1-1b
39	M49	PIPE_2.0	0.1797	15.7895	11	0.089	30		11	7437.8808	32130	1871.625	1871.625	3	H1-1b
40	HR12	PL6x0.375	0.1702	3.6947	17	0.3058	3.7263	y	7	62014.2245	72900	569.5326	9112.5	1.5526	H1-1b
41	HR21	PL6x0.375	0.1597	3.6947	11	0.3061	3.7263	y	17	62014.2245	72900	569.5326	9112.5	1.5432	H1-1b
42	HR3	PL6x0.375	0.1582	3.6947	6	0.3074	3.7263	y	12	62014.2245	72900	569.5326	9112.5	1.5444	H1-1b
43	M27	PL3.5x.3/16	0.0973	0	9	0.4323	3	y	122	18088.1001	21262.5	83.0574	1550.3913	1.2476	H1-1b
44	M30	PL3.5x.3/16	0.0919	0	4	0.4094	3	y	4	18088.1001	21262.5	83.0574	1550.3913	1.2485	H1-1b
45	M32	PL3.5x.3/16	0.0909	0	15	0.394	3	y	15	18088.1001	21262.5	83.0574	1550.3913	1.2483	H1-1b
46	M29	PL3.5x.3/16	0.0795	0	3	0.3826	0	y	4	18088.1001	21262.5	83.0574	1550.3913	1.2543	H1-1b
47	M31	PL3.5x.3/16	0.0782	0	14	0.3692	0	y	15	18088.1001	21262.5	83.0574	1550.3913	1.2541	H1-1b
48	M33	PL3.5x.3/16	0.0776	0	8	0.3931	0	y	122	18088.1001	21262.5	83.0574	1550.3913	1.2537	H1-1b
49	M99	PIPE_2.0	0.0602	18.1579	3	0.0261	17.7632		15	20114.4271	32130	1871.625	1871.625	1	H1-1b
50	M105	PIPE_2.0	0.0602	18.1579	8	0.0261	17.7632		12	20114.4271	32130	1871.625	1871.625	1	H1-1b
51	M102	PIPE_2.0	0.0602	18.1579	14	0.0261	17.7632		10	20114.4271	32130	1871.625	1871.625	1	H1-1b
52	M28	PL3.5x.3/16	0.0482	6.6949	9	0.2768	6.6949	y	122	9503.8205	21262.5	83.0574	1550.3913	2.2602	H1-1b
53	M45	PL3.5x.3/16	0.0481	6.6949	4	0.2725	6.6949	y	4	9503.8205	21262.5	83.0574	1550.3913	2.2577	H1-1b
54	M46	PL3.5x.3/16	0.0474	6.6949	15	0.2636	6.6949	y	15	9503.8205	21262.5	83.0574	1550.3913	2.258	H1-1b
55	M96	PIPE_2.0	0.031	12.2737	4	0.0035	12.2737		4	25429.3792	32130	1871.625	1871.625	1.6898	H1-1b
56	M100	HSS4X4X4	0.0192	0	9	0.0109	0	y	18	108887.9107	109188	12663	12663	1.4357	H1-1b
57	M103	HSS4X4X4	0.0192	0	13	0.0109	0	y	4	108887.9107	109188	12663	12663	1.4357	H1-1b
58	M97	HSS4X4X4	0.0192	0	8	0.0109	0	y	15	108887.9107	109188	12663	12663	1.4283	H1-1b
59	M57	PIPE_2.0	0.0046	14.3258	14	0.0944	14.3258		13	31585.6333	32130	1871.625	1871.625	1.1364	H1-1b*
60	M56	PIPE_2.0	0.0046	14.3258	3	0.0903	14.3258		3	31585.6333	32130	1871.625	1871.625	1.1364	H1-1b*
61	M58	PIPE_2.0	0.0046	14.3258	8	0.0917	14.3258		7	31585.6333	32130	1871.625	1871.625	1.1364	H1-1b*

Envelope AISI S100-16: LRFD Member Cold Formed Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	DirLC	phi*Pn[lb]	phi*Tn[lb]	phi*Mnyy[lb-ft]	phi*Mnzz[lb-ft]	phi*Vny[lb]	phi*Vnz[lb]	Cb	Eqn
1	M40	Custom Z 4x3x3/16	0.55	29.5696	10	0.1029	29.5696	y 26	44321.0508	56926.8	2851.4453	6175.6062	12292.7522	19767.1622	1.33	H1.1-1
2	M34	Custom Z 4x3x3/16	0.5499	29.5696	4	0.1029	29.5696	y 20	44321.0508	56926.8	2851.4453	6175.6062	12292.7522	19767.1622	1.3366	H1.1-1

Envelope AISI S100-16: LRFD Member Cold Formed Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mnyy[lb-ft]	phi*Mnzz[lb-ft]	phi*Vny[lb]	phi*Vnz[lb]	Cb	Eqn
3	M37	Custom Z 4x3x3/16	0.5427	29.5696	15	0.1003	29.5696	y	31	44321.0508	56926.8	2851.4453	6175.6062	12292.7522	19767.1622	1.3301	H1.1-1
4	M41	Custom Z 4x3x3/16	0.4763	22.6414	10	0.0691	22.6414	z	10	47274.2891	56926.8	2838.4576	6093.6599	12292.7522	19767.1622	1.4796	H1.2-1
5	M35	Custom Z 4x3x3/16	0.4725	22.6414	4	0.0691	22.6414	z	4	47274.2891	56926.8	2838.4576	6093.6599	12292.7522	19767.1622	1.5074	H1.2-1
6	M38	Custom Z 4x3x3/16	0.4709	22.6414	15	0.0688	22.6414	z	15	47274.2891	56926.8	2838.4576	6093.6599	12292.7522	19767.1622	1.508	H1.2-1
7	M42	Custom Z 4x3x3/16	0.1687	0	4	0.0321	27.0038	z	4	49901.9411	56926.8	2839.8046	6093.6599	12292.7522	19767.1622	2.026	H1.2-1
8	M36	Custom Z 4x3x3/16	0.1679	0	15	0.0316	27.0038	z	15	49901.9411	56926.8	2839.8046	6093.6599	12292.7522	19767.1622	2.0115	H1.2-1
9	M39	Custom Z 4x3x3/16	0.1675	0	10	0.0315	27.0038	z	10	49901.9411	56926.8	2839.8046	6093.6599	12292.7522	19767.1622	1.9996	H1.2-1

TOWER-MOUNT CONNECTION ANALYSIS

v.1.0.0

telamon CLS

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

SITE INFORMATION	
Site ID	283422
Site Name	Short Beach Branford CT
Project ID	41124-13958523_C8_01-01-MA

ANALYSIS PARAMETERS	
TIA Revision	H

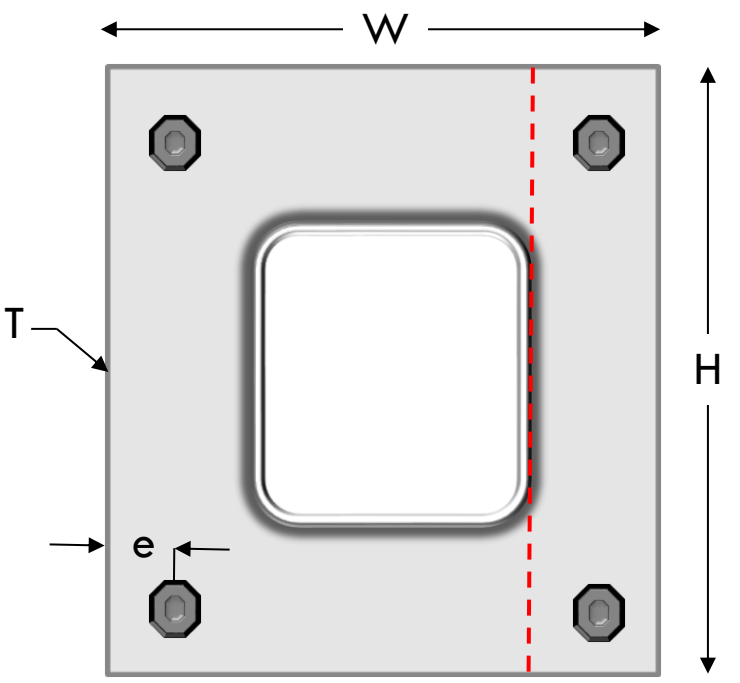
APPLIED FORCES FROM R3D		
Member Label		A2-LC24
Member End Label		I
Force-X	Fx, lbs	-706.5
Force-Y	Fy, lbs	-3.1
Force-Z	Fz, lbs	-2992.8
Moment X-X	Mx, lbs-ft	63.2
Moment Y-Y	My, lbs-ft	7579.3
Moment Z-Z	Mz, lbs-ft	-5.2

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect. HSS
Standoff Member Shape	HSS6X3X3/8
Standoff Member Grade	A500-50
Member to Plate Weld Size, in	1/4

BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.13
Nominal Bolt Diameter (ØDb), in	0.625
Bolt Grade	A325
Plate Height (H), in	11.50
Plate Width (W), in	11.50
Plate Thickness (T), in	0.50
Plate Grade	A36

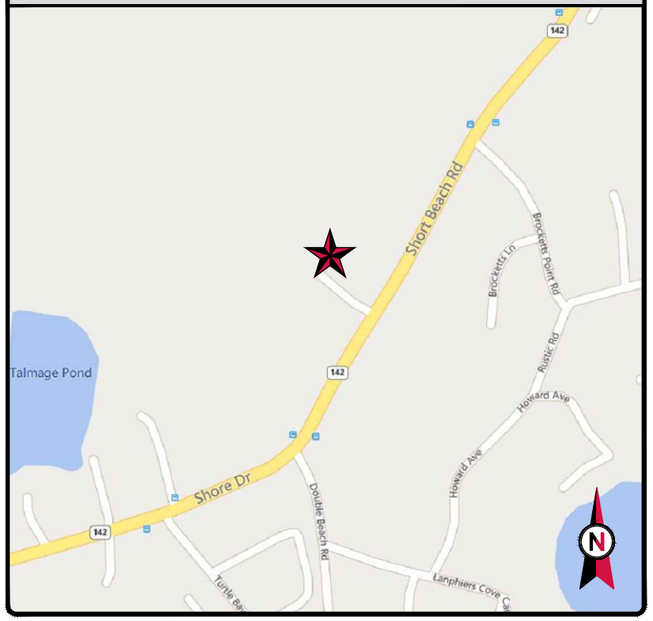
BOLT ANALYSIS		
Shear Demand (Vu), k	0.76	
Shear Capacity (ΦRnv), k	13.81	
Tension Demand (Tu), k	7.13	
Tension Capacity (ΦRnt), k	20.34	
Shear Utilization	5.5%	
Tension Utilization	35.1%	PASS
Interaction Utilization	12.6%	

PLATE ANALYSIS		
Moment Demand (Mu), k-in	44.56	
Flexural Capacity (ΦMn), k-in	23.29	
Plate Utilization	191.3%	FAIL



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	50
Standoff Member - Ultimate Strength (Fu), ksi	62
Bolt - Yield Strength (Fy), ksi	92
Bolt - Tensile Strength (Fu), ksi	120
Plate - Yield Strength (Fy), ksi	36
Plate - Ultimate Strength (Fu), ksi	58

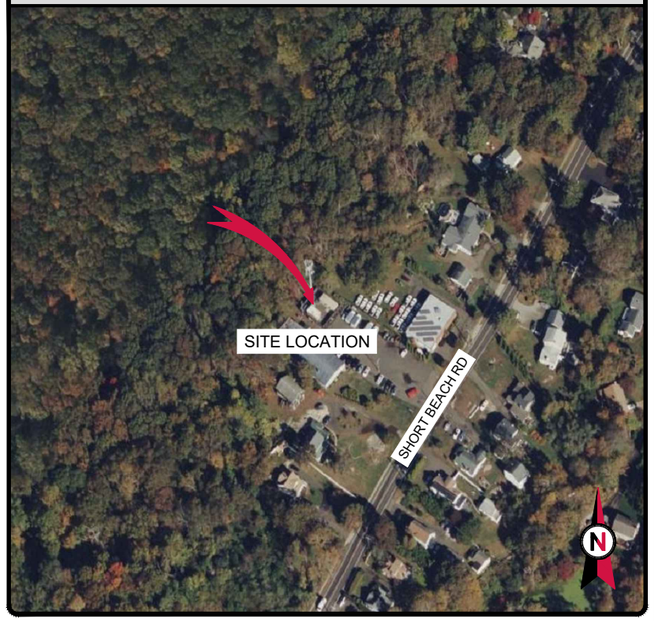
VICINITY MAP



AMERICAN TOWER®

SITE NAME:	SHORT BEACH BRANFORD CT
SITE NUMBER:	283422
ATC PROJECT NUMBER:	13958523_C9_04
SITE ADDRESS:	171 SHORT BEACH ROAD BRANFORD, CT 06405-4930

LOCATION MAP



MOUNT REINFORCEMENT DRAWINGS PREPARED FOR AT&T MOBILITY

PROJECT TEAM

TOWER OWNER:
AMERICAN TOWER CORPORATION
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: MRCTB056193
CARRIER SITE NUMBER: CT1283
CARRIER FA LOCATION: 10133913

811 LOGO

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

PROJECT LOCATION (GEO COORDINATES)

1. LATITUDE: 41.26278888°
2. LONGITUDE: −72.8344277°

PROJECT DESCRIPTION

THE MODIFICATIONS PRESENTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER THE PROJECT NUMBER 13958523_C8_01 DATED MARCH 1, 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)

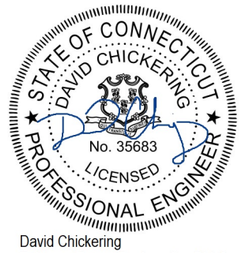
DRAWING INDEX

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:
283422
ATC SITE NAME:
SHORT BEACH BRANFORD CT
CONNECTICUT
SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE
COVER PAGE

SHEET NUMBER	REVISION
G-001	0

C:\USERS\SHEKHAR.SALUNKE\DROPBOX (TELAMON)_TTI LLP SHARE FOLDER_PROJECTS\41124\283422-13958523\02 - MOD\CAD\41124-ATC MA-283422-13958523.DWG - CLS PROJECT ID: 41124-ATC MA-283422-13958523

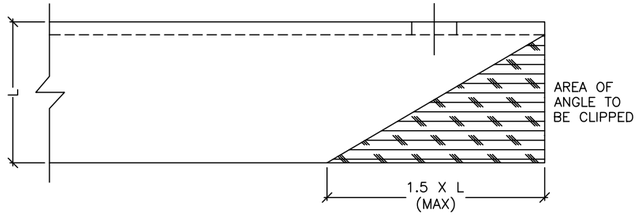
GENERAL

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

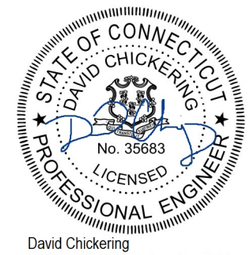
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

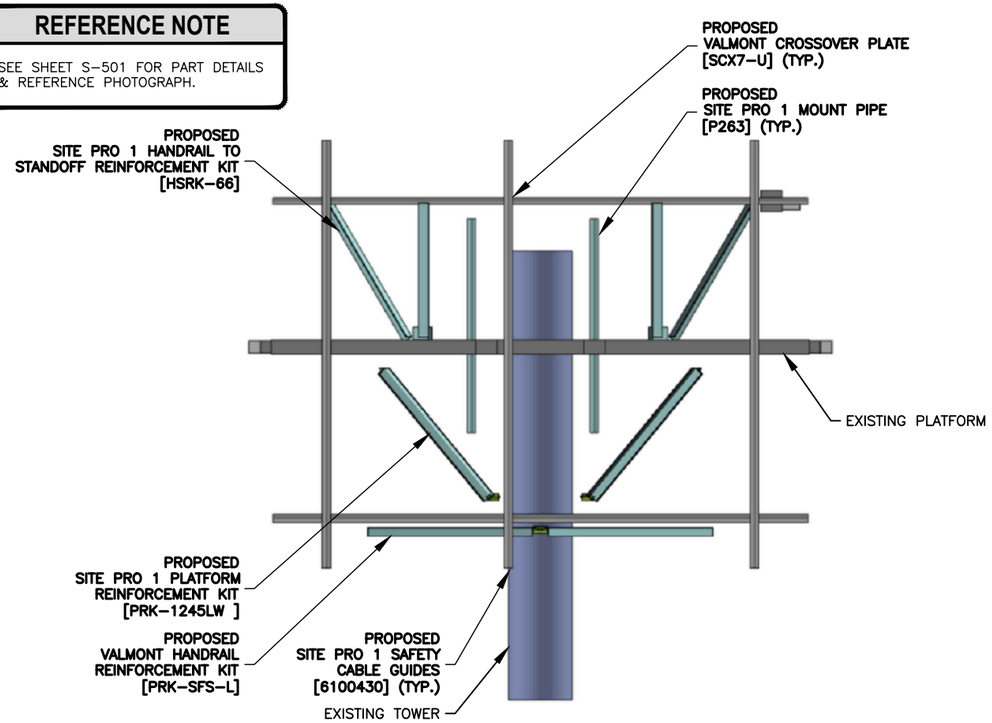
SHEET TITLE

IBC GENERAL NOTES & MODIFICATION INSPECTION

SHEET NUMBER	REVISION
G-002	0

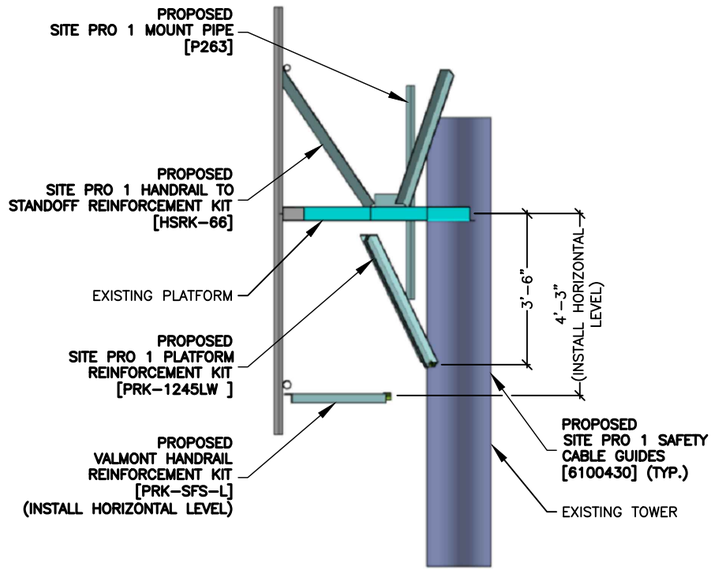
REFERENCE NOTE

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



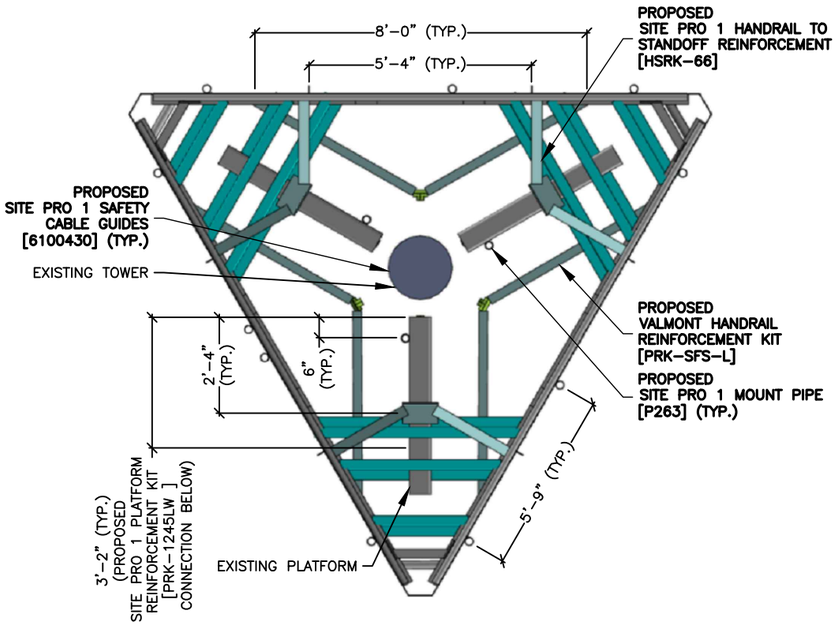
1 TYPICAL MOUNT MODIFICATION - FRONT VIEW

SCALE: N.T.S.



