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 13757810
AT&T Mobility Telecommunications Facility @ 790 Willis Street, Bristol, CT 06010

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, three (3) RRHs, twelve (12) triplexers, six (6) coax cables, and a conduit;
- Install mount modifications, and nine (9) antennas;
- Ground work includes removing six (6) RRUW and six (6) diplexers; and installing one (1) 6648 + XCEDE, one (1) 6630 + IDLe and three (3) 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; the Connecticut Light and Power Co., as Property Owner; the Honorable Jeff Caggiano, as Mayor of Bristol, and City Planner Robert M. Flanagan.

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.

Jack Andrews, Zoning Manager 10130 Donleigh Drive, Columbia, MD 21046 (443) 677-0144
Centerline Communications • 750 W Center Street, Suite 301, W Bridgewater, MA 02379

For the foregoing reasons, AT&T respectfully requests that the Council approve this Exempt Modification request for this tower located at 790 Willis Street, Bristol, CT 06010.

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
Connecticut Light and Power Co. - Property Owner
Honorable Jeff Caggiano - Mayor of Bristol
City Planner - Robert M. Flanagan

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.

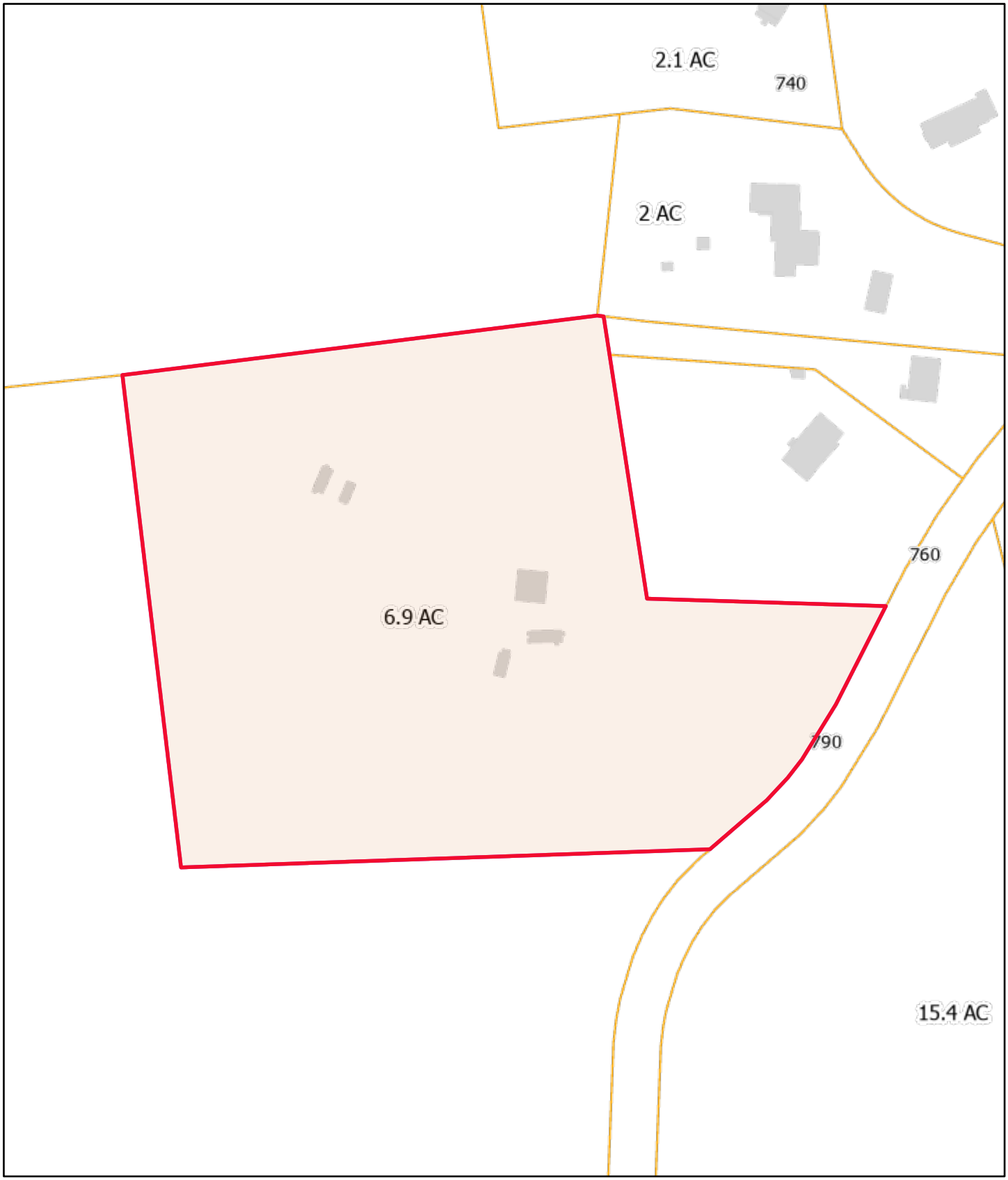
WITNESS my hand and official seal, this 30th day of June, 2022.

NOTARY SEAL

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

Notary Public
My Commission Expires: March 14, 2025

13757810



July 9, 2022

1:2,257

0 75 150 300 ft

0 20 40 80 m

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

790 WILLIS ST

Location	790 WILLIS ST	**Mblu**	06/ / 8A/ /
Acct#	0034800	**Owner**	CONN LIGHT + POWER CO
Assessment	$449,190	**Appraisal**	$641,700
PID	5681	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$392,100	$249,600	$641,700
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$274,470	$174,720	$449,190

Owner of Record

Owner	CONN LIGHT + POWER CO	**Sale Price**	$0
Co-Owner		**Certificate**	1
Address	107 SELDEN ST BERLIN, CT 06037	**Book & Page**	0277/0293
		Sale Date	01/25/1952

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
CONN LIGHT + POWER CO	$0	1	0277/0293	01/25/1952

Building Information

Building 1 : Section 1

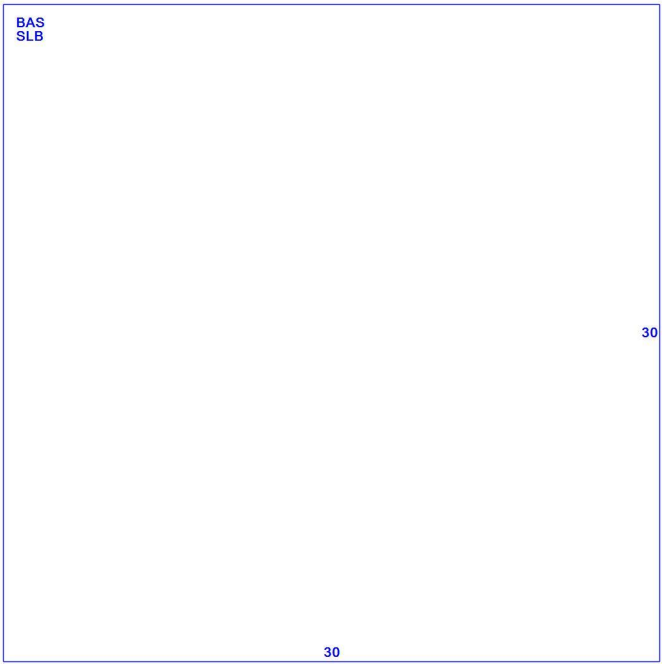
Year Built:	1950
Living Area:	900
Replacement Cost:	$40,248
Building Percent Good:	65
Replacement Cost Less Depreciation:	$26,200

Building Attributes	
Field	**Description**
Style	Warehouse
Model	Ind/Comm
Grade	
Stories:	1
Occupancy	1.00
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Hot Air-no Duc
AC Type	Unit/AC
Struct Class	
Bldg Use	Public Utility
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Light
Ceiling/Wall	None
Rooms/Prtns	Light
Wall Height	8.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos2/BristolCTPhotos//\00\05\61\14.jpg)

Building Layout



(ParcelSketch.ashx?pid=5681&bid=5681)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	900	900
SLB	Slab	900	0
		1,800	900

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	436
Description	Public Utility
Zone	R-25
Neighborhood	50
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	6.9
Frontage	300
Depth	
Assessed Value	$174,720
Appraised Value	$249,600

lblIndfront

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CELL	Cell Tower/Site			2.00 UNITS	$210,000	1
CB3	PreCastConcCel			300.00 S.F.	$54,000	1
CB3	PreCastConcCel			300.00 S.F.	$54,000	1
FCP	Carport			900.00 S.F.	$5,600	1
GAR1	Garage	FR	Frame	420.00 S.F.	$6,300	1
CB3	PreCastConcCel			200.00 S.F.	$36,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$392,100	$249,600	$641,700
2020	$392,100	$249,600	$641,700
2019	$392,100	$249,600	$641,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$274,470	$174,720	$449,190
2020	$274,470	$174,720	$449,190
2019	$274,470	$174,720	$449,190

Radio Frequency Exposure Analysis Report

June 27, 2022

American Tower on behalf of AT&T
Centerline Communications Project Number: 950035-005

AT&T Site Name: Brst - Bristol
Site Number: CTL01055
FA#: 10035029
USID: 59357

Site Address: 790 WILLIS STREET, BRISTOL, CT 06010

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	23.39738 µW/cm^2
Cumulative General Population % MPE (Ground Level):	2.3398599999999998%

June 27, 2022

Centerline
Attn: John Luca, Associate Project Manager
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **Brst - Bristol**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed AT&T facility at **790 WILLIS STREET, BRISTOL, CT 06010** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

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

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

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

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

Calculation Methodology

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

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

Data & Results

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

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

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

Maximum Calculated Cumulative Power Density (Location: approximately 280' southwest of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (μW/cm²)	General Population MPE Limit (μW/cm²)	General Population % MPE
AT&T A 1	QUINTEL QD8616-7 V1	700	13.04	124.00	4.00	30.00	2414.58	0.00000	466.67	0.00000
AT&T A 1	QUINTEL QD8616-7 V1	1900	15.25	124.00	4.00	30.00	4020.33	0.00000	1000.00	0.00000
AT&T A 1	QUINTEL QD8616-7 V1	2100	15.56	124.00	4.00	30.00	4321.67	0.00000	1000.00	0.00000
AT&T A 1	QUINTEL QD8616-7 V1	700	13.04	124.00	2.00	30.00	1207.29	0.00000	466.67	0.00000
AT&T A 2	Ericsson AIR6449	3700	23.45	122.00	1.00	108.40	23989.95	0.00000	1000.00	0.00000
AT&T A 3	Ericsson AIR6419	3450	23.45	126.00	1.00	108.40	23989.95	0.00000	1000.00	0.00000
AT&T A 4	CCI DMP65R-BU8D	700	12.25	124.00	4.00	30.00	2014.56	0.00000	466.67	0.00000
AT&T A 4	CCI DMP65R-BU8D	850	12.55	124.00	4.00	30.00	2158.65	0.00000	566.67	0.00000
AT&T A 4	CCI DMP65R-BU8D	2300	14.95	124.00	4.00	18.00	2250.78	0.00000	1000.00	0.00000
AT&T B 5	QUINTEL QD6616-7 V1	700	11.93	124.00	4.00	30.00	1871.85	0.00005	466.67	0.00001
AT&T B 5	QUINTEL QD6616-7 V1	1900	15.11	124.00	4.00	30.00	3888.22	0.00007	1000.00	0.00001
AT&T B 5	QUINTEL QD6616-7 V1	2100	15.50	124.00	4.00	30.00	4257.96	0.00009	1000.00	0.00001
AT&T B 5	QUINTEL QD6616-7 V1	700	11.93	124.00	2.00	30.00	935.93	0.00003	466.67	0.00001
AT&T B 6	Ericsson AIR6449	3700	23.45	122.00	1.00	108.40	23989.95	0.00103	1000.00	0.00010
AT&T B 7	Ericsson AIR6419	3450	23.45	126.00	1.00	108.40	23989.95	0.00089	1000.00	0.00009
AT&T B 8	COMMSCOPE NNHH-65B-R4	700	11.70	124.00	4.00	30.00	1774.93	0.00017	466.67	0.00004
AT&T B 8	COMMSCOPE NNHH-65B-R4	850	12.60	124.00	4.00	30.00	2183.64	0.00007	566.67	0.00001
AT&T B 8	COMMSCOPE NNHH-65B-R4	2300	15.30	124.00	4.00	18.00	2439.68	0.00003	1000.00	0.00000
AT&T C 9	QUINTEL QD8616-7 V1	700	13.04	124.00	4.00	30.00	2414.58	0.00005	466.67	0.00001
AT&T C 9	QUINTEL QD8616-7 V1	1900	15.25	124.00	4.00	30.00	4020.33	0.00007	1000.00	0.00001
AT&T C 9	QUINTEL QD8616-7 V1	2100	15.56	124.00	4.00	30.00	4321.67	0.00006	1000.00	0.00001
AT&T C 9	QUINTEL QD8616-7 V1	700	13.04	124.00	2.00	30.00	1207.29	0.00003	466.67	0.00001
AT&T C 10	Ericsson AIR6449	3700	23.45	122.00	1.00	108.40	23989.95	0.00107	1000.00	0.00011
AT&T C 11	Ericsson AIR6419	3450	23.45	126.00	1.00	108.40	23989.95	0.00092	1000.00	0.00009
AT&T C 12	CCI DMP65R-BU8D	700	12.25	124.00	4.00	30.00	2014.56	0.00017	466.67	0.00004
AT&T C 12	CCI DMP65R-BU8D	850	12.55	124.00	4.00	30.00	2158.65	0.00006	566.67	0.00001
AT&T C 12	CCI DMP65R-BU8D	2300	14.95	124.00	4.00	18.00	2250.78	0.00005	1000.00	0.00001
Unknown1 A 13	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00000	1000.00	0.00000
Unknown1 A 14	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00000	1000.00	0.00000
Unknown1 A 15	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00000	1000.00	0.00000
Unknown1 A 16	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00000	1000.00	0.00000
Unknown1 B 17	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000
Unknown1 B 18	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000
Unknown1 B 19	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000
Unknown1 B 20	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (µW/cm²)	General Population MPE Limit (µW/cm²)	General Population % MPE
Unknown1 C 21	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000
Unknown1 C 22	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000
Unknown1 C 23	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000
Unknown1 C 24	GENERIC PANEL 6FT	1900	15.84	111.30	1.00	60.00	2302.24	0.00002	1000.00	0.00000
Unknown2 A 25	GENERIC PANEL 6FT	850	12.62	99.70	4.00	40.00	2924.96	0.00000	566.67	0.00000
Unknown2 A 25	GENERIC PANEL 6FT	1900	15.84	99.70	4.00	40.00	6139.32	0.00000	1000.00	0.00000
Unknown2 A 26	GENERIC PANEL 6FT	2100	16.39	99.70	4.00	40.00	6968.19	0.00000	1000.00	0.00000
Unknown2 A 26	GENERIC PANEL 6FT	700	12.33	99.70	4.00	40.00	2736.02	0.00000	466.67	0.00000
Unknown2 B 27	GENERIC PANEL 6FT	850	12.62	99.70	4.00	40.00	2924.96	0.00010	566.67	0.00002
Unknown2 B 27	GENERIC PANEL 6FT	1900	15.84	99.70	4.00	40.00	6139.32	0.00008	1000.00	0.00001
Unknown2 B 28	GENERIC PANEL 6FT	2100	16.39	99.70	4.00	40.00	6968.19	0.00007	1000.00	0.00001
Unknown2 B 28	GENERIC PANEL 6FT	700	12.33	99.70	4.00	40.00	2736.02	0.00012	466.67	0.00003
Unknown2 C 29	GENERIC PANEL 6FT	850	12.62	99.70	4.00	40.00	2924.96	0.00009	566.67	0.00002
Unknown2 C 29	GENERIC PANEL 6FT	1900	15.84	99.70	4.00	40.00	6139.32	0.00008	1000.00	0.00001
Unknown2 C 30	GENERIC PANEL 6FT	2100	16.39	99.70	4.00	40.00	6968.19	0.00011	1000.00	0.00001
Unknown2 C 30	GENERIC PANEL 6FT	700	12.33	99.70	4.00	40.00	2736.02	0.00011	466.67	0.00002
Unknown3 A 31	GENERIC PANEL 6FT	862	12.62	86.50	2.00	40.00	1462.48	0.00000	574.67	0.00000
Unknown3 A 32	GENERIC PANEL 6FT	1900	15.84	86.50	2.00	60.00	4604.49	0.00000	1000.00	0.00000
Unknown3 A 33	GENERIC PANEL 6FT	2500	14.49	86.50	1.00	34.70	975.73	0.00000	1000.00	0.00000
Unknown3 B 34	GENERIC PANEL 6FT	862	12.62	86.50	2.00	40.00	1462.48	0.00007	574.67	0.00001
Unknown3 B 35	GENERIC PANEL 6FT	1900	15.84	86.50	2.00	60.00	4604.49	0.00008	1000.00	0.00001
Unknown3 B 36	GENERIC PANEL 6FT	2500	14.49	86.50	1.00	34.70	975.73	0.00003	1000.00	0.00000
Unknown3 C 37	GENERIC PANEL 6FT	862	12.62	86.50	2.00	40.00	1462.48	0.00006	574.67	0.00001
Unknown3 C 38	GENERIC PANEL 6FT	1900	15.84	86.50	2.00	60.00	4604.49	0.00008	1000.00	0.00001
Unknown3 C 39	GENERIC PANEL 6FT	2500	14.49	86.50	1.00	34.70	975.73	0.00001	1000.00	0.00000
Unknown 40	GENERIC MICROWAVE 3FT	11000	38.65	86.50	1.00	0.10	732.82	0.00000	1000.00	0.00000
Unknown 41	GENERIC MICROWAVE 3FT	18000	39.45	90.70	1.00	0.10	881.05	0.00000	1000.00	0.00000
							Cumulative Power Density:	**23.39738 µW/cm²**	**Cumulative % MPE:**	**2.33986%**

Summary

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

Katrina Styx
RF EME Technical Writer
Centerline Communications, LLC

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Mount Analysis Report

ATC Site Name	:	**Brst - Bristol, CT**
ATC Site Number	:	**302500**
Engineering Number	:	**13757810_C8_01**
Mount Elevation	:	**123 ft**
Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**MRCTB056373**
Carrier Site Number	:	**NA**
Site Location	:	**790 Willis Street** **Bristol, CT 06010-7269** **41.64909486 , -72.94801487**
County	:	**Hartford**
Date	:	**April 6, 2022**
Max Usage	:	**136%**
Result	:	**Fail**

Prepared By:
Garrett Williams
Structural Engineer I

Garrett Williams

Reviewed By:

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for AT&T Mobility at 123 ft.

Supporting Documents

Specifications Sheet	Site Pro 1 RMQP, dated July 9, 2015
Radio Frequency Data Sheet	RFDS ID #10035029, dated February 25, 2022
Reference Photos	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	493 ft
Crest Length (L):	3662 ft
Spectral Response:	Ss = 0.189, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs

*** Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.**

Conclusion

Based on the analysis results, the antenna mount does not meet the requirements per the applicable codes listed above. Modifications to be designed in subsequent service to address below failures:

- Install P2 (2.375" x 60") antenna mounting pipe (Mount Pipe S, T, & U) with Site Pro 1 SCX7-U (ANT.16985 or approved equivalent) crossover plate kits.
- Replace Mount Pipe(s) B, E, H, K, N, & O with Kenwood T1309MT12 using Site Pro 1 SCX7-U (ANT.16985 or approved equivalent) crossover plate kits.
- Horizontals (H016, H017, H018, H019, H020, H021, H031, H033, H034, H035, H037, H038, H039, H040, H041, H042)
- The rough cost estimate, pre-MOD design, is estimated to be ≤$20k. Please note, a more refined cost estimate will be provided as part of the Modification document package.

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

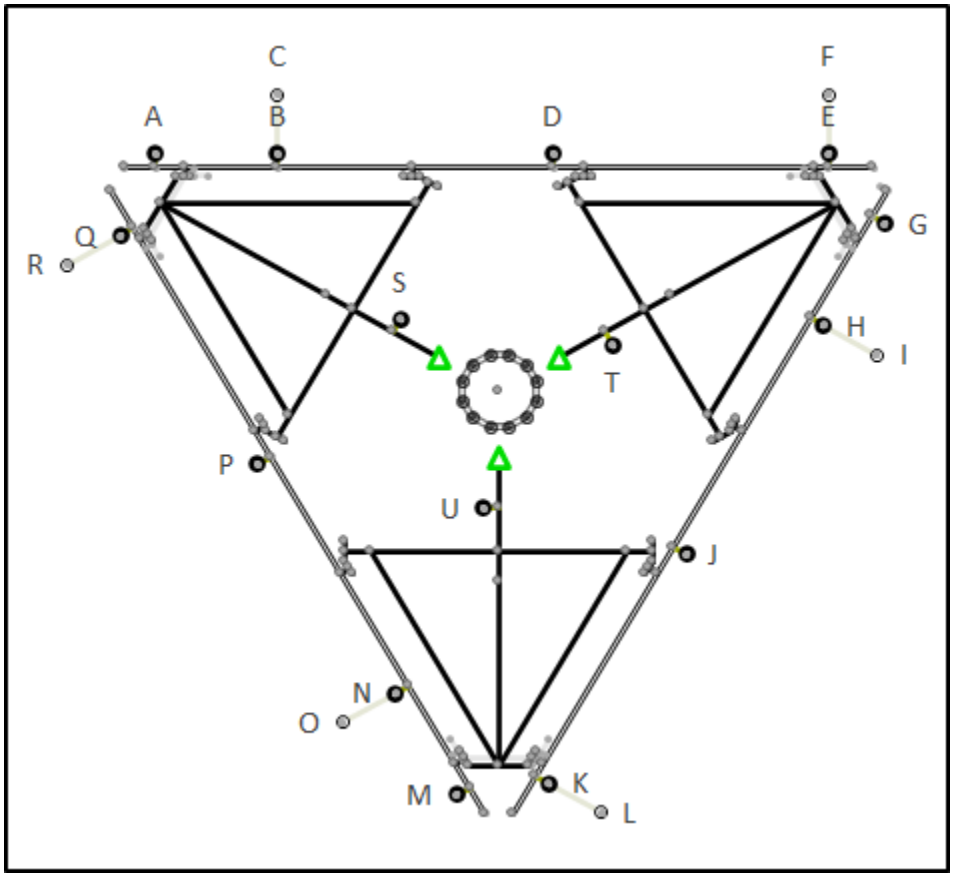
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
123.0	126.0	3	Ericsson AIR 6449 B77D/ C-Band
	124.0	1	Quintel QD6616-7
		1	CCI DMP65R-BU6DA
		1	Commscope NNHH-65B-R4
		2	Quintel QD8616-7
		2	CCI DMP65R-BU8D
		4	Raycap DC6-48-60-18-8F
		3	Ericsson Radio 8843 - B2 + B66A
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		1	Generic 2' Std. Dish
	122.0	3	Ericsson AIR 6419 B77G

Structure Usages

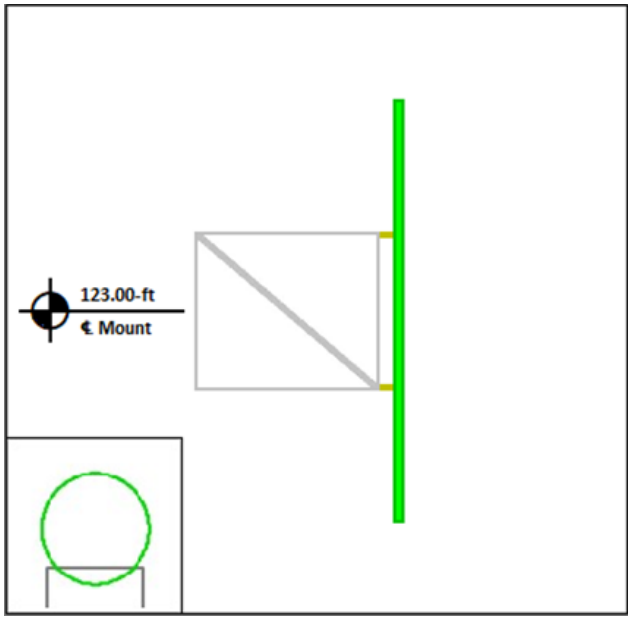
Structural Component	Controlling Usage	Pass/Fail
Horizontals	136%	Fail
Tie-Backs	14%	Pass
Mount Pipes	65%	Pass
Connection Check	28%	Pass

Mount Layout

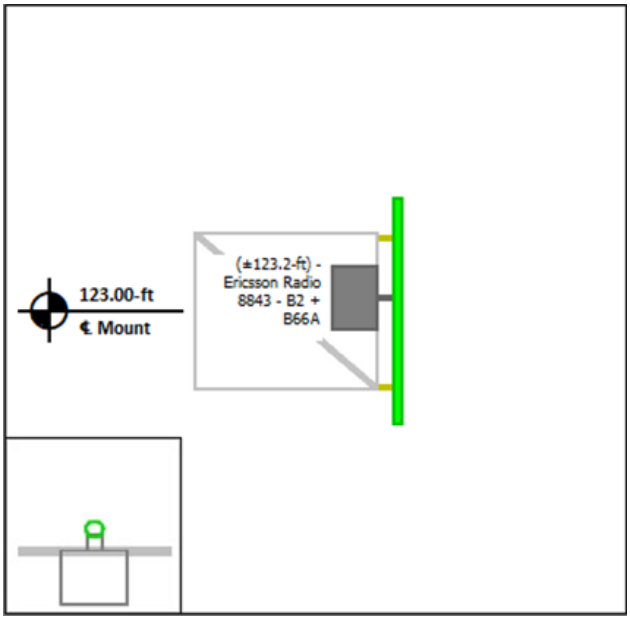


Equipment Layout

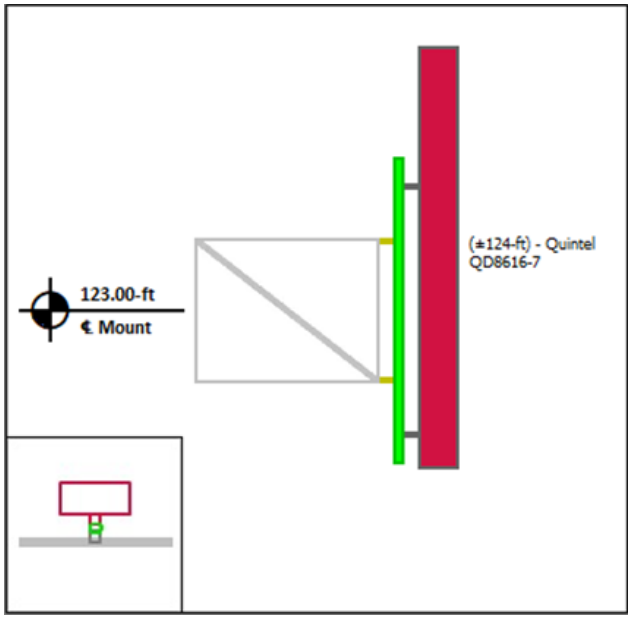
Mount Pipe A



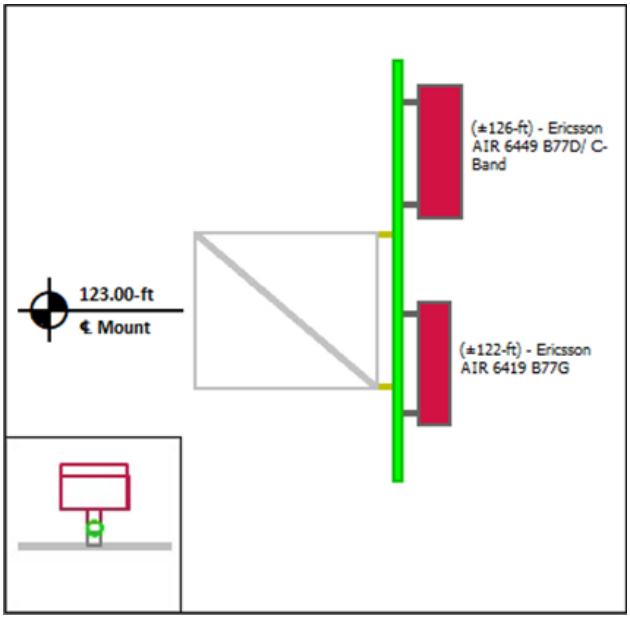
Mount Pipe B



Mount Pipe C

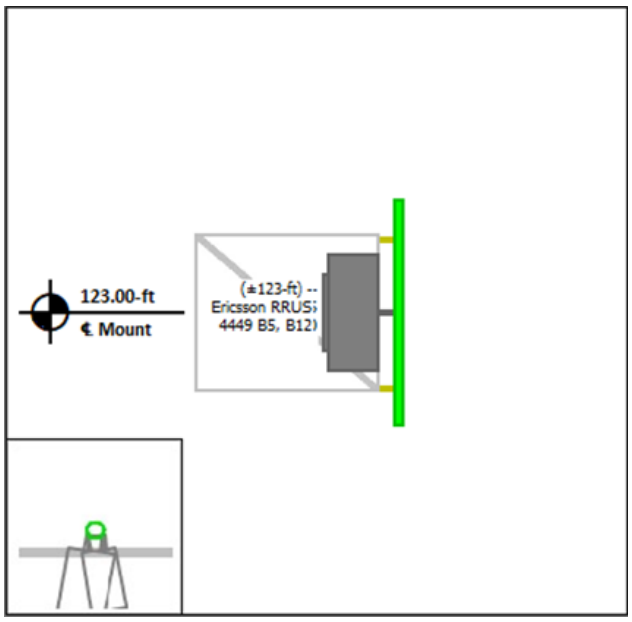


Mount Pipe D

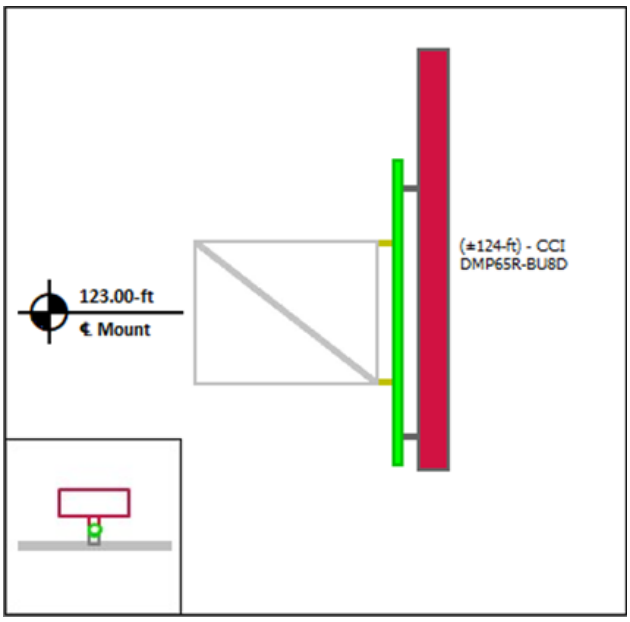


Equipment Layout Cont'd.

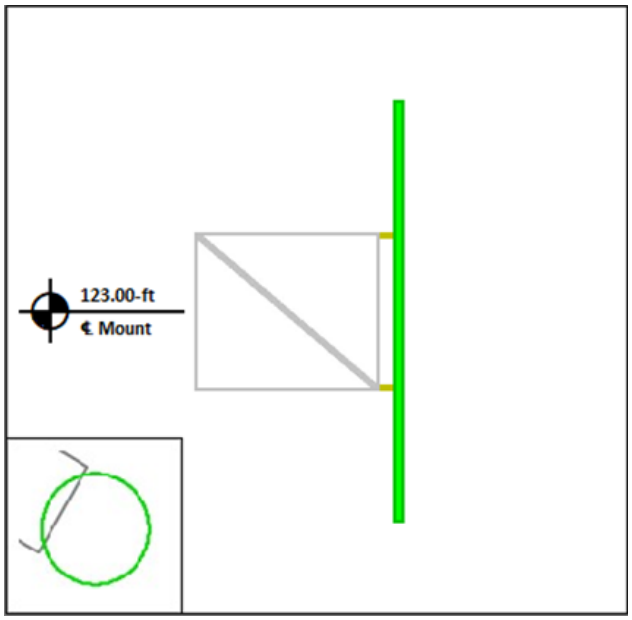
Mount Pipe E



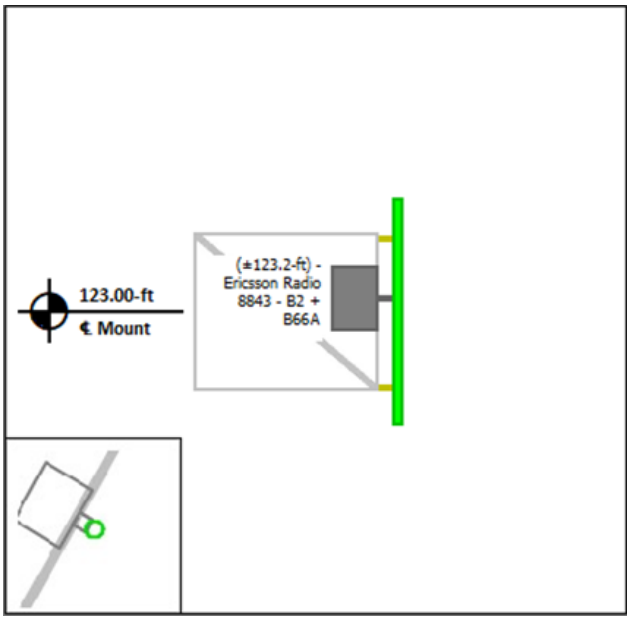
Mount Pipe F



Mount Pipe G

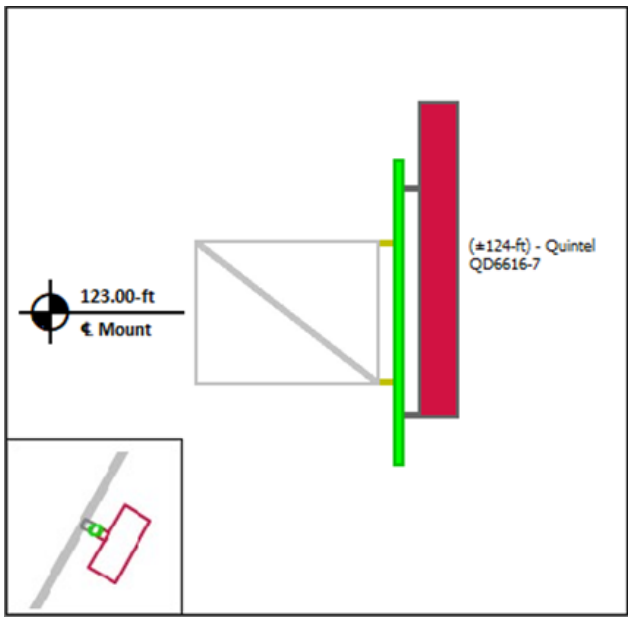


Mount Pipe H

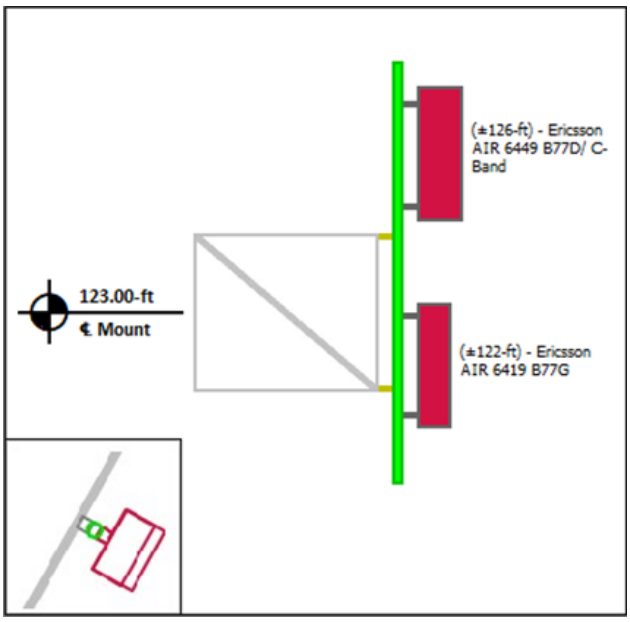


Equipment Layout Cont'd.

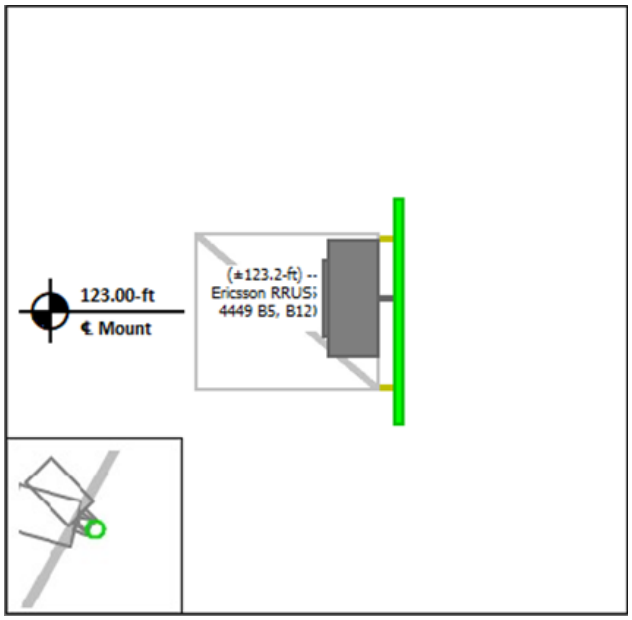
Mount Pipe I



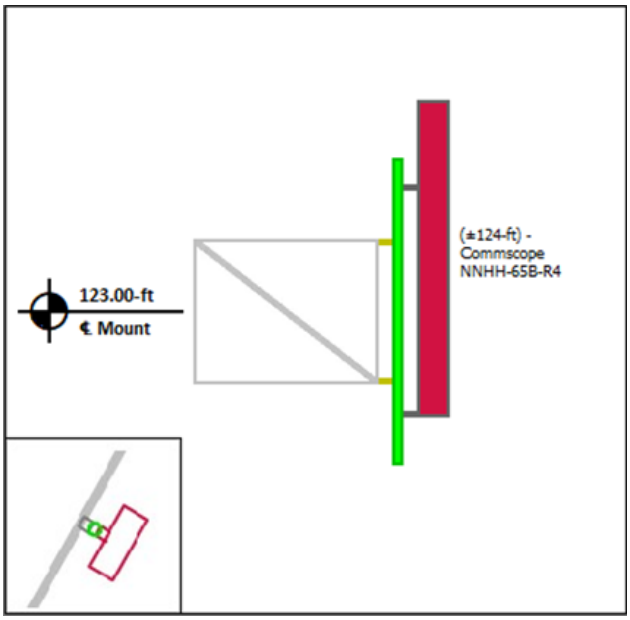
Mount Pipe J



Mount Pipe K

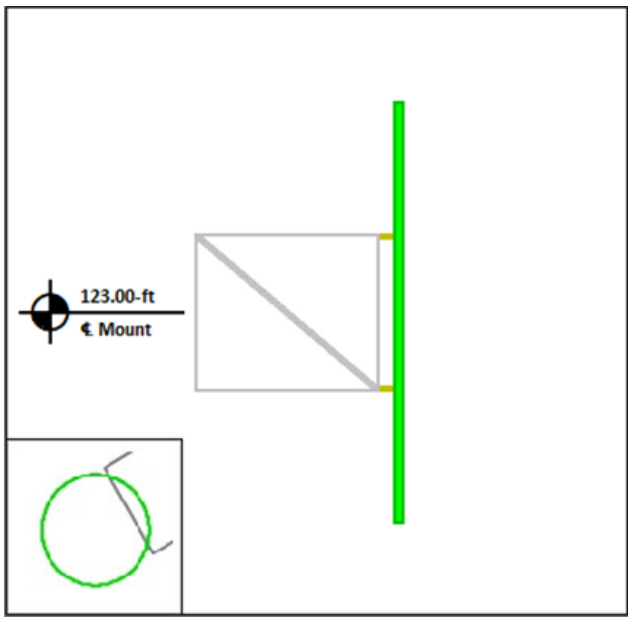


Mount Pipe L

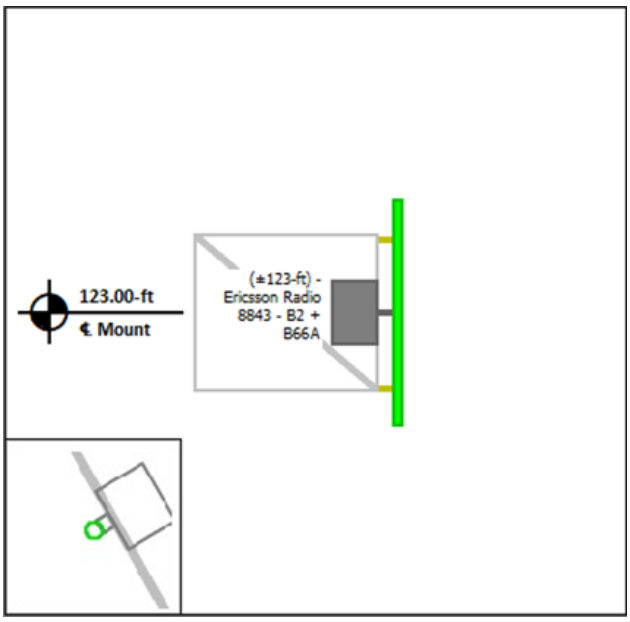


Equipment Layout Cont'd.

