



April 5, 2022

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

Re: Notice of Exempt Modification – Antenna and RRU Add
Property Address: 69 Wheeler Street, New Haven, CT 06512
Applicant: AT&T Mobility, LLC

Dear Ms. Bachman:

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

AT&T currently maintains a wireless telecommunications facility consisting of twelve (12) wireless telecommunication antennas at an antenna center line height of 91-feet on an existing 98-foot Monopole, owned by Whitney Realty Enterprises LLC at 51 Longhini Lane, New Haven, CT 06519. AT&T now intends to remove three (3) 4' Andrew SBNHH-1D65A antennas, each currently installed in position [1, 2, and 4] on Alpha Sector. AT&T also intends to remove four (4) 6' CCI HPA-65R-BUU-H6 antennas, each currently installed in position [1 and 2] on Beta and Gamma Sector, as well as, two (2) 6' Quintel QS66512-2 antennas, each currently installed in position [4] on Beta and Gamma Sector. AT&T intends to then add one (1) 4' Quintel QD4616-7 antenna, to be installed in position [2] on Alpha, and two (2) 6' Quintel QD6616-7 antennas each to be installed in position [2] on Beta and Gamma, as well as three (3) 3' Ericsson AIR 6449 B77 antennas and three (3) 2' AIR 6419 B77 antennas, both to be installed in position [3], all sectors. In addition, AT&T intends to remove nine (9) Remote Radio Units and add one (1) RRUS-4415 B25 in position [2], all sectors. As well as, one (1) RRUS-4449 B5/B12 in positions [4], all sectors, for a total of six (6) new RRUs. All of the changes will take place on the existing antenna mount. This modification/proposal includes B2, B5, and B12 hardware that is both 4G(LTE) and 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

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

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to Justin Elicker – Mayor, City of New Haven, CT at 165 Church Street, 2nd Floor, New Haven, CT 06510 and James Turcio – Building Official, City of New Haven, CT at 200 Orange Street, Room 501, New Haven, CT 06510. A copy of this letter is being sent to the property owner Whitney Realty Enterprises LLC at 51 Longhini Lane, New Haven, CT 06519 and the tower owner Landmark Infrastructure Partners at 400 Continental Blvd., Suite 500, El Segundo, CA 90245.

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

- **EM-AT&T-093-020703** - AT&T Wireless PCS, LLC d/b/a AT&T Wireless notice of intent to modify an existing telecommunications facility located at 69 Wheeler Street, New Haven, Connecticut.
- **EM-CING-093-120507** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 69 Wheeler Street, New Haven, Connecticut.
- **EM-CING-093-160324** – New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 69 Wheeler Street, New Haven, Connecticut.
- **EM-CING-093-170206** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 69 Wheeler Street, New Haven, Connecticut.
- **EM-AT&T-093-190328** – AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility



located at 69 Wheeler Street, New Haven, Connecticut.

- **EM-AT&T-093-200622** – AT&T Wireless notice of intent to modify an existing telecommunications facility located at 69 Wheeler Street, New Haven, Connecticut.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 131-foot level of the 130'-foot Water Tank.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require an extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

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

Sincerely,

Evan Giannakas

Evan Giannakas
Real Estate Project Manager | Smartlink LLC
85 Rangeway Road, Building 3, Suite 102
North Billerica, MA 01862

CC w/ enclosures:

Justin Elicker – Mayor, City of New Haven, CT
James Turcio – Building Official, City of New Haven, CT
Whitney Realty Enterprises LLC at 51 Longhini Lane, New Haven, CT 06519
Landmark Infrastructure Partners at 400 Continental Blvd., Suite 500, El Segundo, CA 90245.



4/5/2022

Memo: No Initial Zoning Decision Found

Upon consulting with the Building Inspector for the City of New Haven, it was determined that no initial zoning decision for this tower could be found. The building department phone number is (203) 946-8046.

Evan Giannakas
Real Estate Project Manager | Smartlink LLC
85 Rangeway Road, Building 3, Suite 102
North Billerica, MA 01862



**Smartlink on behalf of
AT&T Mobility, LLC
Site FA – 10035247
Site ID – CTL02037
USID – 61168
Site Name – NEW HAVEN WHEELER
ST
MRCTB051762-MRCTB051774-
MRCTB052200
69 WHEELER STREET
NEW HAVEN, CT 06512**

Latitude: N41-17-45.57
Longitude: W72-53-52.59
Structure Type: Monopole

Report generated date: March 29, 2022
Report by: Sophie Thein
Customer Contact: Evan Giannakas

**AT&T Mobility, LLC will be compliant when the
remediation recommended in Section 5.2 or
other appropriate remediation is implemented.**

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1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Max Cumulative Simulated RFE Level on the Ground	<1% General Public Limit
Compliant per AT&T Mobility, LLC's Policy?	No

1.2 Fall Arrest Anchor Point Summary

Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	N	N/A	N

The following documents were provided by the client and were utilized to create this report:

RFDS: 10035247_PM201_220309_CTL02037_CBAND

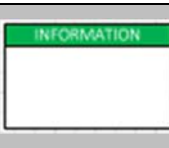
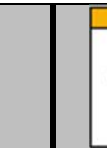
CD's: 10035247_AE201_220315_CTL02037_Rev2_5G NR RADIO_4TXRX ANTENNA RETROFIT_5G NR 1SR CBANDwMINOR RL

RF Powers Used: Max RRH Powers

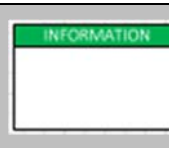
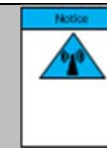
AT&T Mobility, LLC Duty Cycle: MPE Calculations are modeled with "75% Downlink Duty Cycle" for LTE and 5G.

1.3 Signage Summary

a. Pre-Site Visit AT&T Signage (Existing Signage)

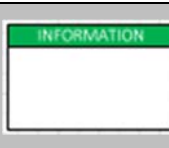
AT&T Signage Locations																		
	Information 1		Information 2		Notice		Notice 2		Caution		Caution 2		Warning		Warning 2		Barriers	
Access Point(s)																		
Alpha																		
Beta																		
Gamma																		
Delta																		
Epsilon																		
Zeta																		
Status	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A

b. Proposed AT&T Signage

AT&T Signage Locations																		
	Information 1		Information 2		Notice		Notice 2		Caution		Caution 2		Warning		Warning 2		Barriers	
Access Point(s)											1							
Alpha																		
Beta																		
Gamma																		
Delta																		
Epsilon																		
Zeta																		
Status	N/A	Remove	N/A	Remove	N/A	Remove	Install	Remove	N/A	Remove	Install	Remove	N/A	Remove	Install	Remove	Install	Remove

Note: The Caution sign proposed at the Monopole Base is a Caution 2B sign.

c. Final Compliance Configuration Signage Summary (Required)

AT&T Signage Locations																		
	Information 1		Information 2		Notice		Notice 2		Caution		Caution 2		Warning		Warning 2		Barriers	
Access Point(s)											1							
Alpha																		
Beta																		
Gamma																		
Delta																		
Epsilon																		
Zeta																		
Status	N/A	N/A	N/A	N/A	N/A	N/A	Existing	Proposed	N/A	N/A	Existing	Proposed	N/A	N/A	Existing	Proposed	Existing	Proposed

Note: The Caution sign required at the Monopole Base is a Caution 2B sign.

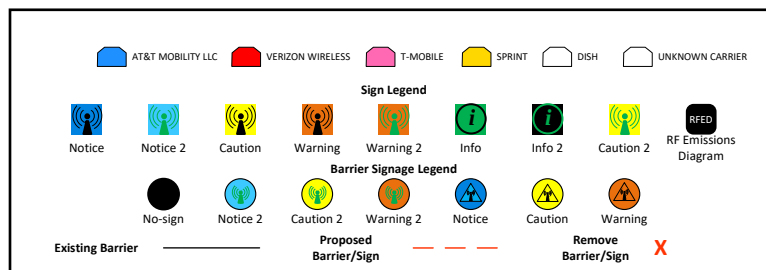
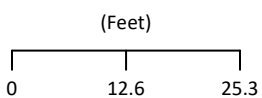
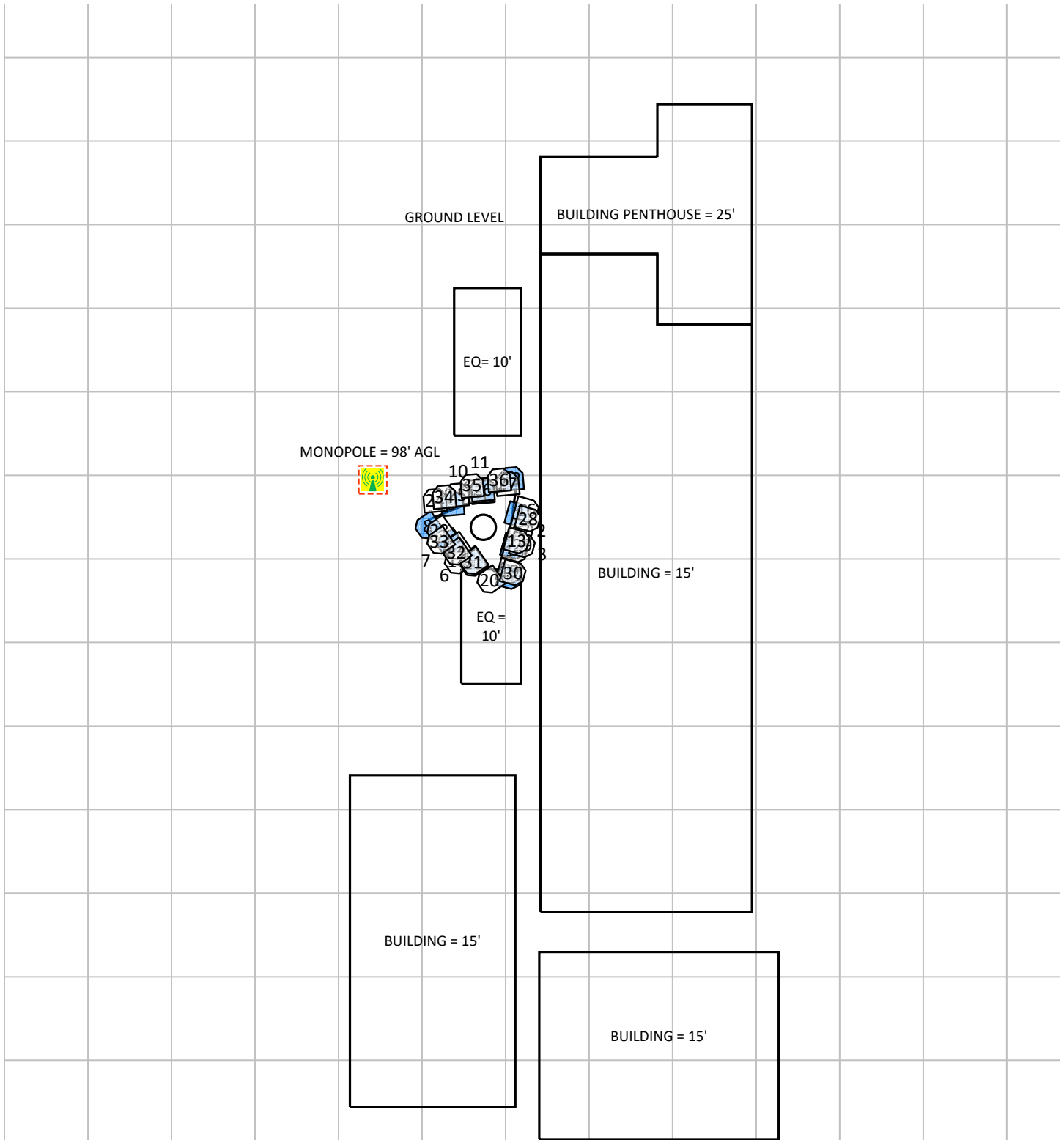
Note: The table above represents EVERY compliance item that MUST be implemented at this location.

2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- RF Exposure Diagram – Elevation View

Site Scale Map For: NEW HAVEN WHEELER ST



3 Antenna Inventory

The following antenna inventory was obtained by the customer and was utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (ft)	AGL (ft)
1	AT&T MOBILITY LLC (Proposed)	Quintel QD4616-7	Panel	722	LTE	50	68.0	4.3	80	TPO	Watt	1	629.64	10.21	88.9	88.86
1	AT&T MOBILITY LLC (Proposed)	Quintel QD4616-7	Panel	763	LTE	50	68.0	4.3	160	TPO	Watt	1	1259.27	10.21	88.9	88.86
1	AT&T MOBILITY LLC (Proposed)	Quintel QD4616-7	Panel	1900	LTE	50	61.0	4.3	80	TPO	Watt	1	1640.93	14.37	88.9	88.86
1	AT&T MOBILITY LLC (Proposed)	Quintel QD4616-7	Panel	1900	5G	50	61.0	4.3	80	TPO	Watt	1	1640.93	14.37	88.9	88.86
1	AT&T MOBILITY LLC (Proposed)	Quintel QD4616-7	Panel	2100	LTE/AWS1	50	62.0	4.3	120	TPO	Watt	1	2774.48	14.89	88.9	88.86
1	AT&T MOBILITY LLC (Proposed)	Quintel QD4616-7	Panel	2100	5G	50	62.0	4.3	120	TPO	Watt	1	2774.48	14.89	88.9	88.86
2	AT&T MOBILITY LLC (Proposed)	Ericsson AIR6419 (AT&T C-band)	Panel	3450	5G	50	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	91.5	91.53
3	AT&T MOBILITY LLC (Proposed)	Ericsson AIR6449 (AT&T C-band)	Panel	3700	5G	50	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	87.9	87.93
4	AT&T MOBILITY LLC	Cci OPA65R-BU4D	Panel	737	LTE	50	61.1	4	160	TPO	Watt	1	1330.82	10.45	89	89
4	AT&T MOBILITY LLC	Cci OPA65R-BU4D	Panel	850	5G	50	66.7	4	160	TPO	Watt	1	1527.99	11.05	89	89
4	AT&T MOBILITY LLC	Cci OPA65R-BU4D	Panel	2300	LTE	50	56.1	4	100	TPO	Watt	1	2137.96	14.55	89	89
5	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	2100	LTE/AWS1	180	61.0	6	120	TPO	Watt	1	3282.32	15.62	88	88
5	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	2100	5G	180	61.0	6	120	TPO	Watt	1	3282.32	15.62	88	88
5	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	722	LTE	180	73.0	6	80	TPO	Watt	1	887.34	11.70	88	88
5	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	763	LTE	180	73.0	6	160	TPO	Watt	1	1774.68	11.70	88	88
5	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	1900	LTE	180	66.0	6	80	TPO	Watt	1	1807.55	14.79	88	88
5	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	1900	5G	180	66.0	6	80	TPO	Watt	1	1807.55	14.79	88	88
6	AT&T MOBILITY LLC (Proposed)	Ericsson AIR6419 (AT&T C-band)	Panel	3450	5G	180	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	91.5	91.53
7	AT&T MOBILITY LLC (Proposed)	Ericsson AIR6449 (AT&T C-band)	Panel	3700	5G	180	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	87.9	87.93
8	AT&T MOBILITY LLC	CCI Antennas OPA65R-BU6D	Panel	737	LTE	180	61.1	5.9	160	TPO	Watt	1	1841.28	11.86	88	88.04
8	AT&T MOBILITY LLC	CCI Antennas OPA65R-BU6D	Panel	850	5G	180	67.9	5.9	160	TPO	Watt	1	1884.17	11.96	88	88.04
8	AT&T MOBILITY LLC	CCI Antennas OPA65R-BU6D	Panel	2300	LTE	180	48.7	5.9	100	TPO	Watt	1	397191.55	37.24	88	88.04
9	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	722	LTE	300	73.0	6	80	TPO	Watt	1	887.34	11.70	88	88
9	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	763	LTE	300	73.0	6	160	TPO	Watt	1	1774.68	11.70	88	88
9	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	1900	LTE	300	66.0	6	80	TPO	Watt	1	1807.55	14.79	88	88
9	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	1900	5G	300	66.0	6	80	TPO	Watt	1	1807.55	14.79	88	88
9	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	2100	LTE/AWS1	300	61.0	6	120	TPO	Watt	1	3282.32	15.62	88	88
9	AT&T MOBILITY LLC (Proposed)	Quintel QD6616-7	Panel	2100	5G	300	61.0	6	120	TPO	Watt	1	3282.32	15.62	88	88
10	AT&T MOBILITY LLC (Proposed)	Ericsson AIR6419 (AT&T C-band)	Panel	3450	5G	300	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	91.5	91.53
11	AT&T MOBILITY LLC (Proposed)	Ericsson AIR6449 (AT&T C-band)	Panel	3700	5G	300	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	87.9	87.93
12	AT&T MOBILITY LLC	CCI Antennas OPA65R-BU6D	Panel	737	LTE	300	61.1	5.9	160	TPO	Watt	1	1841.28	11.86	88	88.04
12	AT&T MOBILITY LLC	CCI Antennas OPA65R-BU6D	Panel	850	5G	300	67.9	5.9	160	TPO	Watt	1	1884.17	11.96	88	88.04

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (ft)	AGL (ft)
12	AT&T MOBILITY LLC	CCI Antennas OPA65R-BU6D	Panel	2300	LTE	300	48.7	5.9	100	TPO	Watt	1	397191.55	37.24	88	88.04
13	UNKNOWN CARRIER	Generic	Panel	1900		50	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	94.9	94.86
14	UNKNOWN CARRIER	Generic	Panel	1900		180	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	94.9	94.86
15	UNKNOWN CARRIER	Generic	Panel	1900		300	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	94.9	94.86
16	UNKNOWN CARRIER	Generic	Panel	700		50	65.0	6.3	160	TPO	Watt	1	2884.83	12.56	76.9	76.86
17	UNKNOWN CARRIER	Generic	Panel	850		50	65.0	6.3	160	TPO	Watt	1	3524.68	13.43	76.9	76.86
18	UNKNOWN CARRIER	Generic	Panel	1900		50	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	76.9	76.86
19	UNKNOWN CARRIER	Generic	Panel	2100		50	65.0	6.3	160	TPO	Watt	1	5716.37	15.53	76.9	76.86
20	UNKNOWN CARRIER	Generic	Panel	700		180	65.0	6.3	160	TPO	Watt	1	2884.83	12.56	76.9	76.86
21	UNKNOWN CARRIER	Generic	Panel	850		180	65.0	6.3	160	TPO	Watt	1	3524.68	13.43	76.9	76.86
22	UNKNOWN CARRIER	Generic	Panel	1900		180	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	76.9	76.86
23	UNKNOWN CARRIER	Generic	Panel	2100		180	65.0	6.3	160	TPO	Watt	1	5716.37	15.53	76.9	76.86
24	UNKNOWN CARRIER	Generic	Panel	700		300	65.0	6.3	160	TPO	Watt	1	2884.83	12.56	76.9	76.86
25	UNKNOWN CARRIER	Generic	Panel	850		300	65.0	6.3	160	TPO	Watt	1	3524.68	13.43	76.9	76.86
26	UNKNOWN CARRIER	Generic	Panel	1900		300	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	76.9	76.86
27	UNKNOWN CARRIER	Generic	Panel	2100		300	65.0	6.3	160	TPO	Watt	1	5716.37	15.53	76.9	76.86
28	UNKNOWN CARRIER	Generic	Panel	850		50	65.0	6.3	160	TPO	Watt	1	3524.68	13.43	66.9	66.86
29	UNKNOWN CARRIER	Generic	Panel	1900		50	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	66.9	66.86
30	UNKNOWN CARRIER	Generic	Panel	2100		50	65.0	6.3	160	TPO	Watt	1	5716.37	15.53	66.9	66.86
31	UNKNOWN CARRIER	Generic	Panel	850		180	65.0	6.3	160	TPO	Watt	1	3524.68	13.43	66.9	66.86
32	UNKNOWN CARRIER	Generic	Panel	1900		180	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	66.9	66.86
33	UNKNOWN CARRIER	Generic	Panel	2100		180	65.0	6.3	160	TPO	Watt	1	5716.37	15.53	66.9	66.86
34	UNKNOWN CARRIER	Generic	Panel	850		300	65.0	6.3	160	TPO	Watt	1	3524.68	13.43	66.9	66.86
35	UNKNOWN CARRIER	Generic	Panel	1900		300	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	66.9	66.86
36	UNKNOWN CARRIER	Generic	Panel	2100		300	65.0	6.3	160	TPO	Watt	1	5716.37	15.53	66.9	66.86

Note: The Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

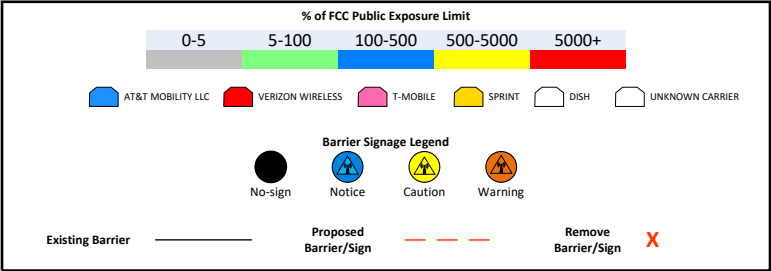
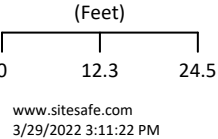
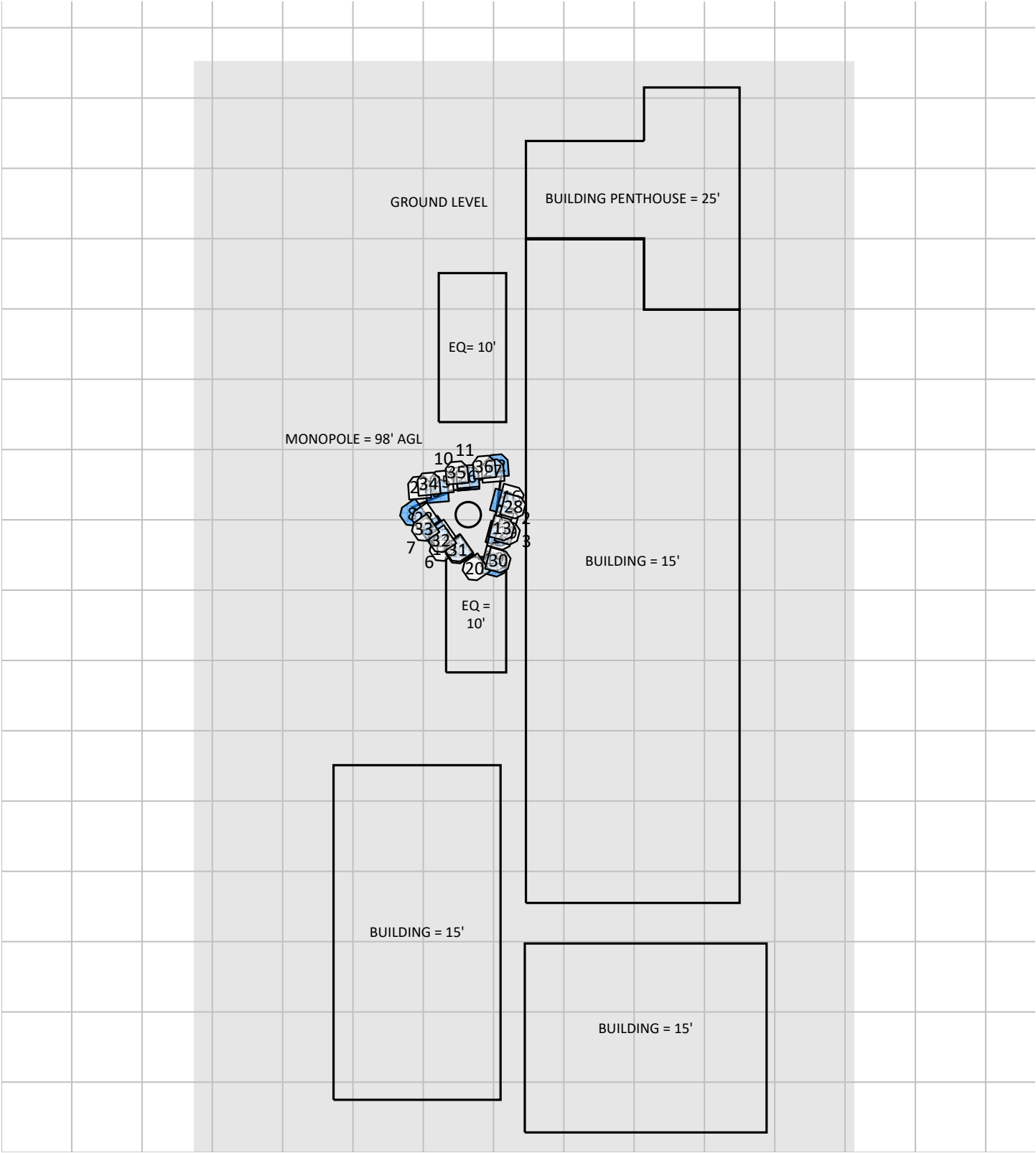
4 Emission Predictions

In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas. The total analyzed elevations in the below RF Exposure Simulations are listed below.

- GROUND LEVEL = 0'
- MONOPOLE = 98'
- BUILDING = 15'
- BUILDING PH = 25'
- EQ = 10'

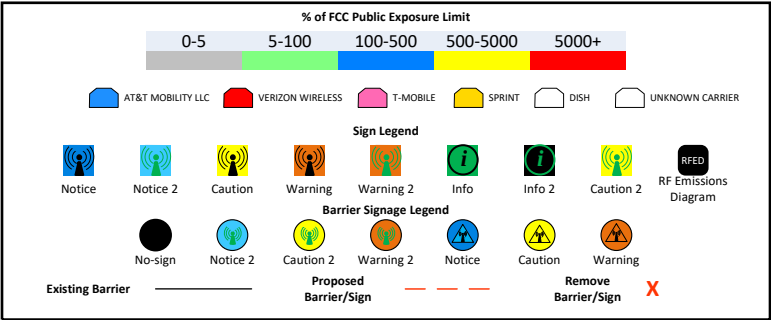
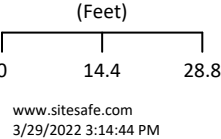
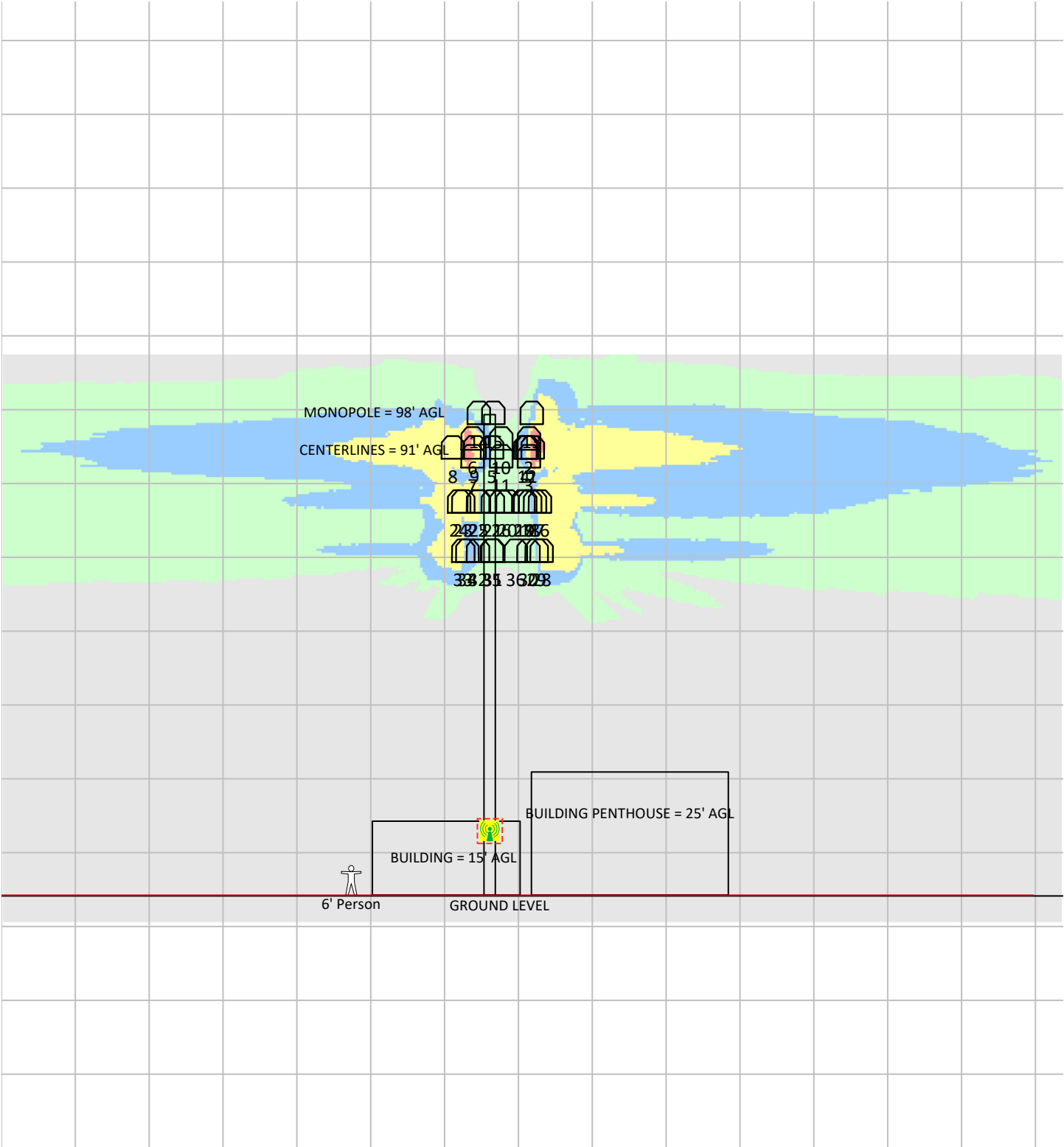
The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: NEW HAVEN WHEELER ST
Composite View



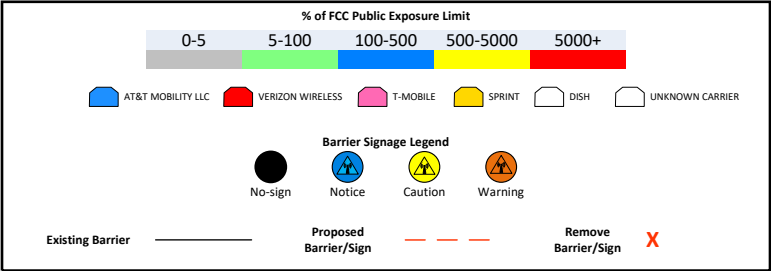
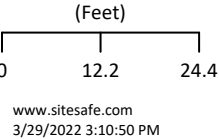
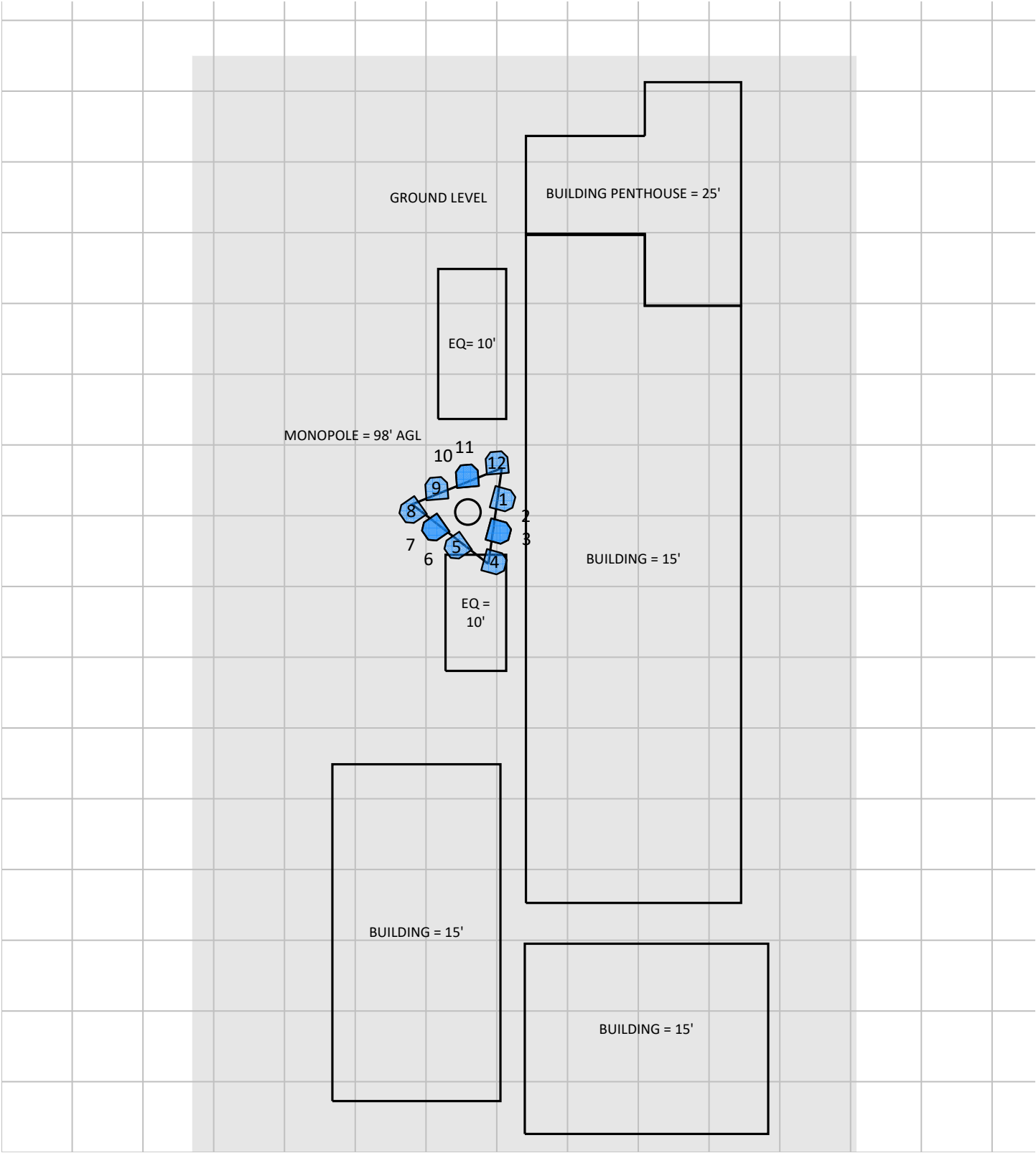
Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: NEW HAVEN WHEELER ST
Elevation View



Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Single Level (0)

RF Exposure Simulation For: NEW HAVEN WHEELER ST
AT&T Mobility Contribution



Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

Based on measurement or predictions, other wireless operators on this site may be out of RF exposure compliance with FCC regulations on this site. We recommend that those operators review this site with respect to RF exposure compliance.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, and the level of restricted access to the antennas at the site.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Monopole Base Location

(1) Caution 2B sign is required.

Notes:

- There are no adjacent structures within the potential exposure areas of the AT&T Mobility, LLC C-Band antennas.

6 Reviewer Certification

The professional engineer whose seal appears on the cover of this document hereby certifies and affirms:

That I am registered as a Professional Engineer in the jurisdiction indicated in the professional engineering stamp on the cover of this document; and

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Site Safe, LLC, in Vienna, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Sophie Thein.

March 29, 2022

Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

AT&T Mobility, LLC policies

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

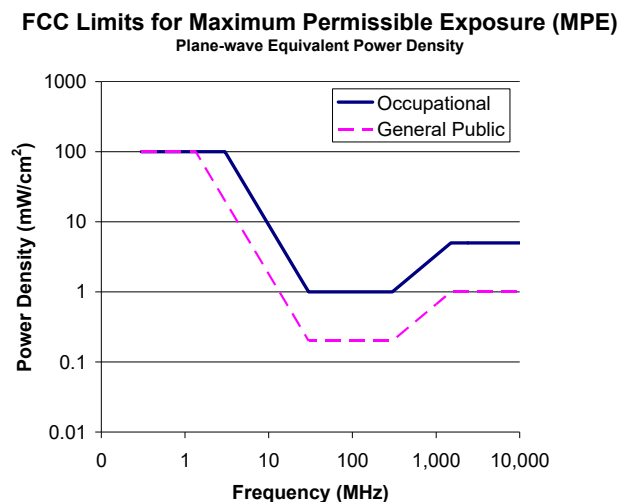
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:



Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lockout/Tagout procedure aimed to control the unexpected energization or startup of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

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

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

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

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

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

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

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

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

Site RF Emissions Diagram: Section 4 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst-case scenario assuming a duty cycle of 100% for each transmitting antenna at full power, unless otherwise noted. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. Gray represents areas more than 20 times below the most conservative exposure limit. **Gray areas are accessible to anyone.**
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone.**
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers.**
- Yellow represents areas predicted to exceed Occupational MPE limits. Yellow areas should be accessible only to RF trained workers able to assess current exposure levels.
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

If trained occupational personnel require access to areas that are delineated as above 100% of the limit, Sitesafe recommends that they utilize the proper personal protection equipment (RF monitors), coordinate with the carriers to reduce or shutdown power, or make real-time power density measurements with the appropriate power density meter to determine real-time MPE levels. This will allow the personnel to ensure that their work area is within exposure limits.

Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has assumed a 100% duty cycle or another duty cycle as noted in this report.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

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

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

Appendix F – Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible for taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site complies with FCC standards with regards to Human Exposure to Radio Frequency Electromagnetic Fields from transmitting antennas.

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

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to a half-wave dipole antenna.

Gain (of an antenna) – The ratio of the maximum power in a given direction to the maximum power in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antenna as compared to an omnidirectional antenna.

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

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

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

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

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

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

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of RF exposure on humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency Exposure or Electromagnetic Fields – Electromagnetic waves that are propagated from antennas through space.

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

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

Appendix G – References

The following references can be followed for further information about RF Health and Safety.

Site Safe, LLC

<http://www.sitesafe.com>

FCC Radio Frequency Safety

<http://www.fcc.gov/encyclopedia/radio-frequency-safety>

National Council on Radiation Protection and Measurements (NCRP)

<http://www.ncrponline.org>

Institute of Electrical and Electronics Engineers, Inc., (IEEE)

<http://www.ieee.org>

American National Standards Institute (ANSI)

<http://www.ansi.org>

Environmental Protection Agency (EPA)

<http://www.epa.gov/radtown/wireless-tech.html>

National Institutes of Health (NIH)

<http://www.niehs.nih.gov/health/topics/agents/emf/>

Occupational Safety and Health Agency (OSHA)

<http://www.osha.gov/SLTC/radiofrequencyradiation/>

International Commission on Non-Ionizing Radiation Protection (ICNIRP)

<http://www.icnirp.org>

World Health Organization (WHO)

<http://www.who.int/peh-emf/en/>

National Cancer Institute

<http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>

American Cancer Society (ACS)

http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?sitearea=PED

European Commission Scientific Committee on Emerging and Newly Identified Health Risks

http://ec.europa.eu/health/ph_risk/committees/04_scenihp/docs/scenihp_o_022.pdf

Fairfax County, Virginia Public School Survey

<http://www.fcps.edu/fts/safety-security/RFEESurvey/>

UK Health Protection Agency Advisory Group on Non-Ionizing Radiation

http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368

Norwegian Institute of Public Health

<http://www.fhi.no/dokumenter/545eea7147.pdf>

69 WHEELER ST

Location 69 WHEELER ST

Mblu 077/ 0975/ 00200/ /

Acct# 077 0975 00200

Owner WHITNEY REALTY ENTERPRISES LLC

Assessment \$359,870

Appraisal \$514,100

PID 3459

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$320,800	\$193,300	\$514,100
Assessment			
Valuation Year	Improvements	Land	Total
2021	\$224,560	\$135,310	\$359,870

Owner of Record

Owner WHITNEY REALTY ENTERPRISES LLC
Co-Owner
Address 51 LONGHINI LANE
NEW HAVEN, CT 06519

Sale Price \$0
Certificate
Book & Page 8954/ 126
Sale Date 03/01/2013
Instrument 3

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
WHITNEY REALTY ENTERPRISES LLC	\$0		8954/ 126	3	03/01/2013
ELMER LAYDON SPRAY TRUST	\$0		8826/ 20	25	05/04/2012
LAYDON ELMER F & WILLIAM M	\$0		2868/ 345		09/11/1980

Building Information

Building 1 : Section 1

Year Built: 1920
Living Area: 8,816
Replacement Cost: \$491,411

Building Percent Good: 60
Replacement Cost
Less Depreciation: \$294,800

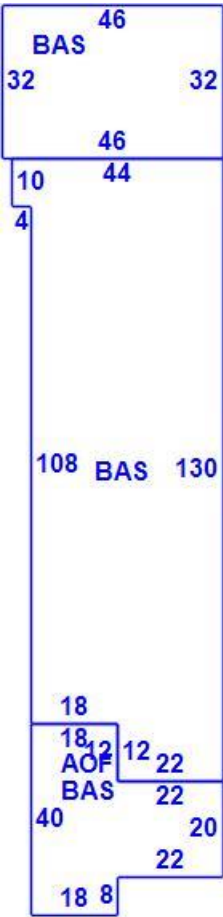
Building Attributes	
Field	Description
Style:	Warehouse
Model	Ind/Lg Com
Grade	Average
Stories:	2
Occupancy	1.00
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil/Gas
Heating Type	FA/HW/ST
AC Type	None
Struct Class	
Bldg Use	IND WHSES MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
NBHD Code	
1st Floor Use:	4010
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & MIN WL
Rooms/Prtns	AVERAGE
Wall Height	14.00
% Comn Wall	

Building Photo



(http://images.vgsi.com/photos/NewHavenCTPhotos/\00\05\09\06.jpg)

Building Layout



(ParcelSketch.ashx?

pid=3459&bid=18150)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	7,656	7,656
AOF	Office	1,160	1,160
		8,816	8,816

Extra Features

Extra Features					<u>Legend</u>
Code	Description	Size	Value	Assessed Value	Bldg #
MEZ1	MEZZANINE-UNF	250.00 S.F.	\$1,900	\$1,330	1

Land

Land Use		Land Line Valuation	
Use Code	4010	Size (Acres)	1.3
Description	IND WHSES MDL-96	Frontage	1
Zone	IH	Depth	0
Neighborhood	IND5	Assessed Value	\$135,310
Alt Land Appr Category	No	Appraised Value	\$193,300

Outbuildings

Outbuildings							<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Assessed Value	Bldg #
PAV1	PAVING-ASPHALT			11760.00 S.F.	\$24,100	\$16,870	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$254,933	\$130,100	\$385,033
2019	\$254,933	\$130,100	\$385,033
2018	\$254,933	\$130,100	\$385,033

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$178,453	\$91,070	\$269,523
2019	\$178,453	\$91,070	\$269,523
2018	\$178,453	\$91,070	\$269,523

Evan Giannakas

From: TrackingUpdates@fedex.com
Sent: Friday, April 8, 2022 1:56 PM
To: Evan Giannakas
Subject: FedEx Shipment 776496571269: Your package has been delivered



Hi. Your package was
delivered Fri, 04/08/2022 at
1:55pm.



Delivered to 200 Orange Street, Room 501, NEW HAVEN, CT 06510
Received by S.IGNATURE ON FILE

OBTAIN PROOF OF DELIVERY

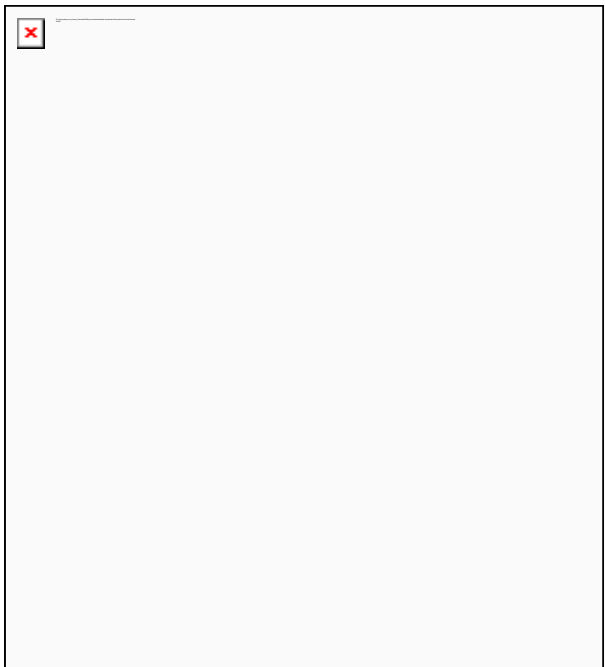
TRACKING NUMBER [776496571269](#)

FROM Smartlink LLC
85 Rangeway Road, Bldg 3, Suite 102
NORTH BILLERICA, MA, US, 01862

TO New Haven Building Inspection
James Turcio, Building Official

200 Orange Street, Room 501
NEW HAVEN, CT, US, 06510

REFERENCE	CTL02037 - New Haven CT
SHIPPER REFERENCE	CTL02037 - New Haven CT
SHIP DATE	Tue 4/05/2022 06:44 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	NEW HAVEN, CT, US, 06510
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Express Saver

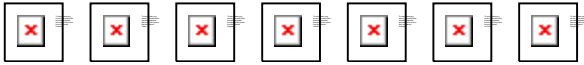


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All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

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Thank you for your business.

Evan Giannakas

From: TrackingUpdates@fedex.com
Sent: Thursday, April 7, 2022 11:31 AM
To: Evan Giannakas
Subject: FedEx Shipment 776496489783: Your package has been delivered



Hi. Your package was
delivered Thu, 04/07/2022 at
11:28am.



Delivered to 165 Church Street, 2nd Floor, NEW HAVEN, CT 06510
Received by A.TRENT

OBTAIN PROOF OF DELIVERY

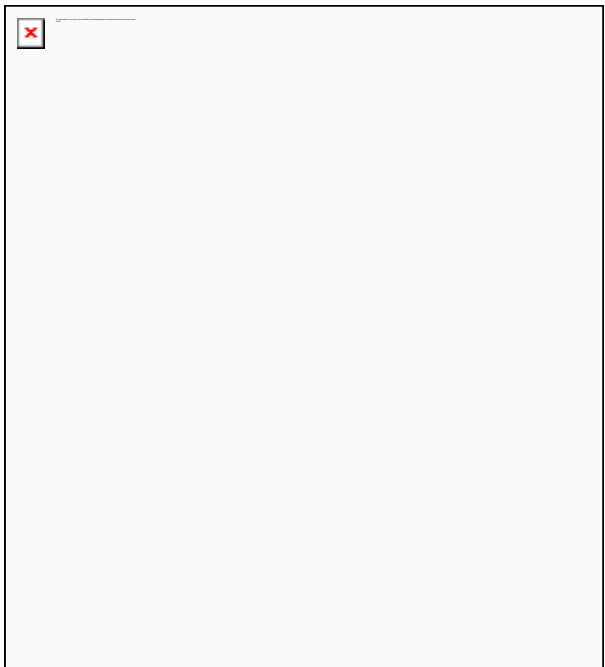
TRACKING NUMBER [776496489783](#)

FROM Smartlink LLC
85 Rangeway Road, Bldg 3, Suite 102
NORTH BILLERICA, MA, US, 01862

TO City of New Haven
Justin Elicker, Mayor

165 Church Street, 2nd Floor
NEW HAVEN, CT, US, 06510

REFERENCE	CTL02037 - New Haven CT
SHIPPER REFERENCE	CTL02037 - New Haven CT
SHIP DATE	Tue 4/05/2022 06:44 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	NEW HAVEN, CT, US, 06510
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Express Saver

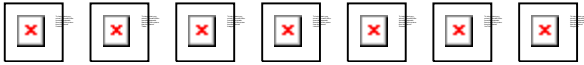


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All weights are estimated.

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Evan Giannakas

From: TrackingUpdates@fedex.com
Sent: Thursday, April 7, 2022 4:53 PM
To: Evan Giannakas
Subject: FedEx Shipment 776496609288: Your package has been delivered



Hi. Your package was
delivered Thu, 04/07/2022 at
1:51pm.



Delivered to 400 CONTINENTAL BLVD 500, EL SEGUNDO, CA 90245

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER [776496609288](#)

FROM Smartlink LLC
85 Rangeway Road, Bldg 3, Suite 102
NORTH BILLERICA, MA, US, 01862

TO Landmark Infrastructure Partners
Ellen Bacho

Evan Giannakas

From: TrackingUpdates@fedex.com
Sent: Thursday, April 7, 2022 9:34 AM
To: Evan Giannakas
Subject: FedEx Shipment 776496673036: Your package has been delivered



Hi. Your package was
delivered Thu, 04/07/2022 at
9:30am.



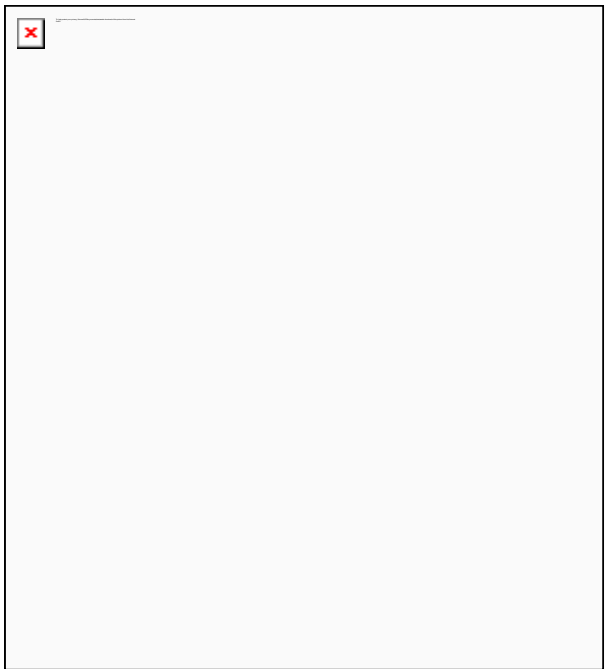
Delivered to 51 Longhini Lane, NEW HAVEN, CT 06519
Received by S.IGNATURE ON FILE

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER [776496673036](#)

FROM Smartlink LLC
85 Rangeway Road, Bldg 3, Suite 102
NORTH BILLERICA, MA, US, 01862

TO	Whitney Realty Enterprises LLC 51 Longhini Lane NEW HAVEN, CT, US, 06519
REFERENCE	CTL02037 - NEW HAVEN CT
SHIPPER REFERENCE	CTL02037 - NEW HAVEN CT
SHIP DATE	Tue 4/05/2022 06:44 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	NEW HAVEN, CT, US, 06519
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Express Saver



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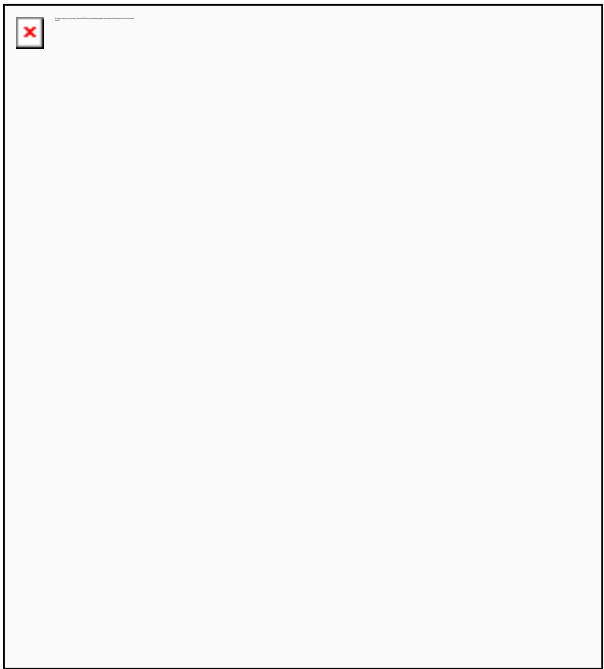
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400 Continental Blvd, Suite 500
EL SEGUNDO, CA, US, 90245

REFERENCE	CTL02037 - New Haven CT
SHIPPER REFERENCE	CTL02037 - New Haven CT
SHIP DATE	Tue 4/05/2022 06:44 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	EL SEGUNDO, CA, US, 90245
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Express Saver



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(REVISED)
COMPREHENSIVE STRUCTURAL ANALYSIS REPORT

For

SITE NUMBER: CT2037
SITE NAME: NEW HAVEN WHEELER ST

69 Wheeler Street
New Haven, CT 06512

Antennas Mounted on the Monopole



Prepared for:



Dated: March 15, 2022 (Rev. 1)
February 11, 2022

Prepared by:



45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com





HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group, LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 98' monopole supporting the proposed AT&T's antennas located at elevation 90' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

The following documents were used for our reference:

- Structural Analysis prepared by URS Corporation, dated July 17, 2006.
- Structural Analysis prepared by Structural Components dated April 26, 2012.
- Monopole Design Drawings prepared by Engineered Endeavors inc. dated April 20, 2015.
- Previous HDG Geotechnical Evaluation dated June 2, 2015.
- Mount Modification Drawings prepared by Bennett & Pless, dated August 26, 2016.
- Structural Analysis prepared by Malouf Engineering Intl., Inc. dated June 9, 2020.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The monopole is rated at **98.0 %** - (Base Plate at EL.0' Controlling).

FOUNDATION SUMMARY:

Based on our evaluation, we have determined that the existing foundation **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The foundation is rated at **80.5 %** - (Overturning Controlling).



APPURTENANCES CONFIGURATION (BASED ON RFDS V5.0 DATED: 3/8/2022):

Tenant	Appurtenances	Elev.	Mount
	(3) AIR32 Antennas	101'-1"	Platform
	(3) APXVAALL24_43 Antennas	101'-1"	Platform
	(3) AIR6449 B41 Antennas	101'-1"	Platform
	(3) 4449 B71 B85A RRH's	101'-1"	Platform
	(3) 4415 B2 B25 RRH's	101'-1"	Platform
	(1) E14FO6P66 02 Diplexer	101'-1"	Platform
	(1) RNSDC-7771-PF-48 OVP	101'-1"	Platform
	(1) 8ft Whip Antenna	96'	Sector Frame
AT&T	(1) OPA65R-BU4DA Antenna	91'	Sector Frame
AT&T	(2) OPA65R-BU6DA Antennas	91'	Sector Frame
AT&T	(4) Squid Surge Arrestors	91'	Sector Frame
AT&T	(3) B14 4478 RRH's	91'	Sector Frame
AT&T	(3) 4426 B66 RRH's	91'	Sector Frame
AT&T	(3) RRUS-E2 B29 RRH's	91'	Sector Frame
AT&T	(1) QD4616-7 Antenna	91'	Sector Frame
AT&T	(2) QD6616-7 Antennas	91'	Sector Frame
AT&T	(3) AIR 6419 Antennas	91'	Sector Frame
AT&T	(3) AIR 6449 Antenna	91'	Sector Frame
AT&T	(3) 4415 B25 RRH's	91'	Sector Frame
AT&T	(3) B5/B12 4449 RRH's	91'	Sector Frame
	(1) 2ft HP Dish	84'-6"	T-Frame
	(1) 1ft HP Dish	84'-6"	T-Frame
	(3) APXVTM14 Antennas	82'	T-Frame
	(3) LLPX310R-V1 Antennas	82'	T-Frame
	(3) NNVV-65B-R4 Antennas	82'	T-Frame
	(3) 2x50-800 RRH's	82'	T-Frame
	(3) Sprint RRH's	82'	T-Frame
	(3) 2x50-800 RRH's	82'	T-Frame
	(3) 4x45-1900 RRH's	82'	T-Frame
	(3) SPI-22132825WB	82'	T-Frame

***Proposed AT&T Appurtenances shown in Bold.**

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(8) DC Power Cables	91'	Tower Face
AT&T	(3) Fiber Cables	91'	Tower Face



ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	51.9 %	88 – 99.42	PASS	
Pole Section-L2	94.7 %	80 – 88	PASS	
Pole Section-L3	45.5 %	75 – 80	PASS	
Pole Section-L4	62.8 %	70 – 75	PASS	
Pole Section-L5	71.6 %	65 – 70	PASS	
Pole Section-L6	79.2 %	60 – 65	PASS	
Pole Section-L7	86.0 %	55 – 60	PASS	
Pole Section-L8	68.2 %	45.67 - 55	PASS	
Pole Section-L9	67.6 %	45 – 45.67	PASS	
Pole Section-L10	70.2 %	40 – 45	PASS	
Pole Section-L11	73.1 %	35 – 40	PASS	
Pole Section-L12	75.7 %	30 – 35	PASS	
Pole Section-L13	78.0 %	25 -30	PASS	
Pole Section-L14	80.1 %	20 – 25	PASS	
Pole Section-L15	81.9 %	15 – 20	PASS	
Pole Section-L16	83.6 %	10 – 15	PASS	
Pole Section-L17	85.1 %	5 – 10	PASS	
Pole Section-L18	91.3 %	0 – 5	PASS	
Anchor Bolts & Base Plate	98.0 %	0	PASS	Controlling

FOUNDATION COMPARISON SUMMARY:

	Stress Ratio	Pass/Fail	Comments
Overturning	80.5 %	PASS	Controlling



HUDSON
Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

County: New Haven
Ultimate Wind Speed: 125 mph (3 second gust)
Structural Class: II
Exposure Category: C
Topographic Category: 1
Nominal Ice Thickness: 1 inch

2. Approximate height above grade to proposed antennas: 91'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.
4. All prior structural modifications, if any, are assumed to be as per data supplied (if available) and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas and RRH's be mounted on the existing sector frames supported by the existing monopole.



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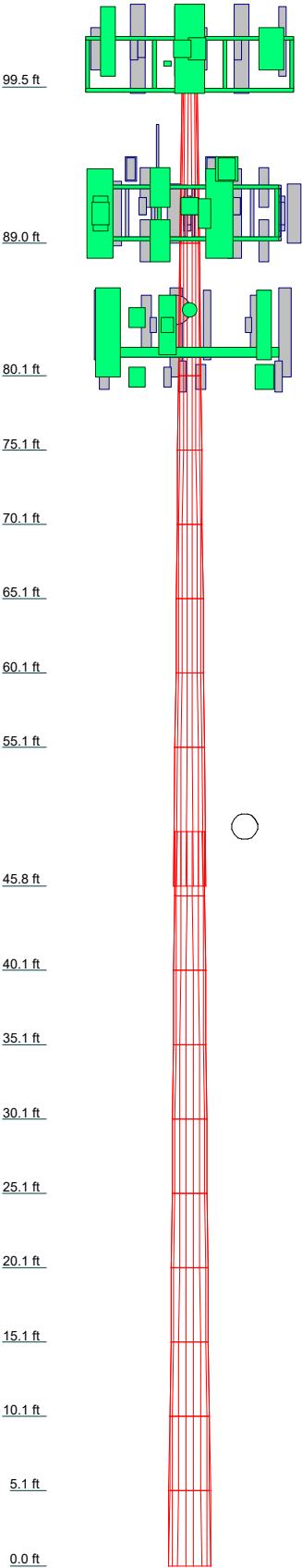
Photo 1: Photo illustrating the Tower with Appurtenances shown.



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CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Length (ft)	10.52	8.90	5.00	5.00	5.00	5.00	5.00	4.34	9.33	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.08	
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
Thickness (in)	0.1875	0.1875	0.5010	0.4840	0.4680	0.4540	0.4410	0.5930	0.6440	0.6300	0.6140	0.6000	0.5870	0.5750	0.5640	0.5530	0.5430	0.5340	
Socket Length (ft)	3.67																		
Top Dia (in)	12.7500	16.5000	18.1367	19.1596	20.1825	21.2054	22.2283	23.2512	24.9108	25.9207	26.9306	27.9405	28.9504	29.9604	30.9703	31.9802	32.9901	34.0000	
Bot Dia (in)	16.5000	18.1367	19.1596	20.1825	21.2054	22.2283	23.2512	25.1600	25.9207	26.9306	27.9405	28.9504	29.9604	30.9703	31.9802	32.9901	34.0000		
Grade	A572-65																		
Weight (lb)	307.6	308.8	491.0	501.5	511.2	521.3	531.0	1411.0	843.2	707.1	855.8	869.5	883.1	896.8	910.7	923.4	936.6	965.7	13375.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PIROD 13' Platform w/handrail (T-Mobile)	101.083	RRUS-32 B30 RRH (ATI)	91
AIR6449 B41 Antenna w/ Mount Pipe (T-Mobile)	101.083	B5/B12 4449 RRH (ATI)	91
APXVAALL18_43-U-NA20 Antenna w/ Mounting Pipe (T-Mobile)	101.083	Squid Surge Arrestor (ATI)	91
AIR32 B66A/B2A Antenna w/ Mount Pipe (T-Mobile)	101.083	Pirot 12' T-Frame Sector Mount (1) (ATI)	91
4449 B71+B85 RRH (T-Mobile)	101.083	QD6616-7 Antenna w/ Mounting Pipe (ATI)	91
4415 B25 RRH (T-Mobile)	101.083	AIR6419 Antenna w/ Mounting Pipe (ATI)	91
AIR6449 B41 Antenna w/ Mount Pipe (T-Mobile)	101.083	AIR6449 Antenna (ATI)	91
APXVAALL18_43-U-NA20 Antenna w/ Mounting Pipe (T-Mobile)	101.083	OPA65R-BU6DA Antenna w/ Mounting Pipe (ATI)	91
AIR32 B66A/B2A Antenna w/ Mount Pipe (T-Mobile)	101.083	RRUS-E2 B29 RRH w/ Mounting Pipe (ATI)	91
4449 B71+B85 RRH (T-Mobile)	101.083	B14 4478 RRH (ATI)	91
4415 B25 RRH (T-Mobile)	101.083	4426 B66 RRH (ATI)	91
AIR6449 B41 Antenna w/ Mount Pipe (T-Mobile)	101.083	4415 B25 RRH w/ Mounting Pipe (ATI)	91
APXVAALL18_43-U-NA20 Antenna w/ Mounting Pipe (T-Mobile)	101.083	RRUS-32 B30 RRH (ATI)	91
AIR32 B66A/B2A Antenna w/ Mount Pipe (T-Mobile)	101.083	B5/B12 4449 RRH (ATI)	91
4449 B71+B85 RRH (T-Mobile)	101.083	Squid Surge Arrestor (ATI)	91
4415 B25 RRH (T-Mobile)	101.083	8' Whip Antenna	91
SDX1926Q-43 Diplexer (T-Mobile)	101.083	2' HP Dish	84.5
Pirot 12' T-Frame Sector Mount (1) (ATI)	91	1' HP Dish	84.5
QD4616-7 Antenna w/ Mounting Pipe (ATI)	91	LLPX310R-V1 Antenna w/ Mounting Pipe (Sprint)	82
AIR6419 Antenna w/ Mounting Pipe (ATI)	91	NNVV-65B-R4 Antenna w/ Mounting Pipe (Sprint)	82
AIR6449 Antenna (ATI)	91	700 RRH (Sprint)	82
OPA65R-BU4DA Antenna w/ Mounting Pipe (ATI)	91	SPI-22132825WB (CT2037) (Sprint)	82
RRUS-E2 B29 RRH w/ Mounting Pipe (ATI)	91	RRH-800 w/ Mount Pipe (Sprint)	82
B14 4478 RRH (ATI)	91	RRH-800 (Sprint)	82
4426 B66 RRH (ATI)	91	RRH-1900 (Sprint)	82
4415 B25 RRH w/ Mounting Pipe (ATI)	91	PIROD 12' T-Frame (Sprint)	82
RRUS-32 B30 RRH (ATI)	91	APXVTM14 Antenna w/ Mount Pipe (Sprint)	82
B5/B12 4449 RRH (ATI)	91	LLPX310R-V1 Antenna w/ Mounting Pipe (Sprint)	82
Squid Surge Arrestor (ATI)	91	NNVV-65B-R4 Antenna w/ Mounting Pipe (Sprint)	82
Squid Surge Arrestor (ATI)	91	700 RRH (Sprint)	82
Pirot 12' T-Frame Sector Mount (1) (ATI)	91	SPI-22132825WB (CT2037) (Sprint)	82
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AIR6419 Antenna w/ Mounting Pipe (ATI)	91	RRH-800 (Sprint)	82
AIR6449 Antenna (ATI)	91	RRH-1900 (Sprint)	82
OPA65R-BU4DA Antenna w/ Mounting Pipe (ATI)	91	PIROD 12' T-Frame (Sprint)	82
RRUS-E2 B29 RRH w/ Mounting Pipe (ATI)	91	APXVTM14 Antenna w/ Mount Pipe (Sprint)	82
B14 4478 RRH (ATI)	91	LLPX310R-V1 Antenna w/ Mounting Pipe (Sprint)	82
4426 B66 RRH (ATI)	91	NNVV-65B-R4 Antenna w/ Mounting Pipe (Sprint)	82
4415 B25 RRH w/ Mounting Pipe (ATI)	91	700 RRH (Sprint)	82
		SPI-22132825WB (CT2037) (Sprint)	82
		RRH-800 w/ Mount Pipe (Sprint)	82
		RRH-800 (Sprint)	82
		RRH-1900 (Sprint)	82
		PIROD 12' T-Frame (Sprint)	82
		APXVTM14 Antenna w/ Mount Pipe (Sprint)	82

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	A139-52	52 ksi	66 ksi
A572-55	55 ksi	70 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
8. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.

Hudson Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
Phone: (978)-557-5553
FAX: (978)-336-5586

Job: **CT2037**

Project: **NEW HAVEN WHEELER ST**

Client: **Smartlink / AT&T**

Drawn by: **LBW**

App'd:

Code: **TIA-222-H**

Date: **03/14/22**

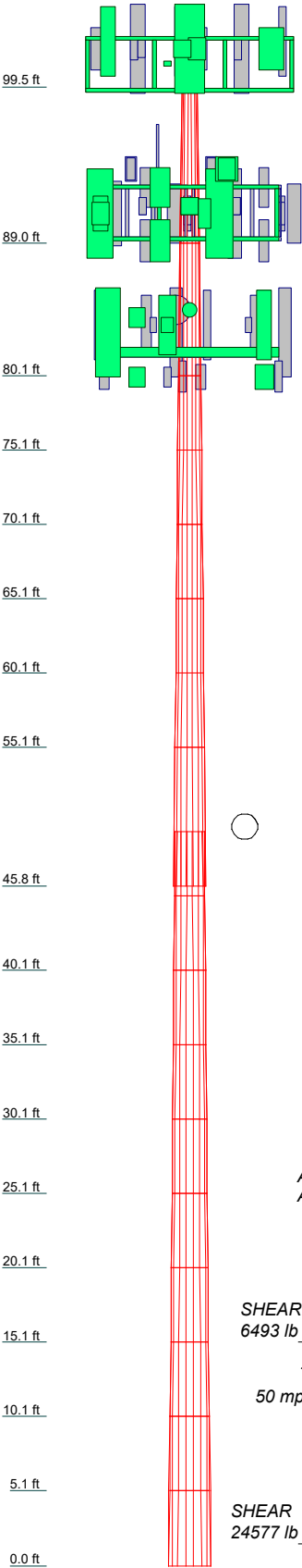
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Path:

Dwg No. **E-1**

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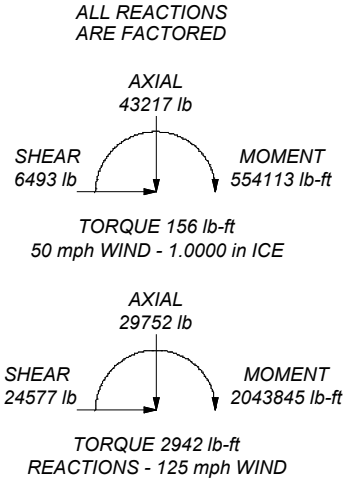
Section		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Length (ft)		10.52	8.90	5.00	5.00	5.00	5.00	5.00	4.34	9.33	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.08	
Number of Sides		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
Thickness (in)		0.1875	0.1875	0.5010	0.4840	0.4680	0.4540	0.4410	0.5930	0.6440	0.6300	0.6140	0.6000	0.5870	0.5640	0.5530	0.5430	0.5340		
Socket Length (ft)									3.67											
Top Dia (in)		12.7500	16.5000	18.1367	19.1596	20.1825	21.2054	22.2283	23.2512	24.9108	25.9207	26.9306	27.9405	28.9504	29.9604	30.9703	31.9802	32.9901		
Bot Dia (in)		16.5000	18.1367	19.1596	20.1825	21.2054	22.2283	23.2512	24.9108	25.9207	26.9306	27.9405	28.9504	29.9604	30.9703	31.9802	32.9901	34.0000		
Grade		A572-65																		
Weight (lb)		307.6	308.8	491.0	501.5	511.2	521.3	531.0	1411.0	843.2	855.8	869.5	883.1	896.8	910.7	923.4	936.6	965.7	13375.4	



MATERIAL STRENGTH					
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	A139-52	52 ksi	66 ksi
A572-55	55 ksi	70 ksi			

TOWER DESIGN NOTES

- Tower designed for Exposure C to the TIA-222-H Standard.
- Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
- Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
- Deflections are based upon a 60 mph wind.
- Tower Risk Category II.
- Topographic Category 1 with Crest Height of 0.00 ft
- Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
- Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.



Hudson Design Group LLC			Job: CT2037		
45 Beechwood Drive			Project: NEW HAVEN WHEELER ST		
North Andover, MA 01845			Client: Smartlink / AT&T	Drawn by: LBW	App'd:
Phone: (978)-557-5553			Code: TIA-222-H	Date: 03/14/22	Scale: NTS
FAX: (978)-336-5586			Path:		Dwg No. E-1

<i>tnxTower</i> <i>Hudson Design Group LLC</i> <i>45 Beechwood Drive</i> <i>North Andover, MA 01845</i> <i>Phone: (978)-557-5553</i> <i>FAX: (978)-336-5586</i>	Job	CT2037 (Rev. 1)	Page	1 of 32
	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 0.00 ft.