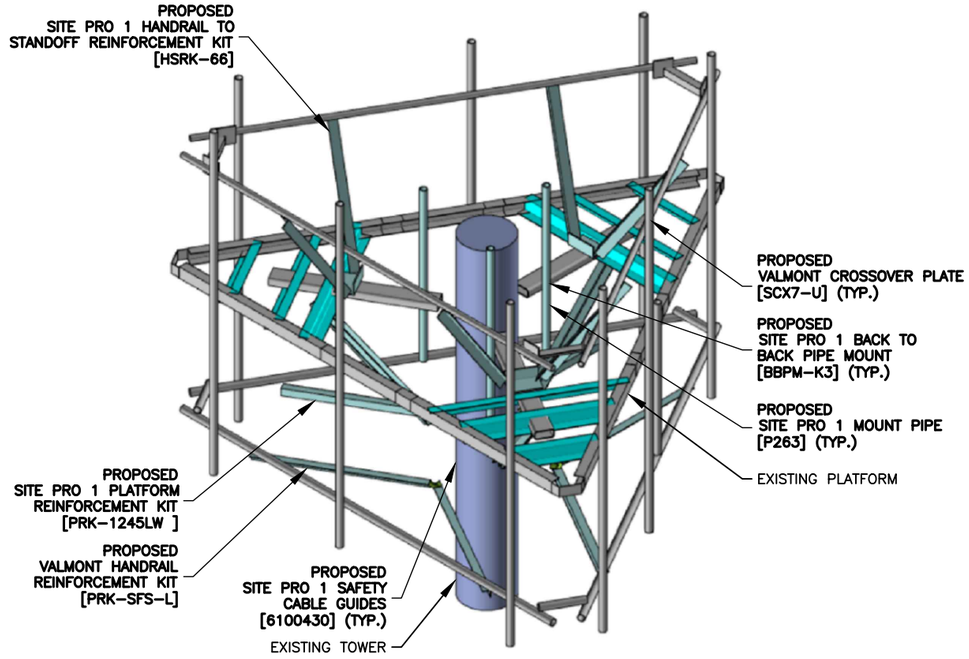
2 TYPICAL MOUNT MODIFICATION - SIDE VIEW

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

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

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_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	SITE PRO 1	PRK-1245LW	PLATFORM REINFORCEMENT KIT FOR 14' PLATFORMS ON A 12" TO 45" POLE (WIDE STANDOFF)	----	564.1	564	FIELD-CUT PROPOSED ANGLES AS REQUIRED.
3	SITE PRO 1	P263	PIPE 2-3/8" OD X 63", ASTM A53 GRADE B, SCHEDULE 40	5'-3"	20.0	60	GALVANIZED
3	SITE PRO 1	BBPM-K3	BACK TO BACK PIPE MOUNT 2-3/8" PIPES	----	38.7	116	----
1	VALMONT	PRK-SFS-L	HANDRAIL REINFORCEMENT KIT (LONG)	----	642.0	642	ANT.16818 FIELD]CUT PROPOSED ANGLES AS REQUIRED.
1	SITE PRO 1	HSRK-66	HANDRAIL TO STANDOFF REINFORCEMENT KIT (6" STANDOFF)	----	142.2	142	FIELD]CUT PROPOSED ANGLES AS REQUIRED.
6	VALMONT	SCX7-U	CROSSOVER PLATE	----	12.0	72	ANT.16985
6	SITE PRO 1	UB1418	U-BOLT 1/2"Ø, SAE J429 GR. 2, W/ (2) HHN-LKW-FW	0'-6"	0.9	5	GALVANIZED
2	SITE PRO 1	6100430	SAFETY CABLE GUIDES	----	----	----	USE ABOVE AND BELOW THE PROPOSED COLLAR.
					TOTAL WEIGHT:	1,601	

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 HSS TUBE TO PIPE,PLATFORM REINFORCEMENT KIT THAT FITS HSS TUBE SIZED 6X3,HANDRAIL TO 6"STAND-OFF REINFORCEMENT KIT AND SAFETY CABLE GUIDE, HENCE PROPOSING MODIFICATIONS PARTS WHICH ARE NOT LISTED IN THE 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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

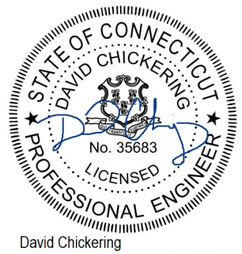
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

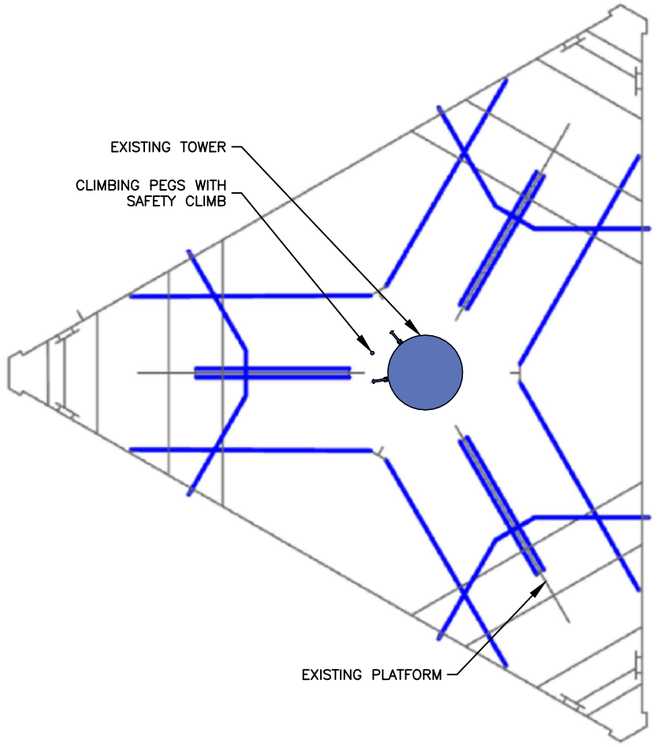
04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

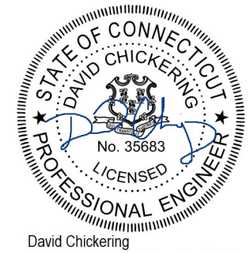
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

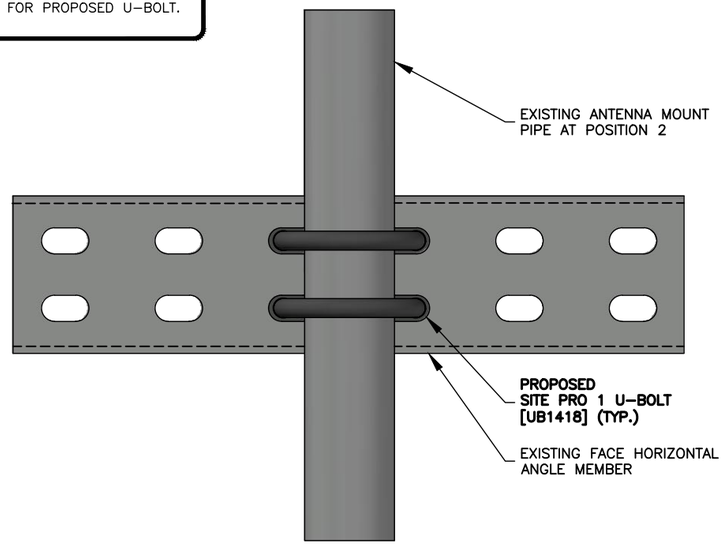
SHEET TITLE

SAFETY CLIMB LAYOUT

SHEET NUMBER	REVISION
S-103	0

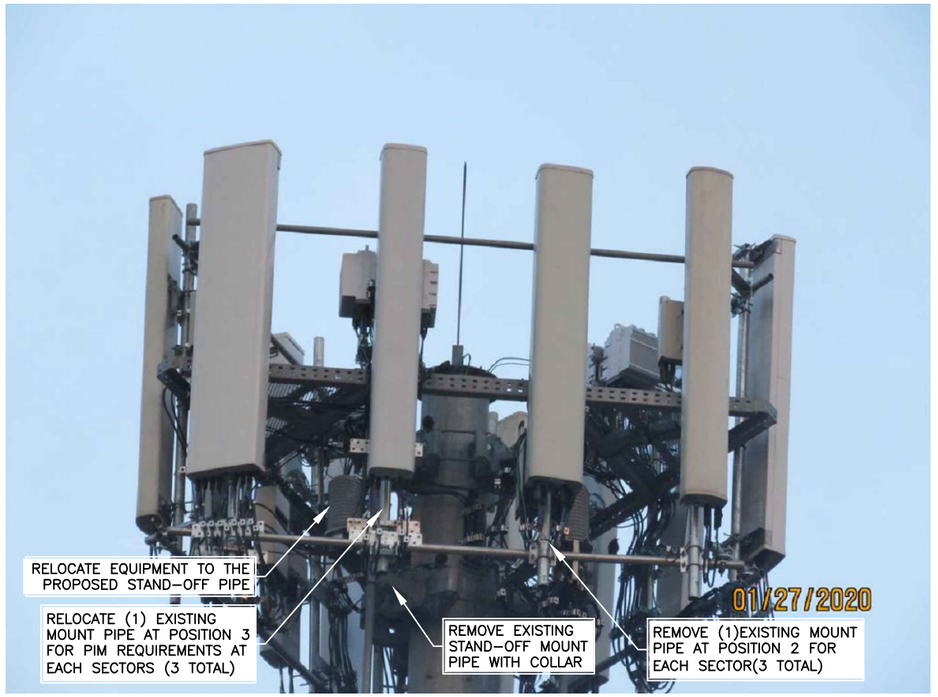
CONSTRUCTION NOTE

USE EXISTING HOLES FOR PROPOSED U-BOLT.



1 MOUNT PIPE U-BOLT CONNECTION

SCALE: N.T.S.



2 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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

MODIFICATION DETAILS

SHEET NUMBER	REVISION
S-501	0

MOD SUMMARY

Project & Site Information		
CLS Project ID		41124-13958523_C9_04-2-MOD
Client Information	Carrier Name	AT&T Mobility
	Client Name	American Tower
	Site #	283422
	Site Name	Short Beach Branford CT
	Application #	13958523_C9_04
Site Location	Address	171 Short Beach Road, Branford, CT 06405-4930
	County	New Haven
	GPS	41.26278888, -72.8344277
	Elevation AMSL (ft)	59.15

Mount & Supporting Structure		
Mount Configuration	Mount Type	Platform w/ Support Rails
Nominal AGL Elevations (ft)	Mount Elevation	121
	Default Antenna Rad	120
Supporting Structure	Structure Type	Monopole
	Height (TOS) (ft)	119

Wind & Ice Loading	
TIA Standard	TIA-222-H
Building Code	
Basic Wind Speed, V (bare)	121 mph
Basic Wind Speed, V (ice)	50 mph
Design Ice Thickness, t_i	1 in

MOD Summary			Cost Estimation
Install (1) proposed Mount Pipe at each sector (3 total).			$ 1,875
Install (1) proposed Sector Frame Stabilizer Kit w/ Monopole Collar at each sector (1 total).			$ 4,375
Install (1) proposed Under Platform Kicker Kit at each sector (1 total).			$ 3,125
Install (1) proposed Support Rail Kicker Kit at each sector (1 total).			$ 3,125
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
Post MOD Usage	96%	Cost + Mobilization	$ 14,500.00

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	:	Short Beach Branford CT
ATC Asset Number	:	283422
Engineering Number	:	13958523_C9_04
Mount Elevation	:	121 ft
Carrier	:	AT&T Mobility
Carrier Site Name	:	MRCTB056193
Carrier Site Number	:	CT1283
Site Location	:	171 Short Beach Road Branford, CT 06405-4930 41.26278888, -72.8344277
County	:	New Haven
Date	:	April 1, 2022
Max Usage	:	96%
Result	:	Pass (Pending MODs)

Prepared By:
Vignesh Hari
Telamon Tower Engineering, PLLC

Reviewed By:
David Chickering, P.E.
Telamon Tower Engineering, PLLC

Table of Contents

Introduction 2
Supporting Documents 2
Analysis 2
Conclusion 2
Antenna Loading 3
Structure Usages 3
Equipment Layout Plan View 4
Equipment Layout Front Elevation View 5
Standard Conditions 6
Calculations ..... Attached

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 January 27, 2020 Mount Mapping by B+T GRP, Project #G0153577.002.01, dated December 27, 2021
Previous Analyses	Mount Analysis by Telamon tower Engineering PLLC, Engineering #13958523_C8_01, dated March 01, 2022 Tower SA by CLS Engineering for ATC, Engineering #13668667_C3_01, dated August 13, 2021 Mount Analysis by Hudson Design Group LLC, Site #CT1283 (LTE 4C/5C), dated January 16, 2019
Loading Data	ATC Application, Project #13958523, dated February 25, 2022 AT&T RFDS ID:4775853, Ver. 2.00, dated January 14, 2022

Analysis

Codes	TIA-222-H
Basic Wind Speed	121 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	C
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 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 April 1, 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.

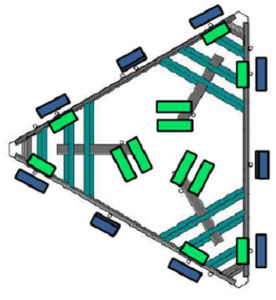
Antenna Loading

Elevation (ft)		Antennas	
Mount	Rad.	#	Name
121.0	120.0	3	CCI TPA65R-BU8A
		3	Kathrein 80010966
		3	Ericsson AIR 6449 B77D/ C-Band
		3	Ericsson AIR 6419 B77G
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		3	Ericsson RRUS 8843 B2, B66A
		1	Commscope WCS-IMFQ-AMT
		1	Raycap DC6-48-60-0-8F
		2	Raycap DC6-48-60-18-8F

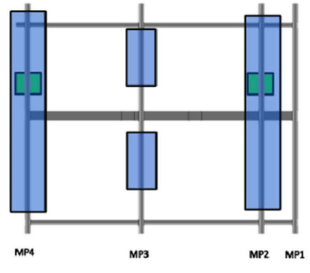
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Tower Mount Plate Connection	98%	Pass
Bracing Members	58%	Pass
Support Rail	50%	Pass
Mount Pipes	42%	Pass
Corner Plates	39%	Pass
Platform Base	28%	Pass
Reinforcement Members	14%	Pass
Stand-Off Horizontals	13%	Pass

Equipment Layout Plan View



Equipment Layout Front Elevation View



Total #	Equipment	Mount Pipe Position
3	CCI TPA65R-BU8A	P2
3	Ericsson AIR 6419 B77G	P3
3	Ericsson AIR 6449 B77D	P3
3	Kathrein 80010966	P4
1	Raycap DC6-48-60-0-8F	Stand-off Mount
2	Raycap DC6-48-60-18-8F	Stand-off Mount
3	Ericsson RRUS 8843 B2/B66A	P2
3	Ericsson RRUS 32 B30	P4
3	Ericsson RRUS 4478 B14	Stand-off
3	Ericsson RRUS 4449 B5/B12	Stand-off
1	Commscope WCS-IMFQ-AMT	P4 (Gamma)

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

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

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-902	0

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}	121 ft	K_{ss}	0.90
Nominal Rad Elevation (AGL), z_{rad}	120 ft	K_d	0.95
Elevation AMSL (ft)	59 ft	K_e	1.00
TIA Standard	H	K_z	1.32
Basic Wind Speed, V_{ult} (bare)	121 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.14 in
Exposure Category	C	G_h	1.00
Risk Category	II	q_z (bare)	46.8 psf
Seismic Response Coeff., C_s	0.11	q_z (ice)	8.0 psf

Live Loading	
At Mount Pipes, L_M	500 lb
Joint Labels Considered	1_M1
	1_M2
	1_M3
	1_M4

Member Distributed Loading				
Section Set Label	Shape Label	F_A (lb/ft) Bare	F_A (lb/ft) Ice	Ice Wt. (lb/ft)
Offset Arm	HSS6X3X6	42.13	2.18	9.56
Face Mid Channel	CH3x4x3/16	28.09	2.00	10.06
MOD PRK	L2.5x2.5x3	17.55	1.86	5.90
Face Channel	CH3x4x3/16	28.09	2.00	10.06
Corner Plate	PL3.5x.3/16	24.58	4.16	4.85
Grating Horizontal	Custom 2 4x3x3/16	28.52	2.00	8.61
Support Rail 1	PIPE_1.5	8.00	3.01	4.23
Support Rail 2	PIPE_2.0	10.01	3.35	4.89
SR Conn Plate	PL6x0.375	42.13	5.96	7.23
Support Rail Brace	PIPE_2.0	10.01	3.35	4.89
SR Conn Angle	L2.5x2.5x4	17.55	1.86	5.90
Mount Pipe	PIPE_2.0	10.01	3.35	4.89
MOD RRH Pipe	PIPE_2.0	10.01	3.35	4.89
MOD KR Bracket	L6X4X8	42.13	2.18	10.33
MOD SR Kicker	L3X3X4	21.06	1.91	6.79
MOD-PRK-5FS	L2.5x2.5x3	17.55	1.86	5.90

Appurtenances

Appurtenance Model	Status	Azimuth Offset (°, CW)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor Front	Area Factor Side	Qty. per Azimuth 0°	120°	240°	Total Qty. Override	0° Joints 1	0° Joints 2	120° Joints 1	120° Joints 2	240° Joints 1	240° Joints 2	Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_S (Bare) (ft^2) N	EPA_S (Bare) (ft^2) T	EPA_S (Ice) (ft^2) N	EPA_S (Ice) (ft^2) T	F_A (Bare) (lb) N	F_A (Bare) (lb) T	F_A (Ice) (lb) N	F_A (Ice) (lb) T
TPA65R-BU8A				☐			1	1	1	3	1_A2T	1_A2B	2_A2T	2_A2B	3_A2T	3_A2B	96	25.5	7.6	114.6	Generic	258.21	21.31	6.38	23.72	8.45	896.20	268.31	170.35	60.69
AIR 6419 B77G				☐			1	1	1	3	1_A3T	1_A3B	2_A3T	2_A3B	3_A3T	3_A3B	28.3	16.1	7.9	66.1	Flat	68.63	3.80	1.94	4.68	2.64	159.68	81.49	33.62	18.97
AIR 6449 B77D				☐			1	1	1	3	1_A3TB	1_A3BB	2_A3TB	2_A3BB	3_A3TB	3_A3BB	30.4	15.9	10.6	81.6	Flat	76.11	4.03	2.72	4.95	3.51	169.40	114.47	35.54	25.21
80010966				☐			1	1	1	3	1_A4T	1_A4B	2_A4T	2_A4B	3_A4T	3_A4B	96	20	6.9	125.7	Generic	209.77	14.59	5.04	16.57	6.79	613.59	211.96	118.99	48.78
DO6-48-60-0-8F				☐			1			1	1_M						24	11	11	18.9	Round	40.31	1.28	1.28	1.70	1.70	53.97	53.97	12.18	12.18
DO6-48-60-18-8F				☐			1	1		2	2_M		3_M				24	11	11	18.9	Round	40.31	1.28	1.28	1.70	1.70	53.97	53.97	12.18	12.18
RRUS 8843 B2/B66A				☐	0		1	1	1	3	1_R2BN		2_R2BN		3_R2BN		14.9	13.2	10.9	72	Flat	40.04	0.00	1.35	0.00	1.89	0.00	56.92	0.00	13.54
RRUS 32 B30				☐	0		1	1	1	3	1_R4BN		2_R4BN		3_R4BN		26.7	12.1	6.7	60	Flat	46.43	0.00	1.57	0.00	2.23	0.00	66.14	0.00	15.98
RRUS 4478 B14				☑		0.5	1	1	1	3	1_R7BT		2_R7BT		3_R7BT		16.5	13.4	7.7	59.9	Flat	36.13	1.06	0.92	1.56	1.23	44.53	38.74	11.21	8.81
RRUS 4449 B5/B12				☑		0.5	1	1	1	3	1_R7BT		2_R7BT		3_R7BT		17.9	13.19	9.44	71	Flat	42.12	1.41	0.98	1.97	1.30	59.22	41.37	14.14	9.34
WCS-IMFQ-AMT				☐	0				1	1					4_M		11.2	10.6	6.9	29.5	Flat	22.04	0.00	0.64	0.00	1.03	0.00	27.08	0.00	7.40

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

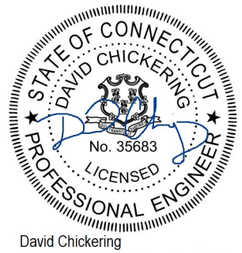
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

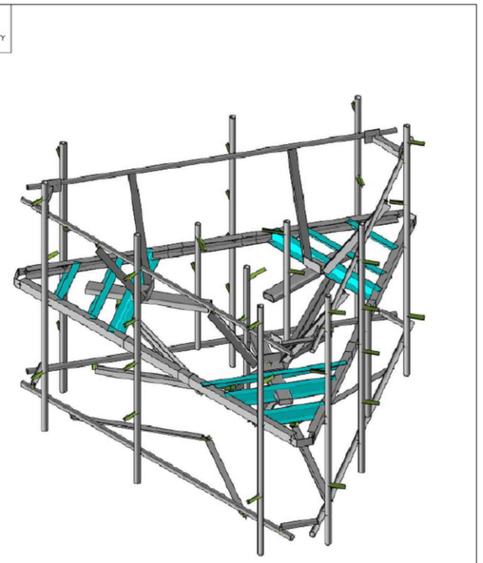
SUPPLEMENTAL

SHEET NUMBER

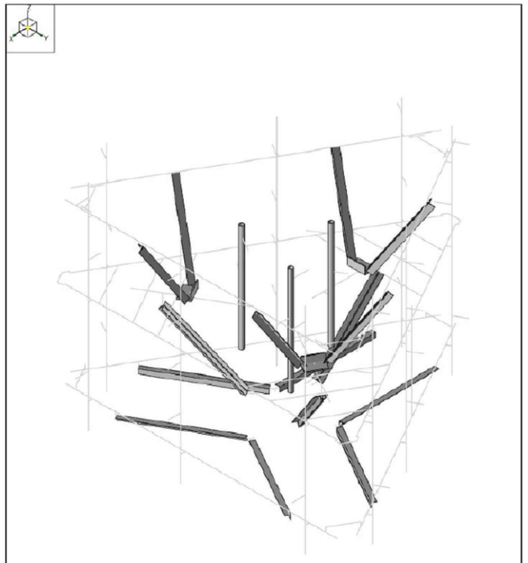
R-903

REVISION

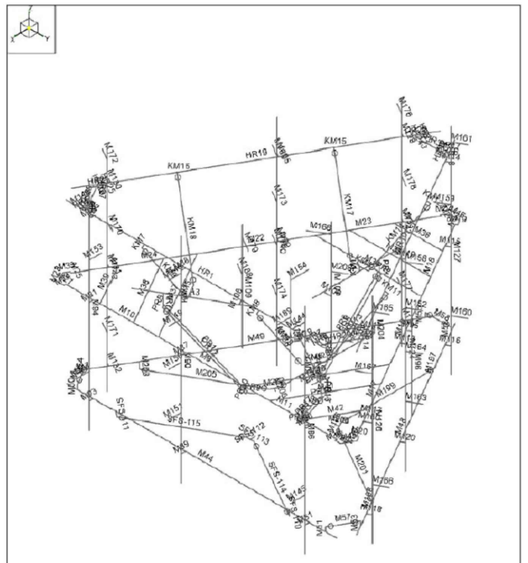
0



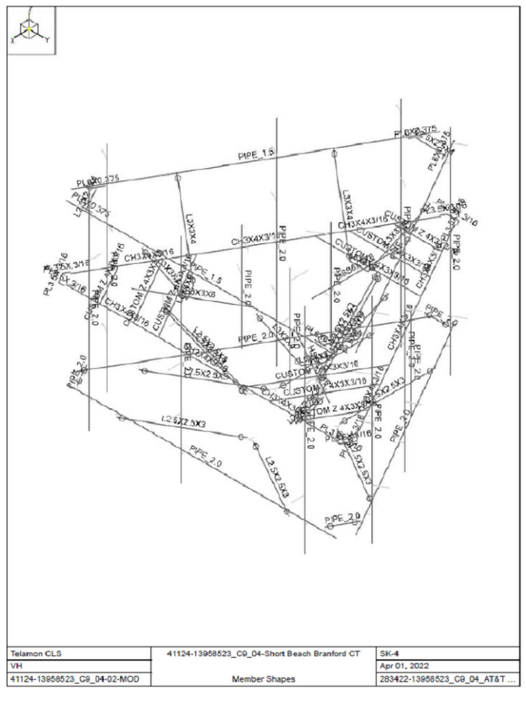
Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-1
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	3D Rendering (Final Configuration)	283422-13958523_C9_04_AT&T ...