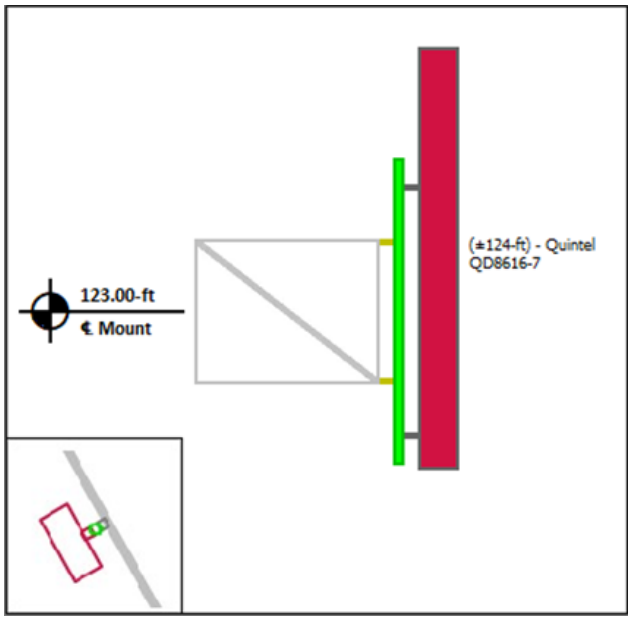
Mount Pipe M



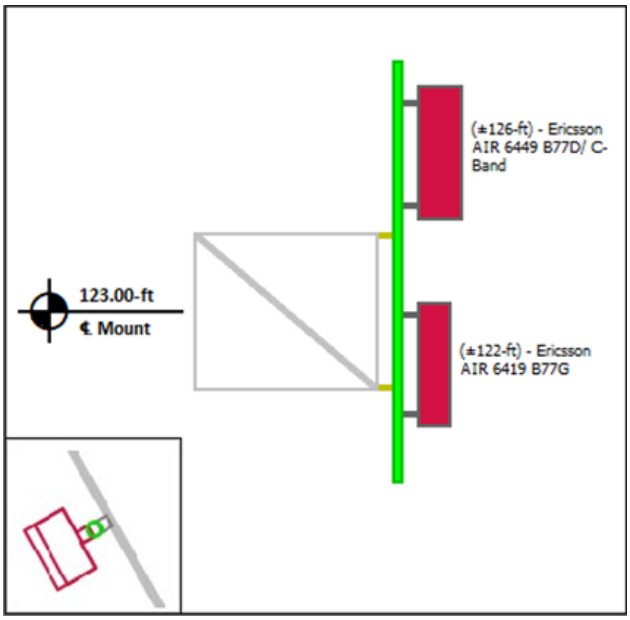
Mount Pipe N



Mount Pipe O

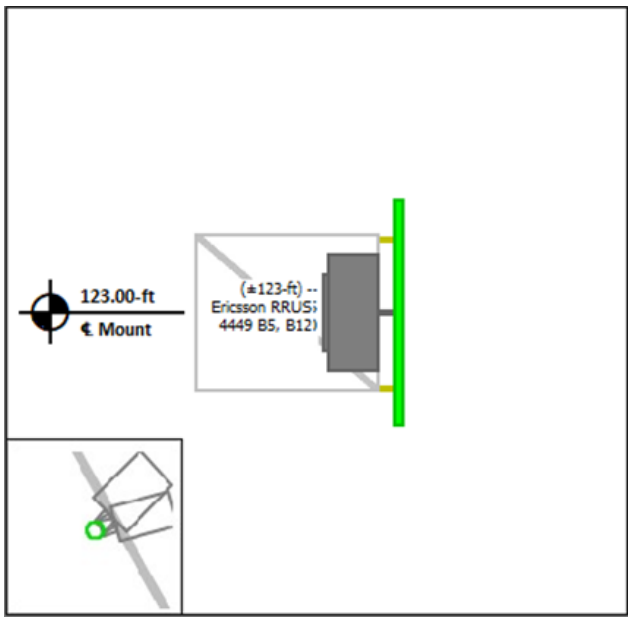


Mount Pipe P

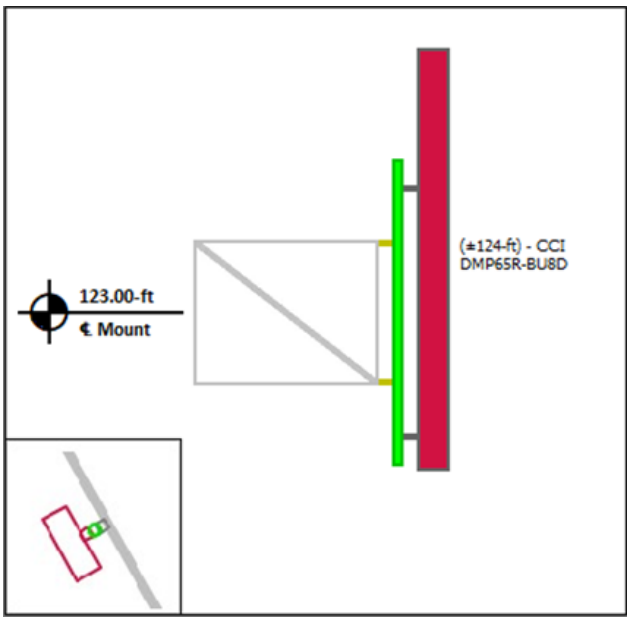


Equipment Layout Cont'd.

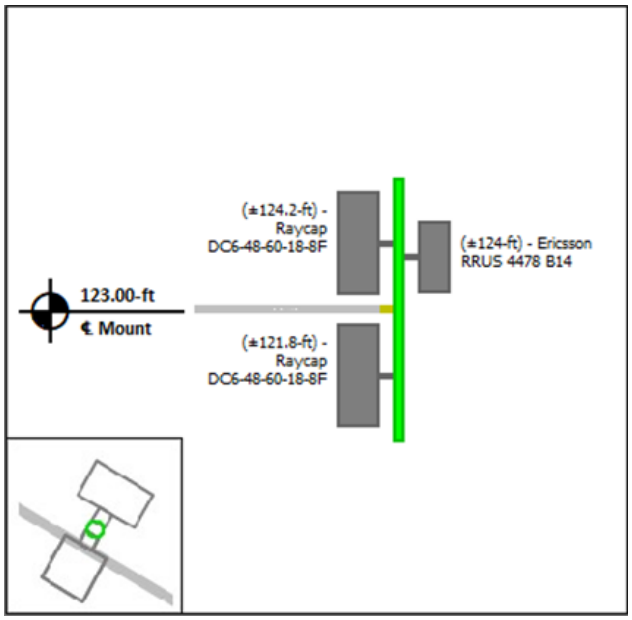
Mount Pipe Q



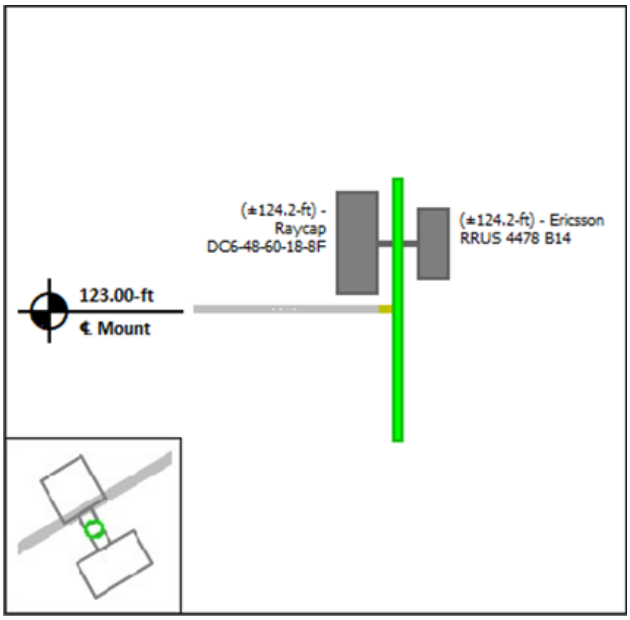
Mount Pipe R



Mount Pipe S

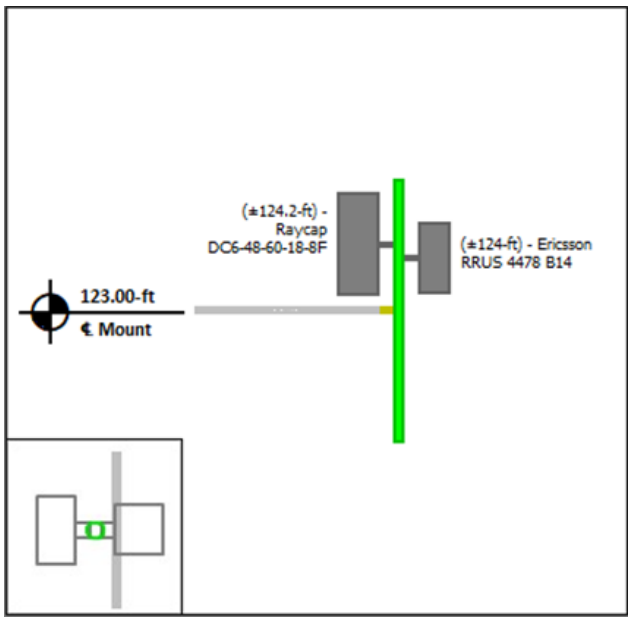


Mount Pipe T



Equipment Layout Cont'd.

Mount Pipe U



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 equipment, 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.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

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.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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.

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Site Number:	*302500*
Project Number:	*13757810_C8_01*
Carrier:	*AT&T Mobility*
Mount Elevation:	*123 ft*
Date:	4/6/2022

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.05	
Topographic Factor	K_{zt}	1.42	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.96	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	117	mph
Velocity Pressure	q_z	47.6	psf
Height Escalation Factor	K_{iz}	1.14	
Thickness of Radial Glaze Ice	T_{iz}	1.29	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.202	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.101	
Amplification Factor	A	1.0	
Total Weight	W	3554.4	lbs
Total Shear Force	V_S	358.3	lbs
Horizontal Seismic Load	Eh	358.3	lbs
Vertical Seismic Load	Ev	143.3	lbs

Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson AIR 6449 B77D/ C-Band	30.4	15.9	10.6	81.6	4.03	1.62	5.08	2.19
Quintel QD6616-7	72.0	22.0	9.6	130.0	13.58	2.88	15.71	3.78
CCI DMP65R-BU6DA	71.2	20.7	7.7	79.4	N/A	N/A	N/A	N/A
Commscope NNHH-65B-R4	72.0	19.6	7.8	83.8	12.27	2.34	14.38	3.22
Quintel QD8616-7	96.0	22.0	9.6	150.0	18.81	3.84	21.58	5.00
CCI DMP65R-BU8D	96.0	20.7	7.7	95.7	17.87	3.08	20.64	4.22
Raycap DC6-48-60-18-8F	23.5	9.7	9.7	20.0	1.90	1.90	2.67	2.67
Ericsson Radio 8843 - B2 + B66A	15.0	13.2	10.9	71.9	1.65	1.36	2.31	1.97
Ericsson RRUS 32 B30	27.2	12.1	7.0	60.0	2.74	1.67	3.64	2.50
Ericsson RRUS 4449 B5, B12	17.9	13.2	9.4	71.0	1.97	1.40	2.69	2.04
Ericsson RRUS 4478 B14	16.5	13.4	7.7	59.9	1.84	1.06	2.54	1.63
Generic 2' Std. Dish	24.0	24.0	6.0	14.0	N/A	N/A	N/A	N/A
Ericsson AIR 6419 B77G	28.3	16.1	7.9	66.1	3.80	1.20	4.81	1.73

**** Equipment with EPA values N/A were not considered in the mount analysis***

AMERICAN TOWER®
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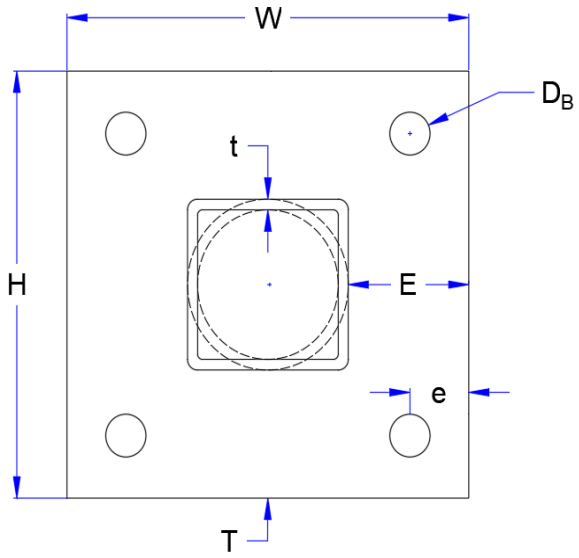
Site Number:	*302500*
Project Number:	*13757810_C8_01*
Carrier:	*AT&T Mobility*
Mount Elevation:	*123 ft*
Date:	4/6/2022

Mount-to-Tower Connection Analysis

Applied Loads from RISA 3D			
Controlling Load Combination		5	
Node Label		N002	
Force in X	Fx	2303.6	lbs
Force in Y	Fy	-805.7	lbs
Force in Z	Fz	1008.7	lbs
Moment about X	Mx	-340.3	lb-ft
Moment about Y	My	-3013.6	lb-ft
Moment about Z	Mz	-1696.6	lb-ft

Bolt Shear and Tensile Capacity			
Bolt Quantity	n	4	
Bolt Diameter	D_B	5/8	in
Bolt Edge Distance	e	1	in
Bolt Grade		A325	
Bolt Fy	Fy_B	92	ksi
Bolt Fu	Fu_B	120	ksi
Applied Shear	Vu	0.31	k
Applied Tension	Tu	3.61	k
Tensile Strength	ϕTn	20.3	k
Interaction Capacity	(Tu+Vu)/ϕTn	19%	Pass

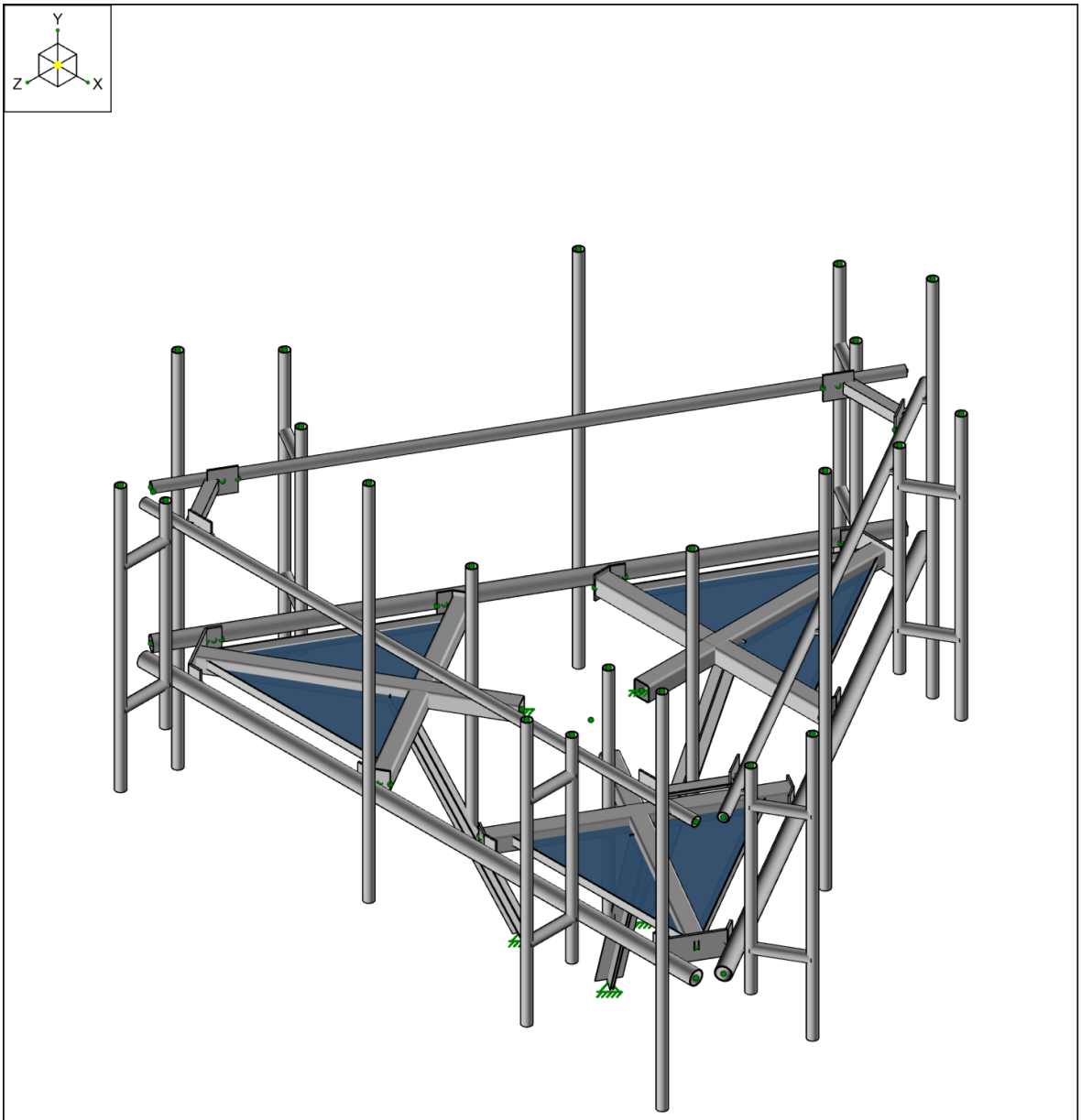
Plate Flexural Capacity			
Plate Height	H	8	in
Plate Width	W	8	in
Plate Thickness	T	1/2	in
Plate Grade		A36	
Plate Fy	Fy_P	36	ksi
Plate Fu	Fu_P	58	ksi
Shear Capacity	ϕVn	26.9	k
Applied Moment	Mu	7.2	k-in
Flexural Strength	ϕMn	26.1	k-in
Flexural Capacity	Mu/ϕMn	28%	Pass



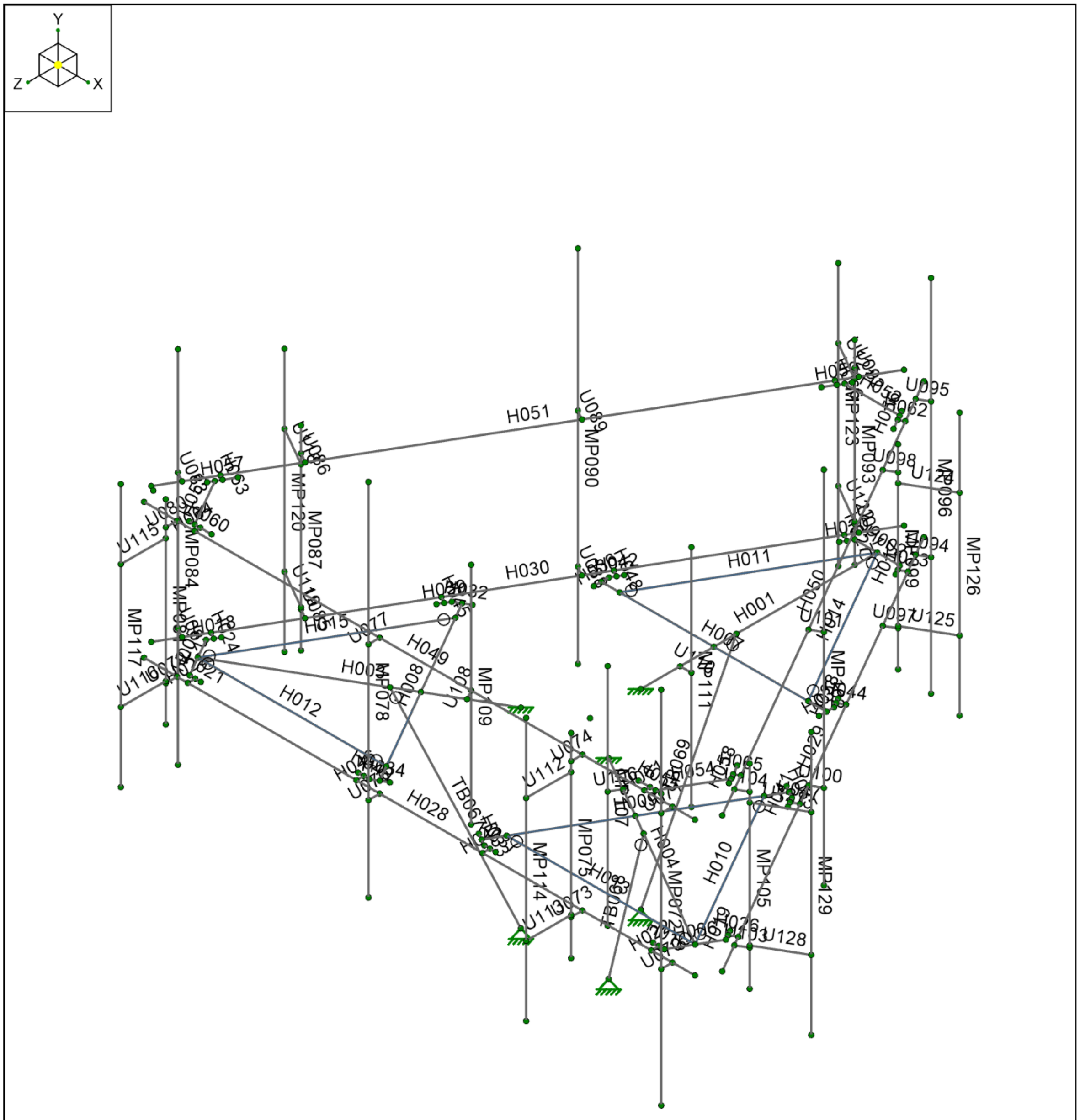
Weld and Base Metal Capacity			
Standoff Type		Tube	
Standoff Member		HSS4x4x4	
Member Edge Distance	E	2	in
Member Width	w	4	in
Member Thickness	t	0.250	in
Member Grade		A53 Gr. B	
Member Fy	Fy_M	35	ksi
Member Fu	Fu_M	60	ksi
Weld Size	a	1/4	in
Weld Length	l	16.0	in
Applied Load	Pu	7.2	k
Weld Strength	ϕRn	44.5	k
Weld Capacity	Pu/ϕRn	16%	Pass

Minimum Base Metal Thickness	0.206	in
Controlling Base Metal Thickness	0.250	in
Base Metal Result	Acceptable	

Prying Action Considerations							
Moment Arm	b	1.00	in	Minimum Thickness	t_{min}	0.20	in
Effective Moment Arm	b'	0.69	in	No Prying Thickness	t_{np}	0.26	in
Tributary Length	p	2.75	in	Min Bolt Strength Thickness	t_c	0.62	k-in
Effective Edge Distance	a'	1.31	in	Prying Action Bolt Tension	T_{up}	0.00	k



American Tower Corp.	302500, Brst - Bristol	SK-1
Garrett.Williams		Apr 06, 2022
13757810_C8_01		R3D. AT&T MOBILITY @ 30250…



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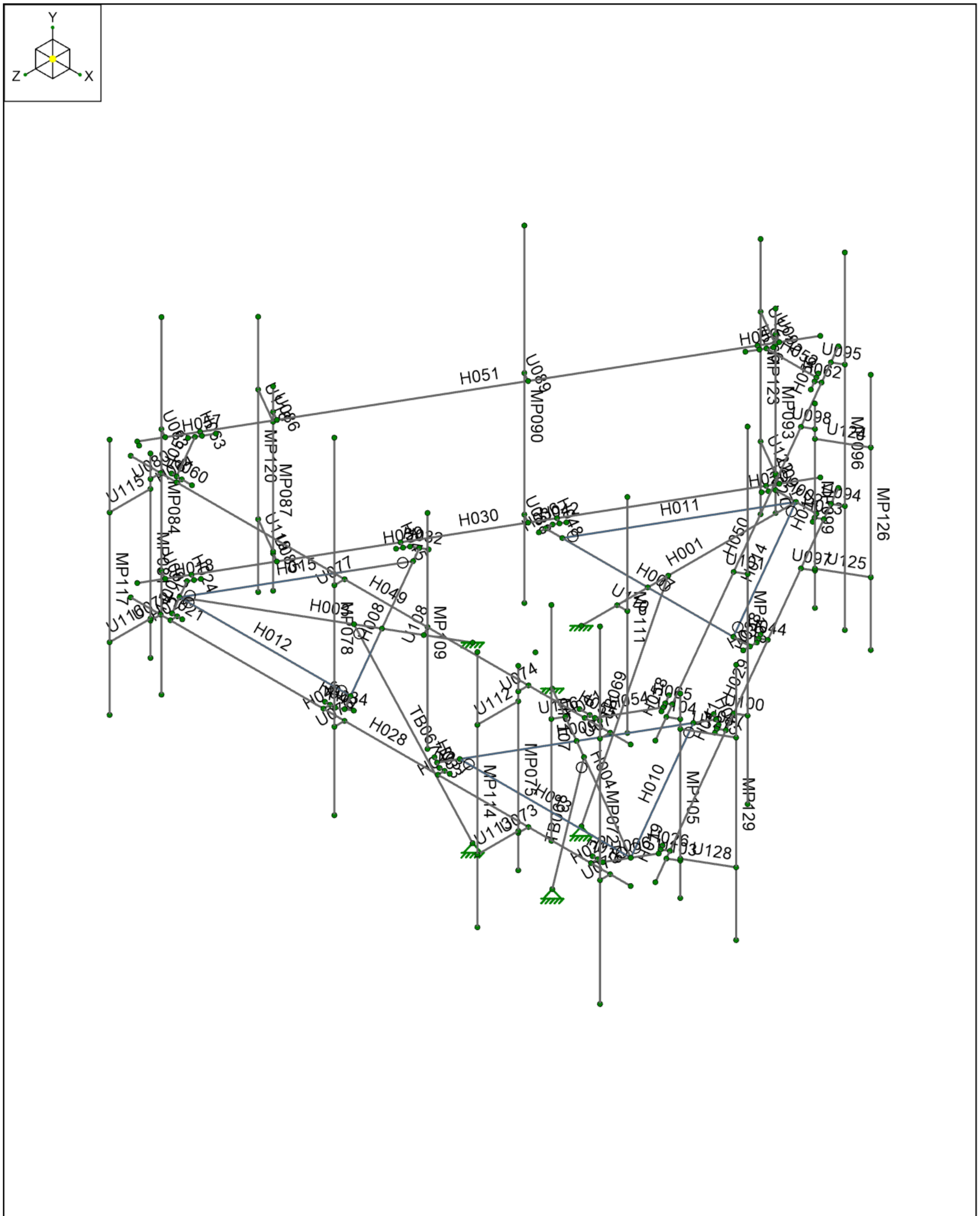
Garrett.Williams		Apr 06, 2022
13757810_C8_01		R3D. AT&T MOBILITY @ 30250…



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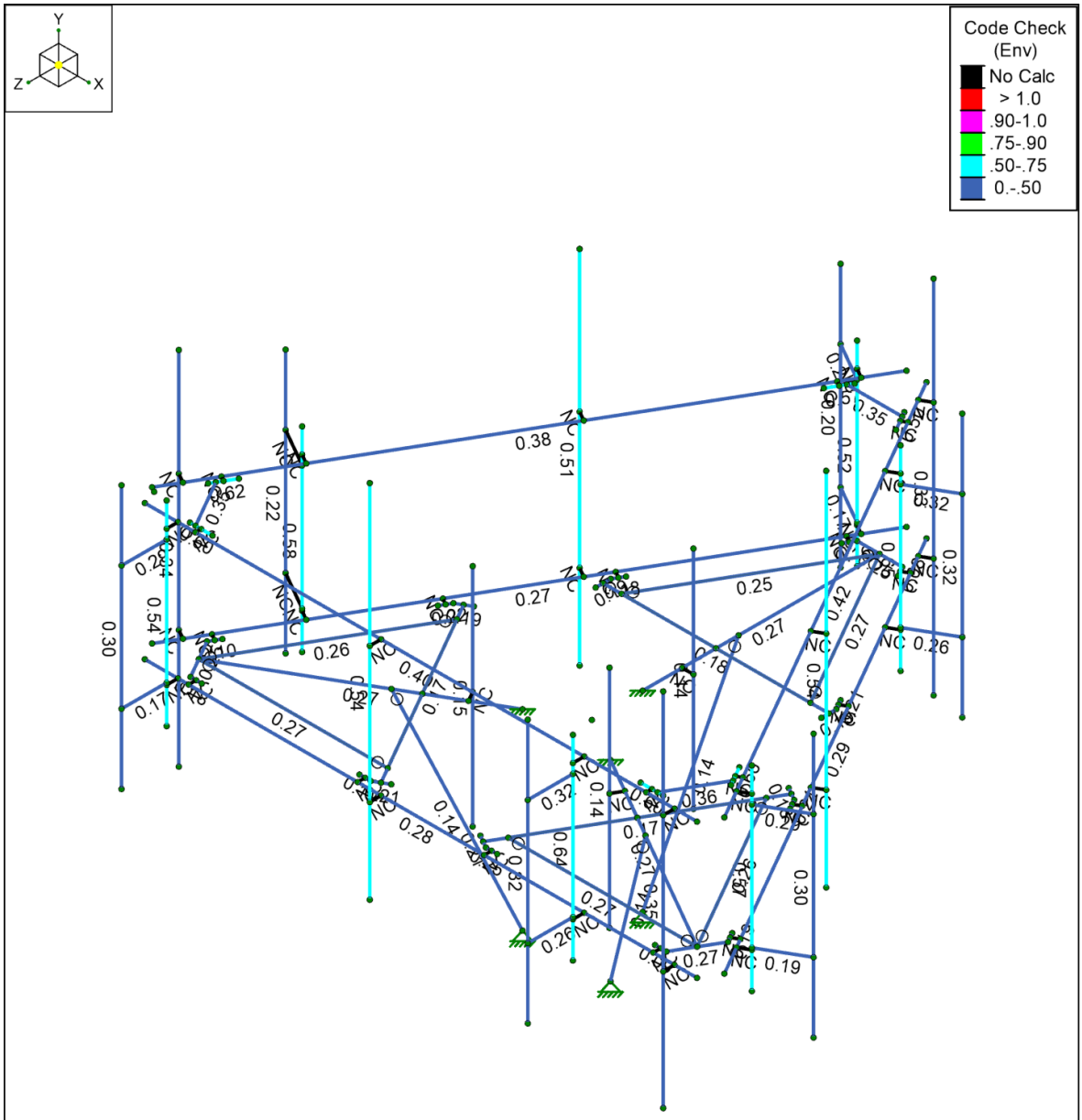
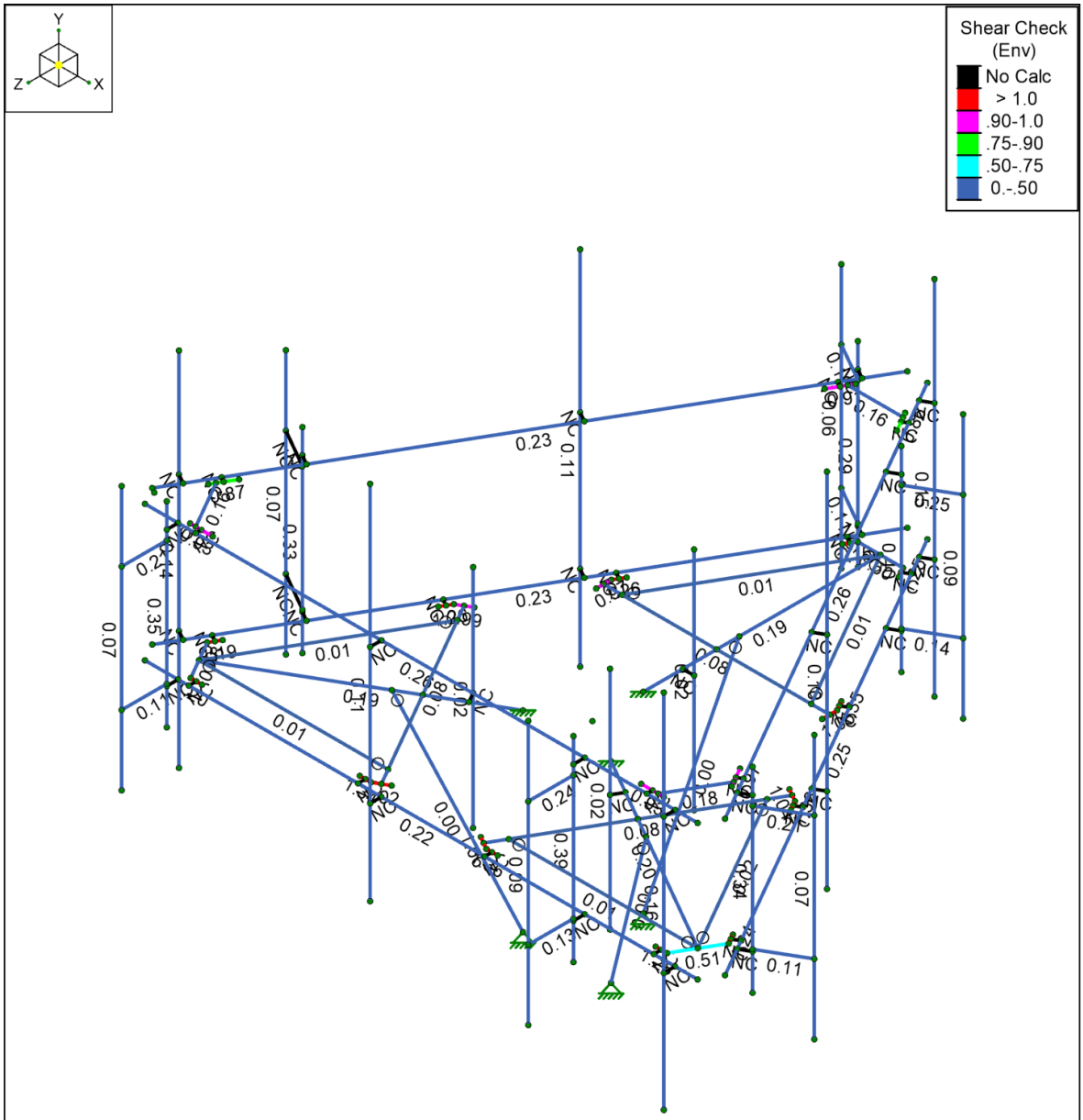
Garrett.Williams		Apr 06, 2022
13757810_C8_01		R3D. AT&T MOBILITY @ 30250…



Member Code Checks Displayed (Enveloped)

American Tower Corp.	302500, Brst - Bristol	SK-4
Garrett.Williams		Apr 06, 2022
13757810_C8_01		R3D. AT&T MOBILITY @ 30250…



Member Shear Checks Displayed (Enveloped)

American Tower Corp.	302500, Brst - Bristol	SK-5
Garrett.Williams		Apr 06, 2022
13757810_C8_01		R3D. AT&T MOBILITY @ 30250…

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
1	D	DL	-1		40		
2	Di	IL			40	72	3
3	W 0	WL			40	129	
4	W 30	WL			80	258	
5	W 60	WL			80	258	
6	W 90	WL			40	132	
7	W 120	WL			80	258	
8	W 150	WL			80	258	
9	W 180	WL			40	129	
10	W 210	WL			80	258	
11	W 240	WL			80	258	
12	W 270	WL			40	132	
13	W 300	WL			80	258	
14	W 330	WL			80	258	
15	Wi 0	WL			40	129	
16	Wi 30	WL			80	258	
17	Wi 60	WL			80	258	
18	Wi 90	WL			40	132	
19	Wi 120	WL			80	258	
20	Wi 150	WL			80	258	
21	Wi 180	WL			40	129	
22	Wi 210	WL			80	258	
23	Wi 240	WL			80	258	
24	Wi 270	WL			40	132	
25	Wi 300	WL			80	258	
26	Wi 330	WL			80	258	
27	Ws 0	WL			40	129	
28	Ws 30	WL			80	258	
29	Ws 60	WL			80	258	
30	Ws 90	WL			40	132	
31	Ws 120	WL			80	258	
32	Ws 150	WL			80	258	
33	Ws 180	WL			40	129	
34	Ws 210	WL			80	258	
35	Ws 240	WL			80	258	
36	Ws 270	WL			40	132	
37	Ws 300	WL			80	258	
38	Ws 330	WL			80	258	
39	Ev -Y	ELY				72	
40	Eh -Z	ELZ				72	
41	Eh -X	ELX				72	
42	Lm (1)	LL		1			
43	Lm (2)	LL		1			
44	Lm (3)	LL		1			
45	Lm (4)	LL		1			
46	Lm (5)	LL		1			
47	Lm (6)	LL		1			
48	Lm (7)	LL		1			
49	Lm (8)	LL		1			
50	Lm (9)	LL		1			
51	Lm (10)	LL		1			
52	Lm (11)	LL		1			
53	Lm (12)	LL		1			
54	Lm (13)	LL		1			
55	Lm (14)	LL		1			

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
56	Lm (15)	LL		1			
57	Lm (16)	LL		1			
58	Lm (17)	LL		1			
59	Lm (18)	LL		1			
60	Lm (19)	LL		1			
61	Lm (20)	LL		1			
62	Lm (21)	LL		1			