Basic wind speed of 125 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	99.50-88.98	10.52	0.00	18	12.7500	16.5000	0.1875	0.7500	A572-65 (65 ksi)
L2	88.98-80.08	8.90	0.00	18	16.5000	18.1367	0.1875	0.7500	A572-65 (65 ksi)
L3	80.08-75.08	5.00	0.00	18	18.1367	19.1596	0.5010	2.0040	A572-65 (65 ksi)
L4	75.08-70.08	5.00	0.00	18	19.1596	20.1825	0.4840	1.9360	A572-55 (55 ksi)
L5	70.08-65.08	5.00	0.00	18	20.1825	21.2054	0.4680	1.8720	A572-55 (55 ksi)
L6	65.08-60.08	5.00	0.00	18	21.2054	22.2283	0.4540	1.8160	A572-55 (55 ksi)
L7	60.08-55.08	5.00	0.00	18	22.2283	23.2512	0.4410	1.7640	A572-55 (55 ksi)
L8	55.08-45.75	9.33	3.67	18	23.2512	25.1600	0.5930	2.3720	A572-55 (55 ksi)
L9	45.75-45.08	4.34	0.00	18	23.2232	24.9108	0.6440	2.5760	A572-55 (55 ksi)
L10	45.08-40.08	5.00	0.00	18	24.9108	25.9207	0.6300	2.5200	A572-55 (55 ksi)
L11	40.08-35.08	5.00	0.00	18	25.9207	26.9306	0.6140	2.4560	A572-55 (55 ksi)
L12	35.08-30.08	5.00	0.00	18	26.9306	27.9405	0.6000	2.4000	A572-55

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	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L13	30.08-25.08	5.00	0.00	18	27.9405	28.9504	0.5870	2.3480	(55 ksi) A572-55
L14	25.08-20.08	5.00	0.00	18	28.9504	29.9604	0.5750	2.3000	(55 ksi) A572-55
L15	20.08-15.08	5.00	0.00	18	29.9604	30.9703	0.5640	2.2560	(55 ksi) A572-55
L16	15.08-10.08	5.00	0.00	18	30.9703	31.9802	0.5530	2.2120	(55 ksi) A572-55
L17	10.08-5.08	5.00	0.00	18	31.9802	32.9901	0.5430	2.1720	(55 ksi) A572-55
L18	5.08-0.00	5.08		18	32.9901	34.0000	0.5340	2.1360	(55 ksi) A139-52 (52 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	Iu/Q in ²	w in	w/t
L1	12.9178	7.4763	149.0644	4.4597	6.4770	23.0144	298.3249	3.7388	1.9140	10.208
	16.7256	9.7080	326.3677	5.7909	8.3820	38.9367	653.1649	4.8549	2.5740	13.728
L2	16.7256	9.7080	326.3677	5.7909	8.3820	38.9367	653.1649	4.8549	2.5740	13.728
	18.3876	10.6820	434.7914	6.3720	9.2134	47.1910	870.1549	5.3420	2.8621	15.264
L3	18.3392	28.0438	1101.9457	6.2607	9.2134	119.6019	2205.3414	14.0246	2.3103	4.611
	19.3779	29.6704	1305.0263	6.6238	9.7331	134.0816	2611.7698	14.8380	2.4903	4.971
L4	19.3805	28.6898	1264.1931	6.6298	9.7331	129.8863	2530.0497	14.3476	2.5202	5.207
	20.4192	30.2612	1483.5056	6.9930	10.2527	144.6940	2968.9633	15.1335	2.7003	5.579
L5	20.4217	29.2845	1437.9624	6.9986	10.2527	140.2519	2877.8169	14.6451	2.7284	5.83
	21.4603	30.8040	1673.6057	7.3618	10.7723	155.3613	3349.4135	15.4049	2.9085	6.215
L6	21.4625	29.9027	1626.8310	7.3667	10.7723	151.0192	3255.8026	14.9542	2.9331	6.461
	22.5012	31.3767	1879.4589	7.7299	11.2920	166.4420	3761.3908	15.6913	3.1131	6.857
L7	22.5032	30.4964	1828.9137	7.7345	11.2920	161.9658	3660.2338	15.2511	3.1360	7.111
	23.5419	31.9282	2098.7961	8.0976	11.8116	177.6893	4200.3538	15.9671	3.3161	7.519
L8	23.5184	42.6469	2766.1472	8.0437	11.8116	234.1888	5535.9341	21.3275	3.0485	5.141
	25.4567	46.2396	3525.7819	8.7213	12.7813	275.8551	7056.2031	23.1242	3.3845	5.707
L9	24.9312	46.1531	2972.7187	8.0156	11.7974	251.9815	5949.3490	23.0809	2.9538	4.587
	25.1957	49.6027	3690.3518	8.6147	12.6547	291.6194	7385.5595	24.8061	3.2509	5.048
L10	25.1979	48.5524	3616.3787	8.6197	12.6547	285.7739	7237.5158	24.2808	3.2755	5.199
	26.2234	50.5718	4086.6503	8.9782	13.1677	310.3538	8178.6778	25.2907	3.4532	5.481
L11	26.2258	49.3186	3990.4263	8.9839	13.1677	303.0462	7986.1033	24.6640	3.4814	5.67
	27.2513	51.2867	4487.4754	9.3424	13.6807	328.0140	8980.8556	25.6482	3.6591	5.96
L12	27.2535	50.1440	4392.1573	9.3474	13.6807	321.0467	8790.0940	25.0768	3.6838	6.14
	28.2790	52.0672	4917.1673	9.7059	14.1938	346.4313	9840.8046	26.0386	3.8615	6.436
L13	28.2810	50.9633	4817.4940	9.7105	14.1938	339.4090	9641.3271	25.4865	3.8844	6.617
	29.3065	52.8449	5371.0271	10.0690	14.7068	365.2070	10749.1215	26.4275	4.0622	6.92
L14	29.3083	51.7865	5267.9082	10.0733	14.7068	358.1953	10542.7480	25.8982	4.0833	7.101
	30.3339	53.6298	5850.6893	10.4318	15.2199	384.4109	11709.0771	26.8200	4.2610	7.41
L15	30.3356	52.6236	5745.2102	10.4357	15.2199	377.4806	11497.9801	26.3168	4.2804	7.589
	31.3611	54.4314	6357.9075	10.7942	15.7329	404.1151	12724.1809	27.2209	4.4581	7.904
L16	31.3628	53.3891	6240.6739	10.7981	15.7329	396.6636	12489.5594	26.6996	4.4775	8.097
	32.3882	55.1617	6883.1395	11.1567	16.2459	423.6836	13775.3360	27.5861	4.6552	8.418
L17	32.3898	54.1814	6765.1242	11.1602	16.2459	416.4193	13539.1502	27.0959	4.6728	8.606
	33.4153	55.9220	7438.2687	11.5187	16.7590	443.8380	14886.3249	27.9663	4.8506	8.933
L18	33.4166	55.0104	7321.0712	11.5219	16.7590	436.8449	14651.7756	27.5104	4.8664	9.113
	34.4421	56.7221	8025.9611	11.8804	17.2720	464.6805	16062.4829	28.3664	5.0442	9.446

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	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1 99.50-88.98				1	1	1			
L2 88.98-80.08				1	1	1			
L3 80.08-75.08				1	1	1			
L4 75.08-70.08				1	1	1			
L5 70.08-65.08				1	1	1			
L6 65.08-60.08				1	1	1			
L7 60.08-55.08				1	1	1			
L8 55.08-45.75				1	1	1			
L9 45.75-45.08				1	1	1			
L10				1	1	1			
45.08-40.08									
L11				1	1	1			
40.08-35.08									
L12				1	1	1			
35.08-30.08									
L13				1	1	1			
30.08-25.08									
L14				1	1	1			
25.08-20.08									
L15				1	1	1			
20.08-15.08									
L16				1	1	1			
15.08-10.08									
L17 10.08-5.08				1	1	1			
L18 5.08-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		$C_A A_A$ ft ² /ft	Weight plf
DC Cables (In Face) (AT&T)	A	No	Yes	Inside Pole	91.00 - 0.00	8	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.88 0.88 0.88
Fiber Cable (AT&T)	A	No	Yes	Inside Pole	91.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.35 0.35 0.35
1-1/4 Hybrid (T-Mobile)	A	No	Yes	Inside Pole	99.42 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.48 0.48 0.48
1" Hybrid (T-Mobile)	A	No	Yes	Inside Pole	99.42 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.48 0.48 0.48
1-1/2" Hybrid Cables (In Face) (T-Mobile)	A	No	Yes	Inside Pole	99.42 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.50 1.50 1.50
DC Cables (In Face) (T-Mobile)	A	No	Yes	Inside Pole	99.42 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.88 0.88 0.88
1/2" Cable (Sprint)	A	No	Yes	Inside Pole	82.00 - 0.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.35 0.35 0.35
1-1/4" Fiber Cable (In Face) (Sprint)	A	No	Yes	Inside Pole	82.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.48 0.48 0.48
7/8 Cable (In Face)	A	No	Yes	Inside Pole	82.00 - 0.00	1	No Ice	0.00	0.54

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	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
(Sprint)						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
2" Cable	A	No	Yes	Inside Pole	82.00 - 0.00	2	No Ice	0.00
(Sprint)						1/2" Ice	0.00	0.71
						1" Ice	0.00	0.71

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L1	99.50-88.98	A	0.000	0.000	0.000	0.000	92.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	88.98-80.08	A	0.000	0.000	0.000	0.000	145.68
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	80.08-75.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	75.08-70.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	70.08-65.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L6	65.08-60.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L7	60.08-55.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L8	55.08-45.75	A	0.000	0.000	0.000	0.000	187.93
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L9	45.75-45.08	A	0.000	0.000	0.000	0.000	13.50
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L10	45.08-40.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L11	40.08-35.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L12	35.08-30.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L13	30.08-25.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L14	25.08-20.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L15	20.08-15.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L16	15.08-10.08	A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i> <i>ft²</i>	<i>A_F</i> <i>ft²</i>	<i>C_AA_A</i> <i>In Face ft²</i>	<i>C_AA_A</i> <i>Out Face ft²</i>	<i>Weight lb</i>
L17	10.08-5.08	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	0.000	0.000	100.72
		B	0.000	0.000	0.000	0.000	0.00
L18	5.08-0.00	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	0.000	0.000	102.33
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R</i> <i>ft²</i>	<i>A_F</i> <i>ft²</i>	<i>C_AA_A</i> <i>In Face ft²</i>	<i>C_AA_A</i> <i>Out Face ft²</i>	<i>Weight lb</i>
L1	99.50-88.98	A	1.110	0.000	0.000	0.000	0.000	92.14
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	88.98-80.08	A	1.099	0.000	0.000	0.000	0.000	145.68
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	80.08-75.08	A	1.089	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	75.08-70.08	A	1.082	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L5	70.08-65.08	A	1.074	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L6	65.08-60.08	A	1.066	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L7	60.08-55.08	A	1.057	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L8	55.08-45.75	A	1.043	0.000	0.000	0.000	0.000	187.93
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L9	45.75-45.08	A	1.032	0.000	0.000	0.000	0.000	13.50
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L10	45.08-40.08	A	1.026	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L11	40.08-35.08	A	1.013	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L12	35.08-30.08	A	0.999	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L13	30.08-25.08	A	0.982	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L14	25.08-20.08	A	0.963	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L15	20.08-15.08	A	0.939	0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L16	15.08-10.08	A	0.908	0.000	0.000	0.000	0.000	100.72

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight lb</i>
L17	10.08-5.08	B	0.863	0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	0.000	0.000	100.72
		B		0.000	0.000	0.000	0.000	0.00
L18	5.08-0.00	C	0.773	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	0.000	0.000	102.33
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_AA_A Front ft²</i>	<i>C_AA_A Side ft²</i>	<i>Weight lb</i>
PiROD 13' Platform w/handrail (T-Mobile)	C	None		0.0000	101.08	No Ice 31.30 1/2" Ice 40.20 1" Ice 49.10	31.30 40.20 49.10	1822.00 2452.00 3082.00
AIR6449 B41 Antenna w/ Mount Pipe (T-Mobile)	A	From Face	3.50 -5.50 1.00	0.0000	101.08	No Ice 6.45 1/2" Ice 7.02 1" Ice 7.53	3.92 4.64 5.25	124.90 179.90 240.81
APXVAALL18_43-U-NA20 Antenna w/ Mounting Pipe (T-Mobile)	A	From Face	3.50 0.00 1.00	0.0000	101.08	No Ice 14.67 1/2" Ice 15.18 1" Ice 15.71	7.58 8.54 9.38	75.90 177.65 288.05
AIR32 B66A/B2A Antenna w/ Mount Pipe (T-Mobile)	A	From Face	3.50 5.50 1.50	0.0000	101.08	No Ice 6.81 1/2" Ice 7.30 1" Ice 7.76	6.14 6.99 7.73	153.90 215.61 284.26
4449 B71+B85 RRH (T-Mobile)	A	From Face	3.50 -0.50 1.00	0.0000	101.08	No Ice 1.97 1/2" Ice 2.15 1" Ice 2.33	1.42 1.57 1.74	71.00 89.58 110.99
4415 B25 RRH (T-Mobile)	A	From Face	3.50 0.50 1.00	0.0000	101.08	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97	0.68 0.79 0.91	44.00 56.41 71.18
AIR6449 B41 Antenna w/ Mount Pipe (T-Mobile)	B	From Face	3.50 -5.50 1.00	0.0000	101.08	No Ice 6.45 1/2" Ice 7.02 1" Ice 7.53	3.92 4.64 5.25	124.90 179.90 240.81
APXVAALL18_43-U-NA20 Antenna w/ Mounting Pipe (T-Mobile)	B	From Face	3.50 0.00 1.00	0.0000	101.08	No Ice 14.67 1/2" Ice 15.18 1" Ice 15.71	7.58 8.54 9.38	75.90 177.65 288.05
AIR32 B66A/B2A Antenna w/ Mount Pipe (T-Mobile)	B	From Face	3.50 5.50 1.50	0.0000	101.08	No Ice 6.81 1/2" Ice 7.30 1" Ice 7.76	6.14 6.99 7.73	153.90 215.61 284.26
4449 B71+B85 RRH (T-Mobile)	B	From Face	3.50 -0.50 1.00	0.0000	101.08	No Ice 1.97 1/2" Ice 2.15 1" Ice 2.33	1.42 1.57 1.74	71.00 89.58 110.99
4415 B25 RRH (T-Mobile)	B	From Face	3.50 0.50 1.00	0.0000	101.08	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97	0.68 0.79 0.91	44.00 56.41 71.18
AIR6449 B41 Antenna w/ Mount Pipe (T-Mobile)	C	From Face	3.50 -5.50 1.00	0.0000	101.08	No Ice 6.45 1/2" Ice 7.02 1" Ice 7.53	3.92 4.64 5.25	124.90 179.90 240.81
APXVAALL18_43-U-NA20 Antenna w/ Mounting Pipe (T-Mobile)	C	From Face	3.50 0.00 1.00	0.0000	101.08	No Ice 14.67 1/2" Ice 15.18 1" Ice 15.71	7.58 8.54 9.38	75.90 177.65 288.05
AIR32 B66A/B2A Antenna w/ Mount Pipe	C	From Face	3.50 5.50	0.0000	101.08	No Ice 6.81 1/2" Ice 7.30	6.14 6.99	153.90 215.61

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	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
(T-Mobile)			1.50			1" Ice	7.76	7.73	284.26
4449 B71+B85 RRH	C	From Face	3.50	0.0000	101.08	No Ice	1.97	1.42	71.00
(T-Mobile)			-0.50			1/2" Ice	2.15	1.57	89.58
			1.00			1" Ice	2.33	1.74	110.99
4415 B25 RRH	C	From Face	3.50	0.0000	101.08	No Ice	1.64	0.68	44.00
(T-Mobile)			0.50			1/2" Ice	1.80	0.79	56.41
			1.00			1" Ice	1.97	0.91	71.18
SDX1926Q-43 Diplexer	C	From Face	3.00	0.0000	101.08	No Ice	0.24	0.10	7.00
(T-Mobile)			1.50			1/2" Ice	0.31	0.14	9.47
			0.00			1" Ice	0.38	0.20	13.04

Pirot 12' T-Frame Sector	A	From Face	3.00	0.0000	91.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(AT&T)			0.00			1" Ice	23.20	23.20	735.00
QD4616-7 Antenna w/	A	From Face	4.00	0.0000	91.00	No Ice	9.93	6.28	84.74
Mounting Pipe			-2.00			1/2" Ice	10.45	6.98	165.78
(AT&T)			0.00			1" Ice	10.97	7.69	254.88
AIR6419 Antenna w/	A	From Face	4.00	0.0000	91.00	No Ice	5.46	3.92	95.20
Mounting Pipe			2.00			1/2" Ice	6.28	4.95	145.49
(AT&T)			1.75			1" Ice	7.01	5.84	201.59
AIR6449 Antenna	A	From Face	4.00	0.0000	91.00	No Ice	4.39	2.37	82.00
(AT&T)			2.00			1/2" Ice	4.66	2.59	113.80
			-1.83			1" Ice	4.95	2.82	149.50
OPA65R-BU4DA Antenna	A	From Face	4.00	0.0000	91.00	No Ice	8.88	4.97	74.90
w/ Mounting Pipe			6.00			1/2" Ice	9.43	5.77	143.42
(AT&T)			0.00			1" Ice	9.95	6.45	218.78
RRUS-E2 B29 RRH w/	A	From Face	2.50	0.0000	91.00	No Ice	3.93	2.47	71.25
Mounting Pipe			-2.50			1/2" Ice	4.35	2.93	107.75
(AT&T)			3.00			1" Ice	4.78	3.41	148.93
B14 4478 RRH	A	From Face	2.50	0.0000	91.00	No Ice	2.02	1.25	60.00
(AT&T)			-2.50			1/2" Ice	2.20	1.40	77.66
			3.00			1" Ice	2.39	1.56	98.08
4426 B66 RRH	A	From Face	3.00	0.0000	91.00	No Ice	1.64	0.72	49.00
(AT&T)			0.00			1/2" Ice	1.80	0.84	61.79
			0.50			1" Ice	1.97	0.96	76.97
4415 B25 RRH w/ Mounting	A	From Face	3.00	0.0000	91.00	No Ice	2.77	2.10	65.90
Pipe			0.00			1/2" Ice	3.33	2.71	94.20
(AT&T)			0.50			1" Ice	3.79	3.20	126.54
RRUS-32 B30 RRH	A	From Face	3.00	0.0000	91.00	No Ice	2.74	1.67	60.00
(AT&T)			6.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
B5/B12 4449 RRH	A	From Face	3.00	0.0000	91.00	No Ice	1.97	1.40	73.00
(AT&T)			6.00			1/2" Ice	2.15	1.56	91.48
			0.00			1" Ice	2.33	1.72	112.77
Squid Surge Arrestor	A	From Face	1.50	0.0000	91.00	No Ice	1.88	1.88	33.00
(AT&T)			-1.00			1/2" Ice	2.07	2.07	51.91
			0.00			1" Ice	2.27	2.27	73.78
Squid Surge Arrestor	A	From Face	1.50	0.0000	91.00	No Ice	1.88	1.88	33.00
(AT&T)			-1.00			1/2" Ice	2.07	2.07	51.91
			0.00			1" Ice	2.27	2.27	73.78
Pirot 12' T-Frame Sector	B	From Face	3.00	0.0000	91.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(AT&T)			0.00			1" Ice	23.20	23.20	735.00
QD6616-7 Antenna w/	B	From Face	4.00	0.0000	91.00	No Ice	14.05	8.70	88.20
Mounting Pipe			-2.00			1/2" Ice	14.77	9.99	193.27
(AT&T)			0.00			1" Ice	15.45	11.12	307.32
AIR6419 Antenna w/	B	From Face	4.00	0.0000	91.00	No Ice	5.46	3.92	95.20

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	Client	Smartlink / AT&T	Designed by	LBW

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
Mounting Pipe (AT&T)			2.00			1/2" Ice	6.28	4.95	145.49
			1.75			1" Ice	7.01	5.84	201.59
AIR6449 Antenna (AT&T)	B	From Face	4.00	0.0000	91.00	No Ice	4.39	2.37	82.00
			2.00			1/2" Ice	4.66	2.59	113.80
			-1.83			1" Ice	4.95	2.82	149.50
OPA65R-BU4DA Antenna w/ Mounting Pipe (AT&T)	B	From Face	4.00	0.0000	91.00	No Ice	8.88	4.97	74.90
			6.00			1/2" Ice	9.43	5.77	143.42
			0.00			1" Ice	9.95	6.45	218.78
RRUS-E2 B29 RRH w/ Mounting Pipe (AT&T)	B	From Face	2.50	0.0000	91.00	No Ice	3.93	2.47	71.25
			-2.50			1/2" Ice	4.35	2.93	107.75
			3.00			1" Ice	4.78	3.41	148.93
B14 4478 RRH (AT&T)	B	From Face	2.50	0.0000	91.00	No Ice	2.02	1.25	60.00
			-2.50			1/2" Ice	2.20	1.40	77.66
			3.00			1" Ice	2.39	1.56	98.08
4426 B66 RRH (AT&T)	B	From Face	3.00	0.0000	91.00	No Ice	1.64	0.72	49.00
			0.00			1/2" Ice	1.80	0.84	61.79
			0.50			1" Ice	1.97	0.96	76.97
4415 B25 RRH w/ Mounting Pipe (AT&T)	B	From Face	3.00	0.0000	91.00	No Ice	2.77	2.10	65.90
			0.00			1/2" Ice	3.33	2.71	94.20
			0.50			1" Ice	3.79	3.20	126.54
RRUS-32 B30 RRH (AT&T)	B	From Face	3.00	0.0000	91.00	No Ice	2.74	1.67	60.00
			6.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
B5/B12 4449 RRH (AT&T)	B	From Face	3.00	0.0000	91.00	No Ice	1.97	1.40	73.00
			6.00			1/2" Ice	2.15	1.56	91.48
			0.00			1" Ice	2.33	1.72	112.77
Squid Surge Arrestor (AT&T)	B	From Face	1.50	0.0000	91.00	No Ice	1.88	1.88	33.00
			-1.00			1/2" Ice	2.07	2.07	51.91
			0.00			1" Ice	2.27	2.27	73.78
Pirot 12' T-Frame Sector Mount (1) (AT&T)	C	From Face	3.00	0.0000	91.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
QD6616-7 Antenna w/ Mounting Pipe (AT&T)	C	From Face	4.00	0.0000	91.00	No Ice	14.05	8.70	88.20
			-2.00			1/2" Ice	14.77	9.99	193.27
			0.00			1" Ice	15.45	11.12	307.32
AIR6419 Antenna w/ Mounting Pipe (AT&T)	C	From Face	4.00	0.0000	91.00	No Ice	5.46	3.92	95.20
			2.00			1/2" Ice	6.28	4.95	145.49
			1.75			1" Ice	7.01	5.84	201.59
AIR6449 Antenna (AT&T)	C	From Face	4.00	0.0000	91.00	No Ice	4.39	2.37	82.00
			2.00			1/2" Ice	4.66	2.59	113.80
			-1.83			1" Ice	4.95	2.82	149.50
OPA65R-BU6DA Antenna w/ Mounting Pipe (AT&T)	C	From Face	4.00	0.0000	91.00	No Ice	12.89	7.10	85.90
			6.00			1/2" Ice	13.39	8.05	176.82
			0.00			1" Ice	13.90	8.88	276.10
RRUS-E2 B29 RRH w/ Mounting Pipe (AT&T)	C	From Face	2.50	0.0000	91.00	No Ice	3.93	2.47	71.25
			-2.50			1/2" Ice	4.35	2.93	107.75
			3.00			1" Ice	4.78	3.41	148.93
B14 4478 RRH (AT&T)	C	From Face	2.50	0.0000	91.00	No Ice	2.02	1.25	60.00
			-2.50			1/2" Ice	2.20	1.40	77.66
			3.00			1" Ice	2.39	1.56	98.08
4426 B66 RRH (AT&T)	C	From Face	3.00	0.0000	91.00	No Ice	1.64	0.72	49.00
			0.00			1/2" Ice	1.80	0.84	61.79
			0.50			1" Ice	1.97	0.96	76.97
4415 B25 RRH w/ Mounting Pipe (AT&T)	C	From Face	3.00	0.0000	91.00	No Ice	2.77	2.10	65.90
			0.00			1/2" Ice	3.33	2.71	94.20
			0.50			1" Ice	3.79	3.20	126.54
RRUS-32 B30 RRH	C	From Face	3.00	0.0000	91.00	No Ice	2.74	1.67	60.00

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	Client	Smartlink / AT&T	Designed by	LBW

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight lb</i>
(AT&T)			6.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
B5/B12 4449 RRH (AT&T)	C	From Face	3.00	0.0000	91.00	No Ice	1.97	1.40	73.00
			6.00			1/2" Ice	2.15	1.56	91.48
			0.00			1" Ice	2.33	1.72	112.77
Squid Surge Arrestor (AT&T)	C	From Face	1.50	0.0000	91.00	No Ice	1.88	1.88	33.00
			-1.00			1/2" Ice	2.07	2.07	51.91
			0.00			1" Ice	2.27	2.27	73.78
8' Whip Antenna	A	From Face	3.00	0.0000	91.00	No Ice	4.00	4.00	10.00
			2.00			1/2" Ice	4.92	4.92	32.30
			2.00			1" Ice	5.61	5.61	61.40

PiROD 12' T-Frame (Sprint)	A	From Face	1.50	0.0000	82.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
APXVTM14 Antenna w/ Mount Pipe (Sprint)	A	From Face	3.50	0.0000	82.00	No Ice	6.65	5.03	52.90
			-5.00			1/2" Ice	7.14	5.89	108.31
			1.50			1" Ice	7.60	6.63	170.47
LLPX310R-V1 Antenna w/ Mounting Pipe (Sprint)	A	From Face	3.50	0.0000	82.00	No Ice	6.34	5.13	49.90
			1.50			1/2" Ice	6.85	5.93	107.04
			1.50			1" Ice	7.31	6.61	170.60
NNVV-65B-R4 Antenna w/ Mounting Pipe (Sprint)	A	From Face	3.50	0.0000	82.00	No Ice	12.27	7.17	98.90
			5.50			1/2" Ice	12.77	8.13	186.93
			1.00			1" Ice	13.27	8.97	283.27
700 RRH (Sprint)	A	From Face	3.00	0.0000	82.00	No Ice	2.50	0.88	50.00
			-5.00			1/2" Ice	2.70	1.02	66.72
			-2.00			1" Ice	2.90	1.16	86.23
SPI-22132825WB (CT2037) (Sprint)	A	From Face	3.00	0.0000	82.00	No Ice	1.00	0.80	50.00
			1.50			1/2" Ice	1.13	0.91	60.60
			1.50			1" Ice	1.26	1.04	73.33
RRH-800 w/ Mount Pipe (Sprint)	A	From Face	3.00	0.0000	82.00	No Ice	2.82	3.27	85.90
			3.50			1/2" Ice	3.38	3.94	122.93
			-2.00			1" Ice	3.84	4.48	164.61
RRH-800 (Sprint)	A	From Face	3.00	0.0000	82.00	No Ice	1.71	1.84	64.00
			3.50			1/2" Ice	1.88	2.01	85.14
			2.00			1" Ice	2.05	2.19	109.25
RRH-1900 (Sprint)	A	From Face	3.00	0.0000	82.00	No Ice	2.31	2.38	60.00
			5.50			1/2" Ice	2.52	2.58	83.90
			-2.00			1" Ice	2.73	2.79	111.08
PiROD 12' T-Frame (Sprint)	B	From Face	1.50	0.0000	82.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
APXVTM14 Antenna w/ Mount Pipe (Sprint)	B	From Face	3.50	0.0000	82.00	No Ice	6.65	5.03	52.90
			-5.00			1/2" Ice	7.14	5.89	108.31
			1.50			1" Ice	7.60	6.63	170.47
LLPX310R-V1 Antenna w/ Mounting Pipe (Sprint)	B	From Face	3.50	0.0000	82.00	No Ice	6.34	5.13	49.90
			1.50			1/2" Ice	6.85	5.93	107.04
			1.50			1" Ice	7.31	6.61	170.60
NNVV-65B-R4 Antenna w/ Mounting Pipe (Sprint)	B	From Face	3.50	0.0000	82.00	No Ice	12.27	7.17	98.90
			5.50			1/2" Ice	12.77	8.13	186.93
			1.00			1" Ice	13.27	8.97	283.27
700 RRH (Sprint)	B	From Face	3.00	0.0000	82.00	No Ice	2.50	0.88	50.00
			-5.00			1/2" Ice	2.70	1.02	66.72
			-2.00			1" Ice	2.90	1.16	86.23
SPI-22132825WB (CT2037) (Sprint)	B	From Face	3.00	0.0000	82.00	No Ice	1.00	0.80	50.00
			1.50			1/2" Ice	1.13	0.91	60.60
			1.50			1" Ice	1.26	1.04	73.33

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	Client	Smartlink / AT&T	Designed by	LBW

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
RRH-800 w/ Mount Pipe (Sprint)	B	From Face	3.00 3.50 -2.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.82 3.38 3.84	3.27 3.94 4.48	85.90 122.93 164.61
RRH-800 (Sprint)	B	From Face	3.00 3.50 2.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.71 1.88 2.05	1.84 2.01 2.19	64.00 85.14 109.25
RRH-1900 (Sprint)	B	From Face	3.00 5.50 -2.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	60.00 83.90 111.08
PiROD 12' T-Frame (Sprint)	C	From Face	1.50 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	12.20 17.60 23.00	12.20 17.60 23.00	360.00 490.00 620.00
APXVTM14 Antenna w/ Mount Pipe (Sprint)	C	From Face	3.50 -5.00 1.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	6.65 7.14 7.60	5.03 5.89 6.63	52.90 108.31 170.47
LLPX310R-V1 Antenna w/ Mounting Pipe (Sprint)	C	From Face	3.50 1.50 1.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	6.34 6.85 7.31	5.13 5.93 6.61	49.90 107.04 170.60
NNVV-65B-R4 Antenna w/ Mounting Pipe (Sprint)	C	From Face	3.50 5.50 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	12.27 12.77 13.27	7.17 8.13 8.97	98.90 186.93 283.27
700 RRH (Sprint)	C	From Face	3.00 -5.00 -2.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.50 2.70 2.90	0.88 1.02 1.16	50.00 66.72 86.23
SPI-22132825WB (CT2037) (Sprint)	C	From Face	3.00 1.50 1.50	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.26	0.80 0.91 1.04	50.00 60.60 73.33
RRH-800 w/ Mount Pipe (Sprint)	C	From Face	3.00 3.50 -2.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.82 3.38 3.84	3.27 3.94 4.48	85.90 122.93 164.61
RRH-800 (Sprint)	C	From Face	3.00 3.50 2.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.71 1.88 2.05	1.84 2.01 2.19	64.00 85.14 109.25

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft²	Weight lb	
2' HP Dish	A	Paraboloid w/Radome	From Face	1.00	0.0000		84.50	2.00	No Ice	3.14	41.00
				1.00					1/2" Ice	3.41	58.50
				0.00					1" Ice	3.68	76.01
1' HP Dish	C	Paraboloid w/Radome	From Face	3.00	0.0000		84.50	1.00	No Ice	3.14	30.00
				0.00					1/2" Ice	3.41	58.50
				0.00					1" Ice	3.68	76.01

Tower Pressures - No Ice

$$G_H = 1.100$$

<i>tnxTower</i> Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Job	CT2037 (Rev. 1)	Page	11 of 32
	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Section Elevation	z	K_z	q_z	A_G	F_{ac}	A_F	A_R	A_{leg}	Leg %	C_{AA} In Face ft^2	C_{AA} Out Face ft^2
ft	ft		psf	ft^2	ft^2	ft^2	ft^2	ft^2			
L1 99.50-88.98	94.02	1.249	47	12.994	A	0.000	12.994	12.994	100.00	0.000	0.000
					B	0.000	12.994		100.00	0.000	0.000
					C	0.000	12.994		100.00	0.000	0.000
L2 88.98-80.08	84.46	1.221	46	13.021	A	0.000	13.021	13.021	100.00	0.000	0.000
					B	0.000	13.021		100.00	0.000	0.000
					C	0.000	13.021		100.00	0.000	0.000
L3 80.08-75.08	77.56	1.2	46	7.858	A	0.000	7.858	7.858	100.00	0.000	0.000
					B	0.000	7.858		100.00	0.000	0.000
					C	0.000	7.858		100.00	0.000	0.000
L4 75.08-70.08	72.56	1.183	45	8.292	A	0.000	8.292	8.292	100.00	0.000	0.000
					B	0.000	8.292		100.00	0.000	0.000
					C	0.000	8.292		100.00	0.000	0.000
L5 70.08-65.08	67.56	1.165	44	8.725	A	0.000	8.725	8.725	100.00	0.000	0.000
					B	0.000	8.725		100.00	0.000	0.000
					C	0.000	8.725		100.00	0.000	0.000
L6 65.08-60.08	62.56	1.147	44	9.159	A	0.000	9.159	9.159	100.00	0.000	0.000
					B	0.000	9.159		100.00	0.000	0.000
					C	0.000	9.159		100.00	0.000	0.000
L7 60.08-55.08	57.56	1.127	43	9.593	A	0.000	9.593	9.593	100.00	0.000	0.000
					B	0.000	9.593		100.00	0.000	0.000
					C	0.000	9.593		100.00	0.000	0.000
L8 55.08-45.75	50.35	1.095	42	19.039	A	0.000	19.039	19.039	100.00	0.000	0.000
					B	0.000	19.039		100.00	0.000	0.000
					C	0.000	19.039		100.00	0.000	0.000
L9 45.75-45.08	45.41	1.072	41	1.399	A	0.000	1.399	1.399	100.00	0.000	0.000
					B	0.000	1.399		100.00	0.000	0.000
					C	0.000	1.399		100.00	0.000	0.000
L10 45.08-40.08	42.56	1.057	40	10.713	A	0.000	10.713	10.713	100.00	0.000	0.000
					B	0.000	10.713		100.00	0.000	0.000
					C	0.000	10.713		100.00	0.000	0.000
L11 40.08-35.08	37.56	1.03	39	11.141	A	0.000	11.141	11.141	100.00	0.000	0.000
					B	0.000	11.141		100.00	0.000	0.000
					C	0.000	11.141		100.00	0.000	0.000
L12 35.08-30.08	32.56	0.999	38	11.569	A	0.000	11.569	11.569	100.00	0.000	0.000
					B	0.000	11.569		100.00	0.000	0.000
					C	0.000	11.569		100.00	0.000	0.000
L13 30.08-25.08	27.57	0.965	37	11.997	A	0.000	11.997	11.997	100.00	0.000	0.000
					B	0.000	11.997		100.00	0.000	0.000
					C	0.000	11.997		100.00	0.000	0.000
L14 25.08-20.08	22.57	0.925	35	12.425	A	0.000	12.425	12.425	100.00	0.000	0.000
					B	0.000	12.425		100.00	0.000	0.000
					C	0.000	12.425		100.00	0.000	0.000
L15 20.08-15.08	17.57	0.878	33	12.853	A	0.000	12.853	12.853	100.00	0.000	0.000
					B	0.000	12.853		100.00	0.000	0.000
					C	0.000	12.853		100.00	0.000	0.000
L16 15.08-10.08	12.57	0.85	32	13.281	A	0.000	13.281	13.281	100.00	0.000	0.000
					B	0.000	13.281		100.00	0.000	0.000
					C	0.000	13.281		100.00	0.000	0.000
L17 10.08-5.08	7.57	0.85	32	13.709	A	0.000	13.709	13.709	100.00	0.000	0.000
					B	0.000	13.709		100.00	0.000	0.000
					C	0.000	13.709		100.00	0.000	0.000
L18 5.08-0.00	2.53	0.85	32	14.363	A	0.000	14.363	14.363	100.00	0.000	0.000
					B	0.000	14.363		100.00	0.000	0.000
					C	0.000	14.363		100.00	0.000	0.000

Tower Pressure - With Ice

$$G_H = 1.100$$

<i>tnxTower</i> <i>Hudson Design Group LLC</i> <i>45 Beechwood Drive</i> <i>North Andover, MA 01845</i> <i>Phone: (978)-557-5553</i> <i>FAX: (978)-336-5586</i>	Job	CT2037 (Rev. 1)	Page	12 of 32
	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Section Elevation	<i>z</i>	<i>K_Z</i>	<i>q_z</i>	<i>t_z</i>	<i>A_G</i>	<i>F</i> <i>a</i> <i>c</i> <i>e</i>	<i>A_F</i>	<i>A_R</i>	<i>A_{leg}</i>	<i>Leg</i> %	<i>C_AA_A</i> <i>In</i> <i>Face</i> <i>ft</i> ²	<i>C_AA_A</i> <i>Out</i> <i>Face</i> <i>ft</i> ²
<i>ft</i>	<i>ft</i>		<i>psf</i>	<i>in</i>	<i>ft</i> ²		<i>ft</i> ²	<i>ft</i> ²	<i>ft</i> ²			
L1 99.50-88.98	94.02	1.249	8	1.1104	14.941	A	0.000	14.941	14.941	100.00	0.000	0.000
						B	0.000	14.941		100.00	0.000	0.000
						C	0.000	14.941		100.00	0.000	0.000
L2 88.98-80.08	84.46	1.221	7	1.0985	14.651	A	0.000	14.651	14.651	100.00	0.000	0.000
						B	0.000	14.651		100.00	0.000	0.000
						C	0.000	14.651		100.00	0.000	0.000
L3 80.08-75.08	77.56	1.2	7	1.0892	8.765	A	0.000	8.765	8.765	100.00	0.000	0.000
						B	0.000	8.765		100.00	0.000	0.000
						C	0.000	8.765		100.00	0.000	0.000
L4 75.08-70.08	72.56	1.183	7	1.0820	9.193	A	0.000	9.193	9.193	100.00	0.000	0.000
						B	0.000	9.193		100.00	0.000	0.000
						C	0.000	9.193		100.00	0.000	0.000
L5 70.08-65.08	67.56	1.165	7	1.0743	9.621	A	0.000	9.621	9.621	100.00	0.000	0.000
						B	0.000	9.621		100.00	0.000	0.000
						C	0.000	9.621		100.00	0.000	0.000
L6 65.08-60.08	62.56	1.147	7	1.0661	10.047	A	0.000	10.047	10.047	100.00	0.000	0.000
						B	0.000	10.047		100.00	0.000	0.000
						C	0.000	10.047		100.00	0.000	0.000
L7 60.08-55.08	57.56	1.127	7	1.0572	10.474	A	0.000	10.474	10.474	100.00	0.000	0.000
						B	0.000	10.474		100.00	0.000	0.000
						C	0.000	10.474		100.00	0.000	0.000
L8 55.08-45.75	50.35	1.095	7	1.0432	20.661	A	0.000	20.661	20.661	100.00	0.000	0.000
						B	0.000	20.661		100.00	0.000	0.000
						C	0.000	20.661		100.00	0.000	0.000
L9 45.75-45.08	45.41	1.072	7	1.0324	1.516	A	0.000	1.516	1.516	100.00	0.000	0.000
						B	0.000	1.516		100.00	0.000	0.000
						C	0.000	1.516		100.00	0.000	0.000
L10 45.08-40.08	42.56	1.057	6	1.0258	11.568	A	0.000	11.568	11.568	100.00	0.000	0.000
						B	0.000	11.568		100.00	0.000	0.000
						C	0.000	11.568		100.00	0.000	0.000
L11 40.08-35.08	37.56	1.03	6	1.0130	11.985	A	0.000	11.985	11.985	100.00	0.000	0.000
						B	0.000	11.985		100.00	0.000	0.000
						C	0.000	11.985		100.00	0.000	0.000
L12 35.08-30.08	32.56	0.999	6	0.9987	12.401	A	0.000	12.401	12.401	100.00	0.000	0.000
						B	0.000	12.401		100.00	0.000	0.000
						C	0.000	12.401		100.00	0.000	0.000
L13 30.08-25.08	27.57	0.965	6	0.9822	12.816	A	0.000	12.816	12.816	100.00	0.000	0.000
						B	0.000	12.816		100.00	0.000	0.000
						C	0.000	12.816		100.00	0.000	0.000
L14 25.08-20.08	22.57	0.925	6	0.9627	13.228	A	0.000	13.228	13.228	100.00	0.000	0.000
						B	0.000	13.228		100.00	0.000	0.000
						C	0.000	13.228		100.00	0.000	0.000
L15 20.08-15.08	17.57	0.878	5	0.9389	13.636	A	0.000	13.636	13.636	100.00	0.000	0.000
						B	0.000	13.636		100.00	0.000	0.000
						C	0.000	13.636		100.00	0.000	0.000
L16 15.08-10.08	12.57	0.85	5	0.9080	14.038	A	0.000	14.038	14.038	100.00	0.000	0.000
						B	0.000	14.038		100.00	0.000	0.000
						C	0.000	14.038		100.00	0.000	0.000
L17 10.08-5.08	7.57	0.85	5	0.8631	14.429	A	0.000	14.429	14.429	100.00	0.000	0.000
						B	0.000	14.429		100.00	0.000	0.000
						C	0.000	14.429		100.00	0.000	0.000
L18 5.08-0.00	2.53	0.85	5	0.7734	15.018	A	0.000	15.018	15.018	100.00	0.000	0.000
						B	0.000	15.018		100.00	0.000	0.000
						C	0.000	15.018		100.00	0.000	0.000