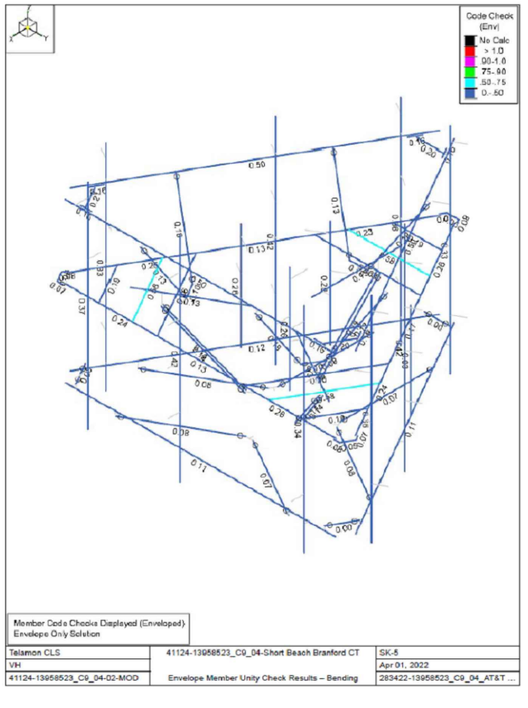
Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-2
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	3D Rendering (Final Configuration)	283422-13958523_C9_04_AT&T ...



Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-3
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Member Labels	283422-13958523_C9_04_AT&T ...

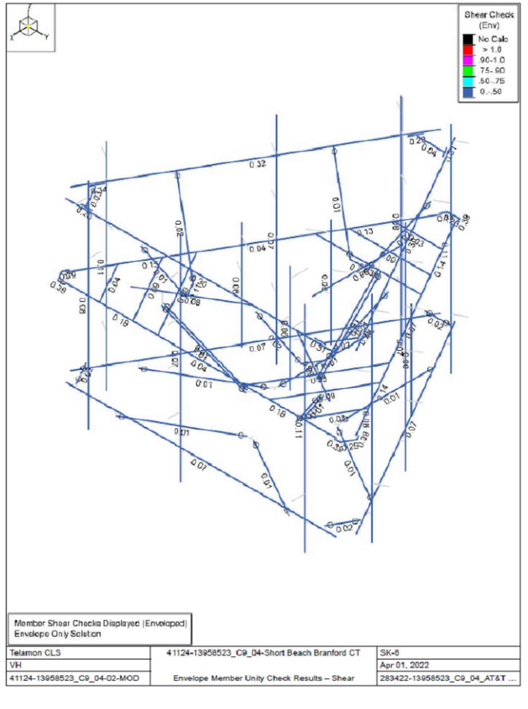


Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-4
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Member Shapes	283422-13958523_C9_04_AT&T ...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-5
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Envelope Member Unity Check Results – Bending	283422-13958523_C9_04_AT&T ...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-6
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Envelope Member Unity Check Results – Shear	283422-13958523_C9_04_AT&T ...

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-904	0

C:\USERS\SHEKHAR.SALUNKE\DROPBOX (TELAMON)_TTI LLP SHARE FOLDER_PROJECTS\41124\283422-13958523\02 - MOD\CAD\41124-ATC MA-283422-13958523.DWG - CLS PROJECT ID: 41124-ATC MA-283422-13958523

Company :Telamon CLS
Designer :VH
Job Number :41124-13958523_C9_04-02-MOD
Model Name:41124-13958523_C9_04-Short Beach Br...

4/1/2022
10:05:31 AM
Checked By : KM

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	39		3
2	Ice Dead	RL		39	82	3
3	BLC 1 Transient Area Loads	None			39	
4	BLC 2 Transient Area Loads	None			39	
5	Structure Wind 0°	None			81	
6	Structure Wind 30°	None			134	
7	Structure Wind 45°	None			164	
8	Structure Wind 60°	None			162	
9	Structure Wind 90°	None			67	
10	Structure Wind 120°	None			162	
11	Structure Wind 135°	None			164	
12	Structure Wind 150°	None			134	
13	Structure Wind 180°	None			81	
14	Structure Wind 210°	None			134	
15	Structure Wind 225°	None			164	
16	Structure Wind 240°	None			162	
17	Structure Wind 270°	None			67	
18	Structure Wind 300°	None			162	
19	Structure Wind 315°	None			164	
20	Structure Wind 330°	None			134	
21	Structure Wind w/ Ice 0°	None			81	
22	Structure Wind w/ Ice 30°	None			134	
23	Structure Wind w/ Ice 45°	None			164	
24	Structure Wind w/ Ice 60°	None			162	
25	Structure Wind w/ Ice 90°	None			67	
26	Structure Wind w/ Ice 120°	None			162	
27	Structure Wind w/ Ice 135°	None			164	
28	Structure Wind w/ Ice 150°	None			134	
29	Structure Wind w/ Ice 180°	None			81	
30	Structure Wind w/ Ice 210°	None			134	
31	Structure Wind w/ Ice 225°	None			164	
32	Structure Wind w/ Ice 240°	None			162	
33	Structure Wind w/ Ice 270°	None			67	
34	Structure Wind w/ Ice 300°	None			162	
35	Structure Wind w/ Ice 315°	None			164	
36	Structure Wind w/ Ice 330°	None			134	
37	Antenna Wind 0°	None		37		
38	Antenna Wind 30°	None		78		
39	Antenna Wind 45°	None		78		
40	Antenna Wind 60°	None		74		
41	Antenna Wind 90°	None		39		
42	Antenna Wind 120°	None		74		
43	Antenna Wind 135°	None		78		
44	Antenna Wind 150°	None		78		
45	Antenna Wind 180°	None		37		
46	Antenna Wind 210°	None		78		
47	Antenna Wind 225°	None		78		
48	Antenna Wind 240°	None		74		
49	Antenna Wind 270°	None		39		
50	Antenna Wind 300°	None		74		
51	Antenna Wind 315°	None		78		
52	Antenna Wind 330°	None		78		
53	Antenna Wind w/ Ice 0°	None		37		
54	Antenna Wind w/ Ice 30°	None		78		
55	Antenna Wind w/ Ice 45°	None		78		
56	Antenna Wind w/ Ice 60°	None		74		
57	Antenna Wind w/ Ice 90°	None		39		
58	Antenna Wind w/ Ice 120°	None		74		

Company :Telamon CLS
Designer :VH
Job Number :41124-13958523_C9_04-02-MOD
Model Name:41124-13958523_C9_04-Short Beach Br...

4/1/2022
10:05:31 AM
Checked By : KM

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
59	Antenna Wind w/ Ice 135°	None		78		
60	Antenna Wind w/ Ice 150°	None		78		
61	Antenna Wind w/ Ice 180°	None		37		
62	Antenna Wind w/ Ice 210°	None		78		
63	Antenna Wind w/ Ice 225°	None		78		
64	Antenna Wind w/ Ice 240°	None		74		
65	Antenna Wind w/ Ice 270°	None		39		
66	Antenna Wind w/ Ice 300°	None		74		
67	Antenna Wind w/ Ice 315°	None		78		
68	Antenna Wind w/ Ice 330°	None		78		
69	Seismic X	ELX		39	82	
70	Seismic Y	ELY		39	82	
71	Seismic Z	ELZ		39	82	
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		

TOWER-MOUNT CONNECTION ANALYSIS

v.1.1.0

telamonCLS

319 Chapanoke Road, Suite 118
Raleigh, NC 27603
Office: (405) 348-5460
Fax: (405) 341-4134

SITE INFORMATION	
Site ID	283422
Site Name	Short Beach Branford CT
Project ID	41124-13958523_C9_04-02-MOD

ANALYSIS PARAMETERS	
TIA Revision	H

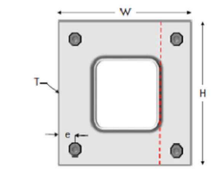
APPLIED FORCES FROM RISA		
Member Label		LC7-A1
Member End Label		1
Force-X	Fx, lbs	-647.7
Force-Y	Fy, lbs	-2020.8
Force-Z	Fz, lbs	-540.7
Moment X-X	Mx, lbs-ft	-1262.9
Moment Y-Y	My, lbs-ft	418.8
Moment Z-Z	Mz, lbs-ft	-3651.7

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect. HSS
Standoff Member Shape	HSS4X3X3/8
Standoff Member Grade	A500-50
Member to Plate Weld Size, in	1/4

BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.33
Nominal Bolt Diameter (ØDb), in	0.625
Bolt Grade	A325
Plate Height (H), in	11.50
Plate Width (W), in	11.50
Plate Thickness (T), in	0.88
Plate Grade	A36

BOLT ANALYSIS		
Shear Demand (Vu), k	0.67	
Shear Capacity (ØRnv), k	13.81	
Tension Demand (Tu), k	3.88	
Tension Capacity (ØRnt), k	20.54	
Shear Utilization	4.8%	
Tension Utilization	17.6%	PASS
Interaction Utilization	3.3%	

PLATE ANALYSIS		
Moment Demand (Mu), k-in	22.40	
Flexural Capacity (ØMn), k-in	23.29	
Plate Utilization	96.2%	PASS



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	50
Standoff Member - Ultimate Strength (Fu), ksi	62
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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

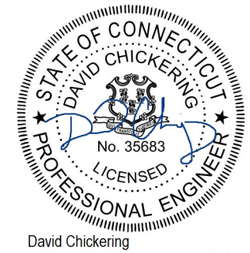
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

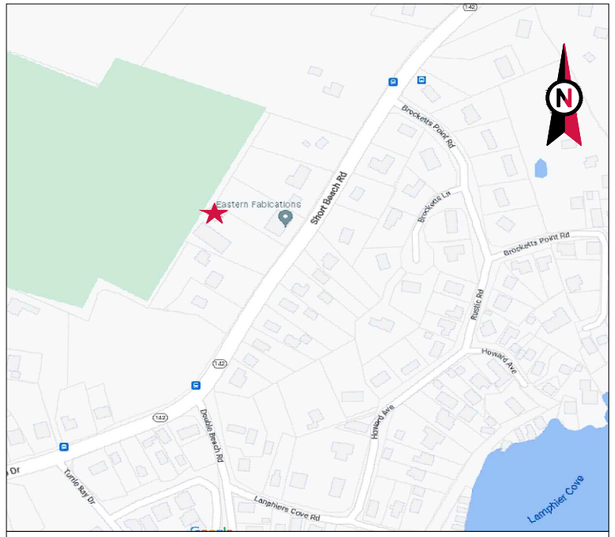
04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-905	0

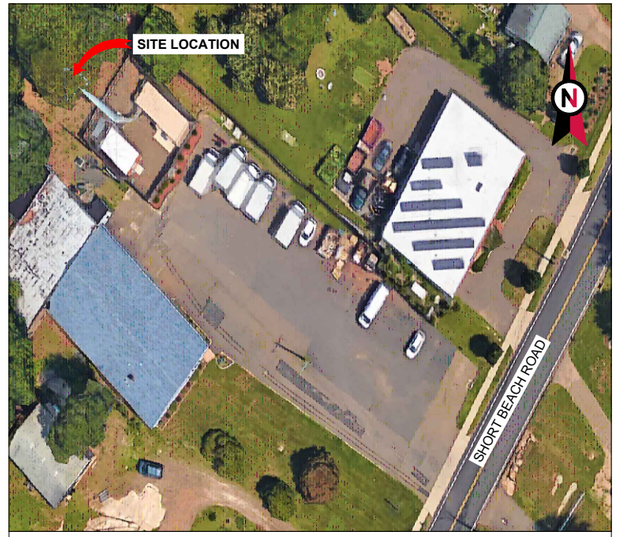


VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: SHORT BEACH BRANFORD CT
ATC SITE NUMBER: 283422
AT&T PACE NUMBERS: MRCTB053902/ MRCTB056193/ MRCTB054761/ MRCTB056237/ MRCTB056010/ MRCTB053884
AT&T SITE ID: CTL01283
AT&T FA CODE:10133913
AT&T SITE NAME: BRANFORD SHORT BEACH ROAD
SITE ADDRESS: 171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

AT&T 5G NR SOFTWARE RADIO,5G NR RADIO,LTE 6C,BBU RECONFIG, 5G NR 1SR CBAND,5G NR ACTIVATION 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:

171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930
COUNTY: NEW HAVEN

GEOGRAPHIC COORDINATES:

LATITUDE: 41.26278888
LONGITUDE: -72.8344277
GROUND ELEVATION: 59' 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:

AIR INC
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

PROJECT DESCRIPTION

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

TOWER WORK:
REMOVE (9) ANTENNA(S) AND (3) RRH(S)

INSTALL MOUNT MODIFICATION(S), (9) ANTENNA(S), (3) RRH(S), (1) 0.405" FIBER CABLE, AND (6) Y-CABLE(S)

EXISTING (3) ANTENNA(S), (9) RRH(S), (3) DC-6 SQUID(S), (3) 2" CONDUIT(S), (6) 0.774" DC, (2) .405" FIBER AND (3) 3/8" RET CONTROL CABLE(S) TO REMAIN

GROUND WORK:
INSTALL (1) 6648+XCEDE AND (4) RECTIFIER(S)

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 COURT ST. TAKE THE 3RD RIGHT ONTO WALL ST. TAKE THE 1ST LEFT ONTO ORANGE ST. TAKE THE 3RD RIGHT ONTO TRUMBULL ST. TURN SLIGHT LEFT TO TAKE THE I-91 S/I-91 N RAMP. MERGE ONTO I-91 S TOWARD I-95/NEW LONDON/N.Y.CITY. MERGE ONTO I-95 N/GOVERNOR JOHN DAVIS LODGE TPKE N VIA THE EXIT ON THE LEFT TOWARD NEW LONDON. TAKE THE US-1 EXIT, EXIT 53, TOWARD CT-142/CT-146/SHORT BEACH. MERGE ONTO BRANFORD CONN. TAKE THE 1ST RIGHT ONTO W MAIN ST/US-1 S. TURN LEFT ONTO CT-142/SHORT BEACH RD. 171 SHORT BEACH RD, BRANFORD, CT 06405-4930, 171 SHORT BEACH RD IS ON THE RIGHT.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	05/23/22	TR
G-002	GENERAL NOTES	0	05/23/22	TR
C-101	DETAILED SITE PLAN	0	05/23/22	TR
C-201	TOWER ELEVATION	0	05/23/22	TR
E-501	GROUNDING DETAILS	0	05/23/22	TR
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
	MOUNT MODIFICATION 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	TM	04/18/22
0	FINALS	TR	05/23/22

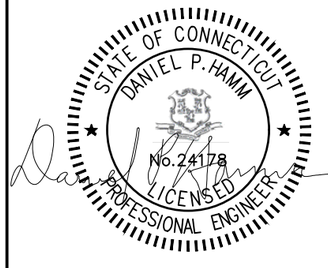
ATC SITE NUMBER:
283422

ATC SITE NAME:
SHORT BEACH BRANFORD CT

AT&T SITE NAME:
BRANFORD SHORT BEACH ROAD

SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

SEAL:



AT&T

DATE DRAWN:	04/05/22
ATC JOB NO:	13958523_G5
CUSTOMER ID:	CTL01283
CUSTOMER #:	10133913

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

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.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
   - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
   - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
   - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
   - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
   - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. 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.
4. 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 MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
   - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
   - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
   - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
   - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
   - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
   - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
   - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING ½" 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.
   - H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.
   - I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND T- MOBILE PROJECT MANAGER IN WRITING

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 AND PROVIDE PRINTOUT OF THAT TEST.
   - 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	TM	04/18/22
0	FINALS	TR	05/23/22

ATC SITE NUMBER:
283422

ATC SITE NAME:
SHORT BEACH BRANFORD CT

AT&T SITE NAME:
BRANFORD SHORT BEACH ROAD

SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

SEAL:

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

AT&T

DATE DRAWN:	04/05/22
ATC JOB NO:	13958523_G5
CUSTOMER ID:	CTL01283
CUSTOMER #:	10133913

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

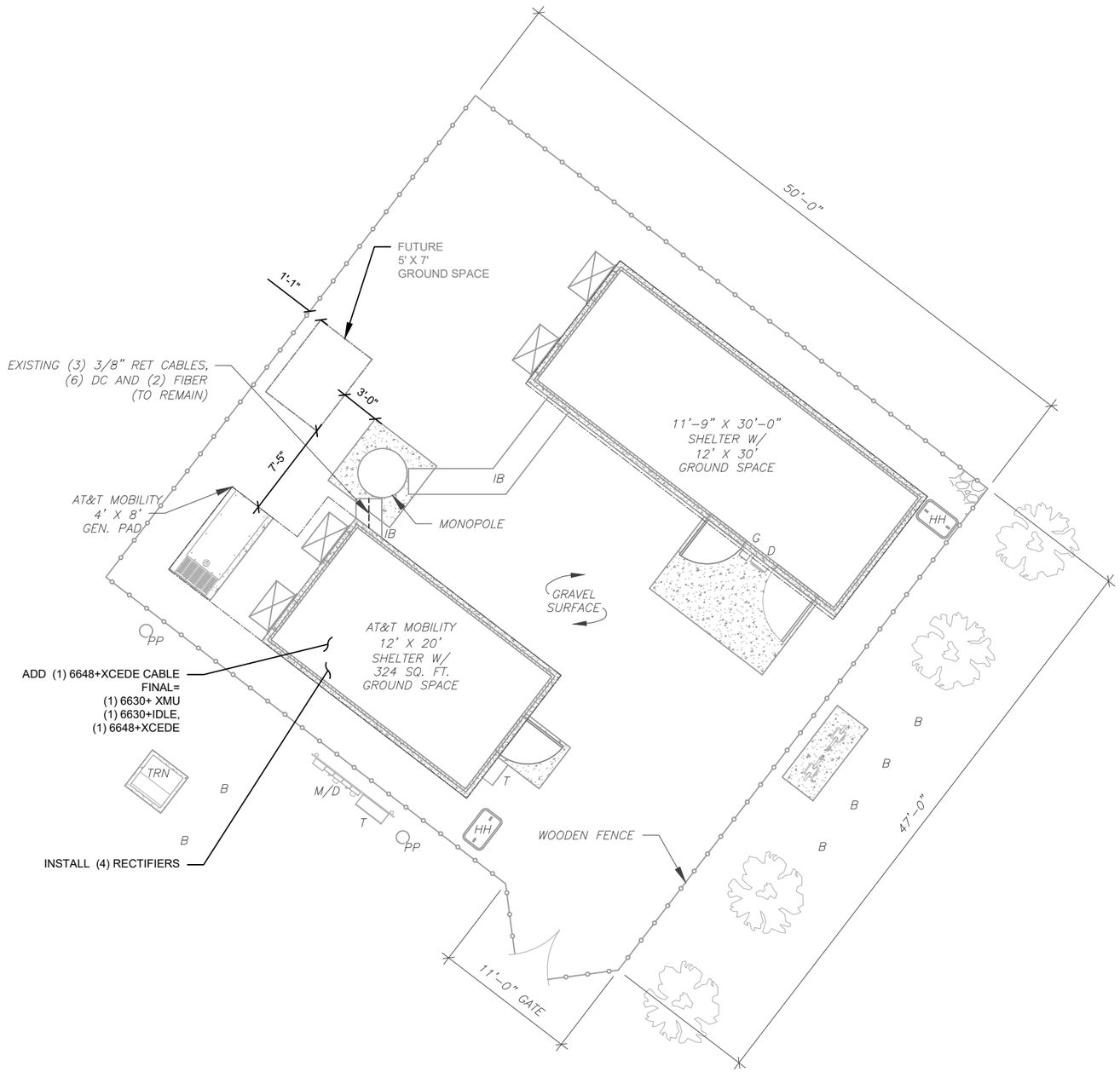
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

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. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

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

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	TM	04/18/22
0	FINALS	TR	05/23/22

ATC SITE NUMBER:
283422

ATC SITE NAME:
SHORT BEACH BRANFORD CT

AT&T SITE NAME:
BRANFORD SHORT BEACH ROAD

SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

SEAL:

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

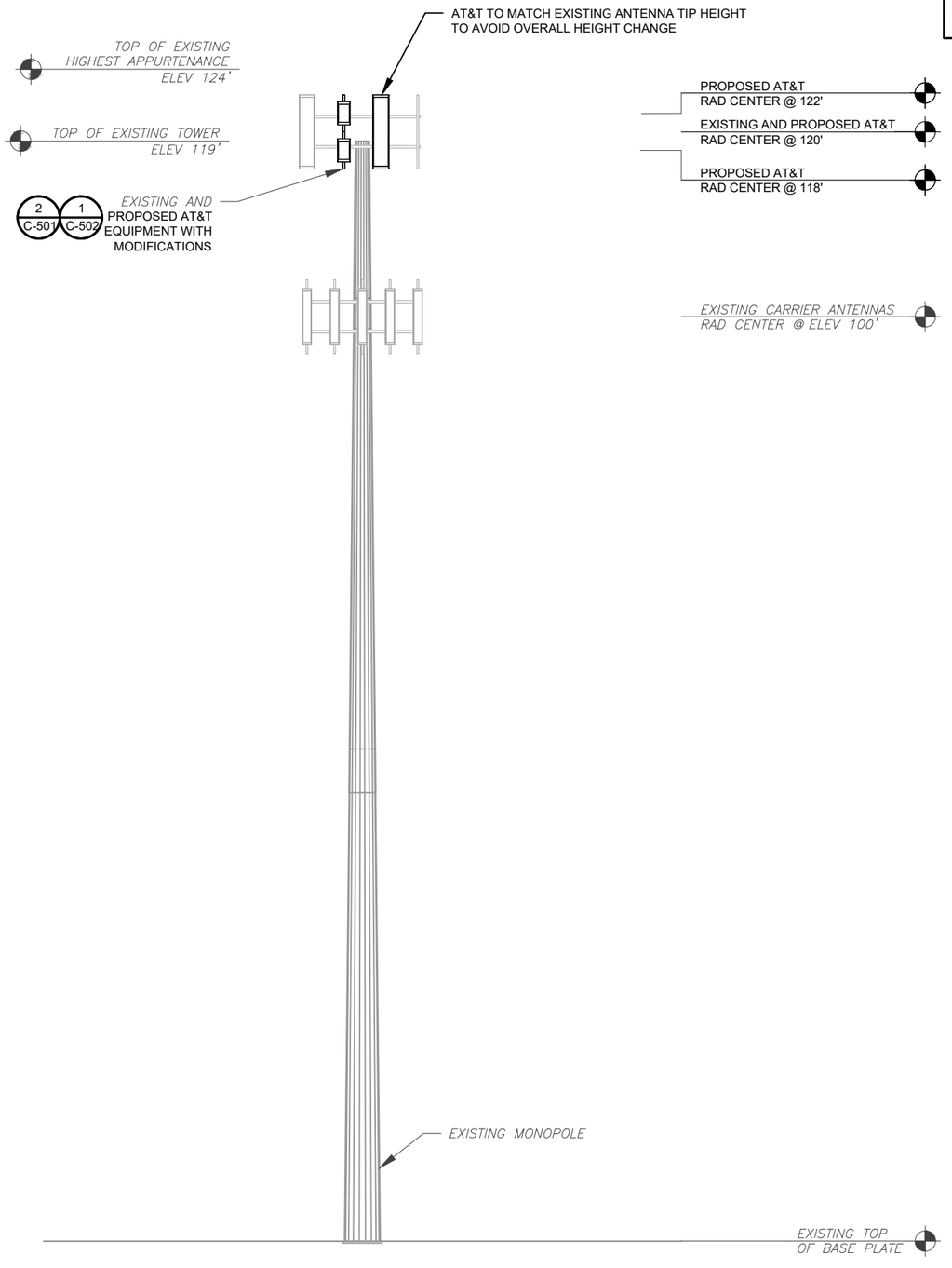
AT&T

DATE DRAWN:	04/05/22
ATC JOB NO:	13958523_G5
CUSTOMER ID:	CTL01283
CUSTOMER #:	10133913

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

PER MOUNT ANALYSIS COMPLETED BY TELAMON, DATED 04/01/2022, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, 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. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)
4. 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	TM	04/18/22
0	FINALS	TR	05/23/22

ATC SITE NUMBER:
283422

ATC SITE NAME:
SHORT BEACH BRANFORD CT

AT&T SITE NAME:
BRANFORD SHORT BEACH ROAD

SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

SEAL:

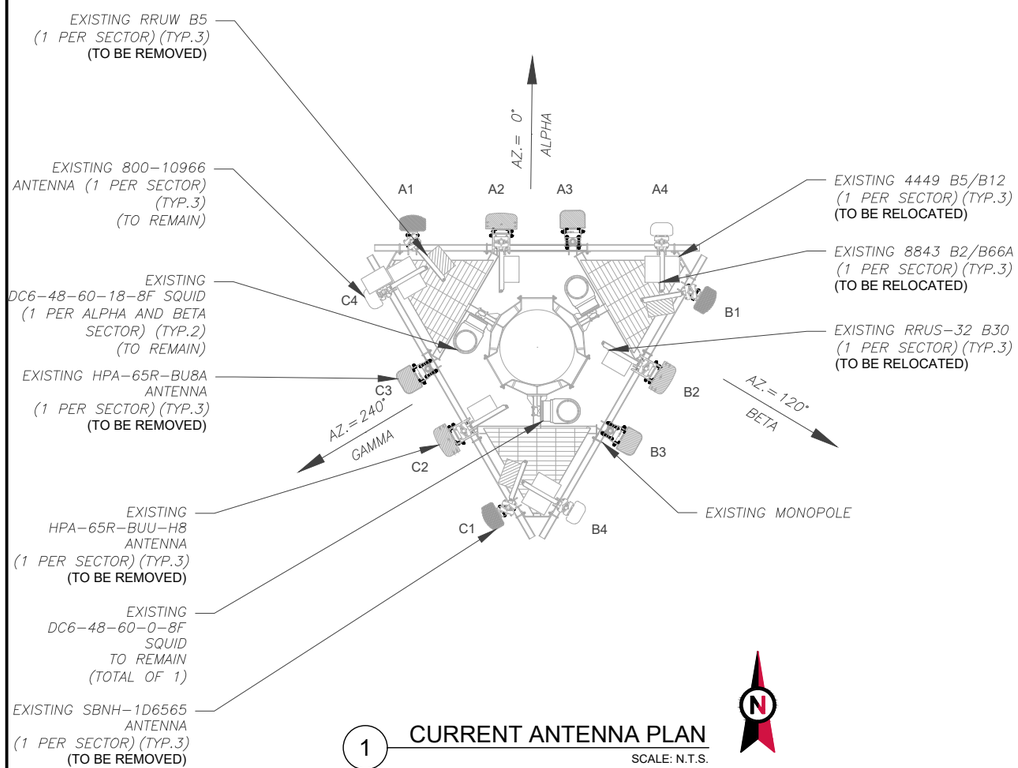
AT&T

DATE DRAWN:	04/05/22
ATC JOB NO:	13958523_G5
CUSTOMER ID:	CTL01283
CUSTOMER #:	10133913

TOWER ELEVATION

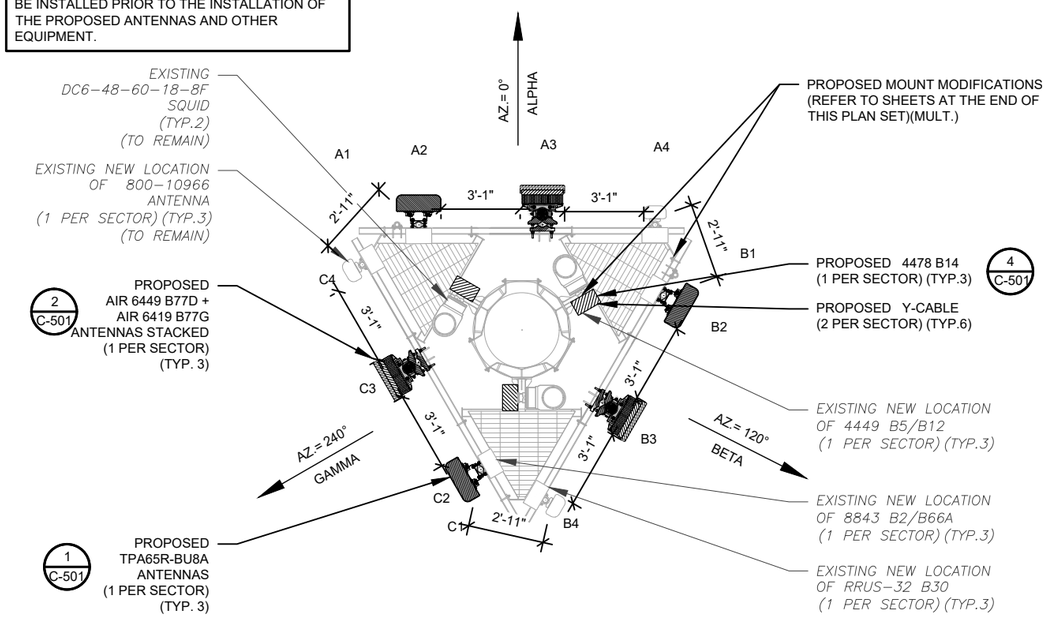
SHEET NUMBER:	REVISION:
C-201	0

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, DATED 04/01/2022, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, 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	120'	0°	A1	SBNH-1D6565C	UMTS 850	RMV	RRUW B5	RMV
			A2	HPA-65R-BUU-H8	LTE AWS	RMV	RRUS-32 B30	REL
			A3	HPA-65R-BU8AA	LTE WCS	RMV	–	–
			A4	800-10966	LTE 700, 850,1900, 5G 850	RMN	4449 B5/B12 8843 B2/B66A	REL REL
BETA	120'	120°	B1	SBNH-1D6565C	850	RMV	RRUW B5	RMV
			B2	HPA-65R-BUU-H8	WCS	RMV	RRUS-32 B30	REL
			B3	HPA-65R-BU8AA	–	RMV	–	–
			B4	800-10966	700, 1900	RMN	4449 B5/B12 8843 B2/B66A	REL REL
GAMMA	120'	240°	C1	SBNH-1D6565C	850	RMV	RRUW B5	RMV
			C2	HPA-65R-BUU-H8	WCS	RMV	RRUS-32 B30	REL
			C3	HPA-65R-BU8AA	–	RMV	–	–
			C4	800-10966	700, 1900	RMN	4449 B5/B12 8843 B2/B66A	REL REL

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)

FINAL ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	120'	0°	A1	-	-	EMPTY	-	-
	120'		A2	TPA65R-BU8DA-K	LTE 700 B14 / AWS / PCS	ADD	RRU 4478 B14 RRU 8843 B2/B66A	ADD REL
	122' 118"		A3 UP A3 DN	AIR6419 B77G AIR6449 B77D	DoD + C BAND	ADD	-	-
	120'		A4	800-10966	LTE 700 BC/ 850/ WCS	RMN	4449 B5/B12 RRUS-32 B30	REL REL
BETA	120'	120°	B1	-	-	EMPTY	-	-
	120'		B2	TPA65R-BU8DA-K	LTE 700 B14 / AWS / PCS	ADD	RRU 4478 B14 RRU 8843 B2/B66A	ADD REL
	122' 118"		B3 UP B3 DN	AIR6419 B77G AIR6449 B77D	DoD + C BAND	ADD	-	-
	120'		B4	800-10966	LTE 700 BC/ 850/ WCS	RMN	4449 B5/B12 RRUS-32 B30	REL REL
GAMMA	120'	240°	C1	-	-	EMPTY	-	-
	120'		C2	TPA65R-BU8DA-K	LTE 700 B14 / AWS / PCS	ADD	RRU 4478 B14 RRU 8843 B2/B66A	ADD REL
	122' 118"		C3 UP C3 DN	AIR6419 B77G AIR6449 B77D	DoD + C BAND	ADD	-	-
	120'		C4	800-10966	LTE 700 BC/ 850/ WCS	RMN	4449 B5/B12 RRUS-32 B30	REL REL

STATUS ABBREVIATIONS

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

CABLE LENGTHS FOR JUMPERS

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

THIS PAGE CONTAINS CONFIDENTIAL, PROPRIETARY OR TRADE SECRET INFORMATION EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW.

EXISTING FIBER DISTRIBUTION/SQUID		EXISTING CABLING SUMMARY				
MODEL NUMBER	STATUS	COAX	CONDUIT	DC	FIBER	STATUS
(1) DC6-48-60-0-8F	RMN	–	(3) 2"	(6) 0.774"	(2) 0.45"	RMN
(2) DC6-48-60-18-8F	RMN	–	–	–	(3) 0.38" RET CONTROL CABLE	RMN

FINAL FIBER DISTRIBUTION/SQUID		FINAL CABLING SUMMARY				
MODEL NUMBER	STATUS	COAX	CONDUIT	DC	FIBER	STATUS
(1) DC6-48-60-0-8F	RMN	–	(3) 2"	(6) 0.774" (3) 0.38" RET CONTROL CABLE	(2) 0.45"	RMN
(2) DC6-48-60-18-8F	RMN	-	-	-	(1) .405"	RMN

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
0	PRELIM	TM	04/18/22
0	FINALS	TR	05/23/22

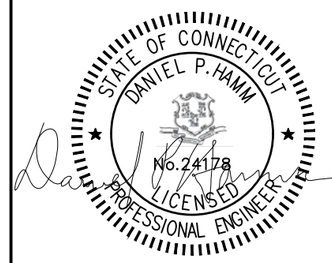
ATC SITE NUMBER:
283422

ATC SITE NAME:
SHORT BEACH BRANFORD CT

AT&T SITE NAME:
BRANFORD SHORT BEACH ROAD

SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

SEAL:

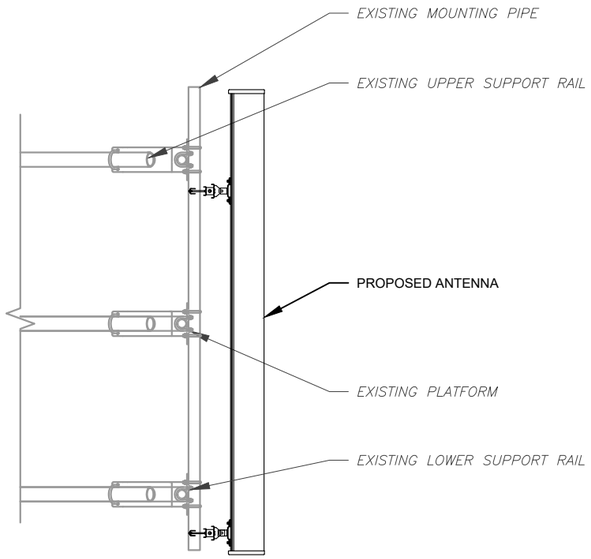


AT&T

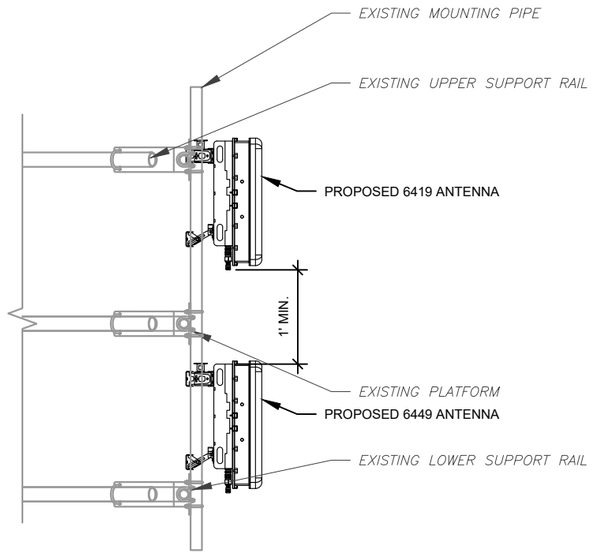
DATE DRAWN:	04/05/22
ATC JOB NO:	13958523_G5
CUSTOMER ID:	CTL01283
CUSTOMER #:	10133913

RF SCHEDULE AND ANTENNA INSTALLATION

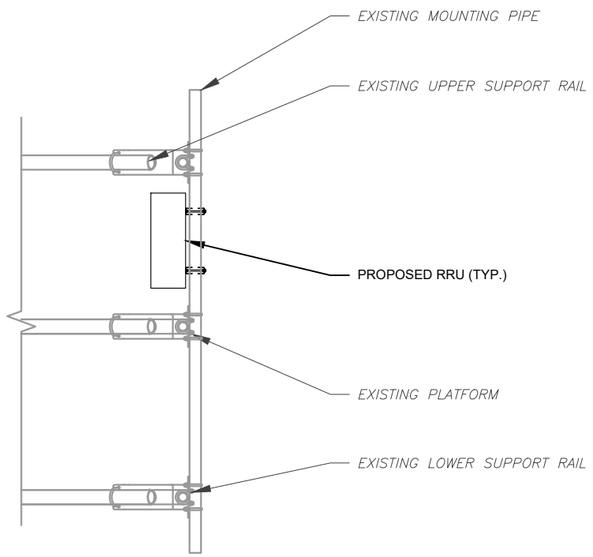
SHEET NUMBER:	REVISION:
C-401	0



1 ANTENNA DETAIL
SCALE: N.T.S.



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



3 RRU MOUNTING DETAIL
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
0	PRELIM	TM	04/18/22
0	FINALS	TR	05/23/22

ATC SITE NUMBER:
283422

ATC SITE NAME:
SHORT BEACH BRANFORD CT

AT&T SITE NAME:
BRANFORD SHORT BEACH ROAD

SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

SEAL:

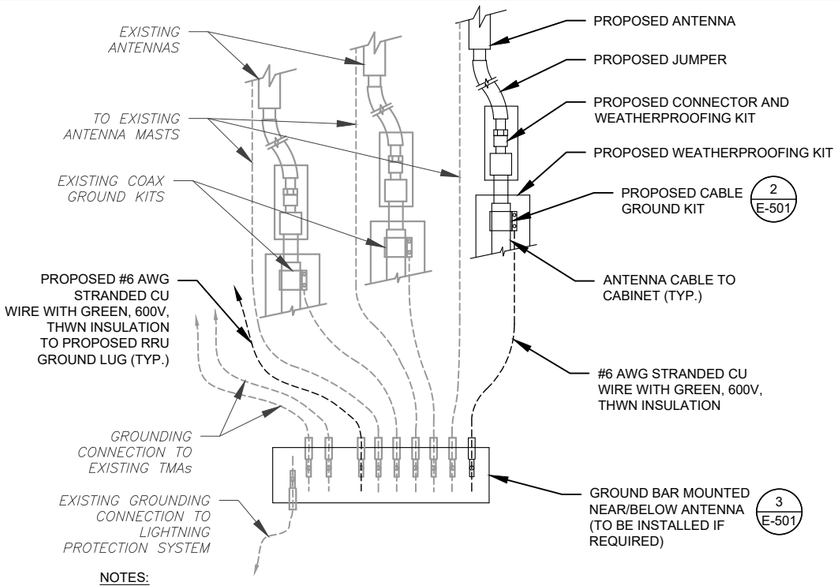
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

DATE DRAWN:	04/05/22
ATC JOB NO:	13958523_G5
CUSTOMER ID:	CTL01283
CUSTOMER #:	10133913

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

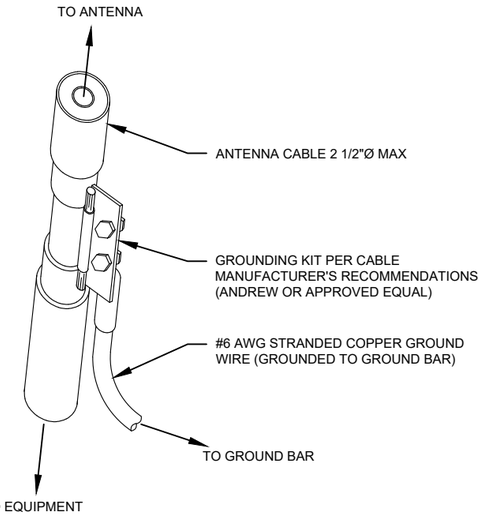


NOTES:

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.

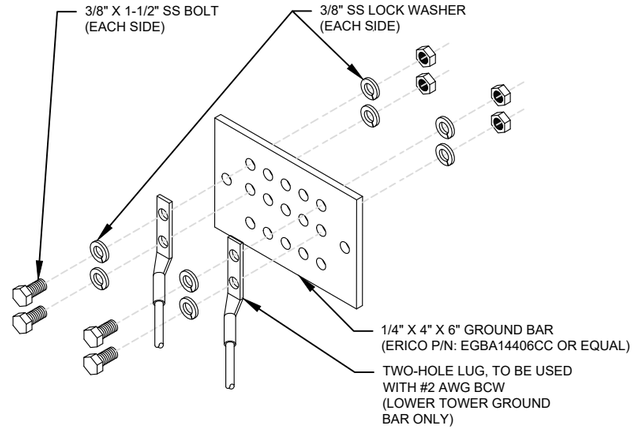


GROUND KIT NOTES:

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.