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N002	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N006	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N007	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N120	Reaction	Reaction	Reaction			
5	N121	Reaction	Reaction	Reaction			
6	N122	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N003		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
2	H002	N004	N005		PL6X0.5	Beam	None	A36	Typical
3	H003	N006	N012		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
4	H004	N007	N013		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
5	H005	N008	N010		PL6X0.5	Beam	None	A36	Typical
6	H006	N009	N011		PL6X0.5	Beam	None	A36	Typical
7	H007	N015	N016		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
8	H008	N021	N023		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
9	H009	N022	N024		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
10	H010	N033	N013		L2X2X3	Beam	None	A36	Typical
11	H011	N034	N003		L2X2X3	Beam	None	A36	Typical
12	H012	N029	N012		L2X2X3	Beam	None	A36	Typical
13	H013	N030	N013	270	L2X2X3	Beam	None	A36	Typical
14	H014	N031	N003	270	L2X2X3	Beam	None	A36	Typical
15	H015	N032	N012	270	L2X2X3	Beam	None	A36	Typical
16	H016	N009	N036		PL6X0.5	Beam	None	A36	Typical
17	H017	N004	N042		PL6X0.5	Beam	None	A36	Typical
18	H018	N008	N043		PL6X0.5	Beam	None	A36	Typical
19	H019	N011	N048		PL6X0.5	Beam	None	A36	Typical
20	H020	N005	N049		PL6X0.5	Beam	None	A36	Typical
21	H021	N010	N037		PL6X0.5	Beam	None	A36	Typical
22	H022	N038	N040		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
23	H023	N044	N050		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
24	H024	N045	N051		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
25	H025	N039	N041		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
26	H026	N046	N052		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
27	H027	N047	N053		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
28	H028	N017	N018		PIPE_3.0	Beam	None	A53 Gr. B	Typical
29	H029	N025	N027		PIPE_3.0	Beam	None	A53 Gr. B	Typical
30	H030	N026	N028		PIPE_3.0	Beam	None	A53 Gr. B	Typical
31	H031	N054	N055		PL6X0.375	Beam	None	A36	Typical
32	H032	N056	N058		PL6X0.375	Beam	None	A36	Typical
33	H033	N057	N059		PL6X0.375	Beam	None	A36	Typical
34	H034	N060	N062		PL6X0.375	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
35	H035	N061	N063		PL6X0.375	Beam	None	A36	Typical
36	H036	N064	N035		PL6X0.375	Beam	None	A36	Typical
37	H037	N059	N065		PL6X0.375	Beam	None	A36	Typical
38	H038	N055	N071		PL6X0.375	Beam	None	A36	Typical
39	H039	N058	N072		PL6X0.375	Beam	None	A36	Typical
40	H040	N062	N066		PL6X0.375	Beam	None	A36	Typical
41	H041	N063	N073		PL6X0.375	Beam	None	A36	Typical
42	H042	N035	N074		PL6X0.375	Beam	None	A36	Typical
43	H043	N067	N069		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
44	H044	N075	N079		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
45	H045	N076	N080		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
46	H046	N068	N070		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
47	H047	N077	N081		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
48	H048	N078	N082		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
49	H049	N083	N084		PIPE_2.0	Beam	None	A53 Gr. B	Typical
50	H050	N085	N087		PIPE_2.0	Beam	None	A53 Gr. B	Typical
51	H051	N086	N088		PIPE_2.0	Beam	None	A53 Gr. B	Typical
52	H052	N094	N095	90	L2.5X2.5X4	Beam	None	A36	Typical
53	H053	N091	N092	90	L2.5X2.5X4	Beam	None	A36	Typical
54	H054	N090	N093	90	L2.5X2.5X4	Beam	None	A36	Typical
55	H055	N096	N099		PL6X0.375	Beam	None	A36	Typical
56	H056	N097	N100		PL6X0.375	Beam	None	A36	Typical
57	H057	N098	N101		PL6X0.375	Beam	None	A36	Typical
58	H058	N103	N106		PL6X0.375	Beam	None	A36	Typical
59	H059	N104	N107		PL6X0.375	Beam	None	A36	Typical
60	H060	N102	N105		PL6X0.375	Beam	None	A36	Typical
61	H061	N108	N114		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
62	H062	N109	N115		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
63	H063	N110	N116		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
64	H064	N111	N117		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
65	H065	N112	N118		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
66	H066	N113	N119		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
67	TB067	N121	N129		LL2.5X2.5X3X3	Column	None	A36	Typical
68	TB068	N122	N130		LL2.5X2.5X3X3	Column	None	A36	Typical
69	TB069	N120	N128		LL2.5X2.5X3X3	Column	None	A36	Typical
70	U070	N123	N131		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
71	U071	N132	N133		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
72	MP072	N134	N135		PIPE_2.0	Column	None	A53 Gr. B	Typical
73	U073	N125	N136		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
74	U074	N137	N138		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
75	MP075	N139	N140		PIPE_2.0	Column	None	A53 Gr. B	Typical
76	U076	N124	N141		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
77	U077	N142	N143		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
78	MP078	N144	N145		PIPE_2.0	Column	None	A53 Gr. B	Typical
79	U079	N126	N146		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
80	U080	N147	N148		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
81	MP081	N149	N150		PIPE_2.0	Column	None	A53 Gr. B	Typical
82	U082	N127	N151		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
83	U083	N152	N153		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
84	MP084	N154	N155		PIPE_2.0	Column	None	A53 Gr. B	Typical
85	U085	N158	N163		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
86	U086	N164	N165		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
87	MP087	N166	N167		PIPE_2.0	Column	None	A53 Gr. B	Typical
88	U088	N160	N168		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
89	U089	N169	N170		(2) 1/2 U-BOLTS	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
90	MP090	N171	N172		PIPE_2.0	Column	None	A53 Gr. B	Typical
91	U091	N162	N173		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
92	U092	N174	N175		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
93	MP093	N176	N177		PIPE_2.0	Column	None	A53 Gr. B	Typical
94	U094	N156	N178		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
95	U095	N179	N180		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
96	MP096	N181	N182		PIPE_2.0	Column	None	A53 Gr. B	Typical
97	U097	N157	N183		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
98	U098	N184	N185		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
99	MP099	N186	N187		PIPE_2.0	Column	None	A53 Gr. B	Typical
100	U100	N159	N188		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
101	U101	N189	N190		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
102	MP102	N191	N192		PIPE_2.0	Column	None	A53 Gr. B	Typical
103	U103	N161	N193		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
104	U104	N194	N195		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
105	MP105	N196	N197		PIPE_2.0	Column	None	A53 Gr. B	Typical
106	U106	N200	N201		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
107	MP107	N202	N203		PIPE_2.0	Column	None	A53 Gr. B	Typical
108	U108	N199	N204		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
109	MP109	N205	N206		PIPE_2.0	Column	None	A53 Gr. B	Typical
110	U110	N198	N207		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
111	MP111	N208	N209		PIPE_2.0	Column	None	A53 Gr. B	Typical
112	U112	N213	N216		PIPE_2.0	Beam	None	A36	Typical
113	U113	N217	N218		PIPE_2.0	Beam	None	A36	Typical
114	MP114	N219	N220		PIPE_2.0	Column	None	A53 Gr. B	Typical
115	U115	N210	N221		PIPE_2.0	Beam	None	A36	Typical
116	U116	N222	N223		PIPE_2.0	Beam	None	A36	Typical
117	MP117	N224	N225		PIPE_2.0	Column	None	A53 Gr. B	Typical
118	U118	N215	N226		PIPE_2.0	Beam	None	A36	Typical
119	U119	N227	N228		PIPE_2.0	Beam	None	A36	Typical
120	MP120	N229	N230		PIPE_2.0	Column	None	A53 Gr. B	Typical
121	U121	N212	N231		PIPE_2.0	Beam	None	A36	Typical
122	U122	N232	N233		PIPE_2.0	Beam	None	A36	Typical
123	MP123	N234	N235		PIPE_2.0	Column	None	A53 Gr. B	Typical
124	U124	N214	N236		PIPE_2.0	Beam	None	A36	Typical
125	U125	N237	N238		PIPE_2.0	Beam	None	A36	Typical
126	MP126	N239	N240		PIPE_2.0	Column	None	A53 Gr. B	Typical
127	U127	N211	N241		PIPE_2.0	Beam	None	A36	Typical
128	U128	N242	N243		PIPE_2.0	Beam	None	A36	Typical
129	MP129	N244	N245		PIPE_2.0	Column	None	A53 Gr. B	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	N/A		None
2	H002			Yes	N/A		None
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	N/A		None
6	H006			Yes	N/A		None
7	H007			Yes	N/A		None
8	H008			Yes	N/A		None
9	H009			Yes	N/A		None
10	H010	BenPIN	BenPIN	Yes	N/A		None
11	H011	BenPIN	BenPIN	Yes	N/A		None
12	H012	BenPIN	BenPIN	Yes	N/A		None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
13	H013	BenPIN	BenPIN	Yes	N/A		None
14	H014	BenPIN	BenPIN	Yes	N/A		None
15	H015	BenPIN	BenPIN	Yes	N/A		None
16	H016			Yes	N/A		None
17	H017			Yes	N/A		None
18	H018			Yes	N/A		None
19	H019			Yes	N/A		None
20	H020			Yes	N/A		None
21	H021			Yes	N/A		None
22	H022			Yes	Default	Exclude	None
23	H023			Yes	Default	Exclude	None
24	H024			Yes	Default	Exclude	None
25	H025			Yes	Default	Exclude	None
26	H026			Yes	Default	Exclude	None
27	H027			Yes	Default	Exclude	None
28	H028			Yes	N/A		None
29	H029			Yes	N/A		None
30	H030			Yes	N/A		None
31	H031			Yes	N/A		None
32	H032			Yes	N/A		None
33	H033			Yes	N/A		None
34	H034			Yes	N/A		None
35	H035			Yes	N/A		None
36	H036			Yes	N/A		None
37	H037			Yes	N/A		None
38	H038			Yes	N/A		None
39	H039			Yes	N/A		None
40	H040			Yes	N/A		None
41	H041			Yes	N/A		None
42	H042			Yes	N/A		None
43	H043			Yes	Default	Exclude	None
44	H044			Yes	Default	Exclude	None
45	H045			Yes	Default	Exclude	None
46	H046			Yes	Default	Exclude	None
47	H047			Yes	Default	Exclude	None
48	H048			Yes	Default	Exclude	None
49	H049			Yes	N/A		None
50	H050			Yes	N/A		None
51	H051			Yes	N/A		None
52	H052			Yes	N/A		None
53	H053			Yes	N/A		None
54	H054			Yes	N/A		None
55	H055			Yes	N/A		None
56	H056			Yes	N/A		None
57	H057			Yes	N/A		None
58	H058			Yes	N/A		None
59	H059			Yes	N/A		None
60	H060			Yes	N/A		None
61	H061			Yes	N/A	Exclude	None
62	H062			Yes	N/A	Exclude	None
63	H063			Yes	N/A	Exclude	None
64	H064			Yes	N/A	Exclude	None
65	H065			Yes	N/A	Exclude	None
66	H066			Yes	N/A	Exclude	None
67	TB067		BenPIN	Yes	** NA **		None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
68	TB068		BenPIN	Yes	** NA **		None
69	TB069		BenPIN	Yes	** NA **		None
70	U070			Yes	N/A	Exclude	None
71	U071			Yes	N/A	Exclude	None
72	MP072			Yes	** NA **		None
73	U073			Yes	N/A	Exclude	None
74	U074			Yes	N/A	Exclude	None
75	MP075			Yes	** NA **		None
76	U076			Yes	N/A	Exclude	None
77	U077			Yes	N/A	Exclude	None
78	MP078			Yes	** NA **		None
79	U079			Yes	N/A	Exclude	None
80	U080			Yes	N/A	Exclude	None
81	MP081			Yes	** NA **		None
82	U082			Yes	N/A	Exclude	None
83	U083			Yes	N/A	Exclude	None
84	MP084			Yes	** NA **		None
85	U085			Yes	N/A	Exclude	None
86	U086			Yes	N/A	Exclude	None
87	MP087			Yes	** NA **		None
88	U088			Yes	N/A	Exclude	None
89	U089			Yes	N/A	Exclude	None
90	MP090			Yes	** NA **		None
91	U091			Yes	N/A	Exclude	None
92	U092			Yes	N/A	Exclude	None
93	MP093			Yes	** NA **		None
94	U094			Yes	N/A	Exclude	None
95	U095			Yes	N/A	Exclude	None
96	MP096			Yes	** NA **		None
97	U097			Yes	N/A	Exclude	None
98	U098			Yes	N/A	Exclude	None
99	MP099			Yes	** NA **		None
100	U100			Yes	N/A	Exclude	None
101	U101			Yes	N/A	Exclude	None
102	MP102			Yes	** NA **		None
103	U103			Yes	N/A	Exclude	None
104	U104			Yes	N/A	Exclude	None
105	MP105			Yes	** NA **		None
106	U106			Yes	N/A	Exclude	None
107	MP107			Yes	** NA **		None
108	U108			Yes	N/A	Exclude	None
109	MP109			Yes	** NA **		None
110	U110			Yes	N/A	Exclude	None
111	MP111			Yes	** NA **		None
112	U112			Yes	Default		None
113	U113			Yes	Default		None
114	MP114			Yes	** NA **		None
115	U115			Yes	Default		None
116	U116			Yes	Default		None
117	MP117			Yes	** NA **		None
118	U118			Yes	Default	Exclude	None
119	U119			Yes	Default	Exclude	None
120	MP120			Yes	** NA **		None
121	U121			Yes	Default		None
122	U122			Yes	Default		None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
123	MP123			Yes	** NA **		None
124	U124			Yes	Default		None
125	U125			Yes	Default		None
126	MP126			Yes	** NA **		None
127	U127			Yes	Default		None
128	U128			Yes	Default		None
129	MP129			Yes	** NA **		None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H001	HSS4X4X4	63			Lbyy		1	1	Lateral
2	H002	PL6X0.5	12			Lbyy		0.65	0.65	Lateral
3	H003	HSS4X4X4	63			Lbyy		1	1	Lateral
4	H004	HSS4X4X4	63			Lbyy		1	1	Lateral
5	H005	PL6X0.5	12			Lbyy		0.65	0.65	Lateral
6	H006	PL6X0.5	12			Lbyy		0.65	0.65	Lateral
7	H007	HSS4X4X4	60			Lbyy		0.65	0.65	Lateral
8	H008	HSS4X4X4	60			Lbyy		0.65	0.65	Lateral
9	H009	HSS4X4X4	60			Lbyy		0.65	0.65	Lateral
10	H010	L2X2X3	50.229			Lbyy		1	1	Lateral
11	H011	L2X2X3	50.229			Lbyy		1	1	Lateral
12	H012	L2X2X3	50.229			Lbyy		1	1	Lateral
13	H013	L2X2X3	50.229			Lbyy		1	1	Lateral
14	H014	L2X2X3	50.229			Lbyy		1	1	Lateral
15	H015	L2X2X3	50.229			Lbyy		1	1	Lateral
16	H016	PL6X0.5	3			Lbyy		1	1	Lateral
17	H017	PL6X0.5	3			Lbyy		1	1	Lateral
18	H018	PL6X0.5	3			Lbyy		1	1	Lateral
19	H019	PL6X0.5	3			Lbyy		1	1	Lateral
20	H020	PL6X0.5	3			Lbyy		1	1	Lateral
21	H021	PL6X0.5	3			Lbyy		1	1	Lateral
22	H022	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
23	H023	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
24	H024	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
25	H025	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
26	H026	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
27	H027	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
28	H028	PIPE_3.0	146.813			Lbyy		1	1	Lateral
29	H029	PIPE_3.0	146.813			Lbyy		1	1	Lateral
30	H030	PIPE_3.0	146.813			Lbyy		1	1	Lateral
31	H031	PL6X0.375	4			Lbyy		0.65	0.65	Lateral
32	H032	PL6X0.375	4			Lbyy		0.65	0.65	Lateral
33	H033	PL6X0.375	4			Lbyy		0.65	0.65	Lateral
34	H034	PL6X0.375	4			Lbyy		0.65	0.65	Lateral
35	H035	PL6X0.375	4			Lbyy		0.65	0.65	Lateral
36	H036	PL6X0.375	4			Lbyy		0.65	0.65	Lateral
37	H037	PL6X0.375	3			Lbyy		1	1	Lateral
38	H038	PL6X0.375	3			Lbyy		1	1	Lateral
39	H039	PL6X0.375	3			Lbyy		1	1	Lateral
40	H040	PL6X0.375	3			Lbyy		1	1	Lateral
41	H041	PL6X0.375	3			Lbyy		1	1	Lateral
42	H042	PL6X0.375	3			Lbyy		1	1	Lateral
43	H043	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
44	H044	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
45	H045	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
46	H046	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
47	H047	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
48	H048	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
49	H049	PIPE_2.0	146.813			Lbyy		0.65	0.65	Lateral
50	H050	PIPE_2.0	146.813			Lbyy		0.65	0.65	Lateral
51	H051	PIPE_2.0	146.813			Lbyy		0.65	0.65	Lateral
52	H052	L2.5X2.5X4	14.71			Lbyy		0.65	0.65	Lateral
53	H053	L2.5X2.5X4	14.71			Lbyy		0.65	0.65	Lateral
54	H054	L2.5X2.5X4	14.71			Lbyy		0.65	0.65	Lateral
55	H055	PL6X0.375	6			Lbyy		0.65	0.65	Lateral
56	H056	PL6X0.375	6			Lbyy		0.65	0.65	Lateral
57	H057	PL6X0.375	6			Lbyy		0.65	0.65	Lateral
58	H058	PL6X0.375	6			Lbyy		0.65	0.65	Lateral
59	H059	PL6X0.375	6			Lbyy		0.65	0.65	Lateral
60	H060	PL6X0.375	6			Lbyy		0.65	0.65	Lateral
61	H061	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
62	H062	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
63	H063	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
64	H064	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
65	H065	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
66	H066	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
67	TB067	LL2.5X2.5X3X3	57.02			Lbyy		1	1	Lateral
68	TB068	LL2.5X2.5X3X3	57.02			Lbyy		1	1	Lateral
69	TB069	LL2.5X2.5X3X3	57.02			Lbyy		1	1	Lateral
70	U070	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
71	U071	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
72	MP072	PIPE_2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
73	U073	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
74	U074	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
75	MP075	PIPE_2.0	52	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
76	U076	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
77	U077	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
78	MP078	PIPE_2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
79	U079	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
80	U080	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
81	MP081	PIPE_2.0	52	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
82	U082	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
83	U083	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
84	MP084	PIPE_2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
85	U085	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
86	U086	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
87	MP087	PIPE_2.0	52	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
88	U088	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
89	U089	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
90	MP090	PIPE_2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
91	U091	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
92	U092	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
93	MP093	PIPE_2.0	52	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
94	U094	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
95	U095	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
96	MP096	PIPE_2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
97	U097	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
98	U098	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
99	MP099	PIPE_2.0	52	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
100	U100	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
101	U101	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
102	MP102	PIPE_2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
103	U103	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
104	U104	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
105	MP105	PIPE_2.0	52	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
106	U106	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
107	MP107	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
108	U108	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
109	MP109	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
110	U110	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
111	MP111	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
112	U112	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
113	U113	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
114	MP114	PIPE_2.0	70	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
115	U115	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
116	U116	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
117	MP117	PIPE_2.0	70	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
118	U118	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
119	U119	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
120	MP120	PIPE_2.0	70	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
121	U121	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
122	U122	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
123	MP123	PIPE_2.0	70	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
124	U124	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
125	U125	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
126	MP126	PIPE_2.0	70	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
127	U127	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
128	U128	PIPE_2.0	12			Lbyy		0.5	0.5	Lateral
129	MP129	PIPE_2.0	70	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [lb/ft^{3}]	Yield [psi]	Ry	Fu [psi]	Rt
1	A500 Gr. B [SQR]	2.9e+07	1.115e+07	0.3	0.65	527	46000	1.4	58000	1.3
2	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
3	SAE J429 Gr. 2	2.9e+07	1.115e+07	0.3	0.65	490	57000	1.1	74000	1.1
4	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2

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	N002	max	2303.599	5	1393.151	20	6894.195	2	611.988	20	3018.76	11	1803.493	11
2		min	-2290.606	23	-2368.762	2	-5330.045	20	-952.724	2	-3015.888	17	-1707.983	17
3	N006	max	6069.401	6	1385.115	24	2473.359	24	1579.646	3	3165.47	3	1428.157	8
4		min	-4720.522	24	-2362.055	6	-3261.683	6	-1368.187	21	-3155.558	21	-1160.16	14
5	N007	max	4586.709	16	1320.305	16	2716.674	16	1740.455	12	3543.397	7	776.828	14
6		min	-5995.903	10	-2304.111	10	-3516.179	10	-1656.765	18	-3540.339	25	-1107.753	8
7	N120	max	41.307	17	5462.458	2	961.742	20	0	313	0	313	0	313
8		min	-41.618	23	-1986.62	20	-2685.326	2	0	1	0	1	0	1
9	N121	max	827.827	24	5454.794	6	1321.265	6	0	313	0	313	0	313
10		min	-2317.441	6	-1986.898	24	-462.13	24	0	1	0	1	0	1
11	N122	max	2309.047	34	5419.911	10	1329.597	34	0	313	0	313	0	313
12		min	-763.238	16	-1837.512	16	-424.649	16	0	1	0	1	0	1
13	Totals:	max	8329.274	5	9261.475	32	9051.79	2						
14		min	-8329.274	23	3234.668	14	-9051.79	20						

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	H001	HSS4X4X4	0.274	25.594	2	0.192	0	z	11	124317.885	139518	16180.5	16180.5	1.429	H1-1b
2	H002	PL6X0.5	0.248	6	4	0.501	6	y	6	83348.625	97200	1012.5	12150	1.263	H1-1b
3	H003	HSS4X4X4	0.272	25.594	6	0.194	24.937	y	8	124317.885	139518	16180.5	16180.5	1.429	H1-1b
4	H004	HSS4X4X4	0.273	25.594	10	0.205	0	z	7	124317.885	139518	16180.5	16180.5	1.426	H1-1b
5	H005	PL6X0.5	0.254	6	8	0.477	0	y	10	83348.625	97200	1012.5	12150	1.259	H1-1b
6	H006	PL6X0.5	0.268	6	12	0.511	0	y	2	83348.625	97200	1012.5	12150	1.255	H1-1b
7	H007	HSS4X4X4	0.177	30	13	0.08	4.375	z	13	133484.923	139518	16180.5	16180.5	1.323	H1-1b
8	H008	HSS4X4X4	0.167	30	6	0.08	55.625	z	7	133484.923	139518	16180.5	16180.5	1.31	H1-1b
9	H009	HSS4X4X4	0.171	30	9	0.079	4.375	z	8	133484.923	139518	16180.5	16180.5	1.321	H1-1b
10	H010	L2X2X3	0.257	25.638	23	0.015	50.229	z	13	9724.796	23392.8	557.717	1072.365	1.136	H2-1
11	H011	L2X2X3	0.25	25.638	15	0.014	50.229	z	5	9724.796	23392.8	557.717	1072.365	1.136	H2-1
12	H012	L2X2X3	0.267	25.638	19	0.014	50.229	z	9	9724.796	23392.8	557.717	1072.365	1.136	H2-1
13	H013	L2X2X3	0.268	25.115	20	0.013	50.229	y	2	9724.796	23392.8	557.717	1072.365	1.136	H2-1
14	H014	L2X2X3	0.272	25.638	25	0.013	50.229	y	12	9724.796	23392.8	557.717	1072.365	1.136	H2-1
15	H015	L2X2X3	0.258	25.115	16	0.013	50.229	y	10	9724.796	23392.8	557.717	1072.365	1.136	H2-1
16	H016	PL6X0.5	0.092	1.5	2	**1.28**	0	y	8	95014.386	97200	1012.5	12150	1.688	H1-1b
17	H017	PL6X0.5	0.085	0	2	**1.249**	0	y	12	95014.386	97200	1012.5	12150	2.039	H1-1b
18	H018	PL6X0.5	0.098	0	6	**1.186**	1.5	y	10	95014.386	97200	1012.5	12150	1.989	H1-1b
19	H019	PL6X0.5	0.192	1.5	7	**1.243**	0	y	12	95014.386	97200	1012.5	12150	1.567	H1-1b
20	H020	PL6X0.5	0.163	1.5	11	**1.149**	1.5	y	10	95014.386	97200	1012.5	12150	1.573	H1-1b
21	H021	PL6X0.5	0.18	1.5	3	**1.203**	0	y	8	95014.386	97200	1012.5	12150	1.535	H1-1b
22	H028	PIPE_3.0	0.28	30.586	4	0.221	136.108		3	29261.504	65205	5748.75	5748.75	1.749	H1-1b
23	H029	PIPE_3.0	0.29	30.586	8	0.246	136.108		7	29261.504	65205	5748.75	5748.75	1.747	H1-1b
24	H030	PIPE_3.0	0.267	30.586	12	0.225	136.108		11	29261.504	65205	5748.75	5748.75	1.74	H1-1b
25	H031	PL6X0.375	0.189	2	11	**1.051**	2	y	6	70719.442	72900	569.531	9112.5	1.334	H1-1b
26	H032	PL6X0.375	0.188	2	3	0.989	2	y	10	70719.442	72900	569.531	9112.5	1.334	H1-1b
27	H033	PL6X0.375	0.214	2	7	**1.057**	2	y	2	70719.442	72900	569.531	9112.5	1.333	H1-1b
28	H034	PL6X0.375	0.21	2	7	**1.024**	2	y	2	70719.442	72900	569.531	9112.5	1.36	H1-1b
29	H035	PL6X0.375	0.178	2	11	**1.037**	2	y	6	70719.442	72900	569.531	9112.5	1.361	H1-1b
30	H036	PL6X0.375	0.191	2	3	0.969	2	y	10	70719.442	72900	569.531	9112.5	1.362	H1-1b
31	H037	PL6X0.375	0.248	1.5	13	**1.358**	0	y	8	70011.374	72900	569.531	9112.5	1.467	H1-1b
32	H038	PL6X0.375	0.214	1.5	5	**1.349**	0	y	12	70011.374	72900	569.531	9112.5	1.476	H1-1b
33	H039	PL6X0.375	0.221	1.5	9	**1.259**	0	y	4	70011.374	72900	569.531	9112.5	1.476	H1-1b
34	H040	PL6X0.375	0.192	1.5	3	**1.344**	0	y	8	70011.374	72900	569.531	9112.5	1.511	H1-1b
35	H041	PL6X0.375	0.212	1.5	7	**1.359**	0	y	12	70011.374	72900	569.531	9112.5	1.505	H1-1b
36	H042	PL6X0.375	0.184	1.5	11	**1.259**	0	y	4	70011.374	72900	569.531	9112.5	1.513	H1-1b
37	H049	PIPE_2.0	0.405	134.579	10	0.261	13.764		8	15052.527	32130	1871.625	1871.625	2.266	H1-1b
38	H050	PIPE_2.0	0.417	134.579	2	0.264	13.764		12	15052.527	32130	1871.625	1871.625	2.277	H1-1b
39	H051	PIPE_2.0	0.38	134.579	6	0.229	13.764		4	15052.527	32130	1871.625	1871.625	2.256	H1-1b
40	H052	L2.5X2.5X4	0.347	0	6	0.165	14.71	z	5	37765.457	38556	1113.554	2537.388	1.5	H2-1
41	H053	L2.5X2.5X4	0.346	0	10	0.165	14.71	z	9	37765.457	38556	1113.554	2537.388	1.5	H2-1
42	H054	L2.5X2.5X4	0.359	0	8	0.178	14.71	z	13	37765.457	38556	1113.554	2537.388	1.5	H2-1
43	H055	PL6X0.375	0.6	1.5	11	0.926	1.5	y	13	68085.235	72900	569.531	9112.5	1.7	H1-1b
44	H056	PL6X0.375	0.5	1.5	3	0.865	1.5	y	6	68085.235	72900	569.531	9112.5	1.779	H1-1b
45	H057	PL6X0.375	0.617	1.5	7	0.866	1.5	y	9	68085.235	72900	569.531	9112.5	1.748	H1-1b
46	H058	PL6X0.375	0.656	3	7	0.975	1.5	y	6	68085.235	72900	569.531	9112.5	1.452	H1-1b
47	H059	PL6X0.375	0.568	3	11	0.915	1.5	y	10	68085.235	72900	569.531	9112.5	1.451	H1-1b
48	H060	PL6X0.375	0.602	3	3	0.933	1.5	y	2	68085.235	72900	569.531	9112.5	1.452	H1-1b
49	TB067	LL2.5X2.5X3X3	0.139	57.02	6	0.003	57.02	y	6	43729.022	58320	3954.307	2549.586	1.136	H1-1b*
50	TB068	LL2.5X2.5X3X3	0.138	57.02	10	0.003	57.02	y	10	43729.022	58320	3954.307	2549.586	1.136	H1-1b*
51	TB069	LL2.5X2.5X3X3	0.139	57.02	2	0.002	57.02	z	5	43729.022	58320	3954.307	2549.586	1	H1-1b*
52	MP072	PIPE_2.0	0.351	64	6	0.16	64		7	19963.662	32130	1871.625	1871.625	2.268	H1-1b
53	MP075	PIPE_2.0	0.643	42.25	13	0.394	42.25		9	32127.051	32130	1871.625	1871.625	2.021	H1-1b
54	MP078	PIPE_2.0	0.541	73	12	0.112	73		7	19963.662	32130	1871.625	1871.625	1.876	H1-1b
55	MP081	PIPE_2.0	0.541	42.25	12	0.348	42.25		13	32127.051	32130	1871.625	1871.625	2.294	H3-6

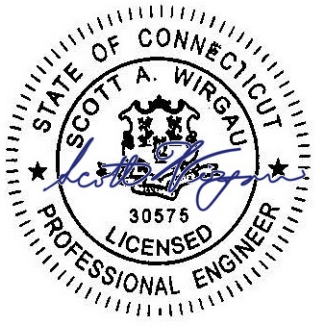
Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	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
56	MP084	PIPE_2.0	0.335	64	2	0.141	64		3	19963.662	32130	1871.625	1871.625	3	H1-1b
57	MP087	PIPE_2.0	0.585	42.25	9	0.333	42.25		5	32127.051	32130	1871.625	1871.625	2.8	H1-1b
58	MP090	PIPE_2.0	0.514	73	8	0.105	73		3	19963.662	32130	1871.625	1871.625	2.102	H1-1b
59	MP093	PIPE_2.0	0.523	42.25	11	0.287	42.25		9	32127.051	32130	1871.625	1871.625	2.353	H1-1b
60	MP096	PIPE_2.0	0.335	64	10	0.154	64		11	19963.662	32130	1871.625	1871.625	3	H1-1b
61	MP099	PIPE_2.0	0.651	42.25	7	0.4	42.25		13	32127.051	32130	1871.625	1871.625	1	H3-6
62	MP102	PIPE_2.0	0.537	73	7	0.1	73		11	19963.662	32130	1871.625	1871.625	1.517	H1-1b
63	MP105	PIPE_2.0	0.571	42.25	7	0.342	42.25		5	32127.051	32130	1871.625	1871.625	1	H1-1b
64	MP107	PIPE_2.0	0.137	28.75	6	0.024	28.75		6	23593.813	32130	1871.625	1871.625	3	H1-1b
65	MP109	PIPE_2.0	0.149	28.75	2	0.024	28.75		2	23593.813	32130	1871.625	1871.625	2.69	H1-1b
66	MP111	PIPE_2.0	0.137	28.75	10	0.024	28.75		10	23593.813	32130	1871.625	1871.625	3	H1-1b
67	U112	PIPE_2.0	0.322	0	2	0.242	12		4	32946.269	33048	1925.1	1925.1	2.051	H1-1b
68	U113	PIPE_2.0	0.264	12	13	0.134	12		9	32946.269	33048	1925.1	1925.1	1.772	H1-1b
69	MP114	PIPE_2.0	0.317	18.229	8	0.089	51.042		9	28335.625	32130	1871.625	1871.625	3	H1-1b
70	U115	PIPE_2.0	0.286	0	2	0.211	12		12	32946.269	33048	1925.1	1925.1	1.592	H1-1b
71	U116	PIPE_2.0	0.173	12	3	0.113	12		12	32946.269	33048	1925.1	1925.1	1.83	H1-1b
72	MP117	PIPE_2.0	0.301	18.229	8	0.072	18.958		7	28335.625	32130	1871.625	1871.625	1.712	H1-1b
73	MP120	PIPE_2.0	0.223	18.229	4	0.074	51.042		5	28335.625	32130	1871.625	1871.625	2.466	H1-1b
74	U121	PIPE_2.0	0.215	0	10	0.163	12		8	32946.269	33048	1925.1	1925.1	1.586	H1-1b
75	U122	PIPE_2.0	0.167	12	11	0.111	12		8	32946.269	33048	1925.1	1925.1	1.496	H1-1b
76	MP123	PIPE_2.0	0.201	18.229	4	0.056	18.958		3	28335.625	32130	1871.625	1871.625	2.467	H1-1b
77	U124	PIPE_2.0	0.317	0	6	0.245	12		8	32946.269	33048	1925.1	1925.1	2.044	H1-1b
78	U125	PIPE_2.0	0.255	12	13	0.138	12		13	32946.269	33048	1925.1	1925.1	2.185	H1-1b
79	MP126	PIPE_2.0	0.317	18.229	12	0.09	51.042		13	28335.625	32130	1871.625	1871.625	1.851	H1-1b
80	U127	PIPE_2.0	0.294	0	6	0.207	12		4	32946.269	33048	1925.1	1925.1	1.596	H1-1b
81	U128	PIPE_2.0	0.191	12	7	0.105	0		5	32946.269	33048	1925.1	1925.1	1.753	H1-1b
82	MP129	PIPE_2.0	0.301	18.229	12	0.071	18.958		11	28335.625	32130	1871.625	1871.625	1.834	H1-1b

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**120 ft Monopole**
ATC Site Name	:	**Brst - Bristol,CT**
ATC Site Number	:	**302500**
Engineering Number	:	**13757810_C3_03**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**MRCTB056373**
Carrier Site Number	:	**N/A**
Site Location	:	**790 Willis Street** **Bristol, CT 06010-7269** **41.6491, -72.948**
County	:	**Hartford**
Date	:	**March 28, 2022**
Max Usage	:	**95%**
Result	:	**Pass**



Prepared By:

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Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 120 ft Monopole to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	Valmont Drawing #DC1671Z, dated December 29, 1993
Foundation Drawing	Mapping by FDH Project #01-0612, dated June 23, 2001
Geotechnical Report	Johnson Soils Job #15220-B, dated May 21, 2002
Modifications	Spectrasite Site #CT-0036, dated June 12, 2002 ATC Project #64490338, dated May 5, 2016

Analysis

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

Basic Wind Speed:	117 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Crest Height (H):	198 ft
Crest Length (L):	2957 ft
Spectral Response:	Ss = 0.19, 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
128.6	3	Ericsson RRUS 4478 B14	Triangular Platform with Handrails	(1) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (1) 7/8" Coax	AT&T MOBILITY
	3	Ericsson Radio 8843 - B2 + B66A			
128.5	3	Ericsson RRUS 4449 B5, B12			
124.0	2	CCI DMP65R-BU8D			
	1	CCI DMP65R-BU6DA			
	1	Generic 2' Std. Dish			
	4	Raycap DC6-48-60-18-8F			
111.3	8	Andrew DB844H90E-XY	T-Arm with Platform	(16) 1 1/4" Coax	SPRINT NEXTEL
100.0	1	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	METRO PCS INC
	2	Kathrein Scala 742 213			
99.7	2	RFS APXV18-206517S-C			
90.0	3	NextNet BTS-2500	Triangular Low Profile Platform	(4) 1/2" Coax (2) 2" conduit (6) 5/16" (0.31"-7.9mm) Coax (5) 7/8" Coax	CLEARWIRE CORPORATION
	3	Argus LLPX310R			
	1	DragonWave A-ANT-18G-2-C			
	3	DragonWave A-ANT-11G-2.5-C			
	4	DragonWave Horizon Compact			
85.3	1	Generic 12" x 12" Junction Box			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
128.7	3	Ericsson RRUS 32 (50.8 lbs)	-	(1) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (12) 1 1/4" Coax (2) 3" conduit	AT&T MOBILITY
128.6	3	Ericsson RRUS 32 B2			
124.0	2	Kathrein Scala 80010966			
	3	Powerwave Allgon 7770.00			
	1	Quintel QS66512-2			
	2	CCI TPA-65R-LCUUUU-H8			
	1	Kathrein Scala 80010965			
	6	Powerwave Allgon LGP21401			
	6	CCI TPX-070821			
	3	Ericsson RRUS A2			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
126.0	3	Ericsson AIR 6449 B77D/ C-Band	Triangular Platform with Handrails	(2) 0.40" (10.3mm) Fiber (1) 0.41" (10.3mm) Fiber (4) 0.92" (23.4mm) Cable (4) 2" conduit (6) 1 1/4" Coax	AT&T MOBILITY
124.0	3	Ericsson RRUS 32 B30			
	1	Commscope NNHH-65B-R4			
	2	Quintel QD8616-7			
	1	Quintel QD6616-7			
122.0	3	Ericsson AIR 6419 B77G			

[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	39%	Pass
Shaft	85%	Pass
Reinforcement	95%	Pass
Base Plate	13%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1946.9	80%
Shear (Kips)	21.3	15%
Axial (Kips)	36.5	17%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
126.0	Ericsson AIR 6449 B77D/ C-Band	AT&T MOBILITY	1.989	1.970
124.0	Generic 2' Std. Dish			
	Quintel QD6616-7			
	Quintel QD8616-7			
	Ericsson RRUS 32 B30			
	Commscope NNHH-65B-R4			
122.0	Ericsson AIR 6419 B77G			
90.0	DragonWave A-ANT-18G-2-C	CLEARWIRE CORPORATION	1.114	1.380
	DragonWave A-ANT-11G-2.5-C			

***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.

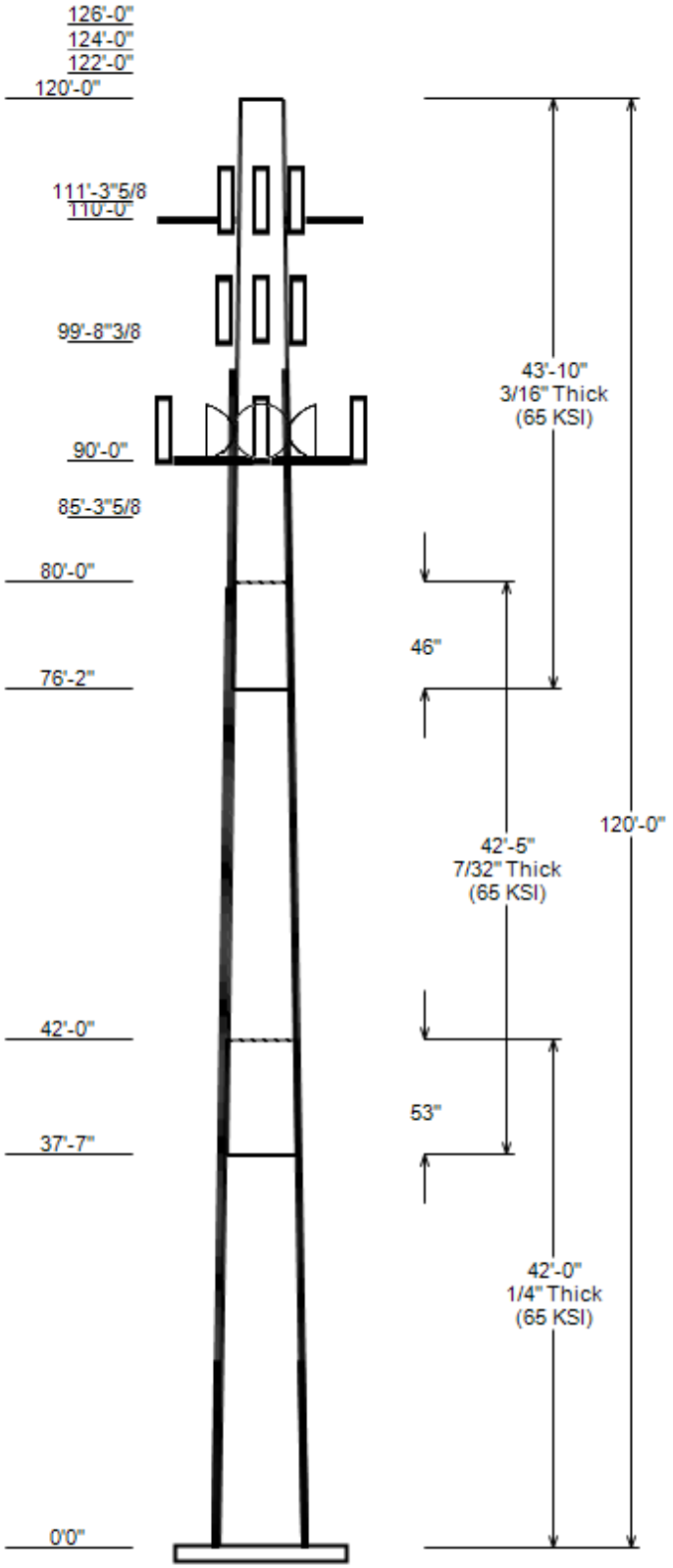
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with 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 :	302500, Brst - Bristol	Height :	120 ft
Client :	AT&T MOBILITY	Base Width :	31
Code :	ANSI/TIA-222-H	Shape :	12 Sides