<i>tnxTower</i> Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Job	CT2037 (Rev. 1)	Page	13 of 32
	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Tower Pressure - Service

$$G_H = 1.100$$

Section Elevation	<i>z</i>	<i>K_Z</i>	<i>q_z</i>	<i>A_G</i>	<i>F_a</i> <i>c</i> <i>e</i>	<i>A_F</i>	<i>A_R</i>	<i>A_{leg}</i>	<i>Leg</i> %	<i>C_AA_A</i> <i>In</i> <i>Face</i> <i>ft</i> ²	<i>C_AA_A</i> <i>Out</i> <i>Face</i> <i>ft</i> ²
<i>ft</i>	<i>ft</i>		<i>psf</i>	<i>ft</i> ²		<i>ft</i> ²	<i>ft</i> ²	<i>ft</i> ²		<i>ft</i> ²	<i>ft</i> ²
L1 99.50-88.98	94.02	1.249	10	12.994	A	0.000	12.994	12.994	100.00	0.000	0.000
					B	0.000	12.994		100.00	0.000	0.000
					C	0.000	12.994		100.00	0.000	0.000
L2 88.98-80.08	84.46	1.221	10	13.021	A	0.000	13.021	13.021	100.00	0.000	0.000
					B	0.000	13.021		100.00	0.000	0.000
					C	0.000	13.021		100.00	0.000	0.000
L3 80.08-75.08	77.56	1.2	9	7.858	A	0.000	7.858	7.858	100.00	0.000	0.000
					B	0.000	7.858		100.00	0.000	0.000
					C	0.000	7.858		100.00	0.000	0.000
L4 75.08-70.08	72.56	1.183	9	8.292	A	0.000	8.292	8.292	100.00	0.000	0.000
					B	0.000	8.292		100.00	0.000	0.000
					C	0.000	8.292		100.00	0.000	0.000
L5 70.08-65.08	67.56	1.165	9	8.725	A	0.000	8.725	8.725	100.00	0.000	0.000
					B	0.000	8.725		100.00	0.000	0.000
					C	0.000	8.725		100.00	0.000	0.000
L6 65.08-60.08	62.56	1.147	9	9.159	A	0.000	9.159	9.159	100.00	0.000	0.000
					B	0.000	9.159		100.00	0.000	0.000
					C	0.000	9.159		100.00	0.000	0.000
L7 60.08-55.08	57.56	1.127	9	9.593	A	0.000	9.593	9.593	100.00	0.000	0.000
					B	0.000	9.593		100.00	0.000	0.000
					C	0.000	9.593		100.00	0.000	0.000
L8 55.08-45.75	50.35	1.095	9	19.039	A	0.000	19.039	19.039	100.00	0.000	0.000
					B	0.000	19.039		100.00	0.000	0.000
					C	0.000	19.039		100.00	0.000	0.000
L9 45.75-45.08	45.41	1.072	8	1.399	A	0.000	1.399	1.399	100.00	0.000	0.000
					B	0.000	1.399		100.00	0.000	0.000
					C	0.000	1.399		100.00	0.000	0.000
L10 45.08-40.08	42.56	1.057	8	10.713	A	0.000	10.713	10.713	100.00	0.000	0.000
					B	0.000	10.713		100.00	0.000	0.000
					C	0.000	10.713		100.00	0.000	0.000
L11 40.08-35.08	37.56	1.03	8	11.141	A	0.000	11.141	11.141	100.00	0.000	0.000
					B	0.000	11.141		100.00	0.000	0.000
					C	0.000	11.141		100.00	0.000	0.000
L12 35.08-30.08	32.56	0.999	8	11.569	A	0.000	11.569	11.569	100.00	0.000	0.000
					B	0.000	11.569		100.00	0.000	0.000
					C	0.000	11.569		100.00	0.000	0.000
L13 30.08-25.08	27.57	0.965	8	11.997	A	0.000	11.997	11.997	100.00	0.000	0.000
					B	0.000	11.997		100.00	0.000	0.000
					C	0.000	11.997		100.00	0.000	0.000
L14 25.08-20.08	22.57	0.925	7	12.425	A	0.000	12.425	12.425	100.00	0.000	0.000
					B	0.000	12.425		100.00	0.000	0.000
					C	0.000	12.425		100.00	0.000	0.000
L15 20.08-15.08	17.57	0.878	7	12.853	A	0.000	12.853	12.853	100.00	0.000	0.000
					B	0.000	12.853		100.00	0.000	0.000
					C	0.000	12.853		100.00	0.000	0.000
L16 15.08-10.08	12.57	0.85	7	13.281	A	0.000	13.281	13.281	100.00	0.000	0.000
					B	0.000	13.281		100.00	0.000	0.000
					C	0.000	13.281		100.00	0.000	0.000
L17 10.08-5.08	7.57	0.85	7	13.709	A	0.000	13.709	13.709	100.00	0.000	0.000
					B	0.000	13.709		100.00	0.000	0.000
					C	0.000	13.709		100.00	0.000	0.000
L18 5.08-0.00	2.53	0.85	7	14.363	A	0.000	14.363	14.363	100.00	0.000	0.000
					B	0.000	14.363		100.00	0.000	0.000
					C	0.000	14.363		100.00	0.000	0.000

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Job	CT2037 (Rev. 1)	Page	14 of 32
	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 99.50-88.98	92.14	307.58	A B C	1 1 1	0.73 0.73 0.73	47	1 1 1	1 1 1	12.994 12.994 12.994	495.33	47.08	C
L2 88.98-80.08	145.68	308.75	A B C	1 1 1	0.73 0.73 0.73	46	1 1 1	1 1 1	13.021 13.021 13.021	485.30	54.53	C
L3 80.08-75.08	100.72	490.97	A B C	1 1 1	0.73 0.73 0.73	46	1 1 1	1 1 1	7.858 7.858 7.858	287.65	57.53	C
L4 75.08-70.08	100.72	501.49	A B C	1 1 1	0.73 0.73 0.73	45	1 1 1	1 1 1	8.292 8.292 8.292	299.30	59.86	C
L5 70.08-65.08	100.72	511.17	A B C	1 1 1	0.73 0.73 0.73	44	1 1 1	1 1 1	8.725 8.725 8.725	310.26	62.05	C
L6 65.08-60.08	100.72	521.30	A B C	1 1 1	0.73 0.73 0.73	44	1 1 1	1 1 1	9.159 9.159 9.159	320.46	64.09	C
L7 60.08-55.08	100.72	531.05	A B C	1 1 1	0.73 0.73 0.73	43	1 1 1	1 1 1	9.593 9.593 9.593	329.80	65.96	C
L8 55.08-45.75	187.93	1410.99	A B C	1 1 1	0.73 0.73 0.73	42	1 1 1	1 1 1	19.039 19.039 19.039	636.38	68.21	C
L9 45.75-45.08	13.50	707.07	A B C	1 1 1	0.73 0.73 0.73	41	1 1 1	1 1 1	1.399 1.399 1.399	45.77	68.31	C
L10 45.08-40.08	100.72	843.25	A B C	1 1 1	0.73 0.73 0.73	40	1 1 1	1 1 1	10.713 10.713 10.713	345.63	69.13	C
L11 40.08-35.08	100.72	855.85	A B C	1 1 1	0.73 0.73 0.73	39	1 1 1	1 1 1	11.141 11.141 11.141	350.11	70.02	C
L12 35.08-30.08	100.72	869.51	A B C	1 1 1	0.73 0.73 0.73	38	1 1 1	1 1 1	11.569 11.569 11.569	352.80	70.56	C
L13 30.08-25.08	100.72	883.09	A B C	1 1 1	0.73 0.73 0.73	37	1 1 1	1 1 1	11.997 11.997 11.997	353.24	70.65	C
L14 25.08-20.08	100.72	896.77	A B C	1 1 1	0.73 0.73 0.73	35	1 1 1	1 1 1	12.425 12.425 12.425	350.75	70.15	C
L15 20.08-15.08	100.72	910.71	A B C	1 1 1	0.73 0.73 0.73	33	1 1 1	1 1 1	12.853 12.853 12.853	344.20	68.84	C
L16 15.08-10.08	100.72	923.44	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	13.281 13.281 13.281	344.48	68.90	C
L17 10.08-5.08	100.72	936.65	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	13.709 13.709 13.709	355.58	71.12	C
L18 5.08-0.00	102.33	965.71	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	14.363 14.363 14.363	372.54	73.34	C
Sum Weight:	1850.88	13375.36						OTM	296708.89 lb-ft	6379.57		

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Job	CT2037 (Rev. 1)	Page	15 of 32
	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 99.50-88.98	92.14	307.58	A B C	1 1 1	0.73 0.73 0.73	47	1 1 1	1 1 1	12.994 12.994 12.994	495.33	47.08	C
L2 88.98-80.08	145.68	308.75	A B C	1 1 1	0.73 0.73 0.73	46	1 1 1	1 1 1	13.021 13.021 13.021	485.30	54.53	C
L3 80.08-75.08	100.72	490.97	A B C	1 1 1	0.73 0.73 0.73	46	1 1 1	1 1 1	7.858 7.858 7.858	287.65	57.53	C
L4 75.08-70.08	100.72	501.49	A B C	1 1 1	0.73 0.73 0.73	45	1 1 1	1 1 1	8.292 8.292 8.292	299.30	59.86	C
L5 70.08-65.08	100.72	511.17	A B C	1 1 1	0.73 0.73 0.73	44	1 1 1	1 1 1	8.725 8.725 8.725	310.26	62.05	C
L6 65.08-60.08	100.72	521.30	A B C	1 1 1	0.73 0.73 0.73	44	1 1 1	1 1 1	9.159 9.159 9.159	320.46	64.09	C
L7 60.08-55.08	100.72	531.05	A B C	1 1 1	0.73 0.73 0.73	43	1 1 1	1 1 1	9.593 9.593 9.593	329.80	65.96	C
L8 55.08-45.75	187.93	1410.99	A B C	1 1 1	0.73 0.73 0.73	42	1 1 1	1 1 1	19.039 19.039 19.039	636.38	68.21	C
L9 45.75-45.08	13.50	707.07	A B C	1 1 1	0.73 0.73 0.73	41	1 1 1	1 1 1	1.399 1.399 1.399	45.77	68.31	C
L10 45.08-40.08	100.72	843.25	A B C	1 1 1	0.73 0.73 0.73	40	1 1 1	1 1 1	10.713 10.713 10.713	345.63	69.13	C
L11 40.08-35.08	100.72	855.85	A B C	1 1 1	0.73 0.73 0.73	39	1 1 1	1 1 1	11.141 11.141 11.141	350.11	70.02	C
L12 35.08-30.08	100.72	869.51	A B C	1 1 1	0.73 0.73 0.73	38	1 1 1	1 1 1	11.569 11.569 11.569	352.80	70.56	C
L13 30.08-25.08	100.72	883.09	A B C	1 1 1	0.73 0.73 0.73	37	1 1 1	1 1 1	11.997 11.997 11.997	353.24	70.65	C
L14 25.08-20.08	100.72	896.77	A B C	1 1 1	0.73 0.73 0.73	35	1 1 1	1 1 1	12.425 12.425 12.425	350.75	70.15	C
L15 20.08-15.08	100.72	910.71	A B C	1 1 1	0.73 0.73 0.73	33	1 1 1	1 1 1	12.853 12.853 12.853	344.20	68.84	C
L16 15.08-10.08	100.72	923.44	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	13.281 13.281 13.281	344.48	68.90	C
L17 10.08-5.08	100.72	936.65	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	13.709 13.709 13.709	355.58	71.12	C
L18 5.08-0.00	102.33	965.71	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	14.363 14.363 14.363	372.54	73.34	C
Sum Weight:	1850.88	13375.36						OTM	296708.89 lb-ft	6379.57		

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	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 99.50-88.98	92.14	307.58	A B C	1 1 1	0.73 0.73 0.73	47	1 1 1	1 1 1	12.994 12.994 12.994	495.33	47.08	C
L2 88.98-80.08	145.68	308.75	A B C	1 1 1	0.73 0.73 0.73	46	1 1 1	1 1 1	13.021 13.021 13.021	485.30	54.53	C
L3 80.08-75.08	100.72	490.97	A B C	1 1 1	0.73 0.73 0.73	46	1 1 1	1 1 1	7.858 7.858 7.858	287.65	57.53	C
L4 75.08-70.08	100.72	501.49	A B C	1 1 1	0.73 0.73 0.73	45	1 1 1	1 1 1	8.292 8.292 8.292	299.30	59.86	C
L5 70.08-65.08	100.72	511.17	A B C	1 1 1	0.73 0.73 0.73	44	1 1 1	1 1 1	8.725 8.725 8.725	310.26	62.05	C
L6 65.08-60.08	100.72	521.30	A B C	1 1 1	0.73 0.73 0.73	44	1 1 1	1 1 1	9.159 9.159 9.159	320.46	64.09	C
L7 60.08-55.08	100.72	531.05	A B C	1 1 1	0.73 0.73 0.73	43	1 1 1	1 1 1	9.593 9.593 9.593	329.80	65.96	C
L8 55.08-45.75	187.93	1410.99	A B C	1 1 1	0.73 0.73 0.73	42	1 1 1	1 1 1	19.039 19.039 19.039	636.38	68.21	C
L9 45.75-45.08	13.50	707.07	A B C	1 1 1	0.73 0.73 0.73	41	1 1 1	1 1 1	1.399 1.399 1.399	45.77	68.31	C
L10 45.08-40.08	100.72	843.25	A B C	1 1 1	0.73 0.73 0.73	40	1 1 1	1 1 1	10.713 10.713 10.713	345.63	69.13	C
L11 40.08-35.08	100.72	855.85	A B C	1 1 1	0.73 0.73 0.73	39	1 1 1	1 1 1	11.141 11.141 11.141	350.11	70.02	C
L12 35.08-30.08	100.72	869.51	A B C	1 1 1	0.73 0.73 0.73	38	1 1 1	1 1 1	11.569 11.569 11.569	352.80	70.56	C
L13 30.08-25.08	100.72	883.09	A B C	1 1 1	0.73 0.73 0.73	37	1 1 1	1 1 1	11.997 11.997 11.997	353.24	70.65	C
L14 25.08-20.08	100.72	896.77	A B C	1 1 1	0.73 0.73 0.73	35	1 1 1	1 1 1	12.425 12.425 12.425	350.75	70.15	C
L15 20.08-15.08	100.72	910.71	A B C	1 1 1	0.73 0.73 0.73	33	1 1 1	1 1 1	12.853 12.853 12.853	344.20	68.84	C
L16 15.08-10.08	100.72	923.44	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	13.281 13.281 13.281	344.48	68.90	C
L17 10.08-5.08	100.72	936.65	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	13.709 13.709 13.709	355.58	71.12	C
L18 5.08-0.00	102.33	965.71	A B C	1 1 1	0.73 0.73 0.73	32	1 1 1	1 1 1	14.363 14.363 14.363	372.54	73.34	C
Sum Weight:	1850.88	13375.36						OTM	296708.89 lb-ft	6379.57		

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Job	CT2037 (Rev. 1)	Page 17 of 32
	Project	NEW HAVEN WHEELER ST	Date 20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by LBW

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 99.50-88.98	92.14	534.45	A B C	1 1 1	1.2 1.2 1.2	8	1 1 1	1 1 1	14.941 14.941 14.941	149.80	14.24	C
L2 88.98-80.08	145.68	531.01	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	14.651 14.651 14.651	143.61	16.14	C
L3 80.08-75.08	100.72	623.65	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	8.765 8.765 8.765	84.39	16.88	C
L4 75.08-70.08	100.72	640.07	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	9.193 9.193 9.193	87.28	17.46	C
L5 70.08-65.08	100.72	655.50	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	9.621 9.621 9.621	89.98	18.00	C
L6 65.08-60.08	100.72	671.20	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	10.047 10.047 10.047	92.46	18.49	C
L7 60.08-55.08	100.72	686.31	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	10.474 10.474 10.474	94.71	18.94	C
L8 55.08-45.75	187.93	1714.31	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	20.661 20.661 20.661	181.64	19.47	C
L9 45.75-45.08	13.50	729.11	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	1.515 1.515 1.515	13.03	19.45	C
L10 45.08-40.08	100.72	1010.64	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	11.568 11.568 11.568	98.16	19.63	C
L11 40.08-35.08	100.72	1027.40	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	11.985 11.985 11.985	99.06	19.81	C
L12 35.08-30.08	100.72	1044.76	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	12.401 12.401 12.401	99.47	19.89	C
L13 30.08-25.08	100.72	1061.47	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	12.816 12.816 12.816	99.25	19.85	C
L14 25.08-20.08	100.72	1077.50	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	13.228 13.228 13.228	98.21	19.64	C
L15 20.08-15.08	100.72	1092.69	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	13.636 13.636 13.636	96.04	19.21	C
L16 15.08-10.08	100.72	1104.90	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	14.038 14.038 14.038	95.76	19.15	C
L17 10.08-5.08	100.72	1114.28	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	14.429 14.429 14.429	98.43	19.69	C
L18 5.08-0.00	102.33	1131.90	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	15.018 15.018 15.018	102.45	20.17	C
Sum Weight:	1850.88	16451.17						OTM	86127.80 lb-ft	1823.72		

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	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
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Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 99.50-88.98	92.14	534.45	A B C	1 1 1	1.2 1.2 1.2	8	1 1 1	1 1 1	14.941 14.941 14.941	149.80	14.24	C
L2 88.98-80.08	145.68	531.01	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	14.651 14.651 14.651	143.61	16.14	C
L3 80.08-75.08	100.72	623.65	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	8.765 8.765 8.765	84.39	16.88	C
L4 75.08-70.08	100.72	640.07	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	9.193 9.193 9.193	87.28	17.46	C
L5 70.08-65.08	100.72	655.50	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	9.621 9.621 9.621	89.98	18.00	C
L6 65.08-60.08	100.72	671.20	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	10.047 10.047 10.047	92.46	18.49	C
L7 60.08-55.08	100.72	686.31	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	10.474 10.474 10.474	94.71	18.94	C
L8 55.08-45.75	187.93	1714.31	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	20.661 20.661 20.661	181.64	19.47	C
L9 45.75-45.08	13.50	729.11	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	1.515 1.515 1.515	13.03	19.45	C
L10 45.08-40.08	100.72	1010.64	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	11.568 11.568 11.568	98.16	19.63	C
L11 40.08-35.08	100.72	1027.40	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	11.985 11.985 11.985	99.06	19.81	C
L12 35.08-30.08	100.72	1044.76	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	12.401 12.401 12.401	99.47	19.89	C
L13 30.08-25.08	100.72	1061.47	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	12.816 12.816 12.816	99.25	19.85	C
L14 25.08-20.08	100.72	1077.50	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	13.228 13.228 13.228	98.21	19.64	C
L15 20.08-15.08	100.72	1092.69	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	13.636 13.636 13.636	96.04	19.21	C
L16 15.08-10.08	100.72	1104.90	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	14.038 14.038 14.038	95.76	19.15	C
L17 10.08-5.08	100.72	1114.28	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	14.429 14.429 14.429	98.43	19.69	C
L18 5.08-0.00	102.33	1131.90	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	15.018 15.018 15.018	102.45	20.17	C
Sum Weight:	1850.88	16451.17						OTM	86127.80 lb-ft	1823.72		

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Job	CT2037 (Rev. 1)	Page 19 of 32
	Project	NEW HAVEN WHEELER ST	Date 20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by LBW

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 99.50-88.98	92.14	534.45	A B C	1 1 1	1.2 1.2 1.2	8	1 1 1	1 1 1	14.941 14.941 14.941	149.80	14.24	C
L2 88.98-80.08	145.68	531.01	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	14.651 14.651 14.651	143.61	16.14	C
L3 80.08-75.08	100.72	623.65	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	8.765 8.765 8.765	84.39	16.88	C
L4 75.08-70.08	100.72	640.07	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	9.193 9.193 9.193	87.28	17.46	C
L5 70.08-65.08	100.72	655.50	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	9.621 9.621 9.621	89.98	18.00	C
L6 65.08-60.08	100.72	671.20	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	10.047 10.047 10.047	92.46	18.49	C
L7 60.08-55.08	100.72	686.31	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	10.474 10.474 10.474	94.71	18.94	C
L8 55.08-45.75	187.93	1714.31	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	20.661 20.661 20.661	181.64	19.47	C
L9 45.75-45.08	13.50	729.11	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	1.515 1.515 1.515	13.03	19.45	C
L10 45.08-40.08	100.72	1010.64	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	11.568 11.568 11.568	98.16	19.63	C
L11 40.08-35.08	100.72	1027.40	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	11.985 11.985 11.985	99.06	19.81	C
L12 35.08-30.08	100.72	1044.76	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	12.401 12.401 12.401	99.47	19.89	C
L13 30.08-25.08	100.72	1061.47	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	12.816 12.816 12.816	99.25	19.85	C
L14 25.08-20.08	100.72	1077.50	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	13.228 13.228 13.228	98.21	19.64	C
L15 20.08-15.08	100.72	1092.69	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	13.636 13.636 13.636	96.04	19.21	C
L16 15.08-10.08	100.72	1104.90	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	14.038 14.038 14.038	95.76	19.15	C
L17 10.08-5.08	100.72	1114.28	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	14.429 14.429 14.429	98.43	19.69	C
L18 5.08-0.00	102.33	1131.90	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	15.018 15.018 15.018	102.45	20.17	C
Sum Weight:	1850.88	16451.17						OTM	86127.80 lb-ft	1823.72		

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	Project	NEW HAVEN WHEELER ST	Date	20:25:29 03/14/22
	Client	Smartlink / AT&T	Designed by	LBW

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 99.50-88.98	92.14	307.58	A B C	1 1 1	0.73 0.73 0.73	10	1 1 1	1 1 1	12.994 12.994 12.994	102.11	9.71	C
L2 88.98-80.08	145.68	308.75	A B C	1 1 1	0.73 0.73 0.73	10	1 1 1	1 1 1	13.021 13.021 13.021	100.04	11.24	C
L3 80.08-75.08	100.72	490.97	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	7.858 7.858 7.858	59.30	11.86	C
L4 75.08-70.08	100.72	501.49	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	8.292 8.292 8.292	61.70	12.34	C
L5 70.08-65.08	100.72	511.17	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	8.725 8.725 8.725	63.96	12.79	C
L6 65.08-60.08	100.72	521.30	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	9.159 9.159 9.159	66.06	13.21	C
L7 60.08-55.08	100.72	531.05	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	9.593 9.593 9.593	67.99	13.60	C
L8 55.08-45.75	187.93	1410.99	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	19.039 19.039 19.039	131.19	14.06	C
L9 45.75-45.08	13.50	707.07	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	1.399 1.399 1.399	9.44	14.08	C
L10 45.08-40.08	100.72	843.25	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	10.713 10.713 10.713	71.25	14.25	C
L11 40.08-35.08	100.72	855.85	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.141 11.141 11.141	72.17	14.43	C
L12 35.08-30.08	100.72	869.51	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.569 11.569 11.569	72.73	14.55	C
L13 30.08-25.08	100.72	883.09	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.997 11.997 11.997	72.82	14.56	C
L14 25.08-20.08	100.72	896.77	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	12.425 12.425 12.425	72.31	14.46	C
L15 20.08-15.08	100.72	910.71	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	12.853 12.853 12.853	70.96	14.19	C
L16 15.08-10.08	100.72	923.44	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	13.281 13.281 13.281	71.01	14.20	C
L17 10.08-5.08	100.72	936.65	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	13.709 13.709 13.709	73.30	14.66	C
L18 5.08-0.00	102.33	965.71	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	14.363 14.363 14.363	76.80	15.12	C
Sum Weight:	1850.88	13375.36						OTM	61165.76 lb-ft	1315.13		

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Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 99.50-88.98	92.14	307.58	A B C	1 1 1	0.73 0.73 0.73	10	1 1 1	1 1 1	12.994 12.994 12.994	102.11	9.71	C
L2 88.98-80.08	145.68	308.75	A B C	1 1 1	0.73 0.73 0.73	10	1 1 1	1 1 1	13.021 13.021 13.021	100.04	11.24	C
L3 80.08-75.08	100.72	490.97	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	7.858 7.858 7.858	59.30	11.86	C
L4 75.08-70.08	100.72	501.49	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	8.292 8.292 8.292	61.70	12.34	C
L5 70.08-65.08	100.72	511.17	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	8.725 8.725 8.725	63.96	12.79	C
L6 65.08-60.08	100.72	521.30	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	9.159 9.159 9.159	66.06	13.21	C
L7 60.08-55.08	100.72	531.05	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	9.593 9.593 9.593	67.99	13.60	C
L8 55.08-45.75	187.93	1410.99	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	19.039 19.039 19.039	131.19	14.06	C
L9 45.75-45.08	13.50	707.07	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	1.399 1.399 1.399	9.44	14.08	C
L10 45.08-40.08	100.72	843.25	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	10.713 10.713 10.713	71.25	14.25	C
L11 40.08-35.08	100.72	855.85	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.141 11.141 11.141	72.17	14.43	C
L12 35.08-30.08	100.72	869.51	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.569 11.569 11.569	72.73	14.55	C
L13 30.08-25.08	100.72	883.09	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.997 11.997 11.997	72.82	14.56	C
L14 25.08-20.08	100.72	896.77	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	12.425 12.425 12.425	72.31	14.46	C
L15 20.08-15.08	100.72	910.71	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	12.853 12.853 12.853	70.96	14.19	C
L16 15.08-10.08	100.72	923.44	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	13.281 13.281 13.281	71.01	14.20	C
L17 10.08-5.08	100.72	936.65	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	13.709 13.709 13.709	73.30	14.66	C
L18 5.08-0.00	102.33	965.71	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	14.363 14.363 14.363	76.80	15.12	C
Sum Weight:	1850.88	13375.36						OTM	61165.76 lb-ft	1315.13		

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Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1 99.50-88.98	92.14	307.58	A B C	1 1 1	0.73 0.73 0.73	10	1 1 1	1 1 1	12.994 12.994 12.994	102.11	9.71	C
L2 88.98-80.08	145.68	308.75	A B C	1 1 1	0.73 0.73 0.73	10	1 1 1	1 1 1	13.021 13.021 13.021	100.04	11.24	C
L3 80.08-75.08	100.72	490.97	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	7.858 7.858 7.858	59.30	11.86	C
L4 75.08-70.08	100.72	501.49	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	8.292 8.292 8.292	61.70	12.34	C
L5 70.08-65.08	100.72	511.17	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	8.725 8.725 8.725	63.96	12.79	C
L6 65.08-60.08	100.72	521.30	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	9.159 9.159 9.159	66.06	13.21	C
L7 60.08-55.08	100.72	531.05	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	9.593 9.593 9.593	67.99	13.60	C
L8 55.08-45.75	187.93	1410.99	A B C	1 1 1	0.73 0.73 0.73	9	1 1 1	1 1 1	19.039 19.039 19.039	131.19	14.06	C
L9 45.75-45.08	13.50	707.07	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	1.399 1.399 1.399	9.44	14.08	C
L10 45.08-40.08	100.72	843.25	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	10.713 10.713 10.713	71.25	14.25	C
L11 40.08-35.08	100.72	855.85	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.141 11.141 11.141	72.17	14.43	C
L12 35.08-30.08	100.72	869.51	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.569 11.569 11.569	72.73	14.55	C
L13 30.08-25.08	100.72	883.09	A B C	1 1 1	0.73 0.73 0.73	8	1 1 1	1 1 1	11.997 11.997 11.997	72.82	14.56	C
L14 25.08-20.08	100.72	896.77	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	12.425 12.425 12.425	72.31	14.46	C
L15 20.08-15.08	100.72	910.71	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	12.853 12.853 12.853	70.96	14.19	C
L16 15.08-10.08	100.72	923.44	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	13.281 13.281 13.281	71.01	14.20	C
L17 10.08-5.08	100.72	936.65	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	13.709 13.709 13.709	73.30	14.66	C
L18 5.08-0.00	102.33	965.71	A B C	1 1 1	0.73 0.73 0.73	7	1 1 1	1 1 1	14.363 14.363 14.363	76.80	15.12	C
Sum Weight:	1850.88	13375.36						OTM	61165.76 lb-ft	1315.13		

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Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	13375.36					
Bracing Weight	0.00					
Total Member Self-Weight	13375.36			-148.22	-130.45	
Total Weight	24793.02			-148.22	-130.45	
Wind 0 deg - No Ice		35.67	-24577.74	-1957842.78	-3343.24	-2324.91
Wind 30 deg - No Ice		12107.45	-21295.07	-1696515.59	-962257.96	-925.60
Wind 60 deg - No Ice		20916.18	-12318.37	-981660.11	-1661776.33	616.77
Wind 90 deg - No Ice		24132.18	-47.76	-4382.69	-1917051.14	1943.32
Wind 120 deg - No Ice		20882.92	12257.98	975916.70	-1658767.48	2822.31
Wind 150 deg - No Ice		12054.44	21297.91	1696260.62	-957434.46	2975.68
Member Ice	3075.81					
Total Weight Ice	38137.40			-167.21	-121.47	
Wind 0 deg - Ice		7.63	-6491.66	-511852.04	-818.59	-34.91
Wind 30 deg - Ice		3243.70	-5624.29	-443523.80	-255746.67	-91.36
Wind 60 deg - Ice		5607.04	-3252.18	-256590.96	-441876.84	-143.29
Wind 90 deg - Ice		6470.21	-9.93	-1058.64	-509827.88	-166.44
Wind 120 deg - Ice		5599.87	3239.22	255071.48	-441218.50	-131.08
Wind 150 deg - Ice		3232.15	5623.99	443111.14	-254680.18	-54.78
Total Weight	24793.02			-148.22	-130.45	
Wind 0 deg - Service		7.35	-5066.64	-403721.80	-792.75	-479.27
Wind 30 deg - Service		2495.92	-4389.92	-349849.89	-198470.50	-190.81
Wind 60 deg - Service		4311.82	-2539.40	-202484.31	-342674.37	127.14
Wind 90 deg - Service		4974.79	-9.85	-1021.15	-395298.60	400.61
Wind 120 deg - Service		4304.96	2526.95	201064.99	-342054.11	581.81
Wind 150 deg - Service		2484.99	4390.51	349562.00	-197476.15	613.43

Load Combinations

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

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<i>Comb. No.</i>	<i>Description</i>
26	Dead+Wind 150 deg - Service

Maximum Member Forces

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial lb</i>	<i>Major Axis Moment lb-ft</i>	<i>Minor Axis Moment lb-ft</i>
L1	99.5 - 88.98	Pole	Max Tension	14	0.00	-0.00	0.00
			Max. Compression	14	-16210.65	475.56	-119.38
			Max. Mx	8	-7221.89	-87726.18	144.71
			Max. My	2	-7139.15	-102.44	89686.77
			Max. Vy	8	13255.41	-87726.18	144.71
			Max. Vx	2	-13628.75	-102.44	89686.77
			Max. Torque	12			-2558.96
L2	88.98 - 80.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23222.83	-147.56	196.86
			Max. Mx	8	-10417.88	-223043.81	764.55
			Max. My	2	-10320.12	-713.39	228435.48
			Max. Vy	8	19969.34	-223043.81	764.55
			Max. Vx	2	-20437.56	-713.39	228435.48
			Max. Torque	12			-2974.26
L3	80.08 - 75.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24065.54	-147.56	196.86
			Max. Mx	8	-11222.94	-323564.03	992.35
			Max. My	2	-11130.51	-871.40	331297.50
			Max. Vy	8	20260.16	-323564.03	992.35
			Max. Vx	2	-20728.94	-871.40	331297.50
			Max. Torque	12			-2972.51
L4	75.08 - 70.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24926.77	-147.56	196.86
			Max. Mx	8	-12048.89	-425553.15	1225.38
			Max. My	2	-11962.07	-1035.85	435630.71
			Max. Vy	8	20551.14	-425553.15	1225.38
			Max. Vx	2	-21020.20	-1035.85	435630.71
			Max. Torque	12			-2970.13
L5	70.08 - 65.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25805.36	-147.56	196.87
			Max. Mx	8	-12908.04	-528964.99	1462.24
			Max. My	2	-12827.77	-1205.13	541386.83
			Max. Vy	8	20832.62	-528964.99	1462.24
			Max. Vx	2	-21301.54	-1205.13	541386.83
			Max. Torque	12			-2967.18
L6	65.08 - 60.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26701.67	-147.56	196.87
			Max. Mx	8	-13796.91	-633752.78	1702.18
			Max. My	2	-13723.86	-1378.42	648516.90
			Max. Vy	8	21104.60	-633752.78	1702.18
			Max. Vx	2	-21572.93	-1378.42	648516.90
			Max. Torque	12			-2963.88
L7	60.08 - 55.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-27615.06	-147.56	196.87
			Max. Mx	8	-14712.00	-739868.66	1944.57
			Max. My	2	-14646.73	-1555.06	756970.83
			Max. Vy	8	21366.69	-739868.66	1944.57
			Max. Vx	2	-21833.98	-1555.06	756970.83
			Max. Torque	12			-2960.44
L8	55.08 - 45.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28946.71	-147.57	196.88
			Max. Mx	8	-15996.76	-861686.90	2219.50
			Max. My	2	-15938.27	-1756.05	881431.10

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L9	45.75 - 45.08	Pole	Max. Vy	8	21704.52	-861686.90	2219.50
			Max. Vx	2	-22171.23	-1756.05	881431.10
			Max. Torque	12			-2957.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30844.52	-147.57	196.88
			Max. Mx	8	-17691.29	-956607.53	2429.68
			Max. My	2	-17635.85	-1909.37	978379.14
			Max. Vy	8	22044.13	-956607.53	2429.68
L10	45.08 - 40.08	Pole	Max. Vx	2	-22511.82	-1909.37	978379.14
			Max. Torque	12			-2953.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32144.67	-147.57	196.88
			Max. Mx	8	-18943.09	-1067505.9	2675.34
					3		
			Max. My	2	-18893.34	-2090.43	1091612.71
			Max. Vy	8	22336.43	-1067505.9	2675.34
L11	40.08 - 35.08	Pole				3	
			Max. Vx	2	-22803.19	-2090.43	1091612.71
			Max. Torque	12			-2953.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33464.10	-147.57	196.89
			Max. Mx	8	-20220.22	-1179815.8	2921.26
					6		
			Max. My	2	-20176.50	-2272.18	1206251.78
L12	35.08 - 30.08	Pole	Max. Vy	8	22613.88	-1179815.8	2921.26
						6	
			Max. Vx	2	-23079.26	-2272.18	1206251.78
			Max. Torque	12			-2951.04
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-34803.62	-147.58	196.89
			Max. Mx	8	-21518.48	-1293476.3	3167.51
					8		
L13	30.08 - 25.08	Pole	Max. My	2	-21480.87	-2454.79	1322233.59
			Max. Vy	8	22878.39	-1293476.3	3167.51
						8	
			Max. Vx	2	-23342.04	-2454.79	1322233.59
			Max. Torque	12			-2949.03
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-36162.57	-147.58	196.90
			Max. Mx	8	-22837.12	-1408418.0	3413.81
L14	25.08 - 20.08	Pole				3	
			Max. My	2	-22805.67	-2638.00	1439486.86
			Max. Vy	8	23127.92	-1408418.0	3413.81
						3	
			Max. Vx	2	-23589.48	-2638.00	1439486.86
			Max. Torque	12			-2947.22
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-37540.29	-147.58	196.90
L15	20.08 - 15.08	Pole	Max. Mx	8	-24175.63	-1524559.4	3659.90
						7	
			Max. My	2	-24150.38	-2821.57	1557928.49
			Max. Vy	8	23359.78	-1524559.4	3659.90
						7	
			Max. Vx	2	-23818.90	-2821.57	1557928.49
			Max. Torque	12			-2945.66
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38935.98	-147.58	196.90
			Max. Mx	8	-25533.74	-1641803.1	3905.54
						4	
			Max. My	2	-25514.67	-3005.27	1677459.20
Max. Vy			8	23570.17	-1641803.1	3905.54	

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L16	15.08 - 10.08	Pole	Max. Vx	2	-24026.50	-3005.27	1677459.20
			Max. Torque	12			-2944.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-40346.43	-147.59	196.91
			Max. Mx	8	-26909.40	-1760058.9	4150.50
						0	
			Max. My	2	-26896.51	-3188.92	1797987.16
			Max. Vy	8	23765.93	-1760058.9	4150.50
						0	
L17	10.08 - 5.08	Pole	Max. Vx	2	-24219.15	-3188.92	1797987.16
			Max. Torque	12			-2943.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-41768.89	-147.59	196.91
			Max. Mx	8	-28302.63	-1879281.4	4394.56
						9	
			Max. My	2	-28295.86	-3372.30	1919465.46
			Max. Vy	8	23958.19	-1879281.4	4394.56
						9	
L18	5.08 - 0	Pole	Max. Vx	2	-24407.96	-3372.30	1919465.46
			Max. Torque	12			-2942.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-43216.73	-147.59	196.92
			Max. Mx	8	-29736.33	-2001384.5	4641.38
						7	
			Max. My	2	-29735.72	-3558.15	2043841.81
			Max. Vy	8	24150.39	-2001384.5	4641.38
						7	
			Max. Vx	2	-24596.34	-3558.15	2043841.81
			Max. Torque	12			-2942.17