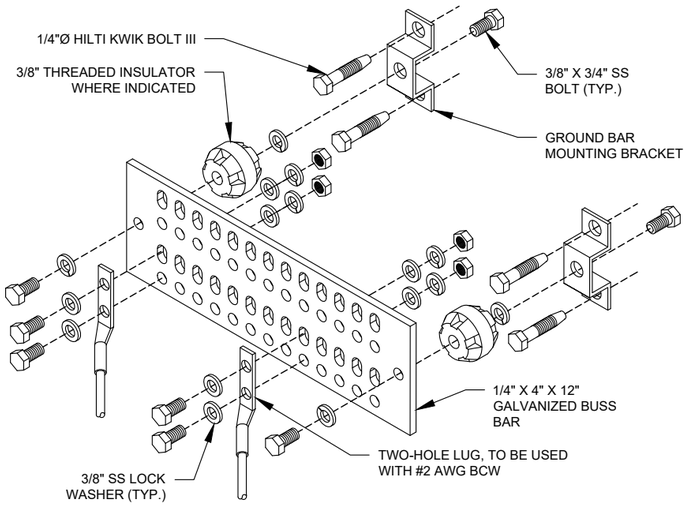


GROUND BAR NOTES:

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. CONTRACTOR TO ENSURE AT&T UL467 COMPLIANCE WHEN ASSEMBLING KITS

3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

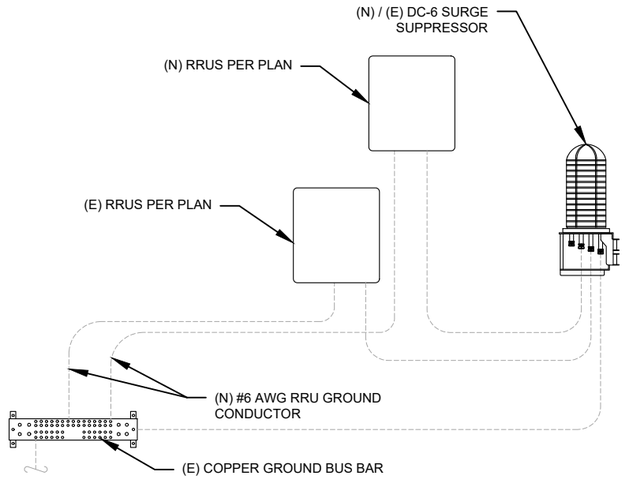


GROUND BAR NOTES

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.
3. CONTRACTOR TO ENSURE AT&T UL467 COMPLIANCE WHEN ASSEMBLING KITS

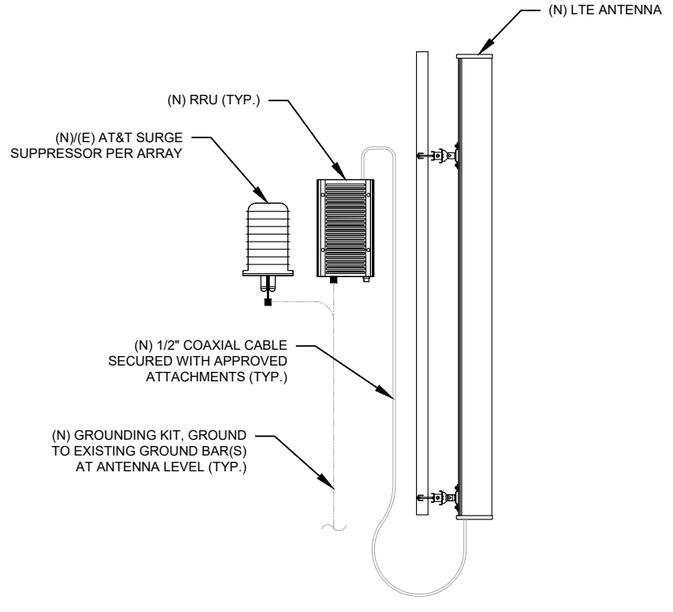
4 MAIN GROUND BAR DETAIL

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	TM	04/18/22
0	FINALS	TR	05/23/22

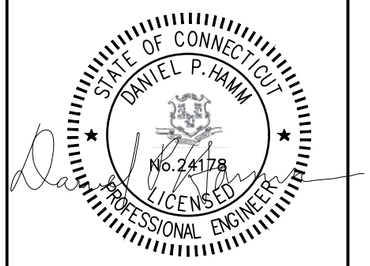
ATC SITE NUMBER:
283422

ATC SITE NAME:
SHORT BEACH BRANFORD CT

AT&T SITE NAME:
BRANFORD SHORT BEACH ROAD

SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD,CT 06405-4930

SEAL:

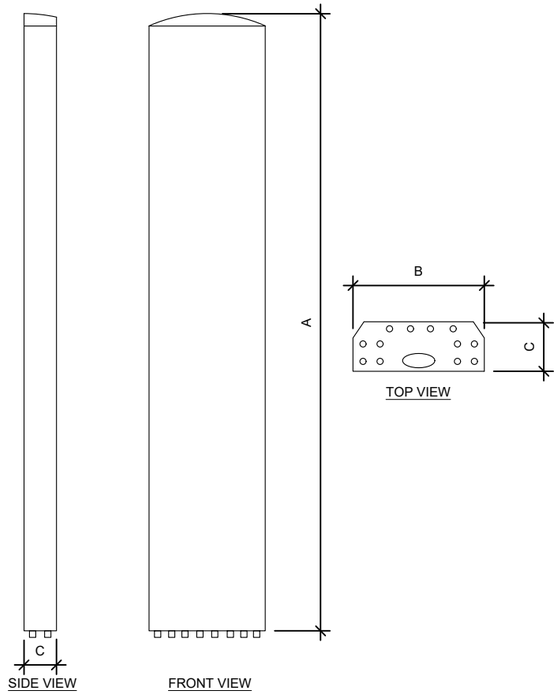


AT&T

DATE DRAWN:	04/05/22
ATC JOB NO:	13958523_G5
CUSTOMER ID:	CTL01283
CUSTOMER #:	10133913

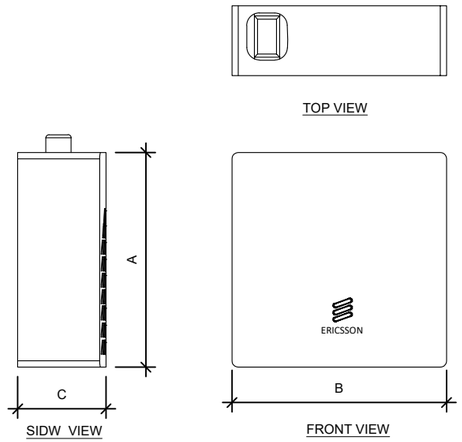
GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0



SIDE VIEW FRONT VIEW TOP VIEW

ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
TPA-65R-BU8DA-K	96.0"	20.7"	7.7"	87.1
Air 6449 B77D	30.4"	15.9"	8.1"	81.6
AIR 6419 B77G	28.3"	16.1"	7.9"	66.1



TOP VIEW SIDW VIEW FRONT VIEW

RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
4478 B14	16.5"	13.4"	7.7"	59.9

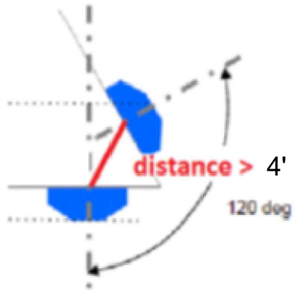
SUPPLEMENTAL

SHEET NUMBER: R-601

REVISION: 0

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.

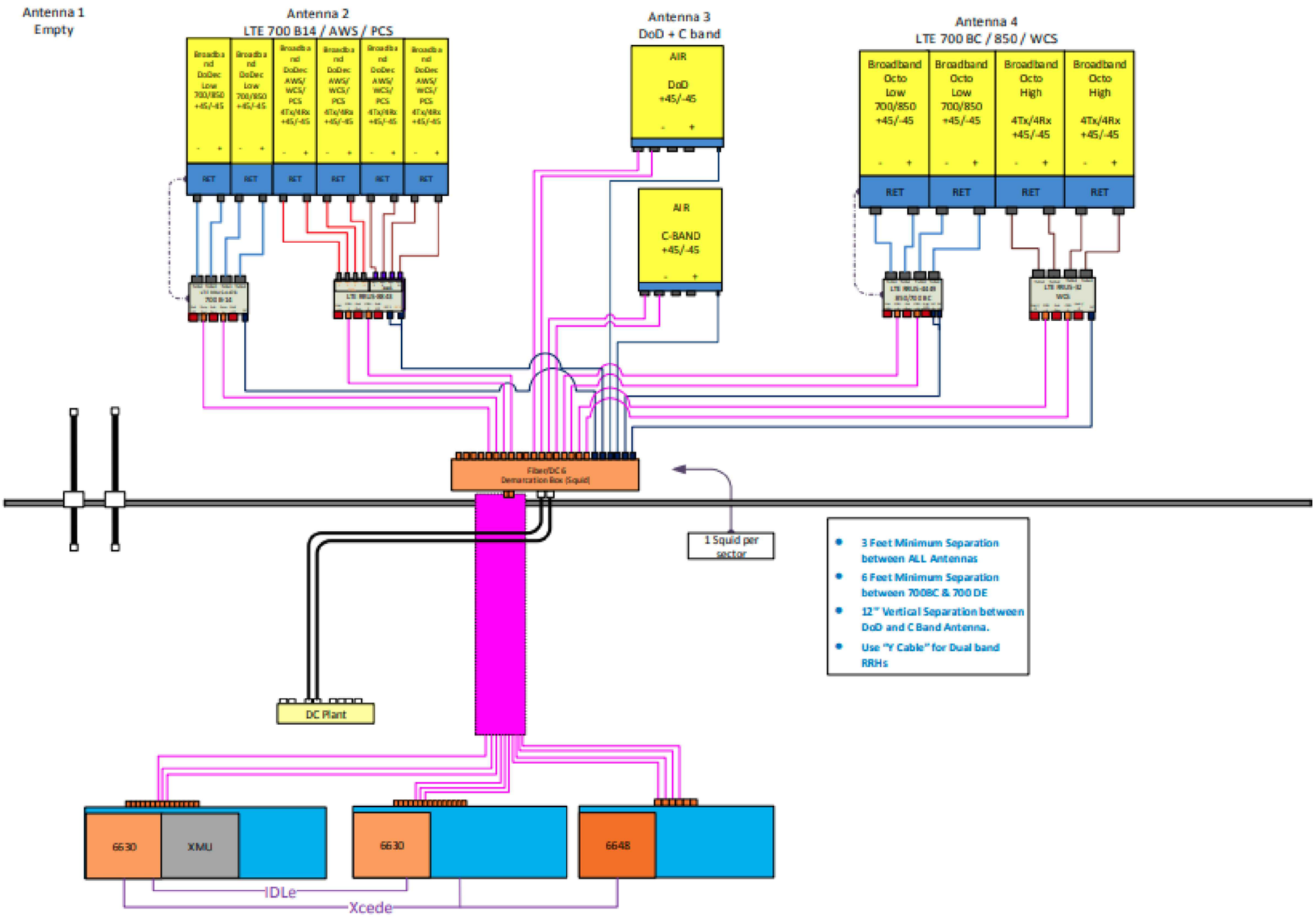


- ❑ Please note additional horizontal separation may be required if B14 antennas azimuth are different from others or antennas are severely angled with respect to the mount.
- ❑ Typical 3' horizontal separation can tolerate skew angle up to 6°.

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0



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	0

AMERICAN TOWER®
CORPORATION

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

Antenna Mount Analysis Report

ATC Site Name	:	Short Beach Branford CT
ATC Asset Number	:	283422
Engineering Number	:	13958523_C9_04
Mount Elevation	:	121 ft
Carrier	:	AT&T Mobility
Carrier Site Name	:	MRCTB056193
Carrier Site Number	:	CT1283
Site Location	:	171 Short Beach Road Branford, CT 06405-4930 41.26278888, -72.8344277
County	:	New Haven
Date	:	April 1, 2022
Max Usage	:	96%
Result	:	Pass (Pending MODs)

Prepared By:
Vignesh Hari
Telamon Tower Engineering, PLLC

Reviewed By:
David Chickering, P.E.
Telamon Tower Engineering, PLLC

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 January 27, 2020 Mount Mapping by B+T GRP, Project #G0153577.002.01, dated December 27, 2021
Previous Analyses	Mount Analysis by Telamon tower Engineering PLLC, Engineering #13958523_C8_01, dated March 01, 2022 Tower SA by CLS Engineering for ATC, Engineering #13668667_C3_01, dated August 13, 2021 Mount Analysis by Hudson Design Group LLC, Site #CT1283 (LTE 4C/5C), dated January 16, 2019
Loading Data	ATC Application, Project #13958523, dated February 25, 2022 AT&T RFDS ID:4775853, Ver. 2.00, dated January 14, 2022

Analysis

Codes	TIA-222-H
Basic Wind Speed	121 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	C
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 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 April 1, 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.

1 MOUNT ANALYSIS

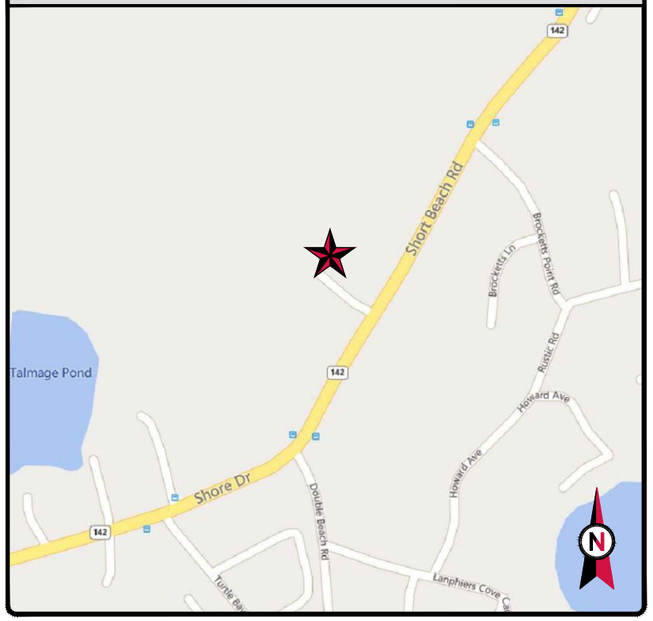
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERYIFY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

SUPPLEMENTAL

SHEET NUMBER: R-604

REVISION: 0

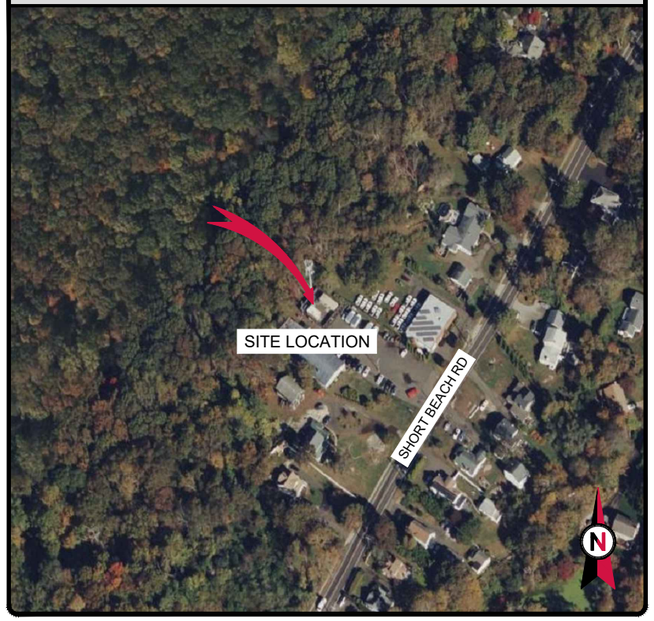
VICINITY MAP



AMERICAN TOWER®

SITE NAME:	*SHORT BEACH BRANFORD CT*
SITE NUMBER:	*283422*
ATC PROJECT NUMBER:	*13958523_C9_04*
SITE ADDRESS:	*171 SHORT BEACH ROAD*
	BRANFORD, CT 06405-4930

LOCATION MAP



MOUNT REINFORCEMENT DRAWINGS PREPARED FOR AT&T MOBILITY

PROJECT TEAM

TOWER OWNER:
AMERICAN TOWER CORPORATION
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: MRCTB056193
CARRIER SITE NUMBER: CT1283
CARRIER FA LOCATION: 10133913

811 LOGO

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

PROJECT LOCATION (GEO COORDINATES)

1. LATITUDE: 41.26278888°
2. LONGITUDE: −72.8344277°

PROJECT DESCRIPTION

THE MODIFICATIONS PRESENTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER THE PROJECT NUMBER 13958523_C8_01 DATED MARCH 1, 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)

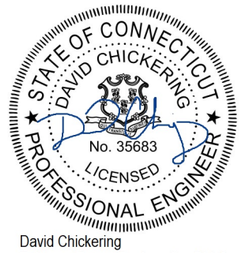
DRAWING INDEX

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:
283422
ATC SITE NAME:
SHORT BEACH BRANFORD CT
CONNECTICUT
SITE ADDRESS:
171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE
COVER PAGE

SHEET NUMBER	REVISION
G-001	0

C:\USERS\SHEKHAR.SALUNKE\DROPBOX (TELAMON)_TTI LLP SHARE FOLDER_PROJECTS\41124\283422-13958523\02 - MOD\CAD\41124-ATC MA-283422-13958523.DWG - CLS PROJECT ID: 41124-ATC MA-283422-13958523

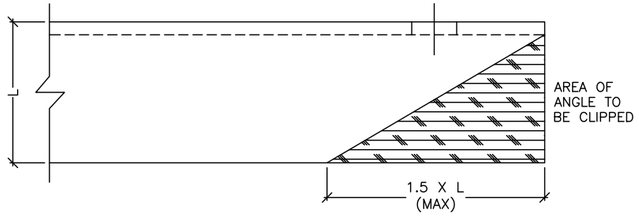
GENERAL

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

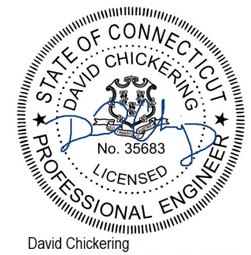
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

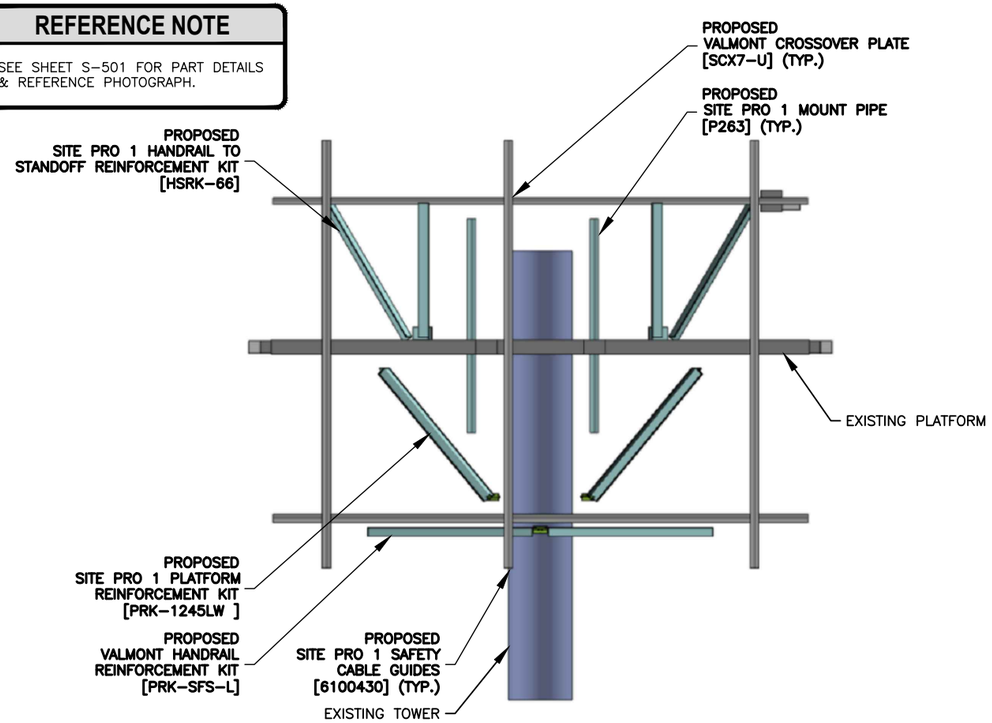
SHEET TITLE

IBC GENERAL NOTES & MODIFICATION INSPECTION

SHEET NUMBER	REVISION
G-002	0

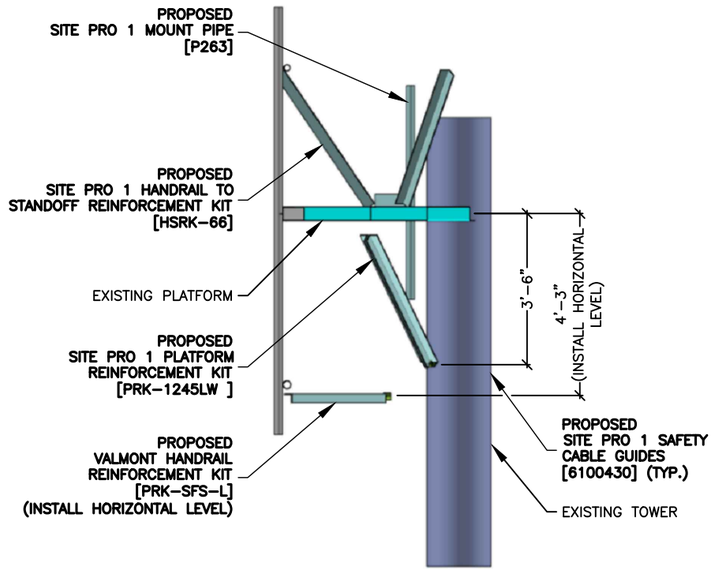
REFERENCE NOTE

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



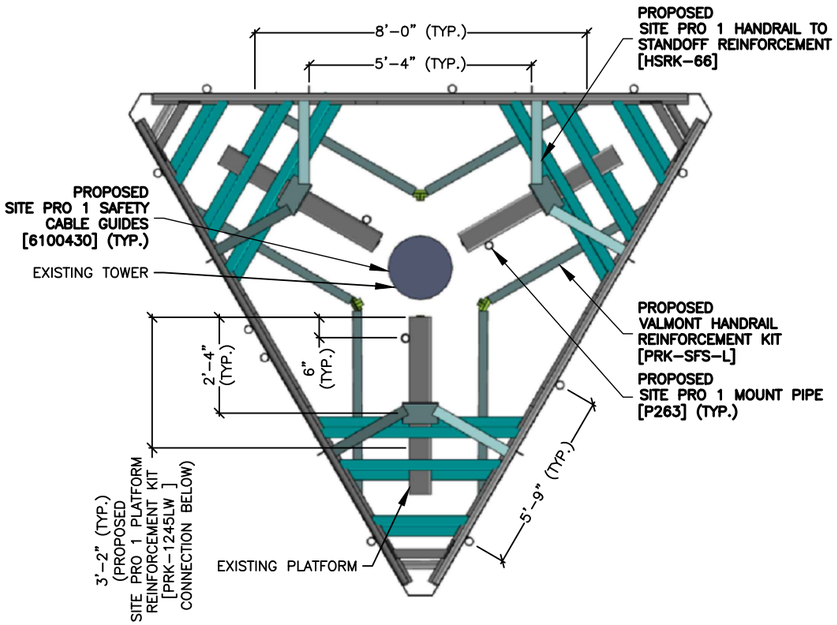
1 TYPICAL MOUNT MODIFICATION - FRONT VIEW

SCALE: N.T.S.