SITE PARAMETERS

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

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

Base Elev (ft): 0.00 **Taper :** 0.14500(In/ft) **Topo Feature:** Hill

Structure Class: II **Exposure :** B **S_s :** 0.189 **S_1** : 0.054

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	42.000	24.91	31.00	0.250		0.000	12 Sides	65
2	42.417	19.84	25.99	0.219	Slip Joint	53.000	12 Sides	65
3	43.833	14.41	20.77	0.188	Slip Joint	46.000	12 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
128.6	132.6	3	Ericsson Radio 8843 - B2 + B66
128.6	128.6	3	Ericsson RRUS 4478 B14
128.5	132.5	3	Ericsson RRUS 4449 B5, B12
126.0	126.0	3	Ericsson AIR 6449 B77D/ C-Band
124.0	128.0	4	Raycap DC6-48-60-18-8F
124.0	124.0	3	Ericsson RRUS 32 B30
124.0	128.0	1	Generic 2' Std. Dish
124.0	124.0	1	Commscope NNHH-65B-R4
124.0	128.0	1	CCI DMP65R-BU6DA
124.0	128.0	2	CCI DMP65R-BU8D
124.0	124.0	2	Quintel QD8616-7
124.0	124.0	1	Quintel QD6616-7
122.0	122.0	3	Ericsson AIR 6419 B77G
120.0	120.0	1	Generic Mount Reinforcement
120.0	120.0	1	SitePro1 RMQP-496-HK
111.3	111.3	8	Andrew DB844H90E-XY
110.0	110.0	2	Round T-Arm
110.0	110.0	1	T-Arm w/ Working Platform
100.0	101.0	2	Kathrein Scala 742 213
100.0	101.0	1	RFS APXV18-206517S-C
99.7	100.7	2	RFS APXV18-206517S-C
90.0	92.0	4	DragonWave Horizon Compact
90.0	87.9	3	NextNet BTS-2500
90.0	90.5	3	Argus LLPX310R
90.0	92.0	1	DragonWave A-ANT-18G-2-C
90.0	92.0	3	DragonWave A-ANT-11G-2.5-C
90.0	90.0	1	Generic Flat Low Profile Platf
85.3	85.3	1	Generic 12" x 12" Junction Box

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
7.0	124.0	7/8" Coax	No
7.0	124.0	0.78" (19.7mm) 8 AWG 6	No
0.0	124.0	2" conduit	No
0.0	124.0	0.92" (23.4mm) Cable	No
0.0	124.0	0.41" (10.3mm) Fiber	No
0.0	124.0	0.40" (10.3mm) Fiber	No
0.0	124.0	0.39" (10mm) Fiber Trunk	No
0.0	122.0	1 1/4" Coax	No
0.0	111.0	1 1/4" Coax	No
7.0	110.0	1 1/4" Coax	No
0.0	102.0	#20 w/ Angle Brackets	Yes

JOB INFORMATION

Asset :	302500, Brst - Bristol	Height :	120 ft
Client :	AT&T MOBILITY	Base Width :	31
Code :	ANSI/TIA-222-H	Shape :	12 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	102.0	#20 w/ Angle Brackets	Yes
0.0	102.0	#20 w/ Angle Brackets	Yes
0.0	102.0	#20 w/ Angle Brackets	Yes
7.0	100.0	1 5/8" Coax	Yes
7.0	90.0	1/2" Coax	Yes
0.0	90.0	7/8" Coax	Yes
0.0	90.0	5/16" (0.31"-7.9mm) Coax	No
0.0	90.0	2" conduit	No
0.0	22.5	#20 w/ Angle Brackets	Yes
0.0	22.5	#20 w/ Angle Brackets	Yes
0.0	22.5	#20 w/ Angle Brackets	Yes
0.0	22.5	#20 w/ Angle Brackets	Yes

LOAD CASES

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

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	1946.88	21.25	36.47
0.9D + 1.0W Normal	1913.92	21.24	27.34
1.2D + 1.0Di + 1.0Wi Normal	470.75	4.79	48.91
1.2D + 1.0Ev + 1.0Eh Normal	95.97	0.91	36.81
0.9D - 1.0Ev + 1.0Eh Normal	93.93	0.91	25.52
1.0D + 1.0W Service Normal	453.86	5.00	30.41

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W Service Normal	90.00	13.370	1.378
1.0D + 1.0W Service Normal	90.00	13.370	1.378
1.0D + 1.0W Service Normal	120.00	23.872	1.969

ANALYSIS PARAMETERS

Location:	Hartford County,CT	**Height:**	120 ft
Type and Shape:	Taper, 12 Sides	**Base Diameter:**	31.00 in
Manufacturer:	Valmont	**Top Diameter:**	14.41 in
K_d (non-service):	0.95	**Taper:**	0.1450 in/ft
K_e:	0.96	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed w/o Ice:**	117 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	50 mph
Topo Factor Procedure:	Method 2	**Operational Wind Speed:**	60 mph
		Design Ice Thickness:	1.00 in
		HMSL:	1034.00 ft
Crest Height(H):	198 ft	**Distance from Apex (x):**	0 ft
Crest Length(L):	2957 ft	**Upwind/Downwind:**	Upwind
Feature:	Hill		

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	2.54
T_L (sec):	6	**P:**	1	**C_s:**	0.030
S_s:	0.189	**S_1:**	0.054	**C_s Max:**	0.030
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.202	**S_{d1}:**	0.086		

LOAD CASES

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

SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in^2)	Bottom Ix (in^4)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in^2)	Top Ix (in^4)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-12	42.00	0.2500	65		0.00	3,187	31.00	0.000	24.75	2,987.6	30.55	124.00	24.91	42.00	19.85	1,540.7	24.02	99.64	0.1450
2-12	42.42	0.2188	65	Slip	53.00	2,307	25.99	37.583	18.15	1,538.7	29.15	118.77	19.84	80.00	13.82	678.9	21.61	90.66	0.1450
3-12	43.83	0.1875	65	Slip	46.00	1,567	20.77	76.167	12.42	671.6	27.00	110.76	14.41	120.00	8.59	221.7	17.91	76.85	0.1450
				Shaft Weight		7,061													

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
128.60	Ericsson Radio 8843 - B2 + B66	3	0.75	4.000	71.90	1.650	0.50	112.11	2.203	0.50
128.60	Ericsson RRUS 4478 B14	3	0.75	0.000	59.90	1.842	0.50	95.98	2.427	0.50
128.50	Ericsson RRUS 4449 B5, B12	3	0.75	4.000	71.00	1.969	0.50	113.06	2.578	0.50
126.00	Ericsson AIR 6449 B77D/ C-Band	3	0.75	0.000	81.60	4.028	0.70	157.62	4.924	0.70
124.00	Generic 2' Std. Dish	1	1.00	4.000	14.00	5.228	1.00	50.16	6.238	1.00
124.00	Quintel QD6616-7	1	0.75	0.000	130.00	51.400	1.00	320.91	58.411	1.00
124.00	Quintel QD8616-7	2	0.75	0.000	150.00	18.815	0.74	398.51	21.227	0.74
124.00	CCI DMP65R-BU8D	2	0.75	4.000	95.70	17.871	0.72	317.51	20.276	0.72
124.00	CCI DMP65R-BU6DA	1	0.75	4.000	79.40	12.709	1.00	247.51	14.529	1.00
124.00	Commscope NNHH-65B-R4	1	0.75	0.000	83.80	12.271	1.00	247.78	14.101	1.00
124.00	Raycap DC6-48-60-18-8F	4	0.75	4.000	20.00	1.260	1.00	54.36	1.690	1.00
124.00	Ericsson RRUS 32 B30	3	0.75	0.000	60.00	2.743	0.67	108.01	3.506	0.67
122.00	Ericsson AIR 6419 B77G	3	0.75	0.000	66.10	3.797	0.65	129.42	4.657	0.65
120.00	SitePro1 RMQP-496-HK	1	1.00	0.000	2446.00	42.400	1.00	3558.06	61.677	1.00
120.00	Generic Mount Reinforcement	1	1.00	0.000	200.00	7.500	1.00	326.30	12.386	1.00
111.30	Andrew DB844H90E-XY	8	0.80	0.000	14.00	3.615	0.73	79.41	3.599	0.73
110.00	Round T-Arm	2	0.75	0.000	250.00	9.700	0.67	385.20	15.033	0.67
110.00	T-Arm w/ Working Platform	1	0.75	0.000	300.00	14.400	0.67	435.20	20.890	0.67
100.00	Kathrein Scala 742 213	2	1.00	1.000	22.00	5.135	0.75	86.09	5.926	0.75
100.00	RFS APXV18-206517S-C	1	1.00	1.000	26.40	5.160	1.00	85.83	6.677	1.00
99.70	RFS APXV18-206517S-C	2	1.00	1.000	26.40	5.160	1.00	85.76	6.675	1.00
90.00	DragonWave Horizon Compact	4	0.80	2.000	10.60	0.721	0.50	24.85	1.082	0.50
90.00	NextNet BTS-2500	3	0.80	-2.100	35.00	1.817	0.50	64.40	2.398	0.50
90.00	Argus LLPX310R	3	0.80	0.500	28.60	4.292	0.63	85.72	5.340	0.63
90.00	DragonWave A-ANT-18G-2-C	1	1.00	2.000	27.10	4.688	1.00	88.96	5.495	1.00
90.00	DragonWave A-ANT-11G-2.5-C	3	1.00	2.000	47.60	8.670	1.00	159.91	9.765	1.00
90.00	Generic Flat Low Profile Platf	1	1.00	0.000	1875.00	26.100	1.00	2388.36	38.202	1.00
85.30	Generic 12" x 12" Junction Box	1	0.80	0.000	10.00	1.200	1.00	36.29	1.658	1.00
Totals	Num Loadings: 28	64			8,079.40			14,362.31		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : 0.00

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
7.00	124.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	124.00	4	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	124.00	4	0.92" (23.4mm) Cable	0.92	0.89	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	124.00	2	0.40" (10.3mm) Fiber	0.4	0.09	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	124.00	1	0.41" (10.3mm) Fiber	0.41	0.09	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	124.00	1	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
7.00	124.00	1	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	122.00	6	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	111.00	8	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	SPRINT NEXTEL
7.00	110.00	8	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	SPRINT NEXTEL
0.00	102.00	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	180	0	Y	
0.00	102.00	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	270	0	Y	
0.00	102.00	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	0	0	Y	
0.00	102.00	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	90	0	Y	
7.00	100.00	6	1 5/8" Coax	1.98	0.82	N	6	1	1	160	0.5	Y	METRO PCS INC
0.00	90.00	6	5/16" (0.31"-7.9mm) C	0.31	0.05	N	0	0	0	0	0	N	CLEARWIRE COR
0.00	90.00	5	7/8" Coax	1.09	0.33	N	3	1.09	1.09	40	1.17	Y	CLEARWIRE COR
7.00	90.00	4	1/2" Coax	0.63	0.15	N	2	1	0	60	0.5	Y	CLEARWIRE COR

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	90.00	2	2" conduit	2.38	3.65	N	0	0	0	0	0	N	CLEARWIRE COR
0.00	22.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	225	0	Y	
0.00	22.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	135	0	Y	
0.00	22.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	315	0	Y	
0.00	22.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	45	0	Y	

ADDITIONAL STEEL

						Intermediate Connectors				
Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	15.48	4	SOL #20 All Thread Bar	80	2.19	6" Angle Bracket	30.00	3.31	5/8" A36 U-Bolt	N
0.00	79.50	4	SOL #20 All Thread Bar	80	2.19	6" Angle Bracket	30.00	3.31	5/8" A36 U-Bolt	Y
79.50	97.44	4	SOL #20 All Thread Bar	80	2.19	6" Angle Bracket	30.00	3.31	5/8" A36 U-Bolt	Y

SEGMENT PROPERTIES

(Max Len: 2 . 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)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
0.00		0.2500	31.000	24.754	2,987.60	30.55	124.00	71.4	186.2	0.0	0.0	39.280	7,139.20	0.0
2.50		0.2500	30.637	24.462	2,883.10	30.16	122.55	71.8	181.8	0.0	209.3	39.280	7,001.80	334.0
5.00		0.2500	30.275	24.170	2,781.20	29.77	121.10	72.2	177.5	0.0	206.9	39.280	6,865.80	334.0
7.50		0.2500	29.912	23.878	2,681.60	29.38	119.65	72.7	173.2	0.0	204.4	39.280	6,731.10	334.0
10.00		0.2500	29.550	23.586	2,584.50	28.99	118.20	73.1	169.0	0.0	201.9	39.280	6,597.80	334.0
12.50		0.2500	29.187	23.294	2,489.70	28.60	116.75	73.5	164.8	0.0	199.4	39.280	6,465.80	334.0
15.00		0.2500	28.825	23.003	2,397.30	28.21	115.30	73.9	160.7	0.0	196.9	39.280	6,335.20	334.0
15.48	Reinf. Top	0.2500	28.755	22.947	2,379.80	28.14	115.02	74	159.9	0.0	37.5	39.280	6,310.20	64.1
17.50		0.2500	28.462	22.711	2,307.20	27.83	113.85	74.4	156.6	0.0	156.9	19.640	3,073.40	134.9
20.00		0.2500	28.100	22.419	2,219.40	27.44	112.40	74.8	152.6	0.0	192.0	19.640	3,010.90	167.0
22.50		0.2500	27.737	22.127	2,133.90	27.05	110.95	75.2	148.6	0.0	189.5	19.640	2,948.90	167.0
25.00		0.2500	27.374	21.835	2,050.50	26.66	109.50	75.6	144.7	0.0	187.0	19.640	2,887.60	167.0
27.50		0.2500	27.012	21.543	1,969.40	26.27	108.05	76.1	140.8	0.0	184.5	19.640	2,827.00	167.0
30.00		0.2500	26.649	21.251	1,890.40	25.88	106.60	76.5	137.0	0.0	182.0	19.640	2,767.00	167.0
32.50		0.2500	26.287	20.960	1,813.60	25.49	105.15	76.9	133.3	0.0	179.5	19.640	2,707.60	167.0
35.00		0.2500	25.924	20.668	1,738.90	25.11	103.70	77.3	129.6	0.0	177.1	19.640	2,648.90	167.0
37.50		0.2500	25.562	20.376	1,666.30	24.72	102.25	77.8	125.9	0.0	174.6	19.640	2,590.80	167.0
37.58	Bot - Section 2	0.2500	25.550	20.366	1,663.90	24.70	102.20	77.8	125.8	0.0	5.8	19.640	2,588.90	5.6
40.00		0.2500	25.199	20.084	1,595.70	24.33	100.80	78.2	122.3	0.0	314.6	19.640	2,602.80	161.4
42.00	Top - Section 1	0.2188	25.347	17.704	1,426.80	28.36	115.84	73.8	108.7	0.0	257.1	19.640	2,556.70	133.6
42.50		0.2188	25.274	17.652	1,414.50	28.27	115.51	73.9	108.1	0.0	30.1	19.640	2,545.20	33.4
45.00		0.2188	24.912	17.397	1,354.00	27.83	113.86	74.4	105.0	0.0	149.1	19.640	2,488.30	167.0
47.50		0.2188	24.549	17.142	1,295.20	27.38	112.20	74.8	101.9	0.0	146.9	19.640	2,432.10	167.0
50.00		0.2188	24.187	16.886	1,238.10	26.94	110.54	75.3	98.9	0.0	144.7	19.640	2,376.50	167.0
52.50		0.2188	23.824	16.631	1,182.80	26.50	108.88	75.8	95.9	0.0	142.6	19.640	2,321.50	167.0
55.00		0.2188	23.461	16.375	1,129.10	26.05	107.23	76.3	93.0	0.0	140.4	19.640	2,267.20	167.0
57.50		0.2188	23.099	16.120	1,077.10	25.61	105.57	76.8	90.1	0.0	138.2	19.640	2,213.50	167.0
60.00		0.2188	22.736	15.864	1,026.70	25.16	103.91	77.3	87.2	0.0	136.0	19.640	2,160.40	167.0
62.50		0.2188	22.374	15.609	977.90	24.72	102.26	77.8	84.4	0.0	133.9	19.640	2,108.00	167.0
65.00		0.2188	22.011	15.354	930.70	24.28	100.60	78.2	81.7	0.0	131.7	19.640	2,056.30	167.0
67.50		0.2188	21.649	15.098	885.00	23.83	98.94	78.7	79.0	0.0	129.5	19.640	2,005.20	167.0
70.00		0.2188	21.286	14.843	840.80	23.39	97.29	79.2	76.3	0.0	127.4	19.640	1,954.70	167.0
72.50		0.2188	20.924	14.587	798.20	22.94	95.63	79.7	73.7	0.0	125.2	19.640	1,904.90	167.0
75.00		0.2188	20.561	14.332	757.00	22.50	93.97	80.2	71.1	0.0	123.0	19.640	1,855.80	167.0
76.17	Bot - Section 3	0.2188	20.392	14.213	738.30	22.29	93.20	80.4	69.9	0.0	56.7	19.640	1,833.10	77.9
77.50		0.2188	20.198	14.076	717.20	22.06	92.31	80.7	68.6	0.0	120.3	19.640	1,857.50	89.1
79.50	Reinf. Top Reinf Bottom	0.2188	19.908	13.872	686.40	21.70	90.99	81	66.6	0.0	178.3	19.640	1,818.60	133.6
80.00	Top - Section 2	0.1875	20.211	12.089	618.70	26.20	107.79	76.1	59.1	0.0	44.2	19.640	1,808.90	33.4
82.50		0.1875	19.848	11.870	585.70	25.69	105.86	76.7	57.0	0.0	101.9	19.640	1,761.00	167.0
85.00		0.1875	19.486	11.651	553.90	25.17	103.92	77.3	54.9	0.0	100.0	19.640	1,713.80	167.0
85.30		0.1875	19.442	11.625	550.10	25.10	103.69	77.3	54.7	0.0	11.9	19.640	1,708.10	20.0
87.50		0.1875	19.123	11.432	523.20	24.65	101.99	77.8	52.9	0.0	86.3	19.640	1,667.20	147.0
90.00		0.1875	18.761	11.214	493.70	24.13	100.06	78.4	50.8	0.0	96.3	19.640	1,621.20	167.0
92.50		0.1875	18.398	10.995	465.40	23.61	98.12	79	48.9	0.0	94.5	19.640	1,575.90	167.0
95.00		0.1875	18.036	10.776	438.10	23.09	96.19	79.5	46.9	0.0	92.6	19.640	1,531.20	167.0
97.44	Reinf. Top	0.1875	17.682	10.562	412.60	22.59	94.30	80.1	45.1	0.0	88.6	19.640	1,488.20	163.0
97.50		0.1875	17.673	10.557	412.00	22.58	94.26	80.1	45.0	0.0	2.2			
99.70		0.1875	17.354	10.364	389.80	22.12	92.55	80.6	43.4	0.0	78.3			
100.00		0.1875	17.311	10.338	386.90	22.06	92.32	80.7	43.2	0.0	10.6			
102.50		0.1875	16.948	10.119	362.80	21.54	90.39	81.2	41.4	0.0	87.0			
105.00		0.1875	16.585	9.900	339.80	21.02	88.46	81.8	39.6	0.0	85.2			
107.50		0.1875	16.223	9.681	317.70	20.50	86.52	81.9	37.8	0.0	83.3			
110.00		0.1875	15.860	9.462	296.70	19.99	84.59	81.9	36.1	0.0	81.4			
111.30		0.1875	15.672	9.349	286.10	19.72	83.58	81.9	35.3	0.0	41.6			
112.50		0.1875	15.498	9.244	276.60	19.47	82.65	81.9	34.5	0.0	38.0			
115.00		0.1875	15.135	9.025	257.40	18.95	80.72	81.9	32.9	0.0	77.7			
117.50		0.1875	14.773	8.806	239.10	18.43	78.79	81.9	31.3	0.0	75.8			
120.00		0.1875	14.410	8.587	221.70	17.91	76.85	81.9	29.7	0.0	74.0			
										Totals:	7,062.3			7,543.0

Load Case: 1.2D + 1.0W Normal 117 mph wind with no ice 27 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	-36.47	-21.25	0.00	-1,946.9	0.00	1,946.88	1,590.66	434.43	1,260.13	996.98	0	0	0.587
2.50	-35.54	-21.09	0.00	-1,893.8	0.00	1,893.75	1,581.24	429.31	1,230.60	979.29	0.04	-0.13	0.575
5.00	-34.62	-20.92	0.00	-1,841.0	0.00	1,841.03	1,571.59	424.18	1,201.42	961.61	0.14	-0.27	0.563
7.50	-33.70	-20.76	0.00	-1,788.7	0.00	1,788.72	1,561.72	419.06	1,172.59	943.94	0.32	-0.4	0.550
10.00	-32.75	-20.59	0.00	-1,736.8	0.00	1,736.83	1,551.63	413.94	1,144.11	926.28	0.57	-0.54	0.538
12.50	-31.80	-20.42	0.00	-1,685.4	0.00	1,685.36	1,541.32	408.82	1,115.98	908.64	0.89	-0.67	0.526
15.00	-30.88	-20.29	0.00	-1,634.3	0.00	1,634.32	1,530.78	403.70	1,088.20	891.03	1.27	-0.8	0.514
15.48	-30.69	-20.22	0.00	-1,624.6	0.00	1,624.59	1,528.73	402.71	1,082.90	887.65	1.36	-0.83	0.511
15.48	-30.69	-20.22	0.00	-1,624.6	0.00	1,624.59	1,528.73	402.71	1,082.90	887.65	1.36	-0.83	0.805
17.50	-30.07	-20.09	0.00	-1,583.8	0.00	1,583.75	1,520.02	398.57	1,060.77	873.44	1.73	-0.93	0.791
20.00	-29.31	-19.95	0.00	-1,533.5	0.00	1,533.53	1,509.04	393.45	1,033.69	855.89	2.27	-1.14	0.773
22.50	-28.56	-19.81	0.00	-1,483.6	0.00	1,483.65	1,497.83	388.33	1,006.96	838.37	2.93	-1.34	0.756
25.00	-27.86	-19.67	0.00	-1,434.1	0.00	1,434.12	1,486.41	383.21	980.58	820.91	3.69	-1.55	0.738
27.50	-27.17	-19.53	0.00	-1,384.9	0.00	1,384.94	1,474.76	378.09	954.55	803.49	4.55	-1.75	0.720
30.00	-26.49	-19.38	0.00	-1,336.1	0.00	1,336.13	1,462.88	372.96	928.87	786.12	5.52	-1.95	0.702
32.50	-25.81	-19.23	0.00	-1,287.7	0.00	1,287.68	1,450.79	367.84	903.54	768.81	6.6	-2.15	0.684
35.00	-25.13	-19.06	0.00	-1,239.6	0.00	1,239.62	1,438.47	362.72	878.56	751.57	7.78	-2.35	0.665
37.50	-24.49	-18.94	0.00	-1,192.0	0.00	1,191.96	1,425.93	357.60	853.93	734.39	9.06	-2.55	0.647
37.58	-24.44	-18.89	0.00	-1,190.4	0.00	1,190.38	1,425.51	357.43	853.11	733.82	9.11	-2.56	0.646
40.00	-23.63	-18.72	0.00	-1,144.7	0.00	1,144.73	1,413.16	352.48	829.65	717.29	10.45	-2.74	0.618
42.00	-22.97	-18.59	0.00	-1,107.3	0.00	1,107.30	1,175.60	310.70	736.48	601.77	11.63	-2.9	0.672
42.50	-22.82	-18.51	0.00	-1,098.0	0.00	1,098.01	1,173.74	309.80	732.24	599.07	11.94	-2.93	0.667
45.00	-22.19	-18.32	0.00	-1,051.7	0.00	1,051.73	1,164.34	305.32	711.21	585.60	13.53	-3.13	0.645
47.50	-21.56	-18.13	0.00	-1,005.9	0.00	1,005.92	1,154.72	300.83	690.48	572.15	15.22	-3.32	0.623
50.00	-20.94	-17.92	0.00	-960.6	0.00	960.60	1,144.87	296.35	670.07	558.75	17.01	-3.51	0.601
52.50	-20.32	-17.72	0.00	-915.8	0.00	915.79	1,134.80	291.87	649.95	545.38	18.89	-3.69	0.579
55.00	-19.71	-17.51	0.00	-871.5	0.00	871.50	1,124.51	287.39	630.15	532.06	20.87	-3.87	0.556
57.50	-19.10	-17.29	0.00	-827.7	0.00	827.74	1,113.99	282.90	610.65	518.78	22.95	-4.05	0.534
60.00	-18.50	-17.07	0.00	-784.5	0.00	784.52	1,103.25	278.42	591.46	505.56	25.11	-4.22	0.511
62.50	-17.90	-16.84	0.00	-741.8	0.00	741.85	1,092.29	273.94	572.57	492.40	27.37	-4.39	0.488
65.00	-17.31	-16.61	0.00	-699.8	0.00	699.75	1,081.11	269.46	553.99	479.31	29.72	-4.56	0.466
67.50	-16.73	-16.37	0.00	-658.2	0.00	658.23	1,069.70	264.97	535.72	466.28	32.15	-4.72	0.443
70.00	-16.15	-16.14	0.00	-617.3	0.00	617.30	1,058.07	260.49	517.75	453.33	34.66	-4.88	0.420
72.50	-15.57	-15.89	0.00	-577.0	0.00	576.96	1,046.22	256.01	500.09	440.46	37.25	-5.03	0.397
75.00	-15.01	-15.68	0.00	-537.2	0.00	537.22	1,034.15	251.52	482.73	427.68	39.92	-5.18	0.374
76.17	-14.74	-15.56	0.00	-518.9	0.00	518.93	1,028.44	249.43	474.74	421.74	41.2	-5.24	0.363
77.50	-14.37	-15.40	0.00	-498.2	0.00	498.17	1,021.85	247.04	465.69	414.98	42.67	-5.32	0.344
79.50	-13.83	-15.23	0.00	-467.4	0.00	467.37	1,011.86	243.45	452.27	404.89	44.92	-5.43	0.326
80.00	-13.69	-15.12	0.00	-459.8	0.00	459.75	828.38	212.16	400.78	337.68	45.49	-5.45	0.358
82.50	-13.15	-14.87	0.00	-421.9	0.00	421.94	819.42	208.32	386.40	327.92	48.38	-5.58	0.332
85.00	-12.63	-14.67	0.00	-384.8	0.00	384.77	810.23	204.48	372.28	318.21	51.33	-5.7	0.306
85.30	-12.55	-14.55	0.00	-380.4	0.00	380.37	809.12	204.02	370.61	317.04	51.69	-5.72	0.303
87.50	-12.09	-14.31	0.00	-348.4	0.00	348.36	800.83	200.64	358.43	308.55	54.34	-5.82	0.280
90.00	-9.08	-11.52	0.00	-310.4	0.00	310.45	791.20	196.80	344.84	298.94	57.41	-5.92	0.250
92.50	-8.60	-11.25	0.00	-281.6	0.00	281.65	781.34	192.96	331.52	289.40	60.54	-6.02	0.229
95.00	-8.12	-10.99	0.00	-253.5	0.00	253.52	771.27	189.12	318.45	279.92	63.71	-6.12	0.209
97.44	-7.66	-10.80	0.00	-226.7	0.00	226.70	761.22	185.37	305.95	270.74	66.86	-6.2	0.189
97.44	-7.66	-10.80	0.00	-226.7	0.00	226.70	761.22	185.37	305.95	270.74	66.86	-6.2	0.851
97.50	-7.63	-10.75	0.00	-226.1	0.00	226.06	760.97	185.27	305.65	270.52	66.93	-6.2	0.849
99.70	-7.34	-10.24	0.00	-202.0	0.00	202.05	751.72	181.89	294.60	262.30	69.86	-6.53	0.783
100.00	-7.25	-9.71	0.00	-198.5	0.00	198.53	750.45	181.43	293.11	261.19	70.27	-6.57	0.773
102.50	-6.97	-9.51	0.00	-174.3	0.00	174.26	739.71	177.59	280.83	251.94	73.8	-6.92	0.704
105.00	-6.73	-9.40	0.00	-150.5	0.00	150.48	728.74	173.75	268.82	242.77	77.5	-7.23	0.632
107.50	-6.50	-9.29	0.00	-127.0	0.00	126.97	713.61	169.91	257.07	232.42	81.36	-7.52	0.558
110.00	-5.41	-8.46	0.00	-103.7	0.00	103.74	697.48	166.07	245.58	221.97	85.36	-7.78	0.478
111.30	-5.26	-7.78	0.00	-92.7	0.00	92.74	689.09	164.07	239.71	216.63	87.49	-7.9	0.438
112.50	-5.17	-7.70	0.00	-83.4	0.00	83.40	681.34	162.22	234.35	211.76	89.48	-8.01	0.404
115.00	-5.00	-7.58	0.00	-64.2	0.00	64.15	665.21	158.38	223.39	201.79	93.71	-8.2	0.328
117.50	-4.83	-7.46	0.00	-45.2	0.00	45.19	649.07	154.54	212.69	192.06	98.04	-8.35	0.245
120.00	0.00	-6.67	0.00	-26.5	0.00	26.54	632.94	150.70	202.25	182.57	102.42	-8.46	0.147

Load Case: 0.9D + 1.0W Normal 117 mph wind with no ice 27 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	-27.34	-21.24	0.00	-1,913.9	0.00	1,913.92	1,590.66	434.43	1,260.13	996.98	0	0	0.575
2.50	-26.64	-21.06	0.00	-1,860.8	0.00	1,860.82	1,581.24	429.31	1,230.60	979.29	0.04	-0.13	0.563
5.00	-25.94	-20.87	0.00	-1,808.2	0.00	1,808.18	1,571.59	424.18	1,201.42	961.61	0.14	-0.26	0.551
7.50	-25.24	-20.68	0.00	-1,756.0	0.00	1,756.00	1,561.72	419.06	1,172.59	943.94	0.32	-0.4	0.539
10.00	-24.51	-20.50	0.00	-1,704.3	0.00	1,704.29	1,551.63	413.94	1,144.11	926.28	0.56	-0.53	0.526
12.50	-23.79	-20.31	0.00	-1,653.0	0.00	1,653.05	1,541.32	408.82	1,115.98	908.64	0.87	-0.66	0.514
15.00	-23.09	-20.17	0.00	-1,602.3	0.00	1,602.29	1,530.78	403.70	1,088.20	891.03	1.25	-0.79	0.502
15.48	-22.94	-20.09	0.00	-1,592.6	0.00	1,592.61	1,528.73	402.71	1,082.90	887.65	1.33	-0.81	0.499
15.48	-22.94	-20.09	0.00	-1,592.6	0.00	1,592.61	1,528.73	402.71	1,082.90	887.65	1.33	-0.81	0.786
17.50	-22.47	-19.94	0.00	-1,552.0	0.00	1,552.02	1,520.02	398.57	1,060.77	873.44	1.7	-0.91	0.772
20.00	-21.89	-19.78	0.00	-1,502.2	0.00	1,502.17	1,509.04	393.45	1,033.69	855.89	2.23	-1.12	0.755
22.50	-21.31	-19.62	0.00	-1,452.7	0.00	1,452.71	1,497.83	388.33	1,006.96	838.37	2.87	-1.32	0.738
25.00	-20.77	-19.45	0.00	-1,403.7	0.00	1,403.67	1,486.41	383.21	980.58	820.91	3.62	-1.52	0.720
27.50	-20.24	-19.29	0.00	-1,355.0	0.00	1,355.03	1,474.76	378.09	954.55	803.49	4.47	-1.72	0.702
30.00	-19.71	-19.12	0.00	-1,306.8	0.00	1,306.81	1,462.88	372.96	928.87	786.12	5.42	-1.91	0.684
32.50	-19.19	-18.95	0.00	-1,259.0	0.00	1,259.01	1,450.79	367.84	903.54	768.81	6.47	-2.11	0.666
35.00	-18.67	-18.77	0.00	-1,211.6	0.00	1,211.64	1,438.47	362.72	878.56	751.57	7.63	-2.3	0.648
37.50	-18.19	-18.64	0.00	-1,164.7	0.00	1,164.71	1,425.93	357.60	853.93	734.39	8.89	-2.5	0.630
37.58	-18.14	-18.58	0.00	-1,163.2	0.00	1,163.16	1,425.51	357.43	853.11	733.82	8.93	-2.5	0.629
40.00	-17.52	-18.40	0.00	-1,118.3	0.00	1,118.26	1,413.16	352.48	829.65	717.29	10.25	-2.69	0.602
42.00	-17.03	-18.27	0.00	-1,081.5	0.00	1,081.47	1,175.60	310.70	736.48	601.77	11.41	-2.84	0.654
42.50	-16.91	-18.18	0.00	-1,072.3	0.00	1,072.33	1,173.74	309.80	732.24	599.07	11.71	-2.87	0.650
45.00	-16.42	-17.98	0.00	-1,026.9	0.00	1,026.88	1,164.34	305.32	711.21	585.60	13.26	-3.06	0.628
47.50	-15.94	-17.77	0.00	-981.9	0.00	981.94	1,154.72	300.83	690.48	572.15	14.92	-3.25	0.606
50.00	-15.47	-17.56	0.00	-937.5	0.00	937.52	1,144.87	296.35	670.07	558.75	16.67	-3.43	0.585
52.50	-15.00	-17.34	0.00	-893.6	0.00	893.62	1,134.80	291.87	649.95	545.38	18.51	-3.61	0.563
55.00	-14.53	-17.12	0.00	-850.3	0.00	850.27	1,124.51	287.39	630.15	532.06	20.45	-3.79	0.541
57.50	-14.07	-16.90	0.00	-807.5	0.00	807.46	1,113.99	282.90	610.65	518.78	22.48	-3.96	0.519
60.00	-13.61	-16.67	0.00	-765.2	0.00	765.21	1,103.25	278.42	591.46	505.56	24.6	-4.13	0.497
62.50	-13.15	-16.44	0.00	-723.5	0.00	723.53	1,092.29	273.94	572.57	492.40	26.81	-4.3	0.475
65.00	-12.71	-16.21	0.00	-682.4	0.00	682.42	1,081.11	269.46	553.99	479.31	29.1	-4.46	0.452
67.50	-12.26	-15.97	0.00	-641.9	0.00	641.90	1,069.70	264.97	535.72	466.28	31.48	-4.62	0.430
70.00	-11.82	-15.74	0.00	-602.0	0.00	601.96	1,058.07	260.49	517.75	453.33	33.93	-4.77	0.408
72.50	-11.39	-15.49	0.00	-562.6	0.00	562.62	1,046.22	256.01	500.09	440.46	36.47	-4.92	0.385
75.00	-10.96	-15.29	0.00	-523.9	0.00	523.89	1,034.15	251.52	482.73	427.68	39.08	-5.06	0.363
76.17	-10.76	-15.17	0.00	-506.0	0.00	506.05	1,028.44	249.43	474.74	421.74	40.33	-5.13	0.353
77.50	-10.48	-15.01	0.00	-485.8	0.00	485.82	1,021.85	247.04	465.69	414.98	41.77	-5.2	0.334
79.50	-10.08	-14.85	0.00	-455.8	0.00	455.80	1,011.86	243.45	452.27	404.89	43.97	-5.3	0.316
80.00	-9.97	-14.74	0.00	-448.4	0.00	448.37	828.38	212.16	400.78	337.68	44.52	-5.33	0.348
82.50	-9.56	-14.49	0.00	-411.5	0.00	411.53	819.42	208.32	386.40	327.92	47.35	-5.45	0.322
85.00	-9.17	-14.30	0.00	-375.3	0.00	375.31	810.23	204.48	372.28	318.21	50.23	-5.57	0.297
85.30	-9.11	-14.18	0.00	-371.0	0.00	371.02	809.12	204.02	370.61	317.04	50.58	-5.59	0.294
87.50	-8.77	-13.95	0.00	-339.8	0.00	339.82	800.83	200.64	358.43	308.55	53.18	-5.69	0.272
90.00	-6.57	-11.24	0.00	-302.8	0.00	302.82	791.20	196.80	344.84	298.94	56.18	-5.79	0.243
92.50	-6.21	-10.98	0.00	-274.7	0.00	274.73	781.34	192.96	331.52	289.40	59.23	-5.89	0.223
95.00	-5.85	-10.73	0.00	-247.3	0.00	247.27	771.27	189.12	318.45	279.92	62.34	-5.98	0.202
97.44	-5.50	-10.55	0.00	-221.1	0.00	221.10	761.22	185.37	305.95	270.74	65.41	-6.06	0.183
97.44	-5.50	-10.55	0.00	-221.1	0.00	221.10	761.22	185.37	305.95	270.74	65.41	-6.06	0.827
97.50	-5.48	-10.49	0.00	-220.5	0.00	220.47	760.97	185.27	305.65	270.52	65.48	-6.06	0.825
99.70	-5.27	-9.98	0.00	-197.0	0.00	197.03	751.72	181.89	294.60	262.30	68.35	-6.38	0.761
100.00	-5.21	-9.45	0.00	-193.6	0.00	193.59	750.45	181.43	293.11	261.19	68.75	-6.42	0.751
102.50	-4.99	-9.25	0.00	-170.0	0.00	169.96	739.71	177.59	280.83	251.94	72.2	-6.76	0.684
105.00	-4.80	-9.14	0.00	-146.8	0.00	146.84	728.74	173.75	268.82	242.77	75.81	-7.07	0.614
107.50	-4.62	-9.02	0.00	-124.0	0.00	124.00	713.61	169.91	257.07	232.42	79.58	-7.35	0.543
110.00	-3.82	-8.23	0.00	-101.4	0.00	101.45	697.48	166.07	245.58	221.97	83.49	-7.6	0.465
111.30	-3.73	-7.55	0.00	-90.8	0.00	90.75	689.09	164.07	239.71	216.63	85.57	-7.72	0.426
112.50	-3.66	-7.47	0.00	-81.7	0.00	81.69	681.34	162.22	234.35	211.76	87.52	-7.83	0.393
115.00	-3.53	-7.35	0.00	-63.0	0.00	63.01	665.21	158.38	223.39	201.79	91.65	-8.01	0.320
117.50	-3.40	-7.23	0.00	-44.6	0.00	44.62	649.07	154.54	212.69	192.06	95.88	-8.16	0.240
120.00	0.00	-6.67	0.00	-26.5	0.00	26.54	632.94	150.70	202.25	182.57	100.17	-8.27	0.147