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	14	43216.73	-0.00	0.00
	Max. H _x	1	24793.02	-0.00	0.00
	Max. H _z	3	22313.70	-35.66	24577.35
	Max. M _x	2	2043841.81	-35.66	24577.14
	Max. M _z	8	2001384.57	-24131.59	47.76
	Max. Torsion	2	2306.89	-35.66	24577.14
	Min. Vert	3	22313.70	-35.66	24577.35
	Min. H _x	9	22313.70	-24131.80	47.76
	Min. H _z	13	22313.72	-12054.44	-21297.90
	Min. M _x	12	-1770768.37	-12054.43	-21297.89
	Min. M _z	1	130.45	-0.00	0.00
	Min. Torsion	12	-2942.05	-12054.43	-21297.89

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	24793.02	0.00	-0.00	-148.22	-130.45	0.00

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
1.2 Dead+1.0 Wind 0 deg - No Ice	29751.59	35.66	-24577.14	-2043841.81	-3558.59	-2306.89
0.9 Dead+1.0 Wind 0 deg - No Ice	22313.70	35.66	-24577.35	-2020297.74	-3465.62	-2301.25
1.2 Dead+1.0 Wind 30 deg - No Ice	29751.63	12107.44	-21295.04	-1771113.95	-1004554.59	-920.21
0.9 Dead+1.0 Wind 30 deg - No Ice	22313.72	12107.45	-21295.05	-1750689.41	-992962.59	-916.66
1.2 Dead+1.0 Wind 60 deg - No Ice	29751.63	20916.16	-12318.36	-1024909.02	-1734864.33	610.13
0.9 Dead+1.0 Wind 60 deg - No Ice	22313.72	20916.17	-12318.36	-1013063.54	-1714878.88	610.58
1.2 Dead+1.0 Wind 90 deg - No Ice	29751.59	24131.59	-47.76	-4641.74	-2001384.57	1924.79
0.9 Dead+1.0 Wind 90 deg - No Ice	22313.70	24131.80	-47.76	-4532.08	-1978349.18	1921.98
1.2 Dead+1.0 Wind 120 deg - No Ice	29751.63	20882.90	12257.97	1018806.51	-1731769.26	2791.81
0.9 Dead+1.0 Wind 120 deg - No Ice	22313.72	20882.91	12257.97	1007140.12	-1711812.54	2786.62
1.2 Dead+1.0 Wind 150 deg - No Ice	29751.63	12054.43	21297.89	1770768.37	-999545.28	2942.05
0.9 Dead+1.0 Wind 150 deg - No Ice	22313.72	12054.44	21297.90	1750449.12	-988005.55	2935.89
1.2 Dead+1.0 Ice+1.0 Temp	43216.73	0.00	-0.00	-196.92	-147.59	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	43216.73	7.63	-6491.53	-553969.52	-918.07	-51.01
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	43216.73	3243.64	-5624.18	-480025.97	-276795.97	-99.85
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	43216.73	5606.92	-3252.11	-277727.57	-478222.17	-141.88
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	43216.73	6470.07	-9.93	-1189.54	-551756.02	-155.54
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	43216.73	5599.75	3239.16	275994.85	-477506.25	-113.68
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	43216.73	3232.09	5623.87	479490.74	-275635.67	-35.43
Dead+Wind 0 deg - Service	24793.01	7.35	-5065.88	-419121.67	-827.58	-483.72
Dead+Wind 30 deg - Service	24793.01	2495.55	-4389.27	-363196.05	-206034.99	-193.36
Dead+Wind 60 deg - Service	24793.01	4311.18	-2539.02	-210211.79	-355732.54	127.16
Dead+Wind 90 deg - Service	24793.01	4974.05	-9.84	-1065.74	-410361.92	403.05
Dead+Wind 120 deg - Service	24793.01	4304.32	2526.58	208727.27	-355088.88	585.87
Dead+Wind 150 deg - Service	24793.01	2484.62	4389.86	362886.83	-205002.15	618.11

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-24793.02	0.00	-0.00	24793.02	0.00	0.000%
2	35.67	-29751.63	-24577.74	-35.66	29751.59	24577.14	0.002%
3	35.67	-22313.72	-24577.74	-35.66	22313.70	24577.35	0.001%
4	12107.45	-29751.63	-21295.07	-12107.44	29751.63	21295.04	0.000%
5	12107.45	-22313.72	-21295.07	-12107.45	22313.72	21295.05	0.000%
6	20916.18	-29751.63	-12318.37	-20916.16	29751.63	12318.36	0.000%
7	20916.18	-22313.72	-12318.37	-20916.17	22313.72	12318.36	0.000%
8	24132.18	-29751.63	-47.76	-24131.59	29751.59	47.76	0.002%
9	24132.18	-22313.72	-47.76	-24131.80	22313.70	47.76	0.001%
10	20882.92	-29751.63	12257.98	-20882.90	29751.63	-12257.97	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
11	20882.92	-22313.72	12257.98	-20882.91	22313.72	-12257.97	0.000%
12	12054.44	-29751.63	21297.91	-12054.43	29751.63	-21297.89	0.000%
13	12054.44	-22313.72	21297.91	-12054.44	22313.72	-21297.90	0.000%
14	0.00	-43216.73	0.00	-0.00	43216.73	0.00	0.000%
15	7.63	-43216.73	-6491.66	-7.63	43216.73	6491.53	0.000%
16	3243.70	-43216.73	-5624.29	-3243.64	43216.73	5624.18	0.000%
17	5607.04	-43216.73	-3252.18	-5606.92	43216.73	3252.11	0.000%
18	6470.21	-43216.73	-9.93	-6470.07	43216.73	9.93	0.000%
19	5599.87	-43216.73	3239.22	-5599.75	43216.73	-3239.16	0.000%
20	3232.15	-43216.73	5623.99	-3232.09	43216.73	-5623.87	0.000%
21	7.35	-24793.02	-5066.64	-7.35	24793.01	5065.88	0.003%
22	2495.92	-24793.02	-4389.92	-2495.55	24793.01	4389.27	0.003%
23	4311.82	-24793.02	-2539.40	-4311.18	24793.01	2539.02	0.003%
24	4974.79	-24793.02	-9.85	-4974.05	24793.01	9.84	0.003%
25	4304.96	-24793.02	2526.95	-4304.32	24793.01	-2526.58	0.003%
26	2484.99	-24793.02	4390.51	-2484.62	24793.01	-4389.86	0.003%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99.5 - 88.98	16.506	21	1.5931	0.0145
L2	88.98 - 80.08	13.098	21	1.4840	0.0111
L3	80.08 - 75.08	10.505	21	1.2774	0.0063
L4	75.08 - 70.08	9.202	21	1.2097	0.0053
L5	70.08 - 65.08	7.977	21	1.1282	0.0045
L6	65.08 - 60.08	6.843	21	1.0366	0.0037
L7	60.08 - 55.08	5.809	21	0.9376	0.0031
L8	55.08 - 45.75	4.882	21	0.8332	0.0025
L9	49.42 - 45.08	3.948	21	0.7427	0.0021
L10	45.08 - 40.08	3.289	21	0.7025	0.0019
L11	40.08 - 35.08	2.594	21	0.6242	0.0016
L12	35.08 - 30.08	1.982	21	0.5451	0.0013
L13	30.08 - 25.08	1.453	21	0.4659	0.0011
L14	25.08 - 20.08	1.007	21	0.3868	0.0009
L15	20.08 - 15.08	0.643	21	0.3082	0.0007
L16	15.08 - 10.08	0.361	21	0.2302	0.0005
L17	10.08 - 5.08	0.161	21	0.1530	0.0003
L18	5.08 - 0	0.041	21	0.0766	0.0002

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99.5 - 88.98	80.420	2	7.7750	0.0693
L2	88.98 - 80.08	63.834	2	7.2411	0.0529
L3	80.08 - 75.08	51.212	2	6.2324	0.0298
L4	75.08 - 70.08	44.865	2	5.9021	0.0253
L5	70.08 - 65.08	38.898	2	5.5052	0.0213
L6	65.08 - 60.08	33.372	2	5.0584	0.0178
L7	60.08 - 55.08	28.332	2	4.5754	0.0147
L8	55.08 - 45.75	23.811	2	4.0660	0.0119
L9	49.42 - 45.08	19.256	2	3.6243	0.0099
L10	45.08 - 40.08	16.042	2	3.4284	0.0091

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<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
L11	40.08 - 35.08	12.654	2	3.0458	0.0077
L12	35.08 - 30.08	9.669	2	2.6599	0.0064
L13	30.08 - 25.08	7.087	2	2.2732	0.0052
L14	25.08 - 20.08	4.910	2	1.8873	0.0042
L15	20.08 - 15.08	3.135	2	1.5036	0.0032
L16	15.08 - 10.08	1.761	2	1.1230	0.0023
L17	10.08 - 5.08	0.783	2	0.7460	0.0015
L18	5.08 - 0	0.198	2	0.3735	0.0007

Compression Checks

Pole Design Data

<i>Section No.</i>	<i>Elevation ft</i>	<i>Size</i>	<i>L ft</i>	<i>L_u ft</i>	<i>Kl/r</i>	<i>A in²</i>	<i>P_u lb</i>	<i>φP_n lb</i>	<i>Ratio P_u φP_n</i>
L1	99.5 - 88.98 (1)	TP16.5x12.75x0.1875	10.52	99.50	206.2	9.7080	-7139.15	51589.10	0.138
L2	88.98 - 80.08 (2)	TP18.1367x16.5x0.1875	8.90	99.50	187.4	10.6820	-10320.10	68727.60	0.150
L3	80.08 - 75.08 (3)	TP19.1596x18.1367x0.501	5.00	99.50	180.3	29.6704	-11130.50	206286.00	0.054
L4	75.08 - 70.08 (4)	TP20.1825x19.1596x0.484	5.00	99.50	170.7	30.2612	-11962.10	234498.00	0.051
L5	70.08 - 65.08 (5)	TP21.2054x20.1825x0.468	5.00	99.50	162.2	30.8040	-12827.80	264547.00	0.048
L6	65.08 - 60.08 (6)	TP22.2283x21.2054x0.454	5.00	99.50	154.5	31.3767	-13723.90	297087.00	0.046
L7	60.08 - 55.08 (7)	TP23.2512x22.2283x0.441	5.00	99.50	147.5	31.9282	-14646.70	331757.00	0.044
L8	55.08 - 45.75 (8)	TP25.16x23.2512x0.593	9.33	99.50	141.2	44.8264	-15938.30	507768.00	0.031
L9	45.75 - 45.08 (9)	TP24.9108x23.2232x0.644	4.34	99.50	140.1	49.0702	-17487.70	564748.00	0.031
L10	45.08 - 40.08 (10)	TP25.9207x24.9108x0.63	5.00	99.50	133.0	50.5718	-18893.30	645978.00	0.029
L11	40.08 - 35.08 (11)	TP26.9306x25.9207x0.614	5.00	99.50	127.8	51.2867	-20176.50	709337.00	0.028
L12	35.08 - 30.08 (12)	TP27.9405x26.9306x0.6	5.00	99.50	123.0	52.0672	-21480.90	777258.00	0.028
L13	30.08 - 25.08 (13)	TP28.9504x27.9405x0.587	5.00	99.50	118.6	52.8449	-22805.70	849000.00	0.027
L14	25.08 - 20.08 (14)	TP29.9604x28.9504x0.575	5.00	99.50	114.5	53.6298	-24150.40	924821.00	0.026
L15	20.08 - 15.08 (15)	TP30.9703x29.9604x0.564	5.00	99.50	110.6	54.4314	-25514.70	1005000.00	0.025
L16	15.08 - 10.08 (16)	TP31.9802x30.9703x0.553	5.00	99.50	107.0	55.1617	-26896.50	1086850.00	0.025
L17	10.08 - 5.08 (17)	TP32.9901x31.9802x0.543	5.00	99.50	104.3	55.5739	-28044.60	1146680.00	0.024
L18	5.08 - 0 (18)	TP34x32.9901x0.534	5.08	99.50	101.7	56.0374	-29187.30	1193870.00	0.024

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Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio	M_{uy}	ϕM_{ny}	Ratio
	ft		lb-ft	lb-ft	$\frac{M_{ux}}{\phi M_{nx}}$	lb-ft	lb-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L1	99.5 - 88.98 (1)	TP16.5x12.75x0.1875	89686.67	241067.50	0.372	0.00	241067.50	0.000
L2	88.98 - 80.08	TP18.1367x16.5x0.1875	228436.67	291682.50	0.783	0.00	291682.50	0.000
	(2)							
L3	80.08 - 75.08	TP19.1596x18.1367x0.501	331298.33	830132.50	0.399	0.00	830132.50	0.000
	(3)							
L4	75.08 - 70.08	TP20.1825x19.1596x0.484	435631.67	758015.83	0.575	0.00	758015.83	0.000
	(4)							
L5	70.08 - 65.08	TP21.2054x20.1825x0.468	541388.33	813899.17	0.665	0.00	813899.17	0.000
	(5)							
L6	65.08 - 60.08	TP22.2283x21.2054x0.454	648518.33	871950.00	0.744	0.00	871950.00	0.000
	(6)							
L7	60.08 - 55.08	TP23.2512x22.2283x0.441	756972.50	930866.67	0.813	0.00	930866.67	0.000
	(7)							
L8	55.08 - 45.75	TP25.16x23.2512x0.593	881433.33	1357141.67	0.649	0.00	1357141.67	0.000
	(8)							
L9	45.75 - 45.08	TP24.9108x23.2232x0.644	963316.67	1494675.00	0.644	0.00	1494675.00	0.000
	(9)							
L10	45.08 - 40.08	TP25.9207x24.9108x0.63	1091616.67	1625866.67	0.671	0.00	1625866.67	0.000
	(10)							
L11	40.08 - 35.08	TP26.9306x25.9207x0.614	1206250.00	1718383.33	0.702	0.00	1718383.33	0.000
	(11)							
L12	35.08 - 30.08	TP27.9405x26.9306x0.6	1322233.33	1814866.67	0.729	0.00	1814866.67	0.000
	(12)							
L13	30.08 - 25.08	TP28.9504x27.9405x0.587	1439491.67	1913225.00	0.752	0.00	1913225.00	0.000
	(13)							
L14	25.08 - 20.08	TP29.9604x28.9504x0.575	1557933.33	2013833.33	0.774	0.00	2013833.33	0.000
	(14)							
L15	20.08 - 15.08	TP30.9703x29.9604x0.564	1677458.33	2117058.33	0.792	0.00	2117058.33	0.000
	(15)							
L16	15.08 - 10.08	TP31.9802x30.9703x0.553	1797991.67	2219575.00	0.810	0.00	2219575.00	0.000
	(16)							
L17	10.08 - 5.08	TP32.9901x31.9802x0.543	1895100.00	2296058.33	0.825	0.00	2296058.33	0.000
	(17)							
L18	5.08 - 0 (18)	TP34x32.9901x0.534	1993983.33	2245900.00	0.888	0.00	2245900.00	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio	Actual T_u	ϕT_n	Ratio
	ft		lb	lb	$\frac{V_u}{\phi V_n}$	lb-ft	lb-ft	$\frac{T_u}{\phi T_n}$
L1	99.5 - 88.98 (1)	TP16.5x12.75x0.1875	13628.80	166458.00	0.082	2238.47	243391.67	0.009
L2	88.98 - 80.08	TP18.1367x16.5x0.1875	20437.60	185333.00	0.110	2331.79	294683.33	0.008
	(2)							
L3	80.08 - 75.08	TP19.1596x18.1367x0.501	20729.00	520716.00	0.040	2329.69	850866.67	0.003
	(3)							
L4	75.08 - 70.08	TP20.1825x19.1596x0.484	21020.20	449378.00	0.047	2327.42	775220.00	0.003
	(4)							
L5	70.08 - 65.08	TP21.2054x20.1825x0.468	21301.60	457439.00	0.047	2324.82	830745.00	0.003
	(5)							
L6	65.08 - 60.08	TP22.2283x21.2054x0.454	21573.00	465944.00	0.046	2322.08	888500.00	0.003
	(6)							
L7	60.08 - 55.08	TP23.2512x22.2283x0.441	21834.00	474134.00	0.046	2319.36	947133.33	0.002
	(7)							

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	Client	Smartlink / AT&T	Designed by	LBW

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L8	55.08 - 45.75 (8)	TP25.16x23.2512x0.593	22171.30	665671.00	0.033	2317.12	1388391.67	0.002
L9	45.75 - 45.08 (9)	TP24.9108x23.2232x0.644	22511.80	736600.00	0.031	2316.08	1531966.67	0.002
L10	45.08 - 40.08 (10)	TP25.9207x24.9108x0.63	22803.20	750991.00	0.030	2314.38	1663316.67	0.001
L11	40.08 - 35.08 (11)	TP26.9306x25.9207x0.614	23079.30	761608.00	0.030	2312.74	1755258.33	0.001
L12	35.08 - 30.08 (12)	TP27.9405x26.9306x0.6	23342.10	773199.00	0.030	2311.27	1851300.00	0.001
L13	30.08 - 25.08 (13)	TP28.9504x27.9405x0.587	23589.50	784747.00	0.030	2309.99	1949250.00	0.001
L14	25.08 - 20.08 (14)	TP29.9604x28.9504x0.575	23818.90	796403.00	0.030	2308.92	2049483.33	0.001
L15	20.08 - 15.08 (15)	TP30.9703x29.9604x0.564	24026.50	808307.00	0.030	2308.06	2152383.33	0.001
L16	15.08 - 10.08 (16)	TP31.9802x30.9703x0.553	24219.20	819151.00	0.030	2307.43	2254500.00	0.001
L17	10.08 - 5.08 (17)	TP32.9901x31.9802x0.543	24408.00	830442.00	0.029	2307.05	2330458.33	0.001
L18	5.08 - 0 (18)	TP34x32.9901x0.534	24558.90	791571.00	0.031	2306.91	2278008.33	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	99.5 - 88.98 (1)	0.138	0.372	0.000	0.082	0.009	0.519	1.000	4.8.2 ✓
L2	88.98 - 80.08 (2)	0.150	0.783	0.000	0.110	0.008	0.947	1.000	4.8.2 ✓
L3	80.08 - 75.08 (3)	0.054	0.399	0.000	0.040	0.003	0.455	1.000	4.8.2 ✓
L4	75.08 - 70.08 (4)	0.051	0.575	0.000	0.047	0.003	0.628	1.000	4.8.2 ✓
L5	70.08 - 65.08 (5)	0.048	0.665	0.000	0.047	0.003	0.716	1.000	4.8.2 ✓
L6	65.08 - 60.08 (6)	0.046	0.744	0.000	0.046	0.003	0.792	1.000	4.8.2 ✓
L7	60.08 - 55.08 (7)	0.044	0.813	0.000	0.046	0.002	0.860	1.000	4.8.2 ✓
L8	55.08 - 45.75 (8)	0.031	0.649	0.000	0.033	0.002	0.682	1.000	4.8.2 ✓
L9	45.75 - 45.08 (9)	0.031	0.644	0.000	0.031	0.002	0.676	1.000	4.8.2 ✓
L10	45.08 - 40.08 (10)	0.029	0.671	0.000	0.030	0.001	0.702	1.000	4.8.2 ✓
L11	40.08 - 35.08 (11)	0.028	0.702	0.000	0.030	0.001	0.731	1.000	4.8.2 ✓
L12	35.08 - 30.08 (12)	0.028	0.729	0.000	0.030	0.001	0.757	1.000	4.8.2 ✓
L13	30.08 - 25.08	0.027	0.752	0.000	0.030	0.001	0.780	1.000	4.8.2 ✓

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Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(13)						✓		
L14	25.08 - 20.08	0.026	0.774	0.000	0.030	0.001	0.801	1.000	4.8.2 ✓
	(14)						✓		
L15	20.08 - 15.08	0.025	0.792	0.000	0.030	0.001	0.819	1.000	4.8.2 ✓
	(15)						✓		
L16	15.08 - 10.08	0.025	0.810	0.000	0.030	0.001	0.836	1.000	4.8.2 ✓
	(16)						✓		
L17	10.08 - 5.08	0.024	0.825	0.000	0.029	0.001	0.851	1.000	4.8.2 ✓
	(17)						✓		
L18	5.08 - 0 (18)	0.024	0.888	0.000	0.031	0.001	0.913	1.000	4.8.2 ✓
							✓		

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	99.5 - 88.98	Pole	TP16.5x12.75x0.1875	1	-7139.15	51589.10	51.9	Pass
L2	88.98 - 80.08	Pole	TP18.1367x16.5x0.1875	2	-10320.10	68727.60	94.7	Pass
L3	80.08 - 75.08	Pole	TP19.1596x18.1367x0.501	3	-11130.50	206286.00	45.5	Pass
L4	75.08 - 70.08	Pole	TP20.1825x19.1596x0.484	4	-11962.10	234498.00	62.8	Pass
L5	70.08 - 65.08	Pole	TP21.2054x20.1825x0.468	5	-12827.80	264547.00	71.6	Pass
L6	65.08 - 60.08	Pole	TP22.2283x21.2054x0.454	6	-13723.90	297087.00	79.2	Pass
L7	60.08 - 55.08	Pole	TP23.2512x22.2283x0.441	7	-14646.70	331757.00	86.0	Pass
L8	55.08 - 45.75	Pole	TP25.16x23.2512x0.593	8	-15938.30	507768.00	68.2	Pass
L9	45.75 - 45.08	Pole	TP24.9108x23.2232x0.644	9	-17487.70	564748.00	67.6	Pass
L10	45.08 - 40.08	Pole	TP25.9207x24.9108x0.63	10	-18893.30	645978.00	70.2	Pass
L11	40.08 - 35.08	Pole	TP26.9306x25.9207x0.614	11	-20176.50	709337.00	73.1	Pass
L12	35.08 - 30.08	Pole	TP27.9405x26.9306x0.6	12	-21480.90	777258.00	75.7	Pass
L13	30.08 - 25.08	Pole	TP28.9504x27.9405x0.587	13	-22805.70	849000.00	78.0	Pass
L14	25.08 - 20.08	Pole	TP29.9604x28.9504x0.575	14	-24150.40	924821.00	80.1	Pass
L15	20.08 - 15.08	Pole	TP30.9703x29.9604x0.564	15	-25514.70	1005000.00	81.9	Pass
L16	15.08 - 10.08	Pole	TP31.9802x30.9703x0.553	16	-26896.50	1086850.00	83.6	Pass
L17	10.08 - 5.08	Pole	TP32.9901x31.9802x0.543	17	-28044.60	1146680.00	85.1	Pass
L18	5.08 - 0	Pole	TP34x32.9901x0.534	18	-29187.30	1193870.00	91.3	Pass
							Summary	
							Pole (L2)	Pass
							RATING = 94.7	Pass

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: CT2037

Site Name: NEW HAVEN WHEELER ST

App #: 0

Pole Manufacturer: Other

Anchor Rod Data

Qty: 6
Diam: 2.25 in
Rod Material: A615-J
Strength (Fu): 100 ksi
Yield (Fy): 75 ksi
Bolt Circle: 42 in

Plate Data

Diam: 48 in
Thick: 1.5 in
Grade: 60 ksi
Single-Rod B-eff: 17.99 in

Stiffener Data (Welding at both sides)

Config: 3 *
Weld Type: Fillet
Groove Depth: 0.25 <-- Disregard
Groove Angle: 45 <-- Disregard
Fillet H. Weld: 0.3125 in
Fillet V. Weld: 0.3125 in
Width: 6 in
Height: 18 in
Thick: 1.375 in
Notch: 0 in
Grade: 50 ksi
Weld str.: 70 ksi

Clear Space between: 11 in

Pole Data

Diam: 34 in
Thick: 0.534 in
Grade: 52 ksi
of Sides: 18 "0" IF Round
Fu: 66 ksi
Reinf. Fillet Weld: 0 "0" if None

Reactions

Mu: 1100 ft-kips
Axial, Pu: 30 kips
Shear, Vu: 25 kips
Eta Factor, η : 0.5 TIA G (Fig. 4-4)

If No stiffeners, Criteria: AISC LRFD <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Max Rod (Cu+ Vu/ η): 222.7 Kips
Allowable Axial, $\Phi \cdot F_u \cdot A_{net}$: 260.0 Kips
Anchor Rod Stress Ratio: 85.6% **Pass**

Stiffened
AISC LRFD
 $\phi \cdot T_n$

Base Plate Results

Base Plate Stress: #NAME? ksi
Allowable Plate Stress: 54.0 ksi
Base Plate Stress Ratio: #NAME? #NAME?

Flexural Check

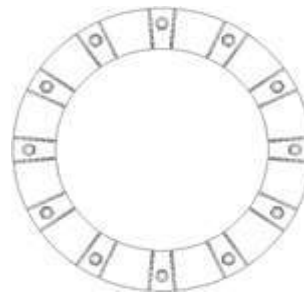
Stiffened
AISC LRFD
 $\phi \cdot F_y$
Y.L. Length:
N/A, Roark

Stiffener Results

Horizontal Weld: 98.0% **Pass**
Vertical Weld: 35.4% **Pass**
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: 5.0% **Pass**
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: 22.2% **Pass**
Plate Comp. (AISC Bracket): 27.1% **Pass**

Pole Results

Pole Punching Shear Check: 7.4% **Pass**



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Date: 3/14/2022
Project Name: NEW HAVEN WHEELER ST
Project No.: CT2037
Designed By: LBW Checked By: MSC



HUDSON
Design Group LLC

Outer Anchor Rod Epoxy Adhesive Check

Reference: Product Data Sheet prepared by Sika USA

Anchor Rod Properties:

Anchor Rod Diameter = 2.75 in
Epoxy Adhesive Area = 180.00 in²

Epoxy Adhesive Properties:

Epoxy Type: Sikadur - 32 Hi-Mod LPL

Tensile Strength (F_T) = 5800 psi
 F_T = 1044000 lbs

Shear Strength = 6400 psi
 F_V = 1152000 lbs

Tensile Forces

Total Moment on Tower = 2043845 lb-ft
Moment on Inner Anchor Rods = 1100000 lb-ft

Remainder Moment = 943845 lb-ft

Distance to Outer Anchor Rods = 2.125 ft

Force Applied on Bolts = 444162 lbs

Number of Bolts in Tension 2

Tension Design Load /Bolts =

f_t = 222081 lbs. < 1044000 lbs. Therefore, OK !

Date: 3/14/2022

Project Name: NEW HAVEN WHEELER ST

Project No.: CT2037

Designed By: LBW Checked By: MSC



Foundation Overturning Check

Reference: Structural Analysis prepared by URS Corporation, dated July 17, 2006

Overturning Moment (OTM) = 2043.845 ft-kips (See Tnx Tower Output)

Concrete Density = 0.15 kcf

Soil Density = 0.1 kcf

Pad Dimensions:

Width = 18 ft

Length = 26 ft

Depth = 3.25 ft

Weight of Pad = 228.15 kips

Pier Dimensions:

Width = 6 ft

Length = 6 ft

Depth = 2 ft

Weight of Pier = 10.8 kips

Overburden Dimensions:

Pad Area 468 ft

Pier Area 36 ft

Depth = 1 ft

Weight of Overburden = 43.2 kips

Total Weight = 282.15 kips

Resisting Moment:

Moment Arm = 9 ft

M_R = 2539.35 ft-kips

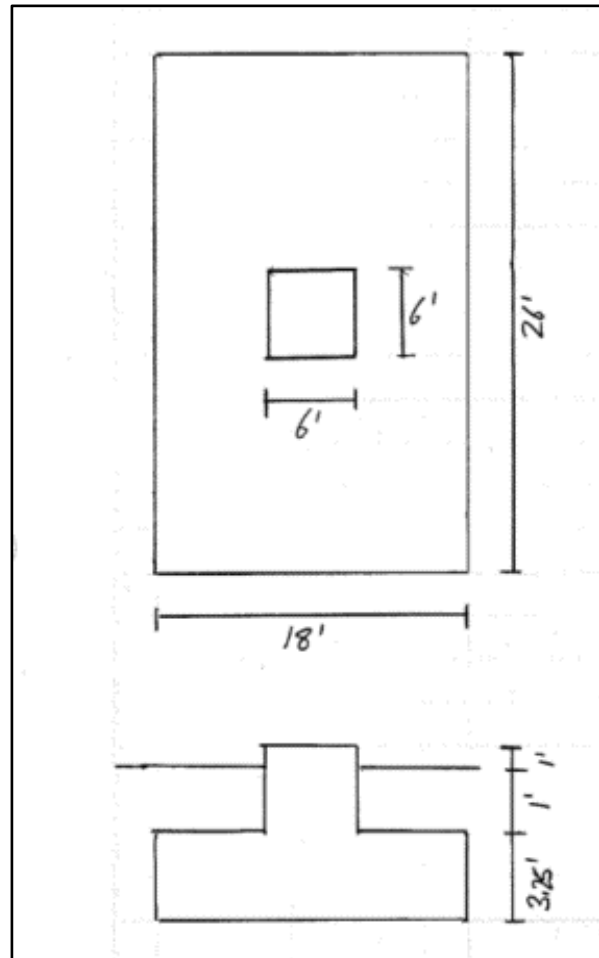
Foundation Stability (FS):

2043.845 lbs.

<

2539.35 lbs.

Therefore, OK !



January 27, 2022

March 15, 2022 (Rev.1)



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

RE:	Site Number:	CT2037
	FA Number:	10035247
	PACE Number:	MRCTB052200
	PT Number:	2051A101RB
	Site Name:	NEW HAVEN WHEELER ST
	Site Address:	69 Wheeler Street
		New Haven, CT 06512

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Smartlink to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading (based on RFDS V5.0 dated 3/8/2022):

- (1) OPA65R-BU4DA Antennas (48.0"x21.0"x7.8" – Wt. = 53 lbs. /each)
- (2) OPA65R-BU6DA Antennas (71.2"x21.0"x7.8" – Wt. = 64 lbs. /each)
- (3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)
- (3) RRUS-E2 B29 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (4) DC6-48-60-18-8F Surge Arrestors (31.4"x10.2"Ø – Wt. = 29 lbs.)
- **(1) QD4616-7 Antenna (51.5"x22.0"x9.6" – Wt. = 109 lbs. /each)**
- **(2) QD6616-7 Antennas (72.0"x22.0"x9.6" – Wt. = 130 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antenna (30.4"x15.9"x8.1" – Wt. 82 lbs. /each)**
- **(3) 4415 B25 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on November 22, 2021.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.11 in was used for this analysis.
- HDG considers this site to be exposure category D; tower is located on flat, unobstructed, shorelines.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_s , of 0.186 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.062.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mounts are secured to the existing monopole with ring mounts and threaded rods. HDG considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the existing mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	8	LC77	78%	PASS

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Vice President



Daniel P. Hamm, PE
Principal

FIELD PHOTOS:







HUDSON
Design Group LLC

Wind & Ice Calculations

Date: 1/26/2022
 Project Name: NEW HAVEN WHEELER ST
 Project No.: CT2037
 Designed By: LBW Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

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

$K_z =$ **1.414**
 $z =$ **92.75** (ft)
 $z_g =$ **700** (ft)
 $\alpha =$ **11.5**

$$K_{zmin} \leq K_z \leq 2.01$$

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

$$K_{zt} = [1 + (K_c K_t / K_h)]^2$$

$$K_h = e^{(fz/H)}$$

$K_{zt} =$ **1**

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

Category = **1**

$K_h =$ **1**
 $K_c =$ **1.1** (from Table 2-4)
 $K_t =$ **0** (from Table 2-5)
 $f =$ **0** (from Table 2-5)
 $z =$ **92.75**
 $z_s =$ **7** (Mean elevation of base of structure above sea level)
 $H =$ **0** (Ht. of the crest above surrounding terrain)
 $K_{zt} =$ **1.00** (from 2.6.6.2.1)
 $K_e =$ **1.00** (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =
 Importance Factor =

$t_i =$ **1.00** in
 $I =$ **1.0** (from Table 2-3)
 $K_{iz} =$ **1.11** (from Sec. 2.6.10)

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

$t_{iz} =$ **1.11** in

Date: 1/26/2022
 Project Name: NEW HAVEN WHEELER ST
 Project No.: CT2037
 Designed By: LBW Checked By: MSC



2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

$G_h = 1.0$ Latticed Structures > 600 ft

$G_h = 0.85$ Latticed Structures 450 ft or less

$G_h = 0.85 + 0.15 [h/150 - 3.0]$

$h =$ ht. of structure

$h =$ 98

$G_h =$ 0.85

2.6.9.2 Guyed Masts

$G_h =$ 0.85

2.6.9.3 Pole Structures

$G_h =$ 1.1

2.6.9 Appurtenances

$G_h =$ 1.0

2.6.9.4 Structures Supported on Other Structures

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

$G_h =$ 1.35

$G_h =$ 1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

$q_z =$ 53.73

$q_z (ice) =$ 8.60

$q_z (30) =$ 3.09

$K_z =$ 1.414 (from 2.6.5.2)

$K_{zt} =$ 1.0 (from 2.6.6.2.1)

$K_s =$ 1.0 (from 2.6.7)

$K_e =$ 1.00 (from 2.6.8)

$K_d =$ 0.95 (from Table 2-2)

$V_{max} =$ 125 mph (Ultimate Wind Speed)

$V_{max (ice)} =$ 50 mph

$V_{30} =$ 30 mph

Table 2-2

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

Date: 3/14/2022
 Project Name: NEW HAVEN WHEELER ST
 Project No.: CT2037
 Designed By: LBW Checked By: MSC



Determine Ca:

Table 2-9

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

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
 (Aspect ratio is independent of the spacing between support points of a linear appurtenance,
 Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.11 in Angle = 0 (deg) Equivalent Angle = 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
QD4616-7 Antenna	51.5	22.0	9.6	7.87	2.34	1.20	507	93	29
QD6616-7 Antenna	72.0	22.0	9.6	11.00	3.27	1.23	730	132	42
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	224	44	13
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.91	1.20	216	42	12
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.29	1.20	451	84	26
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.39	1.24	692	126	40
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	67	15	4
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.72	1.21	69	16	4
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	2.57	1.20	39	10	2
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	2.62	1.21	47	11	3
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	90	20	5
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	75	17	4
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	61	13	4
2" Pipe	2.4	12.0		0.20	0.20	1.20	13		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	15		
3" Pipe	3.5	12.0		0.29	0.29	1.20	19		
3/4" RoundBar	0.8	12.0		0.06	0.06	1.20	4		
5x3/8 Plate	0.4	12.0		0.03	0.03	2.00	3		

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 Designed By: LBW Checked By: MSC



WIND LOADS

Angle = 30 (deg) Ice Thickness = 1.11 in. Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	507	245	442
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	730	365	638
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	224	108	195
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	216	115	191
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	451	190	386
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	692	305	595
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	67	109	78
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	69	169	94
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	39	88	51
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	47	100	60
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	90	147	104
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	75	106	83

WIND LOADS WITH ICE:

QD4616-7 Antenna	53.7	24.2	11.8	9.03	4.41	2.22	4.55	1.20	1.29	93	49	82
QD6616-7 Antenna	74.2	24.2	11.8	12.48	6.09	3.06	6.28	1.23	1.37	131	72	116
AIR6419 Antenna	33.3	18.3	9.5	4.24	2.20	1.82	3.50	1.20	1.24	44	24	39
AIR6449 Antenna	32.6	18.1	10.3	4.10	2.34	1.80	3.16	1.20	1.23	42	25	38
OPA65R-BU4DA Antenna	50.2	23.2	10.0	8.10	3.49	2.16	5.01	1.20	1.31	84	39	72
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.84	5.11	3.16	7.33	1.23	1.41	125	62	109
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	15	23	17
RRUS-E2 B29 RRH (Side)	22.6	9.7	20.7	1.53	3.25	2.33	1.09	1.20	1.20	16	34	20
4426 B66 RRH (Side)	17.1	8.0	15.4	0.95	1.83	2.13	1.11	1.20	1.20	10	19	12
4415 B25 RRH (Side)	18.7	8.5	15.7	1.11	2.04	2.20	1.19	1.20	1.20	11	21	14
RRUS-32 B30 RRH (Side)	29.4	9.2	14.3	1.88	2.92	3.19	2.05	1.23	1.20	20	30	22
B5/B12 4449 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.30	1.20	1.20	17	22	18

WIND LOADS AT 30 MPH:

QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	29	14	25
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	42	21	37
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	13	6	11
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	12	7	11
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	26	11	22
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	40	18	34
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	4	10	5
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	5	3
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	3	6	3
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	5	8	6
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5