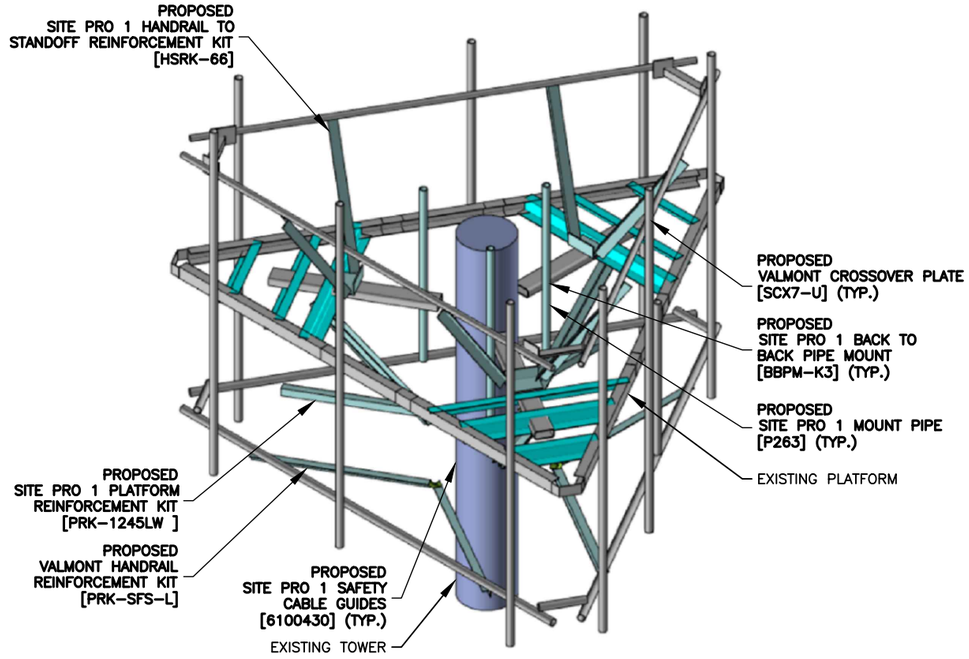
2 TYPICAL MOUNT MODIFICATION - SIDE VIEW

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

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

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_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	SITE PRO 1	PRK-1245LW	PLATFORM REINFORCEMENT KIT FOR 14' PLATFORMS ON A 12" TO 45" POLE (WIDE STANDOFF)	----	564.1	564	FIELD-CUT PROPOSED ANGLES AS REQUIRED.
3	SITE PRO 1	P263	PIPE 2-3/8" OD X 63", ASTM A53 GRADE B, SCHEDULE 40	5'-3"	20.0	60	GALVANIZED
3	SITE PRO 1	BBPM-K3	BACK TO BACK PIPE MOUNT 2-3/8" PIPES	----	38.7	116	----
1	VALMONT	PRK-SFS-L	HANDRAIL REINFORCEMENT KIT (LONG)	----	642.0	642	ANT.16818 FIELD]CUT PROPOSED ANGLES AS REQUIRED.
1	SITE PRO 1	HSRK-66	HANDRAIL TO STANDOFF REINFORCEMENT KIT (6" STANDOFF)	----	142.2	142	FIELD]CUT PROPOSED ANGLES AS REQUIRED.
6	VALMONT	SCX7-U	CROSSOVER PLATE	----	12.0	72	ANT.16985
6	SITE PRO 1	UB1418	U-BOLT 1/2"Ø, SAE J429 GR. 2, W/ (2) HHN-LKW-FW	0'-6"	0.9	5	GALVANIZED
2	SITE PRO 1	6100430	SAFETY CABLE GUIDES	----	----	----	USE ABOVE AND BELOW THE PROPOSED COLLAR.
					TOTAL WEIGHT:	1,601	

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 HSS TUBE TO PIPE,PLATFORM REINFORCEMENT KIT THAT FITS HSS TUBE SIZED 6X3,HANDRAIL TO 6"STAND-OFF REINFORCEMENT KIT AND SAFETY CABLE GUIDE, HENCE PROPOSING MODIFICATIONS PARTS WHICH ARE NOT LISTED IN THE 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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

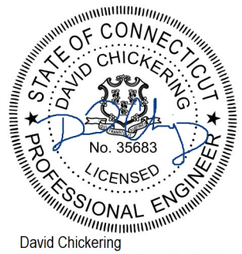
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

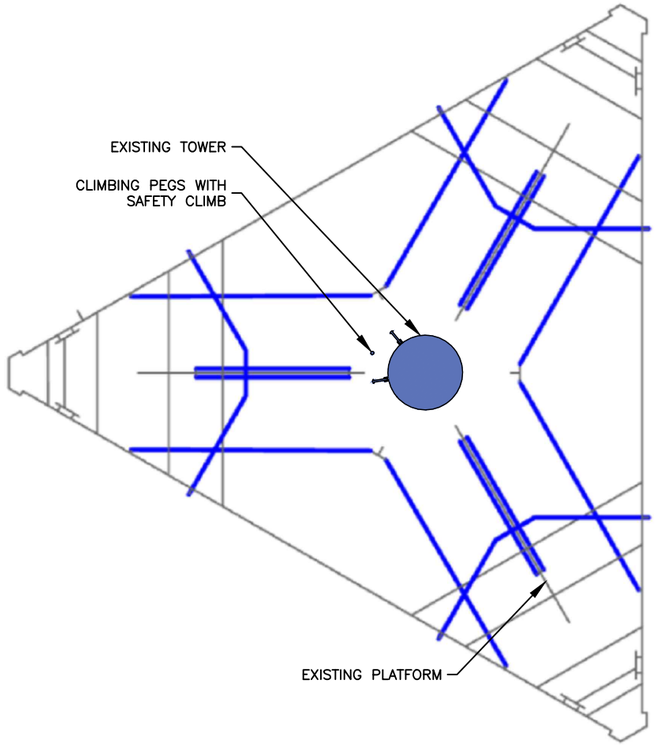
04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

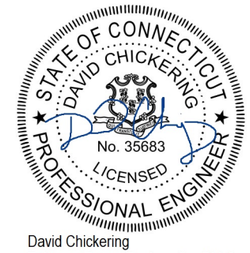
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

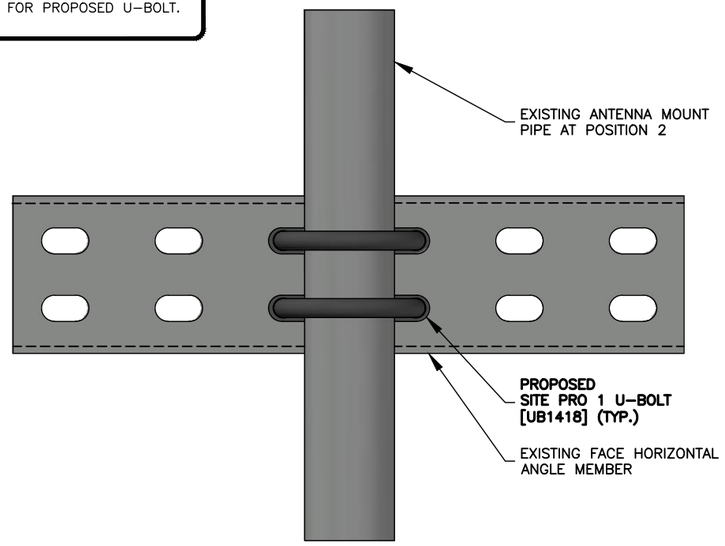
SHEET TITLE

SAFETY CLIMB LAYOUT

SHEET NUMBER	REVISION
S-103	0

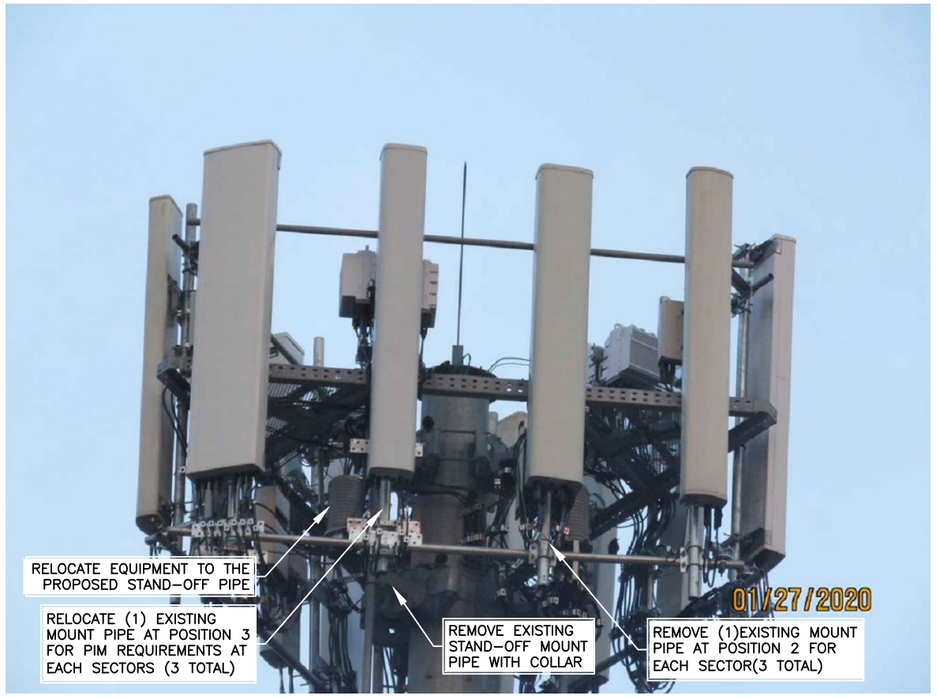
CONSTRUCTION NOTE

USE EXISTING HOLES FOR PROPOSED U-BOLT.



1 MOUNT PIPE U-BOLT CONNECTION

SCALE: N.T.S.



2 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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

MODIFICATION DETAILS

SHEET NUMBER	REVISION
S-501	0

MOD SUMMARY

Project & Site Information		
CLS Project ID		41124-13958523_C9_04-2-MOD
Client Information	Carrier Name	AT&T Mobility
	Client Name	American Tower
	Site #	283422
	Site Name	Short Beach Branford CT
	Application #	13958523_C9_04
Site Location	Address	171 Short Beach Road, Branford, CT 06405-4930
	County	New Haven
	GPS	41.26278888, -72.8344277
	Elevation AMSL (ft)	59.15

Mount & Supporting Structure		
Mount Configuration	Mount Type	Platform w/ Support Rails
Nominal AGL Elevations (ft)	Mount Elevation	121
	Default Antenna Rad	120
Supporting Structure	Structure Type	Monopole
	Height (TOS) (ft)	119

Wind & Ice Loading	
TIA Standard	TIA-222-H
Building Code	
Basic Wind Speed, V (bare)	121 mph
Basic Wind Speed, V (ice)	50 mph
Design Ice Thickness, t_i	1 in

MOD Summary			Cost Estimation
Install (1) proposed Mount Pipe at each sector (3 total).			$ 1,875
Install (1) proposed Sector Frame Stabilizer Kit w/ Monopole Collar at each sector (1 total).			$ 4,375
Install (1) proposed Under Platform Kicker Kit at each sector (1 total).			$ 3,125
Install (1) proposed Support Rail Kicker Kit at each sector (1 total).			$ 3,125
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
Post MOD Usage	96%	Cost + Mobilization	$ 14,500.00

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	:	Short Beach Branford CT
ATC Asset Number	:	283422
Engineering Number	:	13958523_C9_04
Mount Elevation	:	121 ft
Carrier	:	AT&T Mobility
Carrier Site Name	:	MRCTB056193
Carrier Site Number	:	CT1283
Site Location	:	171 Short Beach Road Branford, CT 06405-4930 41.26278888, -72.8344277
County	:	New Haven
Date	:	April 1, 2022
Max Usage	:	96%
Result	:	Pass (Pending MODs)

Prepared By:
Vignesh Hari
Telamon Tower Engineering, PLLC

Reviewed By:
David Chickering, P.E.
Telamon Tower Engineering, PLLC

Table of Contents

Introduction 2
Supporting Documents 2
Analysis 2
Conclusion 2
Antenna Loading 3
Structure Usages 3
Equipment Layout Plan View 4
Equipment Layout Front Elevation View 5
Standard Conditions 6
Calculations ..... Attached

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 January 27, 2020 Mount Mapping by B+T GRP, Project #G0153577.002.01, dated December 27, 2021
Previous Analyses	Mount Analysis by Telamon tower Engineering PLLC, Engineering #13958523_C8_01, dated March 01, 2022 Tower SA by CLS Engineering for ATC, Engineering #13668667_C3_01, dated August 13, 2021 Mount Analysis by Hudson Design Group LLC, Site #CT1283 (LTE 4C/5C), dated January 16, 2019
Loading Data	ATC Application, Project #13958523, dated February 25, 2022 AT&T RFDS ID:4775853, Ver. 2.00, dated January 14, 2022

Analysis

Codes	TIA-222-H
Basic Wind Speed	121 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	C
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 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 April 1, 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.

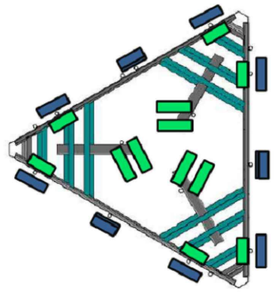
Antenna Loading

Elevation (ft)		Antennas	
Mount	Rad.	#	Name
121.0	120.0	3	CCI TPA65R-BU8A
		3	Kathrein 80010966
		3	Ericsson AIR 6449 B77D/ C-Band
		3	Ericsson AIR 6419 B77G
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		3	Ericsson RRUS 8843 B2, B66A
		1	Commscope WCS-IMFQ-AMT
		1	Raycap DC6-48-60-0-8F
		2	Raycap DC6-48-60-18-8F

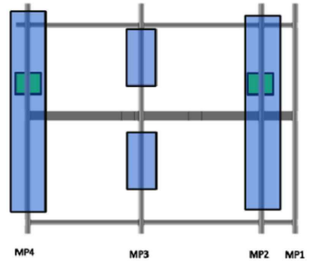
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Tower Mount Plate Connection	98%	Pass
Bracing Members	58%	Pass
Support Rail	50%	Pass
Mount Pipes	42%	Pass
Corner Plates	39%	Pass
Platform Base	28%	Pass
Reinforcement Members	14%	Pass
Stand-Off Horizontals	13%	Pass

Equipment Layout Plan View



Equipment Layout Front Elevation View



Total #	Equipment	Mount Pipe Position
3	CCI TPA65R-BU8A	P2
3	Ericsson AIR 6419 B77G	P3
3	Ericsson AIR 6449 B77D	P3
3	Kathrein 80010966	P4
1	Raycap DC6-48-60-0-8F	Stand-off Mount
2	Raycap DC6-48-60-18-8F	Stand-off Mount
3	Ericsson RRUS 8843 B2/B66A	P2
3	Ericsson RRUS 32 B30	P4
3	Ericsson RRUS 4478 B14	Stand-off
3	Ericsson RRUS 4449 B5/B12	Stand-off
1	Commscope WCS-IMFQ-AMT	P4 (Gamma)

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-902	0

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}	121 ft	K_{ss}	0.90
Nominal Rad Elevation (AGL), z_{rad}	120 ft	K_d	0.95
Elevation AMSL (ft)	59 ft	K_e	1.00
TIA Standard	H	K_z	1.32
Basic Wind Speed, V_{ult} (bare)	121 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.14 in
Exposure Category	C	G_h	1.00
Risk Category	II	q_z (bare)	46.8 psf
Seismic Response Coeff., C_s	0.11	q_z (ice)	8.0 psf

Live Loading	
At Mount Pipes, L_M	500 lb
Joint Labels Considered	1_M1
	1_M2
	1_M3
	1_M4

Member Distributed Loading				
Section Set Label	Shape Label	F_A (lb/ft) Bare	F_A (lb/ft) Ice	Ice Wt. (lb/ft)
Offset Arm	HSS6X3X6	42.13	2.18	9.56
Face Mid Channel	CH3x4x3/16	28.09	2.00	10.06
MOD PRK	L2.5x2.5x3	17.55	1.86	5.90
Face Channel	CH3x4x3/16	28.09	2.00	10.06
Corner Plate	PL3.5x.3/16	24.58	4.16	4.85
Grating Horizontal	Custom 2 4x3x3/16	28.52	2.00	8.61
Support Rail 1	PIPE_1.5	8.00	3.01	4.23
Support Rail 2	PIPE_2.0	10.01	3.35	4.89
SR Conn Plate	PL6x0.375	42.13	5.96	7.23
Support Rail Brace	PIPE_2.0	10.01	3.35	4.89
SR Conn Angle	L2.5x2.5x4	17.55	1.86	5.90
Mount Pipe	PIPE_2.0	10.01	3.35	4.89
MOD RRH Pipe	PIPE_2.0	10.01	3.35	4.89
MOD KR Bracket	L6X4X8	42.13	2.18	10.33
MOD SR Kicker	L3X3X4	21.06	1.91	6.79
MOD-PRK-5FS	L2.5x2.5x3	17.55	1.86	5.90

Appurtenances

Appurtenance Model	Status	Azimuth Offset (°, CW)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor Front	Area Factor Side	Qty. per Azimuth 0°	120°	240°	Total Qty. Override	0° Joints 1	0° Joints 2	120° Joints 1	120° Joints 2	240° Joints 1	240° Joints 2	Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_S (Bare) (ft^2) N	EPA_S (Bare) (ft^2) T	EPA_S (Ice) (ft^2) N	EPA_S (Ice) (ft^2) T	F_A (Bare) (lb) N	F_A (Bare) (lb) T	F_A (Ice) (lb) N	F_A (Ice) (lb) T
TPA65R-BU8A				☐			1	1	1	3	1_A2T	1_A2B	2_A2T	2_A2B	3_A2T	3_A2B	96	25.5	7.6	114.6	Generic	258.21	21.31	6.38	23.72	8.45	896.20	268.31	170.35	60.69
AIR 6419 B77G				☐			1	1	1	3	1_A3T	1_A3B	2_A3T	2_A3B	3_A3T	3_A3B	28.3	16.1	7.9	66.1	Flat	68.63	3.80	1.94	4.68	2.64	159.68	81.49	33.62	18.97
AIR 6449 B77D				☐			1	1	1	3	1_A3TB	1_A3BB	2_A3TB	2_A3BB	3_A3TB	3_A3BB	30.4	15.9	10.6	81.6	Flat	76.11	4.03	2.72	4.95	3.51	169.40	114.47	35.54	25.21
80010966				☐			1	1	1	3	1_A4T	1_A4B	2_A4T	2_A4B	3_A4T	3_A4B	96	20	6.9	125.7	Generic	209.77	14.59	5.04	16.57	6.79	613.59	211.96	118.99	48.78
DO6-48-60-0-8F				☐			1			1	1_M						24	11	11	18.9	Round	40.31	1.28	1.28	1.70	1.70	53.97	53.97	12.18	12.18
DO6-48-60-18-8F				☐			1	1		2	2_M		3_M				24	11	11	18.9	Round	40.31	1.28	1.28	1.70	1.70	53.97	53.97	12.18	12.18
RRUS 8843 B2/B66A				☐	0		1	1	1	3	1_R2BN		2_R2BN		3_R2BN		14.9	13.2	10.9	72	Flat	40.04	0.00	1.35	0.00	1.89	0.00	56.92	0.00	13.54
RRUS 32 B30				☐	0		1	1	1	3	1_R4BN		2_R4BN		3_R4BN		26.7	12.1	6.7	60	Flat	46.43	0.00	1.57	0.00	2.23	0.00	66.14	0.00	15.98
RRUS 4478 B14				☑		0.5	1	1	1	3	1_R7BT		2_R7BT		3_R7BT		16.5	13.4	7.7	59.9	Flat	36.13	1.06	0.92	1.56	1.23	44.53	38.74	11.21	8.81
RRUS 4449 B5/B12				☑		0.5	1	1	1	3	1_R7BT		2_R7BT		3_R7BT		17.9	13.19	9.44	71	Flat	42.12	1.41	0.98	1.97	1.30	59.22	41.37	14.14	9.34
WCS-IMFQ-AMT				☐	0				1	1					4_M		11.2	10.6	6.9	29.5	Flat	22.04	0.00	0.64	0.00	1.03	0.00	27.08	0.00	7.40

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

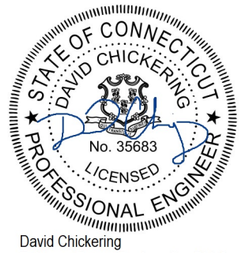
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

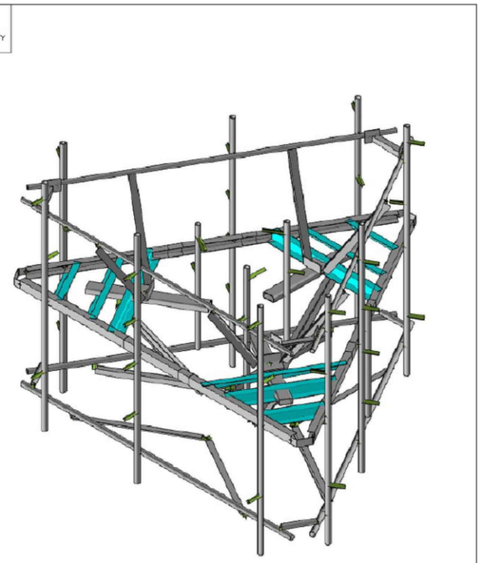
SUPPLEMENTAL

SHEET NUMBER

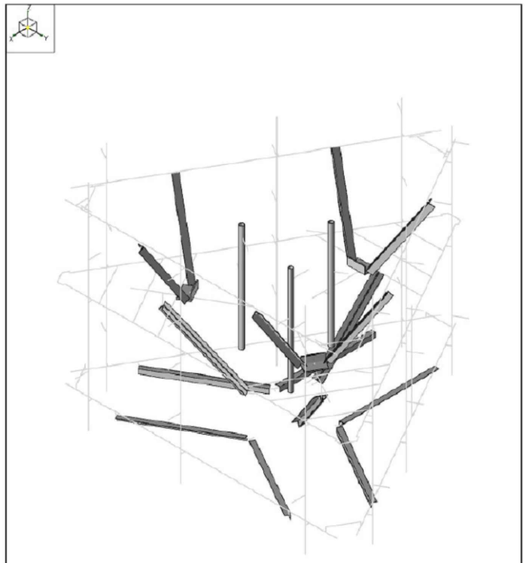
R-903

REVISION

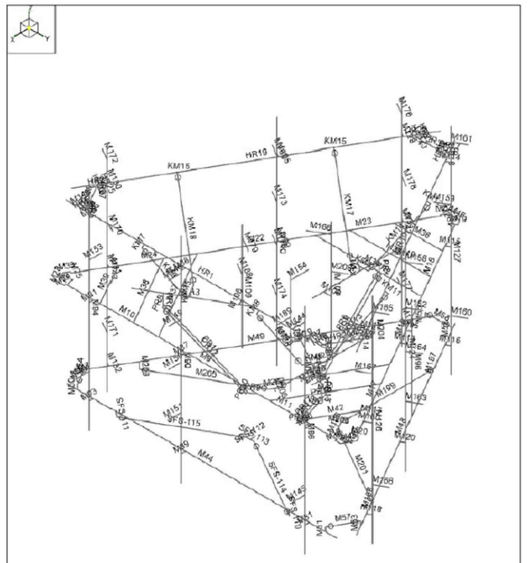
0



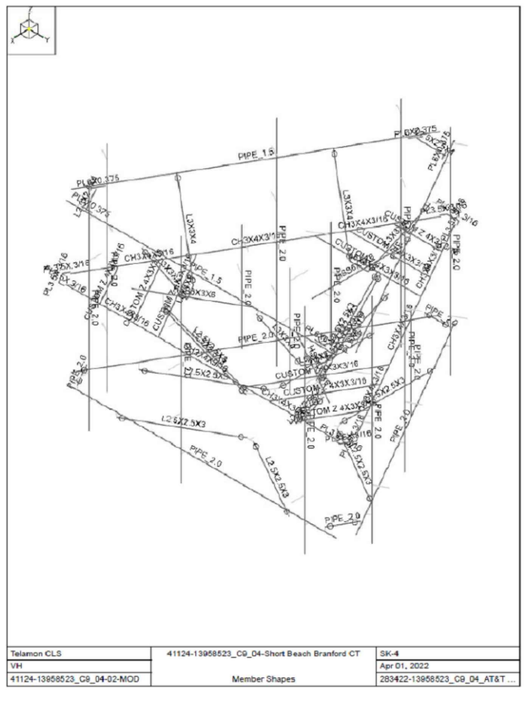
Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-1
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	3D Rendering (Final Configuration)	283422-13958523_C9_04_AT&T ...