Load Case: 1.2D + 1.0Di + 1.0Wi Normal		50 mph wind with 1" radial ice			26 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	-48.91	-4.79	0.00	-470.8	0.00	470.75	1,590.66	434.43	1,260.13	996.98	0	0	0.151
2.50	-47.91	-4.77	0.00	-458.8	0.00	458.78	1,581.24	429.31	1,230.60	979.29	0.01	-0.03	0.148
5.00	-46.90	-4.76	0.00	-446.8	0.00	446.84	1,571.59	424.18	1,201.42	961.61	0.04	-0.07	0.145
7.50	-45.87	-4.75	0.00	-434.9	0.00	434.94	1,561.72	419.06	1,172.59	943.94	0.08	-0.1	0.143
10.00	-44.77	-4.73	0.00	-423.1	0.00	423.07	1,551.63	413.94	1,144.11	926.28	0.14	-0.13	0.140
12.50	-43.67	-4.71	0.00	-411.2	0.00	411.25	1,541.32	408.82	1,115.98	908.64	0.22	-0.16	0.137
15.00	-42.58	-4.70	0.00	-399.5	0.00	399.46	1,530.78	403.70	1,088.20	891.03	0.31	-0.19	0.133
15.48	-42.36	-4.69	0.00	-397.2	0.00	397.20	1,528.73	402.71	1,082.90	887.65	0.33	-0.2	0.133
15.48	-42.36	-4.69	0.00	-397.2	0.00	397.20	1,528.73	402.71	1,082.90	887.65	0.33	-0.2	0.209
17.50	-41.64	-4.69	0.00	-387.7	0.00	387.72	1,520.02	398.57	1,060.77	873.44	0.42	-0.23	0.205
20.00	-40.74	-4.68	0.00	-376.0	0.00	376.01	1,509.04	393.45	1,033.69	855.89	0.55	-0.28	0.201
22.50	-39.85	-4.67	0.00	-364.3	0.00	364.31	1,497.83	388.33	1,006.96	838.37	0.71	-0.33	0.197
25.00	-39.04	-4.66	0.00	-352.6	0.00	352.63	1,486.41	383.21	980.58	820.91	0.9	-0.38	0.192
27.50	-38.23	-4.66	0.00	-341.0	0.00	340.97	1,474.76	378.09	954.55	803.49	1.11	-0.43	0.188
30.00	-37.43	-4.65	0.00	-329.3	0.00	329.33	1,462.88	372.96	928.87	786.12	1.35	-0.48	0.183
32.50	-36.62	-4.63	0.00	-317.7	0.00	317.71	1,450.79	367.84	903.54	768.81	1.61	-0.53	0.179
35.00	-35.82	-4.61	0.00	-306.1	0.00	306.13	1,438.47	362.72	878.56	751.57	1.9	-0.58	0.174
37.50	-35.03	-4.59	0.00	-294.6	0.00	294.60	1,425.93	357.60	853.93	734.39	2.21	-0.62	0.170
37.58	-35.00	-4.59	0.00	-294.2	0.00	294.22	1,425.51	357.43	853.11	733.82	2.22	-0.63	0.170
40.00	-34.06	-4.56	0.00	-283.1	0.00	283.13	1,413.16	352.48	829.65	717.29	2.55	-0.67	0.162
42.00	-33.28	-4.54	0.00	-274.0	0.00	274.01	1,175.60	310.70	736.48	601.77	2.84	-0.71	0.177
42.50	-33.12	-4.53	0.00	-271.7	0.00	271.74	1,173.74	309.80	732.24	599.07	2.92	-0.72	0.176
45.00	-32.36	-4.50	0.00	-260.4	0.00	260.41	1,164.34	305.32	711.21	585.60	3.31	-0.77	0.170
47.50	-31.60	-4.47	0.00	-249.2	0.00	249.15	1,154.72	300.83	690.48	572.15	3.72	-0.82	0.164
50.00	-30.84	-4.44	0.00	-238.0	0.00	237.98	1,144.87	296.35	670.07	558.75	4.16	-0.86	0.159
52.50	-30.08	-4.40	0.00	-226.9	0.00	226.89	1,134.80	291.87	649.95	545.38	4.63	-0.91	0.153
55.00	-29.32	-4.36	0.00	-215.9	0.00	215.89	1,124.51	287.39	630.15	532.06	5.11	-0.95	0.147
57.50	-28.57	-4.31	0.00	-205.0	0.00	205.00	1,113.99	282.90	610.65	518.78	5.63	-1	0.141
60.00	-27.83	-4.26	0.00	-194.2	0.00	194.23	1,103.25	278.42	591.46	505.56	6.16	-1.04	0.135
62.50	-27.08	-4.21	0.00	-183.6	0.00	183.58	1,092.29	273.94	572.57	492.40	6.71	-1.08	0.129
65.00	-26.34	-4.15	0.00	-173.1	0.00	173.06	1,081.11	269.46	553.99	479.31	7.29	-1.12	0.123
67.50	-25.61	-4.10	0.00	-162.7	0.00	162.68	1,069.70	264.97	535.72	466.28	7.89	-1.16	0.117
70.00	-24.87	-4.04	0.00	-152.4	0.00	152.43	1,058.07	260.49	517.75	453.33	8.51	-1.2	0.111
72.50	-24.14	-3.98	0.00	-142.3	0.00	142.34	1,046.22	256.01	500.09	440.46	9.15	-1.24	0.105
75.00	-23.42	-3.92	0.00	-132.4	0.00	132.40	1,034.15	251.52	482.73	427.68	9.81	-1.28	0.099
76.17	-23.08	-3.89	0.00	-127.8	0.00	127.83	1,028.44	249.43	474.74	421.74	10.12	-1.29	0.097
77.50	-22.63	-3.85	0.00	-122.6	0.00	122.64	1,021.85	247.04	465.69	414.98	10.49	-1.31	0.092
79.50	-21.95	-3.80	0.00	-115.0	0.00	114.95	1,011.86	243.45	452.27	404.89	11.04	-1.34	0.087
80.00	-21.78	-3.77	0.00	-113.0	0.00	113.05	828.38	212.16	400.78	337.68	11.18	-1.34	0.096
82.50	-21.08	-3.70	0.00	-103.6	0.00	103.62	819.42	208.32	386.40	327.92	11.89	-1.37	0.089
85.00	-20.38	-3.64	0.00	-94.4	0.00	94.37	810.23	204.48	372.28	318.21	12.62	-1.4	0.082
85.30	-20.27	-3.61	0.00	-93.3	0.00	93.28	809.12	204.02	370.61	317.04	12.71	-1.41	0.081
87.50	-19.66	-3.55	0.00	-85.3	0.00	85.32	800.83	200.64	358.43	308.55	13.36	-1.43	0.075
90.00	-15.30	-2.85	0.00	-76.0	0.00	76.01	791.20	196.80	344.84	298.94	14.12	-1.46	0.067
92.50	-14.67	-2.78	0.00	-68.9	0.00	68.89	781.34	192.96	331.52	289.40	14.89	-1.48	0.061
95.00	-14.04	-2.71	0.00	-61.9	0.00	61.94	771.27	189.12	318.45	279.92	15.68	-1.51	0.056
97.44	-13.44	-2.66	0.00	-55.3	0.00	55.32	761.22	185.37	305.95	270.74	16.45	-1.53	0.051
97.44	-13.44	-2.66	0.00	-55.3	0.00	55.32	761.22	185.37	305.95	270.74	16.45	-1.53	0.222
97.50	-13.42	-2.66	0.00	-55.2	0.00	55.16	760.97	185.27	305.65	270.52	16.47	-1.53	0.222
99.70	-12.90	-2.53	0.00	-49.2	0.00	49.23	751.72	181.89	294.60	262.30	17.19	-1.61	0.205
100.00	-12.59	-2.41	0.00	-48.4	0.00	48.38	750.45	181.43	293.11	261.19	17.29	-1.62	0.202
102.50	-12.25	-2.36	0.00	-42.4	0.00	42.36	739.71	177.59	280.83	251.94	18.16	-1.7	0.185
105.00	-11.97	-2.34	0.00	-36.5	0.00	36.46	728.74	173.75	268.82	242.77	19.07	-1.78	0.167
107.50	-11.70	-2.31	0.00	-30.6	0.00	30.61	713.61	169.91	257.07	232.42	20.02	-1.85	0.148
110.00	-10.17	-2.08	0.00	-24.8	0.00	24.83	697.48	166.07	245.58	221.97	21.01	-1.91	0.127
111.30	-9.39	-1.93	0.00	-22.1	0.00	22.12	689.09	164.07	239.71	216.63	21.53	-1.94	0.116
112.50	-9.28	-1.91	0.00	-19.8	0.00	19.80	681.34	162.22	234.35	211.76	22.02	-1.96	0.107
115.00	-9.05	-1.88	0.00	-15.0	0.00	15.02	665.21	158.38	223.39	201.79	23.06	-2.01	0.088
117.50	-8.83	-1.85	0.00	-10.3	0.00	10.32	649.07	154.54	212.69	192.06	24.13	-2.04	0.067
120.00	0.00	-1.53	0.00	-5.7	0.00	5.70	632.94	150.70	202.25	182.57	25.2	-2.07	0.031

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 25 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	-30.41	-5.00	0.00	-453.9	0.00	453.86	1,590.66	434.43	1,260.13	996.98	0	0	0.142
2.50	-29.68	-4.96	0.00	-441.4	0.00	441.36	1,581.24	429.31	1,230.60	979.29	0.01	-0.03	0.139
5.00	-28.95	-4.91	0.00	-429.0	0.00	428.97	1,571.59	424.18	1,201.42	961.61	0.03	-0.06	0.136
7.50	-28.22	-4.87	0.00	-416.7	0.00	416.69	1,561.72	419.06	1,172.59	943.94	0.08	-0.09	0.133
10.00	-27.46	-4.83	0.00	-404.5	0.00	404.51	1,551.63	413.94	1,144.11	926.28	0.13	-0.12	0.130
12.50	-26.71	-4.79	0.00	-392.4	0.00	392.44	1,541.32	408.82	1,115.98	908.64	0.21	-0.16	0.127
15.00	-25.96	-4.75	0.00	-380.5	0.00	380.48	1,530.78	403.70	1,088.20	891.03	0.3	-0.19	0.124
15.48	-25.81	-4.74	0.00	-378.2	0.00	378.19	1,528.73	402.71	1,082.90	887.65	0.32	-0.19	0.123
15.48	-25.81	-4.74	0.00	-378.2	0.00	378.19	1,528.73	402.71	1,082.90	887.65	0.32	-0.19	0.193
17.50	-25.34	-4.70	0.00	-368.6	0.00	368.63	1,520.02	398.57	1,060.77	873.44	0.4	-0.22	0.190
20.00	-24.76	-4.67	0.00	-356.9	0.00	356.87	1,509.04	393.45	1,033.69	855.89	0.53	-0.27	0.186
22.50	-24.18	-4.63	0.00	-345.2	0.00	345.20	1,497.83	388.33	1,006.96	838.37	0.68	-0.31	0.182
25.00	-23.65	-4.60	0.00	-333.6	0.00	333.62	1,486.41	383.21	980.58	820.91	0.86	-0.36	0.177
27.50	-23.13	-4.56	0.00	-322.1	0.00	322.14	1,474.76	378.09	954.55	803.49	1.06	-0.41	0.173
30.00	-22.60	-4.52	0.00	-310.7	0.00	310.74	1,462.88	372.96	928.87	786.12	1.29	-0.45	0.169
32.50	-22.08	-4.48	0.00	-299.4	0.00	299.44	1,450.79	367.84	903.54	768.81	1.54	-0.5	0.164
35.00	-21.56	-4.44	0.00	-288.2	0.00	288.23	1,438.47	362.72	878.56	751.57	1.81	-0.55	0.160
37.50	-21.05	-4.41	0.00	-277.1	0.00	277.13	1,425.93	357.60	853.93	734.39	2.11	-0.59	0.155
37.58	-21.03	-4.40	0.00	-276.8	0.00	276.76	1,425.51	357.43	853.11	733.82	2.12	-0.59	0.155
40.00	-20.39	-4.36	0.00	-266.1	0.00	266.13	1,413.16	352.48	829.65	717.29	2.43	-0.64	0.148
42.00	-19.86	-4.33	0.00	-257.4	0.00	257.42	1,175.60	310.70	736.48	601.77	2.71	-0.67	0.161
42.50	-19.76	-4.31	0.00	-255.2	0.00	255.25	1,173.74	309.80	732.24	599.07	2.78	-0.68	0.160
45.00	-19.27	-4.26	0.00	-244.5	0.00	244.48	1,164.34	305.32	711.21	585.60	3.15	-0.73	0.155
47.50	-18.78	-4.21	0.00	-233.8	0.00	233.83	1,154.72	300.83	690.48	572.15	3.54	-0.77	0.150
50.00	-18.29	-4.17	0.00	-223.3	0.00	223.29	1,144.87	296.35	670.07	558.75	3.96	-0.82	0.144
52.50	-17.81	-4.12	0.00	-212.9	0.00	212.87	1,134.80	291.87	649.95	545.38	4.4	-0.86	0.139
55.00	-17.33	-4.07	0.00	-202.6	0.00	202.58	1,124.51	287.39	630.15	532.06	4.86	-0.9	0.134
57.50	-16.85	-4.02	0.00	-192.4	0.00	192.42	1,113.99	282.90	610.65	518.78	5.34	-0.94	0.128
60.00	-16.38	-3.96	0.00	-182.4	0.00	182.38	1,103.25	278.42	591.46	505.56	5.85	-0.98	0.123
62.50	-15.90	-3.91	0.00	-172.5	0.00	172.47	1,092.29	273.94	572.57	492.40	6.37	-1.02	0.118
65.00	-15.43	-3.86	0.00	-162.7	0.00	162.70	1,081.11	269.46	553.99	479.31	6.92	-1.06	0.112
67.50	-14.96	-3.80	0.00	-153.1	0.00	153.06	1,069.70	264.97	535.72	466.28	7.48	-1.1	0.107
70.00	-14.49	-3.75	0.00	-143.6	0.00	143.55	1,058.07	260.49	517.75	453.33	8.07	-1.13	0.101
72.50	-14.03	-3.69	0.00	-134.2	0.00	134.19	1,046.22	256.01	500.09	440.46	8.67	-1.17	0.096
75.00	-13.57	-3.64	0.00	-125.0	0.00	124.97	1,034.15	251.52	482.73	427.68	9.3	-1.2	0.090
76.17	-13.35	-3.61	0.00	-120.7	0.00	120.72	1,028.44	249.43	474.74	421.74	9.59	-1.22	0.088
77.50	-13.05	-3.58	0.00	-115.9	0.00	115.90	1,021.85	247.04	465.69	414.98	9.94	-1.24	0.083
79.50	-12.60	-3.54	0.00	-108.8	0.00	108.75	1,011.86	243.45	452.27	404.89	10.46	-1.26	0.079
80.00	-12.49	-3.51	0.00	-107.0	0.00	106.98	828.38	212.16	400.78	337.68	10.59	-1.27	0.087
82.50	-12.05	-3.45	0.00	-98.2	0.00	98.20	819.42	208.32	386.40	327.92	11.26	-1.3	0.081
85.00	-11.61	-3.41	0.00	-89.6	0.00	89.57	810.23	204.48	372.28	318.21	11.95	-1.33	0.074
85.30	-11.55	-3.38	0.00	-88.6	0.00	88.55	809.12	204.02	370.61	317.04	12.04	-1.33	0.074
87.50	-11.16	-3.33	0.00	-81.1	0.00	81.11	800.83	200.64	358.43	308.55	12.65	-1.35	0.068
90.00	-8.47	-2.68	0.00	-72.3	0.00	72.29	791.20	196.80	344.84	298.94	13.37	-1.38	0.061
92.50	-8.06	-2.62	0.00	-65.6	0.00	65.60	781.34	192.96	331.52	289.40	14.1	-1.4	0.056
95.00	-7.65	-2.56	0.00	-59.0	0.00	59.05	771.27	189.12	318.45	279.92	14.84	-1.42	0.051
97.44	-7.26	-2.51	0.00	-52.8	0.00	52.81	761.22	185.37	305.95	270.74	15.57	-1.44	0.046
97.44	-7.26	-2.51	0.00	-52.8	0.00	52.81	761.22	185.37	305.95	270.74	15.57	-1.44	0.205
97.50	-7.25	-2.50	0.00	-52.7	0.00	52.66	760.97	185.27	305.65	270.52	15.59	-1.44	0.204
99.70	-6.99	-2.38	0.00	-47.1	0.00	47.07	751.72	181.89	294.60	262.30	16.27	-1.52	0.189
100.00	-6.90	-2.26	0.00	-46.2	0.00	46.25	750.45	181.43	293.11	261.19	16.37	-1.53	0.186
102.50	-6.68	-2.21	0.00	-40.6	0.00	40.61	739.71	177.59	280.83	251.94	17.19	-1.61	0.170
105.00	-6.51	-2.19	0.00	-35.1	0.00	35.08	728.74	173.75	268.82	242.77	18.05	-1.68	0.154
107.50	-6.33	-2.16	0.00	-29.6	0.00	29.62	713.61	169.91	257.07	232.42	18.95	-1.75	0.136
110.00	-5.37	-1.97	0.00	-24.2	0.00	24.21	697.48	166.07	245.58	221.97	19.89	-1.81	0.117
111.30	-5.18	-1.81	0.00	-21.6	0.00	21.65	689.09	164.07	239.71	216.63	20.38	-1.84	0.108
112.50	-5.11	-1.79	0.00	-19.5	0.00	19.48	681.34	162.22	234.35	211.76	20.85	-1.86	0.100
115.00	-4.97	-1.76	0.00	-15.0	0.00	15.00	665.21	158.38	223.39	201.79	21.84	-1.91	0.082
117.50	-4.84	-1.74	0.00	-10.6	0.00	10.59	649.07	154.54	212.69	192.06	22.85	-1.94	0.063
120.00	0.00	-1.57	0.00	-6.2	0.00	6.24	632.94	150.70	202.25	182.57	23.87	-1.97	0.034

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.189
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.202
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
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):	2.540
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	2.000
Total Unfactored Dead Load:	30.410 k
Seismic Base Shear (E):	0.910 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)
57	118.75	136	1,923	0.011	10	169
56	116.25	138	1,868	0.011	10	171
55	113.75	140	1,813	0.010	9	174
54	111.9	68	850	0.005	4	84
53	110.65	79	968	0.006	5	98
52	108.75	169	1,999	0.012	10	210
51	106.25	171	1,929	0.011	10	212
50	103.75	173	1,860	0.011	10	214
49	101.25	212	2,174	0.012	11	263
48	99.85	28	281	0.002	1	35
47	98.6	207	2,016	0.012	11	257
46	97.47	6	54	0.000	0	7
45	96.22	395	3,655	0.021	19	490
44	93.75	406	3,571	0.020	19	504
43	91.25	408	3,399	0.020	18	506
42	88.75	435	3,424	0.020	18	539
41	86.4	384	2,867	0.016	15	476
40	85.15	52	381	0.002	2	65
39	83.75	438	3,075	0.018	16	544
38	81.25	440	2,906	0.017	15	546
37	79.75	112	711	0.004	4	139
36	78.5	449	2,766	0.016	14	557
35	76.8333	301	1,775	0.010	9	373
34	75.5833	215	1,226	0.007	6	266
33	73.75	461	2,509	0.014	13	572
32	71.25	464	2,353	0.014	12	575
31	68.75	466	2,201	0.013	12	578
30	66.25	468	2,053	0.012	11	580
29	63.75	470	1,910	0.011	10	583
28	61.25	472	1,771	0.010	9	586
27	58.75	474	1,637	0.009	9	588
26	56.25	477	1,508	0.009	8	591
25	53.75	479	1,383	0.008	7	594
24	51.25	481	1,263	0.007	7	596

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
23	48.75	483	1,148	0.007	6	599
22	46.25	485	1,038	0.006	5	602
21	43.75	487	933	0.005	5	605
20	42.25	98	174	0.001	1	121
19	41	528	887	0.005	5	655
18	38.7917	642	966	0.006	5	796
17	37.5417	17	24	0.000	0	21
16	36.25	513	674	0.004	4	636
15	33.75	515	587	0.003	3	639
14	31.25	518	506	0.003	3	642
13	28.75	520	430	0.002	2	645
12	26.25	523	360	0.002	2	648
11	23.75	525	296	0.002	2	652
10	21.25	575	259	0.002	1	713
9	18.75	577	203	0.001	1	716
8	16.49	468	127	0.001	1	581
7	15.24	144	33	0.000	0	178
6	13.75	749	142	0.001	1	929
5	11.25	752	95	0.000	0	932
4	8.75	754	58	0.000	0	935
3	6.25	730	29	0.000	0	905
2	3.75	726	10	0.000	0	900
1	1.25	728	1	0.000	0	903
Ericsson Radio 8843 - B2 + B66A	120	216	3,106	0.018	16	268
Ericsson RRUS 4478 B14	120	180	2,588	0.015	14	223
Ericsson RRUS 4449 B5, B12	120	213	3,067	0.018	16	264
Ericsson AIR 6449 B77D/ C-Band	120	245	3,525	0.020	18	304
Raycap DC6-48-60-18-8F	120	80	1,152	0.007	6	99
Ericsson RRUS 32 B30	120	180	2,592	0.015	14	223
Generic 2' Std. Dish	120	14	202	0.001	1	17
Commscope NNHH-65B-R4	120	84	1,207	0.007	6	104
CCI DMP65R-BU6DA	120	79	1,143	0.007	6	98
CCI DMP65R-BU8D	120	191	2,756	0.016	14	237
Quintel QD8616-7	120	300	4,320	0.025	23	372
Quintel QD6616-7	120	130	1,872	0.011	10	161
Ericsson AIR 6419 B77G	120	198	2,856	0.016	15	246
Generic Mount Reinforcement	120	200	2,880	0.016	15	248
SitePro1 RMQP-496-HK	120	2,446	35,222	0.202	184	3,034
Andrew DB844H90E-XY	111.3	112	1,387	0.008	7	139
Round T-Arm	110	500	6,050	0.035	32	620
T-Arm w/ Working Platform	110	300	3,630	0.021	19	372
Kathrein Scala 742 213	100	44	440	0.002	2	55
RFS APXV18-206517S-C	100	26	264	0.002	1	33
RFS APXV18-206517S-C	99.7	53	525	0.003	3	65
DragonWave Horizon Compact	90	42	343	0.002	2	53
NextNet BTS-2500	90	105	850	0.005	4	130
Argus LLPX310R	90	86	695	0.004	4	106
DragonWave A-ANT-18G-2-C	90	27	220	0.001	1	34
DragonWave A-ANT-11G-2.5-C	90	143	1,157	0.007	6	177
Generic Flat Low Profile Platform	90	1,875	15,188	0.087	79	2,326
Generic 12" x 12" Junction Box	85.3	10	73	0.000	0	12
		30,410	174,370	1.001	912	37,718

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)
57	118.75	136	1,923	0.011	10	117
56	116.25	138	1,868	0.011	10	119
55	113.75	140	1,813	0.010	9	120
54	111.9	68	850	0.005	4	58
53	110.65	79	968	0.006	5	68
52	108.75	169	1,999	0.012	10	145

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
51	106.25	171	1,929	0.011	10	147
50	103.75	173	1,860	0.011	10	149
49	101.25	212	2,174	0.012	11	182
48	99.85	28	281	0.002	1	24
47	98.6	207	2,016	0.012	11	178
46	97.47	6	54	0.000	0	5
45	96.22	395	3,655	0.021	19	339
44	93.75	406	3,571	0.020	19	349
43	91.25	408	3,399	0.020	18	351
42	88.75	435	3,424	0.020	18	374
41	86.4	384	2,867	0.016	15	330
40	85.15	52	381	0.002	2	45
39	83.75	438	3,075	0.018	16	377
38	81.25	440	2,906	0.017	15	378
37	79.75	112	711	0.004	4	96
36	78.5	449	2,766	0.016	14	386
35	76.8333	301	1,775	0.010	9	259
34	75.5833	215	1,226	0.007	6	184
33	73.75	461	2,509	0.014	13	397
32	71.25	464	2,353	0.014	12	398
31	68.75	466	2,201	0.013	12	400
30	66.25	468	2,053	0.012	11	402
29	63.75	470	1,910	0.011	10	404
28	61.25	472	1,771	0.010	9	406
27	58.75	474	1,637	0.009	9	408
26	56.25	477	1,508	0.009	8	410
25	53.75	479	1,383	0.008	7	412
24	51.25	481	1,263	0.007	7	413
23	48.75	483	1,148	0.007	6	415
22	46.25	485	1,038	0.006	5	417
21	43.75	487	933	0.005	5	419
20	42.25	98	174	0.001	1	84
19	41	528	887	0.005	5	454
18	38.7917	642	966	0.006	5	552
17	37.5417	17	24	0.000	0	15
16	36.25	513	674	0.004	4	441
15	33.75	515	587	0.003	3	443
14	31.25	518	506	0.003	3	445
13	28.75	520	430	0.002	2	447
12	26.25	523	360	0.002	2	449
11	23.75	525	296	0.002	2	452
10	21.25	575	259	0.002	1	494
9	18.75	577	203	0.001	1	496
8	16.49	468	127	0.001	1	402
7	15.24	144	33	0.000	0	123
6	13.75	749	142	0.001	1	644
5	11.25	752	95	0.000	0	646
4	8.75	754	58	0.000	0	648
3	6.25	730	29	0.000	0	628
2	3.75	726	10	0.000	0	624
1	1.25	728	1	0.000	0	626
Ericsson Radio 8843 - B2 + B66A	120	216	3,106	0.018	16	185
Ericsson RRUS 4478 B14	120	180	2,588	0.015	14	154
Ericsson RRUS 4449 B5, B12	120	213	3,067	0.018	16	183
Ericsson AIR 6449 B77D/ C-Band	120	245	3,525	0.020	18	210
Raycap DC6-48-60-18-8F	120	80	1,152	0.007	6	69
Ericsson RRUS 32 B30	120	180	2,592	0.015	14	155
Generic 2' Std. Dish	120	14	202	0.001	1	12
Commscope NNHH-65B-R4	120	84	1,207	0.007	6	72
CCI DMP65R-BU6DA	120	79	1,143	0.007	6	68
CCI DMP65R-BU8D	120	191	2,756	0.016	14	165
Quintel QD8616-7	120	300	4,320	0.025	23	258
Quintel QD6616-7	120	130	1,872	0.011	10	112
Ericsson AIR 6419 B77G	120	198	2,856	0.016	15	170
Generic Mount Reinforcement	120	200	2,880	0.016	15	172
SitePro1 RMQP-496-HK	120	2,446	35,222	0.202	184	2,103
Andrew DB844H90E-XY	111.3	112	1,387	0.008	7	96
Round T-Arm	110	500	6,050	0.035	32	430
T-Arm w/ Working Platform	110	300	3,630	0.021	19	258
Kathrein Scala 742 213	100	44	440	0.002	2	38

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
RFS APXV18-206517S-C	100	26	264	0.002	1	23
RFS APXV18-206517S-C	99.7	53	525	0.003	3	45
DragonWave Horizon Compact	90	42	343	0.002	2	36
NextNet BTS-2500	90	105	850	0.005	4	90
Argus LLPX310R	90	86	695	0.004	4	74
DragonWave A-ANT-18G-2-C	90	27	220	0.001	1	23
DragonWave A-ANT-11G-2.5-C	90	143	1,157	0.007	6	123
Generic Flat Low Profile Platform	90	1,875	15,188	0.087	79	1,612
Generic 12" x 12" Junction Box	85.3	10	73	0.000	0	9
		30,410	174,370	1.001	912	26,143

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	-36.81	-0.91	0.00	-95.97	0.00	95.97	1,590.66	434.43	1,260	996.98	0.00	0.00	0.04
2.50	-35.91	-0.92	0.00	-93.69	0.00	93.69	1,581.24	429.31	1,231	979.29	0.00	-0.01	0.04
5.00	-35.01	-0.92	0.00	-91.40	0.00	91.40	1,571.59	424.18	1,201	961.61	0.01	-0.01	0.04
7.50	-34.07	-0.92	0.00	-89.09	0.00	89.09	1,561.72	419.06	1,173	943.94	0.02	-0.02	0.04
10.00	-33.14	-0.93	0.00	-86.78	0.00	86.78	1,551.63	413.94	1,144	926.28	0.03	-0.03	0.03
12.50	-32.21	-0.93	0.00	-84.46	0.00	84.46	1,541.32	408.82	1,116	908.64	0.04	-0.03	0.03
15.00	-32.03	-0.93	0.00	-82.14	0.00	82.14	1,530.78	403.70	1,088	891.03	0.06	-0.04	0.03
15.48	-31.45	-0.93	0.00	-81.69	0.00	81.69	1,528.73	402.71	1,083	887.65	0.07	-0.04	0.03
15.48	-31.45	-0.93	0.00	-81.69	0.00	81.69	1,528.73	402.71	1,083	887.65	0.07	-0.04	0.05
17.50	-30.74	-0.94	0.00	-79.81	0.00	79.81	1,520.02	398.57	1,061	873.44	0.09	-0.05	0.05
20.00	-30.02	-0.94	0.00	-77.47	0.00	77.47	1,509.04	393.45	1,034	855.89	0.11	-0.06	0.05
22.50	-29.37	-0.94	0.00	-75.12	0.00	75.12	1,497.83	388.33	1,007	838.37	0.15	-0.07	0.05
25.00	-28.72	-0.94	0.00	-72.77	0.00	72.77	1,486.41	383.21	981	820.91	0.18	-0.08	0.05
27.50	-28.08	-0.95	0.00	-70.41	0.00	70.41	1,474.76	378.09	955	803.49	0.23	-0.09	0.05
30.00	-27.44	-0.95	0.00	-68.04	0.00	68.04	1,462.88	372.96	929	786.12	0.28	-0.10	0.05
32.50	-26.80	-0.95	0.00	-65.68	0.00	65.68	1,450.79	367.84	904	768.81	0.33	-0.11	0.04
35.00	-26.16	-0.95	0.00	-63.31	0.00	63.31	1,438.47	362.72	879	751.57	0.39	-0.12	0.04
37.50	-26.14	-0.95	0.00	-60.94	0.00	60.94	1,425.93	357.60	854	734.39	0.45	-0.13	0.04
37.58	-25.34	-0.95	0.00	-60.86	0.00	60.86	1,425.51	357.43	853	733.82	0.46	-0.13	0.04
40.00	-24.69	-0.94	0.00	-58.58	0.00	58.58	1,413.16	352.48	830	717.29	0.52	-0.14	0.04
42.00	-24.57	-0.94	0.00	-56.69	0.00	56.69	1,175.60	310.70	736	601.77	0.58	-0.15	0.04
42.50	-23.96	-0.94	0.00	-56.22	0.00	56.22	1,173.74	309.80	732	599.07	0.60	-0.15	0.04
45.00	-23.36	-0.94	0.00	-53.87	0.00	53.87	1,164.34	305.32	711	585.60	0.68	-0.16	0.04
47.50	-22.76	-0.93	0.00	-51.53	0.00	51.53	1,154.72	300.83	690	572.15	0.77	-0.17	0.04
50.00	-22.16	-0.93	0.00	-49.20	0.00	49.20	1,144.87	296.35	670	558.75	0.86	-0.18	0.04
52.50	-21.57	-0.92	0.00	-46.88	0.00	46.88	1,134.80	291.87	650	545.38	0.95	-0.19	0.04
55.00	-20.98	-0.92	0.00	-44.57	0.00	44.57	1,124.51	287.39	630	532.06	1.05	-0.20	0.04
57.50	-20.39	-0.91	0.00	-42.28	0.00	42.28	1,113.99	282.90	611	518.78	1.16	-0.21	0.04
60.00	-19.81	-0.90	0.00	-40.01	0.00	40.01	1,103.25	278.42	591	505.56	1.27	-0.21	0.03
62.50	-19.22	-0.89	0.00	-37.76	0.00	37.76	1,092.29	273.94	573	492.40	1.38	-0.22	0.03
65.00	-18.64	-0.88	0.00	-35.53	0.00	35.53	1,081.11	269.46	554	479.31	1.50	-0.23	0.03
67.50	-18.06	-0.87	0.00	-33.33	0.00	33.33	1,069.70	264.97	536	466.28	1.63	-0.24	0.03
70.00	-17.49	-0.86	0.00	-31.16	0.00	31.16	1,058.07	260.49	518	453.33	1.75	-0.25	0.03
72.50	-16.92	-0.84	0.00	-29.01	0.00	29.01	1,046.22	256.01	500	440.46	1.88	-0.26	0.03
75.00	-16.65	-0.84	0.00	-26.90	0.00	26.90	1,034.15	251.52	483	427.68	2.02	-0.26	0.03
76.17	-16.28	-0.83	0.00	-25.93	0.00	25.93	1,028.44	249.43	475	421.74	2.08	-0.27	0.02
77.50	-15.72	-0.81	0.00	-24.82	0.00	24.82	1,021.85	247.04	466	414.98	2.16	-0.27	0.02
79.50	-15.58	-0.81	0.00	-23.20	0.00	23.20	1,011.86	243.45	452	404.89	2.27	-0.28	0.02
79.50	-15.58	-0.81	0.00	-23.20	0.00	23.20	1,011.86	243.45	452	404.89	2.27	-0.28	0.02
80.00	-15.04	-0.79	0.00	-22.80	0.00	22.80	828.38	212.16	401	337.68	2.30	-0.28	0.02
82.50	-14.49	-0.77	0.00	-20.82	0.00	20.82	819.42	208.32	386	327.92	2.45	-0.28	0.02
85.00	-14.43	-0.77	0.00	-18.88	0.00	18.88	810.23	204.48	372	318.21	2.60	-0.29	0.02
85.30	-13.94	-0.76	0.00	-18.65	0.00	18.65	809.12	204.02	371	317.04	2.62	-0.29	0.02
87.50	-13.40	-0.74	0.00	-16.99	0.00	16.99	800.83	200.64	358	308.55	2.75	-0.29	0.02
90.00	-10.07	-0.61	0.00	-15.15	0.00	15.15	791.20	196.80	345	298.94	2.91	-0.30	0.02
92.50	-9.56	-0.59	0.00	-13.63	0.00	13.63	781.34	192.96	332	289.40	3.07	-0.30	0.02
95.00	-9.07	-0.56	0.00	-12.17	0.00	12.17	771.27	189.12	318	279.92	3.23	-0.31	0.01
97.44	-9.07	-0.56	0.00	-10.79	0.00	10.79	761.22	185.37	306	270.74	3.39	-0.31	0.05

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
97.44	-9.07	-0.56	0.00	-10.79	0.00	10.79	761.22	185.37	306	270.74	3.39	-0.31	0.01
97.50	-8.81	-0.55	0.00	-10.76	0.00	10.76	760.97	185.27	306	270.52	3.39	-0.31	0.05
99.70	-8.71	-0.55	0.00	-9.54	0.00	9.54	751.72	181.89	295	262.30	3.54	-0.33	0.05
100.00	-8.36	-0.53	0.00	-9.38	0.00	9.38	750.45	181.43	293	261.19	3.56	-0.33	0.05
102.50	-8.15	-0.53	0.00	-8.04	0.00	8.04	739.71	177.59	281	251.94	3.74	-0.35	0.04
105.00	-7.93	-0.52	0.00	-6.73	0.00	6.73	728.74	173.75	269	242.77	3.92	-0.36	0.04
107.50	-7.72	-0.51	0.00	-5.44	0.00	5.44	713.61	169.91	257	232.42	4.11	-0.37	0.03
110.00	-6.63	-0.44	0.00	-4.17	0.00	4.17	697.48	166.07	246	221.97	4.31	-0.38	0.03
111.30	-6.41	-0.43	0.00	-3.60	0.00	3.60	689.09	164.07	240	216.63	4.42	-0.39	0.03
112.50	-6.24	-0.42	0.00	-3.08	0.00	3.08	681.34	162.22	234	211.76	4.52	-0.39	0.02
115.00	-6.07	-0.41	0.00	-2.03	0.00	2.03	665.21	158.38	223	201.79	4.72	-0.40	0.02
117.50	-5.90	-0.40	0.00	-1.00	0.00	1.00	649.07	154.54	213	192.06	4.93	-0.40	0.01
120.00	0.00	-0.36	0.00	0.00	0.00	0.00	632.94	150.70	202	182.57	5.15	-0.41	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	-25.52	-0.91	0.00	-93.93	0.00	93.93	1,590.66	434.43	1,260	996.98	0.00	0.00	0.03
2.50	-24.89	-0.92	0.00	-91.65	0.00	91.65	1,581.24	429.31	1,231	979.29	0.00	-0.01	0.03
5.00	-24.26	-0.92	0.00	-89.36	0.00	89.36	1,571.59	424.18	1,201	961.61	0.01	-0.01	0.03
7.50	-23.62	-0.92	0.00	-87.07	0.00	87.07	1,561.72	419.06	1,173	943.94	0.02	-0.02	0.03
10.00	-22.97	-0.92	0.00	-84.77	0.00	84.77	1,551.63	413.94	1,144	926.28	0.03	-0.03	0.03
12.50	-22.33	-0.92	0.00	-82.46	0.00	82.46	1,541.32	408.82	1,116	908.64	0.04	-0.03	0.03
15.00	-22.20	-0.92	0.00	-80.16	0.00	80.16	1,530.78	403.70	1,088	891.03	0.06	-0.04	0.03
15.48	-21.80	-0.92	0.00	-79.71	0.00	79.71	1,528.73	402.71	1,083	887.65	0.07	-0.04	0.03
15.48	-21.80	-0.92	0.00	-79.71	0.00	79.71	1,528.73	402.71	1,083	887.65	0.07	-0.04	0.05
17.50	-21.30	-0.93	0.00	-77.84	0.00	77.84	1,520.02	398.57	1,061	873.44	0.08	-0.05	0.05
20.00	-20.81	-0.93	0.00	-75.53	0.00	75.53	1,509.04	393.45	1,034	855.89	0.11	-0.06	0.05
22.50	-20.36	-0.93	0.00	-73.21	0.00	73.21	1,497.83	388.33	1,007	838.37	0.14	-0.07	0.04
25.00	-19.91	-0.93	0.00	-70.88	0.00	70.88	1,486.41	383.21	981	820.91	0.18	-0.08	0.04
27.50	-19.46	-0.93	0.00	-68.56	0.00	68.56	1,474.76	378.09	955	803.49	0.22	-0.09	0.04
30.00	-19.02	-0.93	0.00	-66.23	0.00	66.23	1,462.88	372.96	929	786.12	0.27	-0.10	0.04
32.50	-18.57	-0.93	0.00	-63.90	0.00	63.90	1,450.79	367.84	904	768.81	0.32	-0.11	0.04
35.00	-18.13	-0.93	0.00	-61.57	0.00	61.57	1,438.47	362.72	879	751.57	0.38	-0.12	0.04
37.50	-18.12	-0.93	0.00	-59.25	0.00	59.25	1,425.93	357.60	854	734.39	0.44	-0.13	0.04
37.58	-17.56	-0.93	0.00	-59.17	0.00	59.17	1,425.51	357.43	853	733.82	0.45	-0.13	0.04
40.00	-17.11	-0.92	0.00	-56.93	0.00	56.93	1,413.16	352.48	830	717.29	0.51	-0.14	0.04
42.00	-17.03	-0.92	0.00	-55.09	0.00	55.09	1,175.60	310.70	736	601.77	0.57	-0.14	0.04
42.50	-16.61	-0.92	0.00	-54.63	0.00	54.63	1,173.74	309.80	732	599.07	0.59	-0.14	0.04
45.00	-16.19	-0.92	0.00	-52.33	0.00	52.33	1,164.34	305.32	711	585.60	0.66	-0.15	0.04
47.50	-15.78	-0.91	0.00	-50.04	0.00	50.04	1,154.72	300.83	690	572.15	0.75	-0.16	0.04
50.00	-15.36	-0.91	0.00	-47.76	0.00	47.76	1,144.87	296.35	670	558.75	0.84	-0.17	0.04
52.50	-14.95	-0.90	0.00	-45.50	0.00	45.50	1,134.80	291.87	650	545.38	0.93	-0.18	0.03
55.00	-14.54	-0.89	0.00	-43.25	0.00	43.25	1,124.51	287.39	630	532.06	1.03	-0.19	0.03
57.50	-14.13	-0.88	0.00	-41.02	0.00	41.02	1,113.99	282.90	611	518.78	1.13	-0.20	0.03
60.00	-13.73	-0.88	0.00	-38.81	0.00	38.81	1,103.25	278.42	591	505.56	1.24	-0.21	0.03
62.50	-13.32	-0.87	0.00	-36.62	0.00	36.62	1,092.29	273.94	573	492.40	1.35	-0.22	0.03
65.00	-12.92	-0.86	0.00	-34.46	0.00	34.46	1,081.11	269.46	554	479.31	1.46	-0.23	0.03
67.50	-12.52	-0.84	0.00	-32.32	0.00	32.32	1,069.70	264.97	536	466.28	1.58	-0.23	0.03
70.00	-12.12	-0.83	0.00	-30.21	0.00	30.21	1,058.07	260.49	518	453.33	1.71	-0.24	0.03
72.50	-11.72	-0.82	0.00	-28.13	0.00	28.13	1,046.22	256.01	500	440.46	1.84	-0.25	0.02
75.00	-11.54	-0.81	0.00	-26.08	0.00	26.08	1,034.15	251.52	483	427.68	1.97	-0.26	0.02
76.17	-11.28	-0.80	0.00	-25.13	0.00	25.13	1,028.44	249.43	475	421.74	2.03	-0.26	0.02
77.50	-10.90	-0.79	0.00	-24.06	0.00	24.06	1,021.85	247.04	466	414.98	2.10	-0.26	0.02
79.50	-10.80	-0.78	0.00	-22.49	0.00	22.49	1,011.86	243.45	452	404.89	2.21	-0.27	0.02
79.50	-10.80	-0.78	0.00	-22.49	0.00	22.49	1,011.86	243.45	452	404.89	2.21	-0.27	0.02
80.00	-10.42	-0.77	0.00	-22.09	0.00	22.09	828.38	212.16	401	337.68	2.24	-0.27	0.02
82.50	-10.04	-0.75	0.00	-20.18	0.00	20.18	819.42	208.32	386	327.92	2.39	-0.27	0.02
85.00	-10.00	-0.75	0.00	-18.30	0.00	18.30	810.23	204.48	372	318.21	2.53	-0.28	0.02
85.30	-9.66	-0.73	0.00	-18.07	0.00	18.07	809.12	204.02	371	317.04	2.55	-0.28	0.02
87.50	-9.29	-0.71	0.00	-16.46	0.00	16.46	800.83	200.64	358	308.55	2.68	-0.29	0.02
90.00	-6.98	-0.59	0.00	-14.68	0.00	14.68	791.20	196.80	345	298.94	2.83	-0.29	0.02
92.50	-6.63	-0.57	0.00	-13.21	0.00	13.21	781.34	192.96	332	289.40	2.98	-0.30	0.01
95.00	-6.29	-0.55	0.00	-11.79	0.00	11.79	771.27	189.12	318	279.92	3.14	-0.30	0.01
97.44	-6.28	-0.55	0.00	-10.45	0.00	10.45	761.22	185.37	306	270.74	3.30	-0.30	0.01
97.44	-6.28	-0.55	0.00	-10.45	0.00	10.45	761.22	185.37	306	270.74	3.30	-0.30	0.05