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 Designed By: LBW Checked By: MSC



WIND LOADS

Angle = 60 (deg) Ice Thickness = 1.11 in. Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	507	245	310
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	730	365	456
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	224	108	137
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	216	115	141
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	451	190	256
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	692	305	401
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	67	109	98
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	69	169	144
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	39	88	76
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	47	100	86
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	90	147	133
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	75	106	98

WIND LOADS WITH ICE:

QD4616-7 Antenna	53.7	24.2	11.8	9.03	4.41	2.22	4.55	1.20	1.29	93	49	60
QD6616-7 Antenna	74.2	24.2	11.8	12.48	6.09	3.06	6.28	1.23	1.37	131	72	87
AIR6419 Antenna	33.3	18.3	9.5	4.24	2.20	1.82	3.50	1.20	1.24	44	24	29
AIR6449 Antenna	32.6	18.1	10.3	4.10	2.34	1.80	3.16	1.20	1.23	42	25	29
OPA65R-BU4DA Antenna	50.2	23.2	10.0	8.10	3.49	2.16	5.01	1.20	1.31	84	39	50
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.84	5.11	3.16	7.33	1.23	1.41	125	62	78
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	15	23	21
RRUS-E2 B29 RRH (Side)	22.6	9.7	20.7	1.53	3.25	2.33	1.09	1.20	1.20	16	34	29
4426 B66 RRH (Side)	17.1	8.0	15.4	0.95	1.83	2.13	1.11	1.20	1.20	10	19	17
4415 B25 RRH (Side)	18.7	8.5	15.7	1.11	2.04	2.20	1.19	1.20	1.20	11	21	19
RRUS-32 B30 RRH (Side)	29.4	9.2	14.3	1.88	2.92	3.19	2.05	1.23	1.20	20	30	28
B5/B12 4449 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.30	1.20	1.20	17	22	21

WIND LOADS AT 30 MPH:

QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	29	14	18
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	42	21	26
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	13	6	8
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	12	7	8
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	26	11	15
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	40	18	23
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	4	10	8
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	5	4
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	3	6	5
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	5	8	8
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6

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 Project Name: NEW HAVEN WHEELER ST
 Project No.: CT2037
 Designed By: LBW Checked By: MSC



WIND LOADS

Angle = 90 (deg) Ice Thickness = 1.11 in. Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	507	245	245
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	730	365	365
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	224	108	108
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	216	115	115
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	451	190	190
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	692	305	305
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	67	109	109
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	69	169	169
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	39	88	88
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	47	100	100
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	90	147	147
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	75	106	106

WIND LOADS WITH ICE:

QD4616-7 Antenna	53.7	24.2	11.8	9.03	4.41	2.22	4.55	1.20	1.29	93	49	49
QD6616-7 Antenna	74.2	24.2	11.8	12.48	6.09	3.06	6.28	1.23	1.37	131	72	72
AIR6419 Antenna	33.3	18.3	9.5	4.24	2.20	1.82	3.50	1.20	1.24	44	24	24
AIR6449 Antenna	32.6	18.1	10.3	4.10	2.34	1.80	3.16	1.20	1.23	42	25	25
OPA65R-BU4DA Antenna	50.2	23.2	10.0	8.10	3.49	2.16	5.01	1.20	1.31	84	39	39
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.84	5.11	3.16	7.33	1.23	1.41	125	62	62
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	15	23	23
RRUS-E2 B29 RRH (Side)	22.6	9.7	20.7	1.53	3.25	2.33	1.09	1.20	1.20	16	34	34
4426 B66 RRH (Side)	17.1	8.0	15.4	0.95	1.83	2.13	1.11	1.20	1.20	10	19	19
4415 B25 RRH (Side)	18.7	8.5	15.7	1.11	2.04	2.20	1.19	1.20	1.20	11	21	21
RRUS-32 B30 RRH (Side)	29.4	9.2	14.3	1.88	2.92	3.19	2.05	1.23	1.20	20	30	30
B5/B12 4449 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.30	1.20	1.20	17	22	22

WIND LOADS AT 30 MPH:

QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	29	14	14
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	42	21	21
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	13	6	6
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	12	7	7
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	26	11	11
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	40	18	18
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	4	10	10
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	5	5
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	3	6	6
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	5	8	8
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6

Date: 3/14/2022
 Project Name: NEW HAVEN WHEELER ST
 Project No.: CT2037
 Designed By: LBW Checked By: MSC



WIND LOADS

Angle = 120 (deg) Ice Thickness = 1.11 in. Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	507	245	310
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	730	365	456
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	224	108	137
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	216	115	141
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	451	190	256
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	692	305	401
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	67	109	98
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	69	169	144
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	39	88	76
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	47	100	86
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	90	147	133
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	75	106	98

WIND LOADS WITH ICE:

QD4616-7 Antenna	53.7	24.2	11.8	9.03	4.41	2.22	4.55	1.20	1.29	93	49	60
QD6616-7 Antenna	74.2	24.2	11.8	12.48	6.09	3.06	6.28	1.23	1.37	131	72	87
AIR6419 Antenna	33.3	18.3	9.5	4.24	2.20	1.82	3.50	1.20	1.24	44	24	29
AIR6449 Antenna	32.6	18.1	10.3	4.10	2.34	1.80	3.16	1.20	1.23	42	25	29
OPA65R-BU4DA Antenna	50.2	23.2	10.0	8.10	3.49	2.16	5.01	1.20	1.31	84	39	50
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.84	5.11	3.16	7.33	1.23	1.41	125	62	78
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	15	23	21
RRUS-E2 B29 RRH (Side)	22.6	9.7	20.7	1.53	3.25	2.33	1.09	1.20	1.20	16	34	29
4426 B66 RRH (Side)	17.1	8.0	15.4	0.95	1.83	2.13	1.11	1.20	1.20	10	19	17
4415 B25 RRH (Side)	18.7	8.5	15.7	1.11	2.04	2.20	1.19	1.20	1.20	11	21	19
RRUS-32 B30 RRH (Side)	29.4	9.2	14.3	1.88	2.92	3.19	2.05	1.23	1.20	20	30	28
B5/B12 4449 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.30	1.20	1.20	17	22	21

WIND LOADS AT 30 MPH:

QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	29	14	18
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	42	21	26
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	13	6	8
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	12	7	8
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	26	11	15
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	40	18	23
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	4	10	8
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	5	4
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	3	6	5
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	5	8	8
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6

Date: 3/14/2022
 Project Name: NEW HAVEN WHEELER ST
 Project No.: CT2037
 Designed By: LBW Checked By: MSC



WIND LOADS

Angle = 150 (deg) Ice Thickness = 1.11 in. Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	507	245	442
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	730	365	638
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	224	108	195
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	216	115	191
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	451	190	386
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	692	305	595
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	67	109	78
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	69	169	94
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	39	88	51
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	47	100	60
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	90	147	104
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	75	106	83

WIND LOADS WITH ICE:

QD4616-7 Antenna	53.7	24.2	11.8	9.03	4.41	2.22	4.55	1.20	1.29	93	49	82
QD6616-7 Antenna	74.2	24.2	11.8	12.48	6.09	3.06	6.28	1.23	1.37	131	72	116
AIR6419 Antenna	33.3	18.3	9.5	4.24	2.20	1.82	3.50	1.20	1.24	44	24	39
AIR6449 Antenna	32.6	18.1	10.3	4.10	2.34	1.80	3.16	1.20	1.23	42	25	38
OPA65R-BU4DA Antenna	50.2	23.2	10.0	8.10	3.49	2.16	5.01	1.20	1.31	84	39	72
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.84	5.11	3.16	7.33	1.23	1.41	125	62	109
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	15	23	17
RRUS-E2 B29 RRH (Side)	22.6	9.7	20.7	1.53	3.25	2.33	1.09	1.20	1.20	16	34	20
4426 B66 RRH (Side)	17.1	8.0	15.4	0.95	1.83	2.13	1.11	1.20	1.20	10	19	12
4415 B25 RRH (Side)	18.7	8.5	15.7	1.11	2.04	2.20	1.19	1.20	1.20	11	21	14
RRUS-32 B30 RRH (Side)	29.4	9.2	14.3	1.88	2.92	3.19	2.05	1.23	1.20	20	30	22
B5/B12 4449 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.30	1.20	1.20	17	22	18

WIND LOADS AT 30 MPH:

QD4616-7 Antenna	51.5	22.0	9.6	7.87	3.43	2.34	5.36	1.20	1.33	29	14	25
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	42	21	37
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	13	6	11
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	12	7	11
OPA65R-BU4DA Antenna	48.0	21.0	7.8	7.00	2.60	2.29	6.15	1.20	1.36	26	11	22
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	40	18	34
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	4	10	5
4426 B66 RRH (Side)	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	5	3
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	3	6	3
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	5	8	6
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5

Date: 3/14/2022
 Project Name: NEW HAVEN WHEELER ST
 Project No.: CT2037
 Designed By: LBW Checked By: MSC



ICE WEIGHT CALCULATIONS

Thickness of ice: 1.11 in.
 Density of ice: 56 pcf

QD4616-7 Antenna

Weight of ice based on total radial SF area:
 Height (in): 51.5
 Width (in): 22.0
 Depth (in): 9.6
 Total weight of ice on object: 146 lbs
 Weight of object: 109.0 lbs
 Combined weight of ice and object: 255 lbs

QD6616-7 Antenna

Weight of ice based on total radial SF area:
 Height (in): 72.0
 Width (in): 22.0
 Depth (in): 9.6
 Total weight of ice on object: 204 lbs
 Weight of object: 130.0 lbs
 Combined weight of ice and object: 334 lbs

AIR6419 Antenna

Weight of ice based on total radial SF area:
 Height (in): 31.1
 Width (in): 16.1
 Depth (in): 7.3
 Total weight of ice on object: 66 lbs
 Weight of object: 66.0 lbs
 Combined weight of ice and object: 132 lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:
 Height (in): 30.4
 Width (in): 15.9
 Depth (in): 8.1
 Total weight of ice on object: 65 lbs
 Weight of object: 82.0 lbs
 Combined weight of ice and object: 147 lbs

OPA65R-BU4DA Antenna

Weight of ice based on total radial SF area:
 Height (in): 48.0
 Width (in): 21.0
 Depth (in): 7.8
 Total weight of ice on object: 128 lbs
 Weight of object: 53.0 lbs
 Combined weight of ice and object: 181 lbs

OPA65R-BU6DA Antenna

Weight of ice based on total radial SF area:
 Height (in): 71.2
 Width (in): 21.0
 Depth (in): 7.8
 Total weight of ice on object: 189 lbs
 Weight of object: 64.0 lbs
 Combined weight of ice and object: 253 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:
 Height (in): 18.1
 Width (in): 13.4
 Depth (in): 8.3
 Total weight of ice on object: 35 lbs
 Weight of object: 60.0 lbs
 Combined weight of ice and object: 95 lbs

RRUS-E2 B29 RRH

Weight of ice based on total radial SF area:
 Height (in): 20.4
 Width (in): 18.5
 Depth (in): 7.5
 Total weight of ice on object: 49 lbs
 Weight of object: 53.0 lbs
 Combined weight of ice and object: 102 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:
 Height (in): 14.9
 Width (in): 13.2
 Depth (in): 5.8
 Total weight of ice on object: 26 lbs
 Weight of object: 49.0 lbs
 Combined weight of ice and object: 75 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:
 Height (in): 16.5
 Width (in): 13.5
 Depth (in): 6.3
 Total weight of ice on object: 30 lbs
 Weight of object: 46.0 lbs
 Combined weight of ice and object: 76 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:
 Height (in): 27.2
 Width (in): 12.1
 Depth (in): 7.0
 Total weight of ice on object: 46 lbs
 Weight of object: 60.0 lbs
 Combined weight of ice and object: 106 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:
 Height (in): 17.9
 Width (in): 13.2
 Depth (in): 9.4
 Total weight of ice on object: 35 lbs
 Weight of object: 73.0 lbs
 Combined weight of ice and object: 108 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:
 Depth (in): 24.0
 Diameter(in): 9.7
 Total weight of ice on object: 29 lbs
 Weight of object: 33 lbs
 Combined weight of ice and object: 62 lbs

3/4" Round Bar

Per foot weight of ice:
 diameter (in): 0.75
 Per foot weight of ice on object: 3 plf

2" pipe

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

2-1/2" pipe

Per foot weight of ice:
 diameter (in): 2.88
 Per foot weight of ice on object: 5 plf

PL 5x3/8

Weight of ice based on total radial SF area:
 Height (in): 5
 Width (in): 0.375
 Per foot weight of ice on object: 8 plf

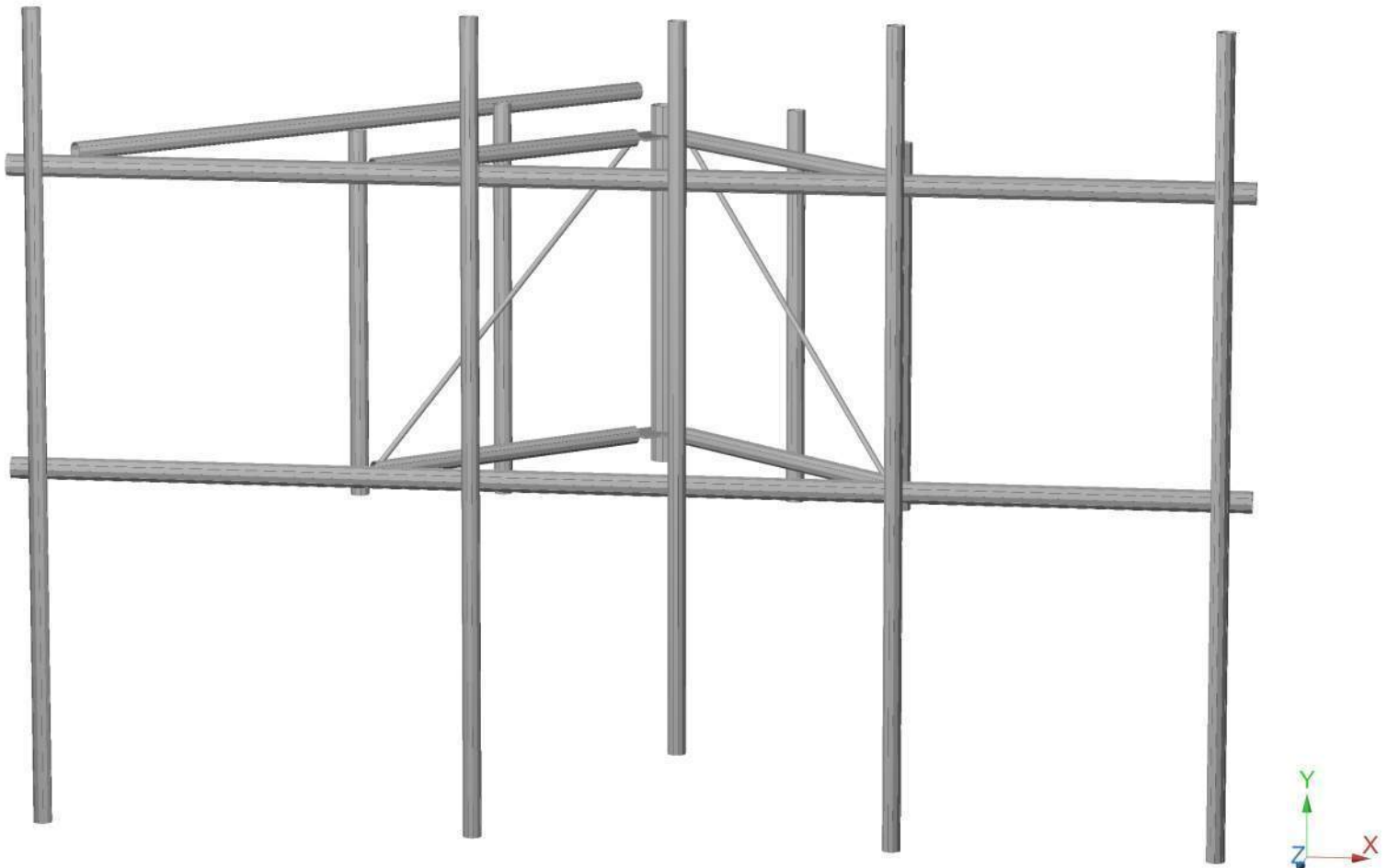
3" Pipe

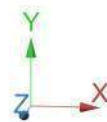
Per foot weight of ice:
 diameter (in): 3.5
 Per foot weight of ice on object: 6 plf



HUDSON
Design Group LLC

Mount Calculations (Existing Conditions)

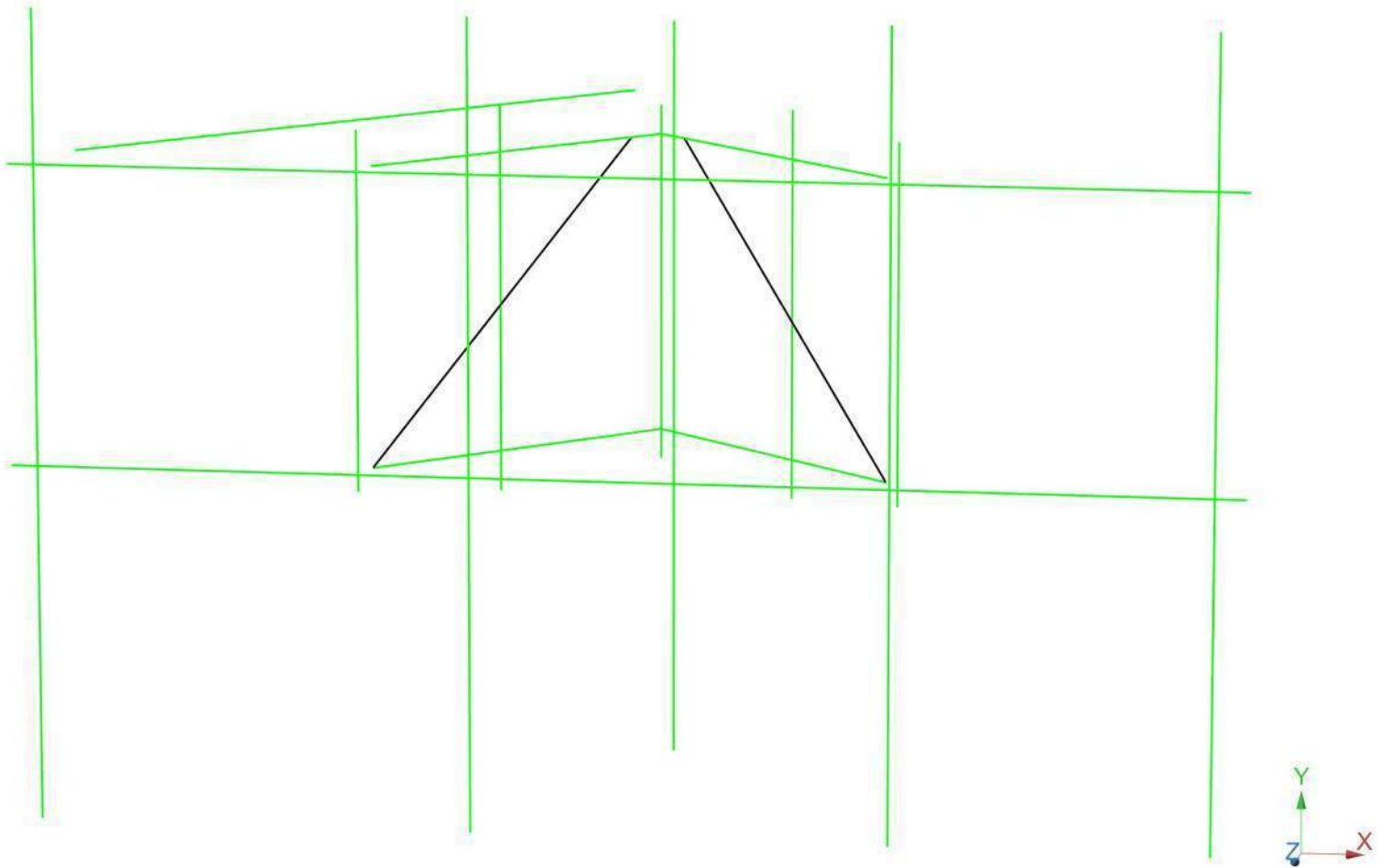


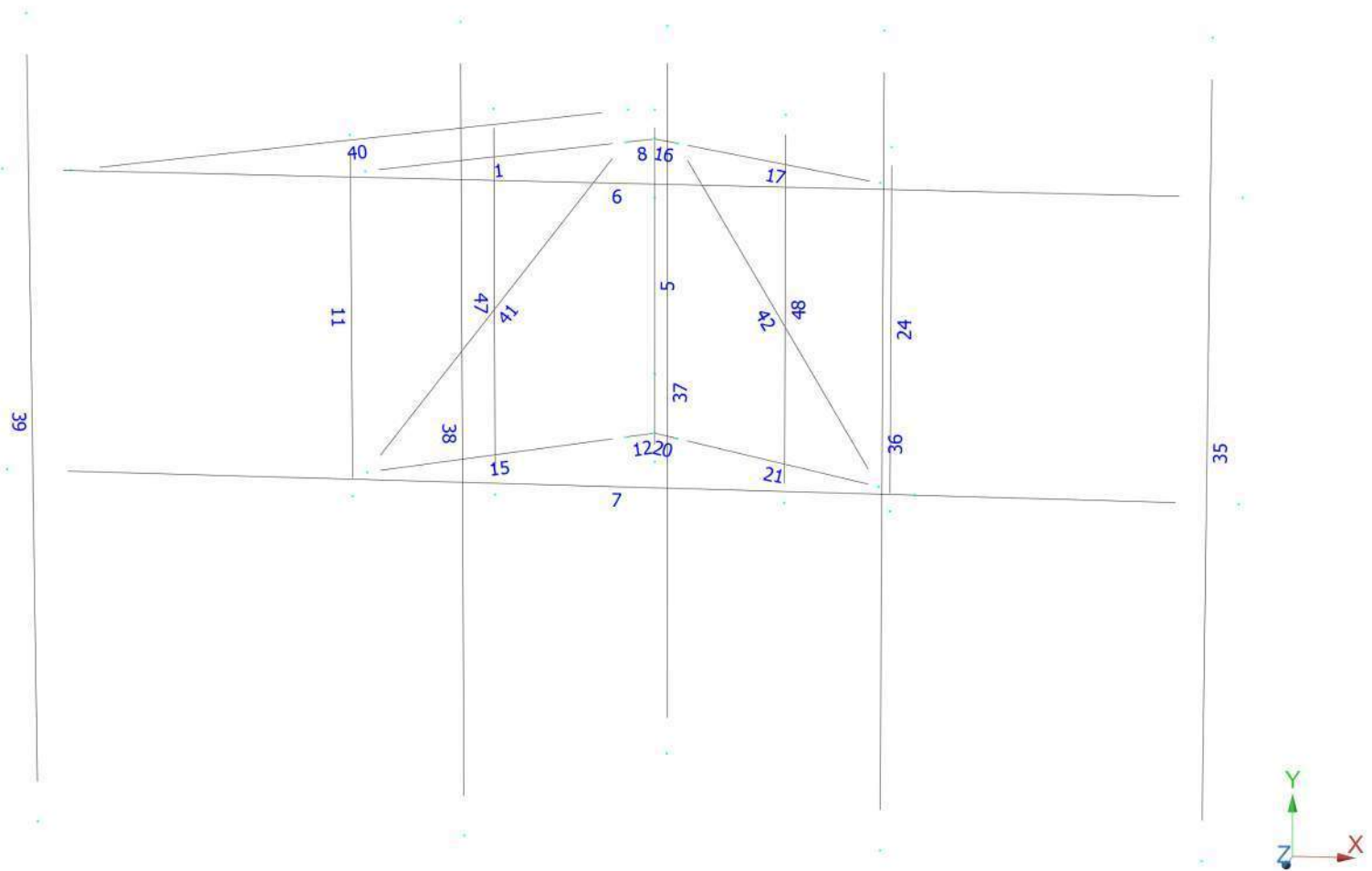




Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





Current Date: 3/14/2022 5:29 PM
Units system: English

Load data

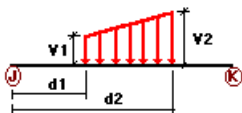
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

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

Distributed force on members



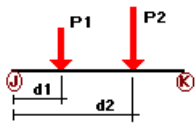
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	Z	-0.013	0.00	0.00	No	0.00	No
	5	Z	-0.019	0.00	0.00	No	0.00	No
	6	Z	-0.015	0.00	0.00	No	0.00	No
	7	Z	-0.015	0.00	0.00	No	0.00	No
	8	Z	-0.003	0.00	0.00	No	0.00	No
	11	Z	-0.013	0.00	0.00	No	0.00	No
	12	Z	-0.003	0.00	0.00	No	0.00	No
	15	Z	-0.013	0.00	0.00	No	0.00	No
	16	Z	-0.003	0.00	0.00	No	0.00	No
	17	Z	-0.013	0.00	0.00	No	0.00	No

W30	20	z	-0.003	0.00	0.00	No	0.00	No
	21	z	-0.013	0.00	0.00	No	0.00	No
	24	z	-0.013	0.00	0.00	No	0.00	No
	35	z	-0.013	0.00	0.00	No	0.00	No
	36	z	-0.013	-0.013	75.00	Yes	100.00	Yes
	37	z	-0.013	0.00	0.00	No	0.00	No
	38	z	-0.013	-0.013	75.00	Yes	100.00	Yes
	39	z	-0.013	-0.013	75.00	Yes	100.00	Yes
	40	z	-0.013	0.00	0.00	No	0.00	No
	41	z	-0.004	0.00	0.00	No	0.00	No
	42	z	-0.004	0.00	0.00	No	0.00	No
	47	z	-0.013	0.00	0.00	No	0.00	No
	48	z	-0.013	0.00	0.00	No	0.00	No
	1	z	-0.013	0.00	0.00	No	0.00	No
	5	z	-0.019	0.00	0.00	No	0.00	No
	6	z	-0.015	0.00	0.00	No	0.00	No
	7	z	-0.015	0.00	0.00	No	0.00	No
	8	z	-0.003	0.00	0.00	No	0.00	No
	11	z	-0.013	0.00	0.00	No	0.00	No
	12	z	-0.003	0.00	0.00	No	0.00	No
W60	15	z	-0.013	0.00	0.00	No	0.00	No
	16	z	-0.003	0.00	0.00	No	0.00	No
	17	z	-0.013	0.00	0.00	No	0.00	No
	20	z	-0.003	0.00	0.00	No	0.00	No
	21	z	-0.013	0.00	0.00	No	0.00	No
	24	z	-0.013	0.00	0.00	No	0.00	No
	35	z	-0.013	0.00	0.00	No	0.00	No
	36	z	-0.013	-0.013	75.00	Yes	100.00	Yes
	37	z	-0.013	0.00	0.00	No	0.00	No
	38	z	-0.013	-0.013	75.00	Yes	100.00	Yes
	39	z	-0.013	-0.013	75.00	Yes	100.00	Yes
	40	z	-0.013	0.00	0.00	No	0.00	No
	41	z	-0.004	0.00	0.00	No	0.00	No
	42	z	-0.004	0.00	0.00	No	0.00	No
	47	z	-0.013	0.00	0.00	No	0.00	No
	48	z	-0.013	0.00	0.00	No	0.00	No
	1	x	-0.013	0.00	0.00	No	0.00	No
	5	x	-0.019	0.00	0.00	No	0.00	No
	6	x	-0.015	0.00	0.00	No	0.00	No
	7	x	-0.015	0.00	0.00	No	0.00	No
W90	8	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.013	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.013	0.00	0.00	No	0.00	No
	16	x	-0.003	0.00	0.00	No	0.00	No
	17	x	-0.013	0.00	0.00	No	0.00	No
	20	x	-0.003	0.00	0.00	No	0.00	No
	21	x	-0.013	0.00	0.00	No	0.00	No
	24	x	-0.013	0.00	0.00	No	0.00	No
	35	x	-0.013	0.00	0.00	No	0.00	No
	36	x	-0.013	0.00	0.00	No	0.00	No
	37	x	-0.013	0.00	0.00	No	0.00	No
	38	x	-0.013	0.00	0.00	No	0.00	No
	39	x	-0.013	0.00	0.00	No	0.00	No
	40	x	-0.013	0.00	0.00	No	0.00	No
	41	x	-0.004	0.00	0.00	No	0.00	No
	42	x	-0.004	0.00	0.00	No	0.00	No
	47	x	-0.013	0.00	0.00	No	0.00	No
	48	x	-0.013	0.00	0.00	No	0.00	No
	1	x	-0.013	0.00	0.00	No	0.00	No
	5	x	-0.019	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.013	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.013	0.00	0.00	No	0.00	No
	16	x	-0.003	0.00	0.00	No	0.00	No

	17	x	-0.013	0.00	0.00	No	0.00	No
	20	x	-0.003	0.00	0.00	No	0.00	No
	21	x	-0.013	0.00	0.00	No	0.00	No
	24	x	-0.013	0.00	0.00	No	0.00	No
	35	x	-0.013	0.00	0.00	No	0.00	No
	36	x	-0.013	0.00	0.00	No	0.00	No
	37	x	-0.013	0.00	0.00	No	0.00	No
	38	x	-0.013	0.00	0.00	No	0.00	No
	39	x	-0.013	0.00	0.00	No	0.00	No
	40	x	-0.013	0.00	0.00	No	0.00	No
	41	x	-0.004	0.00	0.00	No	0.00	No
	42	x	-0.004	0.00	0.00	No	0.00	No
	47	x	-0.013	0.00	0.00	No	0.00	No
	48	x	-0.013	0.00	0.00	No	0.00	No
W120	1	x	-0.013	0.00	0.00	No	0.00	No
	5	x	-0.019	0.00	0.00	No	0.00	No
	6	x	-0.015	0.00	0.00	No	0.00	No
	7	x	-0.015	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.013	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.013	0.00	0.00	No	0.00	No
	16	x	-0.003	0.00	0.00	No	0.00	No
	17	x	-0.013	0.00	0.00	No	0.00	No
	20	x	-0.003	0.00	0.00	No	0.00	No
	21	x	-0.013	0.00	0.00	No	0.00	No
	24	x	-0.013	0.00	0.00	No	0.00	No
	35	x	-0.013	0.00	0.00	No	0.00	No
	36	x	-0.013	0.00	0.00	No	0.00	No
	37	x	-0.013	0.00	0.00	No	0.00	No
	38	x	-0.013	0.00	0.00	No	0.00	No
	39	x	-0.013	0.00	0.00	No	0.00	No
	40	x	-0.013	0.00	0.00	No	0.00	No
	41	x	-0.004	0.00	0.00	No	0.00	No
	42	x	-0.004	0.00	0.00	No	0.00	No
	47	x	-0.013	0.00	0.00	No	0.00	No
	48	x	-0.013	0.00	0.00	No	0.00	No
W150	1	z	0.013	0.00	0.00	No	0.00	No
	5	z	0.019	0.00	0.00	No	0.00	No
	6	z	0.015	0.00	0.00	No	0.00	No
	7	z	0.015	0.00	0.00	No	0.00	No
	8	z	0.003	0.00	0.00	No	0.00	No
	11	z	0.013	0.00	0.00	No	0.00	No
	12	z	0.003	0.00	0.00	No	0.00	No
	15	z	0.013	0.00	0.00	No	0.00	No
	16	z	0.003	0.00	0.00	No	0.00	No
	17	z	0.013	0.00	0.00	No	0.00	No
	20	z	0.003	0.00	0.00	No	0.00	No
	21	z	0.013	0.00	0.00	No	0.00	No
	24	z	0.013	0.00	0.00	No	0.00	No
	35	z	0.013	0.00	0.00	No	0.00	No
	36	z	0.013	0.00	0.00	No	0.00	No
	37	z	0.013	0.00	0.00	No	0.00	No
	38	z	0.013	0.00	0.00	No	0.00	No
	39	z	0.013	0.00	0.00	No	0.00	No
	40	z	0.013	0.00	0.00	No	0.00	No
	41	z	0.004	0.00	0.00	No	0.00	No
	42	z	0.004	0.00	0.00	No	0.00	No
	47	z	0.013	0.00	0.00	No	0.00	No
	48	z	0.013	0.00	0.00	No	0.00	No
Di	1	y	-0.005	0.00	0.00	No	0.00	No
	5	y	-0.006	0.00	0.00	No	0.00	No
	6	y	-0.005	0.00	0.00	No	0.00	No
	7	y	-0.005	0.00	0.00	No	0.00	No
	8	y	-0.008	0.00	0.00	No	0.00	No
	11	y	-0.005	0.00	0.00	No	0.00	No

12	y	-0.008	0.00	0.00	No	0.00	No
15	y	-0.005	0.00	0.00	No	0.00	No
16	y	-0.008	0.00	0.00	No	0.00	No
17	y	-0.005	0.00	0.00	No	0.00	No
20	y	-0.008	0.00	0.00	No	0.00	No
21	y	-0.005	0.00	0.00	No	0.00	No
24	y	-0.005	0.00	0.00	No	0.00	No
35	y	-0.005	0.00	0.00	No	0.00	No
36	y	-0.005	0.00	0.00	No	0.00	No
37	y	-0.005	0.00	0.00	No	0.00	No
38	y	-0.005	0.00	0.00	No	0.00	No
39	y	-0.005	0.00	0.00	No	0.00	No
40	y	-0.005	0.00	0.00	No	0.00	No
41	y	-0.003	0.00	0.00	No	0.00	No
42	y	-0.003	0.00	0.00	No	0.00	No
47	y	-0.005	0.00	0.00	No	0.00	No
48	y	-0.005	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	11	y	-0.06	2.00	No
		y	-0.073	2.00	No
	24	y	-0.06	2.00	No
		y	-0.053	2.00	No
	36	y	-0.065	1.00	No
		y	-0.065	6.00	No
	37	y	-0.049	2.50	No
		y	-0.046	2.50	No
	38	y	-0.033	0.50	No
		y	-0.033	2.25	No
		y	-0.041	4.25	No
	39	y	-0.041	6.00	No
		y	-0.032	1.00	No
		y	-0.032	6.00	No
	47	y	-0.033	2.00	No
	48	y	-0.033	2.00	No
Wo	11	z	-0.09	2.00	No
		z	-0.069	2.00	No
	24	z	-0.069	2.00	No
		z	-0.365	1.00	No
	36	z	-0.365	6.00	No
		z	-0.047	2.50	No
	37	z	-0.113	0.50	No
		z	-0.113	2.25	No
		z	-0.109	4.25	No
	38	z	-0.109	6.00	No
		z	-0.346	1.00	No
		z	-0.346	6.00	No
	39	z	-0.061	2.00	No
		z	-0.061	2.00	No
W30	11	3	-0.104	2.00	No
	24	3	-0.094	2.00	No
	36	3	-0.32	1.00	No
		3	-0.32	6.00	No
	37	3	-0.06	2.50	No
	38	3	-0.098	0.50	No