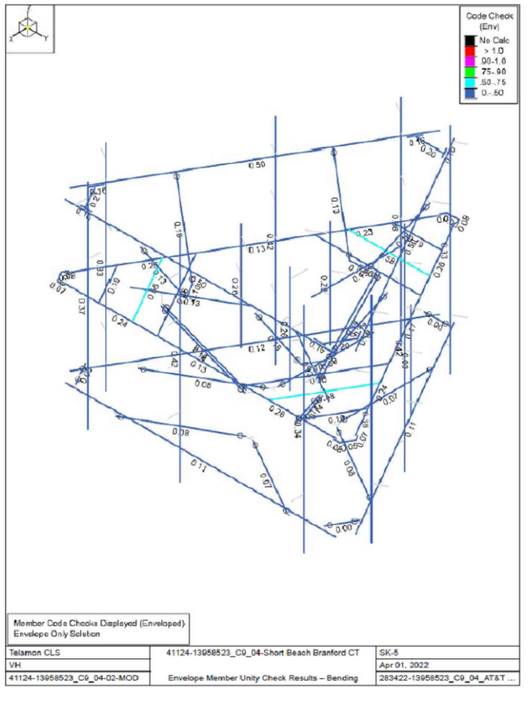
Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-2
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	3D Rendering (Final Configuration)	283422-13958523_C9_04_AT&T ...



Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-3
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Member Labels	283422-13958523_C9_04_AT&T ...

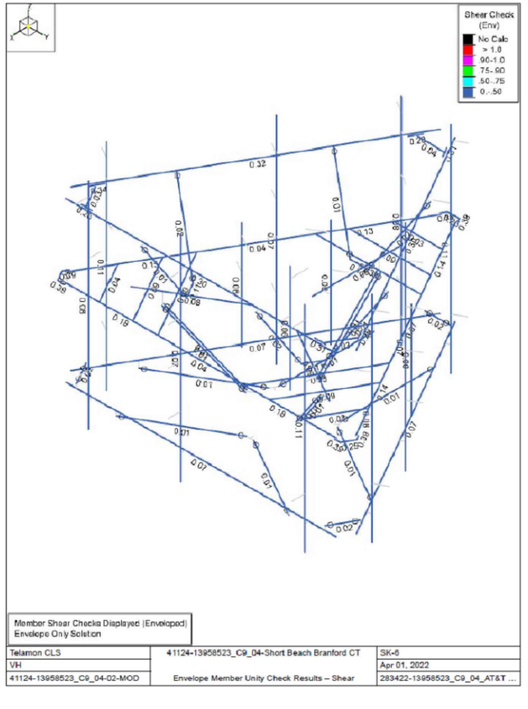


Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-4
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Member Shapes	283422-13958523_C9_04_AT&T ...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-5
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Envelope Member Unity Check Results – Bending	283422-13958523_C9_04_AT&T ...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Telamon CLS	41124-13958523_C9_04-Short Beach Branford CT	SK-6
VH		Apr 01, 2022
41124-13958523_C9_04-02-MOD	Envelope Member Unity Check Results – Shear	283422-13958523_C9_04_AT&T ...

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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930

STATE OF CONNECTICUT
DAVID CHICKERING
No. 35683
LICENSED
PROFESSIONAL ENGINEER

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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-904	0

C:\USERS\SHEKHAR.SALUNKE\DROPBOX (TELAMON)_TTI LLP SHARE FOLDER_PROJECTS\41124\283422-13958523\02 - MOD\CAD\41124-ATC MA-283422-13958523.DWG - CLS PROJECT ID: 41124-ATC MA-283422-13958523

Company :Telamon CLS
Designer :VH
Job Number :41124-13958523_C9_04-02-MOD
Model Name:41124-13958523_C9_04-Short Beach Br...

4/1/2022
10:05:31 AM
Checked By : KM

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	39		3
2	Ice Dead	RL		39	82	3
3	BLC 1 Transient Area Loads	None			39	
4	BLC 2 Transient Area Loads	None			39	
5	Structure Wind 0°	None			81	
6	Structure Wind 30°	None			134	
7	Structure Wind 45°	None			164	
8	Structure Wind 60°	None			162	
9	Structure Wind 90°	None			67	
10	Structure Wind 120°	None			162	
11	Structure Wind 135°	None			164	
12	Structure Wind 150°	None			134	
13	Structure Wind 180°	None			81	
14	Structure Wind 210°	None			134	
15	Structure Wind 225°	None			164	
16	Structure Wind 240°	None			162	
17	Structure Wind 270°	None			67	
18	Structure Wind 300°	None			162	
19	Structure Wind 315°	None			164	
20	Structure Wind 330°	None			134	
21	Structure Wind w/ Ice 0°	None			81	
22	Structure Wind w/ Ice 30°	None			134	
23	Structure Wind w/ Ice 45°	None			164	
24	Structure Wind w/ Ice 60°	None			162	
25	Structure Wind w/ Ice 90°	None			67	
26	Structure Wind w/ Ice 120°	None			162	
27	Structure Wind w/ Ice 135°	None			164	
28	Structure Wind w/ Ice 150°	None			134	
29	Structure Wind w/ Ice 180°	None			81	
30	Structure Wind w/ Ice 210°	None			134	
31	Structure Wind w/ Ice 225°	None			164	
32	Structure Wind w/ Ice 240°	None			162	
33	Structure Wind w/ Ice 270°	None			67	
34	Structure Wind w/ Ice 300°	None			162	
35	Structure Wind w/ Ice 315°	None			164	
36	Structure Wind w/ Ice 330°	None			134	
37	Antenna Wind 0°	None		37		
38	Antenna Wind 30°	None		78		
39	Antenna Wind 45°	None		78		
40	Antenna Wind 60°	None		74		
41	Antenna Wind 90°	None		39		
42	Antenna Wind 120°	None		74		
43	Antenna Wind 135°	None		78		
44	Antenna Wind 150°	None		78		
45	Antenna Wind 180°	None		37		
46	Antenna Wind 210°	None		78		
47	Antenna Wind 225°	None		78		
48	Antenna Wind 240°	None		74		
49	Antenna Wind 270°	None		39		
50	Antenna Wind 300°	None		74		
51	Antenna Wind 315°	None		78		
52	Antenna Wind 330°	None		78		
53	Antenna Wind w/ Ice 0°	None		37		
54	Antenna Wind w/ Ice 30°	None		78		
55	Antenna Wind w/ Ice 45°	None		78		
56	Antenna Wind w/ Ice 60°	None		74		
57	Antenna Wind w/ Ice 90°	None		39		
58	Antenna Wind w/ Ice 120°	None		74		

Company :Telamon CLS
Designer :VH
Job Number :41124-13958523_C9_04-02-MOD
Model Name:41124-13958523_C9_04-Short Beach Br...

4/1/2022
10:05:31 AM
Checked By : KM

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
59	Antenna Wind w/ Ice 135°	None		78		
60	Antenna Wind w/ Ice 150°	None		78		
61	Antenna Wind w/ Ice 180°	None		37		
62	Antenna Wind w/ Ice 210°	None		78		
63	Antenna Wind w/ Ice 225°	None		78		
64	Antenna Wind w/ Ice 240°	None		74		
65	Antenna Wind w/ Ice 270°	None		39		
66	Antenna Wind w/ Ice 300°	None		74		
67	Antenna Wind w/ Ice 315°	None		78		
68	Antenna Wind w/ Ice 330°	None		78		
69	Seismic X	ELX		39	82	
70	Seismic Y	ELY		39	82	
71	Seismic Z	ELZ		39	82	
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		

TOWER-MOUNT CONNECTION ANALYSIS

v.1.1.0

telamonCLS

319 Chapanoke Road, Suite 118
Raleigh, NC 27603
Office: (405) 348-5460
Fax: (405) 341-4134

SITE INFORMATION	
Site ID	283422
Site Name	Short Beach Branford CT
Project ID	41124-13958523_C9_04-02-MOD

ANALYSIS PARAMETERS	
TIA Revision	H

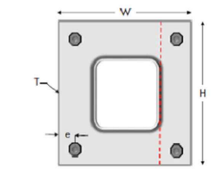
APPLIED FORCES FROM RISA		
Member Label		LC7-A1
Member End Label		1
Force-X	Fx, lbs	-647.7
Force-Y	Fy, lbs	-2020.8
Force-Z	Fz, lbs	-540.7
Moment X-X	Mx, lbs-ft	-1262.9
Moment Y-Y	My, lbs-ft	418.8
Moment Z-Z	Mz, lbs-ft	-3651.7

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect. HSS
Standoff Member Shape	HSS4X3X3/8
Standoff Member Grade	A500-50
Member to Plate Weld Size, in	1/4

BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.33
Nominal Bolt Diameter (ØDb), in	0.625
Bolt Grade	A325
Plate Height (H), in	11.50
Plate Width (W), in	11.50
Plate Thickness (T), in	0.88
Plate Grade	A36

BOLT ANALYSIS		
Shear Demand (Vu), k	0.67	
Shear Capacity (ØRnv), k	13.81	
Tension Demand (Tu), k	3.88	
Tension Capacity (ØRnt), k	20.54	
Shear Utilization	4.8%	
Tension Utilization	17.6%	PASS
Interaction Utilization	3.3%	

PLATE ANALYSIS		
Moment Demand (Mu), k-in	22.40	
Flexural Capacity (ØMn), k-in	23.29	
Plate Utilization	96.2%	PASS



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	50
Standoff Member - Ultimate Strength (Fu), ksi	62
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-283422-13958523

REV.	DESCRIPTION	DRAWN BY	DATE
A	PRELIMINARY	SVS	03/31/2022
0	FOR CONSTRUCTION	SVS	04/01/2022

ATC SITE NUMBER:

283422

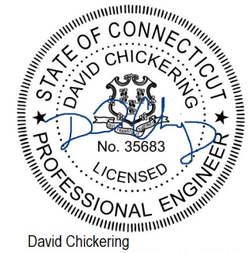
ATC SITE NAME:

SHORT BEACH BRANFORD CT

CONNECTICUT

SITE ADDRESS:

171 SHORT BEACH ROAD
BRANFORD, CT 06405-4930



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

04/05/2022

DRAWN BY:	SVS
APPROVED BY:	DC
DATE DRAWN:	04/01/2022
ATC JOB NO:	13958523_C9_04

SHEET TITLE

SUPPLEMENTAL

SHEET NUMBER	REVISION
R-905	0

July 7, 2022

Town Planner Harry Smith
Branford Town Hall
1019 Main Street
Branford, CT 06405

Re: Exempt Modification Application – AT&T Site 13958523
AT&T Mobility Telecommunications Facility @ 171 Short Beach Road, Branford, CT 06405

Dear Mr. Smith:

New Cingular Wireless, PCS, LLC (dba AT&T) currently maintains antennas on a wireless telecommunications facility on an existing American Tower Corporation (ATC) telecommunications tower at the above referenced address. AT&T desires to modify its existing equipment as described in the attached Construction and Antenna Mount Modification Drawings:

- Remove nine (9) antennas and three (3) RRHs;
- Install mount modifications, nine (9) antennas, three (3) RRHs, one (1) cable and six (6) Y cables.
- Ground work includes installing a 6648 plus XCEDE and four (4) rectifiers.

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 the 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

enclosures

July 7, 2022

The Honorable James Cosgrove
Branford Town Hall
1019 Main Street
Branford, CT 06405

Re: Exempt Modification Application – AT&T Site 13958523
AT&T Mobility Telecommunications Facility @ 171 Short Beach Road, Branford, CT 06405

Dear First Selectman Cosgrove:

New Cingular Wireless, PCS, LLC (dba AT&T) currently maintains antennas on a wireless telecommunications facility on an existing American Tower Corporation (ATC) telecommunications tower at the above referenced address. AT&T desires to modify its existing equipment as described in the attached Construction and Antenna Mount Modification Drawings:

- Remove nine (9) antennas and three (3) RRHs;
- Install mount modifications, nine (9) antennas, three (3) RRHs, one (1) cable and six (6) Y cables.
- Ground work includes installing a 6648 plus XCEDE and four (4) rectifiers.

This letter is intended to serve as the required notice to the municipality's chief elected official. 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 the 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

enclosures

July 7, 2022

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

Re: Exempt Modification Application – AT&T Site 13958523
AT&T Mobility Telecommunications Facility @ 171 Short Beach Road, Branford, CT 06405

Dear Ms. Hall:

New Cingular Wireless, PCS, LLC (dba AT&T) currently maintains antennas on a wireless telecommunications facility on an existing American Tower Corporation (ATC) telecommunications tower at the above referenced address. AT&T desires to modify its existing equipment as described in the attached Construction and Antenna Mount Modification Drawings:

- Remove nine (9) antennas and three (3) RRHs;
- Install mount modifications, nine (9) antennas, three (3) RRHs, one (1) cable and six (6) Y cables.
- Ground work includes installing a 6648 plus XCEDE and four (4) rectifiers.

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
443-677-0144

Enclosures

July 7, 2022

171 SHORT BEACH ROAD REALTY LLC
171 Short Beach Road
Branford, CT 06405

Re: Exempt Modification Application – AT&T Site 13958523
AT&T Mobility Telecommunications Facility @ 171 Short Beach Road, Branford, CT 06405

Dear Property Owner:

New Cingular Wireless, PCS, LLC (dba AT&T) currently maintains antennas on a wireless telecommunications facility on an existing American Tower Corporation (ATC) telecommunications tower at the above referenced address. AT&T desires to modify its existing equipment as described in the attached Construction and Antenna Mount Modification Drawings:

- Remove nine (9) antennas and three (3) RRHs;
- Install mount modifications, nine (9) antennas, three (3) RRHs, one (1) cable and six (6) Y cables.
- Ground work includes installing a 6648 plus XCEDE and four (4) rectifiers.

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
443-677-0144

Enclosures

USPS Tracking®

FAQs >

Track Another Package +

Tracking Number: 9505510391972189714800

Remove ×

Your item was delivered in or at the mailbox at 11:35 am on July 11, 2022 in BRANFORD, CT 06405.

USPS Tracking Plus® Available ⌄

Delivered, In/At Mailbox

July 11, 2022 at 11:35 am
BRANFORD, CT 06405

Get Updates ⌄

Feedback

Text & Email Updates ⌄

Tracking History ⌄

USPS Tracking Plus® ⌄

Product Information ⌄

See Less ⌃

USPS Tracking®

FAQs >

Track Another Package +

Tracking Number: 9505510391972189714794

Remove ×

Your item was delivered in or at the mailbox at 12:00 pm on July 11, 2022 in WOBURN, MA 01801.

USPS Tracking Plus® Available ⌄

Delivered, In/At Mailbox

July 11, 2022 at 12:00 pm
WOBURN, MA 01801

Feedback

Get Updates ⌄

Text & Email Updates ⌄

Tracking History ⌄

USPS Tracking Plus® ⌄

Product Information ⌄

See Less ^

Can’t find what you’re looking for?

USPS Tracking®

FAQs >

Track Another Package +

Tracking Number: 9505510391972189714817

Remove ×

Your item was delivered at the front door or porch at 8:34 am on July 11, 2022 in BRANFORD, CT 06405.

USPS Tracking Plus® Available

Delivered, Front Door/Porch

July 11, 2022 at 8:34 am
BRANFORD, CT 06405

Get Updates

Feedback

Text & Email Updates

Tracking History

USPS Tracking Plus®

Product Information

See Less

USPS Tracking®

FAQs >

Track Another Package +

Tracking Number: 9505510391972189714824

Remove ×

Your item was delivered at the front door or porch at 8:34 am on July 11, 2022 in BRANFORD, CT 06405.

USPS Tracking Plus® Available ⌄

Delivered, Front Door/Porch

July 11, 2022 at 8:34 am
BRANFORD, CT 06405

Feedback

Get Updates ⌄

Text & Email Updates ⌄

Tracking History ⌄

USPS Tracking Plus® ⌄

Product Information ⌄

See Less ⌃

Radio Frequency Safety Survey Report Prediction (RFSSRP)

AT&T Mobility Monopole Facility

Site ID: CTL01283 **Site Name:** Branford Short Beach Road **Address:** 171 Short Beach Road, Branford, CT 06405 **Latitude:** 41.262792 **Longitude:** -72.834420 **USID:** 106390 **FA**: 10133913	**Prepared for:** American Tower on behalf of AT&T **Centerline PN: 950035-003** **Pace ID: MRCTB053902; MRCTB056193; MRCTB054761; MRCTB056237; MRCTB056010; MRCTB053884** **Report Writer:** Michelle Stone **Date:** June 10, 2022 **Report Reviewer**: Yasir Alqadhili

Statement of Compliance

AT&T is compliant with FCC Regulations.

TABLE OF CONTENTS

1.0 GENERAL SUMMARY 3
1.1 SITE SUMMARY 3
2.0 SITE SCALE MAP 5
2.1 C-BAND ANALYSIS 6
3.0 ANTENNA INVENTORY 7
4.0 PREDICTED EMISSION LEVELS AND DISCUSSION 9
5.0 EMISSIONS DIAGRAMS 10
6.0 STATEMENT OF COMPLIANCE 12
6.1 STATEMENT OF AT&T MOBILITY COMPLIANCE 12
6.2 RECOMMENDATIONS 12
7.0 FALL ARREST AND PARAPET INFORMATION 13
APPENDIX A: RF SIGNAGE 14
APPENDIX B: FCC GUIDELINES AND EMISSIONS THRESHOLD LIMITS 15
APPENDIX C: CALCULATION METHODOLOGY 17
APPENDIX D: CERTIFICATIONS 20
APPENDIX E: PROPRIETARY STATEMENT 21

1.0 GENERAL SUMMARY

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following AT&T Mobility wireless monopole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations, for all equipment for AT&T Mobility.

1.1 SITE SUMMARY

Analysis Site Data	
Site USID:	106390
Site FA#:	10133913
Site Name:	Branford Short Beach Road
Site Address:	171 Short Beach Road, Branford CT 06405
Site Latitude:	41.262792
Site Longitude:	-72.834420
Facility Type:	Monopole
Compliance Summary	
Compliance Status:	Compliant
Maximum Modeled AT&T MPE% at Ground Level (General Public Limit):	0.22%
Site Survey Data	
Is Access Locked or Controlled? :	Unknown
Lock or Control Measures if Present:	Unknown
Parapet Height:	0
Site Data Information	
CD:	AT&T, 10133913,ATC 2843422 (13958523) AE(CD) REV0
RFDS:	NEW-ENGLAND_CONNECTICUT_CTL01283_10133913_106390_10-01-2021_Final-Approved_v2.00 (1)

Signage and barriers are the primary means of mitigating access to accessible areas of exposure. Below is a summary of existing and recommended signage at this AT&T facility.

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	0	0	0	0	0

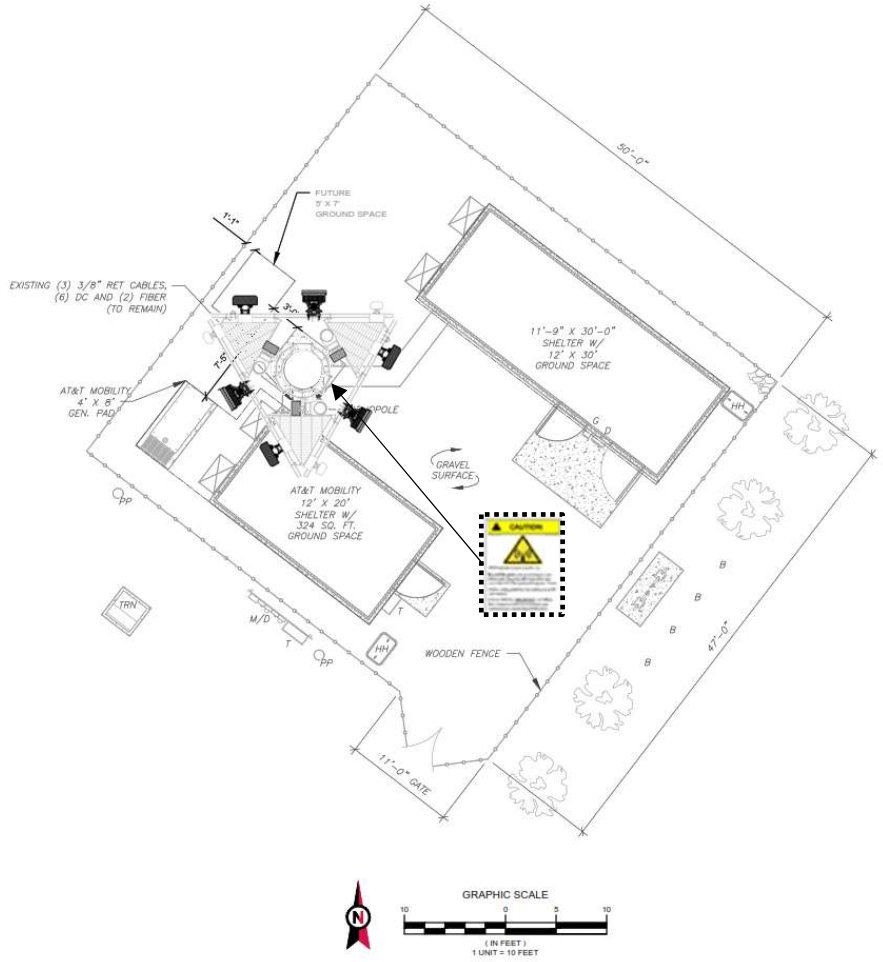
Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Monopole Base	0	0	1	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	1	0	0	0	0

Monopole Base:

- Install (1) Caution 2B sign at the base of the monopole per AT&T Policy.