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
97.50	-6.11	-0.54	0.00	-10.42	0.00	10.42	760.97	185.27	306	270.52	3.30	-0.30	0.05
99.70	-6.04	-0.53	0.00	-9.23	0.00	9.23	751.72	181.89	295	262.30	3.44	-0.32	0.04
100.00	-5.79	-0.52	0.00	-9.07	0.00	9.07	750.45	181.43	293	261.19	3.46	-0.32	0.04
102.50	-5.64	-0.51	0.00	-7.78	0.00	7.78	739.71	177.59	281	251.94	3.64	-0.34	0.04
105.00	-5.50	-0.50	0.00	-6.51	0.00	6.51	728.74	173.75	269	242.77	3.82	-0.35	0.03
107.50	-5.35	-0.49	0.00	-5.26	0.00	5.26	713.61	169.91	257	232.42	4.00	-0.36	0.03
110.00	-4.60	-0.43	0.00	-4.03	0.00	4.03	697.48	166.07	246	221.97	4.20	-0.37	0.03
111.30	-4.44	-0.42	0.00	-3.48	0.00	3.48	689.09	164.07	240	216.63	4.30	-0.38	0.02
112.50	-4.32	-0.41	0.00	-2.98	0.00	2.98	681.34	162.22	234	211.76	4.39	-0.38	0.02
115.00	-4.20	-0.40	0.00	-1.96	0.00	1.96	665.21	158.38	223	201.79	4.60	-0.39	0.02
117.50	-4.09	-0.39	0.00	-0.97	0.00	0.97	649.07	154.54	213	192.06	4.80	-0.39	0.01
120.00	0.00	-0.36	0.00	0.00	0.00	0.00	632.94	150.70	202	182.57	5.01	-0.39	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	21.25	0.00	36.47	0.00	0.00	1946.88	97.44	0.85
0.9D + 1.0W Normal	21.24	0.00	27.34	0.00	0.00	1913.92	97.44	0.83
1.2D + 1.0Di + 1.0Wi Normal	4.79	0.00	48.91	0.00	0.00	470.75	97.44	0.22
1.2D + 1.0Ev + 1.0Eh Normal	0.95	0.00	36.81	0.00	0.00	95.97	97.44	0.05
0.9D - 1.0Ev + 1.0Eh Normal	0.93	0.00	25.52	0.00	0.00	93.93	97.44	0.05
1.0D + 1.0W Service Normal	5.00	0.00	30.41	0.00	0.00	453.86	97.44	0.2

ADDITIONAL STEEL SUMMARY

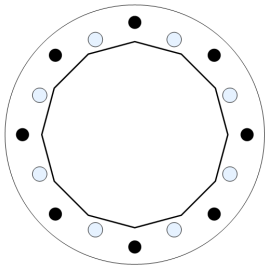
			Intermediate Connectors				Max member		
Elev From (ft)	Elev To (ft)	Member	VQ/I	Shear Applied (kips)	Shear (phiVn) (kips)	Ratio	Pu (kip)	PhiPn (kip)	Ratio
0.00	15.48	SOL #20 All Thread Bar	205.6	6.2	16.8	0.3669	219.7	330.5	0.6649
0.00	79.50	SOL #20 All Thread Bar	405.4	12.2	16.8	0.7236	313.4	330.5	0.9482
79.50	97.44	SOL #20 All Thread Bar	418.7	12.6	16.8	0.7472	151.3	330.5	0.4578

			Upper Termination Connectors					Lower Termination Connectors				
Elev From (ft)	Elev To (ft)	Member	MQ/I	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kip)	Num Reqd	Num Actual	Ratio
0.00	15.48	SOL #20 All Thread Bar	198.1565	12	17	20	0.8257	0	12	0	0	0.0000
0.00	79.50	SOL #20 All Thread Bar	0	12	0	12	0.0000	0	12	0	0	0.0000
79.50	97.44	SOL #20 All Thread Bar	86.2845	12	8	12	0.5992	0	12	0	0	0.0000

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 16769)

Diameter:	44.59	in
Shape:	Round	
Thickness:	2.125	in
Grade:	A633 Gr. E	
Yield Strength:	60	ksi
Tensile Strength:	80	ksi
Rod Detail Type:	c	
Clear Distance	-	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Elastic	
Neutral Axis:	90	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 17163]	Radial	8	2.25	38.59	A615-75	75	100	-	-

DYWIDAG BAR PARAMETERS

Quantity	Bar Size	Bar Diameter (in)	Fy (ksi)	Fu (ksi)	Bracket Type	Bracket Offset (in)	Circle (in)	Offset (°)
8 [ID# 1091]	#20	2.5	80	100	Angle	2.19	37.88	22.5

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (8) 2.25"ø [ID 17163]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.785	13.64	13.64	-12.716	525.943	-64.20	3.11
2	1.571	0.00	19.30	0.000	0.839	1.30	4.40
3	2.356	-13.64	13.64	12.716	525.943	66.80	3.11
4	3.142	-19.30	0.00	17.983	1051.046	93.93	0.00
5	3.927	-13.64	-13.64	12.716	525.943	66.80	3.11
6	4.712	0.00	-19.30	0.000	0.839	1.30	4.40
7	5.498	13.64	-13.64	-12.716	525.943	-64.20	3.11
8	6.283	19.30	0.00	-17.983	1051.046	-91.32	0.00

DYWIDAG BAR GEOMETRY AND APPLIED LOADS --- (8) #20 [ID 1091]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)
1	1.178	7.25	17.50	-7.248	259.792	-80.86
2	1.963	-7.25	17.50	7.248	259.792	87.38
3	2.749	-17.50	7.25	17.498	1504.923	206.34
4	3.534	-17.50	-7.25	17.498	1504.923	206.34
5	4.320	-7.25	-17.50	7.248	259.792	87.38
6	5.105	7.25	-17.50	-7.248	259.792	-80.86
7	5.890	17.50	-7.25	-17.498	1504.923	-199.82
8	0.393	17.50	7.25	-17.498	1504.923	-199.82

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	31"ø x 0.25" (12 Sides)	556.1	36.47	21.25	0.286
Bolt Group	Original (8) 2.25"ø	556.1	-	21.25	0.286
Dywidag Group	(8) #20	1390.8	-	-	0.714
	TOTALS	**1946.88**	**36.47**	**21.25**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	31"ø x 0.25" (12 Sides)	23.8761	-	-	2822.54	-
Bolt Group	Original (8) 2.25"ø	3.9761	3.2477	0.8393	4207.54	4.5
Dywidag Group	(8) #20	4.9087	4.9087	1.9175	7058.86	-

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	31.12	in
Point-to-Point Diameter:	32.22	in
Flat Width:	8.340	in
Flat Radians:	0.524	rad

PLATE PROPERTIES

Neutral Axis:	90	°
Bend Line Lower Limit:	2.606	rad
Bend Line Upper Limit:	3.677	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	28.170	0.00	31.801	227.3	1717.3	0.132
Corner	26.907	0.00	30.376	175.7	1640.3	0.107
Circumferential	32.589	0.00	36.790	175.7	1986.6	0.088

ELASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio	Interaction
Original	8	2.25	93.9	0.0	243.6	0.386	0.386

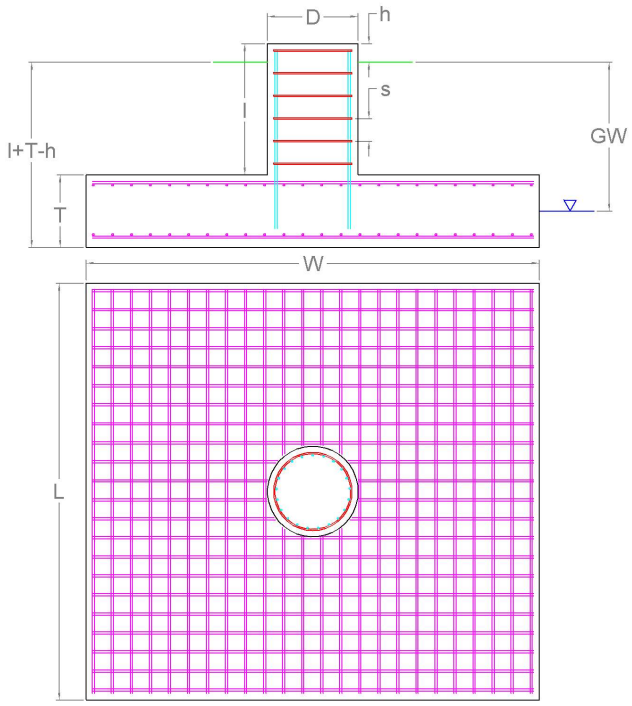
DYWIDAG BAR ANALYSIS

Group Quantity	Bar Size	Bar Circle (in)	Applied Axial Load Pu (k)	Compressive Capacity ϕPn (k)	Ratio
8	#20	37.88	206.3	368.2	0.560

Monolithic Mat Foundation Analysis (ANSI/TIA-222-H)

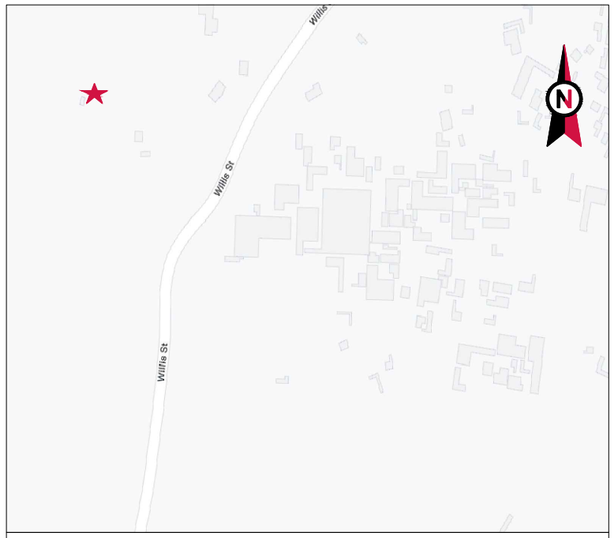
Foundation & Tower Parameters			
Ignore Mat Rebar?		Y	
Ignore Pier Rebar?		Y	
Foundation has Pier(s)?		Y	
Pier Shape		Round	
Pier Diameter	*D*	6	ft
Pier Height Above Ground	*h*	2.7	ft
Pier Length	*l*	6.7	ft
Mat Base Depth	*l+T-h*	6.5	ft
Mat Length	*L*	18.4	ft
Mat Width	*W*	17.5	ft
Mat Thickness	*T*	2.5	ft
Unit Weight of Concrete		150	pcf
Tower Eccentricity	ecc	0	ft
Tower Face Width	FW	2.58	ft
Tower Leg Count		1	

Reactions		
Moment, M_u	1,946.88	k-ft
Shear, V_u	21.25	k
Axial, P_u	36.47	k
Uplift, T_u	0	k
Tower Weight	36.47	k
Tower Dead Load Factor	0.9	



Soil Parameters			
Water Table Depth [BGL]	*GW*	-	ft
Unit Weight of Soil		115	pcf
Unit Weight of Soil [Submerged]		52.6	pcf
Shear Friction Coefficient		0.5	
Ultimate Bearing Pressure		32,000	psf
Bearing Pressure Type		Gross	
Conical Failure Angle		15	°
Capacity Increase (Transient Loads)		1.00	
Soil Strength Reduction Factor, ϕ_s		0.75	
Dead Load Factor		1.2	

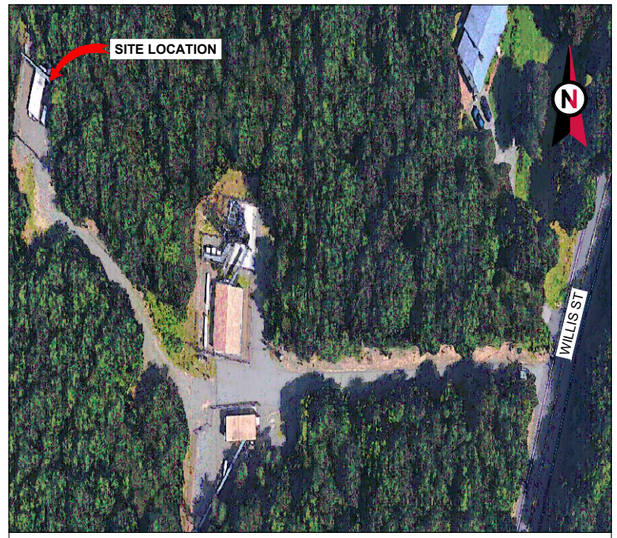
Soil Capacities		
Design Moment, M_u	2,142.38	k-ft
Nominal Moment Capacity, $\phi_m M_n$	2,666.49	k-ft
$M_u / \phi_s M_n$	80.3%	
Net Bearing Pressure	4,009	k
Nominal Bearing Capacity, $\phi_b P_n$	24,000	k
Bearing Pressure Controlling Load Direction	Parallel to Pad Edge	
$P_u / \phi_s P_n$	16.7%	
Ultimate Friction Resistance	157.34	k
Ultimate Passive Pressure Resistance	27.77	k
Nominal Shear Capacity, $\phi_s V_n$	138.83	k
$V_u / \phi_s V_n$	15.0%	



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: BRST - BRISTOL
ATC SITE NUMBER: 302500
AT&T PACE NUMBERS: MRCTB053323/ MRCTB056373/ MRCTB055522/ MRCTB053274/ MRCTB056185
AT&T SITE ID: CTL01055
AT&T FA CODE:10035029
AT&T SITE NAME: BRISTOL
SITE ADDRESS: 790 WILLIS STREET
BRISTOL,CT 06010-7269



LOCATION MAP

AT&T 5G NR 1SR CBAND AMENDMENT PLAN

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:

790 WILLIS STREET
BRISTOL,CT 06010-7269
COUNTY: HARTFORD

GEOGRAPHIC COORDINATES:

LATITUDE: 41.64909486
LONGITUDE: -72.94801487
GROUND ELEVATION: 1034' 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:

THE CONNECTICUT LIGHT AND POWER CO
790 WILLIS STREET
BRISTOL,CT 06010-7269

PROJECT DESCRIPTION

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

TOWER WORK:

REMOVE (9) ANTENNA(S), (3) RRH(S), (6) TMA(S), (12) TRIPLEXERS, (6) 1 1/4" COAX CABLE(S) AND (1) 3" CONDUIT

INSTALL MOUNT MODIFCATION(S) AND (9) ANTENNA(S)

EXISTING (3) ANTENNA(S), (12) RRH(S), (4) DC-6 SQUID(S), (4) FIBER TRUNKS, (8) DC TRUNKS, (1) DISH ANTENNA, (4) 2" CONDUIT(S), (6) 1 1/4" COAX CABLE(S) AND (1) 7/8" COAX CABLE TO REMAIN

GROUND WORK:

REMOVE (6) RRUW AND (6) DIPLEXERS

INSTALL (1) 6648+XCEDE, (1) 6630+IDLE CABLE, AND (3) RECTIFIER(S)

EXISTING (3) RRUS E2 B29 TO REMAIN

PROJECT NOTES

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

PROJECT LOCATION DIRECTIONS

FROM HARTFORD TAKE I-84 WEST TO RT 72 WEST. FOLLOW TO END. GO STRAIGHT AT END OF RAMP AND AT NEXT STREET TAKE A RIGHT. GO STRAIGHT FOR A FEW MILES UNTIL MEMORIAL SCHOOL IS ON RIGHT. AT THIS INTERSECTION TURN RIGHT ON WILLIS. GO UP HILL TO TOP, ACCESS ROAD IS JUST AFTER # 760.

SHEET INDEX

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

AT&T RAN SCOPING NOTES:

(0) DC UPCONVERTERS REQUIRED
INSTALL (3) RECTIFIERS

AMERICAN TOWER®

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

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	04/15/22
0	FINALS	TR	05/18/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

AT&T SITE NAME:
BRISTOL

SITE ADDRESS:
790 WILLIS STREET
BRISTOL,CT 06010-7269

SEAL:

AT&T

DATE DRAWN:	04/15/22
ATC JOB NO:	13757810_G5
CUSTOMER ID:	CTL01055
CUSTOMER #:	10035029

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

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	04/15/22
0	FINALS	TR	05/18/22

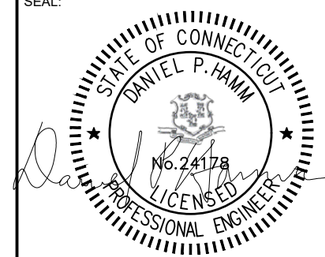
ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

AT&T SITE NAME:
BRISTOL

SITE ADDRESS:
790 WILLIS STREET
BRISTOL,CT 06010-7269

SEAL:



AT&T

DATE DRAWN:	04/15/22
ATC JOB NO:	13757810_G5
CUSTOMER ID:	CTL01055
CUSTOMER #:	10035029

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

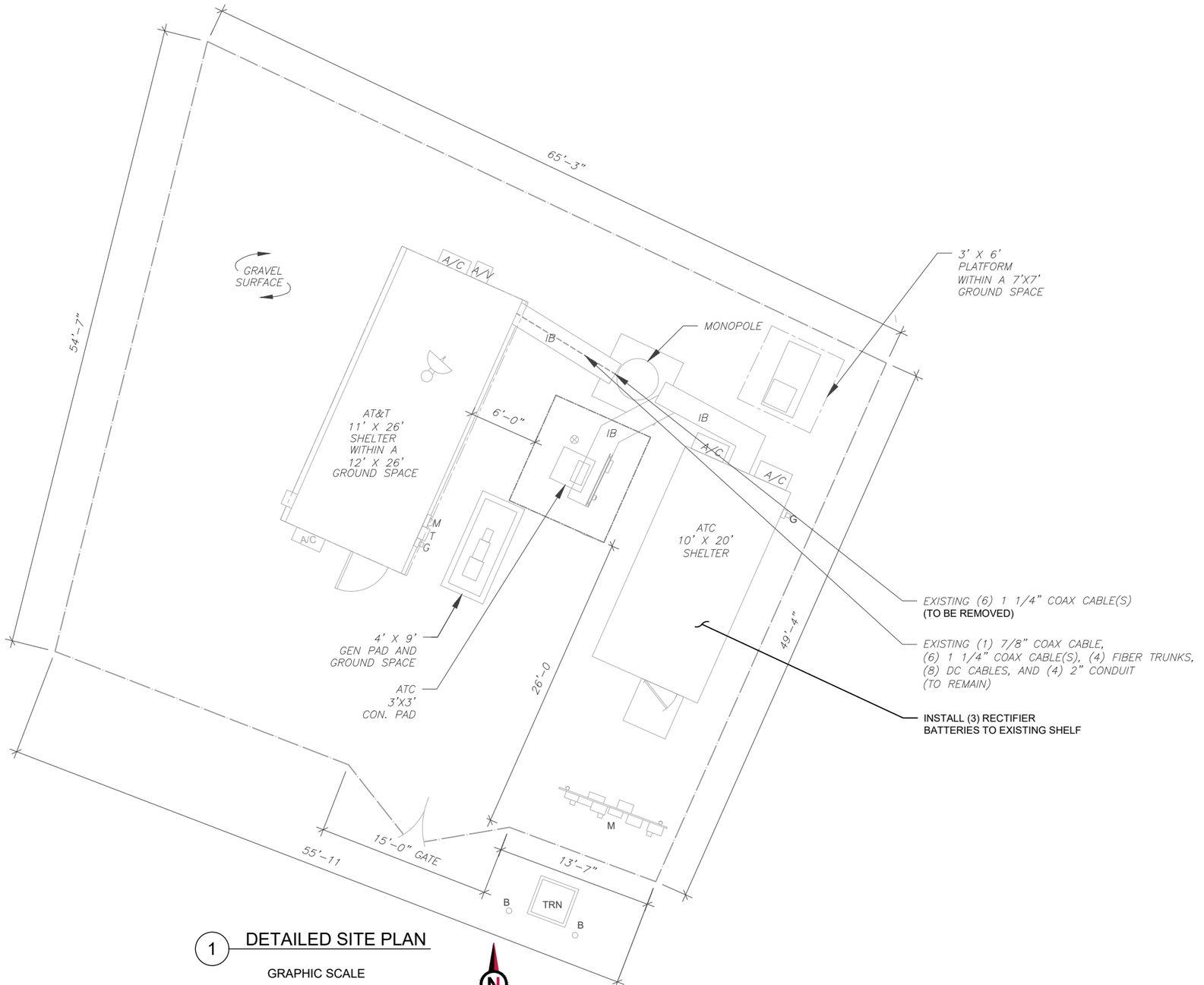
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

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. THIS PROJECT INCLUDES NO INSTALL OR MODIFICATION AT GRADE.

LEGEND

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



1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

N

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ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

AT&T SITE NAME:
BRISTOL

SITE ADDRESS:
790 WILLIS STREET
BRISTOL,CT 06010-7269

SEAL:

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

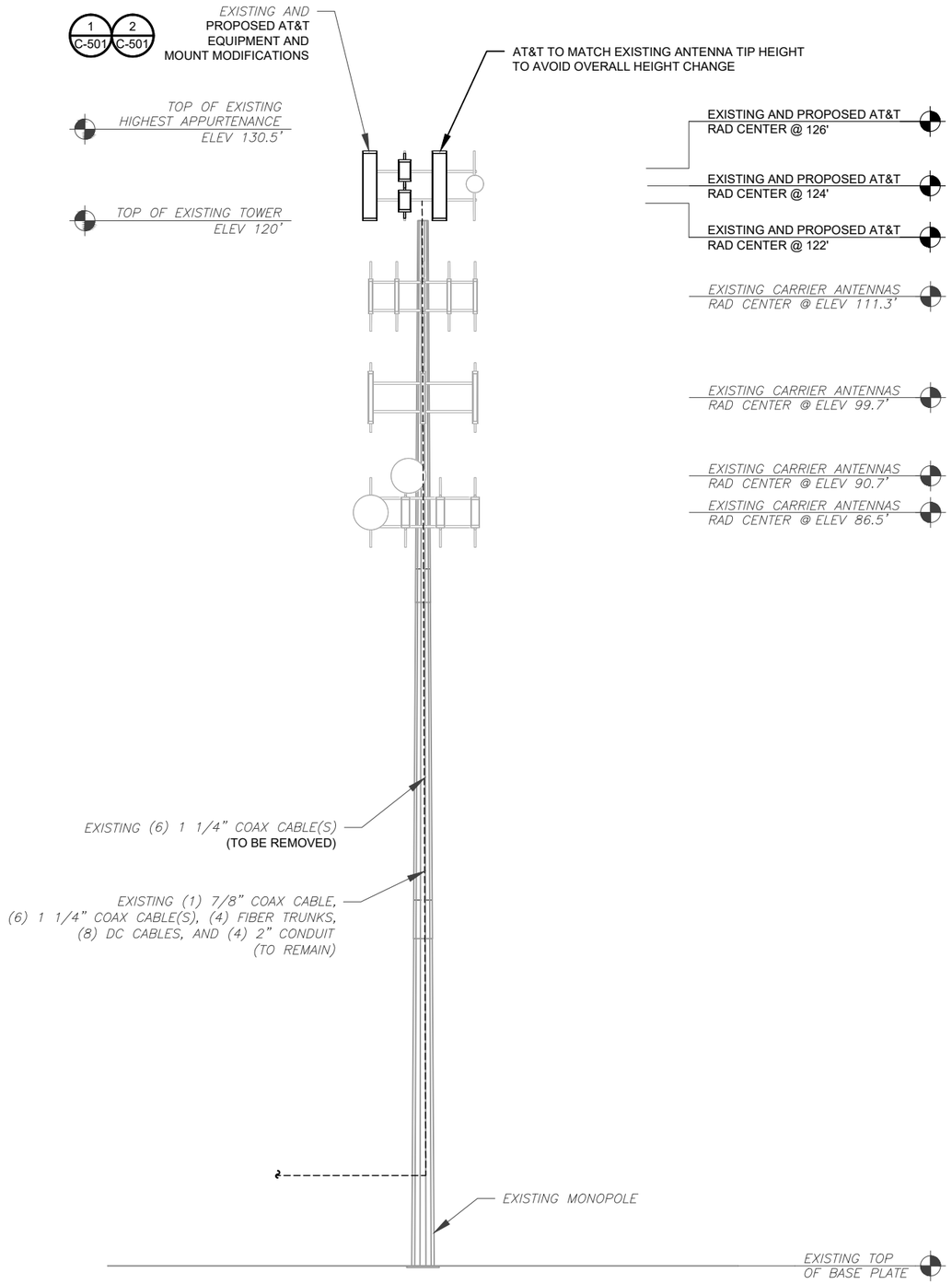
AT&T

DATE DRAWN:	04/15/22
ATC JOB NO:	13757810_G5
CUSTOMER ID:	CTL01055
CUSTOMER #:	10035029

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 04/18/2022, 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.

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790 WILLIS STREET
BRISTOL,CT 06010-7269

SEAL:

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DANIEL P. HAMM
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AT&T

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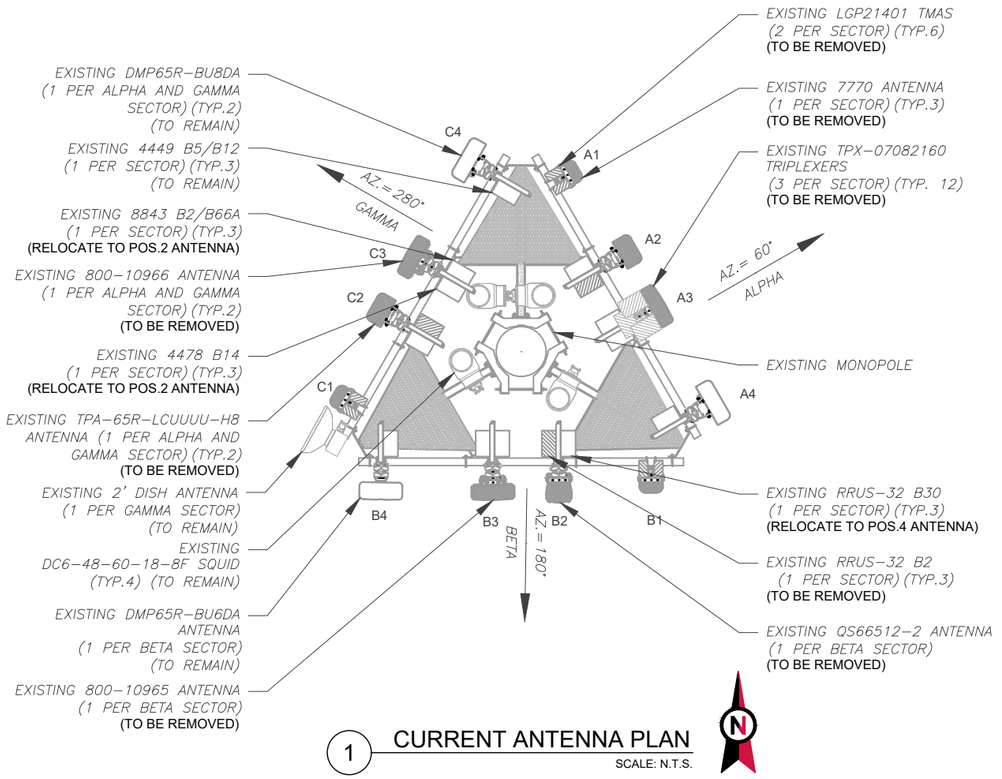
TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-201	0

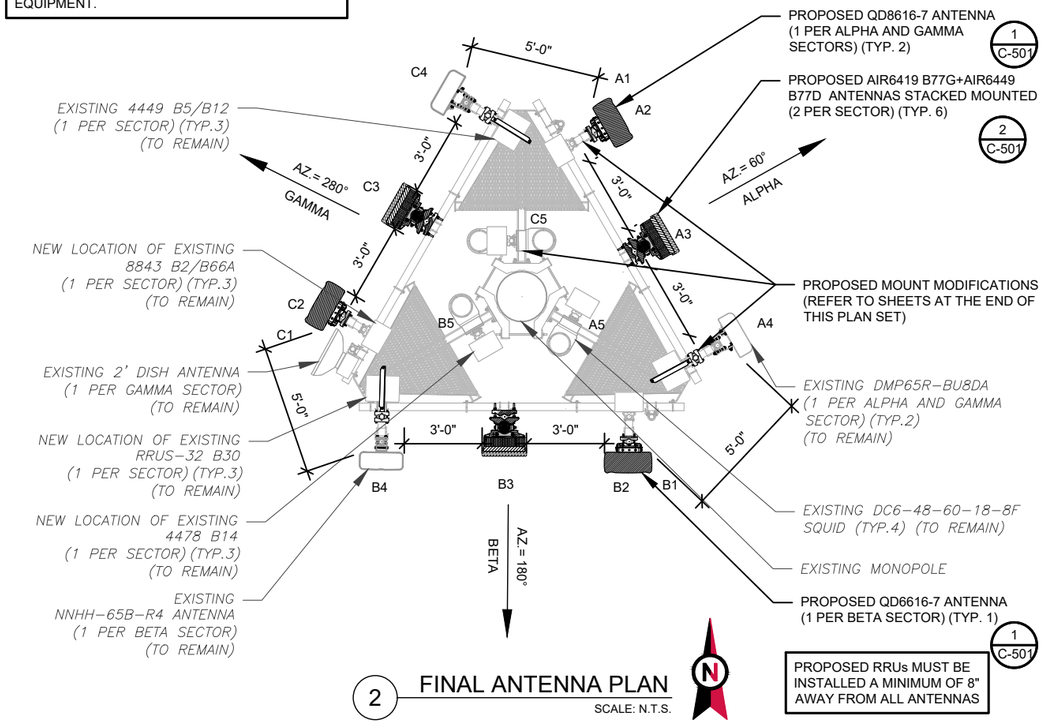
EXISTING CONFIGURATIONS ARE BASED ON RFDS. CONTRACTOR TO VERIFY EXISTING CONDITIONS.



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

PER MOUNT ANALYSIS COMPLETED BY ATC, DATED 04/18/2022, 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.

CONTRACTOR SHALL RE-ORIENT ANTENNA MOUNT(s) AS NECESSARY TO ACHIEVE PROPOSED ANTENNA AZIMUTHS



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

EXISTING ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	124'	60°	A1	7770	UTMS 850	RMV	LGP21401 TMAS	RMV
			A2	TPA-65R-LCUUUU-H8	1900, WCS	RMV	RRUS-32 B2 RRUS-32 B30	RMV REL
			A3	800-10966	700, 1900	RMV	8843 B2/B66A 4478 B14	REL REL
			A4	DMP65R-BU8DA	700	RMN	4449 B5/B12	RMN
BETA	124'	180°	B1	7770	UTMS 850	RMV	LGP21401 TMAS	RMV
			B2	QS66512-2	1900, WCS	RMV	RRUS-32 B2 RRUS-32 B30	RMV REL
			B3	800-10965	700, 1900	RMV	8843 B2/B66A 4478 B14	REL REL
			B4	NNHH-65B-R4	700	RMN	4449 B5/B12	RMN
GAMMA	124'	280°	C1	7770	UTMS 850	RMV	LGP21401 TMAS	RMV
			C2	TPA-65R-LCUUUU-H8	1900, WCS	RMV	RRUS-32 B2 RRUS-32 B30	RMV REL
			C3	800-10966	700, 1900	RMV	8843 B2/B66A 4478 B14	REL REL
			C4	DMP65R-BU8DA	700	RMN	4449 B5/B12	RMN

NOTES

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

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'

FINAL ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	124'	60°	A1	-	-	EMPTY	-	-
			A2	QD8616-7	LTE 700 DE / B14 / PCS /AWS	ADD	8843 B2/B66A RRUS E2 B29 (GROUND)	REL RMN
			A3 UP A3 DN	AIR6419 B77G AIR6449 B77D	DOD C-BAND	ADD	-	-
			A4	DMP65R-BU8DA	LTE 700 BC / 850 / WCS	RMN	4449 B5/B12 RRUS-32 B30	REL REL
			A5	-	-	-	4478 B14	REL
BETA	124'	180°	B1	-	-	EMPTY	-	-
			B2	QD6616-7	LTE 700 DE / B14 / PCS /AWS	ADD	8843 B2/B66A RRUS E2 B29 (GROUND)	REL RMN
			B3 UP B3 DN	AIR6419 B77G AIR6449 B77D	DOD C-BAND	ADD	-	-
			B4	NNHH-65B-R4	LTE 700 BC / 850 / WCS	RMN	4449 B5/B12 RRUS-32 B30	REL REL
			B5	-	-	-	4478 B14	REL
GAMMA	124'	280°	C1	-	-	EMPTY	-	-
			C2	QD8616-7	LTE 700 DE / B14 / PCS /AWS	ADD	8843 B2/B66A RRUS E2 B29 (GROUND)	REL RMN
			C3 UP C3 DN	AIR6419 B77G AIR6449 B77D	DOD C-BAND	ADD	-	-
			C4	DMP65R-BU8DA	LTE 700 BC / 850 / WCS	RMN	4449 B5/B12 RRUS-32 B30	REL REL
			C5	-	-	-	4478 B14	REL

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

EXISTING FIBER DISTRIBUTION/SQUID

MODEL NUMBER	STATUS
(4) DC6-48-60-18-8F	RMN
-	-

EXISTING CABLING SUMMARY

COAX	CONDUIT	DC	FIBER	STATUS
(6) 1 1/4"	(4) 2"	(8)	(4)	RMN
(6) 1 1/4"	-	-	-	RMV

FINAL FIBER DISTRIBUTION/SQUID

MODEL NUMBER	STATUS
(4) DC6-48-60-18-8F	RMN

FINAL CABLING SUMMARY

COAX	CONDUIT	DC	FIBER	STATUS
(6) 1 1/4"	(4) 2"	(8)	(4)	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
A	PRELIM	AB	04/15/22
0	FINALS	TR	05/18/22

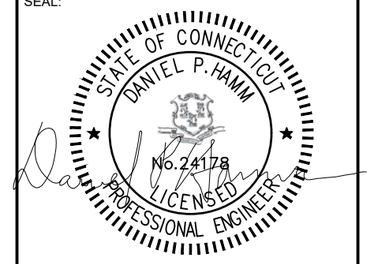
ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

AT&T SITE NAME:
BRISTOL

SITE ADDRESS:
790 WILLIS STREET
BRISTOL,CT 06010-7269

SEAL:

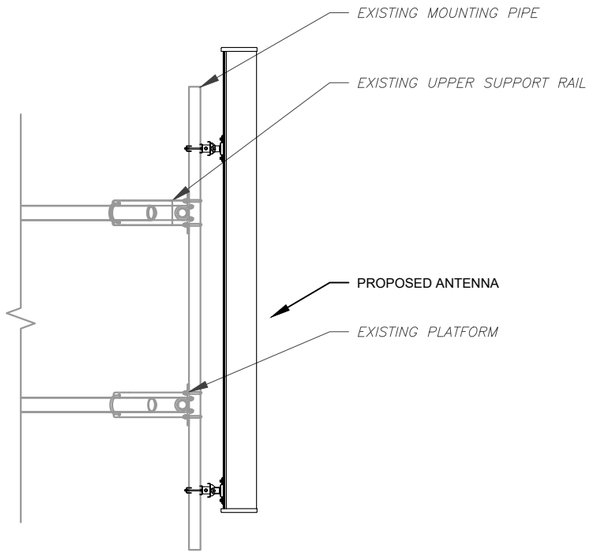


AT&T

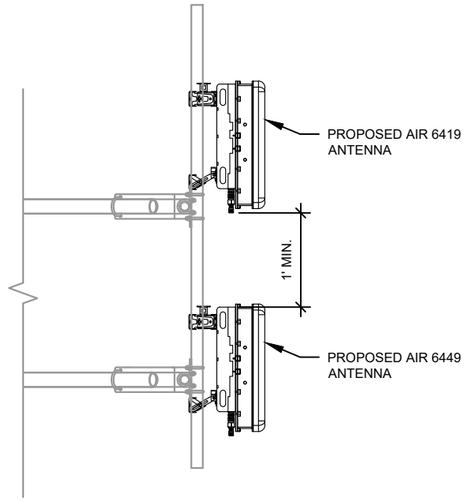
DATE DRAWN:	04/15/22
ATC JOB NO:	13757810_G5
CUSTOMER ID:	CTL01055
CUSTOMER #:	10035029

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.