		3	-0.098	2.25	No
		3	-0.096	4.25	No
		3	-0.096	6.00	No
	39	3	-0.298	1.00	No
		3	-0.298	6.00	No
	47	3	-0.061	2.00	No
	48	3	-0.061	2.00	No
W60	11	3	-0.133	2.00	No
	24	3	-0.144	2.00	No
	36	3	-0.229	1.00	No
		3	-0.229	6.00	No
	37	3	-0.086	2.50	No
	38	3	-0.069	0.50	No
		3	-0.069	2.25	No
		3	-0.071	4.25	No
		3	-0.071	6.00	No
	39	3	-0.201	1.00	No
		3	-0.201	6.00	No
	47	3	-0.061	2.00	No
	48	3	-0.061	2.00	No
W90	11	x	-0.147	2.00	No
	24	x	-0.169	2.00	No
	36	x	-0.183	1.00	No
		x	-0.183	6.00	No
	37	x	-0.10	2.50	No
	38	x	-0.055	0.50	No
		x	-0.055	2.25	No
		x	-0.058	4.25	No
		x	-0.058	6.00	No
	39	x	-0.153	1.00	No
		x	-0.153	6.00	No
	47	x	-0.061	2.00	No
	48	x	-0.061	2.00	No
W120	11	2	-0.133	2.00	No
	24	2	-0.144	2.00	No
	36	2	-0.229	1.00	No
		2	-0.229	6.00	No
	37	2	-0.086	2.50	No
	38	2	-0.069	0.50	No
		2	-0.069	2.25	No
		2	-0.071	4.25	No
		2	-0.071	6.00	No
	39	2	-0.201	1.00	No
		2	-0.201	6.00	No
	47	2	-0.061	2.00	No
	48	2	-0.061	2.00	No
W150	11	2	-0.104	2.00	No
	24	2	-0.094	2.00	No
	36	2	-0.32	1.00	No
		2	-0.32	6.00	No
	37	2	-0.06	2.50	No
	38	2	-0.098	0.50	No
		2	-0.098	2.25	No
		2	-0.096	4.25	No
		2	-0.096	6.00	No
	39	2	-0.298	1.00	No
		2	-0.298	6.00	No
	47	2	-0.061	2.00	No
	48	2	-0.061	2.00	No
Di	11	y	-0.046	2.00	No
		y	-0.035	2.00	No
	24	y	-0.035	2.00	No
		y	-0.049	2.00	No
	36	y	-0.102	1.00	No
		y	-0.102	6.00	No
	37	y	-0.026	2.50	No

		y	-0.03	2.50	No
	38	y	-0.033	0.50	No
		y	-0.033	2.25	No
		y	-0.033	4.25	No
		y	-0.033	6.00	No
	39	y	-0.095	1.00	No
		y	-0.095	6.00	No
	47	y	-0.029	2.00	No
	48	y	-0.029	2.00	No
WI0	11	z	-0.02	2.00	No
	24	z	-0.016	2.00	No
	36	z	-0.067	1.00	No
		z	-0.067	6.00	No
	37	z	-0.011	2.50	No
	38	z	-0.022	0.50	No
		z	-0.022	2.25	No
		z	-0.022	4.25	No
		z	-0.022	6.00	No
	39	z	-0.064	1.00	No
		z	-0.064	6.00	No
	47	z	-0.013	2.00	No
	48	z	-0.013	2.00	No
WI30	11	3	-0.022	2.00	No
	24	3	-0.02	2.00	No
	36	3	-0.059	1.00	No
		3	-0.059	6.00	No
	37	3	-0.014	2.50	No
	38	3	-0.02	0.50	No
		3	-0.02	2.25	No
		3	-0.019	4.25	No
		3	-0.019	6.00	No
	39	3	-0.055	1.00	No
		3	-0.055	6.00	No
	47	3	-0.013	2.00	No
	48	3	-0.013	2.00	No
WI60	11	3	-0.028	2.00	No
	24	3	-0.029	2.00	No
	36	3	-0.044	1.00	No
		3	-0.044	6.00	No
	37	3	-0.019	2.50	No
	38	3	-0.015	0.50	No
		3	-0.015	2.25	No
		3	-0.015	4.25	No
		3	-0.015	6.00	No
	39	3	-0.039	1.00	No
		3	-0.039	6.00	No
	47	3	-0.013	2.00	No
	48	3	-0.013	2.00	No
WI90	11	x	-0.03	2.00	No
	24	x	-0.034	2.00	No
	36	x	-0.036	1.00	No
		x	-0.036	6.00	No
	37	x	-0.021	2.50	No
	38	x	-0.012	0.50	No
		x	-0.012	2.25	No
		x	-0.013	4.25	No
		x	-0.013	6.00	No
	39	x	-0.031	1.00	No
		x	-0.031	6.00	No
	47	x	-0.013	2.00	No
	48	x	-0.013	2.00	No
WI120	11	2	-0.028	2.00	No
	24	2	-0.029	2.00	No
	36	2	-0.044	1.00	No
		2	-0.044	6.00	No
	37	2	-0.019	2.50	No

WL150	38	2	-0.015	0.50	No
		2	-0.015	2.25	No
		2	-0.015	4.25	No
		2	-0.015	6.00	No
	39	2	-0.039	1.00	No
		2	-0.039	6.00	No
	47	2	-0.013	2.00	No
	48	2	-0.013	2.00	No
	11	2	-0.022	2.00	No
	24	2	-0.02	2.00	No
	36	2	-0.059	1.00	No
		2	-0.059	6.00	No
	37	2	-0.014	2.50	No
	38	2	-0.02	0.50	No
		2	-0.02	2.25	No
WL0		2	-0.019	4.25	No
		2	-0.019	6.00	No
	39	2	-0.055	1.00	No
		2	-0.055	6.00	No
	47	2	-0.013	2.00	No
	48	2	-0.013	2.00	No
	11	z	-0.005	2.00	No
	24	z	-0.004	2.00	No
	36	z	-0.022	1.00	No
		z	-0.022	6.00	No
	37	z	-0.003	2.50	No
	38	z	-0.007	0.50	No
		z	-0.007	2.25	No
		z	-0.007	4.25	No
		z	-0.007	6.00	No
WL30	39	z	-0.02	1.00	No
		z	-0.02	6.00	No
	47	z	-0.004	2.00	No
	48	z	-0.004	2.00	No
	11	3	-0.006	2.00	No
	24	3	-0.005	2.00	No
	36	3	-0.019	1.00	No
		3	-0.019	6.00	No
	37	3	-0.003	2.50	No
	38	3	-0.006	0.50	No
		3	-0.006	2.25	No
		3	-0.006	4.25	No
		3	-0.006	6.00	No
	39	3	-0.018	1.00	No
		3	-0.018	6.00	No
WL60	47	3	-0.004	2.00	No
	48	3	-0.004	2.00	No
	11	3	-0.008	2.00	No
	24	3	-0.008	2.00	No
	36	3	-0.014	1.00	No
		3	-0.014	6.00	No
	37	3	-0.005	2.50	No
	38	3	-0.004	0.50	No
		3	-0.004	2.25	No
		3	-0.005	4.25	No
		3	-0.005	6.00	No
	39	3	-0.012	1.00	No
		3	-0.012	6.00	No
	47	3	-0.004	2.00	No
	48	3	-0.004	2.00	No
WL90	11	x	-0.008	2.00	No
	24	x	-0.01	2.00	No
	36	x	-0.011	1.00	No
		x	-0.011	6.00	No
	37	x	-0.006	2.50	No
	38	x	-0.004	0.50	No

		x	-0.004	2.25	No
		x	-0.004	4.25	No
		x	-0.004	6.00	No
	39	x	-0.009	1.00	No
		x	-0.009	6.00	No
	47	x	-0.004	2.00	No
	48	x	-0.004	2.00	No
WL120	11	2	-0.008	2.00	No
	24	2	-0.008	2.00	No
	36	2	-0.014	1.00	No
		2	-0.014	6.00	No
	37	2	-0.005	2.50	No
	38	2	-0.004	0.50	No
		2	-0.004	2.25	No
		2	-0.005	4.25	No
		2	-0.005	6.00	No
	39	2	-0.012	1.00	No
		2	-0.012	6.00	No
	47	2	-0.004	2.00	No
	48	2	-0.004	2.00	No
WL150	11	2	-0.006	2.00	No
	24	2	-0.005	2.00	No
	36	2	-0.019	1.00	No
		2	-0.019	6.00	No
	37	2	-0.003	2.50	No
	38	2	-0.006	0.50	No
		2	-0.006	2.25	No
		2	-0.006	4.25	No
		2	-0.006	6.00	No
	39	2	-0.018	1.00	No
		2	-0.018	6.00	No
	47	2	-0.004	2.00	No
	48	2	-0.004	2.00	No
LL1	6	y	-0.25	6.75	No
LL2	6	y	-0.25	13.50	No
LL3	6	y	-0.25	0.00	No
LLa1	35	y	-0.50	4.50	No
LLa2	36	y	-0.50	4.50	No
LLa3	38	y	-0.50	4.50	No
LLa4	39	y	-0.50	4.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00

WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load Antenna 4	No	0.00	0.00	0.00

Current Date: 3/14/2022 5:30 PM
Units system: English

Steel Code Check

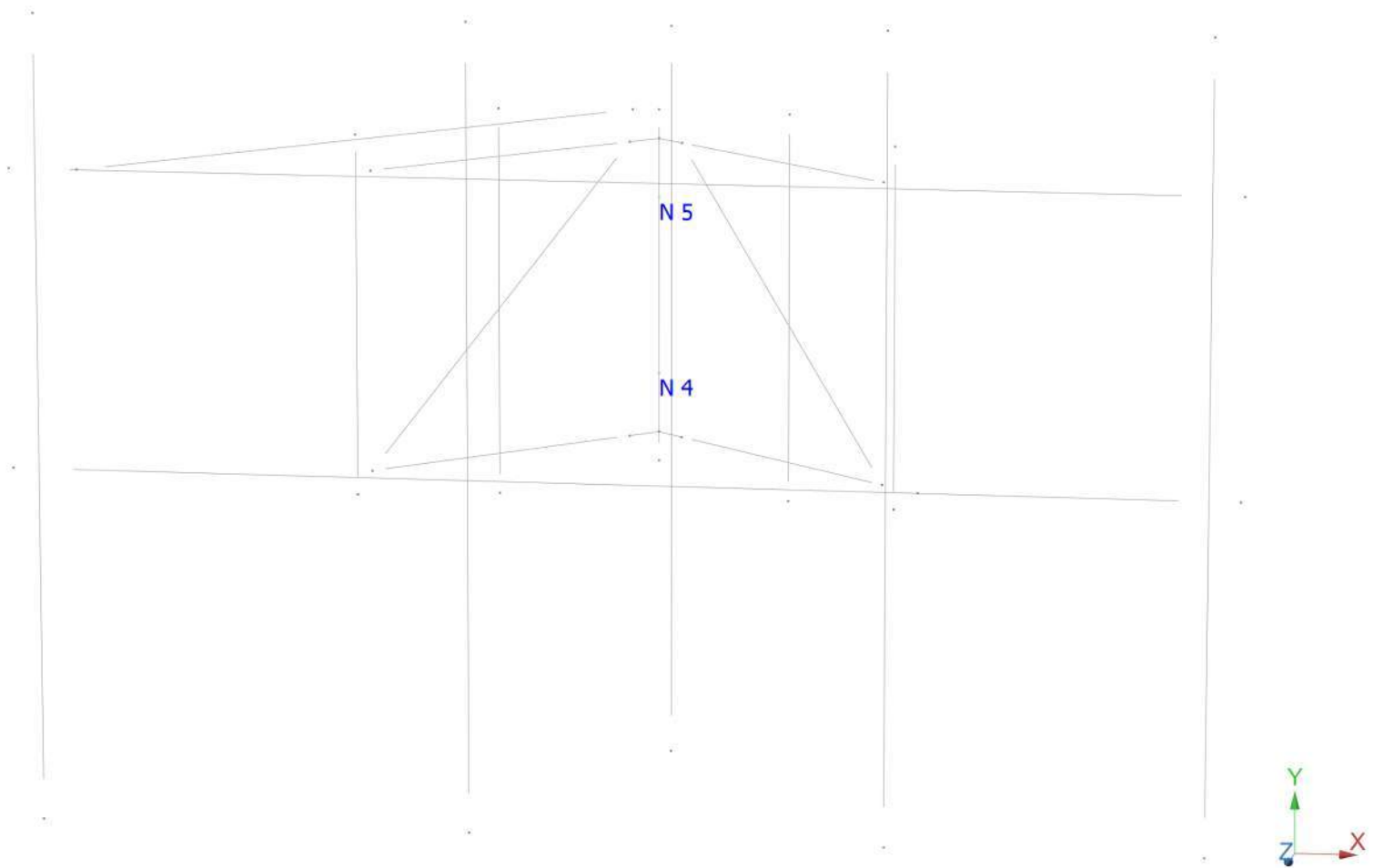
Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+Wi0
LC26=1.2D+Di+Wi30
LC27=1.2D+Di+Wi60
LC28=1.2D+Di+Wi90
LC29=1.2D+Di+Wi120
LC30=1.2D+Di+Wi150
LC31=1.2D+Di-Wi0
LC32=1.2D+Di-Wi30
LC33=1.2D+Di-Wi60
LC34=1.2D+Di-Wi90
LC35=1.2D+Di-Wi120
LC36=1.2D+Di-Wi150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2

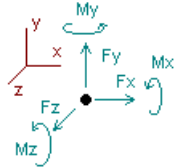
LC61=1.2D-WL90+1.6LLa2
 LC62=1.2D-WL120+1.6LLa2
 LC63=1.2D-WL150+1.6LLa2
 LC64=1.2D-WL0+1.6LLa3
 LC65=1.2D-WL30+1.6LLa3
 LC66=1.2D-WL60+1.6LLa3
 LC67=1.2D-WL90+1.6LLa3
 LC68=1.2D-WL120+1.6LLa3
 LC69=1.2D-WL150+1.6LLa3
 LC70=1.2D-WL0+1.6LLa3
 LC71=1.2D-WL30+1.6LLa3
 LC72=1.2D-WL60+1.6LLa3
 LC73=1.2D-WL90+1.6LLa3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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	6	LC10 at 25.69%	0.52	OK	
		7	LC6 at 25.78%	0.33	OK	
	PIPE 2x0.154	1	LC10 at 0.00%	0.71	OK	
		11	LC85 at 93.75%	0.28	OK	
		15	LC10 at 0.00%	0.62	OK	
		17	LC4 at 0.00%	0.53	OK	
		21	LC4 at 0.00%	0.52	OK	
		24	LC43 at 93.75%	0.24	OK	
		35	LC47 at 56.25%	0.33	OK	
		36	LC7 at 58.33%	0.27	OK	
		37	LC2 at 62.50%	0.12	OK	
		38	LC1 at 56.25%	0.21	OK	
		39	LC87 at 56.25%	0.44	OK	
		40	LC15 at 100.00%	0.16	OK	
		47	LC83 at 87.50%	0.07	OK	
		48	LC41 at 87.50%	0.07	OK	
	PIPE 3x0.216	5	LC77 at 23.75%	0.48	OK	
	PL 5x3/8	8	LC77 at 0.00%	0.78	OK	
		12	LC10 at 0.00%	0.26	OK	
		16	LC49 at 0.00%	0.73	OK	
		20	LC10 at 0.00%	0.22	OK	
	RndBar 3_4	41	LC83 at 0.00%	0.20	With warnings	
		42	LC41 at 0.00%	0.18	With warnings	



Analysis result

Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition LC1=1.2D+Wo						
4	-0.10615	0.13279	3.00558	-1.99325	0.38899	-0.07284
5	0.82501	1.33591	-0.26278	-0.39612	0.44666	-0.54852
SUM	0.71886	1.46870	2.74280	-2.38937	0.83564	-0.62136
Condition LC2=1.2D+W30						
4	0.58089	0.13479	2.62429	-1.74078	1.59022	0.38037
5	1.81219	1.32635	-0.88833	-0.80828	1.67298	-1.19264
SUM	2.39308	1.46114	1.73595	-2.54906	3.26320	-0.81227
Condition LC3=1.2D+W60						
4	1.10347	0.13783	1.73089	-1.17190	2.29740	0.70998
5	2.11723	1.32302	-1.50735	-1.19166	2.29762	-1.34730
SUM	3.22070	1.46085	0.22354	-2.36357	4.59502	-0.63731
Condition LC4=1.2D+W90						
4	1.23460	0.14458	1.17122	-0.80513	2.33455	0.79432
5	2.08253	1.32190	-1.92342	-1.46447	2.34630	-1.32868
SUM	3.31714	1.46648	-0.75221	-2.26960	4.68085	-0.53436
Condition LC5=1.2D+W120						
4	1.10930	0.15233	0.60721	-0.43572	1.84139	0.71165
5	1.53875	1.32547	-2.16223	-1.62101	1.83675	-0.97802
SUM	2.64805	1.47780	-1.55502	-2.05674	3.67814	-0.26637
Condition LC6=1.2D+W150						
4	0.58443	0.15970	-0.42586	0.22446	1.18577	0.38279
5	0.83581	1.33128	-2.46725	-1.79888	1.21473	-0.55980
SUM	1.42024	1.49098	-2.89311	-1.57442	2.40049	-0.17701
Condition LC7=1.2D-Wo						
4	-0.09818	0.16312	-0.69958	0.40345	-0.38921	-0.06844
5	-0.62500	1.34970	-2.03532	-1.51545	-0.38965	0.38801
SUM	-0.72318	1.51282	-2.73489	-1.11201	-0.77886	0.31958

Condition LC8=1.2D-W30						
4	-0.78519	0.16117	-0.31690	0.15015	-1.58468	-0.52129
5	-1.59623	1.35897	-1.41135	-1.10416	-1.60502	1.02249
SUM	-2.38142	1.52013	-1.72825	-0.95401	-3.18970	0.50120
Condition LC9=1.2D-W60						
4	-1.30756	0.15827	0.57862	-0.42015	-2.30400	-0.85085
5	-1.90150	1.36189	-0.78685	-0.71691	-2.24227	1.17729
SUM	-3.20907	1.52016	-0.20823	-1.13707	-4.54627	0.32644
Condition LC10=1.2D-W90						
4	-1.43849	0.15156	1.13711	-0.78617	-2.36062	-0.93523
5	-1.88085	1.36327	-0.36139	-0.43794	-2.31214	1.16754
SUM	-3.31934	1.51484	0.77572	-1.22411	-4.67276	0.23230
Condition LC11=1.2D-W120						
4	-1.31315	0.14385	1.69923	-1.15435	-1.87641	-0.85276
5	-1.35285	1.35996	-0.11862	-0.27895	-1.81506	0.82664
SUM	-2.66600	1.50381	1.58062	-1.43330	-3.69147	-0.02612
Condition LC12=1.2D-W150						
4	-0.78822	0.13642	2.73051	-1.81340	-1.22670	-0.52406
5	-0.66059	1.35451	0.18919	-0.09942	-1.20244	0.41482
SUM	-1.44880	1.49094	2.91970	-1.91282	-2.42914	-0.10924
Condition LC13=0.9D+Wo						
4	-0.07996	0.09653	2.71717	-1.79441	0.39062	-0.05474
5	0.80041	0.99932	0.02414	-0.15727	0.44065	-0.52872
SUM	0.72045	1.09585	2.74132	-1.95168	0.83127	-0.58346
Condition LC14=0.9D+W30						
4	0.60856	0.09846	2.33617	-1.54216	1.59276	0.39945
5	1.78613	0.98978	-0.60171	-0.56968	1.66603	-1.17204
SUM	2.39469	1.08824	1.73446	-2.11184	3.25880	-0.77260
Condition LC15=0.9D+W60						
4	1.13196	0.10130	1.44304	-0.97349	2.30038	0.72961
5	2.09036	0.98664	-1.22100	-0.95332	2.29018	-1.32625
SUM	3.22232	1.08794	0.22204	-1.92680	4.59056	-0.59664
Condition LC16=0.9D+W90						
4	1.26306	0.10794	0.88352	-0.60682	2.33754	0.81392
5	2.05572	0.98568	-1.63724	-1.22628	2.33891	-1.30767
SUM	3.31878	1.09361	-0.75372	-1.83310	4.67644	-0.49375
Condition LC17=0.9D+W120						
4	1.13705	0.11555	0.31958	-0.23747	1.84400	0.73077
5	1.51269	0.98946	-1.87614	-1.38293	1.82981	-0.95745
SUM	2.64974	1.10501	-1.55656	-1.62040	3.67381	-0.22668
Condition LC18=0.9D+W150						
4	0.61138	0.12268	-0.71337	0.42262	1.18799	0.40139
5	0.81059	0.99561	-2.18133	-1.56096	1.20828	-0.53971
SUM	1.42197	1.11829	-2.89470	-1.13835	2.39627	-0.13832

Condition LC19=0.9D-Wo						
4	-0.07330	0.12600	-0.98726	0.60173	-0.38817	-0.05120
5	-0.64812	1.01429	-1.74924	-1.27742	-0.39479	0.40692
SUM	-0.72142	1.14029	-2.73650	-0.67570	-0.78296	0.35572
Condition LC20=0.9D-W30						
4	-0.76177	0.12412	-0.60488	0.34864	-1.58454	-0.50502
5	-1.61790	1.02354	-1.12498	-0.86588	-1.60923	1.04061
SUM	-2.37967	1.14767	-1.72985	-0.51724	-3.19377	0.53559
Condition LC21=0.9D-W60						
4	-1.28500	0.12142	0.29038	-0.22146	-2.30431	-0.83514
5	-1.92233	1.02628	-0.50021	-0.47838	-2.24596	1.19493
SUM	-3.20733	1.14770	-0.20983	-0.69984	-4.55027	0.35979
Condition LC22=0.9D-W90						
4	-1.41593	0.11483	0.84871	-0.58737	-2.36098	-0.91953
5	-1.90170	1.02751	-0.07457	-0.19924	-2.31584	1.18521
SUM	-3.31763	1.14234	0.77414	-0.78661	-4.67682	0.26568
Condition LC23=0.9D-W120						
4	-1.28990	0.10724	1.41076	-0.95548	-1.87641	-0.83660
5	-1.37442	1.02399	0.16830	-0.04014	-1.81920	0.84474
SUM	-2.66432	1.13123	1.57906	-0.99563	-3.69561	0.00814
Condition LC24=0.9D-W150						
4	-0.76418	0.10006	2.44191	-1.61444	-1.22632	-0.50738
5	-0.68299	1.01820	0.47626	0.13955	-1.20707	0.43339
SUM	-1.44717	1.11826	2.91818	-1.47488	-2.43339	-0.07399
Condition LC25=1.2D+Di+W10						
4	-0.36601	0.23758	2.20869	-1.51460	0.08774	-0.25213
5	0.48969	2.30987	-1.89966	-1.59452	0.18186	-0.37000
SUM	0.12368	2.54745	0.30904	-3.10912	0.26961	-0.62213
Condition LC26=1.2D+Di+W130						
4	-0.23510	0.23803	2.13430	-1.46537	0.31741	-0.16590
5	0.68265	2.30800	-2.01931	-1.67329	0.41828	-0.49605
SUM	0.44755	2.54603	0.11499	-3.13865	0.73569	-0.66195
Condition LC27=1.2D+Di+W160						
4	-0.25628	0.23808	2.11126	-1.45011	0.24797	-0.18012
5	0.61634	2.30924	-1.99728	-1.65897	0.34789	-0.45325
SUM	0.36006	2.54732	0.11398	-3.10908	0.59586	-0.63337
Condition LC28=1.2D+Di+W190						
4	-0.22648	0.23949	1.99934	-1.37679	0.26033	-0.16082
5	0.61602	2.30879	-2.08636	-1.71734	0.36216	-0.45366
SUM	0.38954	2.54828	-0.08702	-3.09412	0.62249	-0.61449
Condition LC29=1.2D+Di+W1120						
4	-0.25467	0.24111	1.88665	-1.30301	0.15388	-0.17944
5	0.50491	2.30935	-2.13544	-1.74945	0.25249	-0.38206
SUM	0.25023	2.55046	-0.24879	-3.05246	0.40637	-0.56149

Condition LC30=1.2D+Di+WI150						
4	-0.23279	0.24113	1.86430	-1.28810	0.17818	-0.16486
5	0.51754	2.30955	-2.14823	-1.75805	0.27591	-0.39042
SUM	0.28474	2.55069	-0.28392	-3.04615	0.45409	-0.55527
Condition LC31=1.2D+Di-WI0						
4	-0.36210	0.24218	1.78611	-1.23686	-0.14727	-0.25039
5	0.21326	2.31307	-2.07174	-1.70788	-0.05753	-0.19324
SUM	-0.14884	2.55525	-0.28563	-2.94474	-0.20480	-0.44363
Condition LC32=1.2D+Di-WI30						
4	-0.49300	0.24173	1.86056	-1.28613	-0.37717	-0.33661
5	0.02067	2.31494	-1.95193	-1.62900	-0.29404	-0.06741
SUM	-0.47234	2.55666	-0.09137	-2.91513	-0.67121	-0.40402
Condition LC33=1.2D+Di-WI60						
4	-0.47182	0.24167	1.88356	-1.30136	-0.30773	-0.32238
5	0.08672	2.31370	-1.97398	-1.64333	-0.22374	-0.11006
SUM	-0.38510	2.55538	-0.09042	-2.94469	-0.53146	-0.43244
Condition LC34=1.2D+Di-WI90						
4	-0.50161	0.24027	1.99545	-1.37467	-0.32059	-0.34168
5	0.08667	2.31415	-1.88464	-1.58480	-0.23856	-0.10941
SUM	-0.41493	2.55442	0.11081	-2.95947	-0.55915	-0.45110
Condition LC35=1.2D+Di-WI120						
4	-0.47342	0.23865	2.10811	-1.44842	-0.21425	-0.32307
5	0.19746	2.31360	-1.83553	-1.55267	-0.12907	-0.18082
SUM	-0.27595	2.55225	0.27258	-3.00109	-0.34332	-0.50389
Condition LC36=1.2D+Di-WI150						
4	-0.49530	0.23862	2.13045	-1.46333	-0.23871	-0.33765
5	0.18475	2.31340	-1.82268	-1.54402	-0.15267	-0.17240
SUM	-0.31055	2.55202	0.30778	-3.00735	-0.39137	-0.51005
Condition LC37=1.2D+1.6LL1						
4	-0.10213	0.17696	1.49411	-1.02914	-0.00492	-0.07095
5	0.09313	1.71384	-1.48581	-1.23373	0.02768	-0.07562
SUM	-0.00900	1.89080	0.00830	-2.26286	0.02276	-0.14657
Condition LC38=1.2D+1.6LL2						
4	0.67176	0.16463	1.49577	-1.02551	0.08904	0.46408
5	-0.68183	1.72621	-1.48648	-1.23288	-0.06238	0.54263
SUM	-0.01007	1.89083	0.00930	-2.25839	0.02665	1.00671
Condition LC39=1.2D+1.6LL3						
4	-0.87568	0.16368	1.49579	-1.02533	-0.08213	-0.60444
5	0.86692	1.72709	-1.48772	-1.23348	0.10303	-0.69550
SUM	-0.00875	1.89077	0.00807	-2.25881	0.02090	-1.29994
Condition LC40=1.2D+WI0+1.6LLa1						
4	1.37099	0.17919	1.95408	-1.33259	0.18573	0.94457
5	-1.34138	2.11044	-1.84940	-1.52693	-0.08211	1.07101
SUM	0.02961	2.28963	0.10468	-2.85952	0.10362	2.01559

Condition LC41=1.2D+WL30+1.6LLa1						
4	1.41202	0.17931	1.93145	-1.31762	0.26011	0.97165
5	-1.28003	2.10979	-1.89008	-1.55371	-0.00624	1.03103
SUM	0.13199	2.28910	0.04137	-2.87133	0.25387	2.00268
Condition LC42=1.2D+WL60+1.6LLa1						
4	1.40504	0.17932	1.92366	-1.31246	0.23505	0.96699
5	-1.30455	2.11029	-1.88178	-1.54833	-0.03202	1.04693
SUM	0.10049	2.28961	0.04187	-2.86079	0.20302	2.01392
Condition LC43=1.2D+WL90+1.6LLa1						
4	1.41232	0.17972	1.88889	-1.28967	0.23763	0.97162
5	-1.30458	2.11022	-1.90711	-1.56491	-0.02791	1.04655
SUM	0.10774	2.28993	-0.01821	-2.85458	0.20972	2.01817
Condition LC44=1.2D+WL120+1.6LLa1						
4	1.40553	0.18020	1.85369	-1.26660	0.20716	0.96716
5	-1.33861	2.11042	-1.92084	-1.57390	-0.05968	1.06858
SUM	0.06692	2.29062	-0.06716	-2.84050	0.14748	2.03574
Condition LC45=1.2D+WL150+1.6LLa1						
4	1.41275	0.18020	1.84636	-1.26171	0.21458	0.97195
5	-1.33461	2.11053	-1.92502	-1.57672	-0.05253	1.06589
SUM	0.07813	2.29073	-0.07865	-2.83843	0.16204	2.03784
Condition LC46=1.2D-WL0+1.6LLa1						
4	1.37210	0.18049	1.82136	-1.24529	0.11625	0.94504
5	-1.42613	2.11168	-1.90347	-1.56262	-0.15286	1.12516
SUM	-0.05403	2.29217	-0.08211	-2.80792	-0.03661	2.07020
Condition LC47=1.2D-WL30+1.6LLa1						
4	1.33107	0.18037	1.84399	-1.26027	0.04184	0.91796
5	-1.48744	2.11233	-1.86278	-1.53583	-0.22873	1.16512
SUM	-0.15637	2.29270	-0.01879	-2.79610	-0.18689	2.08308
Condition LC48=1.2D-WL60+1.6LLa1						
4	1.33804	0.18036	1.85178	-1.26543	0.06691	0.92263
5	-1.46295	2.11184	-1.87108	-1.54122	-0.20296	1.14923
SUM	-0.12491	2.29219	-0.01929	-2.80664	-0.13605	2.07186
Condition LC49=1.2D-WL90+1.6LLa1						
4	1.33076	0.17997	1.88654	-1.28821	0.06428	0.91800
5	-1.46295	2.11190	-1.84573	-1.52462	-0.20713	1.14963
SUM	-0.13219	2.29187	0.04081	-2.81282	-0.14284	2.06763
Condition LC50=1.2D-WL120+1.6LLa1						
4	1.33755	0.17948	1.92175	-1.31128	0.09474	0.92246
5	-1.42895	2.11170	-1.83199	-1.51562	-0.17537	1.12762
SUM	-0.09139	2.29118	0.08975	-2.82691	-0.08063	2.05008
Condition LC51=1.2D-WL150+1.6LLa1						
4	1.33034	0.17948	1.92907	-1.31617	0.08731	0.91766
5	-1.43296	2.11159	-1.82781	-1.51280	-0.18254	1.13032
SUM	-0.10262	2.29107	0.10126	-2.82897	-0.09523	2.04798

Condition LC52=1.2D+WL0+1.6LLa2						
4	0.56593	0.19568	1.95122	-1.33699	0.03255	0.38716
5	-0.53110	2.09381	-1.85134	-1.53055	0.05519	0.43652
SUM	0.03483	2.28949	0.09988	-2.86754	0.08774	0.82367
Condition LC53=1.2D+WL30+1.6LLa2						
4	0.60699	0.19579	1.92838	-1.32188	0.10686	0.41425
5	-0.46977	2.09317	-1.89180	-1.55719	0.13111	0.39653
SUM	0.13721	2.28896	0.03658	-2.87907	0.23797	0.81078
Condition LC54=1.2D+WL60+1.6LLa2						
4	0.60000	0.19581	1.92066	-1.31677	0.08182	0.40958
5	-0.49428	2.09365	-1.88358	-1.55186	0.10532	0.41244
SUM	0.10572	2.28946	0.03708	-2.86863	0.18714	0.82202
Condition LC55=1.2D+WL90+1.6LLa2						
4	0.60728	0.19621	1.88589	-1.29398	0.08441	0.41421
5	-0.49432	2.09358	-1.90891	-1.56845	0.10945	0.41207
SUM	0.11296	2.28978	-0.02302	-2.86242	0.19386	0.82628
Condition LC56=1.2D+WL120+1.6LLa2						
4	0.60048	0.19669	1.85077	-1.27096	0.05398	0.40975
5	-0.52834	2.09377	-1.92275	-1.57750	0.07766	0.43411
SUM	0.07214	2.29047	-0.07197	-2.84846	0.13164	0.84386
Condition LC57=1.2D+WL150+1.6LLa2						
4	0.60770	0.19670	1.84343	-1.26606	0.06139	0.41455
5	-0.52434	2.09388	-1.92690	-1.58031	0.08482	0.43141
SUM	0.08336	2.29058	-0.08347	-2.84637	0.14621	0.84597
Condition LC58=1.2D-WL0+1.6LLa2						
4	0.56701	0.19699	1.81871	-1.24984	-0.03683	0.38763
5	-0.61583	2.09501	-1.90566	-1.56640	-0.01556	0.49069
SUM	-0.04882	2.29200	-0.08695	-2.81624	-0.05239	0.87832
Condition LC59=1.2D-WL30+1.6LLa2						
4	0.52595	0.19687	1.84155	-1.26496	-0.11116	0.36053
5	-0.67712	2.09565	-1.86518	-1.53975	-0.09149	0.53065
SUM	-0.15117	2.29252	-0.02363	-2.80471	-0.20265	0.89119
Condition LC60=1.2D-WL60+1.6LLa2						
4	0.53294	0.19685	1.84927	-1.27007	-0.08612	0.36520
5	-0.65264	2.09517	-1.87340	-1.54508	-0.06571	0.51477
SUM	-0.11970	2.29202	-0.02413	-2.81515	-0.15183	0.87997
Condition LC61=1.2D-WL90+1.6LLa2						
4	0.52566	0.19646	1.88403	-1.29285	-0.08876	0.36057
5	-0.65264	2.09524	-1.84805	-1.52849	-0.06989	0.51516
SUM	-0.12698	2.29170	0.03598	-2.82134	-0.15864	0.87573
Condition LC62=1.2D-WL120+1.6LLa2						
4	0.53246	0.19597	1.91914	-1.31587	-0.05833	0.36503
5	-0.61865	2.09505	-1.83421	-1.51943	-0.03812	0.49314
SUM	-0.08618	2.29102	0.08494	-2.83529	-0.09645	0.85817

Condition LC63=1.2D-WL150+1.6LLa2						
4	0.52524	0.19597	1.92649	-1.32077	-0.06576	0.36023
5	-0.62265	2.09494	-1.83005	-1.51662	-0.04529	0.49583
SUM	-0.09741	2.29091	0.09644	-2.83738	-0.11105	0.85607
Condition LC64=1.2D+WL0+1.6LLa3						
4	-0.48225	0.20075	1.95002	-1.33823	0.04331	-0.33112
5	0.50965	2.08897	-1.84328	-1.52590	0.06338	-0.40813
SUM	0.02740	2.28972	0.10674	-2.86413	0.10669	-0.73926
Condition LC65=1.2D+WL30+1.6LLa3						
4	-0.44120	0.20087	1.92680	-1.32285	0.11760	-0.30403
5	0.57098	2.08833	-1.88336	-1.55230	0.13930	-0.44811
SUM	0.12978	2.28920	0.04345	-2.87515	0.25690	-0.75214
Condition LC66=1.2D+WL60+1.6LLa3						
4	-0.44818	0.20089	1.91921	-1.31783	0.09257	-0.30870
5	0.54647	2.08880	-1.87528	-1.54705	0.11351	-0.43220
SUM	0.09828	2.28969	0.04393	-2.86488	0.20608	-0.74090
Condition LC67=1.2D+WL90+1.6LLa3						
4	-0.44090	0.20129	1.88444	-1.29503	0.09517	-0.30407
5	0.54643	2.08872	-1.90060	-1.56363	0.11764	-0.43256
SUM	0.10553	2.29001	-0.01616	-2.85866	0.21280	-0.73663
Condition LC68=1.2D+WL120+1.6LLa3						
4	-0.44770	0.20178	1.84947	-1.27213	0.06474	-0.30852
5	0.51241	2.08891	-1.91459	-1.57279	0.08584	-0.41051
SUM	0.06470	2.29069	-0.06512	-2.84491	0.15059	-0.71904
Condition LC69=1.2D+WL150+1.6LLa3						
4	-0.44048	0.20179	1.84209	-1.26720	0.07215	-0.30372
5	0.51640	2.08901	-1.91870	-1.57557	0.09300	-0.41320
SUM	0.07592	2.29080	-0.07662	-2.84276	0.16515	-0.71693
Condition LC70=1.2D-WL0+1.6LLa3						
4	-0.48116	0.20208	1.81787	-1.25133	-0.02604	-0.33064
5	0.42491	2.09012	-1.89797	-1.56198	-0.00740	-0.35393
SUM	-0.05625	2.29220	-0.08011	-2.81331	-0.03343	-0.68457
Condition LC71=1.2D-WL30+1.6LLa3						
4	-0.52221	0.20196	1.84109	-1.26670	-0.10035	-0.35773
5	0.36362	2.09076	-1.85788	-1.53558	-0.08333	-0.31398
SUM	-0.15860	2.29273	-0.01679	-2.80228	-0.18367	-0.67171
Condition LC72=1.2D-WL60+1.6LLa3						
4	-0.51522	0.20194	1.84868	-1.27172	-0.07532	-0.35307
5	0.38810	2.09029	-1.86597	-1.54083	-0.05754	-0.32986
SUM	-0.12713	2.29223	-0.01729	-2.81255	-0.13286	-0.68293
Condition LC73=1.2D-WL90+1.6LLa3						
4	-0.52251	0.20154	1.88345	-1.29452	-0.07796	-0.35770
5	0.38810	2.09037	-1.84062	-1.52424	-0.06172	-0.32948
SUM	-0.13441	2.29191	0.04283	-2.81875	-0.13967	-0.68718