2.0 SITE SCALE MAP



Operator Antenna Identifiers

- AT&T Mobility
- Verizon
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown


INFO 1 Sign

Caution 1 Sign

INFO 2 Sign

Tower Caution Sign

Notice 1 Sign


Caution 2 Sign


Notice 2 Sign

Warning 2 Sign

Items to be Removed | Existing Sign | Proposed Sign | Existing Barrier | Proposed Barrier

Signage/ Mitigation Plan

Branford Short Beach Road / 10133913

2.1 C-BAND ANALYSIS

- All adjacent buildings are >60’ away laterally from the AIR6449/6419 antennas and/or >20’ below the bottom tips of the AIR6449/6419 antennas.

3.0 ANTENNA INVENTORY

ANT ID	Operator	Antenna Make	Antenna Model	Type	Freq (MHz)	TPO (Watts)	# of TX	Azimuth (°)	BW (°)	Gain (dBd)	Total ERP (Watts)	Length (ft.)	Antenna Z Value (ft.) AGL*
1	AT&T	CCI	TPA65R-BU8D	Panel	700	30.00	4	0	62	13.05	2422.04	8.0	116.0
1	AT&T	CCI	TPA65R-BU8D	Panel	1900	30.00	4	0	62	15.15	3928.09	8.0	116.0
1	AT&T	CCI	TPA65R-BU8D	Panel	2100	30.00	4	0	64	15.65	4407.39	8.0	116.0
2	AT&T	ERICSSON	AIR6449	Panel	3700	108.40	1	0	11	23.55	24548.74	2.8	118.6
3	AT&T	ERICSSON	AIR6419 NR	Panel	3450	54.20	1	0	13	22.85	10447.19	2.4	118.8
3	AT&T	ERICSSON	AIR6419 LTE	Panel	3450	54.00	1	0	13	22.85	10408.63	2.4	118.8
4	AT&T	KATHREIN	80010966	Panel	700	30.00	2	0	66.7	13.15	1239.23	8.0	116.0
4	AT&T	KATHREIN	80010966	Panel	850	30.00	2	0	65.2	13.95	1489.88	8.0	116.0
4	AT&T	KATHREIN	80010966	Panel	2300	18.00	4	0	58.7	16.05	2899.56	8.0	116.0
5	AT&T	CCI	TPA65R-BU8D	Panel	700	30.00	4	120	62	13.05	2422.04	8.0	116.0
5	AT&T	CCI	TPA65R-BU8D	Panel	1900	30.00	4	120	62	15.15	3928.09	8.0	116.0
5	AT&T	CCI	TPA65R-BU8D	Panel	2100	30.00	4	120	64	15.65	4407.39	8.0	116.0
6	AT&T	ERICSSON	AIR6449	Panel	3700	108.40	1	120	11	23.55	24548.74	2.8	118.6
7	AT&T	ERICSSON	AIR6419 NR	Panel	3450	54.20	1	120	13	22.85	10447.19	2.4	118.8
7	AT&T	ERICSSON	AIR6419 LTE	Panel	3450	54.00	1	120	13	22.85	10408.63	2.4	118.8
8	AT&T	KATHREIN	80010966	Panel	700	30.00	2	120	66.7	13.15	1239.23	8.0	116.0
8	AT&T	KATHREIN	80010966	Panel	850	30.00	2	120	65.2	13.95	1489.88	8.0	116.0
8	AT&T	KATHREIN	80010966	Panel	2300	18.00	4	120	58.7	16.05	2899.56	8.0	116.0
9	AT&T	CCI	TPA65R-BU8D	Panel	700	30.00	4	240	62	13.05	2422.04	8.0	116.0
9	AT&T	CCI	TPA65R-BU8D	Panel	1900	30.00	4	240	62	15.15	3928.09	8.0	116.0
9	AT&T	CCI	TPA65R-BU8D	Panel	2100	30.00	4	240	64	15.65	4407.39	8.0	116.0
10	AT&T	ERICSSON	AIR6449	Panel	3700	108.40	1	240	11	23.55	24548.74	2.8	118.6
11	AT&T	ERICSSON	AIR6419 NR	Panel	3450	54.20	1	240	13	22.85	10447.19	2.4	118.8
11	AT&T	ERICSSON	AIR6419 LTE	Panel	3450	54.00	1	240	13	22.85	10408.63	2.4	118.8
12	AT&T	KATHREIN	80010966	Panel	700	30.00	2	240	66.7	13.15	1239.23	8.0	116.0

ANT ID	Operator	Antenna Make	Antenna Model	Type	Freq (MHz)	TPO (Watts)	# of TX	Azimuth (°)	BW (°)	Gain (dBd)	Total ERP (Watts)	Length (ft.)	Antenna Z Value (ft.) AGL*
12	AT&T	KATHREIN	80010966	Panel	850	30.00	2	240	65.2	13.95	1489.88	8.0	116.0
12	AT&T	KATHREIN	80010966	Panel	2300	18.00	4	240	58.7	16.05	2899.56	8.0	116.0
13	Unknown	GENERIC	PANEL 6FT	Panel	850	40.00	4	0	66	12.62	2924.96	6.0	97.0
14	Unknown	GENERIC	PANEL 6FT	Panel	1900	40.00	4	0	66	15.84	6139.32	6.0	97.0
15	Unknown	GENERIC	PANEL 6FT	Panel	2100	40.00	4	0	63	16.39	6968.19	6.0	97.0
16	Unknown	GENERIC	PANEL 6FT	Panel	700	40.00	4	0	68	12.33	2736.02	6.0	97.0
17	Unknown	GENERIC	PANEL 6FT	Panel	850	40.00	4	120	66	12.62	2924.96	6.0	97.0
18	Unknown	GENERIC	PANEL 6FT	Panel	1900	40.00	4	120	66	15.84	6139.32	6.0	97.0
19	Unknown	GENERIC	PANEL 6FT	Panel	2100	40.00	4	120	63	16.39	6968.19	6.0	97.0
20	Unknown	GENERIC	PANEL 6FT	Panel	700	40.00	4	120	68	12.33	2736.02	6.0	97.0
21	Unknown	GENERIC	PANEL 6FT	Panel	850	40.00	4	240	66	12.62	2924.96	6.0	97.0
22	Unknown	GENERIC	PANEL 6FT	Panel	1900	40.00	4	240	66	15.84	6139.32	6.0	97.0
23	Unknown	GENERIC	PANEL 6FT	Panel	2100	40.00	4	240	63	16.39	6968.19	6.0	97.0
24	Unknown	GENERIC	PANEL 6FT	Panel	700	40.00	4	240	68	12.33	2736.02	6.0	97.0

*Table 1: Total Site Data Table (*AGL = Above Ground Level)*

Note: Z Value represents the bottom tip height of the antenna

75% TDD Cycle is assumed for all AT&T antennas

C-Band antennas were calculated using AT&T's preferred conservative power reduction factor of 0.32

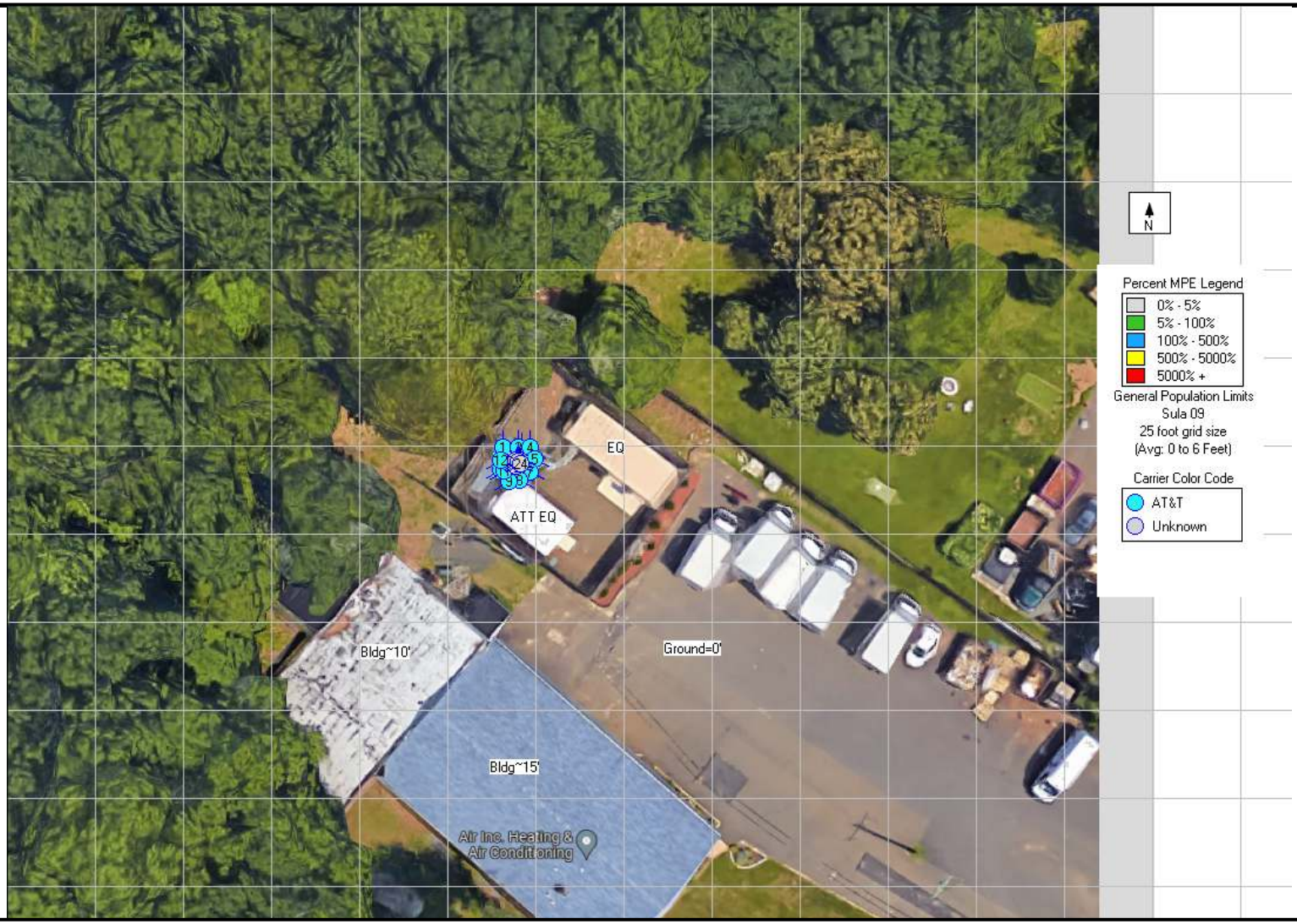
4.0 PREDICTED EMISSION LEVELS AND DISCUSSION

All calculations performed based upon the data listed for this facility have produced results that are within allowable limits for General Population limits for exposure to RF emissions as specified by federal standards.

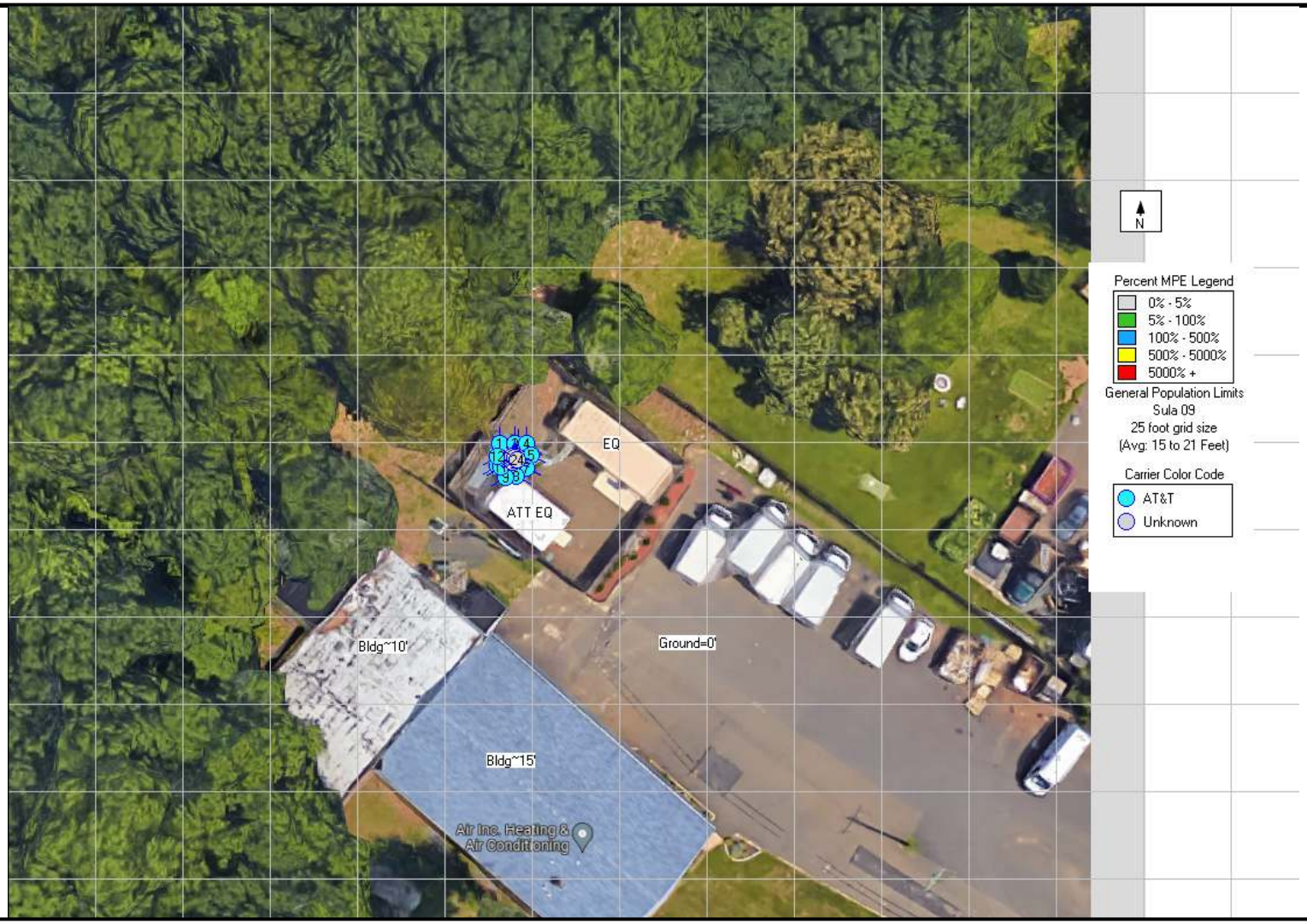
Maximum Predicted Ground Level MPE – AT&T Only:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.22%**
Ground Level **Occupational** MPE Limits:	**0.04%**

Maximum Predicted Ground Level MPE – All Carriers:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.33%**
Ground Level **Occupational** MPE Limits:	**0.07%**

5.0 EMISSIONS DIAGRAMS



Emissions Thresholds for All Carriers (Ground 0.00ft.) Branford Short Beach Road / 10133913



Emissions Thresholds for All Carriers (Adjacent Building 15.00ft.) Branford Short Beach Road / 10133913

6.0 STATEMENT OF COMPLIANCE

Centerline conducted worst case modeling to determine whether the monopole facility located at 171 Short Beach Road in Branford, Connecticut is in compliance with FCC Regulations.

6.1 STATEMENT OF AT&T MOBILITY COMPLIANCE

Based on the information analyzed, AT&T is in compliance with FCC Regulations. No additional action is required by AT&T.

6.2 RECOMMENDATIONS

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	0	0	0	0	0

Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Monopole Base	0	0	1	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Monopole Base	0	0	0	0	0	1	0	0	0	0

Monopole Base:

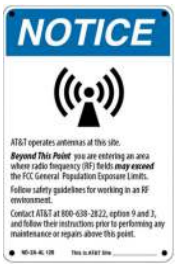
- Install (1) Caution 2B sign at the base of the monopole per AT&T policy.

7.0 FALL ARREST AND PARAPET INFORMATION

As per AT&T barrier policy, rooftop edges that are protected with a 39-inch parapet wall or guardrail are safe for work activity within six (6) feet of the edge. OSHA has stated that an existing 39-inch guardrail or parapet provides sufficient protection for employees. The height of the top rail or equivalent component of guardrail systems in new construction shall be at least 42 inches above the walking or working surface. It should also be noted that the height of the parapet or guardrail may be reduced to no less than 30 inches at any point provided the sum of the depth (horizontal distance) of the top edge, and the height of the top edge (vertical distance from the work surface to the top edge of the top member, is at least 48 inches. If there is no reason for working atop the roof, then edge protection is not required. In addition, workers may use personnel lifts or temporary fall protection measures to perform work within 6 feet of the roof edge in place of permanent edge protection. Reference: 29 CFR 1910.28, 29 CFR 1910.23 (NPRM-1990); OSHA Letters of Interpretation 2/9/83 and 3/8/9

APPENDIX A: RF SIGNAGE

AT&T RF Signage

Sign	Description	Sign	Description
	**Information 1 Sign** Gives guidelines on how to proceed and who to contact regarding areas that may exceed either the FCC's General Population or Occupational emissions limits.		**Caution 2C Sign** Gives specific information on how to proceed and who to contact regarding antennas that are façade mounted, concealed or on stand-alone structures.
	**Blue Notice 1 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Blue Notice 2 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limits. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Blue Notice 1 signs.
	**Yellow Caution 1 Sign- Rooftop** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Yellow Caution 2 Sign- Rooftop** Used to alert individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Yellow Caution 1 signs.
	**Yellow Caution 2B Sign- Tower** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limits. Must be placed at the base of the tower to warn tower climbers of potential for exposure.		**Warning 2 Sign** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit by a factor of 10 or greater. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.

APPENDIX B: FCC GUIDELINES AND EMISSIONS THRESHOLD LIMITS

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

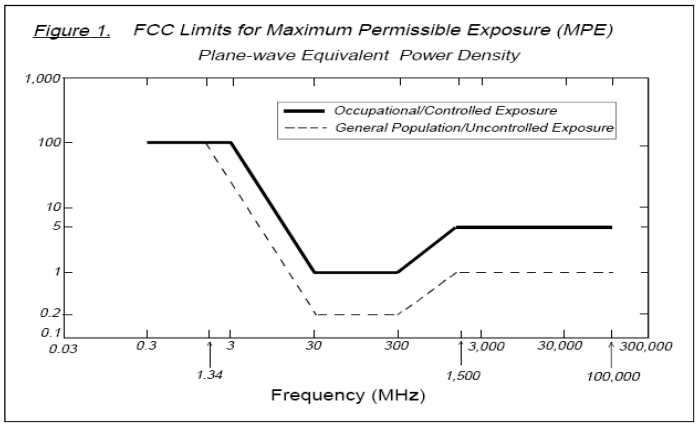
The FCC Mandates that if a site is found to be out of compliance with regard to emissions that any system operator contributing 5% or more to areas exceeding the FCC's allowable limits will be responsible for bringing the site into compliance.

Additional details can be found in FCC OET 65.

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

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX C: CALCULATION METHODOLOGY

Centerline Communications, LLC has performed theoretical modeling using Waterford Consultants' RoofMaster™ 2020 Version 35.05.18.22 which 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. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

The diagrams listed with "Farfield Overlay" have Sula09 spatial average calculations active for all non-C-Band antennas while simultaneously having only far-field spatial average calculations active for AT&T C-Band antennas.

The modeling is based on worst-case assumptions for the number of antennas and transmitter power. No losses were included in the power calculations unless they were specifically provided for the project.

FAR FIELD MODEL

In OET-65, a far field model is presented to calculate the spatial peak power density. The RoofMasterTM implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. Power density is calculated as follows:

$$S = \frac{13.05 P_{in} G}{R^2} \frac{\mu W}{cm^2}$$

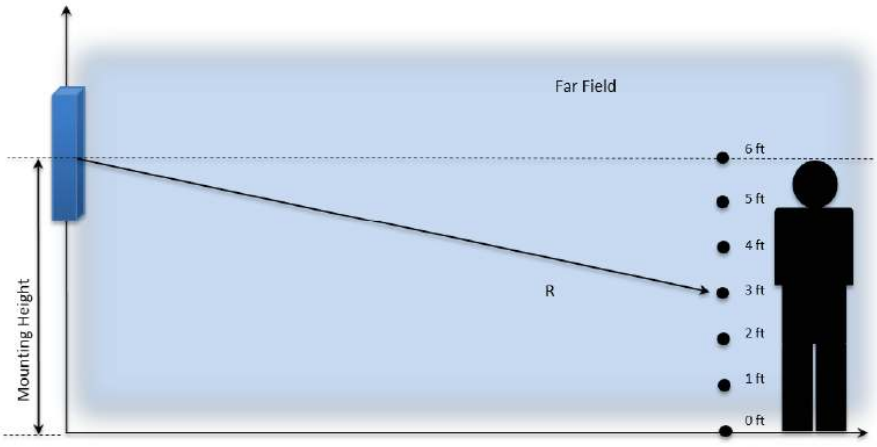
- Does not include 100% reflection factor
- Pin is Watts
- R is meters to study point
- G is gain to study point as specified in manufacturer horizontal and vertical patterns

A worst-case prediction is described in OET-65 where field strength may double due to 100% reflection of the incoming radiation. Considering an EPA recommendation that a multiplier of 1.6 is a more realistically representation of this effect is rewritten as follow:

$$S_{FF} = \frac{33.4 \cdot P_{in} \cdot G_{dBd}}{R^2} \quad (\mu W/cm^2)$$

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 to 6 feet) must be conducted.

RoofMasterTM calculates seven power density values between 0 and 6 feet above the specified study plane and performs a linear spatial average.



Predicted power densities are displayed as a percentage of the applicable FCC standards.

Power Reduction Formula for Reducing Maximum Safety Distance Length

($\mathbf{R}_{reduced}/\mathbf{R}_{max}$) = 0.99 * ($\mathbf{P}_{reduced}/\mathbf{P}_{max}$)

$\mathbf{P}_{max}$ = 200W (Nominal Peak power of AEQK)

$\mathbf{R}_{max}$ = Lateral Compliance Distance of AEQK

$\mathbf{P}_{reduced}$ = ?

$\mathbf{R}_{reduced}$ = Actual Lateral Distance between AEQK and Bldg. X

APPENDIX D: CERTIFICATIONS

I, Michelle Stone, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Michelle Stone

6/10/2022

I, Yasir Alqadhili, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Yasir Alqadhili

6/10/2022

APPENDIX E: PROPRIETARY STATEMENT

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