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HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
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REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	04/15/22
0	FINALS	TR	05/18/22

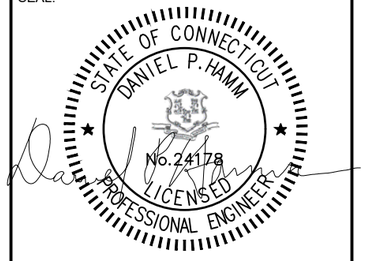
ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

AT&T SITE NAME:
BRISTOL

SITE ADDRESS:
790 WILLIS STREET
BRISTOL,CT 06010-7269

SEAL:

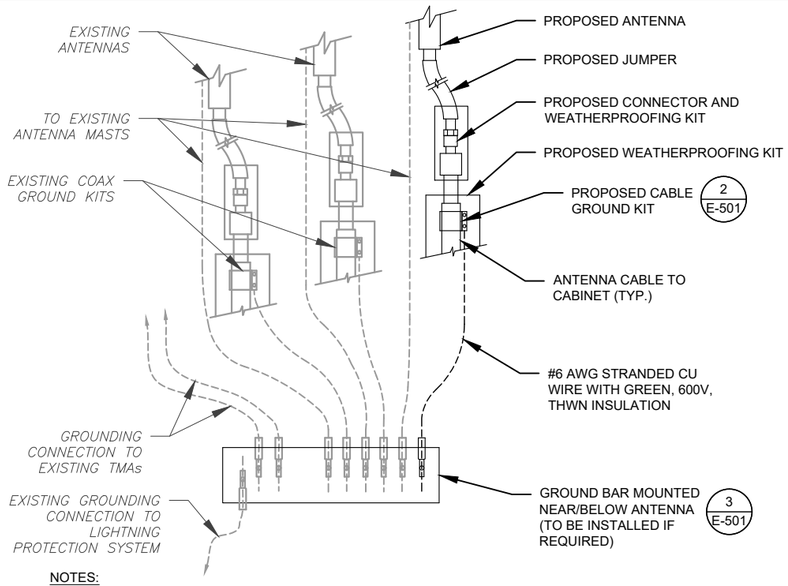


AT&T

DATE DRAWN:	04/15/22
ATC JOB NO:	13757810_G5
CUSTOMER ID:	CTL01055
CUSTOMER #:	10035029

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

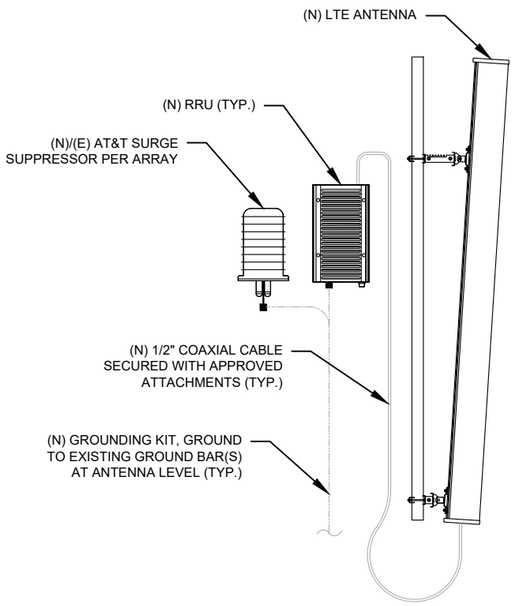


NOTES:

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.



2 ANTENNA/RRU GROUNDING

SCALE: N.T.S.

AMERICAN TOWER®

HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

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

REV.	DESCRIPTION	BY	DATE
A	PRELIM	AB	04/15/22
0	FINALS	TR	05/18/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

AT&T SITE NAME:
BRISTOL

SITE ADDRESS:
790 WILLIS STREET
BRISTOL,CT 06010-7269

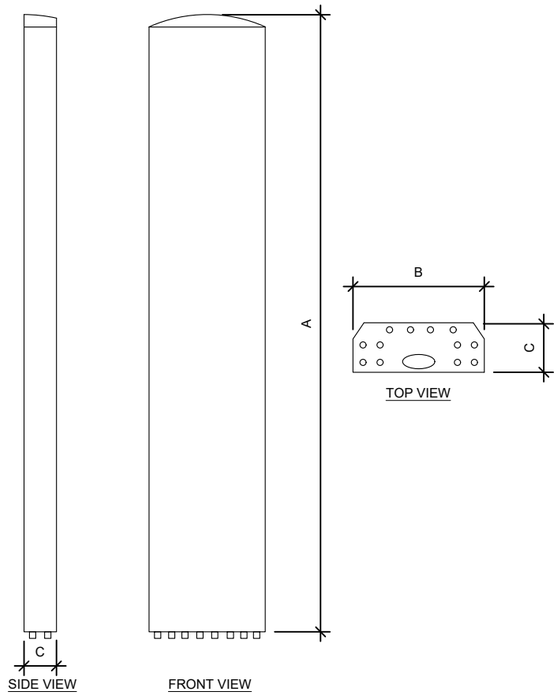
SEAL:

AT&T

DATE DRAWN:	04/15/22
ATC JOB NO:	13757810_G5
CUSTOMER ID:	CTL01055
CUSTOMER #:	10035029

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0



ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
QD8616-7	72"	22"	9.6"	59.1
QD6616-7	96"	22"	9.6"	68.2
Air 6449 B77D	30.4"	15.9"	8.1"	81.6
AIR 6419 B77G	28.3"	16.1"	7.9"	66.1

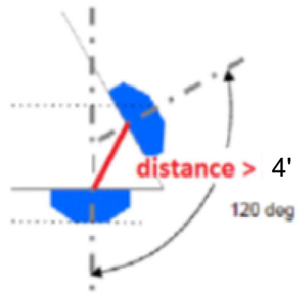
SUPPLEMENTAL

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.



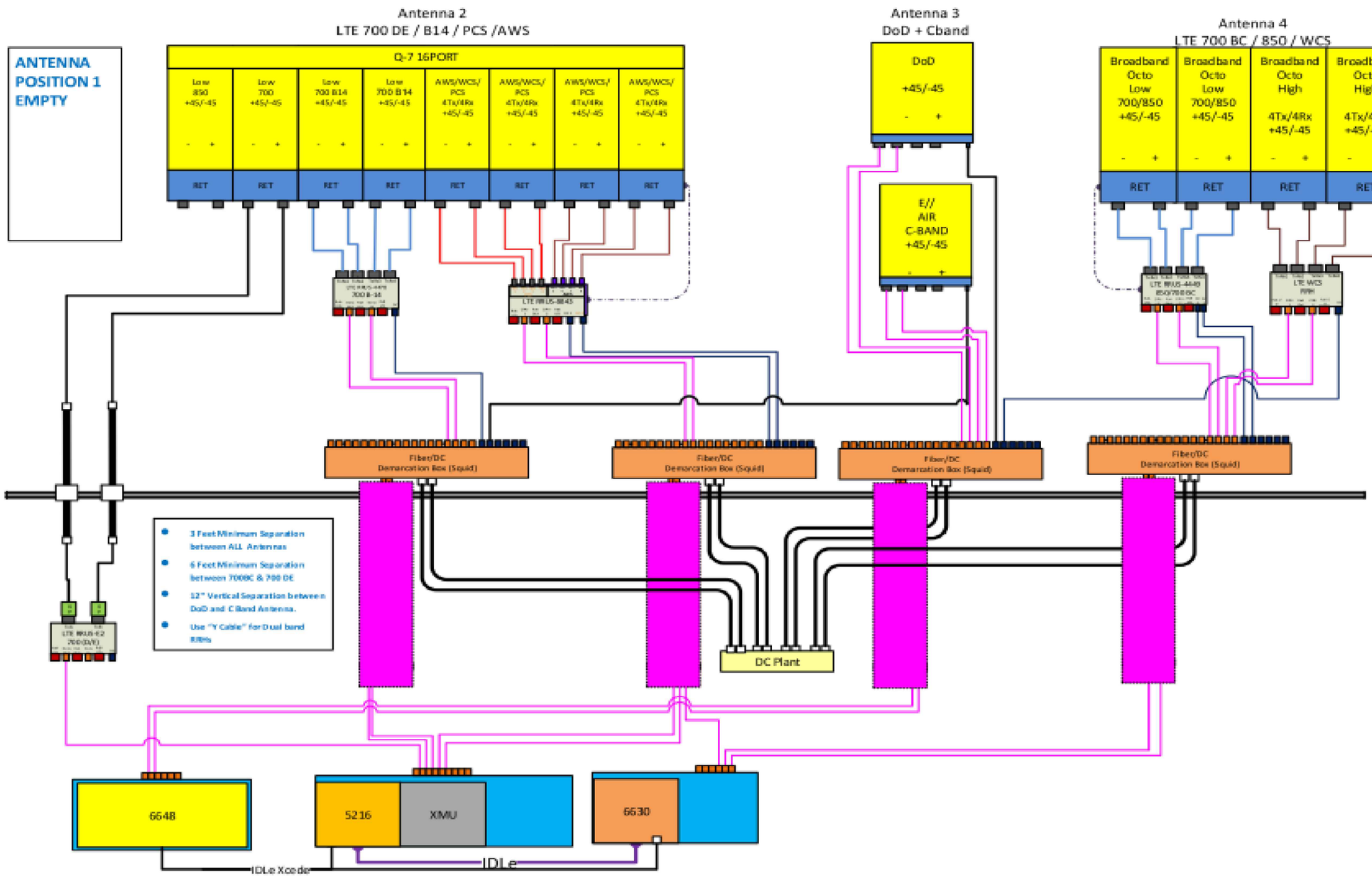
- ❑ Please note additional horizontal separation may be required if B14 antennas azimuth are different from others or antennas are severely angled with respect to the mount.
- ❑ Typical 3' horizontal separation can tolerate skew angle up to 6°.

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0

Diagram - Sector	A	Diagram File Name - Cband_3Ant_Q7DEBOT_DoD_CB_DMP_8843__4DCFIB_1x5216_1XMU_6630_6648.vsd					
Atoll Site Name -	CTL01055	Location Name -	BRISTOL	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)							



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

Post Modification Mount Analysis Report

ATC Site Name	:	Brst - Bristol, CT
ATC Site Number	:	302500
Engineering Number	:	13757810_C9_04
Mount Elevation	:	123 ft
Carrier	:	AT&T Mobility
Carrier Site Name	:	MRCTB056373
Carrier Site Number	:	NA
Site Location	:	790 Willis Street Bristol, CT 06010-7269 41.64909486 , -72.94801487
County	:	Hartford
Date	:	April 18, 2022
Max Usage	:	99%
Result	:	Contingent Pass

Prepared By:
Michael Ellis
Structural Engineer I

Reviewed By:

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of the mount analysis performed for AT&T Mobility at 123 ft.

Supporting Documents

Specifications Sheet	Site Pro 1 RMQP, dated July 9, 2015
Radio Frequency Data Sheet	RFDS ID #10035029, dated February 25, 2022
Reference Photos	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00" radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	493 ft
Crest Length (L):	3662 ft
Spectral Response:	Ss = 0.189, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs

*** Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.**

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Install modification per ATC Drawing #13757810_C9_04

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.

A.T. Engineering Services, PLLC - 3500 Regency Parkway, Suite 100 - Cary, NC 27518 - 919.468.0132 Office - 919.466.5414 Fax - www.americantower.com

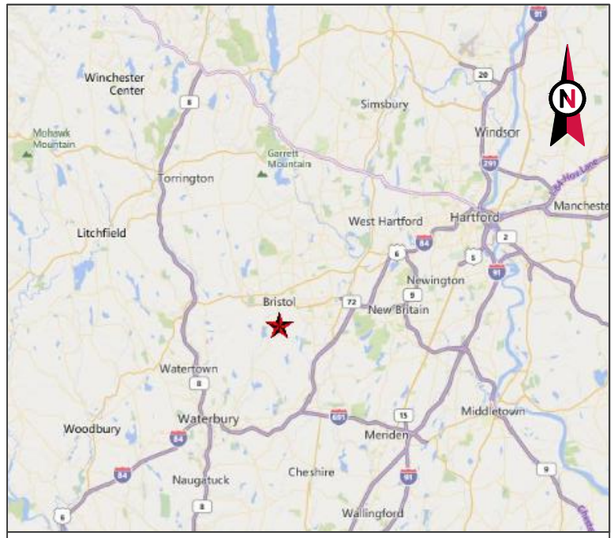
1 MOUNT ANALYSIS

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: R-604

REVISION: 0



VICINITY MAP

AMERICAN TOWER®

SITE NAME: BRST - BRISTOL
SITE NUMBER: 302500
ATC PROJECT NUMBER: 13757810_C9_04
SITE ADDRESS: 790 WILLIS STREET
BRISTOL, CT 06010

LOCATION MAP

MOUNT REINFORCEMENT DRAWINGS
PREPARED FOR AT&T MOBILITY

PROJECT TEAM

TOWER OWNER

AMERICAN TOWER
10 PRESIDENTAL WAY
WOBURN, MA 01801

ENGINEERED BY

ATC TOWER SERVICES
3500 REGENCY PARKWAY, SUITE 100
CARY, NC 27518

CARRIER INFORMATION

CARRIER: AT&T MOBILITY
CARRIER SITE NAME: MRCTB056373
CARRIER SITE NUMBER: NA

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

PROJECT DESCRIPTION

THE PROJECT DEPICTED IN THESE PLANS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER ENGINEERING PROJECT NUMBER 13757810_C8_01 DATED 04/06/22. SATISFACTORY COMPLETION OF THE WORK INDICATED IN THESE PLANS 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 IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. ANSI/TIA/EIA: STRUCTURAL STANDARDS (222-H EDITION)
2. INTERNATIONAL BUILDING CODE (2015 IBC)
3. CONNECTICUT STATE BUILDING CODE (2018)

PROJECT LOCATION

GEOGRAPHIC COORDINATES

LATITUDE: 41.64909486

LONGITUDE: -72.94801487

SHEET	SHEET TITLE	REV.
G-002	IBC GENERAL NOTES & MOUNT MODIFICATION INSPECTION	0
S-101	MODIFICATION PROFILE & SAFETY CLIMB LAYOUT	0
R-901	SUPPLEMENTAL	0
R-902	SUPPLEMENTAL	0
R-903	SUPPLEMENTAL	0
R-904	SUPPLEMENTAL	0

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010

DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

COVER

SHEET NUMBER:	REVISION:
G-001	0

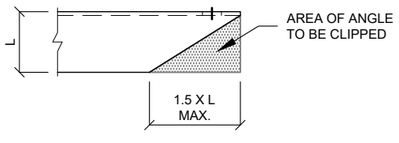
GENERAL

1. ALL WORK TO BE COMPLETED PER APPLICABLE LOCAL, STATE, FEDERAL CODES AND ORDINANCES AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS FOR WIRELESS TOWER SITES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL REQUIRED PERMITS.
2. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
4. ANY SUBSTITUTIONS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
5. ANY MANUFACTURED DESIGN ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN 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 & 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-14 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 NECESSARY.
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 ELECTRODES, UNLESS NOTED OTHERWISE.
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 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 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 PRETENSIONING
   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 NOTES

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.

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 CORPORATION (ATC).

GENERAL CONTRACTOR

THE GENERAL CONTRACTOR IS REQUIRED TO:

- REVIEW THE REQUIREMENTS OF THE MMI CHECKLIST.
- UNDERSTAND ALL INSPECTION REQUIREMENTS.

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 REQUIRED	RESPONSIBILITY
ON-SITE COLD GALVANIZING VERIFICATION	PHOTOGRAPHIC EVIDENCE OF COLD GALVANIZATION TYPE AND APPLICATION IN ALL APPLICABLE LOCATIONS TO BE INCLUDED WITHIN THE MMI REPORT	✔	GC
GC AS-BUILT DRAWINGS WITH CONSTRUCTION RED-LINES	"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 IS TO BE SUBMITTED WITHIN MMI REPORT.	✔	GC

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

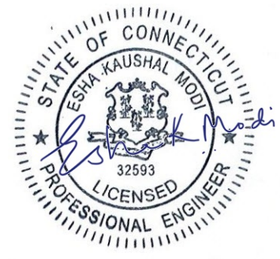
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

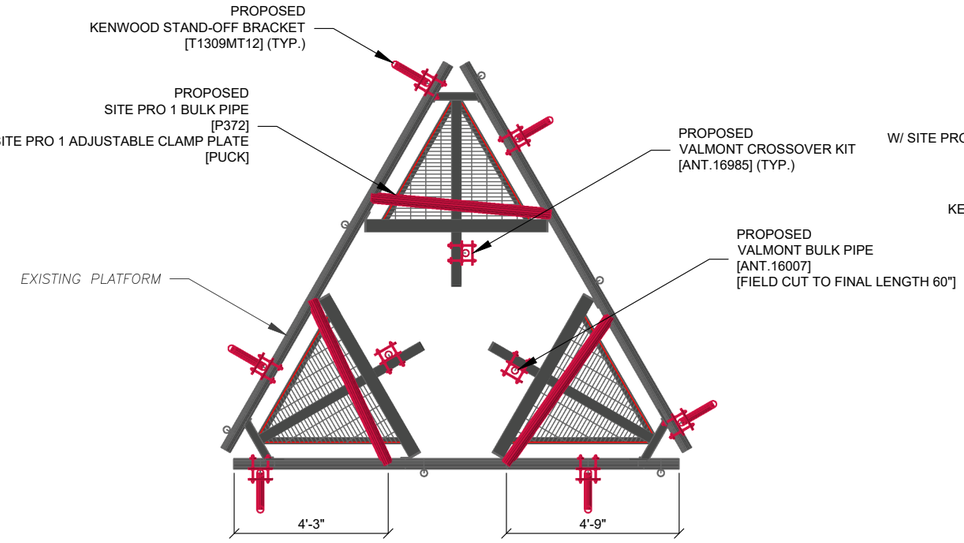
SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010



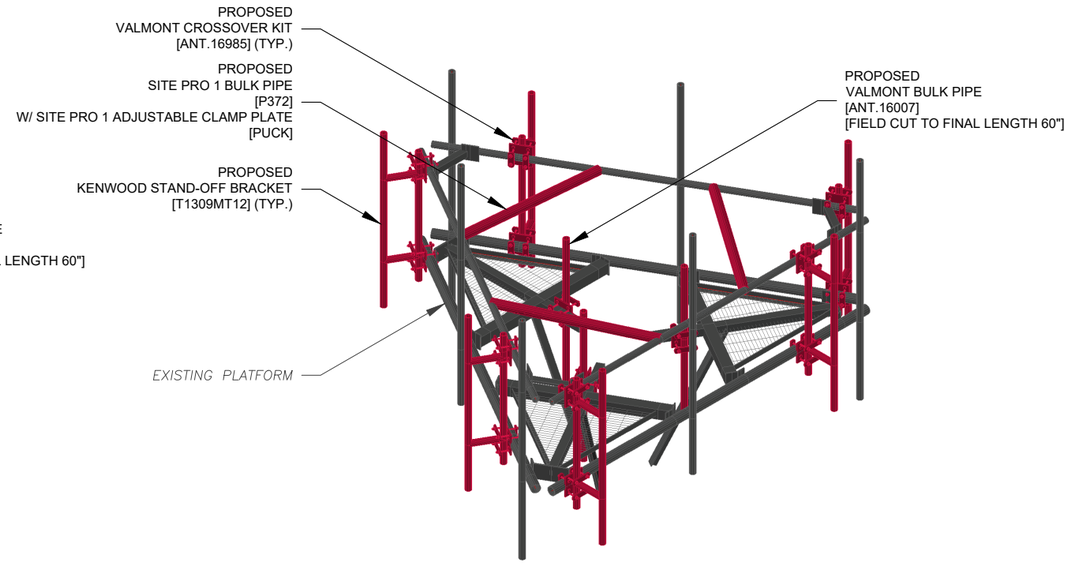
DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

IBC GENERAL NOTES & MOUNT MODIFICATION INSPECTION

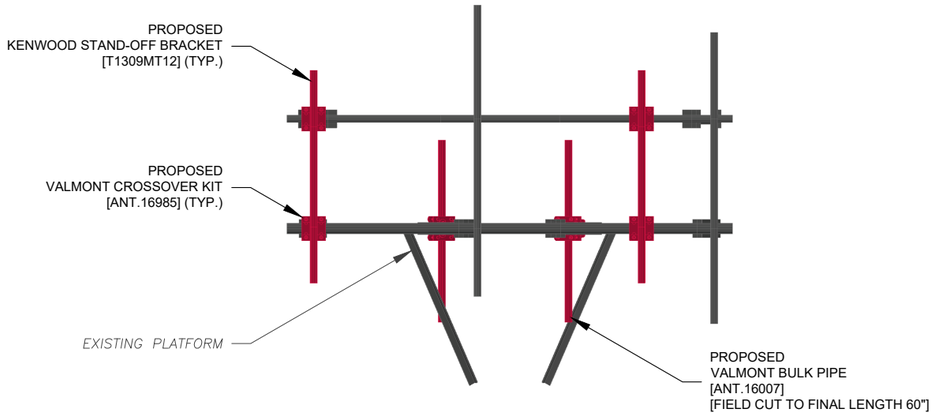
SHEET NUMBER:	REVISION:
G-002	0



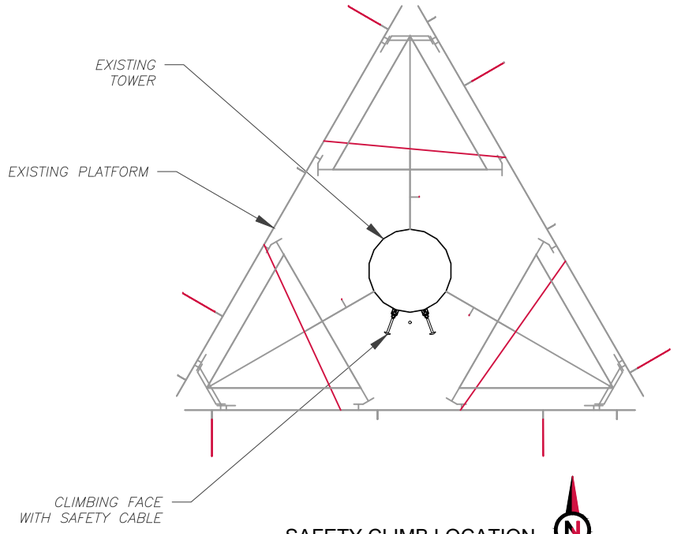
MOUNT MODIFICATION
TOP VIEW



MOUNT MODIFICATION
ISOMETRIC VIEW



MOUNT MODIFICATION
FRONT VIEW



SAFETY CLIMB LOCATION

REINFORCEMENT MATERIALS LIST (ALL SECTORS)

QUANTITY REQUIRED	MANUFACTURER	PART NUMBER	DESCRIPTION	LENGTH	PART WEIGHT (lb)	WEIGHT (lb)	NOTES
3	VALMONT	ANT.16007	PIPE 2-3/8"OD X 126", ASTM A53 GRADE B, SCHEDULE 40	10'-6"	39	117	OR EQUIVALENT SITE PRO 1 - P2126
15	VALMONT	ANT.16985	CROSSOVER PLATE	----	11.98	180	OR EQUIVALENT SITE PRO 1 - SCX7-U
6	KENWOOD	T1309MT12	PANEL ANTENNA STANDOFF BRACKET	----	65	390	GALVANIZED
3	SITE PRO 1	P372	PIPE 3-1/2"OD X 72", ASTM A53 GRADE B, SCHEDULE 40	6'-0"	46	138	GALVANIZED
3	SITE PRO 1	PUCK	ADJUSTABLE CLAMP PLATE TIE-BACK ASSEMBLY	----	6.2	18	
					TOTAL WEIGHT (lb)	843	

NOTES:

1. 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
2. IN THE EVENT A PROPOSED MODIFICATION PART LISTED IN THE DRAWINGS IS NOT AVAILABLE, AN APPROVED EQUIVALENT CAN BE SUBSTITUTED. FOR APPROVAL OF EQUIVALENT PART OR QUESTIONS PLEASE CONTACT AMERICAN TOWER PMI INBOX AT PMI@AMERICANTOWER.COM.

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

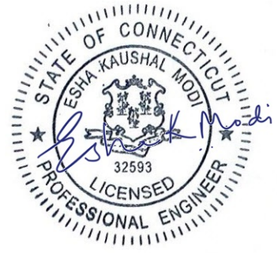
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010



DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

MODIFICATION PROFILE &
SAFETY CLIMB LAYOUT

SHEET NUMBER:	REVISION:
S-101	0

9:16 AM 4/18/2022

Option 1 - Modify: Estimate for AT&T Mobility @ 302500 (Brst - Bristol) -- 13757810_C9_04

Site Data and Design Parameters	
Asset OTM #	302500
Asset Name	Brst - Bristol
State	Connecticut
County	Hartford
City	Bristol
Failing Analysis Eng. #	13757810_C8_01
Mod. Drawing Eng. #	13757810_C9_04

Dates and Designers		
Mount Analysis Date / By	4/6/2022 /	GW
Design Date / By	4/18/2022 /	MFE
Checked Date / By	/	
Detailer (Prev/Current/Level)	/	/
Software	RISA	
Tower Type	Monopole	Round
Mount Type	Platform w/ Handrails	

Building Codes	TIA/IBC:	ANSI/TIA-222-H /	2015 IBC
	Local:	2018 Connecticut State Building Code	
Failing Analysis % / Code		136% /	TIA-H
Post Mod % / Controlling Member		99% /	Horizontals
Usage Limit % / Reason		105% /	N/A

Carriers	
# of RADs	1
Carrier	AT&T Mobility

Any modification design comments or assumptions? **No** *(including notes to the Estimator)*

Modification Summary

Item #	Scope Item
1	Install Site Pro 1 P2126 (ANT.16007) MP w/ Site Pro 1 SCX7-U (ANT.16985) crossovers on All (3) sector(s) at position 5.
2	Install kenwood T1309MT12 standoffs w/ Site Pro 1 SCX7-U (ANT16985) crossovers on all (3) sector(s)
3	Install kenwood T1309MT12 standoffs w/ Site Pro 1 SCX7-U (ANT16985) crossovers on all (3) sector(s)
4	Install Site Pro 1 P372 plan braces w/ Site Pro 1 PUCK connection(s) to Exist. Handrails

Estimated Modification Cost	$19,000

X:\A-B\BRST-Bristol, CT (302500)\13757810 AT&T MOBILITY\13757810_04_MOUNT_DRW\Mount Modification SOW v1.4.9

Option 2 - Replace: Estimate for AT&T Mobility @ 302500 (Brst - Bristol) -- 13757810_C9_04

Tower Info	
Tower Number	302500
Tower Name	Brst - Bristol
State	Connecticut

Jurisdictional Codes	
Design TIA Code	Unknown
Current TIA Code	ANSI/TIA-222-H
IBC	2015 IBC
Other	2018 Connecticut State Building Code

Project Requirements		
New Mount Face Width	150	in
Number of Sectors	3	

Project Information	
Carrier	AT&T Mobility
Structure Type	Monopole

Recommended Mount Replacement	Sabre C10857802DP*

*or approved equivalent

Estimated Replacement Cost	$ 36,000.00

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-901	0

AMERICAN TOWER®
CORPORATION

Post Modification Mount Analysis Report

ATC Site Name	:	**Brst - Bristol, CT**
ATC Site Number	:	**302500**
Engineering Number	:	**13757810_C9_04**
Mount Elevation	:	**123 ft**
Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**MRCTB056373**
Carrier Site Number	:	**NA**
Site Location	:	**790 Willis Street Bristol, CT 06010-7269 41.64909486 , -72.94801487**
County	:	**Hartford**
Date	:	**April 18, 2022**
Max Usage	:	**99%**
Result	:	**Contingent Pass**

Prepared By:
Michael Ellis
Structural Engineer I

Reviewed By:

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for AT&T Mobility at 123 ft.

Supporting Documents

Specifications Sheet	Site Pro 1 RMQP, dated July 9, 2015
Radio Frequency Data Sheet	RFDS ID #10035029, dated February 25, 2022
Reference Photos	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00" radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	493 ft
Crest Length (L):	3662 ft
Spectral Response:	Ss = 0.189, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs

*** Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.**

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Install modification per ATC Drawing #13757810_C9_04

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.

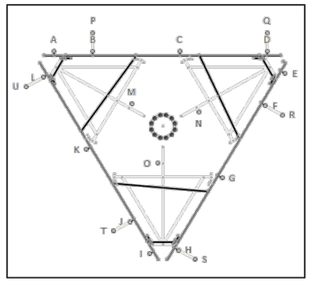
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
123.0	126.0	3	Ericsson AIR 6449 B77D/ C-Band
	124.0	1	Quintel QD6616-7
		1	CCI DMP65R-BU6DA
		1	Commscope NNHH-65B-R4
		2	Quintel QD8616-7
		2	CCI DMP65R-BU8D
		4	Raycap DC6-48-60-18-8F
		3	Ericsson Radio 8843 - B2 + B66A
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		1	Generic 2' Std. Dish
	122.0	3	Ericsson AIR 6419 B77G

Structure Usages

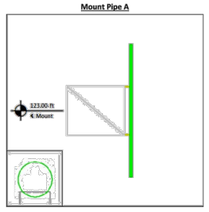
Structural Component	Controlling Usage	Pass/Fail
Horizontals	99%	Pass
Tie-Backs	14%	Pass
Mount Pipes	51%	Pass

Mount Layout

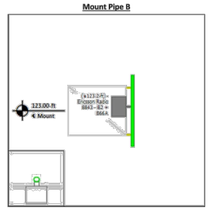


Equipment Layout

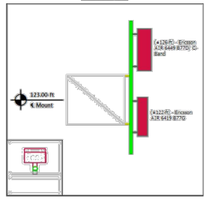
Mount Pipe A



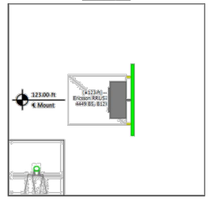
Mount Pipe B



Mount Pipe C

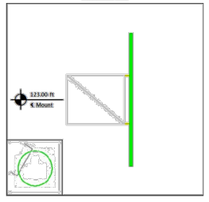


Mount Pipe D

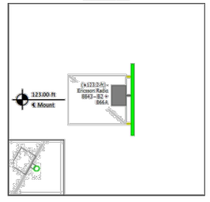


Equipment Layout Cont'd.

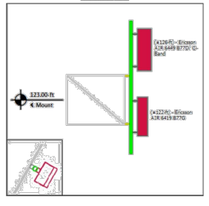
Mount Pipe E



Mount Pipe F



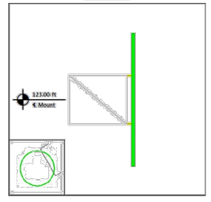
Mount Pipe G



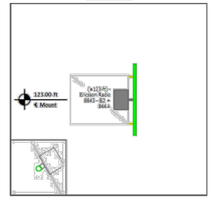
Mount Pipe H

Equipment Layout Cont'd.

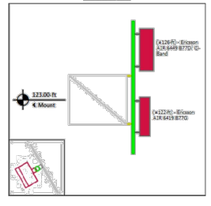
Mount Pipe I



Mount Pipe J



Mount Pipe K



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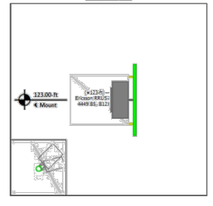

AMERICAN TOWER®
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PHONE: (919) 468-0112
COA: PEC.0001553

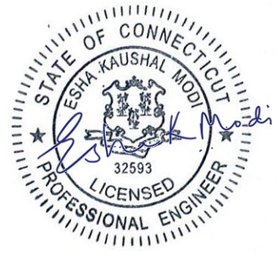
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010



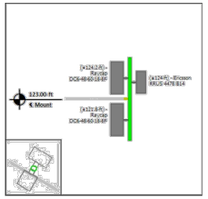
DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

SUPPLEMENTAL

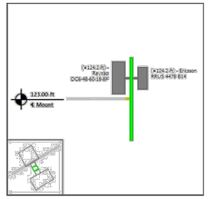
SHEET NUMBER:	REVISION:
R-902	0

Equipment Layout Cont'd.

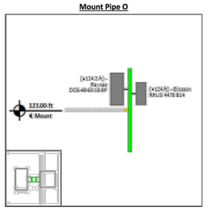
Mount Pipe M



Mount Pipe N



Mount Pipe O



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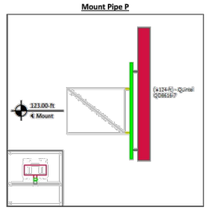
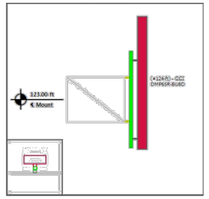
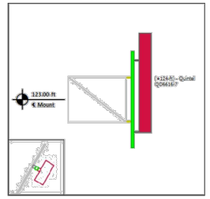


Equipment Layout Cont'd.

Mount Pipe Q



Mount Pipe R



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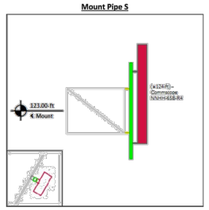
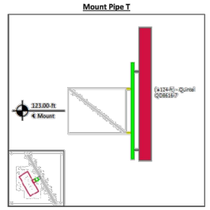
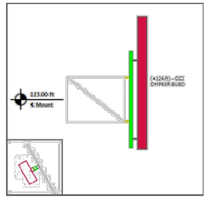


Mount Pipe T



Equipment Layout Cont'd.

Mount Pipe U



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 equipment, 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.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

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.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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.

Site Number: 302500
Project Number: 13757810_C9_04
Carrier: AT&T Mobility
Mount Elevation: 123 ft
Date: 4/18/2022

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.05	
Topographic Factor	K_{zt}	1.42	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.96	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	117	mph
Velocity Pressure	q_z	47.6	psf
Height Escalation Factor	K_h	1.14	
Thickness of Radial Glaze Ice	T_{id}	1.29	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.202	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.101	
Amplification Factor	A	1.0	
Total Weight	W	3608.6	lbs
Total Shear Force	V_S	363.7	lbs
Horizontal Seismic Load	E_h	363.7	lbs
Vertical Seismic Load	E_v	145.5	lbs

Antenna Calculations (Elevations per Application/RFDS)*

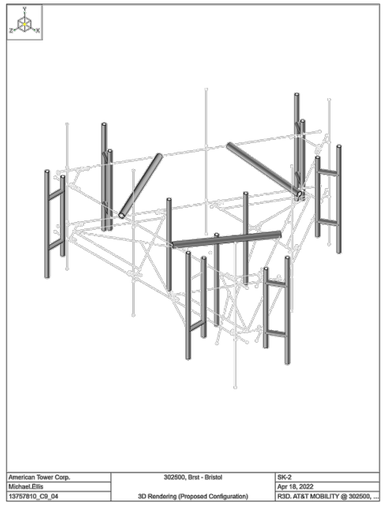
Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{NI}	EPA_{TI}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson AIR 6449 B77D/ C-Band	30.4	15.9	10.6	81.6	4.03	1.62	5.08	2.19
Quintel QD6616-7	72.0	22.0	9.6	130.0	13.58	2.88	15.71	3.78
CCI DMP65R-BU6DA	71.2	20.7	7.7	79.4	N/A	N/A	N/A	N/A
Commscope NNHH-65B-R4	72.0	19.6	7.8	83.8	12.27	2.34	14.38	3.22
Quintel QD8616-7	96.0	22.0	9.6	150.0	18.81	3.84	21.58	5.00
CCI DMP65R-BU8D	96.0	20.7	7.7	95.7	17.87	3.08	20.64	4.22
Raycap DC6-48-60-18-8F	23.5	9.7	9.7	20.0	1.90	1.90	2.67	2.67
Ericsson Radio 8843 - B2 + B66A	15.0	13.2	10.9	71.9	1.65	1.36	2.31	1.97
Ericsson RRUS 32 B30	27.2	12.1	7.0	60.0	2.74	1.67	3.64	2.50
Ericsson RRUS 4449 B5, B12	17.9	13.2	9.4	71.0	1.97	1.40	2.69	2.04
Ericsson RRUS 4478 B14	16.5	13.4	7.7	59.9	1.84	1.06	2.54	1.63
Generic 2' Std. Dish	24.0	24.0	6.0	14.0	N/A	N/A	N/A	N/A
Ericsson AIR 6419 B77G	28.3	16.1	7.9	66.1	3.80	1.20	4.81	1.73

** Equipment with EPA values N/A were not considered in the mount analysis*

Company : American Tower Corp.
Designer : Michael.Ellis
Job Number : 13757810_C9_04
Model Name : 302500, Brst - Bristol
4/18/2022
8:50:16 AM
Checked By : -

American Tower Corp.	302500, Brst - Bristol	SK-1
Michael.Ellis		Apr 18, 2022
13757810_C9_04	3D Rendering (Final Configuration)	R3D. AT&T MOBILITY @ 302500, ...

Company : American Tower Corp.
Designer : Michael.Ellis
Job Number : 13757810_C9_04
Model Name : 302500, Brst - Bristol
4/18/2022
8:50:16 AM
Checked By : -



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Michael.Ellis		Apr 18, 2022
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Company : American Tower Corp.
Designer : Michael.Ellis
Job Number : 13757810_C9_04
Model Name : 302500, Brst - Bristol
4/18/2022
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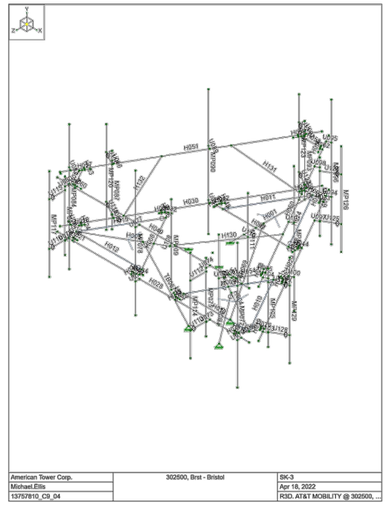
Checked By : -



American Tower Corp.	302500, Brst - Bristol	SK-3
Michael.Ellis		Apr 18, 2022
13757810_C9_04		R3D. AT&T MOBILITY @ 302500, ...