Condition LC74=1.2D-WL120+1.6LLa3						
4	-0.51571	0.20105	1.91841	-1.31742	-0.04754	-0.35324
5	0.42210	2.09019	-1.82663	-1.51508	-0.02994	-0.35151
SUM	-0.09361	2.29123	0.09178	-2.83250	-0.07749	-0.70476
Condition LC75=1.2D-WL150+1.6LLa3						
4	-0.52293	0.20104	1.92580	-1.32235	-0.05497	-0.35804
5	0.41809	2.09009	-1.82251	-1.51229	-0.03711	-0.34882
SUM	-0.10484	2.29113	0.10329	-2.83464	-0.09208	-0.70686
Condition LC76=1.2D-WL0+1.6LLa4						
4	-1.57597	0.17585	1.95317	-1.33123	-0.07105	-1.08457
5	1.58799	2.11437	-1.83225	-1.51556	0.21470	-1.26489
SUM	0.01202	2.29022	0.12092	-2.84679	0.14366	-2.34946
Condition LC77=1.2D-WL30+1.6LLa4						
4	-1.53483	0.17599	1.92963	-1.31563	0.00333	-1.05741
5	1.64928	2.11378	-1.87203	-1.54177	0.29053	-1.30478
SUM	0.11445	2.28977	0.05760	-2.85740	0.29387	-2.36219
Condition LC78=1.2D-WL60+1.6LLa4						
4	-1.54185	0.17600	1.92213	-1.31068	-0.02173	-1.06210
5	1.62475	2.11420	-1.86401	-1.53656	0.26476	-1.28887
SUM	0.08290	2.29020	0.05813	-2.84723	0.24303	-2.35097
Condition LC79=1.2D-WL90+1.6LLa4						
4	-1.53456	0.17640	1.88733	-1.28786	-0.01914	-1.05746
5	1.62466	2.11408	-1.88927	-1.55308	0.26887	-1.28919
SUM	0.09010	2.29048	-0.00193	-2.84095	0.24972	-2.34665
Condition LC80=1.2D-WL120+1.6LLa4						
4	-1.54133	0.17689	1.85248	-1.26503	-0.04960	-1.06190
5	1.59052	2.11418	-1.90331	-1.56226	0.23708	-1.26706
SUM	0.04919	2.29107	-0.05083	-2.82729	0.18748	-2.32896
Condition LC81=1.2D-WL150+1.6LLa4						
4	-1.53406	0.17690	1.84506	-1.26008	-0.04218	-1.05706
5	1.59445	2.11426	-1.90737	-1.56501	0.24421	-1.26970
SUM	0.06039	2.29116	-0.06232	-2.82508	0.20203	-2.32676
Condition LC82=1.2D-WL0+1.6LLa4						
4	-1.57480	0.17717	1.82124	-1.24448	-0.14049	-1.08403
5	1.50286	2.11521	-1.88694	-1.55158	0.14390	-1.21039
SUM	-0.07194	2.29238	-0.06569	-2.79606	0.00341	-2.29443
Condition LC83=1.2D-WL30+1.6LLa4						
4	-1.61594	0.17704	1.84480	-1.26008	-0.21489	-1.11119
5	1.44161	2.11580	-1.84714	-1.52536	0.06807	-1.17052
SUM	-0.17433	2.29283	-0.00234	-2.78544	-0.14683	-2.28171
Condition LC84=1.2D-WL60+1.6LLa4						
4	-1.60892	0.17702	1.85228	-1.26504	-0.18983	-1.10650
5	1.46611	2.11538	-1.85516	-1.53058	0.09383	-1.18641
SUM	-0.14281	2.29240	-0.00288	-2.79561	-0.09600	-2.29291

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

4	-1.61621	0.17662	1.88708	-1.28785	-0.19246	-1.11114
5	1.46617	2.11550	-1.82988	-1.51403	0.08967	-1.18608
SUM	-0.15004	2.29213	0.05720	-2.80188	-0.10279	-2.29721

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

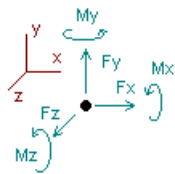
4	-1.60944	0.17613	1.92193	-1.31068	-0.16201	-1.10671
5	1.50028	2.11540	-1.81583	-1.50485	0.12144	-1.20818
SUM	-0.10916	2.29154	0.10610	-2.81553	-0.04057	-2.31489

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

4	-1.61670	0.17612	1.92936	-1.31563	-0.16945	-1.11154
5	1.49634	2.11532	-1.81177	-1.50210	0.11429	-1.20554
SUM	-0.12037	2.29144	0.11759	-2.81774	-0.05516	-2.31708

Envelope for nodal reactions

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



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
 LC2=1.2D+W30
 LC3=1.2D+W60
 LC4=1.2D+W90
 LC5=1.2D+W120
 LC6=1.2D+W150
 LC7=1.2D-Wo
 LC8=1.2D-W30
 LC9=1.2D-W60
 LC10=1.2D-W90
 LC11=1.2D-W120
 LC12=1.2D-W150
 LC13=0.9D+Wo
 LC14=0.9D+W30
 LC15=0.9D+W60
 LC16=0.9D+W90
 LC17=0.9D+W120
 LC18=0.9D+W150
 LC19=0.9D-Wo
 LC20=0.9D-W30
 LC21=0.9D-W60
 LC22=0.9D-W90
 LC23=0.9D-W120
 LC24=0.9D-W150
 LC25=1.2D+Di+Wi0
 LC26=1.2D+Di+Wi30
 LC27=1.2D+Di+Wi60
 LC28=1.2D+Di+Wi90
 LC29=1.2D+Di+Wi120
 LC30=1.2D+Di+Wi150
 LC31=1.2D+Di-Wi0
 LC32=1.2D+Di-Wi30

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

Node		Forces						Moments											
		Fx		lc	Fy		lc	Fz		lc	Mx		lc	My		lc	Mz		lc
		[Kip]			[Kip]			[Kip]			[Kip*ft]			[Kip*ft]			[Kip*ft]		
4	Max	1.413	LC45	0.242	LC31	3.006	LC1	0.60173	LC19	2.33754	LC16	0.97195	LC45						
	Min	-1.617	LC87	0.097	LC13	-0.987	LC19	-1.99325	LC1	-2.36098	LC22	-1.11154	LC87						
5	Max	2.117	LC3	2.315	LC32	0.476	LC24	0.13955	LC24	2.34630	LC4	1.19493	LC21						
	Min	-1.922	LC21	0.986	LC16	-2.467	LC6	-1.79888	LC6	-2.31584	LC22	-1.34730	LC3						

Date: 3/14/2022
Project Name: NEW HAVEN WHEELER ST
Project No.: CT2037
Designed By: LBW Checked By: MSC



CHECK CONNECTION CAPACITY (Worst Case)

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

Bolt Type = A36 3/4" (Threaded Rod)

Allowable Tensile Load =

$$F_{Tall} = 9609 \text{ lbs.}$$

Allowable Shear Load =

$$F_{Vall} = 5765 \text{ lbs.}$$

TENSILE FORCES

Reaction $F = 2467$ lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 2117 lbs. (See Bentley Output)

Reactions in Y direction: 2315 lbs. (See Bentley Output)

Resultant: 3137 lbs.

No. of Supports = 1

No. of Bolts / Support = 4

Tension Design Load /Bolts =

$$f_t = 616.75 \text{ lbs.} < 9609 \text{ lbs.} \text{ Therefore, OK !}$$

Shear Design Load / Bolts=

$$f_v = 784.26 \text{ lbs.} < 5765 \text{ lbs.} \text{ Therefore, OK !}$$

CHECK COMBINED TENSION AND SHEAR

$$\begin{array}{rclclcl} f_t / F_T & + & f_v / F_V & \leq & 1.0 \\ 0.064 & + & 0.136 & = & 0.200 < 1.0 \text{ Therefore, OK !} \end{array}$$

SCOPE OF WORK:

- ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- PROPOSED AT&T LTE ANTENNAS (QD4616-7) @ POS. 2 (1 PER ALPHA SECTOR, TOTAL OF 1).
- PROPOSED AT&T LTE ANTENNAS (QD6616-7) @ POS. 2 (TYP. OF 1 PER BETA & GAMMA SECTOR, TOTAL OF 2).
- PROPOSED AT&T LTE ANTENNAS (AIR6419 N77G) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (STACKED).
- PROPOSED AT&T LTE ANTENNAS (AIR6449 N77D) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (STACKED).
- EXISTING AT&T LTE ANTENNA OPA-65R-BU4DA @ POS. 3 (ALPHA SECTOR, TOTAL OF 1) (TO BE RELOCATED TO POS. 4).
- EXISTING AT&T LTE ANTENNA OPA-65R-BU6DA @ POS. 3 (BETA & GAMMA SECTOR, TOTAL OF 2) (TO BE RELOCATED TO POS. 4).
- PROPOSED AT&T RRUS-4415 B25 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- PROPOSED AT&T RRUS 4449 B5/B12 (700/850) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- PROPOSED Y CABLE (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- RELOCATE EXISTING RRUS 4426 B66 (AWS) FROM POS. 4 TO POS. 2.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- ADD 6648 + XCEDE CABLE.
- FINAL CONFIG. 5216+XMU/6630+IDLE/6648+XCEDE.

ITEMS TO BE REMOVED:

- EXISTING AT&T UMTS ANTENNA HPA-65R-BUU-H6 @ POS. 1 (GAMMA SECTOR, TOTAL OF 1).
- EXISTING AT&T LTE ANTENNA SBNHH-1D65A @ POS. 2 & 4 (ALPHA SECTOR, TOTAL OF 2).
- EXISTING AT&T UMTS ANTENNA SBNHH-1D65A @ POS. 1 (ALPHA SECTOR, TOTAL OF 1).
- EXISTING AT&T LTE ANTENNA HPA-65R-BUU-H6 @ POS. 2 (BETA & GAMMA SECTOR, TOTAL OF 2).
- EXISTING AT&T LTE ANTENNA QS66512-2 @ POS. 4 (BETA & GAMMA SECTOR, TOTAL OF 2).
- EXISTING RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING RRUS-32 B2 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING DBCT108F1V92-1 DIPLEXERS (TYP. OF 2 PER SECTOR, TOTAL OF 6).

ITEMS TO REMAIN:

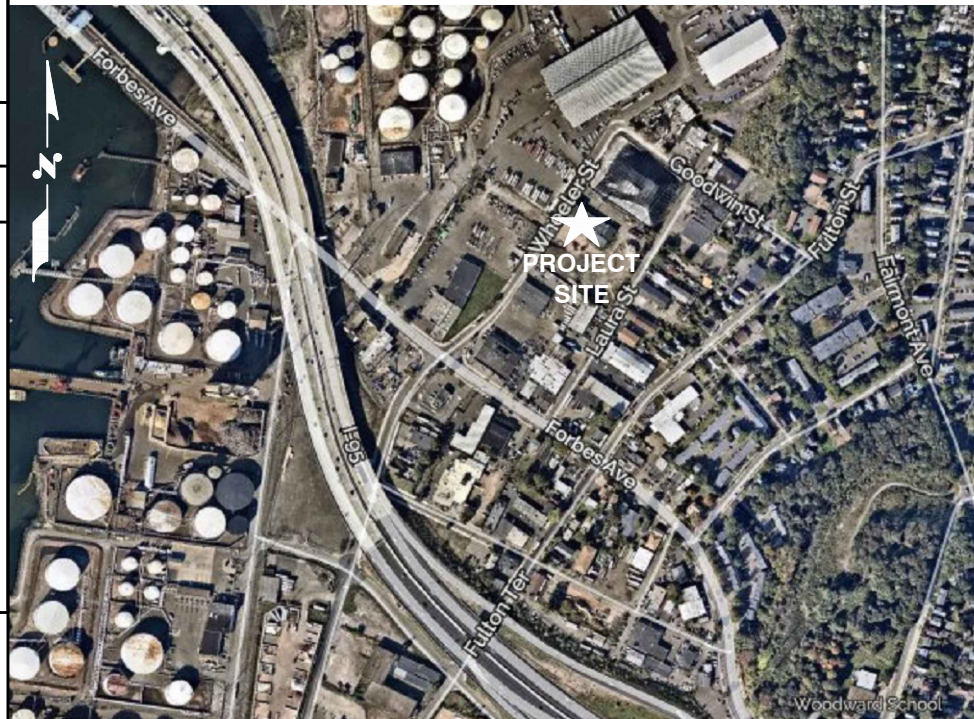
- (3) ANTENNAS, (12) RRU'S, (4) SURGE ARRESTORS, (8) DC POWER & (3) FIBER CABLES.

RFDS:	FINAL APPROVED V5 RFDS DATED 03/08/2022
SITE ADDRESS:	69 WHEELER STREET NEW HAVEN, CT 06512
LATITUDE:	41.2959919° N, 41° 17' 45.57" N
LONGITUDE:	72.8979431° W, 72° 53' 52.59" W
TYPE OF SITE:	MONOPOLE / OUTDOOR EQUIPMENT
STRUCTURE HEIGHT:	98'-0"±
RAD CENTER:	91'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

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



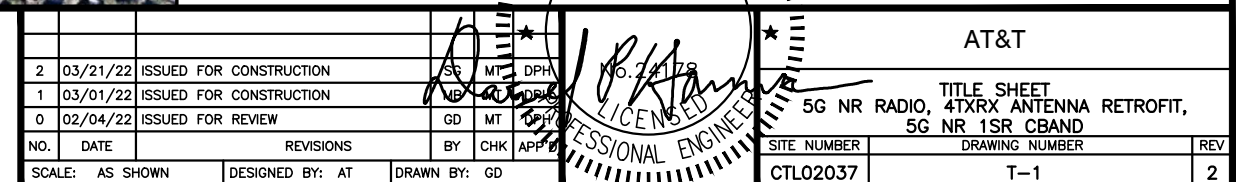
HEAD SOUTHEAST TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE WITH I-91 S, MERGE WITH I-91 S, TAKE EXIT 2 FOR HAMILTON STREET, CONTINUE ONTO IVES PL, TURN RIGHT ONTO EAST ST, TURN LEFT ONTO WATER ST, CONTINUE ONTO FORBES AVE, TURN LEFT ONTO GOODWIN ST/WHEELER ST
DESTINATION WILL BE ON THE RIGHT.



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2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.



UNDERGROUND SERVICE ALERT



1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUIT TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

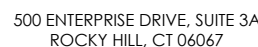
1. FOR THE PURPOSE OF SUBMITTING BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
2. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
3. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
4. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
5. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

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

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



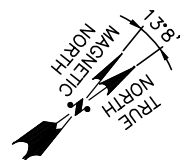
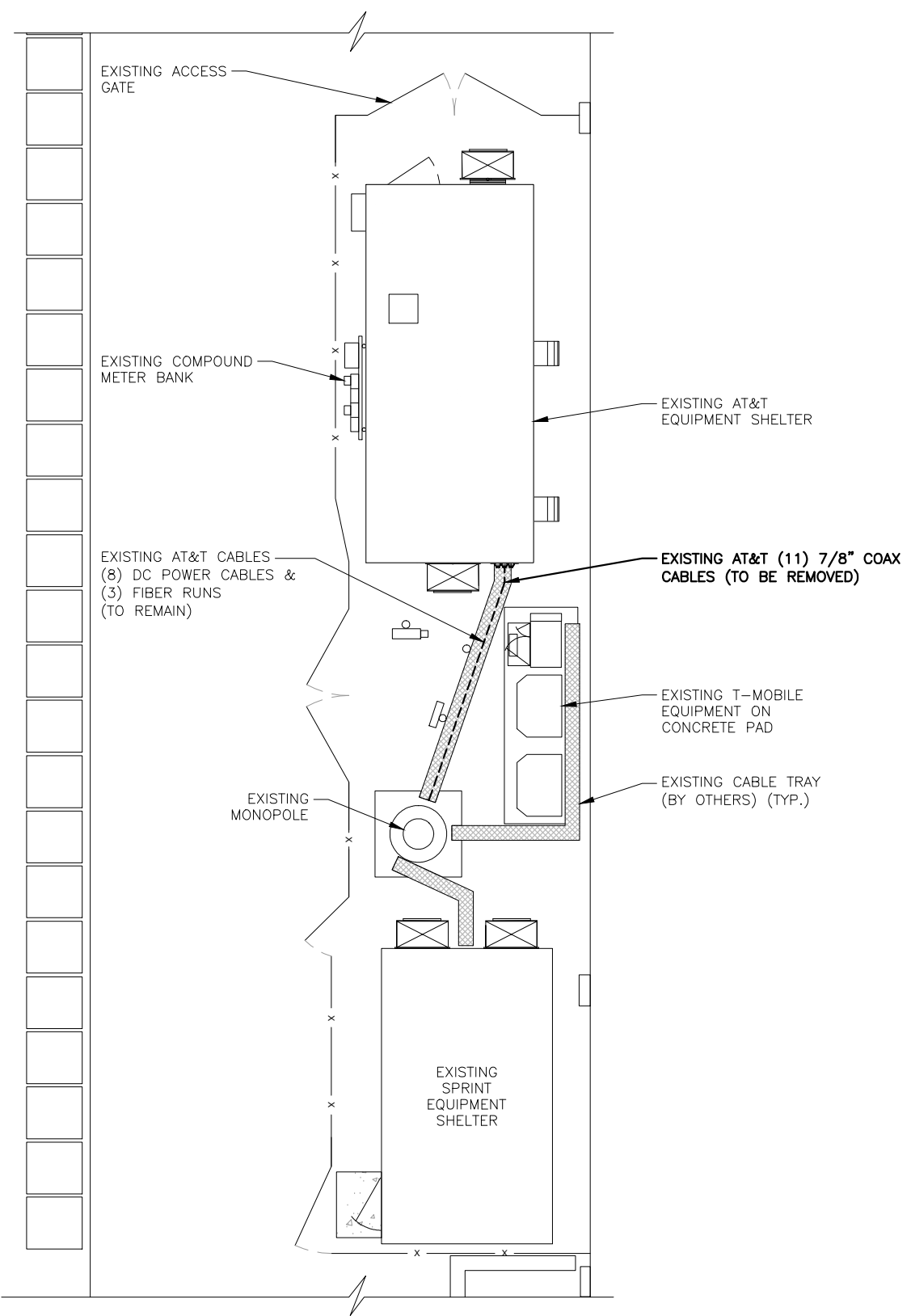
69 WHEELER STREET
NEW HAVEN, CT 06512
NEW HAVEN COUNTY



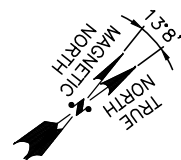
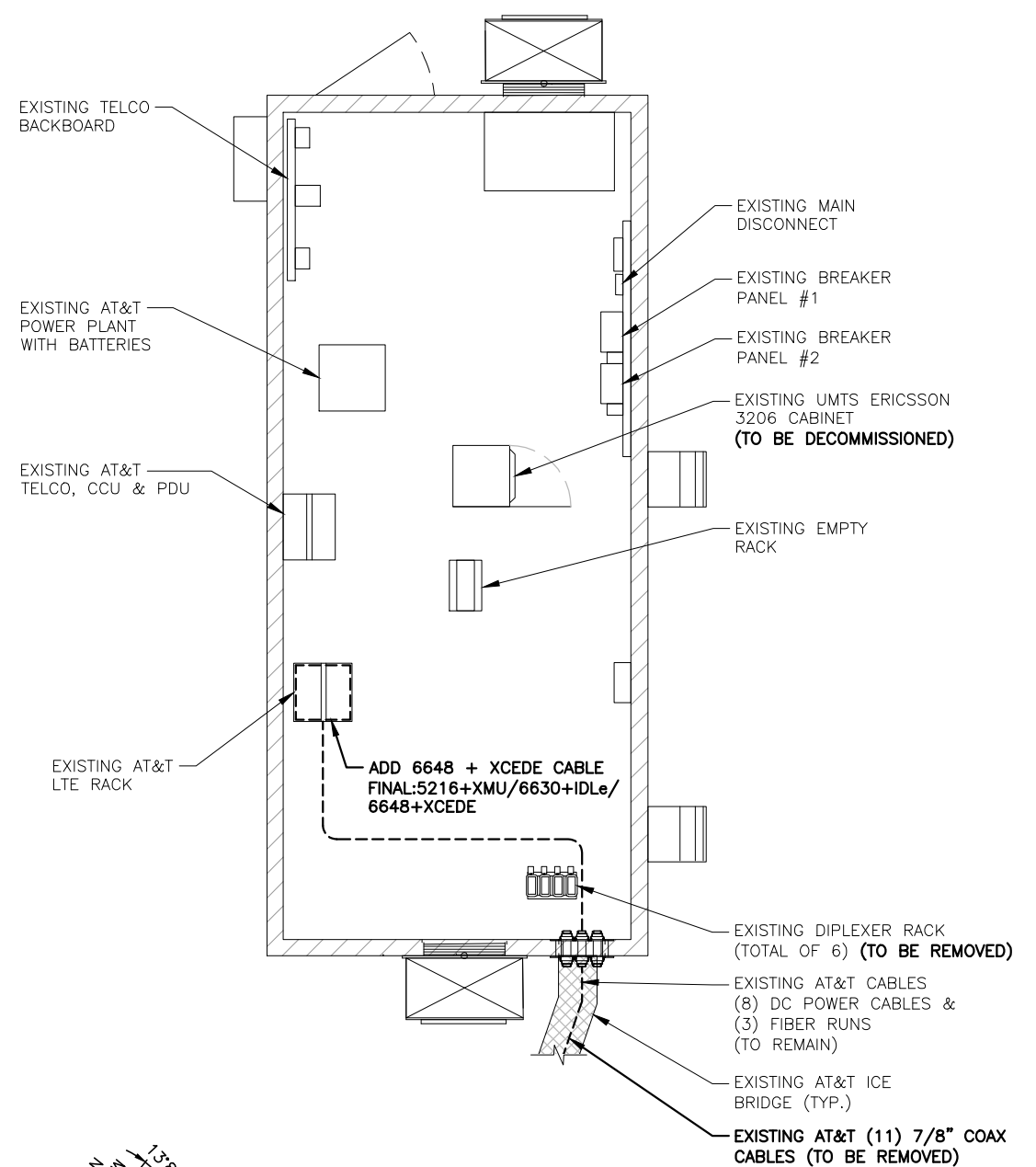
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1	03/01/22	ISSUED FOR CONSTRUCTION	MP	MT	DPH		GENERAL NOTES 5G NR RADIO, 4TXRX ANTENNA RETROFIT, 5G NR 1SR CBAND
0	02/04/22	ISSUED FOR REVIEW	GD	MT	DPH		
NO.	DATE	REVISIONS	BY	CHK	APP		
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: GD		SITE NUMBER		REVISION
					CTL02037		GN-1
							2

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC DATED: MARCH 15, 2022 (REV.1)

NOTE:
REFER TO FINAL APPROVED V5 RFDS DATED 03/08/2022



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



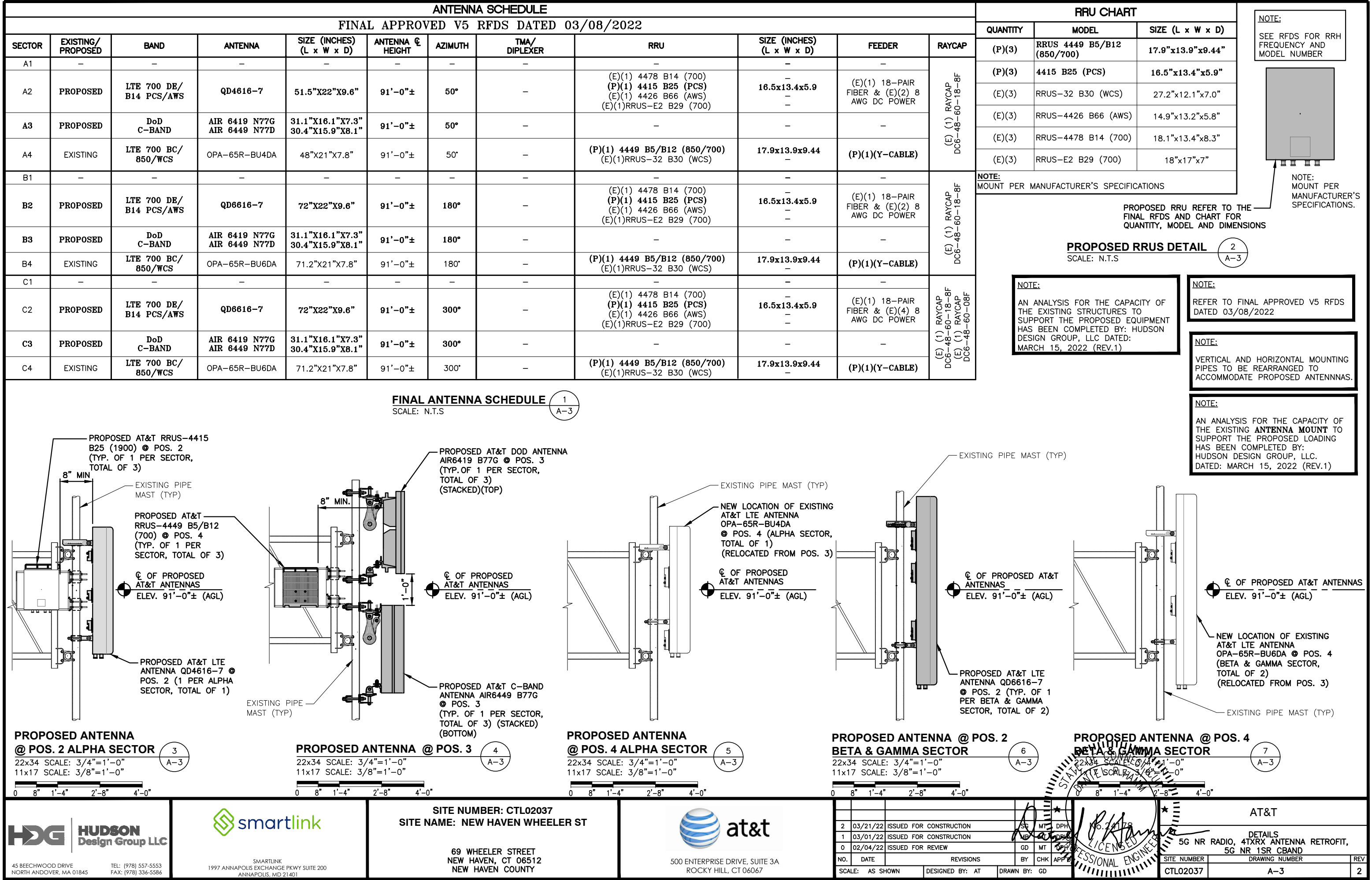
EQUIPMENT PLAN
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"
2 A-1

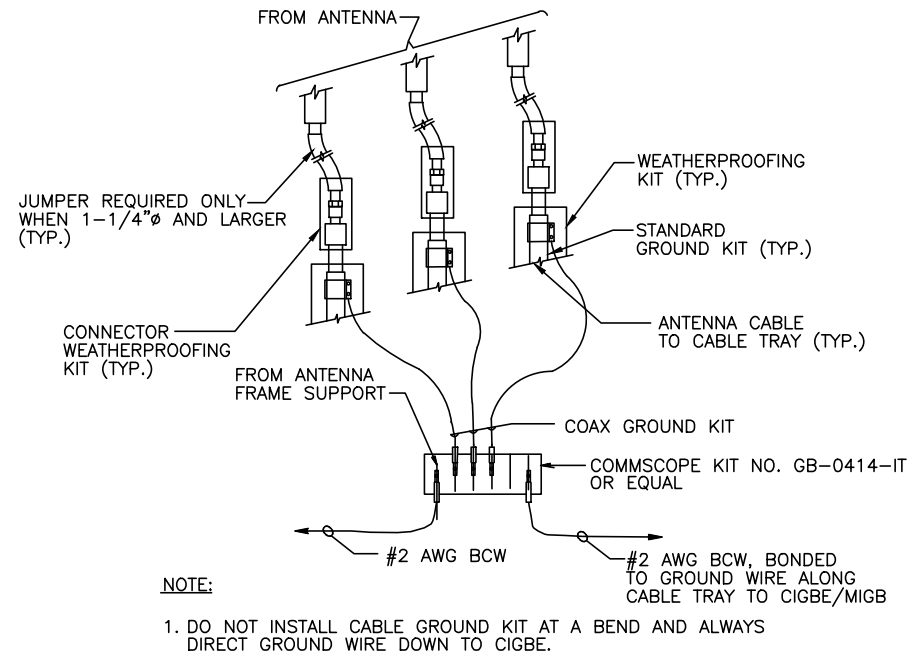
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1	03/01/22	ISSUED FOR CONSTRUCTION	MB	MT	DPH
0	02/04/22	ISSUED FOR REVIEW	GD	MT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: GD

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

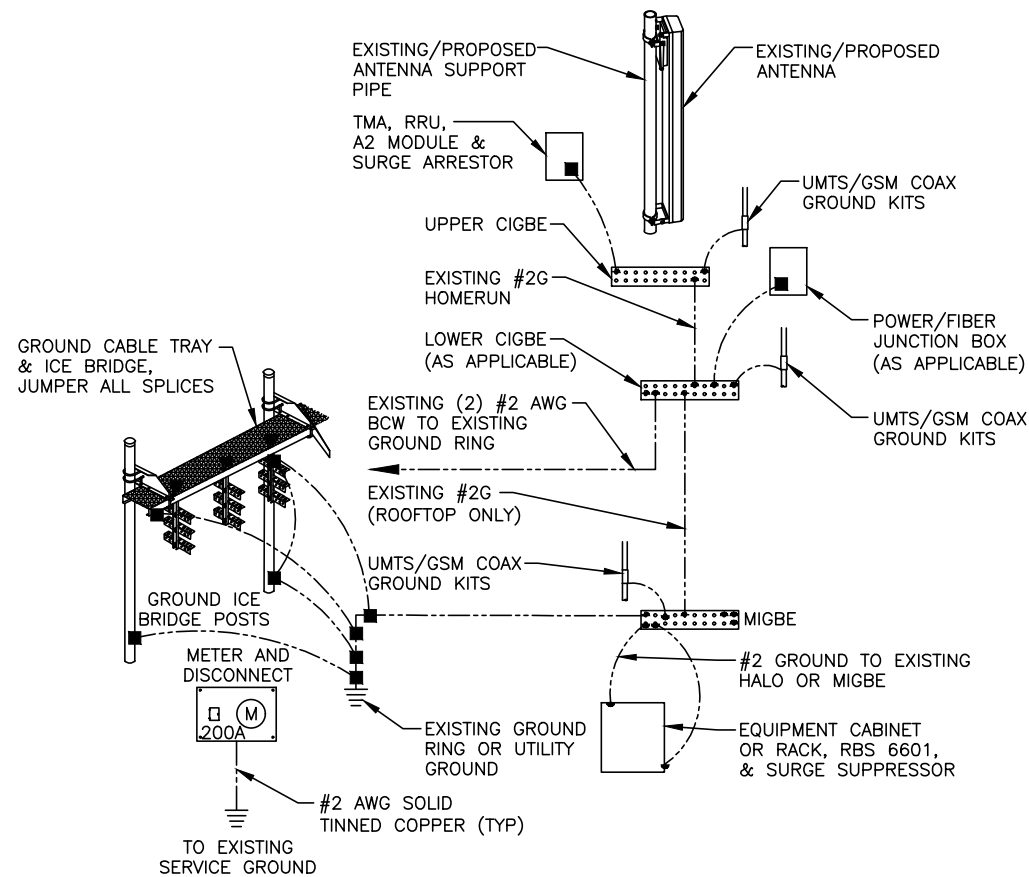
AT&T		
COMPOUND & EQUIPMENT PLANS 5G NR RADIO, 4TXRX ANTENNA RETROFIT, 5G NR 1SR CBAND		
SITE NUMBER	DRAWING NUMBER	REV
CTL02037	A-1	2





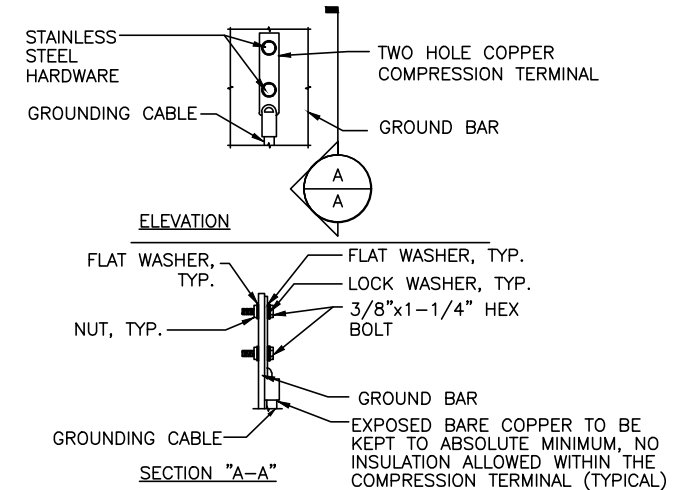
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S

1
G-1



GROUNDING RISER DIAGRAM
SCALE: N.T.S

2
G-1



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

TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: N.T.S

3
G-1

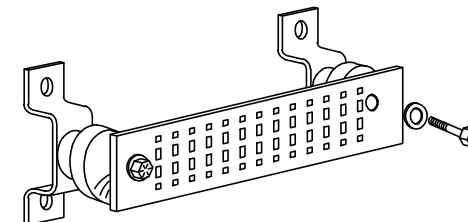
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

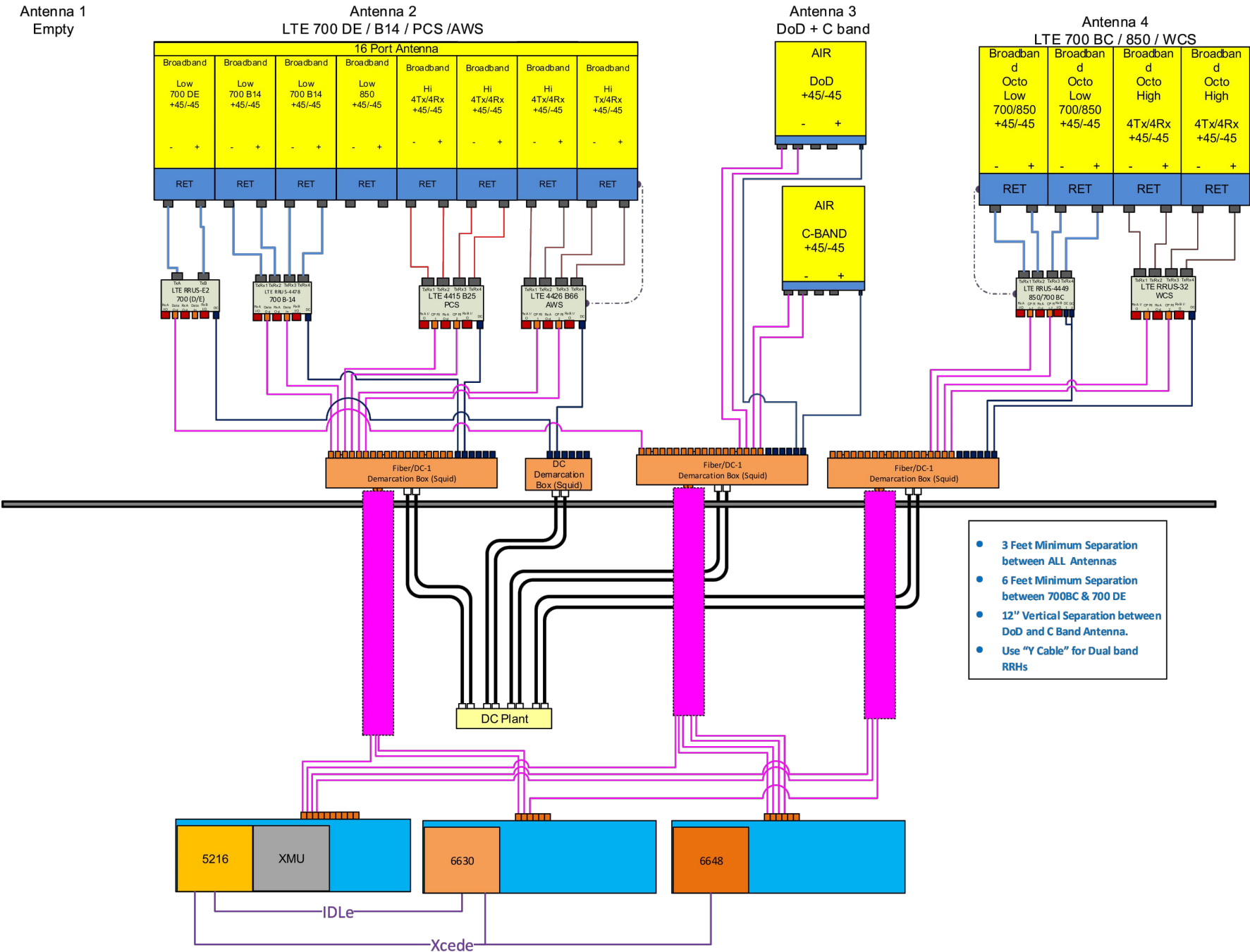
CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED)
SCALE: N.T.S



RF PLUMBING DIAGRAM
SCALE: N.T.S

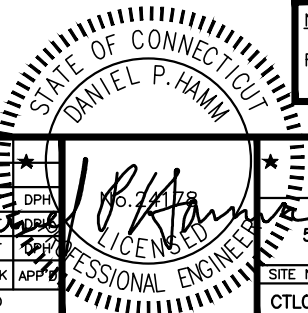
1
RF-1

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

NOTE:
REFER TO FINAL APPROVED V5 RFDS DATED 03/08/2022

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	03/21/22	ISSUED FOR CONSTRUCTION	SE	MT	DPH
1	03/01/22	ISSUED FOR CONSTRUCTION	MP	MT	DPH
0	02/04/22	ISSUED FOR REVIEW	GD	MT	DPH

SCALE: AS SHOWN
DESIGNED BY: AT
DRAWN BY: GD



AT&T		
RF PLUMBING DIAGRAM 5G NR RADIO, 4TXRX ANTENNA RETROFIT, 5G NR 1SR CBAND		
SITE NUMBER	DRAWING NUMBER	REV
CTL02037	RF-1	2