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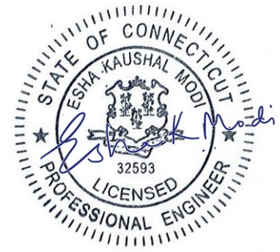
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

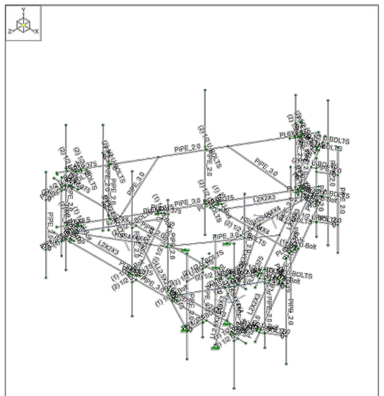
SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010

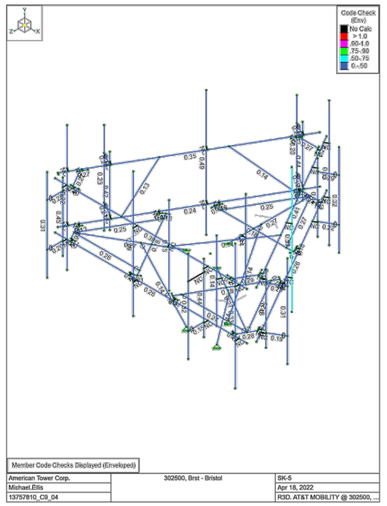


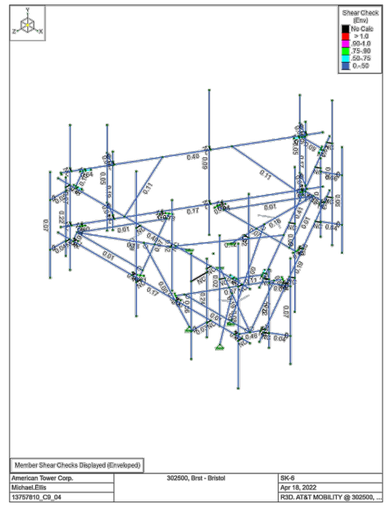
DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-903	0







Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
1	D	DL	-1		40		
2	DI	IL			40	75	3
3	W 0	WL			40	132	
4	W 30	WL			80	264	
5	W 60	WL			80	264	
6	W 90	WL			40	135	
7	W 120	WL			80	264	
8	W 150	WL			80	264	
9	W 180	WL			40	132	
10	W 210	WL			80	264	
11	W 240	WL			80	264	
12	W 270	WL			40	135	
13	W 300	WL			80	264	
14	W 330	WL			80	264	
15	Wi 0	WL			40	132	
16	Wi 30	WL			80	264	
17	Wi 60	WL			80	264	
18	Wi 90	WL			40	135	
19	Wi 120	WL			80	264	
20	Wi 150	WL			80	264	
21	Wi 180	WL			40	132	
22	Wi 210	WL			80	264	
23	Wi 240	WL			80	264	
24	Wi 270	WL			40	135	
25	Wi 300	WL			80	264	
26	Wi 330	WL			80	264	
27	Ws 0	WL			40	132	
28	Ws 30	WL			80	264	
29	Ws 60	WL			80	264	
30	Ws 90	WL			40	135	
31	Ws 120	WL			80	264	
32	Ws 150	WL			80	264	
33	Ws 180	WL			40	132	
34	Ws 210	WL			80	264	
35	Ws 240	WL			80	264	
36	Ws 270	WL			40	135	
37	Ws 300	WL			80	264	
38	Ws 330	WL			80	264	
39	Ev -Y	ELY				75	
40	Eh -Z	ELZ				75	
41	Eh -X	ELX				75	
42	Lm (1)	LL		1			
43	Lm (2)	LL		1			
44	Lm (3)	LL		1			
45	Lm (4)	LL		1			
46	Lm (5)	LL		1			
47	Lm (6)	LL		1			
48	Lm (7)	LL		1			
49	Lm (8)	LL		1			
50	Lm (9)	LL		1			
51	Lm (10)	LL		1			
52	Lm (11)	LL		1			
53	Lm (12)	LL		1			
54	Lm (13)	LL		1			
55	Lm (14)	LL		1			

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
56	Lm (15)	LL		1			
57	Lm (16)	LL		1			
58	Lm (17)	LL		1			
59	Lm (18)	LL		1			
60	Lm (19)	LL		1			
61	Lm (20)	LL		1			
62	Lm (21)	LL		1			

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N002	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N006	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N007	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N120	Reaction	Reaction	Reaction			
5	N121	Reaction	Reaction	Reaction			
6	N122	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N003		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
2	H002	N004	N005		PL6X0.5	Beam	None	A36	Typical
3	H003	N006	N012		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
4	H004	N007	N013		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
5	H005	N008	N010		PL6X0.5	Beam	None	A36	Typical
6	H006	N009	N011		PL6X0.5	Beam	None	A36	Typical
7	H007	N015	N016		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
8	H008	N021	N023		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
9	H009	N022	N024		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
10	H010	N033	N013		L2X2X3	Beam	None	A36	Typical
11	H011	N034	N003		L2X2X3	Beam	None	A36	Typical
12	H012	N029	N012		L2X2X3	Beam	None	A36	Typical
13	H013	N030	N013	270	L2X2X3	Beam	None	A36	Typical
14	H014	N031	N003	270	L2X2X3	Beam	None	A36	Typical
15	H015	N032	N012	270	L2X2X3	Beam	None	A36	Typical
16	H016	N009	N036		PL6X0.5	Beam	None	A36	Typical
17	H017	N004	N042		PL6X0.5	Beam	None	A36	Typical
18	H018	N008	N043		PL6X0.5	Beam	None	A36	Typical
19	H019	N011	N048		PL6X0.5	Beam	None	A36	Typical
20	H020	N005	N049		PL6X0.5	Beam	None	A36	Typical
21	H021	N010	N037		PL6X0.5	Beam	None	A36	Typical
22	H022	N038	N040		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
23	H023	N044	N050		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
24	H024	N045	N051		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
25	H025	N039	N041		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
26	H026	N046	N052		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
27	H027	N047	N053		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
28	H028	N017	N018		PIPE_3.0	Beam	None	A53 Gr. B	Typical
29	H029	N025	N027		PIPE_3.0	Beam	None	A53 Gr. B	Typical
30	H030	N026	N028		PIPE_3.0	Beam	None	A53 Gr. B	Typical
31	H031	N054	N055		PL6X0.375	Beam	None	A36	Typical
32	H032	N056	N058		PL6X0.375	Beam	None	A36	Typical
33	H033	N057	N059		PL6X0.375	Beam	None	A36	Typical
34	H034	N060	N062		PL6X0.375	Beam	None	A36	Typical

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CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:

302500

ATC SITE NAME:

BRST - BRISTOL

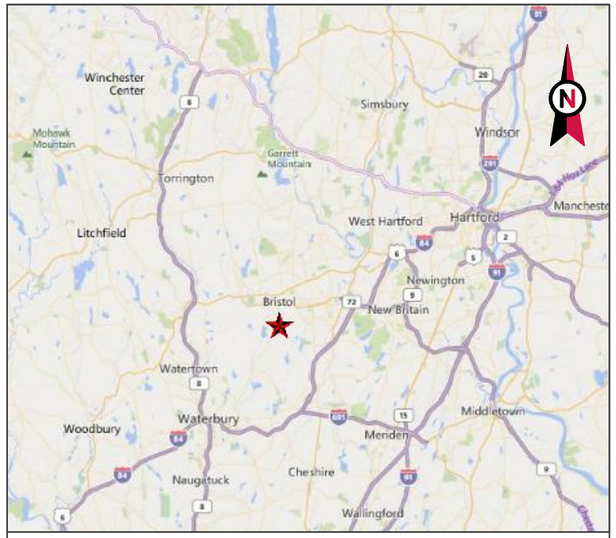
CONNECTICUT

SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010

DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-904	0



VICINITY MAP

AMERICAN TOWER®

SITE NAME: BRST - BRISTOL
SITE NUMBER: 302500
ATC PROJECT NUMBER: 13757810_C9_04
SITE ADDRESS: 790 WILLIS STREET
BRISTOL, CT 06010

LOCATION MAP

MOUNT REINFORCEMENT DRAWINGS
PREPARED FOR AT&T MOBILITY

PROJECT TEAM

TOWER OWNER

AMERICAN TOWER
10 PRESIDENTAL WAY
WOBURN, MA 01801

ENGINEERED BY

ATC TOWER SERVICES
3500 REGENCY PARKWAY, SUITE 100
CARY, NC 27518

CARRIER INFORMATION

CARRIER: AT&T MOBILITY
CARRIER SITE NAME: MRCTB056373
CARRIER SITE NUMBER: NA

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

PROJECT DESCRIPTION

THE PROJECT DEPICTED IN THESE PLANS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER ENGINEERING PROJECT NUMBER 13757810_C8_01 DATED 04/06/22. SATISFACTORY COMPLETION OF THE WORK INDICATED IN THESE PLANS 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 IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. ANSI/TIA/EIA: STRUCTURAL STANDARDS (222-H EDITION)
2. INTERNATIONAL BUILDING CODE (2015 IBC)
3. CONNECTICUT STATE BUILDING CODE (2018)

PROJECT LOCATION

GEOGRAPHIC COORDINATES

LATITUDE: 41.64909486

LONGITUDE: -72.94801487

SHEET	SHEET TITLE	REV.
G-002	IBC GENERAL NOTES & MOUNT MODIFICATION INSPECTION	0
S-101	MODIFICATION PROFILE & SAFETY CLIMB LAYOUT	0
R-901	SUPPLEMENTAL	0
R-902	SUPPLEMENTAL	0
R-903	SUPPLEMENTAL	0
R-904	SUPPLEMENTAL	0

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REV.	DESCRIPTION	BY	DATE
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DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

COVER

SHEET NUMBER:	REVISION:
G-001	0

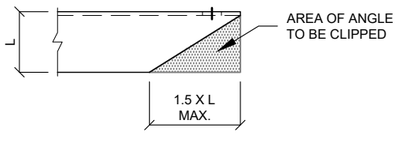
GENERAL

1. ALL WORK TO BE COMPLETED PER APPLICABLE LOCAL, STATE, FEDERAL CODES AND ORDINANCES AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS FOR WIRELESS TOWER SITES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL REQUIRED PERMITS.
2. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
4. ANY SUBSTITUTIONS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
5. ANY MANUFACTURED DESIGN ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN 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 & 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-14 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 NECESSARY.
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 ELECTRODES, UNLESS NOTED OTHERWISE.
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 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 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 PRETENSIONING
   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 NOTES

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.

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 CORPORATION (ATC).

GENERAL CONTRACTOR

THE GENERAL CONTRACTOR IS REQUIRED TO:

- REVIEW THE REQUIREMENTS OF THE MMI CHECKLIST.
- UNDERSTAND ALL INSPECTION REQUIREMENTS.

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 REQUIRED	RESPONSIBILITY
ON-SITE COLD GALVANIZING VERIFICATION	PHOTOGRAPHIC EVIDENCE OF COLD GALVANIZATION TYPE AND APPLICATION IN ALL APPLICABLE LOCATIONS TO BE INCLUDED WITHIN THE MMI REPORT	✔	GC
GC AS-BUILT DRAWINGS WITH CONSTRUCTION RED-LINES	"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 IS TO BE SUBMITTED WITHIN MMI REPORT.	✔	GC

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

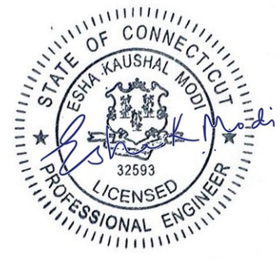
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

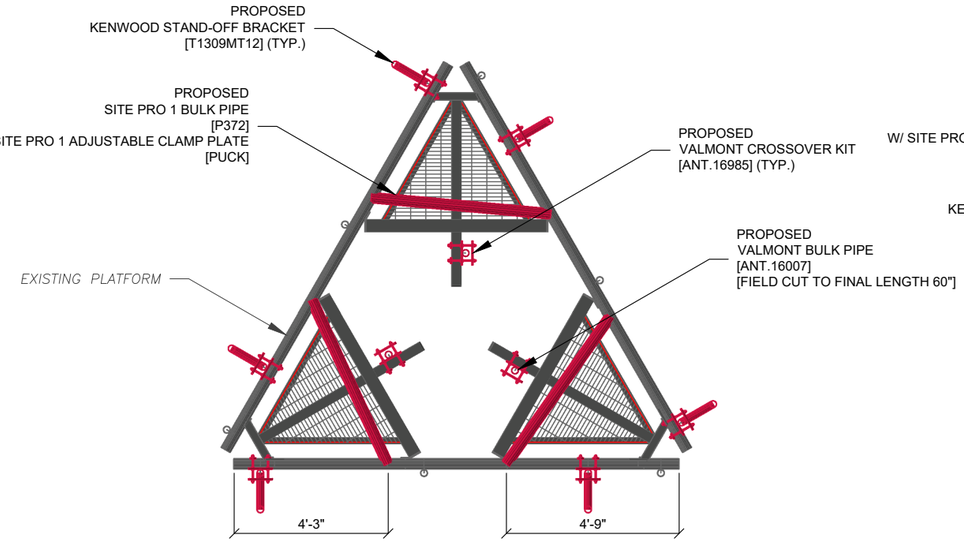
SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010



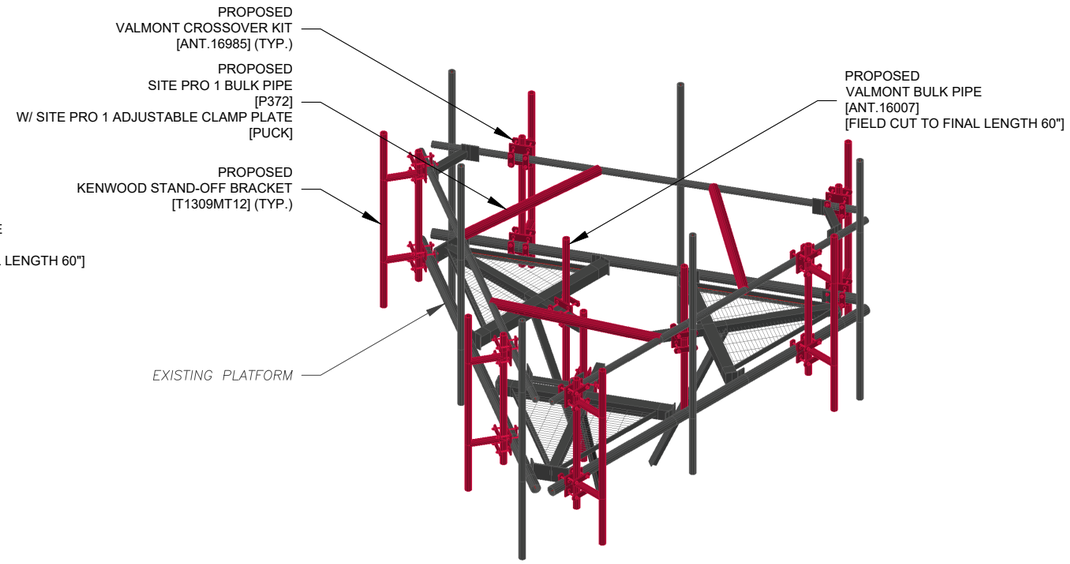
DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

IBC GENERAL NOTES & MOUNT MODIFICATION INSPECTION

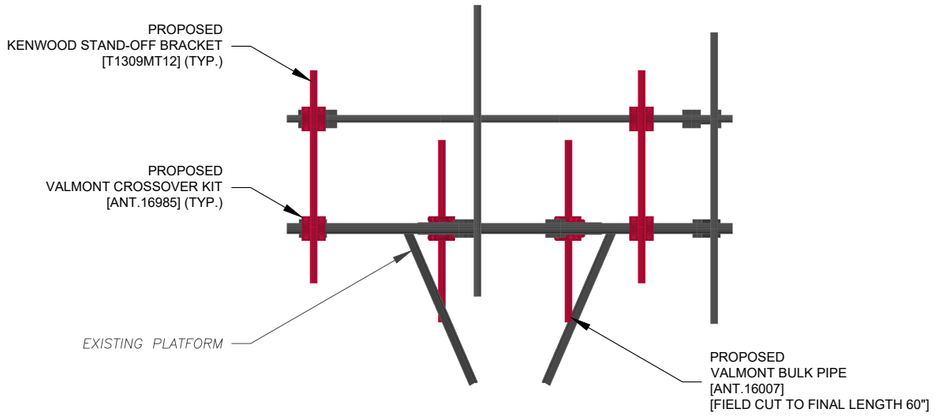
SHEET NUMBER:	REVISION:
G-002	0



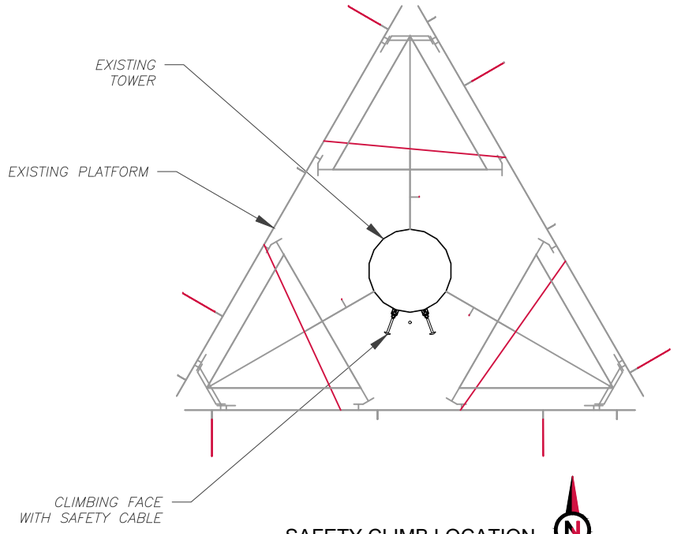
MOUNT MODIFICATION
TOP VIEW



MOUNT MODIFICATION
ISOMETRIC VIEW



MOUNT MODIFICATION
FRONT VIEW



SAFETY CLIMB LOCATION

REINFORCEMENT MATERIALS LIST (ALL SECTORS)

QUANTITY REQUIRED	MANUFACTURER	PART NUMBER	DESCRIPTION	LENGTH	PART WEIGHT (lb)	WEIGHT (lb)	NOTES
3	VALMONT	ANT.16007	PIPE 2-3/8"OD X 126", ASTM A53 GRADE B, SCHEDULE 40	10'-6"	39	117	OR EQUIVALENT SITE PRO 1 - P2126
15	VALMONT	ANT.16985	CROSSOVER PLATE	----	11.98	180	OR EQUIVALENT SITE PRO 1 - SCX7-U
6	KENWOOD	T1309MT12	PANEL ANTENNA STANDOFF BRACKET	----	65	390	GALVANIZED
3	SITE PRO 1	P372	PIPE 3-1/2"OD X 72", ASTM A53 GRADE B, SCHEDULE 40	6'-0"	46	138	GALVANIZED
3	SITE PRO 1	PUCK	ADJUSTABLE CLAMP PLATE TIE-BACK ASSEMBLY	----	6.2	18	
					TOTAL WEIGHT (lb)	843	

NOTES:

1. 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
2. IN THE EVENT A PROPOSED MODIFICATION PART LISTED IN THE DRAWINGS IS NOT AVAILABLE, AN APPROVED EQUIVALENT CAN BE SUBSTITUTED. FOR APPROVAL OF EQUIVALENT PART OR QUESTIONS PLEASE CONTACT AMERICAN TOWER PMI INBOX AT PMI@AMERICANTOWER.COM.

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REV.	DESCRIPTION	BY	DATE
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302500

ATC SITE NAME:
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CONNECTICUT

SITE ADDRESS:
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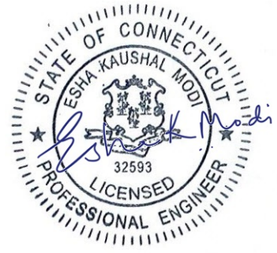
BRISTOL, CT 06010



DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

MODIFICATION PROFILE &
SAFETY CLIMB LAYOUT

SHEET NUMBER:	REVISION:
S-101	0

9:16 AM 4/18/2022

Option 1 - Modify: Estimate for AT&T Mobility @ 302500 (Brst - Bristol) -- 13757810_C9_04

Site Data and Design Parameters	
Asset OTM #	302500
Asset Name	Brst - Bristol
State	Connecticut
County	Hartford
City	Bristol
Failing Analysis Eng. #	13757810_C8_01
Mod. Drawing Eng. #	13757810_C9_04

Dates and Designers		
Mount Analysis Date / By	4/6/2022 /	GW
Design Date / By	4/18/2022 /	MFE
Checked Date / By	/	
Detailer (Prev/Current/Level)	/	/
Software	RISA	
Tower Type	Monopole	Round
Mount Type	Platform w/ Handrails	

Building Codes	TIA/IBC:	ANSI/TIA-222-H /	2015 IBC
	Local:	2018 Connecticut State Building Code	
Failing Analysis % / Code		136% /	TIA-H
Post Mod % / Controlling Member		99% /	Horizontals
Usage Limit % / Reason		105% /	N/A

Carriers	
# of RADs	1
Carrier	AT&T Mobility

Any modification design comments or assumptions? **No** *(including notes to the Estimator)*

Modification Summary

Item #	Scope Item
1	Install Site Pro 1 P2126 (ANT.16007) MP w/ Site Pro 1 SCX7-U (ANT.16985) crossovers on All (3) sector(s) at position 5.
2	Install kenwood T1309MT12 standoffs w/ Site Pro 1 SCX7-U (ANT16985) crossovers on all (3) sector(s)
3	Install kenwood T1309MT12 standoffs w/ Site Pro 1 SCX7-U (ANT16985) crossovers on all (3) sector(s)
4	Install Site Pro 1 P372 plan braces w/ Site Pro 1 PUCK connection(s) to Exist. Handrails

Estimated Modification Cost	$19,000

X:\A-B\BRST-Bristol, CT (302500)\13757810 AT&T MOBILITY\13757810_04_MOUNT_DRW\Mount Modification SOW v1.4.9

Option 2 - Replace: Estimate for AT&T Mobility @ 302500 (Brst - Bristol) -- 13757810_C9_04

Tower Info	
Tower Number	302500
Tower Name	Brst - Bristol
State	Connecticut

Jurisdictional Codes	
Design TIA Code	Unknown
Current TIA Code	ANSI/TIA-222-H
IBC	2015 IBC
Other	2018 Connecticut State Building Code

Project Requirements		
New Mount Face Width	150	in
Number of Sectors	3	

Project Information	
Carrier	AT&T Mobility
Structure Type	Monopole

Recommended Mount Replacement	Sabre C10857802DP*

*or approved equivalent

Estimated Replacement Cost	$ 36,000.00

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-901	0

AMERICAN TOWER®
CORPORATION

Post Modification Mount Analysis Report

ATC Site Name	:	**Brst - Bristol, CT**
ATC Site Number	:	**302500**
Engineering Number	:	**13757810_C9_04**
Mount Elevation	:	**123 ft**
Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**MRCTB056373**
Carrier Site Number	:	**NA**
Site Location	:	**790 Willis Street Bristol, CT 06010-7269 41.64909486 , -72.94801487**
County	:	**Hartford**
Date	:	**April 18, 2022**
Max Usage	:	**99%**
Result	:	**Contingent Pass**

Prepared By:
Michael Ellis
Structural Engineer I

Reviewed By:

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for AT&T Mobility at 123 ft.

Supporting Documents

Specifications Sheet	Site Pro 1 RMQP, dated July 9, 2015
Radio Frequency Data Sheet	RFDS ID #10035029, dated February 25, 2022
Reference Photos	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00" radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	493 ft
Crest Length (L):	3662 ft
Spectral Response:	Ss = 0.189, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs

*** Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.**

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Install modification per ATC Drawing #13757810_C9_04

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.

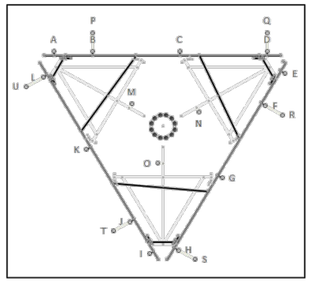
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
123.0	126.0	3	Ericsson AIR 6449 B77D/ C-Band
	124.0	1	Quintel QD6616-7
		1	CCI DMP65R-BU6DA
		1	Commscope NNHH-65B-R4
		2	Quintel QD8616-7
		2	CCI DMP65R-BU8D
		4	Raycap DC6-48-60-18-8F
		3	Ericsson Radio 8843 - B2 + B66A
		3	Ericsson RRUS 32 B30
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		1	Generic 2' Std. Dish
	122.0	3	Ericsson AIR 6419 B77G

Structure Usages

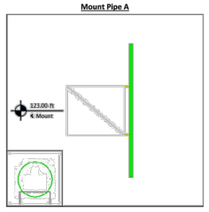
Structural Component	Controlling Usage	Pass/Fail
Horizontals	99%	Pass
Tie-Backs	14%	Pass
Mount Pipes	51%	Pass

Mount Layout

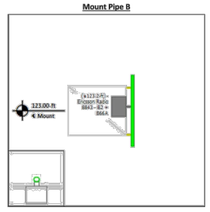


Equipment Layout

Mount Pipe A



Mount Pipe B



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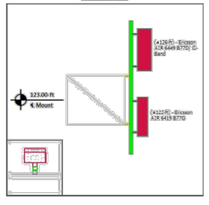
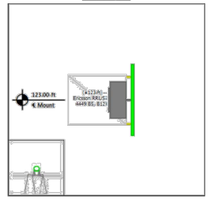
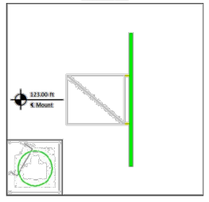


Mount Pipe D

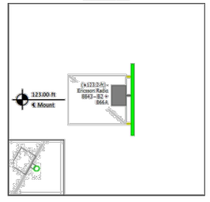


Equipment Layout Cont'd.

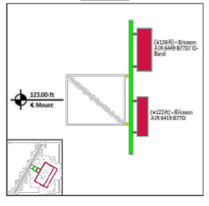
Mount Pipe E



Mount Pipe F



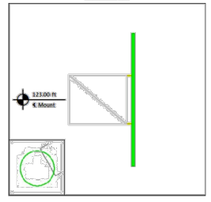
Mount Pipe G



Mount Pipe H

Equipment Layout Cont'd.

Mount Pipe I



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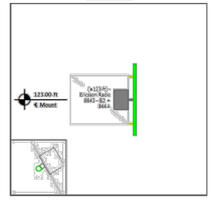

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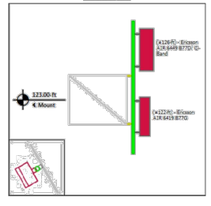

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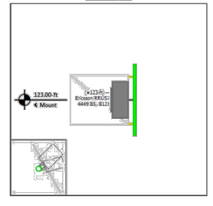

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

SITE ADDRESS:
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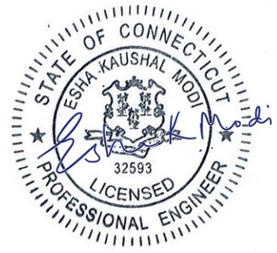

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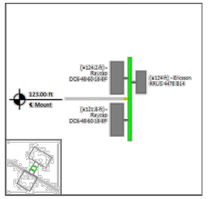
SUPPLEMENTAL

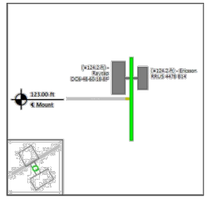
SHEET NUMBER:	REVISION:
R-902	0

Equipment Layout Cont'd.

Mount Pipe M



Mount Pipe N



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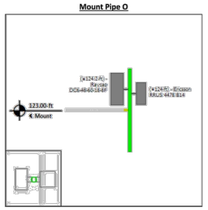

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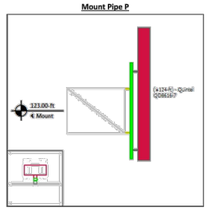
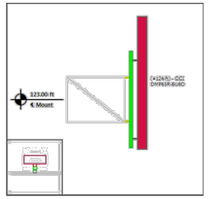


Equipment Layout Cont'd.

Mount Pipe Q



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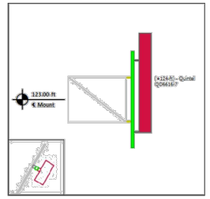

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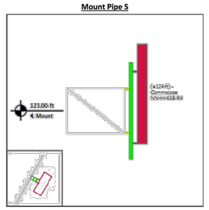
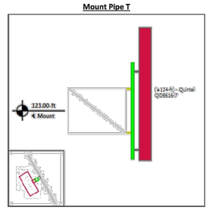
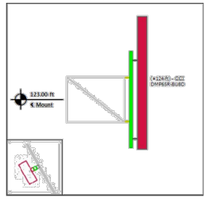


Mount Pipe T



Equipment Layout Cont'd.

Mount Pipe U



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 equipment, 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.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

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.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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.

Site Number: 302500
Project Number: 13757810_C9_04
Carrier: AT&T Mobility
Mount Elevation: 123 ft
Date: 4/18/2022

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.05	
Topographic Factor	K_{zt}	1.42	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.96	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	117	mph
Velocity Pressure	q_z	47.6	psf
Height Escalation Factor	K_h	1.14	
Thickness of Radial Glaze Ice	T_{id}	1.29	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.202	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.101	
Amplification Factor	A	1.0	
Total Weight	W	3608.6	lbs
Total Shear Force	V_S	363.7	lbs
Horizontal Seismic Load	E_h	363.7	lbs
Vertical Seismic Load	E_v	145.5	lbs

Antenna Calculations (Elevations per Application/RFDS)*

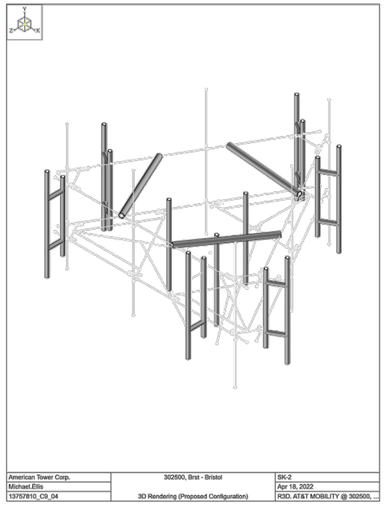
Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{NI}	EPA_{TI}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson AIR 6449 B77D/ C-Band	30.4	15.9	10.6	81.6	4.03	1.62	5.08	2.19
Quintel QD6616-7	72.0	22.0	9.6	130.0	13.58	2.88	15.71	3.78
CCI DMP65R-BU6DA	71.2	20.7	7.7	79.4	N/A	N/A	N/A	N/A
Commscope NNHH-65B-R4	72.0	19.6	7.8	83.8	12.27	2.34	14.38	3.22
Quintel QD8616-7	96.0	22.0	9.6	150.0	18.81	3.84	21.58	5.00
CCI DMP65R-BU8D	96.0	20.7	7.7	95.7	17.87	3.08	20.64	4.22
Raycap DC6-48-60-18-8F	23.5	9.7	9.7	20.0	1.90	1.90	2.67	2.67
Ericsson Radio 8843 - B2 + B66A	15.0	13.2	10.9	71.9	1.65	1.36	2.31	1.97
Ericsson RRUS 32 B30	27.2	12.1	7.0	60.0	2.74	1.67	3.64	2.50
Ericsson RRUS 4449 B5, B12	17.9	13.2	9.4	71.0	1.97	1.40	2.69	2.04
Ericsson RRUS 4478 B14	16.5	13.4	7.7	59.9	1.84	1.06	2.54	1.63
Generic 2' Std. Dish	24.0	24.0	6.0	14.0	N/A	N/A	N/A	N/A
Ericsson AIR 6419 B77G	28.3	16.1	7.9	66.1	3.80	1.20	4.81	1.73

** Equipment with EPA values N/A were not considered in the mount analysis*

Company : American Tower Corp.
Designer : Michael.Ellis
Job Number : 13757810_C9_04
Model Name : 302500, Brst - Bristol
4/18/2022
8:50:16 AM
Checked By : -

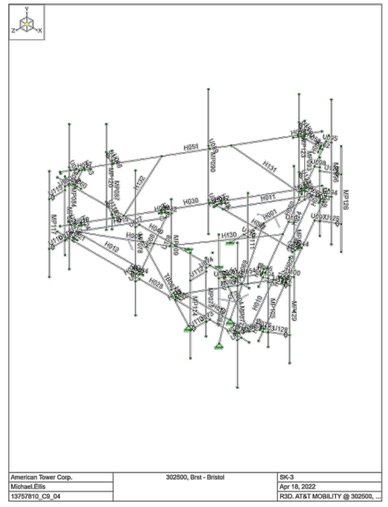
American Tower Corp.	302500, Brst - Bristol	SK-1
Michael.Ellis		Apr 18, 2022
13757810_C9_04	3D Rendering (Final Configuration)	R3D. AT&T MOBILITY @ 302500, ...

Company : American Tower Corp.
Designer : Michael.Ellis
Job Number : 13757810_C9_04
Model Name : 302500, Brst - Bristol
4/18/2022
8:50:16 AM
Checked By : -



American Tower Corp.	302500, Brst - Bristol	SK-2
Michael.Ellis		Apr 18, 2022
13757810_C9_04	3D Rendering (Proposed Configuration)	R3D. AT&T MOBILITY @ 302500, ...

Company : American Tower Corp.
Designer : Michael.Ellis
Job Number : 13757810_C9_04
Model Name : 302500, Brst - Bristol
4/18/2022
8:50:16 AM
Checked By : -



American Tower Corp.	302500, Brst - Bristol	SK-3
Michael.Ellis		Apr 18, 2022
13757810_C9_04		R3D. AT&T MOBILITY @ 302500, ...

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

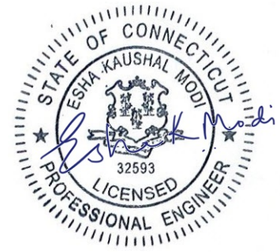
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:
302500

ATC SITE NAME:
BRST - BRISTOL

CONNECTICUT

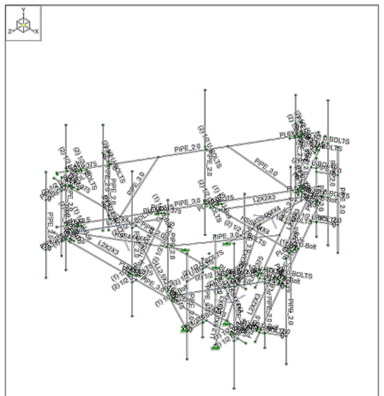
SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010

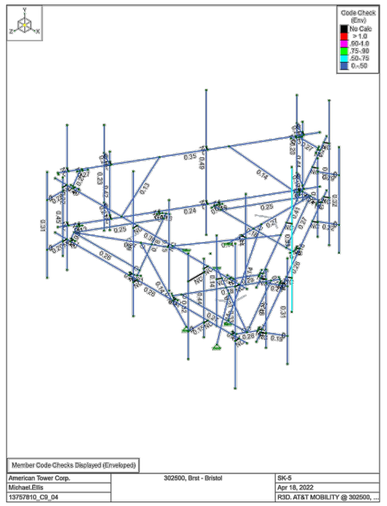


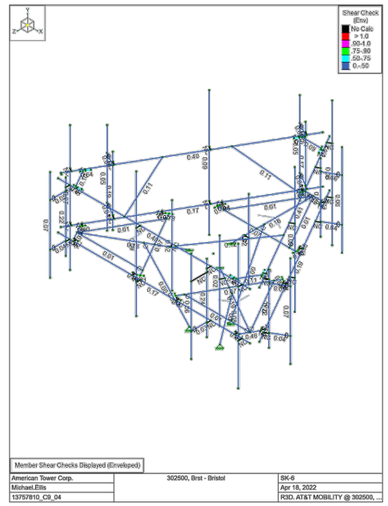
DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-903	0







Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
1	D	DL	-1		40		
2	DI	IL			40	75	3
3	W 0	WL			40	132	
4	W 30	WL			80	264	
5	W 60	WL			80	264	
6	W 90	WL			40	135	
7	W 120	WL			80	264	
8	W 150	WL			80	264	
9	W 180	WL			40	132	
10	W 210	WL			80	264	
11	W 240	WL			80	264	
12	W 270	WL			40	135	
13	W 300	WL			80	264	
14	W 330	WL			80	264	
15	Wi 0	WL			40	132	
16	Wi 30	WL			80	264	
17	Wi 60	WL			80	264	
18	Wi 90	WL			40	135	
19	Wi 120	WL			80	264	
20	Wi 150	WL			80	264	
21	Wi 180	WL			40	132	
22	Wi 210	WL			80	264	
23	Wi 240	WL			80	264	
24	Wi 270	WL			40	135	
25	Wi 300	WL			80	264	
26	Wi 330	WL			80	264	
27	Ws 0	WL			40	132	
28	Ws 30	WL			80	264	
29	Ws 60	WL			80	264	
30	Ws 90	WL			40	135	
31	Ws 120	WL			80	264	
32	Ws 150	WL			80	264	
33	Ws 180	WL			40	132	
34	Ws 210	WL			80	264	
35	Ws 240	WL			80	264	
36	Ws 270	WL			40	135	
37	Ws 300	WL			80	264	
38	Ws 330	WL			80	264	
39	Ev -Y	ELY				75	
40	Eh -Z	ELZ				75	
41	Eh -X	ELX				75	
42	Lm (1)	LL		1			
43	Lm (2)	LL		1			
44	Lm (3)	LL		1			
45	Lm (4)	LL		1			
46	Lm (5)	LL		1			
47	Lm (6)	LL		1			
48	Lm (7)	LL		1			
49	Lm (8)	LL		1			
50	Lm (9)	LL		1			
51	Lm (10)	LL		1			
52	Lm (11)	LL		1			
53	Lm (12)	LL		1			
54	Lm (13)	LL		1			
55	Lm (14)	LL		1			

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
56	Lm (15)	LL		1			
57	Lm (16)	LL		1			
58	Lm (17)	LL		1			
59	Lm (18)	LL		1			
60	Lm (19)	LL		1			
61	Lm (20)	LL		1			
62	Lm (21)	LL		1			

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N002	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N006	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N007	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N120	Reaction	Reaction	Reaction			
5	N121	Reaction	Reaction	Reaction			
6	N122	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N003		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
2	H002	N004	N005		PL6X0.5	Beam	None	A36	Typical
3	H003	N006	N012		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
4	H004	N007	N013		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
5	H005	N008	N010		PL6X0.5	Beam	None	A36	Typical
6	H006	N009	N011		PL6X0.5	Beam	None	A36	Typical
7	H007	N015	N016		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
8	H008	N021	N023		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
9	H009	N022	N024		HSS4X4X4	Beam	None	A500 Gr. B [SQR]	Typical
10	H010	N033	N013		L2X2X3	Beam	None	A36	Typical
11	H011	N034	N003		L2X2X3	Beam	None	A36	Typical
12	H012	N029	N012		L2X2X3	Beam	None	A36	Typical
13	H013	N030	N013	270	L2X2X3	Beam	None	A36	Typical
14	H014	N031	N003	270	L2X2X3	Beam	None	A36	Typical
15	H015	N032	N012	270	L2X2X3	Beam	None	A36	Typical
16	H016	N009	N036		PL6X0.5	Beam	None	A36	Typical
17	H017	N004	N042		PL6X0.5	Beam	None	A36	Typical
18	H018	N008	N043		PL6X0.5	Beam	None	A36	Typical
19	H019	N011	N048		PL6X0.5	Beam	None	A36	Typical
20	H020	N005	N049		PL6X0.5	Beam	None	A36	Typical
21	H021	N010	N037		PL6X0.5	Beam	None	A36	Typical
22	H022	N038	N040		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
23	H023	N044	N050		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
24	H024	N045	N051		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
25	H025	N039	N041		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
26	H026	N046	N052		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
27	H027	N047	N053		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
28	H028	N017	N018		PIPE_3.0	Beam	None	A53 Gr. B	Typical
29	H029	N025	N027		PIPE_3.0	Beam	None	A53 Gr. B	Typical
30	H030	N026	N028		PIPE_3.0	Beam	None	A53 Gr. B	Typical
31	H031	N054	N055		PL6X0.375	Beam	None	A36	Typical
32	H032	N056	N058		PL6X0.375	Beam	None	A36	Typical
33	H033	N057	N059		PL6X0.375	Beam	None	A36	Typical
34	H034	N060	N062		PL6X0.375	Beam	None	A36	Typical

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RFL	04/25/22

ATC SITE NUMBER:

302500

ATC SITE NAME:

BRST - BRISTOL

CONNECTICUT

SITE ADDRESS:
790 WILLIS STREET
BRISTOL, CT 06010

DRAWN BY:	RFL
APPROVED BY:	MFE
DATE DRAWN:	04/25/22
ATC JOB NO:	13757810_C9_04

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-904	0

July 9, 2022

Connecticut Light and Power Co.
107 Selden Street
Berlin, CT 06037

Re: Exempt Modification Application – AT&T Site 13757810
AT&T Mobility Telecommunications Facility @ 790 Willis Street, Bristol, CT 06010

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, three (3) RRHs, twelve (12) triplexers, six (6) coax cables, and a conduit;
- Install mount modifications, and nine (9) antennas;
- Ground work includes removing six (6) RRUW and six (6) diplexers; and installing one (1) 6648 + XCEDE, one (1) 6630 + IDLe and three (3) 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

July 9, 2022

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

Re: Exempt Modification Application – AT&T Site 13757810
AT&T Mobility Telecommunications Facility @ 790 Willis Street, Bristol, CT 06010

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, three (3) RRHs, twelve (12) triplexers, six (6) coax cables, and a conduit;
- Install mount modifications, and nine (9) antennas;
- Ground work includes removing six (6) RRUW and six (6) diplexers; and installing one (1) 6648 + XCEDE, one (1) 6630 + IDLe and three (3) 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 9, 2022

The Honorable Jeff Caggiano
Bristol City Hall
111 North Main Street
Bristol, CT 06010

Re: Exempt Modification Application – AT&T Site 13757810
AT&T Mobility Telecommunications Facility @ 790 Willis Street, Bristol, CT 06010

Dear Mayor Caggiano:

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, three (3) RRHs, twelve (12) triplexers, six (6) coax cables, and a conduit;
- Install mount modifications, and nine (9) antennas;
- Ground work includes removing six (6) RRUW and six (6) diplexers; and installing one (1) 6648 + XCEDE, one (1) 6630 + IDLe and three (3) 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

City Planner Robert M. Flanagan
Bristol City Hall
111 North Main Street
Bristol, CT 06010

Re: Exempt Modification Application – AT&T Site 13757810
AT&T Mobility Telecommunications Facility @ 790 Willis Street, Bristol, CT 06010

Dear Mr. Flanagan:

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, three (3) RRHs, twelve (12) triplexers, six (6) coax cables, and a conduit;
- Install mount modifications, and nine (9) antennas;
- Ground work includes removing six (6) RRUW and six (6) diplexers; and installing one (1) 6648 + XCEDE, one (1) 6630 + IDLe and three (3) 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

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BRISTOL, CT 06010

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July 18, 2022 at 10:00 am
BRISTOL, CT 06010

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FAQs

Feedback